

DATSUN
240Z SPORTS

SERVICE
MANUAL

MODEL S30 SERIES
CHASSIS & BODY



NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

QUICK REFERENCE INDEX

GENERAL INFORMATION	GI
ENGINE REMOVAL & INSTALLATION	ER
CLUTCH	CL
TRANSMISSION	TR
PROPELLER SHAFT & DIFFERENTIAL CARRIER	PD
FRONT AXLE & FRONT SUSPENSION	FA
REAR AXLE & REAR SUSPENSION	RA
BRAKE	BR
WHEEL AND TIRE	WT
STEERING	ST
ENGINE CONTROL, FUEL & EXHAUST SYSTEM	FE
BODY	BO
BODY ELECTRICAL	BE
SERVICE EQUIPMENT	SE

FOREWORD

This service manual has been prepared for the purpose of assisting service personnels of our distributors and dealers for effective service and maintenance of DATSUN 240Z SPORTS (model S30 series).

Since proper maintenance and service are most essential to satisfy our customers by keeping their cars in the best condition, this manual should be read carefully. The followings should be noted for effective utilization of this manual.

- 1. Explanations in this manual are mainly concerning the model HLS30-U (left hand drive) but will easily be referred also for the right hand drive models and for the version models.*
- 2. Please, refer to both this and L20A, L24 SERIES ENGINE SERVICE MANUAL for complete details of the car, because this manual describes information concerning the chassis and body only.*
- 3. All part name in this manual conform to DATSUN SPORTS 240Z PARTS CATALOG, and only the genuine service parts listed in this parts catalog should be used for replacements.*
- 4. All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of publication approval.*
- 5. It is emphasised that those who use this manual revise the contents according to the SERVICE JOURNAL and SERVICE DATA AND SPECIFICATIONS issued by the factory, which carry the latest factory approved servicing method.*
- 6. Rights for alternation in specifications and others at any time are reserved.*

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION GI

**GENERAL
INFORMATION**

**DATSUN 240Z SPORTS
MODEL S30 SERIES
CHASSIS & BODY**



NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

MODEL IDENTIFICATION GI- 2
IDENTIFICATION NUMBER GI- 2
GENERAL VIEW GI- 3
GENERAL SPECIFICATIONS GI- 4

GENERAL INFORMATION

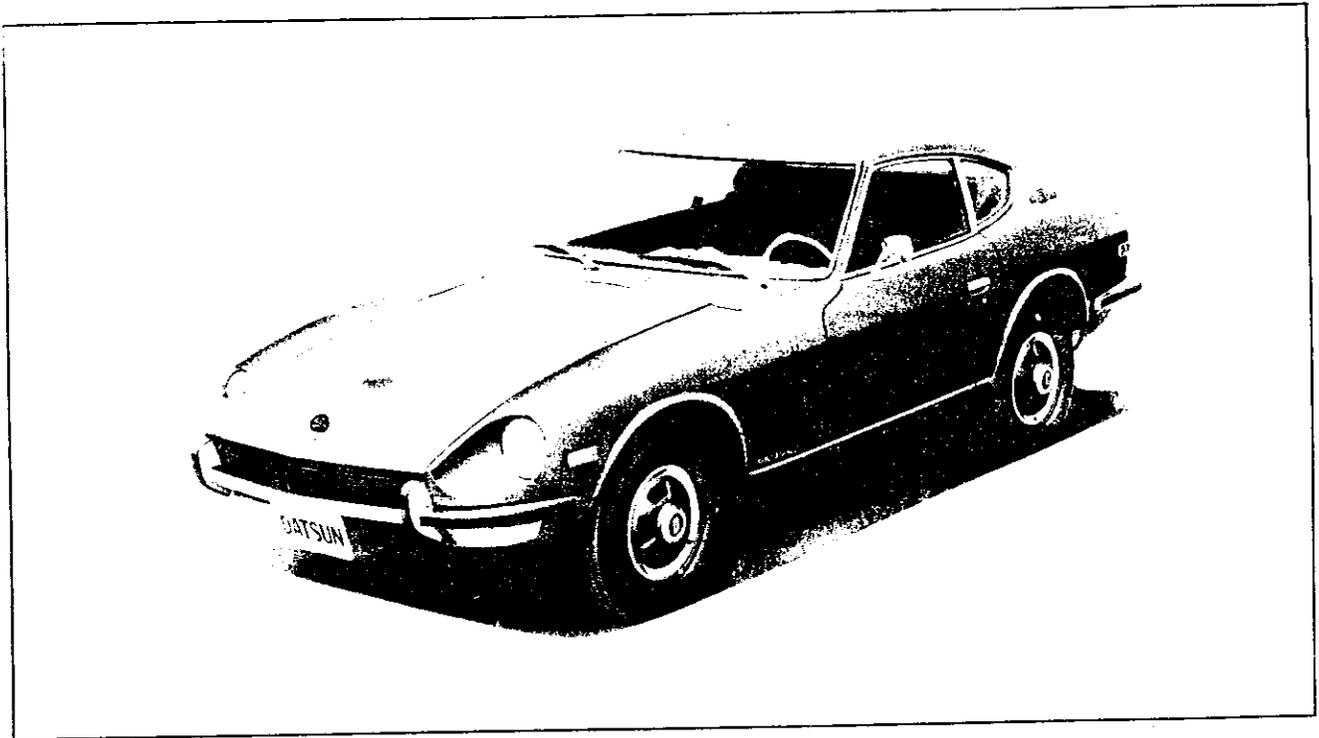


Fig. GI-1 DATSUN 240Z SPORTS (Model HLS30-U)

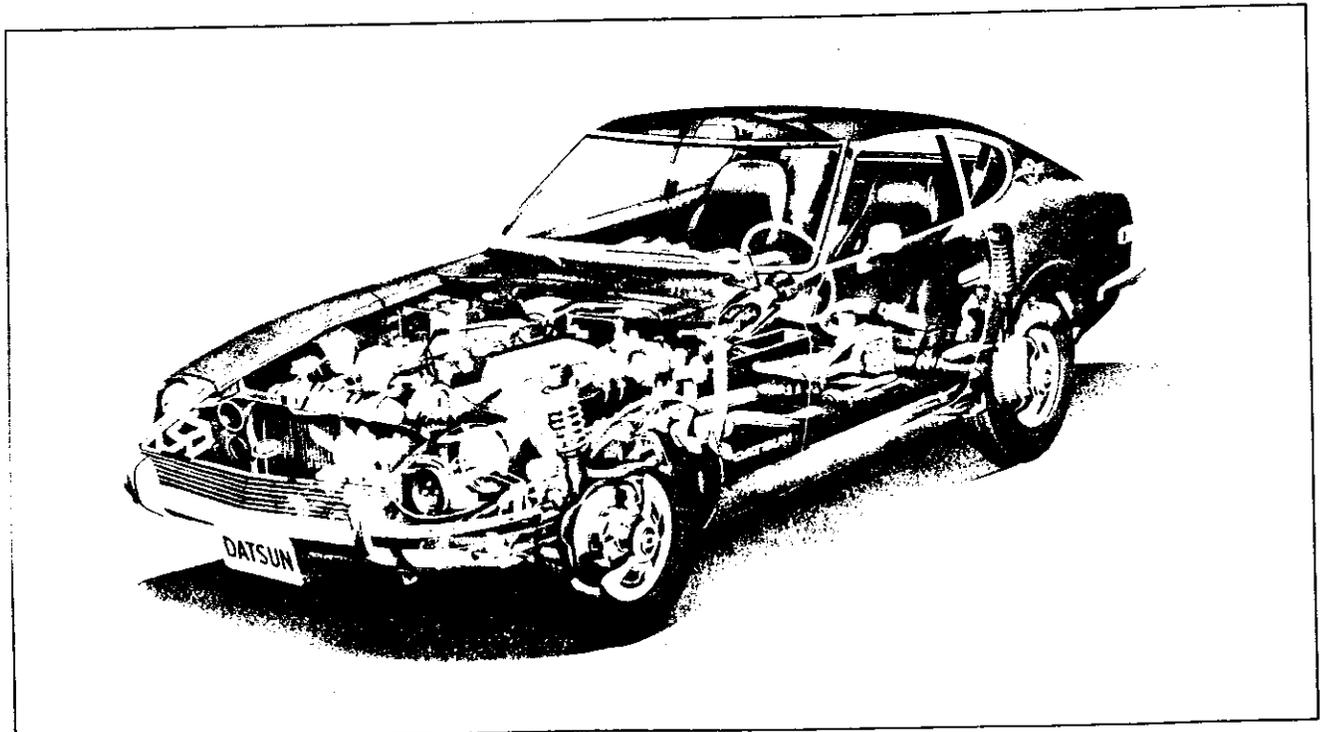


Fig. GI-2 Clairvoyant view (Model HLS30-U)

CHASSIS

MODEL IDENTIFICATION

Vehicle model	Engine model	Transmission - speeds	Remark
HLS30-U	L24 (SU carb.)	F4W71A-4	Left hand drive for U.S.A. Canada.
HLS30	L24 (SU carb.)	FS5C71A-5	Left hand drive
HS30-U	L24 (SU carb.)	FS5C71A-5	Right hand drive

IDENTIFICATION NUMBER

The identification number is stamped on instrument panel, and can be seen from outside. (For U.S.A.)

The body number plate identifies the type of car, engine capacity, maximum horse power [SAE (New)],

wheel base, engine number and car number.

The body number plate is attached to the right front strut housing.

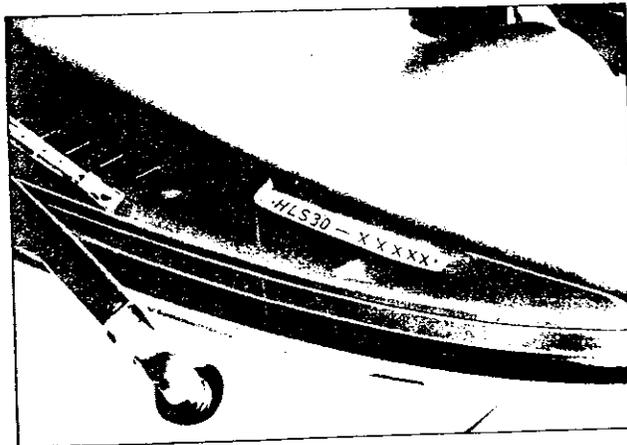


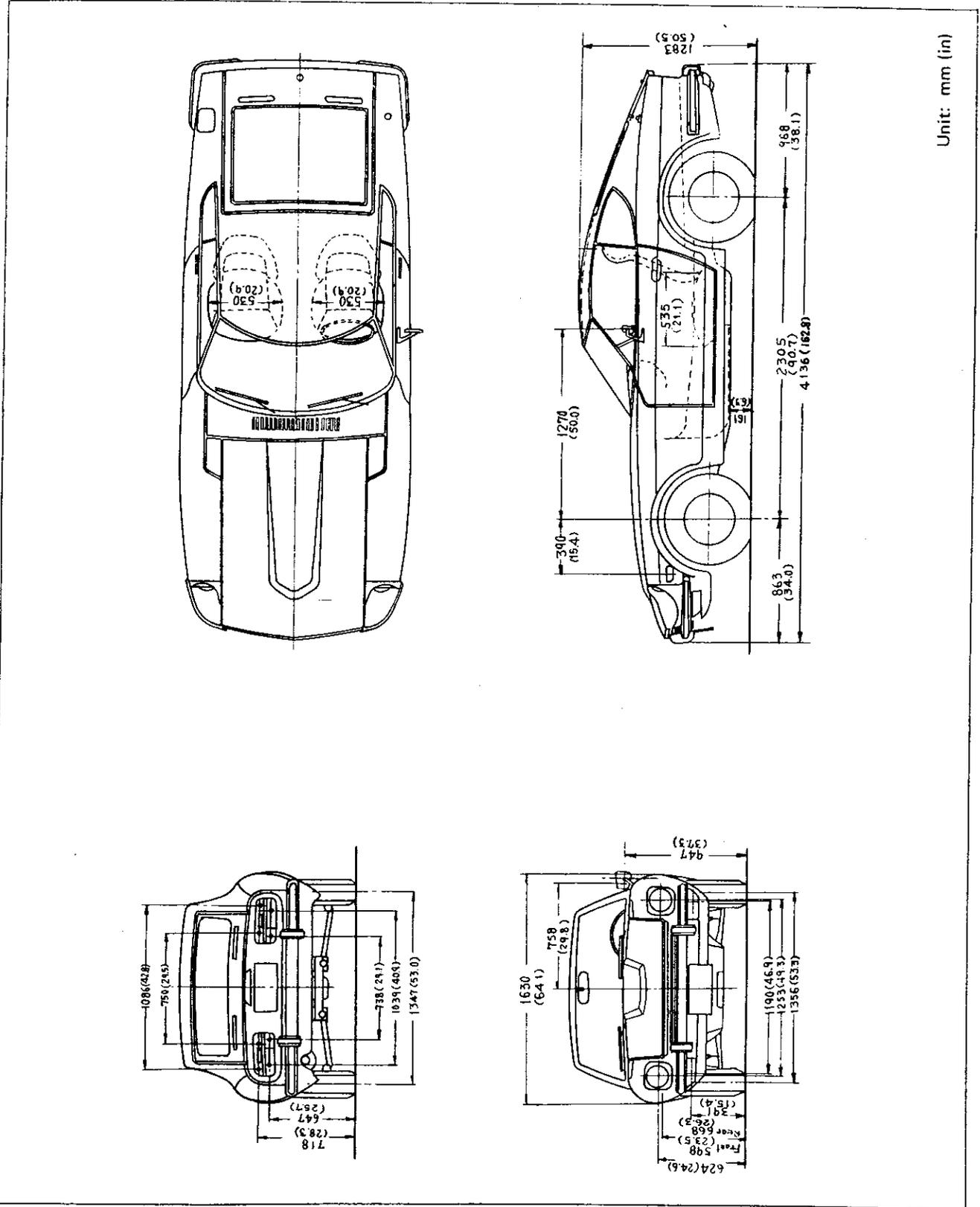
Fig. GI-3 Identification number

DATSUN		TYPE	HLS30
ENGINE CAPACITY	2,393 cc		
MAX. HP at RPM	151 HP at 5,600 rpm		
WHEEL BASE	2,305 mm		
ENGINE NO.	L24-	<input type="checkbox"/>	<input type="checkbox"/>
CAR NO.	HLS30-	<input type="checkbox"/>	<input type="checkbox"/>
NISSAN MOTOR CO., LTD.			
YOKOHAMA JAPAN			

Fig. GI-4 Body number plate

GENERAL INFORMATION

GENERAL VIEW



Unit: mm (in)

Fig. GI-5 General view

CHASSIS

GENERAL SPECIFICATIONS

Item		Model	DATSUN 240Z SPORTS		
			HLS30-U	H(L)S30-(U)	
Dimensions & Weight	Overall length		4,136 mm (162.8 in)	←	
	Overall width		1,630 mm (64.1 in)	←	
	Overall height		1,283 mm (50.5 in)	←	
	Wheel base		2,305 mm (90.7 in)	←	
	Tread	Front		1,356 mm (53.3 in)	←
		Rear		1,347 mm (53.0 in)	←
	Minimum road clearance		161 mm (6.3 in)	←	
	Seating capacity		2	←	
Vehicle weight		1,044 kg (2,300 lb)	1,025 kg (2,260 lb)		
Performance	Maximum speed		200 km/h (125 mph)	205 km/h (129 mph)	
	Maximum grade ability	(Sin θ)	0.436	0.436	
	Minimum turn radius		4.8 m (15.7 ft)	←	
	Engine model		L24 (SU carb.)	←	
	Clutch type		Dry single disc Diaphragm spring.	←	
Transmission	Model		F4W71A	FS5C71A	
	Synchro type		Warner	Servo	
	Control system		Floor shift	←	
	Gear ratio	1st		3.549	2.957
		2nd		2.197	1.858
		3rd		1.420	1.311
		4th		1.000	1.000
5th			—	0.852	
Reverse		3.146	2.922		
Final gear	Gear type		Hypoid gear	←	
	Gear ratio		3.364	3.900	

GENERAL INFORMATION

Speedometer gear ratio		17/6	19/6	
Suspension	Front	Type	Independent strut type	←
		Spring	Coil spring	←
		Shock absorber type	Telescopic double-acting	←
	Rear	Type	Independent strut type	←
		Spring	Coil spring	←
		Shock absorber type	Telescopic double-acting	←
		Drive shaft	Ball spline	←
Brake system	Front		Girling-Sumitomo S-16 type Disc brake	←
	Rear	Leading training type with Self-adjuster		←
		Drum	Aluminum drum with fins	
	Parking		Mechanical operated on rear wheels	←
	Master Vac		6 in	←
	Master cylinder		7/8 in tandem Master cylinder	←
	Skid control valve		Proportioning valve	←
Fuel tank	Tank capacity		60 ℓ (15.9 US gal 13.2 UK gal)	←
	Reservoir tank capacity		*4.2 ℓ (1.1 USgal 0.9 UK gal)	—
Battery		N50	←	
Steering	Gear type		Rack-and-pinion	←
	Lock to lock		2.7	←
Wheel & Tire	Size		175SR-14 175HR-14 6.45H14-4PR	6.45H14-4PR 165HR-14 6.95H14-4PR
	Rim size		4½J x 14	←

* For U.S.A. California

CHASSIS

MAINTENANCE FREQUENCY EVERY	CHECKING POINTS (CHASSIS & BODY)	MAINTENANCE PERIODS															
		50,000 km (30,000 miles)	40,000 km (24,000 miles)	20,000 km (12,000 miles)	10,000 km (6,000 miles)	5,000 km (3,000 miles)	3,000 km (2,000 miles)	6,000 km (4,000 miles)	10,000 km (6,000 miles)	15,000 km (9,000 miles)	20,000 km (12,000 miles)	25,000 km (15,000 miles)	30,000 km (18,000 miles)	35,000 km (21,000 miles)	40,000 km (24,000 miles)	45,000 km (27,000 miles)	50,000 km (30,000 miles)
	Check clutch & brake pedal free play.																
	Check clutch & brake system for oil leak or defect.																
	Check clutch operation.																
	Check foot & hand brake operation.																
	Check brake drum for wear.																
	Check drum brake lining.																
	Check disc brake lining pad.																
	Check master vac for proper function. (Change rubber parts every two years.)																
	Overhaul Master-Vac.																
	Overhaul master cylinder, wheel cylinder & caliper assembly.																
	Check steering wheel free play.																
	Retighten steering gear housing.																
	Retighten steering coupling & joint.																
	Check steering linkage for loose connection.																
	Retighten steering knuckle.																
	Check and retighten front and rear suspension parts.																
	Check P-valve operation.																
	Check strut assembly.																
	Check wheel alignment and turning angle.																
	Rotate wheel position.																
	Check wheel disc for damage.																
	Measure wheel balance (correct if necessary).																
	Retighten propeller shaft universal joint flange.																
	Check propeller shaft spline and joint for wear or damage.																
	Retighten transmission case and differential carrier.																
	Check exhaust pipe & muffler fitting parts.																
	Check wire harness and contact parts.																
	Retighten door hinge, lock & striker (align door if necessary).																
	Road test.																
	Check headlight aiming.																
	Check wheel bearing for wear.																

CHASSIS

JACKING UP AND TOWING THE CAR

CONTENTS

JACK UP	GI-10	Supportable point	GI-10
Pantograph jack	GI-10	TOWING	GI-11
Garage jack	GI-10		

JACK UP

Pantograph jack

Apply a jack to the indicated position where sill flange is cut for identification. Do not jack up other position.

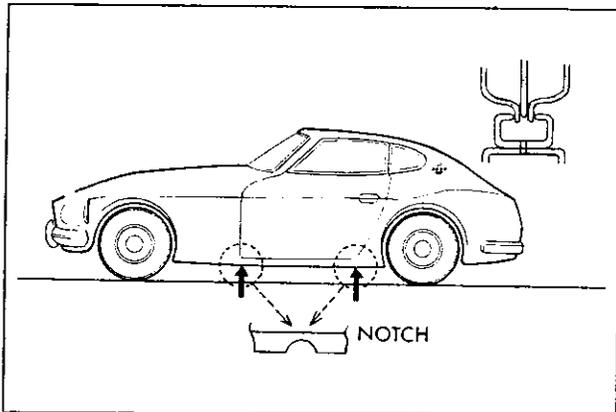


Fig. GI-6 Jacking point

Garage jack

The front jacking point is center of front suspension member and rear is differential gear carrier.

Do not apply a jack to center portion of front suspension transverse link.

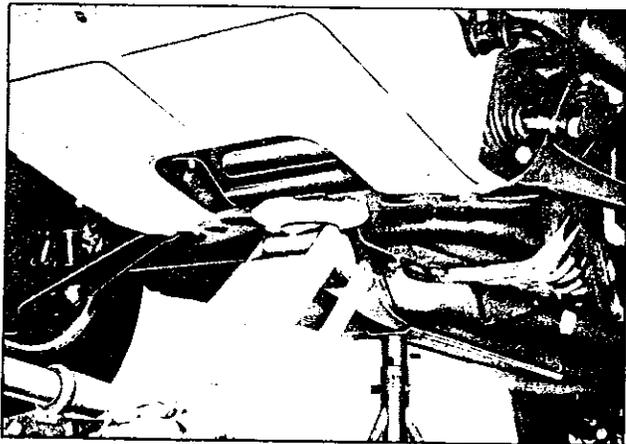


Fig. GI-7 Front jacking point

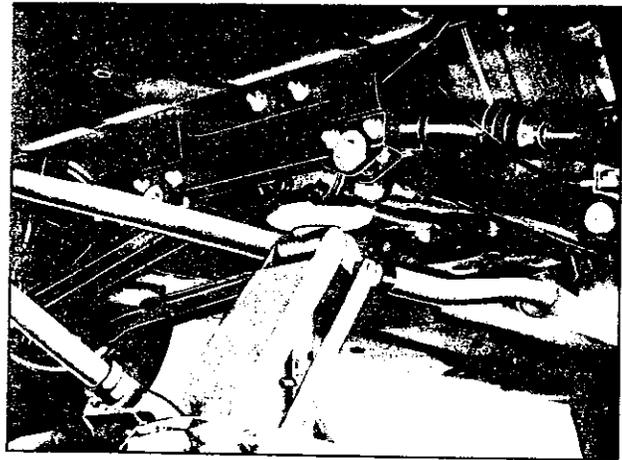


Fig. GI-8 Rear jacking point

Supportable point

Front supportable points for stand are both front side members. Rear supportable points are both sides of front differential mounting cross member.

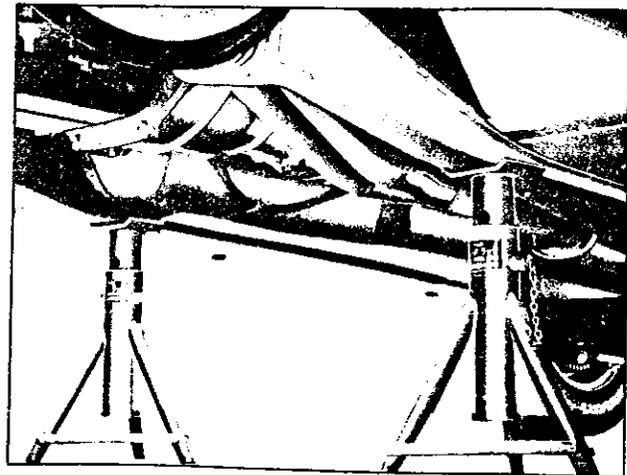


Fig. GI-9 Front supportable point

DATSUN 240Z SPORTS
MODEL S30 SERIES
CHASSIS & BODY



NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION ER

**ENGINE REMOVAL
& INSTALLATION**



ENGINE REMOVAL AND INSTALLATION	ER- 1
FRONT ENGINE MOUNTING INSULATOR	ER- 3
REAR ENGINE MOUNTING INSULATOR	ER- 3

ENGINE REMOVAL & INSTALLATION

ENGINE REMOVAL AND INSTALLATION

CONTENTS

REMOVAL	ER-1	INSTALLATION	ER-3
---------------	------	--------------------	------

Experience has shown that it is much easier to remove the engine with transmission as a single unit that to remove the engine only.

The engine can then be separated from the transmission assembly.

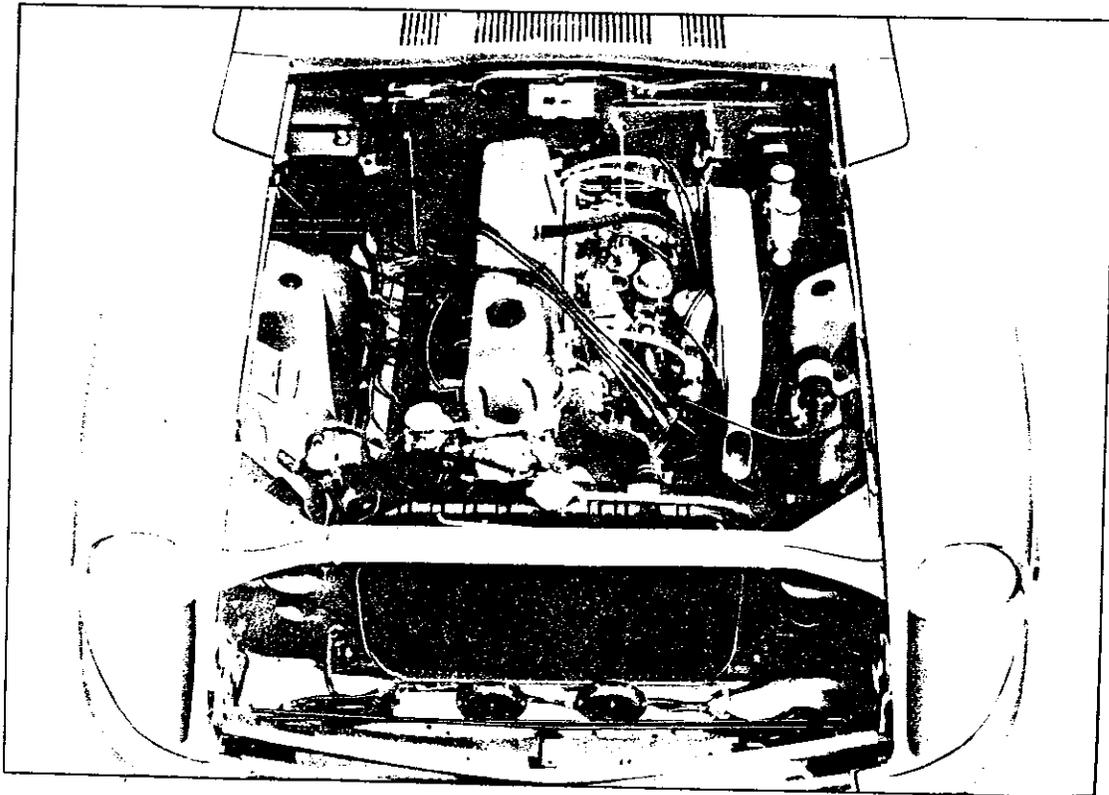


Fig. ER-1 Engine compartment

REMOVAL

1. Scribe alignment marks on hood around hood hinges and remove hood from hinges.
2. Completely drain the cooling system, engine and transmission lubricant.
3. Disconnect the battery cable.
4. Take off both upper and lower radiator hoses by removing the hose clamps. Then loosen the fixing bolts of the radiator, and take it out in sequence.

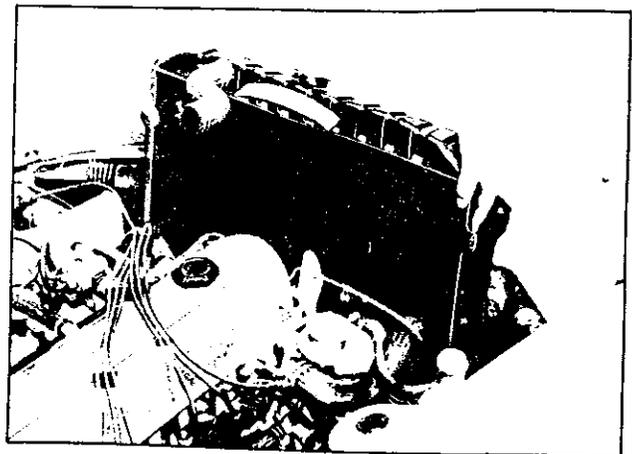


Fig. ER-2 Removing radiator

CHASSIS

5. Disconnect the fuel tube from the fuel pump.
6. If equipped with heater, remove its hoses at engine attachment.
7. Disconnect master vac vacuum hose from engine.
8. Disconnect accelerator control linkage, throttle control wire and choke control wire at the carburetor side.
9. Disconnect the wirings for the starter, alternator, ignition coil, oil pressure switch and thermal transmitter.
10. Remove the clutch operating cylinder and its return spring.

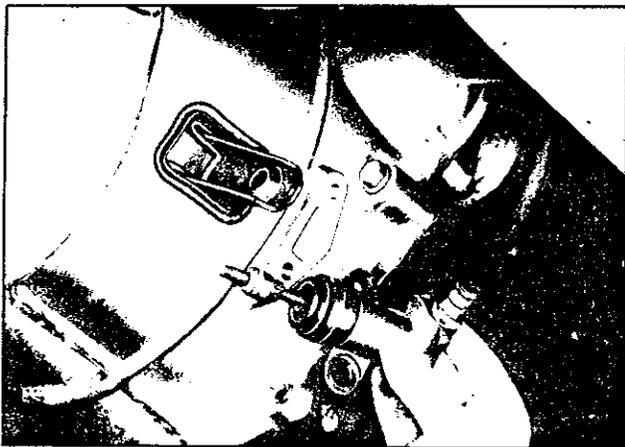


Fig. ER-3 Removing clutch operating cylinder

11. Disconnect the speedometer cable. Disconnect the reverse lamp switch.
12. Disconnect the transmission control lever from the control lever bracket, and remove the control lever.

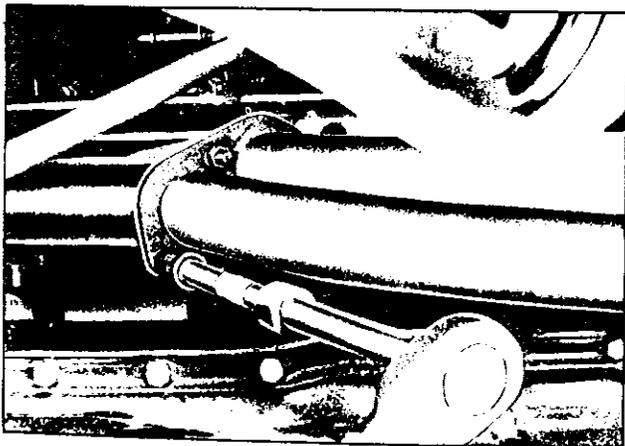


Fig. RE-4 Disconnecting exhaust tube

13. Disconnect the front exhaust tube from the exhaust manifold.
14. Disconnect the center tube from the main muffler and remove the front tube, pre-muffler and center tube assembly.
15. Disconnect the propeller shaft by disconnecting it from the companion flange of the gear carrier.
16. Jack up the transmission a little and then remove the rear engine mounting cross member by removing the fixing bolts of the engine mounting insulator, mounting cross member.

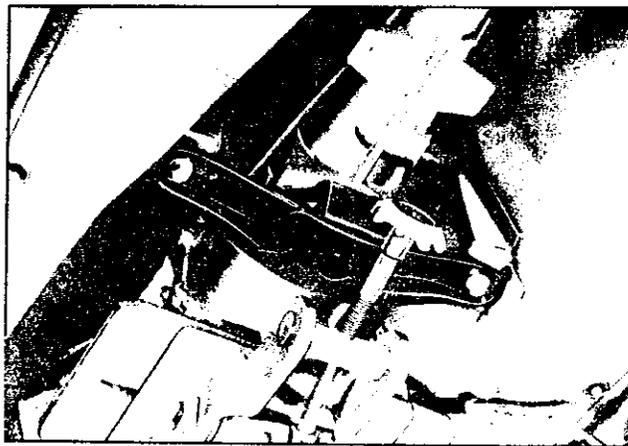


Fig. ER-5 Removing rear engine mounting

17. Remove the fixing bolts securing the front engine mounting brackets to engine mounting insulators.
18. Hook with cable or chain to the slingers (hooks) which are installed on the engine cylinder head one at the front and the other at the rear.

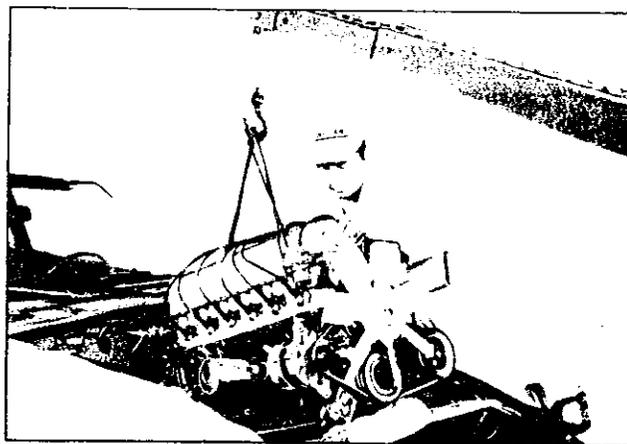


Fig. ER-6 Lifting engine

ENGINE REMOVAL & INSTALLATION

At this lifting, lower the jack placed under the transmission gradually (draw off the jack at adequate stage), hoist up engine observing the tension of wire and adjusting the position of chain block so that the engine tilts in order to make it cleared off the body. At this lifting, take care that accessories installed on the body side do not touch the engine and transmission.

INSTALLATION

Reverse the removal procedure but do not connect any parts to the engine steadily until the engine mounting insulators have been replaced and the power unit weight is taken by them.

FRONT ENGINE MOUNTING INSULATOR

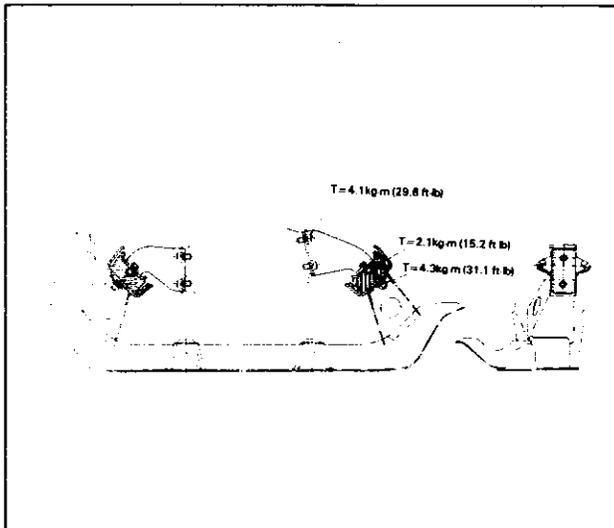


Fig. ER-7 Sectional view of front engine mounting

REMOVAL AND INSTALLATION

1. Support the engine weight by a jack.
2. Remove the nut connecting the front engine mounting insulator and the front suspension member. Remove the bolts connecting the engine mounting insulator and the engine mounting bracket.

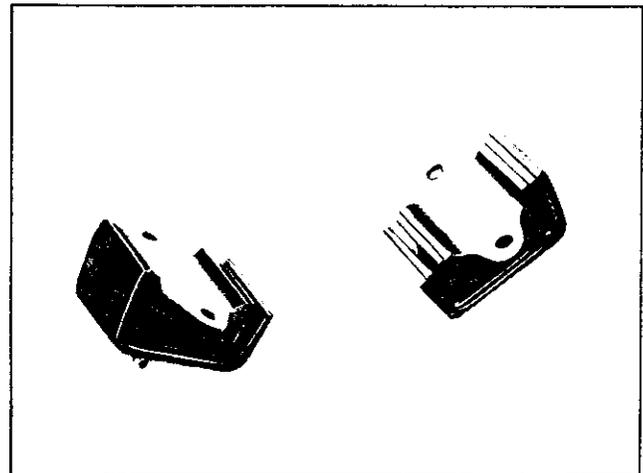


Fig. ER-8 Front engine mounting insulator

3. Jack up the engine a little and remove the insulator.
4. Reverse the removal procedure.

Note: Keep the insulator free from Oil or Grease.

INSPECTION

If there is damage, deterioration, or separation of bonded surface, renew the parts.

REAR ENGINE MOUNTING INSULATOR

CONTENTS

REMOVAL AND INSTALLATION	ER-4	INSPECTION	ER-4
--------------------------------	------	------------------	------

CHASSIS

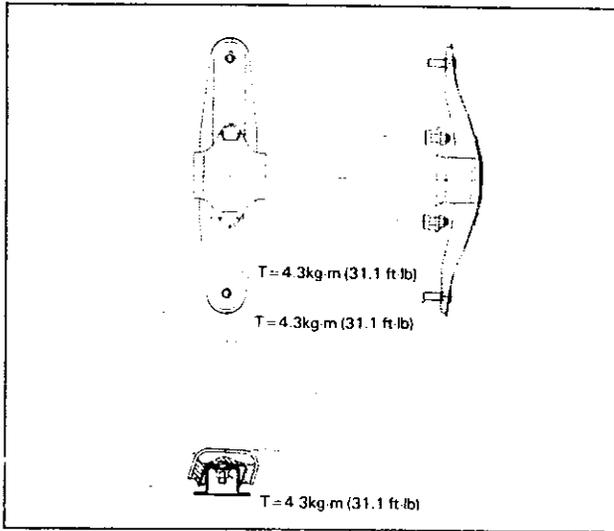


Fig. ER-9 Sectional view of rear engine mounting

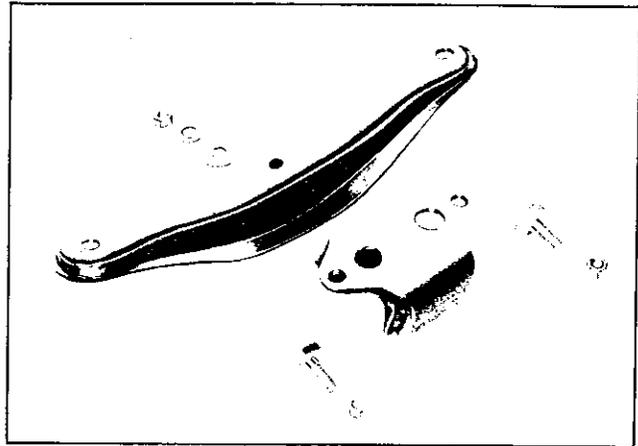


Fig. ER-10 Rear engine mounting

REMOVAL AND INSTALLATION

1. Support the transmission weight by a jack.
2. Remove the bolts connecting the rear engine mounting insulator and the transmission rear extension housing. Remove the fixing bolts connecting the mounting insulator and the cross member.

3. Remove the bolts fixing the cross member to under the body. Then remove the insulator.
4. Reverse the removal procedure.

Note: Keep the insulator free from Oil or Grease.

INSPECTION

If there is damage, deterioration, or separation of bonded surface, renew the parts.

SERVICE JOURNAL OR BULLETIN REFERENCE

DATE	JOURNAL or BULLETIN No.	PAGE No.	SUBJECT

**DATSUN 240Z SPORTS
MODEL S30 SERIES
CHASSIS & BODY**



NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION CL

CLUTCH

CL

CLUTCH	CL- 1
CLUTCH CONTROL	CL- 5
SERVICE DATA AND SPECIFICATIONS	CL- 9
TROUBLE DIAGNOSES AND CORRECTIONS	CL-11

CLUTCH

CLUTCH

CONTENTS

DESCRIPTION	CL-1	Disc assembly	CL-3
REMOVAL	CL-2	Release bearing and sleeve	CL-4
DISASSEMBLY	CL-2	REASSEMBLY	CL-4
INSPECTION AND ADJUSTMENT	CL-2	Release mechanism	CL-4
Clutch assembly	CL-2	REINSTALLATION	CL-5

DESCRIPTION

The clutch is a single dry disc diaphragm spring type clutch. The major components are clutch cover, pressure plate, diaphragm spring, and wire rings. The clutch disc is provided with riveted plates on both surfaces and coil springs arranged in a link. The coil springs absorb shock while engaging the clutch softening and smoothing clutch

engagement.

Release bearing, sleeve, and withdrawal lever are used to control clutch engagement and disengagement.

Each part of the clutch assembly is secured with rivets. Therefore, when a trouble is uncorrectable, replace the clutch assembly with a new assembly.

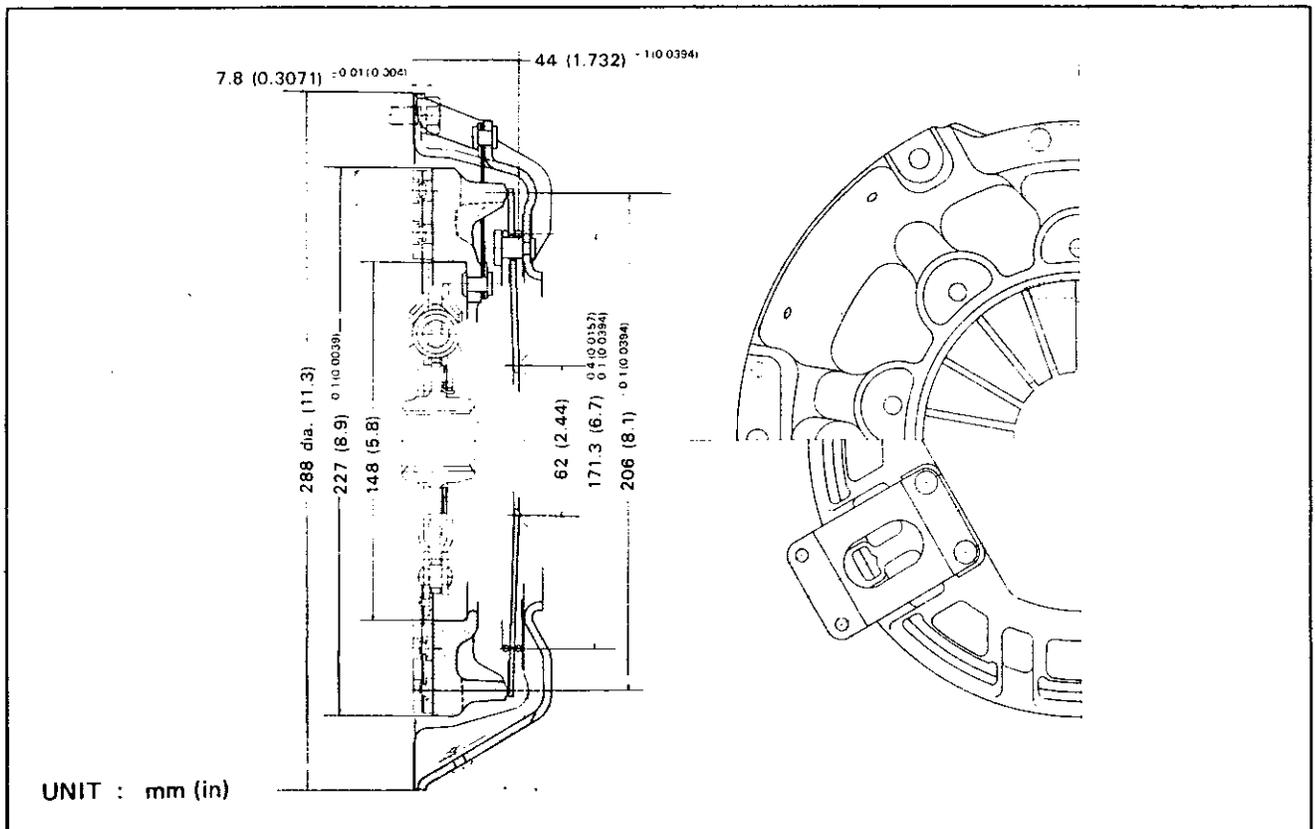
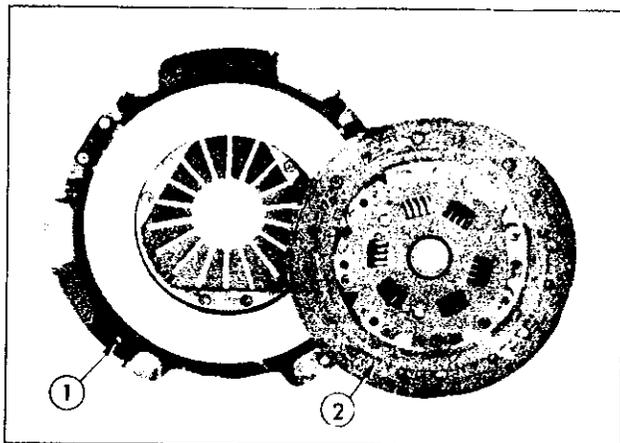


Fig. CL-1 Construction of clutch

CHASSIS

REMOVAL

The clutch assembly is dismantled primarily in the same manner as the engine assembly. Thus, when dismantling the clutch assembly, refer to the Section ER (Engine Removal) and other relative sections.



1	Clutch assembly	2	Clutch disc assembly
---	-----------------	---	----------------------

Fig. CL-2 Clutch assembly and disc assembly

DISASSEMBLY

1. When separating the clutch assembly from the flywheel, loosen and remove the installation bolts diagonally and gradually.

Note: When separating the clutch assembly from the flywheel, support the clutch cover sufficiently and loosen the installation bolts gradually and carefully because the diaphragm spring tension is always applied.

2. Removing release mechanism

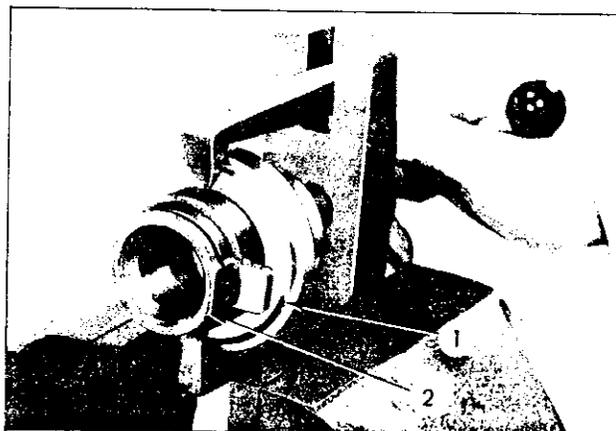
- (1) Remove the dust cover from the clutch housing.
- (2) Remove the holder spring from the bearing sleeve, and separate the withdrawal lever from the bearing sleeve.
- (3) Remove the release bearing and bearing sleeve from the front cover, and remove the withdrawal lever from the withdrawal lever ball pin.



1	Dust cover	3	Release bearing
2	Withdrawal lever	4	Holder spring

Fig. CL-3 Disassembling release mechanism

3. Withdraw the release bearing from the bearing sleeve by the use of a bearing puller.



1	Release bearing	2	Bearing sleeve
---	-----------------	---	----------------

Fig. CL-4 Withdrawing release bearing

INSPECTION AND ADJUSTMENT

Thoroughly clean all disassembled parts, except for disc assembly and release bearing, and check them for wear, crack, and other defective conditions.

Clutch assembly

1. Check the clutch cover, diaphragm spring, pressure plate, etc. for excessive wear, crack and damage. When noise occurs on the clutch assembly, replace.

CLUTCH

2. Measuring and adjusting height of diaphragm spring

- (1) Line up distance piece (special tool ST20058001) on clutch assembly base plate (special tool ST20051000).

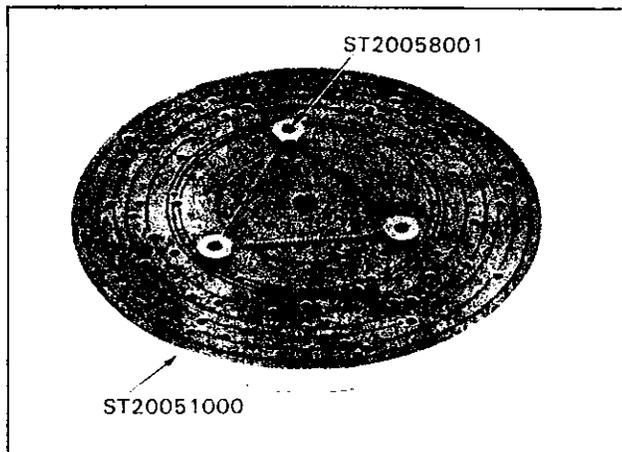


Fig. CL-5 Base plate and distance piece

- (2) Place the clutch assembly on the distance piece, and set the clutch assembly on the base plate stationarily. (Under this condition, the distance piece is placed beneath the pressure plate.)

- (3) Raise center pole (special tool ST20052000) on the base plate. Install height gauge (special tool ST20240000) on the pole, and measure height of the diaphragm spring end from the upper surface of the base plate.

Height of diaphragm spring end:

43.0 to 45.0 mm (1.693 to 1.772 in)

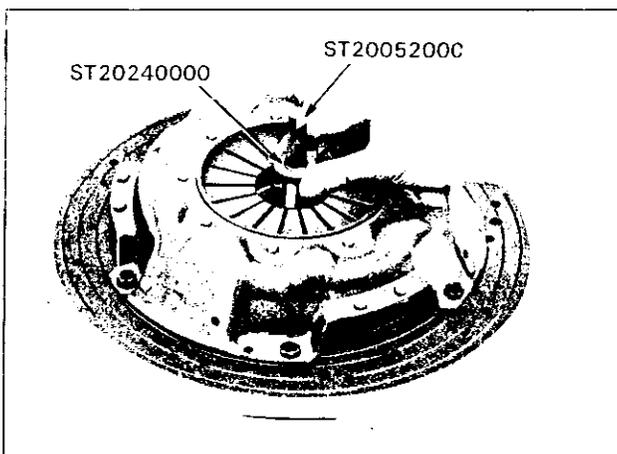


Fig. CL-6 Measuring height of diaphragm spring

- (4) Adjust height of the diaphragm spring by the use of diaphragm spring adjusting wrench (special tool ST20500000), if required.

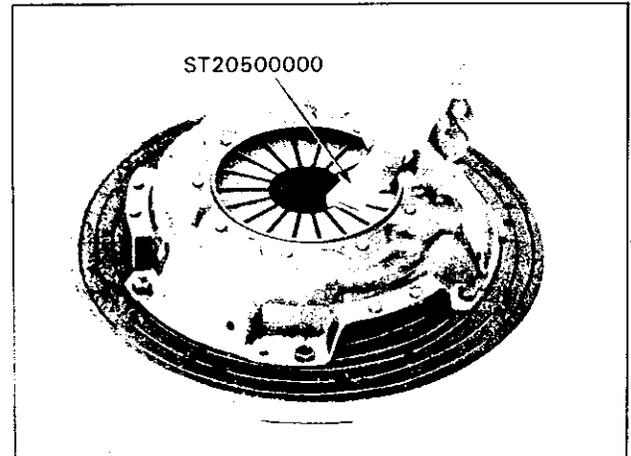


Fig. CL-7 Adjusting diaphragm spring height

Disc assembly

1. If the facing is soiled with grease or oil, clean off with gasoline tetrachloride and dress the facing with a wire brush. Replace the facing, if required.

2. Check the disc for deflection, and repair or replace if the deflection at the outer circumference of the facing exceeds the following value:

Upper limit of the deflection:

0.5 mm (0.0197 in) at

112 mm (4.40 in) radius

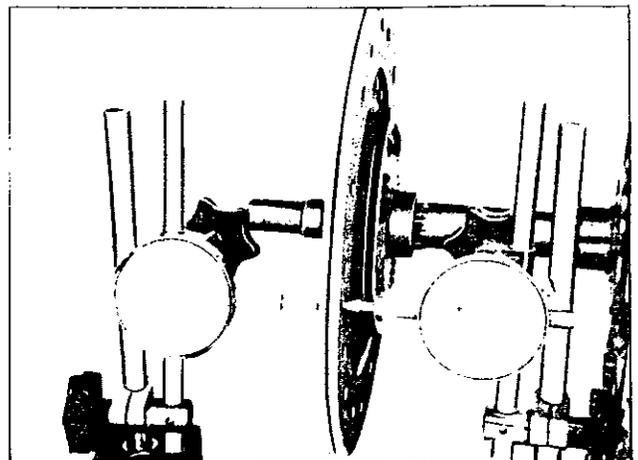


Fig. CL-8 Checking disc for deflection

CHASSIS

3. Replace the disc assembly if the facing is worn to such an extent that the facing height above rivet is less than 0.3 mm (0.0118 in), the facing is worn unevenly, or rivets are loose.

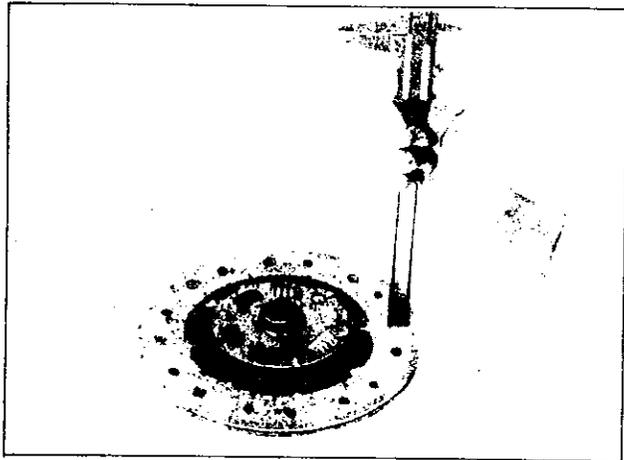


Fig. CL-9 Checking clutch facing for wear

Release bearing and sleeve

1. When withdrawal lever and bearing sleeve contact point is worn in step, replace the sleeve.
2. When grease leaks from the release bearing, or noise occurs on the release bearing, replace the release bearing.

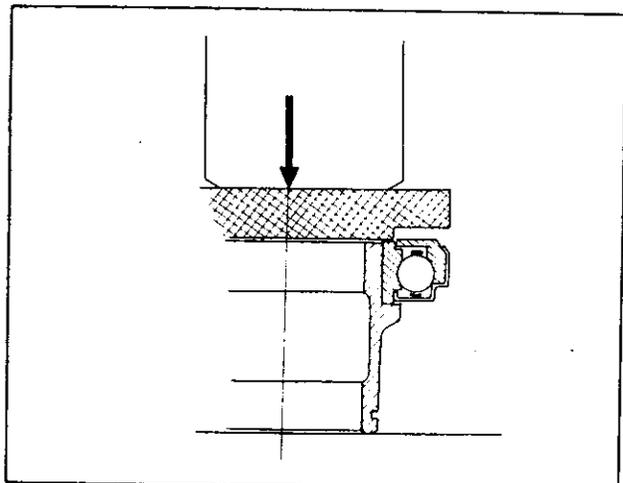


Fig. CL-10 Fitting release bearing

REASSEMBLY

Release mechanism

1. Tightly fit the release bearing to the place on the

bearing sleeve as shown in Figure CL-10. When the bearing is installed completely, turn the bearing with a finger, and make sure that the bearing operates smoothly.

2. Apply multi-purpose grease (MIL G-2108 or 10924) to the following places:

- Bearing sleeve inside groove

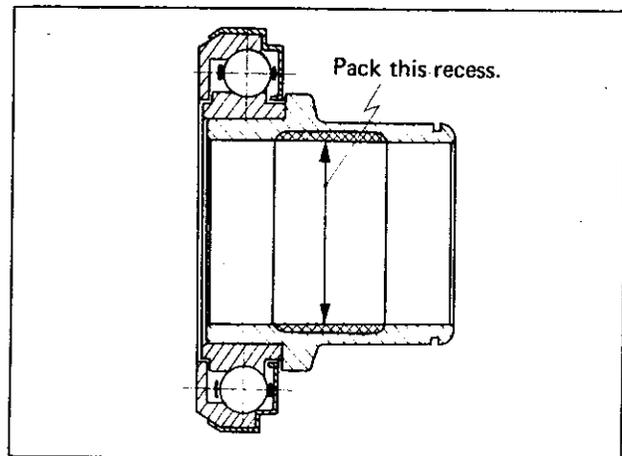
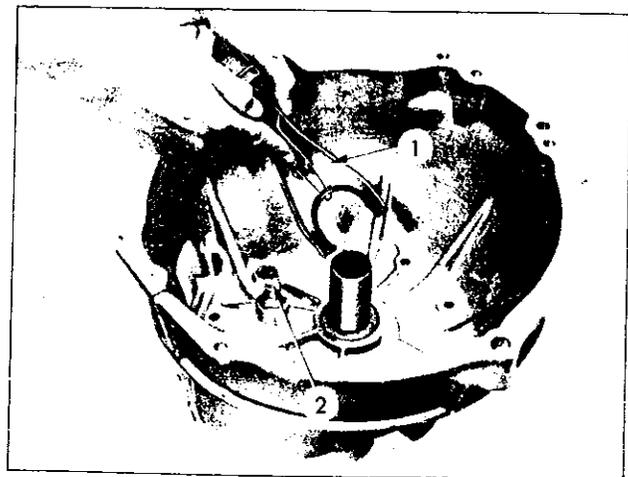


Fig. CL-11 Lubricated position on the bearing sleeve

- Withdrawal lever and bearing sleeve contact point
- Withdrawal lever ball pin and withdrawal lever contact surface.

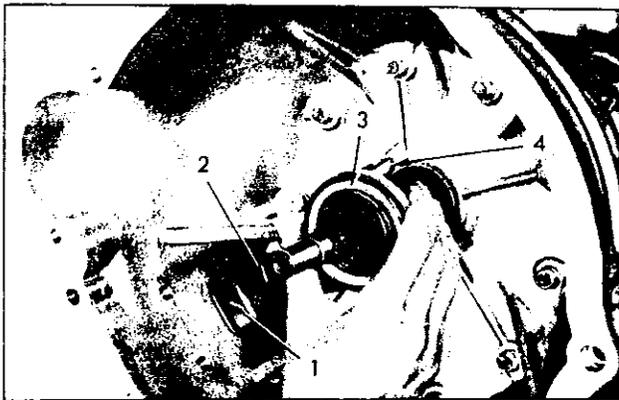


1	Withdrawal lever	2	Withdrawal lever ball pin
---	------------------	---	---------------------------

Fig. CL-12 Position on the withdrawal lever to which grease is applied.

CLUTCH

3. When grease is applied to the necessary places, install the withdrawal lever, release bearing, and bearing sleeve on the clutch housing, connect them with holder spring, and install the dust cover on the clutch housing.



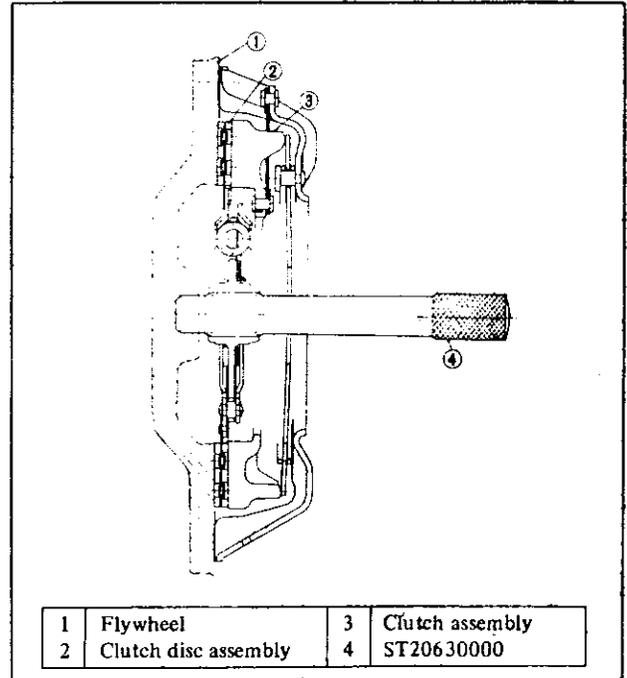
1	Dust cover	3	Release bearing
2	Withdrawal lever	4	Holder spring

Fig. CL-13 Installing release mechanism

REINSTALLATION

1. Clean the clutch pilot bushing, and fill it with multi-purpose grease (MIL G-2108, 10924).

2. Install the disc assembly and clutch assembly on the flywheel by the use of a clutch aligning bar (special tool ST20630000).



1	Flywheel	3	Clutch assembly
2	Clutch disc assembly	4	ST20630000

Fig. CL-14 Installing disc and clutch assembly

CLUTCH CONTROL

CONTENTS

DESCRIPTION	CL-5	Reassembly	CL-7
CLUTCH PEDAL	CL-6	Reinstallation	CL-8
Removal	CL-6	OPERATING CYLINDER	CL-8
Inspection	CL-6	Removal	CL-8
Reinstallation	CL-6	Disassembly	CL-8
Adjustment	CL-6	Inspection	CL-8
CLUTCH MASTER CYLINDER	CL-7	Reassembly	CL-8
Removal	CL-7	Reinstallation	CL-8
Disassembly	CL-7	ADJUSTING WITHDRAWAL LEVER	CL-8
Inspection	CL-7	BLEEDING CLUTCH SYSTEM	CL-8

DESCRIPTION

The hydraulic clutch control consists of a pendent pedal, master cylinder, operating cylinder and withdrawal lever.

When the clutch pedal is depressed, the piston of the master cylinder forwards the fluid to the operating cylinder through a pipe line. The movement of the

CHASSIS

operating cylinder piston is transmitted to the withdrawal lever through the push rod, and thus, the clutch is disengaged.

CLUTCH PEDAL

Removal

1. Remove the return spring.
2. Loosen the lock nut of the master cylinder push rod, and disconnect the push rod end.
3. Remove the cotter pin and washer of the pedal shaft, and remove the pedal lever.

Note: Before removing the pedal, measure the pedal head height from toe board without fail.

Inspection

Thoroughly clean all disassembled parts (indicated

below) and carefully check them for wear, damage and other abnormal conditions. Repair or replace them with new ones, if required.

1. Pedal head rubber
2. Return spring
3. Pedal lever boss
4. Clevis pin
5. Nylon bushing
6. Pedal shaft, etc.

Reinstallation

Reinstall the clutch pedal in reverse sequence of removal.

Adjustment

Adjust the pedal head height to 202 mm (8.0 in) for both right-hand and left-hand drive by adjusting the master cylinder push rod length.

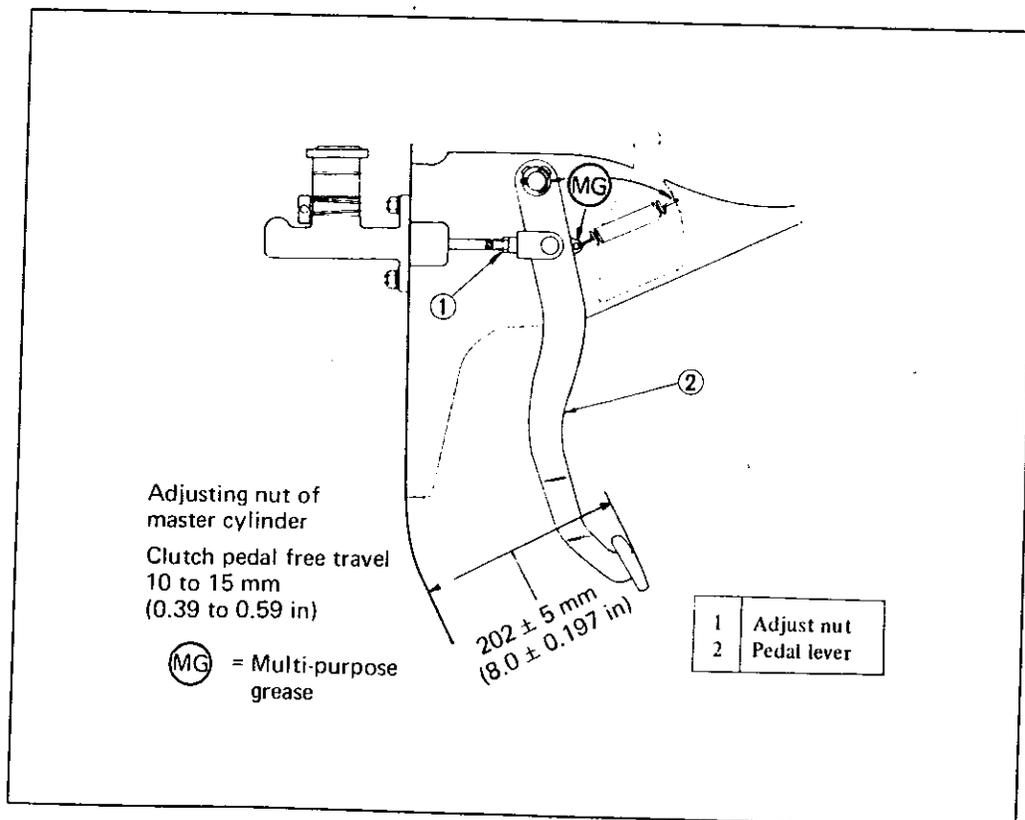


Fig. CL-15 Pedal height adjustment

CLUTCH

CLUTCH MASTER CYLINDER

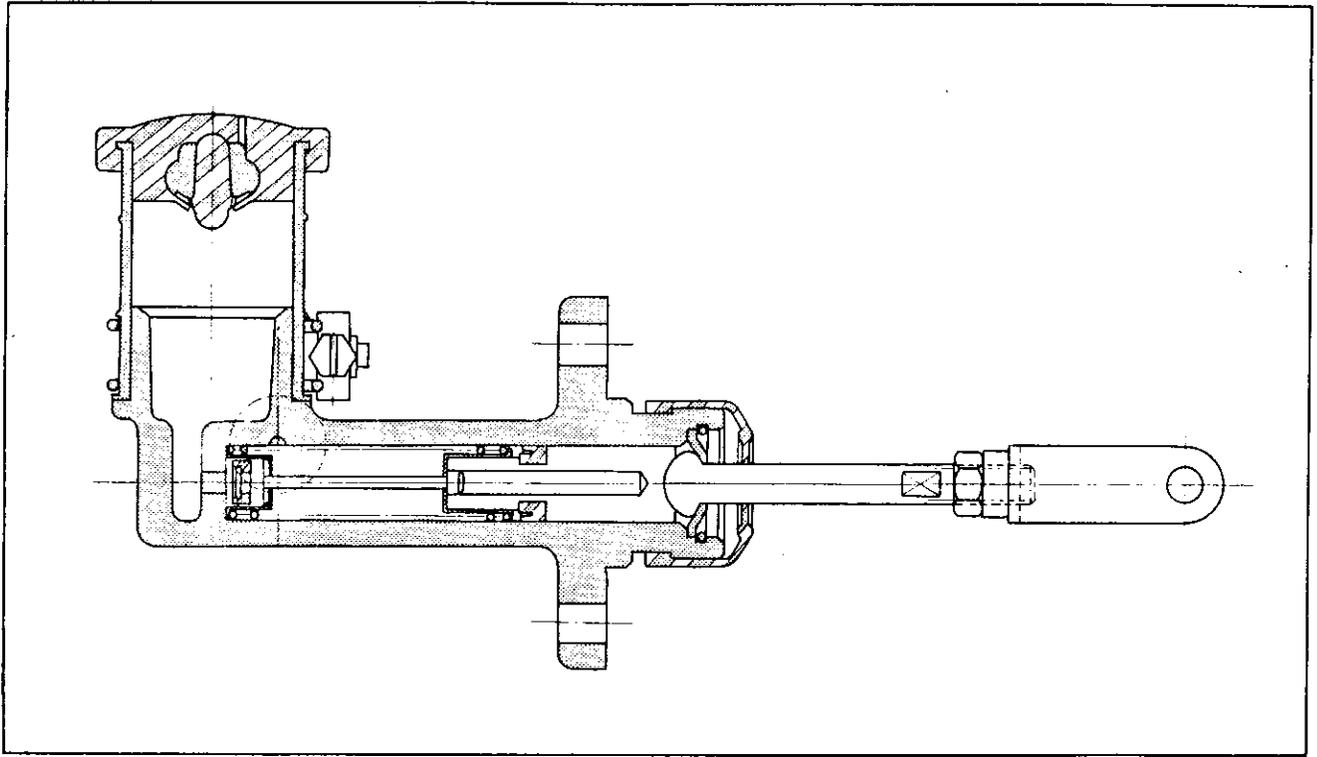


Fig. CL-16 Clutch master cylinder

Removal

1. Loosen the lock nut of the master cylinder push rod and disconnect the push rod from the clevis.
2. Disconnect the clutch line from the master cylinder, and drain fluid.
3. Remove the securing bolts and remove the master cylinder assembly from the vehicle.

Disassembly

1. Remove the filler cap and drain fluid.
2. Pull back the dust cover and remove the snap ring. The stopper, push rod, piston assembly, primary cup and return spring assembly can be removed.

Inspection

Thoroughly clean all parts with brake fluid before inspection.

1. Check the cylinder and piston for uneven wear or damage. Replace if required.

2. When clearance between the cylinder and piston is more than 0.15 mm (0.0059 in), replace the cylinder.

3. Replace the piston cup, primarily, whenever the master cylinder is disassembled. It must also be replaced when wear or deformation due to fatigue or damage is found.

4. Check the dust cover, oil reservoir, filler cap, and clutch line for damage or deformation. If abnormal condition is found, replace with new one.

Reassembly

Reassemble the master cylinder assembly in reverse sequence of disassembly noting the following matters.

CHASSIS

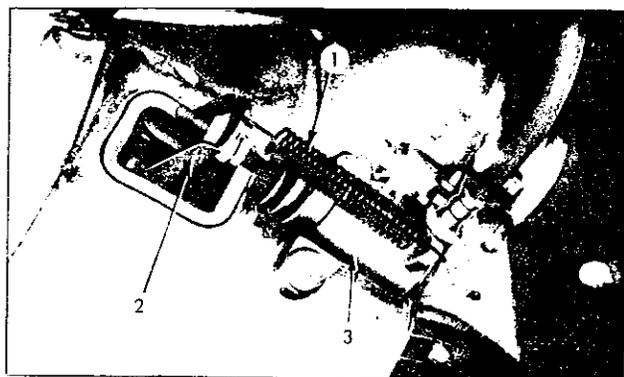
1. The piston cup should be soaked in brake fluid before reassembly. Install the piston cup carefully so that it is correctly faced.
2. Apply brake fluid sufficiently to the cylinder and piston, and assemble them.

Reinstallation

Reinstall the master cylinder assembly in reverse sequence of removal, and adjust as follows.

1. Adjust the pedal height by changing the push rod length.
2. Bleed air out of the hydraulic system.

OPERATING CYLINDER



1	Return spring	3	Operating cylinder
2	Withdrawal lever		

Fig. CL-17 Operating cylinder

Removal

1. Remove the return spring.
2. Disconnect the clutch line from the operating cylinder.
3. Disconnect the push rod from the withdrawal lever.
4. Release two bolts used to mount the operating cylinder to the clutch housing.

Disassembly

1. Remove the dust cover.

2. Remove the snap ring. All other parts are can be disassembled.

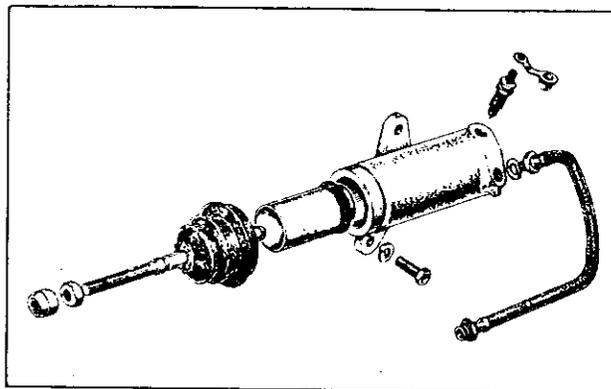


Fig. CL-18 Operating cylinder disassembled

Inspection

Check all parts (especially the piston cup), and replace if worn or damaged.

Reassembly

Reassemble the operating cylinder in reverse sequence of disassembly noting the following matters.

1. Soak the piston cup in fluid before reassembly. Install the piston cup carefully so that it is faced correctly.
2. Apply brake fluid sufficiently to the cylinder and piston, and assemble them.

Reinstallation

Reinstall the operating cylinder in reverse sequence of removal.

1. Bleed air out of the hydraulic system.
2. Adjust the clearance between the top of withdrawal lever and release bearing to 2.0 mm (0.0786 in) in accordance with the following instructions.

ADJUSTING WITHDRAWAL LEVER

Correct adjustment of the clutch withdrawal lever is essential. Insufficient free travel between the release bearing and the diaphragm spring fingers causes the clutch to slip, while excessive free travel affects full disengagement of the clutch.

CLUTCH

The clearance between the release bearing and the diaphragm spring fingers can be adjusted at the withdrawal lever end as follows.

1. Loosen the lock nut, tighten the adjusting nut and eliminate clearance between the top of the withdrawal lever and release bearing.
2. Return the adjusting nut from that position 1.5 turns and set the adjusting nut stationarily with the lock nut.

When the adjusting nut is returned 1.5 turns, the withdrawal lever end is returned 2.0 mm (0.0786 in).

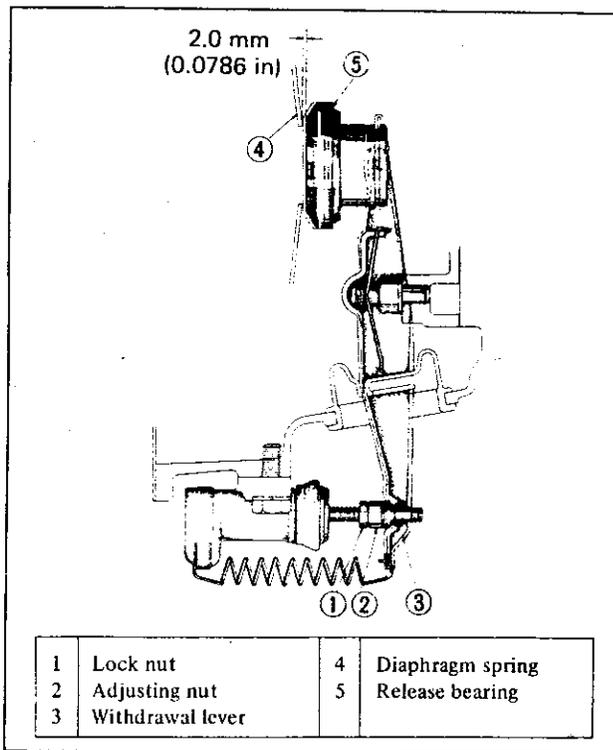


Fig. CL-19 Adjusting withdrawal lever play

BLEEDING CLUTCH SYSTEM

1. Remove the bleed screw dust cap from the operating cylinder.
2. Open the bleed screw approximately three-quarters of a turn. Attach a tube immersing the open end into a clean container which contains a small amount of brake fluid.
3. Fill the master cylinder reservoir with the recommended fluid.
4. Depress the clutch pedal quickly while keeping it down retighten the bleed screw, and allow it to return slowly. Repeat this pumping action until the fluid entering the container is free from air bubbles.
5. Screw up the bleed screw on a down stroke of the pedal, remove the bleed tube and replace the dust cap.

SERVICE DATA AND SPECIFICATIONS

Clutch release lever

Release bearing-to-diaphragm spring (withdrawal lever) clearance	2.0 mm (0.0786 in)
Diaphragm spring to-flywheel height	44 ± 1.0 mm (1.73 ± 0.00394 in)

CHASSIS

Clutch disc

Facing size	
Outer dia. x inside dia. x thickness	225 x 150 x 8.6 mm (8.86 x 5.90 x 0.338 in)
Total friction area	444 cm ² (68.8 sq in)
Thickness of disc assembly	
Free	8.3 to 8.9 mm (0.327 to 0.350 in)
Compressed	7.6 to 8.0 mm (0.300 to 0.315 in)
Number of torsion spring	6
Allowable minimum depth of rivet head from facing surface	0.3 mm (0.0118 in)
Allowable facing run-out	0.5 mm (0.0197 in)
Allowable free play of spline	0.4 mm (0.0157 in)

Clutch pedal

Pedal height when not depressed	202 mm (8.0 in)
Free travel of pedal head	10 to 15 mm (0.394 to 0.590 in)
Pressing strength at full stroke	10 to 15 kg (22 to 33 lb)

Master cylinder – clutch

Master cylinder diameter	15.87 mm (5/8 in)
Allowable maximum clearance between cylinder and piston	0.15 mm (0.0059 in)

Operating cylinder – clutch

Operating cylinder diameter	15.87 mm (5/8 in)
-----------------------------------	-------------------

Tightening torque

Clutch assembly securing bolt	2.4 to 2.6 kg-m (17.4 to 18.8 ft-lb)
-------------------------------------	--------------------------------------

CLUTCH

TROUBLE DIAGNOSES AND CORRECTIONS

Troubles	Possible causes	Corrective action
<p>Noises audible on pedal depression</p>	<p>Excessively worn, damaged or poorly lubricated release bearing</p> <p>Seized release bearing and diaphragm spring fingers</p> <p>Insufficient pedal free travel</p> <p>Weakened, unhooked or broken clutch pedal return and control springs</p> <p>Weakened clutch yoke lever return spring broken or unhooked</p> <p>Excessive play between clutch disc hub and drive shaft spline</p>	<p>Replace the bearing which, being cased, cannot be greased inside.</p> <p>Replace the release bearing. Clean diaphragm spring fingers with metal brush and smooth out bearing contact faces with felt polishers.</p> <p>Readjust pedal free travel correctly.</p> <p>Set springs in position or replace them, if weakened or snapped.</p> <p>Replace the spring or hook it up, as required.</p> <p>Replace the clutch disc and ensure that clearance between hub of new clutch and drive shaft is within 0.50 mm (0.0197 in) endwise and 0.20 to 0.0079 in) crosswise. When clearances exceed above limits, replace the drive shaft also.</p>
<p>Noises audible on pedal release</p>	<p>Misalignment of clutch disc to flywheel causes slight movement of disc hub in respect of facings.</p> <p>This noise is especially audible with engine idling or at low speed.</p> <p>Broken or weakened clutch disc cushion springs</p> <p>Insufficient pedal free travel</p> <p>Weakened, unhooked or broken clutch control and pedal return springs</p> <p>Weakened, broken or unhooked clutch yoke lever return spring</p> <p>Distorted or worn drive shaft</p> <p>Excessive play of release bearing on slip sleeve</p>	<p>Set level of clutch disc with clutch disc in place on drive shaft, set it under slight rotation and check for no run-out, using a scriber.</p> <p>Replace the clutch disc.</p> <p>Set pedal free travel correctly.</p> <p>Check the springs for correct position, and replace them, if necessary.</p> <p>Replace the spring or hook it up, as required.</p> <p>Replace the drive shaft and clutch disc if necessary.</p> <p>Replace the worn parts.</p>

CHASSIS

<p>The clutch drags.</p>	<p>Insufficient push rod length</p> <p>Excessive pedal free travel</p> <p>Warped clutch disc</p> <p>Roughened linings</p> <p>Improperly fitted, loose or broken lining</p> <p>Incorrect release bearing-to-diaphragm spring finger clearance</p> <p>Clutch disc hub forcing on drive shaft</p> <p>Damaged drive shaft splines prevent the clutch disc from sliding</p> <p>Oil or grease on linings</p> <p>Warped or damaged pressure plate or clutch cover</p> <p>Air pockets in the hydraulic system (not bled correctly)</p> <p>Dirt or foreign matter on sealing faces of master cylinder piston cup</p> <p>Air pockets in master cylinder due to loose piston</p> <p>Fluid leakage from cylinder</p> <p>Low fluid level in reservoir</p> <p>Clogged vent hole in reservoir cap promotes vacuum in master cylinder allowing air to infiltrate past the seal</p>	<p>Adjust the push rod length correctly.</p> <p>Adjust free travel correctly</p> <p>Set level of clutch disc, if possible.</p> <p>Maximum plate run-out; 0.25 mm (0.0098 in)</p> <p>Repolish linings with a metal brush or replace them, if necessary.</p> <p>Replace linings. Lining rivets should be clenched with no protrusion, to avoid damaging pressure plate and flywheel.</p> <p>Adjust correctly.</p> <p>Locate cause of trouble and remove it, if possible. Otherwise replace the clutch disc.</p> <p>Replace the drive shaft; also the clutch disc, if required.</p> <p>Locate the cause of oil or grease leakage and correct it as required.</p> <p>Clean or replace linings.</p> <p>Replace defective parts.</p> <p>Bleed out completely.</p> <p>Clean, replace piston cup, if damaged, and bleed the system.</p> <p>Replace piston cup and bleed the system.</p> <p>Replace piston cup, if damaged; bleed the system.</p> <p>Top up with brake fluid and bleed the system, if necessary.</p> <p>Clean reservoir cap, unclog the vent hole and bleed the system.</p>
<p>Abnormal lining wear</p>	<p>Insufficient pedal free travel</p>	<p>Adjust clutch pedal free travel correctly.</p>

CLUTCH

	<p>Driver steps unnecessarily on pedal; this causes lining wear and damage to release bearing</p> <p>Weakened or snapped pressure springs</p> <p>Incorrectly installed linings</p>	<p>Advise driver to discontinue wrong practice and step on clutch pedal only when necessary.</p> <p>Check pressure springs for tension as specified, and replace springs, if they are un-serviceable.</p> <p>Replace linings with new ones and install them correctly. Check clutch disc for center alignment.</p>
<p>The clutch grabs.</p>	<p>Oil or grease on flywheel, pressure plate and linings</p> <p>Loose disc linings due to poor rivet tightness</p> <p>Clutch disc hub does not slide freely on drive shaft spline</p> <p>Warped or cracked pressure plate</p> <p>Misalignment</p> <p>Stiffened hydraulic control mechanism</p> <p>Worn out lining</p>	<p>Remove cause of leakage, clean flywheel and pressure plate thoroughly, replace linings.</p> <p>If linings are not worn, replace defective rivets. Otherwise, replace linings and clench rivets securely.</p> <p>Remove any foreign matter or dirt deposits from shaft splines. When trouble is still present, replace damaged part.</p> <p>Replace pressure plate.</p> <p>Locate the defective point, and if possible, adjust alignment or replace distorted parts.</p> <p>Check spring tension: If necessary, take down pedal and lubricate components.</p> <p>Install new linings and make sure that the clutch disc, pressure plate and flywheel are not damaged.</p>
<p>The clutch slips.</p>	<p>Insufficient clutch pedal return travel, due to the control and pedal return springs being weak or misadjusted</p> <p>Weakened or broken diaphragm spring</p> <p>Oil or grease on linings</p> <p>Worn or burned disc linings</p> <p>Overloaded master cylinder due to a restricted transfer port</p>	<p>Locate cause of failure and replace defective springs.</p> <p>Overhaul clutch and replace springs.</p> <p>Remove cause of leakage and replace linings if cleaning is ineffective.</p> <p>Replace linings.</p> <p>Overhaul the master cylinder, replace the piston cup if swollen or damaged, and clean the transfer port; bleed the system.</p>

**DATSUN 240Z SPORTS
MODEL S30 SERIES
CHASSIS & BODY**



NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION TM

TRANSMISSION



TRANSMISSION	TM- 1
TYPE FS5C71A TRANSMISSION	TM-20
SERVICE DATA AND SPECIFICATIONS	TM-24
TROUBLE DIAGNOSES AND CORRECTIONS	TM-25

TRANSMISSION

TRANSMISSION

CONTENTS

Specifications	TM- 1	Baulk ring	TM-10
DESCRIPTION	TM- 1	Oil seal	TM-10
REMOVAL	TM- 2	Gasket	TM-11
DISASSEMBLY	TM- 3	Rear engine mounting insulator	TM-11
INSPECTION	TM- 9	REASSEMBLY	TM-11
Transmission case and rear extension	TM- 9	Clutch housing	TM-11
Bearing	TM- 9	Rear extension	TM-11
Gear and shaft	TM- 9	Gear assembly	TM-11

The type F4W71A transmission a warner type synchromesh 4-forward speed 1-reverse speed transmission. For some territories, type FS5C71A servo type synchromesh

5-forward speed 1-reverse speed transmission is used.

This chapter described mainly about the type F4W71A transmission.

Specifications

Model		HLS30U	HS30U HLS30
Type		F4W71A	FS5C71A
Gear ratio	1st	3.549	2.957
	2nd	2.197	1.858
	3rd	1.420	1.311
	4th	1.000	1.000
	5th	—	0.852
	Rev.	3.164	2.922
Final gear ratio		3.364	3.900
Speedometer		17/6	19/6
Oil capacity		1.5 ℓ (0.4 US gal, 0.3 UK gal)	1.5 ℓ (0.4 US gal, 0.3 UK gal)

DESCRIPTION

The transmission assembly consists of clutch housing, transmission case which contains gear assembly, and rear extension.

The cast iron adapter plate supports each ends of the main shaft, counter shaft, and reverse idler shaft, and front side of the transmission case supports the other

CHASSIS

ends. Moreover, the rear extension supports the main shaft rear end.

The gear assembly can be disassembled with the gear assembly installed on the adapter plate.

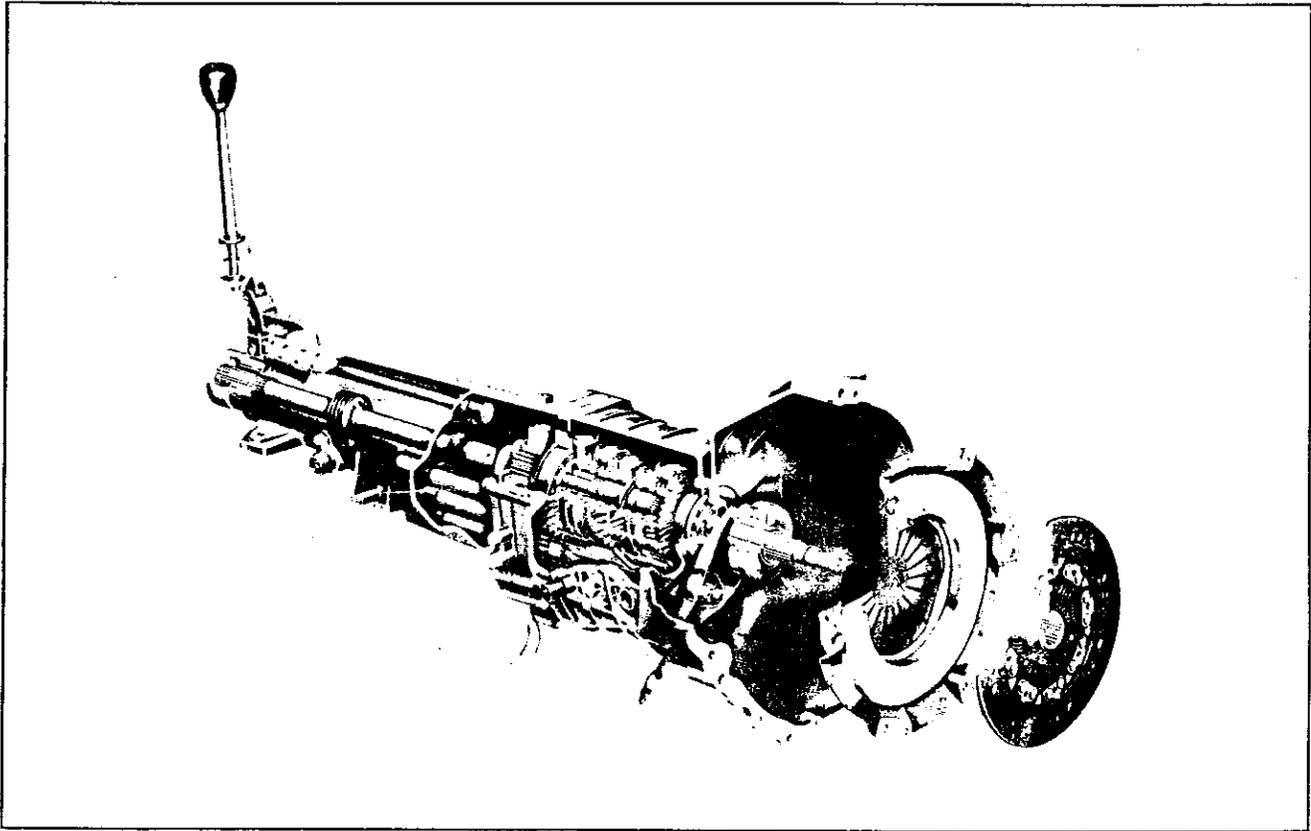


Fig. TM-1 Clairvoyant view of type F4W71A transmission

REMOVAL

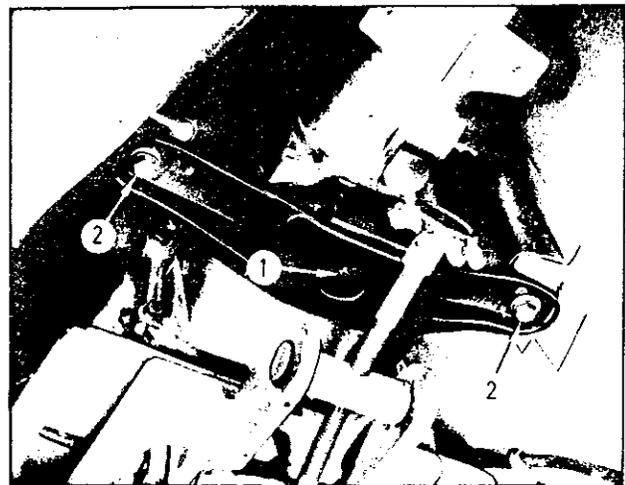
The transmission assembly is dismantled from the vehicle primarily in the same manner as the engine assembly. For transmission dismantling, refer to the Section "ER" (Engine removal) and other relative sections for details.

To remove the transmission assembly; disconnect or remove

- Speedometer cable
- Propeller shaft
- Exhaust system
- Clutch operating cylinder
- Back-up lamp switch
- Starter motor
- Transmission control lever knob;

Hold the engine, support the transmission with a transmission jack, remove

Rear engine mounting



1	Rear engine mounting nut	2	Rear mounting member installation bolt
---	--------------------------	---	--

Fig. TM-2 Removing rear mounting member

TRANSMISSION

Transmission installation bolts;

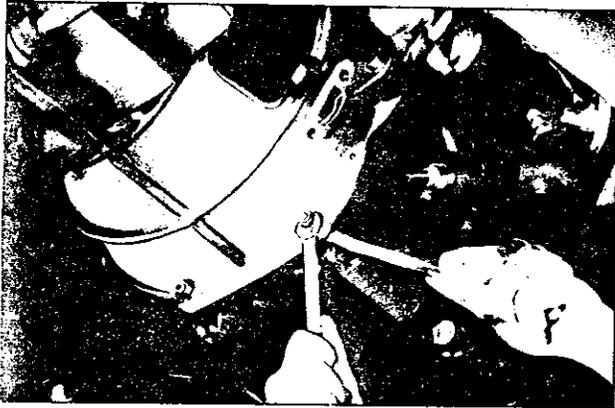


Fig. TM-3 Removing transmission installation bolt

And sliding the transmission jack rearward, remove the transmission.

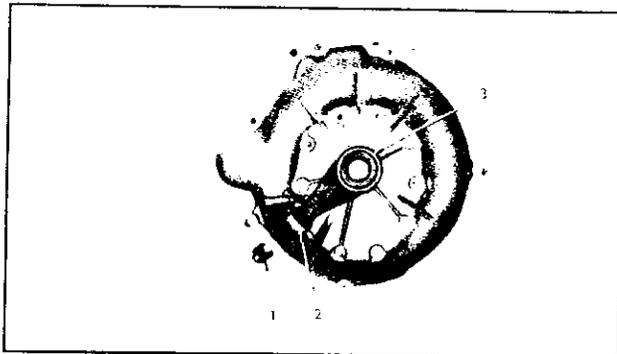
Note: a. In order to prevent damaging the serration of the main drive shaft, be sure not to dismount the transmission unless the main drive shaft is removed from the engine completely.

b. When the propeller shaft is removed, transmission oil will flow out from rear side of the rear extension. Apply a proper cap or other proper item to cover the rear extension rear side.

DISASSEMBLY

1. Before disassembling the transmission assembly, thoroughly remove mud and other foreign matters from the exterior, and drain oil.

2. Remove the dust cover from the clutch housing, and remove the holder spring, bearing sleeve, and withdrawal lever.



1	Withdrawal lever	3	Release bearing
2	Dust cover		

Fig. TM-4 Removing release mechanism

3. Remove the back-up lamp switch.

4. Remove the installation bolts (used to join the clutch housing and transmission case), separate the clutch housing from the transmission case by the use of a wooden mallet, and remove the gasket, main drive gear bearing spacer, and counter bearing shim.

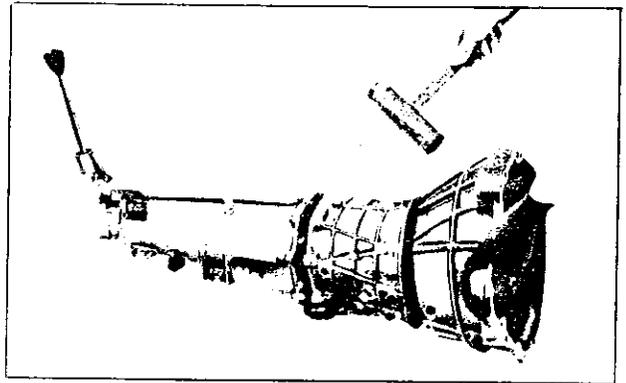


Fig. TM-5 Removing clutch housing

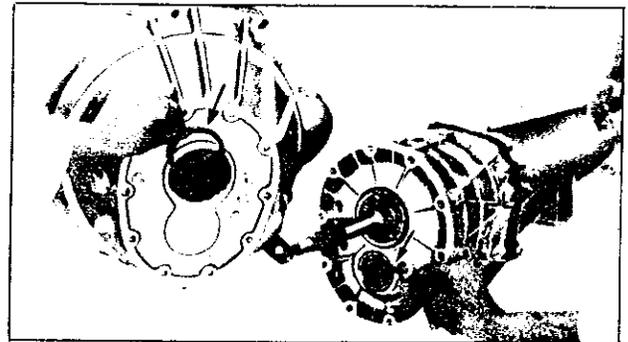
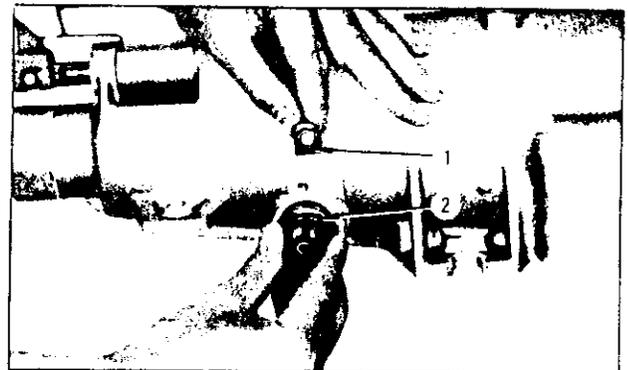


Fig. TM-6 Removing main drive bearing spacer and counter bearing shim

5. Loosen the speedometer pinion sleeve locking plate bolt, and remove the speedometer pinion sleeve.



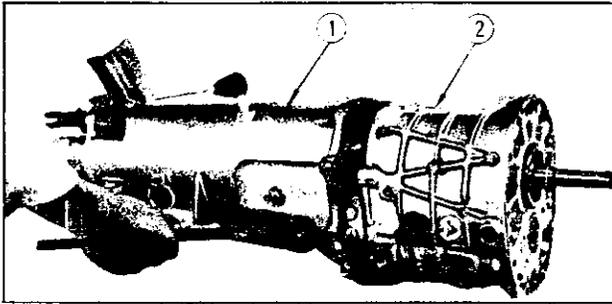
1	Lock plate	2	Speedometer pinion sleeve
---	------------	---	---------------------------

Fig. TM-7 Removing speedometer pinion

CHASSIS

6. Remove the striking rod pin from the striking rod rear end, and separate the striking rod from the control lever bracket.

7. Loosen the transmission case and rear extension connecting bolts, and separate the rear extension from the transmission case by the use of a wooden mallet.



1	Rear extension	2	Transmission case
---	----------------	---	-------------------

Fig. TM-8 Removing rear extension

8. Remove the main shaft bearing snap ring with a pair of snap ring pliers.

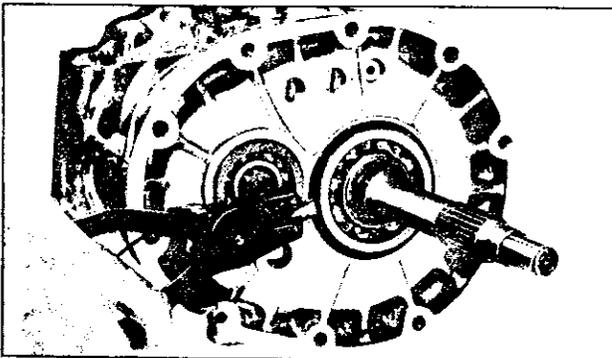
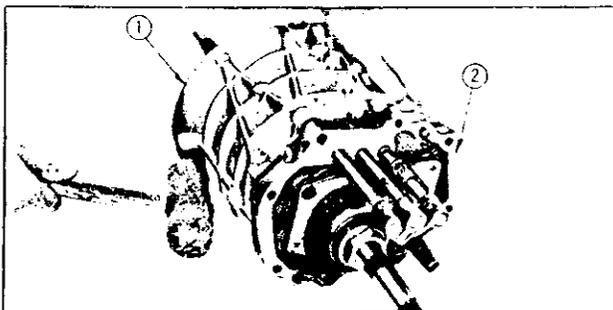


Fig. TM-9 Removing main shaft bearing snap ring

9. Separate the transmission case from the adapter plate by the use of wooden mallet.



1	Transmission case	2	Adaptor plate
---	-------------------	---	---------------

Fig. TM-10 Removing transmission case

10. Install a setting plate adapter (special tool ST23810000) on the adapter plate on the gear assembly, and secure them in a vise. Remove the reverse gear, 3rd & 4th gear, and 1st & 2nd gear fork rod retaining pins by the use of a fork rod pin punch (special tool ST23500000).

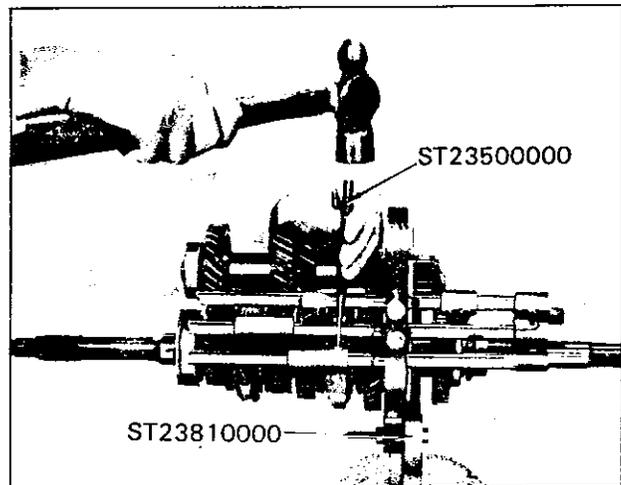


Fig. TM-11 Removing retaining pin

11. Remove the fork rod snap ring by the use of a screwdriver or other proper tool.

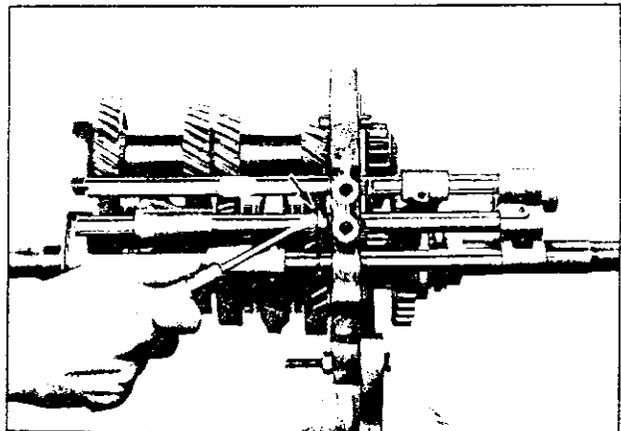
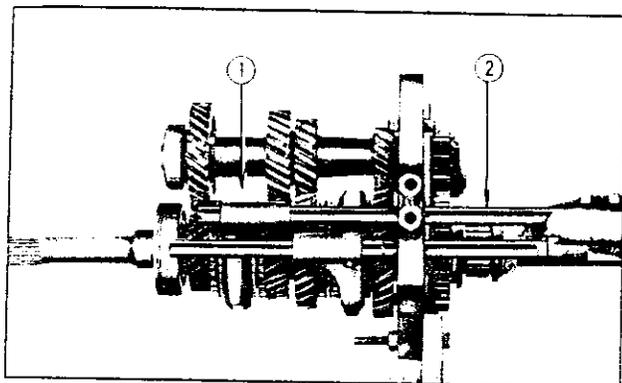


Fig. TM-12 Removing fork rod snap ring

12. Loosen each check ball plug, and withdraw the reverse gear fork rod, 3rd & 4th gear fork rod and 1st & 2nd gear fork rod from the adapter plate. In this operation, be careful not to lose the check balls and interlock balls. Moreover, withdraw the fork rod carefully so that the shift fork is not dropped off. (The check ball plug, check ball spring, and check ball may be removed before removing the fork rod.)

TRANSMISSION



1	Shift fork	2	Fork rod
---	------------	---	----------

Fig. TM-13 Withdrawing fork rod

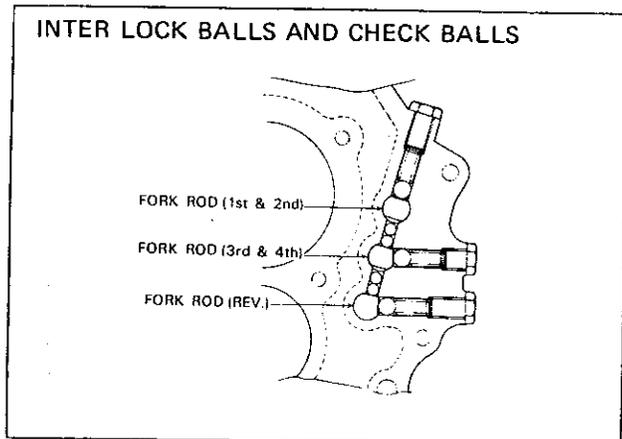
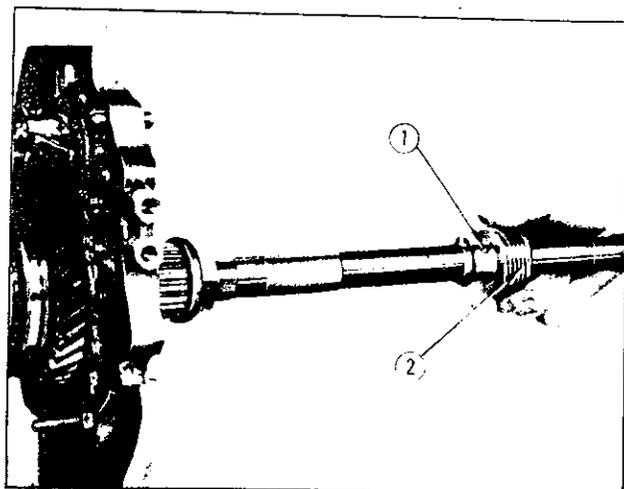


Fig. TM-14 Layout of check ball and interlock ball

13. Remove the snap ring, and remove the speedometer drive gear together with the steel ball.



1	Steel ball	2	Speedometer drive gear
---	------------	---	------------------------

Fig. TM-15 Removing speedometer drive gear

14. Unbend the main shaft lock washer, loosen the main shaft nut, and remove the main shaft lock washer, thrust washer, reverse hub, and reverse gear.

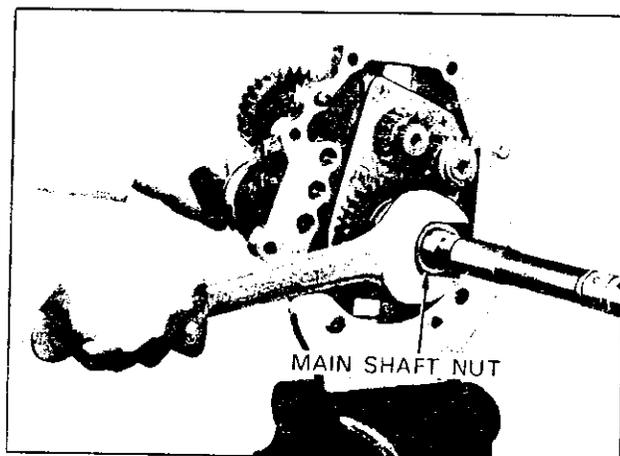


Fig. TM-16 Removing main shaft nut

15. Remove the snap ring, and remove the counter reverse gear.

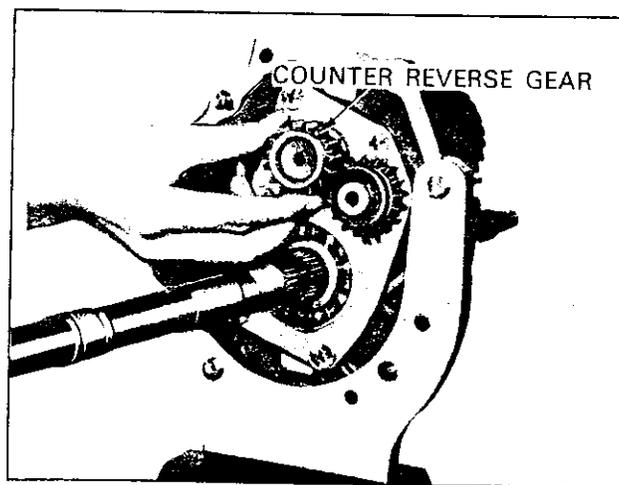
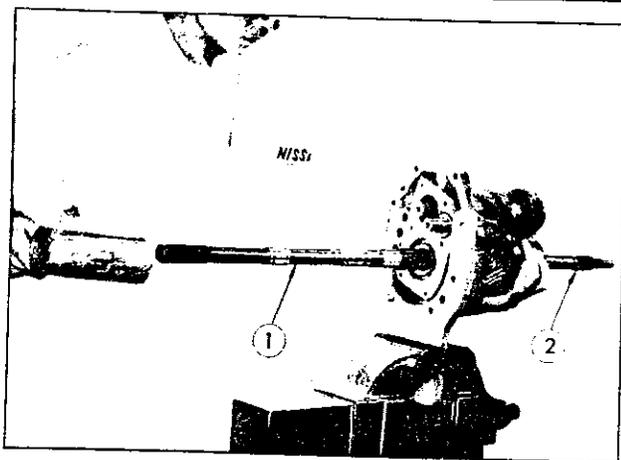


Fig. TM-17 Removing counter reverse gear

16. Remove the snap ring, and remove the reverse idler gear together with the thrust washer and needle bearing.

17. Supporting the front side gear assembly, tap and remove the gear assembly from the rear side of the main shaft and counter shaft by the use of a wooden mallet. Split the counter shaft and main drive shaft into three pieces. In this operation, be careful not to drop off the shafts because they are split simultaneously.

CHASSIS



1	Main shaft	2	Main drive shaft
---	------------	---	------------------

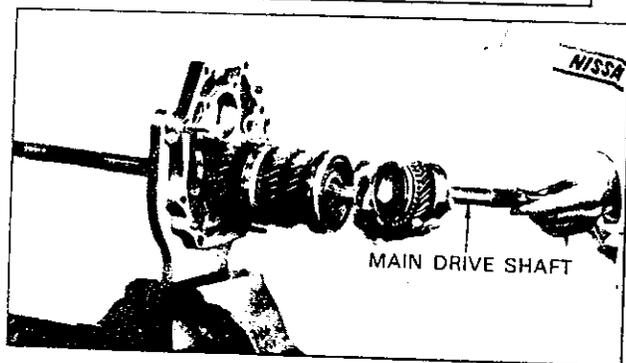
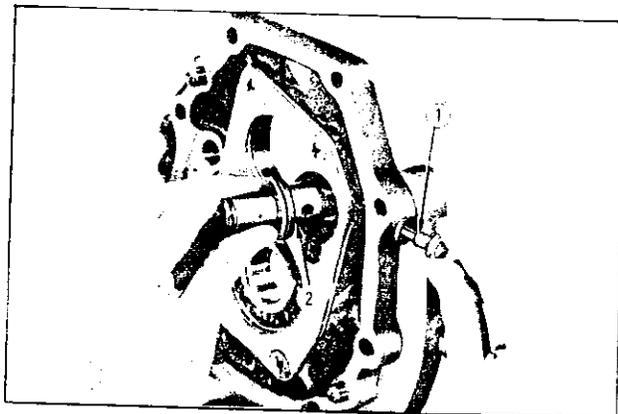


Fig. TM-18 Removing gear assembly

18. Remove the set screw, reverse idler shaft nut, spring washer, and plain washer, and remove the reverse idler shaft.

Note: Note that the reverse idler shaft cannot be removed

unless the set screw is removed.



1	Set screw	2	Reverse idler shaft
---	-----------	---	---------------------

Fig. TM-19 Removing reverse idler shaft

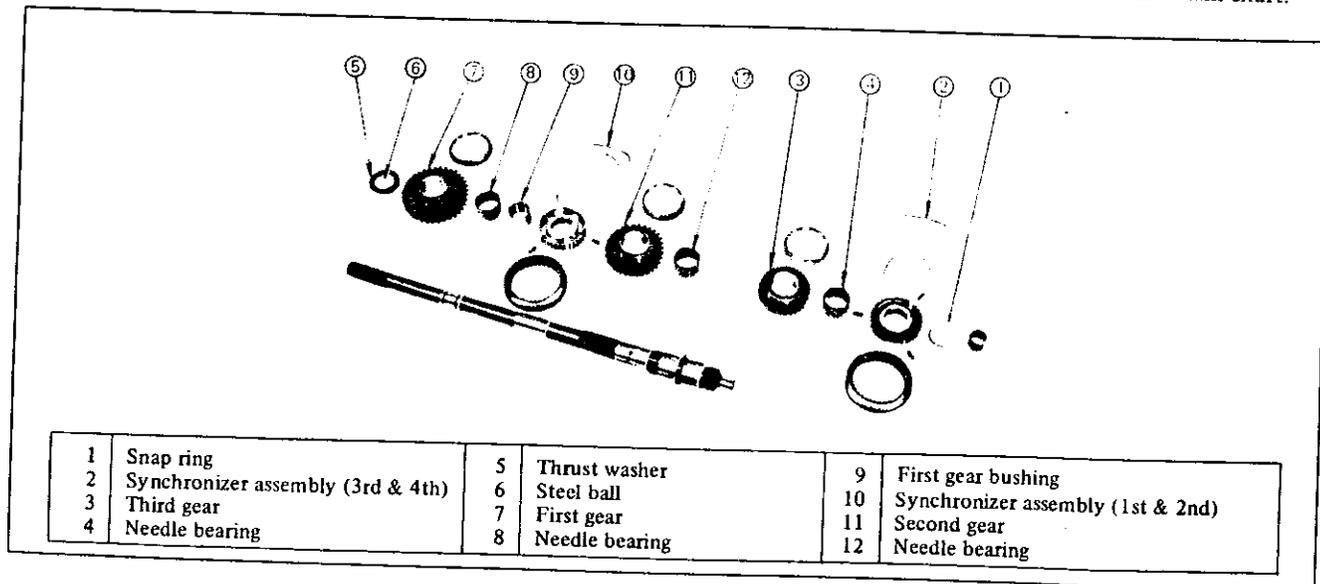
19. Loosen the machine screws (six screws) by the use of an impact wrench, and remove the bearing retainer.

Main shaft assembly

20. Remove the main shaft rear bushing from the adapter plate.

21. Remove the snap ring (1) from the front side of the main shaft, and remove the 3rd & 4th synchro. assembly (2), 3rd gear (3), and needle bearing (4).

Moreover, remove the thrust washer (5), steel ball (6), 1st gear (7), needle bearing (8), 1st gear bushing (9), 1st & 2nd synchro. assembly (10), 2nd gear (11), and needle bearing (12) rearward, and disassemble the main shaft.



1	Snap ring	5	Thrust washer	9	First gear bushing
2	Synchronizer assembly (3rd & 4th)	6	Steel ball	10	Synchronizer assembly (1st & 2nd)
3	Third gear	7	First gear	11	Second gear
4	Needle bearing	8	Needle bearing	12	Needle bearing

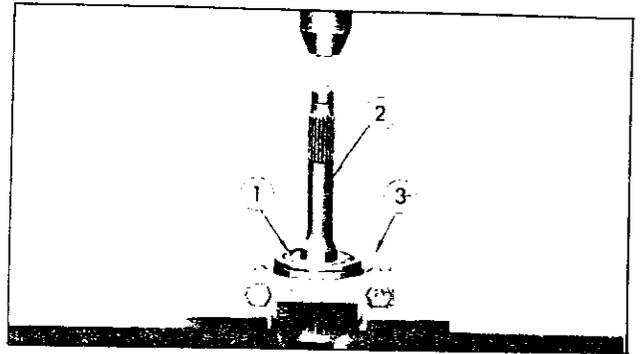
Fig. TM-20 Removing main shaft assembly

TRANSMISSION

Main drive assembly

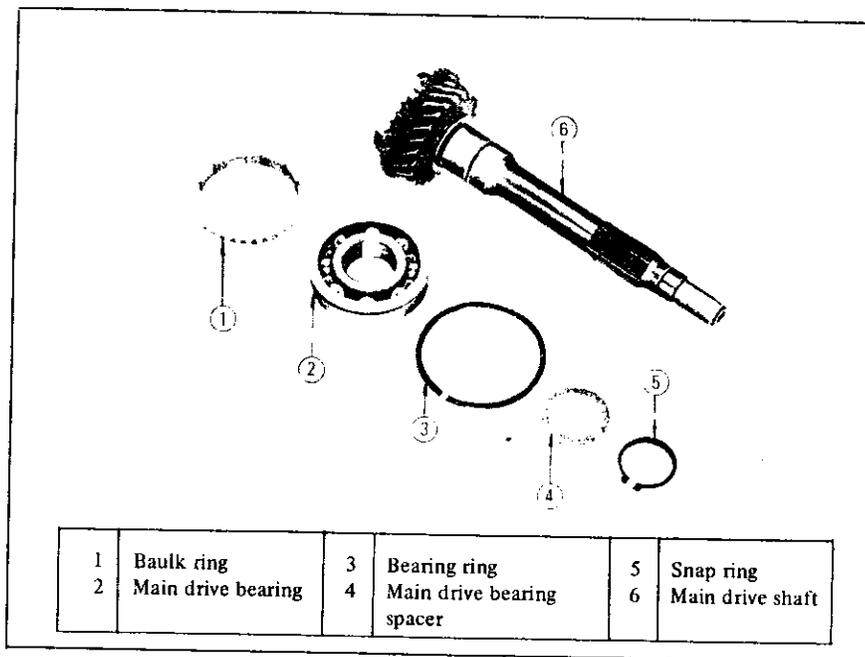
22. Remove the snap ring with a pair of snap ring pliers and main drive bearing spacer.

23. Install the drive pinion bearing replacer (special tool ST30030000) on the main drive bearing, and remove the main drive bearing with a press. In this operation, support the shaft by hand from the lower side so that the main drive shaft is not dropped off.



1	Main drive bearing	3	Special tool ST30030000
2	Main drive shaft		

Fig. TM-21 Removing main drive bearing



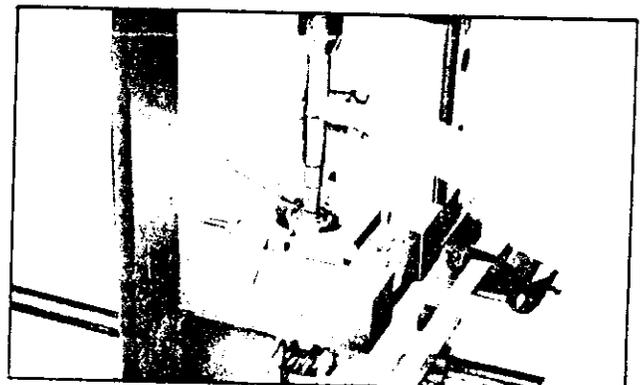
1	Baulk ring	3	Bearing ring	5	Snap ring
2	Main drive bearing	4	Main drive bearing spacer	6	Main drive shaft

Fig. TM-22 Main drive assembly

Counter shaft assembly

24. Install a drive pinion bearing replacer (special tool ST30030000) on the counter shaft front bearing, and applying a proper rod, remove the bearing with a press.

Remove the counter shaft rear bearing in the same manner. When removing, support the counter shaft by hand from the lower side so as not to drop off the shaft.



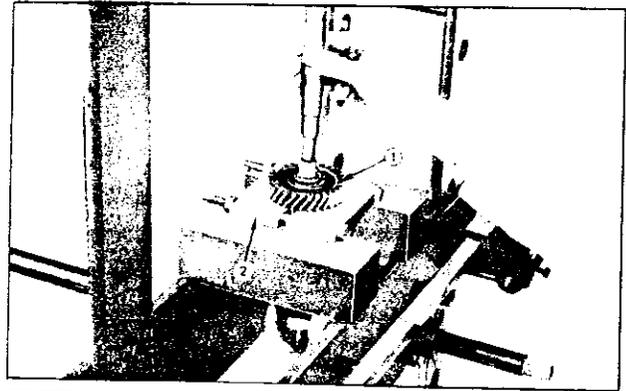
1	Counter shaft front bearing	2	Special tool ST30030000
---	-----------------------------	---	-------------------------

Fig. TM-23 Removing counter shaft bearing

CHASSIS

25. Remove the snap ring, install a drive pinion bearing replacer (special tool ST30030000) on the counter drive gear, applying a proper rod, remove the counter gear with a press, and remove two woodruff keys.

Remove the counter third gear in the same manner. also. When removing the gear, support the shaft by hand from the lower side so as not to drop off the counter shaft.



1	Counter drive gear	2	Special tool ST30030000
---	--------------------	---	-------------------------

Fig. TM-24 Removing counter gear

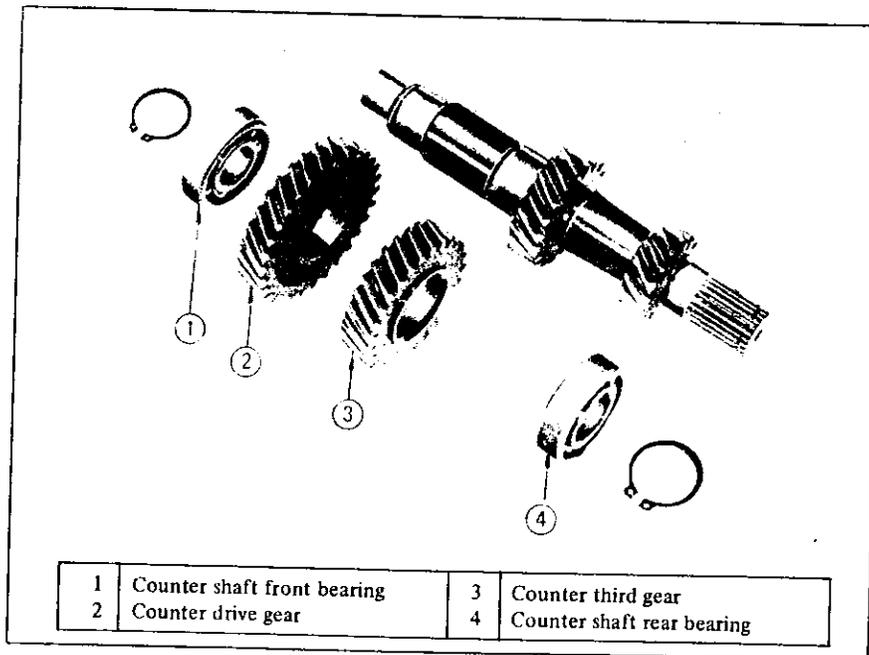


Fig. TM-25 Counter shaft assembly

26. Remove the self-locking nut from the lower end of the control lever, and remove the control lever.

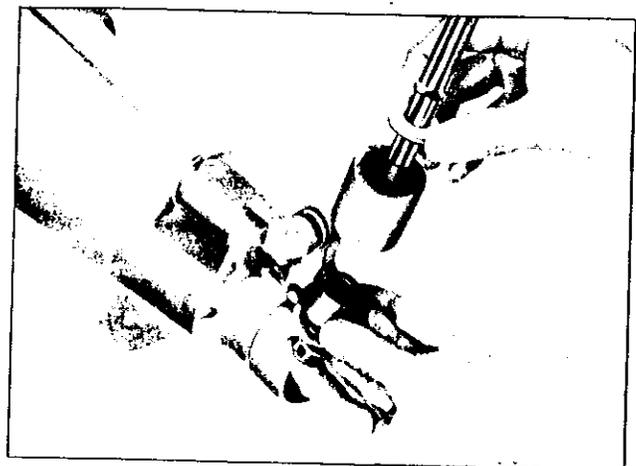


Fig. TM-26 Removing control lever

TRANSMISSION

27. Remove the retaining pin from the control arm pin, remove the control arm pin, and separate the control arm from the control lever bracket.

INSPECTION

Thoroughly clean all disassembled parts with solvent, and check them for wear, damage, and other defective conditions.

Transmission case and rear extension

Clean them with solvent thoroughly, and check for crack which may cause oil leaking and other defective conditions.

Bearing

1. Thoroughly clean the bearing, and dry and remove dust with compressed air.
2. When the ball bearing inner race and center race ball sliding surfaces are worn unevenly and/or unsmooth due to crack, or out-of-round of ball is excessive due to wear or rough surface, replace the bearing with a new one.

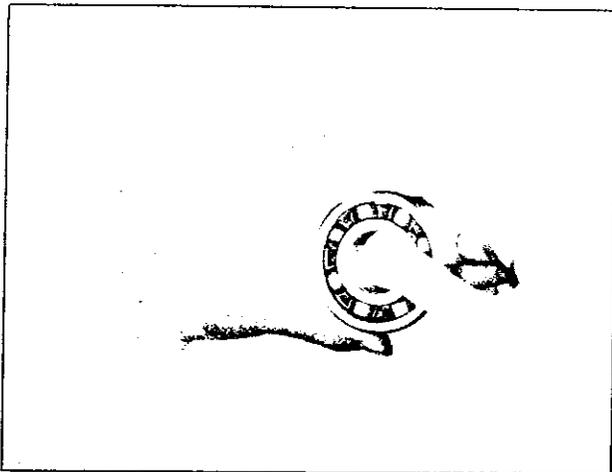


Fig. TM-27 Inspecting ball bearing

3. Replace needle bearing, if worn or damaged.
4. Replace rear extension bushing, if worn or cracked.

Gear and shaft

1. Check the gear for wear, damage and/or crack, and replace, if required.
2. Check the shaft for bending, crack, wear, and worn spline, and replace, if required.

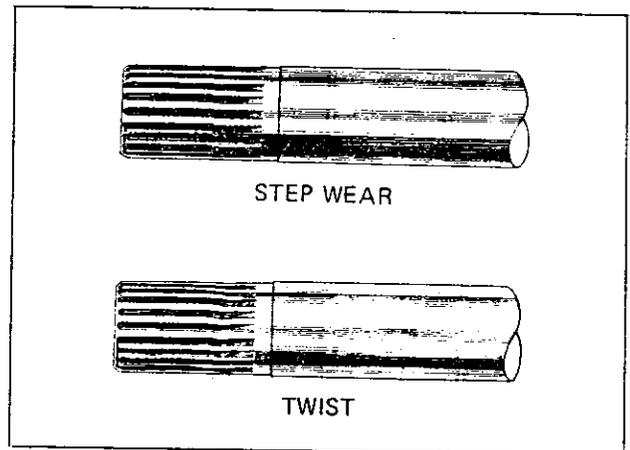


Fig. TM-28 Checking main shaft spline for twisting

3. Measure each gear backlash, and make sure that backlash is in range from 0.05 to 0.15 mm (0.0020 to 0.0059 in). When backlash exceeds this range, recommend both driving and driven gears be replaced as a set.

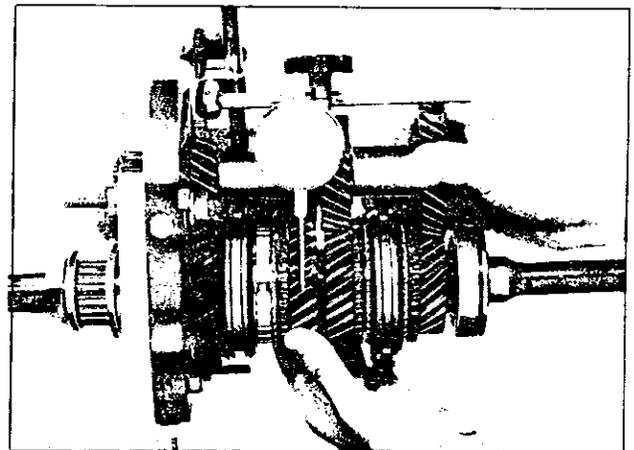


Fig. TM-29 Measuring gear backlash

4. Measure end play between individual gears.
End play of the reverse idler gear should be in range from 0.05 to 0.35 mm (0.0020 to 0.0138 in), and end play for other gears should be in range from 0.12 to 0.19 mm (0.0047 to 0.0075 in). When end play is deviated from this range, again select proper snap ring.

CHASSIS

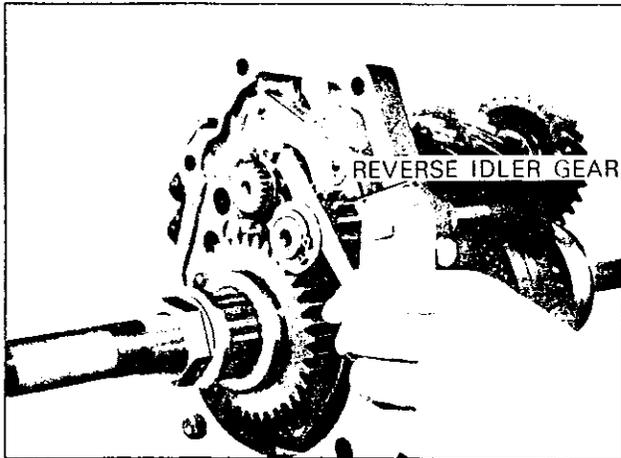


Fig. TM-30 Measuring reverse idler gear end play

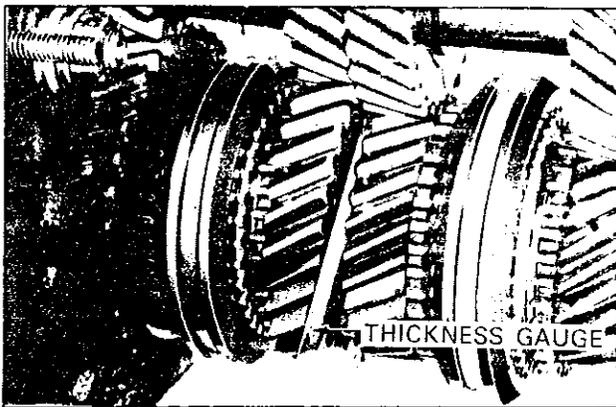


Fig. TM-31 Measuring end play between 2nd and 3rd gears

Baulk ring

1. Replace, if deformed, cracked, or damaged.
2. Measure the baulk ring inside serration for wear as shown in Figure TM-32 below.

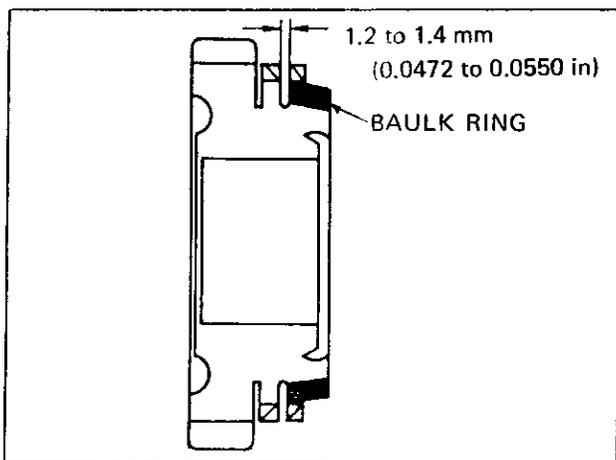


Fig. TM-32 Baulk ring-to-cone installing dimension

Oil seal

Replace the oil seal with a new one, if lip is deformed, worn, or cracked, or when the spring is dropped off.

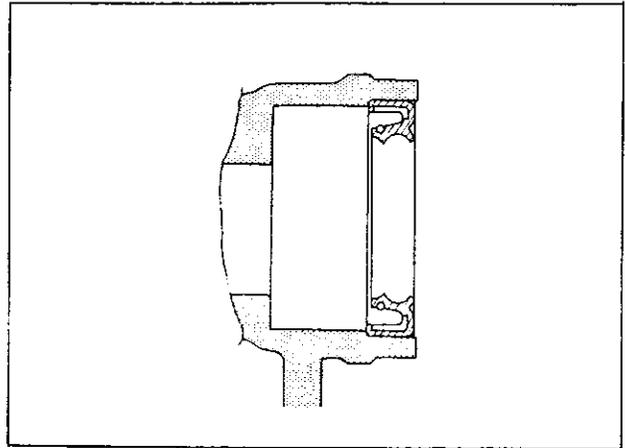


Fig. TM-33 Rear extension oil seal

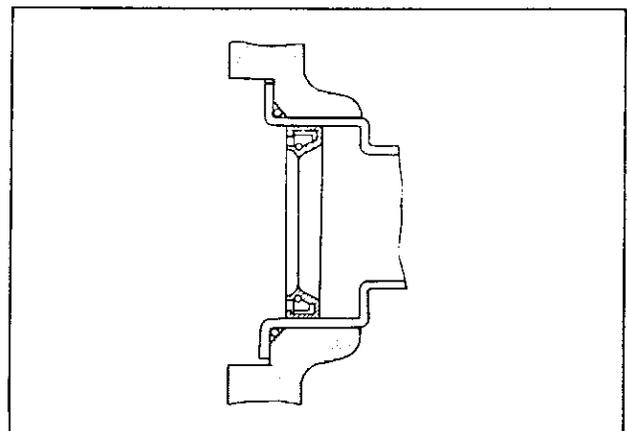


Fig. TM-34 Clutch housing oil seal

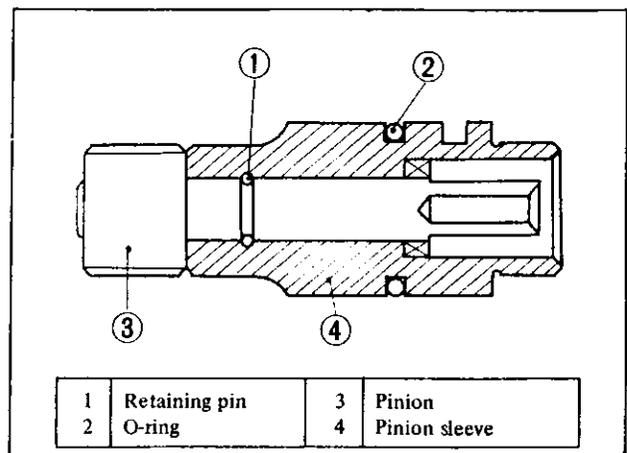


Fig. TM-35 O-ring of speedometer pinion sleeve

TRANSMISSION

Gasket

Replace, whenever the transmission is disassembled.

Rear engine mounting insulator

Replace rear engine mounting insulator, if weakened, deteriorated, or cracked.

REASSEMBLY

Reassemble the transmission at a place where no dust rises, and handle all component parts with bare hand. Gloves, rags, and other cloth should not be used.

Clutch housing

Apply O-ring to the front cover, and fit the front cover to the clutch housing by the use of a drift and press.

Fit oil seal to the front cover.

Rear extension

Install the rear extension oil seal by the use of a drift.

Gear assembly

1. Thoroughly clean all component parts with solvent, dry and remove dust from the parts with compressed air.
2. Assemble the low and high synchromesh assemblies.
When installing spring spreads, be sure to shift directions of the front and rear spring spread splits.

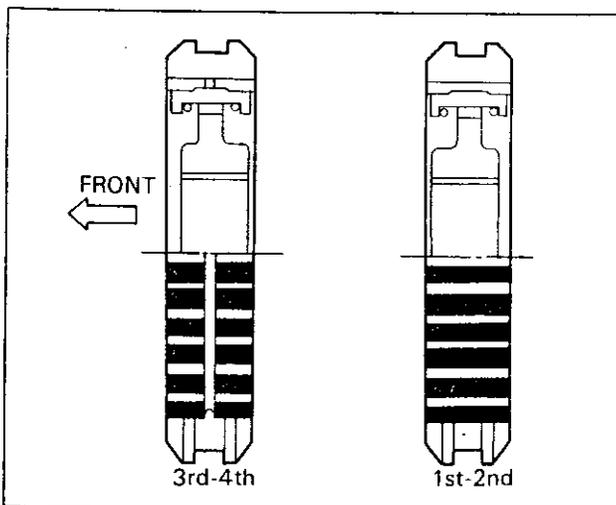


Fig. TM-36 Installing direction of synchro-hubs

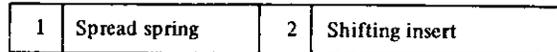
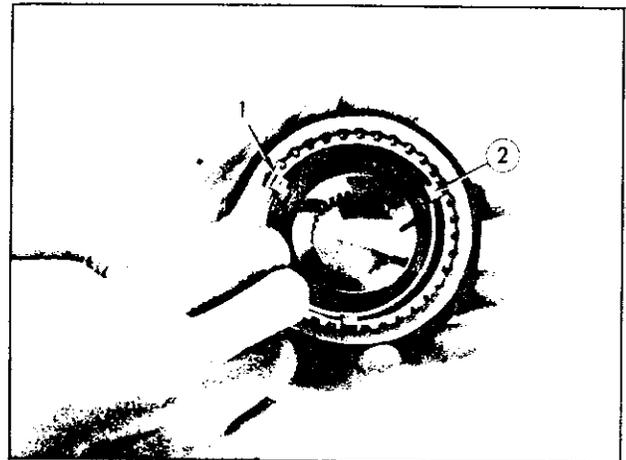


Fig. TM-37 Installing spring spread

3. Install the needle bearing, 2nd gear, baulk ring, synchromesh assembly for 1st to 2nd speed, baulk ring, 1st gear bushing, needle bearing, 1st gear, steel ball, and thrust washer on the shaft from the main shaft rear side.

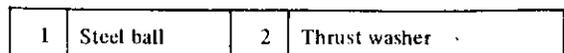
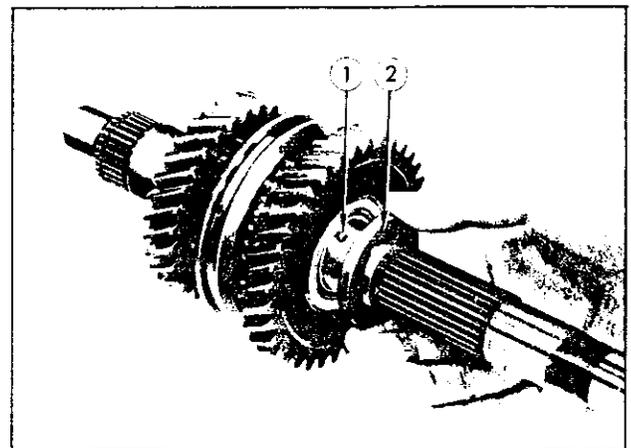


Fig. TM-38 Installing steel ball and thrust washer

4. Fit the main shaft rear bearing to the main shaft by the use of a transmission adapter (special tool ST23800000).

CHASSIS

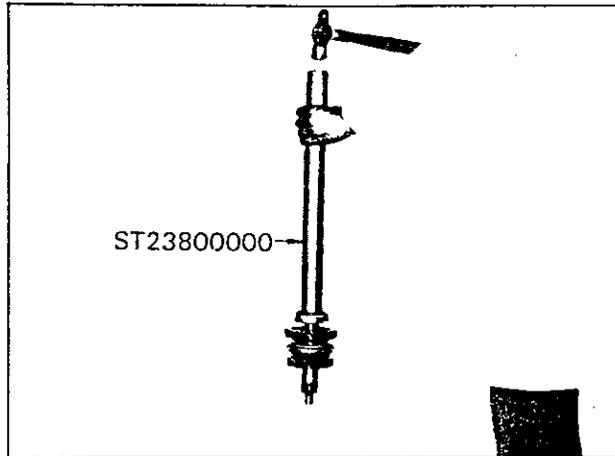


Fig. TM-39 Fitting main shaft rear bearing

5. Fit the counter shaft rear bearing to the adapter plate.

6. Fit the main shaft rear bearing to the adapter plate up to such an extent that the snap ring groove on the outer race of the main shaft rear bearing comes out to the rear side of the adapter plate, by the use of a drift B (special tool ST30600000), gradually and carefully so as not to affect the bearing accuracy.

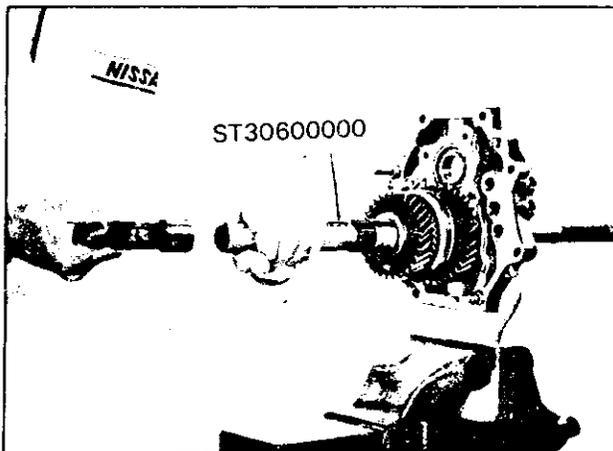


Fig. TM-40 Fitting main shaft

7. Fit the snap ring to the main shaft rear bearing. Make sure that the snap ring has been tightly fitted to the adapter plate. If not, tap the main shaft from the rear side and fit the snap ring to the adapter plate tightly.

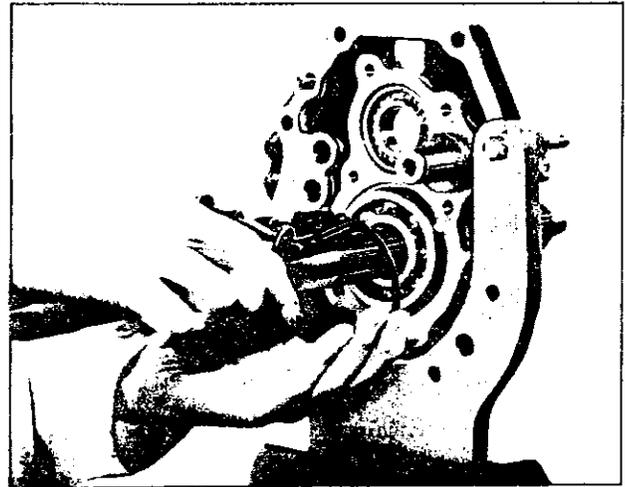
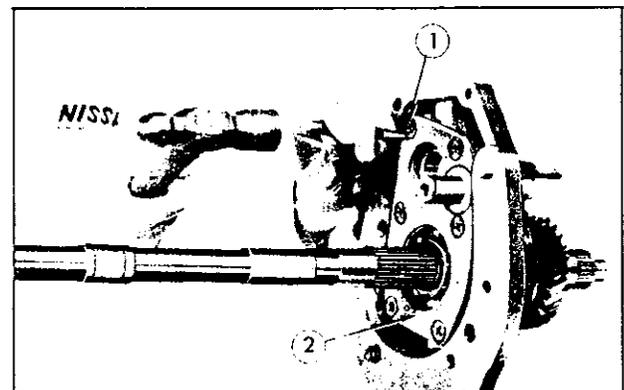


Fig. TM-41 Installing snap ring

8. Insert the counter shaft bearing ring between the counter shaft rear bearing and bearing retainer.

9. Install the bearing retainer on the adapter plate, tighten each machine screw to tightening torque in range from 1.20 to 1.80 kg-m (8.7 to 13.0 ft-lb), and caulk both ends of the machine screw to lock by the use of a punch.



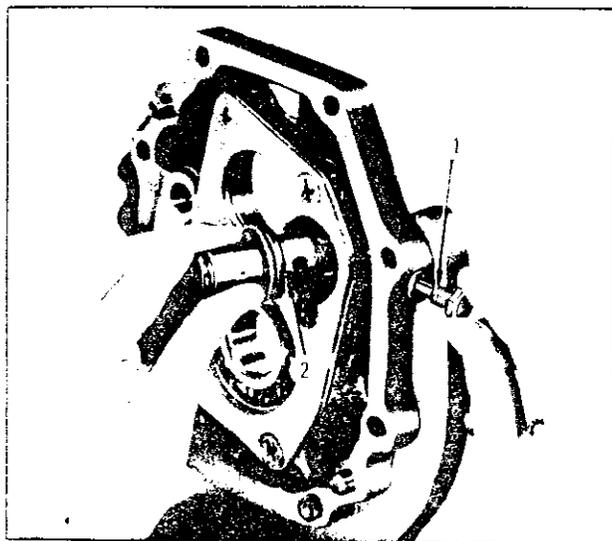
1	Machine screw	2	Bearing retainer
---	---------------	---	------------------

Fig. TM-42 Caulking machine screw

10. Insert the reverse idler shaft from the rear side, line it up to the set screw hole position, put locking agent, and tighten the set screw to tightening torque in range from 1.20 to 1.80 kg-m (8.7 to 13.0 ft-lb).

TRANSMISSION

11. Install spring washer and plain washer on the shaft, and tighten the nut to tightening torque in range from 6.0 to 8.0 kg-m (43.4 to 57.8 ft-lb).



1	Set screw	2	Reverse idler shaft
---	-----------	---	---------------------

Fig. TM-43 Installing reverse idler shaft

Counter shaft assembly

12. Apply two woodruff keys to the counter shaft, and apply gear oil slightly to portion of gear where the gear is applied.

Lining up direction of the counter 3rd gear to the woodruff key direction, fit the counter 3rd gear to the counter shaft by the use of a drive pinion bearing replacer (special tool ST30030000), and install a snap ring.

13. Fit the counter shaft to which the counter 3rd gear has been installed to the counter shaft rear bearing, install the needle bearing, 3rd gear, baulk ring, and synchronesh assembly for 3rd to 4th gear to the front side of the main shaft, and secure them with a snap ring.

Select a snap ring from five different types shown below:

Snap ring thickness		
1.	1.625 mm	(0.0640 in)
2.	1.575 mm	(0.0620 in)
3.	1.525 mm	(0.0600 in)
4.	1.475 mm	(0.0581 in)
5.	1.425 mm	(0.0561 in)

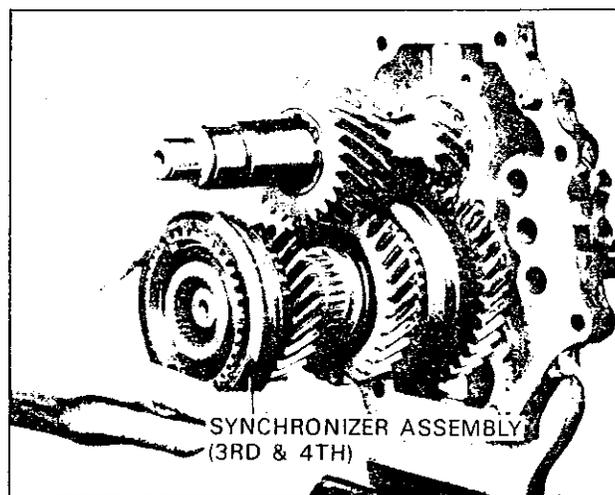


Fig. TM-44 Installing 3rd gear and synchronesh assembly

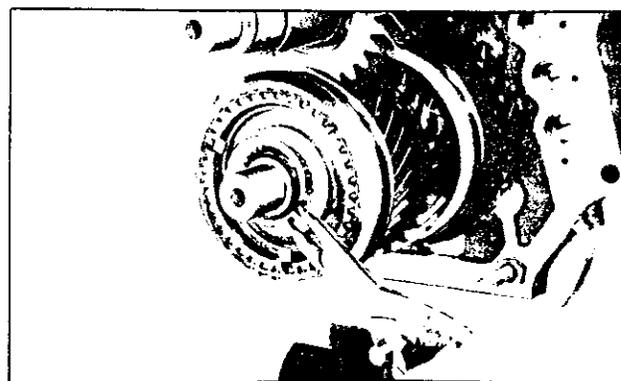


Fig. TM-45 Installing snap ring

Main drive gear assembly

14. Fit the main drive bearing to the main drive gear shaft by the use of a drive pinion bearing replacer (special tool ST30030000) and press carefully so that the bearing is faced to the correct direction.

CHASSIS

Install the main drive gear spacer, and install a snap ring. Select a snap ring from five different types shown below:

Snap ring thickness	
1.	1.80 mm (0.0710 in)
2.	1.87 mm (0.0736 in)
3.	1.94 mm (0.0765 in)
4.	2.01 mm (0.0790 in)
5.	2.08 mm (0.0820 in)

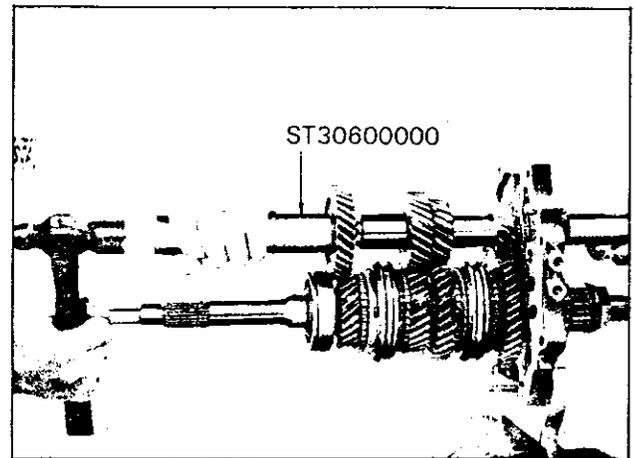
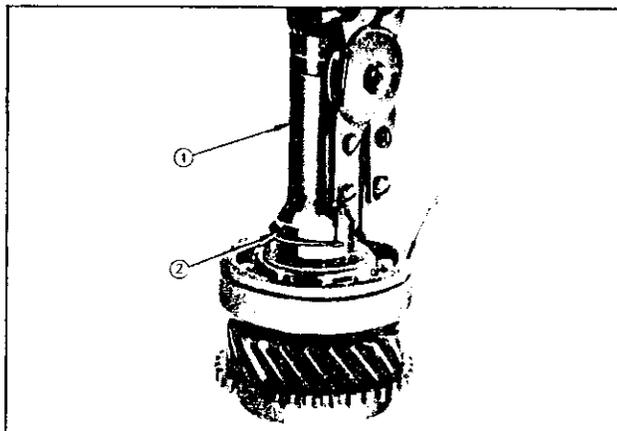
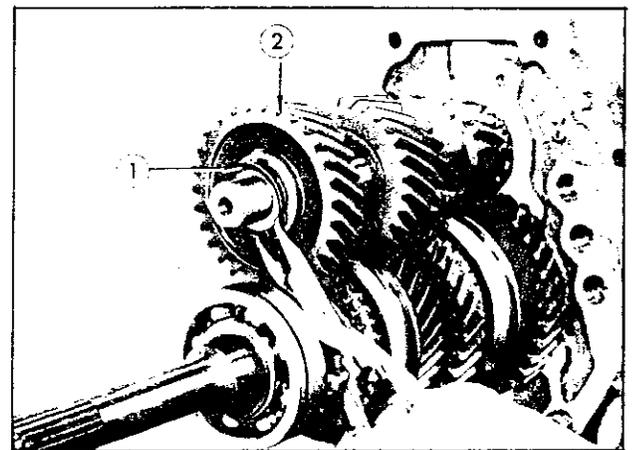


Fig. TM-47 Fitting counter drive gear



1	Main drive shaft	3	Main drive bearing
2	Snap ring		

Fig. TM-46 Installing snap ring



1	Snap ring	2	Counter drive gear
---	-----------	---	--------------------

Fig. TM-48 Installing snap ring

15. Insert a woodruff key to the counter drive gear side of the counter shaft.

16. Insert pilot bearing to the main drive gear assembly, engage the counter drive gear with the 4th gear, apply them to the main shaft and counter shaft front side, line up the counter drive gear to the direction of the woodruff key, fit the counter drive gear to the shaft by the use of a drift B (special tool ST30600000), and install a snap ring. In this operation, support the other side of the shaft to protect the counter shaft rear bearing.

17. Install the reverse hub, reverse gear, thrust washer, and lock plate on the rear side of the main shaft, and temporarily secure them with the main shaft nut.

18. Slightly apply gear oil to the reverse idler shaft, apply needle bearing, reverse idler gear, and thrust washer to the idler shaft, and install a snap ring.

TRANSMISSION

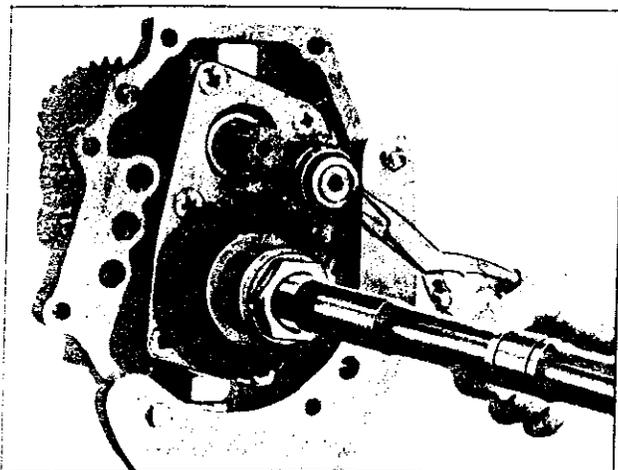


Fig. TM-49 Installing snap ring of reverse idler gear

19. Apply the counter reverse gear to the rear side of the counter shaft, and install a snap ring. Select a snap ring from five different types shown below:

Snap ring thickness		
1.	1.1 mm	(0.0433 in)
2.	1.2 mm	(0.0472 in)
3.	1.3 mm	(0.0512 in)
4.	1.4 mm	(0.0552 in)
5.	1.5 mm	(0.0590 in)

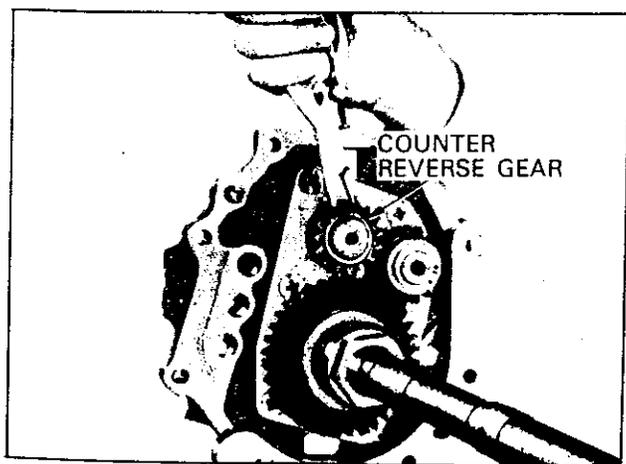


Fig. TM-50 Installing snap ring of counter reverse gear

20. Intermesh the synchromesh assembly for the 1st to 2nd speed gear with the reverse gear simultaneously, tighten the main shaft nut to tightening torque in range

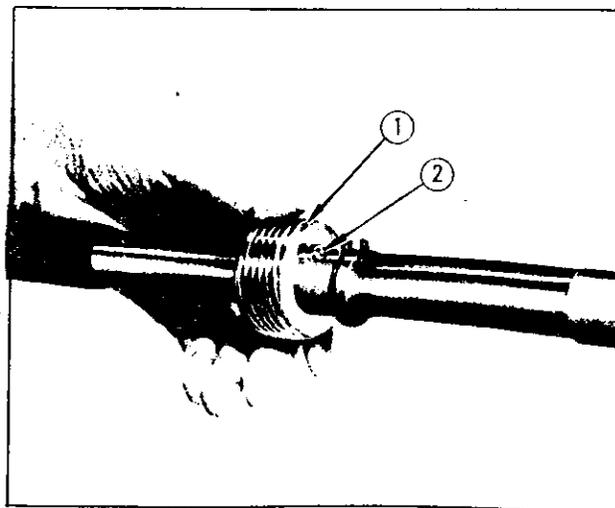
from 18.0 to 21.0 kg-m (130.2 to 151.8 ft-lb), and bend the lock washer to the main shaft nut side.



Fig. TM-51 Bending lock washer

21. Install the snap ring, steel ball, and speedometer drive gear in that order, and secure them with a snap ring. Select a proper snap ring from five different types shown below:

Snap ring thickness		
1.	1.1 mm	(0.0433 in)
2.	1.2 mm	(0.0472 in)
3.	1.3 mm	(0.0512 in)
4.	1.4 mm	(0.0552 in)
5.	1.5 mm	(0.0590 in)



1	Speedometer drive gear	2	Steel ball
---	------------------------	---	------------

Fig. TM-52 Installing speedometer drive gear

CHASSIS

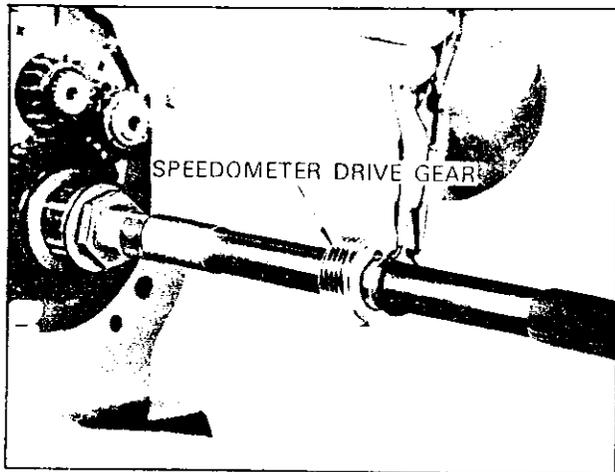
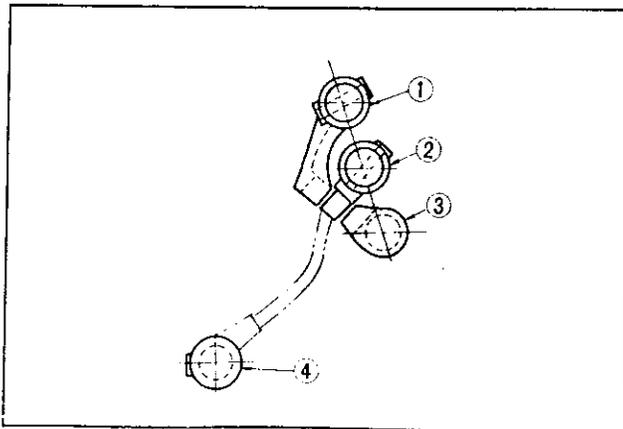


Fig. TM-53 Installing speedometer drive gear snap ring

22. Measure the gear end play and backlash. For the details, refer to the section covering the inspection.

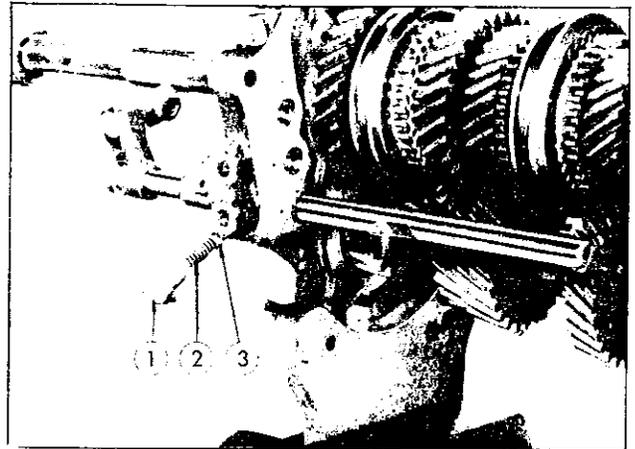
23. Turn the gear assembly 180° and reinstall the setting plate adapter (special tool ST23810000).

24. Install the reverse shift fork on the reverse gear, and apply the reverse fork rod to the shift fork and adapter plate. Apply the check ball, and check ball spring, put locking agent to the check ball plug, and temporarily tighten them.



1	Reverse gear fork rod	3	1st & 2nd gear fork rod
2	3rd & 4th gear fork rod	4	Striking rod

Fig. TM-54 Layout for fork rod



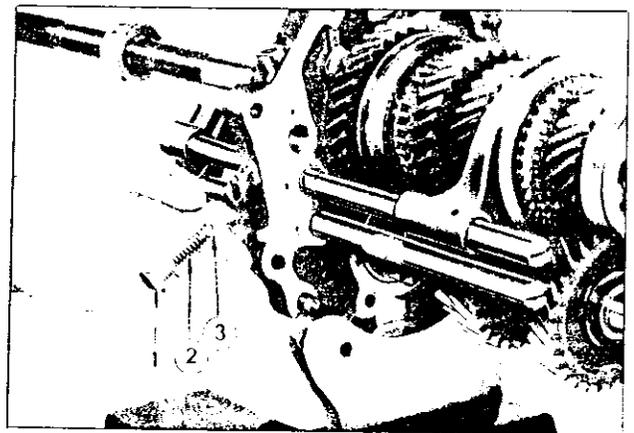
1	Check ball plug	3	Check ball
2	Check ball spring		

Fig. TM-55 Installing reverse fork rod

25. Install the retaining pin, and secure the shift fork and fork rod stationarily.

26. Apply two interlock balls between the reverse fork rod and 3rd to 4th speed fork rod.

27. Install the 3rd to 4th shift fork on the grooved portion of the coupling sleeve for the 3rd to 4th gear, and apply the 3rd to 4th fork rod to the shift fork and adapter plate. Apply the check ball and check ball spring, apply locking agent to the check ball plug, and tighten them temporarily. Note that the total length of this plug is shorter than that of the reverse fork rod and 1st to 2nd speed fork rod.



1	Check ball plug	3	Check ball
2	Check ball spring		

Fig. TM-56 Installing 3rd to 4th speed fork rod

TRANSMISSION

28. Install the retaining pin, and set the shift fork and fork rod stationarily.

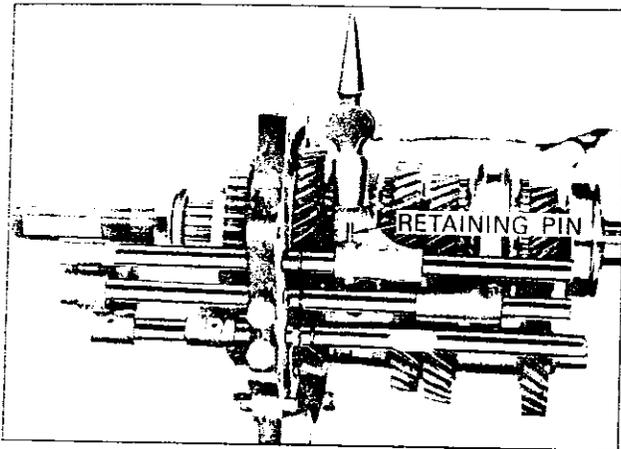


Fig. TM-57 Installing retaining pin

29. Apply two interlock balls between the 1st to 2nd speed fork rod and 3rd to 4th speed fork rod.

30. Install the shift fork into the groove on the coupling sleeve for the 1st to 2nd gear, and apply the 1st to 2nd speed fork rod to the shift fork and adapter plate. Apply the check ball and check ball spring, put locking agent on the check ball plug, and temporarily tighten them.

31. Tighten each check ball plug to tightening torque in range from 2.2 to 3.0 kg-m (15.9 to 21.7 ft-lb).

Install the retaining pin, and set the shift fork and fork rod stationarily.

32. Fit the fork rod ring.

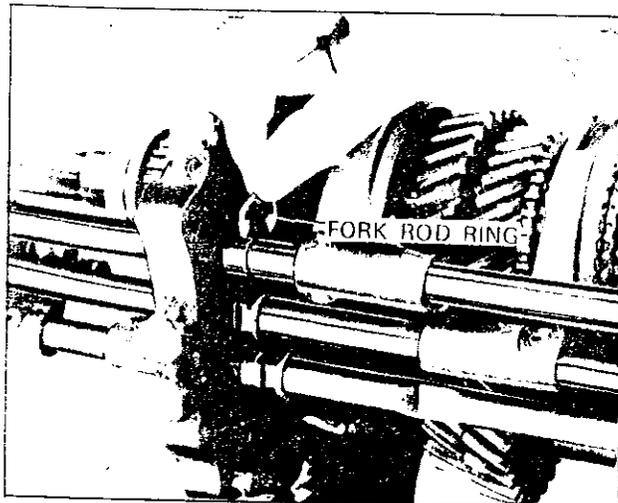


Fig. TM-58 Installing fork rod ring

33. Apply gear oil to the individual sliding portions, intermesh the synchromesh assembly to each gear, and make sure that the synchromesh mechanism operates smoothly and that each gear intermeshes smoothly.

Installing the transmission case

34. Clean the adapter plate joint, put liquid packing to the adapter plate and rear extension gasket, install the transmission case on the adapter plate, and tighten them temporarily with the bolts.

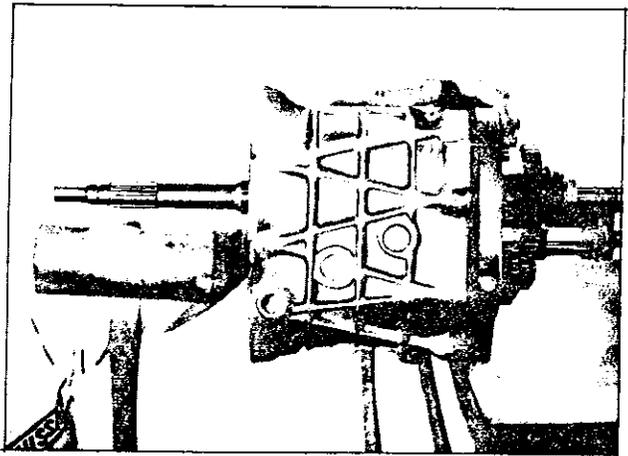


Fig. TM-59 Installing transmission case

35. Fit the counter shaft front bearing to the transmission case by the use of a drift C (special tool ST22360000).

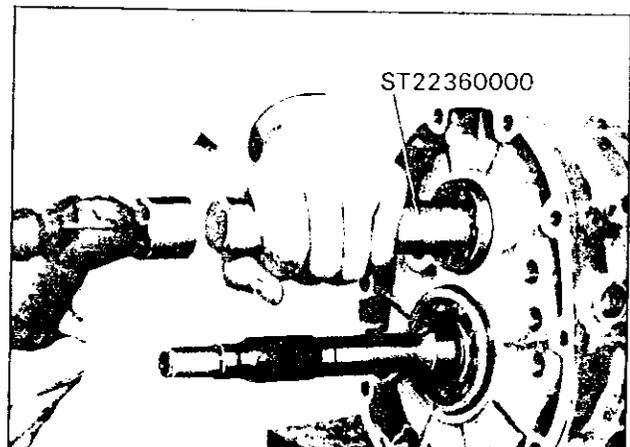


Fig. TM-60 Fitting counter shaft front bearing

CHASSIS

36. Fit the main drive bearing ring to the ring groove on the main drive bearing.

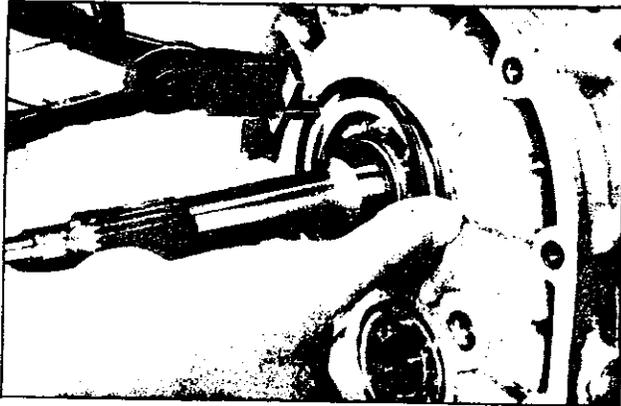


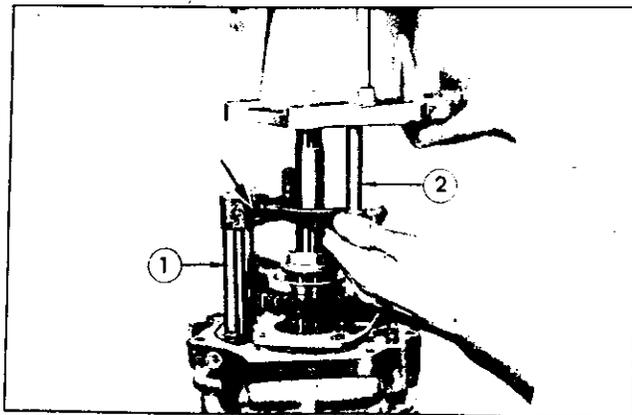
Fig. TM-61 Installing main drive bearing ring

Installing rear extension

37. Clean the adapter plate and rear extension contact surfaces, and apply liquid packing to the adapter plate and gasket.

38. When installing the rear extension on the transmission, arrange each fork rod to the neutral position, line up fork rod rear portions in a box shape, and install the striking rod in it. Apply washer to installation bolt, and tighten the rear extension to tightening torque in range from 1.5 to 2.2 kg-m (10.8 to 15.9 ft-lb).

When inserting the rear extension, be careful not to damage the rear extension oil seal with the main shaft spline.



1	Fork rod	2	Striking rod
---	----------	---	--------------

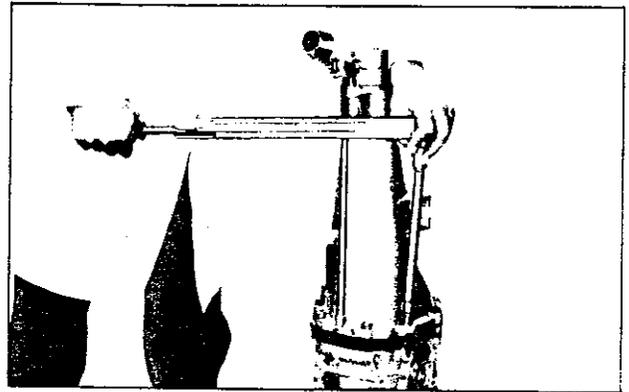


Fig. TM-62 Installing rear extension

39. Insert a striking rod pin, connect the striking rod to the control lever bracket, and secure them with a striking pin ring.

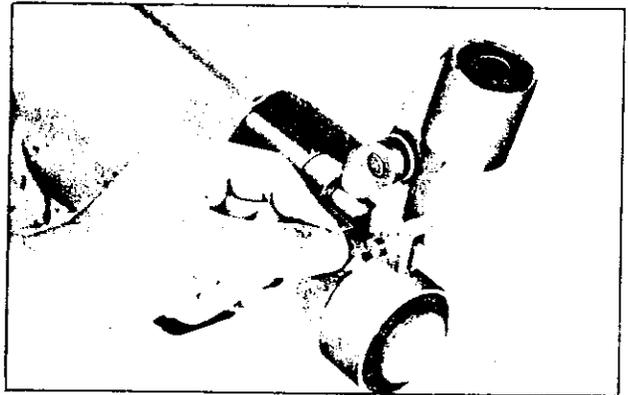
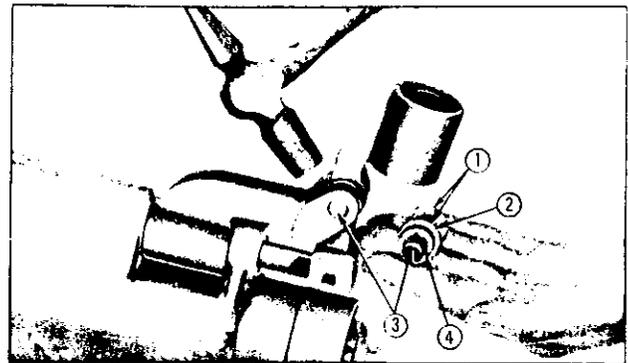


Fig. TM-63 Installing striking rod pin

40. When installing the control arm pin, install the control spring, thrust washer, and washer on their positions correctly and fit retaining pin by means of driving.

When removing the retaining pin use a solid punch (special tool ST23530000) and drive with a hammer.



1	Washer	3	Striking rod pin
2	Thrust washer	4	Spring

Fig. TM-64 Installing control arm pin

TRANSMISSION

41. Selecting main drive bearing shim

- 1) Measure height of the transmission case from front end surface of the main drive bearing. The height is referred to as "B".
- 2) Measure depth of rear end surface of the front cover from the clutch housing rear end surface. The depth is referred to as "A".
- 3) Thickness of a required shim "T" is obtained by the following formula:

$$T = A - B$$

Ring thickness for selection		
1.	1.4 mm	(0.0551 in)
2.	1.6 mm	(0.0630 in)

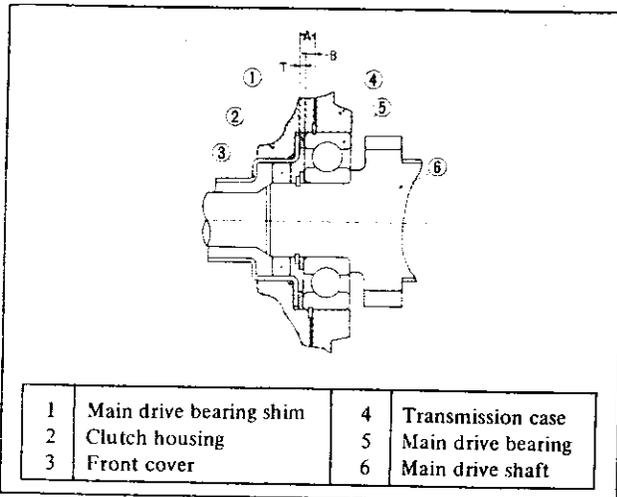


Fig. TM-65 Main drive bearing spacer



Fig. TM-66 Selection main drive bearing spacer (Measuring depth "A")

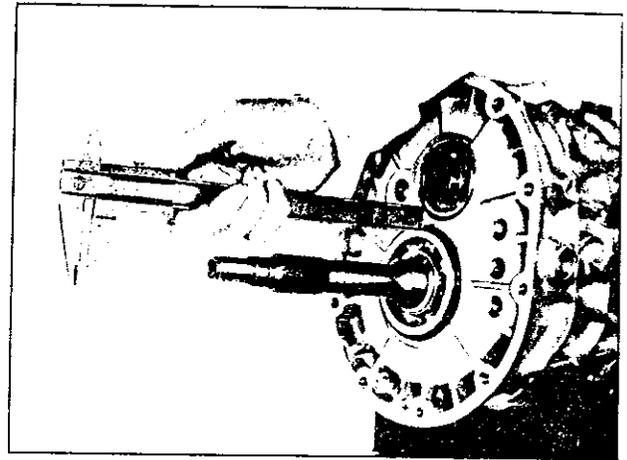
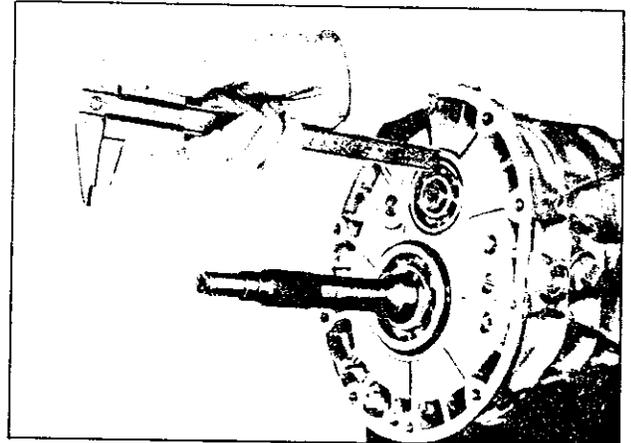


Fig. TM-67 Selection main drive bearing spacer (Measuring depth "B")

42. Selecting counter shaft front bearing shim

Measure depth of counter shaft front bearing down to the front end surface from the transmission case front end surface (referred to as "A"), and select a proper shim based on the depth "A".



Spacer thickness for selection	
1.	0.4 mm (0.0157 in)
2.	0.5 mm (0.0197 in)
3.	0.6 mm (0.0236 in)
4.	0.7 mm (0.0275 in)
5.	0.8 mm (0.0315 in)
6.	0.9 mm (0.0354 in)
7.	1.0 mm (0.0394 in)

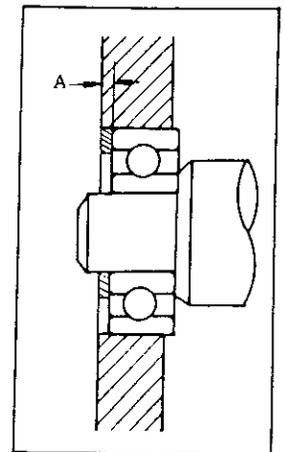


Fig. TM-68 Selecting counter shaft front bearing shim

CHASSIS

43. Clean the clutch housing and transmission case contact surfaces, apply liquid packing to the clutch housing installing surface and gasket, and attach the

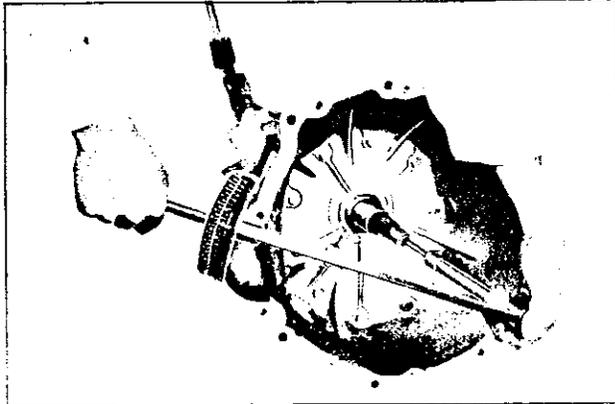


Fig. TM-69 Installing clutch housing

clutch housing to the transmission case. Tighten the installation bolts and washer to tightening torque in range from 1.5 to 2.2 kg-m (10.8 to 15.9 ft-lb), and secure the clutch housing.

44. Install the clutch release mechanism. (See Section CL.)

45. Shift the transmission control lever to each gear, and make sure that the gear operates smoothly.

46. Remount the transmission assembly in reverse sequence of dismounting.

47. Pour gear oil into the transmission [1.5 liters (0.4 US gal)].

TYPE FS5C71A TRANSMISSION

CONTENTS

DISASSEMBLY	TM-21	Synchronizer assembly	TM-22
Synchronizer assembly	TM-21	Main shaft	TM-23
INSPECTION	TM-21	Gear assembly	TM-23
REASSEMBLY	TM-22		

The type FS5C71A transmission is a servo type synchromesh 5-forward (with over drive) 1-reverse speed transmission, which is adopted at some territories only.

The items which differ from the type F4W71A transmission are as follows.

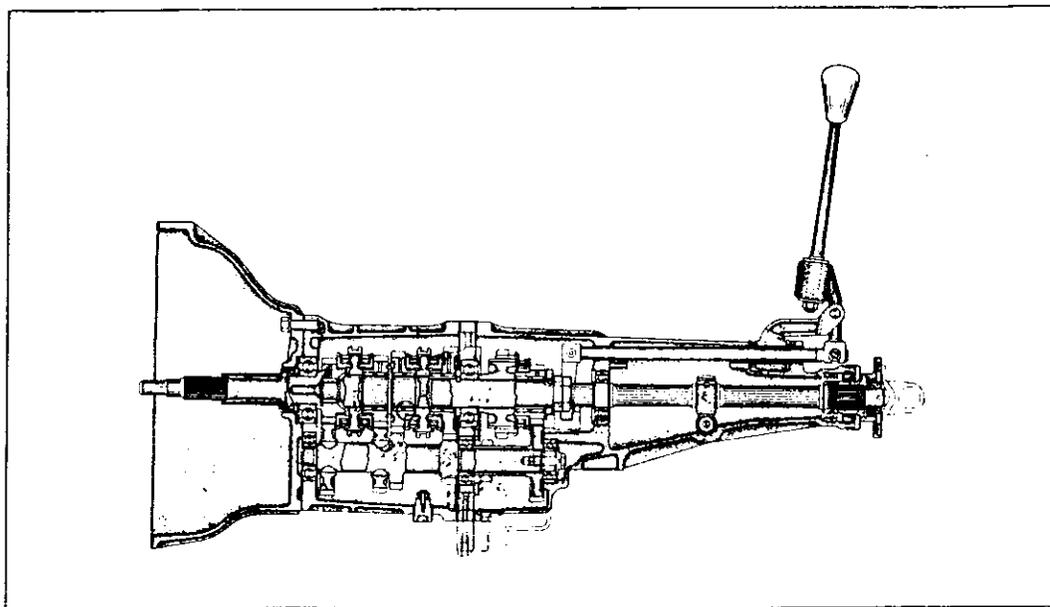


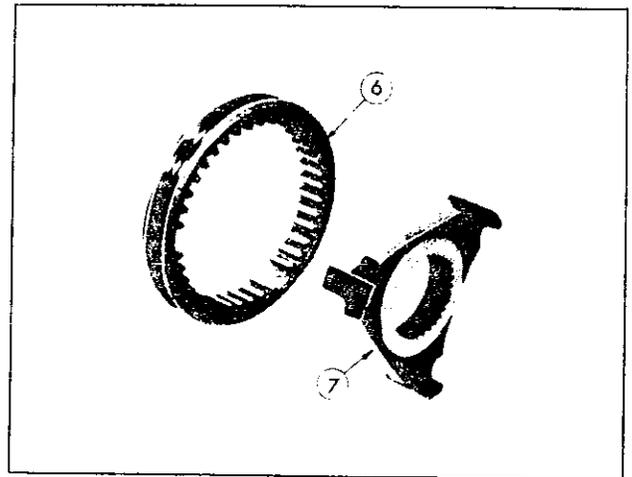
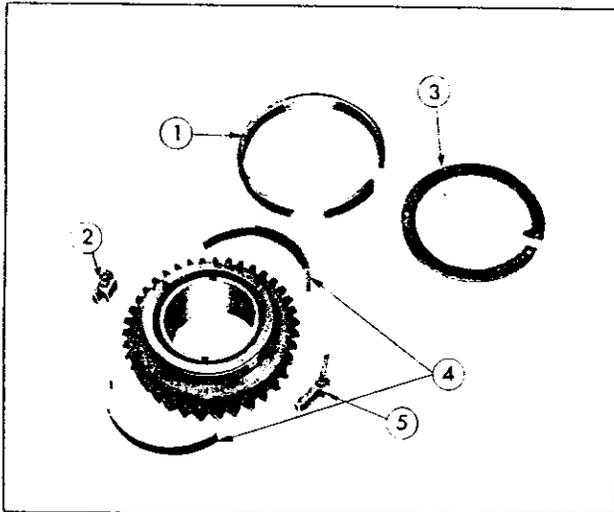
Fig. TM-70 Cross-sectional view of type FS5C71A transmission

TRANSMISSION

DISASSEMBLY

Synchronizer assembly

Remove the circlip, and remove the synchronizer ring, thrust block, brake band, and anchor block.



1	Synchro. ring	5	Thrust block
2	Anchor block	6	Synchro. sleeve
3	Circlip	7	Synchro. hub
4	Brake band		

Fig. TM-71 Components of synchronizer assembly

INSPECTION

1. Gear backlash

Main drive gear	}	0.04 to 0.15 mm (0.0016 to 0.0059 in)
Reverse gear		
1st gear	}	0.04 to 0.20 mm (0.0016 to 0.0079 in)
2nd gear		
3rd gear		
5th gear		

2. Gear end play

1st gear	}	0.12 to 0.19 mm (0.0039 to 0.0075 in)
2nd gear		
5th gear		
3rd gear		0.12 to 0.24 mm (0.0039 to 0.0094 in)
Reverse idler gear		0.05 to 0.35 mm (0.0019 to 0.0137 in)

3. Synchronizer assembly

Replace, if synchronizer hub, anchor block, thrust block, brake band, etc. are damaged, cracked, or worn.

CHASSIS

REASSEMBLY

Synchronizer assembly

The following table indicates three types of synchro-

nizer. When assembling the individual components, be careful to combine appropriate components correctly.

Component parts of synchronizer assembly

mm (in)

	4th	3rd	2nd	1st	5th (OD)
Thrust block		←	←		
Anchor block		←	←		
Brake band		←	←	←	
Brake band	Same as above	←	←		Same as above
Synchronizer ring		←	←	←	
Circlip		←	←	←	

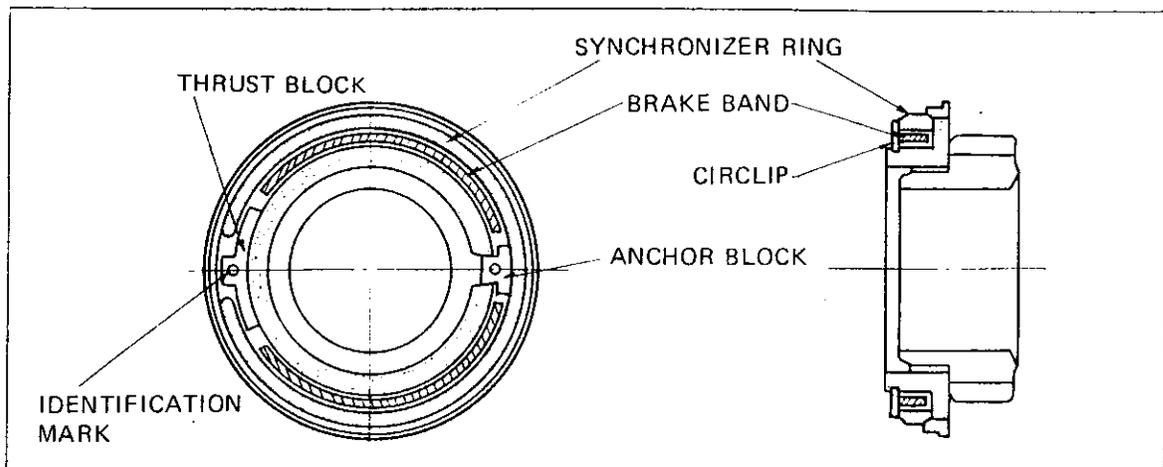


Fig. TM-72 Synchronizer assembly

Note: When assembling synchronizer for 1st speed gear, be sure to install 2.2 mm (0.0866 in) thick brake

band in the lower side in the above figure.

TRANSMISSION

Main shaft

Apply the 3rd speed gear (3), synchronizer hub, and coupling sleeve (2), select and install a snap ring (1) so that synchronizer hub play is minimized.

Note: a. When installing the synchronizer hub (2), be sure to face the longer boss to the rear side.

b. When installing the synchronizer hub (5), be sure to face the longer boss to the front side.

Snap ring for selection

	Thickness
1.	1.55 to 1.60 mm (0.0610 to 0.0630 in)
2.	1.50 to 1.55 mm (0.0591 to 0.0610 in)
3.	1.45 to 1.50 mm (0.0571 to 0.0591 in)

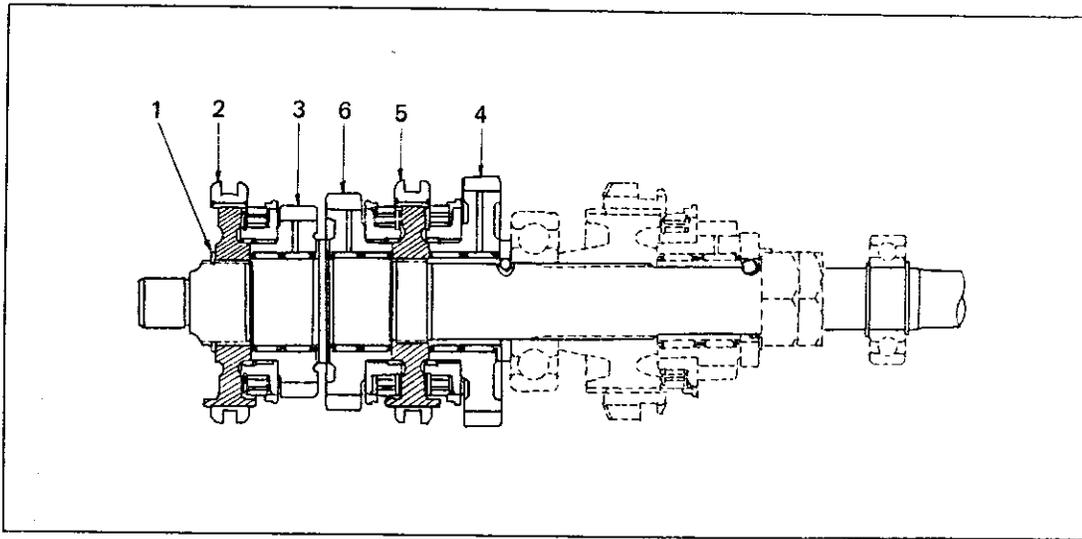


Fig. TM-73 Main shaft assembly

Gear assembly

1. Install the main shaft, counter shaft, and gears on the adapter plate.

2. Tightening the main shaft lock nuts

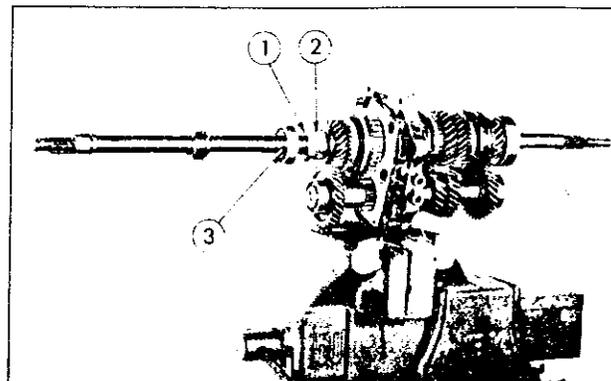
(1) Tighten the 1st nut and 2nd nut respectively to tightening torque ranging from 2 to 3 kg-m (14.5 to 21.7 ft-lb) and 1 to 2 kg-m (7.2 to 14.5 ft-lb).

(2) Set the 2nd nut stationarily, and tighten the 1st nut toward loosening direction under 30 kg-m (216.9 ft-lb).

3. For the snap ring used in the rear side of the over drive bearing, select a proper snap ring so that the bearing play toward the axial direction is minimized.

Snap ring for selection

	Thickness
1.	1.1 mm (0.0433 in)
2.	1.2 mm (0.0472 in)
3.	1.3 mm (0.0512 in)
4.	1.4 mm (0.0551 in)



1	2nd nut	2	1st nut	3	snap ring
---	---------	---	---------	---	-----------

Fig. TM-74 Tightening lock nuts

CHASSIS

SERVICE DATA AND SPECIFICATIONS

GENERAL SPECIFICATIONS

Type	F4W71A	FS5C71A
No. of speeds	4-forward, 1-reverse	5-forward, 1-reverse
Synchromesh type	Warner type	Servo type
Gear ratio		
1st	3.549	2.957
2nd	2.197	1.857
3rd	1.420	1.311
4th	1.000	1.000
5th	—	0.852
Rev.	3.164	2.922
Speedometer pinion	17/6	19/6
Oil capacity	1.5 ℓ (0.4 US gal)	1.5 ℓ (0.4 US gal)

TIGHTENING TORQUE

Machine screw for bearing retainer	1.20 to 1.80 kg-m (8.7 to 13.0 ft-lb)
Set screw for reverse idler shaft	1.20 to 1.80 kg-m (8.7 to 13.0 ft-lb)
Reverse idler shaft nut	6.0 to 8.0 kg-m (43.4 to 57.8 ft-lb)
Main shaft nut	18.0 to 21.0 kg-m (130.2 to 151.8 ft-lb)
Check ball plug	2.2 to 3.0 kg-m (15.9 to 21.7 ft-lb)
Rear extension installation bolt	1.5 to 2.2 kg-m (10.8 to 15.9 ft-lb)
Clutch housing installation bolt	1.5 to 2.2 kg-m (10.8 to 15.9 ft-lb)
Locking plate nut for speedometer pinion sleeve	0.3 to 0.6 kg-m (2.2 to 4.3 ft-lb)
Reverse lamp switch	2.0 to 3.0 kg-m (14.5 to 21.7 ft-lb)
Gear oil drain plug	2.0 to 4.0 kg-m (14.5 to 28.9 ft-lb)
Transmission installation bolt (Used to join the transmission and engine)	2.7 to 3.7 kg-m (19.5 to 26.8 ft-lb)

TRANSMISSION

SPECIFICATIONS

	Type F4W71A	Type FS5C71A
Gear backlash		
Main drive and reverse gear	0.05 to 0.15 mm (0.0020 to 0.0059 in)	0.04 to 0.15 mm (0.0016 to 0.0059 in)
The other gears	0.05 to 0.15 mm (0.0020 to 0.0059 in)	0.04 to 0.20 mm (0.0016 to 0.0079 in)
Gear end play		
1st gear	0.12 to 0.19 mm (0.0047 to 0.0075 in)	0.12 to 0.19 mm (0.0047 to 0.0075 in)
2nd gear	0.12 to 0.19 mm (0.0047 to 0.0075 in)	0.12 to 0.19 mm (0.0047 to 0.0075 in)
3rd gear	0.12 to 0.19 mm (0.0047 to 0.0075 in)	0.12 to 0.24 mm (0.0047 to 0.0094 in)
5th gear	0.12 to 0.19 mm (0.0047 to 0.0075 in)	0.12 to 0.19 mm (0.0047 to 0.0075 in)
Reverse idler gear	0.05 to 0.35 mm (0.0020 to 0.0138 in)	0.05 to 0.35 mm (0.0020 to 0.0138 in)
Clearance between baulk ring and gear	1.2 to 1.4 mm (0.0472 to 0.0550 in)	1.2 to 1.4 mm (0.0472 to 0.0550 in)

TROUBLE DIAGNOSES AND CORRECTIONS

Symptom and possible cause	Corrective action
Difficult to intermesh gears Causes for difficult gear hifting are classified to troubles concerning the control system and transmission. When the gear shift lever is heavy and it is difficult to shift gears, clutch disengagement may also be unsmooth. First, make sure that the clutch operates correctly, and inspect the transmission.	
Worn gears, shaft, and/or bearing	Replace.
Insufficient operating stroke due to worn or loose sliding part	Repair or replace.
Defective or damaged synchronizer	Replace.

CHASSIS

Gear slips out of mesh

In the most cases, this trouble occurs when the interlock plunger, check ball, and/or spring is worn or weakened, or when the control system is defective. In this case, the trouble cannot be corrected by replacing gears, and therefore, trouble shooting must be carried out carefully. It should also be noted that gear slips out of mesh due to vibration generated by weakened front and rear engine mounts.

Worn interlock plunger

Replace.

Worn check ball and/or weakened or broken spring

Replace.

Worn fork rod ball groove

Replace.

Worn or damaged bearing

Replace.

Worn or damaged gear

Replace.

Noise

When noise occurs under engine idling and stops while the clutch is disengaged, or when noise occurs while shifting gears, it may be judged that the noise is from the transmission.

Insufficient or improper lubricant

Add oil or replace with designated oil.

Oil leaking due to defective oil seal and gasket, clogged breather, etc.

Clean or replace.

Worn bearing (High humming occurs at a high speed.)

Replace.

Damaged bearing (Cyclic knocking sound occurs also at a low speed.)

Replace.

Worn each spline

Replace.

Worn each bushing

Replace.

SERVICE JOURNAL OR BULLETIN REFERENCE

DATE	JOURNAL or BULLETIN No.	PAGE No.	SUBJECT

DATSUN 240Z SPORTS
MODEL S30 SERIES
CHASSIS & BODY



NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION PD

PROPELLER SHAFT & DIFFERENTIAL CARRIER

PD

PROPELLER SHAFT AND UNIVERSAL JOINT	PD- 1
DIFFERENTIAL CARRIER	PD- 3
TORUBLE DIAGNOSES AND CORRECTIONS	PD-14
SERVICE DATA AND SPECIFICATIONS	PD-16

PROPELLER SHAFT & DIFFERENTIAL CARRIER

PROPELLER SHAFT AND UNIVERSAL JOINT

CONTENTS

SPECIFICATIONS	PD-1	Journal	PD-2
DESCRIPTION	PD-1	SERVICE DATA	PD-2
REMOVAL, INSPECTION, AND REPAIR	PD-2		

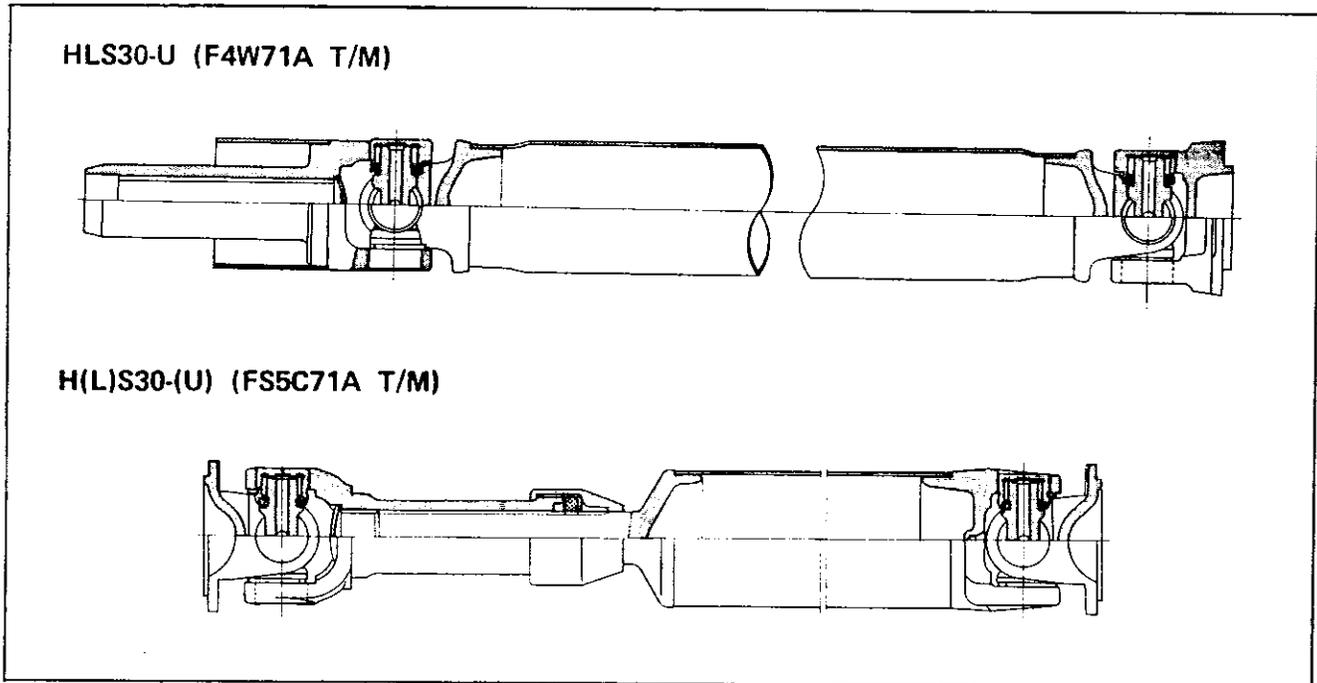


Fig. PD-1 Cross-sectional view of propeller shaft

SPECIFICATIONS

Propeller shaft	Model	HLS30-U (F4W71A T/M)	H(L)S30-(U) (FS5C71A T/M)
Length between joints		540 mm (21.26 in)	520 mm (20.47 in)
Tube outer diameter		63.5 mm dia. (2.500 in dia.)	63.5 mm dia. (2.500 in dia.)
Tube thickness		1.6 mm (0.0630 in)	1.6 mm (0.0630 in)
Type of joint		63H non-lubricating	63H non-lubricating

DESCRIPTION

The propeller shaft is of a 2-joint type. The sliding part of the propeller shaft for the F4W71A transmission is on the rear extension of transmission unit in form of an involute spline, and is lubricated with gear oil.

The propeller shaft for the FS5C71A transmission differs from that for the F4W71A. For the FS5C71A transmission, the sliding part is on the propeller shaft and is lubricated with multi-purpose grease.

CHASSIS

REMOVAL, INSPECTION, AND REPAIR

1. The propeller shaft is balanced an assembly. When removing the propeller shaft, verify the spline/flange yoke match marks in two places. When the match marks are unverifiable, put match marks by means of punching for convenience' sake during reassembling.

2. Remove the submuffler, remove four bolts and nuts from the propeller shaft rear end flange yoke and differential carrier flange connecting unit, and remove the propeller shaft.

Note: Carry out this operation carefully so as not to damage the spline and rear oil seal. Take proper action to prevent oil leaking from the transmission rear end.

3. The permissible unbalance of the propeller shaft (in condition of an assembly) is 15 gr-cm (0.21 in-oz) at 4,000 rpm, [less than 20 gr-cm (0.28 in-oz) at 6,000 rpm].

Journal

Before disassembling, check the journal (without removing from the propeller shaft) for the movement; and when,

1. The journal does not operate smoothly [Bending resistance: more than 10 kg-cm (9 in-lb)], and/or,

2. The yoke in one side is set stationarily, a load of 10 kg (22 lb) is applied to the other yoke alternately, and the relative displacement toward the yoke axial direction is more than 0.1 mm (0.039 in);

Disassemble the journal and inspect the components and alignment.

Before disassembling the journal, verify the component alignment and relationship so that the yoke direction and snap ring thickness are not changed (When the yoke direction and/or snap ring thickness is changed, the tube and journal center alignment is deviated and the propeller

shaft is unbalanced.) because the journal is balanced as an assembly.

It is desired not to disassemble the propeller shaft so that the alignment is not unbalanced.

Removal

1. Lightly tap the yoke unit with a wooden mallet (or copper hammer), and remove the bearing race from the yoke.

2. Tap and remove both bearing races from the yoke, and remove the journal from the yoke carefully so that the journal is not damaged.

Inspection and repair

Check the clearance toward the thrust direction (clearance between the journal and bearing assembly) and replace if excessively worn. The clearance of a new journal is 0.006 to 0.037 mm (0.0002 to 0.0015 in).

When the roller is damaged or rusted and/or bearing race and journal sliding surface is pitted, replace the bearing as an assembly.

Reassembly

The component parts are reassembled in reverse sequence of disassembly. When reassembling, select and use a proper snap ring out of the following types (four types) so that the journal moves under the following conditions:

1. Bending resistance of the journal unit is less than 10 kg-cm (9 in-lb).

2. When a yoke in one side is set stationarily and a load of 10 kg (22 lb) is applied to the other yoke alternately, the relative displacement of the yoke toward the axial direction is less than 0.02 mm (0.0008 in).

Snap rings:

White	2.00 mm (0.0787 in)
Yellow	2.02 mm (0.0795 in)
Red	2.04 mm (0.0803 in)
Green	2.06 mm (0.0811 in)

SERVICE DATA

Permissible dynamic unbalance	15 gr-cm (0.21 in-oz)/4,000 rpm [20 gr-cm (0.28 in-oz)/6,000 rpm]
-------------------------------------	--

PROPELLER SHAFT & DIFFERENTIAL CARRIER

Axial play of spider journal	Less than 0.02 mm (0.0008 in)
Spider journal swinging torque	Less than 10 kg-cm (9 in-lb)
Clearance between bearing assembly and journal	0.006 to 0.037 mm (0.0002 to 0.0015 in)
Available snap ring thickness	
White	2.00 mm (0.0787 in)
Yellow	2.02 mm (0.0795 in)
Red	2.04 mm (0.0803 in)
Green	2.06 mm (0.0811 in)
Tightening torque	
Companion flange fixing nuts	2.5 kg-m (18 ft-lb)

DIFFERENTIAL CARRIER

CONTENTS

DESCRIPTION	PD-3	REASSEMBLY AND ADJUSTMENT	PD- 9
INSPECTION BEFORE DISASSEMBLY	PD-5	Precautions in reassembly	PD- 9
DISASSEMBLY	PD-5	Differential case	PD- 9
Disassembling differential case	PD-7	Adjustment of drive pinion preload	PD-10
Replacement of oil seal	PD-7	Adjustment of pinion height	PD-10
INSPECTION	PD-8	Adjustment of the side retainer shims	PD-12

DESCRIPTION

The gear carrier assembly, designed for use in the rear independent suspension is made of malleable cast iron. The gears used are hypoid bevel gears. To serve as part of the suspension, its housing is highly rigid, basically in a combined cylindrical and oval form.

Adjustment figures stamped on screws, adjusting shims, washers, differential case, drive pinion and carrier are given in meters in accordance with the metric standardization of parts recently adopted.

The front part of the gear carrier assembly is mounted on the center of the rear suspension member with four bolts and the rear part is mounted on the body through a leaf spring with rubber insulators to prevent vibration from the road condition.

The gear housing requires a proper lubrication, or otherwise, durability of the gear is affected causing troubles.

The lubricant should be checked each 5,000 km (3,000 miles) and replenished as necessary.

The lubricant should be replaced completely at the end of the first 1,000 km (600 miles) to eliminate metal particles and other foreign matters accumulated during the break-in period. Thereafter differential lubricant should be changed at least every 50,000 km (30,000 miles).

Considerations should be given to the following matters:

1. Nominated hypoid gear oil API.GL-5 MIL-L-2105B be used. (Refer to Section G1.)
2. It is prohibited to use any gear oil having different viscosity. The same brand must always be selected.
3. The standard oil capacity is about 1.0 ltr. (0.22 US gal).

PROPELLER SHAFT & DIFFERENTIAL CARRIER

INSPECTION BEFORE DISASSEMBLY

Check the parts and components to be disassembled or being disassembled carefully so that the causes for the defects can be determined definitely.

1. Place the carrier assembly on the Gear Carrier, Strut & Steering Gear Box Attachment (Special tool ST06270000).

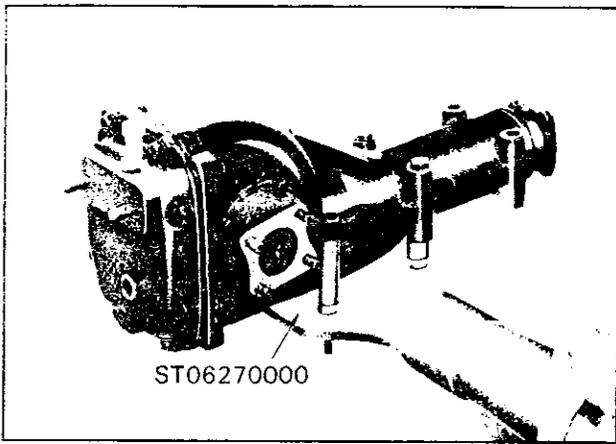


Fig. PD-3 Holding differential carrier

2. Check the tooth contact pattern (2 or 3 points) with lead oxide.

Note: For the tooth contact pattern, see paragraph dealing with "tooth contact pattern adjustment".

3. Measure the backlash between the drive gear and pinion using a dial indicator [backlash: 0.10 to 0.20 mm (0.0039 to 0.0079 in)].

4. Check the drive gear for run-out at the rear, and make sure that the tooth contact pattern or the backlash is normal. [run-out limit: 0.08 mm (0.0031 in)].

5. Measure the turning torque of the driven pinion. [Turning torque: 3 to 15 kg-cm (2.6 to 13.0 in-lb)].

DISASSEMBLY

1. Remove the clamp bolt that holds the flange.
2. Attach the Gear Carrier Side Flange Stand (Special

tool ST33730000) to the side flange and extract the flange using the Sliding Hammer (Special tool ST36230000).

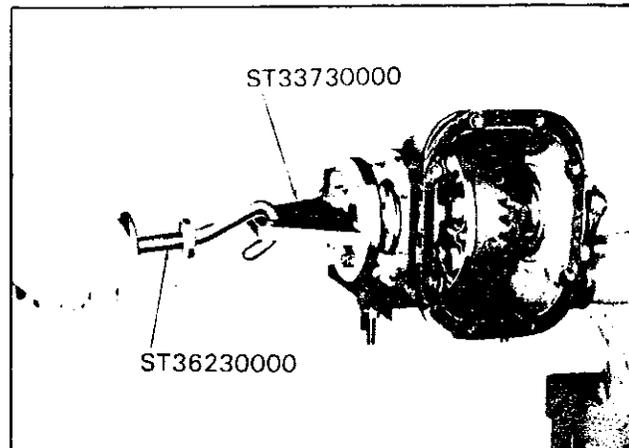


Fig. PD-4 Removing side flange

3. Remove the left side retainer and right side retainer using the Gear Carrier Side Retainer Attachment [(Special tool ST33710000) and standard puller].

Note: a. Provide the right and left side retainers with identification marks before removal.

b. Be careful not to confuse the right and left hand side retainers and shims so that reassembly will be made with the same parts in the original position.

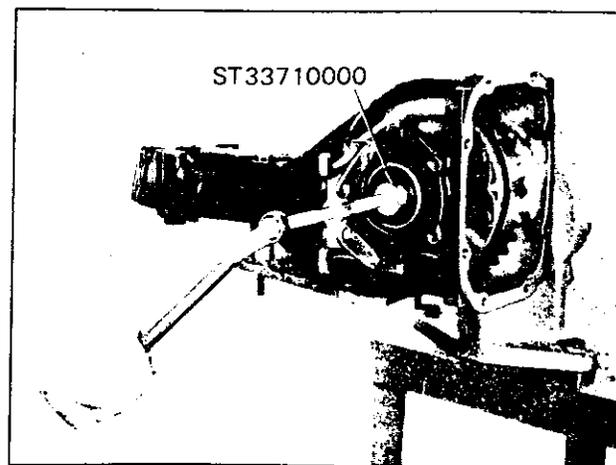


Fig. PD-5 Removing side retainer

4. Remove the differential case from the gear carrier.

CHASSIS

5. When replacing the side thrust bearing, remove the bearing outer race from the side retainer using the Gear Carrier Oil Seal Puller (Special tool ST33290000).

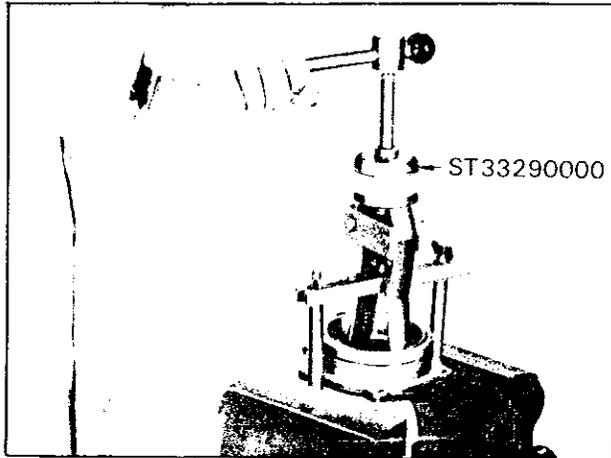


Fig. PD-6 Removing side bearing outer race

6. Hold the companion flange with the Drive Pinion Flange Wrench (Special tool ST31530000) and loosen the drive pinion nut.

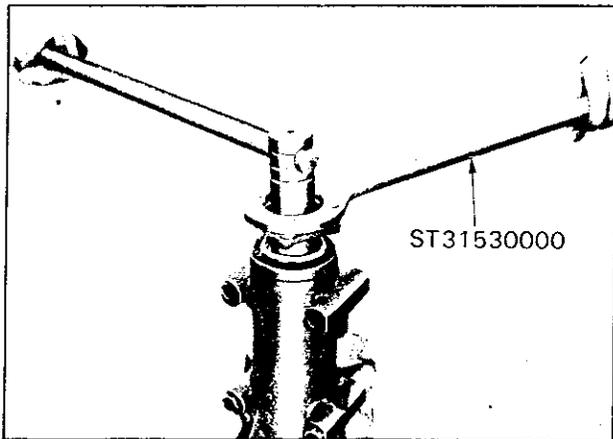


Fig. PD-7 Removing drive pinion nut

7. Insert the companion flange into the drive pinion, tighten the pinion nut to the given torque, and check the turning torque of the drive pinion. [pinion nut tightening torque: 17 to 20 kg-m (122.9 to 144.6 ft-lb)].

Loosen the pinion nut and pull off the companion flange. Remove the oil seal.

8. Remove the drive pinion from the gear carrier with a press. Disassemble the front pilot bearing with pilot

bearing drift (Special tool ST30650000). The drive pinion can be removed together with the front and rear bearing inner races, bearing spacers and adjusting washers.

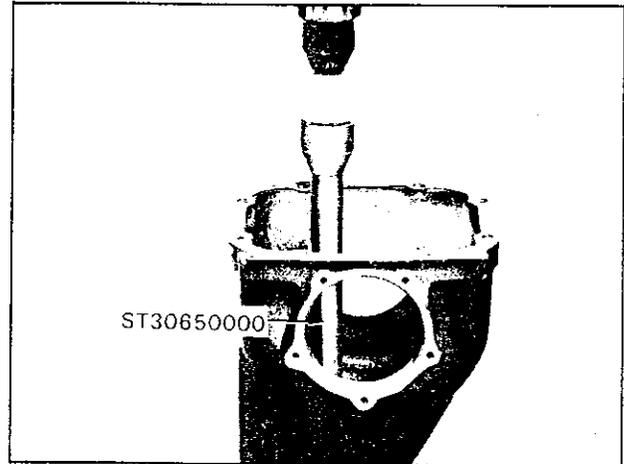


Fig. PD-8 Removing front pilot bearing

9. Hold the rear bearing inner race with the Drive Pinion Rear Bearing Inner Race Replacer (Special tool ST30030000) and remove it from the drive pinion with a press.

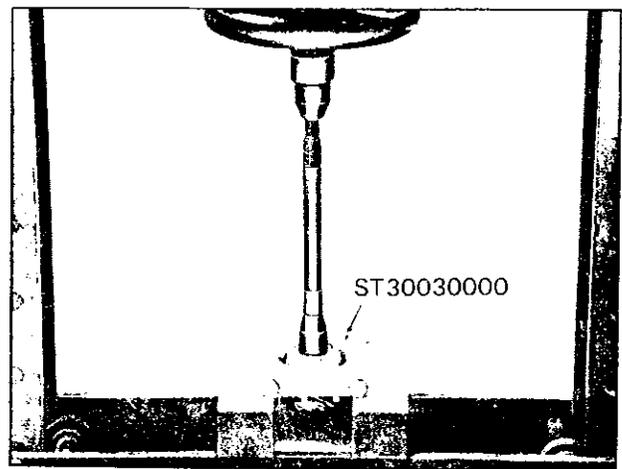


Fig. PD-9 Removing rear bearing inner race

Note: As the result of inspection before disassembly, if proper tooth contact pattern has been obtained and the drive gear, drive pinion carrier, rear bearing, washers, etc. can be reused without replacing the proper tooth contact pattern can be obtained without a pinion height adjustment. Consequently, it is not necessary to remove the bearing inner race.

PROPELLER SHAFT & DIFFERENTIAL CARRIER

10. Remove the front and rear bearing outer races by the use of a press and the Drive Pinion Outer Race Drift Assembly (Special tool ST30610000).

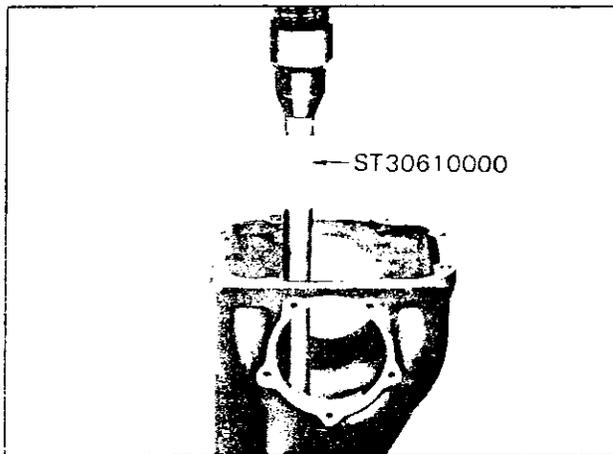


Fig. PD-10

Disassembling differential case

1. Remove the bearing cone with the Puller and Adapter (Special tool ST33012000).

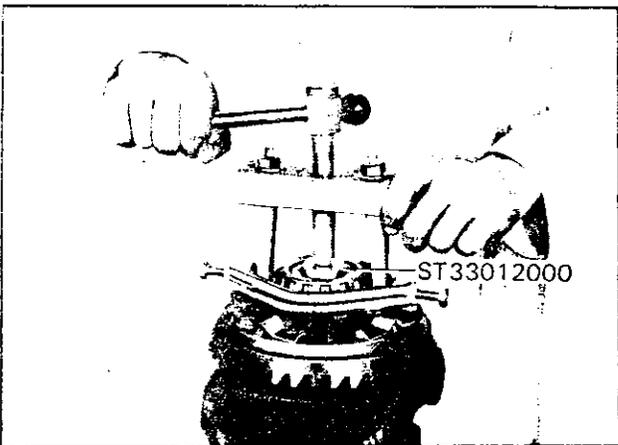


Fig. PD-11 Removing side bearing cone

Remove the left hand one after removing the drive gear.

Note: a. The puller should be handled carefully so as to catch the edge of bearing inner race.

b. Be careful not to confuse the right and left hand parts.

2. Remove the hypoid drive gear by spreading out the lock strap and loosening the drive gear bolts.

Note: Loosen the bolts diagonally and alternately.

3. Punch off the pinion mate shaft lock pin from the drive gear side with the Solid Punch (Special tool ST23510000).

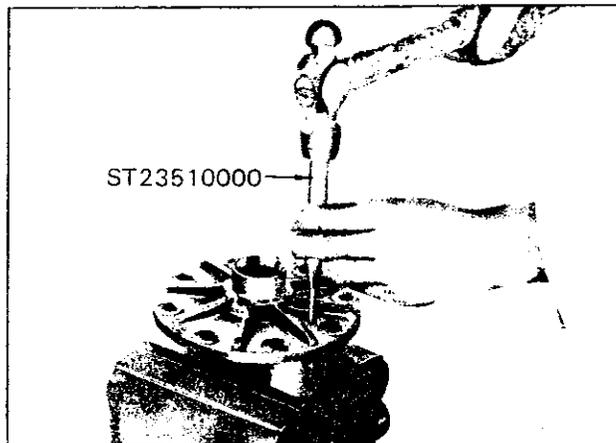


Fig. PD-12 Punching off lock pin

Note: The lock pin is caulked at the pin hole mouth on the differential case. Do not punch it off forcibly without checking how it is caulked.

4. Draw out the pinion mate shaft and remove the pinion mate gears, side gears and thrust washers.

Note: The left, right, front and rear gears as well as thrust washers should be marked or preserved separately.

Replacement of oil seal

Replacing front oil seal

- (1) Drain gear oil.
- (2) Jack up the rear wheel.
- (3) Remove exhaust system (Refer to Section FE.).
- (4) Detach the propeller shaft from the companion flange of the carrier.
- (5) Hold the companion flange and drive pinion companion flange with a Drive Pinion Flange Wrench (Special tool ST31530000) remove pinion nuts.
- (6) Remove the companion flange and the front retainer with a standard puller.

CHASSIS

- (7) Remove the oil seal from the front retainer with the Gear Carrier Oil Seal Puller (Special tool ST33290000).
- (8) Install the new oil seal in position by the use of the Gear Carrier Oil Seal Drift (Special tool ST33252000).

Note: Apply grease in between the seal lips when driving in the oil seal.

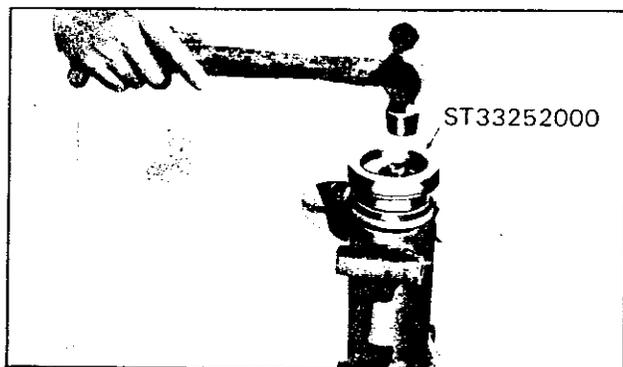


Fig. PD-13 Removing front retainer

- (9) Re-install the front retainer when the oil seal is replaced, in reverse sequence of removal.

Replacing side oil seal

- (1) Remove the drive shaft from the side flange of the gear carrier.
- (2) Remove the side flange by the use of the Sliding Hammer (Special tool ST36230000) and Gear Carrier Side Flange Stand (Special tool ST33730000).
- (3) Remove the oil seal.
- (4) Install the new oil seal by the use of the Gear Carrier Oil Seal Drift (Special tool ST33270000).

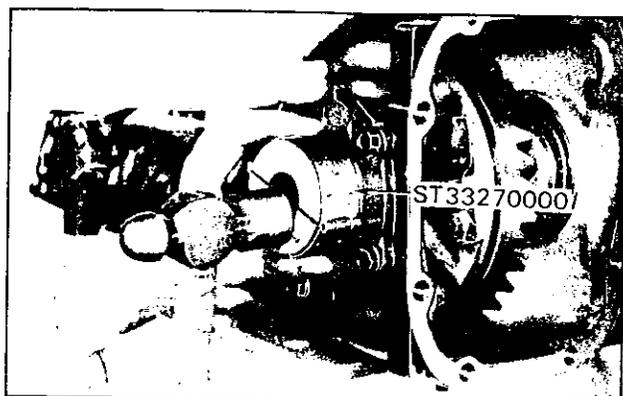


Fig. PD-14 Removing side flange

Note: Apply grease in between the oil seal lips.

INSPECTION

Thoroughly clean all disassembled parts and check them for wear, damage and other defects. Examine how they are affected. Repair or replace all defective parts as applicable.

1. Check gear teeth for scoring, cracking and chipping, and make sure that tooth contact pattern indicates correct meshing depth.

If any defect is evident, replace parts as required.

Note: Drive pinion and drive gear are supplied for replacement as a set, therefore, should either parts be damaged, replace as a set.

2. Check the pinion gear shaft and pinion, and gear mating faces for scoring and signs of wear. Replace as required.

Follow the same procedure for inner faces of side gear and their seats on differential case.

3. Inspect all bearing races and rollers for scoring, chipping or excessive wear.

They should be in tiptop condition, with mirror-like surfaces. Replace if there is a shadow of doubt on their efficiency, because an incorrect bearing operation may result in noisiness and gear seizure.

4. Inspect thrust washer faces

Minor defects may be corrected with emery paper.

When the backlash between the side gear and the pinion mate exceeds 0.2 mm (0.0079 in) and the clearance between the side gear and thrust washer exceeds 0.3 mm (0.0118 in), replace the thrust washer.

Three types of thrust washers are available.

5. Measure the run-out of the drive gear at its rear side with a dial indicator.

When the run-out exceeds 0.08 mm (0.0031 in), replace the drive gear and pinion gear as a set.

PROPELLER SHAFT & DIFFERENTIAL CARRIER

6. Inspect carrier and differential case for cracks or distortion.

If cracked or distorted replace defective parts.

7. As a general rule, oil seal should be replaced every disassembly.

REASSEMBLY AND ADJUSTMENT

Reassembly can be proceeded in reverse order of disassembly. The following directions for the adjustment and usage of special tools enable to obtain a perfect differential operation.

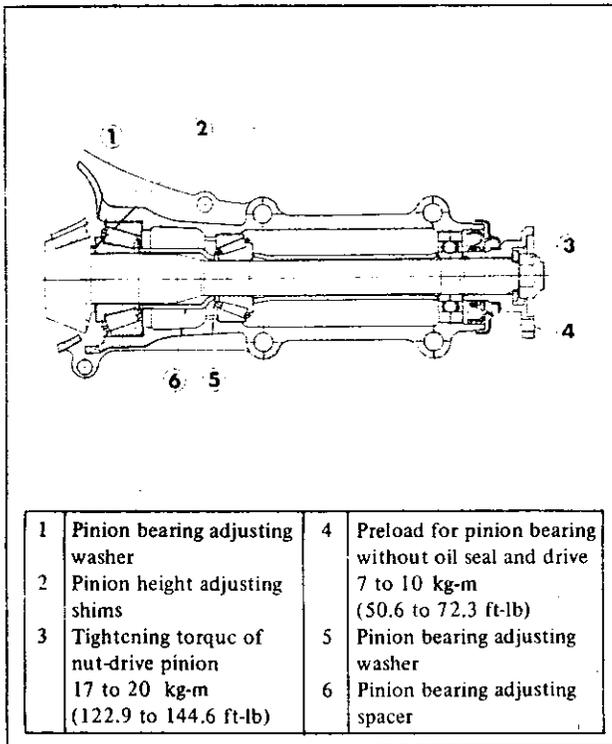


Fig. PD-15 Sectional view of drive pinion

Precautions in reassembly

1. Arrange shims, washers and other relative parts in order so that they will be installed correctly.
2. Thoroughly clean the surfaces on which shims, washers, bearings and bearing retainers are installed.
3. Apply gear oil when installing bearings.
4. Apply grease in between the lips when fitting oil seal.

Differential case

1. Install the side gear and pinion mate in the differential case using the corresponding thrust washers.
2. Fit the pinion shaft to the differential case so that it meets the lock pin holes.
3. Measure the clearance between the differential case and the rear face of the side gear.

If the clearance is deviated from the normal range, use a suitable side gear thrust washer to bring the clearance to normal.

Note: Normal clearance between the side gear and thrust washer is 0.1 to 0.2 mm (0.0039 to 0.0079 in).

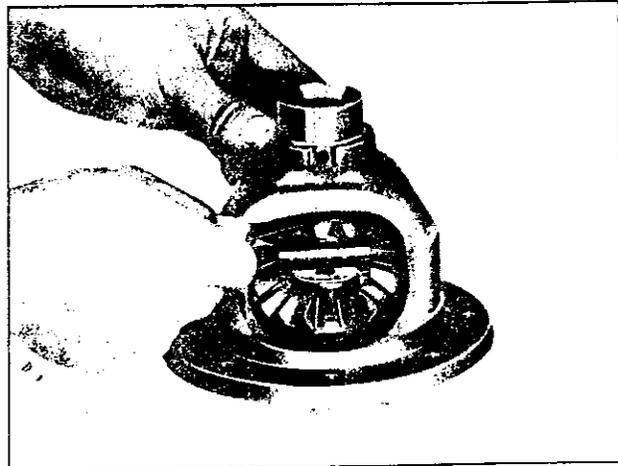


Fig. PD-16 Measuring the clearance between the side gear and thrust washer

4. Lock the pinion shaft lock pin using a punch after it is secured into the place.
5. Apply oil to the gear tooth surfaces and thrust surfaces and make sure that they turn properly.
6. Fit the drive gear to the differential case and tighten the bolts to the given torque.

Tightening torque: 7.0 to 8.0 kg-m
(50.6 to 57.8 ft-lb)

Note: a. Only genuine drive gear bolts and new lock bolts straps should be used.

b. Tighten the clamp bolts in the diagonal order by tapping its head.

CHASSIS

7. Before replacing the side bearing, measure the bearing width using a 2.5 kg (5.5 lb) weight block.

The normal bearing width is 20.00 mm (0.787 in).

8. Press fit the side bearing cone in the differential case with Gear Carrier Side Bearing Drift (Special tool ST33230000).

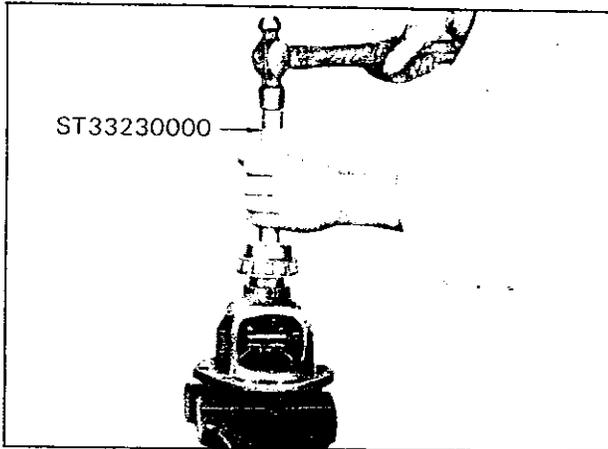


Fig. PD-17 Pressing side bearing cone

Adjustment of drive pinion preload

Adjust the preload of the drive pinion with spacer and washer between the front and rear bearing cones, regardless of the thickness of pinion height adjusting washer and shims.

This adjustment must be carried out without the oil seal inserted.

1. Press fit the front and rear bearing outer races into the gear carrier using the drift.

(Special Tool Drive Pinion Outer Race Drift Assembly (Special tool ST30610000).

2. Insert pinion height adjusting washer, shims and rear bearing inner race into a dummy shaft to facilitate adjustment of the pinion height: Gear Carrier Height Gauge Assembly (Special tool ST31210000).

Note: Re-use the old washer and shims if they have been found with normal tooth contact pattern during inspection before disassembly.

3. Apply drive pinion bearing spacer, washer, front bearing, drive Pinion Collar (Special tool ST31500000)

and companion flange in that order to a dummy shaft and tighten the drive pinion nut to the given torque to secure them.

[Pinion nut tightening torque: 17 to 20 kg-m (122.9 to 144.6 ft-lb)]

Note: Replace the bearing washer and spacer with ones having proper thickness if the pinion cannot be turned by hand while it is being tightened.

4. Measure the pinion bearing preload, and select proper washer and spacer that will provide the required preload.

Note: a. The initial turning torque is measured by means of the Preload Gauge

b. Correct pinion bearing preload when using new bearings. [7 to 10 kg-cm (97.2 to 138.9 in-oz) when using old bearings 3 to 6 kg-cm (41.7 to 83.3 in-oz)].

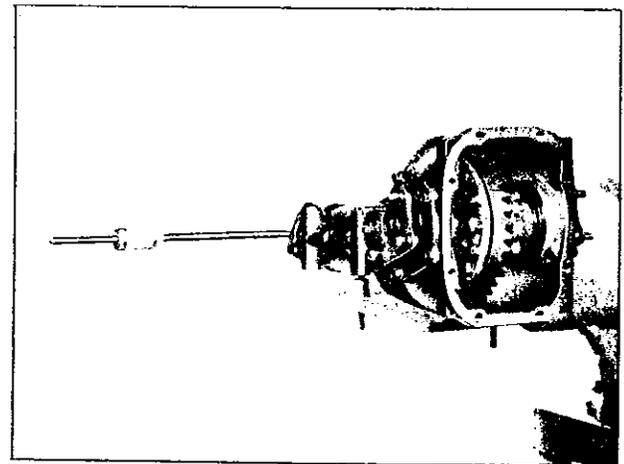


Fig. PD-18 Measuring pinion bearing preload

Adjustment of pinion height

Adjust the pinion height with washer and shims applied between the rear bearing cone and the back of the pinion gear.

1. Install the Dummy Pinion (Special tool ST31210000), the Dummy Spacer (Special tool ST31850000), the Drive Pinion Collar (Special tool ST31500000) in the gear carrier case.

2. Install the Height Gauge (Special tool ST31210000) on the carrier, with the dummy pinion mounted.

PROPELLER SHAFT & DIFFERENTIAL CARRIER

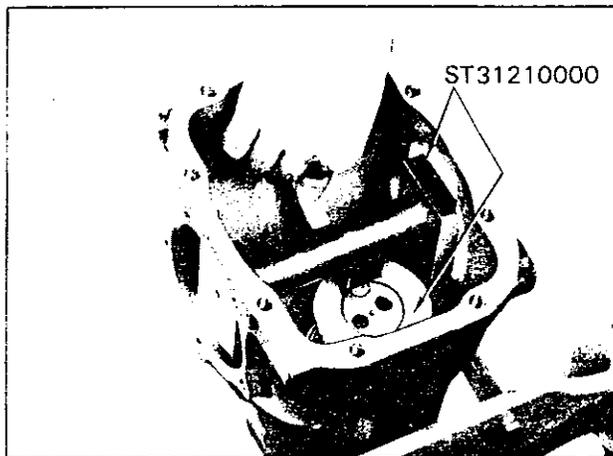


Fig. PD-19 Measuring the clearance

3. Measure the clearance between the tip end of the height gauge and end surface of the dummy shaft with a thickness gauge.

4. The thickness of a drive pinion height adjusting shim can be obtained from the following equation:

$$S = W + T - (H \times 0.01) - 0.20$$

Where, W = Thickness of inserted washer and shim (mm).

T = Value measured with thickness gauge (mm).

H = Head figure on drive pinion

S = Required thicknesses of washer and shim used on drive pinion (mm).

Example

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

$$T = 0.24 \text{ mm (0.0094 in)}$$

$$H = -2$$

$$S = 3.40 + 0.24 - (-2 \times 0.01) - 0.20 = 3.46 \text{ mm}$$

5. Fit the selected pinion height adjusting washer and shim in the drive pinion, and press fit the rear bearing inner race in it (Special tool ST30030000).

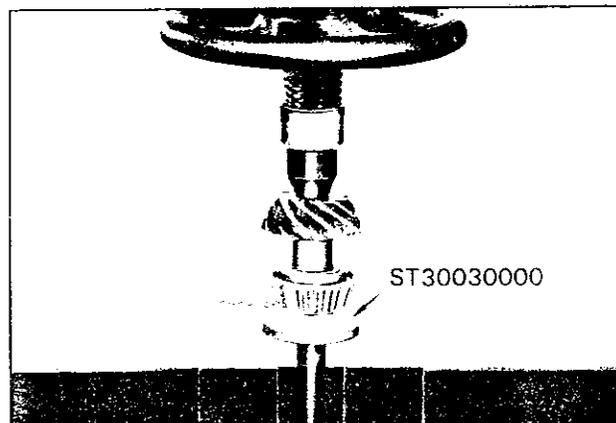


Fig. PD-20 Pressing rear bearing inner race

6. Install the drive pinion on the gear carrier assembly onto which fit the drive pinion bearing spacer and washer, front bearing inner race and front bearing pilot spacer.

7. Install the front pilot bearing and oil seal on their positions with oil seal draft (Special tool ST33252000).

8. Install the companion flange and flat washer on the drive pinion, and secure them in position by tightening the nut to the given torque.

Note: a. The drive pinion lock nut tightening torque 17 to 20 kg-m (122.9 to 144.6 ft-lb)

b. If the drive pinion lock nut is worn replace it.

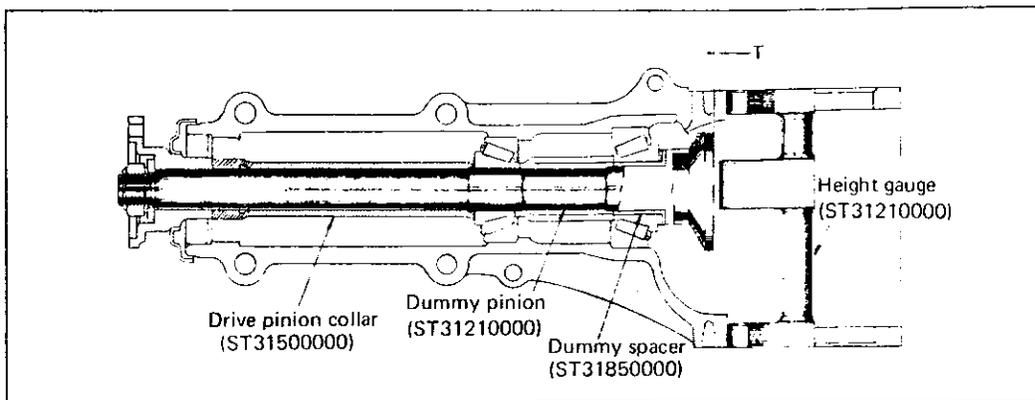


Fig. PD-21 Adjusting pinion height

CHASSIS

Adjustment the side retainer shims

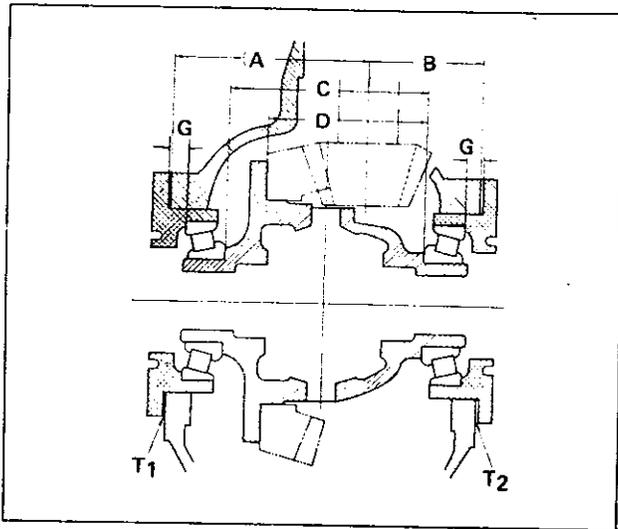


Fig. PD-22 Thickness of shims in left side
Thickness of shims in right side

1. When the carrier, differential case, side bearing or side bearing retainer are replaced with new ones, adjust the side bearing preload with adjusting shim. The required thicknesses of the left and right retainer shims can be obtained from the following equations:

$$T1 \text{ (left)} = (A + C + G - D - E + H) \times 0.01 + 0.76$$

$$T2 \text{ (right)} = (B + D + G - F - H) \times 0.01 + 0.76$$

The figures of A, B, C, D, G and H show dimensional variations in a unit of 1/100 mm against the individual standard measurements.

Where

A & B = The figure marked on the gear carrier

C & D = The figure marked on the differential case

F & F = The difference of the width of left or right side bearing against the standard width 20.0 mm (0.7874 in), given in a unit of 1/100 mm.

G = The figure marked on both side retainers.

H = The figure marked on the drive gear by an electric pen.

To measure the width of the side bearing, use the standard gauge (20.0 mm, 0.7847 in thickness) and dial indicator placed on a small surface plate.

In this case, place load on the bearing with the aid of weight block for about 2.5 kg (5.5 lb) to acquire the

steady figures.

When the measured width of the left side bearing is, for example, 19.8 mm (0.7795 in), the width is -0.2 mm (-0.008 in) against the standard width and the difference is expressed by excluding the minus sign, as 20 (=0.2 mm - 0.01 mm).

Note: Normally preload of used bearing is 60 to 80% of that of new one. Therefore, if it is necessary to use the old bearing again the thickness of each side adjusting shims of left and right must be increased by 0.03 to 0.07 mm (0.001 to 0.003 in).

E1, E2 and E3 represent 19.99, 19.88, and 19.97, respectively.

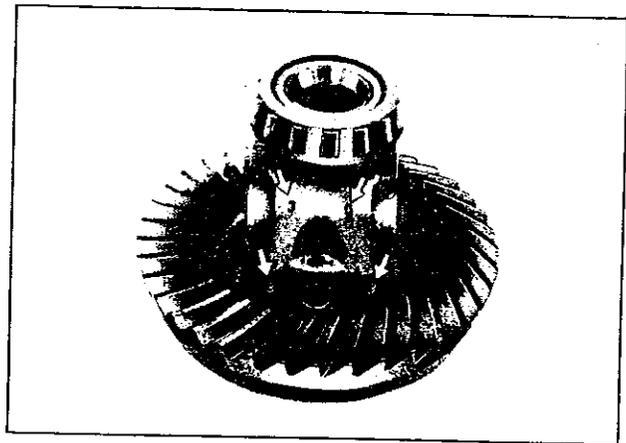


Fig. PD-23 C & D figures

G: Numerical figure given on side retainers.

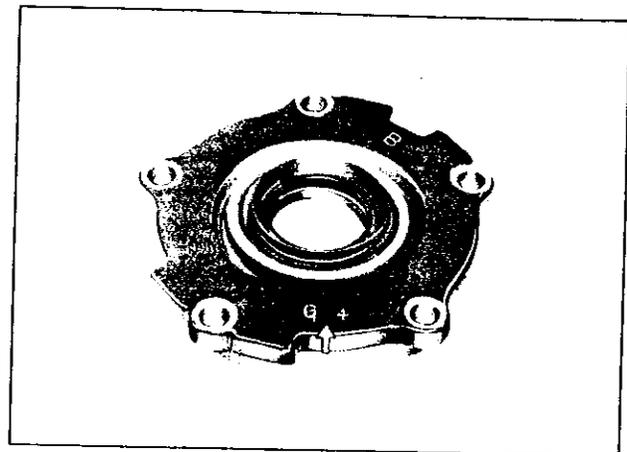


Fig. PD-24 G figures

2. Install the differential case assembly in the gear carrier in reverse order of disassembly.

PROPELLER SHAFT & DIFFERENTIAL CARRIER

3. Fit given shims and O-rings in the both side retainers, and install retainers in the carrier using the Gear Carrier Side Retainer Guide (Special tool ST33720000).

Note: When installing the retainers, be careful not to damage the side bearing outer races with the roller.

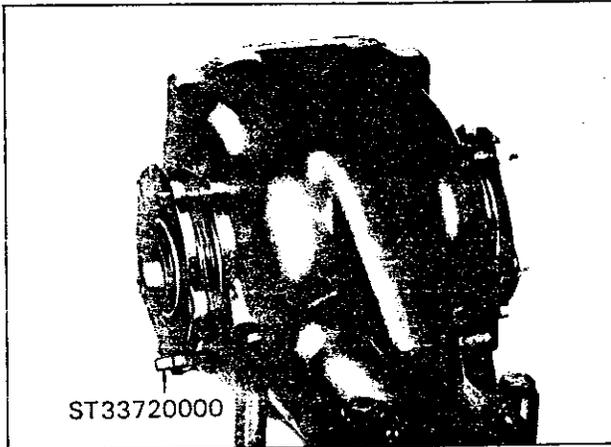


Fig. PD-25 Installation of side retainer

4. Measure the backlash of the drive gear and the drive pinion by using the dial indicator, and adjust it to 0.10 to 0.20 mm (0.0039 to 0.0079 in), if required.

If it is less than the prescribed value, move the shim from the right to the left. If it is excessive, move it inversely.

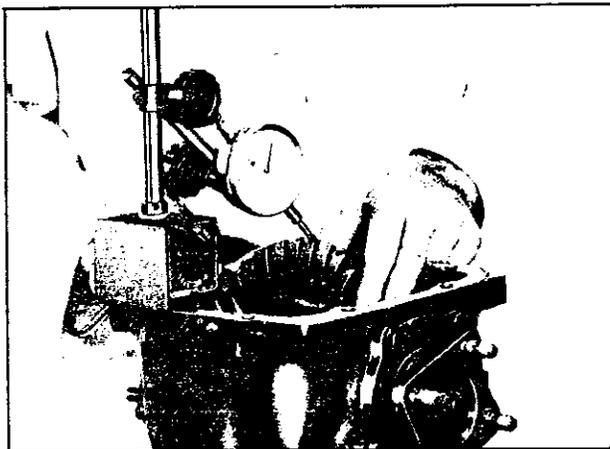


Fig. PD-26 Measuring the backlash of the drive gear and pinion

5. If the turning torque is not more than that measured before the differential case is installed on the gear carrier in range from 1 to 3 kg-cm (0.07 to 0.22 ft-lb), adjust it with side retainer shims.

Incidentally, decrease or increase in the thickness of the shims changes the drive gear and the pinion backlash. Thus, make sure that they have the proper backlash.

6. Check and adjust the tooth contact pattern of the drive gear and drive pinion.

Apply red lead slightly and evenly to 4 to 5 teeth at two places of the drive gear, and turn it backward and forward several times by hand. This causes the gear to impress a pattern on the painted section of the drive gears and coast side.

This is the tooth contact pattern that is the final proof of the adjustments.

Incorrect contact pattern of teeth shall be adjusted in the following manner.

a. Heel contact

Increase the thickness of drive pinion adjusting shim and washer so that the drive pinion is moved to the drive gear.

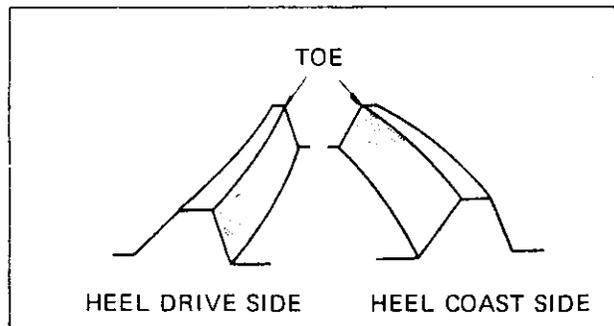


Fig. PD-27 Heel contact

b. Toe contact

Reduce the thickness of drive pinion adjusting shim and washer so that drive pinion is moved away from drive gear.

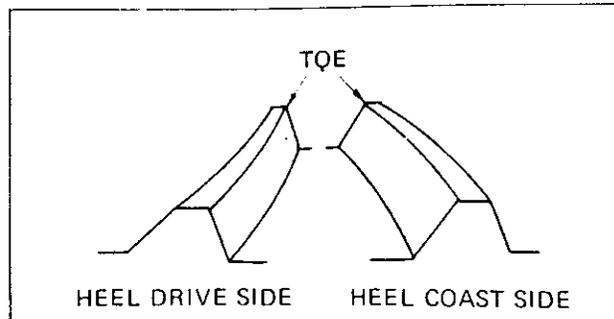


Fig. PD-28 Toe contact

CHASSIS

all component parts, and make sure that dirt and other foreign matters are completely removed. During reassembly, do not use cloth or gloves.

1. Secure the strut outer casing in a vise.
2. Insert the piston rod and cylinder assembly into the strut outer casing.
3. Fill the strut outer casing with correct amount of oil.

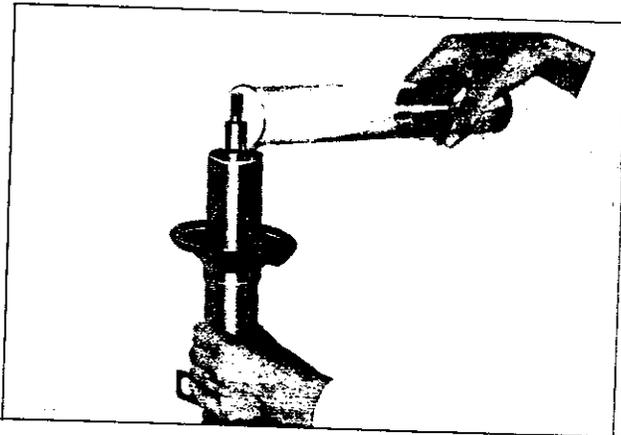


Fig. FA-34 Pouring shock absorber oil

- Note:
- a. Correctly measure amount of shock absorber oil to be poured because amount of oil directly affects damping power. [290 cc (17.7 cu in)]
 - b. Use Nissan genuine oil (Nisseki Shock Absorber Oil A-1) for the shock absorber oil.

4. Install a rubber O-ring on top of the piston rod guide, and install the gland packing by the use of a gland packing guide (special tool ST35540000).

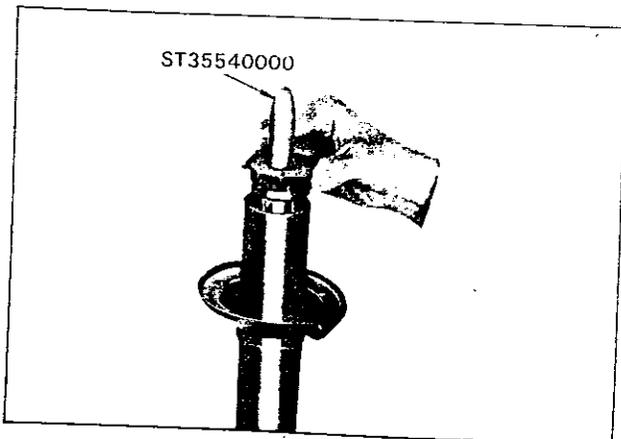


Fig. FA-35 Installing gland packing

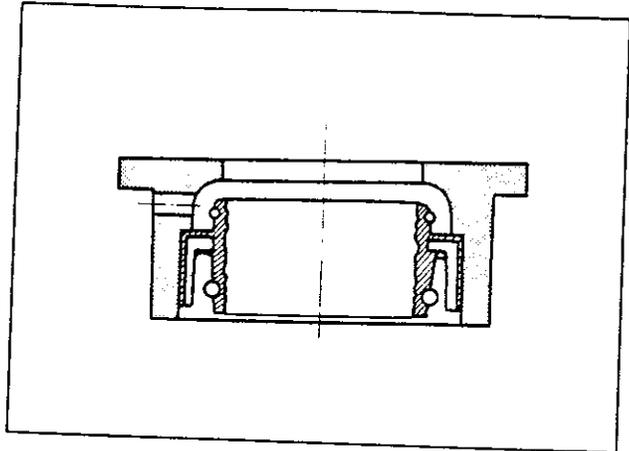


Fig. FA-36 Cross-sectional view of gland packing

5. Tighten the gland packing to 6.0 to 6.5 kg-m (43.4 to 47.0 ft-lb) by the use of a gland packing wrench (special tool ST35500000).

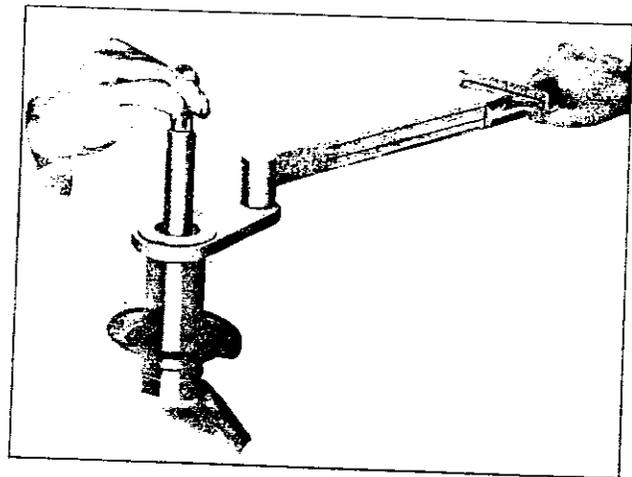


Fig. FA-37 Tightening gland packing

- Note:
- a. Before tightening the gland packing, pull the piston rod approximately 90 mm (3.543 in) upward. This will provide the shock absorber system with the best condition for bleeding.

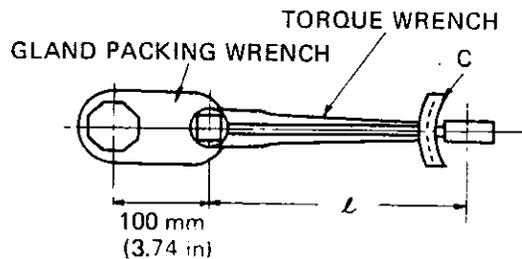
- b. Gland packing tightening torque is rated at 6.0 to 6.5 kg-m (43.4 to 47.0 ft-lb). However, arm length of this tool is extended by 100 mm (3.94 in) as shown in the following figure. Thus, when actually tightening the gland packing, measure effective length (L) of a torque wrench to be used, and set up torque wrench value based on the following formula.

FRONT AXLE & FRONT SUSPENSION

$$C = 6 \times \left(\frac{L}{L + 100} \right)$$

where, C Value read on the torque wrench
[kg-m (ft-lb)]

L Effective length of torque wrench
[mm (in)]



6. Conduct air bleeding on the shock absorber system

- (1) Stand the strut assembly vertically with the spindle side down, and pull the piston rod within its stroke. Turn over the strut assembly (with the spindle side up), and depress the piston rod in the full stroke.
- (2) Repeat the above described operations several times.
- (3) Make sure that there is no feeling variation on pressure while depressing or pulling the piston rod. Thus, air bleeding completes.

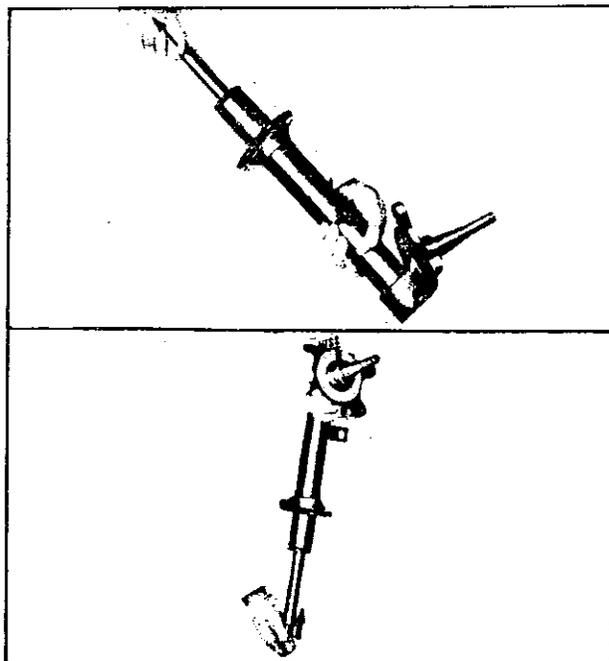


Fig. FA-38 Conducting air bleeding on the shock absorber system

7. Place the front spring on the lower spring seat correctly, compress the front spring with a coil spring compressor (special tool ST35650000), install the upper spring seat, strut mounting bearing, and strut mounting insulator, and tighten the self-locking nut.

Tightening torque:

7.5 to 9.5 kg-m (54.2 to 68.7 ft-lb)

Note: a. Use new self-locking nuts whenever the strut assembly is reassembled.

b. Install the strut mounting bearing carefully so that it is installed correctly toward the prescribed direction, and be sure to apply multi-purpose grease (MIL G2108 or 10924) to the portion indicated by asterisk (*) in Figure FA-39.

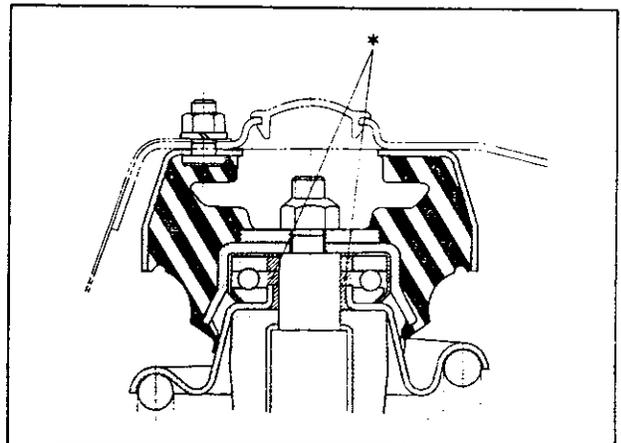


Fig. FA-39 Strut mounting bearing greasing point

8. Release the coil spring gradually from the coil spring compressor, and set the spring to the upper and lower spring seats correctly.

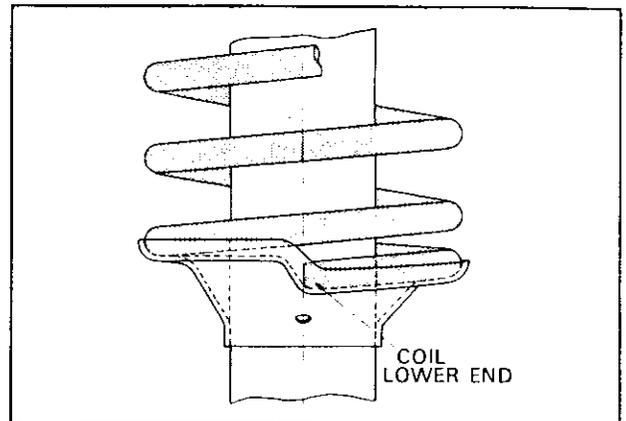


Fig. FA-40 Installing front spring

CHASSIS

<p>Breakage of differential</p>	<p>Shortage of oil or use of improper oil</p> <p>An excessive loading, and/or improper use of clutch</p> <p>Incorrect adjustment of bearings</p> <p>Incorrect adjustment of drive gear and drive pinion</p> <p>Excessive backlash due to defacement of side gear and thrust washer</p> <p>Loose bolts and nuts, such as drive gear clamp bolt</p>	<p>Disassemble differential and replace parts as required.</p> <p>After adjusting preload of bearings, backlash and engaging condition of gears, secure parts and apply specified volume of genuine gear oil.</p> <p>Operate the vehicle under proper and correct manner.</p>
<p>Oil leakage</p>	<p>Worn-out, damaged or improperly installed front oil seal, or bruised, dented or abnormally worn slide face of companion flange</p> <p>Worn, damaged or improperly installed side flange oil seal, or bruised, dented or abnormally worn slide face of side flange</p> <p>Loose side flange or side retainer installation</p> <p>Defective O-rings for these parts</p> <p>Damaged rear cover or rear cover gasket</p> <p>Loose filler or drain plug</p> <p>Clogged or damaged breather</p>	<p>Replace the defective oil seal.</p> <p>Ammend the affected flange with sand paper or replace if necessary.</p> <p>Treat as above.</p> <p>Retighten the bolts to the designated torque.</p> <p>Replace defective O-rings with new ones.</p> <p>Tighten the bolts to the designated torque.</p> <p>Replace the defective gasket with new one.</p> <p>Retighten</p> <p>Repair or replace.</p>

SERVICE DATA AND SPECIFICATIONS

Final gear type	Hypoid
Final gear ratio (number of teeth)	
with 4-speed T/M	3.900 : 1 (39 : 10)
with 5-speed T/M	3.364 : 1 (37 : 11)

PROPELLER SHAFT & DIFFERENTIAL CARRIER

Drive pinion

Initial turning torque (without oil seal)	7 to 10 kg-cm (0.506 to 0.723 ft-lb)
Depth from axle center	Approximately 48.5 mm (1.909 in)
Thickness of pinion height adjusting washer	2.000, 2.200, 2.400 mm (78.7, 86.6, 94.5 in)
Thickness of pinion height adjusting shims	From 1.08 to 1.28 mm spacing 0.02 mm (From 0.0425 to 0.0504 in spacing 0.0008 in)
Length of drive pinion bearing adjusting spacers	From 52.20 to 53.20 mm spacing 0.20 mm (From 2.055 to 2.094 in spacing 0.0079 in)
Thickness of drive pinion bearing adjusting washers	From 2.31 to 2.70 mm spacing 0.02 mm (From 0.0909 to 0.106 spacing 0.0008 in)

Drive gear

Backlash between drive gear and pinion	0.10 to 0.20 mm (0.0039 to 0.0079 in)
Run-out of rear side of drive gear	Less than 0.08 mm (0.0031 in)

Side gear and pinion mate

Thickness of side gear thrust washer	0.775, 0.825, 0.875 mm (0.0305, 0.0325, 0.0344 in)
Clearance between side gear and thrust washer	0.10 to 0.20 mm (0.0039 to 0.0079 in)

Side retainer

Thickness of side retainer adjusting shims	0.05, 0.07, 0.10, 0.20, 0.50 mm (0.0020, 0.0028, 0.0039, 0.0079, 0.0200 in)
--	--

TIGHTENING TORQUE

Drive pinion nuts	17.0 to 20.0 kg-m (122.9 to 144.6 ft-lb)
Drive gear bolts	7.0 to 8.0 kg-m (50.6 to 57.8 ft-lb)
Side retainer bolts	0.9 to 1.2 kg-m (6.5 to 8.7 ft-lb)
Side flange fix bolts	1.9 to 2.6 kg-m (13.7 to 18.8 ft-lb)
Rear cover fix bolts	1.9 to 2.6 kg-m (13.7 to 18.8 ft-lb)
Gear carrier to rear differential mounting member lock nuts	7.5 to 9.5 kg-m (54.2 to 68.7 ft-lb)

Final drive

Companion flange to propeller shaft fix nuts	2.5 kg-m (18 ft-lb)
--	---------------------

**DATSUN 240Z SPORTS
MODEL S30 SERIES
CHASSIS & BODY**



NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION FA

**FRONT AXLE
& FRONT
SUSPENSION**

FA

FRONT AXLE AND FRONT SUSPENSION	FA- 1
ADJUSTMENT	FA-18
SERVICE DATA AND SPECIFICATIONS	FA-20
TROUBLE DIAGNOSES AND CORRECTIONS	FA-22

FRONT AXLE & FRONT SUSPENSION

FRONT AXLE AND FRONT SUSPENSION

CONTENTS

DESCRIPTION	FA- 2	STRUT ASSEMBLY	FA-10
FRONT AXLE AND SUSPENSION		Disassembly	FA-12
ASSEMBLY	FA- 2	Inspection	FA-13
Removal	FA- 2	Reassembly	FA-13
Reinstallation	FA- 4	TRANSVERSE LINK AND	
FRONT AXLE	FA- 4	LOWER BALL JOINT	FA-16
Removal	FA- 4	Removal	FA-16
Inspection	FA- 5	Inspection	FA-17
Reinstallation	FA- 9	Reinstallation	FA-18
Wheel bearing adjustment	FA-10		

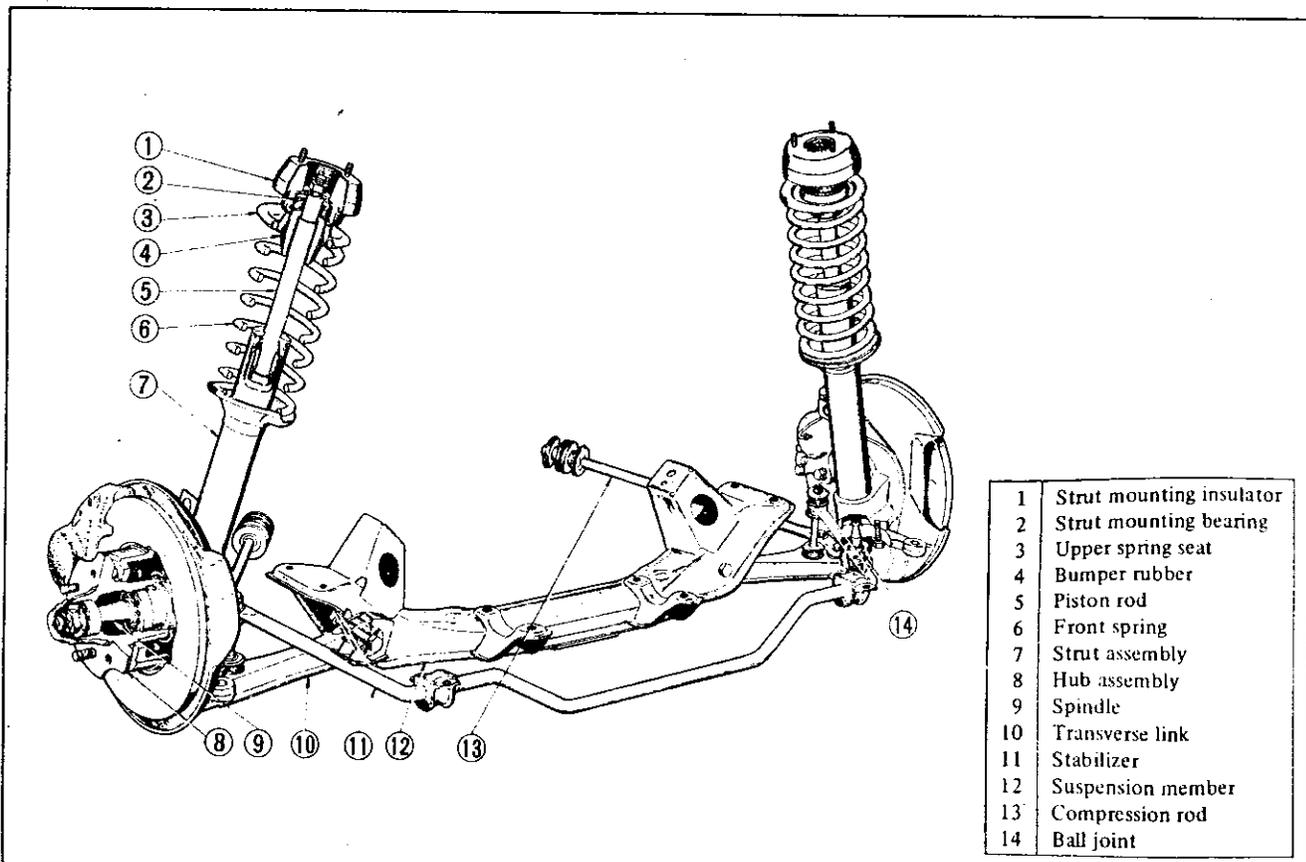


Fig. FA-1 Front axle and suspension assembly

CHASSIS

DESCRIPTION

The front suspension is of a strut type. The shock absorber and spindle are combined to a single unit which is supported by the coil spring at the upper end and by the transverse link at the lower end.

The spindle is installed on the bottom of the strut outer casing by means of welding.

A ball-joint is attached to the lower part of the spindle. The ball-joint and the transverse link (lower link) are connected and they are fitted to the suspension member through a rubber bushing. The shock absorber mechanism is built in the strut outer casing. A coil-spring is applied between the upper end of the piston rod and spring seat welded to the outer casing. These components, assembled to a single unit, are fitted to the chassis frame at their upper part through the thrust bearing. Moreover, the transverse link supports the overall forward and backward strut movements by means of the compression rod fitted to the chassis through a rubber bushing. The rubber bushing adopts a non-linear shape with which the forward and rearward rigidities are changed. The torsion-bar type stabilizer adopted in this suspension system is used so that the strut maintains connection between both side struts.

Thus, this suspension mechanism absorbs shocks toward all directions into the chassis effectively and efficiently; the compression rod absorbs forward and backward shocks, the strut absorbs vertical shock, and the transverse-link absorbs shock applied toward sideway.

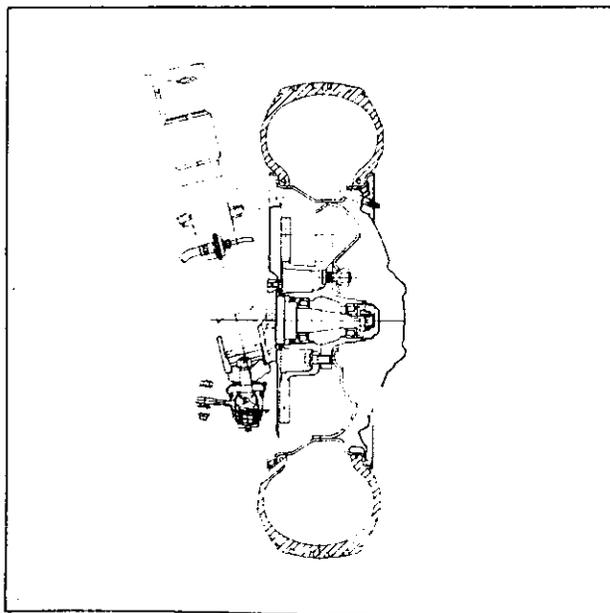


Fig. FA-2 Cross-sectional view of front axle

FRONT AXLE AND SUSPENSION ASSEMBLY

Removal

1. Jack up the vehicle, and support the vehicle with stands. (See the Section GI.)
2. Remove the hub nuts and remove the wheel.
3. Remove the splash board.
4. Loosen the brake tube, remove the brake hose locking spring, withdraw the plate, and remove the brake hose from the strut assembly bracket.

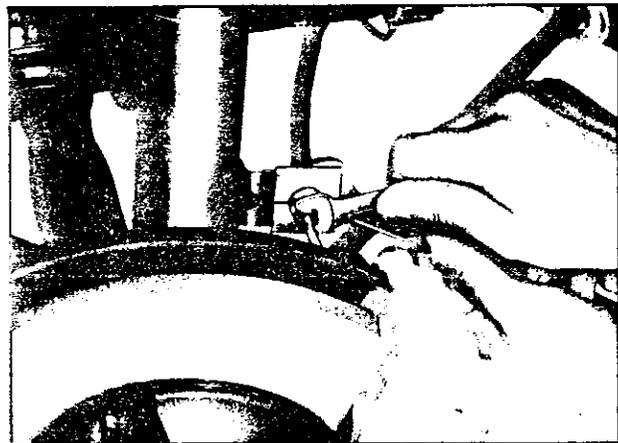


Fig. FA-3 Detaching brake hose

Note: Be careful not allow dust entering the brake hose.

5. Remove the stabilizer from the body.

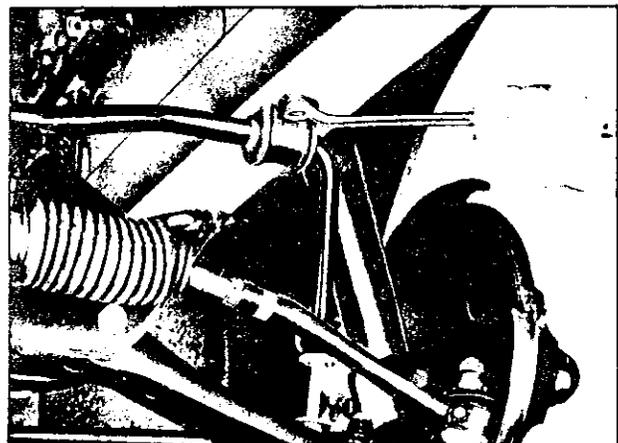


Fig. FA-4 Removing stabilizer

FRONT AXLE & FRONT SUSPENSION

6. Remove the steering coupling bolt and remove the steering shaft at the rubber coupling unit. (See Section ST.)

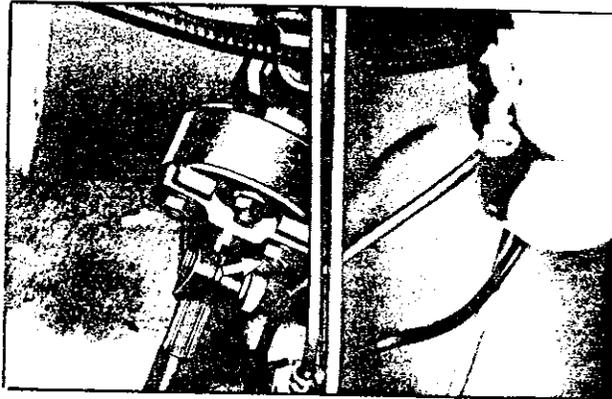


Fig. FA-5 Removing steering coupling bolt

7. Loosen the compression rod securing bolts and nuts, and remove the compression rod.

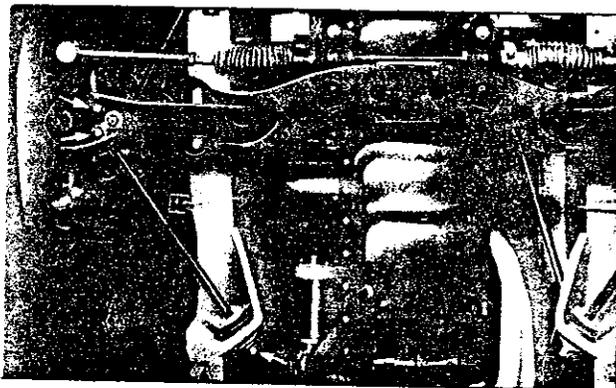


Fig. FA-6 Removing compression rod

8. Support the engine, remove the engine mounting bolts (indicated by arrow marks), and separate the suspension cross member from the engine assembly.

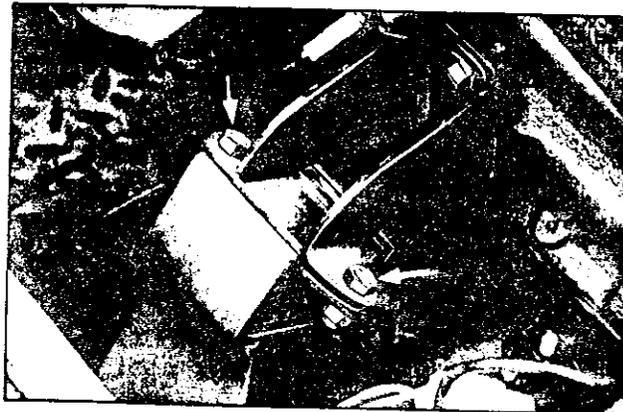


Fig. FA-7 Removing engine mounting bolts

9. Apply a jack to the patch unit in the center of the suspension cross member to support the member, loosen the bolts (indicated by arrow marks), and separate the suspension cross member from the body.

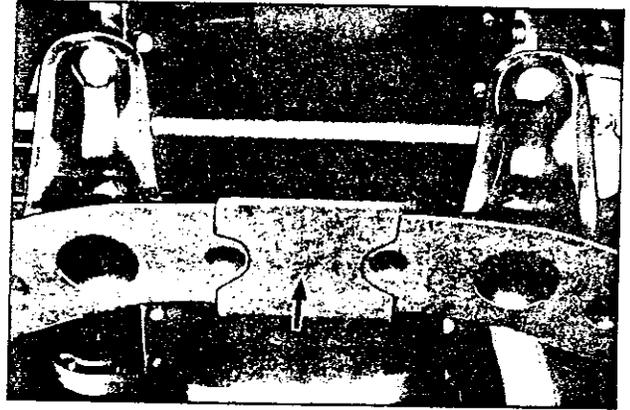


Fig. FA-8 Jack-up point of suspension cross member

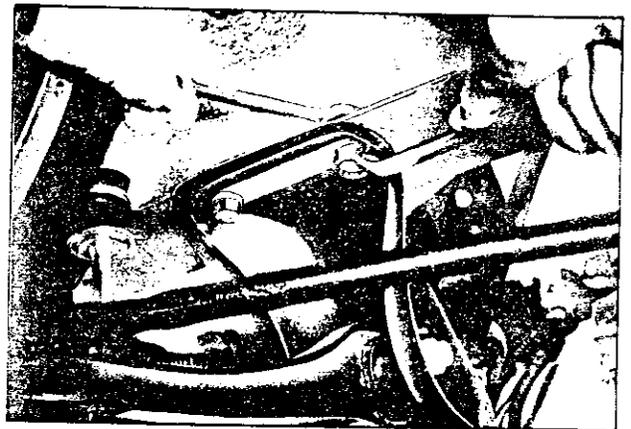


Fig. FA-9 Removing suspension cross member

10. Loosen the self-locking nut on the strut assembly, and holding the strut assembly, dismount the front suspension assembly.

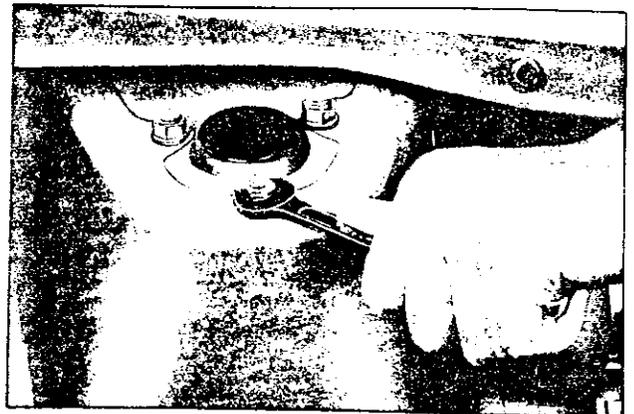


Fig. FA-10 Removing self-locking nut

CHASSIS

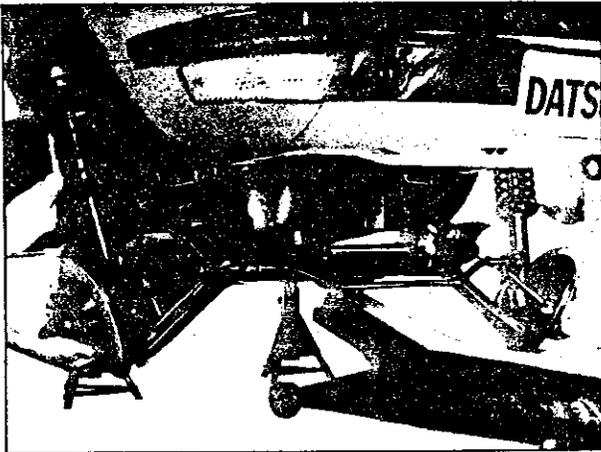


Fig. FA-11 Removing front axle and suspension assembly

11. Remove the cotter pin from the side rod socket, remove the slotted nut, and separate the knuckle arm from the side rod assembly.

12. Remove the bolts from the rack mounting bracket, and separate the steering gear assembly from the suspension member.

Reinstallation

1. First, check rubber parts such as compression rod mounting bushing, stabilizer bar bushing, etc. for deterioration, crack, and other defective conditions, and replace as required.

2. Reinstall the front axle and suspension assembly in reverse sequence of removal, noting the following matters.

(1) Tighten the transverse link mounting bolts and stabilizer bar body side installation bolt to the rated tightening torque with the vehicle loaded with the standard load (two passengers).

(2) Install the stabilizer bar correctly so that the position painted in white is in the position indicated in Figure FA-12.

(3) When assembling the stabilizer connecting rod and transverse link, be sure to tighten the first nut to 1.2 to 1.9 kg-m (8.7 to 13.7 ft-lb) tightening torque and tighten the lock nut to secure the first nut.

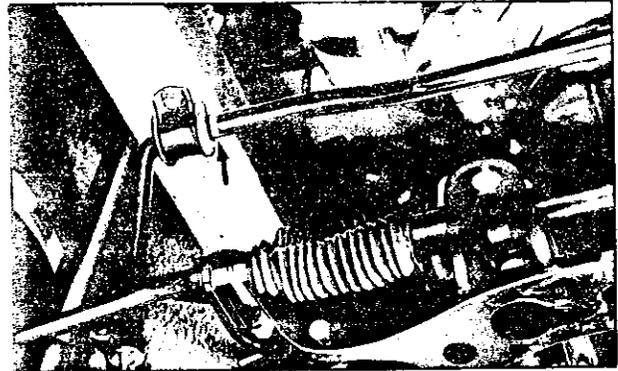


Fig. FA-12 Installing stabilizer bar

FRONT AXLE

Removal

1. Jack up the vehicle, remove the wheel, and disconnect the brake hose. (For the details, see "Removal of front axle and suspension assembly" above.)

2. Remove the caliper fitting bolts, and remove the caliper assembly.

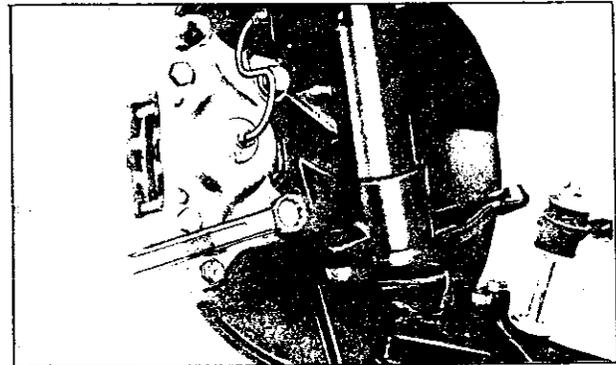


Fig. FA-13 Removing caliper assembly

3. Remove the hub cap with a flat-headed (-) screw driver or other proper tool and hammer as shown in Figure FA-14.

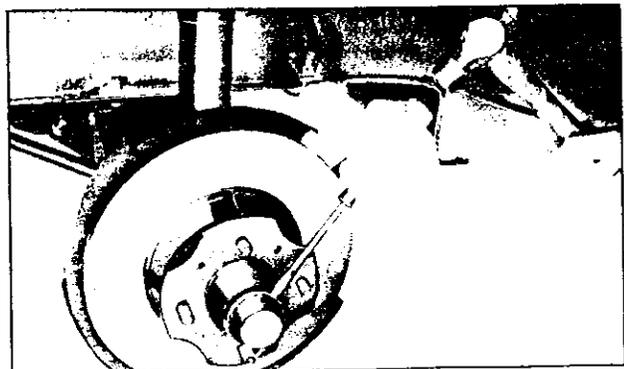


Fig. FA-14 Removing hub cap

FRONT AXLE & FRONT SUSPENSION

4. Withdraw the cotter pin, and remove the wheel bearing lock nut.
5. Remove the wheel hub with the wheel bearing washer, wheel bearing and brake disc rotor installed on the wheel hub, from the spindle.

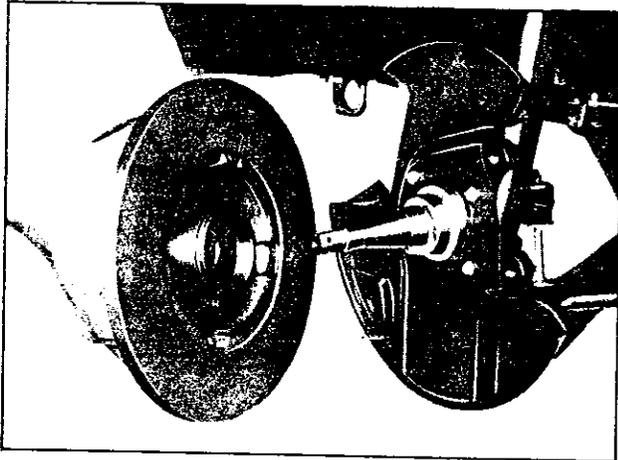


Fig. FA-15 Removing wheel hub assembly

6. Remove set screws and remove the baffle plate.

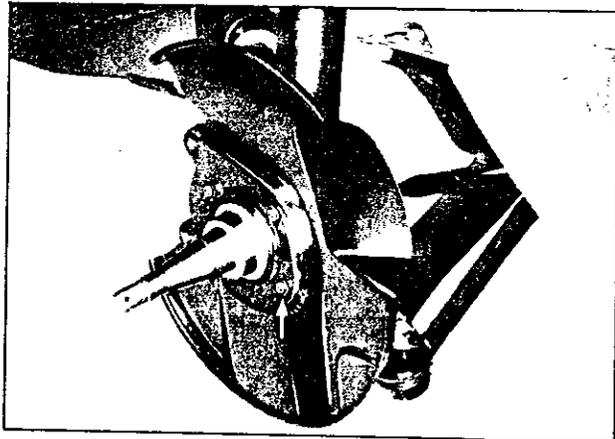


Fig. FA-16 Removing baffle plate

7. Utilizing two grooves inside the wheel hub, tap and remove the wheel bearing outer race from the hub.

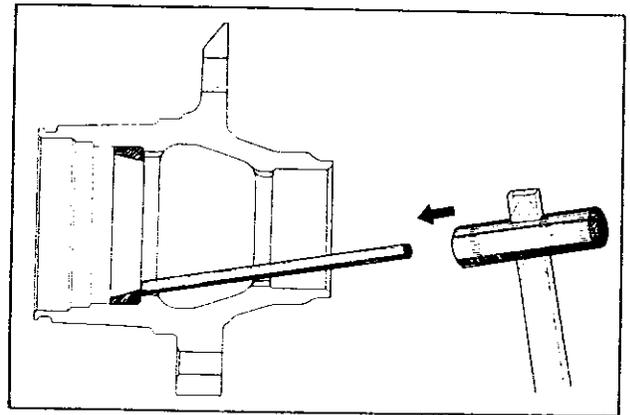


Fig. FA-17 Removing wheel bearing outer race

8. Remove four brake disc fitting bolts, and remove the brake disc rotor from the wheel hub assembly.

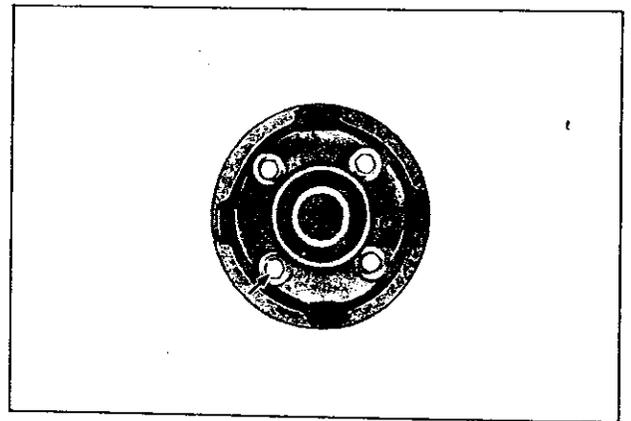


Fig. FA-18 Removing brake disc rotor

Inspection

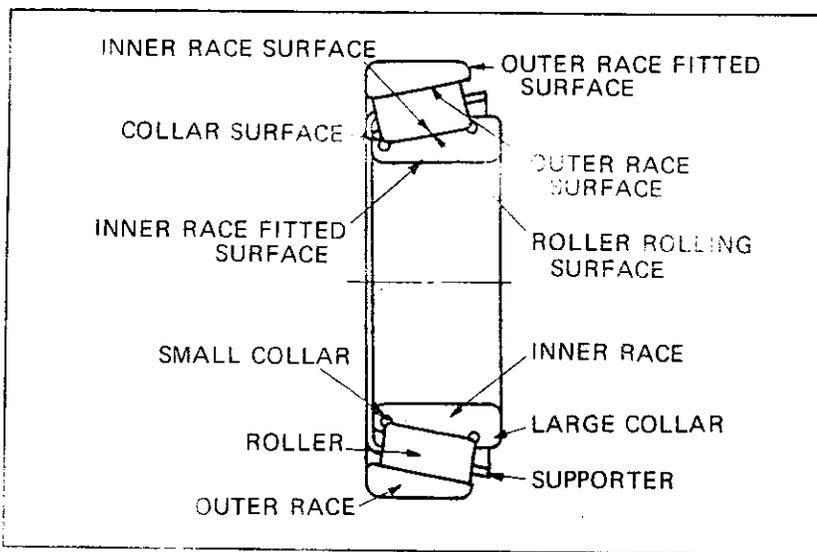
1. Wheel bearing

Remove used grease from the wheel bearing with solvent, and inspect the bearing for operating condition from the rotation, operating sound and appearance. The outer race may be checked for the condition of rolling surface with the race installed on the wheel hub.

Visual serviceability judgement standard for the wheel bearing is indicated in the following table.

CHASSIS

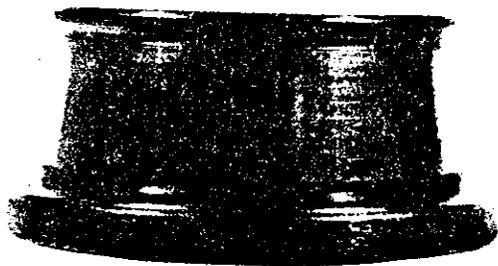
Visual Serviceability Judgement Standard for Wheel Bearing



Judgement	Race and roller			Supporter	Cause
	Race surface roller and collar surface	Fitted surface			
Flaking	x				Service life due to rolling fatigue. However, this symptom occurs before the service life. The following causes are considered. <ul style="list-style-type: none"> . Abnormal load (overload) . Improper handling or improper installation
Crack	x	x	x		<ul style="list-style-type: none"> . Excessive tightening . Gap is excessive and a considerable shock is received from the outside. . Rapid heat generation on the race due to creep . Rollers bite the supporter due to seizure . Abnormal thrust load . Tapped with a hammer while removing
Seizure	x	x	x		In the most cases, seizure occurs as the result of grown discoloring or flaking
Scratch	△	△	△		<ul style="list-style-type: none"> . Shock is given carelessly during installation . Bit foreign matter

FRONT AXLE & FRONT SUSPENSION

Recess or wear made by pressing or striking	△	△	△	<ul style="list-style-type: none"> . Careless installation, removal, or other handling (scar due to striking) . Recess made by bit foreign matter
Wear	△	△	△	<ul style="list-style-type: none"> . Poor lubricant quality or deteriorated lubricant . Intrusion of dust. Fitted surface is worn remarkably. . Wear due to excessive preliminary pressure
Biting	△	△	△	<ul style="list-style-type: none"> . Excessive preliminary pressure or faulty lubrication
Fretting	△*	△*	△*	<ul style="list-style-type: none"> . The fitted part is discolored to brown or black . Fretting corrosion (rust on fitted part) means fine relative slip on metal) contact surface.
Rust	△*	△*	△*	<ul style="list-style-type: none"> . Temperature increased during operation lowers when the bearing stops, moisture inside the bearing is condensed, becoming fine drips, and the grease is moistened. . The bearing has been placed in a highly moistened place for a long period of time. . Intrusion of moisture, chemicals, etc., or the bearing is touched with bare hand and no rustproof action has been taken.
Discoloring	The wheel bearing is serviceable if discoloring can be removed with solvent (such as thinner) or by polishing.			<ul style="list-style-type: none"> . Slight discoloring may become like oxidized oil stain due to grease . In the most cases, this occurs when preliminary pressure is too high.



Inner race



Roller flaking

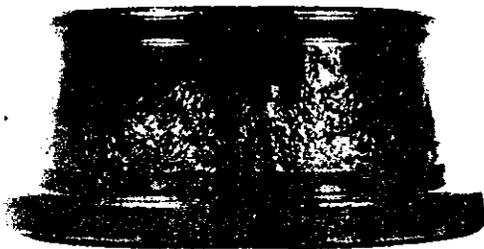
CHASSIS



Cracked inner race



Cracked roller



Recess on inner race made by bit foreign matter



Recess on outer race made by bit foreign matter



Recess on roller made by bit foreign matter

2. Grease seal

(1) When grease leakage is detected during disassembly, replace.

(2) Replace the grease seal with a new one, if worn or cracked.

FRONT AXLE & FRONT SUSPENSION

Reinstallation

1. Reinstall the wheel bearing in reverse sequence of removal.
2. Install the bearing outer race by the use of a front wheel bearing drift (special tool ST35300000).

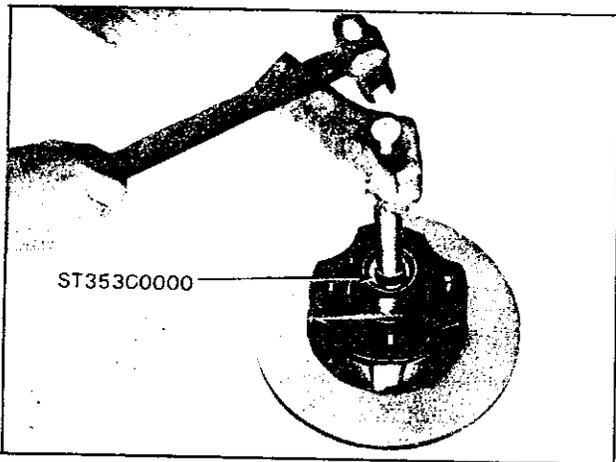


Fig. FA-19 Installing wheel bearing outer race

3. Fill the wheel hub and hub cap with multi-purpose grease (MIL G2108 or 10924) up to the line indicated in Figure FA-20.

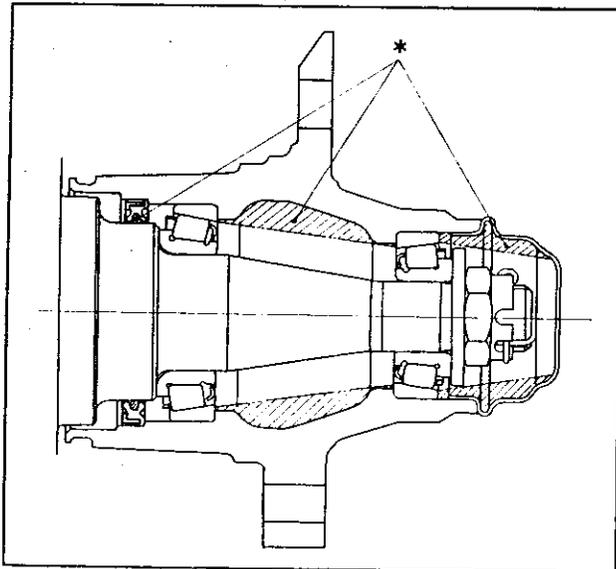


Fig. FA-20 Greasing points of hub assembly

4. Fill the spaces between wheel bearing rollers and grease seal lip pocket with multi-purpose grease sufficiently. (See Figures FA-21 and FA-22.)

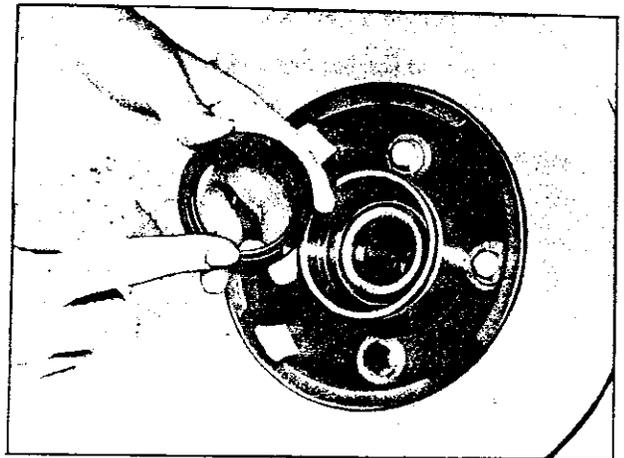


Fig. FA-21 Filling grease seal lip pocket with grease



Fig. FA-22 Filling spaces between wheel bearing rollers with grease

5. Apply multi-purpose grease to the spindle shaft and threaded portions, wheel bearing washer, and wheel bearing lock nut surfaces slightly.
6. Install the wheel bearing and grease seal on the wheel hub, and install them on the spindle.

Note: In order to provide the bearing with a proper prepressure and to extend the bearing service life, install the wheel bearing, grease seal, washer, and lock nut carefully so that no dust and foreign matters stick on grease applied to them.

CHASSIS

Wheel bearing adjustment

1. Tighten the wheel bearing lock nut to 2.5 to 3.0 kg-m (18.1 to 21.7 ft-lb) tightening torque.

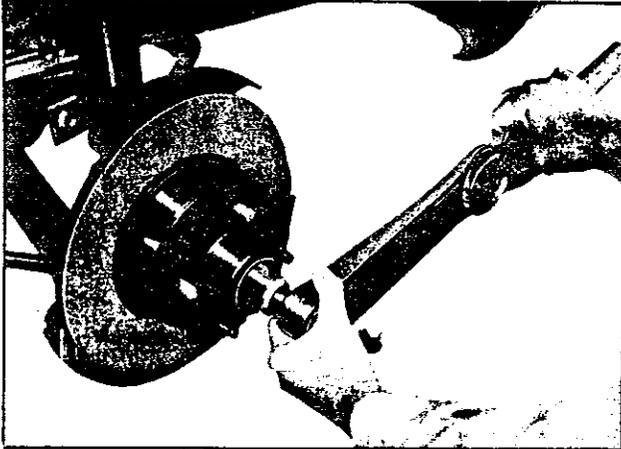


Fig. FA-23 Tightening wheel bearing lock nut

2. Turn the wheel hub in a few turns toward both clockwise and counterclockwise to settle down the bearing, and retighten the wheel bearing lock nut to the same tightening torque.

3. Return the wheel bearing lock nut 60° and coincide it with cotter pin hole on the spindle. When the wheel bearing lock nut is returned 60° and not coincided with the cotter pin hole, turn the nut toward loosening direction in maximum range of 15° and correctly coincide it with the cotter pin hole.

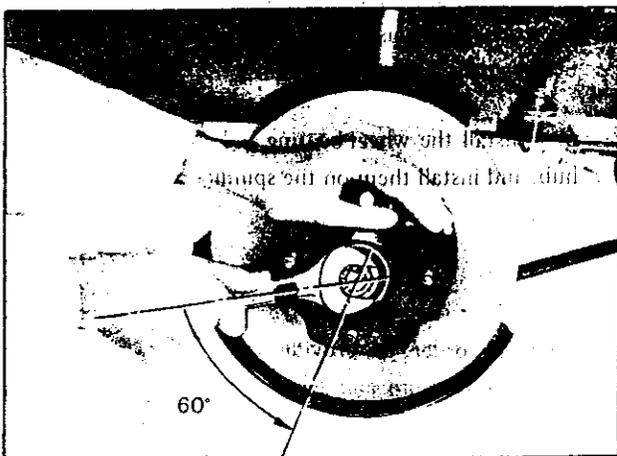


Fig. FA-24 Returning wheel bearing lock nut 60°

4. Turn the wheel hub in a few turns toward both clockwise and counterclockwise again to allow the bearing breaking-in, measure bearing rotation starting torque, apply a cotter pin to secure the nut (if the measured starting torque is within the rated value), and install the hub cap.

Wheel bearing rotation starting torque:

4.0 to 8.5 kg-cm (3.47 to 7.37 in-lb)

- At the hub bolt: 0.7 to 1.5 kg (1.54 to 3.30 lb)
- No slackness should exist toward the axis direction.
- Be sure to remove the brake pad.
- Correctly measure starting force toward tangential direction against the hub bolt.
- When bearing is reused (without replacing), adjust the rotation starting torque so that the wheel hub starts rotating at a starting torque as closer to 4.0 kg-cm (3.47 in-lb) as possible within the permissible rotation starting torque range 4.0 to 8.5 kg-cm (3.47 to 7.37 in-lb).

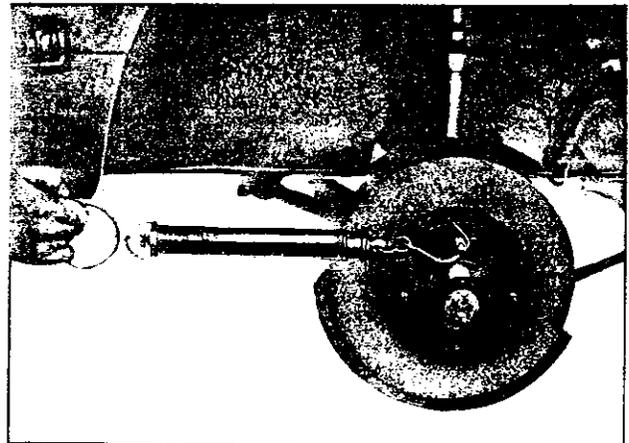


Fig. FA-25 Measuring wheel bearing rotation starting torque

STRUT ASSEMBLY

The strut assembly, consisting of a strut-outer casing with spindle, forms a cylinder between the piston rod guide and bottom valve.

FRONT AXLE & FRONT SUSPENSION

The inner components are precisely assembled, and no dirt and foreign matter intrusions are permitted. The components such as piston rod, piston rod guide, cylinder,

and bottom valve are handled together as an assembly. When replacing them, be sure to replace the inner components as an assembly.

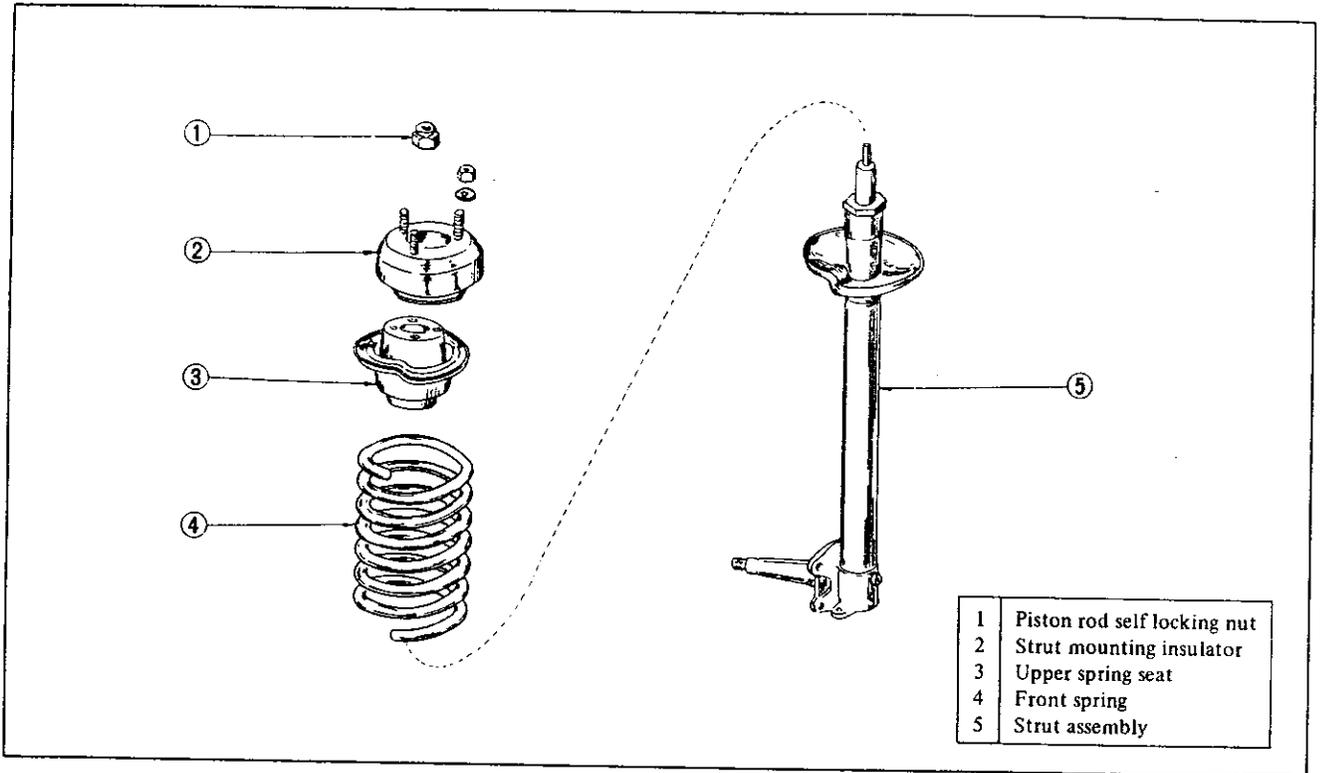


Fig. FA-26 Exploded view of strut assembly

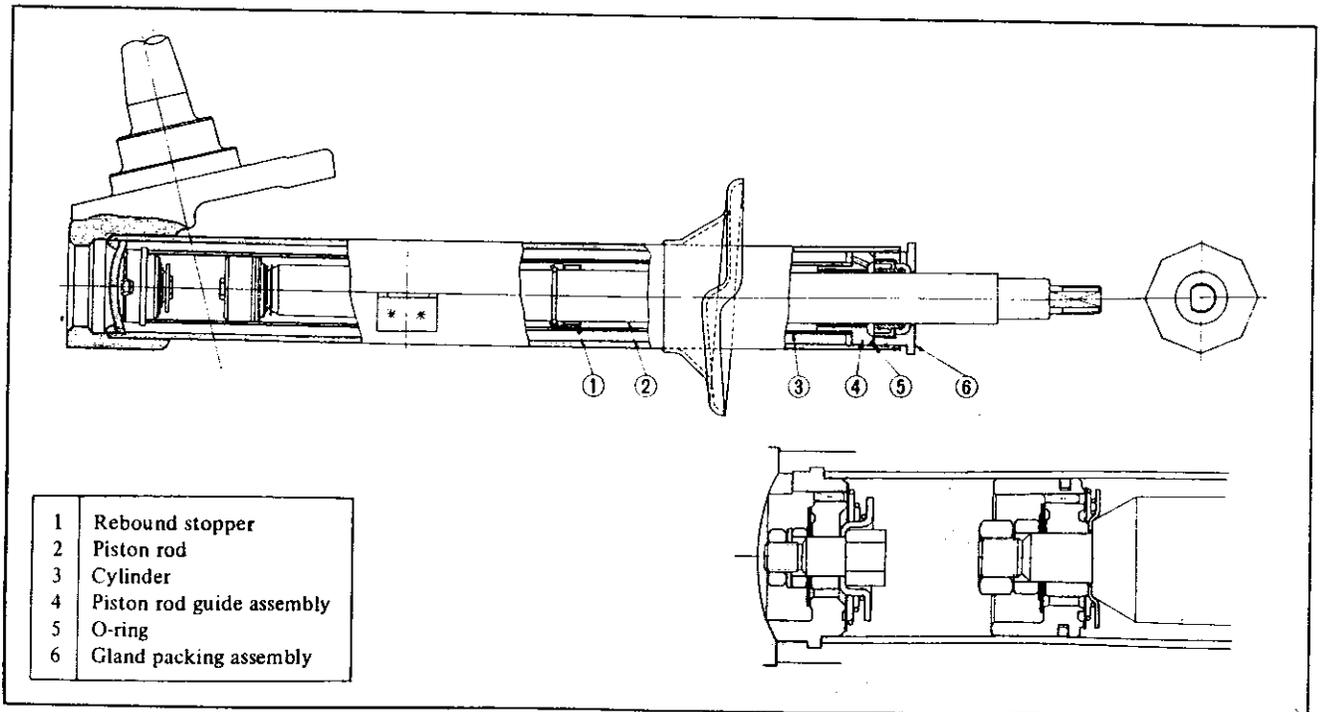


Fig. FA-27 Sectional view of strut assembly

CHASSIS

Disassembly

Disassemble and reassemble the strut assembly in a clean place so that the inner components are protected from dirt and other foreign matters.

1. Jack up the vehicle, remove the wheel, and remove the stabilizer bar and compression rod from the transverse link. Loosen the knuckle arm fixing bolts, and separate the strut assembly from the ball-joint. Loosen the self-locking nut on the upper portion of the strut, and remove the strut assembly. (See the "Removal of Front Axle and Suspension Assembly" above, for details.)

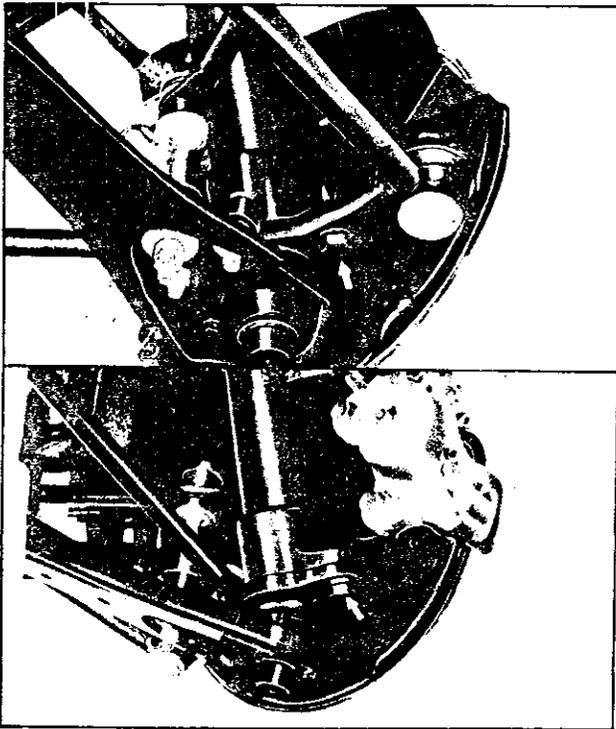


Fig. FA-28 Removing knuckle arm fixing bolt

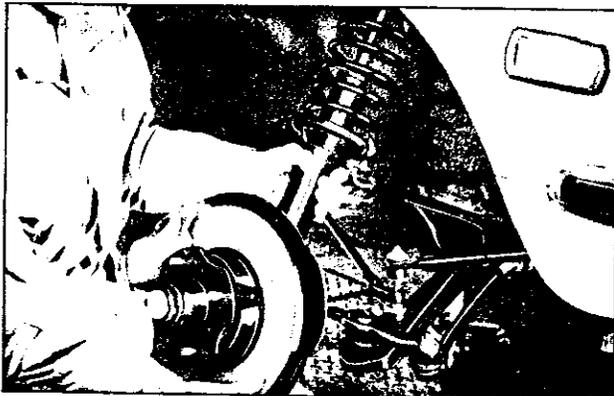


Fig. FA-29 Removing front strut assembly

2. Install a strut attachment (special tool ST35650000) on the strut outer casing, and secure the strut assembly in a vise.

3. Install a coil spring compressor (special tool ST35650000) on the spring, compress the spring up to such an extent that the strut mounting insulator can be readily turned by hand, and remove the self-locking nut (used to hold down the spring).

Note: When loosening the self-locking nut, use a screwdriver as a shifter. Moreover, when loosening the self-locking nut (used to hold down the spring), install a nut on the bolt (used to install the strut on the body) and apply the screwdriver to the nut so that the thread of the bolt is not damaged.

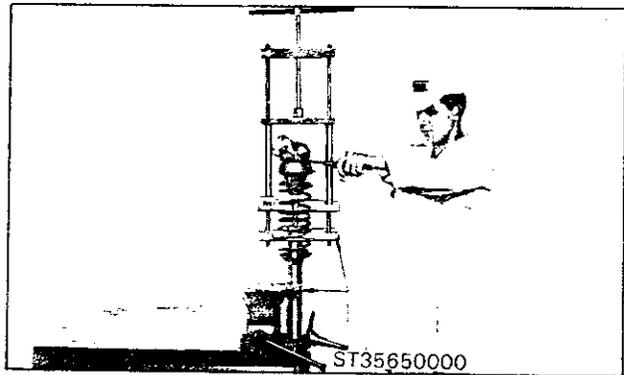


Fig. FA-30 Removing self-locking nut

4. Remove the strut mounting insulator, strut mounting bearing, and upper spring seat.

5. Remove the spring with the coil spring compressor (special tool ST35650000) installed on the spring, from the strut.

6. Depress the piston rod down to the bottom and remove the gland packing with a gland packing wrench (special tool ST35500000).

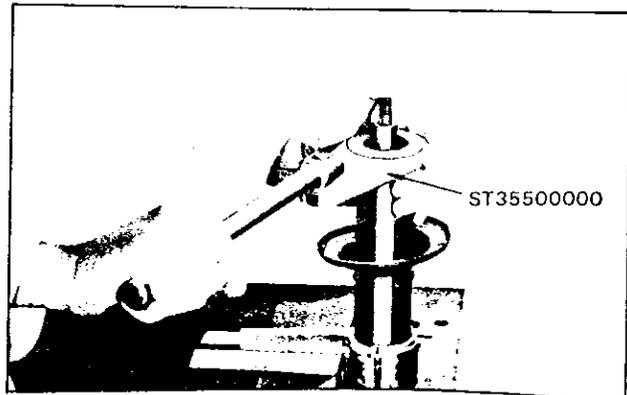


Fig. FA-31 Removing gland packing

FRONT AXLE & FRONT SUSPENSION

Note: Remove mud and other foreign matters from the gland packing.

7. Remove the O-ring from the upper portion of the piston rod guide.

8. Separate the piston rod and cylinder assembly upward from the strut tube slowly and carefully.

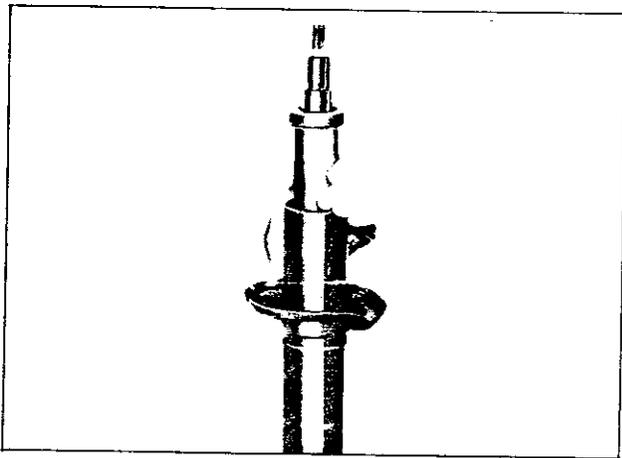


Fig. FA-32 Removing piston rod and cylinder assembly

Note: Do not remove the piston rod and guide from the cylinder. They are precisely assembled and thus, should be handled as an assembly.

9. Drain damping oil from the cylinder and strut outer casing into a clean container.

Note: This procedure should be strictly observed because shock absorber performance is directly affected by amount of damping oil. When refilling, measure amount of damping oil correctly.

Inspection

1. Be sure to replace the gland packing, O-ring and damping oil with new ones whenever the strut assembly is disassembled.
2. Wash all disassembled parts, except for nonmetal parts, with gasoline or thinner, and remove dirt and other foreign matters with compressed air.
3. Clean the nonmetal parts with compressed air.

● Strut outer casing

Replace, if deformed, cracked or damaged.

● Spindle

Check the spindle especially carefully for hair crack on the base and damaged threaded portion. Replace the strut assembly, if faulty condition exists.

● Strut mounting insulator

Replace if rubber and metal joint is melted or cracked. Replace the rubber parts, if they are deteriorated.

● Front spring

Replace, if weakened or cracked.

Specifications for spring

	LH	RH
Free length:	373 mm (24.68 in)	386 mm (15.20 in)
Installed height/load	201 mm/255 kg (8 in/562 lb)	201 mm/274 kg (8 in/604 lb)

● Strut mounting bearing

Replace, if unusual sound occurs during rotation or slackness toward the axis direction is excessive.

When installing the strut mounting bearing, be sure to fill it with multi-purpose grease (MIL G-2108 or 10924).

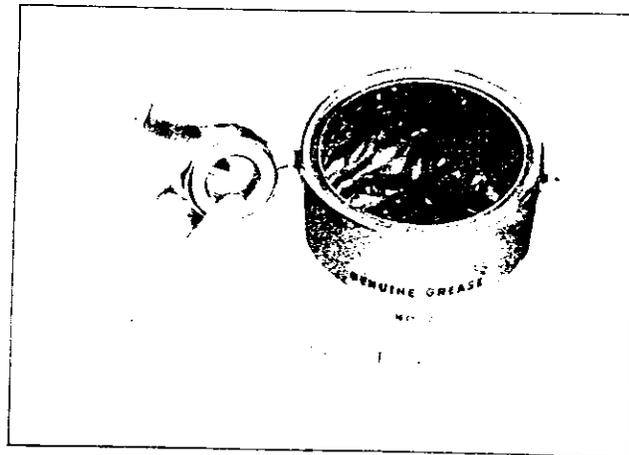


Fig. FA-33 Greasing strut mounting bearing

Reassembly

Be careful not to drop or scratch part since all parts are precision finished. When reassembling, thoroughly clean

CHASSIS

all component parts, and make sure that dirt and other foreign matters are completely removed. During reassembly, do not use cloth or gloves.

1. Secure the strut outer casing in a vise.
2. Insert the piston rod and cylinder assembly into the strut outer casing.
3. Fill the strut outer casing with correct amount of oil.

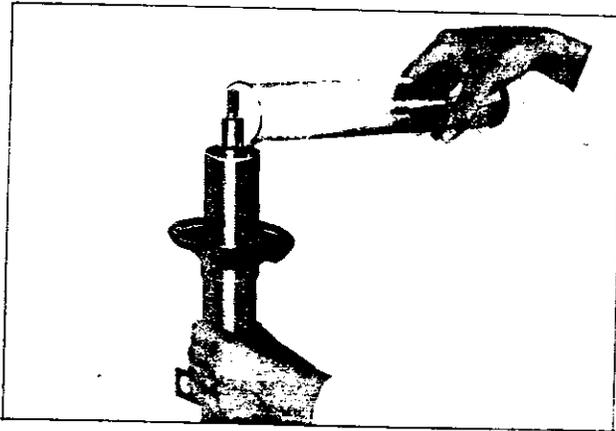


Fig. FA-34 Pouring shock absorber oil

- Note:
- a. Correctly measure amount of shock absorber oil to be poured because amount of oil directly affects damping power. [290 cc (17.7 cu in)]
 - b. Use Nissan genuine oil (Nisseki Shock Absorber Oil A-1) for the shock absorber oil.

4. Install a rubber O-ring on top of the piston rod guide, and install the gland packing by the use of a gland packing guide (special tool ST35540000).

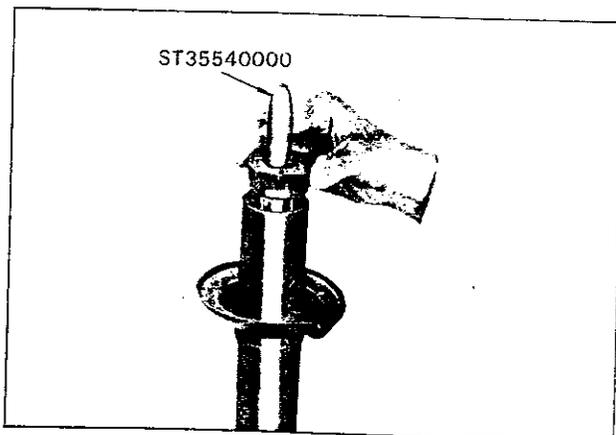


Fig. FA-35 Installing gland packing

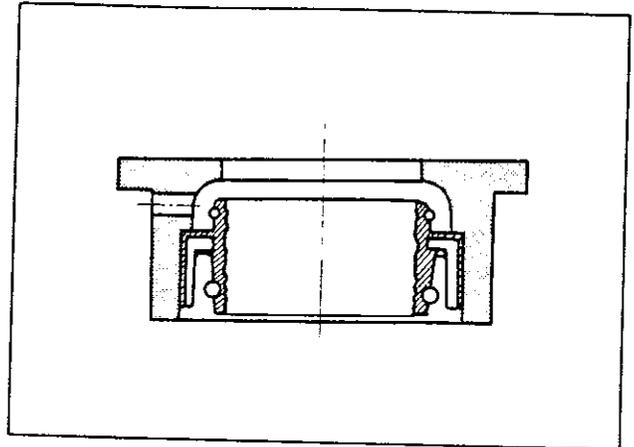


Fig. FA-36 Cross-sectional view of gland packing

5. Tighten the gland packing to 6.0 to 6.5 kg-m (43.4 to 47.0 ft-lb) by the use of a gland packing wrench (special tool ST35500000).

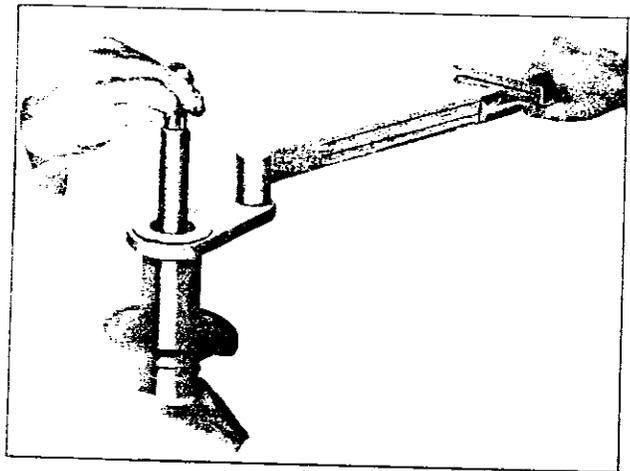


Fig. FA-37 Tightening gland packing

- Note:
- a. Before tightening the gland packing, pull the piston rod approximately 90 mm (3.543 in) upward. This will provide the shock absorber system with the best condition for bleeding.

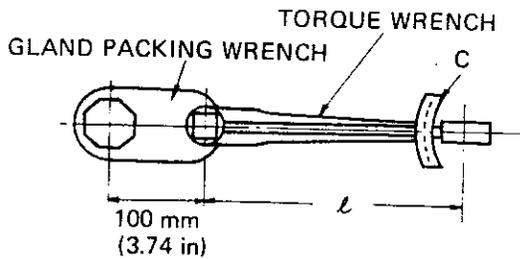
- b. Gland packing tightening torque is rated at 6.0 to 6.5 kg-m (43.4 to 47.0 ft-lb). However, arm length of this tool is extended by 100 mm (3.94 in) as shown in the following figure. Thus, when actually tightening the gland packing, measure effective length (L) of a torque wrench to be used, and set up torque wrench value based on the following formula.

FRONT AXLE & FRONT SUSPENSION

$$C = 6 \times \left(\frac{l}{l + 100} \right)$$

where, C Value read on the torque wrench
[kg-m (ft-lb)]

l Effective length of torque wrench
[mm (in)]



6. Conduct air bleeding on the shock absorber system

- (1) Stand the strut assembly vertically with the spindle side down, and pull the piston rod within its stroke. Turn over the strut assembly (with the spindle side up), and depress the piston rod in the full stroke.
- (2) Repeat the above described operations several times.
- (3) Make sure that there is no feeling variation on pressure while depressing or pulling the piston rod. Thus, air bleeding completes.

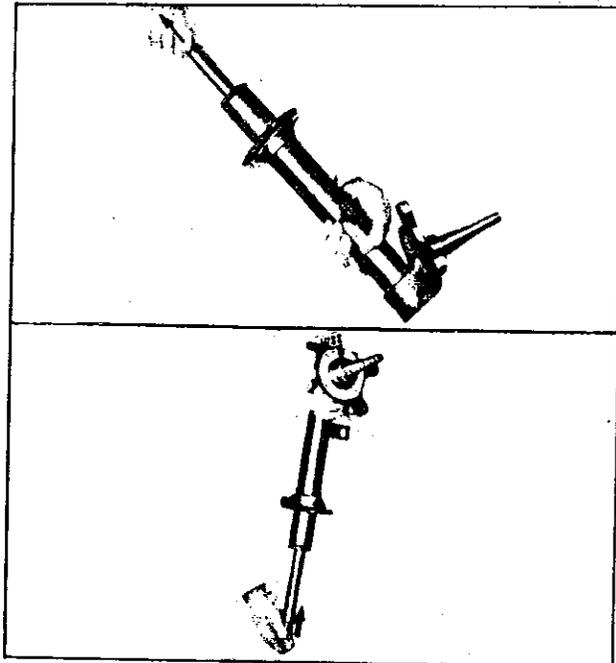


Fig. FA-38 Conducting air bleeding on the shock absorber system

7. Place the front spring on the lower spring seat correctly, compress the front spring with a coil spring compressor (special tool ST35650000), install the upper spring seat, strut mounting bearing, and strut mounting insulator, and tighten the self-locking nut.

Tightening torque:

7.5 to 9.5 kg-m (54.2 to 68.7 ft-lb)

Note: a. Use new self-locking nuts whenever the strut assembly is reassembled.

b. Install the strut mounting bearing carefully so that it is installed correctly toward the prescribed direction, and be sure to apply multi-purpose grease (MIL G2108 or 10924) to the portion indicated by asterisk (*) in Figure FA-39.

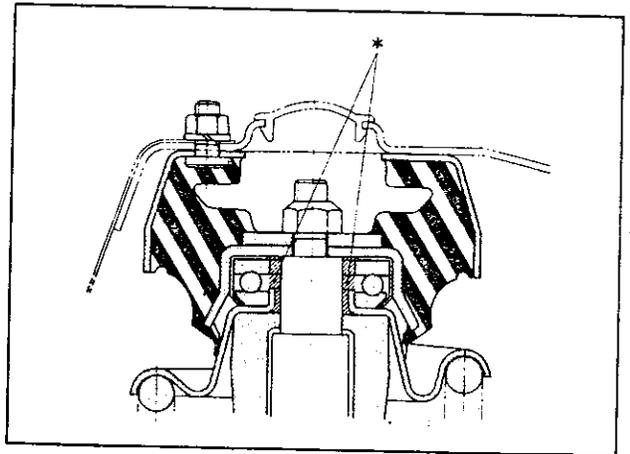


Fig. FA-39 Strut mounting bearing greasing point

8. Release the coil spring gradually from the coil spring compressor, and set the spring to the upper and lower spring seats correctly.

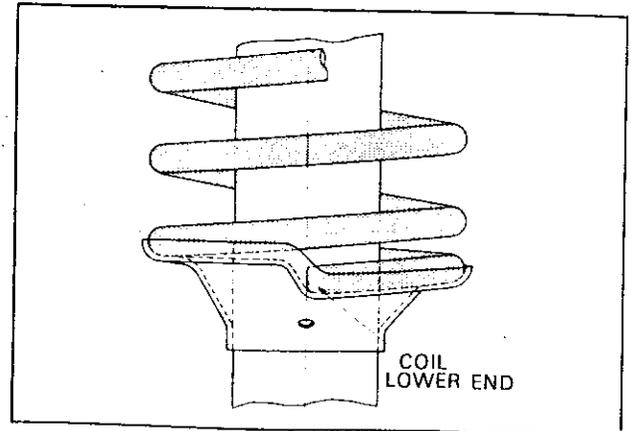


Fig. FA-40 Installing front spring

CHASSIS

Tightening torque:

Nuts used to install the strut assembly on the body:

2.5 to 3.5 kg-m (18.1 to 25.3 ft-lb)

Bolts used to install the knuckle arm to strut:

7.3 to 10.0 kg-m (52.8 to 72.3 ft-lb)

Nut used to install the compression rod on the transverse link:

5.0 to 6.2 kg-m (36.2 to 44.8 ft-lb)

Stabilizer installation bolts

Transverse link bracket side:

1.2 to 1.7 kg-m (8.7 to 12.3 ft-lb)

Frame bracket side:

1.9 to 2.5 kg-m (13.7 to 18.1 ft-lb)

TRANSVERSE LINK AND LOWER BALL JOINT

The transverse link is connected to the suspension member with the rubber bushing both the inner and outer tubes of which are adhered, the transverse link is also connected to the strut assembly through the lower ball joint, and thus, the front suspension link mechanism is formed.

The lower ball joint is of a non-disassembled type. Lubricate the lower ball joint every 50,000 km (30,000 miles) or two years.

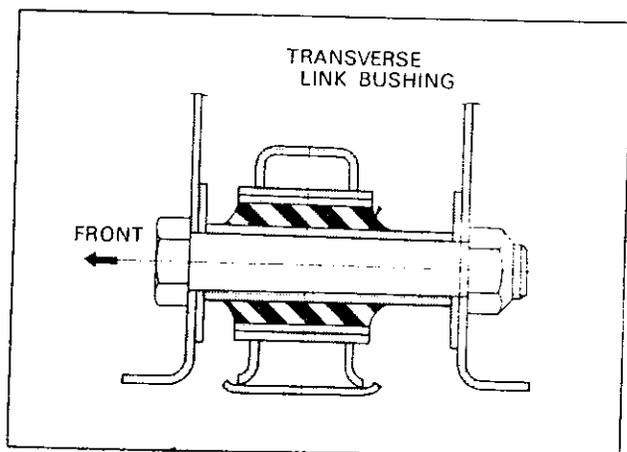


Fig. FA-41 Cross-sectional view of transverse link bushing

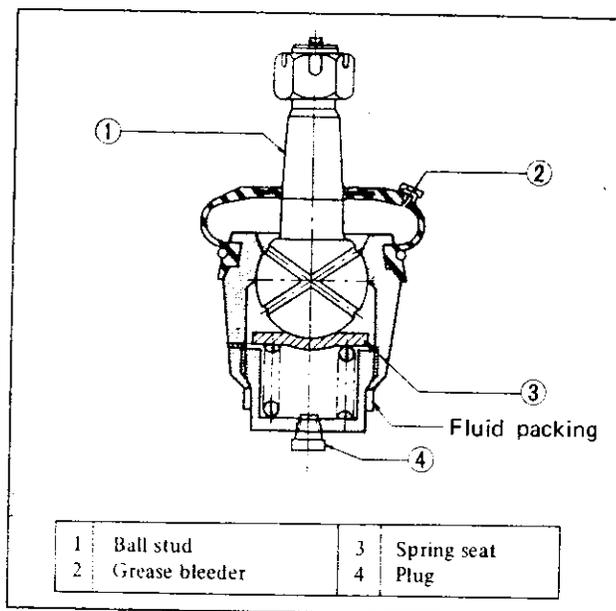


Fig. FA-42 Cross-sectional view of ball joint

Removal

1. Jack up the vehicle, remove the wheel, and remove the stabilizer bar and compression rod from the transverse link. Loosen the knuckle arm fixing bolts (1) and (2), and separate the ball joint from the strut assembly. (See "Removal of front axle and suspension assembly" above for details.)

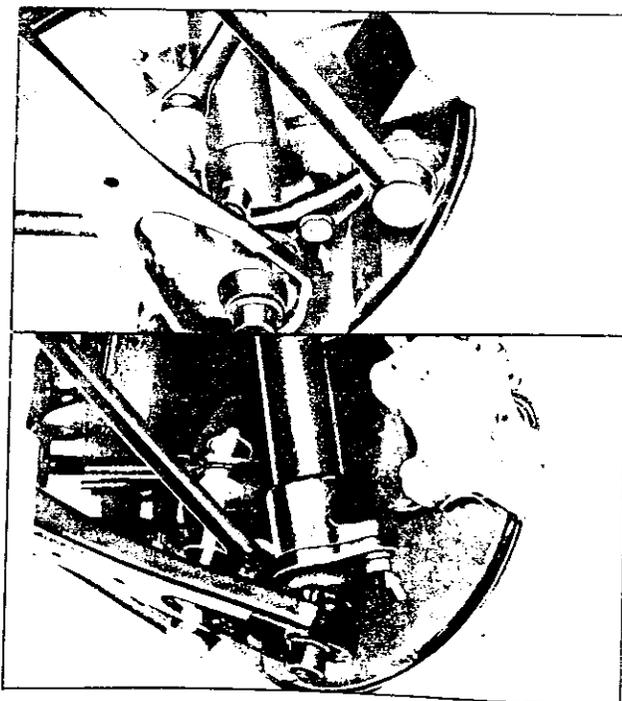


Fig. FA-43 Loosening knuckle arm fixing bolts

FRONT AXLE & FRONT SUSPENSION

2. Loosen the transverse link mounting bolt, and separate the transverse link from the suspension member.

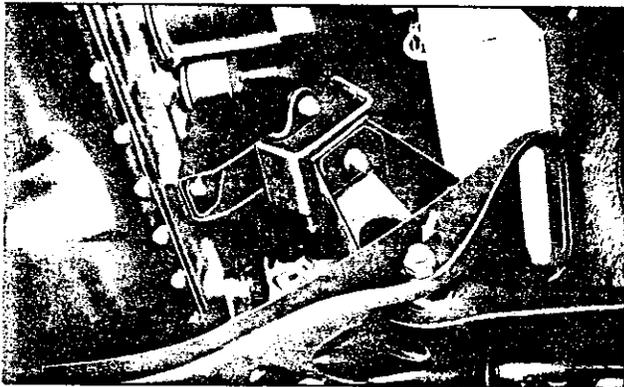


Fig. FA-44 Loosening transverse link mounting bolt

3. Remove cotter pin from the castle nut on the knuckle arm, loosen the castle nut, and remove the knuckle arm from the ball joint.

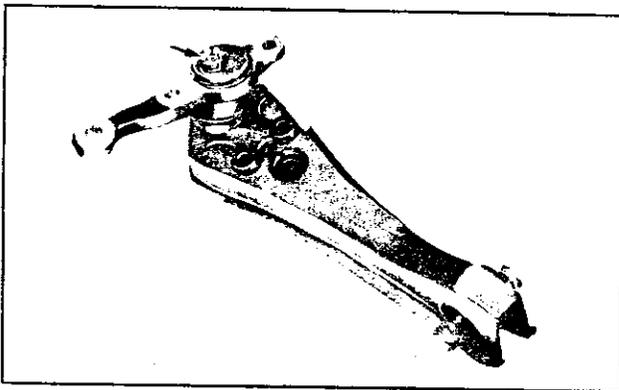


Fig. FA-45 Removing knuckle arm

4. Loosen the ball joint installation nut, and remove the ball joint from the transverse link.
5. Withdraw the transverse link bushing from the transverse link with a front transverse link bushing replacer (special tool ST36710000) and a press.

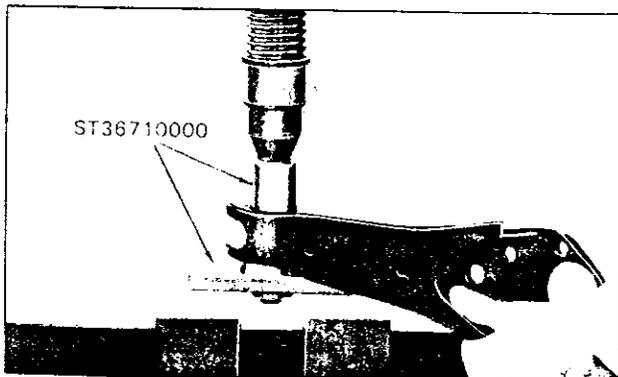


Fig. FA-46 Removing transverse link bushing

Inspection

● Transverse link bushing

Rubber and inner/outer tube joints (adhered) are sticky (melted) or cracked, replace the transverse link as an assembly.

● Ball joint

1. The ball joint is of a non-disassembled type, and therefore, the ball joint cannot be disassembled. Measure end play toward the axial direction and shaking torque, and replace, when deviated from the standards.

Standard end play (axial direction):

0.03 to 0.6 mm (0.0012 to 0.0136 in)

Shaking torque: 20 to 90 gr-cm

(0.28 to 1.25 in-oz)

[At the cotter pin opening position:

3.9 to 17.3 kg (8.6 to 38.1 lb)]

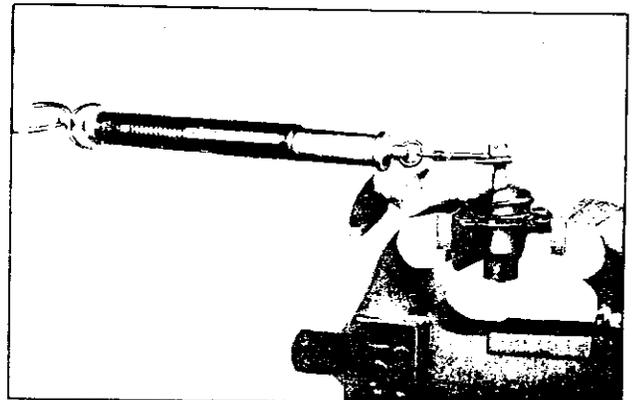


Fig. FA-47 Measuring ball joint shaking torque

2. Replace the ball joint with a new one, when the dust cover is cracked.

3. Lubricate the ball joint with multi-purpose grease (MIL G2108 or 10924) every 50,000 km (30,000 miles) or two years.

Install a grease knipple on the plug hole, and grease completely so that old grease is replaced with new grease. Be sure to reinstall the plug when completely greased.

Note: When a high-pressure grease gun is used, operate the grease gun carefully so that grease is injected slowly and new grease does not come out from the clamp portion.

CHASSIS

Reinstallation

Reinstall the transverse link and lower ball joint in reverse sequence of removal. However, when installing the transverse link bushing, use the special tool (special tool ST36710000), and fit it to such an extent that the transverse link bushing inner tube end surface is aligned flush with the transverse link end surface. Be careful to align the bushing direction correctly (front and rear). (See Figure FA-41.)

First, tighten the transverse link mounting bolt temporarily, and finally tighten to the rated tightening torque with the vehicle loaded with the standard load (two passengers).

Tightening torque:

Ball joint bolt:
4.9 to 6.3 kg-m (35.4 to 45.6 ft-lb)

Ball joint castle nut:

5.5 to 7.5 kg-m (39.8 to 54.2 ft-lb)

Transverse link mounting bolt:

11.0 to 13.0 kg-m (79.6 to 94.0 ft-lb)

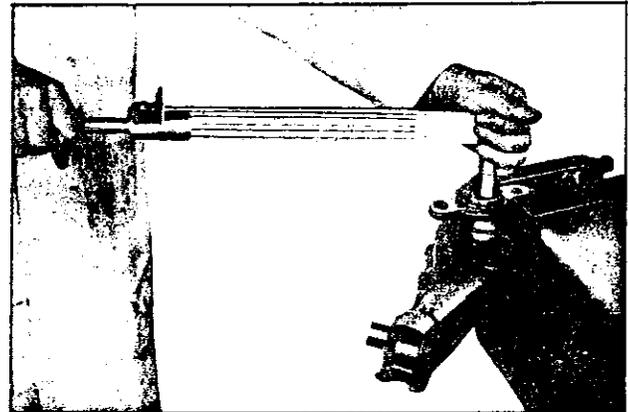


Fig. FA-48 Tightening knuckle arm castle nut

ADJUSTMENT

CONTENTS

ADJUSTMENT DATA	FA-18	ADJUSTMENT OF VEHICLE LEVEL	FA-19
ADJUSTMENT OF WHEEL ALIGNMENT	FA-19	ADJUSTMENT OF TOE-IN	FA-19

1. Carry out wheel alignment on a flat surface with tire air pressure adjusted to the normal pressure.
2. Thoroughly check all component parts of the steering and suspension systems, and repair or replace

defective parts before starting the wheel alignment.

3. The camber and caster angles are preset and cannot be adjusted. Adjust the toe-in and vehicle level only.

ADJUSTMENT DATA

Wheel alignment	Without load	With standard load
Camber.....	50' ± 30'	30' ± 30'
Caster	2°55' ± 30'	3° ± 30'
Toe-in	2 to 5 mm (0.0787 to 0.1969 in)	0 to 3 mm (0 to 0.1181 in)
King pin inclination	12°10' ± 30'	12°25' ± 30'

FRONT AXLE & FRONT SUSPENSION

Steering angle		
In	32.5° ± 30'	33° ± 30'
Out	31.9° ± 30'	31.7° ± 30'
Tire pressure (when not heated)		
175 SR-14	2.0 kg/cm ²	(0.31 lb/sq in)
175 HR-14	2.0 kg/cm ²	(0.31 lb/sq in)
6.45 H14-4PR	1.7 kg/cm ²	(0.26 lb/sq in)

ADJUSTMENT OF WHEEL ALIGNMENT

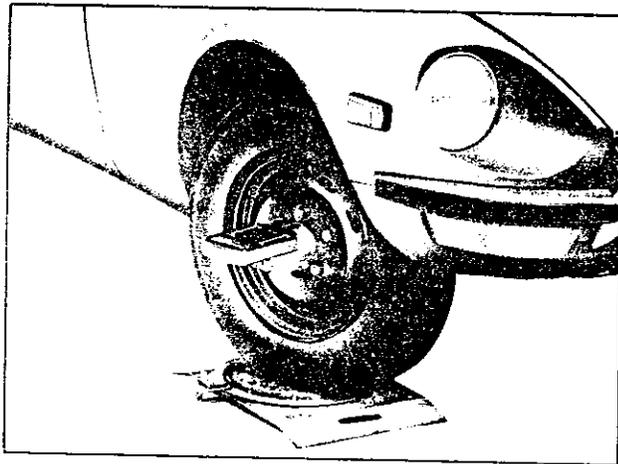


Fig. FA-49 Measuring steering angle, camber and caster

1. Use a turning radius gauge and alignment gauge for the measurement.
2. Carry out wheel alignment on a flat surface with tire air pressure adjusted to the normal pressure.

ADJUSTMENT OF VEHICLE LEVEL

Vehicle level is adjusted by changing springs.

ADJUSTMENT OF TOE-IN

1. Measure toe-in with a toe-in gauge.

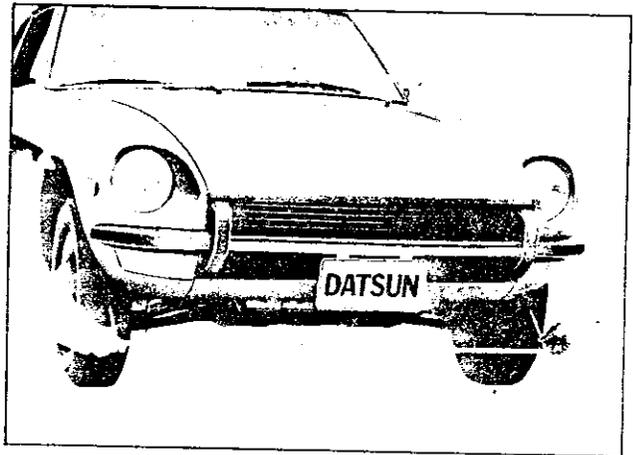


Fig. FA-50 Measuring toe-in

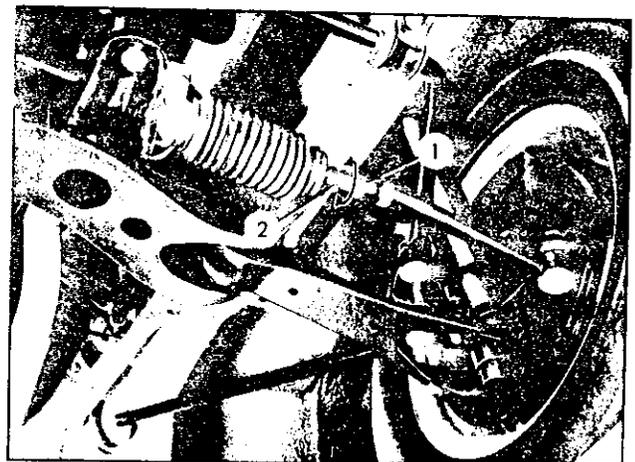


Fig. FA-51 Adjusting toe-in

2. Loosen the side rod lock nut (1), and adjust length of side rod (2) properly to the standard value.

CHASSIS

Note: a. Primarily, both side side rod ball joint center distances should be balanced.

Standard distance between side rod ball joint centers: 276.6 mm (10.89 in)

b. When the steering gear housing is removed, be sure to adjust the steering angle at the side rod unit with a turning radius gauge upon completion of reinstallation.

c. Adjust toe-in upon completion of the steering

angle adjustment.

d. When adjusting toe-in, be sure to move the left and right side rods equally.

e. When steering angle is incorrect, reassemble the rack and pinion because incorrectly assembled rack and pinion cause improper steering angle.

f. Side rod lock nut end surface comes into contact with steering gear housing end forming a steering stopper.

SERVICE DATA AND SPECIFICATIONS

Wheel alignment

	Without load	Without standard load
Caster	2°55' ± 30'	3° ± 30'
Camber	50' ± 30'	30' ± 30'
King pin inclination	12°10' ± 30'	12°25' ± 30'
Toe-in	2 to 5 mm (0.0787 to 0.1969 in)	0 to 3 mm (0 to 0.1181 in)
Steering angle		
In	32.5° ± 30'	33° ± 30'
Out	31.9° ± 30'	31.7° ± 30'

Coil spring

	LH	RH
Wire diameter	10.6 mm (0.417 in)	10.6 mm (0.417 in)
Coil diameter	100 mm (3.94 in)	100 mm (3.94 in)
Coil turns	10	10
Coil effective turns	8.5	8.5
Free length	373.5 mm (22.72 in)	386 mm (23.56 in)
Installed height/load	201 mm/255 kg (8in/562 lb)	201 mm/274 kg (8 in/604 lb)
Spring constant	1.48 kg/mm (83 in/lb)	1.48 kg/mm (83 in/lb)

Strut assembly

Strut outer diameter	50.8 mm (2.0 in)
Piston rod diameter	25 mm (0.984 in)
Piston diameter	32 mm (1.260 in)
Damping force at piston speed	0.3 m/sec (1.08 ft/sec)
Expansion	35 kg (77.1 lb)
Compression	20 kg (44.1 lb)
Piston rod	
Bend limit	0.1 mm (0.0039 in)

FRONT AXLE & FRONT SUSPENSION

Wear limit	0.05 mm (0.0020 in)
Piston cylinder	
Bend limit	0.2 mm (0.0079 in)
Wear limit	0.1 mm (0.0039 in)
Stabilizer bar diameter	16 mm (0.630 in)
Front wheel bearing rotation starting torque	4.0 to 8.5 kg-cm (3.47 to 7.37 in-lb)
Ball joint shaking torque	20 to 90 gr-cm (0.28 to 1.25 in-oz)
Ball joint end play (axial direction)	0.03 to 0.6 mm (0.0012 to 0.0136 in)

TIGHTENING TORQUE

Front axle

Brake disc rotor and hub assembly tightening bolt	3.9 to 5.3 kg-m (28.2 to 38.3 ft-lb)
Brake tube caliper installation nut	1.5 to 1.8 kg-m (10.9 to 13.0 ft-lb)
Wheel bearing lock nut	2.5 to 3.0 kg-m (18.1 to 21.7 ft-lb)
Disc brake caliper fixing bolt	7.3 to 9.9 kg-m (52.8 to 71.6 ft-lb)
Baffle plate installation screw	0.32 to 0.44 kg-m (2.3 to 3.2 ft-lb)

Strut assembly

Gland packing tightening torque	6.0 to 6.5 kg-m (43.4 to 47.0 ft-lb)
Piston rod self-locking nut	7.5 to 9.5 kg-m (54.2 to 68.7 ft-lb)
Nut used to install the strut assembly on the body	2.5 to 3.5 kg-m (18.1 to 25.3 ft-lb)

Transverse link and ball joint

Bolts used to install the knuckle arm to strut	7.3 to 10.0 kg-m (52.8 to 72.3 ft-lb)
Ball joint castle nut	5.5 to 7.5 kg-m (39.8 to 54.2 ft-lb)
Bolts used to install the transverse link to ball joint	4.9 to 6.3 kg-m (35.4 to 45.6 ft-lb)
Transverse link mounting bolt	11.0 to 13.0 kg-m (79.6 to 94.0 ft-lb)

Compression rod

Transverse link side	5.0 to 6.2 kg-m (36.2 to 44.8 ft-lb)
Body side	4.5 to 5.5 kg-m (32.6 to 39.8 ft-lb)

Stabilizer bar

Connecting rod and transverse link installation nut	1.9 to 2.6 kg-m (13.7 to 18.8 ft-lb)
Connecting rod and stabilizer bar installation nut	1.2 to 2.7 kg-m (8.7 to 19.5 ft-lb)
Stabilizer bar and body installation bolt	1.9 to 2.5 kg-m (13.7 to 18.1 ft-lb)

CHASSIS

Suspension member	
Body side	4.0 to 5.0 kg-m (28.9 to 36.2 ft-lb)
Engine mounting bolt	1.6 to 2.6 kg-m (11.6 to 18.8 ft-lb)
Steering mounting bolt	2.2 to 3.0 kg-m (15.9 to 21.7 ft-lb)
Side rod socket and knuckle arm	5.5 to 7.5 kg-m (39.8 to 54.2 ft-lb)
Hub nut	8.5 to 9.0 kg-m (61.5 to 65.1 ft-lb)

TROUBLE DIAGNOSES AND CORRECTIONS

Troubles	Possible causes	Corrective action
<p>Vibration, shock and shimmying of steering wheel.</p> <p>Vibration: Loose connection of the serration parts and rubber coupling parts, defective rubber coupling and wear of each part of linkage and vibration of front wheels are, in many cases, transmitted to the steering wheel. This is very noticeable when travelling over rough road.</p> <p>Shock: When the front wheels are travelling over bumpy roads, the play of the steering linkage is transmitted to the steering wheel. This is especially noticeable when travelling rough road.</p> <p>Shimmying: Abnormal vibrations of the front suspension group and the whole steering linkage, which occur when a specific speed is attained.</p>	<p>Improper air pressure of tire.</p> <p>Unbalance and deformation of road-wheel.</p> <p>Unevenly worn tire or insufficient tightening.</p> <p>Improperly adjusted or worn front wheel bearing.</p> <p>Faulty wheel alignment.</p> <p>Worn fitting transverse link bushings.</p> <p>Insufficiently tightened steering gear housing.</p> <p>Wear of steering linkage.</p> <p>Worn suspension ball-joint.</p> <p>Excessive backlash due to improper adjustment of the retainer parts.</p> <p>Defective rubber coupling, or loose connection of rubber coupling (serration parts) and loose bolts.</p> <p>Worn column bearing, weakened column bearing spring, or loose clamp.</p> <p>Malfunction of shock absorber (inside the strut) or loose installation bolts.</p> <p>Unbalance of vehicle level.</p>	<p>Adjust.</p> <p>Correct the unbalance or replace.</p> <p>Replace or tighten.</p> <p>Adjust or tighten.</p> <p>Adjust.</p> <p>Replace.</p> <p>Retighten.</p> <p>Replace defective parts.</p> <p>Replace.</p> <p>Adjust correctly.</p> <p>Check the parts for tightness, and retighten if necessary. Otherwise, replace the rubber coupling.</p> <p>Check and repair correctly.</p> <p>Replace or retighten.</p> <p>Correct the unbalance.</p>

FRONT AXLE & FRONT SUSPENSION

<p>Vehicle pulls to right or left.</p> <p>When driving with hands off the steering wheel over a flat road, the vehicle gently swerves to right or left.</p> <p>Note: A defective rear suspension may also be the cause of this trouble and, therefore, see also the chapter dealing with the rear suspension.</p>	<p>Improper air-pressure of tire or insufficient tightening of wheel nuts.</p> <p>Difference in height of right and left tire treads.</p> <p>Incorrect adjustment or abrasion of front wheel bearing.</p> <p>Collapsed or twisted front spring.</p>	<p>Adjust or tighten.</p> <p>Replace tires.</p> <p>Adjust or replace.</p> <p>Replace.</p>
	<p>Incorrect wheel alignment.</p> <p>Incorrect brake adjustment (binding).</p> <p>Worn rubber bushings for transverse link and compression rod.</p> <p>Deformed or steering linkage and suspension link</p> <p>Unbalanced vehicle level</p>	<p>Adjust.</p> <p>Adjust.</p> <p>Replace.</p> <p>Replace.</p> <p>Correct the unbalance.</p>
<p>Instability of vehicle</p>	<p>Improper air pressure of tire.</p> <p>Worn rubber bushings for transverse link and compression rod.</p> <p>Incorrect wheel alignment</p> <p>Worn or deformed steering linkage and suspension link</p> <p>Incorrect adjustment of steering gear</p> <p>Deformed unbalanced wheel</p>	<p>Adjust.</p> <p>Adjust.</p> <p>Adjust.</p> <p>Replace.</p> <p>Adjust.</p> <p>Correct or replace.</p>
<p>Stiff steering wheel (checking up procedure)</p> <p>Jack up front wheels, detach the steering gear and operate the steering wheel, and;</p> <p>If it is light, check steering linkage, and suspension groups.</p> <p>If it is heavy, check steering gear and steering column groups.</p>	<p>Improper air pressure of tire.</p> <p>Insufficient lubricants or mixing impurities in steering linkage or excessively worn steering linkage.</p> <p>Stiff or damaged suspension ball-joint, or lack of grease</p> <p>Worn or incorrectly adjusted wheel bearing.</p> <p>Worn damaged steering gear and bearing</p> <p>Incorrectly adjusted steering gear.</p> <p>Deformed steering linkage</p>	<p>Adjust.</p> <p>Replenish grease or replace the part.</p> <p>Replace.</p> <p>Replace or adjust.</p> <p>Replace.</p> <p>Adjust.</p> <p>Replace.</p>

CHASSIS

	<p>Incorrect wheel alignment</p> <p>Damaged strut upper end bearing</p> <p>Damaged or stiff piston or shock absorber rod (in the strut)</p> <p>Interference of steering column with turn signal switch</p>	<p>Adjust.</p> <p>Replace.</p> <p>Replace.</p> <p>Adjust.</p>
Excessive steering wheel play	<p>Incorrectly adjusted steering gear housing</p> <p>Worn steering linkage</p> <p>Improperly fitted of gear box</p> <p>Incorrectly adjusted wheel bearing</p> <p>Worn transverse link and compression fitting bushings</p>	<p>Adjust.</p> <p>Replace.</p> <p>Retighten.</p> <p>Adjust.</p> <p>Replace.</p>
Noises	<p>Improper air pressure of tire</p> <p>Insufficient lubricating oil and grease for suspension ball joint and steering linkage, or their breakage.</p> <p>Loose steering gear bolts, linkage and suspension groups.</p> <p>Defective shock absorber (inside the strut).</p> <p>Defective wheel bearing</p> <p>Worn steering linkage</p> <p>Worn transverse link and tension rod fitting bushings</p> <p>Broken collapsed coil spring</p> <p>Loose strut mounting insulator tightening nuts</p>	<p>Adjust.</p> <p>Replenish lubrication oil and grease, or replace.</p> <p>Retighten.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Retighten.</p>
Grating tire noise	<p>Improper air pressure of tire</p> <p>Incorrect wheel alignment</p> <p>Deformed knuckle spindle and suspension linkage</p>	<p>Adjust.</p> <p>Adjust.</p> <p>Replace.</p>
Jumping of disc wheel	<p>Improper air pressure of tire</p> <p>Unbalanced wheels</p>	<p>Adjust.</p> <p>Adjust.</p>

SECTION RA

**REAR AXLE
& REAR SUSPENSION**

**DATSUN 240Z SPORTS
MODEL S30 SERIES
CHASSIS & BODY**



NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

RA

REAR AXLE AND REARRA- 1
SUSPENSION

REAR AXLE & REAR SUSPENSION

REAR AXLE AND REAR SUSPENSION

CONTENTS

DESCRIPTION	RA- 2	Removal	RA- 7
Specifications	RA- 2	Reinstallation	RA- 8
Rear wheel alignment	RA- 2	WHEEL BEARING, OIL SEAL, AND REAR AXLE SHAFT	RA- 8
Road clearance	RA- 2	Removal	RA- 8
REAR SUSPENSION ASSEMBLY	RA- 3	Inspection	RA- 9
Removal	RA- 3	Reinstallation	RA- 9
Disassembly	RA- 3	Instructions for assembly of rear wheel bearing	RA- 9
Inspection	RA- 4	DRIVE SHAFT	RA-10
Reinstallation	RA- 4	Removal	RA-11
STRUT AND COIL SPRING	RA- 5	Disassembly	RA-11
Removal	RA- 5	Inspection	RA-11
Reinstallation	RA- 6	Reassembly	RA-11
TRANSVERSE LINK	RA- 6	SERVICE DATA AND SPECIFICATIONS.....	RA-12
Removal	RA- 6	TROUBLE DIAGNOSES AND CORRECTIONS	RA-14
Inspection	RA- 7		
Reinstallation	RA- 7		
GEAR CARRIER	RA- 7		

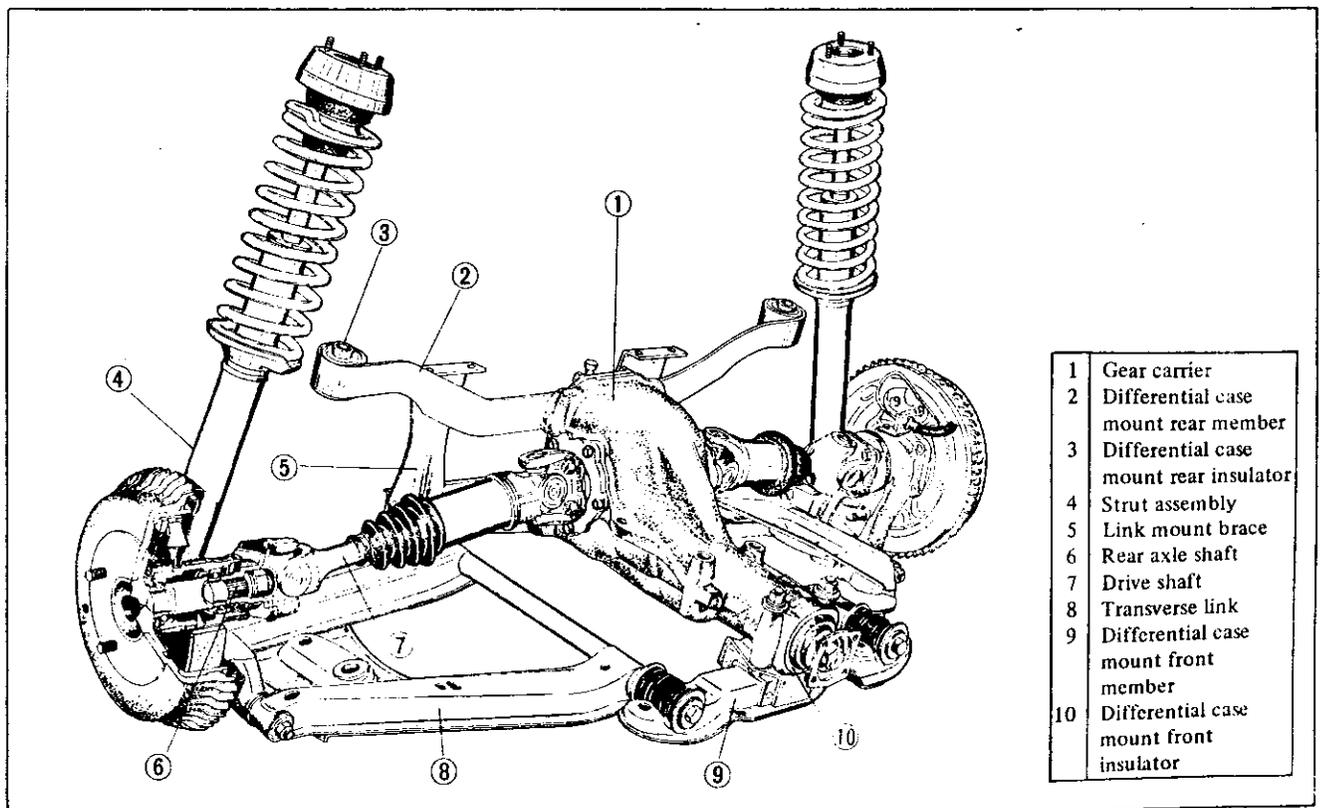


Fig. RA-1 Rear axle and rear suspension assembly

CHASSIS

DESCRIPTION

The rear suspension is a strut type independent suspension. Primarily, rear wheel is supported with the strut and transverse link, the gear carrier is aligned independently and separately from the suspension, and the gear carrier is installed on the body directly with rubber insulators. Thus, three major rear suspension elements providing the left wheel, right wheel, and gear carrier, are separated, and very high suspension performance is obtained.

As for the construction, the rear axle housing is bronged on the lower end of the strut which self-contains a shock absorber, and the lower side is connected to the

transverse link through rubber bushing. On the intermediate position of the strut, the body is suspended with coil spring, the upper end is installed on the body through rubber cushion, and the transverse link is also installed on the body directly with rubber cushion.

A horizontal leaf spring is connected to the rear end of the gear carrier, and the gear carrier is installed on the body at three positions (both ends of the leaf spring and front end of the gear carrier) through rubber cushions. Driving power is transmitted to the rear axle shaft with the freely extensible drive shaft through side flanges on both ends of the gear carrier. The rear axle shaft is supported with two ball bearings in the axle housing.

Specifications

Type of suspension	Strut (independent suspension)
Type of drive shaft	Ball spline
Type of shock absorber	Hydraulic cylindrical multi-motion
Spring	Coil spring

Rear wheel alignment

	With standard load*	Without load
Camber	-24'	48'
Tread	1,362.5 mm (53.64 in)	1,344.5 mm (52.93 in)
Toe-in	0°	0°

Road clearance

(At the transverse link mount member lower end)

	With standard load*	Without load
S30	231 mm (9.09 in)	261 mm (10.28 in)

* "With standard load" means total weight of two riders weighing 68 kg (150 lb) each.

REAR AXLE & REAR SUSPENSION

REAR SUSPENSION ASSEMBLY

Removal

1. Remove the strut assemblies from both sides. (See the paragraphs for strut and coil spring removals.)
2. Remove the main muffler. (Refer to section FE Engine control, Fuel, Exhaust system.)
3. Separate the propeller shaft from the final drive.
4. Loosen the transverse link inner bolts (indicated by arrow mark) (for front, rear, left, and right).

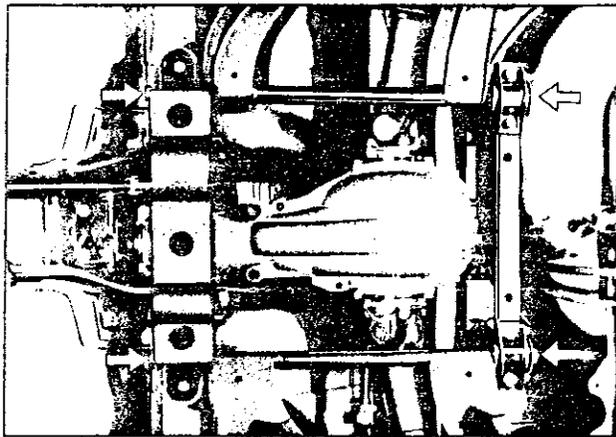


Fig. RA-2 Removing the transverse link inner bolts

5. Apply a jack to the lower end of the gear carrier.
6. Remove the differential mount front member installation bolts (indicated by arrow mark).

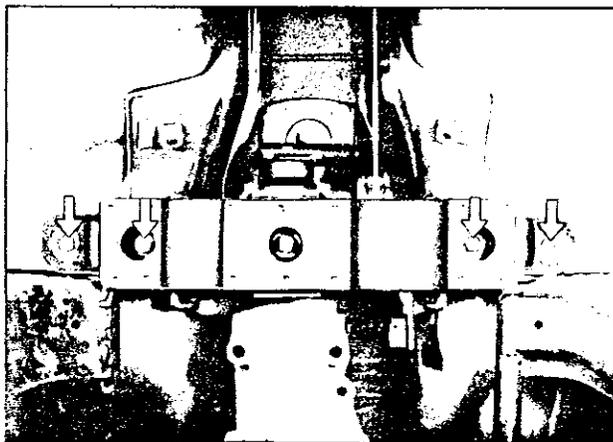


Fig. RA-3 Removing the differential mount front member

7. Remove the link mount brace installation bolt 1 and differential mount rear insulator installation bolt 2. (For both sides)

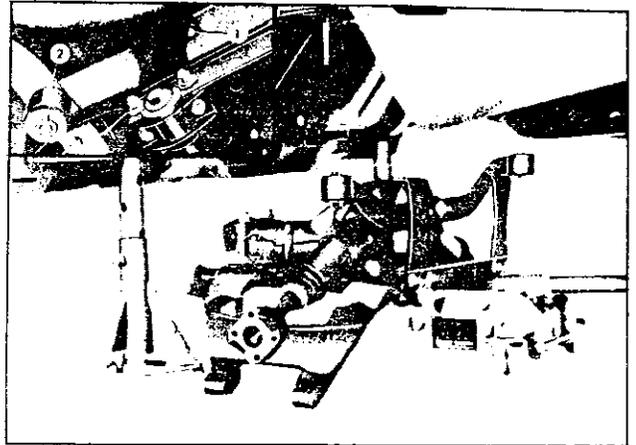


Fig. RA-4 Removing the rear axle and suspension assembly

8. Lower the jack slowly, and remove the rear suspension assembly slowly.

Disassembly

1. Remove the link mount rear bracket, and remove the transverse link. (For both sides)
2. Remove the drive shaft installation bolt (in the gear carrier side), and separate the drive shaft from the gear carrier. (For both sides.)
3. Remove the inner bushing from the transverse link.
4. Remove the outer bushing from the transverse link by the use of rear transverse link bushing replacer (special tool ST38800000).

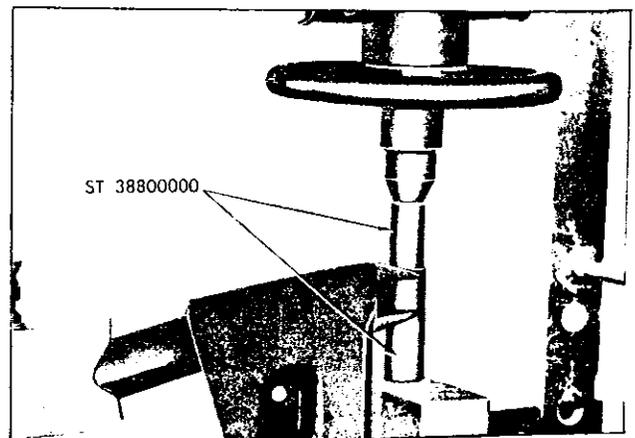


Fig. RA-5 Removing the transverse link outer bushing

CHASSIS

- Remove the differential mount rear member and differential mount front insulator from the gear carrier.
- Remove the differential mount rear insulator from the differential mount rear member by the use of drift set (special tool ST33260000).

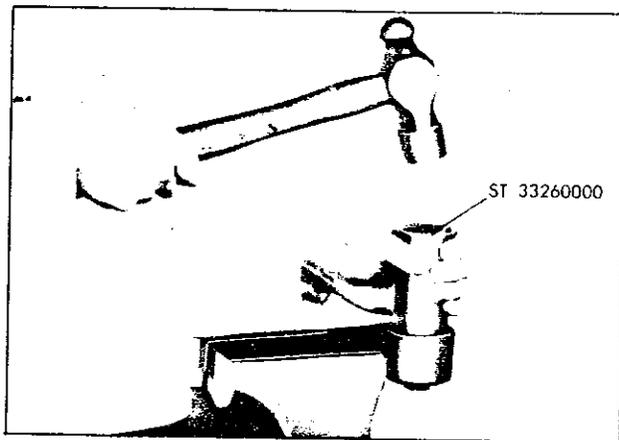


Fig. RA-6 Removing the differential mount rear insulator

Inspection

- Check the suspension system components such as differential mount front and rear members, transverse link, etc. for crack, deformation, and damage. Replace as required.
- Replace the differential mount front insulator with new one, if the dimension "A" (Figure RA-7) is 9 mm (0.3543 in) or greater or 2 mm (0.0787 in) or smaller. (unloaded)

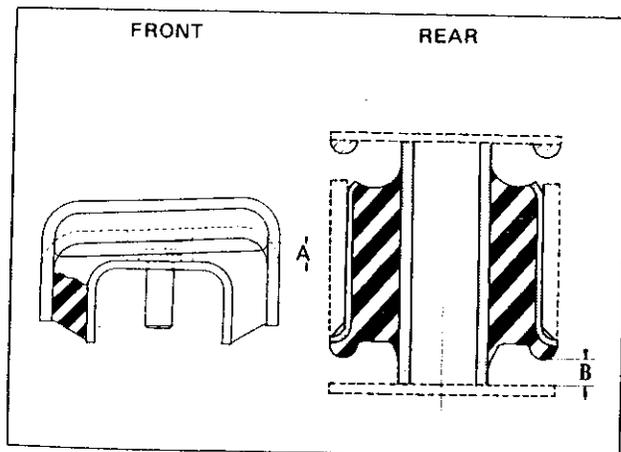


Fig. RA-7 Sectional view of the differential mount insulator

- Replace the differential mount rear insulator with new one, if the dimension "B" (Figure RA-7) is less than 5 mm (0.1969 in). (unloaded)
- Check other rubber parts (transverse link inner bushing and outer bushing, etc.) for crack, deformation and damage. Replace as required.

Reinstallation

- Reinstall and reassemble the rear suspension assembly in reverse sequence of removal and disassembly.
- Instructions for installation of the transverse link inner bushing
 - Apply the inner bushing to the link shaft.
 - Align the projection on the bushing (directed to the axis direction) horizontally.
 - Align the center of bushing (directed toward the axis direction) to the center of bracket.

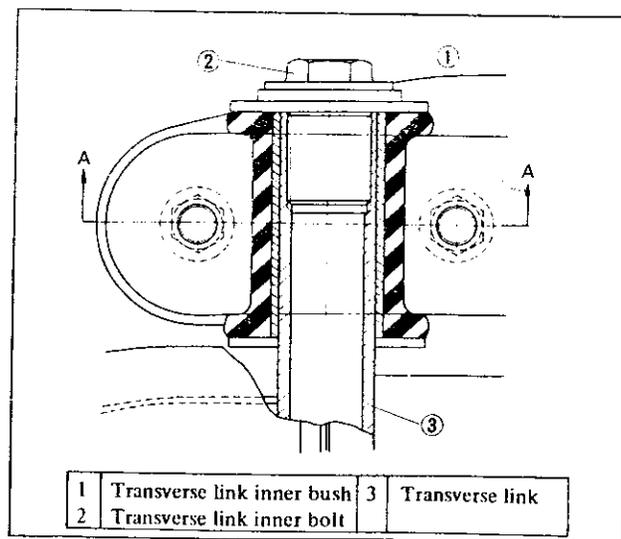


Fig. RA-8 Cross sectional view of the transverse link inner bushing (1)

- First, tighten bolts supported toward the vertical direction (differential mount front member or link mount rear bracket).

REAR AXLE & REAR SUSPENSION

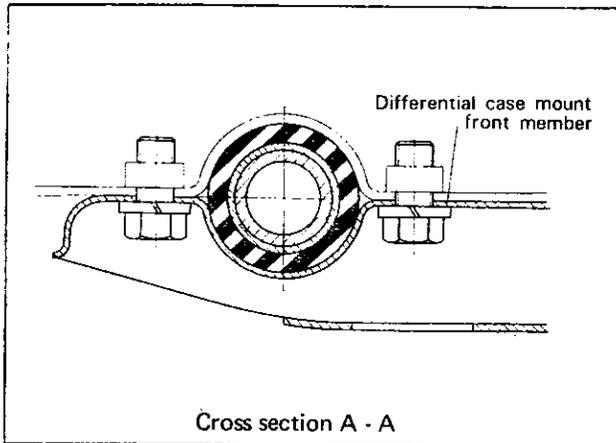


Fig. RA-9 Cross sectional view of the transverse link inner bushing (II)

(5) Temporarily tighten the transverse link inner bolts.

Note: a. Tighten the transverse link inner bolt and outer self-lock nut after installing wheels and placing the vehicle on ground under the standard load. (See RA-2 Rear wheel alignment)
b. Install the differential carrier front insulator carefully so that the front and rear direction are correctly faced. (Indicated by mark "F")

STRUT AND COIL SPRING

Removal

1. Choke the front wheels.
2. Loosen the wheel nuts, jack up the vehicle, and support the body with a stand.
3. Remove the wheel nuts and remove the wheels.
4. Disconnect the brake line connector (body side) ① and side brake linkage ②. (Figure RA-10)

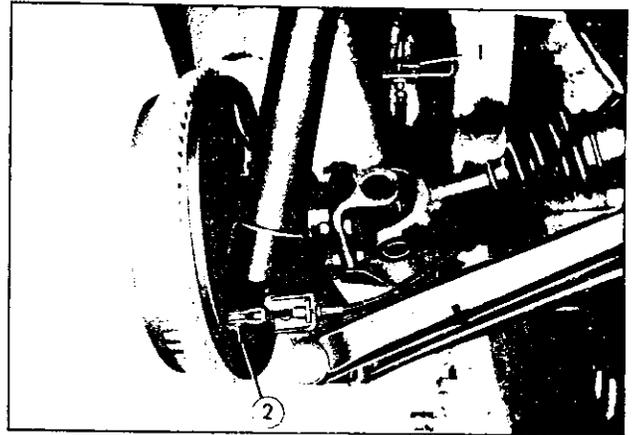


Fig. RA-10 Removing the brake hose and side brake linkage

5. Remove the transverse link outer self-lock nut ② and lock bolt ① from the lower end of the bearing housing.

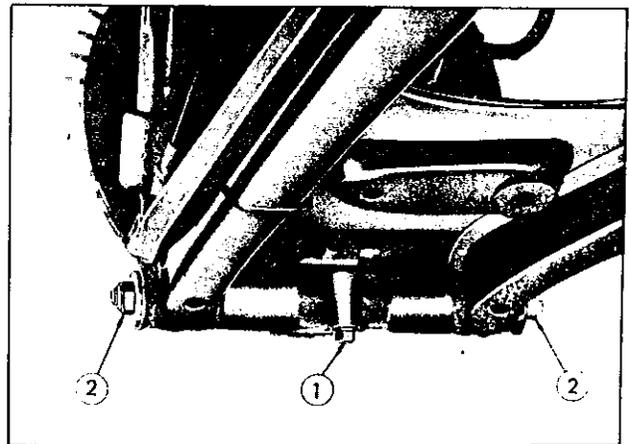


Fig. RA-11 Removing the lock bolt and self-lock nut

6. Withdraw the spindle, and separate the transverse link from the strut assembly.

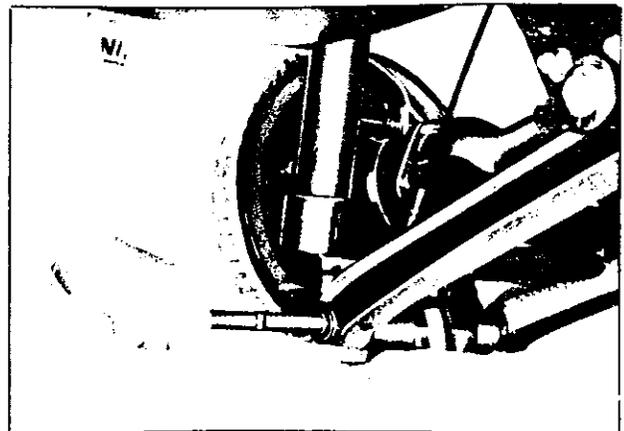


Fig. RA-12 Removing the spindle

CHASSIS

7. Disconnect the drive shaft (wheel side) (indicated by arrow mark).

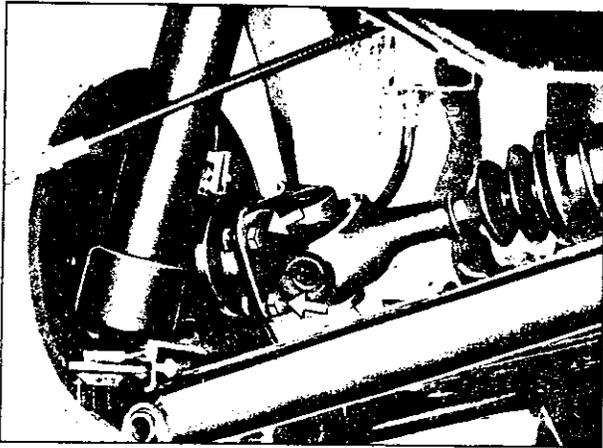


Fig. RA-13 Removing the drive shaft

8. Remove the strut installation nut (from the rider's compartment side). The strut assembly can be removed downward.

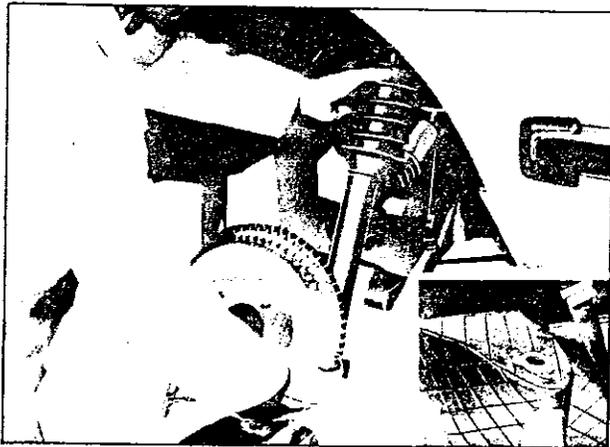


Fig. RA-14 Removing the strut assembly

Note: When removing the strut assembly, apply a jack to the lower end of the strut, and remove it gradually.

9. For the removal and reinstallation of the spring from the strut assembly, disassembly of the strut, inspection, and adjustment, the instructions for the front strut assembly apply.

Refer to section "FA-Front Axle and Front Suspension".

Reinstallation

Install the strut assembly in reverse sequence of removal.

Note: a. Install the spindle so that the shorter side (when measured from the position where the lock bolt is installed) is faced to the front side of the vehicle.

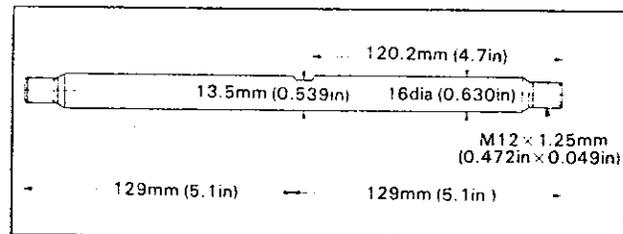


Fig. RA-15 The spindle

- b. Tighten the transverse link outer self-lock nut completely after installing wheels and placing the vehicle under the standard load
- c. When installing the spring, make sure that the spring has been correctly seated on the spring seat.

TRANSVERSE LINK

Removal

1. Choke the front wheels.
2. Loosen the wheel nuts, jack up the vehicle, and support the body with a stand.
3. Remove the wheel nuts, and remove the wheel.
4. Separate the transverse link from the strut. (Refer to the paragraph for strut and coil spring.)
5. Apply a jack beneath the gear carrier, and support it.
6. Loosen the transverse link inner bolt ① (for both front and rear). (Figure RA-16)
7. Remove the differential mount front insulator installation nut ②. (Figure RA-16)

REAR AXLE & REAR SUSPENSION

8. Remove the differential mount front member installation nut (3), and remove the differential mount front member (4).

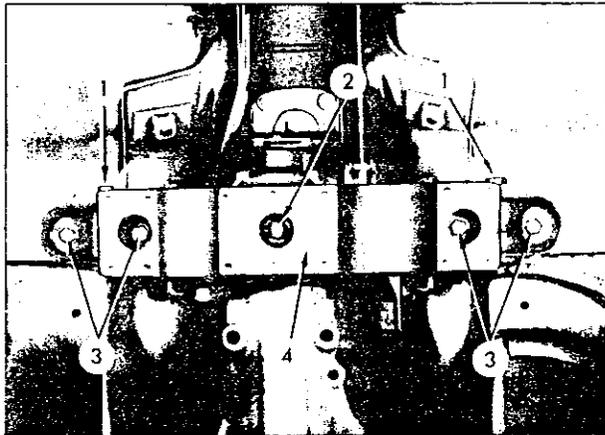


Fig. RA-16 Removing the differential mount front member

9. Remove the link mount rear bracket (indicated by arrow mark). The transverse link can be removed.

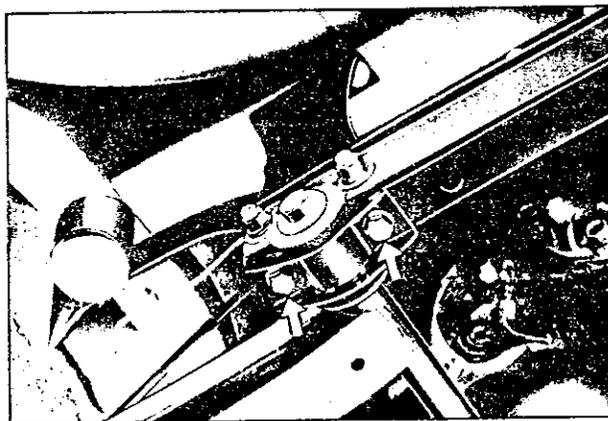


Fig. RA-17 Removing the transverse link

10. Withdraw the inner bushing and outer bushing from the transverse link. (Refer to the paragraph for rear suspension assembly.)

Inspection

1. Check the transverse link differential mount front member for crack, deformation, and damage. Replace as required.

2. Check the rubber bushing for decline, wear, or other defective condition, replace as required.

Reinstallation

1. Install the transverse link in reverse sequence of removal.
2. For the installation, refer to the precautions for installation of rear suspension assembly (page RA-4).

GEAR CARRIER

Removal

1. Choke the front wheels.
2. Jack up the vehicle, and support the body with a stand.
3. Remove the main muffler. (Refer to section FE Engine control, Fuel and Exhaust system.)
4. Separate the propeller shaft from the gear carrier.
5. Loosen the front side transverse link inner bolt (1). (Figure RA-18)
6. Remove the drive shaft installation bolt (gear carrier side) (2), and separate the drive shaft from the gear carrier.

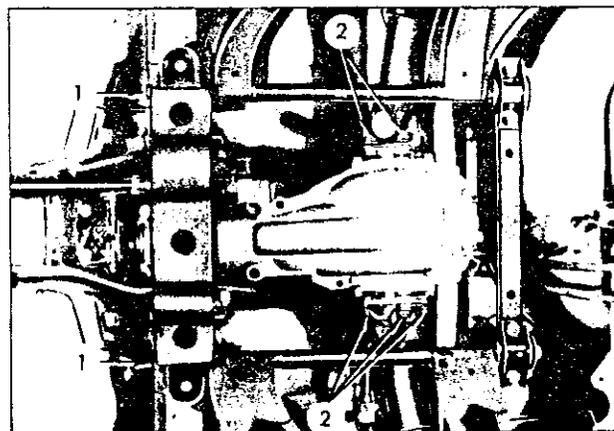


Fig. RA-18 Separating the drive shaft

CHASSIS

7. Apply a jack beneath the gear carrier and support it.
8. Remove the differential mount rear member installation nut (indicated by arrow mark).

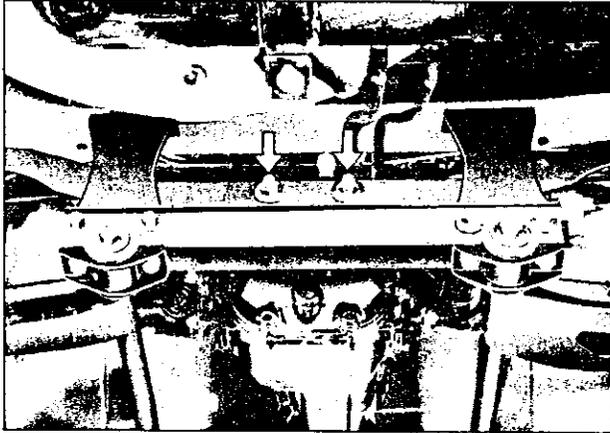


Fig. RA-19 Removing the differential mount rear member

9. Remove the differential mount front member installation bolt (indicated by arrow mark), lower the jack slowly, and remove the gear carrier.

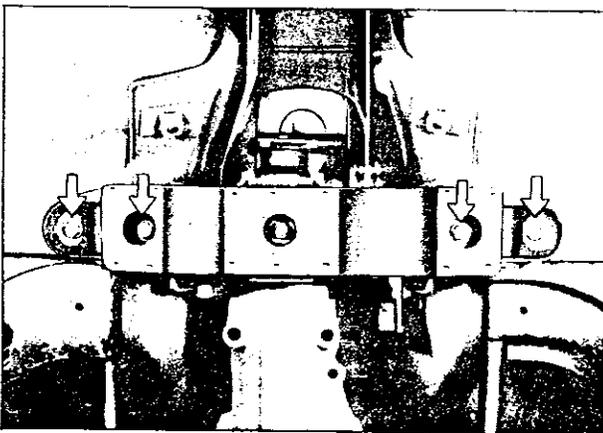


Fig. RA-20 Removing the differential mount front member

10. Remove the differential mount front member and differential mount front insulator from the gear carrier.

Reinstallation

1. Install the gear carrier in reverse sequence of removal.
2. When installing the gear carrier, refer to the precautions for installation of rear suspension assembly (page RA-4).

WHEEL BEARING, OIL SEAL, AND REAR AXLE SHAFT

Removal

1. Choke the front wheels.
2. Loosen the wheel nuts, jack up the vehicle, and support it with stand.
3. Remove the wheel nuts and wheel.
4. Remove the drive shaft installation bolt (wheel side). (Figure RA-13)
5. Remove the rear wheel bearing lock nut.

Note: Do not release the rear wheel bearing lock nut from caulking when removing it.

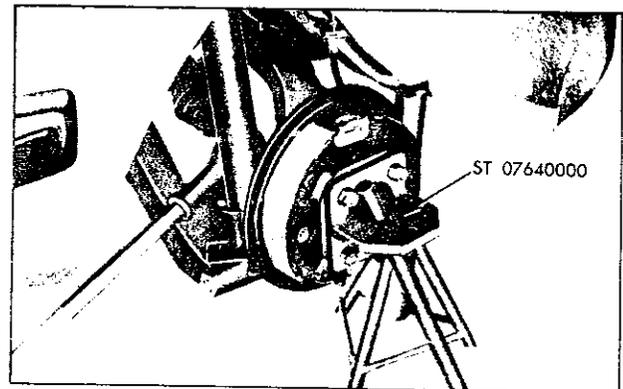


Fig. RA-21 Removing the rear wheel bearing lock nut

6. Remove the rear axle shaft by the use of rear axle stand (special tool ST07640000) and sliding hammer (special tool ST36230000).

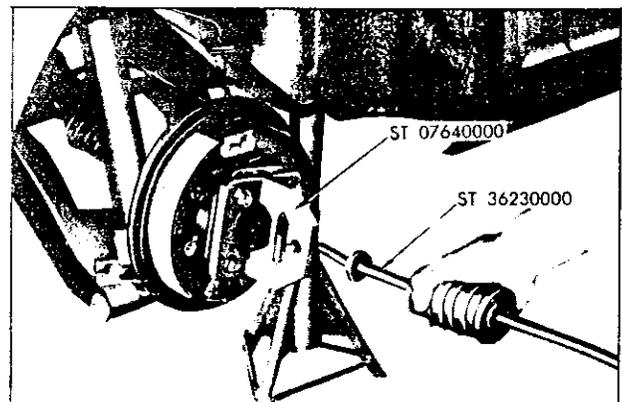


Fig. RA-22 Removing the rear axle shaft

REAR AXLE & REAR SUSPENSION

7. Remove the distance piece and companion flange.
8. Remove the inner rear wheel bearing and oil seal.
9. Remove the rear wheel bearing (outer side) from the rear axle shaft.

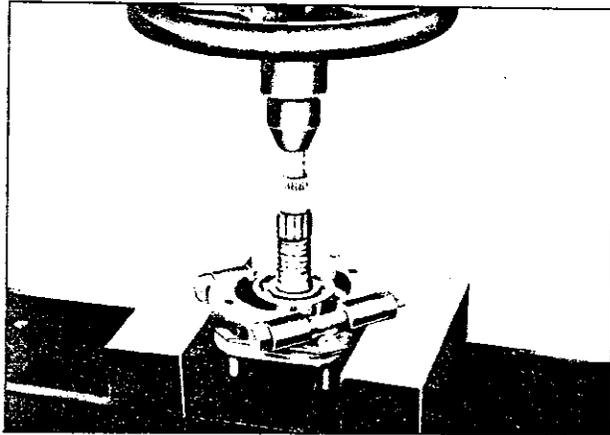


Fig. RA-23 Removing the rear wheel bearing (outer side)

Inspection

1. Check the wheel bearing for end play, and the rolling surface for flaking, wear, seizure, and oil seal for crack, deformation.

Replace the wheel bearing as required.

2. Check the rear axle shaft for crack, for seizure.

Replace the rear axle shaft and wheel bearing replace as required.

3. Check the lip of oil seal for damage and wear.

Reinstallation

Install the wheel bearing, oil seal and rear axle shaft in reverse sequence of removal.

Instructions for assembly of rear wheel bearing

1. The outer bearing is provided with a seal in one side. Apply the outer bearing to the rear axle shaft so that the side to which the seal is attached is faced to the wheel. (See Figure RA-25)

2. Relationship between the rear bearing housing and distance piece is shown in Figure RA-24

Mark "A", "B", or "C" is stamped on the housing. Select a distance piece having a mark coincided with the mark on the housing.

When a distance piece is reused, make sure that both ends are not collapsed or deformed.

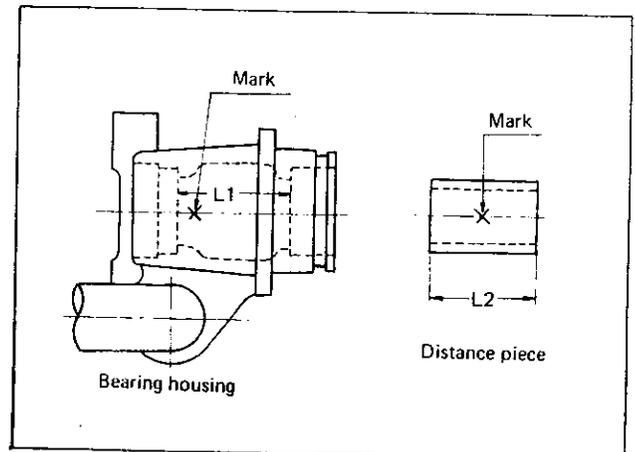


Fig. RA-24 The rear bearing housing and distance piece

Rear bearing housing		Distance piece	
Mark	Size mm (in)	Mark	Size mm (in)
A	52.63 (2.072) or more but less than 52.73 (2.076)	A	52.60 (2.070) or more but less than 62.66 (2.467)
B	52.53 (2.068) or more but less than 52.63 (2.072)	B	52.50 (2.067) or more but less than 52.56 (2.069)
C	52.43 (2.064) or more but less than 52.53 (2.068)	C	52.40 (2.063) or more but less than 52.46 (2.065)

CHASSIS

3. For the wheel bearing grease, use multipurpose grease (MIL G2108 or G10924).

Fill the portion indicated by asterisk (*) in Figure RA-25

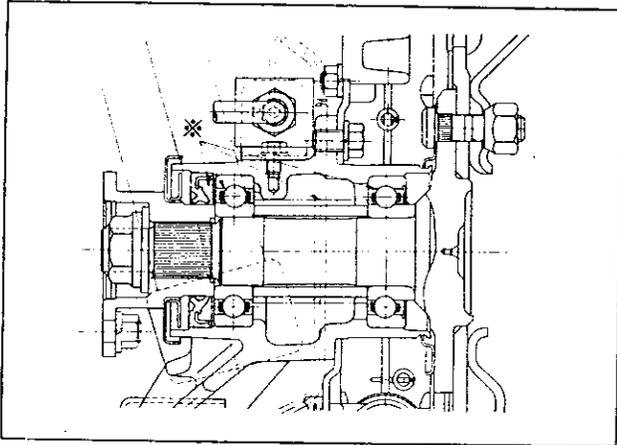


Fig. RA-25 Lubrication chaft of rear axle

4. Tighten the wheel bearing lock nut, and measure the rear axle shaft turning starting torque and rear axle shaft end play. Readjust as required.

Rear axle shaft turning starting torque:

4.5 kg-cm (390 in-lb)

At the hub bolt 790 gr (28.7 oz) or less

Rear axle shaft end play:

0 to 0.15 mm (0 to 0.0057 in)

5. Securely caulk the wheel nuts after tightening.

6. When fitting the wheel side wheel bearing, use rear axle shaft outer bearing drift (special tool ST37780000)

DRIVE SHAFT

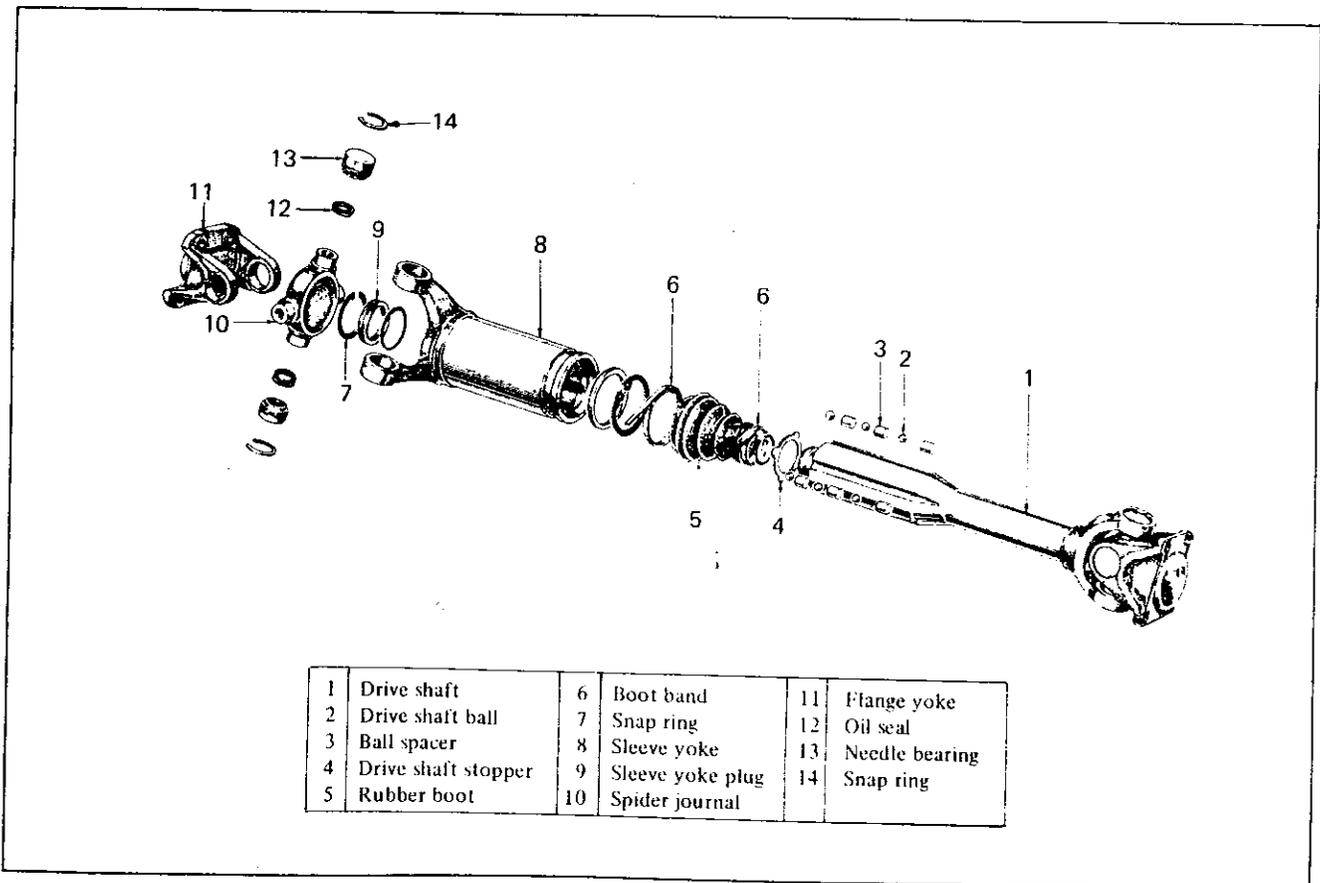


Fig. RA-26 Drive shaft components

REAR AXLE & REAR SUSPENSION

Removal

Remove the drive shaft universal joint yoke flange bolts from both sides. (indicated by arrow mark)

Note: Handle the drive shaft carefully because it is easily damaged.

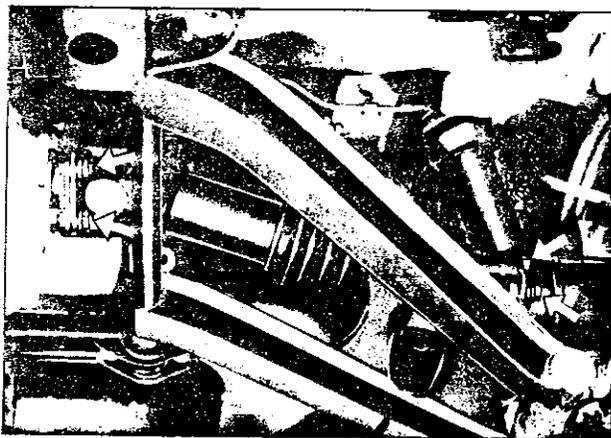


Fig. RA-27 Removing the drive shaft

Disassembly

The drive shaft should be disassembled only when lubricating the ball spline.

The lubrication is required every 50,000 km (30,000 miles).

1. Remove the universal joint spider from the differential side. Refer to the paragraph covering the propeller shaft.

2. Remove the snap ring from the sleeve yoke plug and remove the plug. Use drive shaft snap ring plier (special tool ST38300000).

Depress the drive shaft and remove the snap ring from the stopper.

Remove the stopper. Disconnect the boot and separate the drive shaft carefully so as not to lose the balls and spacers.

Inspection

1. Replace the boot and O-ring of the sleeve yoke plug, if damaged.

2. Check the drive shaft for straightness, crack, damage, wear or distortion.

Replace the drive shaft assembly as required.

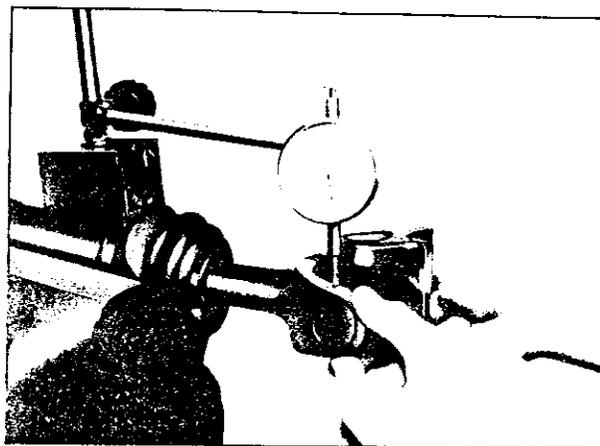


Fig. RA-28 Measuring drive shaft play

3. Check the steel balls and sleeve yoke for damage, wear or distortion.

Replace the drive shaft assembly as required.

4. Replace the universal joint in accordance with the instructions described in the paragraph covering the propeller shaft if faulty condition is detected.

5. Thoroughly remove grease from the sleeve yoke, drive shaft ball rolling groove and oil groove, and clean them. (Multipurpose grease MIL G2108, G10924)

6. Measure the drive shaft play as shown in the Figure RA-28. If the play exceeds 0.1 mm (0.0039 in), replace the drive shaft assembly. Be sure to measure the drive shaft play with the drive shaft compressed completely.

7. Check the drive shaft for radial play, and replace, if excessive.

Reassembly

Reassemble the drive shaft in reverse sequence of disassembly regarding the following matters:

1. Correctly align the yokes, and make sure that the steel balls and spacers have been installed in the correct order.

2. Selecting a suitable snap ring, adjust the axial play of the universal joint to within 0.02 mm (0.0008 in). Snap rings having four different thicknesses are available.

CHASSIS

3. Apply multipurpose grease (MIL G2108 or G-10924) to the ball rolling groove and oil groove in an adequate volume. [Approximately 10 gr (0.35 oz)]

Moreover, apply grease in volume of approximately 35 gr (1.23 oz) to the area shown in Figure RA-29.

Note: The drive shaft component parts are not available as separate parts.

Therefore, the drive shaft assembly should be replaced in form of an assembly, although only one component is defective.

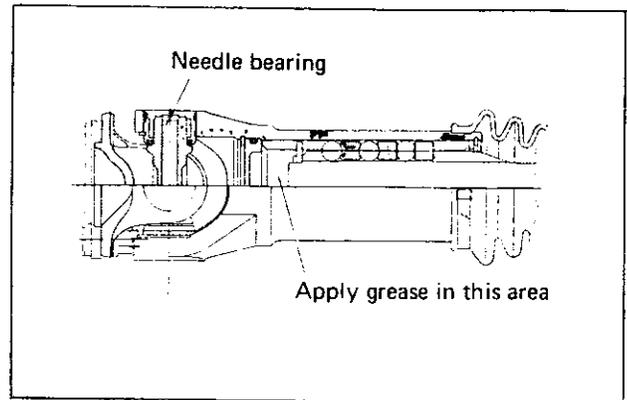


Fig. RA-29 Cross-sectional view of drive shaft

SERVICE DATA AND SPECIFICATIONS

SPECIFICATIONS FOR SPRING

Spring wire diameter	11.4 mm (0.449 in)
Spring coil diameter	100 mm (3.94 in)
Number of windings	10.65
Free height	381 mm (15.0 in)
Height when installed	225 mm (8.86 in)
Normal load	288 kg (635 lb)
Spring constant	1.85 kg/mm (103.6 lb/in)

SPECIFICATIONS FOR STRUT

Outer diameter	50.8 mm (2.000 in)
Piston rod diameter	24.945 to 24.975 mm (0.982 to 0.983 in)
Piston cylinder bore	32.020 to 32.060 mm (1.261 to 1.262 in)
Damping force at $v = 0.3$ m/s	
Expanding side	35 kg (77 lb)
Contracting side	20 kg (44 lb)
Piston rod	
Bend limit	0.1 mm (0.0039 in)
Wear limit	0.05 mm (0.0020 in)
Piston cylinder	
Bend limit	0.2 mm (0.0079 in)
Wear limit	0.1 mm (0.0039 in)
Strut oil manufacturer	NISSEKI shock absorber oil A-1
Volume of strut oil	320 cc (19.5 cu in)

REAR AXLE & REAR SUSPENSION

REAR WHEEL ALIGNMENT

	With standard load*	With out load	When fully bounded	When fully rebounded
Camber	-24'	48'	-3°49'	3°19'
Tread	1,362.5 mm (53.64 in)	1,344.5 mm (52.93 in)	—	—
Toe-in	0°	0°	0°	0°

* "With standard load" means total weight of two riders or weighting 68 kg (150 lb) each.

TIGHTENING TORQUE

Drive shaft installation bolts (both wheel and gear carrier sides)	5 to 6 kg-m (36.2 to 43.4 ft-lb)
Strut installation nut	1.6 to 2.1 kg-m (11.6 to 15.2 ft-lb)
Strut rod self-lock nut	7.5 to 9.5 kg-m (54.2 to 68.7 ft-lb)
Packing gland	6.0 to 6.5 kg-m (43.4 to 47.0 ft-lb)
Rear axle bearing lock nut	25 to 33 kg-m (181 to 239 ft-lb)
Brake disc installation bolt	2.7 to 3.7 kg-m (19.5 to 26.8 ft-lb)
Brake hose (line) clamp nut	0.54 to 0.74 kg-m (3.9 to 5.4 ft-lb)
Wheel nut	8 to 9 kg-m (57.8 to 65.1 ft-lb)
Bearing housing spindle lock bolt	1.0 to 1.2 kg-m (7.2 to 8.7 ft-lb)
Transverse link outer self-lock nut	7.5 to 9.5 kg-m (54.2 to 68.7 ft-lb)
Transverse link inner bolt	14 to 16 kg-m (101 to 116 ft-lb)
Rear link mount bracket installation bolt	3.2 to 4.3 kg-m (23.1 to 31.1 ft-lb)
Front differential mount member installation bolt	3.2 to 4.3 kg-m (23.1 to 31.1 ft-lb)
Front differential mount member and front differential mount insulation insulator nut	3.2 to 4.3 kg-m (23.1 to 31.1 ft-lb)
Gear carrier and differential mount front insulator installation nut	6.0 to 8.0 kg-m (43.4 to 57.8 ft-lb)
Belt fitting self-lock nut	11.3 to 13.8 kg-m (82 to 100 ft-lb)
Belt fitting bracket installation bolt	3.2 to 4.3 kg-m (23.1 to 31.1 ft-lb)
Rear differential mount member installation nut	7.5 to 9.5 kg-m (54.2 to 68.7 ft-lb)
Rear differential mount insulator installation nut	7.5 to 9.5 kg-m (54.2 to 68.7 ft-lb)
Transverse link mounting brace installation bolt	3.2 to 4.3 kg-m (23.1 to 31.1 ft-lb)
Propeller shaft and differential companion flange installation nut	1.6 to 2.4 kg-m (11.6 to 17.4 ft-lb)

CHASSIS

TROUBLE DIAGNOSES AND CORRECTIONS

Troubles	Possible causes	Corrective action
<p>Noise (Unusual sound)</p> <p>It is difficult to definitely identify noise (unusual sound) of the rear axle from other noises (unusual sounds) generated from the differential carrier and propeller shaft. However, when unusual sound occurs, make sure that it comes from the rear axle.</p>	<ol style="list-style-type: none"> 1) Loose joint 2) Unbalanced tires 3) Insufficient lubrication, improper adjustment, worn, or damaged wheel bearing 4) Damaged transverse link rubber bushing 5) Defective shock absorber (in strut) 6) Damaged differential mount insulator 7) Damaged universal joint 8) Worn or seized drive shaft ball spline 9) Broken coil spring 	<p>Retighten.</p> <p>Adjust.</p> <p>Lubricate, adjust, or replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p>
<p>Unstable running</p> <p>This trouble is also related to the front suspension. When diagnoses trouble, refer to the paragraph covering the front suspension, also.</p>	<ol style="list-style-type: none"> 1) Loose wheel nut(s) 2) Damaged transverse link bushing 3) Reduced shock absorber damping force 4) Seized or damaged drive shaft ball spline 5) Weakened spring 	<p>Retighten.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p>
<p>Oil Leaking</p>	<ol style="list-style-type: none"> 1) Damaged drive shaft dust cover 2) Worn or damaged rear axle shaft grease seal 	<p>Disassemble, clean, and reassemble, or replace the dust cover with new one.</p> <p>Replace.</p>

**DATSUN 240Z SPORTS
MODEL S30 SERIES
CHASSIS & BODY**



NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION BR

BRAKE

BRAKE SYSTEM	BR- 1
FRONT DISC BRAKE	BR- 9
REAR BRAKE	BR-13
HAND BRAKE	BR-18
MASTER-VAC	BR-21
SERVICE DATA AND SPECIFICATIONS	BR-27
TROUBLE DIAGNOSES AND CORRECTIONS	BR-28

BR