SERVICE MANUAL

DATSUN PICK-UP

MODEL 620 SERIES
CHASSIS AND BODY

NISSAN

1972

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

DATSUN PICK-UP

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QUICK REFERENCE INDEX

FOREWORD

This service manual has been prepared for the purpose of assisting service personnels of our distributors and dealers in providing effective service and maintenance of the DATSUN PICK-UP (model 620) series.

Since proper maintenance and service are absolutely essential satisfying our customers, this manual should be read carefully. The following matters should be noted for effective utilization of this manual.

1. Explanations in this manual are mainly concerning the model (G)(N)620U (right hand drive) but will easily be referred also to the left hand drive models.
2. Please refer to the following SERVICE MANUALS in addition to this manual for complete details of the vehicles, because this manual describes information concerning the chassis and body only.
   - J13 & J15 ENGINE SERVICE MANUAL
   - L13, L16 & L20 ENGINE SERVICE MANUAL (for PL620 series)
3. All part names in this manual conform to the DATSUN 620 PARTS CATALOG, and only the genuine service parts listed in this PARTS CATALOG must 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 should be emphasized that those who use this manual are responsible for revising the contents according to the SERVICE JOURNAL and SERVICE DATA AND SPECIFICATIONS issued by the factory, which carry the latest factory approved servicing methods.
6. Rights for alternation of specifications and methods at any time are reserved.

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 Printed in Japan

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SECTION GI

GI

GENERAL INFORMATION

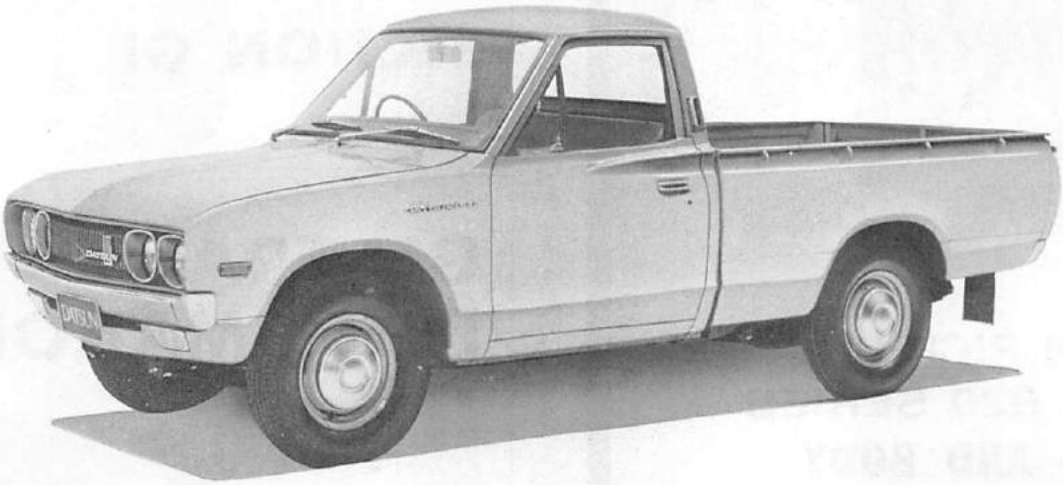


Fig. GI-1 Standard body Pick-up

Fig. GI-2 Long body Pick-up

Fig. GI-3 Double Pick-up

GENERAL INFORMATION

CONTENTS

MODEL VARIATION

		Vehicle model		Engine model	Payload kg (lb)	Transmission	Remarks
		R.H. drive	L.H. drive				
Standard body	Pick-up	620U	L620	J13	1,000 (2,204.6)	R4W63	
		———	L620T			F4W63	
	Double Pick-up	U620U	UL620		400 (881.8)	R4W63	
	Pick-up	N620U	NL620	J15	1,000 (2,204.6)	R4W63	
		———	NL620T			F4W63	
	Double Pick-up	———	UNL620		400 (881.8)	R4W63	
Long body	Pick-up	G620U	LG620	J13	1,000 (2,204.6)	R4W63	
		———	LG620T			F4W63	
		GN620U	GNL620	J15	1,000 (2,204.6)	R4W63	
		———	GNL620T			F4W63	
Standard body	Pick-up	———	PL620TU	L16	500 (1,102.3)	F4W63	for U.S.A., CANADA
		———	PL620TUH				for HAWAII, GUAM, PUERTO RICO, A. SAMOA

MODEL IDENTIFICATION

The unit and car numbers are stamped at the factory and are registered by the company. These numbers are used as the basis for preparing the technical report, warranty claim sheet and other similar service and technical information.

Model number plate

The model number plate is located at the hood ledge in the engine room.

The plate yields the vehicle type, engine capacity, maximum engine horsepower (SAE), wheel base, engine number and car serial numbers.

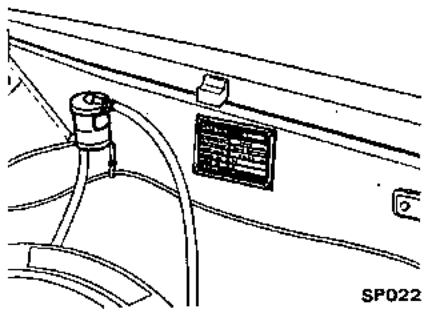
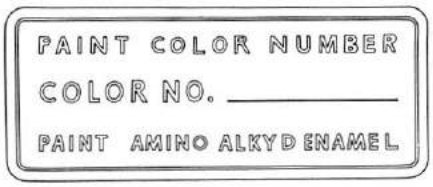


Fig. GI-4 Model number plate location

Color number plate

The color number plate is stamped on the top face of radiator core support.



GI002

Fig. GI-5 Color number plate

Chassis number location

The chassis number is stamped on the front upper face of left side member for R.H. drive, right side member for L.H. drive.

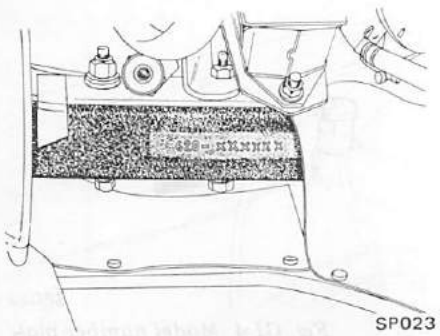
The number is identified by the following figures as a serial number in each model.

PICK-UP

620, L620, G620, LG620, N620, NL620, GN620, GNL620, PL620	XXXXXX

DOUBLE PICK-UP

620	9XXXXX
L620	9XXXXX
N620	9XXXXX
NL620	9XXXXX



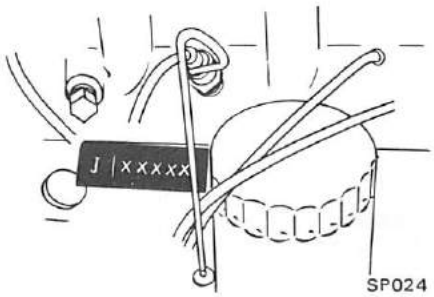
SP023

Fig. GI-6 Chassis number location

Engine number location

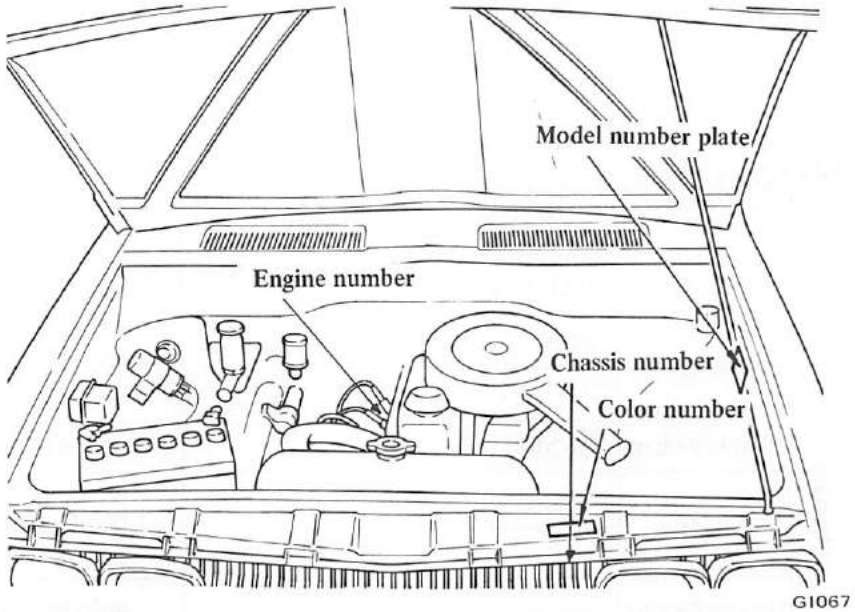
The engine serial number is stamped on the right side of cylinder block. The number is preceded by the engine model, J(J13), J15 or L16.

J	XXXXXX
J15	XXXXXX
L16	XXXXXX



SP024

Fig. GI-7 Engine serial number location



GI067

Fig. GI-8 Indication number location

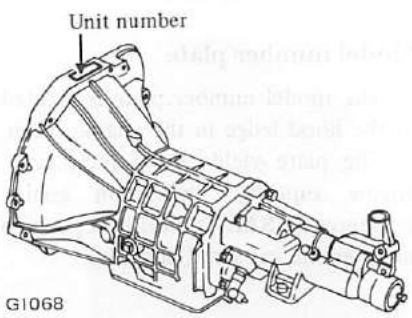
Transmission number location

The transmission serial number is stamped on the front upper face of transmission case.

(Numbering System)

X XX XX XXXX

- Serial number (daily)
- Date of manufacture
- Month of manufacture
- Last letter of year of manufacture



GI068

Fig. GI-9 Transmission number location

Steering gear, Front axle and Rear axle number

The steering gear, front axle and rear axle numbers are stamped on each units of the vehicle.

These unit numbers are stamped as a lot number of product.

(Location)

Steering gear:
On top of gear box

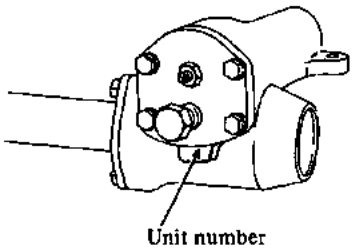
Front axle:
On front face of right and left lower arm

Rear axle:
On rear cover of rear axle case

(Numbering system)

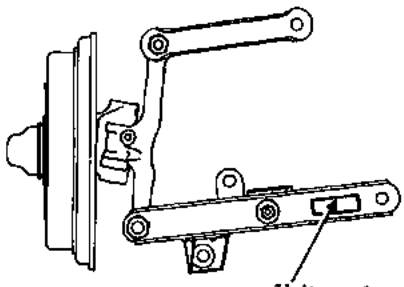
X X XX X

- Line shift, etc. (daily)
- Date of manufacture
- Month of manufacture (1, 2, ... 9, X, Y, Z)
- Last letter of year of manufacture



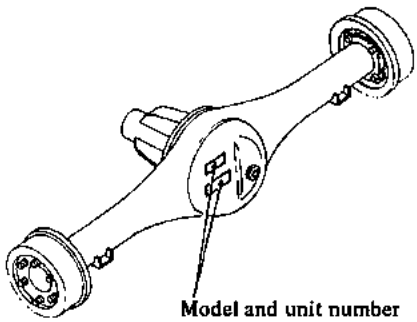
GI069

Fig. GI-10 Steering gear box number location



GI070

Fig. GI-11 Front axle number location



GI071

Fig. GI-12 Rear axle number location

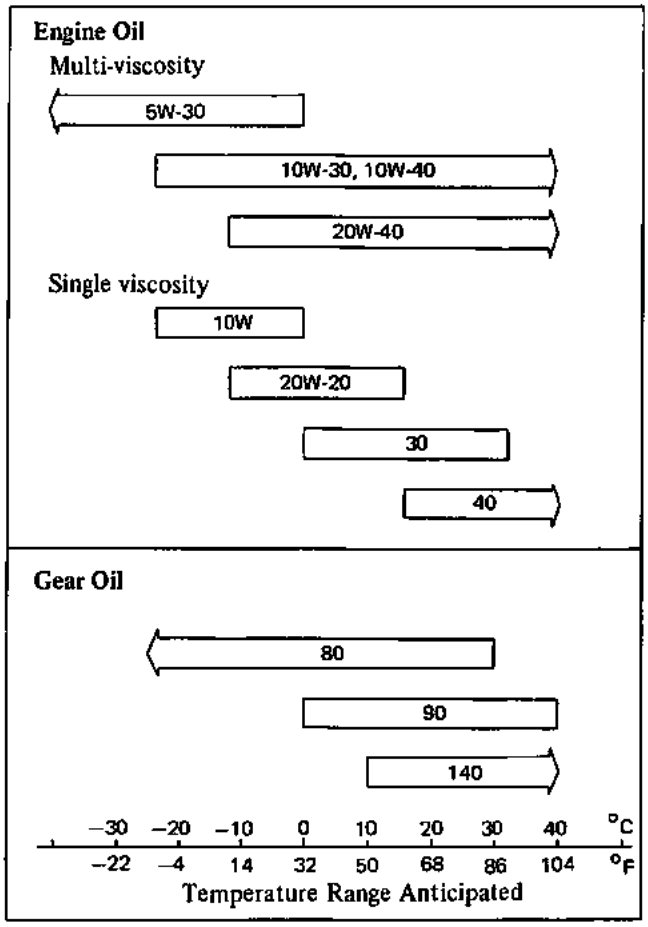
Item \ Model	Standard body								Long body			
	J13 Engine			J15 Engine			L16 Engine		J13 Engine		J15 Engine	
	620U L620	L620T	U620U UL620	N620U NL620	NL620T	UNL620	PL620TU	PL620TUH	G620U LG620	LG620T	GN620U GNL620	GNL620T
Engine model	J13			J15			L16		J13		J15	
Battery capacity	12V-40AH						12V-50AH		12V-40AH			
Clutch type	Dry single disc, Diaphragm spring											
Transmission: Model	R4W63	F4W63	R4W63	R4W63	F4W63	R4W63	F4W63		R4W63	F4W63	R4W63	F4W63
Transmission: Synchro type	Warner											
Final gear type	Hypoid											
Steering gear type	Recirculating ball											
Brake system: Service: Front	Uni-Servo											
Brake system: Service: Rear	Duo-Servo											
Brake system: Parking	Mechanically operated on rear wheels											
Suspension: Front	Independent torsion bar											
Suspension: Rear	Semi-elliptic leaf spring											
Tire: Front	6.00-14-6PRLT		5.50-14-6PRLT	6.00-14-6PRLT		5.50-14-6PRLT	6.00-14-6PRLT					
Tire: Rear	6.00-14-8PRLT		5.50-14-6PRLT	6.00-14-8PRLT		5.50-14-6PRLT	6.00-14-6PRLT		6.00-14-8PRLT			

FINAL, TRANSMISSION AND SPEEDOMETER GEAR USAGE CHART

Item \ Model	620U L620 G620U LG620	U620U UL620	N620U NL620 GN620U GNL620	UNL620	NL620T GNL620T	L620T LG620T	PL620TU PL620TUH
Final gear ratio	4.875	4.625	4.625	4.375	4.625	4.875	4.375
Transmission — Type	R4W63		R4W63		F4W63	F4W63	
Transmission — Control system	Column shift		Column shift		Floor shift	Floor shift	
Transmission — Gear ratio — 1st	5.000		4.243			3.657	
Transmission — Gear ratio — 2nd	3.014		2.558			2.177	
Transmission — Gear ratio — 3rd	1.685		1.589			1.419	
Transmission — Gear ratio — 4th	1.000		1.000			1.000	
Transmission — Gear ratio — Reverse	5.146		4.367			~~3.683~~ 3.638	
Speedometer gear ratio	18/5		17/5			18/5	16/5

RECOMMENDED LUBRICANTS AND PERIODICAL MAINTENANCE

Recommended SAE viscosity number



Recommended lubricants

All models except PL620TU & PL620TU

PRODUCING			AGIP	BP	CALTEX	CASTROL	ESSO	MOBIL	SHELL	TEXACO	TOTAL
ENGINE OIL	Gasoline	Multigrade SD MIL-L-2104B	AGIP F.1 Woom SAE 10W-40, 20W-50	Super Viscostatic 5W-20, 10W-40, 20W-50	Custom Five Star Motor Oil 10W-30, 10W-40, 20W-40, 20W-50	Castrolite 10W-30 XL 20W-40	Uniflo 5W-30, 10W-40 Extra Motor Oil 5W-20, 10W-30, 20W-40	Mobiloil Super 5W-30, 5W-40, 10W-40; 10W-50, 20W-50 Mobiloil Special 5W-20, 10W-30, 20W-40, 20W-50	Super Motor Oil 10W-40, 20W-50	Havoline Super Premium 5W-30, 10W-40, 20W-50	GTS 10W-30, 20W-40, 20W-50
		Monograde SD MIL-L-2104B	AGIP F.1 Woom SAE 10W-20, 30, 40-50	Energol HD Oil 10W, 20W, 30, 40,	Not available	5HD, 10HD, 20HD, 30HD, 40HD, 50HD	Not available	Mobiloil 10W, 20W-20, 30, 40, 50	Not available	Havoline Motor Oil 10W, 20W-20, 30, 40, 50	Super HD 10W, 20W-20, 30, 40, 50
GEAR OIL	Transmission and steering	API GL-4 MIL-L-2105	AGIP F.1 Rotra Hypoid SAE 80, 90, 140 or AGIP F.1 Rotra MP (MIL-L-2105B Level)	Gear Oil EP 80, 90, 140	Universal Thuban 80, 90, 140	Hypoy 80, 90, 140	Gear Oil GP 80, 90, 140	Mobilube EP or GX 80-90, 90, 140	Spirax 75EP, 80EP, 90EP, 140EP	Universal Gear Lub. EP 80, 90, 140	Extreme Pression 80, 90, 140
	Differential	API GL-4 MIL-L-2105	AGIP F.1 Rotra Hypoid SAE 80, 90, 140 or AGIP F.1 Rotra MP (MIL-L-2105B Level)	Hypogear Oil EP 80, 90, 140	Universal Thuban 80, 90, 140	Hypoy 80, 90, 140	Gear Oil GP 80, 90, 140	Mobilube EP or GX 80-90, 90, 140	Spirax 75EP, 80EP, 90EP, 140EP	Universal Gear Lub. EP 80, 90, 140	Extreme Pression 80, 90, 140
Multipurpose grease		Lithium soap NLGI 2	—	Energrease L-2*	Marfak Multipurpose 2*	LM Grease*	Multipurpose Grease*	Mobilgrease MP*	Retinax A	Marfak Multipurpose 2*	Multis*
Brake and clutch fluid		SAE J1703a	—	Disc Brake Fluid	Heavy Duty Brake Fluid	C.B.F. Crimson Girling B.F. Green GT (LMA)	Brake Fluid HD 400, 500	Super Heavy Duty B.F.	Donax B, HB	Super Heavy Duty Motor Vehicle B.F.	Brake Fluid
Antifreeze coolant (L.L.C.)			—	Antifrost	Startex Antifreeze Coolant	Antifreeze	Antifreeze*	Permazone*	Glycoshell*	Antifreeze Coolant* Startex Antifreeze Coolant*	Antigel*

In case the above brand oils are not available, it is permissible to use oils marked "*."

PRODUCING			CHEVRON	ESSO	MOBIL	SHELL	SUNOCO	TEXACO
ENGINE OIL	Gasoline	Multigrade SD MIL-L-2104B	Supreme Motor Oil 5W-30, 10W-30 10W-40, 20W-40	Uniflo 5W-30, 10W-40 Extra Motor Oil 5W-20, 10W-30, 20W-40	Mobiloil Super 5W-30, 5W-40, 10W-40, 10W-50, 20W-50 Mobiloil Special 5W-20, 10W-30, 20W-40, 20W-50	Super Motor Oil 10W-40, 20W-50	Special Motor Oil 5W-30, 10W-40 Dynalube Motor Oil 10W-30	Havoline Super Premium 5W-30, 10W-40, 20W-50
		Monograde SD MIL-L-2104B	Special Motor Oil 10W, 20W-20, 30, 40, 50	Not available	Mobiloil 10W, 20W-20, 30, 40, 50	Not available	Sunlube Motor Oil 10W, 20W-20, 30, 40, 50	Havoline Motor Oil 10W, 20W-20, 30, 40, 50
GEAR OIL	Transmission and steering	API GL-4 MIL-L-2105	Multiservice Gear Lub. 75, 80, 90, 140	Gear Oil GP 80, 90, 140	Mobilube EP or GX 80-90, 90, 140	Spirax 75EP, 80EP, 90EP, 140EP	Multipurpose Gear Lub. GL-4 80, 90, 140	Universal Gear Lub. EP 80, 90, 140
	Differential	API GL-4 MIL-L-2105	Multiservice Gear Lub. 75, 80, 90, 140	Gear Oil GP 80, 90, 140	Mobilube EP or GX 80-90, 90, 140	Spirax 75EP, 80EP, 90EP, 140EP	Multipurpose Gear Lub. GL-4 80, 90, 140	Universal Gear Lub. EP 80, 90, 140
Multipurpose grease		Lithium soap NLGI 2	Automotive Grease Medium*	Multipurpose Grease*	Mobilgrease MP*	Retinax A	Prestige II WB-500*	Marfak Multipurpose 2*
Brake and clutch fluid		DOT 3	It must conform to the Motor Vehicle Safety Standard No. 116.					
Antifreeze coolant (L.L.C.)			Atlas Perma Guard Antifreeze*	Long Life Coolant* Atlas Long Life Coolant RAD*	Permazone*	Shellzone	Permanent Type*	Antifreeze Coolant* Startex Atnifreeze Coolant*

In case the above brand oils are not available, it is permissible to use oils marked "*."

Periodical maintenance

All models except PL620TU & PL620TUH

UNDER HOOD MAINTENANCE SCHEDULE

MAINTENANCE OPERATION		MAINTENANCE INTERVAL													
	Number of thousands of kilometers	1	3	39	6	9	12	15	18	21	24	27	30	33	36
				75	42	45	48	51	54	57	60	63	66	69	72
					78	81	84	87	90						
	Number of thousands of miles	0.6	2	26	4	6	8	10	12	14	16	18	20	22	24
				50	28	30	32	34	36	38	40	42	44	46	48
					52	54	56	58	60						
Adjust intake & exhaust valve clearances		X				X			X			X			X
Check drive belt tension		X				X			X			X			X
Retighten cylinder head bolts & manifold nuts		X													
Replace oil filter		R				R			R			R			R
Check engine oil for leaks		X				X			X			X			X
Change engine oil		R	R	R	R	R	R	R	R	R	R	R	R	R	R
Change engine coolant						R			R			R			R
Check cooling system hoses & connections									X						X
Lubricate accelerator linkage						X			X			X			X
Clean or replace carburetor air cleaner filter (Dry type)			X	X	X	X	X	X	X	X	X	X	X	X	R
Replace carburetor air cleaner filter (Viscous type)															R
Adjust carburetor-idle r.p.m., mixture ratio			X			X			X			X			X
Replace fuel filter									R						R
Check fuel line (hoses, pipings, connections, etc.) for leaks		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Check & adjust ignition timing		X				X			X			X			X
Check distributor breaker point			X	X	X	X	X	X	X	X	X	X	X	X	X
Grease distributor shaft & cam heel						X			X			X			X
Check or replace spark plugs						X			R			X			R
Change brake fluid															R
Check Master-Vac for operation			X						X						X
Overhaul Master-Vac															X
Check steering gear box oil level, top up if necessary						X			X			X			X
Check battery specific gravity		X							X						X

R: Replacement

UNDER VEHICLE MAINTENANCE SCHEDULE

MAINTENANCE OPERATION	MAINTENANCE INTERVAL													
Number of thousands of kilometers	1	3	39 75	6 42 78	9 45 81	12 48 84	15 51 87	18 54 90	21 57	24 60	27 63	30 66	33 69	36 72
Number of thousands of miles	0.6	2	26 50	4 28 52	6 30 54	8 32 56	10 34 58	12 36 60	14 38	16 40	18 42	20 44	22 46	24 48
Check clutch & brake pedal free play	X				X			X			X			
Check clutch & brake system for leaks or defects	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Check foot & hand brake operation		X			X			X			X			X
Lubricate foot operated pedal bushings					X			X			X			X
Grease hand brake linkage					X			X			X			X
Check brake linings & drums for wear								X						X
Overhaul brake cylinders assembly														X
Change or check transmission & differential gear oil level, top up if necessary	R	X	X	X	X	X	X	X	X	X	X	X	X	R
Grease transmission control linkage					X			X			X			X
Check & retighten steering gear box & linkage	X				X			X			X			X
Grease steering linkage ball joints					X			X			X			X
Check shock absorber								X						X
Check & retighten suspension parts	X				X			X			X			X
Grease all nipples of suspension parts except ball joints		X	X	X	X	X	X	X	X	X	X	X	X	X
Repack wheel bearing grease								X						X
Check wheel discs for damage					X			X			X			X
Retighten propeller shaft universal joint flange bolts	X							X						X
Grease propeller shaft spline		X	X	X	X	X	X	X	X	X	X	X	X	X
Retighten body mountings	X				X			X			X			X
Check frame for cracks								X						X

R: Replacement

UNDER HOOD MAINTENANCE SCHEDULE (Continued)

MAINTENANCE OPERATION	Number of months or thousands of miles, whichever comes first	MAINTENANCE INTERVAL											
		600 miles	3	6	9	12	15	18	21	24	27	30	
					33	36	39	42	45	48	51		
								54			57		60
[E] Check manifold inlet (carburetor spacer, connecting hoses, etc.)						X				X			X
[E] Check engine compartment hose connections						X				X			X
[E] Check fuel vapor control valves						X				X			X
Change brake fluid										R			
Check Master-Vac for operation						X				X			X
Overhaul Master-Vac										X			
Check steering gear box oil level, top up if necessary				X		X		X		X		X	X
Check battery specific gravity		X				X				X			X

[E]: Affects Emission Control R: Replacement

UNDER VEHICLE MAINTENANCE SCHEDULE

MAINTENANCE OPERATION	Number of months or thousands of miles, whichever comes first	MAINTENANCE INTERVAL											
		600 miles	3	6	9	12	15	18	21	24	27	30	
					33	36	39	42	45	48	51		
								54			57		60
Check clutch & brake pedal free play		X		X		X		X		X		X	X
Check clutch & brake system (cylinders, hoses, pipings, connections, etc.) for leaks or defects		X	X	X	X	X	X	X	X	X	X	X	X
Check foot & parking brake operation			X	X		X		X		X		X	X
Lubricate foot operated pedal bushings						X				X			X
Grease parking brake linkage										X			
Check brake linings & drums for wear						X				X			X
Overhaul brake cylinders & caliper assembly												X	X
Change or check transmission & differential gear oil level, top up if necessary		R	X	X	X	X	X	X	X	X	X	R	R
Check & retighten steering gear box & linkage		X		X		X		X		X		X	X
Grease steering linkage ball joints						X				X			X

R: Replacement

UNDER VEHICLE MAINTENANCE SCHEDULE (Continued)

MAINTENANCE OPERATION	Number of months or thousands of miles, whichever comes first	MAINTENANCE INTERVAL											
		600 miles	3	6	9	12	15	18	21	24	27	30	
					33	36	39	42	45	48	51		
								54			57		60
Check shock absorber						X				X			X
Check & retighten suspension parts		X		X		X		X		X		X	X
Grease all nipples of suspension parts			X	X	X	X	X	X	X	X	X	X	X
Repack wheel bearing grease						X				X			X
Check wheel discs for damage				X		X		X		X		X	X
Retighten propeller shaft universal joint flange bolts		X				X				X			X
Retighten body mountings		X											

OUTSIDE MAINTENANCE SCHEDULE

MAINTENANCE OPERATION	Number of months or thousands of miles, whichever comes first	MAINTENANCE INTERVAL											
		600 miles	3	6	9	12	15	18	21	24	27	30	
					33	36	39	42	45	48	51		
								54			57		60
[E] Check fuel tank pressure relief valve operation						X				X			X
Lubricate all locks & hinges				X		X		X		X		X	X
Check wheel balance & rotate wheel position				X		X		X		X		X	X
Check front wheel alignment & turning angle						X				X			X
Check headlight aiming												X	X
Road test		X		X		X		X		X		X	X

[E]: Affects Emission Control

Lubricant capacities

		Liter	U.S. measure	Imper. measure
Fuel tank	Pick-up	45 ℓ	11 7/8 gal.	9 7/8 gal.
	Double Pick-up	40 ℓ	10 5/8 gal.	8 3/4 gal.
Cooling system	Without heater	5.4 ℓ	1 3/8 gal.	1 1/8 gal.
	With heater	6.0 ℓ	1 5/8 gal.	1 3/8 gal.
Engine lubricate system	J13 & J15 Engine	4.4 ℓ	4 5/8 qts.	3 7/8 qts.
	L16 Engine	4.7 ℓ	5 qts.	4 1/8 qts.
Oil pan	J13 & J15 Engine	3.0 ℓ	3 1/8 qts.	3 1/8 qts.
	L16 Engine	3.9 ℓ	4 1/8 qts.	4 1/8 qts.
Transmission case		1.7 ℓ	3 5/8 pts.	3 pts.
Steering gear box		0.33 ℓ	3/4 pt.	5/8 pt.
Differential case		1.0 ℓ	2 1/8 pts.	1 3/4 pts.

JACK UP AND TOWING

Jack

Before using the jack, proceed as follows:

Apply parking brake firmly and block rear wheels if the front of the vehicle is raised.

Notes:

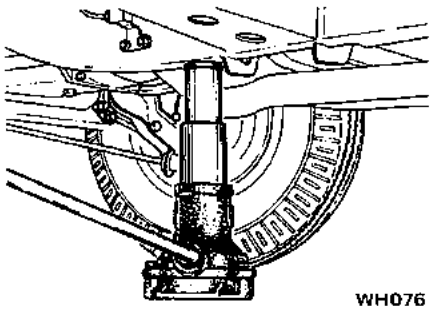
a. **Never get under the vehicle while it is supported only by the jack. Always use safety stands to support frame or rear axle case when you have to get beneath the vehicle.**

b. **In no event should the jack be applied to the points except the following specified portions.**

Pick-up

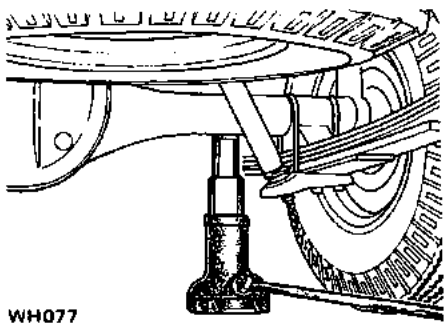
When jacking up the front side, place a screw jack under side frame [about 520 mm (20.5 in) at rear of front axle center].

When jacking up the rear side, place a screw jack under rear axle case close to the side of rear spring.



WH076

Fig. GI-13 Front jacking point for Pick-up



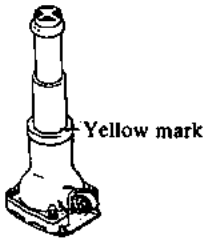
WH077

Fig. GI-14 Rear jacking point for Pick-up

Notes:

a. **When the yellow mark appears on the screw jack, it indicates a maximum permissible height. Do not jack up further.**

b. **When the jack is lower limit, do not add large force downward.**



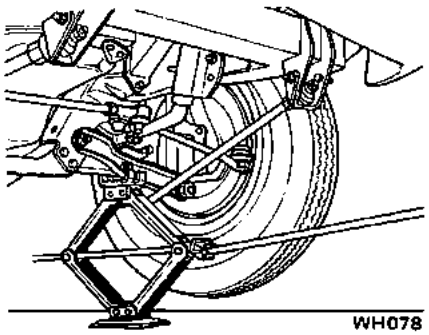
WH080

Fig. GI-15 Warning against over-stroke

Double Pick-up

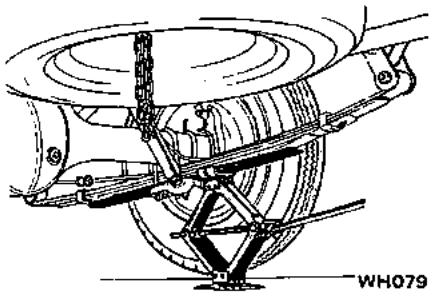
When jacking up the front side, place pantograph jack under lower link.

When jacking up the rear side, place pantograph jack under rear spring.



WH078

Fig. GI-16 Front jacking point for Double Pick-up



WH079

Fig. GI-17 Rear jacking point for Double Pick-up

Garage jack

Note: When carrying out operations with the garage jack, be sure to support the vehicle with stands in a safe manner.

When jacking up the front side, apply garage jack to front cross-member or center portion of suspension member.

When jacking up the rear side, apply the jack to rear axle case.

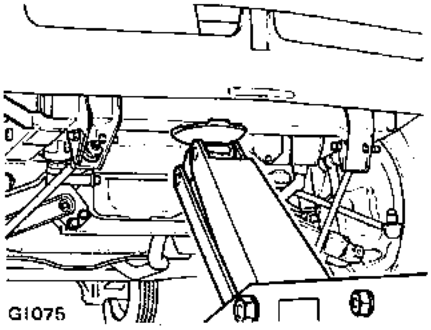


Fig. GI-18 Front jacking point

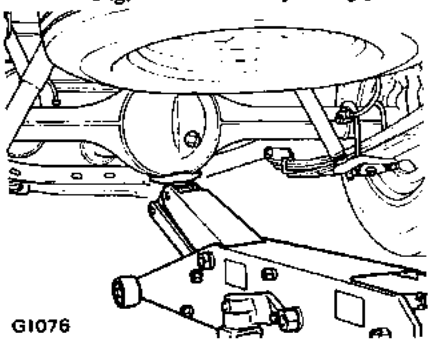


Fig. GI-19 Rear jacking point

Supportable point

The front supportable points are under frame side member.

The rear supportable points are under rear axle case.

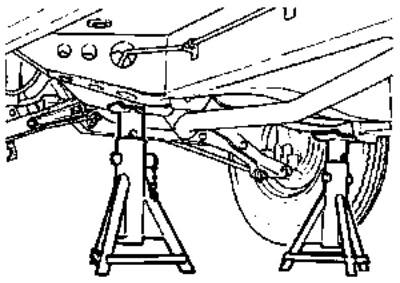


Fig. GI-20 Front supportable points

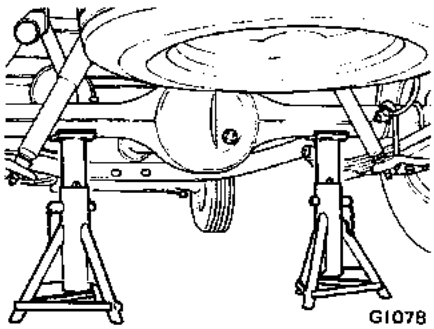


Fig. GI-21 Rear supportable points

Towing

When the vehicle may be towed forward, connect a rope to tension rod bracket securely. Before towing, make sure the parking brake is released and transmission gears are in neutral.

To tow another car, connect it to rear leaf spring shackle. A towing rope should not be connected to any other positions except described above.

If rear axle or transmission is damaged, do not tow the vehicle on all four wheels.

Note: Do not attempt to apply great load for a rope rapidly to prevent damage.

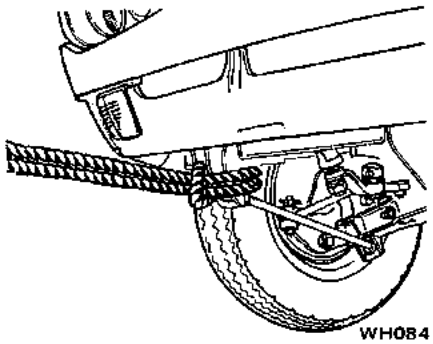


Fig. GI-22 Front towing point

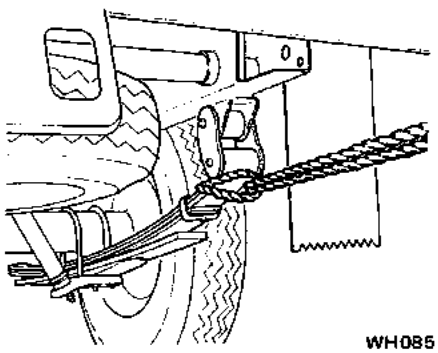


Fig. GI-23 Rear towing point

SERVICE MANUAL

DATSUN PICK-UP
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CHASSIS AND BODY

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SECTION ER

ER

ENGINE REMOVAL & INSTALLATION

ENGINE REMOVAL AND INSTALLATION

CONTENTS

ENGINE REPLACEMENT

Removal

It is much easier to remove the engine with the transmission as a single unit than to remove only the engine from engine compartment. The engine can then be separated from the transmission assembly.

Note: Fender covers should be used to prevent damaging vehicle body.

1. Disconnect battery ground cable.
2. Scribe hood hinge location for proper reinstallation and remove hood.
3. Remove air cleaner after disconnecting blow-by hose from rocker cover.
4. Drain radiator coolant and engine oil.
5. Disconnect radiator upper and lower hoses from engine.
6. Remove four bolts securing radiator and detach radiator.

Note: Securing bolt at upper right hand side is tightened together with body harness terminal.

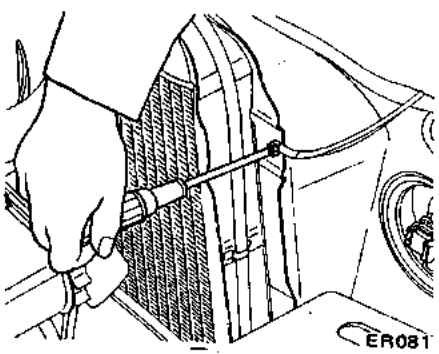


Fig. ER-1 Removing radiator securing bolts

7. Disconnect engine ground cable at cylinder head.

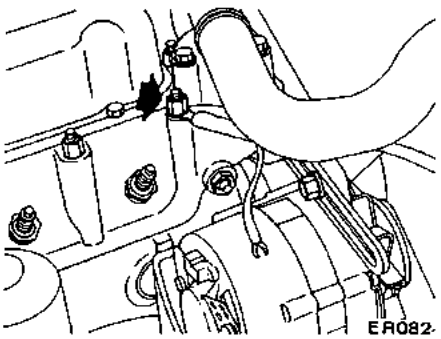


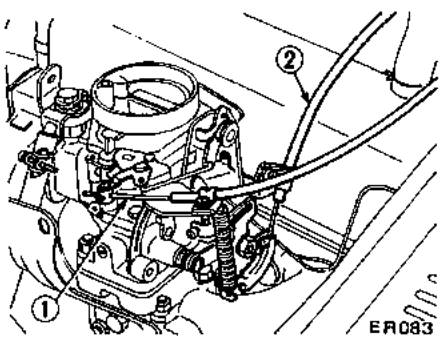
Fig. ER-2 Disconnecting engine ground cable

8. Disconnect wires at:

(1) Starter
(2) Alternator
(3) High tension cable at ignition coil
(4) Oil pressure switch and thermal transmitter

9. Disconnect:

(1) Fuel line at fuel pump
(2) Heater line at engine side
(3) Choke wire and accelerator wire at carburetor



1 Choke wire 2 Accelerator wire

Fig. ER-3 Disconnecting choke wire and accelerator wire

10. Remove transmission control linkage from transmission.

≪For remote control linkage type≫

(1) Remove cross shaft assembly from transmission at the portion shown by two black arrows.
(2) Remove select rod from select lever at the portion shown by a white arrow.

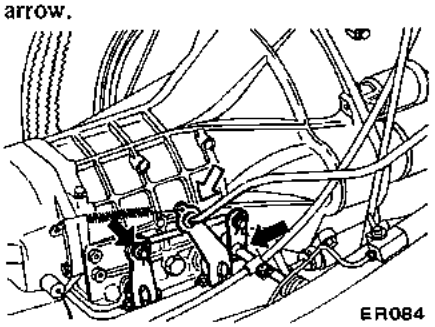


Fig. ER-4 Removing cross shaft and select rod

≪For floor shift control type≫

(1) Detach rubber boot.
(2) Remove nut from shift lever and detach shift lever.

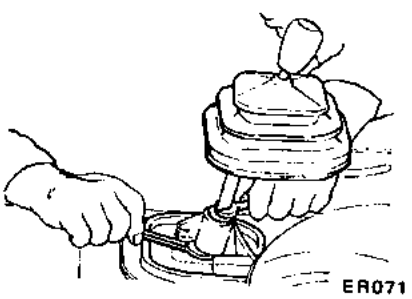


Fig. ER-5 Removing shift lever

11. Remove two bolts (shown by arrows) securing clutch operating cylinder. Then disconnect operating cylinder and flexible tube as an assembly.

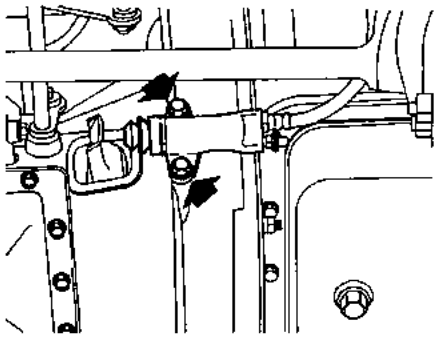

ER087

Fig. ER-6 Removing clutch operating cylinder

12. Disconnect speedometer cable and reverse lamp wiring.

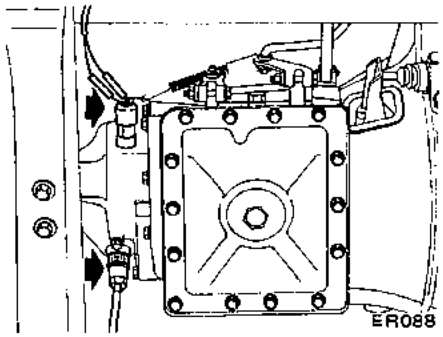

ER088

Fig. ER-7 Disconnecting speedometer cable and reverse lamp wiring

13. Disconnect exhaust front tube from exhaust manifold.

14. Remove propeller shaft.

(1) Disconnect propeller shaft center bearing bracket from third crossmember.

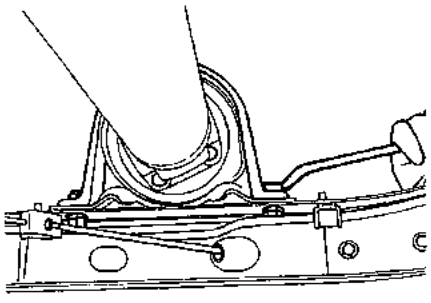

PD219

Fig. ER-8 Removing propeller shaft center bearing bracket

(2) Disconnect propeller shaft at companion flange of gear carrier.

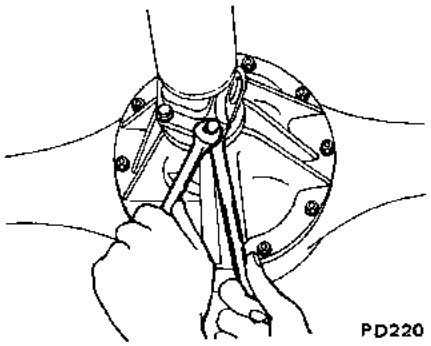
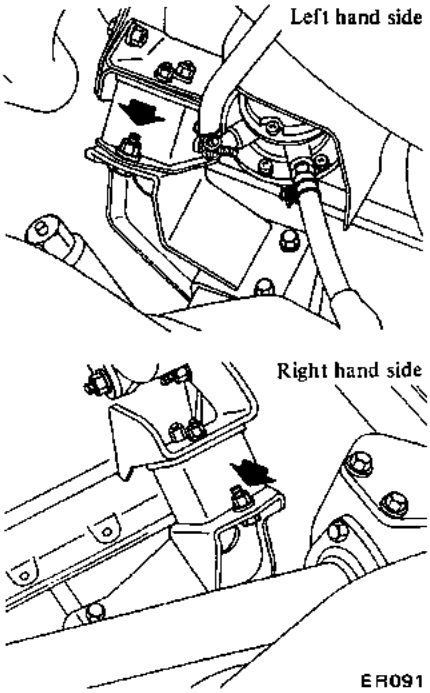

PD220

Fig. ER-9 Disconnecting propeller shaft

(3) Remvoing propeller shaft from transmission, plug up rear end of extention housing of transmission to prevent oil leakage.

15. Attach a suitable wire to shift engine.

Remove engine front mounting bolts (shown by arrows) at engine mounting front support.



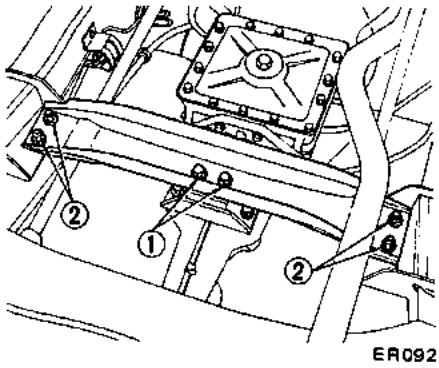
ER091

Fig. ER-10 Removing engine front mounting bolts

16. Place a jack under transmission and jack it up.

17. Loosen two ① engine rear mounting bolts.

Remove four ② bolts securing engine mounting rear support to side member and detach the rear support.



ER092

Fig. ER-11 Removing engine mounting rear support

18. Pull engine towards the front as far as possible and carefully raise engine with transmission by means of a hoist and wire. See Figure ER-12.

Then support them on engine stand.

Note: In this operation, care should always be taken not to allow the unit hitting against any adjacent parts.

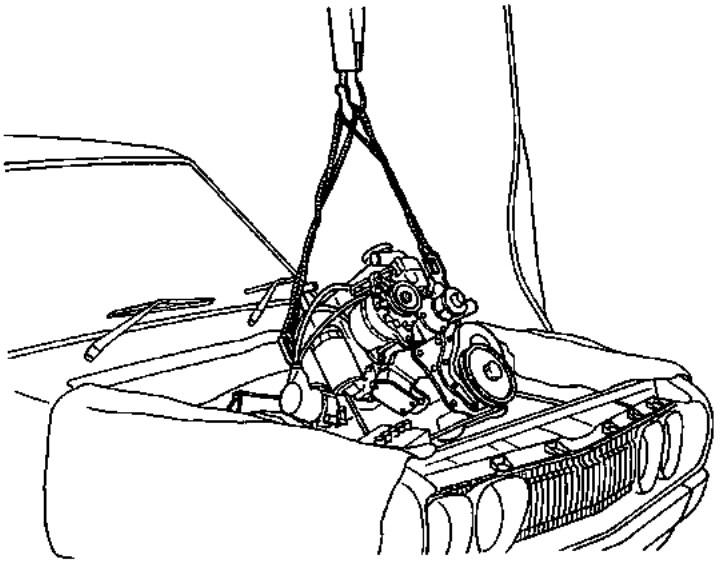


Fig. ER-12 Lifting engine and transmission

Installation

To install, reverse the order of removal.

Do not connect any parts to the engine until engine mounting insulators are placed and power unit weight is supported by them.

Notes:

a. As the sequence of installation, first secure engine mounting rear support to frame.

b. When installing front mounting insulator with engine to engine mounting front support, use upper bolt hole of insulator as a guide and engine installation can be carried out easily.

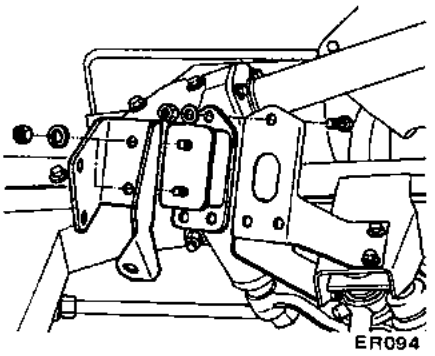
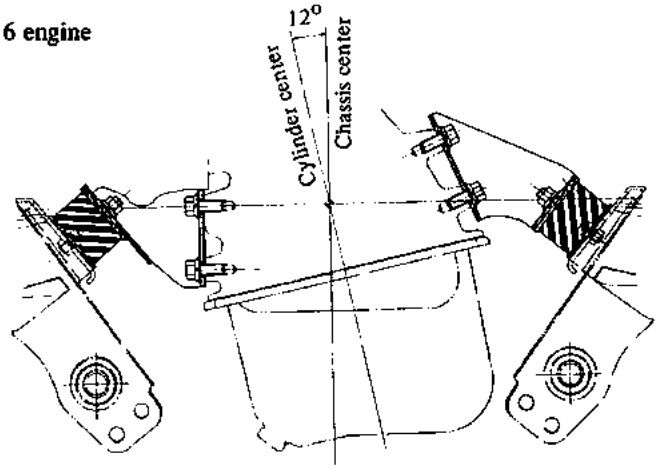


Fig. ER-13 Installing insulator to support

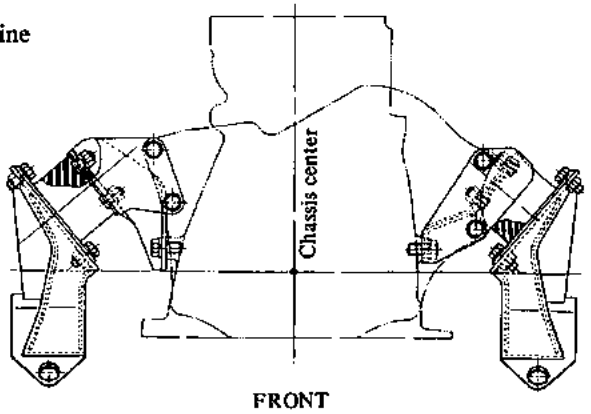
ENGINE MOUNTING INSULATOR

Three insulators are used to mount the engine; two at left and right front ends of the cylinder block and one at transmission rear extension housing.

L16 engine



J engine



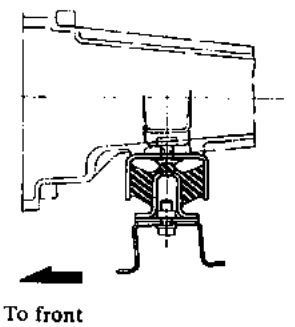


Fig. ER-14 Structural view of engine mounting

Notes:

a. **Replace front or rear insulator assembly when rubber of engine mounting insulator is cracked, abnormally worn or deteriorated.**

b. **Keep insulator free from oil or grease.**

Front mounting insulator

Front mounting insulators are the same parts between right and left hand sides and interchangeable with each other.

Removal and installation

1. Remove hood.
2. Remove air cleaner after disconnecting blow-by hose.
3. Disconnect hoses and cables as same manner in removing engine assembly.
4. Attach a suitable wire to lift engine.
5. Remove engine front mounting nuts at front mounting brackets.

Carefully raise engine by means of a hoist and wire.

6. Remove front mounting insulators at front supports after removing front mounting bolts.
7. To install, reverse the order of removal.

Rear mounting insulator

It is possible to locate the both face of rear mounting insulator facing toward front.

But engine mounting rear support must be located shown by Figure ER-15.

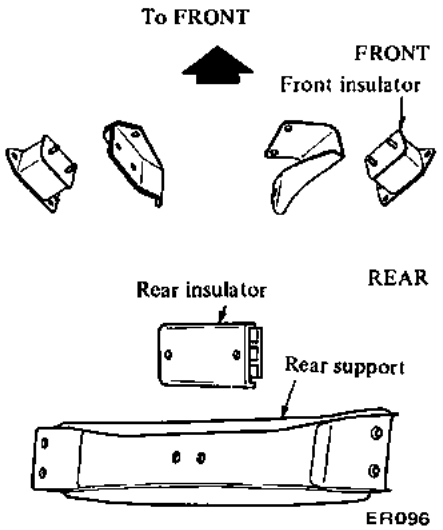


Fig. ER-15 Mounting insulator and rear support

Removal and installation

1. Place a jack under transmission and jack it up slightly.
2. Loosen two engine rear mounting bolts.
3. Remove four bolts securing engine mounting rear support to side member and detach the rear support.
4. Remove rear mounting insulator at transmission rear extension after removing insulator securing bolts.
5. To install, reverse the order of removal.

TIGHTENING TORQUE

Fixing bolts and nuts	kg-m (ft-lb)	
	J engine	L16 engine
Front mounting bracket		
to cylinder block	2.6 to 3.4 (19 to 25)	1.9 to 2.5 (14 to 18)
to front cover	1.4 to 1.8 (10 to 13)	——
Front mounting insulator		
to bracket	1.4 to 1.8 (10 to 13)	1.6 to 2.2 (12 to 16)
Front mounting insulator		
to front support	1.4 to 1.8 (10 to 13)	——
to frame	——	1.4 to 1.8 (10 to 13)
Rear mounting insulator		
to transmission	3.2 to 3.7 (23 to 27)	3.2 to 3.7 (23 to 27)
Rear mounting insulator		
to rear support	1.6 to 2.2 (12 to 16)	1.6 to 2.2 (12 to 16)
Rear support to frame	1.6 to 2.2 (12 to 16)	1.6 to 2.2 (12 to 16)

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS AND BODY

NISSAN

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SECTION CL

CLUTCH

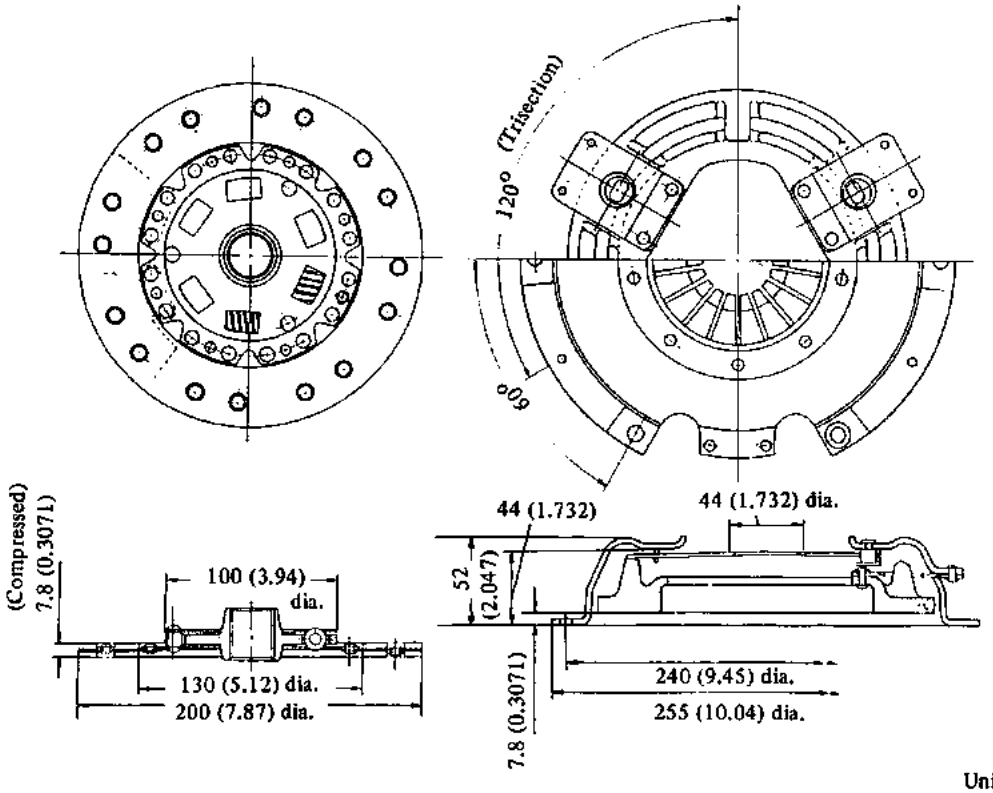
CL

CLUTCH

CONTENTS

DESCRIPTION

The clutch is a single dry disc type using a diaphragm spring. It consists of the clutch disc, pressure plate, diaphragm spring, thrust rings, clutch cover, and clutch release bearing.



Unit: mm (in)

Fig. CL-1 Construction of clutch disc and cover assembly

REMOVAL AND INSTALLATION

Removal

1. Remove transmission from vehicle.

For details of transmission removal, refer to "Transmission Section."

2. Insert Clutch Aligning Bar ST20630000 into clutch disc hub until it will no longer go. It is important to support weight of clutch disc during further steps.

3. Loosen six screws attaching clutch cover to flywheel one turn at a time each until spring pressure released. Be sure to turn them out in a crisscross fashion.

Note: Exercise special care to avoid grease or oil getting on clutch linings.

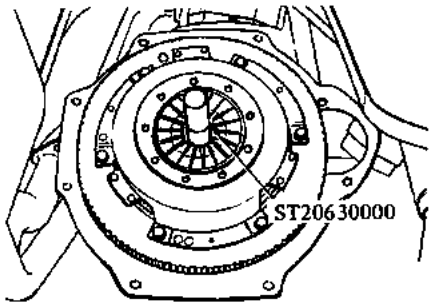


Fig. CL-2 Supporting clutch assembly

Installation

1. Apply a light coat of molybdenum disulphide on transmission main drive gear splines.

Slide clutch disc on main drive gear several times. Remove clutch disc and wipe off excess lubricant pushed off by disc hub.

2. Install clutch disc and clutch cover assembly on flywheel. Support two assemblies with Clutch Aligning Bar ST20630000.

Note: Be sure to keep disc facings, flywheel, and, pressure plate clean and dry.

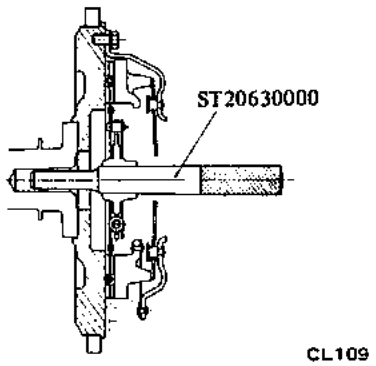


Fig. CL-3 Installing clutch cover assembly

3. Install six bolts to tighten clutch cover assembly to flywheel squarely. Each bolt should be tightened one turn at a time to the specified torque 1.6 to 2.2 kg-m (12 to 15 ft-lb).

Note: Three dowels are used to locate clutch cover on flywheel properly.

4. Remove Clutch Aligning Bar ST20630000 after tightening the bolts securely.

5. Install transmission.

Note: Make certain that withdrawal lever engages lever ball pin.

6. Connect push rod of clutch operating cylinder to withdrawal lever.

DISASSEMBLY AND ASSEMBLY

Disassembly

1. Clutch cover assembly can not be disassembled since diaphragm spring is securely reveted to clutch cover and clutch cover assembly is balanced.

If necessary, replace clutch cover assembly as a complete unit.

2. Remove clutch release mechanism as follows:

(1) Remove dust cover from clutch houisng.

(2) Remove withdrawal lever from clutch housing.

(3) Remove retainer spring from withdrawal lever.

(4) Remove release bearing, bearing sleeve and holder spring from clutch housing as an assembly.

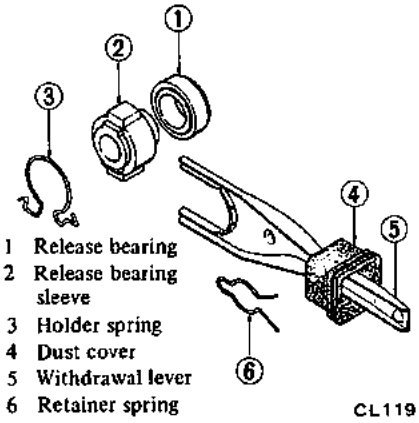


Fig. CL-4 Exploded view of clutch release mechanism

3. Take out clutch release bearing from bearing sleeve, using a universal puller.

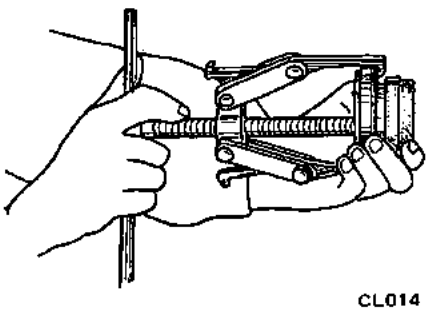


Fig. CL-5 Disassembling release bearing

4. Remove pilot bushing in crankshaft by Pilot Bush Puller ST16610000 (ST16610001 for L16 engine) if necessary. See Figure CL-6.

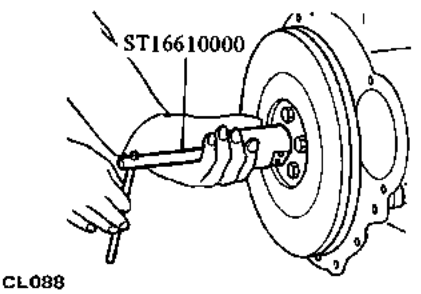


Fig. CL-6 Removing pilot bushing

Assembly

Release mechanism

1. When assembling release bearing on sleeve, use a press and seat bearing squarely on sleeve.

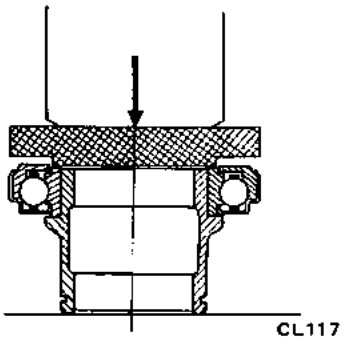


Fig. CL-7 Installing release bearing

2. Before or during assembling, lubricate the following points with a light coat of multi-purpose grease.

a. Inner groove of release bearing sleeve

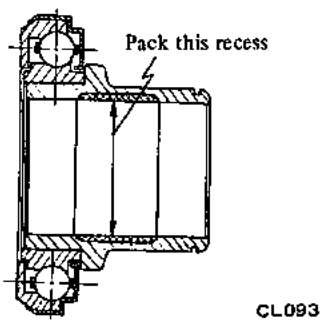
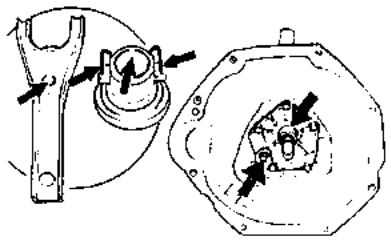


Fig. CL-8 Lubricating recess of bearing sleeve

b. Contact surfaces of withdrawal lever, lever ball pin and bearing sleeve.

c. Contact surfaces of transmission front cover.



CL111

Fig. CL-9 Lubricating points of withdrawal lever and front cover

Note: Very small amount of grease should be coated to the above points. If too much lubricant is applied, it will run out on the friction plates when hot, resulting in damaging clutch disc facings.

3. Install retainer spring to withdrawal lever. Fit holder spring to release bearing and sleeve assembly, then assemble withdrawal lever and bearing sleeve as a unit. Install this assembly on transmission case. Then install dust cover.

Pilot bushing

Before installing a new bushing, thoroughly clean bushing hole. Install bushing in crankshaft using a soft hammer. Bushing need not be oiled.

INSPECTION

Wash all the disassembled parts except release bearing and disc assembly in suitable cleaning solvent to remove dirt and grease before making inspection and adjustment.

Flywheel and pressure plate

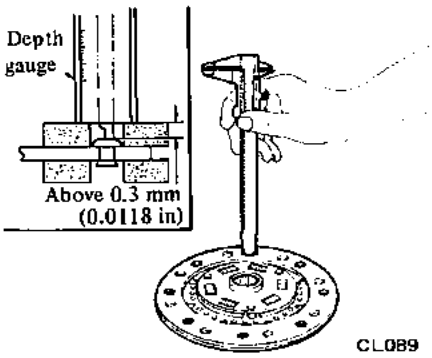
Check friction surface of flywheel and pressure plate for scoring or roughness. Slight roughness may be smoothed by using fine emery cloth.

If surface is deeply scored or grooved, the part should be replaced.

Clutch disc assembly

Inspect clutch disc for worn or oily facings, loose rivets, and broken or loose torsional springs.

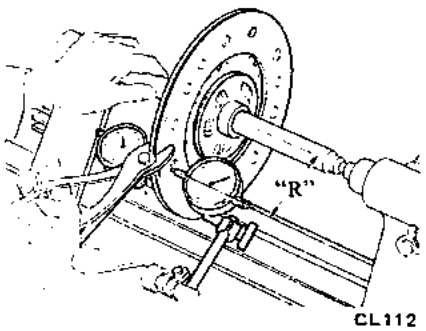
1. If facings are oily, the disc should be replaced. In this case, inspect transmission front cover oil seal, pilot bushing, engine rear oil seals and other points for oil leakage.
2. The disc should also be replaced when facings are worn locally or worn down less than 0.3 mm (0.0118 in) at revets.



CL089

Fig. CL-10 Measuring clutch lining

3. Check disc plate for runout whenever the old disc or a new one is installed.
4. If runout exceeds 0.5 mm (0.0197 in) total indicator reading at the outer circumference of facing "R" is 85 mm (3.346 in), replace or repair disc assembly.



CL112

Fig. CL-11 Measuring disc runout

5. Check the fit of disc hub on transmission main drive gear for smoothly sliding. If splines are worn, clutch disc or main drive gear should be replaced; that is, backlash exceeds 0.4 mm (0.0158 in) at the outer edge of clutch disc.

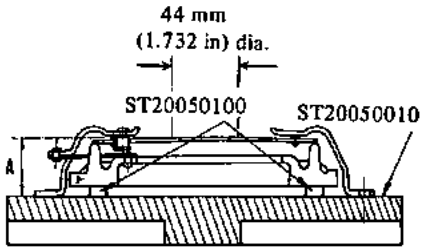
Clutch cover assembly

1. Check the end surface of diaphragm spring for wear.

If excessive wear is found, replace clutch cover as an assembly.

2. Measure the height of diaphragm spring as outlined below:

a. Place Distance Piece ST20050100 on Base Plate ST20050010 and then tighten clutch cover assembly on the base plate by using set bolts.
b. Measure the height "A" at several points with a vernier caliper depth gauge.

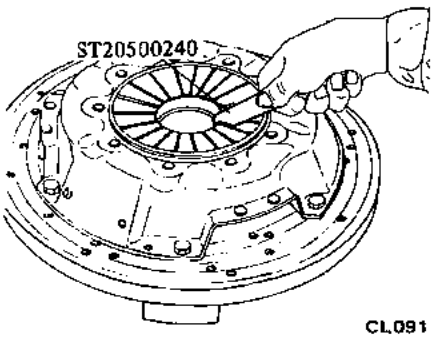


CL090

Fig. CL-12 Measuring the height of diaphragm spring

If the height "A" of spring end is beyond the specified value of 43 to 45 mm (1.693 to 1.772 in), adjust the spring height with Diaphragm Adjust Wrench ST20050240.

If necessary, replace clutch cover as an assembly. Also, unevenness of diaphragm spring toe height should be less than 0.5 mm (0.0197 in).



CL091

Fig. CL-13 Adjusting the spring height

3. Inspect thrust rings for wear or damage. As these parts are invisible from outside, shake cover assembly up and down to listen for chattering noise, or lightly hammer on rivets for a slightly cracked noise. Any of these noises mean requirement for replacement as a complete assembly.

Release bearing and sleeve

Check for abnormal wear on contact surface of withdrawal lever, ball pin and bearing sleeve.

Pilot bushing

Check pilot bushing in crankshaft for wear or roughness. If necessary, replace it.

When bushing is defective, be sure to check transmission main drive gear at the same time.

CLUTCH CONTROL

CONTENTS

DESCRIPTION

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

When the clutch pedal is depressed, the piston of the master cylinder forwards clutch fluid to the operating cylinder via a pipe line. The movement of the operating cylinder piston is transmitted to the withdrawal lever through the push rod, thus disengaging the clutch.

The operating cylinder is a non-adjustable type that uses no return spring. In this unit, the withdrawal-to-push rod play adjustment is not necessary since the "S" as shown in Figure CL-15 serves to automatically compensate for wear on clutch disc.

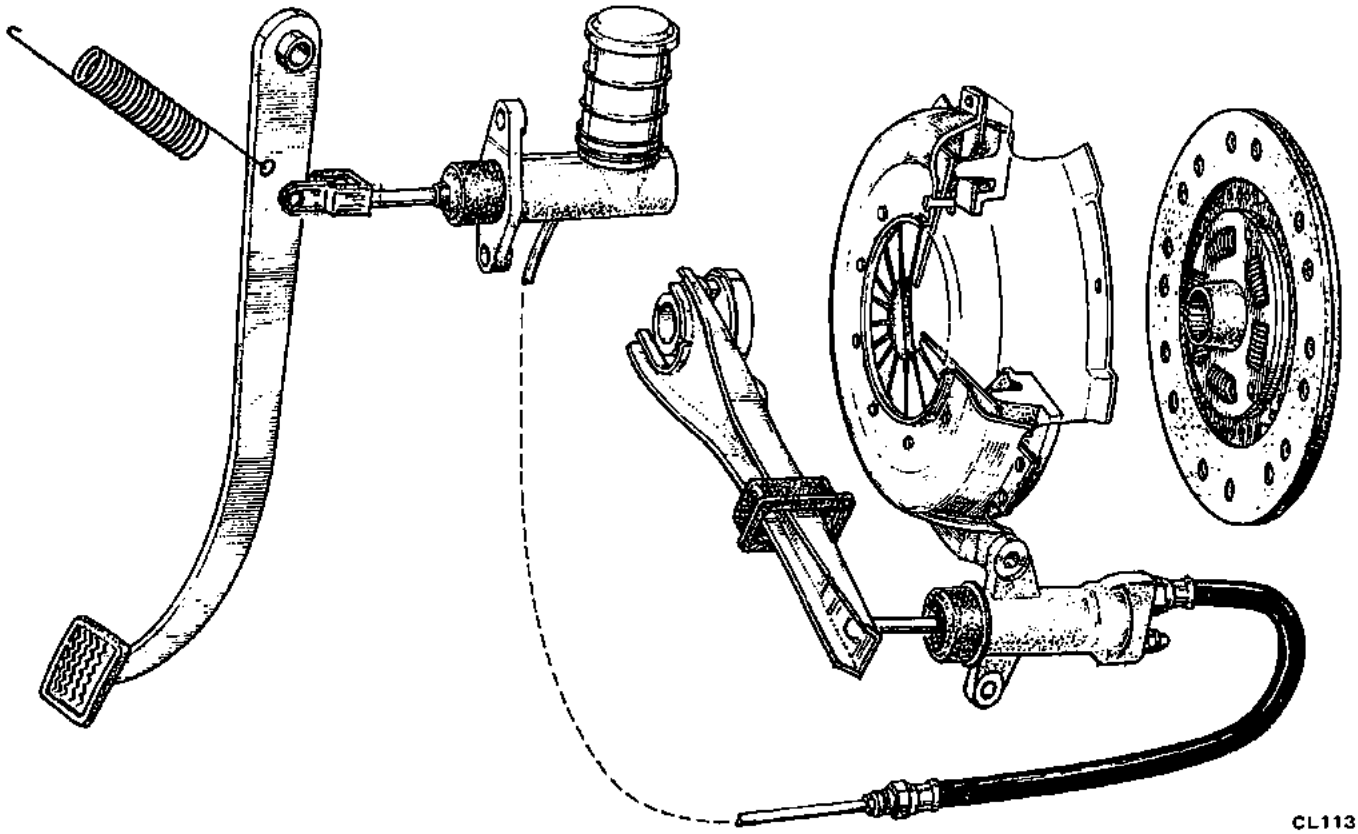


Fig. CL-14 Clutch operating system

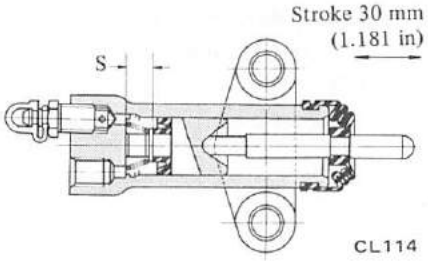


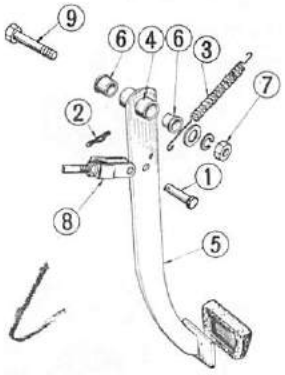
Fig. CL-15 Non-adjustable operating cylinder

CLUTCH PEDAL

Removal and installation

Removal

1. Pry off cotter pin and take out clevis pin; disconnect push rod from pedal assembly.
2. Unhook return spring. Loosen off fulcrum pin and remove pedal assembly.



1 Clevis pin
2 Cotter pin
3 Return spring
4 Pedal boss
5 Pedal assembly
6 Bush
7 Nut
8 Push rod
9 Fulcrum pin

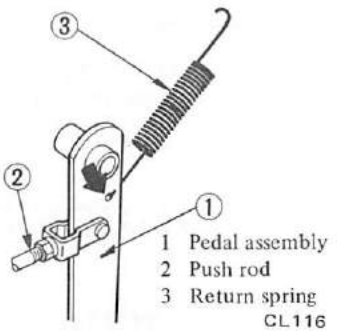
Fig. CL-16 Exploded view of clutch pedal

Note: Before removing clutch pedal, note toe board clearance at pedal pad.

Installation

To install, reverse the order of removal. Apply multi-purpose grease to the friction surfaces of the disassembled parts as shown in Figure CL-18.

Note: Refer to Figure CL-17 for the correct direction of return spring.



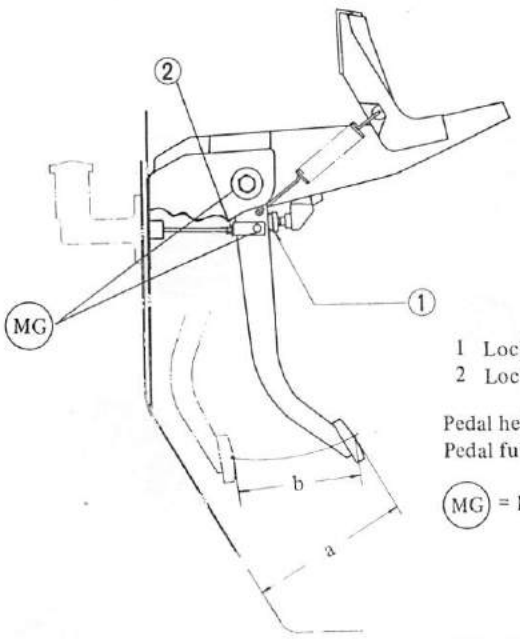
1 Pedal assembly
2 Push rod
3 Return spring

Fig. CL-17 Hooking return spring

Inspection and adjustment

Clean all the following parts in cleaning solvent and check for wear, damage or any other abnormal condition. Replace the parts which are defective.

1. Return spring
2. Bush
3. Pedal boss, etc.



1 Lock nut "A"
2 Lock nut "B"

Pedal height a = 163 mm (6.42 in)
Pedal full stroke b = 129 mm (5.08 in)

(MG) = Multi-purpose grease

Fig. CL-18 Adjusting pedal height

Tightening torque:
Pedal installation bolt (Fulcrum pin):
1.9 to 2.4 kg-m
(14 to 17 ft-lb)
Lock nut "A" "B":
0.8 to 1.2 kg-m
(5.8 to 8.7 ft-lb)

1. Adjust the pedal height to 163 mm (6.42 in) by adjusting pedal stopper and tighten lock nut "A" to the specified torque 0.8 to 1.2 kg-m (5.8 to 8.7 ft-lb).
2. Turn in or out push rod adjusting screw until a play of 1 to 3 mm (0.039 to 0.118 in) at clevis pin is obtained. Then tighten lock nut "B" to the specified torque 0.8 to 1.2 kg-m (5.8 to 8.7 ft-lb).

Note: Exercise care in adjusting the play not to block the port or master cylinder. A blocked port may result if too small play at clevis pin exists.

3. After adjsuting, check the pedal full stroke is in 126 to 132 mm (4.96 to 5.20 in).

Note: Depress and release clutch pedal over its entire stroke to ensure that the clutch linkage operates smoothly without squeak noise, interference and binding.

MASTER CYLINDER - CLUTCH

Removal and installation

Removal

1. Remove clevis pin at push rod.
2. Disconnect clutch tube from master cylinder and drain clutch fluid.
3. Remove bolts securing master cylinder to the vehicle, and dismount master cylinder.

Note: Remove dust cover from master cylinder body, on the side of driver's seat.

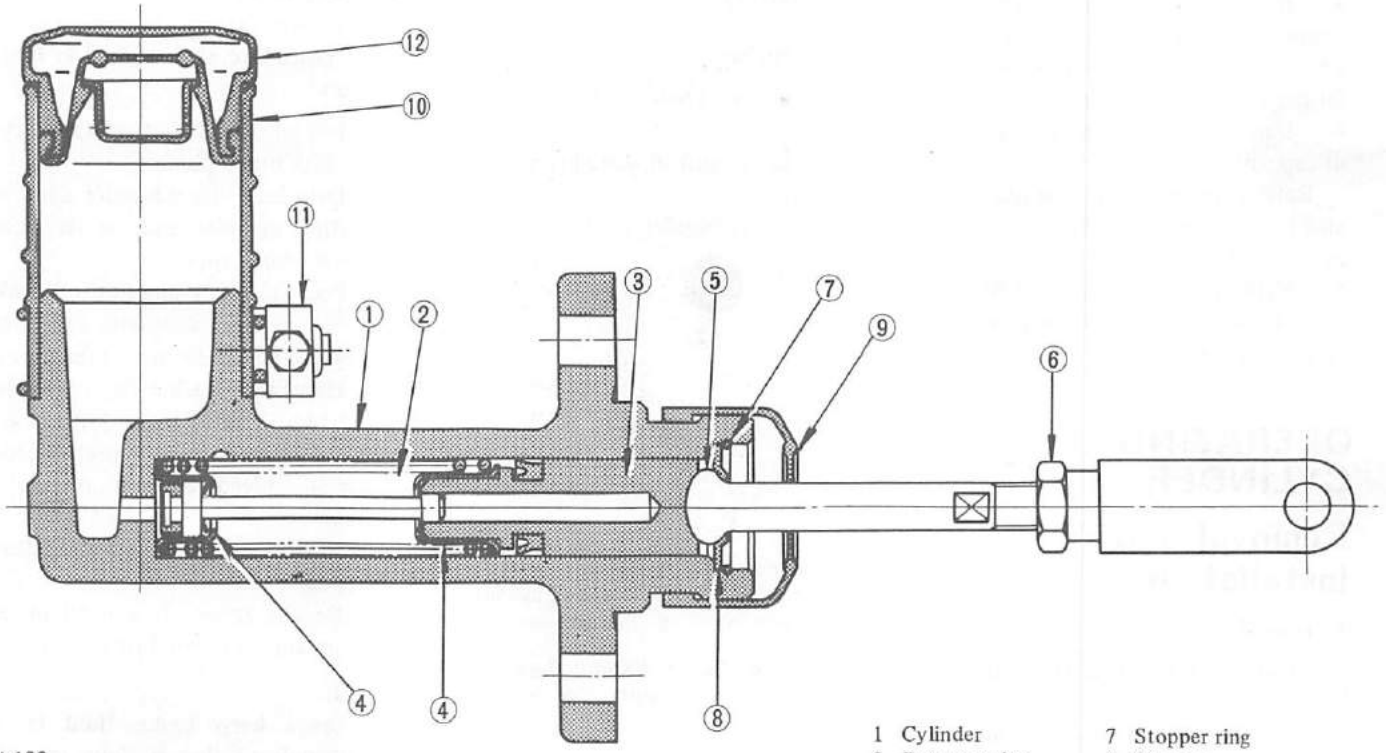
Installation

To install, reverse the order of removal. Closely observe the following instructions.

1 Adjust pedal height by changing pedal stopper length.
2 Bleed air out of hydraulic system.

Tightening torque:
Master cylinder to dash panel:
0.8 to 1.2 kg-m
(5.8 to 8.7 ft-lb)
Clutch hose connector:
1.5 to 1.8 kg-m
(11 to 13 ft-lb)

Disassembly and assembly



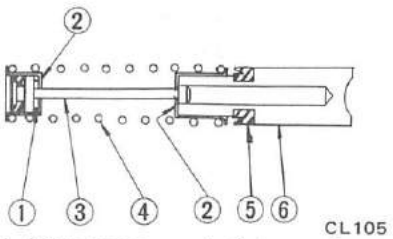
CL103

1 Cylinder
2 Return spring
3 Piston
4 Spring seat
5 Push rod
6 Nut
7 Stopper ring
8 Stopper
9 Dust cover
10 Oil reservoir
11 Reservoir band
12 Reservoir cap

Fig. CL-19 Clutch master cylinder

Disassembly

1. Remove dust cover and take off stopper ring from body.
2. Remove push rod and piston assembly.
3. When replacing piston cup, disassemble piston assembly by straightening the tooth of spring seat, if necessary.



CL105

1 Valve spring
2 Spring seat
3 Valve assembly
4 Return spring
5 Piston cup
6 Piston

Fig. CL-20 Piston assembly

Assembly

To assemble, reverse the order of disassembly. Closely observe the following instructions.

1 Dip piston cup in brake fluid before installing. Make sure that it is correctly faced in position.
2 Apply a coating of brake lfuid to cylinder and piston when assembling.

Inspection

Note: To clean or wash all parts of master cylinder, operating cylinder and piping, clean brake fluid must be used. Never use mineral oils such as gasoline and kerosene. It will ruin the rubber parts of the hydraulic system.

1. Check cylinder and piston for uneven wear or damage, and if necessary, replace.
2. If the clearance between cylinder and piston is more than 0.15 mm (0.0059 in), replace cylinder.
3. Renew piston cup when disassembled. It must also be replaced when wear or deformation due to fatigue or damage is found.
4. Damaged dust cover, oil reservoir or cap, should be replaced.

Return spring and valve spring must also be replaced when they are broken or weak.

5. Replace clutch hose and tube if any abnormal sign of damage or defromation is found.

OPERATING CYLINDER

Removal and installation

Removal

1. Detach clutch hose from operating cylinder.
2. Remove two bolts securing operating cylinder to clutch housing.

Installation

Install in the reverse order of removal.

Observe the following instructions.

1 Bleed air thoroughly from clutch hydraulic system.

2 Do not install return spring, or clutch will not be disengaged properly.

Tightening torque:

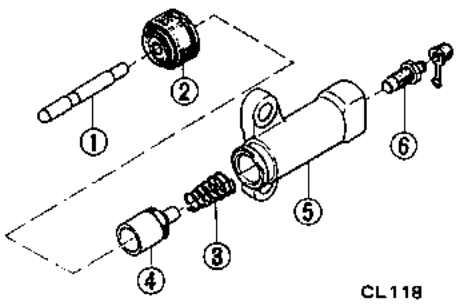
Operating cylinder securing bolt:
2.5 to 3.5 kg-m
(18 to 25 ft-lb)

Bleeder screw:
0.7 to 0.9 kg-m
(5.1 to 6.5 ft-lb)

Disassembly and assembly

Disassembly

1. Remove push rod with dust cover.
2. Remove piston assembly and piston spring.
3. Remove bleeder screw.



1 Push rod
2 Dust cover
3 Piston spring
4 Piston
5 Operating cylinder
6 Bleeder screw

Fig. CL-21 Exploded view of operating cylinder

Assembly

Assemble in the reverse order of disassembly. Closely observe the following instructions.

1. Prior to assembly, dip piston cup in clean brake fluid.

When installing cup, pay particular attention to its direction.

2. Dip cylinder and piston in clean brake fluid before assembly.

Note: Be sure to install piston assembly with piston spring in place.

Inspection

Visually inspect all disassembled parts, replacing those found worn or damaged too badly beyond specifications.

BLEEDING CLUTCH SYSTEM

To bleed clutch system, use the same procedure as described in Brake System.

1. Fill oil reservoir of operating cylinder with brake fluid.
2. Detach cap from bleeder screw on operating cylinder and, in its place, connect a vinyl tube.
3. Pour a small amount of brake fluid into a clean container and insert the open end of the vinyl tube into it.
4. Have a co-worker depress clutch pedal two or three times. With clutch pedal depressed fully, loosen bleeder screw to bleed air out of clutch system.
5. Tighten bleeder screw and release the pedal.
6. Repeat above steps until no air bubbles appear in vinyl tube.

Notes:

a. Always keep brake fluid in oil reservoir so that it flows into the line continuously.
b. Use care not to allow brake fluid coming into contact with painted surfaces.
c. Make sure that no leak occurs at connections.
d. Pour brake fluid into oil reservoir up to the specified level.

SERVICE DATA AND SPECIFICATIONS

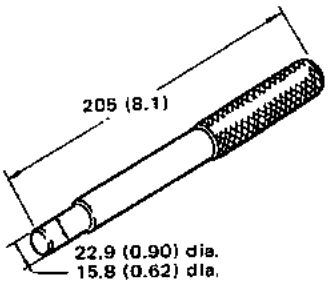
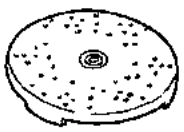
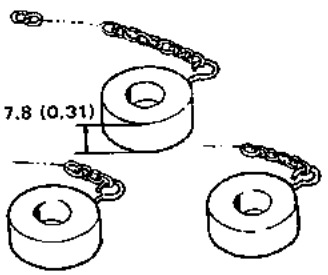
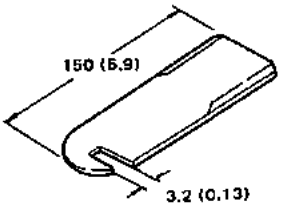
		All 620 series
Clutch cover		
Clutch cover type		Diaphragm (MF200K)
Diaphragm spring-to-flywheel distance	mm (in)	43.0 to 45.0 (1.69 to 1.77)
Unevenness of diaphragm spring toe height	mm (in)	less than 0.5 (0.0197)
Full load	kg (lb)	335 to 385 (739 to 759)
Out of flatness of pressure plate	mm (in)	0.1 (0.004)
Allowable refacing limit of pressure plate	mm (in)	1.0 (0.04)
Clutch disc		
Facing size		
Outer dia. x inside dia. x thickness	mm (in)	200 x 130 x 3.5 (7.87 x 5.12 x 0.1378)
Thickness of disc assembly		
Free	mm (in)	8.6 to 9.0 (0.3386 to 0.3543)
Compressed	mm (in)	7.6 to 8.0 (0.2992 to 0.3150)
Number of torsion springs		6
Allowable minimum depth of rivet head from surface	mm (in)	0.3 (0.0118)
Allowable facing run-out	mm (in)	0.5 (0.0197)
Allowable free play of spline (at the outer edge of disc)	mm (in)	0.4 (0.0157)
Clutch pedal		
Pedal height	mm (in)	163 (6.42)
Play at clevis pin	mm (in)	1 to 3 (0.0394 to 0.0118)
Full stroke	mm (in)	129 (5.08)
Excess stroke (with clutch disengaged)		
Pressing strength at full stroke	kg (lb)	8.4 (18.5)
Master cylinder-clutch		
Dia. of master cylinder	mm (in)	15.87 (58)
Allowable maximum clearance between cylinder and piston	mm (in)	0.15 (0.0059)
Clutch operating cylinder		
Dia. of operating cylinder	mm (in)	19.05 (¾)
Tightening torque		
Clutch mounting bolt	kg-m (ft-lb)	1.6 to 2.2 (12 to 16)

TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause and testing	Corrective action
Slipping clutch	Slipping of clutch is obvious when any of the following symptoms is encountered during operation. (1) Vehicle will not respond to engine speed during acceleration. (2) Insufficient vehicle speed. (3) Lack of power during uphill driving. Some of the above conditions are also experienced when engine is causing troubles. First determine whether engine or clutch is causing a trouble. If slipping clutch is left unheeded, wear and/or overheat will occur on clutch facing to such an extent that it is no longer serviceable. TO TEST THE CLUTCH FOR SLIPPING, proceed as follows: During upgrade travelling, open throttle until engine is running at about 40 to 50 km/h (25 to 31 MPH) with gear shift lever in 3rd-speed position. Now, shift into highest gear and at the same time rev up engine. If clutch is slipping, vehicle will not respond to the operation of accelerator pedal soon.	
	• Clutch facing worn excessively.	Replace.
	• Oil or grease on clutch facing.	Replace.
	• Warped clutch cover or pressure plate.	Repair or replace .
Dragging clutch.	Grabbing clutch is particularly obvious when shifting gears from one position into another, especially into low gear. TO TEST THE CLUTCH FOR DRAGGING OR GRABBING, proceed as follows: (1) Start up engine. Disengage clutch. Shift into reverse gear, and then into Neutral. Under this condition, gradually accelerate engine speed, and again shift into reverse gear. If clutch is dragging, gear "grating" is heard when shifting gears from Neutral into Reverse. (2) Stop engine and shift gears. (Conduct this test at each gear position.) (3) In step (2), gears are shifted smoothly except 1st speed position at idling. a. If dragging is encountered at the end of shifting, check for condition of synchro-mechanism in transmission. b. If dragging is encountered at the beginning of shifting, proceed to step (4) below. (4) Push change lever toward Reverse side, depress pedal to check for free play of pedal. a. If pedal can be depressed further, check clutch for condition. b. If pedal cannot be depressed further, proceed to step (5) below. (5) Check the clutch control (pedal height, free play, etc.) If any abnormal condition does not exist and if pedal cannot be depressed further, check clutch for condition.	
	• Clutch disc runout or warped.	Replace.
	• Wear or rust on hub splines in clutch disc.	Clean and lubricate with grease, or replace.
	• Diaphragm spring toe height out of adjustment or toe tip worn.	Adjust or replace.
	• Worn or improperly installed parts.	Repair or replace.

Condition	Probable cause and testing	Corrective action
Pulsating clutch.	Pulsating clutch pedal is usually noticeable when vehicle is just rolled off with clutch partially engaged.	
	• Weakened, or broken clutch disc torsion spring.	Replace.
	• Oil or grease on clutch facing.	Replace.
	• Clutch facing out of proper contact or clutch disc runout.	Replace.
	• Loose rivets.	Replace.
	• Warped pressure plate or clutch cover surface.	Repair or replace, as necessary.
	• Unevenness of diaphragm spring toe height.	Adjust or replace.
	• Loose enigne mounting or deteriorated rubber.	Retighten or replace.
Noisy clutch.	A noise is heard after clutch is disengaged. • Damaged release bearing.	Replace.
	A noise is heard when clutch is disengaged. • Insufficient grease on the sliding surface of bearing sleeve.	Apply grease.
	• Clutch cover and bearing are not installed correctly.	Adjust.
	A noise is heard when the vehicle is suddenly rolled off with clutch partially engaged.	
	• Defective pilot bushing.	Replace.
Rabbit-hopping clutch	When "rabbit-hopping" of clutch occurs, vehicle will not roll off smoothly from a standing start or clutch will be engaged before clutch pedal is fully depressed.	
	• Oil or grease on clutch facing.	Replace.
	• Clutch facing worn or loose rivets.	Replace.
	• Wear or rust on splines in drive shaft and clutch disc.	Clean or replace.
	• Warped flywheel or pressure plate.	Repair or replace.
	• Loose mounting for engine or power train units.	Retighten.

SPECIAL SERVICE TOOLS

No.	Tool number & tool name	Description (Unit: mm (in))		For use on	Reference page or figure No.
1.	ST20630000 Clutch aligning bar	 SE033	This tool is used to conduct disc centering by inserting the tool into pilot bush in flywheel, when installing clutch assembly to flywheel.	620 521 S30 230 130 GC10	Fig. CL-2 Fig. CL-3
2.	ST20050010 (Former Tool No. ST20051000) Clutch assembly base plate	 SE002	This tool is used to measure the diaphragm spring height. (Use with distance piece ST20050100.)	620 521 610 510 S30 C30 230 130 GC10 C240 140 C80 780	Page CL-4 Fig. CL-12
3.	ST20050100 (Former Tool No. ST20058001) Clutch assembly distance piece	 SE003	This tool is used to measure the diaphragm spring height. (Use with base plate ST20050010.)	620 521 610 510 B110 B120 S30 C30 230 GC10 C80	Page CL-4
4.	ST20050240 (Former Tool No. ST20050000) Diaphragm adjust wrench	 SE032	This tool is used to adjust the diaphragm spring height.	620 521 610 510 B110 B120 S30 C30 230 GC10	Fig. CL-13

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS AND BODY

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION TM

TRANSMISSION

TM

TRANSMISSION

CONTENTS

DESCRIPTION

The model 620 series vehicles adopt the type F4W63 (4-FORWARD, 1-REVERSE – FLOOR SHIFT) and type R4W63 (4-FORWARD, 1-REVERSE – COLUMN SHIFT) transmissions.

These transmissions are of a fully synchronized type (WARNER TYPE) that uses helical gears.

The reverse gear is a sliding-mesh type using spur gears.

In construction, the main drive shaft gear is meshed with the counter drive gear. The forward speed gears formed on the countershaft are in constant mesh with the main shaft gears.

Each of the main gears rides on the main shaft through the needle roller bearing, thus rotating freely on the main shaft.

When the transmission is shifted, the coupling sleeve is slided on the synchronizer hub. This action engages its inner teeth with the outer teeth provided on the main shaft gear.

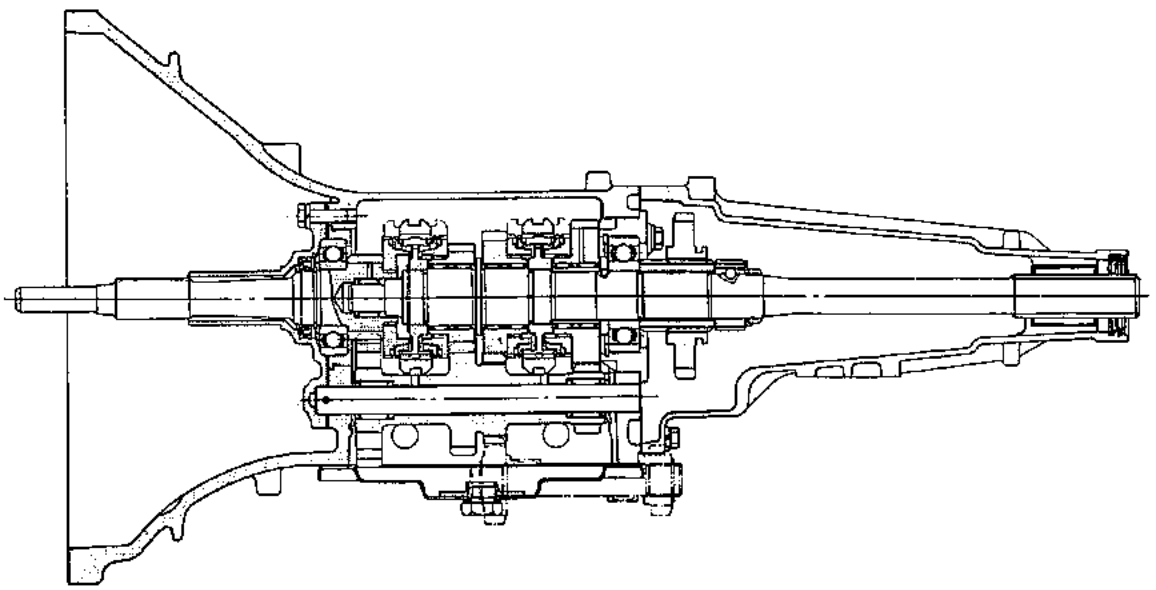
The synchronizer hub is fitted to the main shaft by splines, so they turn together, as the main shaft is rotated.

Placing speed control lever in the reverse position throws the main shaft reverse gear into engagement with the reverse idler gear; the transmission is reversed.

These transmissions consist of the complete transmission case, rear extension housing and gear assembly. The complete transmission case and rear extension housing are made of aluminum alloy metal.

The clutch housing and transmission case are combined to a single unit as the complete transmission case. The complete transmission case is provided with a bottom cover. With this construction, maintenance service can be made easily.

This chapter describes about the type R4W63 transmission.



TM301

Fig. TM-1 Sectional view of type R4W63 transmission

REMOVAL AND INSTALLATION

Removal

In dismounting transmission from vehicle, proceed as follows;

1. Disconnect battery ground cable from terminal.
2. Jack up vehicle and support it with four stands.

Recommend a hydraulic hoist or open pit be utilized, if available. Make sure that safety is insured.

3. Remove four spring pins and disconnect select and shift rods from select ① and shift ② levers. Remove cross shaft assembly from transmission case and side member.
4. Disconnect front exhaust tube ③ from exhaust manifold.
5. Remove clutch operating cylinder ④ from transmission case.
6. Disconnect speedometer drive cable ⑤ from transmission extension housing and back up light switch wires ⑥ at their connections.

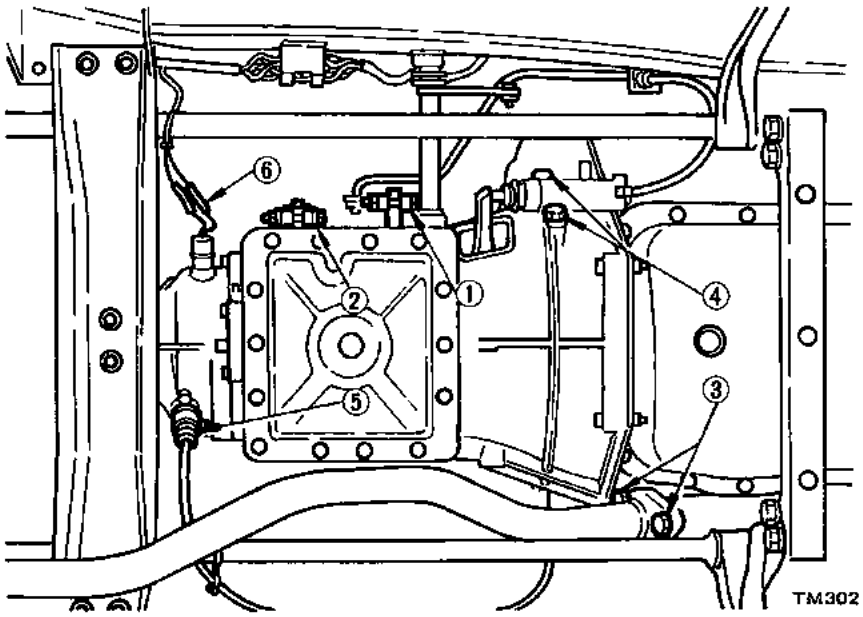


Fig. TM-2 Bottom view of vehicle

7. Remove bracket holding center bearing on 3rd cross member by loosening off attaching bolts.

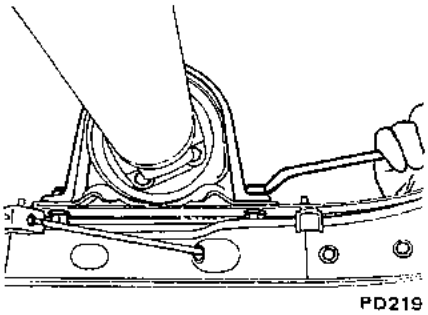


Fig. TM-3 Removing center bearing holding bracket

8. Detach propeller shaft from companion flange of gear carrier by backing off four bolts.

Note: Plug up the opening in the rear of rear extension housing to prevent oil from flowing out.

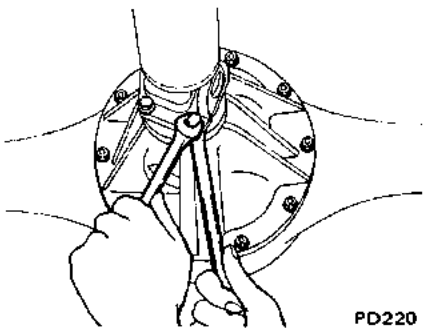


Fig. TM-4 Removing four bolts securing propeller shaft to companion flange

9. Support engine by locating a jack under oil pan with a wooden block used between oil pan and jack.

Be careful not to apply jack to oil pan drain plug.

10. Remove rear engine mount securing bolts ① and cross member mounting bolts ②.

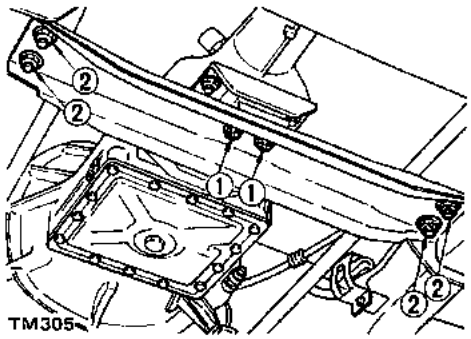


Fig. TM-5 Removing rear engine mount

11. Remove starting motor.
12. Remove bolts securing transmission to engine, pull out transmission to rear once, place the rear portion of rear extension housing on cross member, and then pull it down toward front.

Note: Take care in dismounting transmission not to strike any adjacent part and drive shaft.

Installation

To install, reverse the order of removal observing the following note.

Remove filler plug at the inspection hole, and fill transmission case with recommended gear oil to the level of the filler hole. [Approximately 1.7 liters (½ U.S.gal., 38 Imper.gal.).

The tightening torque of engine to transmission case mounting bolt: 2.4 to 2.8 kg-m (17 to 20 ft-lb).

DISASSEMBLY AND ASSEMBLY

Disassembly

Prior to disassembling transmission, thoroughly wipe off dirt and grease from it.

2. Drain lubricant.

3. Detach dust cover from transmission case. Remove withdrawal lever and release bearing.

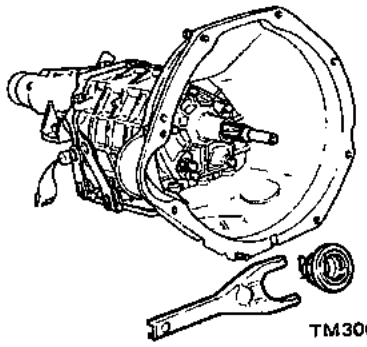


Fig. TM-6 Removing withdrawal lever and release bearing

4. Remove five front cover securing bolts and detach front cover.

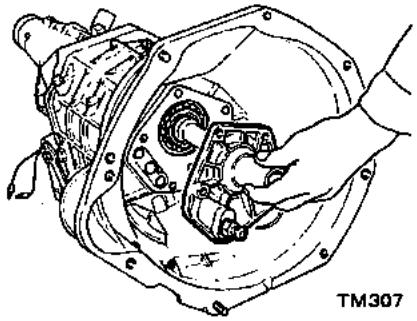


Fig. TM-7 Detaching front cover

5. Detach bottom cover from transmission case.
6. Remove back up light switch and speedometer pinion with speedometer sleeve.
7. Remove rear extension housing securing bolts.

Detach rear extension houisng.

Note: If rear extension houisng cannot be removed easily, lightly tap it with a soft hammer.

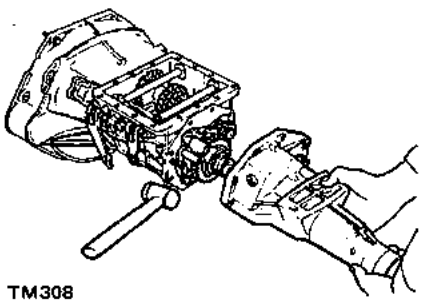


Fig. TM-8 Detaching rear extension housing

Gear assemblies

1. Unscrew check ball plugs, take out three locking springs and three check bolts. Take care not to lose these parts.
2. Remove lock pins ① used to fix cross shaft and operating lever assembly prying off snap rings ② and withdraw cross shafts together with their outer levers, then take out arms and rods assembly.

Note: When withdrawing cross shafts, be careful not to damage oil seal lips and grooves with snap rings.

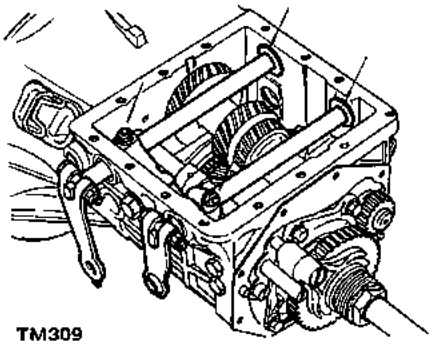


Fig. TM-9 Removing cross shafts

3. Mesh gears at two places. Straighten lock washer and then loosen lock nut on main shaft.
4. Drive out countershaft from the rear of transmission case with the use of Countershaft Guide ST23100000, and then take out countergear togethe; with Countershaft Guide.

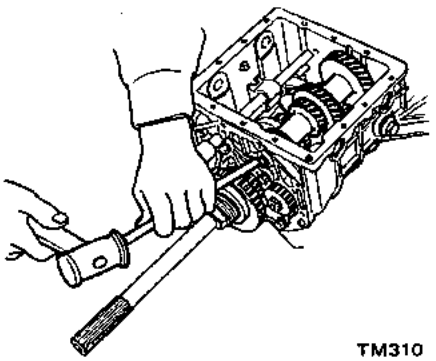


Fig. TM-10 Driving out countershaft

Be careful not to drop needle bearing in countergear into transmission case.

Note: Make sure that washers between countergear and case are removed.

5. Pry off snap ring retaining reverse idler gear (helical gear).

Take out reverse idler gear from reverse idler gear shaft and then withdraw reverse idler gear shaft with idler gear (spur gear) from the rear side of transmission case.

6. Drive out retaining pins by using Fork Rod Pin Punch ST23540000.

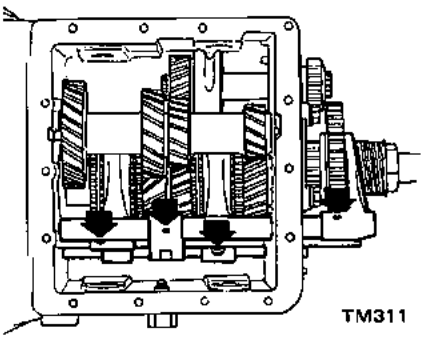


Fig. TM-11 Driving out retaining pins

7. Drive out fork rods removing shift forks and fork rod brackets.
8. Remove bolts securing main shaft bearing retainer and then withdraw main shaft assembly from the rear side.
9. Remove main drive gear from the front side, after taking out pilot bearing located between main shaft and main drive gear.

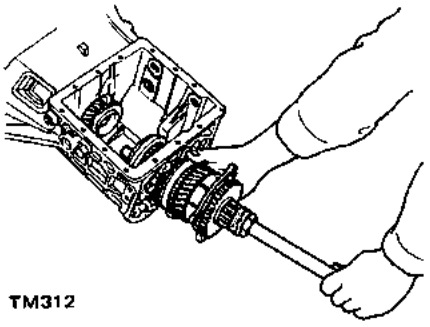


Fig. TM-12 Withdrawing main shaft assembly

Note: When main shaft assembly and/or main drive gear cannot be removed easily, lightly tap transmission case with a soft hammer.

Main shaft assembly

1. Pry off snap ring on the front end of main shaft, and remove 3rd-4th synchromesh assembly and 3rd gear.

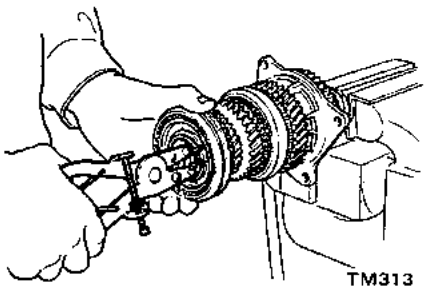


Fig. TM-13 Prying off snap ring

2. Remove main shaft lock nut loosened previously and remove lock washer, speedometer drive gear, steel ball, reverse gear and reverse hub.
3. In removing main shaft bearing, apply the front end of 1st gear to Bearing Replacer ST22130000 and withdraw bearing together with bearing retainer, thrust washer, and 1st gear simultaneously by using a press.

And then take out steel ball, needle roller bearing and baulk ring.

Note: Do not apply this tool to 2nd gear, or it may damage 1st gear bushing.

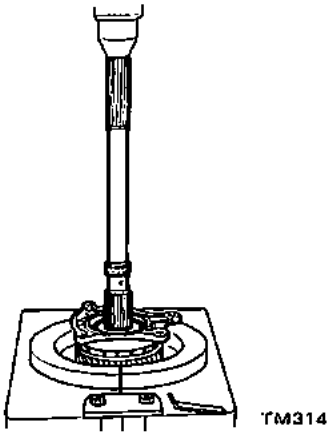
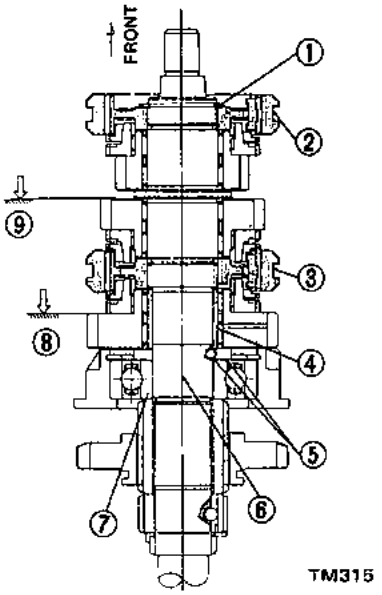


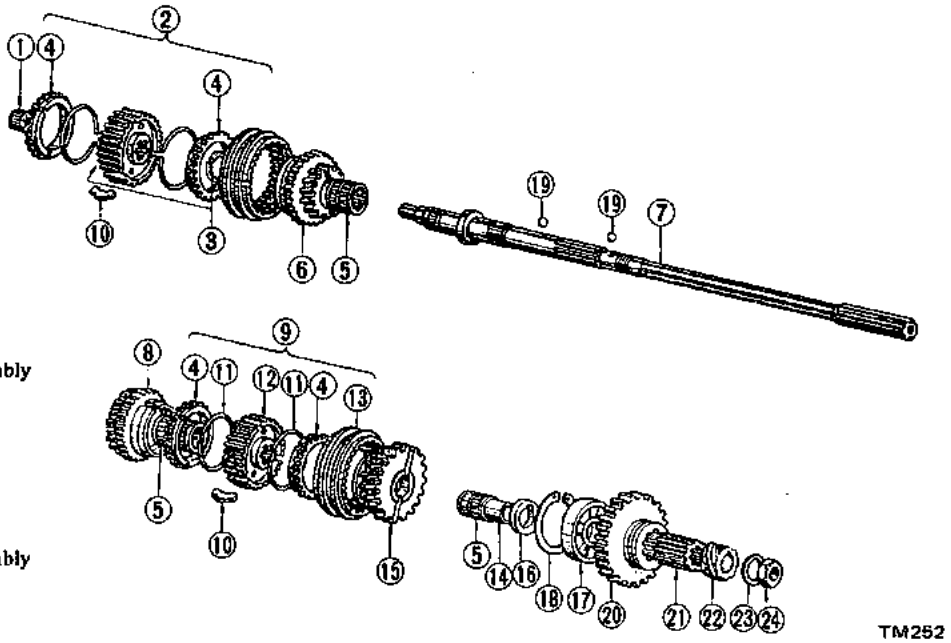
Fig. TM-14 Removing main shaft bearing

4. As 1st gear bushing is tightly fitted to main shaft, support the front end of 2nd gear, and withdraw 1st-2nd synchro-assembly, 2nd gear and bushing all together by using a press.



1 Snap ring
2 3rd-4th synchronizer assembly
3 1st-2nd synchronizer assembly
4 1st gear bearing bushing
5 Thrust washer and ball
6 Main shaft
7 Main shaft bearing
8 Support this end with Bearing Replacer ST22130000, depress main shaft forward, and withdraw bearing together with 1st gear
9 Support this end, and withdraw 1st gear bearing bushing together with synchronizer assembly and 2nd gear.

Fig. TM-15 Cross sectional view of main shaft assembly



1 Pilot bearing
2 3rd & 4th synchromesh assembly
3 Snap ring
4 Baulk ring
5 Needle bearing
6 3rd speed gear, main shaft
7 Main shaft
8 2nd speed gear, main shaft
9 1st & 2nd synchromesh assembly
10 Shifting insert
11 Spread spring
12 Synchronizer hub
13 Coupling sleeve
14 Bush, 1st gear
15 1st speed gear, main shaft
16 Thrust washer, main shaft
17 Main shaft bearing
18 Snap ring, main shaft bearing
19 Steel ball
20 Reverse gear
21 Reverse hub
22 Speedometer drive gear
23 Lock plate
24 Nut

Fig. TM-16 Exploded view of main shaft assembly

Synchromesh assembly

1. Remove spread springs ① and take out shifting inserts ②.
2. Separate coupling sleeve ③ from synchro hub ④.

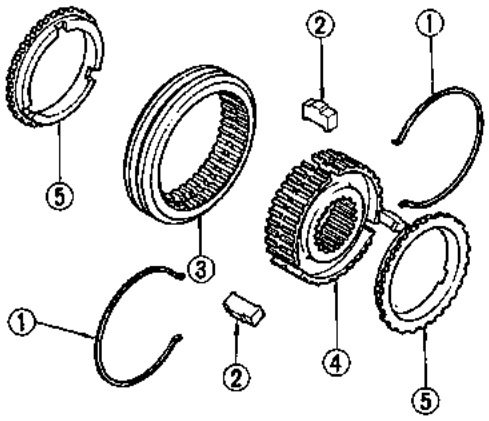


Fig. TM-17 Exploded view of synchromesh assembly

Main drive gear

1. Pry off snap ring from the front side of main drive gear bearing and remove spacer.
2. Remove main drive gear bearing by using Bearing Puller ST3003S000 and a suitable press.

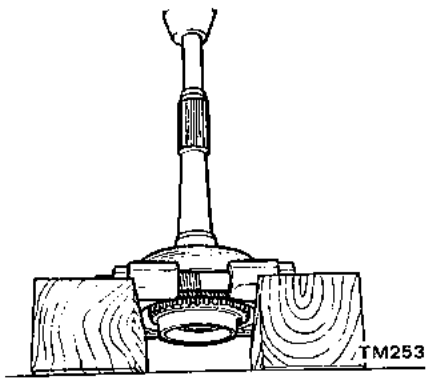


Fig. TM-18 Driving out main drive gear bearing

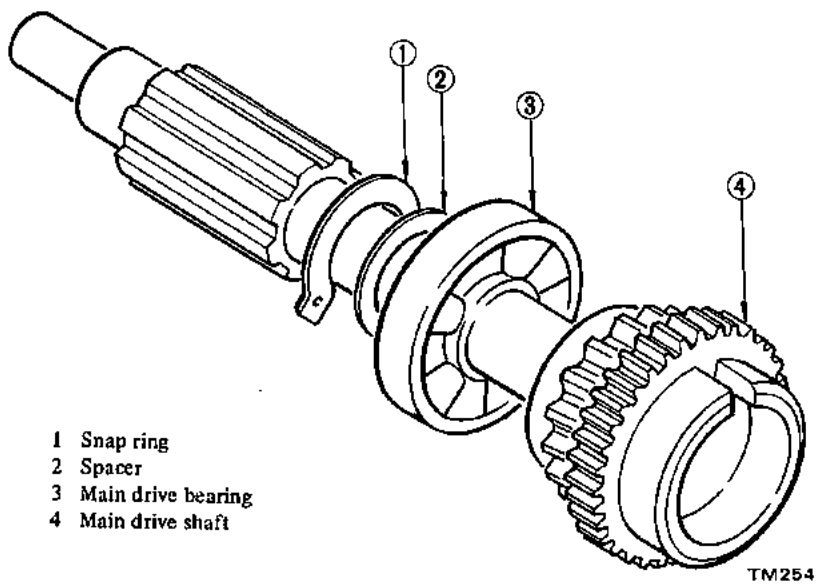


Fig. TM-19 Exploded view of main drive gear

Assembly

To assemble, reverse the order of disassembly observing the following instructions:

Front cover and rear extension housing

1. Make sure that oil seal mating surface is clean.
2. Press new oil seal into position using a press.

Note: Apply gear oil to oil seal lip when installing oil seal.

Main shaft assembly

1. Wash clean all parts with solvent and dry with compressed air.
2. Assemble synchromesh assembly in the following procedures.

(1) Place synchro-hub into coupling sleeve.

(2) Fit shifting inserts in their grooves in synchro-hub.

(3) Locate one spread spring on the lower side of shifting inserts to secure them to the inner side of coupling sleeve.

Install the other spread spring on the opposite side of synchro hub.

Note: Make sure that spread springs are installed opposite to each other.

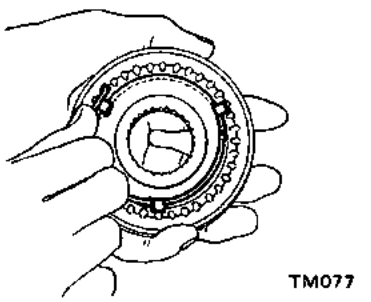


Fig. TM-20 Installing spread spring

3. Install the following parts to main shaft in the order listed below.

2nd gear needle roller bearing, 2nd gear, 2nd gear baulk ring and 1st-2nd speed synchromesh assembly.

Note: Install 1st-2nd synchromesh assembly on main shaft referring to Figure TM-23.

4. When fitting 1st gear bushing onto main shaft, drive bushing by using a proper brass drift.

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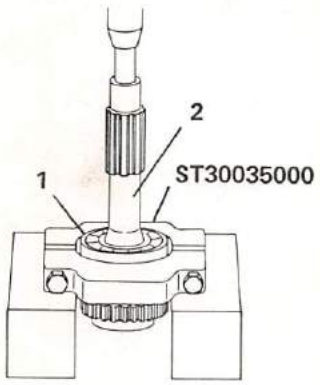
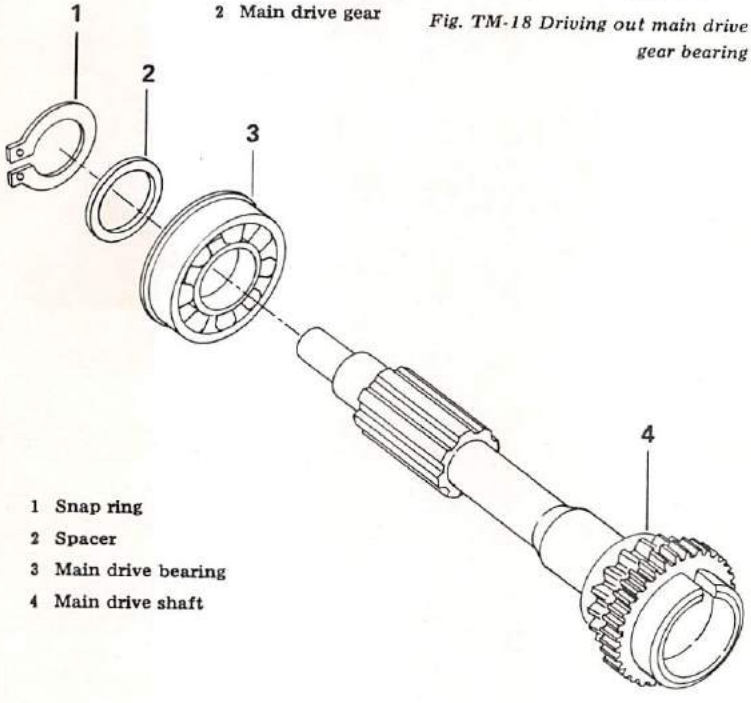
Cut inside dotted line, dampen back with a wet rag,
and paste over figures to be corrected .



1 Main drive bearing
2 Main drive gear

Fig. TM-18 Driving out main drive gear bearing



1 Snap ring
2 Spacer
3 Main drive bearing
4 Main drive shaft

Fig. TM-19 Exploded view of main drive gear

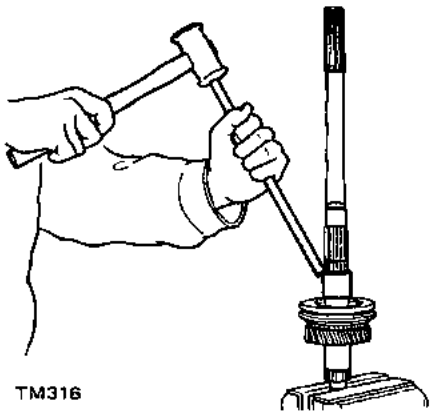


Fig. TM-21 Driving bushing

5. Then, install 1st gear baulk ring, 1st gear needle roller bearing, 1st gear, steel ball and thrust washer to main shaft.

Note: Apply grease to steel ball when installing.

6. Fit main shaft bearing with bearing retainer to main shaft by using Transmission Adapter ST23800000.

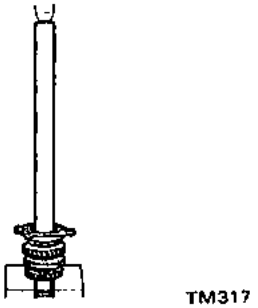
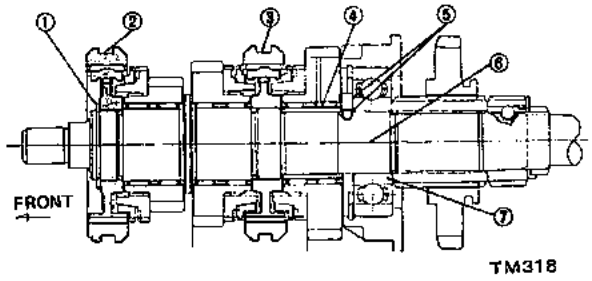


Fig. TM-22 Fitting main shaft bearing

7. Install reverse hub, reverse gear, steel ball, speedometer drive gear, lock washer and lock nut onto main shaft.

And tighten lock nut temporarily. See Figure TM-23.



1 Snap ring
2 3rd-4th synchronizer assembly
3 1st-2nd synchronizer assembly
4 1st gear bearing bushing
5 Thrust washer and ball
6 Main shaft
7 Main shaft bearing

Fig. TM-23 Sectional view of main shaft assembly

8. Install 3rd gear needle roller bearing, 3rd gear, baulk ring and 3rd-4th synchromesh assembly onto main shaft.

9. Fit a suitable snap ring in place so that there exists a minimum clearance between the end face of hub and ring groove. See Figure TM-23.

Available hub snap ring

No.	Thickness mm (in)
1	1.40 to 1.45 (0.0551 to 0.0571)
2	1.45 to 1.50 (0.0571 to 0.0591)
3	1.50 to 1.55 (0.0591 to 0.0610)
4	1.55 to 1.60 (0.0610 to 0.0630)
5	1.60 to 1.65 (0.0630 to 0.0650)

10. Insert main shaft assembly into position from the rear side of transmission case and secure it to transmission case with bearing retainer mounting bolts.

Tightening torque:
0.8 to 1.0 kg-m
(5.8 to 7.2 ft-lb)

11. Retighten lock nut to the specified torque 8.0 to 11.0 kg-m (58 to 80 ft-lb) with gears meshed at two places after installing reverse idler gear and countergear. And firmly bend lock washer.

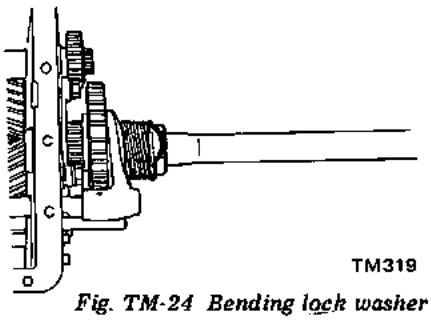


Fig. TM-24 Bending lock washer

Main drive gear assembly

1. Using Bearing Puller ST3003S000, press main drive gear bearing onto the shaft of main drive gear.

2. Install a set of suitable spacer and snap ring onto the shaft so that there exists a minimum of clearance between the groove for snap ring and the end face of spacer.

Available snap ring

No.	Thickness mm (in)
1	1.49 to 1.55 (0.0587 to 0.0610)
2	1.55 to 1.62 (0.0610 to 0.0638)
3	1.62 to 1.68 (0.0638 to 0.0661)
4	1.68 to 1.74 (0.0661 to 0.0685)
5	1.74 to 1.80 (0.0685 to 0.0709)
6	1.80 to 1.86 (0.0709 to 0.0732)
7	1.86 to 1.92 (0.0732 to 0.0756)

3. Install main drive gear assembly into transmission case from the front side.

Prior to installing main drive gear assembly, be sure to install plot bearing in place.

Reverse idler gear assembly

1. Install spur gear ③ onto the one end of reverse idler shaft ① with the larger groove and fit snap ring ② into the groove. See Figure TM-23.
2. With washer ④ placed in its position, insert reverse idler shaft assembly into transmission case from the rear side.

Note: Be sure to align the hollow surface of this washer with the oil groove in spur gear.

3. Insert a 0.1 mm (0.0039 in) thickness gauge between spur gear ③ and washer ④. With shaft ① pushed fully toward the front, install washer ⑤ and helical gear, and then fit snap ring ⑦ of the suitable thickness in position so that the specified reverse gear end play is obtained.

Standard reverse gear end play:
0.05 to 0.15 mm
(0.0020 to 0.0059 in)

Available snap ring

No.	Thickness mm (in)
1	1.15 to 1.25 (0.0453 to 0.0492)
2	1.35 to 1.45 (0.0531 to 0.0571)
3	1.25 to 1.35 (0.0492 to 0.0531)
4	1.45 to 1.55 (0.0571 to 0.0610)
5	1.05 to 1.15 (0.0413 to 0.0453)

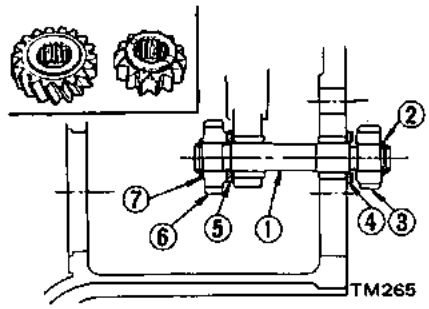


Fig. TM-25 Assembling reverse idler gear assembly

Countergear assembly

1. To install needle roller bearing ③ in its position, insert Countershaft Guide ST23100000 in countergear ① and then install washer ②, bearings ③ and washer in place.

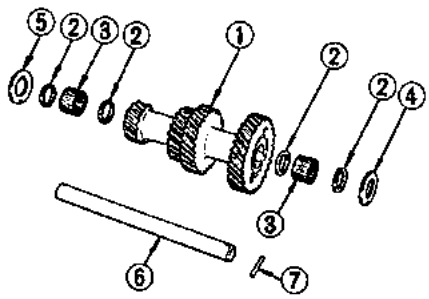


Fig. TM-26 Exploded view of countergear assembly

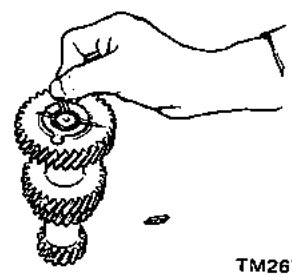


Fig. TM-27 Installing needle roller bearing

2. Install these parts together with washers ④ and ⑤ to transmission case, and insert countershaft ⑥ into transmission case, and then drive pin ⑦ in its hole on the front side of countershaft.
3. Select and install rear thrust washer of the suitable thickness so that the specified countergear end play is obtained.

Standard countergear end play:
0.05 to 0.15 mm
(0.0020 to 0.0059 in).

Available rear thrust washer

No.	Thickness mm (in)
1	2.35 to 2.40 (0.0925 to 0.0945)
2	2.40 to 2.45 (0.0945 to 0.0965)
3	2.45 to 2.50 (0.0965 to 0.0984)
4	2.50 to 2.55 (0.0984 to 0.1004)
5	2.55 to 2.60 (0.1004 to 0.1024)

Shift forks, shift rods and operating lever assembly

1. Install 1st-2nd shift fork and 3rd-4th shift fork to the grooves in their coupling sleeves and reverse-shift fork to the groove in reverse gear.
2. Insert 1st-2nd shift rod into transmission case through 1st-2nd shift fork installing 1st-2nd shift rod bracket in its position, and then drive pins into 1st-2nd shift rod bracket and 1st-2nd shift fork securely.

With 1st-2nd shift rod in neutral position, install interlock plunger in its position.

3. Insert 3rd-4th shift rod into transmission case through 3rd-4th shift fork installing 3rd-4th shift rod bracket in its position, and then drive pins into them.

With 3rd-4th shift rod in neutral position, install interlock plunger in its position.

4. Insert reverse shift rod into transmission case through reverse shift fork installing reverse shift rod bracket in its position.

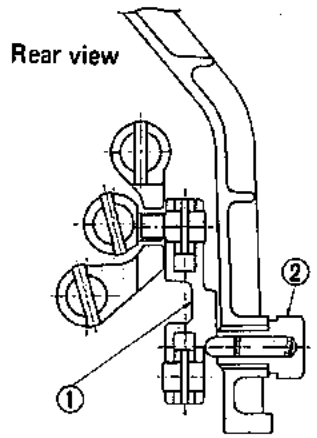
And put check balls and locking springs into each hole in transmission case and then install check ball plugs applying thread locking agent.

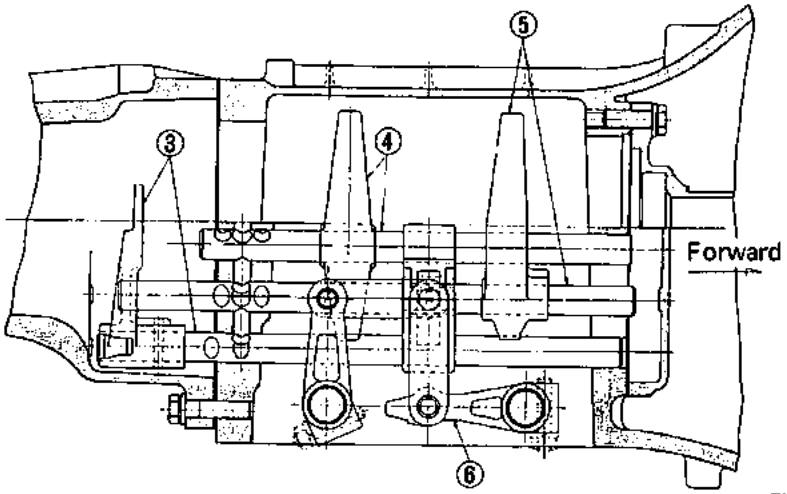
5. Assemble operating lever assembly inserting cross shafts into transmission case and operating levers.

Be sure to install thrust washers and snap rings when inserting cross shafts.

6. Secure operating levers with lock pins.

Lock pin tightening torque:
0.3 to 0.4 kg-cm
(0.26 to 0.35 in-lb)





1 Operating lever assembly
2 Reverse check
3 Reverse shift fork and shift rod
4 1st and 2nd shift fork and shift rod
5 3rd and 4th shift fork and shift rod
6 Operating lever assembly

Fig. TM-28 Layout of shift forks and operating lever

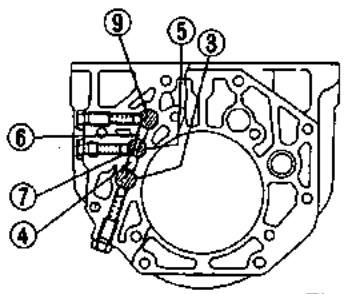


Fig. TM-29 Interlock mechanism

7. Apply gear oil to all sliding parts and make sure that gears are meshed smoothly in their positions.

Complete transmission assembly

1. Install rear extension housing to transmission case.

Rear extension houisng bolt tightening torque: 1.4 to 1.8 kg-m (121.5 to 156.2 in-lb)

Note: Apply sealant to each face of gasket to prevent oil leak.

2. Install speedometer pinion assembly to rear extension housing, and secure it with lock plate.
3. Install front cover to the front of transmission case.

Front cover bolt tighteing torque:
0.8 to 1.0 kg-m
(5.8 to 7.2 ft-lb)

4. Install release bearing, withdrawal lever and dust cover in their positions.
5. Install bottom cover to transmission case.

Bottom cover bolt tighteing torque:
0.8 to 1.0 kg-m
(5.8 to 7.2 ft-lb)

INSPECTION

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

Transmission case and rear extension housing

Clean with solvent and check for any crack which may be the cause of oil leak.
2. If rear extension bushing is worn or cracked, replace it as a unit of bushing and extension housing.

Bearing

1. Wipe oil or grease clean on bearing and dry these parts with compressed air.
2. Check balls, outer race and inner race for wear, burr or other damages. Also check for smooth operation. If necessary, replace.

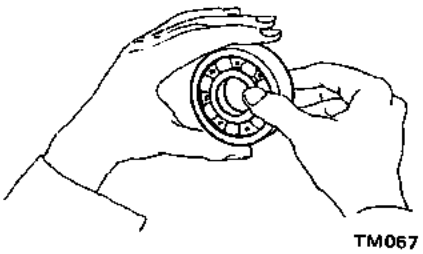


Fig. TM-30 Inspecting ball bearing

3. Replace needle bearings which are excessively worn or damaged.

Gears and shafts

1. Check gears for wear, burr or damage and, if necessary, replace.
2. Check shafts and their splines for wear, crack or bending. If necessary, replace any defective gear or shaft.

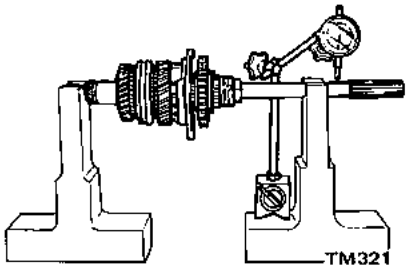


Fig. TM-31 Checking main shaft for straightness

3. Check gears for end play

Standard gear end play (1st, 2nd, 3rd and reverse idler gears): 0.05 to 0.15 mm (0.0020 to 0.0059 in)

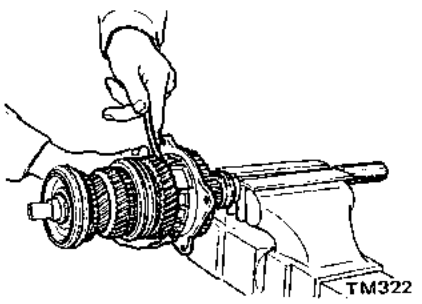


Fig. TM-32 Measuring gear end play

4. Measure backlash in gears.

Standard backlash: 0.05 to 0.10 mm (0.0020 to 0.0039 in)

If the measured backlash is exceeded, replace drive and driven gears as a set.

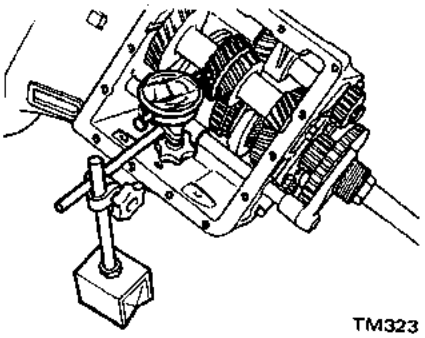


Fig. TM-33 Measuring gear backlash

Baulk rings

1. If any baulk ring is found to be deformed or cracked, replace it.
2. Position baulk ring in place on the gear cone, and measure the baulk ring to gear clearance with baulk ring fully pushed toward gear.

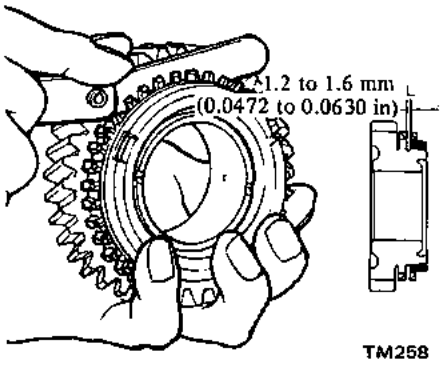


Fig. TM-34 Baulk ring to cone gap

The standard baulk ring to cone clearance is 1.2 to 1.6 mm (0.0472 to 0.0630 in).

TYPE F4W63 TRANSMISSION

CONTENTS

DESCRIPTION

The type F4W63 transmission is used for floor shift type vehicle. The construction, however, is the same as that of the type R4W63 transmission in general. The difference between these transmissions is only in their control devices.

Thus, in this chapter, description is made mainly for the control system and relative matters.

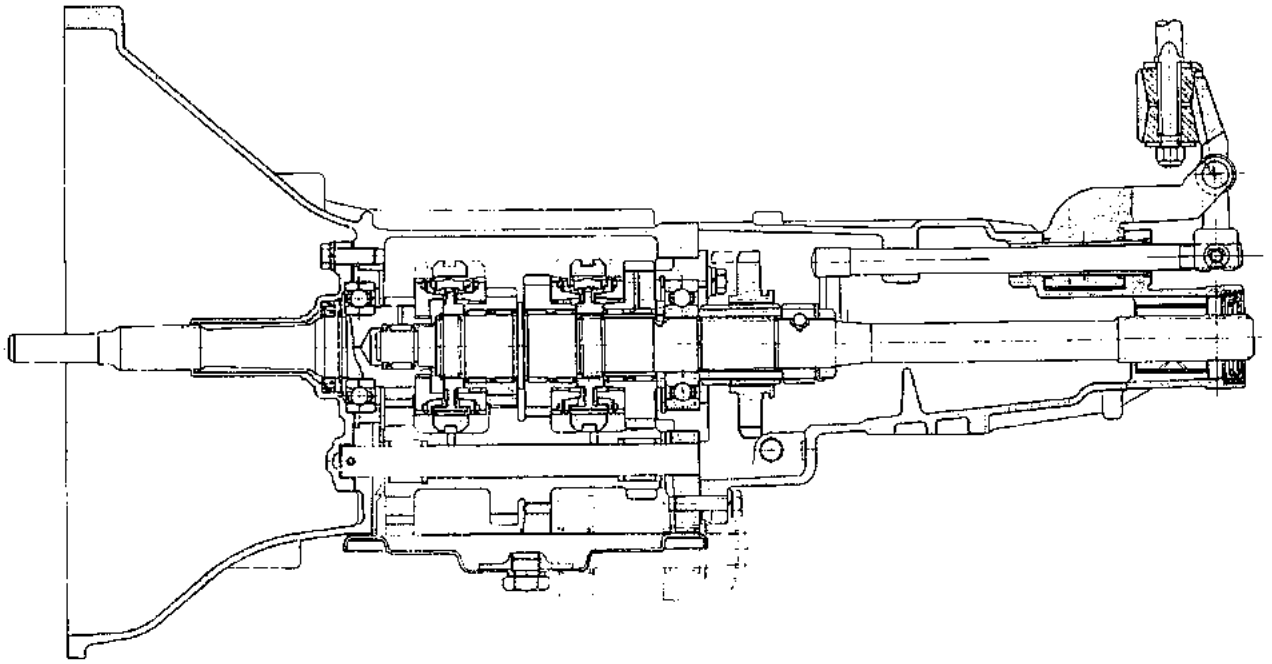
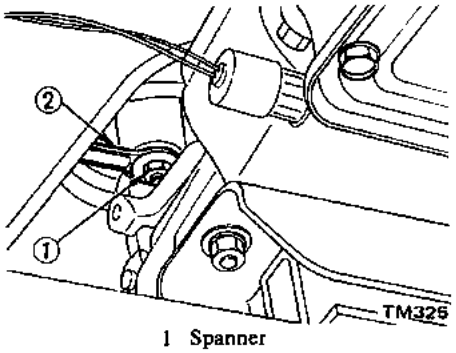


Fig. TM-35 Sectional view of F4W63 transmission

REMOVAL AND INSTALLATION

Procedures for removal and installation of the F4W63L transmission are the same as the R4W63L transmission except for removal and installation of control device.

In removing and installing control lever, conduct those operations referring to Figure TM-36.



1 Spanner
2 Fixing nut

Fig. TM-36 Removing and installing control lever

DISASSEMBLY AND ASSEMBLY

Disassembly

1. Thoroughly wipe off dirt and grease from transmission.
2. Drain out oil in transmission case.
3. Place transmission on a safety stand securely.
4. Detach dust cover from transmission. Rmove withdrawal lever and release bearing.
5. Remove bolts securing front cover to transmission and detach front cover.

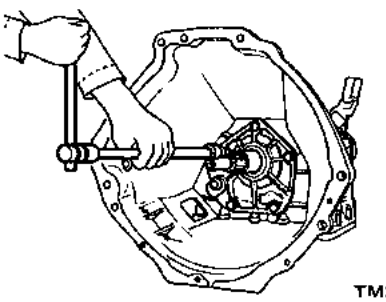


Fig. TM-37 Removing front cover

6. Detach bottom cover from transmission.
7. Remove back-up light switch and speedometer pinion with its sleeve.
8. Move gears to neutral position.
9. Remove rear extension housing mounting bolts and then detach rear extension housing.

If rear extension housing cannot be removed easily, do this housing by lightly tapping it with a soft hammer.

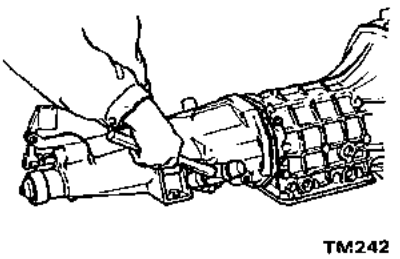


Fig. TM-38 Removing rear extension housing

10. Pull out striking rod pin (1) and remove striking rod (2 .

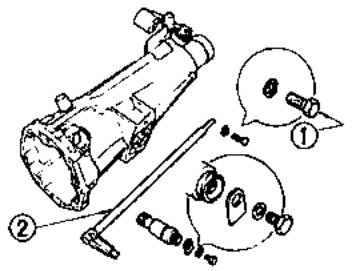


Fig. TM-39 Disassembling rear extension

Gear assembly

1. Disconnect check ball plugs, and remove three locking springs and three check balls.

Take care not to lose these parts.

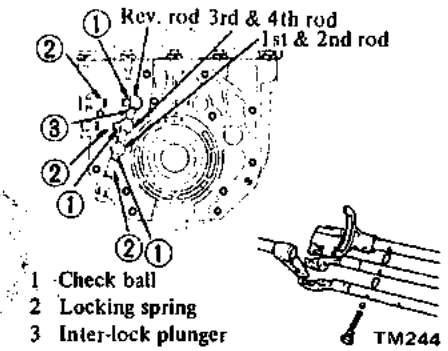


Fig. TM-40 Layout of check balls and interlock plungers

2. Using Fork Rod Pin Punch ST23540000, drive out retaining pins from fork rods.

Take care not to lose plungers when removing fork rods.

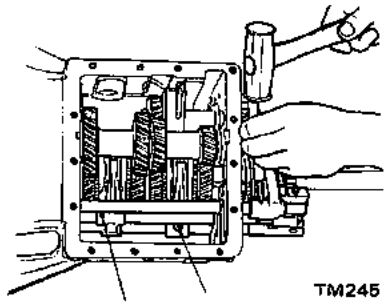


Fig. TM-41 Removing retaining pins

3. Mesh gears at two places. Straighten lock washer and loosen main shaft nut.

4. Using Countershaft Guide ST23100000, drive out countershaft from transmission case.

Exercise care not to drop needle bearings into case.

Remove countergear together with needle bearings and washers.

Note: Make sure that thrust washers used between countergear and transmission case are removed.

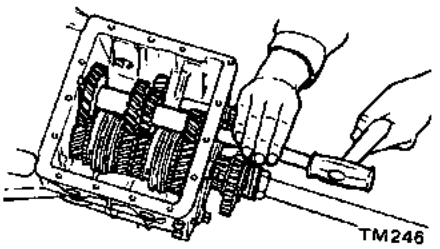


Fig. TM-42 Driving out countershaft

5. Pry off snap ring retaining reverse idler gear (helical gear).

Withdraw idler shaft together with idler gear (spur gear) from the rear side of transmission case.

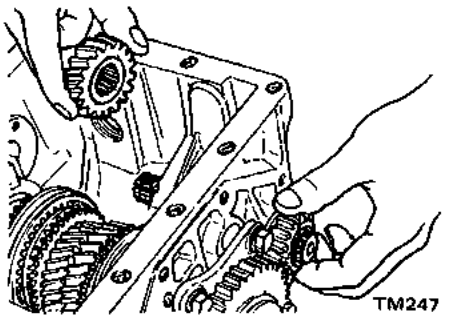


Fig. TM-43 Removing reverse idler sahft

6. Remove bolts securing main shaft bearing retainer, and then withdraw main shaft assembly from the rear side of transmission.

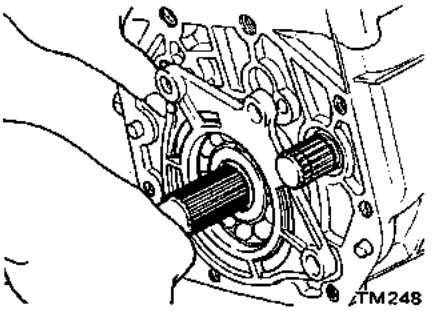


Fig. TM-44 Removing main shaft assembly

7. Take out pilot bearing located between main shaft and main drive gear.

8. Remove main drive gear by using the wooden handle of a hammer.

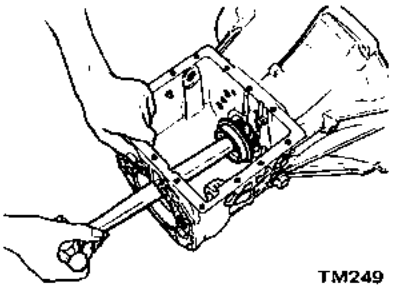


Fig. TM-45 Removing main drive gear assembly

Assembly of main shaft, main drive gear and synchromesh

In disassembling these assemblies, refer to the procedure for disassembling those of the type R4W63 transmission. (See page TM-00)

Assembly

To assemble, reverse the order of disassembly observing the following instructions.

Front cover and rear extension housing

1. Make sure that front cover seal mating surface is clean. Using a press, drive new seal into place on front cover.

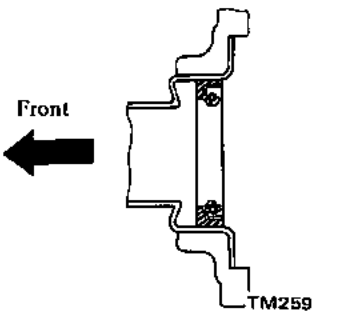


Fig. TM-46 Location of front cover oil seal

2. Wipe rear extension housing clean and then press new oil seal into position. Apply gear oil to sealing lip when installing oil seal.

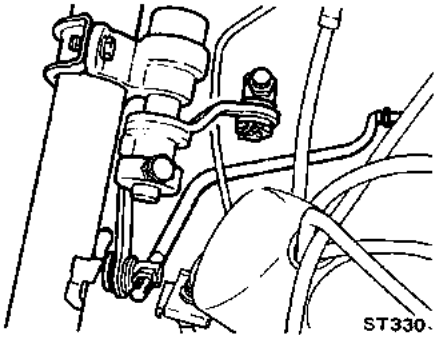


Fig. TM-53 Separating rods from levers

8. Remove two bolts securing lower bracket and its clamp.
9. After loosening locking screw, remove change speed lever from control rod.
10. Remove lower bracket with select gear lever by loosening lower bracket till its positioning knock pin can be freed from jacket tube.
11. Remove control rod from upper support depressing it downward and then withdraw it upwards.
12. Remove spring pins, plain washers and spring washers at select lever and shifting lever.
13. Separate select rod from select lever.
14. After separating upper and lower shift rods, remove cross shaft from transmission case side pushing it against retaining spring.

And then remove cross shaft from member side with retaining spring a little compressed.

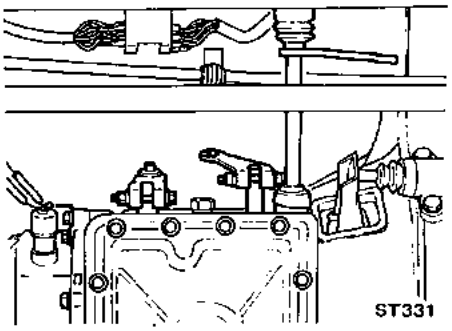


Fig. TM-54 Removing cross shaft assembly

Installation

Install control system in the reverse sequence of removal.

When installing, apply specified grease to the following parts:

1. Select lever pivot bolt bushing
2. Select lever guide
3. Reverse check unit
4. Hand lever unit in upper portion of control rod
5. Both ends of cross shaft (socket ball and spherical bush)

INSPECTION AND REPAIR

Check all sliding parts and other components for wear and other deflective conditions.

If any part is found to be defective, replace as required.

ADJUSTMENT

Shift linkage

1. Set outer lever ⑧ to neutral position.
2. Adjust trunnion nut ⑥, and tighten it when hand lever arrives "A" position.

Select linkage

1. Arrange component parts so that reverse check return spring seat on lower bracket comes into contact with control rod ring.
2. In this arrangement, make sure that hand lever is in "B" position.
3. Set outer lever ⑨ to neutral position.
4. Tighten trunnion nut ⑥ at a position where no unreasonable force is applied to select rod.

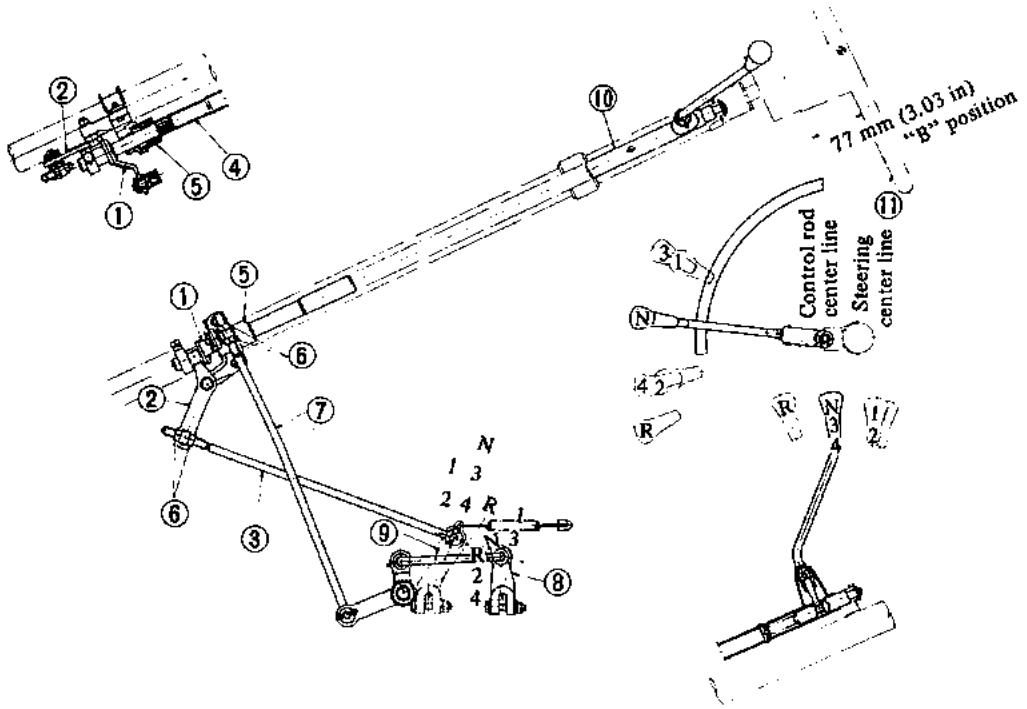


Fig. TM-55 Adjusting control system

SERVICE DATA AND SPECIFICATIONS

Item \ Model			L620T LG620T	PL620TU	N620U NL620 GN620U GNL620	NL620T GNL620T	UNL620	620U L620 G620U GL620U	U620 UL620
Final gear ratio			4.875	4.375	4.625	4.625	4.375	4.875	4.625
Transmission	Type		F4W63		R4W63	F4W63	R4W63	R4W63	
	Gear ratio	1st	3.657		4.243			5.000	
		2nd	2.177		2.558			3.014	
		3rd	1.419		1.589			1.685	
		4th	1.000		1.000			1.000	
		Reverse	3.683		4.367			5.146	
Speedometer gear ratio			18/5	16/5	17/5			18/5	
Tire size			6.00-14 -8PRLT	6.00-14 -6PRLT	6.00-14-8PRLT		5.50-14 -6PRLT	6.00-14 -8PRLT	5.50-14 -6PRLT

Note: Oil capacity ..... 1.7 liters (½ U.S.gal., ⅜ Imper.gal.)

Gear backlash

Standard backlash
(For all gear) mm (in) ..... 0.05 to 0.10 (0.0020 to 0.0039)

Gear end play

Standard end play
(For all gear) mm (in) ..... 0.05 to 0.15 (0.0020 to 0.0059)

Clearance baulk ring and gear mm (in) ..... 1.2 to 1.6 (0.0472 to 0.0630)

3rd-4th synchro hub adjusting snap ring .....

No.	Thickness mm (in)
1	1.40 to 1.45 (0.0551 to 0.0571)
2	1.45 to 1.50 (0.0571 to 0.0591)
3	1.50 to 1.55 (0.0591 to 0.0610)
4	1.55 to 1.60 (0.0610 to 0.0630)
5	1.60 to 1.65 (0.0630 to 0.0650)

Main drive gear adjusting snap ring .....

No.	Thickness mm (in)
1	1.49 to 1.55 (0.0587 to 0.0610)
2	1.56 to 1.62 (0.0614 to 0.0638)
3	1.62 to 1.68 (0.0638 to 0.0661)
4	1.68 to 1.74 (0.0661 to 0.0685)
5	1.74 to 1.80 (0.0685 to 0.0709)
6	1.80 to 1.86 (0.0709 to 0.0732)
7	1.86 to 1.92 (0.0732 to 0.0756)

Reverse idler gear adjusting snap ring .....

No.	Thickness mm (in)
1	1.15 to 1.25 (0.0453 to 0.0492)
2	1.35 to 1.45 (0.0531 to 0.0571)
3	1.25 to 1.35 (0.0492 to 0.0531)
4	1.45 to 1.55 (0.0571 to 0.0610)
5	1.05 to 1.15 (0.0413 to 0.0453)

Counter gear adjusting rear thrust washer .....

No.	Thickness mm (in)
1	2.35 to 2.40 (0.0925 to 0.0945)
2	2.40 to 2.45 (0.0945 to 0.0965)
3	2.45 to 2.50 (0.0965 to 0.0984)
4	2.50 to 2.55 (0.0984 to 0.1004)
5	2.55 to 2.60 (0.1004 to 0.1024)

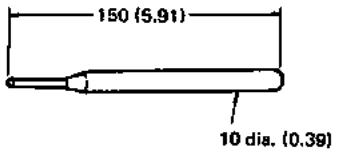
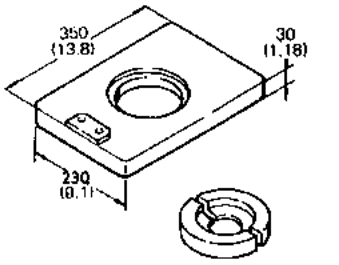
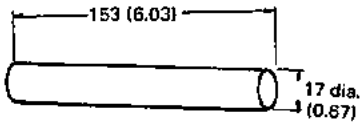
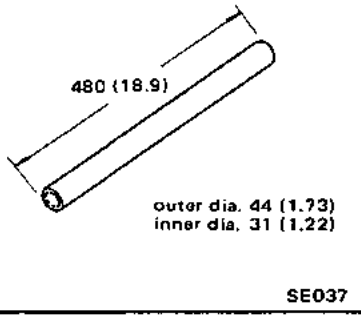
Tightening torque

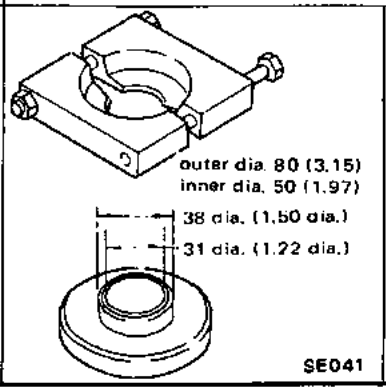
	kg-m	(ft-lb)
Transmission proper		
Engine/transmission installation bolt	2.4 to 2.8	(17 to 20)
Front cover/transmission installation bolt	0.8 to 1.0	(5.8 to 7.2)
Rear extension/transmission installation bolt	1.4 to 1.8	(10 to 13)
Main shaft tightening nut	8 to 11	(58 to 80)
Companion flange tightening nut	10 to 14	(72 to 101)
Rear engine mount installation bolt	3.3 to 3.8	(24 to 28)
Filler plug	2.5 to 3.5	(18 to 25)
Drain plug	2.0 to 3.0	(15 to 22)
Back-up lamp switch	2.0 to 3.0	(15 to 22)
Bottom cover installation bolt	0.8 to 1.0	(5.8 to 7.2)
Speedometer pinion installation bolt	0.3 to 0.4	(2.2 to 2.9)
Interlock plug	1.7 to 2.1	(12 to 15)
Operating lever (for both shift and select)	0.3 to 0.4	(2.2 to 2.9)
Reverse check	2.0 to 3.0	(15 to 22)
Transmission gear control (column shift)		
Transmission outer lever	0.8 to 1.0	(5.8 to 7.2)
Trunnion nut (for both shift and select)	2.0 to 2.8	(15 to 20)
Select lever pivot bolt	0.5 to 0.8	(3.6 to 5.8)
Lower support bracket	0.6 to 1.0	(4.3 to 7.2)
Steering wheel tightening nut	7.0 to 7.5	(51 to 54)
Transmission gear control (floor shift)		
Control lever installation bolt	1.9 to 2.2	(14 to 16)

TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Noise on drive	Shortage of oil.	Supply gear oil.
	Incorrect tooth contact between drive gear and drive pinion.	Adjust tooth contact.
	Damaged differential side bearing or improper adjustment.	Replace or adjust.
	Damaged gear.	Replace defective parts.
Noise on coast	Incorrect backlash between dirve gear and drive pinion.	Adjust backlash.
	Incorrect adjustment of drive pinion bearing.	Adjust correctly.
Noise on drive and coast	Worn or damaged drive pinion bearings.	Rebuild differential and replace as required.
	Incorrect tooth contact pattern.	Adjust backlash or replace hypoid gear set.
	Damaged side gear drive gear, drive pinion teeth surface.	Replace as required.
	Seized drive gear and drive pinion.	Replace hypoid gear set.
	Pinion bearing under inadequate preload.	Adjust preload.
	Seized damaged or broken side bearing.	Replace side bearing.
	Swinging differential case.	Replace differential case.
	Loosen clamp bolts and nuts holding drive gear, side bearing, etc.	Retighten them to the designated tightening torque.
Noise on turn	Side gear jammed in differential case.	Replace defective parts.
	Pinion gears too tight on their shaft.	Replace as required.
	Worn or damaged side gear thrust washer and pinion thrust washer.	Replace.
Excessive backlash	Incorrect backlash between drive gear and drive pinion.	Adjust backlash.
	Worn differential gear or case.	Replace worn parts.
Breakage of differential	Shortage of oil or use of improper oil. Severe service due to an excessive loading.	Rebuild differential and replace as required. After adjusting preload of bearings, backlash and engaging condition of gears, fasten parts and apply specified volume of genuine gear oil. Avoid abusing of the car.
	Incorrect adjustment of drive gear and drive pinion.	
	Excessive backlash due to defacement of side gear and thrust washer.	
	Loosened bolts and nuts such as drive gear bolts.	

SPECIAL SERVICE TOOLS

No.	Tool number & tool name	Description (Unit: mm (in))		For use on	Reference page or figure No.
1.	ST23540000 (Former Tool No. ST23510000) Fork rod pin punch		This tool is used to drive out fork rod retaining pin.	R4W63L & F4W63L T/M	Fig. TM-11 Fig. TM-41
2.	ST22130000 Synchronizer hub puller		This tool is used to pull out synchronizer hub.	620 521 780	Fig. TM-14
3.	ST23100000 Countershaft guide		This tool is used to prevent needle bearing from falling off when countershaft is removed from, or inserted into, the transmission case.	R4W63L & F4W63L T/M	Fig. TM-10 Page TM-8 Fig. TM-42
4.	ST23800000 Transmission adapter		This tool is used to install main shaft bearing.	620 521 S30 230 130	Fig. TM-22

No.	Tool number & tool name	Description Unit: mm (in)		For use on	Reference page or figure No.
5.	ST3003S000 (Former Tool No. ST30030000) Drive pinion rear bearing inner race replacer ├ ST30031000 Puller └ ST30032000 Base		This assembly is used to pull out main drive bearing.	63L & 71B T/M	Fig. TM-18 Page TM-7

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS AND BODY

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION PD

PROPELLER SHAFT & DIFFERENTIAL CARRIER

PD

PROPELLER SHAFT AND CENTER BEARING

CONTENTS

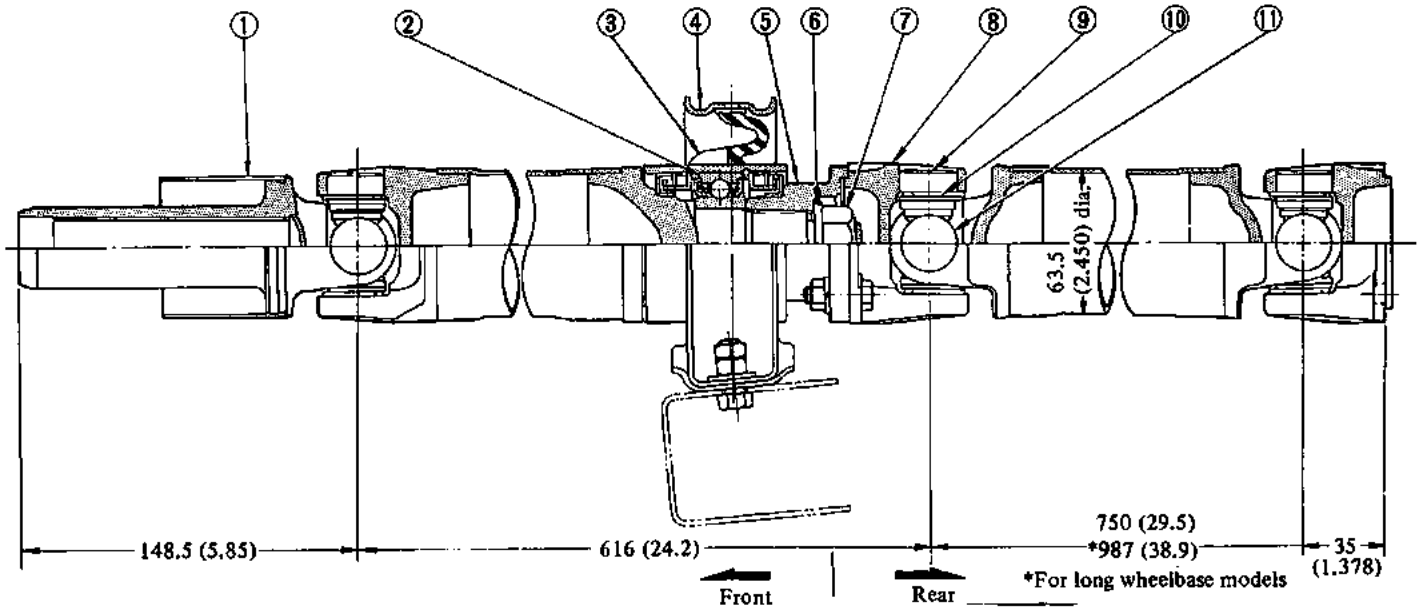


Fig. PD-1 Cross-sectional view of propeller shaft

DESCRIPTION

The propeller shaft on the 620 series is 3-joint type and is prepared two different length for standard and long wheelbase models.

The propeller shaft and universal joint assembly is carefully balanced during original assembly; that is, the dynamic unbalance is under 35 gr-cm (0.5 in-oz) at 5,800 rpm.

If the propeller shaft has to be assembled, it must be made carefully so that the above limit is not exceeded. Therefore, when the vehicle is to be undercoated, cover the propeller shaft and universal joints to prevent application of the undercoating material.

REMOVAL AND INSTALLATION

1. Raise vehicle on hoist. Mark relationship of shaft to companion flange so that shaft can be reinstalled in the same position.
2. Remove bolts retaining center bearing bracket.

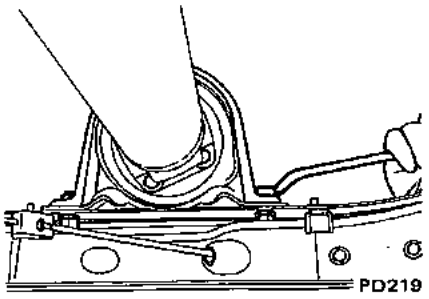


Fig. PD-2 Removing center bearing bracket

3. Remove bolts connecting shaft to companion flange.

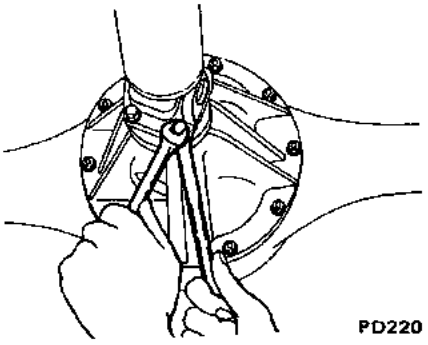


Fig. PD-3 Removing propeller shaft

4. Withdraw propeller shaft sleeve yoke from transmission by moving shaft rearward, passing it under rear axle.

Watch for oil leakage from transmission end.

Note: Remove propeller shaft carefully not so as to damage spline, sleeve yoke and rear oil seal.

To install, reverse the foregoing removal procedure.

1. Align propeller shaft with companion flange using reference marks prescribed in removal procedure and assemble with bolts.

Tightening torque:
2.0 to 2.7 kg-m
(14.5 to 19.5 ft-lb)

2. Insert bolts through the holes of center bearing bracket and torque nuts to retain center bearing on crossmember.

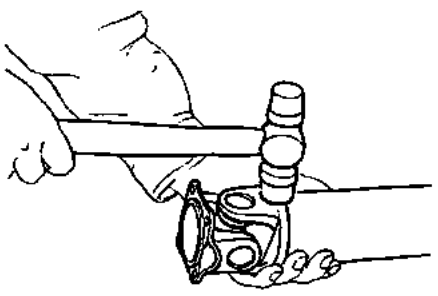
Tightening torque:
1.6 to 2.2 kg-m
(11.6 to 15.9 ft-lb)

DISASSEMBLY AND ASSEMBLY

Primarily, do not disassemble propeller shaft because it is balanced as an assembly.

However, check propeller shaft with journal for movement. When journal does not move smoothly, disassemble.

1. Mark relationship across propeller shaft and journal so that the original combination is restored at assembly.
2. Remove snap ring with a standard screwdriver.
3. Lightly tap base of yoke with a hammer, and withdraw bearing race.



PD005
Fig. PD-4 Removing bearing

Note: When removing journal from yoke, be careful not to damage journal and yoke hole.

When disassembling and repairing center bearing are required, the following procedures are applied.

1. Mark relationship across flange and front propeller shaft. Remove bolts connecting flange yoke to companion flange.
2. Applying Drive Pinion Flange Wrench ST31530000, loosen off locking nut and remove center bearing.

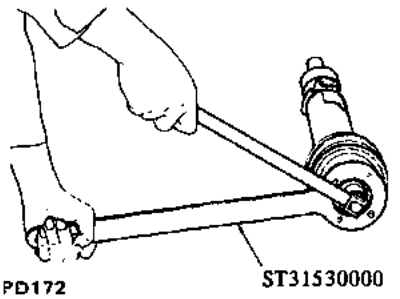


Fig. PD-5 Removing lock nut

To assemble, reverse the foregoing procedure using reference marks prescribed in disassembly procedure.

New bearing need not be lubricated since it is lubricated for life. Fill joint with grease whenever propeller shaft is overhauled.

Use related snap rings of the same thickness and be sure that play is below 0.02 mm (0.0008 in).

Available snap ring

Thickness mm (in)	Color identification
2.00 (0.0788)	White
2.02 (0.0795)	Yellow
2.04 (0.0803)	Red
2.06 (0.0811)	Green
2.08 (0.0819)	Blue
2.10 (0.0827)	Right Brown
2.12 (0.0835)	No paint

Assembling should also be of such that the joint for freedom of movement is below 15 kg-cm (13 in-lb).

Center bearing assembling procedures are as follows:

1. Install center bearing in center bearing insulator.
2. Install center bearing assembly and companion flange on front shaft using reference marks established in disassembly procedure.
3. Install washer and lock nut on front shaft and tighten nut using Drive Pinion Flange Wrench ST31530000 to specified torque.

Tightening torque:
20 to 24 kg-m
(145 to 174 ft-lb)

4. Join companion flange of front shaft with flange yoke of rear shaft and tighten connect bolts to specified torque.

Tightening torque:
2.5 to 3.2 kg-m
(18.1 to 23.1 ft-lb)

5. Install center bearing bracket on center bearing.

INSPECTION

1. Check journal pin for dent or brinell marks, and yoke hole for sign of wear or damage.

Snap ring, bearing and seal ring should also be inspected to see if these are damaged, worn or deformed. Replace if necessary.

2. Check center bearing by rotating bearing race. If it is rough, noisy or damaged, discard. Cracked bearing insulator cannot be tolerated hear.
3. Check propeller shaft tube surface for dent or crack. Change if necessary.

SERVICE DATA

Permissible dynamic unbalance	gr-cm (in-oz)	35 (0.5) at 5,800 rpm
Axial play of spider journal	mm (in)	Less than 0.02 (0.0008)
Journal swinging torque	kg-cm (in-lb)	Less than 15 (13)
Propeller shaft (front and rear) out of round	mm (in)	Less than 0.6 (0.024)
Tightening torque		
Shaft to companion flange (Gear carrier) bolt	kg-m (ft-lb)	2.0 to 2.7 (14.5 to 19.5)
Companion flange fixing nut (front shaft)	kg-m (ft-lb)	20 to 24 (145 to 174)
Flange yoke (rear shaft) to companion flange (front shaft) bolt	kg-m (ft-lb)	2.5 to 3.2 (18.1 to 23.1)
Center bearing bracket to cross member bolt	kg-m (ft-lb)	1.6 to 2.2 (11.6 to 15.9)

TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Vibration during at medium or high speed.	Worn or damaged universal joint needle bearing.	Replace.
	Unbalance due to bent or dented propeller shaft.	Replace.
	Loose propeller shaft installation.	Retighten.
	Worn transmission rear extension bushing.	Replace.
	Damaged center bearing or insulator.	Replace.
	Tight universal joints.	Impact yokes with hammer to free up. Replace joint if unable to free up or if joint feels rough when rotated by hand.
	Undercoating or mud on the shaft causing unbalance.	Clean up shaft.
	Tire unbalance.	Balance wheel and tire assembly or replace from known good vehicle.
	Balance weights missing.	Replace.
Knocking sound during starting or noise during coasting on propeller shaft.	Worn damaged universal joint.	Replace.
	Worn sleeve yoke and main shaft spline.	Replace.
	Loose propeller shaft installation.	Retighten.
	Loose joint installation.	Adjust snap ring.
	Damaged center bearing or insulator.	Replace.
	Loose or missing bolts at center bearing bracket to body.	Replace or tighten bolts.
Scraping noise.	Dust cover on sleeve yoke rubbing on transmission rear extension. Dust cover on companion flange rubbing on differential carrier.	Straighten out dust cover to remove interference.
Whine or whistle	Damaged center bearing.	Replace.

DIFFERENTIAL CARRIER

CONTENTS

DESCRIPTION

The differential gear carrier assembly on the 620 series is prepared three different gear ratio as follows:

Applied models	Gear ratio
With L16 engine model	4.375
With J15 engine model	
Pick-up	4.625 (4.875 Opt.)
Double pick-up	4.375
With J13 engine model	
Pick-up	4.875
Double pick-up	4.625

The gear carrier is of light aluminum alloy. The final drive has a hypoid type ring gear and drive pinion.

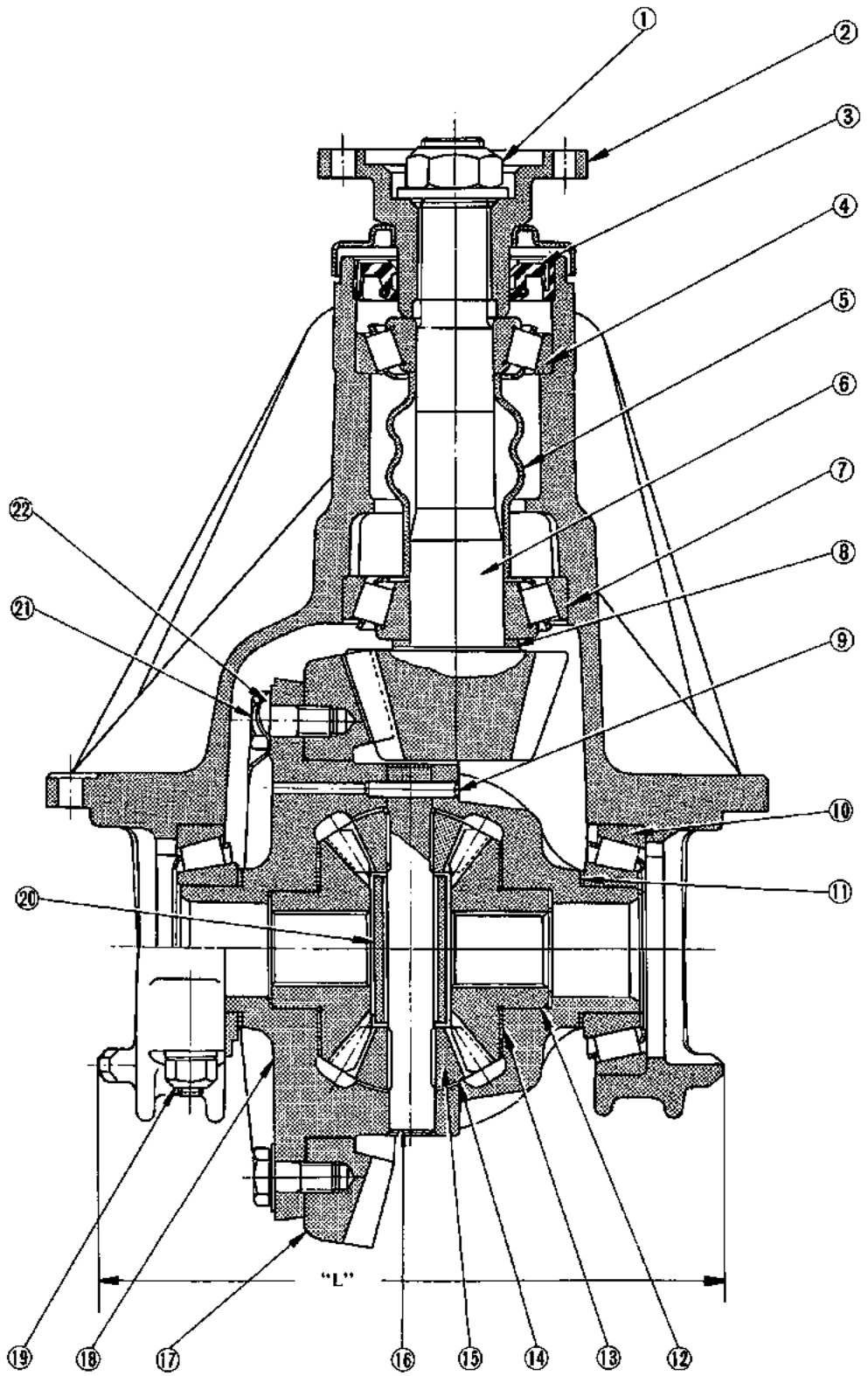
The drive pinion is mounted in two tapered roller bearings which are preloaded by a collapsible spacer during assembly.

The drive pinion is positioned by a shim located between a shoulder on the drive pinion and the rear bearing.

The differential case is supported in the carrier by two tapered roller side bearings. These are preloaded by inserting shims between the bearings and the differential case. The differential case assembly is positioned for proper ring gear and drive pinion backlash by varying these shims. The ring gear is bolted to the differential case. The case houses two side gears in mesh with two pinions and thrust block mounted on a pinion shaft. The pinion shaft anchored in the case by lock pin. The pinions and side gears are backed by thrust washers.

Renew the oil for the first 1,000 km (600 miles) of operation. The oil should then be changed every 50,000 km (30,000 miles) maximum. The lubricant should be checked each 5,000 km (3,000 miles) and replenished as necessary.

Note: Replacement of front oil seal with differential gear carrier assembly installed on the vehicle must not be allowed due to used collapsible spacer on its model.



1 Drive pinion nut
T = 13 to 20 kg-m (94 to 145 ft-lb)
This nut should be tightened by referring to "Adjustment of drive pinion preload."
2 Companion flange
3 Oil seal
Supply chassis grease to oil seal lip when assembling.
4 Pinion front bearing
5 Collapsible spacer
Adjust pinion bearing preload by this spacer.
Procedure can be accomplished by referring to "Adjustment of drive pinion preload."
6 Drive pinion
7 Pinion rear bearing
8 Pinion height adjusting washer
9 Lock pin
10 Side bearing
11 Side bearing adjsuting shim
Adjust side bearing preload and backlash between ring gear and drive pinion by selecting ⑪ .
12 Side gear
13 Thrust washer
Adjust the backlash in pinion mate and side gear (or the crearance between differential case and the rear face of side gear) to 0.1 to 0.2 mm (0.0039 to 0.0079 in) by ⑬.
14 Thrust washer
15 Pinion mate
16 Differential pinion shaft
17 Ring gear
Backlash between ring gear and drive pinion: 0.15 to 0.20 mm (0.0059 to 0.0079 in)
18 Differential gear case
19 Bearing cap nut
T = 4.2 to 4.8 kg-m (30.4 to 34.5 ft-lb)
20 Thrust block
21 Ring gear bolt
T = 7 to 8 kg-m (51 to 58 ft-lb)
22 Lock strap

Fig. PD-6 Cross-sectional view of differential carrier

REMOVAL AND INSTALLATION

1. Jack up rear of vehicle and support under rear axle case on stand. Drain gear oil.
2. Remove propeller shaft and rear axle shafts. These works can be done by referring to "REAR AXLE."
3. Loosen off nuts securing differential to axle housing, and take out differential gear carrier assembly.

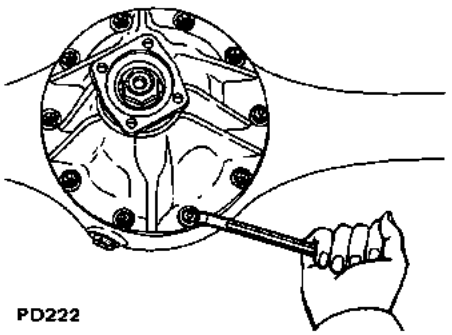

PD222

Fig. PD-7 Removing differential gear carrier

Installing can be proceeded in the reverse order of removal procedure.

Tightening torque:

Gear carrier to rear axle case fix nut:
2.0 to 2.5 kg-m
(14.5 to 18.1 ft-lb)

Companion flange to propeller shaft fix bolt:
2.0 to 2.7 kg-m
(14.5 to 19.5 ft-lb)

Drain and filler plug:
4.2 to 6.9 kg-m
(30.4 to 49.9 ft-lb)

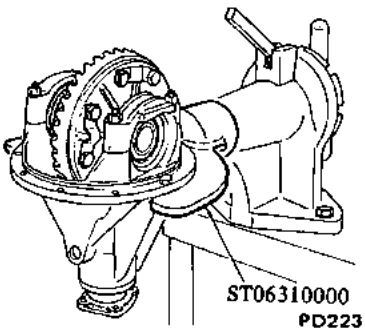
Gear oil quantity:
1.0 litter
(1 U.S.qt, ⅞ Imp.qt)

PRE-DISASSEMBLY INSPECTION

Differential case or carrier should be inspected before any parts are removed from it.

These inspections can help to find the cause of the trouble and to determine the corrections needed.

1. Mount carrier on Gear Carrier Attachment ST06310000 (or Differential carrier stand ST0732S000).



PD223

Fig. PD-8 Holding differential carrier

2. Visually inspect parts for wear or damage.
3. Rotate gears to see if there is any roughness which would indicate damaged bearings or chipped gears. Check the gear teeth for scoring or signs of abnormal wear. Measure preload of drive pinion.
4. Set up a dial indicator and check the backlash at several points around ring gear. Backlash should be within 0.15 to 0.2 mm (0.0059 to 0.0079 in).
5. Check the gear tooth contact with a mixture powdered red lead and oil apply sparingly to all ring gear teeth.

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

6. Check runout of the ring gear at the rear of it if the backlash or the gear tooth contact pattern is found abnormal. Runout limit 0.05 mm (0.0020 in).

DISASSEMBLY AND ASSEMBLY /ADJUSTMENT

1. Mark relationship of side bearing cap to carrier, and remove side bearing caps and take out differential case assembly.

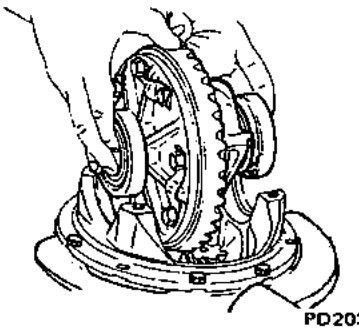
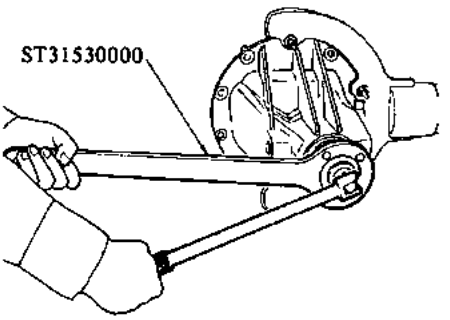

PD203

Fig. PD-9 Removing differential case assembly

Note: Care should be taken not to confuse the left and right hand bearing caps and bearing outer race so that reassembly will be easily carried out with the same parts in the original position.

2. Remove drive pinion nut using Drive Pinion Flange Wrench ST31530000, and pull off companion flange using a standard puller.



PD225

Fig. PD-10 Removing drive pinion nut

3. Extract drive pinion assembly to the rearwards by tapping the front end with a soft hammer. Drive pinion can be taken out together with rear bearing inner race, bearing spacer and washer.
4. Remove oil seal and take out front bearing inner race.

Note: Reuse of a oil seal must not be allowed.

5. Hold rear bearing inner race with Drive Pinion Rear Bearing Inner Race Puller ST30031000 and extract from drive pinion with a press.

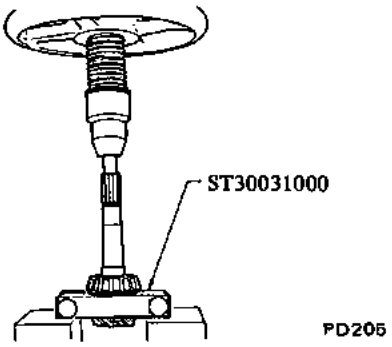


Fig. PD-11 Removing pinion rear bearing inner race

6. To remove outer races of both front and rear bearing, apply a brass drift to race side surface, and withdraw them by tapping the top of drift with a hammer.

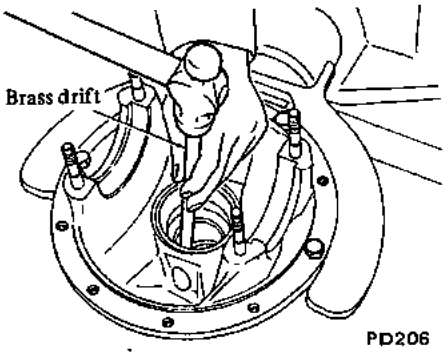


Fig. PD-12 Removing pinion front and rear bearing outer race

Disassembling differential case

1. When replacing side bearing, using Gear Carrier Side Bearing Puller ST3306S001 or ST3306S000 (set of ST33051001 and ST33061000).

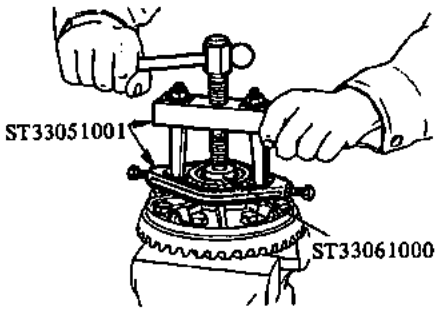


Fig. PD-13 Removing side bearing

Notes:

a. **Puller should be handled with care in catching the edge of bearing inner race.**

b. **Care should be taken not to confuse left and right hand parts.**

2. Remove ring gear by spreading out lock strap and loosening ring gear bolts in diagonally.

3. Punch off pinion mate shaft lock pin from ring gear side using Solid Punch ST23510000.

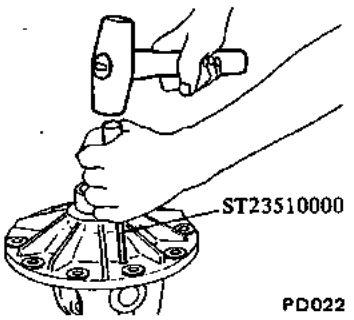


Fig. PD-14 Removing lock pin

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

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

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

Assembly can be proceeded in the reverse order of disassembling. The following directions as to adjustment and usage of special tools will make it possible to obtain a perfect differential operation.

Precaution in reassembly

1. Arrange shims, washers and the like in order so that they will be installed correctly.

2. Thoroughly clean the surfaces on which shims, washers, bearings and bearing caps will be installed.

3. Apply gear oil when installing bearings.

4. Pack grease cavity between lips when fitting oil seal.

Assembling differential gear case

1. Assemble pinion mates, side gears, thrust block and thrust washers in differential case.

2. Fit pinion shaft to differential case so that it meets lock pin holes.

3. Adjust the backlash in pinion mate and side gear (or the clearance between the rear face of side gear and thrust washer) within 0.1 to 0.2 mm (0.0039 to 0.0079 in) by selecting side gear thrust washer.

Side gear thrust washer

Thickness mm (in)
0.75 to 0.80 (0.0295 to 0.0315)
0.80 to 0.85 (0.0315 to 0.0335)
0.85 to 0.90 (0.0335 to 0.0354)
0.90 to 0.95 (0.0354 to 0.0374)

4. Lock pinion shaft lock pin using a punch after it is secured into place.

5. Apply oil to gear tooth surfaces and thrust surfaces and check if they turn properly.

6. Place ring gear on differential case and install bolts and lock washers.

Torque bolts to specification, and bend up lock washers.

Tightening torque:
7 to 8 kg-m
(51 to 58 ft-lb)

Notes:

a. **Only genuine drive gear bolts and new lock washers must be used.**

b. **Tighten bolts in diagonal order while lightly tapping around bolt heads with a hammer.**

7. When replacing side bearing, measure bearing width using a about 2.5 kg (5.5 lb) weight block prior to installation.

Normal bearing width:
20.00 mm (0.7874 in)

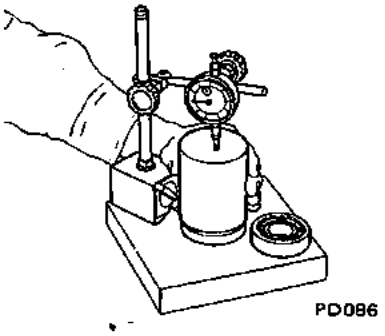


Fig. PD-15 Measuring bearing width

Adjustment of bearing height

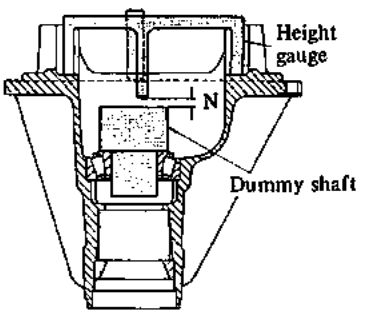
Adjust the pinion height with washer provided between rear bearing inner race and the back of pinion gear.

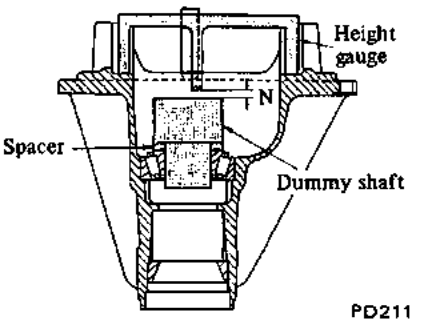
1. Press fit front and rear bearing outer races into gear carrier using Drive Pinion Outer Race Drift Set ST30611000, ST30612000 and ST30613000.

Front:	ST30611000 and ST30612000
Rear:	ST30611000 and ST30613000

2. Fit rear bearing on carrier and install Dummy Shaft ST31942000 on rear bearing, and place Height Gauge ST31941000 on carrier.

When using Height Gauge for 521 model, install Dummy Shaft ST31942000 and Spacer ST31102000 on rear bearing, and place Height Gauge ST31101000 (Former ST31100000) for 521 model.





Use Height Gauge for 521 model.

Fig. PD-16 Adjusting pinion height

3. Measure the clearance (N) between the tip end of height gauge and the end surface of dummy shaft, using a thickness gauge.

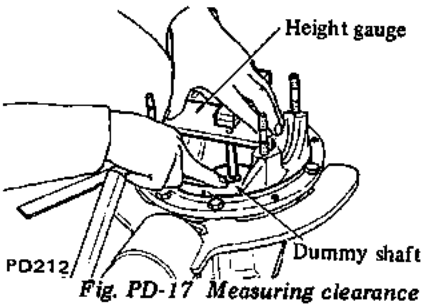


Fig. PD-17 Measuring clearance

4. The thickness of drive pinion height adjusting washers can be obtained from the following formula:

$$T = N - [(H - D' - S) \times 0.01] + 2.18$$

Where,

T = Required thickness of rear bearing adjusting washers (mm).
N = Measured value with thickness gauge (mm).
H = Figure marked on the drive pinion head.
D' = Figure marked on the dummy shaft.
S = Figure marked on the height gauge.

Figures for H, D' and S are dimentional variations in a unit of 1/100 mm against each standard measurement.

Example,

N = 0.3 mm
H = +1, D' = −1, S = 0
T = 0.3 − [(1 + 1 − 0) × 0.01] + 2.18 = 2.46 mm

The correct washer: Thickness 2.46 mm (0.0969 in).

Pinion height adjusting washer

Thickness mm (in)
2.37 (0.0933)
2.40 (0.0945)
2.43 (0.0957)
2.46 (0.0969)
2.49 (0.0980)
2.52 (0.0992)
2.55 (0.1004)
2.58 (0.1016)
2.61 (0.1028)
2.64 (0.1039)
2.67 (0.1051)
2.70 (0.1063)
2.73 (0.1075)
2.76 (0.1087)
2.79 (0.1098)
2.82 (0.1110)
2.85 (0.1122)
2.88 (0.1134)
2.91 (0.1146)
2.94 (0.1158)
2.97 (0.1169)

5. Fit determined pinion height adjusting washer in drive pinion, and press fit rear bearing inner race in it, using Base ST30032000.

Adjustment of drive pinion preload

Adjust the preload of drive pinion with collapsible spacer.

This procedure has nothing to do with thickness of pinion height adjusting washer.

Note: Reuse of a collapsible spacer must not be allowed.

1. After adjusting pinion height, lubricate front bearing with gear oil and place it in carrier.
2. Install a new oil seal in carrier. Lubricate cavity between seal lips with grease when installing.
3. Place a new collapsible spacer on drive pinion and lubricate pinion rear bearing with gear oil.
4. Insert companion flange into oil seal and hold it firmly against pinion front bearing cone. From the rear of the carrier, insert drive pinion into companion flange.
5. Ascertain that threaded portion of drive pinion, a new pinion nut and washer are free from oil or grease.
6. Holding companion flange with Drive Pinion Flange Wrench ST31530000, tighten nut and then drive pinion is pulled into front bearing cone and into flange.

As drive pinion is pulled into front bearing cone, drive pinion end play is reduced. While there is still end play in drive pinion, companion flange and cone will be felt to bottom. This indicates that bearing cone and companion flange have bottomed on collapsible spacer.

From this point, a much greater torque must be applied to turn pinion nut since spacer must be collapsed. From this point, nut should also be tightened very slowly and drive pinion end play checked often so that pinion bearing preload does not exceed the limits.

When the drive pinion end play is eliminated, the specified preload is being approached. Replace collapsible spacer if this specification is exceeded.

Note: Do not decrease preload by loosening pinion nut. This will remove compression between pinion front and rear bearing cones and collapsible spacer and may permit front bearing cone to turn on drive pinion, moreover, nut becomes loose.

7. Turn drive pinion in both directions several times to set bearing rollers. And adjust bearing preload to specifications.

Tightening torque of pinion nut:
13 to 20 kg-m
(94.0 to 144.6 ft-lb)

Preload (with oil seal):
7 to 15 kg-cm
(6.1 to 13.0 in-lb)

At companion flange bolt hole:
2.0 to 4.3 kg
(4.5 to 9.5 lb)

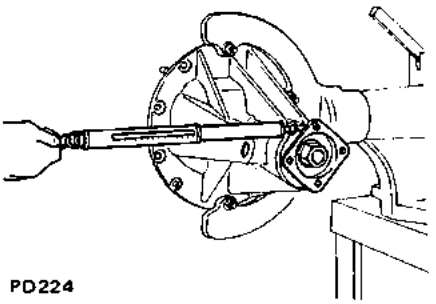

PD224

Fig. PD-18 Measuring pinion preload

Adjustment of side bearing shims

1. If hypoid gear set, carrier, differential case or side bearing have been replaced with new ones, adjust the side bearing preload with adjusting shim.

The required thickness of adjusting shim can be calculated by the following formula.

$$T_1 = (A - C + D - H') \times 0.01 + 0.175 + E$$
$$T_2 = (B - D + H') \times 0.01 + 0.150 + F$$

Where,

T_1 = Required thickness of left side bearing adjusting shim (mm).
T_2 = Required thickness of right side bearing adjusting shim (mm).
A = Figure marked on the left side bearing housing of gear carrier.
B = Figure marked on the right side bearing of gear carrier.
C & D = Figure marked on the differential case.
E & F = These are differences in width of left or right side bearing against the standard width (mm).
H' = Figure marked on the ring gear.

Figures for A, B, C, D and H' are dimensional variations in a unit of 1/100 mm against each standard measurement.

Note: Preload of old bearing is to adopt the same value as that of a new bearing.

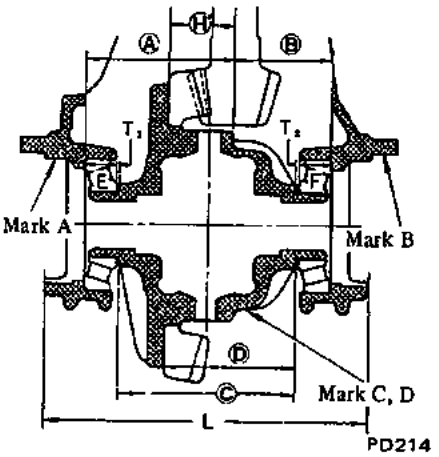


Fig. PD-19 Thickness of shim on left and right side

Example,

A = 1, B = 2, C = 2, D = 3
E = +0.02 mm, F = –0.01 mm,
H' = +1

Left side

$T_1 = (A - C + D - H') \times 0.01 + 0.175 + E$
$= (1 - 2 + 3 - 1) \times 0.01 + 0.175 + 0.02$
$= 0.205$ mm

Right side

$T_2 = (B - D + H') \times 0.01 + 0.150 + F$
$= (2 - 3 + 1) \times 0.01 + 0.150 - 0.01$
$= 0.14$ mm

Thickness mm (in)
0.05 (0.0020)
0.07 (0.0028)
0.10 (0.0039)
0.20 (0.0079)
0.50 (0.0197)

2. Fit determined side bearing adjusting shim on differential case, and press fit left and right side bearing inner races on it, using Side Bearing Drift ST33230000 and Adapter ST33061000.

3. Install differential case assembly into gear carrier, tapping with a rubber mallet.
4. Align mark on bearing cap with that on gear carrier, and install bearing cap on carrier. And tighten nuts to specified torque.

Tightening torque:
4.2 to 4.8 kg-m
(30.4 to 34.7 ft-lb)

5. Measure "L" dimension (between left and right bearing cap edges) by Side Bearing Cap Gauge ST32110001 or a micrometer.

"L" dimension:
198.40 to 198.55 mm
(7.8110 to 7.8196 in)

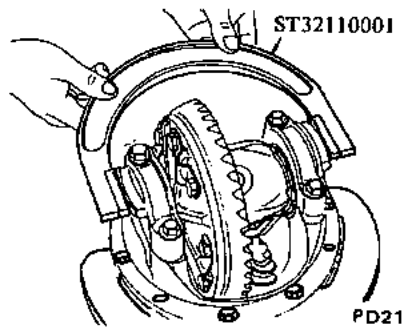


Fig. PD-20 Measuring "L" dimension

6. Measure backlash in ring gear and drive pinion.

If backlash is too small, remove shims from left side and add them to right side. To reduce backlash, remove shims from right side and add them to left side.

Backlash:
0.15 to 0.20 mm
(0.0059 to 0.0079 in)

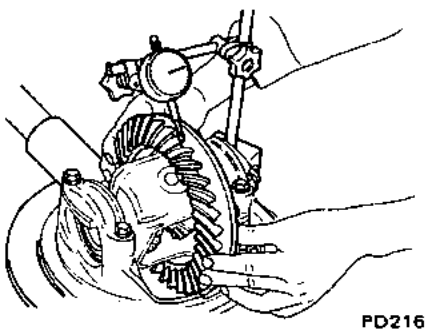


Fig. PD-21 Measuring backlash

7. Check the runout of ring gear side is within 0.05 mm (0.0020 in) total indicator reading.

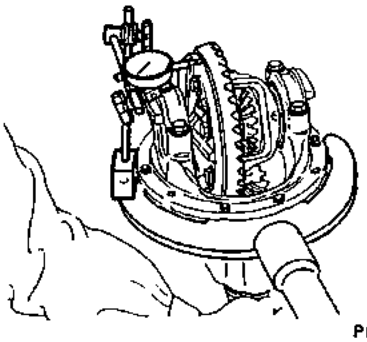


Fig. PD-22 Measuring runout of ring gear

8. At the same time, check bearing preload. Bearing preload should read 8 to 21 kg-cm (6.95 to 18.24 in-lb) of rotating torque [2.3 to 6.0 kg (5.1 to 13.0 lb) at companion flange bolt hole].

If preload does not accord with this specification, adjust it with side bearing shims.

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

(1) Thoroughly clean ring and drive pinion gear teeth.
(2) Paint ring gear teeth lightly and evenly with a mixture of powdered red lead and oil of a suitable consistency to produce a contact pattern.
(3) Rotate pinion through several revolutions in the forward and reverse direction until a definite contact pattern is developed on ring gear.
(4) When contact pattern is incorrect, readjust thickness of adjust shim.

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

(5) Incorrect contact pattern of teeth can be adjusted in the following manner.

a. Heal contact

To correct, increase thickness of drive pinion adjusting washer in order to bring drive pinion close to ring gear.

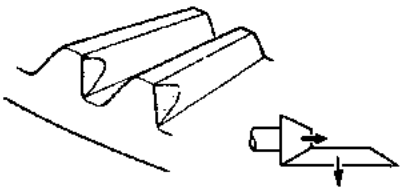


Fig. PD-23 Heal contact

b. Toe contact

To correct, reduce thickness of drive pinion adjusting washer in order to make drive pinion go away from ring gear.

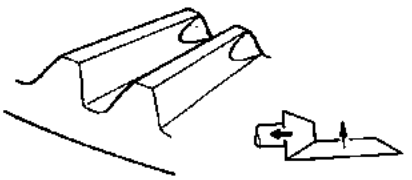


Fig. PD-24 Toe contact

c. Flank contact

Adjust in manner similar to b.

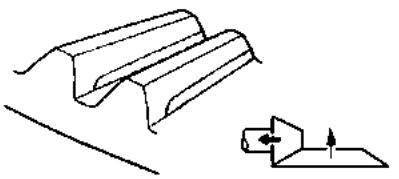


Fig. PD-25 Flank contact

d. Face contact

Adjust in manner similar to a.

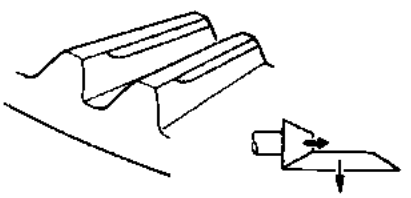
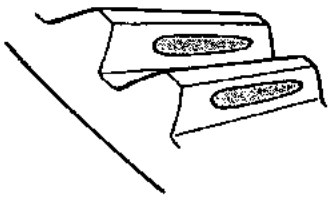


Fig. PD-26 Face contact

e. Correct tooth contact



PD197

Fig. PD-27 Correct contact

Note: Change in thickness of adjusting washer is accompanied by change in backlash. Check it when installing gear.

INSPECTION

Thoroughly clean all disassembled parts, and examine them to see if they are worn, damaged or otherwise defective, and how they are affected. Repair or replace all defective parts, whichever is necessary.

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 ring gear are supplied for replacement as a set, therefore, should either part be damaged, replace as a set.

2. Check pinion gear shaft, and pinion gear for scores and signs of wear, replace as required.

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

3. Inspect all bearing races and rollers for scoring, chipping or evidence of excessive wear. They should be in tiptop condition such as not worn and with mirror-like surfaces. Replace if there is a shadow of doubt on their efficiency, as an incorrect bearing operation may result in noisiness and gear seizure.

4. Inspect thrust washer faces.

Small defects can be corrected with sand paper. In case the backlash in pinion mate and side gear (or the clearance between side gear and thrust washer) exceeds 0.1 to 0.2 mm (0.0039 to 0.0079 in), replace thrust washer. Four kinds of thrust washers are available.

5. Inspect carrier and differential case for cracks or distortion. If either condition is evident, replace defective parts.

6. As a general rule, oil seal should be replaced at each disassembly.

TROUBLE DIAGNOSES AND CORRECTIONS

When a gear carrier is suspected of being noisy it is advisable to make a thorough test to determine whether the noise originates in the tires, road surface, exhaust, universal joint, propeller shaft, wheel bearing, transmission, or gear carrier. Noise which originates in other places cannot be corrected by adjustment or replacement of parts in the rear axle assembly.

Condition	Probable cause	Corrective action
Noise on drive, coast and float.	Shortage of oil.	Supply gear oil. Rebuild gear carrier if necessary.
	Incorrect tooth contact between ring gear and drive pinion.	Adjust tooth contact or replace the hypoid gear set.
	Incorrect backlash between ring gear and drive pinion.	Adjust backlash or replace the hypoid gear set if necessary.
	Seized up or damaged ring gear and drive pinion.	Replace the hypoid gear set.
	Seized up, damaged or broken drive pinion bearing.	Replace the pinion bearing and defective parts.
	Seized up, damaged or broken side bearing.	Replace the side bearing and defective parts.
	Loosen clamp bolts or nuts holding ring gear, bearing cap, etc..	Clamp them to specified torque, and replace defective parts.

Condition	Probable cause	Corrective action
Noise on turn	Seized up, damaged or broken side and pinion gear.	Replace defective parts.
	Seized up, damaged or broken side gear and pinion thrust washer.	Replace defective parts.
	Pinion gears too tight on their shaft.	Replace defective parts.
Knocking sound during starting or gear shifting.	Excessive backlash	
	Incorrect backlash between ring gear and drive pinion, or side and pinion gear.	Adjust backlash.
	Worn gears or case.	Replace worn parts.
	Worn rear axle shaft and side gear spline.	Replace worn parts.
	Pinion bearing under preload.	Adjust preload.
	Loosened drive pinion nut.	Repair or replace.
	Loosen clamp bolts or nuts holding ring gear, bearing cap, etc..	Clamp them or replace if necessary.
Seizure or breakage.	Shortage of oil or use of unsuitable oil.	Replace defective parts.
	Excessively small backlash.	Adjust backlash and replace as required.
	Incorrect adjustment of bearings or gears.	Replace defective parts.
	Severe service due to an excessive loading, improper use of clutch.	Replace defective parts.
	Loosened bolts and nuts, such as ring gear clamp bolts.	Replace defective parts.
Oil leakage.	Worn-out, damaged or improperly driven front oil seal, or bruised, dented or abnormally worn slide face of companion flange.	Replace the defective oil seal. Ammend the affected flange with sand paper or replace if necessary.
	Loosened bolts holding gear carrier.	Tighten the bolts to specified torque.
	Defective gasket.	Replace defective parts with new ones.
	Loosen filler or drain plug.	Tighten the plug.
	Clogged or damaged breather.	Repair or replace.

SERVICE DATA AND SPECIFICATIONS

Nominal diameter of ring gear		190
Gear carrier material		Aluminum alloy
Final gear type		Hypoid
Gear ratio (number of teeth)		
With L16 engine model		4.375 (35/8)
With J15 engine model		
Pick-up		4.625 (37/8) [4.875 Opt. (39/8)]
Double pick-up		4.375 (35/8)
With J13 engine model		
Pick-up		4.875 (39/8)
Double pick-up		4.625 (37/8)
Drive pinion		
Preload (with oil seal)	kg-cm (in-lb)	7 to 15 (6.1 to 13.0)
At companion flange bolt hole (with oil seal)	kg (lb)	2.0 to 4.3 (4.5 to 9.5)

Thickness of pinion height adjusting washer

Thickness mm (in)
2.37 (0.0933)
2.40 (0.0945)
2.43 (0.0957)
2.46 (0.0969)
2.49 (0.0980)
2.52 (0.0992)
2.55 (0.1004)
2.58 (0.1016)
2.61 (0.1028)
2.64 (0.1039)
2.67 (0.1051)
2.70 (0.1063)
2.73 (0.1075)
2.76 (0.1087)
2.79 (0.1098)
2.82 (0.1110)
2.85 (0.1122)
2.88 (0.1134)
2.91 (0.1146)
2.94 (0.1157)
2.97 (0.1169)

Pinion bearing adjusting spacer ..... Non adjustable collapsible spacer

Side gear and pinion mate

Thickness of side gear thrust washer

Thickness mm (in)
0.75 to 0.80 (0.0295 to 0.0315)
0.80 to 0.85 (0.0315 to 0.0335)
0.85 to 0.90 (0.0335 to 0.0354)
0.90 to 0.95 (0.0354 to 0.0374)

Backlash in pinion mate and side gear (or clearance between side gear and thrust washer) mm (in) ..... 0.1 to 0.2 (0.0039 to 0.0079)

Ring gear

Backlash between ring gear and drive pinion mm (in) ..... 0.15 to 0.20 (0.0059 to 0.0079)

Runout of rear side of ring gear mm (in) ..... Less than 0.05 (0.0020) total indicator reading

Thickness of side bearing adjusting shim mm (in)

Thickness mm (in)
0.05 (0.0020)
0.07 (0.0028)
0.10 (0.0039)
0.20 (0.0079)
0.50 (0.0197)

Side bearing standard width mm (in) 20.0 (0.7874)

"L" dimension mm (in) ..... 198.40 to 198.55 (7.8110 to 7.8169)

Tightening torque

Drive pinion nut kg-m (ft-lb) ..... 13 to 20 (94.0 to 144.6)

Ring gear bolt kg-m (ft-lb) ..... 4.8 to 5.5 (34.7 to 39.8)

Side bearing cap nut kg-m (ft-lb) ..... 4.2 to 4.8 (30.4 to 34.7)

Companion flange to propeller shaft fix bolt kg-m (ft-lb) ..... 2.0 to 2.7 (14.5 to 19.5)

Oil drain and filler plug kg-m (ft-lb) ..... 4.2 to 6.9 (30.4 to 49.9)

Oil capacity (about) ..... 1.0 liter (1 U.S.qt, ⅞ Imp.qt)

Adjusting methods

Variation numbers expressed by ..... mm (x 0.01)

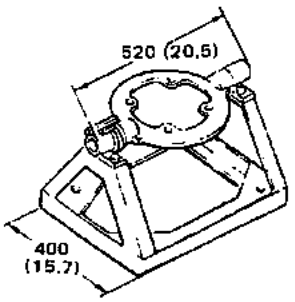
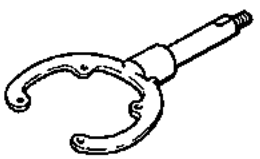
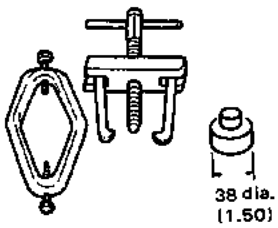
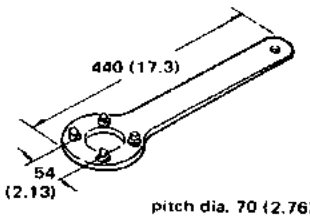
Dummy shaft ..... Use

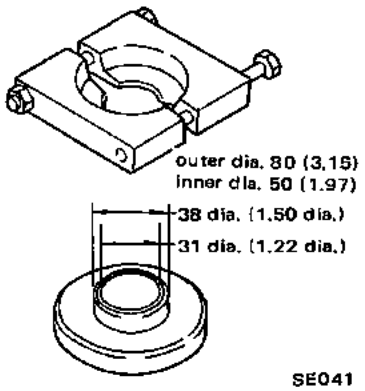
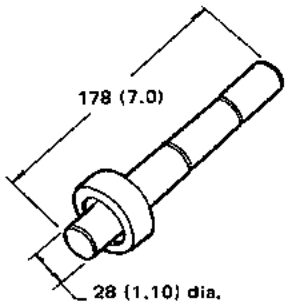
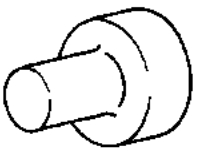
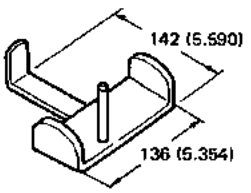
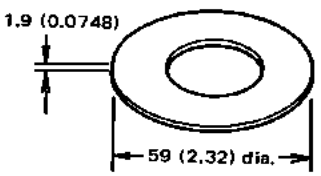
Drive pinion adjusting formula ..... $T = N - [(H - D' - S) \times 0.01] + 2.18$

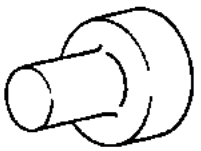
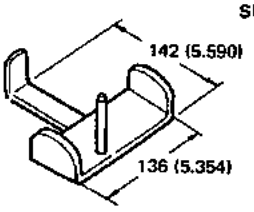
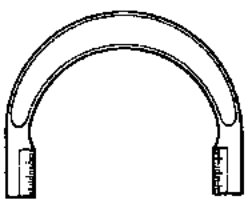
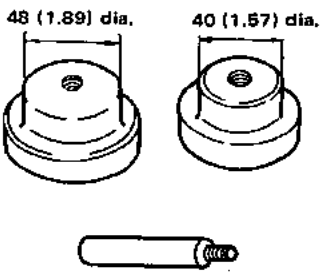
Side bearing adjusting formula ..... $T_1 = (A - C + D - H') \times 0.01 + 0.175 + E$

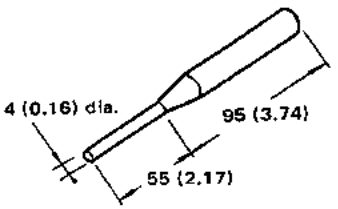
$T2 = (B - D + H') \times 0.01 + 0.150 + F$

SPECIAL SERVICE TOOLS

No.	Tool number & tool name	Description (Unit: mm (in))		For use on	Reference page or Figure No.
1.	ST0732S000 Gear carrier stand assembly — ST07321000 Stand — ST07311000 Attachment	 SE100	This assembly is used to ease disassembly or reassembly of gear carrier.	620 521 230 130	Page PD-7
2.	ST06310000 Gear carrier attachment	 SE023	This tool is used for attaching gear carrier onto engine stand, to ease disassembly or reassembly.	620 V610 W510 230	Fig. PD-8
3.	ST3306S001 (Former Tool No. ST3306S000) Diff. side bearing puller — ST33051001 Body — ST33061000 Adapter	 SE049	This tool is used to pull out side bearing.	620 521 V610 W510 S30 C30 230 GC10	Page PD-8 Fig. PD-13 Page PD-10
4.	ST31530000 Drive pinion flange wrench	 SE213	This tool is used to hold the flange to ease the operation of tightening and loosening drive pinion nut.	620 521 610 510 S30 230 C10	Page PD-3 Fig. PD-5 Fig. PD-10 Page PD-10

No.	Tool number & tool name	Description (Unit: mm (in))		For use on	Reference page or figure No.
5.	ST30038000 (Former Tool No. ST30030000) Drive pinion rear inner bearing puller assembly — ST30031000 Puller — ST30032000 Base	 SE041	This assembly clamps rear bearing inner race and pulls it out by a hydraulic press. Before insertion, place another drift facing inner race, and then press-fit.	620 521 610 510 C10	Page PD-7 Fig. PD-11 Page PD-9
6.	ST33230000 Diff. side bearing drift	 SE051	Use of this tool makes it possible to drive in bearing without damaging it.	620 521 610 510 S30 C30 230 130 GC10	Page PD-10
7.	ST31105000 Drive pinion setting gauge assembly — ST31942000 Dummy shaft — ST31101000 (Former Tool No. ST31100000) Height gauge — ST31102000 Spacer	 SE209  SE210  SE211	This assembly is used to adjust the pinion height.	620 521 V610 W510	Page PD-9

No.	Tool number & tool name	Description (Unit: mm (in))		For use on	Reference page or figure No.
8.	ST3194S000 Drive pinion setting gauge assembly — ST31942000 Dummy shaft — ST31941000 Height gauge	 SE209  SE210	This assembly is used to adjust the pinion height.	620 V610 W510	Page PD-9
9.	ST32110001 Diff. side bearing cap gauge	 SE214	This tool is used to measure the width of side bearing cap after it is tightened to specified torque.	620 521 V610 W510 230 130	Fig. PD-20
10.	ST30611000 Drive pinion outer race drift (bar)		These tools are used when assembling drive pinion outer race. Use ST30611000 and ST30612000 for driving in front outer race. Use ST30611000 and ST30613000 for driving in rear outer race.	620 610 510 S30 C30 GC10	Page PD-9
11.	ST30612000 Drive pinion outer race drift (adapter)				
12.	ST30613000 Drive pinion outer race drift (adapter)	SE042			

No.	Tool number & tool name	Description Unit: mm (in)		For use on	Reference page or figure No.
13.	ST23510000 Solid punch	 SE058	This tool is used to drive out lock pin of pinion mate shaft.	620 610 510 S30 C30 GC10 C10	Fig. PD-14

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS AND BODY

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION FA

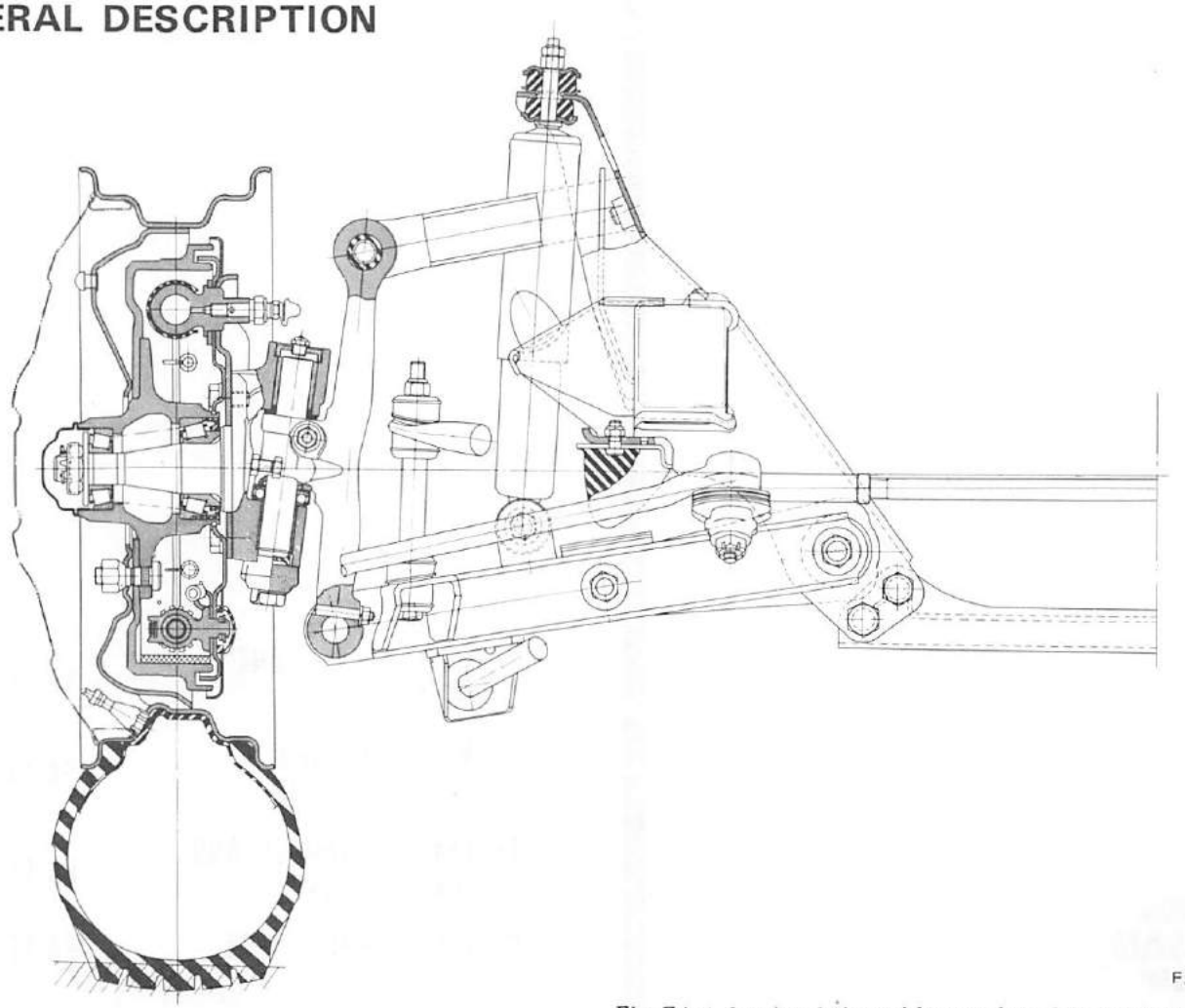
FRONT AXLE & FRONT SUSPENSION

FA

FRONT AXLE & FRONT SUSPENSION

CONTENTS

GENERAL DESCRIPTION



FA224

Fig. FA-1 Sectional view of front axle and front suspension

The design of the front suspension adopts the independent double-wishbone type suspension used the torsion bar spring. Both the upper and lower links are installed on the bracket which is welded on the frame. And the above links swing to allow the knuckle spindle to move freely in a vertical dimension.

The top and bottom of the knuckle spindle support are connected to the upper link through rubber bushing and to the lower link through screw bushing.

The tension rod held by the brackets on the chassis frame and lower link with rubber bushings, bears the force of fore and aft direction.

The front end of the torsion bar spring is installed to the torque arm which attaches to the lower link. The opposite end is installed to the spring anchor that secures to chassis frame firmly. The both ends of the torsion bar spring are serrated.

The shock absorber is double-action, telescopic hydraulic type.

The upper stem is attached to the bracket of the chassis frame. The lower insulated bracket is bolted to the lower link.

The bumper rubber secured to the bracket of the frame, limits the vertical motion of the suspension link.

The knuckle spindle is connected to the knuckle spindle arm by the king pin. The king pin bushings are fitted to the upper and lower arm portions of the knuckle spindle, and seals are provided at the portions mentioned to keep water and dirt from entering.

The knuckle arm is connected to the lower end of the knuckle spindle to transmit the movement of the steering wheel to the knuckle spindle.

The wheel hub is supported by two taper roller bearings on the knuckle spindle. The brake drum and wheel are secured to the hub by the hub bolts.

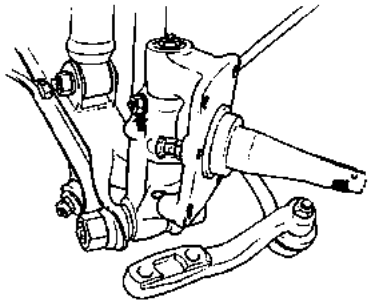
The above component parts are used on the vehicles as standard specifications, and the stabilizer is available as an optional part.

FRONT AXLE

Removal and installation

Removal

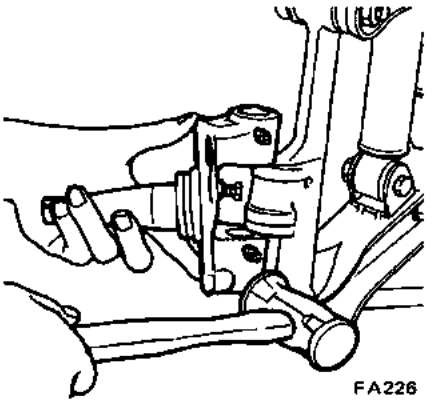
1. Jack up and support vehicle on the stands at the frame in a safe manner.
2. Remove front wheel.
3. Remove brake hose together with connector from wheel cylinder.
4. Remove brake drum.
5. Remove hub cap and then remove cotter pin, adjusting cap, and spindle nut from knuckle spindle.
6. Remove wheel hub, outer and inner wheel bearings, bearing washer and grease seal from knuckle spindle.
7. Remove brake disc assembly from the flange of knuckle spindle.
8. Remove knuckle arm from knuckle spindle.
9. Remove king pin lock bolt.



FA225

Fig. FA-2 Removing king pin lock nut

10. After removing air breather, remove plug from the top of king pin with the following method: Dril a 10.5 mm (0.413 in) diameter hole on the plug, thread hole with a tap (M12-1.25), screw a bolt into threaded hole and pull out the plug.
11. Apply drift to the top of king pin and drive out king pin along with lower plug.
12. Tap spindle with a soft hammer and detach it from knuckle spindle support. Take care not to drop thrust bearing.



FA226

Fig. FA-3 Removing knuckle spindle

Installation

Install front axle in reverse sequence to removal by noting the following matters. Furthermore, when installing front axle, lightly coat grease to sliding parts.

1. Insert O-ring on the lower end of knuckle spindle support. Install thrust bearing and spindle shim together with knuckle spindle to knuckle spindle support.

In this operation, select spindle shims to obtain the specified clearance between knuckle spindle and knuckle spindle support. To measure the clearance with a filler gauge, jack up the bottom of spindle slightly.

Standard clearance:
0.1 mm (0.004 in) or less

Note: Be sure to install thrust bearing to face covered side upward.

2. Line up locking bolt hole of knuckle spindle support with the notch in king pin and secure lock bolt. Be sure to check knuckle spindle for smooth movement. Be certain to move knuckle spindle smoothly and readjust shim if necessary. In addition, check bushings and king pin as required.
3. Press fit plug to the upper of knuckle spindle. Then, install lower plug to the lower knuckle spindle.

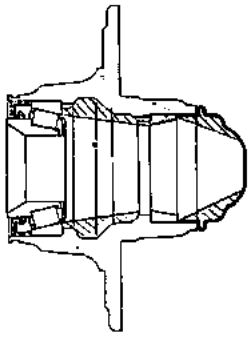
Note: Make sure to place lower plug correctly.

4. Secure knuckle arm to knuckle

spindle and torque bolt to 10.3 to 12.1 kg-m (75 to 88 ft-lb). Bend lock plate to engaged flats on bolt head.

Note: When disassembled, discard used lock plate.

5. Pack grease to the upper and lower bushings on knuckle spindle until grease comes out from grease seal.
6. Fill wheel hub and cap with grease up to the described level. See Figure FA-9.



FA141

Fig. FA-4 Greasing wheel hub

7. Pack roller and cone assembly and the cavity of grease seal lip with grease.
8. Coat grease to the thread of knuckle spindle, bearing washer, and bearing lock nut.
9. Secure wheel hub, bearings, bearing washer and spindle nut on knuckle spindle and adjust bearing preload referring to the paragraph "Wheel bearing adjustment."

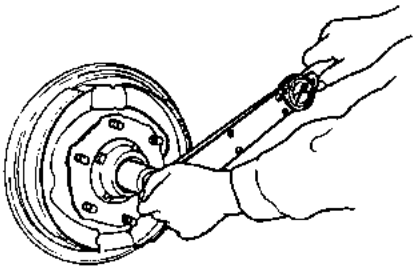
Note: Be sure to obtain correct preload on wheel bearings for the purpose of having their long life, taking care to keep wheel bearings, grease seal, bearing washer and spindle nut clean when installing them.

Wheel bearing adjustment

Wrong adjustment of wheel bearings causes abnormal wear and score on the bearings and knuckle spindle.

To attain proper preload on wheel bearings, proceed the following operations:

1. Torque spindle nut to 3.0 to 3.5 kg-m (22 to 25 ft-lb) using torque wrench.



FA227

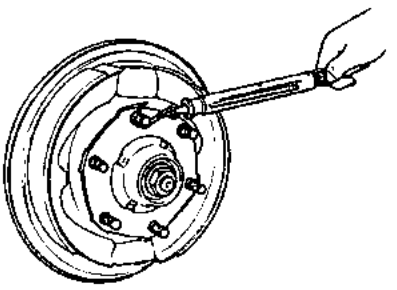
Fig. FA-5 Tightening spindle nut

2. Rotate wheel hub a few turns clockwise and counterclockwise to seat bearings. Then, retighten spindle nut to the same tightening torque. Be certain to rotate hub smoothly.
3. Back off spindle nut in range from 40 to 70 degrees. Locate adjusting cap on spindle nut so as to align the castellation on the cap with the cotter pin hole in the spindle.
4. Check the hub rotation. If hub rotates properly, measure bearing rotation starting torque. If measured torque is deviated from the specified value, replace bearings or readjust.

The starting torque can be measured by a spring balance as shown in Figure FA-6.

Spring balance indication at hub bolt:
New bearing:
2.1 kg (4.6 lb) or less
Used bearing:
1.0 kg (2.2 lb) or less

Notes:
a. **When measuring the staring force, pull the spring balance toward tangential direction against normal line connected between hub bolt and spindle center.**
b. **Axial play is permissible to exist in 0.1 mm (0.004 in) or less.**



FA228

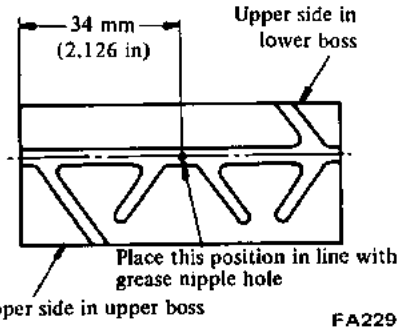
Fig. FA-6 Measuring bearing rotation starting torque

5. Install a new cotter pin. Bend the ends of cotter pin around the castellated flange of adjusting cap. Then, install hub cap.

Disassembly and assembly

Knuckle spindle

1. Drive spindle bushing and grease seal out of knuckle spindle with King Pin Bush Drift ST35380000. Discard bushing and grease seal when disassembled.
2. After cleaning king pin bores thoroughly, install bushing carefully by using the above special tool. Position bushing in accordance with the instructions filled in Figure FA-7 and FA-8.



FA229

Fig. FA-7 King pin bushing

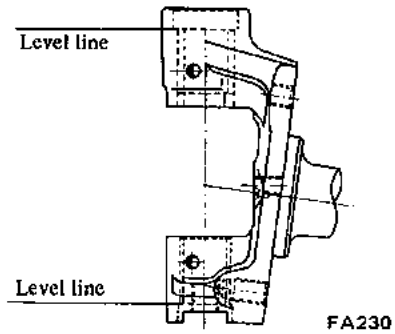


Fig. FA-8 Bushing location

3. Remove grease nipple and drill grease hole on bushing through threaded grease nipple hole. When grease hole is drilled, remove metal chip and burr thoroughly.

Drilling diameter:
approximate 3mm (0.1181 in)

4. Ream the inside of bushing to the specified value with King Pin Bush Reamer HT56802000.

Bushing inner diameter (when fitted):
20.010 to 20.035 mm
(0.7878 to 0.7888 in)

Note: Carry out reaming from both upper and lower bushings. When reaming upper side, use lower side as reaming guide, and when reaming lower side, use upper side as reaming guide to align the center line correctly.

5. Press fit grease seal on upper arm with Grease Seal Drift ST35390000. In installing grease seal, take care not to damage seal lip.

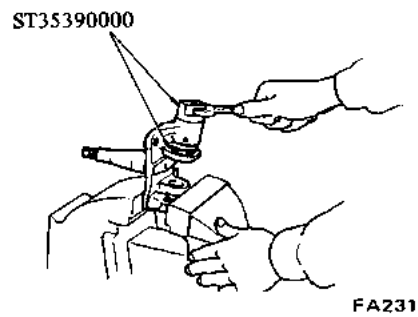


Fig. FA-9 Installing grease seal

Wheel hub

1. After removing grease seal with screwdriver, lightly tap outer race circumference with a hammer by applying a brass bar and remove outer bearing race from hub. When tapping outer race circumference, tap evenly.
2. Remove all traces of old grease from bearings, hub and knuckle spindle.
3. Install inner and outer bearing races in hub with a suitable tool. Be sure to seat the races properly in hub.
4. Pack the inside of hub and hub cap with specified grease to the described level. See Figure FA-4. Also, pack the bearing cone and roller assemblies with the same lubricant.

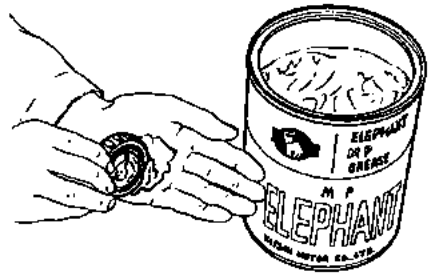


Fig. FA-10 Greasing bearing cone and roller assembly

5. Place inner bearing cone and roller assembly in hub. Coat grease slightly to the lips of new grease seal, and seat it properly.

Inspection

1. King pin and bushing

Check and replace king pin and/or bushing if the following defective condition is detected; deformation, scores, partial wear, and excessive clearance between king pin and bushing in diameter direction exceeding limit listed below.

Clearance limit:
0.15 mm (0.0059 in)

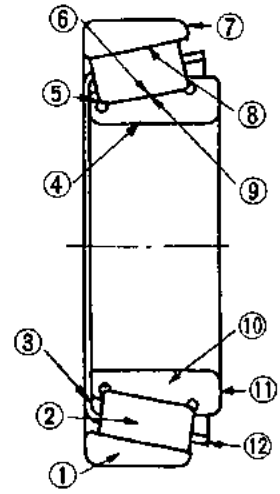
Standard dimensions
King pin outer diameter:
19.979 to 20.000 mm
(0.7866 to 0.7874 in)
Bushing inner diameter:
20.010 to 20.035 mm
(0.7878 to 0.7888 in)

2. Wheel bearing

Thoroughly clean grease and dirt from wheel bearing with cleaning solvent, and dry with compressed air free of moisture. Check wheel bearing to see that it rolls freely and is free from noise, crack, pitting, or wear. Also, check outer race for condition. Removal of outer race from drum is not necessary.

Shown below is the chart which furnishes the necessary information on "Visual Serviceability Standard for Wheel Bearing."

Visual serviceability standard for wheel bearing



1 Outer race
2 Roller
3 Small collar
4 Collar surface
5 Inner race fitted surface
6 Inner race surface
7 Outer race fitted surface
8 Outer race surface
9 Roller rolling surface
10 Inner race
11 Large collar
12 Supporter

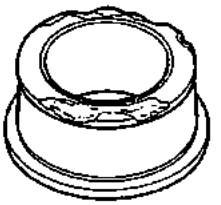
Fig. FA-11 Wheel bearing assembly

Judgement	× : Unserviceable △ : May be used when minor * : Rust should be removed with #0 emery paper			
Components	Race and roller		Supporter	Cause
	Rolling surface	Fitted surface		
Flaking (Fig. a, b)	×			Service life due to rolling fatigue. However, this symptom occurs before the service life. The following causes are considered. • Abnormal load (overload). • Improper handling or installing.
Crack (Fig. c, d)	×	×	×	• Excessive tightening. • Excessive gap and a considerable shock received from the outside. • Rapid heat generation on the race due to creep. • Bitten supporter with seizing rollers. • Abnormal thrust load. • Tapped with a hammer while removing.
Seizure	×	×	×	In the most cases, seizure occurs as the result of grown discoloring or flaking.
Scratch	△	△	△	• Shock is given carelessly during installation. • Bit foreign matter.
Recess or wear made by pressing or striking (Fig. e, f, g)	△	△	△	• Careless installation, removal, or other rough handling (scar due to striking). • Recess made by foreign matter.
Wear	△	△	△	• Poor lubricant quality or deteriorated lubricant. • Intrusion of dust. Fitted surface is worn remarkably. • Wear due to excessive preliminary pressure.
Biting	△	△	△	• Excessive preliminary pressure or faulty lubrication.
Fretting	△*	△*	△*	• The fitted part is discolored to brown or black. • Fretting corrosion (rust on fitted part) means fine relative slip on metal contact surface.

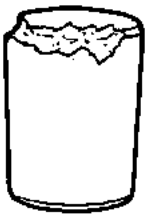
Components	Race and roller		Supporter	Cause
	Rolling surface	Fitted surface		
Rust (Fig. h)	△*	△*	△*	• Temperature increased during operation lowers when the bearing stops, moisture inside the bearing is condensed, becoming fine drips, and the grease is moistened. • The bearing has been placed in a highly 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 or by polishing.			• Slight discoloring may become like oxidized oil stain due to grease. • In the most cases, this occurs when preliminary pressure is too high.

a) Inner race flaking

b) Roller flaking

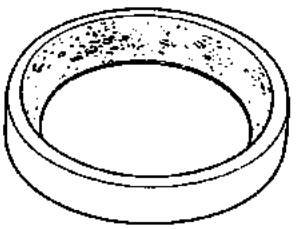


c) Cracked inner race



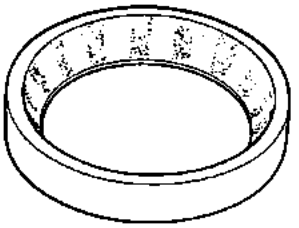
d) Cracked roller

e) Recess om inner race



f) Recess on outer race

g) Recess on roller



h) Rust outer race

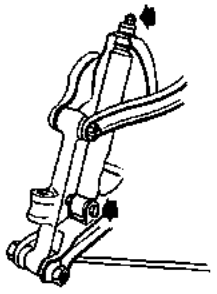
FA007

Fig. FA-12 Defective conditions of bearing

SHOCK ABSORBER

Removal and installation

1. Raise vehicle on a hoist or stands.
2. Remove wheel.
3. Hold the upper stem of shock absorber and remove nuts, washer, and rubber bushing.
4. Remove bolt from the lower end of shock absorber.



FA232

Fig. FA-13 Shock absorber

5. Retain lower rubber bushing in position, install the lower end of shock absorber to the bracket of lower link, and torque the bolt to 3.1 to 4.1 kg-m (23 to 30 ft-lb).

Note: Insert the bolt from the front side of vehicle.

6. Install the upper end of shock absorber to body bracket and tighten lock nuts to the specifications.

Tightening torque:
1.6 to 2.2 kg-m (12 to 16 ft-lb)

Inspection

1. Check shock absorber for visible defects and oil leaks. Place shock absorber right side up in a vise, and hand stroke shock absorber as outlined below:

Extend and compress shock absorber as far as possible, travelling as long as possible.

If smooth hydraulic resistance is not present in both direction, replace absorber.

2. Replace rubber bushing if crack or deterioration is detected.

Specifications for shock absorber

Item \ Model	Pick-up	Double Pick-up
Piston stroke mm (in)	110 (4.3)	
Damping force kg (lb) [0.3 m/sec. (0.98 ft/sec.)]		
Rebound	76 (168)	110 (242.5)
Comprfession	38 (84)	55 (121.3)

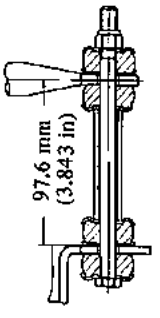
STABILIZER

Removal and installation

1. Raise vehicle on a hoist or stands.
2. Remove wheel.
3. Loosen securing nut at the lower link side of stabilizer.
4. Remove bolt securing stabilizer mounting bracket to chassis frame.

Install stabilizer in the reverse sequence to removal, noting the following instructions.

5. Attach stabilizer mounting bracket to chassis frame, tightening bolt to 1.6 to 2.2 kg-m (12 to 16 ft-lb) torque.
6. Install stabilizer lower link side to connecting rod and tighten nut to the specifications as shown in Figure FA-14. Then, torque lock nut to 1.6 to 2.2 kg-m (12 to 16 ft-lb).



FA233

Fig. FA-14 Stabilizer detail

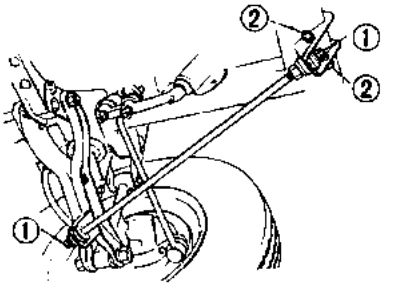
Inspection

Check stabilizer for deformation and rubber bushings for crack, wear and deterioration. Replace if necessary.

TENSION ROD

Removal and installation

1. Raise vehicle on a hoist or stands.
2. Remove wheel.
3. Remove nuts ① from both ends of tension rod.
4. Remove bracket bolt ② from the front end of tension rod, and remove tension rod with bracket.



FA234

Fig. FA-15 Tension rod

Install tension rod in reverse sequnce to removal, noting the following instructions.

5. Install tension rod at rear end, tighten nut to make the distance of rubber bushing to be 33.4 mm (1.315 in), and torque lock nut to 1.6 to 2.2 kg-m (12 to 16 ft-lb).
6. Install tension rod bracket to chassis frame bracket and torque nut to 1.6 to 2.2 kg-m (12 to 16 ft-lb).

When two rubber bushings are different in size, arrange adjusting nut. Standard dimension is 11 mm (0.433 in) as shown in Figure FA-16. Torque lock nut to 1.6 to 2.2 kg-m (12 to 16 ft-lb).

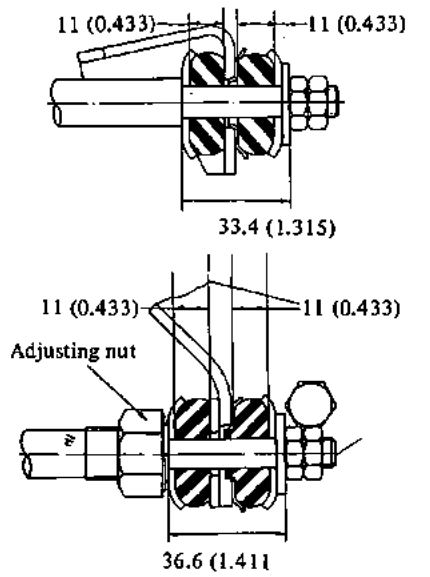


Fig. FA-16 Tension rod detail

Inspection

1. Check tension rod for bend and the thread for defective condition. Repair or replace as required.
2. Check bushing rubber for wear and deterioration. Replace if necessary.

TORSION BAR SPRING

Removal and installation

1. Raise vehicle on a hoist or stands.
2. Remove wheel.
3. Loosen nuts at spring anchor bolt.
4. Remove dust cover at the rear end of torsion bar spring and detach snap ring.
5. Withdraw torsion bar spring rearward after pulling out anchor arm rearward.

Install torsion bar spring in the reverse sequence to removal, noting the following instructions.

6. Coat grease on the serrations of torsion bar spirng and install it to torque arm.

Note: Take care to install left and right torsion bar spring correctly. They can be identified with "L" (Left) and "R" (Right) marked on the end surface.

7. Install anchor arm to obtain "A" dimension to the specifications as shown in Figure FA-17, contacting lower link with bound bumper rubber. After retaining snap ring and dust cover, tighten adjusting nut until "B" dimension come to the specifications.

Note: Discard snap ring when removing it.

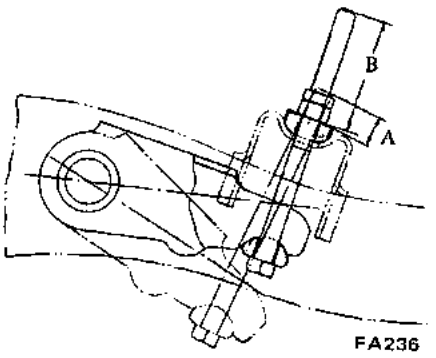


Fig. FA-17 Installing anchor arm

Unit: mm (in)

	A	B
Standard body	5 to 15 (0.197 to 0.591)	60 to 70 (2.363 to 2.756)
Long body	15 to 25 (0.591 to 0.984)	60 to 70 (2.363 to 2.756)
Double Pick-up	23.5 (0.925)	61.5 (2.421)

8. Install wheel and lower vehicle. Adjust vehicle posture at curb weight (full fuel tank, no passengers), referring to "Adjustment."
9. Torque lock nut to 3.1 to 4.1 kg-m (23 to 30 ft-lb).

Inspection

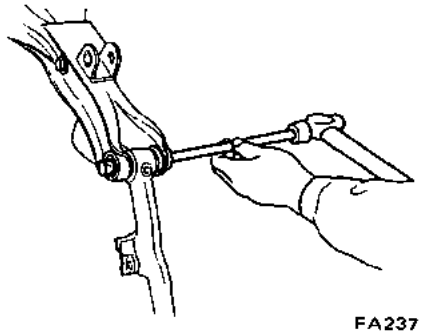
Check torsion bar spirng for wear, twist, etc. When adjusting vehicle posture, replace torsion bar spring with a new one if the specified height can not be obtained.

	Diameter x Length mm (in)	Torsional regidity kg-m/deg. (ft-lb/deg.)
Standard body	20.7 x 830 (0.815 x 32.68)	2.99 (0.118)
Long body	21.9 x 830 (0.863 x 32.68)	3.74 (0.147)
Double Pick-up	20.7 x 830 (0.815 x 32.68)	2.99 (0.118)
U.S.A. & Canada (Optional for common countries)	21.9 x 830 (0.863 x 32.68)	3.74 (0.147)

UPPER AND LOWER LINKS

Removal and installation

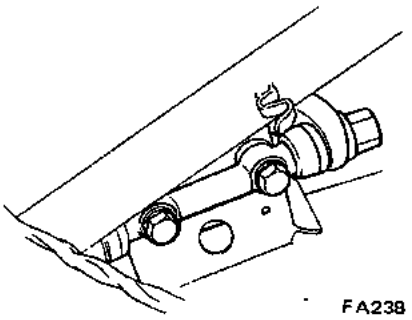
1. Raise vehicle on a hoist or stands.
2. Remove wheel and brake drum as an assembly.
3. Remove wheel hub. Refer to section "Front Axle."
4. Loosen bolts retaining brake disc to knuckle spindle and remove brake disc.
5. Remove knuckle arm, torsion bar spirng, stabilizer, shock absorber, and tension rod in this order referring the related sections.
6. Remove upper fulcrum bolt securing knuckle spindle support to upper link assembly and disassemble them.
7. Remove upper link bushings from knuckle spindle support.
8. Remove screw bushings from both ends of lower link fulcrum pin.
9. Loosen nut at lower portion of knuckle spindle support from inside and pull out cotter pin retaining fulcrum pin.
10. Pull out fulcrum pin with drift and remove knuckle spindle support with knuckle spindle from lower link. Then, detach dust cover.



FA237

Fig. FA-18 Removing fulcrum pin

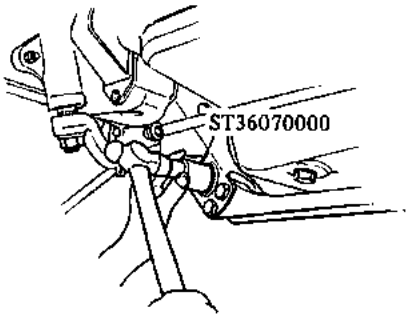
11. Remove bolts retaining upper link spindle and remove upper link spindle with camber adjusting shims from body bracket.



FA238

Fig. FA-19 Removing upper link spindle

12. Remove nut retaining lower link spindle and remove lower link spindle. Remove lower link with torque arm from mounting bracket.
13. Using Lower Link Bushing Drift ST36070000 to lower link bushing, tap it with a hammer and drive out lower link bushing from bracket.



FA239

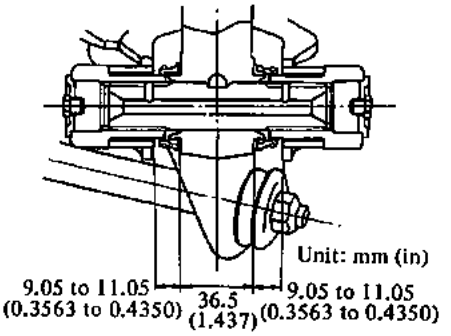
Fig. FA-20 Removing lower link bushing

Install upper and lower links in the reverse sequence to removal, noting the following instructions.

14. When the collar inside of lower link mounting bracket and bushing outside are rusted, remove rust with emery paper.
15. Fit lower link bushing into lower link mounting bracket using Lower Link Bushing Drift ST36070000. When tapping the drift with a hammer, be careful to hit the drift squarely.
16. Secure lower link to lower link bushing with lower link spindle and torque nut to 7.4 to 8.0 kg-m (54 to 58 ft-lb).
17. Install upper link spindle to upper link mounting bracket with used camber adjusting shims and bolts.

Torque bolt to 7.0 to 9.0 kg-m (51 to 65 ft-lb).

18. Install dust seal to the lower end of knuckle spindle support.
19. Coat grease on the thread of fulcrum pin and line up the notch of fulcrum pin with knuckle spindle support for inserting cotter pin. Fit fulcrum pin to spindle support with a soft hammer. Secure cotter pin and torque lock nut to 0.8 to 1.1 kg-m (5.8 to 8.0 ft-lb).
20. Coat grease to the thread portion of screw bushing inside liberally. Position knuckle spindle support at the center of lower link and secure screw bushings temporarily by hand. After ascertaining the dimensions become correct as shown in Figure FA-23, torque screw bushings to 20 to 30 kg-m (145 to 216 ft-lb).



FA240

Fig. FA-21 Installing screw bushing

21. Replace filler plug with grease nipple and pack grease until grease comes out from dust cover. Reinstall filler plug.
22. Upon installation, make sure that fulcrum pin operates smoothly with the following torque.

Operating torque:
Less than 0.5 kg-m (3.6 ft-lb)

23. Install upper link bushing to knuckle spindle support.
24. Install knuckle spindle support to upper link, insert fulcrum bolt, and torque nut to 3.9 to 5.3 kg-m (28 to 38 ft-lb).

Note: When installing fulcrum pin, insert it from rearward of vehicle.

25. Install tension rod, shock absorber, stabilizer, torsion bar spring, and knuckle arm, referring to the related paragraphs.
26. Install brake disc to knuckle spindle and torque securing bolt to 4.2 to 5.0 kg-m (30 to 36 ft-lb).
27. Install wheel and brake drum as an assembly and torque knuckle spindle nut to 8.0 to 9.0 kg-m (58 to 65 ft-lb).

Disassembly and assembly

Upper link

1. Detach upper link spindle from upper links and remove clamp, dust cover and dust seal. Secure upper link in a vise and loosen screw bushing.

Assemble link spindle in reverse sequence to disassembling, noting the following instructions.
2. Torque screw bushing on upper link to 35 to 55 kg-m (253 to 398 ft-lb). Install new dust seal and dust cover and secure them with clamp.
3. Coat grease to screw bushing inside and the thread portion of upper link spindle liberally. Screw front and rear links to upper link spindle in the same length so as to obtain the specified figures as shown in Figure FA-24.

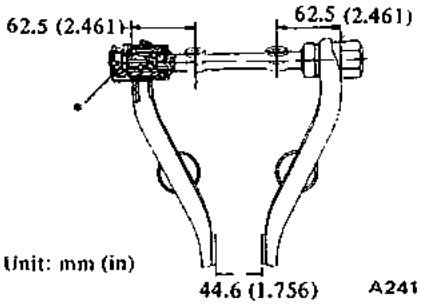


Fig. FA-22 Upper link and upper link spindle

4. Make sure to operate upper link spindle smoothly after installation.
5. Replace filler plug with grease nipple and pack grease until grease comes out from dust cover.
Reinstall filler plug.

Lower link

When installing torque arm on lower link, tighten it to the following specifications.

Serration boss:
1.8 to 2.6 kg-m
(13 to 19 ft-lb)
Arm head:
2.7 to 3.7 kg-m
(20 to 27 ft-lb)

Inspection

Upper link spindle, fulcrum pin and screw bushing

Apply screw bushing to upper link spindle or fulcrum pin and measure axial end play between them.

When the end play exceeds 0.35 mm (0.0138 in), replace upper link spindle or fulcrum pin together with screw bushings.

Check the screw of upper link spindle, fulcrum pin, and screw bushing and repair or replace if necessary.

Note: Discard dust cover and dust seal when disassembled.

ADJUSTMENT

Vehicle posture

Vehicle posture may be incorrect due to weakened spring or other defective condition. The following procedures are necessary when adjustment is required.

That is, the vehicle posture can be adjusted by obtaining only the specified "H" dimension, changing the length of anchor bolt.

1. Raise front of vehicle on stands.
2. Adjust "H" dimension with turning nut adjusting anchor bolt. "H" dimension changes approximately 3.5 mm (0.138 in) vertically when adjust nut is turned one complete turn.
3. To make the best vehicle posture, "H" dimension must be in the following range.

H dimension mm (in)

Condition \ Model	Pick-up	Double Pick-up
Vehicle empty no payload	78 to 82 (3.071 to 3.228)	63 to 68 (2.480 to 2.677)
Vehicle loaded	54.5 (2.146)	46 to 51 (1.811 to 2.008)

Notes:
a. **Vehicle empty no payload consists of the following conditions:**
   1) **Full tank of gasoline, radiator filled and engine oil level full**
   2) **Spare tire, wheel, jack and jack handle in design position**
b. **Vehicle loaded consists of the following conditions:**

For Pick-up model, 2-persons and 1,000 kg (2,205 lb) payload

For Double Pick-up model, 5-persons and 400 kg (882 lb) payload

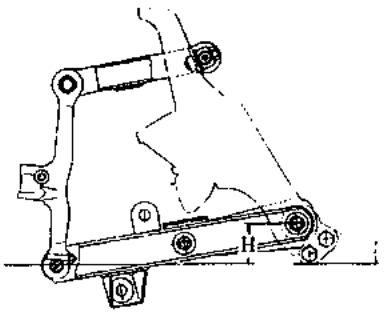


Fig. FA-23 Dimension for standard vehicle posture

Wheel alignment

Correct front wheel alignment attains proper vehicle handling characteristics and the least steering effort with a minimum amount of tire wear.

Before adjusting front wheel alignment, make sure to carry out a preliminary inspection of the front end parts for the following conditions:

1. Tire pressure and ballance
2. Wheel bearings and nuts
3. Steering gear play
4. Steering gear housing at frame
5. Steering linkage and connections
6. Shock absorber action

When using the equipment for front wheel alignment inspection, follow the instructions furnished with the equipment. Furthermore, the inspection should be made with the vehicle level and at curb weight.

Camber and caster

Measure camber and caster and adjsut them in accordance with the following procedures if necessary.

Both camber and caster are adjusted by increasing and decreasing thickness of adjust shim inserted between upper link spindle and upper link mounting bracket.

To adjust caster, made a difference between thickness of front and rear shims. By adding a shim 1 mm (0.0394 in) at front side, caster will be decreased by 33'. At the same time, camber will also be decreased by 6.5'.

To adjust camber, add or remove an equal amount of shims to front and rear sides. By adding a pack of shims 1 mm (0.0394 in) thick at both sides, camber will be decreased by 13'.

Shims are available in 1 mm (0.0394 in), 2 mm (0.0787 in) and 4 mm (0.1575 in) thickness.

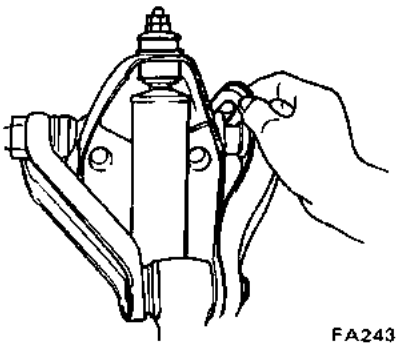


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Fig. FA-24 Adjusting camber and caster

Notes:

a. **Do not make difference between front and rear shims in thickness beyond 2 mm (0.0787 in) on a upper link spindle.**
b. **Limit shim thickness for any one stack within 6 mm (0.236 in).**
c. **Do not use shims for any one stack more the 2 sheets.**

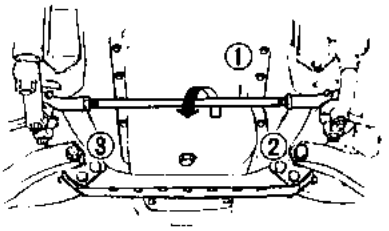
Toe-in

Measure toe-in and adjust if necessary. For adjustment, carry out the following procedures.

Turn steering wheel to straight ahead position with front wheels in the same position. Then, check steering gear straight ahead position.

Loosen lock nuts ② (left hand thread) and ③ (right hand thread) and turn cross rod ① to adjust toe-in. Turn cross rod to forward direction as shown by arrow, and toe-in is reduced. When cross rod is turned to opposite side, toe-in is increased.

After correct toe-in is obtained, tighten lock nut to 8.0 to 10.0 kg-m (58 to 72 ft-lb).



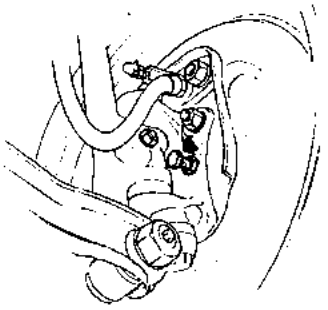
FA244

Fig. FA-25 Adjusting toe-in

Steering angle

Check steering angle and use the following procedures if necessary.

Loosen lock nut at stopper bolt and adjust steering angle with stopper bolt. After obtaining correct steering angle, secure lock nut firmly.



FA245

Fig. FA-26 Adjusting steering angle

		Pick-up	Double Pick-up
Toe-in	mm (in)	1 to 5 MM (0.0787 to 0.1181)	2 to 3 MM (0.0787 to 0.1181)
Camber		1°15' ± 1°	1°15'
Caster		1°50' ± 45'	1°50'
King pin inclination		6°15' ± 1°	6° 15'
Steering angle	Inner wheel	36° ± 1°	36°
	Outer wheel	31° ± 1°	31°

SERVICE DATA AND SPECIFICATIONS

King pin

Clearance limit between the king pin and bushing	mm (in)	0.15 (0.0059)
Bushing inner diameter (when fitted)	mm (in)	20.010 to 20.035 (0.7878 to 0.7888)
Clearance between the knuckle spindle support and spindle	mm (in)	less than 0.1 (0.0039)

Wheel bearing

Tightening torque	kg-m (ft-lb)	3.0 to 3.5 (22 to 25)
Spindle nut returning angle		40 to 70°
Wheel bearing rotation starting torque		
When both bearing and seal are new	kg-cm (in-lb)	less than 15 (13.0)
When readjusted	kg-cm (in-lb)	less than 7 (6.1)
At the hub bolt		
When both bearing and seal are new	kg (lb)	less than 2.1 (4.6)
When readjusted	kg (lb)	less than 1.0 (2.2)

Suspension link

Upper link sliding resistance	kg-m (ft-lb)	less than 0.5 (3.6)
Lower link sliding resistance	kg-m (ft-lb)	less than 0.5 (3.6)

Tightening torque

	kg-m (ft-lb)
Brake hose connecting nut	1.9 to 2.5 (14 to 18)
Wheel bearing lock nut	3.0 to 3.5 (22 to 25)
Brake disc fixing bolt	4.2 to 5.0 (30 to 36)
Knuckle arm fixing bolt	10.3 to 12.1 (75 to 88)
King pin lock bolt	2.1 to 2.5 (15.2 to 18.1)
Torque arm	
Arm end	2.7 to 3.7 (20 to 27)
Serration boss	1.8 to 2.6 (13 to 19)
Lower link spindle nut	7.4 to 8.0 (54 to 58)
Upper link screw bushing	35 to 55 (253 to 398)
Upper link spindle bolt fixing to bracket	7 to 9 (51 to 65)
Cotter pin lock nut	0.8 to 1.1 (5.8 to 8.0)
Lower link screw bushing	20 to 30 (145 to 217)
Fulcrum bolt	3.9 to 5.3 (28 to 38)
Tension rod	
Lock nut	1.6 to 2.2 (12 to 16)
Bracket bolt	1.6 to 2.2 (12 to 16)
Shock absorber	
Lock nut of the upper end	1.6 to 2.2 (12 to 16)
Lower end	3.1 to 4.1 (22 to 30)
Stabilizer	
Bracket bolt	1.6 to 2.2 (12 to 16)
Lock nut of the anchor bolt	3.1 to 4.1 (22 to 30)
Bumper rubber bolt	0.8 to 1.1 (5.8 to 8.0)

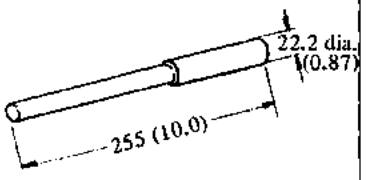
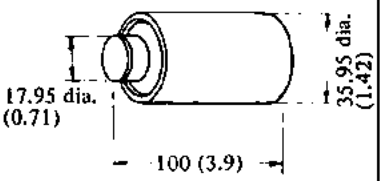
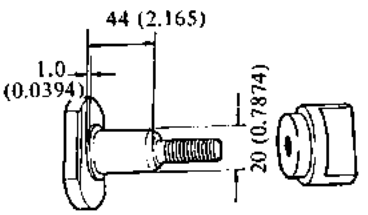
TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Vibration, shock and shimmying of steering wheel.	Vibration: Too much backlash of steering gear, wear of each part of linkage and vibration of front wheels are, in many cases, transmitted to the steering wheel. This is very much noticeable when travelling over bad roads and at higher speeds.	
	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.	
	Shimmy: Abnormal vibrations of the fornt suspension group and the whole steering linkage, which occur when a specific speed is attained.	
	Improper air pressure of tire.	Adjust.
	Unbalance and deformation of roadwheel.	Correct the unbalance or replace.
	Unevenly worn tire or insufficient tightening.	Replace or tighten.
	Improperly adjusted or worn front wheel bearing.	Adjust or replace.
	Faulty wheel alignment.	Adjust.
	Worn or loose suspension link screw bushing.	Replace.
	Damaged idler arm.	Replace.
	Insufficiently tightened steering gear housing.	Tighten.
	Worn steering linkage.	Replace ball joint.
	Improper steering gear adjustment (insufficient backlash).	Adjust.
	Defective shock absorber or loose installation.	Replace or tighten.
	Unbalanced vehicle posture.	Adjust.
Vehicle pulls to right or left.	When driving with hands off the steering wheel on a flat road, the vehicle gently swerves to right or left.	
	Note: A defective rear suspension may also be the cause of this toruble and, therefore, see also the chapter dealing with the rear suspension.	
	Improper air-pressure of tire or insufficient tightening of wheel nuts.	Adjust or tighten.
	Difference in height of right and left tire treads.	Replace tires.
	Incorrect adjustment or abrasion of front wheel bearing.	Adjust or replace.
	Weakened front torsion spring or deviation from standard specification.	Replace.
	Improper wheel alignment.	Readjust.
	Worn or loose suspension link screw bushing.	Replace.

Condition	Probable cause	Corrective action
Vehicle pulles to right or left.	Deformed of steering linkage and suspension link.	Replace.
	Unbalanced vehicle level.	Correct the unbalance.
Instability of vehicle.	Improper air pressure of tire.	Adjust.
	Worn or loose suspension link screw bushing.	Replace.
	Incorrect wheel alignment.	Adjust.
	Worn or deformed steering linkage and suspension link.	Replace.
	Incorrect adjustment of steering gear.	Adjust.
	Deformed unbalanced wheel.	Correct or replace.
Stiff steeirng wheel	Check and correct in the following manner. Jack up front wheels, detach the steering gear and operate the steering wheel, and: a) If it is light, check steering linkage, and suspension groups. b) If it is heavy, check steering gear and steering column groups.	
	Improper air pressure of tire.	Adjust.
	Insufficient lubricants or mixing impurities in steering linkage or excessively worn steering linkage.	Replenish grease or replace the part.
	Insufficient lubricant in gear box or contaminated lubricant.	Add or replace gear oil.
	Unsmooth king pin, damaged part, or insufficient lubrication.	Replace.
	Worn or incorrectly adjusted wheel bearing.	Replace or adjust.
	Worn damaged steering gear and bearing.	Replace.
	Incorrectly adjusted steering gear.	Adjust.
	Deformed steering linkage.	Replace.
	Incorrect wheel alignment.	Adjust.
	Interference of steering column with turn signal switch.	Adjust.
Excessive steering wheel play.	Incorrectly adjusted steering gear.	Adjust.
	Worn steering linkage idler arm.	Replace.
	Improperly fitted of gear box.	Retighten.
	Incorrectly adjusted wheel bearing.	Adjust.
	Worn or loose suspension link screw bushing.	Replace.
Noise.	Improper air pressure of tire.	Adjust.
	Insufficient lubricating oil and grease for suspension link screw bushing and steering linkage, or their breakage.	Replenish lubricating oil and grease, or replace.

Condition	Probable cause	Corrective action
Noise.	Loose steering gear bolts, linkage and suspension groups.	Retighten.
	Defective shock absorber.	Replace.
	Defective wheel bearing.	Replace.
	Worn steering linkage and steering gear.	Replace.
	Worn of loose suspension link screw bushing.	Replace.
Grating tire noise.	Improper air pressure of tire.	Adjust.
	Incorrect wheel alignment.	Adjust.
	Deformed knuckle spindle and suspension linkage.	Replace.
	Rough driving.	Avoid rough driving.
Jumping of disc wheel.	Improper air pressure of tire.	Adjust.
	Unbalanced wheels.	Adjust.
	Defective shock absorber.	Replace.
	Defective tire.	Replace.
	Deformed wheel rim.	Replace.
Excessively or partially worn tire.	Improper air pressure of tire.	Adjust.
	Incorrect wheel alignment.	Adjust.
	Defective wheel bearing.	Replace.
	Incorrect brake adjustment.	Adjust.
	Improper tire shifting (rotation).	Adjust.
	Rough and improper driving manner.	Drive more gently.

SPECIAL SERVICE TOOL

No.	Tool number & tool name	Description (Unit: mm (in))		For use on	Reference page or figure No.
1.	ST35380000 King pin bush drift	 SE234	This tool is used to drive out king pin bushing.	620 521	Page FA-4
2.	HT56802000 King pin bush reamer	 SE235	This tool is used to correct king pin bushing.	620 521	Page FA-5
3.	ST36070000 Lower link bush drift	 SE236	This tool is used to drive out lower link bushing.	620 521	Page FA-10 Fig. FA-20
4.	ST35390000 Grease seal drift	 SE237	This tool is used to install grease seal. Newly established.	620	Page FA-5 Fig.FA-9

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS AND BODY

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

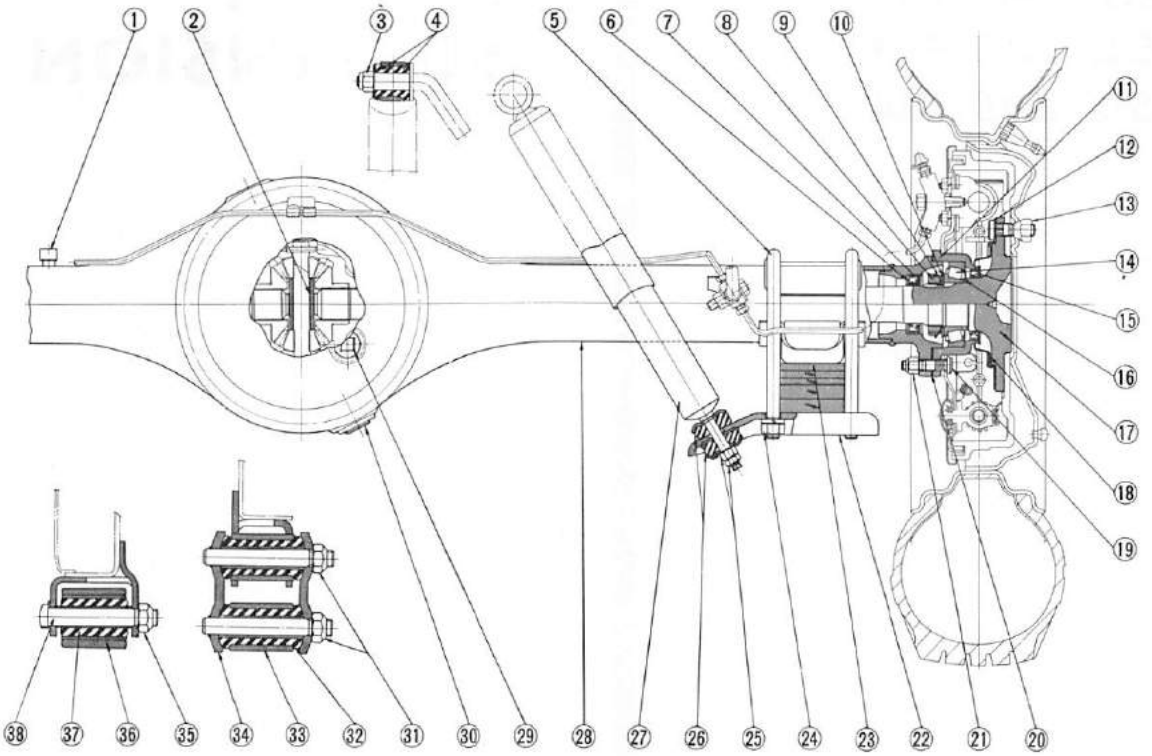
SECTION RA

REAR AXLE & REAR SUSPENSION

RA

REAR AXLE AND REAR SUSPENSION

CONTENTS



RA132

1 Air breather
2 Thrust block
3 Nut
T = 3.1 to 4.1 kg-m
(22.4 to 29.6 ft-lb)
4 Shock absorber mounting rubber bush
5 Rear spring clip (U-bolt)
6 Rear axle oil seal spacer
7 Rear axle shaft oil seal.
Supply wheel bearing grease to oil seal lip when assembly.
8 Rear axle bearing lock nut
T = 15 to 20 kg-m
(108.5 to 144.6 ft-lb)
9 Rear axle bearing lock washer
10 Plain washer
11 Rear axle bearing cage
12 Road wheel bolt
13 Road wheel nut
T = 8 to 9 kg-m
(57.8 to 65.1 ft-lb)
14 Wheel bearing
15 Rear axle bearing grease seal.
Supply wheel bearing grease to oil seal lip when assembly.
16 Rear axle bearing spacer
17 Rear axle shaft
18 Grease catcher
19 Bearing cage bolt
20 Rear axle case end shim
21 Nut
T = 3.7 to 4.8 kg-m
(26.8 to 34.7 ft-lb)
22 Rear spring pad
23 Rear spring
24 Nut
T = 7.3 to 9.9 kg-m
(52.8 to 71.6 ft-lb)
25 Nut
T = 1.6 to 2.2 kg-m
(11.6 to 15.9 ft-lb)
26 Shock absorber rubber bush
27 Shock absorber
28 Rear axle case
29 Filler plug
T = 6 to 10 kg-m
(43.4 to 72.3 ft-lb)
Oil capacity (about) = 1.0 liter
(1 US qt., 7/8 Imp.qt.)
30 Drain plug
T = 6 to 10 kg-m
(43.4 to 72.3 ft-lb)
31 Nut
T = 11.5 to 13.0 kg-m
(83.2 to 94.0 ft-lb)
32 Rear spring rear bush
33 Rear spring
34 Rear spring shackle
35 Nut
T = 11.5 to 13.0 kg-m
(83.2 to 94.0 ft-lb)
36 Rear spring
37 Rear spring front bush
38 Rear spring front pin

T: Tightening torque

Fig. RA-1 Cross-sectional view of rear axle and suspension

DESCRIPTION

The rear axle assembly is of the semi-floating type in which the vehicle weight is carried on the axle shafts through bearings enclosed in the bearing cages on outer rear axle case. The axle case is a pressed steel "Banjo" type housing.

The rear axle assembly is attached to the frame through semi-elliptic leaf springs and telescopic hydraulic shock absorbers. Rubber bushings at either end of the leaf springs and shock absorbers are designed to absorb vibration and noise.

The rear axle shaft splines engage the differential side gears with a floating fit. The outer ends are supported in the bearing cages by tapered-roller bearings.

The bearings are lubricated by wheel bearing grease. The axle shaft oil seals are located outboard and inboard of the bearing. The bearings are secured against shoulders on the shafts by press fit, and held in place by a large nuts.

The bearing cages hold the bearings against shoulders on the axle case.

Wheel side thrust is taken at the wheel bearings through the thrust block, so an axle shaft may be removed simply by removing the bolts holding the brake disc to the bearing cage and the rear axle case.

REMOVAL AND INSTALLATION

Rear axle assembly

It is not necessary to remove the rear axle assembly for any normal repairs.

However, if the axle case is damaged, the rear axle assembly may be removed and installed using the following procedures.

1. Raise rear of vehicle high enough to permit working underneath. Place a jack under center of axle case so it just starts to raise rear axle assembly.

Place stands solidly under frame members on both sides. Remove rear wheels.

2. Mark relationship across propeller shaft flange and companion flange of differential carrier so that the original combination is restored at assembly.
3. Remove bolts retaining center bearing bracket and connecting shaft to companion flange. Withdraw propeller shaft sleeve yoke from transmission by moving the shaft rearward, passing it under rear axle.
4. Disconnect rear hand brake cable ① by removing adjusting nut ② and four clamps ③. Slide front cable rearward and disconnect rear cable ④ at connector ⑤.
5. Disconnect rear brake hose at frame ⑥. Cover brake hose and pipe openings to prevent entrance of dirt.
6. Disconnect shock absorbers at lower end ⑦ and push shock absorbers up out of the way.
7. Lower jack under axle case. Remove U-bolts (spring clips) ⑧ to separate axle case from spring.

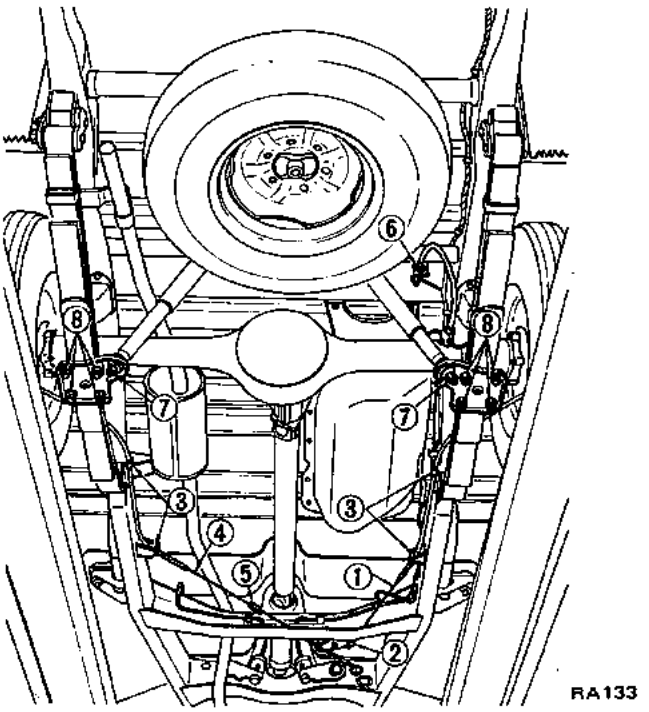


Fig. RA-2 Under view

8. Place a jack under center of axle case. Pass axle case through space above spring, and take it out to the side.

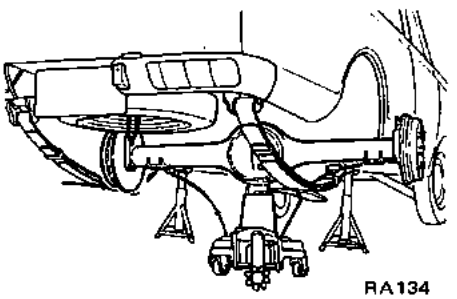


Fig. RA-3 Removing rear axle assembly

9. Install the axle case assembly in the reverse order of removal.

Tightening torque:

U-bolt (Spring clip):
7.3 to 9.9 kg-m
(52.8 to 71.6 ft-lb)

Shock absorber lower end nut:
1.6 to 2.2 kg-m
(11.6 to 15.9 ft-lb)

Brake pipe flare nut:
1.5 to 1.8 kg-m
(10.9 to 13.0 ft-lb)

Propeller shaft to companion flange connecting bolt:
2.0 to 2.7 kg-m
(14.5 to 19.5 ft-lb)

Center bearing bracket fixing bolt:
1.6 to 2.2 kg-m
(11.6 to 15.9 ft-lb)

Rear axle shaft and wheel bearing

1. Raise rear of vehicle and support under axle case on stands. Remove rear wheel.
2. Disconnect rear hand brake cable by removing adjusting nut and clamps.
3. Disconnect brake tube at rear brake disc. Cover brake tube and brake disc openings to prevent entrance of dirt.
4. Remove brake drum.
5. Remove nuts retaining wheel bearing cage to brake disc.

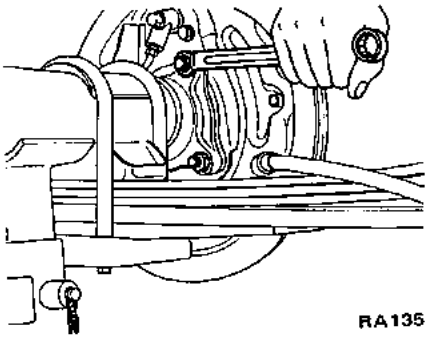


Fig. RA-4 Removing nuts

6. Pull out axle shaft assembly together with brake disc using Rear Axle Stand ST07630000 and Sliding Hammer ST36230000.

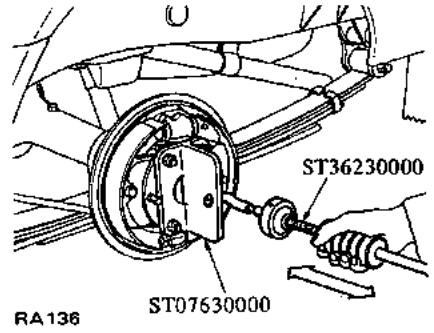


Fig. RA-5 Removing rear axle shaft assembly

7. Remove oil seal in axle case if necessary and install new seal. Insure against damaging the seal lip.
8. Position axle shaft in vise with Rear Axle Stand ST07630000.
9. Unbend lock washer with a screwdriver.

Note: Do not use used lock washer again.

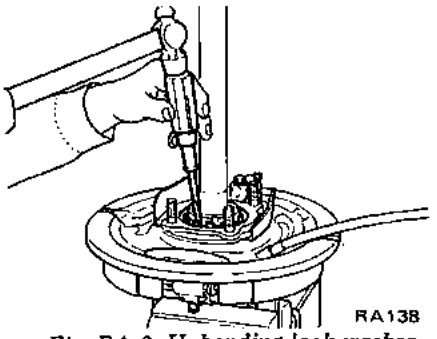


Fig. RA-6 Unbending lock washer

10. Remove lock nut using Rear Axle Bearing Lock Nut Wrench ST38020000.

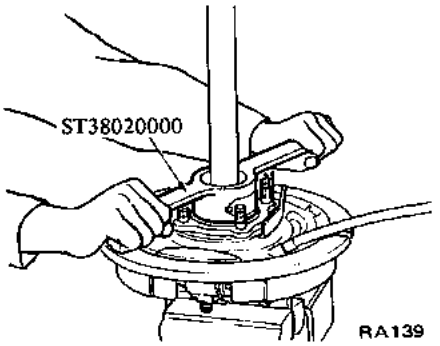


Fig. RA-7 Removing lock nut

11. Withdraw wheel bearing together with bearing cage and brake disc using Rear Axle Shaft Bearing Puller ST37140000.

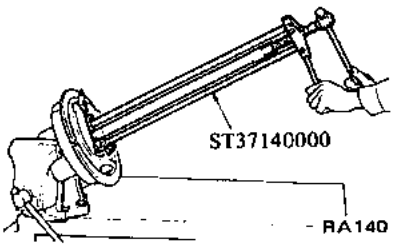


Fig. RA-8 Removing bearing

12. Remove oil seal in bearing cage if necessary.
13. To remove wheel bearing outer race after removed oil seal, apply a brass drift to race side surface, and withdraw it by tapping the top of drift with a hammer.

Installing can be proceeded in the reverse order of removal procedure as follows;

1. Fit wheel bearing outer race by tapping with a brass hammer evenly while fitting.
2. Install a new oil seal in bearing cage. Lubricate cavity between seal lips with wheel bearing grease after fitting seal.
3. Place bearing cage with brake disc and bearing spacer on axle shaft, and fit bearing cone. To install bearing cone, apply a brass drift to race side surface and tapping the top of drift with a hammer.

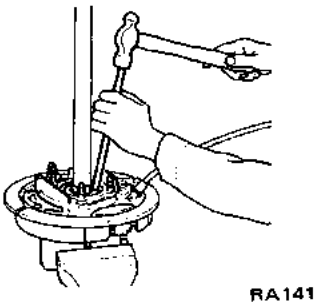


Fig. RA-9 Installing wheel bearing

4. Place bearing lock washer and bearing nut lock washer on axle shaft, and tighten lock nut using Rear Axle Bearing Lock Nut Wrench ST38020000, and bend up lock washer.

Notes:

a. Be careful to place the faced side of nut to washer side so that washer is not damaged.

b. Coincide washer lip with nut groove correctly by tightening nut, and bend washer carefully so that lip will not be damaged.

Tightening torque:
15 to 20 kg-m
(108 to 145 ft-lb)

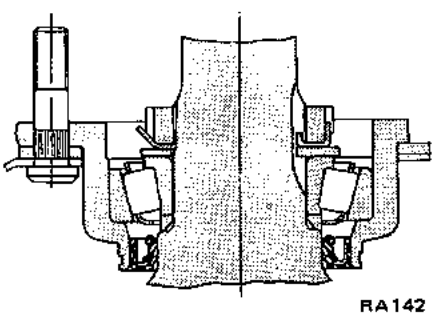
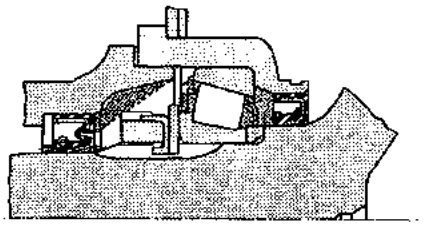


Fig. RA-10 Layout of lock nut

5. Apply wheel bearing grease in wheel bearing and recess of axle case end.



▨: Lubricating portion

RA143

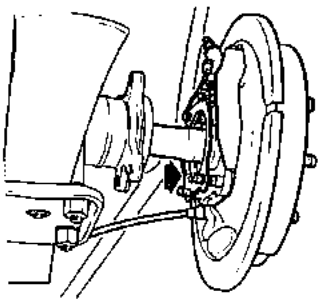
Fig. RA-11 Lubricating portion in and around wheel bearing

6. Apply gear oil to the spline at the inner end of axle shaft. Apply a coat of wheel bearing grease on the seal surface of the shaft.
7. Install left or right shaft, and adjust axial end play by applying rear axle case end shim (indicated by arrow mark).

Axial end play: 0.3 to 0.9 mm (0.012 to 0.035 in)

Standard shim thickness: 1.5 mm (0.059 in)

Tightening torque of bearing cage fixing nut: 3.7 to 4.8 kg-m (26.8 to 34.7 ft-lb)



RA144

Fig. RA-12 Installing rear axle shaft

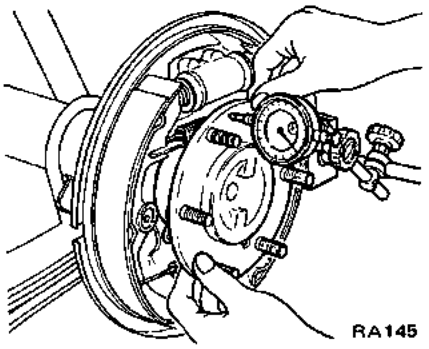
Rear axle case end shim

Thickness mm (in)
0.05 (0.0020)
0.07 (0.0028)
0.10 (0.0039)
0.20 (0.0079)
0.50 (0.0197)

8. Install shaft in opposite side, and adjust axial end play by applying shim.

Axial end play: 0.02 to 0.15 mm (0.0008 to 0.0059 in)

Tightening torque of bearing cage fixing nut: 3.7 to 4.8 kg-m (26.8 to 34.7 ft-lb)



RA145

Fig. RA-13 Measuring axial end play

9. Install other parts in reverse sequence to removal.

Rear axle case

Rear axle case may be removed and installed using the following procedures:

1. Raise rear of vehicle and support securely under both frame members with stands.
2. Remove rear axle assembly (See removal of rear axle assembly.).
3. Remove rear axle shaft at both sides (See removal of rear axle shaft and wheel bearing.).
4. Remove differential gear carrier assembly.

Installing can be proceeded in the reverse order of removal procedure.

Another procedure is available as listed below:

1. Raise rear of vehicle and support under both frame members with stands.
2. Remove rear axle shaft at both sides.
3. Remove differential gear carrier assembly.
4. Remove rear axle case.

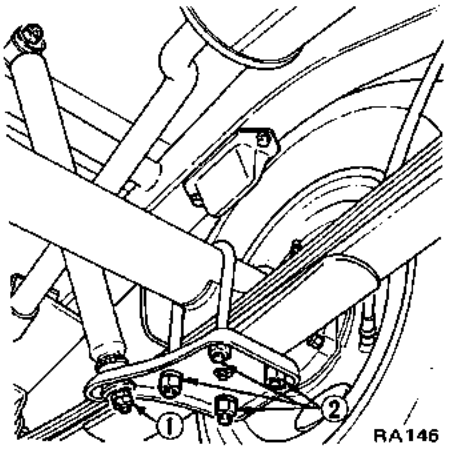
Installing can be proceeded in the reverse order of removal procedure.

Tightening torque:
Differential carrier to axle case fixing nut: 1.7 to 2.5 kg-m (12.3 to 18.1 ft-lb)

Oil drain and filler plug: 4.2 to 6.9 kg-m (30.4 to 49.9 ft-lb)

Rear spring

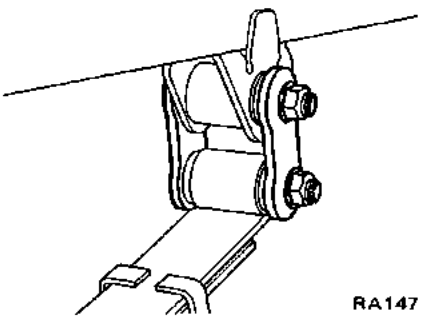
1. Raise rear of vehicle and support under both frame members with stands.
2. Disconnect shock absorber at lower end ① and remove U-bolts (Spring clips)②.



RA146

Fig. RA-14 Removing shock absorber lower end and U-bolts

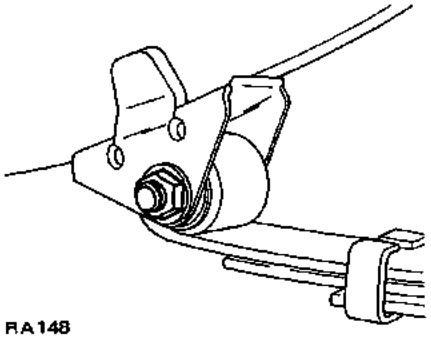
3. Position jack under rear axle case. Raise jack and float axle case from spring.
4. Disconnect rear spring shackle by removing nuts.



RA147

Fig. RA-15 Removing spring shackle

5. Disconnect spring from body by removing spring front pin.



RA148

Fig. RA-16 Remvoing spring pin

6. Remove rubber bush in spring if necessary and install new bush. Coat rubber bush with a soapy solution prior to assembly.

Install rear spring in the reverse order of removal, noting the following point.

Car weight must be on rear wheels when tightening front pin, shackle and shock absorber lower end nut in order to clamp rubber bush in a neutral or unloaded position.

Tightening torque:

Spring front pin nut:
11.5 to 13.0 kg-m
(83.2 to 94.0 ft-lb)

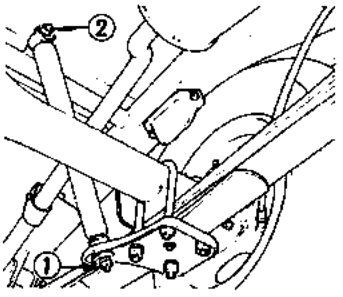
Spring shackle nut:
11.5 to 13.0 kg-m
(83.2 to 94.0 ft-lb)

U-bolt: 7.3 to 9.9 kg-m
(52.8 to 71.6 ft-lb)

Shock absorber lower end nut:
1.6 to 2.2 kg-m
(11.6 to 15.9 ft-lb)

Shock absorber

1. Raise rear of vehicle and support under axle case on stands. It is recommended that a hydraulic hoist or open pit be utilized if available.
2. Disconnect lower end of shock absorber by removing nuts ① at spring seat.
3. Disconnect upper end of shock absorber by removing nut ② at frame.



RA146

Fig. RA-17 Removing shock absorber

Installation of shock absorber in the reverse order of removal.

Note: **Car weight must be on rear wheels when tightening shock absorber upper and lower ends in order to clamp rubber bushings in a neutral or unloaded position.**

INSPECTION

Rear axle shaft and wheel bearing

Inspect the following parts for defects and replace as required.

1. Check axle shaft for straightness, cracks, damage, wear and distortion.
2. Check the lip of oil seal for damage, deformation and wear.
3. Check bearing for wear and damage.

Rear axle case

Check axle case for yield, deformation or cracks and replace if necessary.

Rear spring

Clean all rust and dirt from spring leaves, using a wire brush if necessary.

1. Examine spring leaves for fractures or cracks.
2. Check front bracket and pin, shackle, U-bolts and spring seat for wear, cracks, straightness and damaged threads. If defective parts are found, replace with new ones.
3. Inspect all rubber parts for wear, damage, separation and deformation. Replace them if necessary.

Shock absorber

1. Test shock absorber and compare with the specifications given in Service Data and Specifications. Replace if necessary.
2. Check for oil leakage and cracks. Also, check shaft for straightness.
3. Inspect rubber bushings for damage, cracks and deformation. Replace parts if necessary.

SERVICE DATA AND SPECIFICATIONS

Items \ Applied models		Pick-up	Double Pick-up
Rear shock absorber			
Stroke x Maximum length	mm (in)	190 x 475 (7.48 x 18.70)	210 x 515 (8.27 x 20.28)
Damping force at 0.3 m/sec.	kg (lb)		
Expansion		75 to 101 (165 to 223)	61 to 83 (135 to 183)
Compression		35 to 53 (77 to 117)	16 to 26 (35 to 57)
Rear leaf spring			
Dimension (Length x Width x Thickness - Number of leaves)	mm (in)	1,200 x 60 x 7 - 2 6 - 1 13 - 2 (47.2 x 2.36 x 0.28 - 2 0.24 - 1 0.51 - 2)	1,200 x 60 x 6 - 3 5 - 1 12 - 1 (47.2 x 2.36 x 0.24 - 3 0.20 - 1 0.47 - 1)
Lader camber	mm/kg (in/lb)	–2/697.5 (–0.0787/1,538)*	–38/497.5 (–1.496/1,097)
Spring constant	kg/mm (lb/in)	2.6 to 10.0 (145.6 to 560.0)	2.1 to 5.0 (117.6 to 280.0)
Rear axle			
End play	mm (in)	0.02 to 0.15 (0.0008 to 0.0059)	
Rear axle case end shim		Thickness mm (in) 0.05 (0.0020) 0.07 (0.0028) 0.10 (0.0039) 0.20 (0.0079) 0.50 (0.0197)	

Tightening torque **kg-m (ft-lb)**

Shock absorber upper end nut	3.1 to 4.1	(22.4 to 29.6)
Shock absorber lower end nut	1.6 to 2.2	(11.6 to 15.9)
Rear spring U-bolt (Clip)	7.3 to 9.9	(52.8 to 71.6)
Spring front pin	11.5 to 13.0	(83.2 to 94.0)
Spring shackle	11.5 to 13.0	(83.2 to 94.0)
Bearing cage fixing bolt	3.7 to 4.8	(26.8 to 34.7)
Wheel bearing lock nut	15 to 20	(108.5 to 144.6)
Air breather	0.7 to 0.9	(5.1 to 6.5)
Differential gear carrier to axle case nut	1.7 to 2.7	(12.3 to 19.5)
Propeller shaft flange bolt	2.0 to 2.7	(14.5 to 19.5)
Drain and filler plug	6 to 10	(43.4 to 72.3)
Bumper rubber fixing bolt	1.6 to 2.2	(11.6 to 15.9)
Wheel nut	8 to 9	(57.8 to 65.1)

* Long wheelbase model: –2/697 (–0.0787/1,537), For U.S.A. and Canada: 24/440 (0.945/970)

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS AND BODY

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION BR

BRAKE SYSTEM

BR

7. Repeat bleeding operations until no air bubbles show in hose.

Notes:

a. **Brake fluid containing air is white and contains air bubbles.**

b. **Brake fluid containing no air runs out of bleeder valve in a solid stream free of air bubbles.**

8. Repeat above steps on the remaining brake line to expel air.

BRAKE PEDAL

Removal

1. Remove pedal return spring.

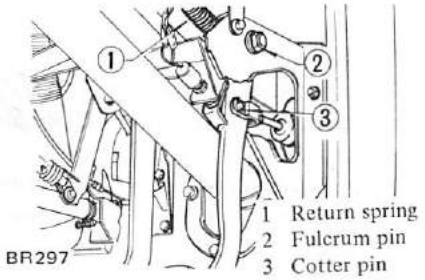


Fig. BR-5 Brake pedal mounting

2. Remove cotter pin from clevis pin, and separate pedal from (Master-Vac) push rod.
3. Remove fulcrum pin and pedal.

Note: Loosen fulcrum pin counter-clockwise on R.H. drive and clockwise on L.H. drive vehicles.

Installation

Install brake pedal in the reverse sequence to removal, paying attention to the following instructions.

1. Insert fulcrum pin from left hand side for R.H. drive and from right hand side for L.H. drive vehicle.
2. Install clevis pin from left hand side.
3. Hook return spring to brake pedal assembly from clutch pedal side on R.H. drive and operate it from reverse side on L.H. drive vehicles.
4. Apply a coating of recommended multipurpose grease to the inner and outer faces of pedal bushing, clevis pin, and hooks of return spring. Charge the clearances in bushings with grease.

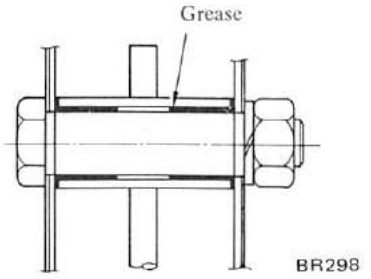


Fig. BR-6 Greasing place

5. Adjust the brake pedal after installation. (Refer to the instructions under "Adjustment.")

Tightening torque:
Fulcrum pin 1.9 to 2.4 kg-m (14 to 17 ft-lb)

Inspection

Check brake pedal for the following items, servicing as necessary.

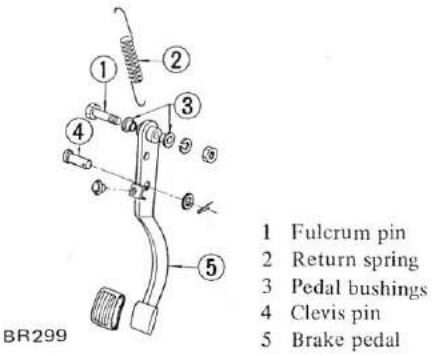


Fig. BR-7 Brake pedal

1. Check pedal bushing for wear, deformation or damage.
2. Check pedal shaft sleeve for wear or roughness.
3. Check for bent brake pedal.
4. Check for fatigued return spring.

MASTER CYLINDER

Three kinds of the master cylinder are used on the vehicles; that is, the diameters of cylinder are 17.46 mm ($^{11}/_{16}$ in) for single and tandem master cylinders, and 19.05 mm ($^{3}/_{4}$ in) for tandem master cylinder. The tandem master cylinder contains two fluid reservoirs which connect the front and rear brake lines independently.

Braking force is constantly maintained when failure occurs in either the front brake system or the rear brake system. Failure in the front brake system will leave the rear brake still operative or failure in the rear brake system will leave the front brake system still operative.

The reservoir is equipped with a retention cap. To remove this cup, proceed as follows:

(1) Turn retention ring fully in the REMOVE direction.
(2) Pull out retention cap.

To install it, proceed as follows:

(1) Turn retention ring (used in the retention cap) fully in the REMOVE direction.
(2) Align the projection in retention ring with the slit in the reservoir tank and push retention cap in the tank.
(3) Turn retention ring fully in the TIGHTEN direction.

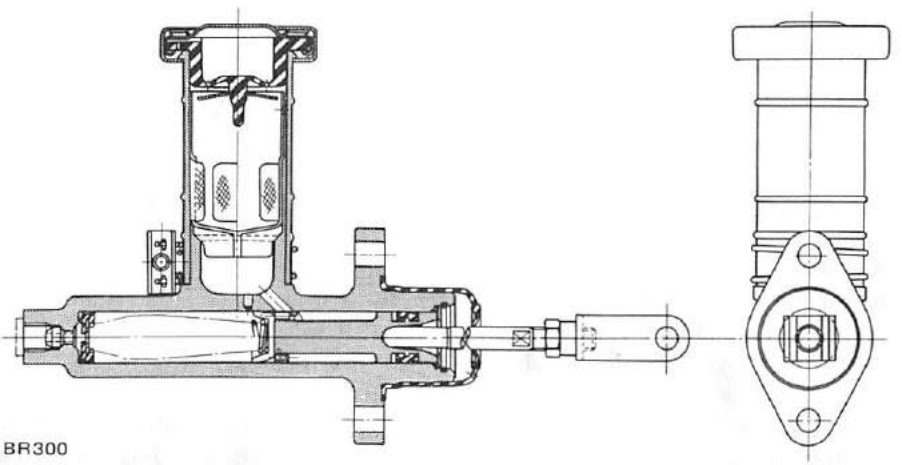
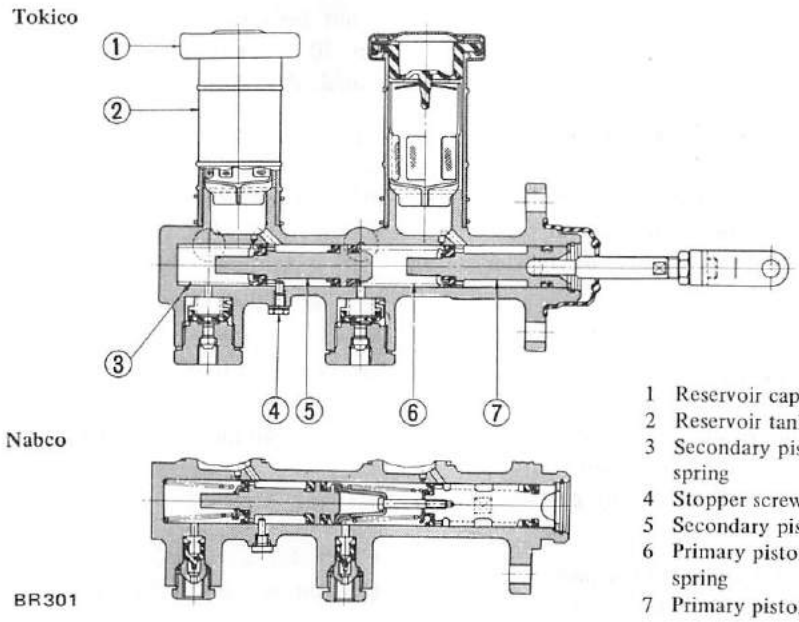


Fig. BR-8 Sectional view of single master cylinder (Made by Nabco)



1 Reservoir cap
2 Reservoir tank
3 Secondary piston return spring
4 Stopper screw
5 Secondary piston
6 Primary piston return spring
7 Primary piston

Fig. BR-9 Sectional view of tandem master cylinder

Removal and installation

1. On the vehicle not equipped with the Master-Vac:

Pull out clevis pin, and separate brake pedal from master cylinder push rod.

2. Disconnect brake tube from master cylinder.

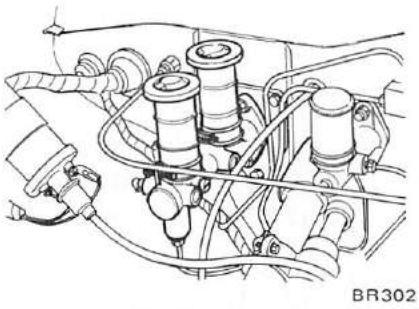


Fig. BR-10 Master cylinder

3. Remove master cylinder securing nuts, and withdraw master cylinder from engine room side.

Note: Before disconnecting brake tube, be sure to use a container that receives draining brake fluid. Use of a rag is also suggested to keep adjacent parts and place clean at all times.

4. Install master cylinder in the reverse sequence to removal.

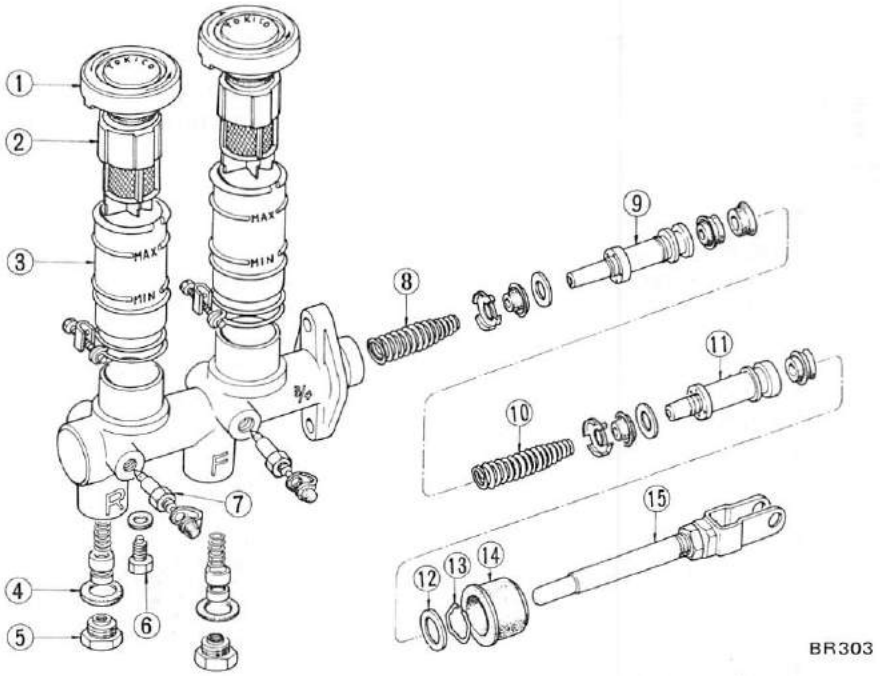
5. Bleed air out of master cylinder after it is installed in its original position.

Tightening torque:

Brake master cylinder attaching nut: 0.8 to 1.2 kg-m (5.8 to 8.7 ft-lb)

Brake tube connector: 1.5 to 1.8 kg-m (11 to 13 ft-lb)

Disassembly and assembly



1 Reservoir cap
2 Oil filter
3 Oil reservoir
4 Packing
5 Valve cap
6 Secondary piston stopper
7 Bleeder screw
8 Secondary return spring
9 Secondary piston
10 Primary return spring
11 Primary piston
12 Piston stopper
13 Piston stopper ring
14 Dust cover
15 Push rod assembly

Fig. BR-11 Master cylinder

1. Remove reservoir cap and filter and drain out brake fluid.
2. Pry off stopper ring, using a screwdriver.
3. Remove stopper screw and take out stopper, primary piston assembly, spring, and secondary piston assembly, in the order shown.

Note: Discard piston cup if it is removed from piston assembly and use a new one.

4. Unscrew plug to gain accessibility of check valve for disassembling.

Note: Never detach reservoir tank. If it is removed for any reason, discard it and install a new one.

5. Assemble master cylinder in the reverse sequence to disassembly, paying particular attention to the following notes:

Tightening torque:

Valve cap:

Tokico	8 to 9 kg-m (58 to 65 ft-lb)
Nabco	2.5 to 3.5 kg-m (18 to 25 ft-lb)
Bleeder:	0.7 to 0.9 kg-m (5.1 to 6.5 ft-lb)

Notes:

a. **Replace gaskets and packings with new ones.**

b. **Apply brake fluid or rubber grease to sliding contact surfaces of parts to facilitate assembly of master cylinder.**

Inspection

Thoroughly clean all parts in a suitable solvent, and check for worn or damaged parts. Replace any part that is defective.

Note: Do not clean rubber parts with mineral oil since this will be the sure way of deteriorating parts. Use brake fluid or alcohol. When alcohol is used for cleaning these parts, do not immerse them in it longer than 30 seconds. After parts are cleaned, dry with compressed air.

1. Check cylinder and position for evidence of abnormal wear or damage. Replace if found defective.

2. Check piston-to-cylinder clearance. If it is more than 0.15 mm (0.0059 in), replace either piston or cylinder.

Master cylinder inner diameter:
19.05 mm (¾ in)
17.46 mm ($^{11}/_{16}$ in)

3. Check for weakened, fatigued or damaged springs, and replace if necessary.

Piston return springs

Maker	Type		Free length mm (in)	Dia. of spring mm (in)	Installed	
					Length mm (in)	Load kg (lb)
Tokico	19.05 mm (¾ in) Tandem master cylinder	Primary side	53 to 57 (2.087 to 2.244)	1.2 (0.047)	35.7 (1.406)	1.8 to 2.2 (4.0 to 4.9)
		Secondary side	54 to 55 (2.126 to 2.165)	1.6 (0.063)	34.5 (1.358)	3.6 to 4.4 (7.9 to 9.7)
	17.46 mm ($^{11}/_{16}$ in) Tandem master cylinder	Primary side	52 to 53 (2.047 to 2.087)	1.2 (0.047)	31.0 (1.221)	1.8 to 2.2 (4.0 to 4.9)
		Secondary side	44 (1.732)	1.6 (0.063)	30.5 (1.201)	3.6 to 4.4 (7.9 to 9.7)
	17.46 mm ($^{11}/_{16}$ in) Single master cylinder		85 to 86 (3.347 to 3.386)	1.2 (0.047)	61.5 (2.421)	1.2 to 1.4 (2.7 to 3.1)
Nabco	19.05 mm (¾ in) Tandem master cylinder	Primary side	Do not disassemble			
		Secondary side	50 to 51 (1.969 to 2.008)	1.4 (0.055)	33 (0.299)	2.5 to 3.1 (5.5 to 6.8)
	17.46 mm ($^{11}/_{16}$ in) Tandem master cylinder	Primary side	Do not disassemble			
		Secondary side	50 to 51 (1.969 to 2.008)	1.2 (0.047)	26.5 (1.043)	2.3 to 2.7 (5.1 to 6.0)
	17.46 mm ($^{11}/_{16}$ in) Single master cylinder		91 (3.583)	1.2 (0.047)	60 (2.362)	1.3 to 1.7 (2.9 to 3.8)

4. When master cylinder is disassembled, be sure to discard cups and valves. Replace any other part which shows evidence of defomation, wear or otherwise damage.
5. Replace damaged oil reservoirs and caps.

BRAKE LINE

The brake line is different from the following types of master cylinder.

Tandem master cylinder with Master-Vac
Tandem master cylinder without Master-Vac
Single master cylinder

Furthermore, the classification is divided by steering column location, wheelbase, etc.

Right hand drive vehicles
Left hand drive vehicles
Standard wheelbase Pick-up
Long wheelbase Pick-up
Double Pick-up

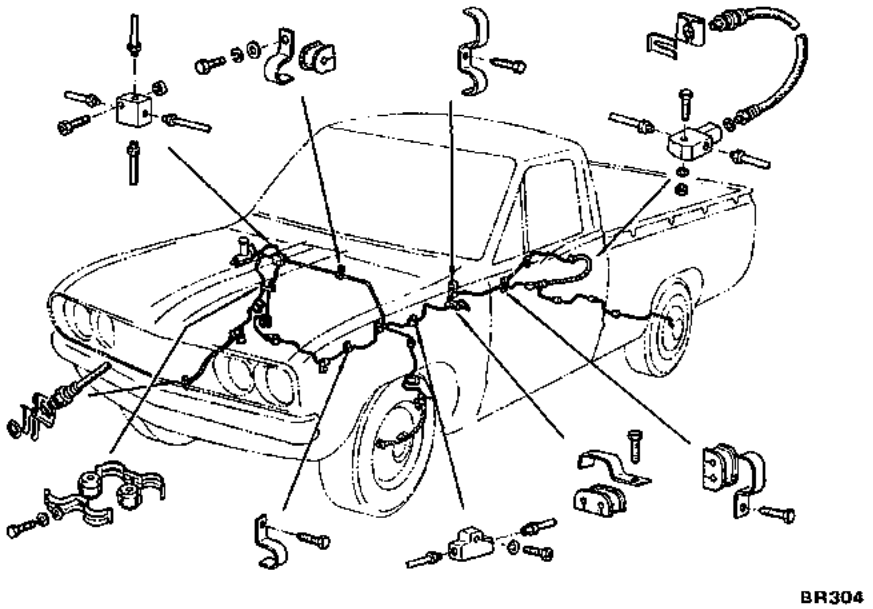


Fig. BR-12 Brake line of R.H. drive (Single master cylinder)

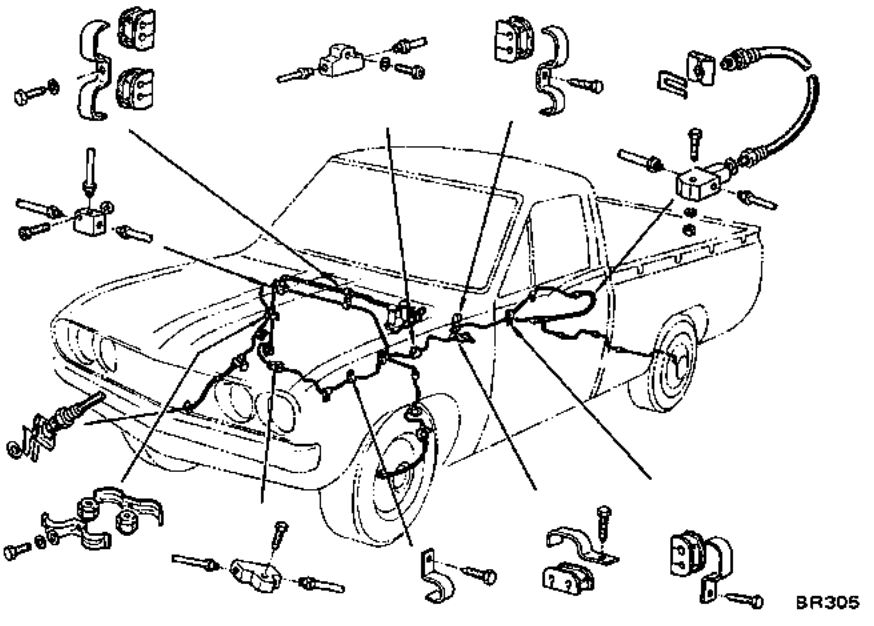


Fig. BR-13 Brake line of L.H. drive (Tandem master cylinder)

Removal

1. Removing flare nuts on both ends and clips effects the removal of brake tube and brake hose.
2. Rear brake hose can be removed by disconnecting the tube and then turning round the hose.

Installation

Brake hose

Front brake hose

In installing brake hose, first jack up vehicle to take off the weight of vehicle from wheels so that suspension is in rebound. Steering wheel should also be kept in straight-ahead position.

To connect brake line, first connect brake hose to wheel cylinder with the specified torque.

Tightening torque:
1.7 to 2.0 kg-m
(12 to 14 ft-lb)

Then secure brake hose to the bracket with lock plate not so as to twist or abnormal bend the hose.

Note: After connecting brake hose at both ends, pay keen attention not to twist the hose when additional tightening is required.

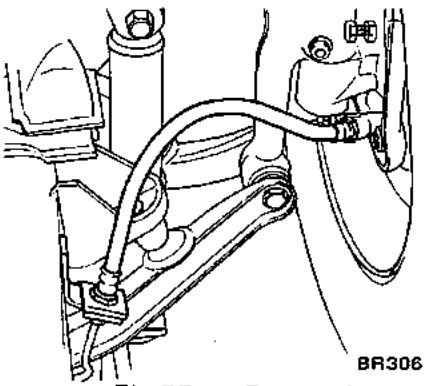


Fig. BR-14 Front brake hose

Rear brake hose

First, secure rear brake hose to 3-way connector on rear axle case to the specifications. After connecting hose, do not tighten it at 3-way connector additionally since this operation gives hose to be twisted.

Tightening torque:
1.7 to 2.0 kg-m
(12 to 14 ft-lb)

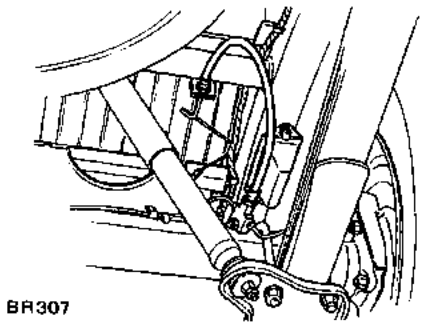


Fig. BR-15 Rear brake hose

After brake hose has been installed, check to be sure that there is enough clearance between hose and adjacent parts to avoid contact with other ones. The check should be carried out while moving wheel up and down through its full stroke and rotating steering wheel between two extreme lock positions. The above clearance must be as follows:

Hose to rotating or moving parts such as tire and rim:
40 mm (1.6 in) and more

Hose to stationary part:
25 mm (1 in) and more

In case that the above clearance cannot be obtained, it may be caused by the hose twisted. Accordingly, carry out the correction with hose connection again, following the above instructions.

Brake tube

In installing a brake tube, use care to locate its end squarely on mating seat, noting the fact that nut can be turned freely by a light finger twist. Then, tighten to correct torque with a Brake Pipe Torque Wrench GG94310000.

Tightening torque (Flare nut):
1.5 to 1.8 kg-m
(11 to 13 ft-lb)

In addition, care should also be exercised to avoid damaging or collapsing brake tube during operation.

Be sure to make enough clearance between all tubes and other adjacent parts to avoid contact.

In installing tube through hood ledge grommet, be sure to position it at the center of grommet.

After connecting brake tube, be sure to check the clearance to prevent from damage. The clearance at the following portions must be specified distance or more.

Tube to body panel and frame:
4 mm (0.16 in)
Tube to edge of each panel:
20 mm (0.80 in)
Tube to tube at loop:
25 mm (1.00 in)
Tube to moving parts:
25 mm (1.00 in)
Loop tube to hood ridge panel:
25 mm (1.00 in)

Notes:

a. **Brake tubes are shaped at factory to secure specified clearance and may not require reshaping. Discard if they call for excessive reshaping.**
b. **In reshaping a brake tube, take care to avoid damaging galvanization or collapsing section.**

After brake lines have been assembled, check to make sure that all fittings and flare nuts are tightened to correct torques.

Tightening torque:

Brake tube to connector
1.5 to 1.8 kg-m
(11 to 13 ft-lb)
Brake tube to brake hose
1.7 to 2.0 kg-m
(12 to 15 ft-lb)
Connector and clip fixing bolt
0.35 to 0.45 kg-m
(2.5 to 3.3 ft-lb)
3-way connector fixing bolt
(on rear axle case)
0.8 to 1.1 kg-m
(5.8 to 8.0 ft-lb)

Inspection

Brake hose

1. Examine all hoses for swell, rubbing marks or ozon-cracking, replacing those found with any of above badly beyond use. Also, inspect end fittings and be sure that no fluid leak through staked end has taken place; replace if necessary. Hose with badly rusted fitting should also be replaced with a new one. As to installation notes, refer to relative topic under "Installation."
2. Retighten all connection, if necessary, to assist in obtaining correct torque. In retightening at front wheel cylinder, first remove hose clamp and loosen flare nut on opposite side to avoid twisting hose.

Brake tube

Clean all tubes to remove dust and dirt with isopropyl alcohol, checking for collapse, wear, cracking, swell or rusting. Replace if found with any of above. Use care not to damage brake tubes while operation.

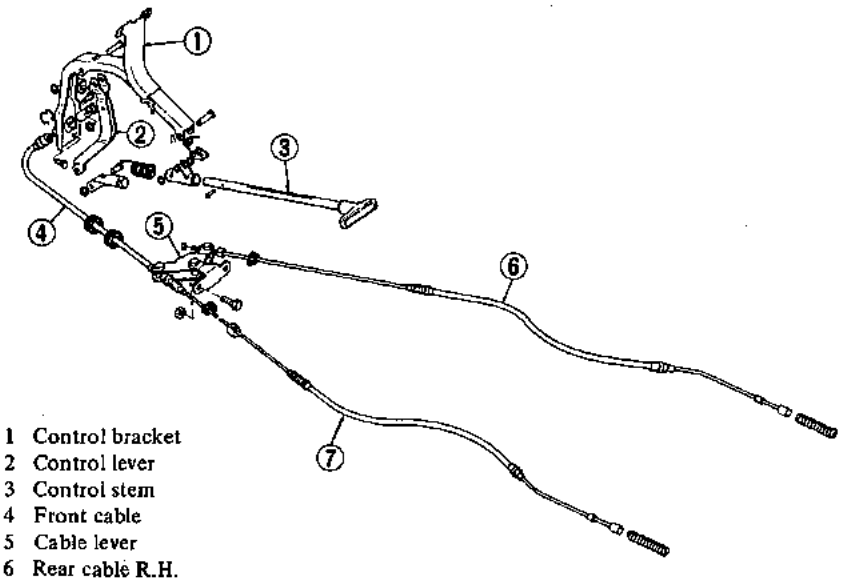
Check if tubes are clamped securely.

After the above steps have been carried out, hold pedal as far downward as possible 80 kg (176 lb) or more, examining evidence as to whether fluid is leaking through brake lines or connections. Leakage in any manner cannot be permitted here. In case fluid leaks, tightening with specified torque, tighten additionally up to 2.5 kg-m (18 ft-lb). Under no circumstances should nut be tightened over 2.5 kg-m (18 ft-lb) torque since this elongates end fitting, making it impossible to reuse brake tube.

Under no circumstances should rear brake hose and 3-way connector be retightened over specified torques. Instead, replace copper washer with a new one after checking for sign of damage on seating surface. Never reuse an old copper washer.

HAND BRAKE (Parking brake)

A hand operated hand brake is of stick type, which actuates rear wheel brake shoes. All the cable adjustment can be made by operating only adjusting nut at cable lever.



1 Control bracket
2 Control lever
3 Control stem
4 Front cable
5 Cable lever
6 Rear cable R.H.
7 Rear cable L.H.

Fig. BR-16 Hand brake linkage

Installation

Install hand brake assembly in the reverse sequence of removal by closely observing the following instructions.

1. When installing, apply a coating of grease to sliding contact surfaces. Make sure that each sliding part functions smoothly.
2. Upon completion of installation of hand brake assembly, adjust the entire system as per instructions described under topic "ADJUSTMENT."
3. Make sure that each cable is not interfered with by any adjacent parts. Do not apply an undue stress to cables.

Removal

Control stem

1. Disconnect terminal from hand brake warning switch.
2. Remove nuts securing control bracket in place on dash panel.
3. Pull out lock pin and cotter pin, and then remove control stem assembly.

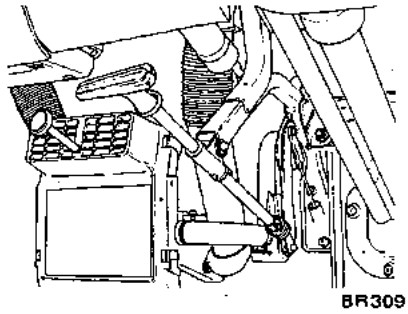


Fig. BR-17 Control stem

Cable

1. Fully release hand brake lever.
2. Loosen adjusting nut at cable lever.
3. Disconnect cable from control lever.
4. Remove both sides rear brake drums, and disconnect rear cable from toggle lever.
5. Detach lock plate, spring and clip and pull out cable to cable lever.
6. Remove cotter pin at cable lever and disconnect cable.

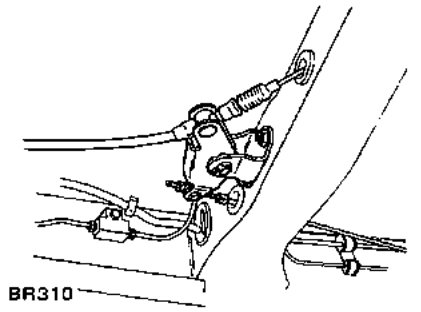
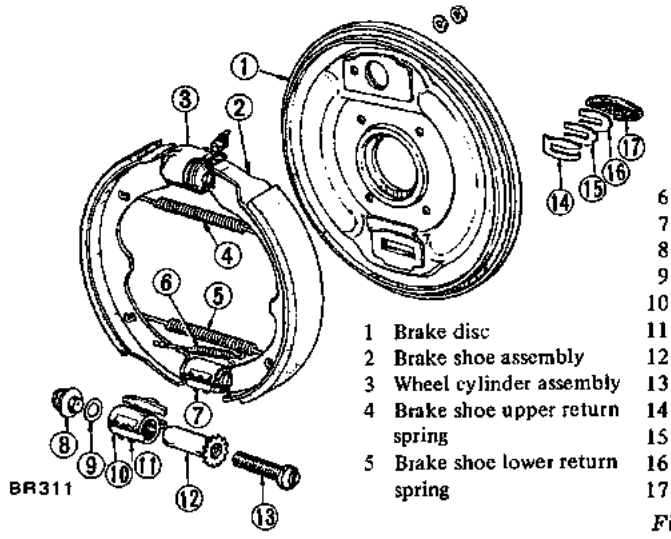


Fig. BR-18 Cable lever

Inspection

1. Check control stem and ratchet for evidence of wear or other damages. Replace parts which are defective.
2. Replace worn or fatigued springs.
3. Check wires for evidence of discontinuity or other deterioration. Replace if necessary.
4. Replace defective warning light and/or switch.
5. Check parts at each connection and, if found deformed or damaged, replace.

FRONT BRAKE

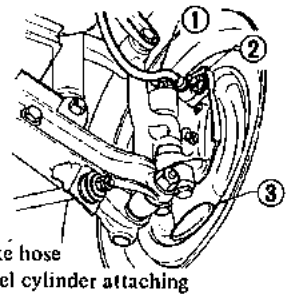


1 Brake disc
2 Brake shoe assembly
3 Wheel cylinder assembly
4 Brake shoe upper return spring
5 Brake shoe lower return spring
6 After shoe return spring
7 Adjuster assembly
8 Adjuster head
9 Adjuster head shim
10 Lock spring
11 Adjuster housing
12 Adjuster wheel
13 Adjuster screw
14 Retaining spring
15 Lock plate
16 Adjuster shim
17 Rubber boot

Fig. BR-19 Front brake

Removal

1. Jack up front of vehicle just high enough to remove tire and support it with safety stands.
2. Remove wheel and brake drum. When brake drum cannot be removed easily, return brake adjuster.
3. In order to ease operation, remove hub assembly from knuckle spindle. (Refer to "FRONT AXLE.")
4. Unhook upper, lower, and after shoe return springs, and then remove brake shoe assemblies.
5. Disconnect brake hose from wheel cylinder.
6. Loosen securing nut and remove wheel cylinder.
7. Remove rubber boot, adjuster shim, lock plate and retaining spring, and then remove adjuster assembly from brake disc.



1 Brake hose
2 Wheel cylinder attaching bolt
3 Rubber boot

BR312

Fig. BR-20 Removing wheel cylinder

Installation

Install front brake in reverse sequence of removal, paying particular attention to the following instructions.

1. When assembling adjuster assembly, apply brake grease to adjuster housing bore, adjuster wheel and adjuster screw.

When installing adjuster assembly to brake disc, apply brake grease to disc, adjuster and retaining spring sliding surfaces to slide adjuster smoothly.

Measure adjuster sliding resistance. Adjust by adjuster shim when sliding resistance is incorrect.

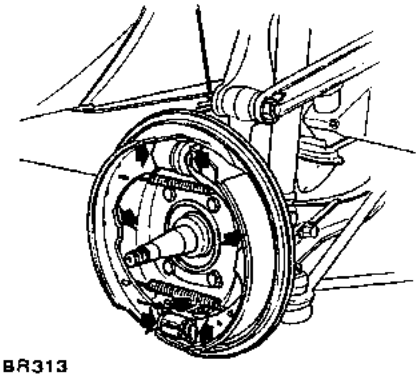
Adjuster sliding resistance
5 to 12 kg (11.0 to 26.5 lb)

2. When installing wheel cylinder, be sure to secure the cylinder with "R" mark to right hand disc and the one with "L" mark to left hand disc. Otherwise, brake hoses may interfere with other adjacent parts. As to the connecting instructions of brake hose, no twist or contact is existed on brake hose, referring the related topic "BRAKE LINE."

Tightening torque:

Wheel cylinder
5.4 to 6.6 kg-m
(39 to 48 ft-lb)
Connector bolt
1.9 to 2.5 kg-m
(14 to 18 ft-lb)
Brake hose
1.7 to 2.0 kg-m
(12 to 14 ft-lb)
Air bleeder
0.7 to 0.9 kg-m
(5.1 to 6.5 ft-lb)
Brake disc
4.2 to 5.0 kg-m
(30 to 36 ft-lb)

3. Before installing brake shoe assemblies, apply brake grease to wheel cylinder and adjuster brake shoe installing grooves, and brake disc and brake shoe assembly contact faces (two places). Exercise care not to allow grease coming into contact with linings and adjuster.



BR313

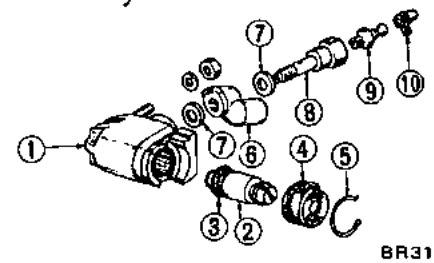
Fig. BR-21 Greasing points

4. Adjust brake shoe clearance and bleed brake system. (Refer to the instructions under topic "ADJUSTMENT" in this section.

Upon completion of the above adjustments, make sure that brake operates correctly and no brake fluid leaks.

Disassembly and assembly

Wheel cylinder



BR314

1 Wheel cylinder housing
2 Piston
3 Piston cup
4 Dust cover
5 Snap ring
6 Connector
7 Packings
8 Connector bolt
9 Bleeder screw
10 Bleeder cap

Fig. BR-22 Front wheel cylinder

Wheel cylinder can be disassembled simply by the following procedures described below:

Remove snap ring and dust cover, and take out piston from wheel cylinder. Be careufl not to damage sliding part of piston and piston cup.

Thoroughly wash all disassembled parts in brake fluid or alcohol.

Note: Do not wash rubber parts with mineral oil since they are deteriorated.
When alcohol is used, however, do not immerse rubber parts in alcohol longer than 30 seconds. After parts are cleaned, dry them with compressed air.

Assemble wheel cylinder in reverse sequence to disassembly.

When securing connector bolt, insert its location tip to the hole of wheel cylinder firmly and tighten it securely.

Carry out operations carefully so that component parts are not damaged or no dust and other foreign materials enter cylinder.

Inspection

Brake drum

1. Replace brake drum whose diameter is beyond the limit of 1.5 mm (0.0591 in) with respect to the standard inner diameter of 254.0 mm (10 in).

2. The allowable maximum "out-of-round" of brake drum is 0.02 mm (0.0008 in).

Re-condition or replace brake drum if specified limit is exceeded.

3. Measure for tapered brake drum. If specified limit of 0.02 mm (0.0008 in) is exceeded as measured at a position where the distance of 45 mm (1.772 in) is kept away from inlet, re-condition or replace brake drum.

4. Contact surface with which linings come into contact should be finished to such an extend that it is ground by a No. 120 to 150 sand-paper.

5. Using a drum racer, finish brake drum by machining if it shows any sign of score marks, partial wear or stepped wear on its contact surface.

Note: After brake drum is completely re-conditioned or renewed, check drum and shoes for proper contact pattern.

Brake assembly

1. When brake shoe linings are cracked, incompletely seated, unevenly worn, and/or deteriorated due to excessive heating or soiled with oil, grease and brake fluid, replace.

2. Replace linings if the thickness is worn down to less than 1.0 mm (0.0394 in).

Note: When brake shoe lining is installed, grind brake shoe lining face to diameter equal to that of brake drum.

Lining dimension
Width x Thickness x Length
45 x 4.5 x 244 mm
(1.772 x 0.177 x 9.606 in)

3. Check adjuster for smooth operation.

4. Replace shoe return springs which are broken or fatigued.

Standard dimensions of shoe springs

Item	Free length mm (in)	Dia. of spring mm (in)	No. of coil	Installed length/load mm/kg (in/lb)
Upper	136.5 (5.374)	2 (0.0787)	37	159.5/14 to 16 (6.280/31 to 25)
Lower	134.5 (5.295)	2.3 (0.0906)	35	159.5/21 to 23 (6.280/46 to 51)
After shoe	83.2 (3.276)	1.4 (0.0551)	27.5	99/4 to 5 (3.898/9 to 11)

Wheel cylinder

1. Replace any cylinder or piston which is scratched, scored or worn on its sliding contact surface.

2. Replace worn parts if piston-to-cylinder clearance is beyond 0.15 mm (0.0059 in).

Wheel cylinder inner diameter
19.05 mm (¾ in)

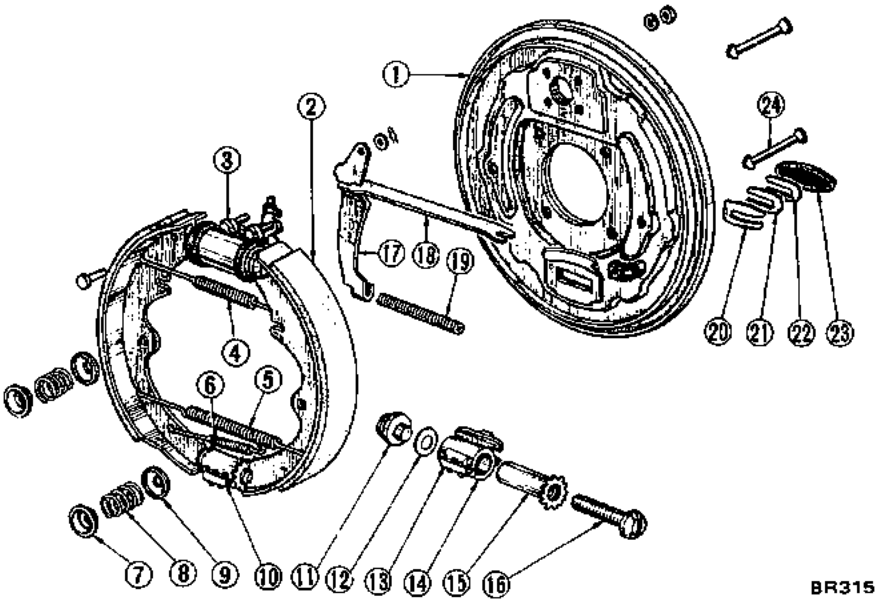
3. Replace piston cup which is worn or otherwise damaged.

4. Replace if contacting face of cylinder and shoe is worn locally or in step.

5. Replace damaged dust cover, fatigued piston spring or defective threaded parts.

6. Replace tube connector which is worn on its threaded portion.

REAR BRAKE

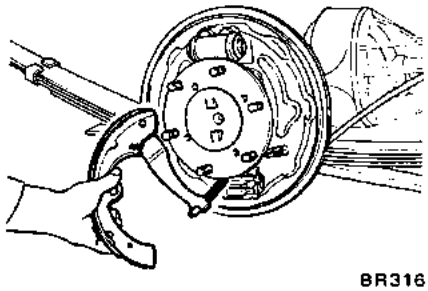


1 Brake disc
2 Brake shoe assembly
3 Wheel cylinder assembly
4 Return upper spring
5 Return lower spring
6 After shoe return spring
7 Retainer
8 Antirattle spring
9 Spring seat
10 Adjuster assembly
11 Adjuster head
12 Adjuster head shim
13 Lock spring
14 Adjuster housing
15 Adjuster wheel
16 Adjuster screw
17 Toggle lever
18 Extension link
19 Return spring
20 Adjuster spring
21 Lock plate
22 Adjuster shim
23 Rubber boot
24 Antirattle pin

Fig. BR-23 Rear brake

Removal

1. Jack up rear of vehicle just high enough to remove tire and support it with safety stands.
2. Remove wheel, loosen hand brake and detach brake drum.
3. Turn pin by 90°, and remove antirattle springs.
4. Open brake shoe assemblies outward against return spring, and remove extension link.
5. Remove return springs.
6. Remove brake shoe assemblies. Note that after (secondary) brake shoe assembly must be separated from toggle lever. When separating after (secondary) brake shoe assembly from toggle lever, withdraw clevis pin.
7. Disconnect toggle lever from hand brake rear cable.



BR316

Fig. BR-24 Removing toggle lever

8. Disconnect brake tube at wheel cylinder by loosening flare nut.
9. Remove wheel cylinder from brake disc by loosening installation nuts.
10. Remove rubber boot, adjuster shim, lock plate and adjuster springs and remove adjuster assembly from brake disc.

Installation

Install rear brake in reverse sequence of removal, paying particular attention to the following instructions.

1. Rear adjuster assembly is the same as front. Refer to the paragraph covering front brake installation.

Adjuster sliding resistance:
5 to 12 kg (11.0 to 26.5 lb)

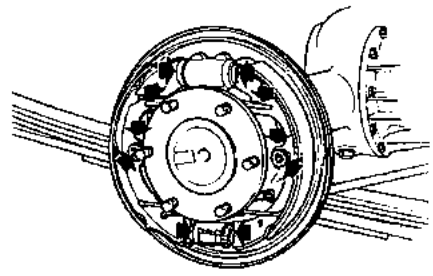
2. When assembling toggle lever and after brake shoe assembly, adjust clearance between toggle lever and after brake shoe assembly to 0 to 0.3 mm (0 to 0.0118 in) with a properly selected toggle pin washer.

Toggle pin washer

No.	Thickness mm (in)
1	2.0 (0.079)
2	2.3 (0.091)
3	2.6 (0.102)
4	2.9 (0.114)
5	3.2 (0.126)

3. Before installing brake shoe assemblies, apply brake grease to the following places:
1) Brake shoe installing grooves of adjuster and wheel cylinder
2) Extension link installing grooves
3) Lower surface of spring seat
4) Contact surfaces between brake disc and brake shoe assembly (six places)

At this time, be sure not to coat brake grease to brake linings.



BR317

Fig. BR-25 Greasing points

4. Tightening torque:

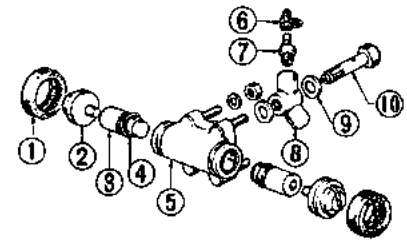
Wheel cylinder	1.5 to 1.8 kg-m (11 to 13 ft-lb)
Connector bolt	1.9 to 2.5 kg-m (14 to 18 ft-lb)
Brake tube	1.5 to 1.8 kg-m (11 to 13 ft-lb)
Air bleeder	0.7 to 0.9 kg-m (5.1 to 6.5 ft-lb)
Brake disc	4.2 to 5.0 kg-m (30 to 36 ft-lb)

5. Adjust brake shoe clearance and bleed brake system. Upon completion of the above adjustments, make sure that brake operates correctly and no brake fluid leaks.

Disassembly and assembly

Wheel cylinder

Remove dust cover, and pull out piston head and piston assembly. Refer to "Wheel cylinder of front brake."



BR318

1 Dust cover
2 Piston head
3 Piston
4 Piston cup
5 Wheel cylinder housing
6 Bleeder cap
7 Bleeder screw
8 Connector
9 Washer
10 Connector bolt

Fig. BR-26 Rear wheel cylinder

Inspection

Brake drum

1. Replace brake drum whose diameter is beyond the limit of 1.5 mm (0.059 in) with respect to the standard inner diameter of 254.0 mm (10 in).
2. The allowable maximum "out-of-round" of brake drum is 0.02 mm (0.0008 in). Re-condition or replace brake drum if specified limit is exceeded.
3. Measure for tapered brake drum.

If specified limit of 0.02 mm (0.0008 in) is exceeded as measured at a position where the distance of 45 mm (1.772 in) is kept away from inlet, re-condition or replace brake drum.

4. Contact surface with which liniigs come into contact should be finished to such an extent that it is ground by a No. 120 to 150 sandpaper.
5. Using a drum racer, finish brake drum by machining if it shows any sign of score marks, partial or stepped wear on its contact surface.

Note: After brake drum is completely re-conditioned or replaced, check drum and shoes for proper contact pattern.

Brake assembly

1. When brake shoe linings are cracked, incompletely seated, unevenly worn, and/or deteriorated due to excessive heating or soiled with oil, grease and brake fluid, replace.
2. Replace linings if the thickness is worn down to less than 1.0 mm (0.0394 in).

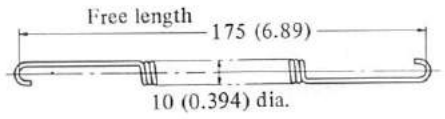
Note: When brake shoe lining is installed, grind brake shoe lining face to diameter equal to that of brake drum.

Lining dimension:
Width x Thickness x Length
45 x 4.5 x 244 mm
(1.772 x 0.177 x 9.606 in)

3. Check adjuster for smooth operation.
4. Replace shoe return springs which are broken or fatigued.

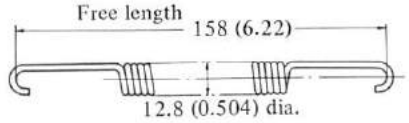
Standard dimensions of shoe springs

Item	Free length mm (in)	Dia. of spring mm (in)	No. of coil	Installed length/load mm/kg (in/lb)
Upper	175 (6.890)	2 (0.0787)	32.5	184/11 to 13 (7.244/24 to 29)
Lower	158 (6.220)	2.3 (0.0906)	30	176/18 to 20 (6.929/40 to 44)
After shoe	83.2 (3.276)	1.4 (0.0551)	27.5	99/4 to 5 (3.898/9 to 11)
Antirattle	20.5 (0.807)	1.6 (0.0630)	3.5	12/3.5 to 4.5 (0.472/8 to 10)



Unit: mm (in) BR319

Fig. BR-27 Upper return spring



Unit: mm (in) BR320

Fig. BR-28 Lower return spring

Wheel cylinder

1. Replace any cylinder or piston which is scratched, scored or worn on its sliding contact surface.
2. Replace worn parts if piston-to-cylinder clearance is beyond 0.15 mm (0.0059 in).

Wheel cylinder inner diameter:
19.05 mm (¾ in)
17.46 mm ($^{11}/_{16}$ in)
(PL620TU only)

3. Replace piston cup which is worn or damaged.
4. Replace if contacting face of cylinder and shoe is worn locally or in step.
5. Replace damaged dust cover, fatigued piston spring or defective threaded parts.
6. Replace tube connector which is worn on its threaded portion.

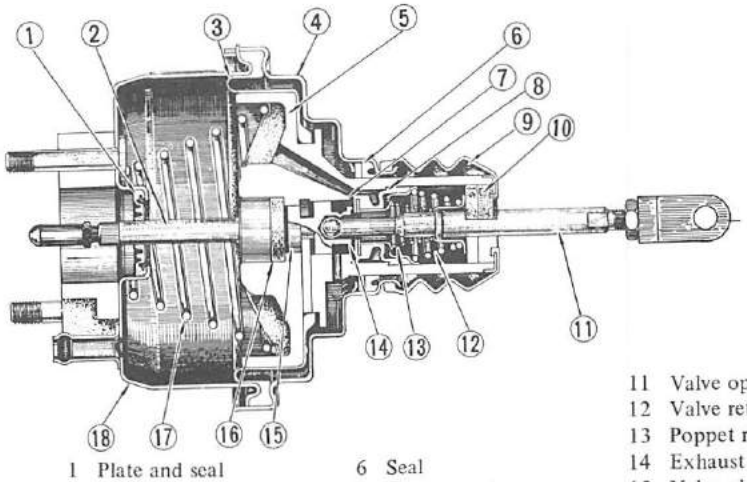
MASTER-VAC

Description

A vacuum suspended Master-Vac is installed behind the master cylinder. As the brake pedal is depressed, fluid is forced under high pressure through the brake pipes to the wheel cylinders to retard or stop the vehicle.

The Master-Vac contains a spring loaded diaphragm of 114.3 mm (4 ½ in) in diameter. It operates on negative pressure produced in the engine intake manifold.

The tandem master cylinder is capable of producing high pressure even if the Master-Vac is defective.



BR321

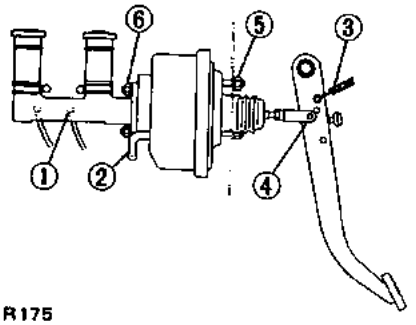
1 Plate and seal
2 Push rod
3 Diaphragm
4 Rear shell
5 Diaphragm plate
6 Seal
7 Vacuum valve
8 Poppet assembly
9 Valve body guard
10 Air silencer filter
11 Valve operating rod
12 Valve return spring
13 Poppet return spring
14 Exhaust valve
15 Valve plunger
16 Reaction disc
17 Diaphragm return spring
18 Front shell

Fig. BR-29 Sectional view of Master-Vac

Removal and installation

Referring to Figure BR-30, remove parts in numerical order enumerated.

Install these parts in the reverse sequence of removal.



BR175

Fig. BR-30 Removal method of Master-Vac

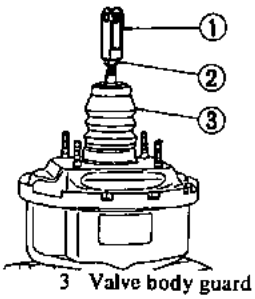
Note: After Master-Vac is properly installed on vehicle, be sure to conduct an air-tight test and operation test described previously in this Section.

Disassembly

When disassembling Master-Vac, observe the following instructions.

a) Thoroughly clean mud or dust from Master-Vac.
b) Extreme care should be taken not to allow dirt, dust, water or any other foreign matter getting into any component-parts.
   Be sure to select a clean place before disassembly or assembly.
c) Mark mating joints so that they may be installed exactly in their original positions.
d) Keep all disassembled parts arranged properly so that they may readily be assembled at any time.
e) Clean rubber parts and syntheticresin parts in alcohol.
f) After all disassembled parts are cleaned in a suitable clean solvent, place on a clean work bench. Use care not to allow dirt and dust coming into contact these parts.

1. Install spacer on rear shell spacer temporarily. Place Master-Vac in a vise. Use soft jaws in suggested.
2. Remove clevis and lock nut. Detach valve body guard.

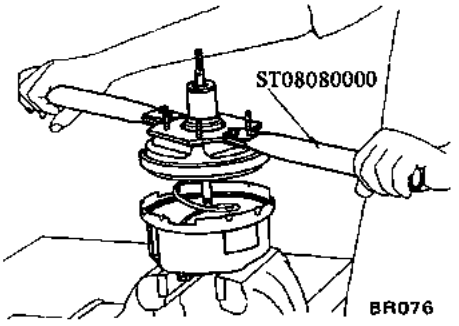


1 Clevis
2 Lock nut
3 Valve body guard

BR075

Fig. BR-31 Removing rear shell

3. Identify front shell and rear shell clearly so that they may be reassembled in their original positions from which they were withdrawn. (Bolts attached on dashboard are not the same in pitch.)
4. Using Master-Vac Wrench ST08080000, remove rear shell-seal assembly, and disassemble diaphragm plate assembly, front shell assembly, diaphragm spring and push rod assembly.



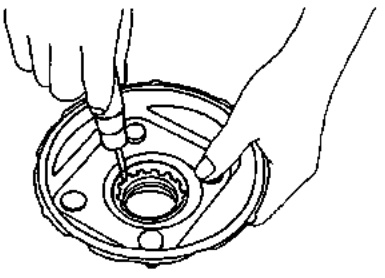
BR076

Fig. BR-32 Removing rear shell

Rear shell-seal

Pry off retainer with use of screwdriver as shown and detach bearing and seal.

Note: Do not disassemble seal assembly unless absolutely necessary. Whenever this is to be removed, use care not to damage it.

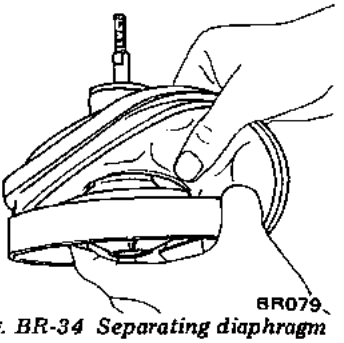


BR078

Fig. BR-33 Removing retainer

Diaphragm plate

1. Place diaphragm plate assembly on a clean work bench. Detach diaphragm from groove in plate as shown.

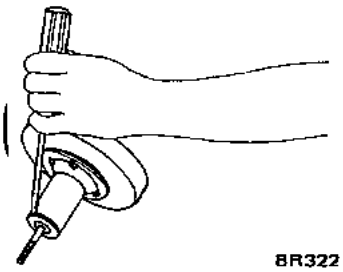


BR079

Fig. BR-34 Separating diaphragm

2. Using a screwdriver as shown, evenly pry air silencer retainer until it is detached from diaphragm plate assembly.

Note: Never use a hammer to remove this retainer since this will be the sure way of damaging it.

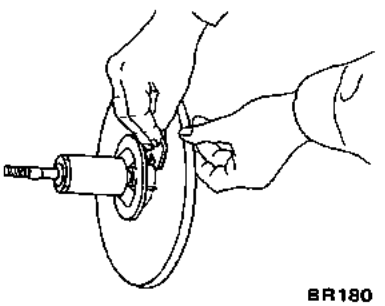


BR322

Fig. BR-35 Removing air silencer retainer

3. Pull out valve plunger stop key and withdraw silencer and plunger assembly.

Note: To remove valve plunger stop key properly, proceed as follows: With key hole facing down, lightly push valve operating rod simultaneously while applying vibration to it.



BR180

Fig. BR-36 Pulling out stop key

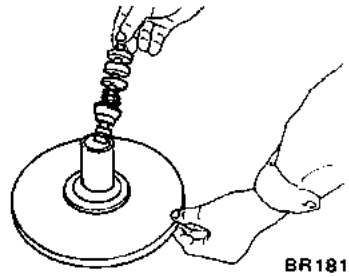


Fig. BR-37 Removing valve operating rod assembly

4. Withdraw reaction disc.

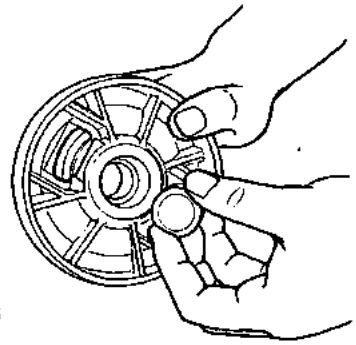


Fig. BR-38 Removing reaction disc

Front shell-seal

1. Detach flange from front shell assembly.

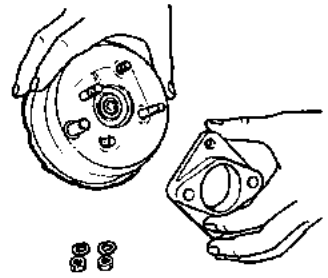


Fig. BR-39 Removing flange

2. Withdraw front seal assembly.

Assembly

Assemble in the reverse sequence of disassembly.

Rear shell-seal

1. Apply a coating of Master-Vac grease to the sealing surface and lip of seal, and install that seal in rear shell with the use of Master-Vac Oil Seal Retainer Drift ST08060000.

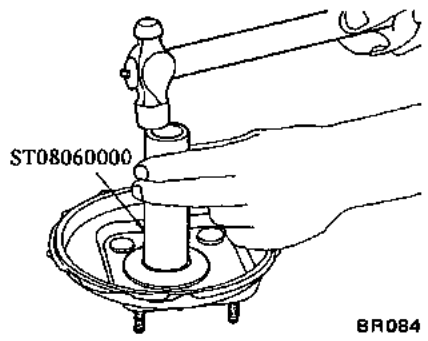


Fig. BR-40 Installing oil seal

Note: Referring to Figure BR-41, install seal in place by properly aligning the pawl of special tool with seal hole. Adjustment is correct when specified length at "A" is obtained.

Length "A"
6.7 to 7.0 mm
(0.264 to 0.276 in)

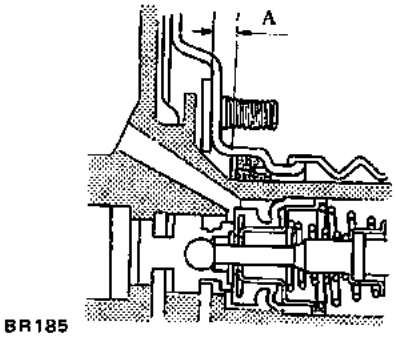


Fig. BR-41 Length at "A"

Diaphragm plate

1. Apply a thin coating of grease to the sliding contact portion on the periphery of plunger assembly.

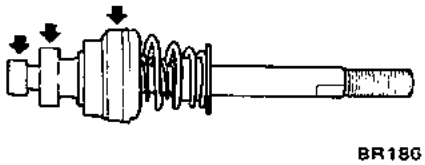


Fig. BR-42 Requiring grease place

2. Install plunger assembly and silencer in diaphragm plate, and lightly push plunger stop key in place.

Note: Diaphragm plate is made of bakelite. Exercise care in installing plunger assembly not to damage diaphragm plate.

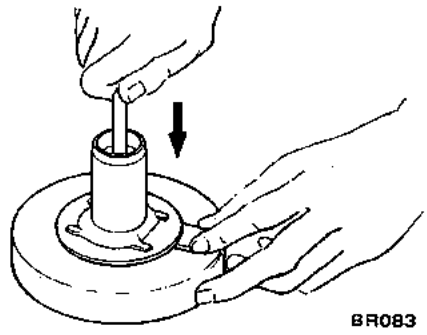


Fig. BR-43 Inserting stop key

3. Before installing diaphragm into position, apply a thin coating of micapower to it except outer diameter and seating portion with which shell comes into contact.
4. Before installing reaction disc in place on diaphragm plate, apply a thin coating of Master-Vac grease.

Front shell-seal

Before installing front shell-seal assembly, apply a coating of Master-Vac grease to the inner wall of seal and front shell with which seal comes into contact.

Final assembly

1. Apply a thin coating of Master-Vac grease to the outer edges of diaphragm with which rear and front shells come into contact, before installing diaphragm in position.
2. Before installing push rod assembly in place, apply a coating of Master-Vac grease to the sliding contact surfacce of diaphragm plate.
3. Align marks scribed in the rear shell and front shell. Carefully turn the Master-Vac Wrench ST08080000 clockwise until it reaches notch in shell retainer.

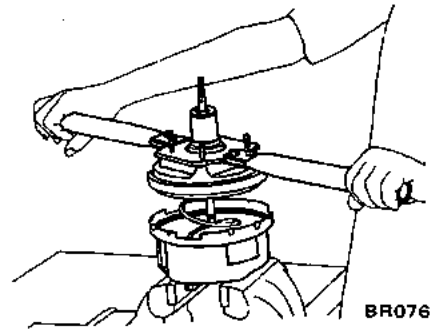


Fig. BR-44 Tightening rear shell

4. After assembly, adjust the length of push rod to less than the specified value indicated below. Length adjustment of push rod is made at the tip of push rod.

Length "B"
10 to 10.5 mm
(0.3937 to 0.4134 in)

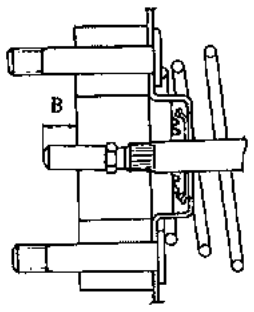


Fig. BR-45 Length at "B"

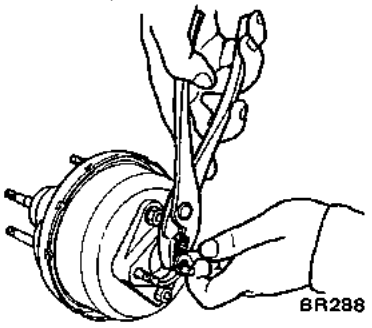


Fig. BR-46 Adjsuting push rod length

Inspection

1. Check poppet assembly for condition. If it shows evidence of wear or damage, replace it and valve operating rod assembly.
2. Check other component-parts for condition. If any part shows evidence of wear or damage, replace it with a new one.

Vacuum pressure

1. Connect a vacuum gauge, in the line, between check valve and Master-Vac, as shown in Figure BR-47.

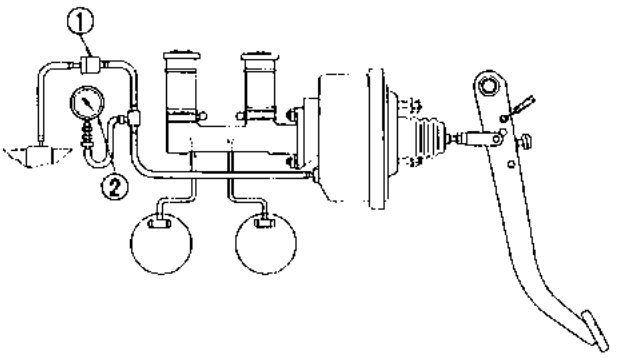


Fig. BR-47 Air-tight test set-up

2. Start engine and increase engine speed. Stop engine when vacuum gauge indicates 500 mmHg (19.7 in Hg).

Air-tight test

1. Fifteen seocnds after engine is stopped, observe the rate of drop in air pressure registered by vacuum gauge. If a pressure drop of 25 mmHg (0.984 in Hg) is exceeded, refer to the following chart to determine the cause of failure.

Probable cause	Corrective action
1. Air leakage at check valve.	Replace check valve.
2. Air leakage at push rod seal.	Replace seal.
3. Air leakage between valve body and seal.	Repair or replace faulty part(s).
4. Air leakage at valve plunger seat.	Repair or replace seat.
5. Damaged piping or joints.	Repair or replace.

2. Fifteen seconds after engine is stopped and brake fully applied, observe the rate of drop in air pressure registered by vacuum gauge. If a pressure drop of 25 mmHg (0.984 in Hg) is exceeded, refer to the following chart to determine the cause of failure.

Probable cause	Corrective action
1. Air leakage at check valve.	Replace check valve.
2. Damaged diaphragm.	Replace.
3. Reaction disc dropped off.	Reinstall and check push rod for proper turn.
4. Air leakage at poppet assembly seat and valve body.	Replace defective part(s).

Note: When replacement of any part is required, be sure to renew Master-Vac as an assembly.

Check valve

1. Remove clip and disconnect hoses at connections. The check valve can now be removed.

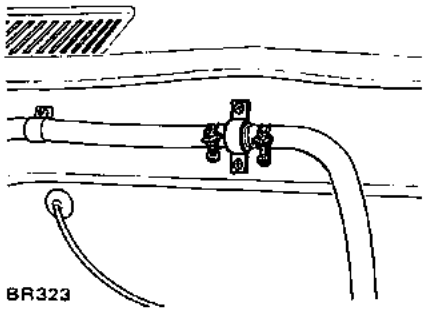


Fig. BR-48 Location of check valve

2. Using a Master-Vac tester, apply a vacuum pressure of 500 mmHg (19.7 in Hg) to the port of check valve on the Master-Vac side. If a pressure drop of 10 mmHg (0.394 in Hg) is exceeded in 15 seconds, replace check valve with a new one.
3. When pressure is applied to the Master-Vac side of check valve and valve does not open, replace check valve with a new one.

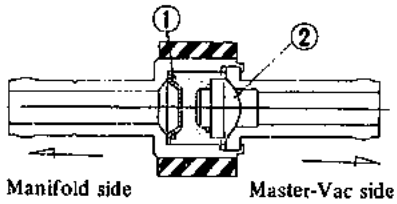


Fig. BR-49 Sectional view of check valve

Operation test

1. Connect an oil pressure gauge, in brake line, at connection on master cylinder.
2. Install a spring scale on brake pedal.
3. Start engine, and increase engine speed until a vacuum pressure of 500 mmHg (19.7 in Hg) is registered on vacuum pressure gauge. With a vacuum pressure of 500 mmHg (19.7 in Hg) held, measure an oil pressure with respect to each pedal operating force.

Relationship between oil pressure and pedal operating force is illustrated in Figure BR-50. If test results are not as specified in Figure BR-50, check Master-Vac for condition in a manner as described under "Inspection," before removal of this unit.

Also check brake line for evidence of fluid leakage.

Note: Determine whether a trouble occurs in Master-Vac or in check valve. Always inspect check valve first.

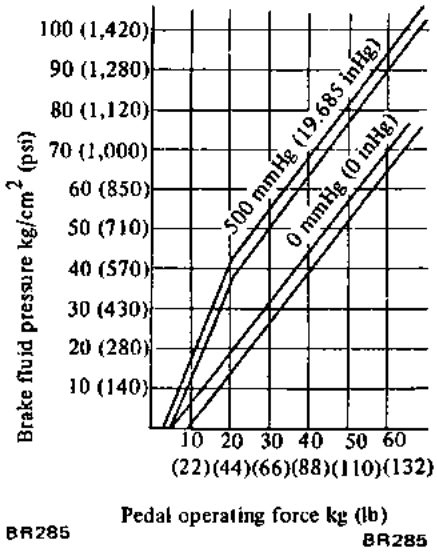


Fig. BR-50 Performance curves of Master-Vac

SERVICE DATA AND SPECIFICATIONS

Brake type:			
Front			Uni-servo
Rear			Duo-servo
Hand brake			Mechanically-operated on rear wheels
Brake pedal:			
Free height	mm (in)		R.H. drive 163 (6.42) L.H. drive 140 (5.51)
Full stroke of pedal head	mm (in)		126 to 132 (4.96 to 5.20)
Brake adjustment notches:			
Front			12
Rear			12
Hand brake normal stroke:	mm (in)		80 to 100 (3.15 to 3.94)
Master cylinder:			
Inner diameter	mm (in)		17.46 ($^{11}/_{16}$) (Single and Tandem) 19.05 (¾) (Tandem)
Allowable maximum clearance between cylinder and piston	mm (in)		0.15 (0.0059) maximum

Wheel cylinder:

Inner diameter	Front	mm (in)	19.05 (¾)
	Rear	mm (in)	19.05 (¾) 17.46 ($^{11}/_{16}$) (PL620TU)
Allowable maximum clearance between cylinder and piston		mm (in)	0.15 (0.0059) maximum

Brake drum:

Inner diameter	Front and Rear	mm (in)	254.0 (10)
Inside out-of-round		mm (in)	0.02 (0.0008) maximum
Repair limit of drum in diameter	Front and Rear	mm (in)	255.5 (10.059)

Lining:

Dimension Width x Thickness x Length	Front and Rear	mm (in)	45 x 4.5 x 244 (1.772 x 0.177 x 9.61)
Allowable maximum wear limit		mm (in)	1 (0.0394)
Adjuster sliding resistance		kg (lb)	5 to 12 (11.0 to 26.5)

Tightening torque

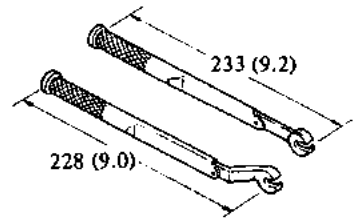
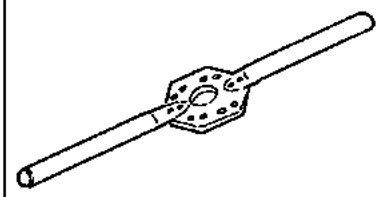
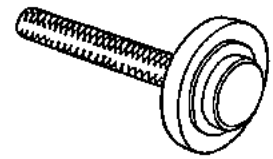
	Unit: kg-m (ft-lb)
Brake master cylinder attaching nut	0.8 to 1.2 (5.8 to 8.7)
Brake tube connection	1.5 to 1.8 (11 to 13)
Brake hose connection	1.7 to 2.0 (12 to 14)
Air bleeder valve	0.7 to 0.9 (5.1 to 6.5)
Connector and clip fixing bolt	0.35 to 0.45 (2.5 to 3.3)
3-way connector fixing bolt (on rear axle case)	0.8 to 1.1 (5.8 to 8.0)
Fulcrum pin of brake pedal	1.9 to 2.4 (14 to 17)
Pedal stopper lock nut	1.2 to 1.5 (8.7 to 11)
Push rod adjusting nut	1.9 to 2.4 (14 to 17)
Wheel cylinder mounting bolt	
Front	5.4 to 6.6 (39 to 48)
Rear	1.5 to 1.8 (11 to 13)
Wheel cylinder connector bolt	1.9 to 2.5 (14 to 18)
Brake disc attaching bolt	4.2 to 5.0 (30 to 36)

TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Spongy pedal.	Air in brake lines.	Bleed thoroughly.
	Swollen hose due to deterioration or use of poor quality hose.	Replace hose and bleed system.
	Use of a brake fluid of which boiling point is too low.	Change with specified brake fluid and bleed system.
	Reservoir filler cap vent hole clogged. (This promotes a vacuum in master cylinder that sucks in air through rear seal.)	Clean and bleed system.
Pedal yields under slight pressure.	Deteriorated check valve.	Replace check valve and bleed system.
	External leaks.	Check master cylinder, piping and wheel cylinder for leaks and repair.
	Leakage on master cylinder.	Overhaul master cylinder.
Excessive pedal travel.	Air in system.	Bleed system.
	Shoes out of adjustment.	Adjust shoe-to-drum clearance.
	Insufficient fluid in master cylinder.	Fill up with specified brake fluid and bleed system.
	Thermal expansion of drums because of excessive overheating.	Allow drums to cool off. Check brake shoe linings and drums. Replace damaged parts.
All brakes drag.	Insufficient shoe-to-drum clearance.	Adjust clearance.
	Weak shoe return springs.	Replace.
	No free travel of brake pedal.	Adjust pedal height.
	Seized master cylinder piston.	Disassemble master cylinder and replace piston. Bleed system.
One brake drags.	Loose or damaged wheel bearings.	Adjust or replace as required.
	Weak, broken or unhooked brake shoe return springs.	Replace.
	Insufficient clearance between brake shoe and drum.	Adjust brakes.
Unbalanced brakes.	Grease or oil on linings.	Clean brake mechanism; check cause of trouble. Replace linings.
	Seized piston in wheel cylinder.	Service wheel cylinder and bleed system.
	Improper tire inflation.	Inflate to correct pressure.
	Loose wheel bearings.	Adjust.
	Faulty front suspension.	Check and adjust all front suspension parts.

Condition	Probable cause	Corrective action
Excessive pedal pressure required, poor brakes.	Grease, mud or water on brake shoe linings.	Remove drums and clean and dry linings or replce.
	Full area or linings not contacting drums.	Replace shoes.
	Scored brake drums.	Reface drums and install new linings.
Brake chatter, squeak or squeal.	Dust on drums or linings.	Remove and clean drums.
	Weak shoe return springs.	Check and, if necessary, replace springs.
	Drum out-of-round.	Turn drums on lathe.
	Worn linings.	Replace.

SPECIAL SERVICE TOOLS

No.	Tool number & tool name	Description (Unit: mm (in))		For use on	Reference page or figure No.
1.	GG94310000 Brake pipe torque wrench	 SE227	This tool is used to tighten and untighten brake tube flared nut. A built-in torque limiting wrench is provided to assure torque accuracy.	All models	Page BR-8
2.	ST08080000 Master-Vac, wrench	 SE073	This tool is used to remove rear shell after aligning rear shell stud bolt with the opening in this tool.	620 610 510 S30 C30 230 C10 GC10	Fig. BR-32
3.	ST08060000 Master-Vac oil seal retainer drift	 SE115	This tool is used when rear shell seal is driven into position. Note: **Make sure that this tool is pushed in until rear guide of this tool touches rear shell.**	620 610 510 S30 C30 230 C10 GC10	Fig. BR-40

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS AND BODY

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION WT

WHEEL AND TIRE

WT

WHEEL AND TIRE

CONTENTS

DESCRIPTION

Wheels and tires

The wheels and tires used on the model 620 series are the same as those used on the model 521 series.

The wheel size is 4J-14 with a 30 mm (1.181 in) offset.

There are three kinds of the tire in size and ply rating: 6.00-14-6PRLT, 6.00-14-8PRLT and 5.50-14-6PRLT.

As for the detailed combination of tires and vehicle models, refer to the "Tire usage" chart.

SPECIFICATIONS

Tires

Tire usage chart

Model		Tire size	Remarks
(G)(N)620 series	Front	6.00-14-6PRLT	For Common country
	Rear	6.00-14-8PRLT	
U(N)620 series	Front	5.50-14-6PRLT	
	Rear	5.50-14-6PRLT	
PL620 series	Front	6.00-14-6PRLT	For U.S.A. and Canada
	Rear	6.00-14-6PRLT	

Recommended tire inflation pressure

Unit: kg/cm² (psi)

Model		Car speed km/h (MPH)	Under 100 km/h (60 MPH)	Over 100 km/h (60 MPH)
(G)(N)620 series	Unloaded	Front	1.50 (21)	1.80 (26)
		Rear	2.75 (39)	3.25 (46)
	Loaded	Front	1.50 (21)	1.80 (26)
		Rear	4.25 (60)	4.75 (67)
U(N)620 series	Unloaded	Front	1.50 (21)	1.80 (26)
		Rear	1.75 (25)	2.25 (32)
	Loaded	Front	1.50 (21)	1.80 (26)
		Rear	3.25 (46)	3.75 (53)
PL620 series	Unloaded	Front	1.50 (21)	1.80 (26)
		Rear	1.75 (25)	2.25 (32)
	Loaded	Front	1.50 (21)	1.80 (26)
		Rear	3.00 (42)	3.50 (49)

Note: The tire inflation pressures should be measured when the tire is cold.

MAINTENANCE AND SERVICE

Tire inflation

Correct tire pressure is very important to ease of steering and riding comfort. This also reduces driving sound to a minimum, resulting in longer tire life; that is, overinflation or underinflation promotes wear at center tread or shoulder of tire.

If all tires are inspected frequently and maintained correct tire pressure, it is possible to detect sharp material in the tread. Also, the above check avoids abnormal wear which invites serious trouble. If tires indicate abnormal or uneven wear, the cause of trouble should be detected and eliminated.

After inflating tires, leakage in valve should be checked. Without valve caps, leakage will occur due to dirt and water, resulting in underinflation. Accordingly, whenever tire pressure is checked, be sure to secure valve caps and tighten firmly by hand.

Wheel repair

Inspect the wheel rim flange for bend or dents.

The flange should be cleaned by a wire brush when rust is found on the flange. Furthermore, if excessive pitting occurs on the rim, eliminate it with a file.

Wear

Misalignment

When the front wheels align in excessive toe-in or toe-out condition, tires scrape the tread rubber off. The wear of tread appears feathered edge.

Center

This wear is caused by overinflation of the tire. The inflation pressure must be kept within the specified limit.

Shoulder

The wear may be caused by underinflation, incorrect wheel camber, or continuous high speed driving on curves. In general, the former two are common. Because underinflation wear appears on both sides of tread, and on the other hand, camber wear causes only one tread side. For cornering tread wear, the driver must operate car slowing down on curves.

Uneven

Uneven wear is caused by incorrect camber or caster, malfunctioning suspension, unbalanced wheel, out-of-round brake drum, or other mechanical conditions. To repair this abnormal wear, correct the above defective parts.

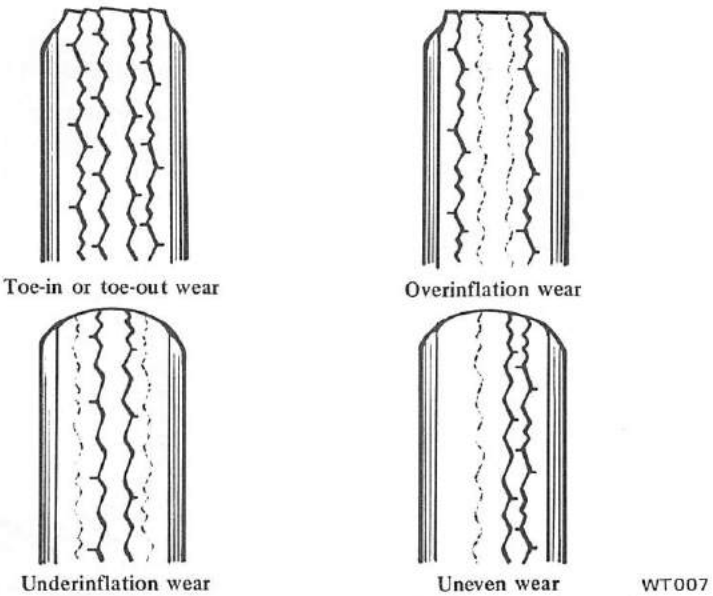


Fig. WT-1 Abnormal tire wear

Tire rotation

Tires wear unevenly and become unbalanced according to running distance. Uneven tire wear often results in tire noise which is attributed to rear axle gears, bearing, etc. Meanwhile, the front tires tend to wear unevenly because of front wheel alignment.

Accordingly, to equalize tire wear, it is necessary to rotate tires.

PL620:
Every 10,000 km (6,000 miles) of operation

(G)(N)620 series:
Every 9,000 km (5,500 miles) of operation

U(N)620 series:
Every 9,000 km (5,500 miles) of operation

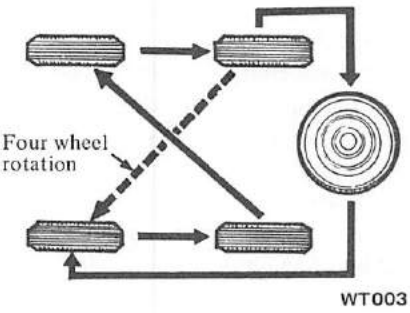


Fig. WT-2 Tire rotation for PL620 and U(N)620 series

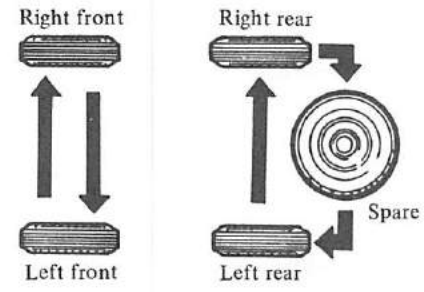


Fig. WT-3 Tire rotation for (G)(N)620 series

The tires should be replaced if the tread depth is less than 1.6 mm (1/16 in).

To change tire with wheel using a jack in the safe manner, observe the following procedures:

1. To remove spare tire,
   insert jack rod to guide and then turn it counterclockwise. When installing, tighten a little strong after lifting up and lock.

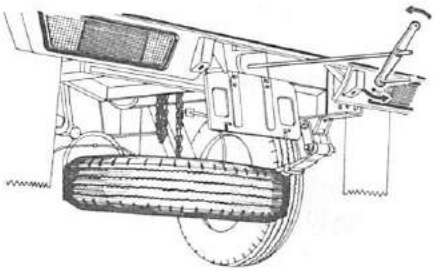


Fig. WT-4 Removing spare tire

2. To remove wheel cap and loosen wheel nuts,
   it is necessary to remove wheel cap and temporarily to loosen wheel nuts before vehicle is jacked up.
3. To jack up
   in changing front wheel, place jack under lower link after applying parking brake and blocking rear wheels.

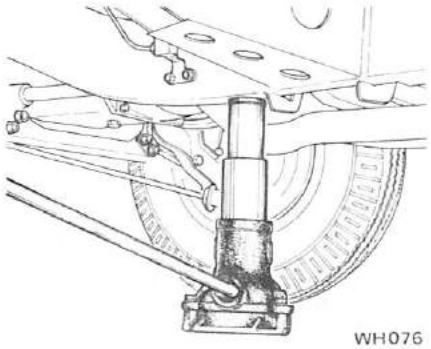


Fig. WT-5 Jacking up front side (Model Pick-up series)

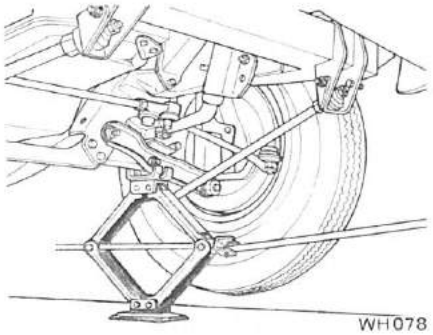


Fig. WT-6 Jacking up front side (Model Double Pick-up series)

Next to jack up
in changing rear wheel, place jack under rear spring seat after applying parking brake and blocking front wheels.

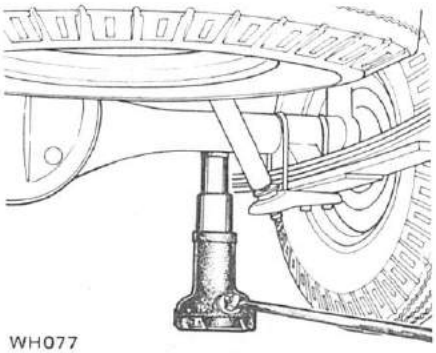


Fig. WT-7 Jacking up rear side (Model Pick-up series)

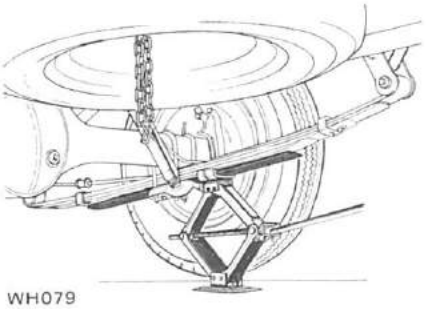


Fig. WT-8 Jacking up rear side (Model Double Pick-up series)

4. Removing wheel
   Remove wheel nuts and wheel from drum.
5. Installing wheel
   To install wheel, reverse the above steps.
   Tighten wheel nuts in criss-cross fashion to 8.0 to 9.0 kg-m (58 to 65 ft-lb).

Note: Never get under the car while it is supported only by the jack. Always use safety stands to support the side member of body construction when you must get beneath the car.

INSPECTION

Wheel balance

The wheel and tire assembly should be kept balanced statically and dynamically.

Proper tire balance is necessary when driving the car at high speeds. Consequently, the wheel and tire assembly should be properly rebalanced whenever puncture is repaired.

The wheel and tire assembly becomes out of balance according to uneven tire wear. Severe acceleration and braking, or fast cornering is the cause of wear on tire, resulting in unbalance of tire and wheel assembly.

The symptom of unbalance appears as tramp, car shake and steering trouble.

To correct unbalance, use proper wheel balancer.

Maximum allowable unbalance:
177 gr-cm (2.5 in-oz)
10 gr. (0.35 oz) at rim circumferences

Balance weight:
10 to 60 gr. (0.35 to 2.12 oz)
at 10 gr. (0.35 oz) interval

Note: Be sure to place the correct balance weights on the inner edge of rim as shown in Figure WT-9.

Wheel and tire

In order to ensure satisfactory steering condition as well as maximum tire life, proceed as follows:

1. Check wheel rim for rust, distortion, cracks or other defects.

Thoroughly remove rust, dust, oxidized rubber or sand from wheel rim with wire brush, emery cloth or paper. Use dial gauge to examine wheel rim for lateral run-out.

Lateral run-out limit:
Less than 4.0 mm (0.158 in) total indicator reading

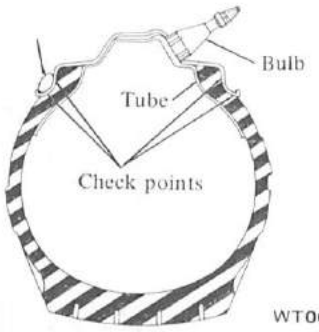


Fig. WT-9 Wheel rim run-out check points

Note: In replacing tire, take extra care not to damage tire bead, rim-flange and bead seat.
Do not use tire irons to force beads away from wheel rim-flange; that is, always use tire replacement device whenever tire is removed.

2. Discard when any of the following trouble occurs:
   (1) Broken or damaged bead wire.
   (2) Ply or tread separation.
   (3) Cracked or damaged side wall, etc.

TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Wheel wobbles.	Improper tire pressure.	Measure and adjust.
	Damaged tire or distorted wheel rim.	Repair or replace.
	Unbalanced wheel.	Balance.
	Loose wheel nuts.	Tighten.
	Worn or damaged wheel bearing, or excessive play of wheel bearing.	Correct play or replace wheel bearing.
	Improper front wheel alignment.	Align.
	Worn or damaged ball joint.	Replace.
	Excessive steering linkage play or worn steering linkage.	Adjust or replace.
	Loose steering linkage connection.	Tighten nuts to rated torque, or replace worn parts if any.
	Broken suspension spring.	Replace.
	Defective shock absorber.	Replace.
Unevenly or excessively worn tire.	Improper tire rotation.	Conduct tire rotation periodically.
	Improper tire pressure.	Measure and adjust.
	Unbalanced wheel.	Balance or replace.
	Improperly adjusted brake.	Adjust.
	Improper wheel alignment.	Align.
	Excessively distorted or improperly installed suspension link.	Repair, replace or, if necessary, reinstall.
	High speed on curves.	Reduce speed.
	Sudden start and improper speed due to rapid acceleration or improper brake application.	Follow correct and proper driving manner.
Tire squeals.	Improper tire pressure.	Measure and adjust.
	Improper front wheel alignment.	Align.
	Distorted knuckle or suspension link.	Repair or replace.

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS AND BODY

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION ST

STEERING SYSTEM

ST

STEERING

CONTENTS

DESCRIPTION

The steering gear used on this model series vehicles is the same recirculating type as that used on model 521 series. This steering gear is designed especially for easy operation and high durability.

The steering linkage is of a relay design, of which gear arm is connected to one end of the adjustable cross rod. The other end of the cross rod is linked to the idler arm connecting with the side member located on the opposite side of the steering gear. The two side rods serve to connect the steering gear arm and idler arm to the both knuckle arms (right and left hand side).

With this construction, even if the left and/or right wheel moves vertically and independently, steering can be safely maintained.

Steering wheel rotation is converted to gear arm motion in proportion to the gear ratio by the steering gear. The gear arm motion operates the side rod on the same side. At the same time, the idler arm is moved through the cross rod, and the opposite side rod is also moved.

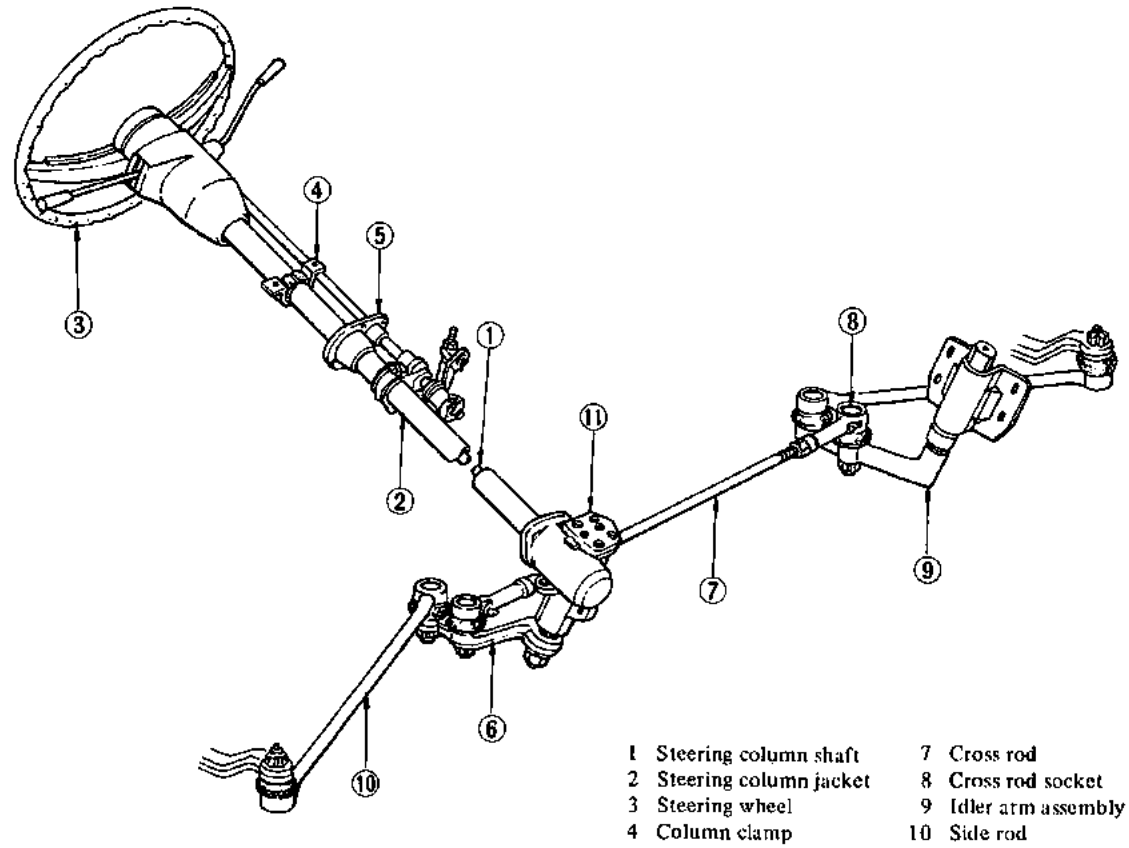
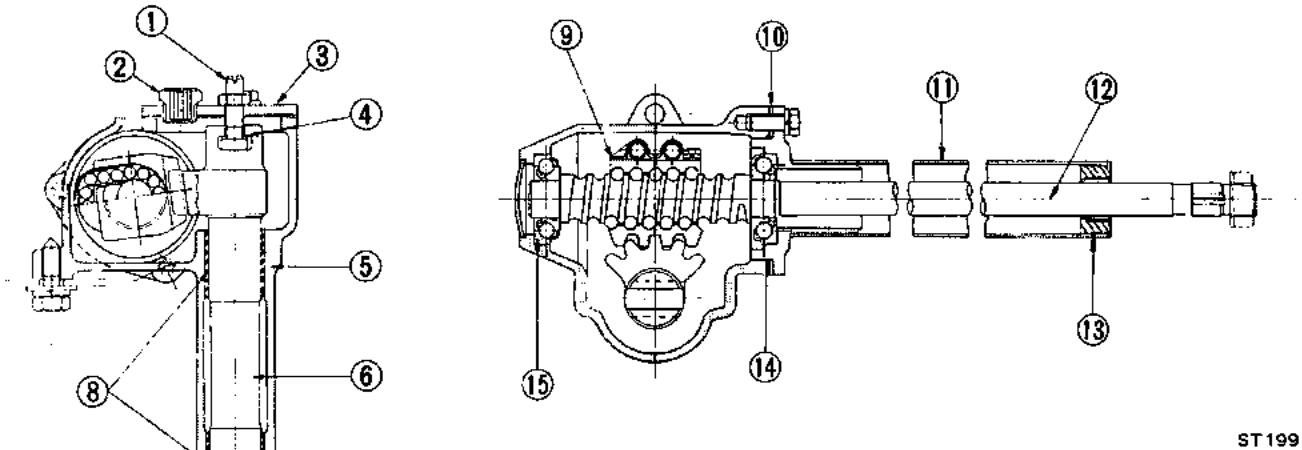


Fig. ST-1 Structural view of steering system

STEERING GEAR



1 Sector shaft adjusting screw
2 Filler plug
3 Sector shaft cover
4 Sector shaft adjusting screw shim
5 Gear housing
6 Sector shaft
7 Oil seal
8 Gear housing bushing
9 Worm assembly (ball nut assembly)
10 Worm bearing adjusting shim
11 Column jacket
12 Steering column shaft
13 Column jacket bushing
14 O-ring
15 Worm bearing

Fig. ST-2 Sectional view of steering gear

Removal and installation

Removal

1. Disconnect battery ground cable from the terminal.
2. Remove horn pad by unscrewing two bolts from the rear side of steering wheel bar.

Note: Be sure to punch mark with "o" on the top of steering column shaft.

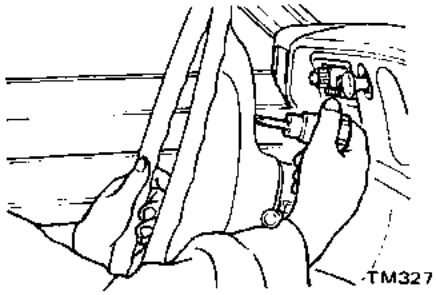


Fig. ST-3 Removing horn pad

3. Remove steering wheel with Steering Wheel Puller ST27180000 after backing off steering wheel fixing nut.

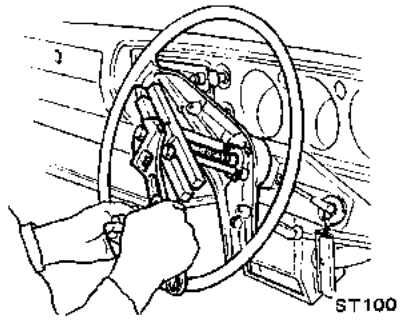


Fig. ST-4 Removing steering wheel

Note: Be sure not to hammer the special tool while removing.

4. Remove upper and lower steering column shell covers.
5. Remove turn signal switch assembly.
6. Draw out hand lever by removing snap ring and pivot pin if equipped.
7. Remove column clamp unscrewing two fixing bolts.

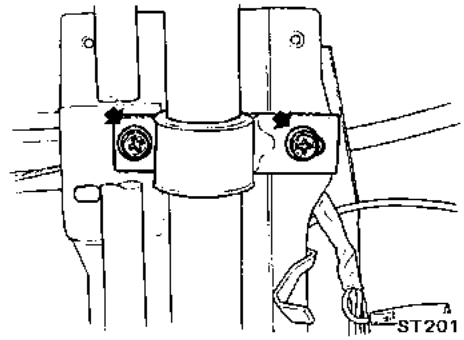


Fig. ST-5 Removing column clamp

8. Remove four bolts securing steering post grommet to dash panel.
9. Disconnect shift lever from upper shift rod and select lever from select rod at trunnions if equipped.
10. Remove nut securing gear arm to sector shaft and then withdraw gear arm with the use of Steering Gear Arm Puller ST27140000.

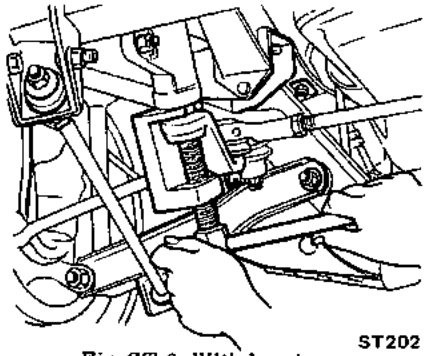

ST202

Fig. ST-6 Withdrawing gear arm

Note: Before removing steering gear arm, scribe match marks on arm and housing so that they can easily be replaced in their original positions at assembly.

11. Remove two bolts securing steering gear housing to frame.
12. Withdraw steering gear assembly toward engine compartment.
13. Detach transmission control parts from steering column jacket if equipped.

Installation

Install steering gear assembly in the reverse order of removal observing the following instructions.

1. Tightening torque
   Steering gear housing:
   4.6 to 5.3 kg-m (33 to 38 ft-lb)
   Gear arm: 14 kg-m (101 ft-lb)
   Steering wheel:
   7 to 7.5 kg-m (51 to 54 ft-lb)
2. With front wheels set in a straight ahead position, make sure that punch mark on the upper end surface of steering column shaft is at the center of the upper side in its installing portion.
3. When installing steering wheel, apply grease to sliding parts.
4. After installing, make sure that steering wheel turns smoothly.

Disassembly and assembly

Disassembly

1. Drain oil in steering gear housing by unscrewing filler plug.
2. Place steering gear assembly in a vise securely.
3. Loosen lock nut and turn sector shaft adjusting screw a few turns counterclockwise.

   Remove sector shaft cover by unscrewing four fixing bolts.

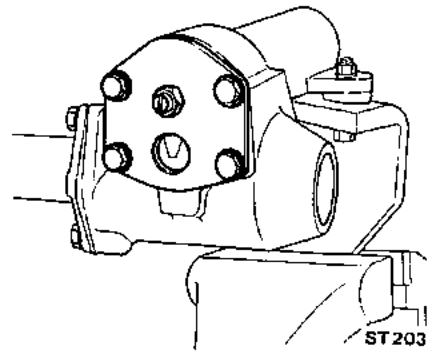

ST203

Fig. ST-7 Removing sector shaft cover

4. Turn sector shaft adjusting screw a few turns clockwise and pull sector shaft cover together with sector shaft from gear housing.

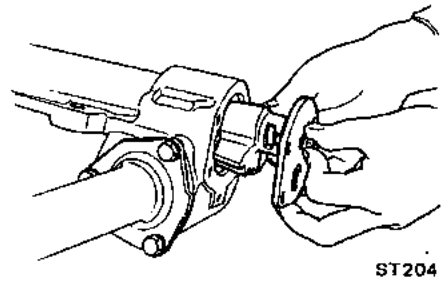

ST204

Fig. ST-8 Pulling out sector shaft

5. Separate sector shaft, adjusting screw and shim from cover.
6. Remove jacket tube by unscrewing three fixing bolts.
7. Remove steering worm assembly from gear housing.
8. Detach worm bearings and worm bearing adjusting shims from worm gear assembly and column jacket.

Note: Be careful not to allow ball nut to run down to the worm end. If ball nut rotates suddenly to the worm end, the ends of ball guides may be damaged.

9. Pry out sector shaft oil seal from gear housing and discard it.
10. Remove O-ring from the rear cover of column jacket and discard it.
11. Remove column jacket bushing.

Notes:

a. **Do not remove sector shaft bushing from housing. If necessary, replace as a gear housing assembly.**
b. **Do not disassemble ball nut and worm gear. If necessary, replace them with new ones as a worm gear assembly.**

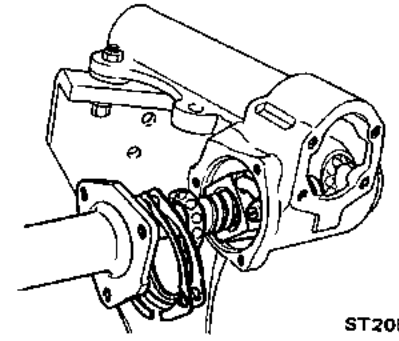

ST205

Fig. ST-9 Removing steering worm assembly

Assembly and adjustment

Apply recommended gear oil to all disassembled parts.

1. Fit column jacket bushing to column jacket in place.

Note: When fitting, apply adhesive to bushing exterior and grease to interior.

2. Fill the space between new sector shaft oil seal lips with grease, and fit it to gear housing.
3. Place steering worm assembly in position in gear housing together with worm bearings.
4. Install column jacket on gear housing with O-ring and worm bearing shims.

   Be sure to install thicker shims to the gear housing side.

   Standard shim thickness:
   1.5 mm (0.0591 in)
   Tightening torque:
   1.6 to 1.8 kg-m (12 to 13 ft-lb)

Available worm bearing adjusting shim

No.	Thickness mm (in)
1	0.762 (0.0300)
2	0.254 (0.0100)
3	0.127 (0.0050)
4	0.050 (0.0020)

5. Adjust the worm bearing preload by selecting suitable bearing shims so that the initial turning torque of steering column is the specified value.

Initial turning torque of steering column shaft.

New worm bearing:
4.0 to 6.0 kg-m (29 to 43 ft-lb)

Used worm bearing:
2.4 to 4.4 kg-m (17 to 32 ft-lb)

At the circumferences of steering wheel:

New: 0.2 to 0.3 kg
(0.4 to 0.7 lb)
Used: 0.12 to 0.22 kg
(0.3 to 0.5 lb)

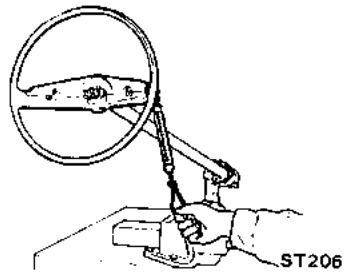


Fig. ST-10 Measuring initial turning torque

6. Insert adjusting screw into the T-shaped groove at the sector shaft head, and adjust the end play between sector shaft and adjusting screw until it is within 0.01 to 0.03 mm (0.0004 to 0.0012 in) by choosing suitable adjusting shims.

Available sector shaft adjusting screw shim

No.	Thickness mm (in)
1	1.575 (0.0620)
2	1.550 (0.0610)
3	1.525 (0.0600)
4	1.500 (0.0591)
5	1.475 (0.0580)
6	1.450 (0.0571)

7. Rotate ball nut by hand until it is in the center of its travel, then install sector shaft together with adjusting screw in gear housing, ensuring that the center gear of sector shaft engages with that of ball nut.
8. Install sector shaft cover to gear housing. Be sure to apply sealant to each face of sector shaft cover packing when installing cover.
9. By turning adjusting screw counterclockwise, attach sector shaft cover to gear houisng and then temporarily secure it with its fixing bolts.
10. Pull sector shaft toward cover approximately 2 to 3 mm (0.08 to 0.12 in) by turning adjusting screw counterclockwise and tighten sector shaft cover fixing bolts to 1.6 to 1.8 kg-m (12 to 13 ft-lb).
11. Push sector shaft against ball nut gear by gradually turning adjusting screw clockwise until sector shaft gear lightly meshes with ball nut gear and then temporarily secure adjusting screw with lock nut.
12. Install gear arm to sector shaft and move sector shaft several times from the side of gear arm and make sure that it turns smoothly.
13. Adjust the backlash at the neutral position of gear arm by turning in or out adjusting screw so that the movement of the gear arm top end is less than 0.1 mm (0.004 in).

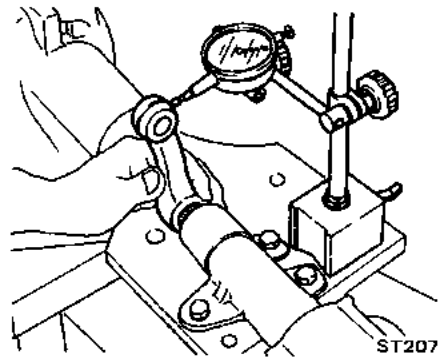


Fig. ST-11 Measuring backlash

14. Turn adjusting screw approximately 1/8 to 1/6 turn clockwise and then retighten lock nut to 3.2 to 3.7 kg-m (23 to 27 ft-lb).
15. Fill recommended gear oil approximately 0.33 liter (3/8 U.S.qt., ¼ Imper. qt.) into gear assembly through the filler hole and install filler plug.

Inspection and repair

Wash clean all the disassembled parts in solvent and check for conditions.

Sector shaft

1. Check gear tooth surface for pitting, burrs, cracks or any other damage, and replace if defective.
2. Check sector shaft for distortion of its serration, and if necessary replace. In this case, be sure to check gear housing for deformation.

Steering column shaft assembly

1. Inspect the ball nut gear tooth surface, and replace if pitting, burrs, wear or any other damage is found.
2. Ball nut must rotate smoothly on worm gear. If found too tight, assembly should be replaced. Check as follows:

Move ball nut to either end of worm gear, and gradually stand steering column shaft assembly until ball nut moves downward on worm gear under its own weight. In the above test, if ball nut does not move freely over entire stroke, assembly may be damaged. Replace with a new one as an assembly.

Note: In this inspection, be careful not to damage ball nut guide tube.

Bearings and bushings

1. Replace worm bearings if pitting, wear or any other damage is found on them.
2. Replace column bushing and gear housing bushings which are excessive worn or deformed.

Oil seal, gasket and O-ring

Do not reuse above parts which are removed once.

Be sure to use new parts at each reassembly.

STEERING LINKAGE

Removal and installation

Removal

1. Jack up the front of vehicle and support it on the safety stands.
2. Remove cotter pins and nuts fastening side rod ball stud to knuckle arms.
3. To detach side rod ball studs from knuckle arms, insert steering Ball Joint Puller ST27850000 between them and separate them by striking the top of this tool with a hammer. If this operation must be done without this tool, strike the knuckle arm boss with a hammer backing up the opposite side of it with a large hammer and ball stud is freed from knuckle arm. Must not strike the ball stud head, the ball socket of side rod and side rod with a hammer and so on in this operation.

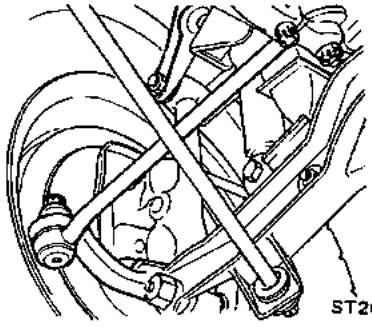


Fig. ST-12 Ball joints (gear arm side)

4. Remove nut securing gear arm on sector shaft, and remove gear arm with the use of Gear Arm Puller ST27140000. See Figure ST-6.
5. Remove idler arm assembly from frame by backing off fixing bolt and nut.

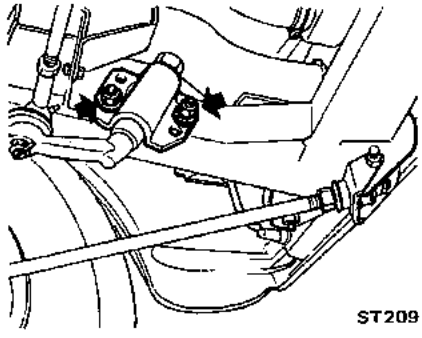


Fig. ST-13 Removing idler arm

6. Cross rod, both side rods and the adjacent parts can then be freed from the vehicle as an assembly.
7. Then separate the ball joints of steering linkage assembly following the procedure for removal of the side rods ball joints at knuckle arm sides.

Assembly

Install steering linkage in the reverse sequence of removal observing the following notes:

1. Tightening torque:

Ball stud: 5.5 to 7.6 kg-m (40 to 55 ft-lb)
Idler arm assembly: 3.2 to 3.7 kg-m (23 to 27 ft-lb)
Cross rod adjust bar lock nut: 8 to 10 kg-m (58 to 72 ft-lb)

2. When cross rod sockets and cross rod are separated, adjust cross rod length correctly.

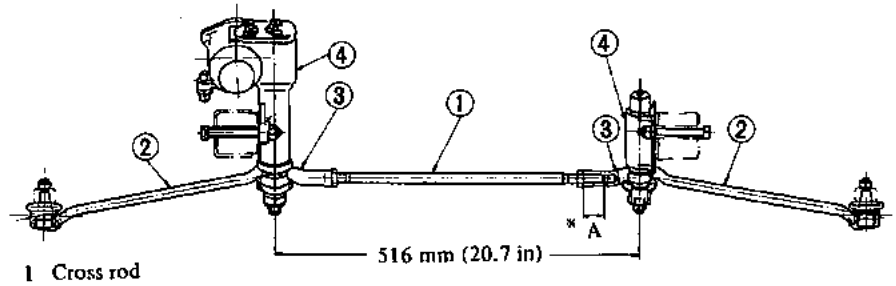
Adjustment should be done between the centers of ball joints at the both end of cross rod assembly.

Standard cross rod length: 516 mm (20.31 in)

3. Adjust toe-in and steering angle.

The procedures of toe-in and steering angle adjustments are described in SECTION "FRONT AXLE AND SUSPENSION."

Toe-in: 2 to 3 mm (0.079 to 0.118 in)
Steering angle:
Inner wheel: 35°30' to 36°30'
Outer wheel: 30°30' to 31°30'



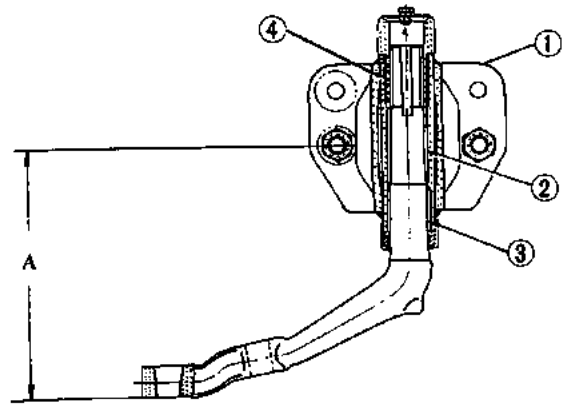
1 Cross rod
2 Side rod
3 Cross rod socket
4 Idler arm assembly
5 Gear housing assembly

* After adjustment of toe-in, be sure that dimension "A" at the both ends of cross rod is not less than 20 mm (0.787 in)

ST210

Fig. ST-14 Adjusting cross rod assembly

Idler arm assembly



1 Idler body
2 Collar (welded to idler body)
3 Plain bushing
4 Screw bushing

Fig. ST-15 Sectional view of idler arm assembly

1. Apply recommended grease to screw bushing interior, plain bushing interior, dust seal inside and bushing sliding surface of idler arm.

Screw bushing tightening torque:
12 kg-m (87 ft-lb)

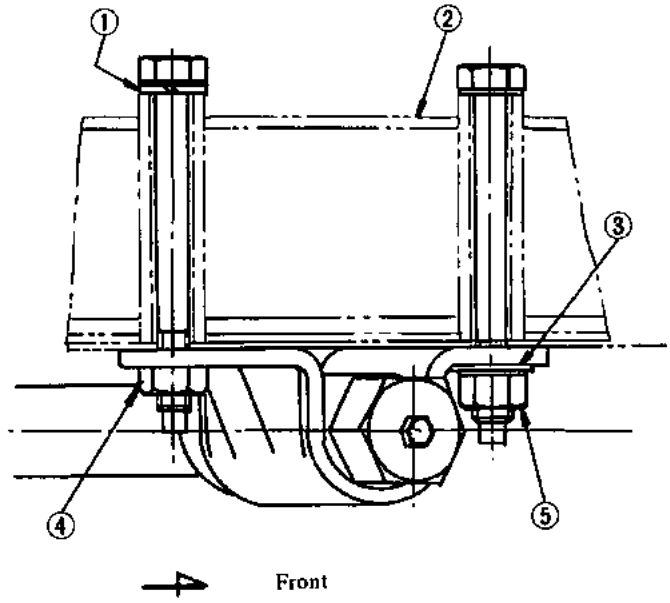
2. Before installing idler arm assembly, replace filler plug with grease nipple, and apply recommended grease to idler arm through this grease nipple until grease is forced out at the lower end of the dust seal lip. Remove grease nipple and reinstall filler plug.

3. In installing idler arm assembly, make sure that the standard dimension "A" is adjusted correctly.

Standard dimension "A":
137.8 to 139.8 mm
(5.43 to 5.50 in)

See Figure ST-15.

Furthermore, take care to install washers correctly as shown Figure ST-16.



1 Spring washer
2 Frame
3 Plain washer
4 Weld nut
5 Self locking nut

Fig. ST-16 Locations of washers

Inspection and repair

Ball joint

1. When ball stud is worn or axial play is too excessive, replace cross rod socket or side rod with a new one.
2. When dust cover is broken or deformed, be sure to replace with a new one.

Axial end play: 0.1 to 0.5 mm
(0.004 to 0.020 in)

Initial swing torque:
5 to 15 kg-m (70 to 209 in-oz)

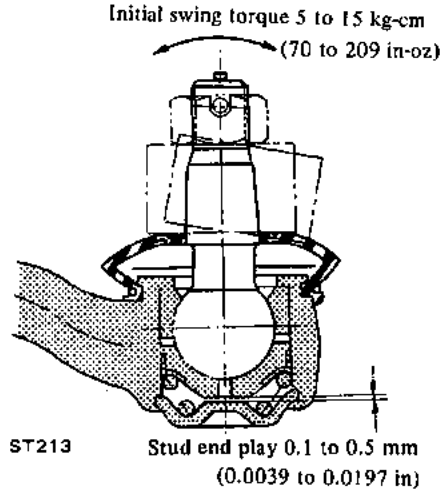


Fig. ST-17 Sectional view of ball joint

Note: At every 9,000 km (5,500 miles) running, check grease and renew if necessary. To renew grease, remove grease nipple cap and apply recommended grease to ball joint through grease nipple until grease is forced out at the grease vent hole.

Idler arm assembly

Remove old grease and dirt, and check idler arm assembly for wear, deformation and damage.

Cross rod, side rod and gear arm

Check them for bending, damage and crack, and replace as necessary.

Inspecting steering system on the vehicle which comes into collision

Steering system is very important for driving a car. When the car comes into collision, especially the front of the car is damaged, special inspection should be done for the following matters.

If any component parts of steering system is found to be defective, replace them with new ones.

1. Steering angles correctness

Inspect side rods and cross rod for bend, and sector shaft for distortion.

2. Level of steering wheel bar (with the front wheels in a straight ahead position)

If its deflection is more than about 90 degree, the bend or distortion of sector shaft and column shaft can be seen.

3. Noise during operation of steering wheel.

Inspect column shaft and jacket tube for bend.

4. Smooth operation of steering wheel

Inspect sector gear for breakage, ball nut screw for dint and column shaft for bend.

5. Gear arm breakage
6. Gear housing breakage

In addition, inspect gear housing fixing bolts for looseness.

7. Distortion of sector shaft serration
8. Sector gear breakage

9. Column shaft breakage (on the welded section)
In addition, inspect column shaft for scratch.

10. Deformation of body construction and frame
Inspect the installation portion of steering system on the body construction and frame for deformation or any other defective conditions.

SERVICE DATA AND SPECIFICATIONS

SPECIFICATIONS

Gear type	Recirculating ball type
Gear ratio	19.8 : 1

SERVICE DATA

Standard thickness of worm bearing adjusting shims	mm (in)	1.5 (0.059)
Initial turning torque of steering column:		
New worm bearing	kg-cm (in-lb)	4.0 to 6.0 (3.5 to 5.2)
Used worm bearing	kg-cm (in-lb)	2.4 to 4.4 (2.1 to 3.8)
End clearance of sector shaft adjusting screw	mm (in)	0.01 to 0.03 (0.0004 to 0.0012)
Backlash at the gear arm top end	mm (in)	0 to 0.1 (0 to 0.004)
Oil capacity	ℓ (U.S.qt., Imper.qt.)	0.33 (⅜, ¼)
Ball joint axial end play	mm (in)	0.1 to 0.5 (0.004 to 0.020)
Standard cross rod length	mm (in)	516 (20.31)
Toe-in	mm (in)	2 to 3 (0.079 to 0.118)
Steering angle:		
Inner wheel		35°30′ to 36°30′
Outer wheel		30°30′ to 31°30′

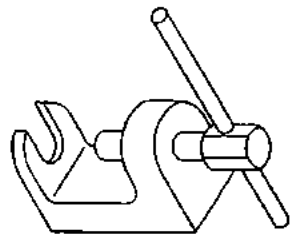
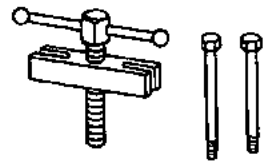
Tightening torque

	Unit: kg-m	(ft-lb)
Steering column jacket to gear housing	1.6 to 1.8	(12 to 13)
Sector shaft cover	1.6 to 1.8	(12 to 13)
Sector shaft lock nut	3.2 to 3.7	(23 to 27)
Gear housing	4.6 to 5.3	(33 to 38)
Gear arm	14	(101)
Steering wheel	7 to 7.5	(51 to 54)
Ball studs of cross rod	5.5 to 7.6	(40 to 55)
Ball studs of side rod:		
Knuckle arm side	5.5 to 7.6	(40 to 55)
Gear or idler arm side	5.5 to 7.6	(40 to 55)

TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Steering wheel moves heavily.	Wheel alignment out of specifications or air pressure in tires too low.	Align or inflate tires to correct pressure.
	Steering linkage out of adjustment.	Adjust and see relative topic under Front Suspension.
	Steering column out of alignment.	Repair.
Steering wheel turns but sluggishly.	Wheels out of alignment or air pressure in tires too low.	Repair or inflate tires to correct air pressure.
	Defrctive steering linkage.	Replace and see relative topic under Front Suspension.
Car pulls to one side.	Wheels out of proper alignment.	Align.
	Wheel bearing out of adjustment.	Adjust.
	Defective steering linkage.	Replace and see relative topic under Front Suspension.

SPECIAL SERVICE TOOLS

No.	Tool number & tool name	Description (Unit: mm (in))		For use on	Reference page or figure No.
1.	ST27140000 Steering gear arm puller	 SE117	This tool is used to remove steering gear arm from steering sector shaft. Caution: Do not hammer on steering gear arm.	620 521 610 510 B110 B120 GC10 C10	Page ST-3 Fig. ST-6 Page ST-6
2.	ST27180000 Steering wheel puller	 SE116	This tool is used to drive out steering wheel. Caution: Do not hammer on steering wheel.	620 610 510 B110 230 780	Fig. ST-4
3.	ST27850000 Steering ball joint puller	 SE089	This tool is used to facilitate the disengagement of ball-joint section. Caution: Do not hammer on ball stud.	620 610 510 B110 B120 E10 S30 C30 230 130 GC10 C10	

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS AND BODY

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION FE

ENGINE CONTROL, FUEL & EXHAUST PIPING

FE

ENGINE CONTROL SYSTEM

CONTENTS

DESCRIPTION

The accelerator control system is of flexible cable type so that the linkage operates smoothly and the system is not affected by engine vibration.

On the vehicles distined for U.S.A. and Canada, the accelerator switch is used in the Exhaust Emission Control System.

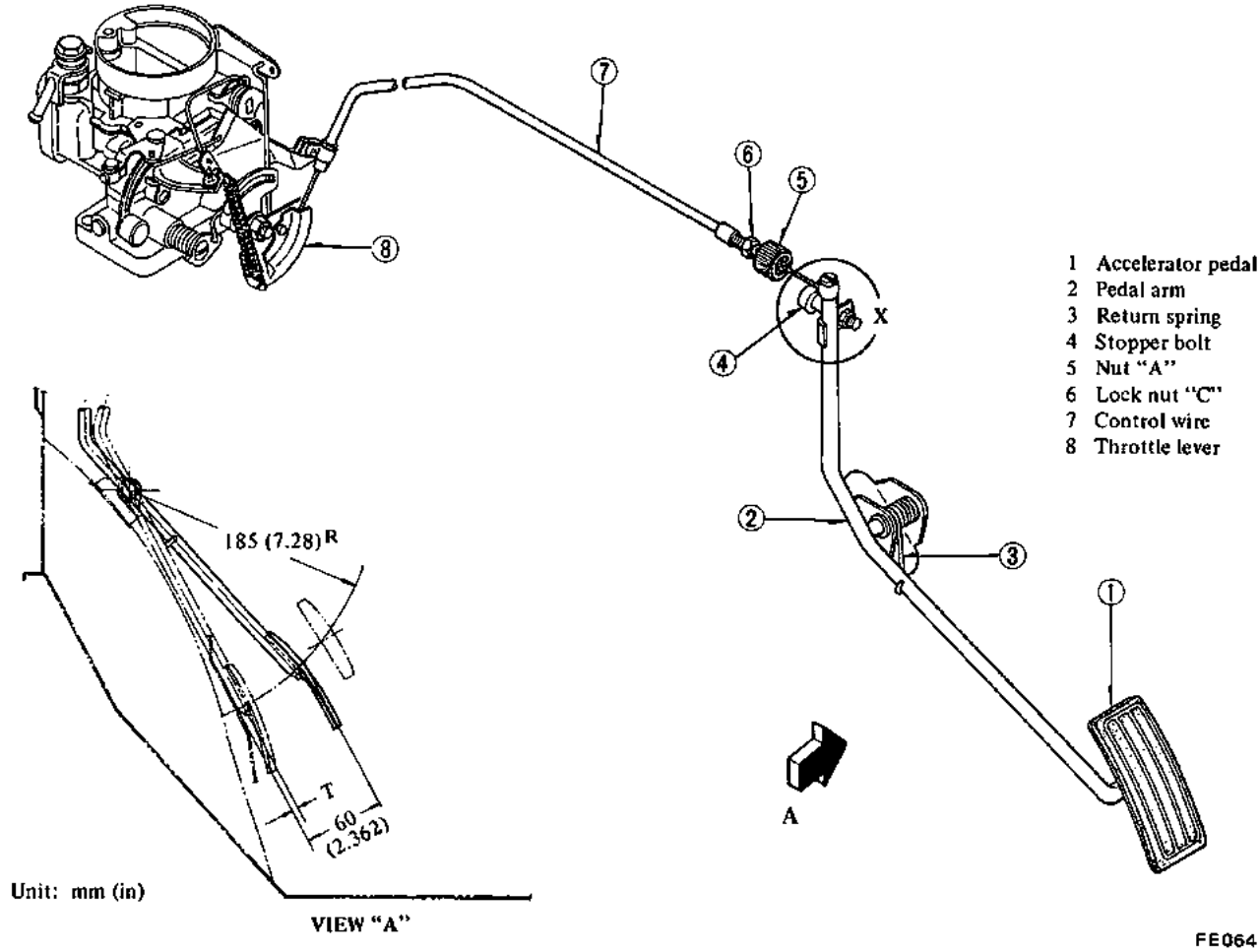


Fig. FE-1 Accelerator control system for R.H. drive

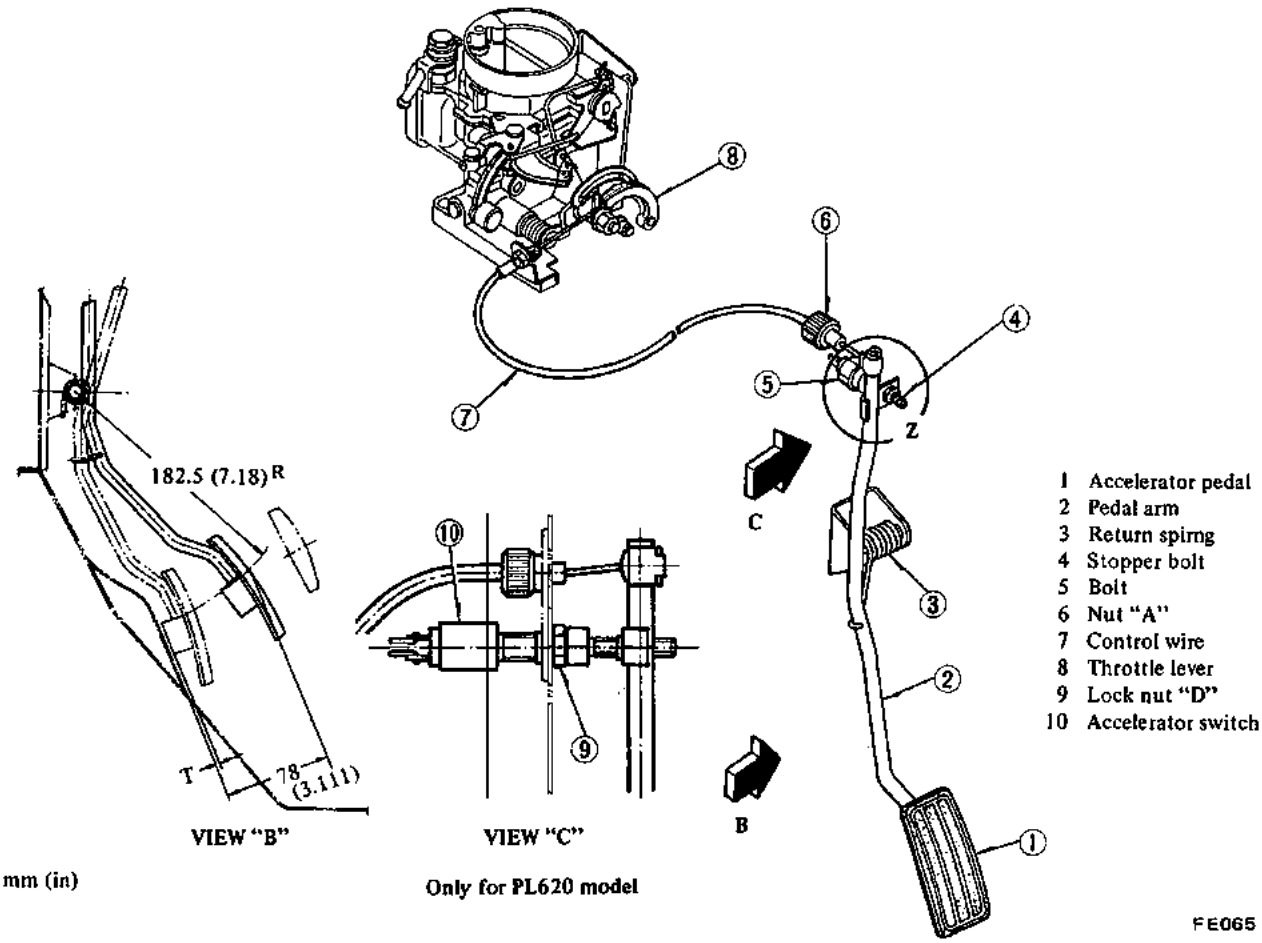


Fig. FE-2 Accelerator control system for L.H. drive

REMOVAL AND INSTALLATION

Accelerator control system

1. Remove return spring from pedal arm with a pair of plier.
2. Remove accelerator pedal.
3. Disconnect control wire from throttle lever of carburetor.
4. Loosen lock nut "C" and remove nut "A," then take out control wire as an assembly.
5. Installation is reverse order of removal.

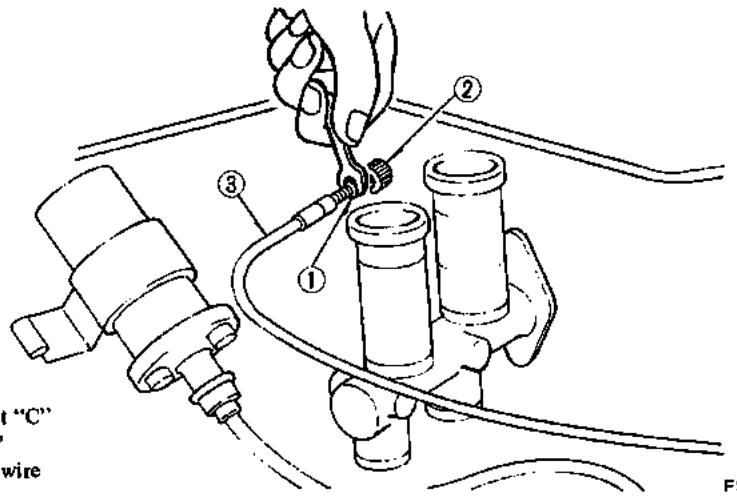


Fig. FE-3 Removing accelerator control wire

Choke control system

1. Disconnect choke wire from choke control lever of carburetor.
2. Remove choke knob. Pull out knob, hold wire with a pair of plier, and then rotate knob 90° counter-clockwise while pushing on knob. Wrap wire with rags to avoid damaging wire.
3. Remove lock nut securing wire to instrument panel and take out choke control wire as an assembly.

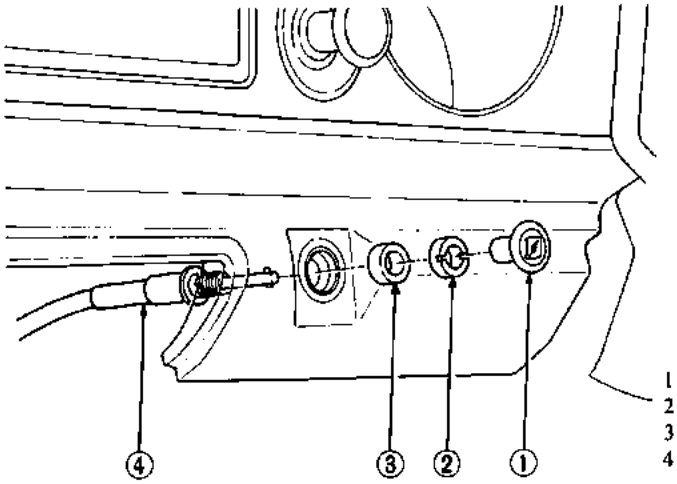


Fig. FE-4 Removing choke control wire

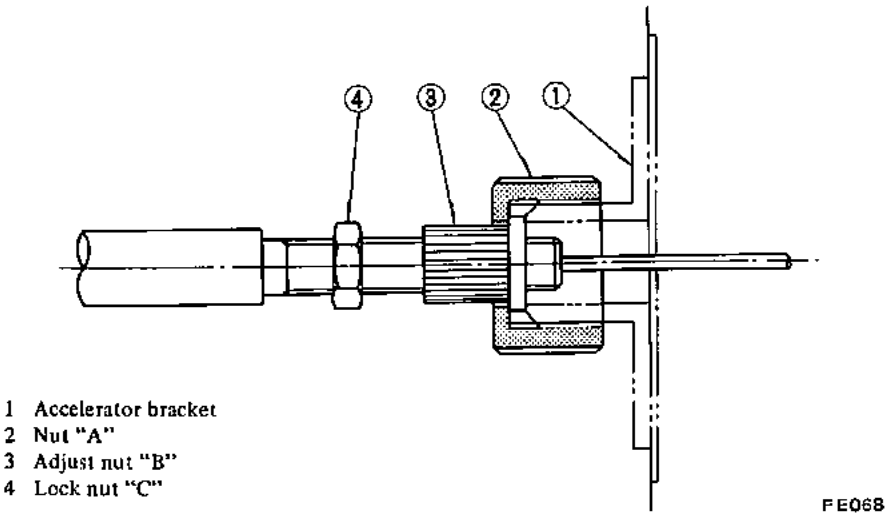


Fig. FE-5 Adjusting play of accelerator wire (for R.H. drive)

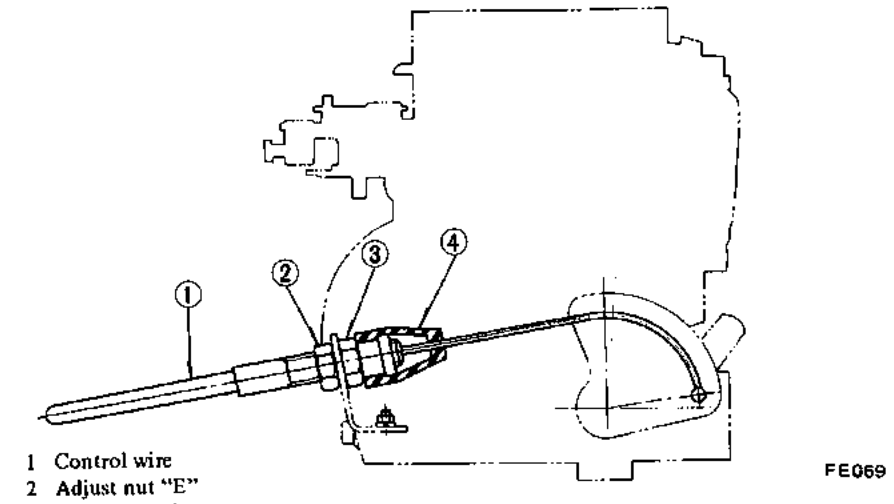


Fig. FE-6 Adjusting play of accelerator wire (for L.H. drive)

4. Installation is reverse order of removal.

ADJUSTMENT

Accelerator control system (R.H. drive)

1. Pedal height

Adjust the pedal height to 60 mm (2,362 in) by turning screw at the "X" section. Refer to Figure FE-1.

2. Play of accelerator wire

(1) Fully screw nut "A" against accelerator bracket, and unscrew one complete turn. Make sure that adjust nut "B" can be turned freely and lock nut "C" is loose.

(2) With wire provided with sufficient slackness, turn adjust nut "B" clockwise, and tighten it up to such an extent that throttle lever is about to move. (Play is zero at this time.)

(3) Unscrew adjust nut "B" one to two complete turns. Play will be 1 to 2 mm (0.0394 to 0.0787 in). Now, completely tighten nut "A" and lock nut "C" to secure adjust nut "B."

Accelerator control system (L.H. drive)

1. Accelerator switch

Adjust the switch situation so as to make the end of securing screw of accelerator switch and the face of lock nut "D" in line and then fix switch securely with lock nut "D." (Only for PL620 model) Refer to Figure FE-2.

2. Pedal height

Adjust the pedal height to 78 mm (3.071 in) by turning screw at the "Z" section. Refer to Figure FE-2.

3. Play of accelerator wire

(1) Set throttle valve to completely closed position, and with wire sufficiently slackened, tighten adjust nut "E" up to such an extent that throttle lever is about to move. (Play is zero at this time.)

(2) Unscrew adjust nut "E" one to one and a half turns so that accelerator wire play is 1 to 2 mm (0.0394 to 0.0787 in). Tighten lock nut "F" to adjust nut "E."

Notes:

a. Make sure that the operation of accelerator pedal is smooth and free in all positions and that nothing touches or interferes with the linkage. When depressing the pedal all the way, throttle valve opens fully, and throttle valve returns to the idle position immediately after releasing the pedal.
b. Under the condition that throttle valve fully opens, the clearance "T" between the pedal and dash floor becomes 2 to 4 mm (0.079 to 0.158 in) without floor mat. If the clearance becomes out of the above specified limits, the readjustment is necessary.
c. Accelerator flexible cable must be free from the interference with all the related moving parts.
d. After adjustment, coat grease slightly on the portions marked as shown in Figure FE-1 and 2.

Choke control system

The choke control adjustment is accomplished when carburetor choke valve returns to its original position as choke knob is fully pushed in. The wire should be slack when it is securely connected to carburetor.

FUEL SYSTEM

CONTENTS

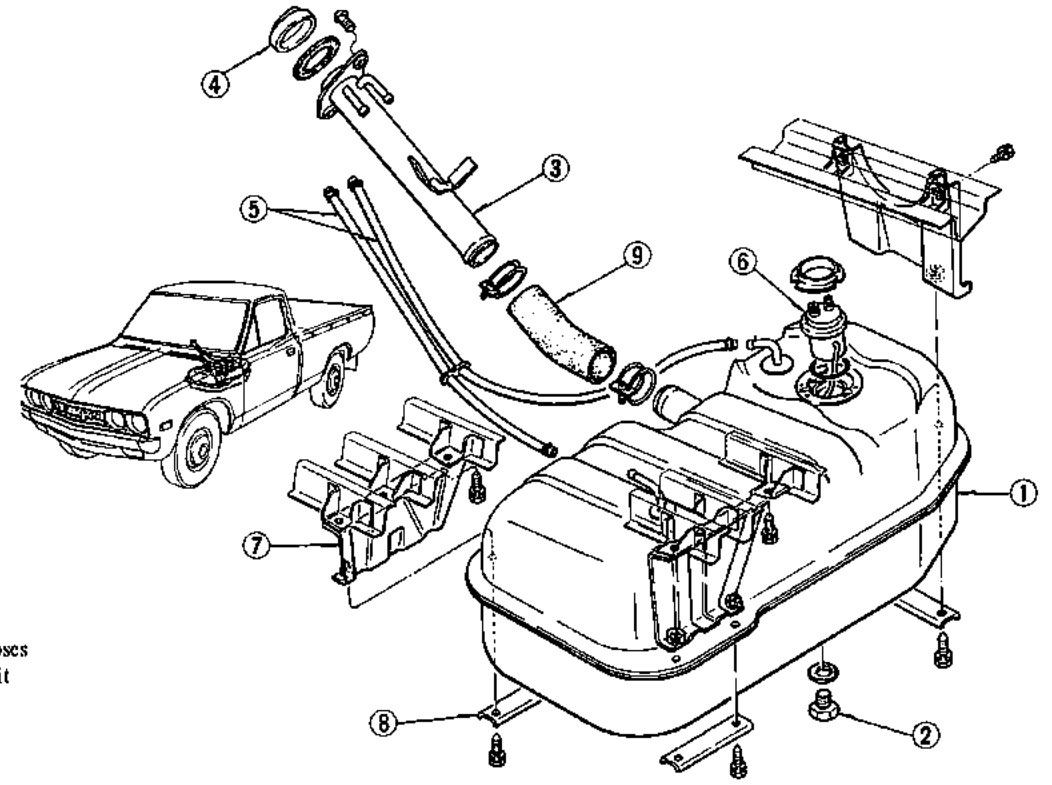
DESCRIPTION

There are two types of fuel tank. One type is used on Pick-up, and the other used on Double Pick-up. On the vehicles destined for U.S.A. and Canada, the reservoir tank is also used in the evaporative emission control system.

The fuel tank for the Pick-up model is 45 liters (1178 U.S.gal., 978 Imper. gal.) in capacity. The tank unit is mounted to the right side of the rear floor.

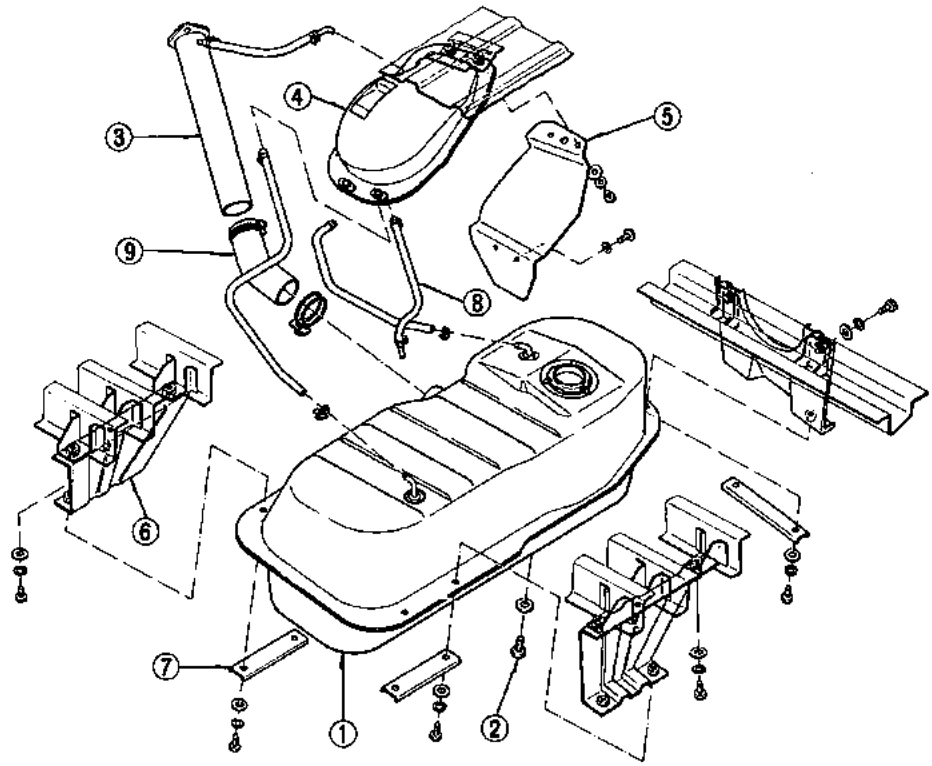
The capacity of the fuel tank for the Double Pick-up model is 40 liters (10½ U.S.gal., 8¾ Imper. gal.).

This unit is mounted to the left side of the rear floor.



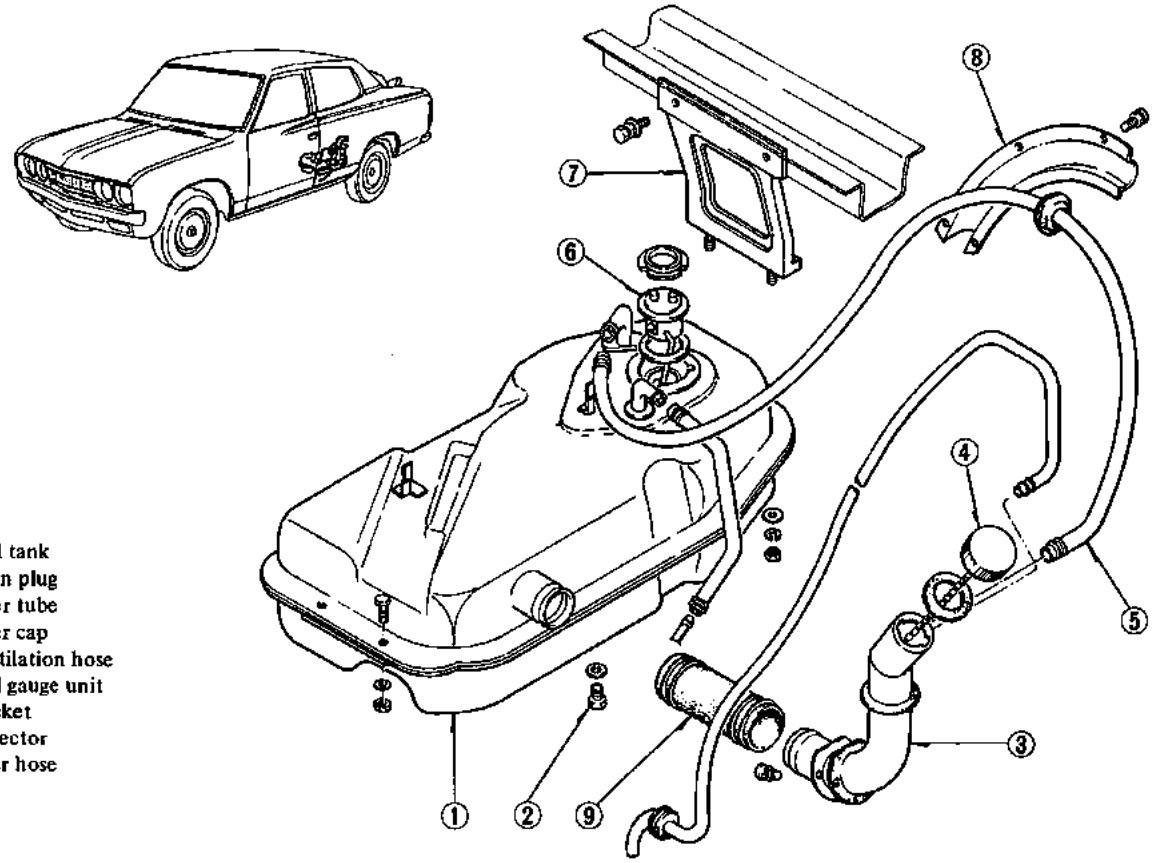
1 Fuel tank
2 Drain plug
3 Filler tube
4 Filler cap
5 Ventilation hoses
6 Fuel gauge unit
7 Bracket
8 Retainer
9 Filler hose

Fig. FE-7 Fuel tank for Pick-up model (except PL620)



1 Fuel tank
2 Drain plug
3 Filler tube
4 Reservoir tank
5 Protector
6 Bracket
7 Retainer
8 Vapor hose
9 Filler hose

Fig. FE-8 Fuel tank for PL620 model



1 Fuel tank
2 Drain plug
3 Filler tube
4 Filler cap
5 Ventilation hose
6 Fuel gauge unit
7 Bracket
8 Protector
9 Filler hose

Fig. FE-9 Fuel tank for Double Pick-up model

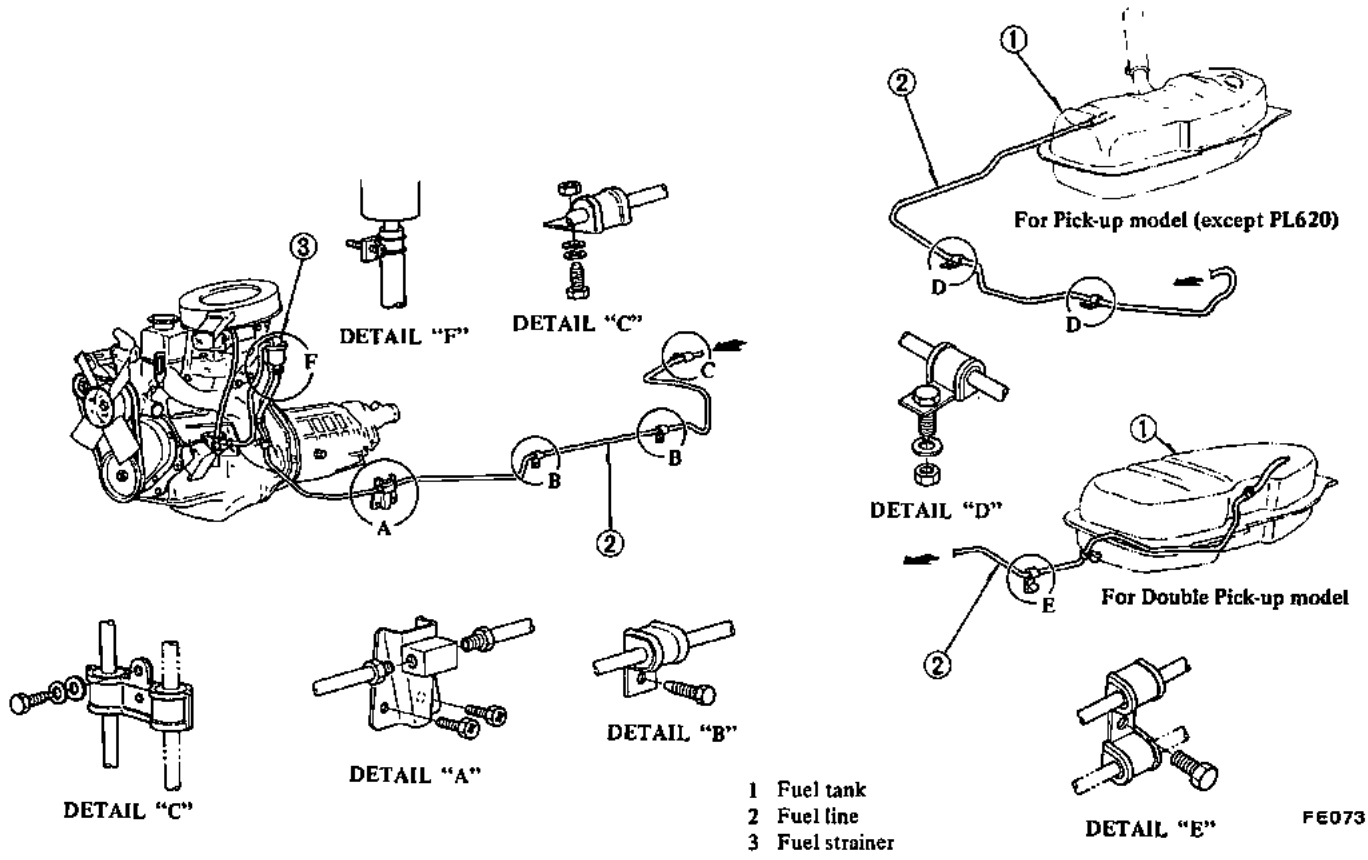


Fig. FE-10 Fuel piping for Pick-up (except PL620) and Double Pick-up models

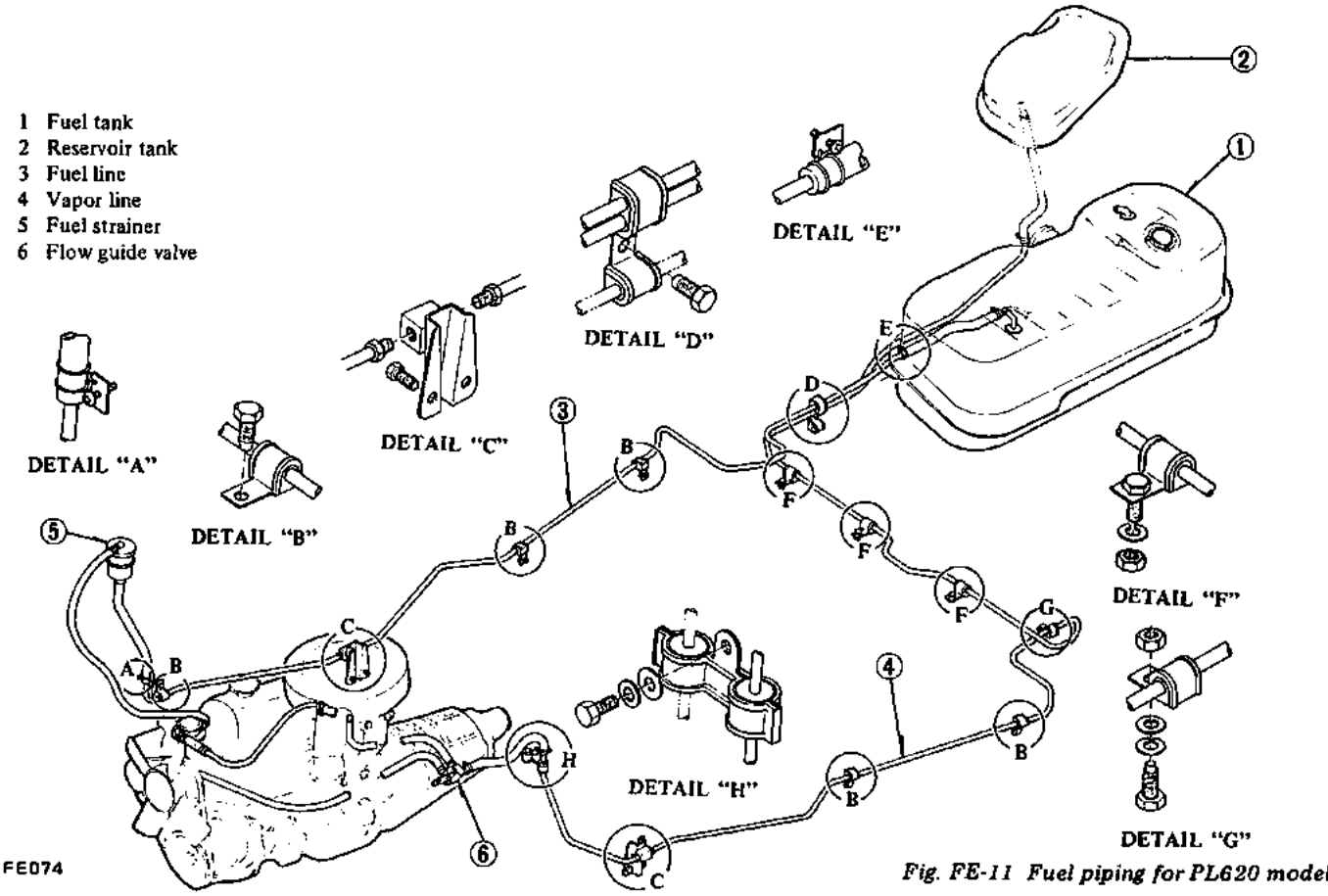


Fig. FE-11 Fuel piping for PL620 model

REMOVAL AND INSTALLATION

Removal

Fuel tank (Pick-up)

1. Loosen drain plug and allow fuel to drain into a suitable container.
2. Disconnect filler hose (filler tube side).
3. Remove a total of six bolts (body side) securing fuel tank in place.
4. Disconnect two ventilation hoses and outlet hose (tank side), and then take out fuel tank.
5. The unit gauge is bayonet type and can be taken out by turning lock plate counterclockwise with a screwdriver.
6. Reservoir tank removal (Only for U.S.A. and Canada)

(1) Disconnect two ventilation hoses.
(2) Loosen four bolts securing reservoir tank, and take out tank with protector.

Fuel tank (Double Pick-up)

1. Remove inspection cover from rear floor. Disconnect wires from unit gauge.
2. Loosen drain plug and allow fuel to drain into a suitable container.
3. Disconnect filler hose, ventilation hose and outlet hose.
4. Remove a total of four bolts securing fuel tank in place, and take out fuel tank.
5. The unit gauge is of a bayonet type and can be taken out by turnig lock plate counterclockwise with a screwdriver.

Note: Plug filler hose and tube openings to prevent entry of dust or dirt.

Fuel piping

All fuel lines can be easily disconnected by unfastening clamps and clips. Do not disconnect any fuel line unless necessary.

Note: Plug hose and tube openings to prevent entry of dust or dirt.

Fuel strainer

Every 20,000 km (12,000 miles), replace fuel strainer with a new one.

Installation

To install, reverse order of removal. Observe the following instructions.

Notes:

a. **Install hose clamps securely. Do not tighten excessively to avoid damaging hose.**
b. **Do not kink or twist hoses and tubes when they are routed.**
c. **Install fuel gauge unit with O-ring in place.**
d. **Install filler hose after fuel tank has been mounted in place. Failure to follow this rule could result in leakage from around hose connections.**
e. **Run the engine and check for leakage at connections.**

Tightening torque:

Fuel pipe rear or front and pipe connection nuts:
0.4 to 0.5 kg-m
(2.9 to 3.6 ft-lb)
Fuel pipe hose clamps:
4.0 to 8.0 kg-cm
(3.5 to 7.0 in-lb)

INSPECTION

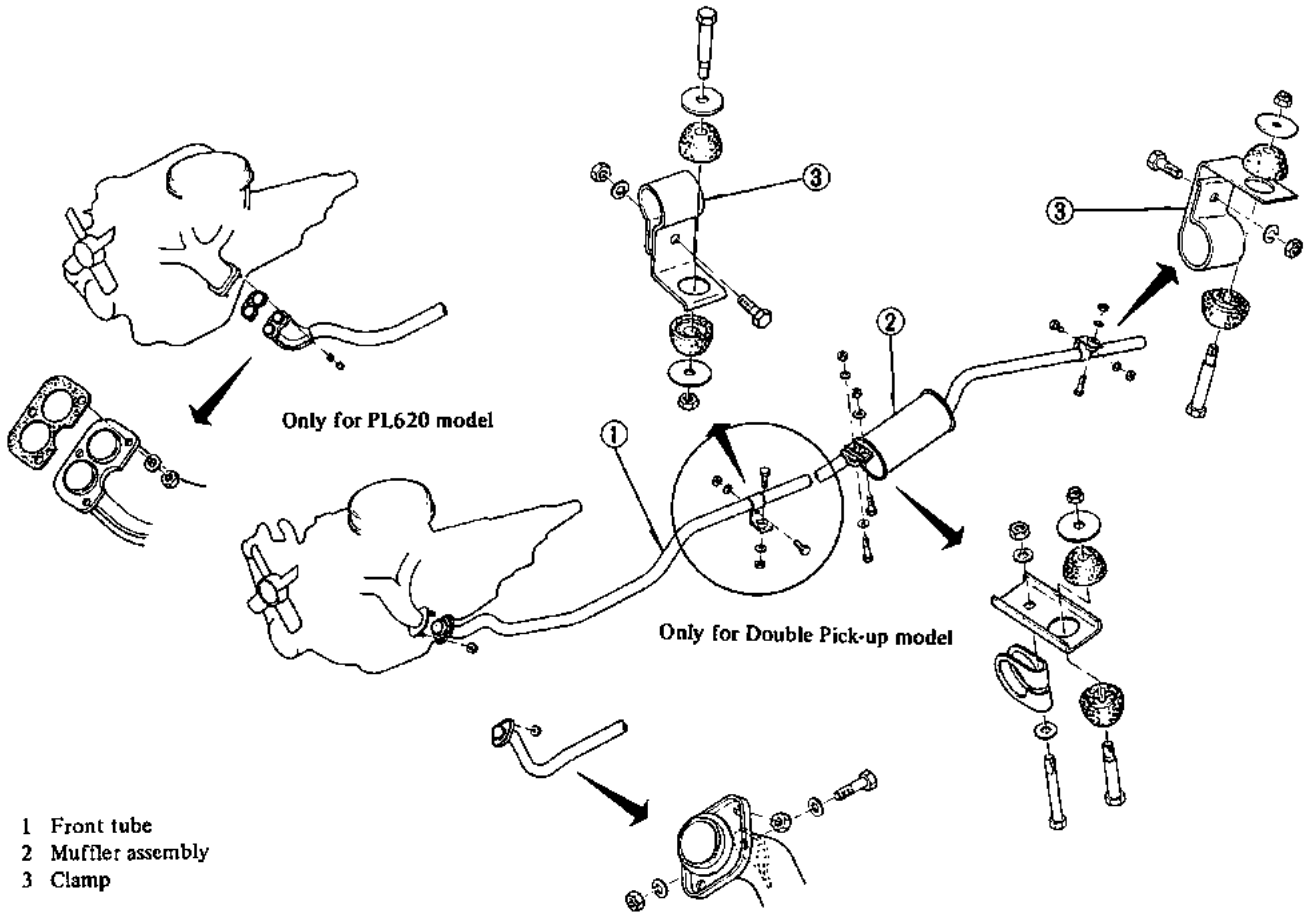
1. Check fuel tank for cracks or distortion. If necessary, replace.
2. Inspect all hoses for cracks or fatigue. Replace any hose that is defective.
3. Replace any fuel tube that is cracked, rusted, collapsed or distorted.

EXHAUST SYSTEM

CONTENTS

DESCRIPTION

The exhaust system consists of front tube, main muffler assembly, mounting hangers and bracket. The spring constant of insulator for mounting is low in the vertical direction, so that exhaust system vibration is not transmitted to the body.



1 Front tube
2 Muffler assembly
3 Clamp

Fig. FE-12 Exhaust system (Pick-up)

REMOVAL

1. Remove nuts securing exhaust manifold to front tube.
2. Remove bolts from clamps. The exhaust system can then be taken out easily.
3. If necessary, remove mounting support and rubber.

INSTALLATION

To install, reverse the order of removal. Observe the following general instructions.

Notes:

a. **When connecting front tube to muffler, be sure to apply it completely to center of embossed portion.**
b. **After installation, check to be sure that mounting supports and rubbers are placed without an undue stress. Failure to follow this caution could result in excessive noise or vibration transmitted to car body.**
c. **Check all the connections for leaks, entire system for unusual noise, etc. with the engine running.**

Tightening torque:

Exhaust manifold and front tube nut: 1.6 to 2.1 kg-m (12 to 15 ft-lb)
Other bolts and nuts: 1.0 to 1.5 kg-m (7 to 11 ft-lb)

INSPECTION

1. Check muffler and tubes for cracks or damage. Replace any part that is damaged beyond limits.
2. Replace bracket and mounting rubber parts that are cracked, fatigued.

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS AND BODY

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION BF

BODY AND FRAME

BF

GENERAL DESCRIPTION

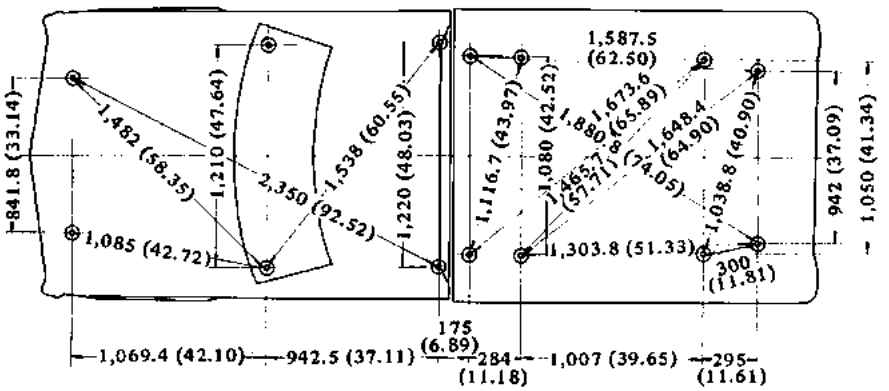
CONTENTS

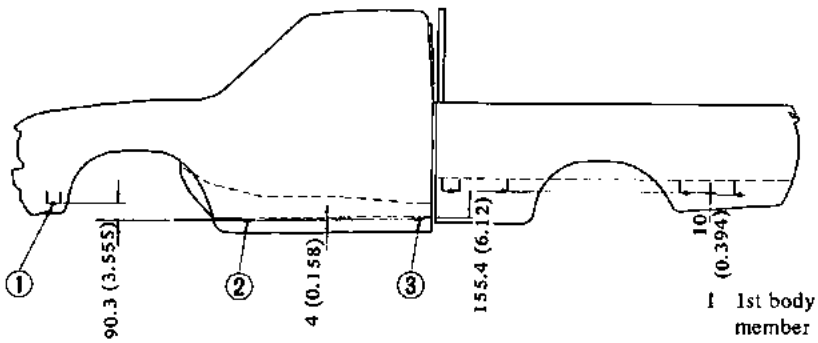
There are three chassis frames; one for the standard wheelbase, another for the long wheelbase of the Pick-up and the other for the Double Pick-up version.

The Double Pick-up uses the same body structure as the Pick-up model for the front half from the front pillar to the front end.

The frame consists of a right and left side members that are linked together with crossmembers to form a rigid structure to withstand load to be encountered. The second crossmember is located somewhat backward to permit individual replacement of the transmission.

PICK-UP

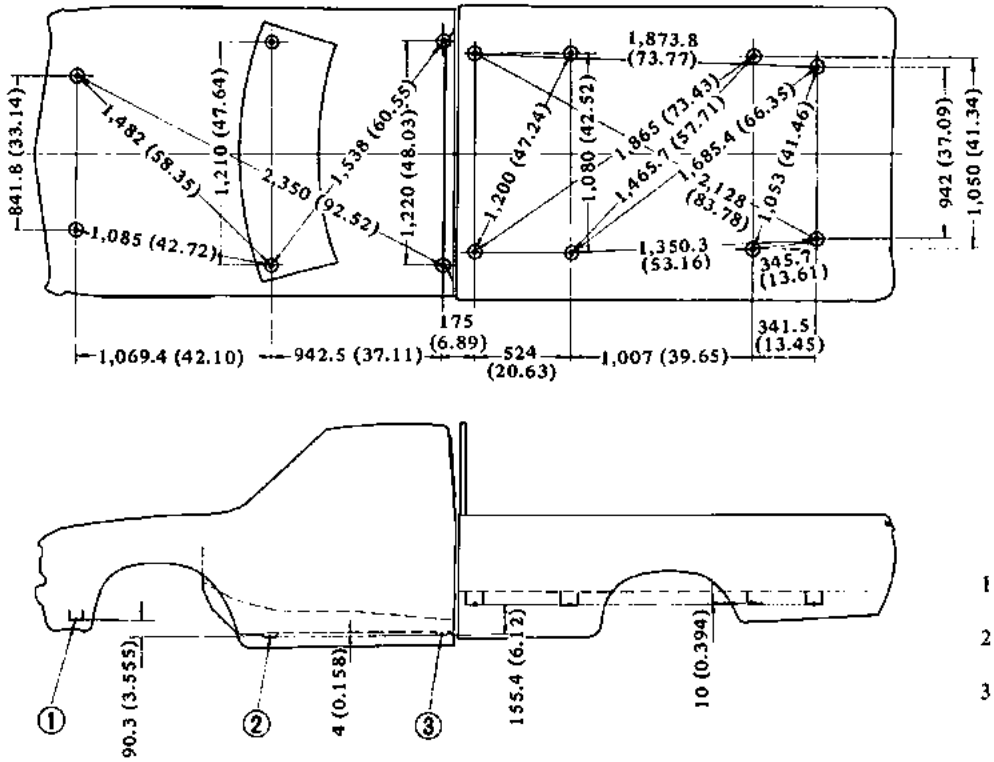




1 1st body mounting member
2 2nd body mounting member
3 3rd body mounting member

BF625

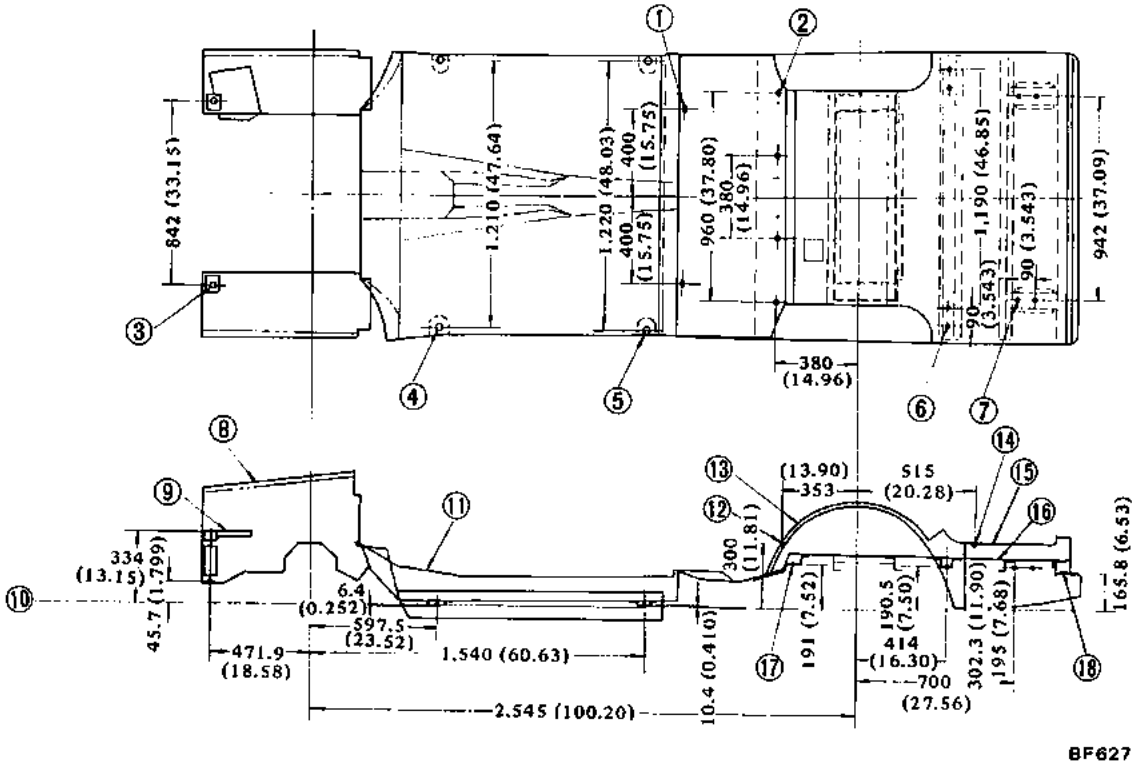
Fig. BF-1 Underbody dimensions (Standard wheelbase)



1 1st body mounting member
2 2nd body mounting member
3 3rd body mounting member

Fig. BF-2 Underbody dimensions (Long wheelbase)

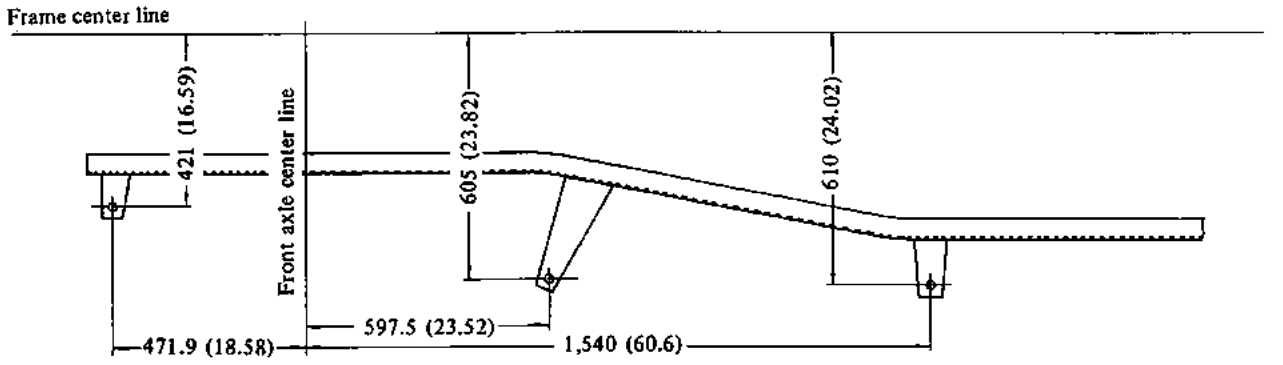
DOUBLE PICK-UP

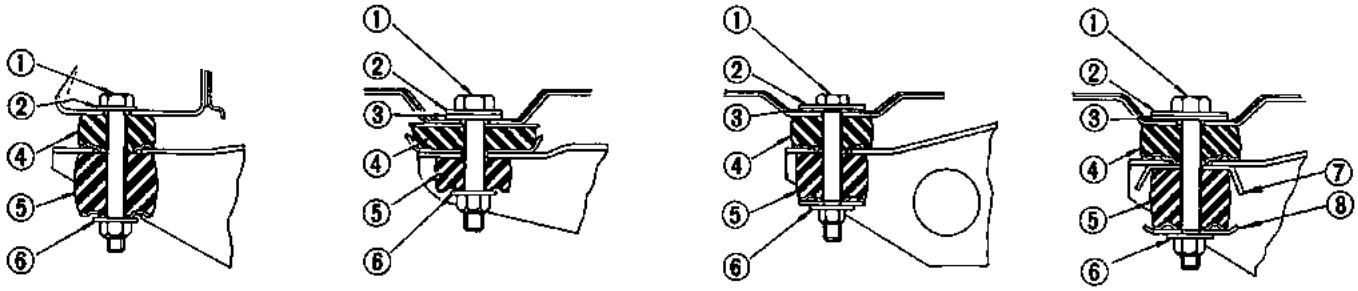


1 Rear seat mounting
2 Seat belt anchorage hole
3 1st body mounting member
4 2nd body mounting member
5 3rd body mounting member
6 5th body mounting member
7 6th body mounting member
8 Hood ledge
9 Battery mounting
10 Datum line
11 Front floor
12 Location hole
13 Rear wheel house
14 Location hole
15 Rear side panel
16 Rear floor
17 4th body mounting member
18 Tail bolster

Fig. BF-3 Underbody dimensions

CAB BODY





1st mounting

2nd mounting

3rd mounting

(For U.S.A. and Australia)

1 Bolt
2 Plain washer
3 Rubber washer
4 Upper rubber
5 Bottom rubber
6 Plain washer
7 Upper washer
8 Lower washer

BF628

Unit: mm (in)

Fig. BF-4 Cab body mountings

REMOVAL AND INSTALLATION

1. Remove battery from engine compartment.
2. Drain water from cooling system completely and remove radiator.
3. Remove engine hood from hood hinges after scribing hood for reinstallation.
4. Remove bumper stays from frame and take out front bumper.
5. Remove radiator grille.
6. With the aid of Steering Wheel Puller ST27180000, remove steering wheel from steering shaft.
7. Remove steering gear arm from steering sector shaft. To do this, use Steering Gear Arm Puller ST27140000.
8. Disconnect select and shift rods at sector lever and gear change lever.
9. Free gear shift lever from control rod.
10. Remove screws securing steering shaft dust seat and insulator in position.
11. Remove steering gear housing from frame and pull it out into engine compartment.
12. Disconnect speedometer cable at transmission.
13. Disconnect front brake rubber hose from brake tube.

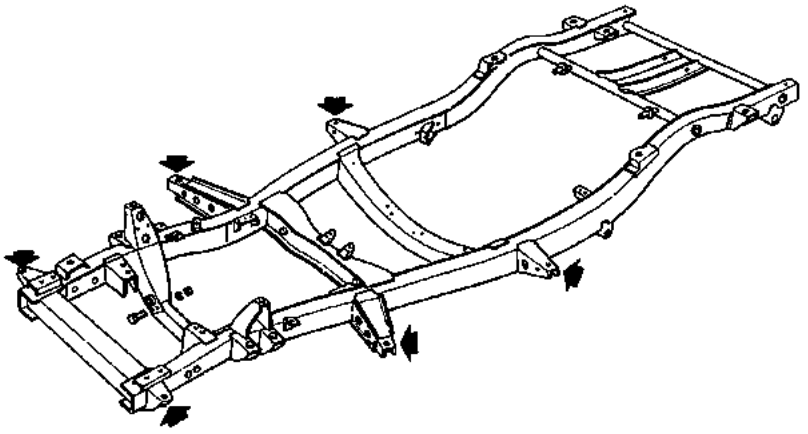
On single brake master cylinder equipped models, it is necessary to disconnect rear brake tube at front 4-way connector.

When equipped with tandem master cylinder, disconnect rear brake tube at master cylinder.

14. Disconnect fuel tube at fuel pump inlet.
15. Loosen hand brake control cable at brake control lever. Then disconnect cable from dash panel.

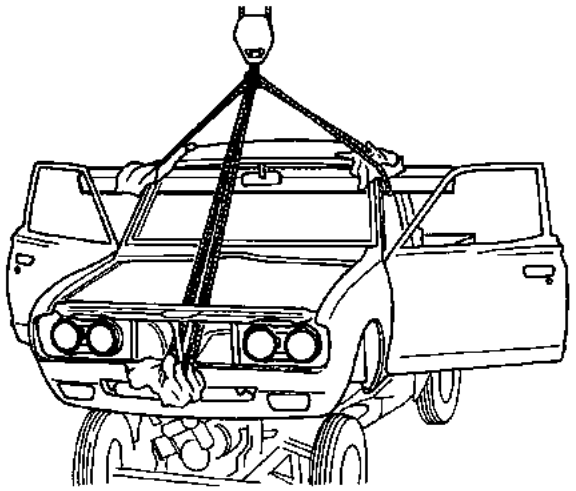
Note: Place blocks against front and rear wheels to prevent car from rolling off accidentally.

16. Free choke wire and accelerator linkage from carburetor.
17. Disconnect heater hoses at engine side.
18. Disconnect wire harnesses from related engine electrical parts.
19. Disconnect engine and chassis harnesses at their connection on right sidemember near rear engine mounting member.
20. Remove six bolts securing body to frame.



BF629

Fig. BF-5 Cab body mountings



BF630

Fig. BF-6 Lifting up cab body

21. With the use of suitable ropes and an overhead hoist, lift cab body straight up slowly, place it on a level surface.

Note: In lifting up cab body, use care not to dash it against enigne or rear body. Cab body weighs approximately 220 kg (484 lb).

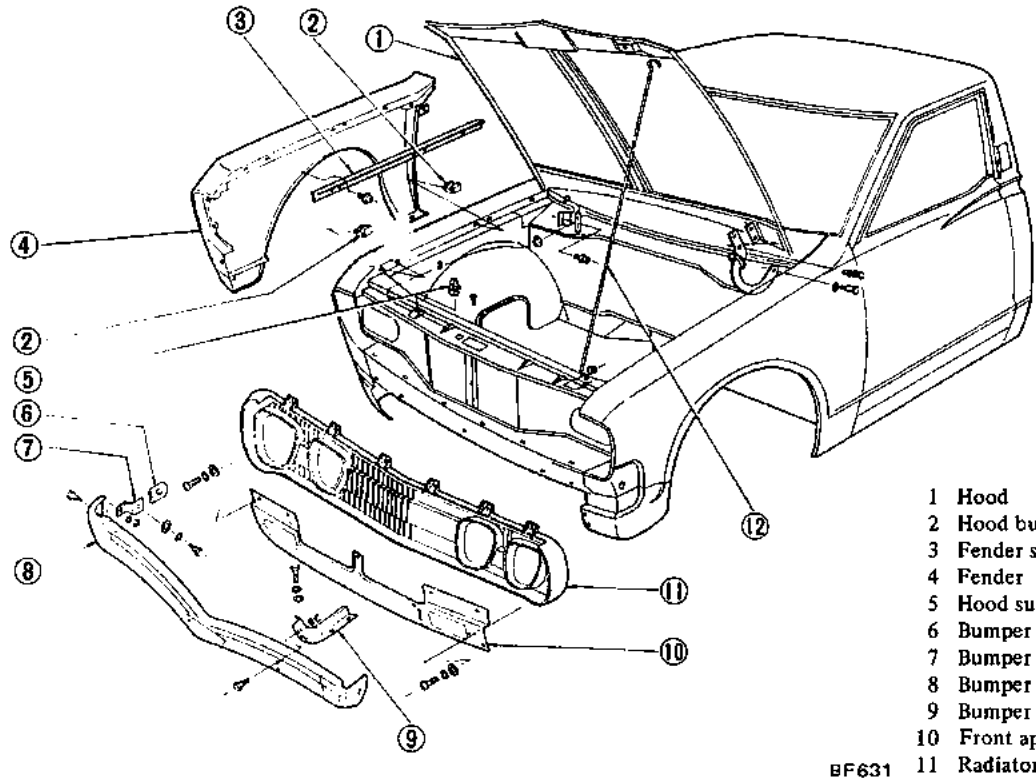
22. For installation, reverse above steps. However, observe the following instructions.

(1) If the cab body is to be replaced, note position and location of insulators and washers used. See Figure BF-4.
(2) Adjust hand brake stroke properly.
(3) Air bleed brake and clutch system thoroughly.

Cab body to frame mounting bolt torque:
1.6 to 2.2 kg-m
(12 to 16 ft-lb)

BODY FRONT END

CONTENTS



1 Hood
2 Hood bumper
3 Fender seal rubber
4 Fender
5 Hood support rod clamp
6 Bumper bracket shim
7 Bumper side bracket
8 Bumper
9 Bumper stay
10 Front apron
11 Radiator grille
12 Hood support rod

Fig. BF-7 Body front end

FRONT BUMPER

Removal and installation

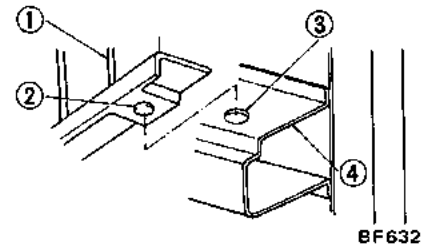
1. Remove bumper to fender attaching bolts.
2. Remove four bumper stay to side frame front attaching bolts. Pull bumper assembly straight forward.
3. For installation, reverse steps. Align bumper with front fender and apron; then tighten them up.

RADIATOR GRILLE

Removal and installation

1. Remove radiator grille by removing attaching screws, six on top and two on both ends.
2. Remove ornament on radiator grille by removing nuts from behind radiator grille.
3. For installation, reverse steps, observing the following:

(1) Check to be certain that six guide studs enter holes in radiator support lower frame before tightening top screws.



1 Radiator grille
2 Guide stud
3 Guide stud hole
4 Radiator support lower frame

Fig. BF-8 Radiator grille guide studs

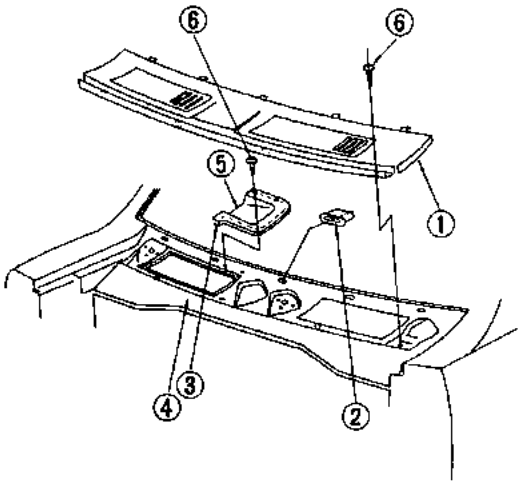
(2) Align grille with head lamps and fenders.

FRONT APRON

Removal and installation

1. Remove front bumper.
2. Remove radiator grille.
3. Disconnect front turn signal wire harness at connector.
4. Remove front apron by removing attaching bolts.
5. For installation, reverse steps.

COWL TOP GRILLE



1 Cowl top grille
2 Cap
3 Air box drain seal
4 Cowl top
5 Air box drain
6 Screw

Fig. BF-9 Cowl top grille

Removal and installation

1. Open engine hood.
2. Remove two windshield wiper blades.
3. Remove cowl top grille attaching screws. Pull grille straight forward to remove.
4. Remove air box drain.
5. To install, reverse steps. However, observe the following items:

(1) When installing air box drain, apply adhesive to its lower end.

(2) Align cowl top grille with fenders.

FRONT FENDER

Removal and installation

1. Remove front bumper.
2. Remove radiator grille.
3. Remove front apron.
4. Remove cowl top grille.
5. Remove sill moulding.
6. Remove hood bumpers (two on each side).
7. Remove nine screws attaching front fender to hood ledge. See Figure BF-7.
8. Remove front fender rubber seals.
9. To install, reverse steps.

HOOD

CONTENTS

REMOVAL AND INSTALLATION

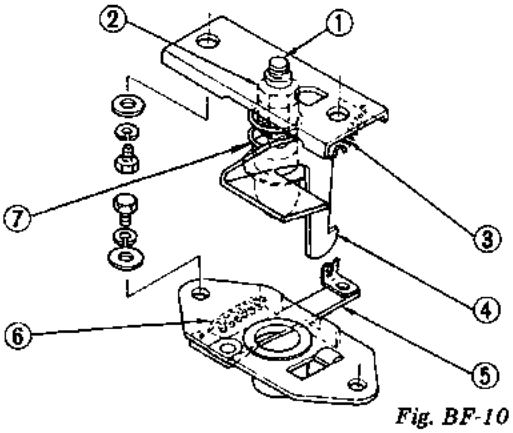
1. Place protective covers over front fender and cowl top grille.
2. Open engine hood. Mark hinge locations on hood and loosen off four bolts securing hood to hood hinge. Use extra caution to avoid damaging painted surfaces of fender and cowl top grille.
3. Remove cowl top grille.
4. Pry off pin from hood hinge and remove hinge.
5. To install, reverse above procedures.

ADJUSTMENT

Four slotted holes in hood hinge provide for fore-aft and side adjustment to correct space between hood and fender, and hood and cowl top grille.

Loosen four bolts just enough to move engine hood and move hood to desired position if necessary to correct space.

To make vertical adjustment, adjust height of dove-tail bolt at hood lock male until hood is flush with fender.



1 Dove-tail bolt
2 Lock nut
3 Return spring
4 Safety catch lever
5 Female lever
6 Spring
7 Hood lock spring

Fig. BF-10 Hood lock male and female

1. Loosen hood to hinge bolts just far enough to permit movement of hood.
2. Shift hood in elongated hole until parallel space is reached between hood and fender or cowl top grille. Tighten bolts securely.

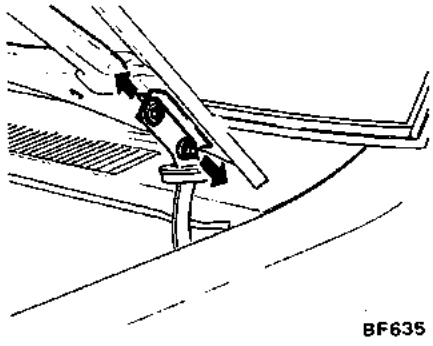


Fig. BF-11 Engine hood alignment

Note: Vertical adjustment should be carried out after hood lock male and female adjustment has been completed.

3. To correct hood lock alignment, loosen two hood lock male attaching bolts and move hood lock male and female right and left as required.

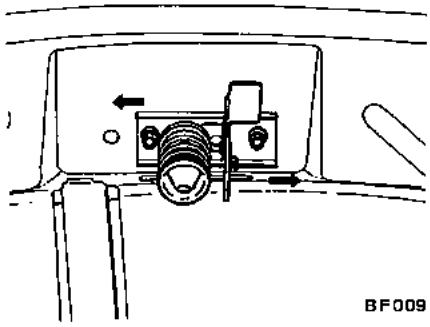
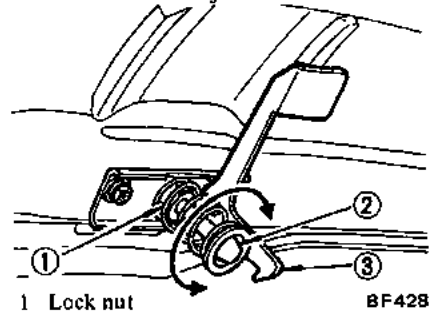


Fig. BF-12 Adjusting hood lock male

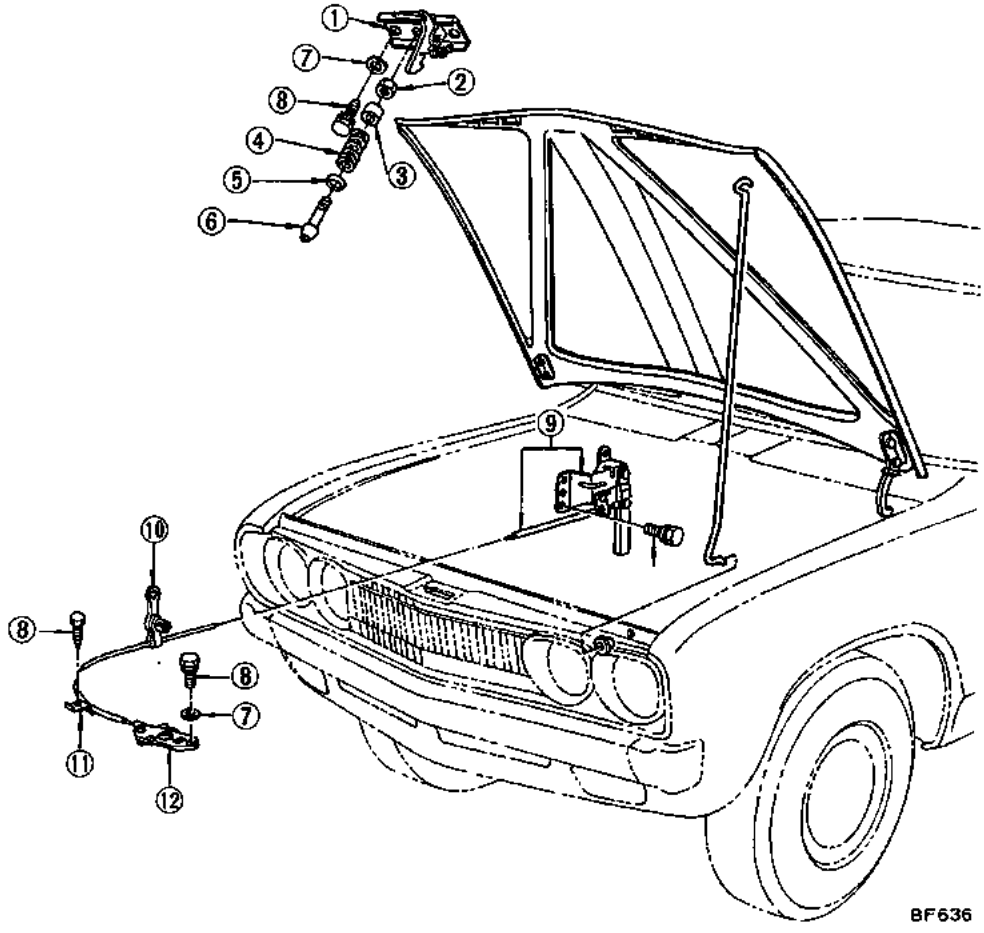
4. Dove-tail bolt at hood lock male provide for vertical adjustment to align hood to make it flush with fender. To correct, loosen lock nut on dove-tail bolt and turn dove-tail bolt in or out as necessary to obtain a correct height.
5. Tighten lock nut firmly while holding dove-tail bolt with a screw-driver to secure adjustment.



1 Lock nut
2 Hood lock male
3 Safety catch

Fig. BF-13 Dove-tail bolt height adjustment

HOOD LOCK AND CONTROL CABLE



1 Dove-tail bolt seat
2 Lock nut
3 Cushion rubber
4 Spring
5 Spring retainer
6 Dove-tail bolt
7 Lock washer
8 Bolt
9 Control cable assembly
10 Clamp
11 Clamp
12 Hood lock female

Fig. BF-14 Hood lock and control cable

Removal and installation

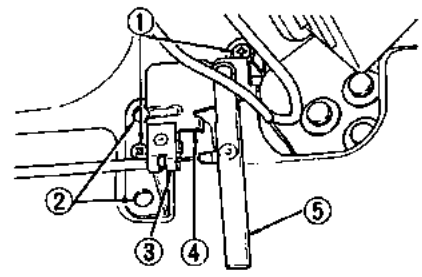
1. Remove hood lock male by removing two attaching bolts.
2. To remove hood lock female, first remove radiator grille. Back off two bolts securing hood lock female in position. Hood lock female can now be taken out.
3. Remove two bolts attaching hood lock handle assembly to dash side panel.

Disconnect cable at hood lock female and remove cable clamps. Pull cable out into cab.

4. To install hood lock male and female, reverse removal procedure. After installation, check to insure that they are properly aligned.
5. To install hood lock handle assembly, reverse steps, observing the following notes:

(1) Check to be certain that cable clamps are tight and secure.

(2) Install hood lock handle bracket in place by using two of four holes. See Figure BF-15.



1 Attaching bolt
2 Hole
3 Clamp
4 Hood lock handle bracket
5 Hood lock handle

Fig. BF-15 Installing hood lock handle bracket

Adjustment and inspection

1. If hood lock handle is heavy, then turn dove-tail bolt of hood lock male counterclockwise to reduce tension of hood lock spring.

Lock nut of dove-tail bolt should first be loosened.

If looseness is noticed, hood is not tight and will vibrate. To correct this, turn bolt clockwise and recheck.

2. Check hood lock mechanism as follows:

(1) Check safety catch lever and spring for deformation, fatigue or rusting.

(2) Check female lever and return spring for deformation, fatigue or rusting. Improper operation of female lever may cause disengagement between female lever and dove-tail bolt.

(3) Make sure that safety catch hooks engine hood properly when hood latch has been disengaged.

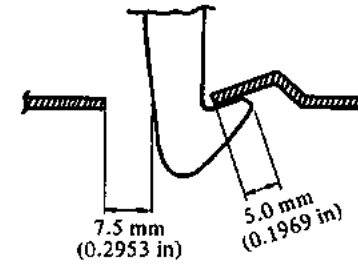
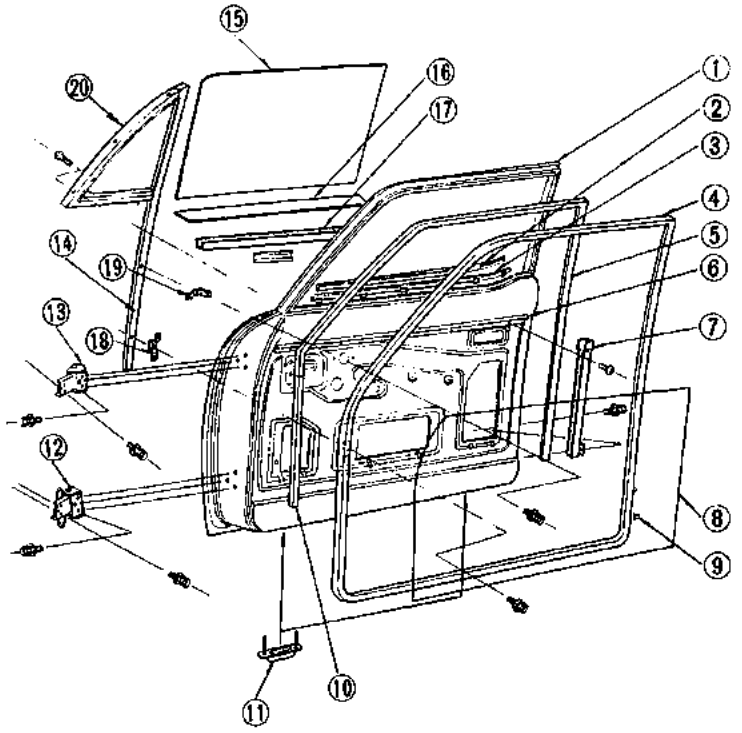


Fig. BF-16 Safety catch lever to radiator upper support adjustment

DOOR

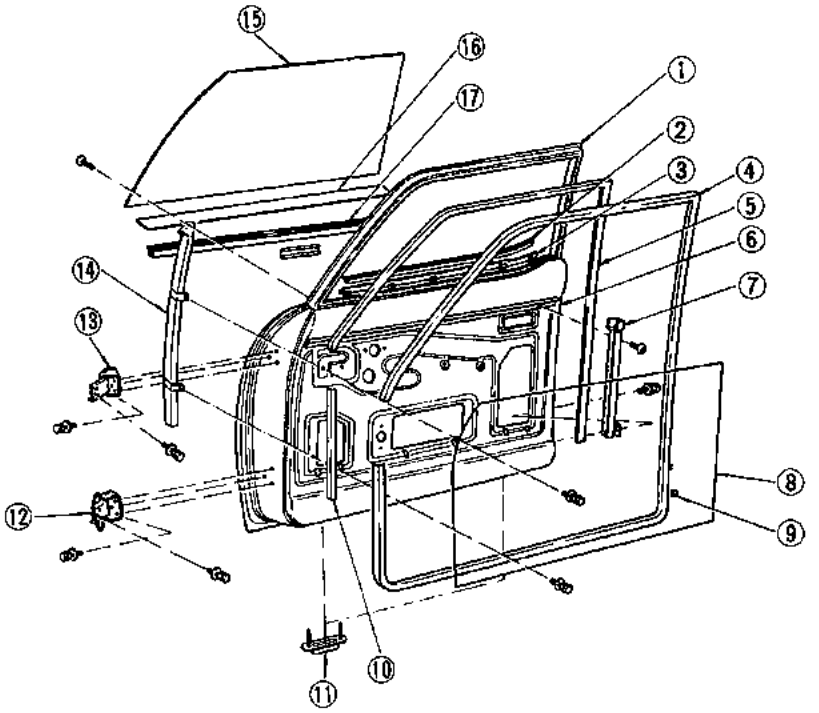
CONTENTS



1 Door sash
2 Door outside weatherstrip
3 Door inside weatherstrip
4 Door weatherstrip
5 Rear glass run rubber
6 Door finish holder
7 Rear lower sash
8 Seal screen
9 Door weatherstrip clip
10 Front glass run rubber
11 Drain hole cover
12 Lower door hinge
13 Upper door hinge
14 Front lower sash
15 Door glass
16 Glazing rubber
17 Door glass bottom channel
18 Lower support
19 Upper support
20 Door ventilator assembly

BF638

Fig. BF-17-1 Door with ventilator window



1 Door sash
2 Door outside weatherstrip
3 Door inside weatherstrip
4 Door weatherstrip
5 Rear glass run rubber
6 Door finish holder
7 Rear lower sash
8 Seal screen
9 Door weatherstrip clip
10 Front glass run rubber
11 Drain hole cover
12 Lower door hinge
13 Upper door hinge
14 Front lower sash
15 Door glass
16 Glazing rubber
17 Door glass bottom channel

BF639

Fig. BF-17-2 Door without ventilator window

DESCRIPTION

The door consists of one piece inner and outer panels welded together to form a rigid structure.

The curved glass provides more room for shoulders. On the L16 engine equipped cars (destined for U.S.A. and Canada), the door uses a one piece glass without ventilator.

A door that incorporates a ventilator window is also avaialble as production optional.

On cars equipped with the J13 or J15 engine, the door incorporates a ventilator window.

The single-check door hinge is the same unit as that introduced in the Nissan Junior (Model 140).

The weatherstrip is inserted into groove on the door sash side and is attached by clips on the door side.

REMOVAL AND INSTALLATION

1. With door in full open position, place a garage jack or stand beneath door to support its weight when bolts are removed. Place rag between door and jack or stand to avoid damaging painted surface.

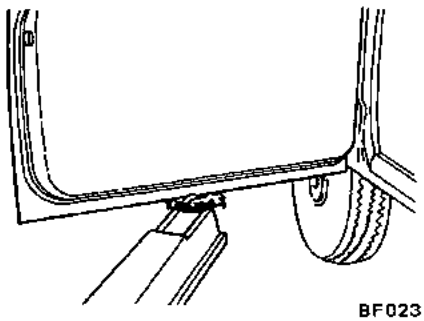


Fig. BF-18 Supporting door

2. Separate lower door hinge hole cover from dash side trim.
3. While supporting door as above, back off body to upper and lower hinge attaching bolts accessible from inside cab (three each). Door can now be taken out from cab body.

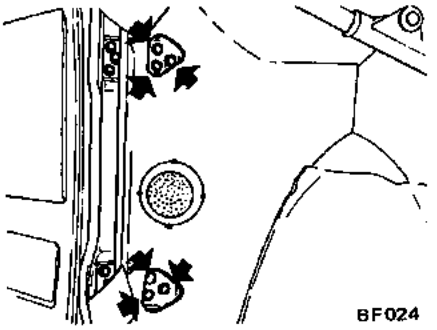


Fig. BF-19 Removing door hinge bolts

4. To install, reverse removal procedure.

DOOR ALIGNMENT

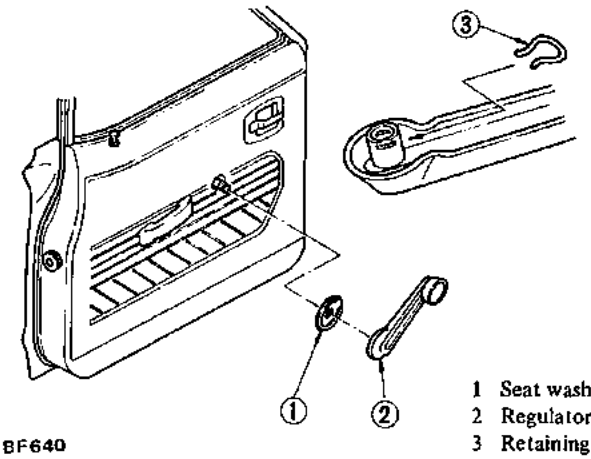
Elongated holes (three each) in door hinge and door lock striker provide for up and down, forward and backward, and/or sideways adjustment to assure proper door fit to door opening.

To adjust door alignment, loosen bolts and move door to desired position to obtain a parallel space between door sides and door opening. Also check to be certain that weatherstrip contacts body opening evenly to prevent entry of mud and water.

DOOR TRIM AND SEAL

Removal and installation

1. Remove screw securing inside door handle escutcheon; remove escutcheon.
2. Remove screws which hold pull handle and arm rest in position. Handle and arm rest can then be taken out.
3. Pull retaining spring off regulator handle. Take out regulator handle and seat washer.



1 Seat washer
2 Regulator handle
3 Retaining spring

Fig. BF-20 Removing regulator handle

4. When removing door finish, it is important that door inside panel and door finish are not damaged.

Use a Phillips screwdriver or similar flat-bladed tool and pry off retaining clips, exercising care not to damage clips.

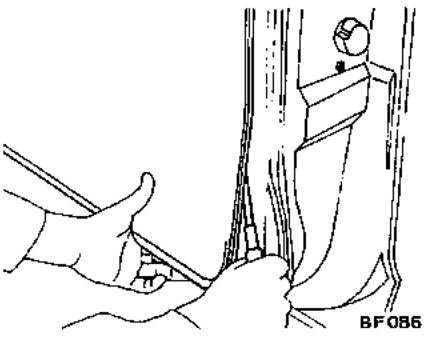


Fig. BF-21 Removing door finish

5. Separate water seal screeen from door inside panel.
6. To install, reverse removal procedure. However, observe the following installation notes:
(1) When water seal screen is to be replaced, be sure to cement it back into position securely to ensure a water sealed door. This can be done by applying adhesive to grooves in door inside panel evenly.

Broken or suspect water leak screen must be replaced with a new one.

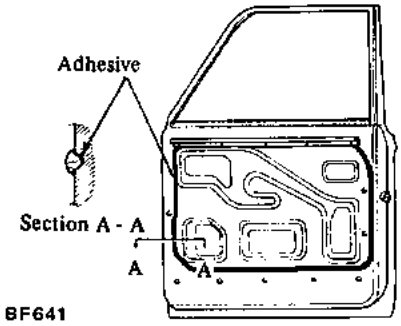


Fig. BF-22 Adhesive for seal screen

(2) With door glass up, set regulator handle at an angle shown in Figure BF-23.

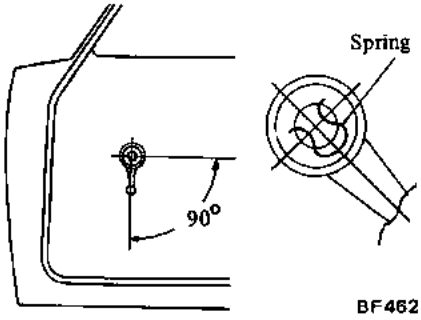


Fig. BF-23 Installation angle of regulator handle

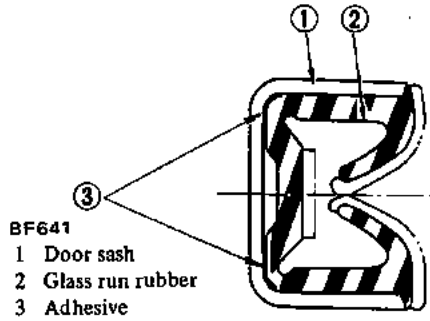
GLASS RUN

Removal and installation

1. With door in full out position, lower glass all the way.
2. Remove pull handle, arm rest and regulator handle.
3. Remove door finish and water seal screen.
4. Remove outer and inner weatherstrips from door.
5. Remove door glass.
6. Remove glass run rubbers from front and rear lower sashes, and from those of fixed door.

Use caution to avoid damaging rubbers during removal operation.

7. Remove front and rear lower door sashes (when ventilator window is not provided).
8. On cars equipped with ventilator window, remove ventilator window frame and rear lower door sash.
9. To install, reverse removal procedure. However, observe the following notes:
(1) Before applying adhesive, clean the inside of door sash.
(2) Apply adhesive to glass run rubber on door sash contacting face and fit it correctly. Particularly, care should be taken at corners and contact face to assure a good fit.



1 Door sash
2 Glass run rubber
3 Adhesive

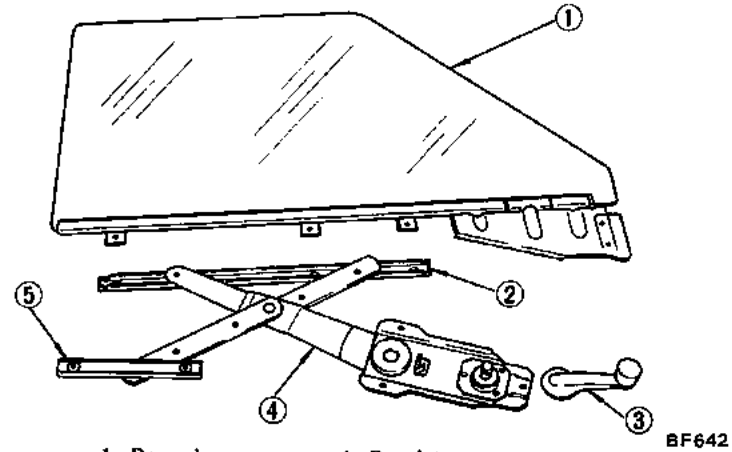
Fig. BF-24 Applying adhesive to glass run rubber

DOOR VENTILATOR WINDOW

Removal and installation

1. Remove five ventilator window frame attaching bolts. Lift frame out of door. For detailed procedure, refer to relative topic under "Door Glass and Regulator."
2. Remove nuts and spring securing lower end of ventilator window to frame.
3. Work off rivets which hold upper end of ventilator window to frame; take out window.
4. To install, reverse removal procedure.

DOOR GLASS AND REGULATOR

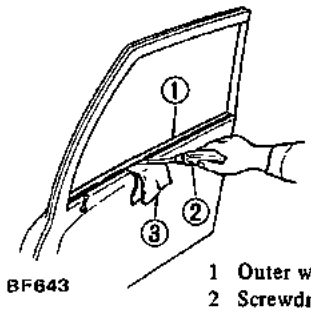


1 Door glass
2 Bottom channel
3 Regulator handle
4 Regulator arm
5 Guide channel

Fig. BF-25 Door glass and regulator

Removal and installation

1. Open door; lower glass all the way.
2. Remove inside door handle escutcheon.
3. Remove pull handle.
4. Remove arm rest.
5. Remove regulator handle.
6. Remove door finish.
7. Peel off water seal screen.
8. Work off outer and inner weatherstrips from door, being sure not to scratch door paint during operation. Use a suitable plain screwdriver or similar flat-bladed tool to remove and place a piece of rag between screwdriver and door panel.

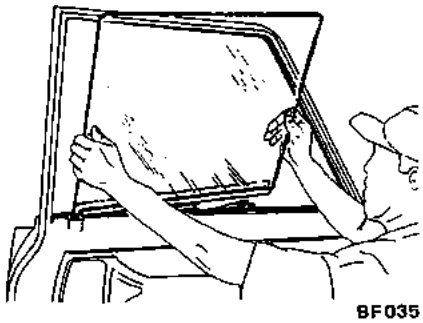


BF643

1 Outer weatherstrip
2 Screwdriver
3 Piece of rag

Fig. BF-26 Removing outer weatherstrip

9. On ventless doors, remove three door glass bottom channel attaching bolts. Remove door glass by lifting it straight-up.



BF035

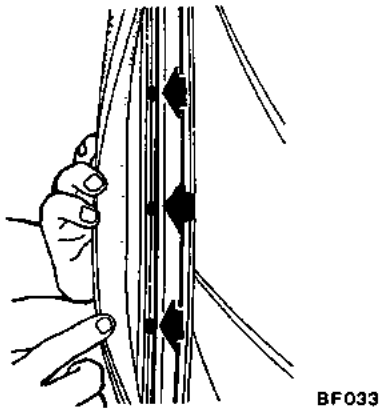
Fig. BF-27 Removing door glass

10. On doors equipped with ventilator, remove three bolts securing door glass bottom channel in place, then let glass go to the bottom of door.

11. Remove five ventilator frame attaching bolts. Lift frame straight-up out of door.

Prior to removing frame, it is necessary to remove glass run rubber from frame.

On doors equipped with ventilator, three screws are used to retain ventilator frame at top area. These screws must be removed after door weatherstrip has been removed from door sash.



BF033

Fig. BF-28 Removing ventilator frame

12. On doors equipped with ventilator, lift door glass straight-up to remove.
13. Loose off five guide channels to regulator base attaching screws. Take out regulator assembly through large access hole in door inside panel.
14. To install, reverse removal procedure.

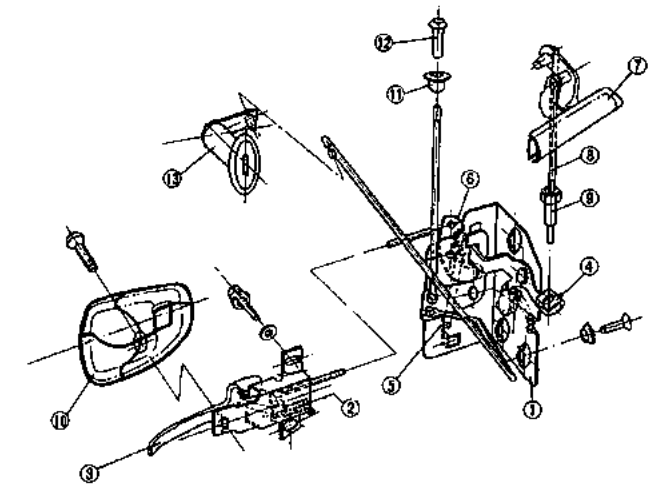
Adjustment

1. In-and-out and fore-and-aft adjustment can be made by moving front- or rear-sash and guide channel as required.

Ease with which window assembly raises and lowers depends on adjustment of rear lower sash. Rear lower sash should be in parallel with front lower sash.

2. Fore-and-aft adjustment is determined by position of guide channel and front lower sash. Moving front lower sash backward reduces play in window assembly.

DOOR LOCK



BF644

1 Door lock
2 Spring
3 Inside handle
4 Locking plate
5 Locking plate spring
6 Stopper
7 Outside handle
8 Outside handle rod
9 Nylon nut
10 Escutcheon
11 Knob grommet
12 Door lock knob
13 Door lock cylinder

Fig. BF-29 Door lock mechanism

Removal and installation

1. Open door.
2. Remove inside door handle escutcheon.
3. Remove pull handle.
4. Remove arm rest.
5. Remove regulator handle.
6. Remove door finish.
7. Peel off water seal screen.
8. Raise door glass to full-up position.
9. Remove inside door lock knob.
10. Remove rear lower sash attaching bolts.
11. Disconnect remote control rod from key cylinder and outside door handle.
12. Remove three door lock assembly attaching screws.
13. Remove two inside door handle attaching screws.
14. Take out door lock as an assembled unit through large access hole in door panel together with inside door handle.
15. Remove two outside door handle attaching nuts. Outside door handle can then be taken out.
16. Remove lock plate from key cylinder and detach key cylinder.
17. To install door lock assembly, outside and inside door handles and key cylinder, reverse removal procedure.

Adjustment

Outside door handle:

Adjustment of play in outside door handle is controlled by play adjustment available at nylon nut on threaded end of outside door handle rod.

Correct play is 1.0 mm (0.039 in) or below as measured between nylon nut and locking plate.

Inside door handle:

Elongated hole in inside door handle provides for play adjustment of inside door handle.

Correct play is 1.0 mm (0.039 in) or below as measured at control rod.

DOOR LOCK STRIKER

Adjustment of door lock striker should be made after door hinge has been adjusted correctly.

Elongated holes (three) provide for up-and-down or fore-and-aft adjustment to establish proper engagement between door lock striker and door lock latch.

WEATHERSTRIP

Description

The weatherstrip is retained by clamp to the door sash and by 19 clips to the door panel. No adhesive is used to retain the weatherstrip to door.

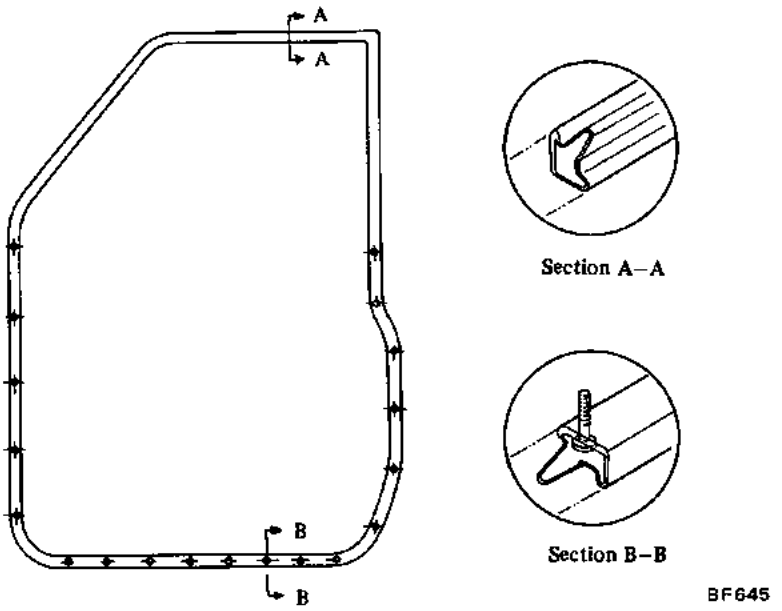


Fig. BF-30 Door weatherstrip

Removal and installation

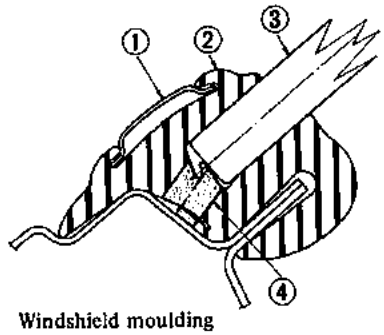
1. Open door.
2. Free weatherstrip from door sash clamp.
3. Pry off clips from door panel; remove weatherstrip.
4. To install, reverse removal procedure.

WINDSHIELD GLASS AND WEATHERSTRIP

CONTENTS

DESCRIPTION

The general design and layout of the windshield glass is essentially the same as that used in the 521 model. It is retained in the body glass opening through the weatherstrip. There are twelve water drain holes; one on each side of the bottom of the glass opening, and ten along the length of the weatherstrip. The back window weatherstrip has four water drain holes.



1 Windshield moulding
2 Weatherstrip
3 Windshield glass
4 Water drain hole

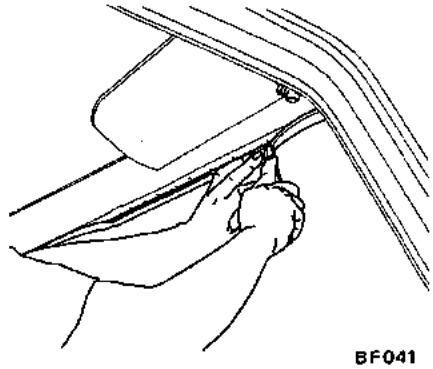
BF646

Fig. BF-31 Front windshield glass and weatherstrip

REMOVAL

1. Place protective covers over engine hood, front fender, seat and instrument panel.
2. Remove inside rearview mirror and sun visor.
3. Remove windshield mouldings.
4. Using a putty knife or similar flat-bladed tool, pry lips of weatherstrip out of place from top and side flanges of body opening.

If weatherstrip is to be reused, it is important that it is not damaged during operation.



BF041

Fig. BF-32 Removing weatherstrip

5. Working from inside car, push by hand windshield glass out of body opening starting at right and left upper corners toward ends.
6. After removing weatherstrip from top and sides of body opening, lift glass up sufficiently to permit removal of weatherstrip from bottom flange; pry weatherstrip out of position.

This operation requires two men.

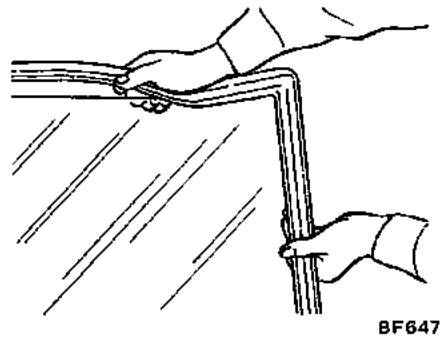
INSPECTION

Prior to installing windshield glass, make the following checks on body glass opening and weatherstrips:

1. Clean weatherstrip channels, replacing those found with cracks or sign of deterioration.
2. Clean body openings noting if these are not distorted or corroded.

INSTALLATION

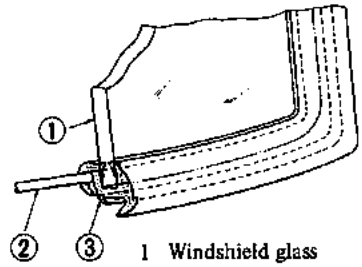
1. Fit weatherstrip on glass, making sure it is properly seated and positioned. Adhesive need not be applied.



BF647

Fig. BF-33 Fitting weatherstrip on glass

2. Insert a draw-cord completely around weatherstrip outer channel.



1 Windshield glass
2 Draw-cord
3 Weatherstrip

BF648

Fig. BF-34 Inserting draw-cord around weatherstrip outer channel

3. With aid of a helper, press windshield assembly against body opening from outside, being sure weatherstrip lip aligns with body opening flange.
4. Slowly pull cord ends from inside to overlap weatherstrip channel on body opening flange starting at center top toward ends. The operation should be made while one man pushes glass against body opening from outside.

The same technique should be applied to right, left and bottom weatherstrips.

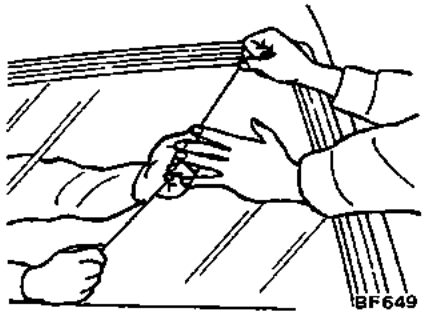


Fig. BF-35 Fitting weatherstrip (top)

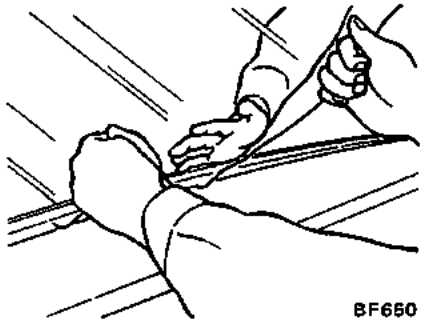


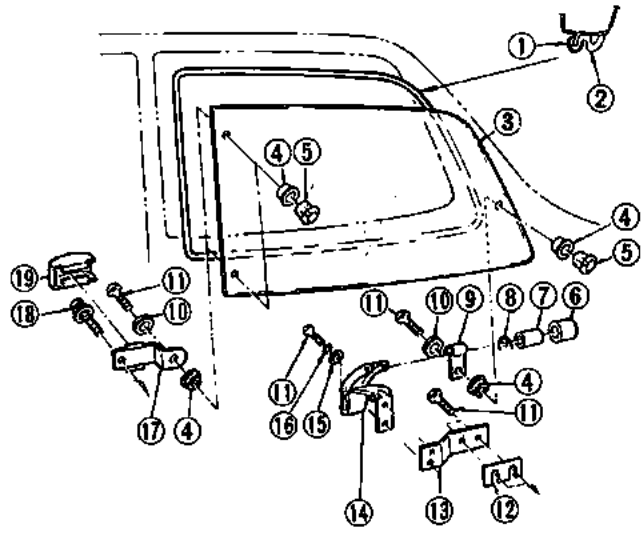
Fig. BF-36 Fitting weatherstrip (bottom)

5. Install windshield mouldings on weatherstrip.
6. Install inside rearview mirror and sun visor.

BACK WINDOW GLASS AND WEATHERSTRIP

Refer to relative topics under "Removal," "Inspection" and "Installation" of windshield glass.

SIDE WINDOW AND WEATHERSTRIP (Double Pick-up)



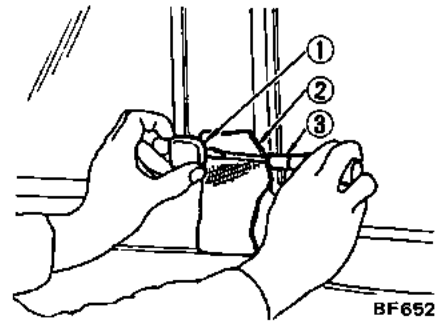
1 Welt
2 Weatherstrip
3 Side window glass
4 Rubber washer
5 Finisher nut
6 Spring cover
7 Roll pin
8 Spring
9 Bracket
10 Pivot washer
11 Screw
12 Shim
13 Catch handle bracket
14 Handle
15 Plain washer
16 Spring washer
17 Hinge
18 Screw
19 Hinge cover

Fig. BF-37 Exploded view of side window and weatherstrip

Removal and installation

1. Remove two catch handle bracket to rear pillar attaching screws.
2. Remove hinge covers (two) with aid of a suitable plain screwdriver.

Place a piece of rag between screwdriver and cover to prevent damage to painted surfaces.



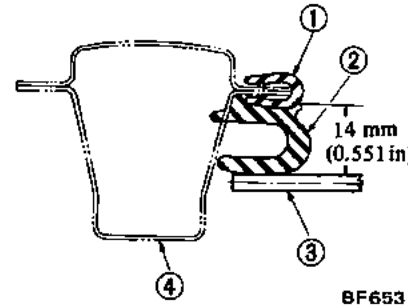
1 Hinge cover
2 Rag
3 Screwdriver

Fig. BF-38 Removing hinge cover

3. Remove screws securing hinge in place; take out side window.
4. Remove welt from glass opening and remove weatherstrip.
5. To install, reverse removal procedure.

Adjustment

1. With glass fully closed, adjust clearance between welt and glass to 14 mm (0.551 in). If necessary, add shim between catch handle bracket and rear pillar to establish required clearance.



1 Welt
2 Weatherstrip
3 Side window glass
4 Center pillar

Fig. BF-39 Adjusting welt to glass clearance

2. Align side window glass with glass opening by moving it up and down in elongated holes on hinge.

SEAT

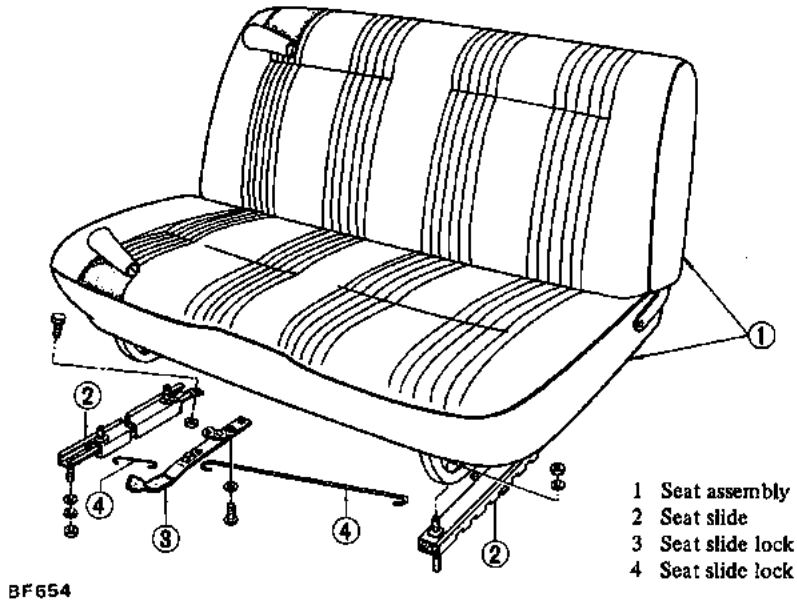
CONTENTS

DESCRIPTION

All Pick-up models use a full width bench seat. On Double Pick-up models, a bench seat with separate seat back is used for the front, and a bench seat for the rear.

The manual seat adjuster provides a 140 mm (5.51 in) fore-aft travel to suit the driver.

Provisions are also made for the attachment of the 3-point seat belt. The rear seat provides anchorage for the 2-point seat belt. On Double Pick-up models, the front seat incorporates separate seat backs with individual seat back latches to let rear passenger step in and out with ease.



BF654

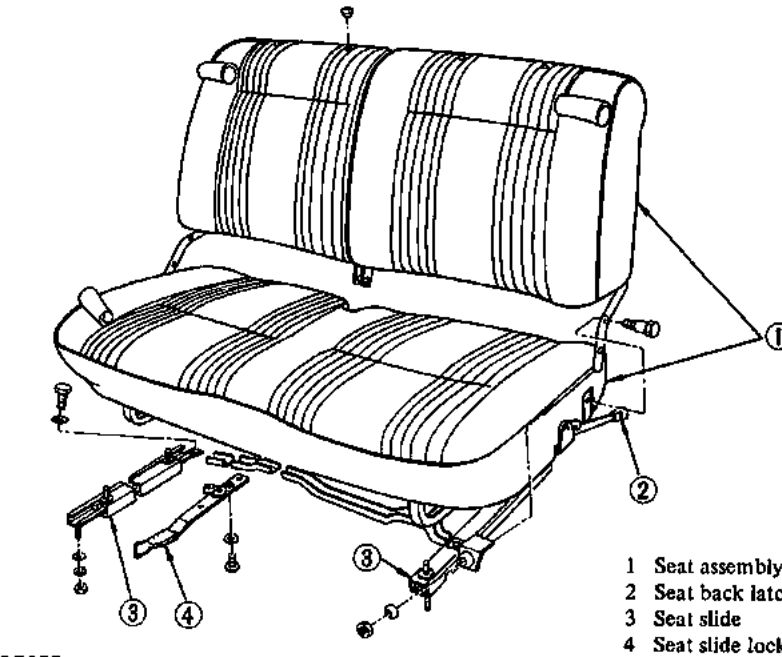
1 Seat assembly
2 Seat slide
3 Seat slide lock handle
4 Seat slide lock wire

Fig. BF-40 Front seat (Pick-up)

CAUTION:

Inconformity with M.V.S.S. No. 302, be sure to remove the thin polyethylene covers from seat cushion, seat back and seat belts at:

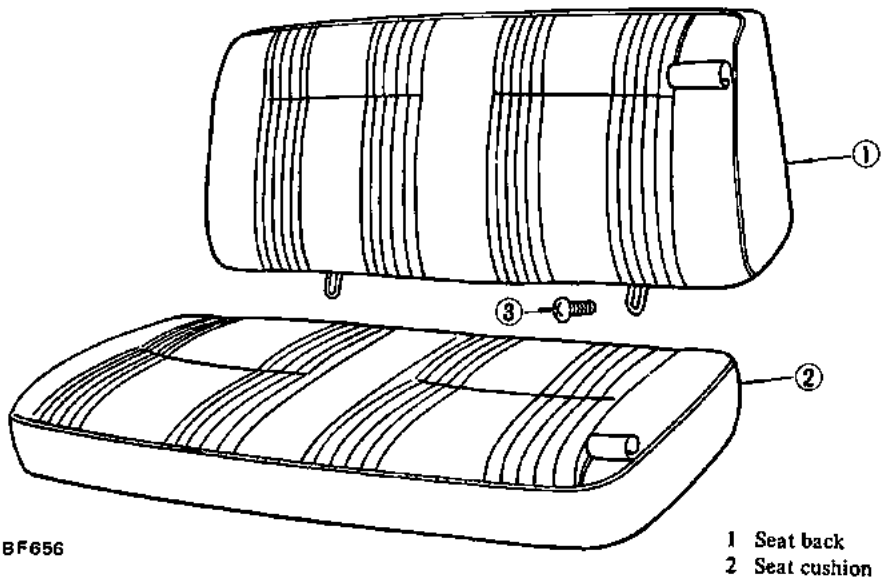
a. **Pre-delivery service**
b. **Parts replacements**



BF655

1 Seat assembly
2 Seat back latch handle
3 Seat slide
4 Seat slide lock handle

Fig. BF-41 Front seat (Double Pick-up)



1 Seat back
2 Seat cushion
3 Bolt

Fig. BF-42 Rear seat (Double Pick-up)

REMOVAL AND INSTALLATION

Front

1. Turn off four bolts retaining seat slide assembly to floor; take out seat assembly.
2. To install seat, reverse above removal procedure.

Rear (Double Pick-up)

1. Lift front end of rear seat cushion sufficiently to permit removal of seat cushion.
2. Loosen off two bolts securing bottom of rear seat back to floor. Remove seat back by lifting it up by hand.

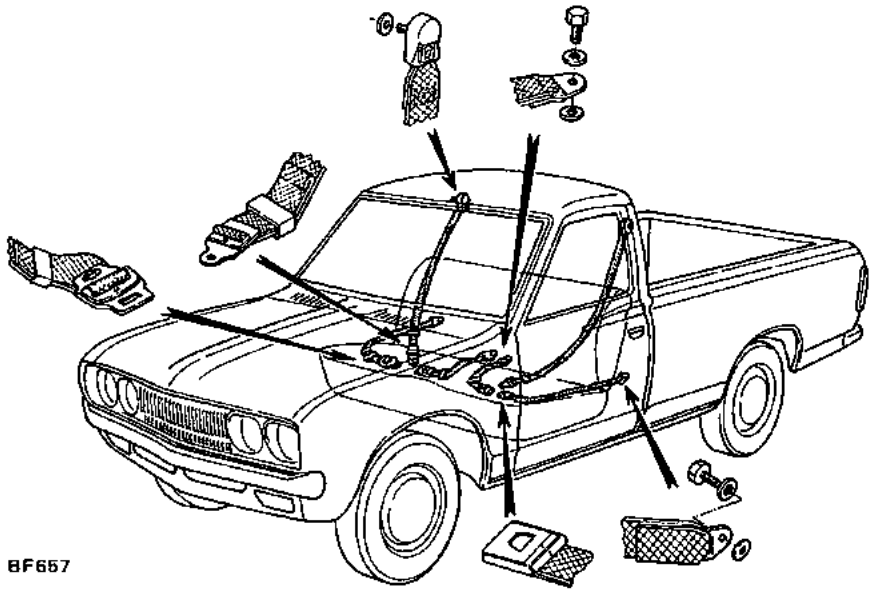


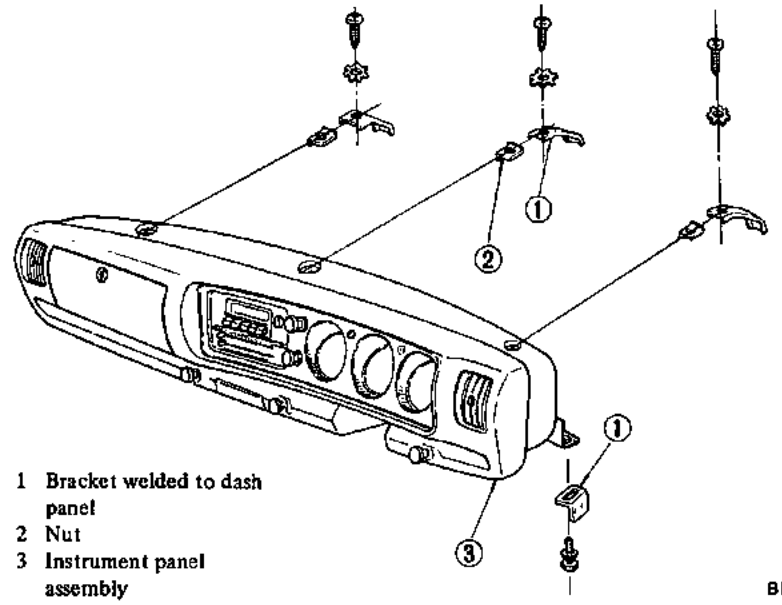
Fig. BF-43 Seat belt anchorages (Pick-up)

SEAT BELT ANCHORAGES

Seat belt attaching nuts are welded to the positions shown in Figure BF-43.

Always use Nissan/Datsun genuine seat belt at its proper location.

INSTRUMENT PANEL



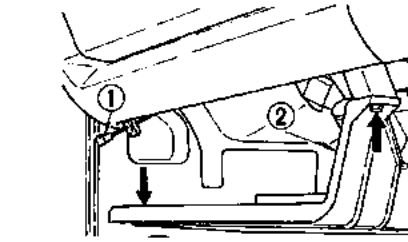
1 Bracket welded to dash panel
2 Nut
3 Instrument panel assembly

BF658

Fig. BF-44 Instrument panel assembly

REMOVAL AND INSTALLATION

1. Disconnect battery cables.
2. Disconnect heater control cables from heater assembly.
3. Disconnect speedometer cable on the back of speedometer.
4. Disconnect antenna and speaker wiring harnesses at connectors.
5. Disconnect relative wiring harnesses from instrument panel at connectors.
6. Remove steering column shell. Removal of steering wheel at this stage facilitates further removal of instrument panel.
7. Remove two side ventilator knobs. Remove package tray attaching bolt and detach package tray.



1 Side ventilator knob
2 Package tray

BF659

Fig. BF-45 Package tray

8. Support instrument panel assembly and remove five attaching bolts from it.
9. Withdraw instrument panel assembly while lifting it slightly.
10. To install, reverse the order of removal.

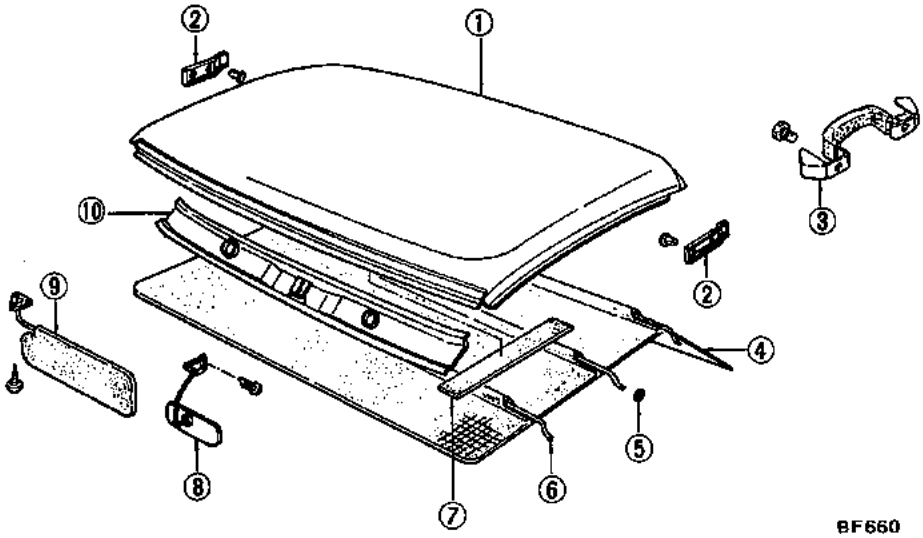
INTERIOR TRIM AND CENTER CONSOLE

CONTENTS

HEADLINING

Description

The headlining assembly is of a suspension type, which is held in place by listing wires. The design is quite similar to that used in a passenger car. The Pick-up uses three listing wires, and the Double Pick-up uses five.

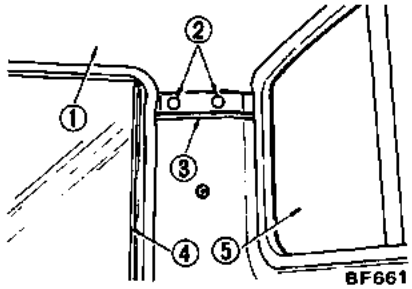


1 Roof panel
2 Retainer
3 Assist rail
4 Headlining cloth
5 Listing wire hook
6 Listing wire
7 Roof insulator
8 Inside rearview mirror
9 Sun visor
10 Front roof rail panel

Fig. BF-46 Headlining (Pick-up)

Removal

1. Remove two inside rearview mirror attaching screws and detach rearview mirror.
2. Remove three sun visor attaching screws and detach sun visor.
3. Remove two assist rail attaching screws and detach assist rail.
4. Remove room lamp.
5. Open doors and remove body side welts on each side.
6. Remove windshield glass and weatherstrip.
7. Remove back window and weatherstrip.
8. Remove garnish securing the end of headlining to rear pillar. (Pick-up only)
9. Detach all cemented edges of headlining from flanged portion of roof rail.
10. Disengage listing wires from roof rail, and detach headlining.



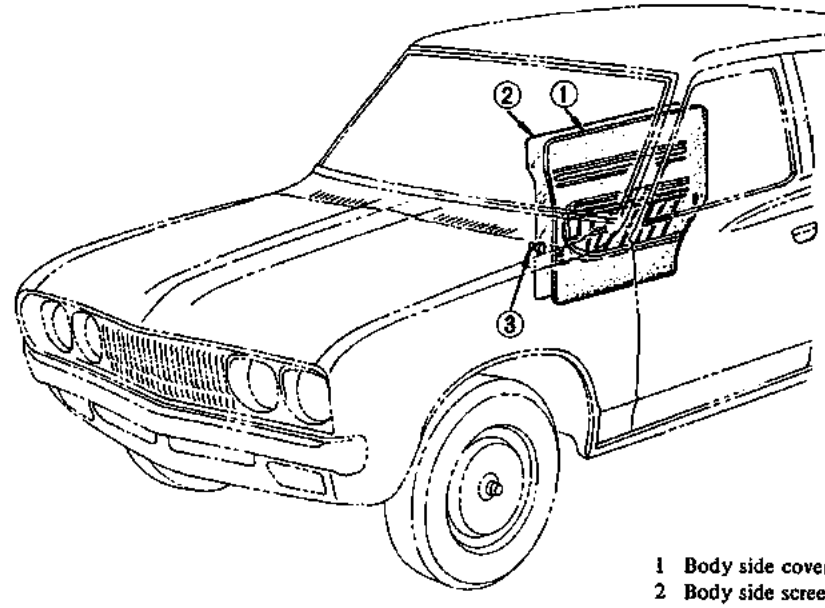
1 Headlining cloth
2 Clip
3 Garnish
4 Door glass
5 Back window glass

Fig. BF-47 Removing garnish

Installation

1. Apply adhesive cement to the outer surface of flange and headlining attaching surface evenly.
2. Install listing wires in place on roof rail.
3. First, attach front headlining to the flanged portion of roof rail. Secondly, attach the rear edges of headlining in place while pulling the headlining material to avoid wrinkles.
4. Attach the right and left edges of headlining material to the flanged portions, using care to avoid wrinkles.
5. Cut excess headlining material except for that (at the upper areas of front, center and rear pillars) not covered by body side welt. The edges of headlining material at these areas should be so cut that it can be folded properly in place.
6. Install garnish on the extreme end of headlining at rear pillar. (Pick-up)
7. Drill a hole in headlining where room lamp is located. Install room lamp.
8. Install body side welts.
9. Install windshield glass.
10. Install back window glass.
11. Install assist rail, sun visor and inside rearview mirror.

BODY SIDE COVER



1 Body side cover
2 Body side screen
3 Clip

Fig. BF-48 Body side cover

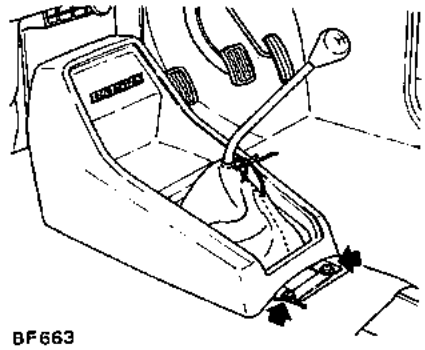
Removal and installation

1. Using a screwdriver, pry off two clips on body side cover.
2. Allow body side cover to curve, and detach this cover from upper and lower retainers.
3. Detach body side screen.
4. To install body side cover, reverse the order of removal. The body side screen should be attached in place with adhesive cement.

CENTER CONSOLE

Removal and installation

1. Remove two bolts from the rear of center console.

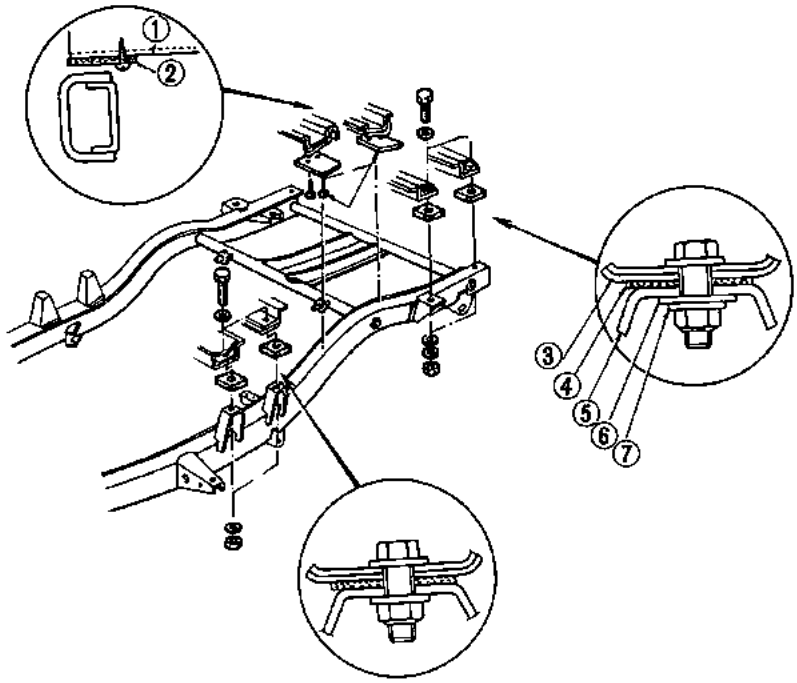


BF663

Fig. BF-49 Removing center console

2. Remove center console by pulling it back.
3. To install center console properly, insert the front portion of center console into bracket on the floor, and install and tighten rear attaching bolts.

REAR BODY



BF664

1 Bolster
2 Shim B
3 Bolster
4 Shim A
5 Frame
6 Rubber washer
7 Plain washer

Fig. BF-50 Rear body mountings

REMOVAL AND INSTALLATION

The rear body is securely fastened to the frame at eight places. It should be hoisted after the fuel tank is removed from the rear body.

Use the following procedures as a guide when removal or installation of rear body is necessary.

1. Apply parking brake.
2. Disconnect cables from battery.
3. Disconnect rear combination lamp wiring harness at connectors.
4. Disconnect fuel hoses from fuel tank. Remove fuel tank from rear body.
5. Remove eight rear body attaching bolts.

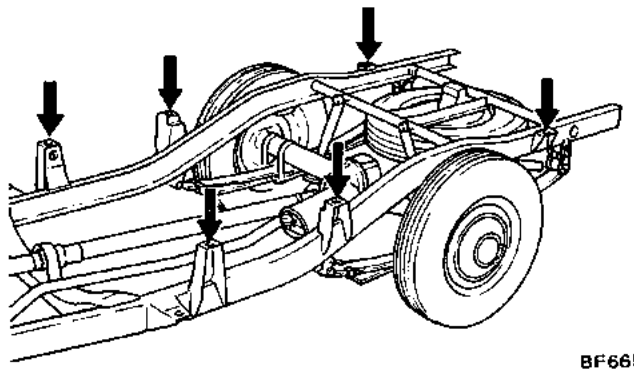


Fig. BF-51 Rear body mountings

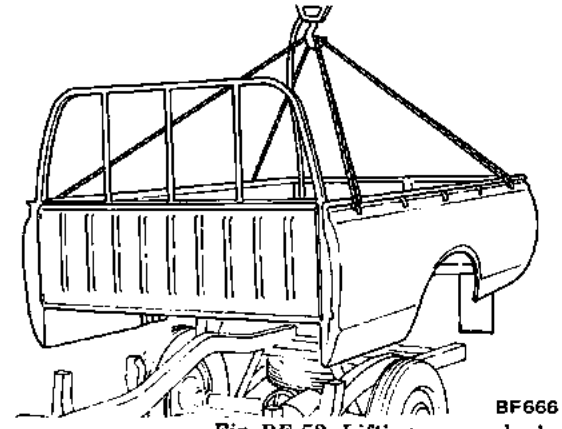


Fig. BF-52 Lifting up rear body

6. Attach lifting ropes to hooks in rear body as shown in Figure BF-52, and lift up rear body slowly and carefully.

Notes:

a. When lifting rear body, make sure that it is in a good balanced condition.

b. Use care while lifting not to allow rear body hitting against cab body or any adjacent parts.

c. The rear body weighs approximately 130 kg (286 lb).

7. To install rear body, reverse the order of removal. Carefully observe the following instructions.

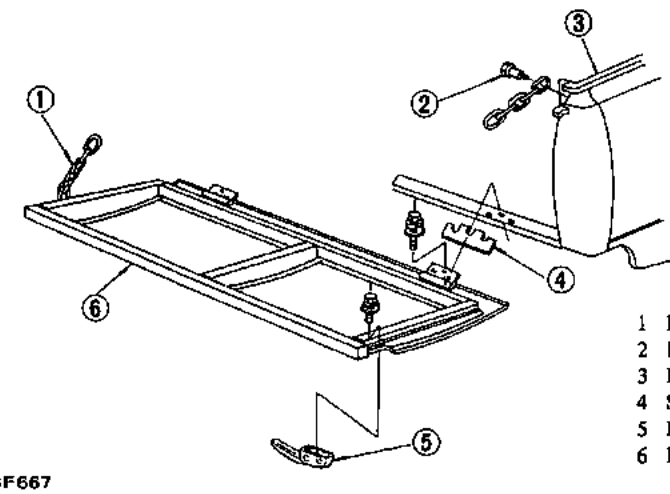
Make sure that spacers and shims (used with bolts) are properly placed in their original positions. Refer to Figure BF-50 for the location of these parts.

The rear body-to-frame attaching bolts should be torqued to 3.3 to 4.2 kg-m (24 to 30 ft-lb).

REAR GATE AND REAR BUMPER

CONTENTS

REMOVAL AND INSTALLATION



1 Rear gate chain
2 Rear gate chain bolt
3 Rear body
4 Shim
5 Hook handle
6 Rear gate

Fig. BF-53 Rear gate (Pick-up)

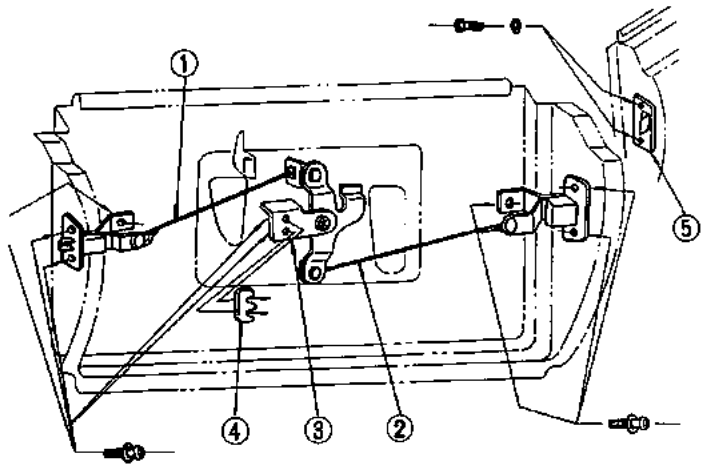
1. Open rear gate.
2. Remove rear gate chain from rear gate. (Pick-up)
3. Remove rear gate stay from rear gate. (Double Pick-up)
4. Remove rear gate hinge attaching bolts and take out rear gate and rear gate hinge shims.
5. To install rear gate, reverse the order of removal.

ALIGNMENT

The rear gate should be adjusted so that there exists an equal clearance between body and the periphery of rear gate. There should be no stepped portion at any points.

1. To adjust the height of rear gate, add or remove shims at rear gate hinge. Two sizes of shim are available in thickness – 1.6 mm (0.0630 in) and 0.8 mm (0.0315 in).
2. To adjust rear gate in the left and right directions, loosen rear gate hinge attaching bolts, and move rear gate as required.
3. To adjust rear gate hook, loosen two attaching bolts and move rear gate hook up-down or left-right in elongated holes as required. (Pick-up)
4. To adjust the length of rear gate stays, loosen bolts and adjust stays until they are of an equal length. (Double Pick-up)
5. Remove three side lock assembly attaching screws and detach side lock assembly.
6. Remove two rear gate lock handle attaching nuts from the inside of rear gate and detach lock handle.
7. To install rear gate lock, reverse the order of removal.

REAR GATE LOCK (Double Pick-up)



BF668

1 Remote control rod
2 Remote control rod
3 Remote control lever assembly
4 Shim
5 Striker

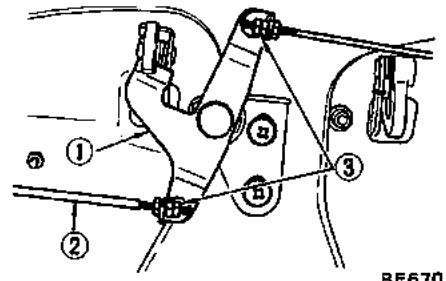
Fig. BF-54 Rear gate lock assembly

Removal and installation

1. Open rear gate.
2. Remove four rear gate inside cover attaching screws and detach rear gate inside cover.
3. Disengage two remote control rods from remote control lever assembly.
4. Remove two remote control lever assembly attaching screws and detach remote control lever assembly and shim.

Adjustment

1. Turn adjusting nut on remote control rod as required until spindle of side lock assembly is properly meshed with striker.



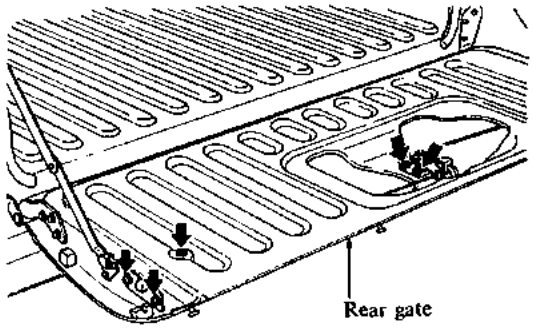
BF670

1 Remote control lever
2 Remote control rod
3 Adjusting nut

Fig. BF-56 Adjusting rear gate lock

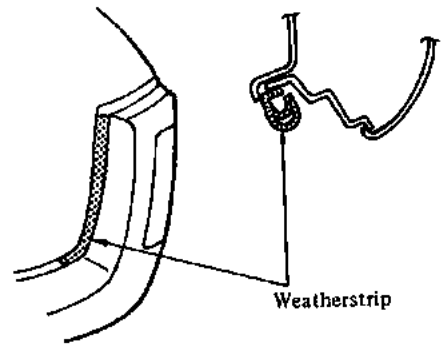
2. To adjust striker properly, loosen two striker attaching bolts and move striker in the fore-aft direction until correct adjustment is made.

WEATHERSTRIP (Double Pick-up)



BF669

Fig. BF-55 Removing remote control lever and side lock assembly



BF671

Fig. BF-57 Rear gate weatherstrip

Removal and installation

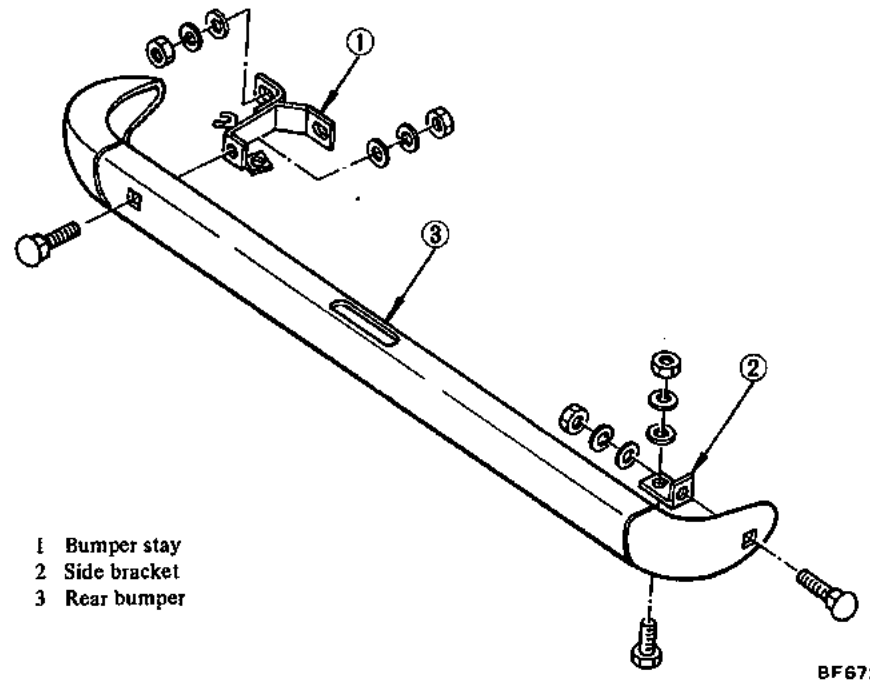
1. Detach weatherstrip from body.
2. Clean adhesive cement from the weatherstrip contact surfaces, using an non-lead gasoline. Wipe these surfaces clean with a clean cloth wet with water.
3. Apply adhesive cement to the contact surfaces of body and weatherstrip.
4. Leave the contact surfaces unattended until adhesive cement is dry, and then attach weatherstrip in position securely.

REAR BUMPER (Double Pick-up)

Removal and installation

1. Remove rear bumper attaching bolts and nuts and detach rear bumper.
2. To install, reverse the order of removal.

Make sure that the rear fender to bumper clearance is equal on each side.



1 Bumper stay
2 Side bracket
3 Rear bumper

BF672

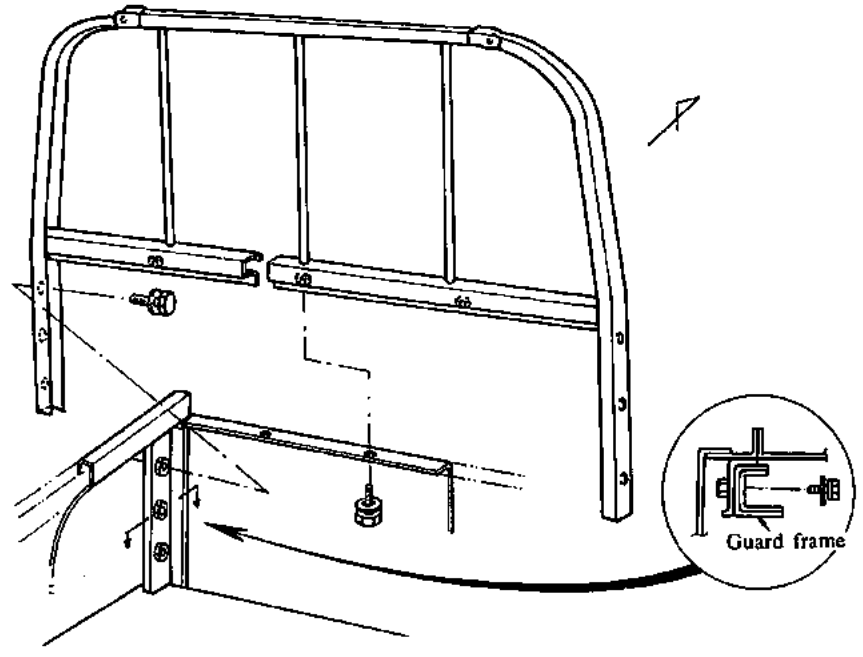
Fig. BF-58 Removing rear bumper

GUARD FRAME (Pick-up)

Removal and installation

The guard frame is furnished as an optional equipment.

1. Remove nine guard frame attaching bolts and detach guard frame.
2. To install optional guard frame, reverse the order of removal.

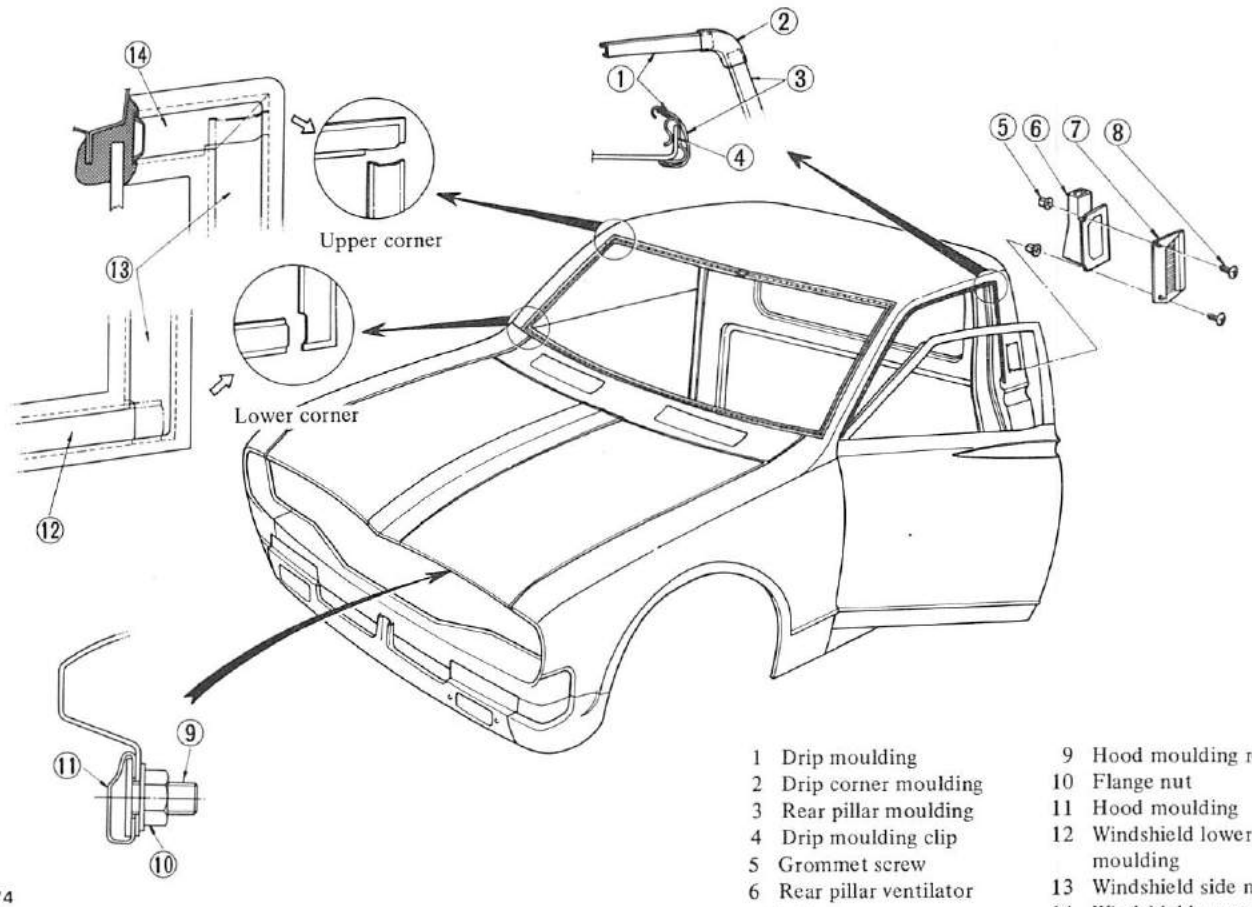


BF673

Fig. BF-59 Guard frame

MOULDING

CONTENTS



BF674

1 Drip moulding
2 Drip corner moulding
3 Rear pillar moulding
4 Drip moulding clip
5 Grommet screw
6 Rear pillar ventilator duct
7 Rear pillar grille
8 Screw
9 Hood moulding retainer
10 Flange nut
11 Hood moulding
12 Windshield lower moulding
13 Windshield side moulding
14 Windshield upper moulding

Fig. BF-60 Mouldings

HOOD MOULDING

Removal and installation

1. Open engine hood.
2. Remove engine hood moulding by loosening six nuts from behind engine hood.
3. To install, reverse removal procedure.

WINDSHIELD MOULDING

Removal and installation

1. Detach the upper windshield moulding.
2. Detach the right and left windshield mouldings.
3. Detach bottom windshield moulding.
4. To install, reverse removal procedure. For details, refer to Figure BF-60.

DRIP MOULDING

Removal and installation

1. Detach corner moulding.

2. Detach drip mouldings.
3. To install, reverse removal procedure.

AIR VENTILATOR GRILLE

Removal and installation

1. Loosen air ventilator grille attaching screws and remove grille and duct.
2. To install, reverse removal procedure.

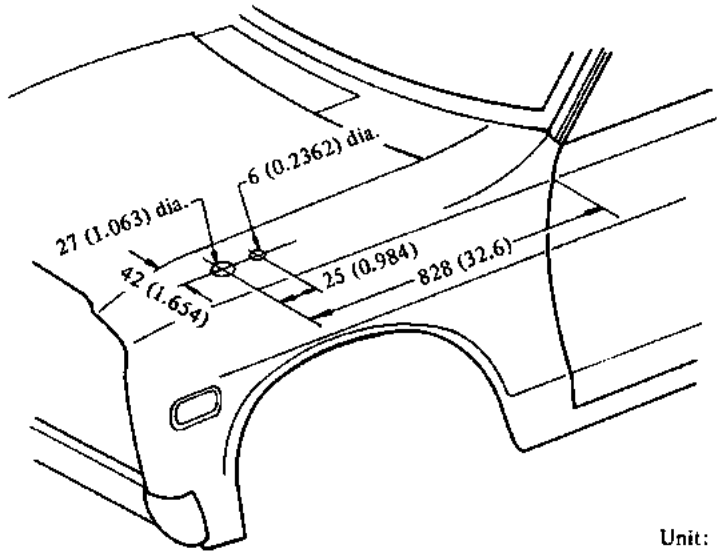
OUTSIDE MIRROR

CONTENTS

INSTALLATION

Fender mirror

Drill holes at the position shown in Figure BF-61, and fix fender mirror into position.



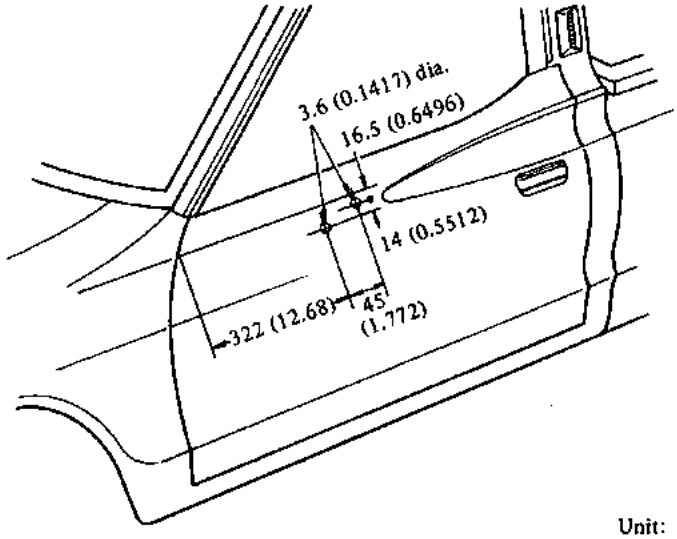
Unit: mm (in)

BF675

Fig. BF-61 Position of fender mirror holes

Door mirror

To install door mirror, attach a template of mirror to driver side door and drill holes through template into door. For details, refer to the instructions shown in template.



Unit: mm (in)

BF676

Fig. BF-62 Position of door mirror holes

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS AND BODY

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION BE

BODY ELECTRICAL SYSTEM

BE

BODY ELECTRICAL WIRING

CONTENTS

DESCRIPTION

Cables used for body electrical wiring are low tension cables. Their conductors are covered with vinyl of various colors. These various colors are intended to represent use of respective cables. In wiring diagram, these colors are indicated by one or two alphabetical letters. With different colors thus used, such cables gathered together in wiring harness easily reveal their origins and destinations. Basic colors included standard colors and supplementary colors to standard ones are established for cables of respective systems such as starting and ignition system, lighting system and signal system. By designated colors, therefore, you can easily tell circuit systems and starting points of respective cables.

Colors of cables

The system of colors applied to the covering of cable conductors is as shown in the following table:

Circuit system	Standard color	Supplementary color	Supplementary color to standard color
Starting and ignition system	B (Black)	W, Y, R	
Charging system	W (White)	B, R, L	Y
Lighting system	R (Red)	W, B, G, Y, L	
Signal system	G (Green)	W, B, R, Y, L	W, Br (Brown)
Instrument system	Y (Yellow)	W, B, G, R, L	
Others	L (Blue)	W, R, Y	Y, Br Lg (Light green)
Grounding system	B (Black)		

To covering of individual main cable of each system, standard color or supplementary color to standard color is generally applied. Colors are represented respectively by such letters as G, W and Br. Applied to minor item of each circuit's terminal is two-tone color which is composed of standard and supplementary colors. Each of such two-tone colors is indicated with combination of two letters like RW or GY; and the first letter of each combination stands for standard color, and the second supplementary color.

WIRING HARNESS

Inspection

Referring to wiring diagrams or circuit diagrams, inspect entire electrical wiring and connections and insure:

1. That each electrical component part or cable is securely fastened to its connector or terminal.
2. That each connection is tight in place and free from rust and dirt.
3. That each cable covering shows no evidence of cracks, deterioration or otherwise damage.
4. That each terminal is securely kept away from any adjacent metal parts.
5. That each cable is fastened to its proper connector or terminal.
6. That each grounding bolt is planted tight.
7. That wiring is securely kept away from any adjacent sharp edges of parts or parts (such as exhaust pipe) having high temperature.
8. That wiring is kept away from any rotating or working parts such as fan pulley, fan belts, etc.
9. That cables between fixed portions and resiliently mounted equipment are long enough to withstand shocks and vibratory forces.

Maintenance instructions

1. Before starting to inspect and repair any part of electrical system or other parts which may lead to a short circuit, be sure to disconnect cables at battery terminals.

Disconnect cables at battery terminals in the following manner:

Disconnect cable at negative ⊖, terminal, and then disconnect the other cable at positive ⊕ terminal.

Before connecting cables at battery terminals, be sure to clean terminals with a rag. Fasten cable at positive ⊕ terminal, and then the other cable at negative ⊖ terminal. Apply grease to top of these terminals to prevent rust from developing on them.

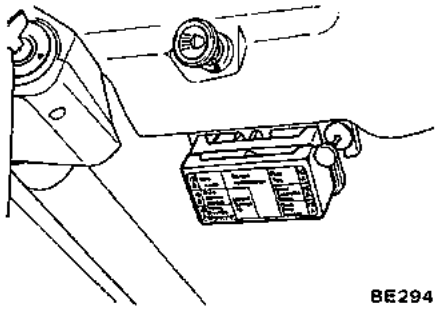
2. Never use a screwdriver or service tool to conduct a continuity test. Use test leads to conduct this check.
3. Never ground an open circuit or circuits under no load. Use a test lamp (12-3W) or circuit tester as a load.
4. Never disconnect cables by pulling them. Be sure to loosen terminals before disconnecting them.

FUSE AND FUSIBLE LINK

CONTENTS

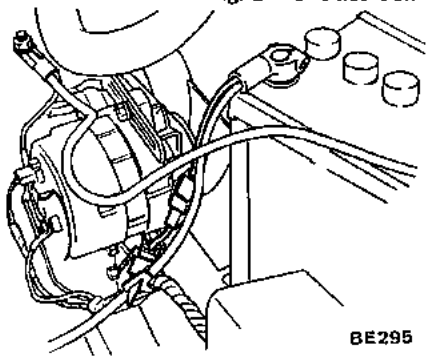
DESCRIPTION

The fuse and fusible link are protective device used in an electric circuit. When current increases beyond rated amperage, fusible metal melts and circuit is broken, and thus, cable and electrical equipment are protected from burning. Whenever fuse is melted for one reason or another, use systemactic procedure to check and eliminate cause of trouble before installing new fuse in position.



BE294

Fig. BE-1 Fuse box



BE295

Fig. BE-2 Fusible link

MAINTENANCE INSTRUCTION

Fuse

In nearly all cases, visual inspection can reveal defective fuse. If condition of fuse is questionable, conduct continuity test with use of circuit tester or test lamp.

Notes:

a. If fuse is blown off, be sure to eliminate the cause before installing new fuse in position.
b. Use fuse of specified rating. Do not use fuse of more than specified rating.
c. Check fuse holders for conditions. If much rust or dirt is found thereon, clean metal parts with fine-grained sandpaper until proper metal-to-metal contact is made. Poor contact of any fuse holder will often lead to voltage drop or heating in the circuit and, in the worst case, may result in improper operation of circuit.

Fusible link

Color	Size mm² (sq in)	Continuous current	Max. current (fuse melts within 5 sec.)
Green	0.5 (0.0008)	20A	Approx. 200A

Melted fusible link can be detected by either visual inspection or finger-tip feeling. If its condition is questionable, use circuit tester or test lamp, as required, to conduct continuity test. This continuity test can be performed in the same manner as for any conventional fuse.

Notes:

a. Fusible link carries current as large as 200 amperes when it melts in period of less than five seconds. Under no circumstances should any larger fusible link than that specified be used.
b. Should melting of fusible link occur, it is possible that critical circuit (power supply or large current carrying circuit) is shorted. In such case, carefully check and eliminate the cause of trouble.
c. Never wrap periphery of fusible link with vinyl tape. Extreme care should be taken of this link so that it does not come into contact with any other wiring harness or vinyl- or rubber-parts.

LIGHTING AND SIGNAL LAMP SYSTEM

CONTENTS

DESCRIPTION

Circuit diagram of lighting system

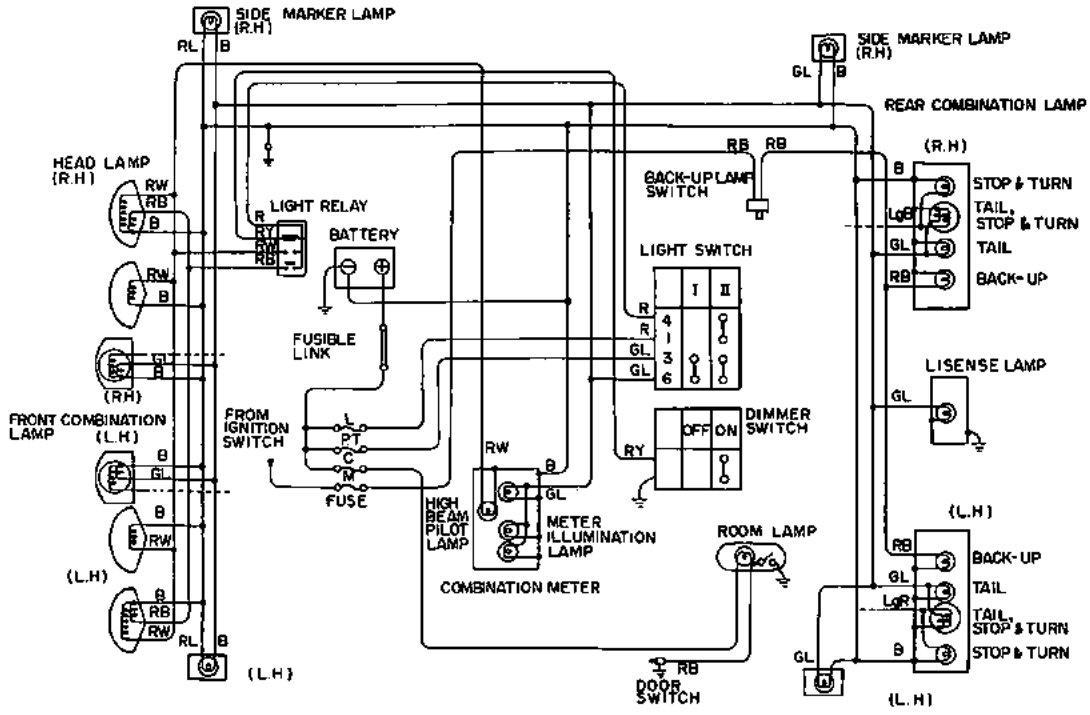


Fig. BE-3 Lighting system (U.S.A. and Canada)

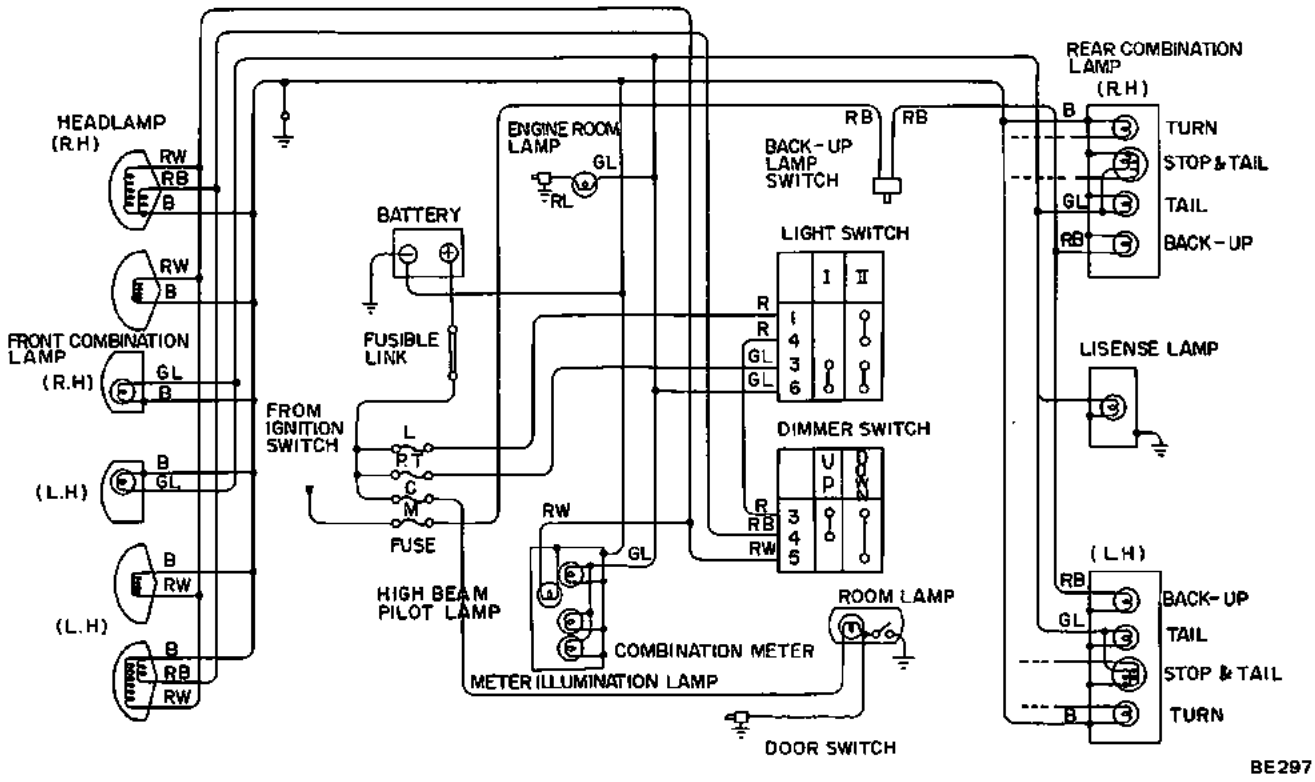


Fig. BE-4 Lighting system (General areas)

Circuit diagram of signal lamp system

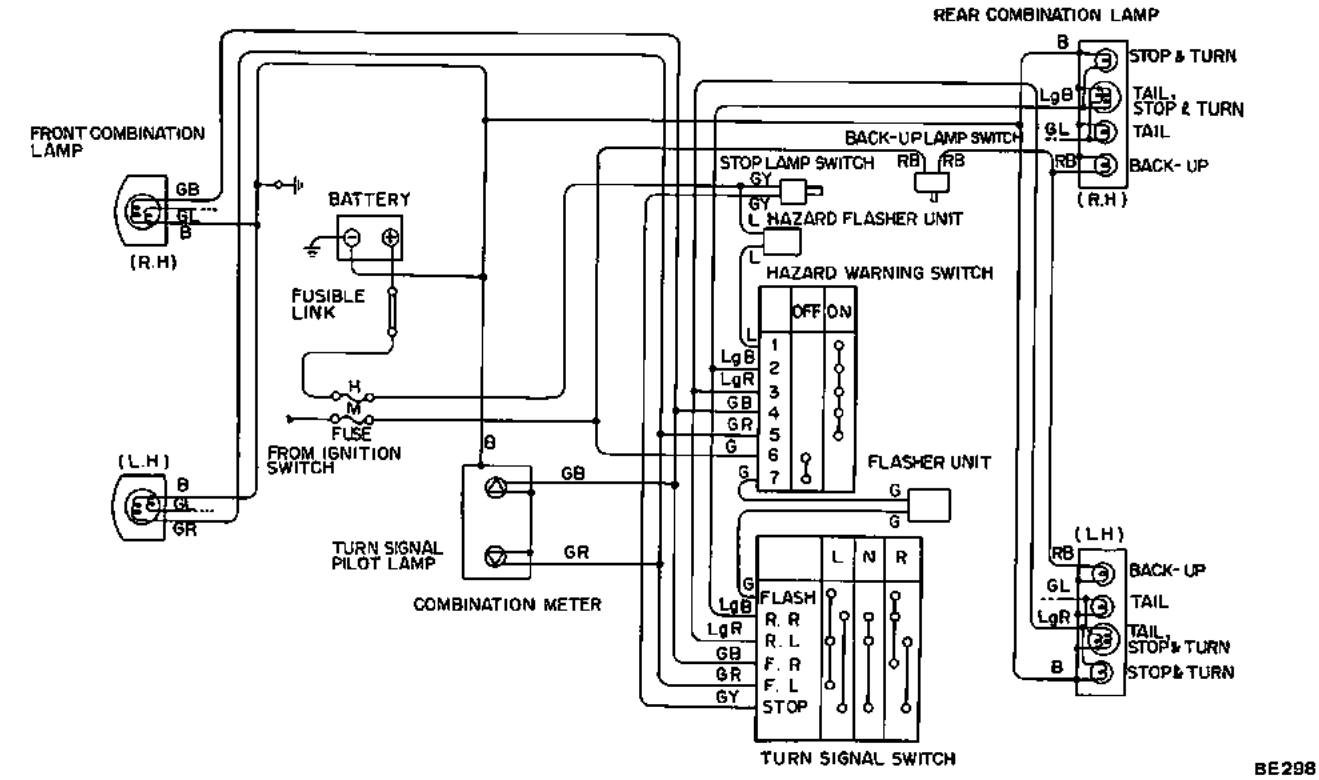


Fig. BE-5 Signal lamp system (U.S.A. and Canada)

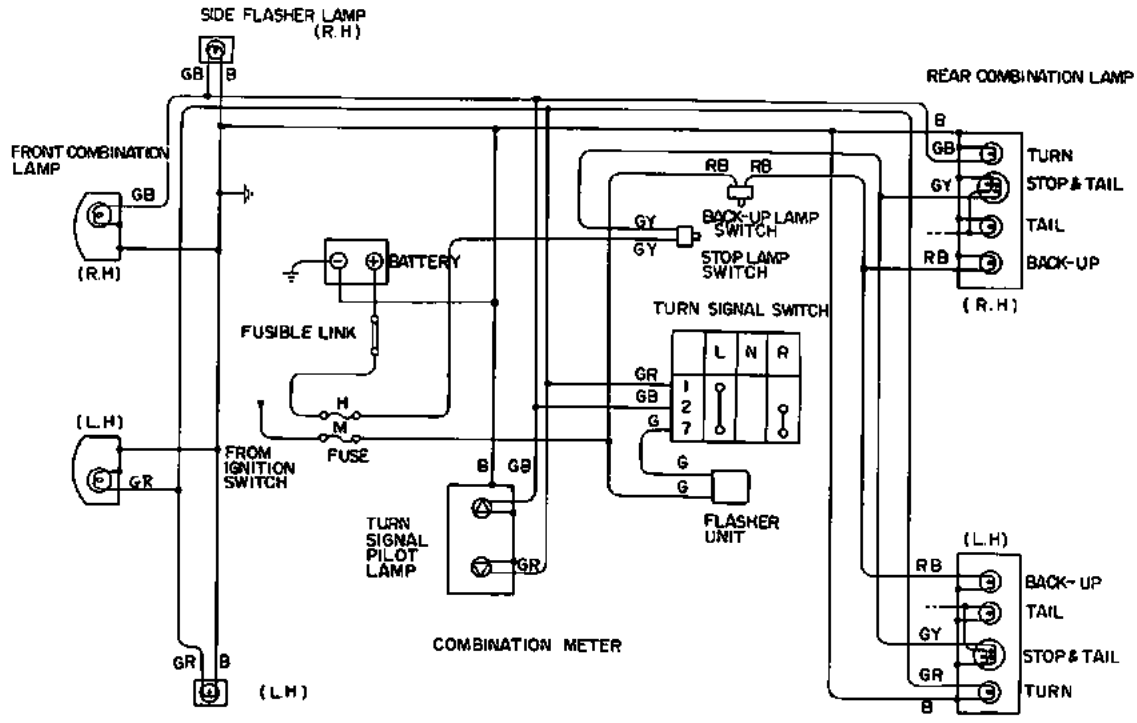


Fig. BE-6 Signal lamp system (General areas)

HEADLAMP

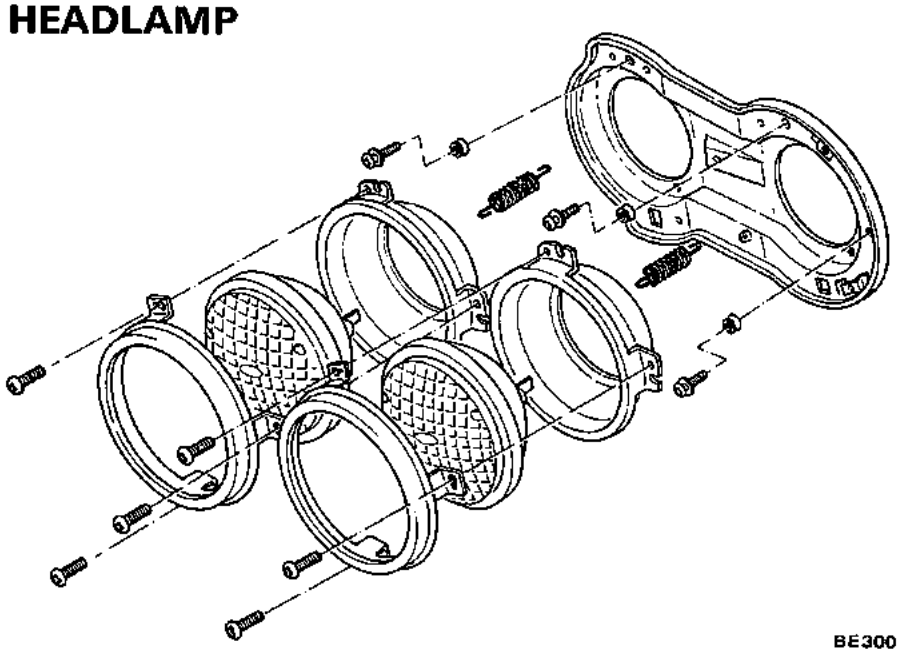


Fig. BE-7 Headlamp

Headlamp beam replacement

1. Remove radiator grille retaining screws and remove radiator grille.
2. Loosen three headlamp retaining ring screws. It may be unnecessary to remove screws.

Note: **Do not disturb aiming adjust screws.**

3. Remove retaining ring by rotating it clockwise.
4. Remove headlamp beam from moutning ring and disconnect wiring connector from behind beam.
5. Change headlamp beam and connect wiring connector to new beam.
6. Place headlamp beam in position so that three location tabs behind beam fit in with three hollows on mounting ring. Make sure that sign "Top" of beam lens is on upper side.
7. Install headlamp retaining ring and tighten retaining screws.
8. Place radiator grille in position and tighten retaining screws.

Aiming adjustment

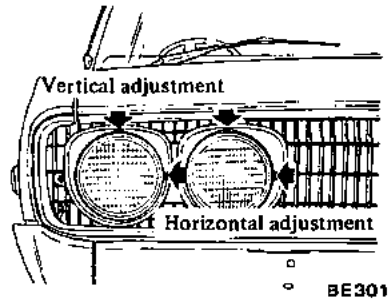


Fig. BE-8 Aiming adjustment

To adjust vertical aim, use adjusting screw on upper side of headlamp; and to adjust horizontal aim, use adjusting screw on side of headlamp.

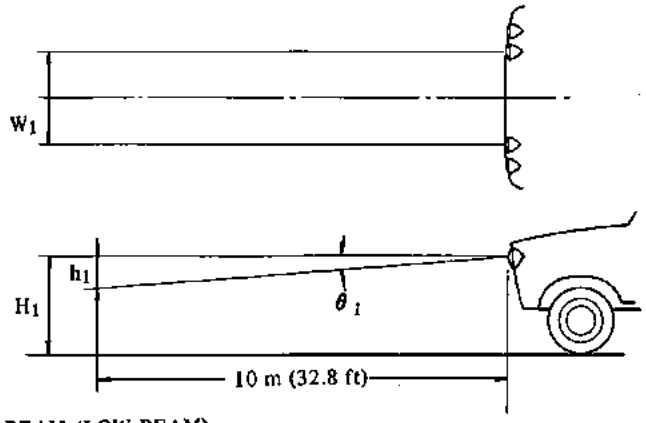
Notes:

Before making headlamp aiming adjustment, observe the following instructions.

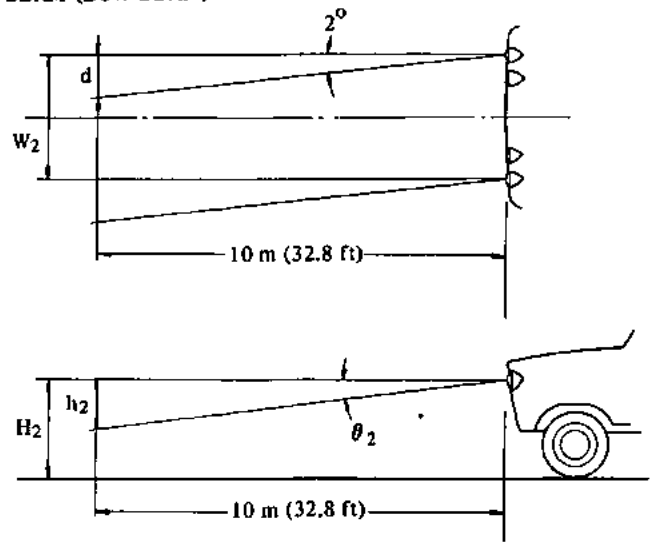
a. **Keep all tires inflated to correct pressures.**
b. **Place car and tester on the same flat surface.**
c. **See that there is no load in vehicle.**
   1) **Gasoline, radiator and engine oil pan filled up to correct levels.**
   2) **Without passenger**

When performing headlamp aiming adjustment, use an aiming device, aiming wall screen or headlamp tester. For operating instructions of any aimer, refer to respective operation manuals supplied with the unit.

DRIVING BEAM (HIGH BEAM)



PASSING BEAM (LOW BEAM)



Item / Model	Driving beam (High beam)				Passing beam (Low beam)				d mm (in)
	H_1 mm (in)	W_1 mm (in)	θ_1 (°)	h_1 mm (in)	H_2 mm (in)	W_2 mm (in)	θ_2 (°)	h_2 mm (in)	
Pick-up	715 (28.15)	780 (30.7)	48′	140 (5.5)	715 (28.15)	1,160 (45.7)	2°18′	392 (15.4)	349 (13.7)
Double Pick-up	680 (26.8)	780 (30.7)	42′	122 (4.8)	680 (26.8)	1,160 (45.7)	1°32′	268 (10.6)	349 (13.7)

BE302

Fig. BE-9 Aiming adjustment

FRONT COMBINATION LAMP

Bulb replacement

1. Remove two retaining screws and lens.
2. Push in on bulb, turn it counterclockwise and remove it from socket.
3. Insert new bulb into socket, press it inward and rotate it clockwise. Make sure that bulb is locked in its socket.
4. Place packing to lamp body in position and install lamp body (with packing), lens and two retaining screws.

Removal and installation

To remove lamp body, disconnect wiring at connector and remove wire grommet from panel. Remove two retaining screws and lens and withdraw lamp body from vehicle.

Install new lamp assembly in the reverse sequence of removal.

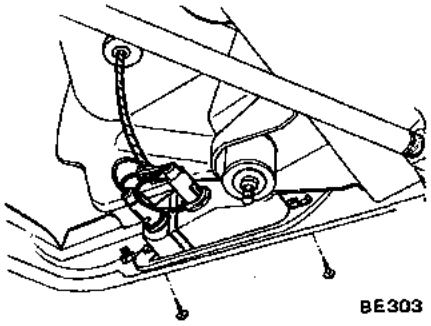


Fig. BE-10 Front combination lamp

SIDE FLASHER LAMP

Bulb replacement

1. Remove two retaining screws, lens and rim.
2. Pull bulb forward to remove it from socket.
3. Push new bulb into socket.
4. Place packing to lamp body in position and install lamp body (with packing), lens and two retaining screws.

Removal and installation

To remove lamp body, disconnect two lead wires at connectors and remove wire grommet from panel. Remove two retaining screws, lens and rim and withdraw lamp body and wire assembly from vehicle.

Install new lamp assembly in the reverse sequence of removal.

SIDE MARKER LAMP

Bulb replacement

1. Remove two retaining screws, lens and rim.
2. Push in on bulb, turn it counterclockwise and remove it from socket.
3. Insert new bulb into socket, press it inward and rotate it clockwise. Make sure that bulb is locked in its socket.
4. Place packing to lamp body in position and install lamp body (with packing), lens and two retaining screws.

Removal and installation

To remove lamp body, disconnect two lead wires at connectors and remove wire grommet (if so equipped) from panel.

Remove two retaining screws, lens and rim and withdraw lamp body from vehicle.

Install new lamp assembly in the reverse sequence of removal.

ROOM LAMP

Bulb replacement

1. Remove lens from lamp housing.
2. Pull bulb forward and remove it from socket.
3. Push new bulb into socket.
4. Install lens.

Removal and installation

To remove lamp assembly, disconnect battery ground cable, remove two retaining screws with lens removed from lamp housing, dismount lamp housing from roof rail and disconnect two wires at connectors.

Install new lamp assembly in the reverse sequence of removal.

REAR COMBINATION LAMP

Bulb replacement

Pick-up series

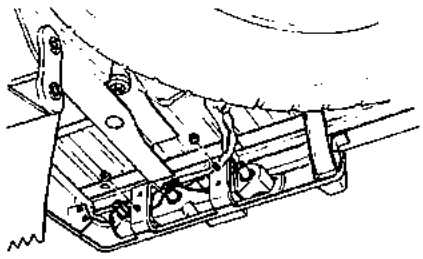
1. Remove six lens retaining screws and lens.
2. Push in on bulb and turn it counterclockwise to remove it from socket.
3. Insert new bulb into socket, press it inward, and rotate it clockwise. Make sure that bulb is locked in its socket.
4. Place lens into position and install retaining screws.

Double Pick-up series

1. Remove tail lamp cover. See Figure BE-12.
2. Turn bulb socket counerclockwise and remove socket from lamp body.
3. Push in on bulb, turn it counterclockwise and remove it from socket.
4. Insert new bulb into socket, making certain that locking pins in base of bulb are in position. Press bulb inward, rotate it clockwise and lock it in socket.
5. Insert socket into lamp houisng with locking tab in proper position. Rotate socket clockwise to lock it in lamp body.

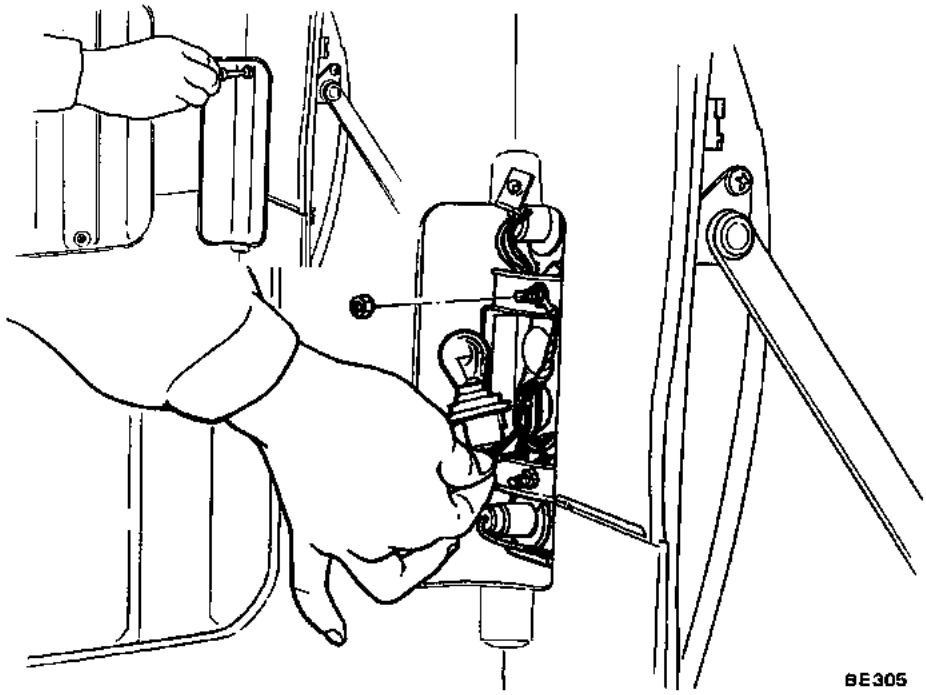
Removal and installation

1. Remove tail lamp cover (Double Pick-up series only).
2. Disconnect wiring assembly at connector.
3. Remove two nuts from combination lamp mounting studs.
4. Dismount combination lamp assembly from vehicle.
5. Replace lamp assembly with a new one.
6. Install new lamp assembly in the reverse sequence of removal.



BE304

Fig. BE-11 Rear combination lamp (Pick-up series)



BE305

Fig. BE-12 Rear combination lamp (Double Pick-up series)

LICENSE LAMP

Bulb replacement

Pick-up series

1. Remove lens retaining screw, if so equipped, and remove lens.
2. Pull out bulb and replace it with a new one.
3. Install lens.

Double Pick-up series

1. Remove two retaining screws and remove rim, lens and packing.
2. Push in on bulb and turn it counterclockwise to remove it from socket.
3. Insert new bulb into socket, press it inward, and rotate it clockwise. Make sure that bulb is locked in its socket.
4. Place packing, lens and rim and install retaining screws.

Removal and installation

Pick-up series

1. Disconnect lead wire at connector.
2. Remove lamp bracket retaining screws and lamp assembly.
3. Install new lamp assembly in the reverse sequence of removal.

Double Pick-up series

1. Disconnect lead wire at connector.
2. Remove two flange nuts from mounting studs at the back side of rear bumper.
3. Pull lamp assembly out of rear bumper.
4. Install new lamp assembly in the reverse sequence of removal.

ENGINE ROOM LAMP

Bulb can be replaced by pushing in on bulb and turning it counterclockwise.

To replace engine room lamp assembly, remove one screw retaining lamp bracket to lower dash panel and disconnect wires at connectors.

Engine room lamp switch can be replaced by disconnecting lead wire at connector and pulling switch assembly out of its bracket. To install switch assembly to bracket, clean dirt, dust and rust from the opening groove of bracket and press down on switch head until it fits in with bracket.

LIGHTING SWITCH

Removal and installation

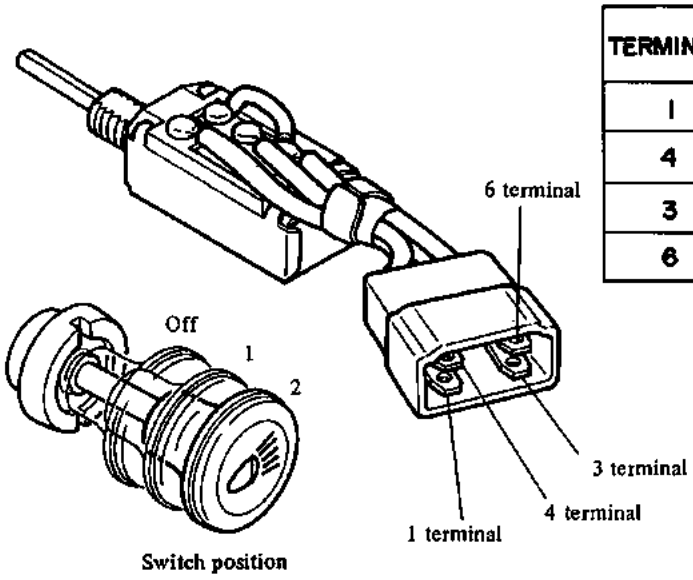
1. Disconnect battery ground cable.
2. Press in switch knob, turn it counterclockwise and pull it out of switch.
3. Unscrew escutcheon and remove escutcheon and spacer.
4. Reach up from underneath instrument panel, disconnect lighting switch multiple connector from instrument harness wiring assembly and remove spacer and lighting switch.
5. Install new switch in the reverse sequence of removal.

Inspection

Continuity test

Remove lighting switch from vehicle, following the procedures given in "Removal and Installation."

Test continuity through lighting switch by using test lamp or ohmmeter.



TERMINAL	SWITCH POSITION		
	OFF	1	2
1			○
4			○
3		○	○
6		○	○

Fig. BE-13 Lighting switch

TURN SIGNAL AND DIMMER SWITCH

Removal and installation

1. Remove steering wheel.
   Refer to the related section "Steering."
2. Unhook wiring assembly from clip that retains wiring assembly to lower instrument panel.
3. Disconnect multiple connector and lead wire from instrument harness wiring.
4. Remove shell covers (Upper and Lower).
5. Loosen two screws attaching switch assembly to steering column jacket and remove switch assembly.
6. Position switch assembly to steering column jacket. Make sure that a location tab (or screw) fits in with hole of steering column jacket.
7. Tighten two attaching screws.
8. Install shell covers.
9. Connect multiple connector and lead wire to instrument harness wiring.
10. Clip wiring assembly at lower instrument panel.
11. Install steering wheel.

Inspection

Continuity test

Test continuity through lighting switch by using test lamp or ohmmeter.

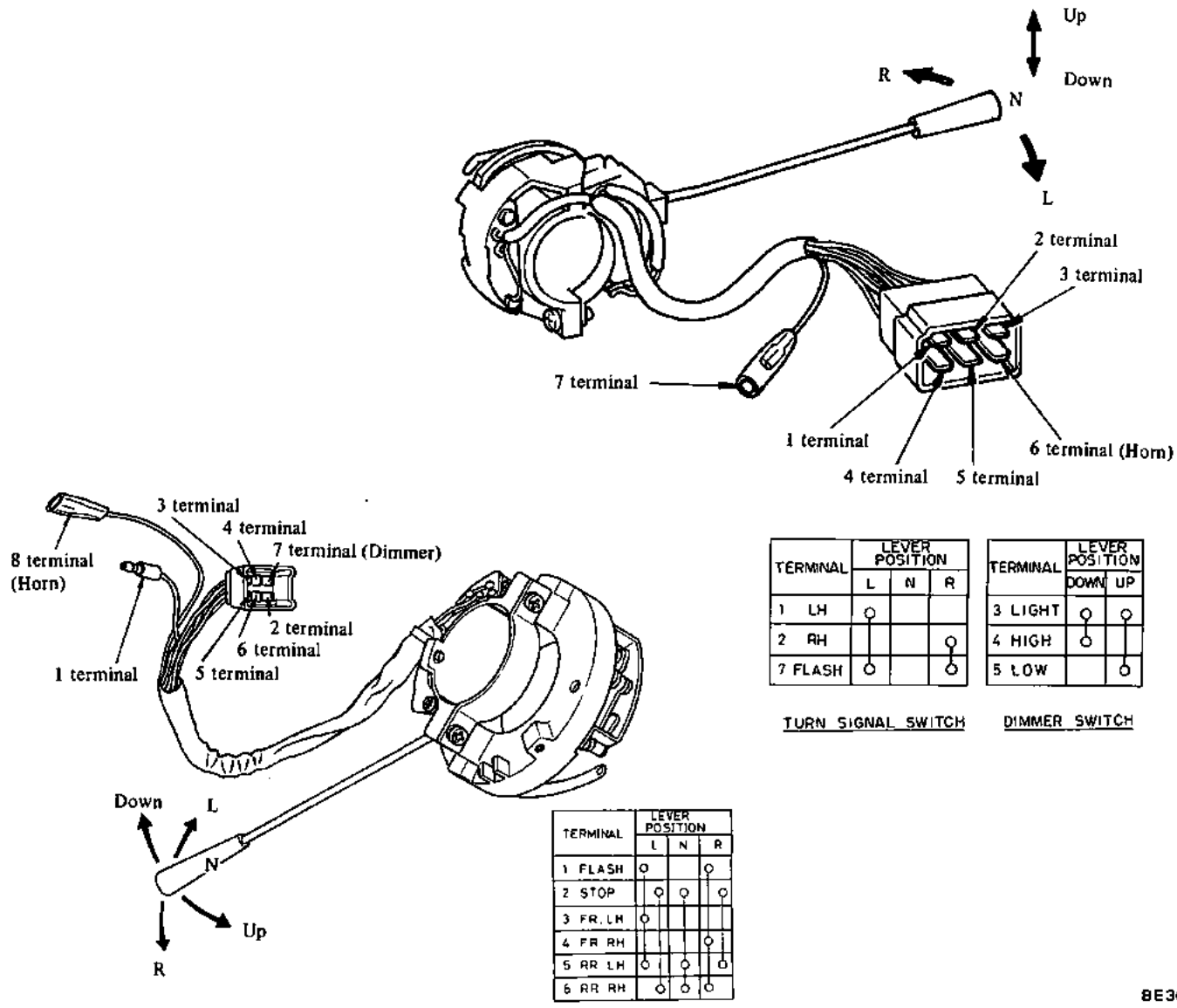


Fig. BE-14 Turn signal and dimmer switch

STOP LAMP SWITCH

Removal and installation

Stop lamp switch is mounted at the bottom of (pedal and steering post) bracket.

1. Disconnect battery ground cable.
2. Disconnect lead wires at connectors.
3. Loosen lock nut, unscrew switch assembly and remove switch assembly.
4. Install switch assembly as described under "Brake pedal" in Section "BR."

Inspection

Continuity test

When plunger is pressed into switch assembly (when brake pedal is released), stop lamp switch contacts are open. On the contrary, contacts are closed with plunger projected.

DOOR SWITCH

Door switch can be replaced by pulling switch assembly out of lower pillar, withdrawing switch and wiring assembly and disconnecting lead wire at connector. Prior to performing operations of removal, be sure to disconnect battery ground cable.

HAZARD SWITCH

Removal and installation

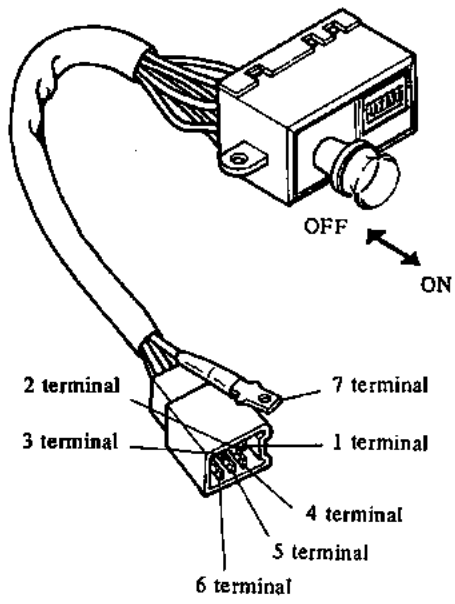
1. Disconnect multiple connector and lead wire from instrument harness wiring.
2. Remove shell covers (Upper and lower).
3. Remove two screws attaching switch to lower shell cover and remove switch.

4. Install hazard switch in the reverse sequence of removal.

Inspection

Continuity test

Test continuity through hazard switch by using test lamp or ohmmeter.



TERMINAL	SWITCH POSITION	
	OFF	ON
1		○
2		○
3		○
4		○
5		○
6	○	
7	○	

BE308

Fig. BE-15 Hazard switch

BULB SPECIFICATIONS

Item		U.S.A. and Canada		General areas
		SAE trade number	Wattage (Candle power)	Wattage
Headlamp				
Inner–High beam		4001	37.5	37.5
Outer–Low - High beam		4002	37.5-50	37.5-50
Front combination lamp				
Turn signal lamp		1034	8-23 (3-32)	21
Parking lamp				5
Side flasher lamp		–	–	5
Side marker lamp		67	8 (4)	–
License plate illumination lamp		89	7.5 (6)	10
Rear combination lamp				
Pick-up	Turn signal	–	–	21
	Turn signal and stop	1073	23 (32)	–
	Tail/Stop	–	–	5-21
	Tail/Turn signal and stop	1034	8-23 (3-32)	–
	Tail	67	8 (4)	5
	Back-up	1073	23 (32)	21
Double Pick-up	Turn signal	–	–	21
	Tail/Stop	–	–	5-21
	Back-up	–	–	21
Room lamp		–	5	5
Engine room lamp		–	6	6

TROUBLE DIAGNOSES AND CORRECTIONS

Headlamp

Condition	Probable cause	Corrective action
Headlamps do not light for both high and low beams.	Burnt fuse.	Correct cause and replace fuse.
	Loose connection or open circuit.	Check wiring and/or repair connection.
	Defective lighting switch.	Conduct continuity test and replace if necessary.
	Defective dimmer switch	
	Defective light relay.	Check light relay for proper operation and replace if necessary.
	No ground.	Clean and tighten ground terminal.
High beam cannot be switched to low beam or vice versa.	Defective dimmer switch.	Conduct continuity test and replace if necessary.
	Defective light relay.	Check light relay for proper operation and replace if necessary.
Headlamps dim.	Partly discharged or defective battery.	Measure specific gravity of electrolyte and recharge or replace battery if necessary.
	Defective charging system.	Measure voltage at headlamp terminals. If it is less than 12.8V, check charging system for proper operation.
	Poor ground or loose connection.	Clean and/or tighten.
	Burnt sealed beams.	Replace.
Headlmap in only one side lights.	Loose headlamp connection.	Repair.
	Defective sealed beam.	Replace.

Turn signal lamp

Condition	Probable cause	Corrective action
Turn signals do not operate.	Burnt fuse.	Correct cause and replace.
	Loose connection or open circuit.	Check wiring and/or repair connection.
	Defective flasher unit.	Replace.
	Defective turn signal switch.	Conduct continuity test and replace if necessary.
Flashing cycle is too slow. (Pilot lamp does not go out.) or too fast.	Bulbs having wattage other than specified wattage are used.	Replace with specified one.
	Burnt bulbs.	Replace.
	Loose connection.	Repair.
	Defective flasher unit.	Replace.
Flashing cycle is irregular.	Burnt bulb.	Replace.
	Loose connection.	Repair.
	Bulb having wattage other than specified wattage is used.	Replace with specified one.

Tail lamp, stop lamp and back-up lamp

Condition	Probable cause	Corrective action
Both left and right lamps do not light.	Burnt fuse.	Correct cause and replace.
	Defective stop lamp switch.	Conduct continuity test and replace if necessary.
	Defective back-up lamp switch.	Conduct continuity test and replace if necessary.
	Loose connection or open circuit.	Check wiring and/or repair connection.
Lamp in only one side lights.	Burnt bulb.	Replace.
	Loose bulb.	Repair lamp socket.

METER AND GAUGES

CONTENTS

COMBINATION METER

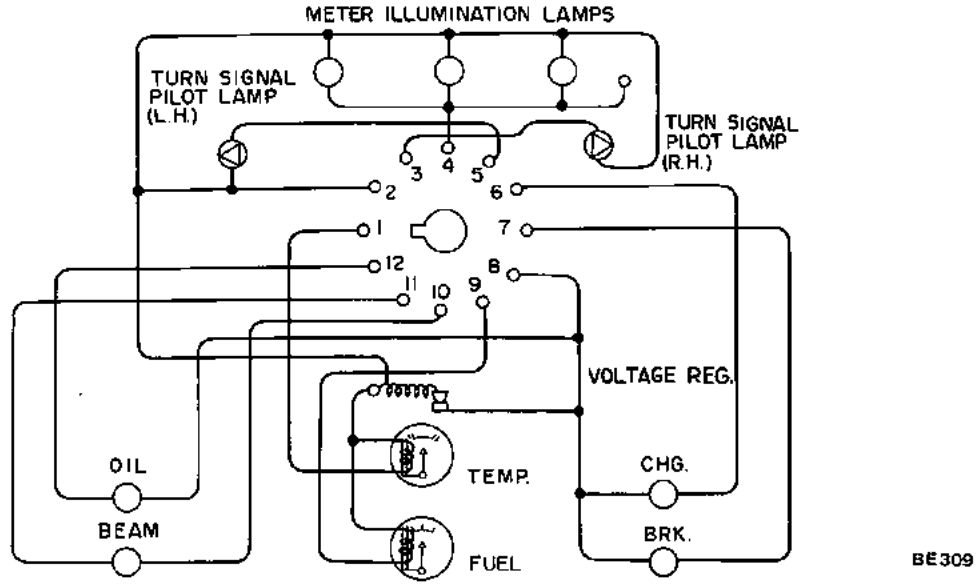


Fig. BE-16 Circuit diagram for combination meter

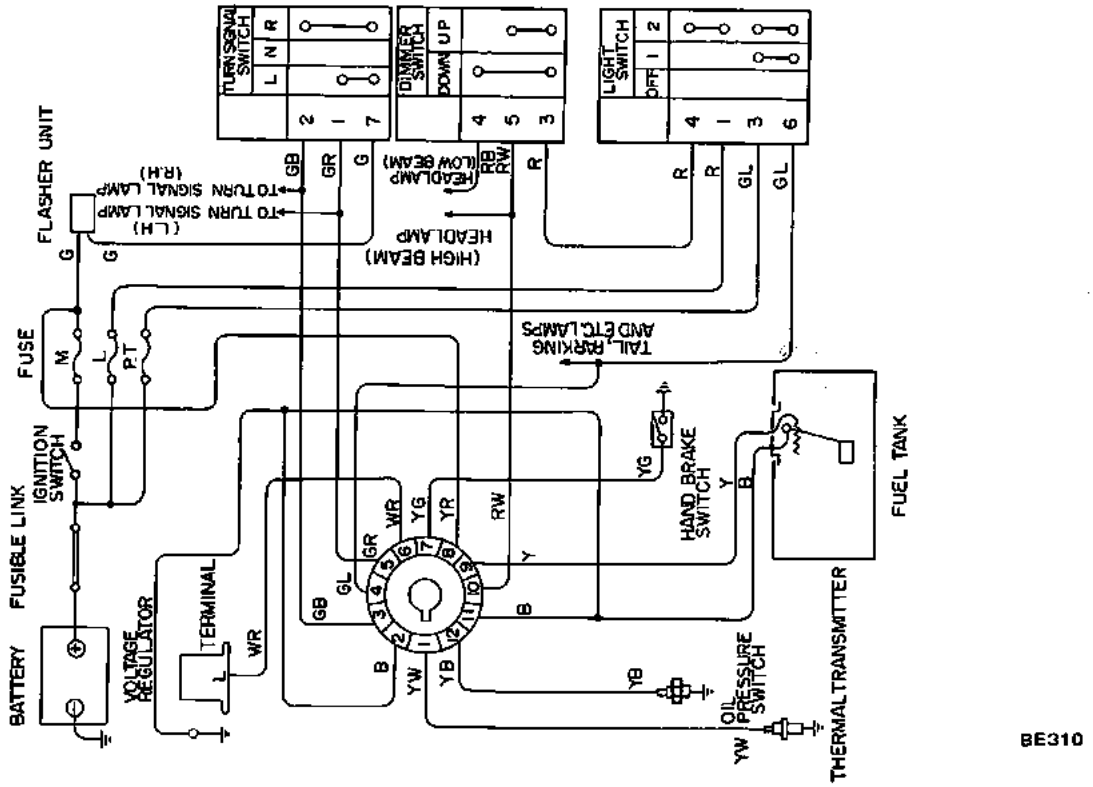


Fig. BE-17 Circuit diagram for combination meter system (General areas)

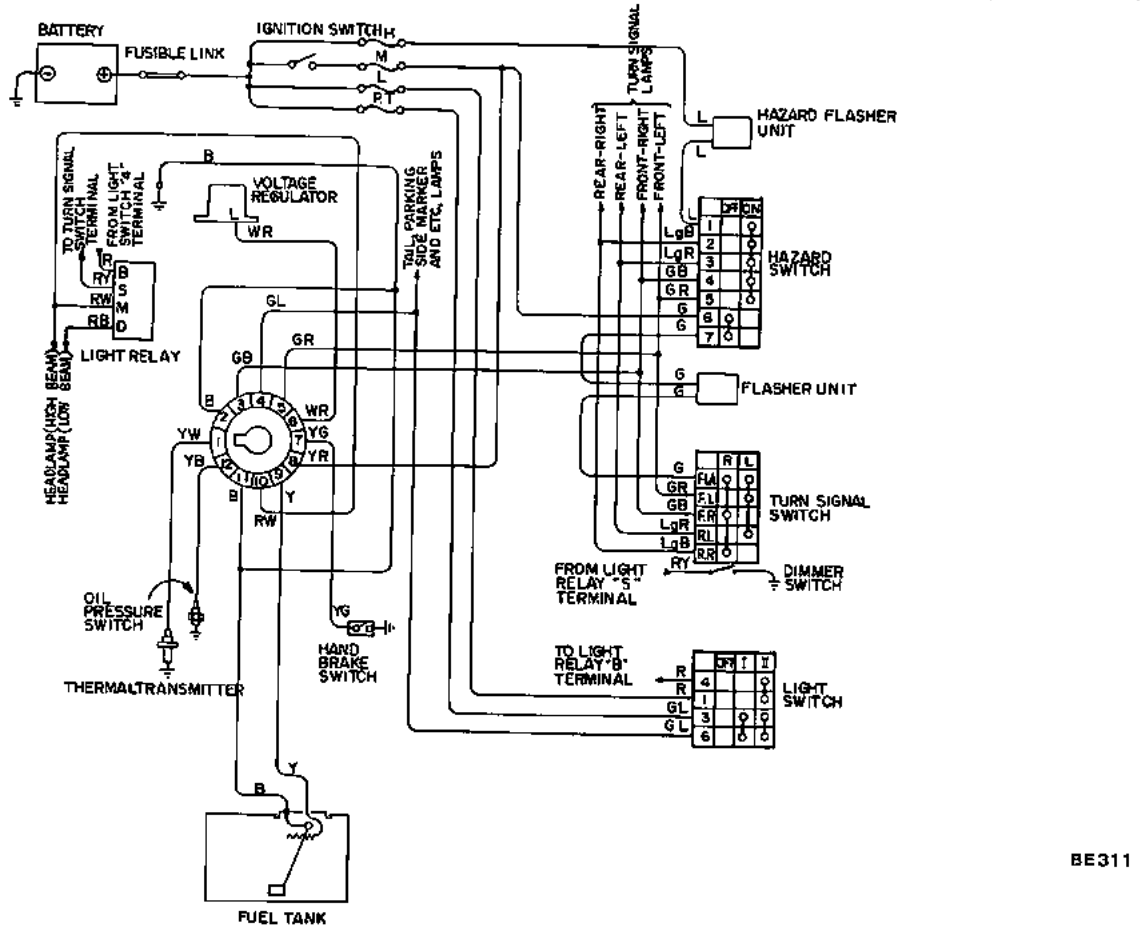


Fig. BE-18 Circuit diagram for combination meter system (U.S.A. and Canada)

Removal and installation

L.H. drive vehicle

1. Disconnect battery ground cable.
2. Working through meter openings of cluster lid, remove three screws retaining cluster lid to instrument panel.
3. From underneath instrument panel, remove one screw retaining meter assembly to lower panel of instrument.
4. Withdraw cluster lid slightly. For access to switches, knobs, etc., follow the procedures given in each section.
5. From behind combination meter disconnect speedometer cable at speedometer head and multiple connector (instrument wire assembly) from printed circuit.
6. On vehicle with clock, disconnect wires at each connection on meter printed circuit.
7. Remove four screws retaining meter assembly to cluster lid.
8. Remove combination meter assembly.
9. When installing combination meter assembly, follow the reverse sequence of removal.

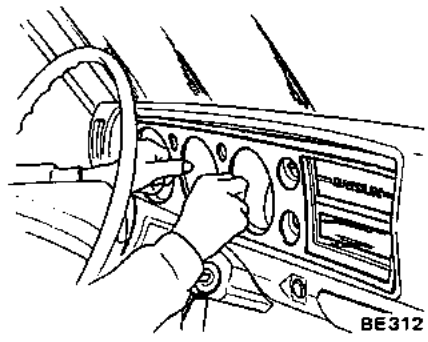


Fig. BE-19 Removing cluster lid

R.H. drive vehicle

1. Disconnect battery ground cable.
2. From behind combination meter assembly, disconnect speedometer cable at speedometer head and multiple connector (instrument wire assembly) from printed circuit.
3. On vehicle with clock, disconnect two wires at each connection on meter printed circuit.

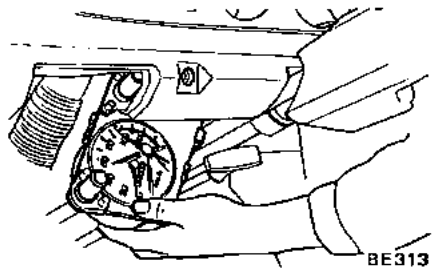


Fig. BE-20 Removing combination meter

4. Working through meter (center and right) openings of instrument panel, remove two screws retaining combination meter assembly to instrument panel.
5. From underneath instrument panel, remove one screw retaining meter assembly to lower instrument panel.
6. Dismount combination meter assembly as shown in Figure BE-20.
7. When installing combination meter assembly, follow the reverse sequence of removal.

SPEEDOMETER

Removal and installation

1. Remove combination meter assembly. Follow the procedures under "Removal and installation" in "COMBINATION METER."
2. Remove meter front cover and shadow plate by removing clips and screws.
3. Remove screws retaining speedometer to printed circuit housing and remove speedometer.
4. Install speedometer in the reverse sequence of removal.

FUEL METER AND WATER TEMPERATURE METER

Description

The fuel meter consists of a tank unit located in the fuel tank and fuel meter. The tank unit detects fuel level with its float, converts fuel level variation to a resistance of slide resistor installed on the float base, and thus, controls current flowing to the fuel meter.

The water temperature meter consists of a meter and thermaltransmitter located in the engine block. The thermaltransmitter is equipped with a thermistor element which converts cooling water temperature variation to a resistance, and thus, the thermaltransmitter controls current flowing to the meter.

The fuel meter and water temperature meter are provided with a bimetal arm and heater coil. When the ignition switch is set to "ON," current flows to the heat coil, and the heat coils is heated. With this heat, the bimetal arm is bent, and thus, the pointer connected to the bimetal arm is operated. The characteristics of both meters are the same.

A tolerance may occur on the water temperature meter or fuel meter due to source voltage fluctuation. The voltage regulator is used to supply a constant voltage so that the water temperature meter and fuel meter operate correctly.

The operating part of the regulator consists of a bimetal arm and a heater coil. When the ignition switch is turned on, the bimetal arm is heated and bent by the coil, opening the contact. Consequently, current to the coil is interrupted. As the bimetal cools, the contact closes. The repetition of this operation produces a pulsating voltage of 8 volts which is applied to the temperature and fuel gauges.

If both the water temperature meter and fuel meter become defective at the same time. This may be attributable to trouble in the voltage regulator.

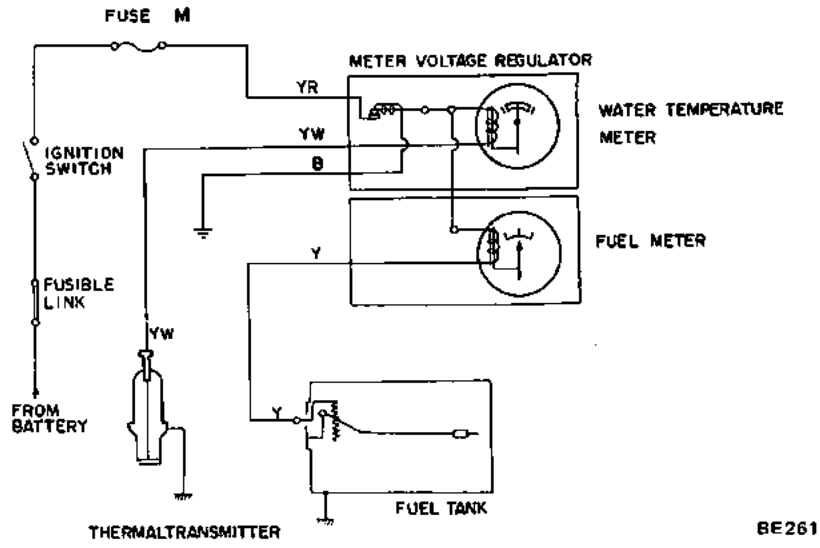


Fig. BE-21 Circuit diagram for fuel meter and water temperature meter

Removal and installation

1. Remove combination meter assembly. Follow the procedures under "Removal and installation" in "COMBINATION METER."
2. Remove meter front cover and shadow plate by removing clips and screws.
3. Remove retaining nuts at the back side of combination meter assembly and remove meter.
4. Install meter in the reverse sequence of removal.

OIL PRESSURE WARNING LAMP

Description

The engine lubricating system incorporates an oil pressure warning lamp which glows whenever engine oil pressure falls below 0.4 to 0.6 kg/cm² (5.7 to 8.5 psi). Under normal operation, when the engine is stationary, the light glows with the ignition switch turned on. When the engine is running and oil pressure reaches the above range, the circuit opens and the light goes out.

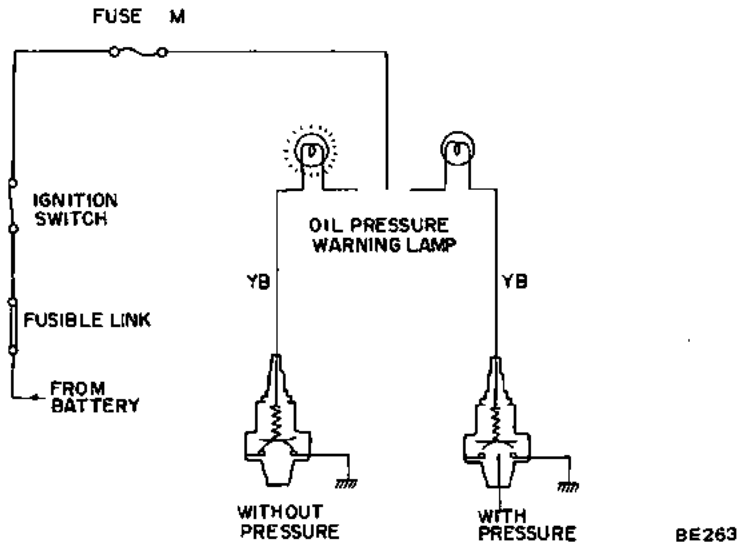


Fig. BE-22 Circuit of oil pressure warning system

Oil pressure switch

To replace oil pressure switch, disconnect lead wire from switch terminal and unscrew switch from engine cylinder block.

Prior to installing switch to cylinder block, be sure to apply conductive sealer to threads of new switch.

CHARGE WARNING LAMP

Description

The charge warning lamp glows when the ignition switch is set to "ON" with the engine shut down, or when the generator falls to charge with the engine operated.

When the ignition switch is set to "ON," the charge warning circuit is closed and current flows from the ignition switch to the warning lamp and grounds through the regulator (Fig. BE-23-1). When the engine is started and the generator comes into operation, the generator output current (N) opposes the current flowing from the warning lamp; as the current (N) increases, the solenoid is more energized and the pilot lamp relay contacts are open, in effect it breaks the warning circuit ground connection, and the lamp goes out (Fig. BE-23-2).

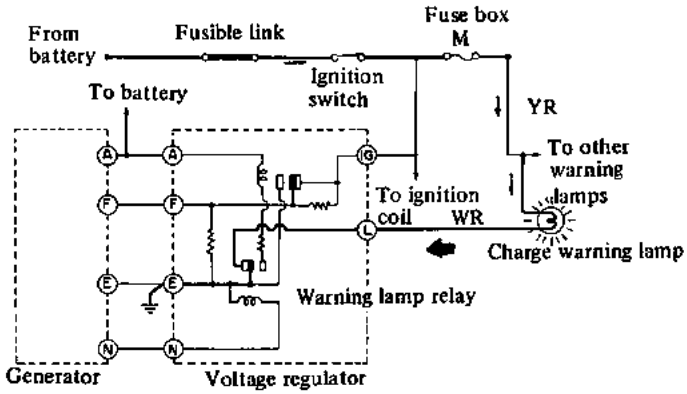


Fig. BE-23-1

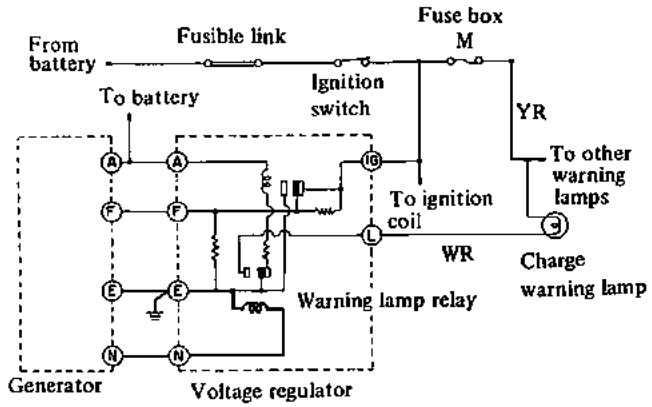


Fig. BE-23-2

Circuit of charge warning system

HAND BRAKE WARNING LAMP

Description

The hand brake warning lamp glows when the hand brake is applied.

When the ignition switch is set to "ON," current flows from the ignition switch to the warning lamp. When the hand brake is applied, hand brake warning switch is closed and warning lamp glows.

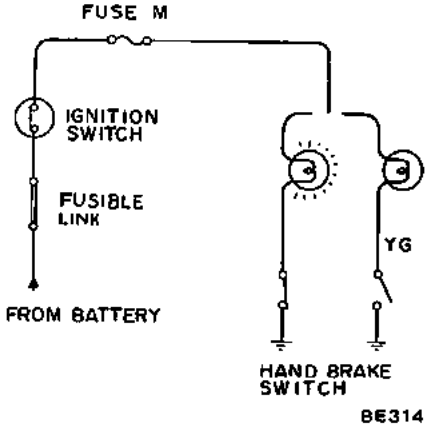


Fig. BE-24 Circuit for hand brake warning lamp

Hand brake switch

To remove hand brake switch, disconnect lead wire, pull switch out of hand brake control bracket and withdraw switch and wiring assembly.

METER ILLUMINATION, INDICATOR AND WARNING BULBS

Removal and installation

To replace bulb, turn bulb socket counterclockwise to dismount it from combination meter (if necessary, disconnect lead wire connector from printed circuit) and remove bulb from socket.

Bulb specifications

Item	SAE Trade Bulb No.	Wattage (Candle power) W (C)
Meter illumination lamp	161	1.7 (1)
Turn signal indicator lamp	161	1.7 (1)
High beam indicator lamp	161	1.7 (1)
Oil pressure warning lamp	161	1.7 (1)
Charge warning lamp	161	1.7 (1)
Hand brake warning lamp	161	1.7 (1)
Clock illumination lamp	161	(1.7) (1)

TROUBLE DIAGNOSES AND CORRECTIONS

Speedometer

Condition	Probable cause	Corrective action
Speedometer pointer and odometer do not operate.	Loose speedometer cable union nut.	Retighten.
	Broken speedometer cable.	Replace.
	Damaged speedometer drive pinion gear (Transmission side).	Replace.
	Defective speedometer.	Replace.
Unstable speedometer pointer.	Improperly tightened or loose speedometer cable union nut.	Retighten.
	Defective speedometer cable.	Replace.
	Defective speedometer.	Replace.
Unusual sound occurs in response to increase of driving speed.	Excessively bent or twisted speedometer cable inner wire or lack of lubrication.	Replace or lubricate.
	Defective speedometer.	Replace.
Inaccurate speedometer indication.	Defective speedometer.	Replace.
Inaccurate odometer operation.	Improperly meshed second and third gear worn gears.	Replace speedometer.
	Faulty feeding due to deformed odometer and pinion carrier.	Replace speedometer.

Water temperature and fuel meters

Condition	Probable cause	Corrective action
Both water temperature meter and fuel meter do not operate.	Burnt fuse. Defective meter voltage regulator.	Correct cause and replace fuse. Replace water temperature meter.
Both water temperature meter and fuel meter indicate inaccurately.	Defective meter voltage regulator (Meter pointer fluctuates excessively). Loose or poor connection (Meter pointer fluctuates slightly).	Replace water temperature meter. Correct connector contact.
Water temperature meter Water temperature meter does not operate.	Defective thermaltransmitter or loose terminal connection. (When thermaltransmitter yellow/white wire is grounded, meter pointer fluctuates). Defective water temperature meter. Open circuit.	Replace thermaltransmitter or correct terminal connection. Replace water temperature meter.
Meter indicates only maximum temperature.	Defective thermaltransmitter (Meter pointer returns to original position when ignition switch is turned off). Defective water temperature meter. (Meter pointer indicates maximum temperature even after ignition switch is turned off).	Replace thermaltransmitter. Replace water temperature meter.
Water temperature meter does not operate accurately.	Defective water temperature meter. Defective thermaltransmitter. Loose or poor connection.	[Connect a 115Ω resistance between thermaltransmitter yellow/white wire and ground. When meter indicates approximately 50°C (122°F), meter is serviceable]. Correct connector terminal contact.
Fuel meter Fuel meter does not operate.	Defective tank unit or loose unit terminal connection. (Pointer deflects when tank unit yellow wire is grounded.) Defective fuel meter. Open circuit.	Replace tank unit or correct terminal connection. Replace fuel meter.
Pointer indicates only "F" position.	Defective tank unit. (Pointer lowers below "E" mark when ignition switch is turned off.) Defective fuel meter. (Pointer still indicates "F" position when ignition switch is turned off.)	Replace tank unit. Replace fuel meter.

Condition	Probable cause	Corrective action
Fuel meter does not operate accurately.	Defective tank unit. (Pointer indicates a half level when a 35Ω resistance is connected between tank unit yellow wire and ground.)	Replace tank unit.
	Defective fuel meter.	Replace fuel meter.
	Poor or loose connection.	Correct connector terminal contact.

Oil pressure and charge warning lamps

Condition	Probable cause	Corrective action
Oil pressure warning lamp		
Lamp does not light when ignition switch is set to "ON."	Defective oil pressure switch or loose switch terminal connection. (When switch yellow/black wire is grounded, warning lamp lights.)	Replace switch or correct terminal connection.
	Burnt bulb or loose bulb.	Replace bulb or correct bulb socket.
	Open circuit.	
Lamp does not go out while engine is being operated.	Lack of engine oil.	Check oil level and add oil as required.
	Oil pressure too low.	Inpect engine oil pressure system.
	Defective oil pressure switch.	Replace oil pressure switch.
Charge warning lamp		
Lamp does not light when ignition switch is set to "ON."	Burnt bulb or loose bulb. (Warning lamp does not light when voltage regulator white/red wire is grounded.)	Replace bulb or correct bulb socket.
	Open circuit.	
Lamp does not go out when engine is started.	Faulty charging system.	Inspect charging system.

HORN

CONTENTS

DESCRIPTION

The horn circuit includes a horn relay. Current from the battery flows through the fusible link and fuse to the horn relay (terminal B), where it is shunted by the two circuits. In one circuit (terminal S), the current flow is supplied through the solenoid and horn button to the ground. In the other circuit (terminal H), the current

flow is supplied through the relay contacts and horn. (Horn bracket serves as a grounding.)

When the horn button is pressed, current from the battery energizes the solenoid. As the solenoid is energized, the relay contacts are closed. This allows the current to flow to the horn.

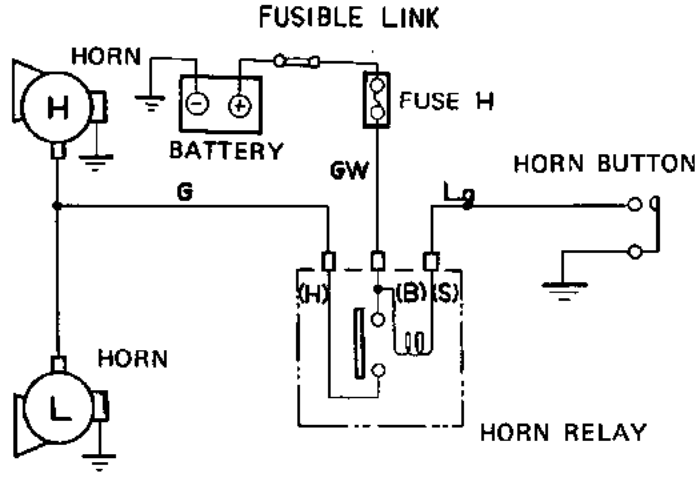


Fig. BE-26 Circuit diagram for horn system

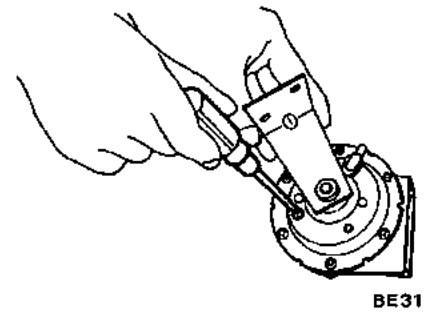


Fig. BE-26 Adjusting horn sound

Sound	Consumed current at 12 volts (Amperes)
Low pitch (330Hz)	3A to 5A
High pitch (415Hz)	3A to 5A

REMOVAL AND INSTALLATION

Horn

Disconnect horn wire at terminal on horn body and remove retaining bolts that hold bracket and horn assembly to hood ledge. Install horn and bracket assembly in reverse sequence of removal.

Horn relay

Horn relay is mounted to radiator core support.

Disconnect battery ground cable. Disconnect three lead wires at terminals on horn relay and remove retaining screw.

Install horn relay in the reverse sequence of removal.

Horn switch

The horn switch is integral with the turn signal and dimmer switch assembly. Remove switch assembly as outlined in "TURN SIGNAL AND DIMMER SWITCH."

ADJUSTMENT

1. Secure horn in a vise. Using a voltmeter, battery and ammeter, connect horn as shown in Figure BE-27.
2. Set switch to "ON," and make sure that voltmeter indicates between 12 and 12.5 volts.
3. Listening horn for sound level, volume and tone, adjust ammeter reading to consumed current of at or below specifications. Make sure that horn sounds clear.

Notes:

a. **Adjustment is made by turning adjusting screw, after loosening lock nut.**

b. **When adjusting screw is turned;**
clockwise: Current increases
counterclockwise: Current decreases

4. After tone adjustment has been made as outlined above, check sound again at an alternator voltage (14 to 15 volts). If sound is clear through this check, then tighten lock nut securely.

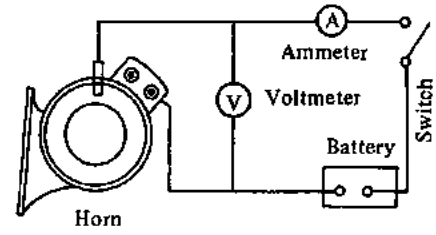


Fig. BE-27 Circuit for horn adjustment

TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Horn does not operate.	Discharged battery. (Measure specific gravity of electrolyte.)	Recharge or replace battery.
	Burnt fuse.	Correct cause and replace fuse.
	Faulty horn button contact. (Horn sounds when horn relay terminal(s) is grounded.)	Repair horn button.
	Defective horn relay. (Horn sounds when (B) and (H) horn relay terminals are connected with a test lead).	Replace horn relay.
	Defective horn or loose horn terminal connection.	Correct horn terminal connection or replace horn.
Horn sounds continuously.	Short-circuited horn button and/or horn button lead wire. (When light green lead wire is disconnected from horn relay terminal(s), horn stops to sound.)	Repair horn button or its wiring.
	Defective horn relay.	Replace horn relay.
Reduced volume and/or tone quality.	Loose or poor connector contact. (Fuse, relay, horn and/or horn button)	Repair.
	Defective horn.	Replace.

IGNITION SWITCH AND STEERING LOCK

CONTENTS

REMOVAL AND INSTALLATION

Standard ignition switch

1. Disconnect battery ground cable from battery.
2. Unscrew and remove escutcheon from the front of ignition switch.
3. Withdraw ignition switch and wiring assembly (with spacer), from shell cover as shown in Figure BE-28.
4. Disconnect wiring connector from the back of ignition switch.
5. Replace ignition switch with new one.
6. Connect ignition switch to wiring connector.
7. Position ignition switch to shell cover opening, install and tighten escutcheon and secure ignition switch to shell cover.

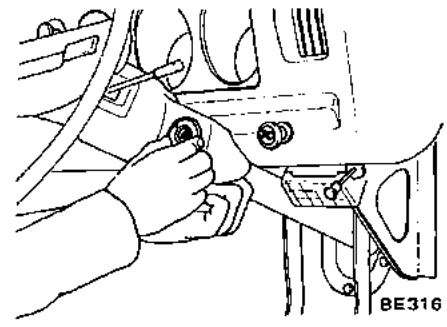


Fig. BE-28 Removing ignition switch

Optional ignition switch with steering lock

The ignition switch is interchangeable and built-in the steering lock.

To remove ignition switch from steering lock, remove two retaining screws and remove switch assembly from the back of steering lock cylinder (Figure BE-29).

Steering lock replacement

For the purpose of tamper-proof, the self-shear type screws are used, and their heads are sheared off when installed so that the steering lock system cannot be removed easily. Replace the steering lock in accordance with the following instructions.

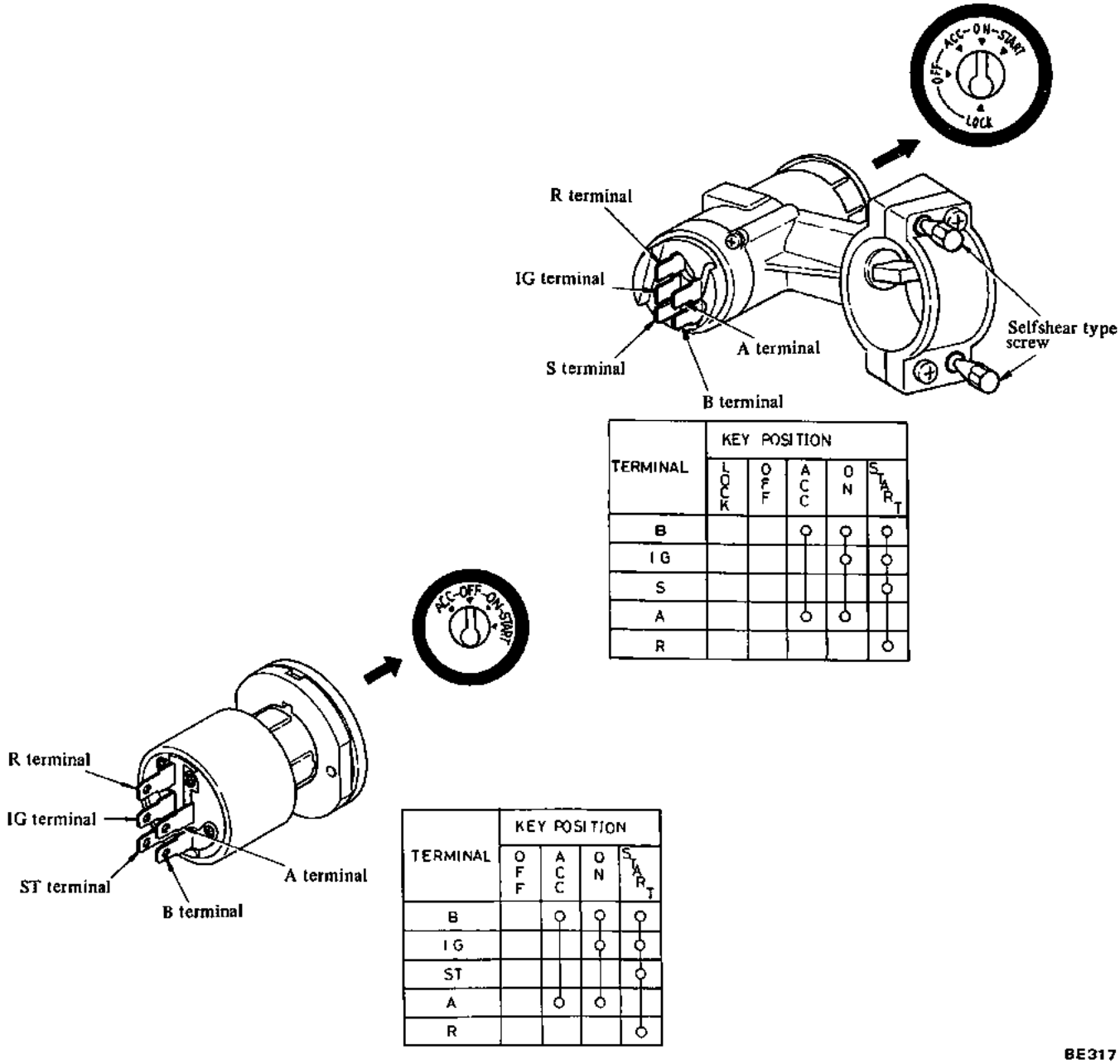
Break two self-shear type screws with a drill or other proper tool. Remove two screws and dismount the steering lock from the steering jacket tube.

When installing a new steering lock, be sure to tighten two new self-shear type screws to shear off their heads.

INSPECTION

Continuity test

Test continuity through ignition switch by using test lamp or ohmmeter.



TERMINAL	KEY POSITION				
	LOCK	OFF	ACC	ON	START
B			○	○	○
IG				○	○
S					○
A			○	○	
R					○

TERMINAL	KEY POSITION			
	OFF	ACC	ON	START
B		○	○	○
IG			○	○
ST				○
A		○	○	
R				○

BE317

Fig. BE-29 Ignition switch

WINDSHIELD WIPER AND WASHER

CONTENTS

REMOVAL AND INSTALLATION

Wiper linkage

1. Remove wiper blade and arm assembly from pivot.
2. Remove cowl top grille. See section "BF."
3. Remove two flange nuts retaining pivot (wiper linkage) to cowl top.
4. Remove stop ring that retains connecting rod to wiper motor arm.
5. Remove wiper motor linkage assembly.
6. Install wiper motor linkage in the reverse sequence of removal.

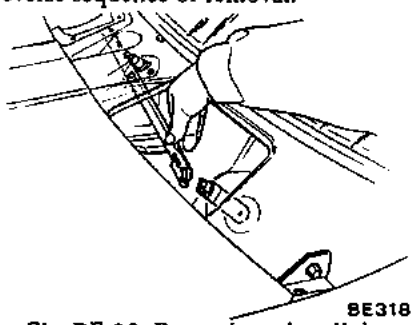


Fig. BE-30 Removing wiper linkage

7. Install wiper arm and blade assembly in correct sweeping angle. See Figure BE-31 for correct installing dimensions.

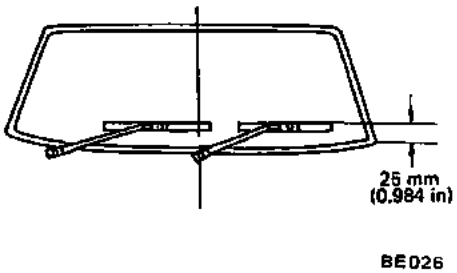


Fig. BE-31 Wiper arm installation

Wiper motor

1. Remove cowl top grille.
3. Remove stop ring that connects wiper motor arm to connecting rod.
3. From under instrument panel, disconnect wiper motor harness at connector on wiper motor body.
4. Remove three retaining screws and pull out wiper motor forward.
5. Install wiper motor in the reverse sequence of removal.

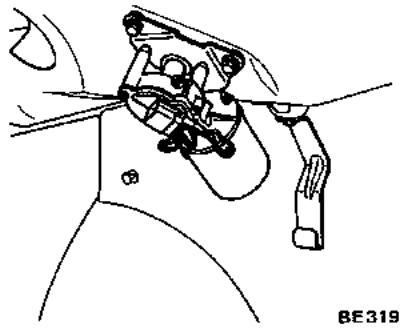


Fig. BE-32 Removing wiper motor

Wiper and washer switch

1. Press in switch knob, turn it counterclockwise and pull it out of switch.
2. Unscrew escutcheon and remove escutcheon and spacer.
3. Reach up from underneath instrument panel, disconnect wiper switch multiple connector from instrument harness wiring assembly and remove spacer and switch.
4. Install new switch in the reverse sequence of removal.

Washer pump

The washer pump and washer fluid tank are integral parts and are serviced as an assembly.

Caution for windshield washer operation

1. Be sure to use only washing solution.

Never use mix powder soap or detergent with solution.

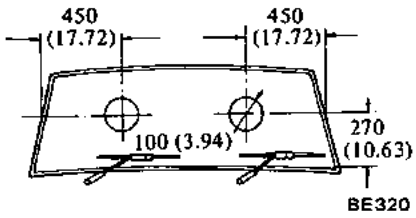
2. Do not operate windshield washer continuously more than 30 seconds or without washer fluid. This often causes improper windshield washer operation. Normally, windshield washer should be operated 10 seconds or less at one time.

1. Disconnect two washer pump lead wires at connectors.
2. Remove hose from washer pump and drain washer fluid.
3. Pull out washer tank and motor assembly from tank bracket.
4. Install washer tank and motor assembly in the reverse sequence of removal.

Washer nozzle

Access for washer nozzle removal is obtained by disconnecting vinyl tube and removing washer nozzle retaining screw from cowl top.

When washer nozzle is installed or when washer fluid is not sprayed properly, adjust nozzle direction by bending nozzle tube so that washer fluid is sprayed in range indicated in Figure BE-33.



Unit: mm (in)

Fig. BE-33 Washer nozzle adjustment

INSPECTION

Wiper motor

1. Disconnect wiring connector from wiper motor.
2. Connect test lead between B terminal on motor side and battery positive terminal (or B terminal and blue/red wire terminal in wiring connector plug).
3. To check wiper low speed operation, connect L terminal to ground with ground cable (or connect L terminal to black wire terminal), make sure that wipers sweep at low speed.
4. To check wiper high speed operation, connect ground cable to H terminal in the same manner as in step 3; make sure that wipers sweep fast.
5. During low speed operation, connect E terminal to ground and connect P terminal and L terminal with lead wire as shown in Figure BE-34. At this time, make sure that auto-stop mechanism actuates to stop wiper blade at the specified position.
6. Wiper is in good condition if above tests are made as indicated.

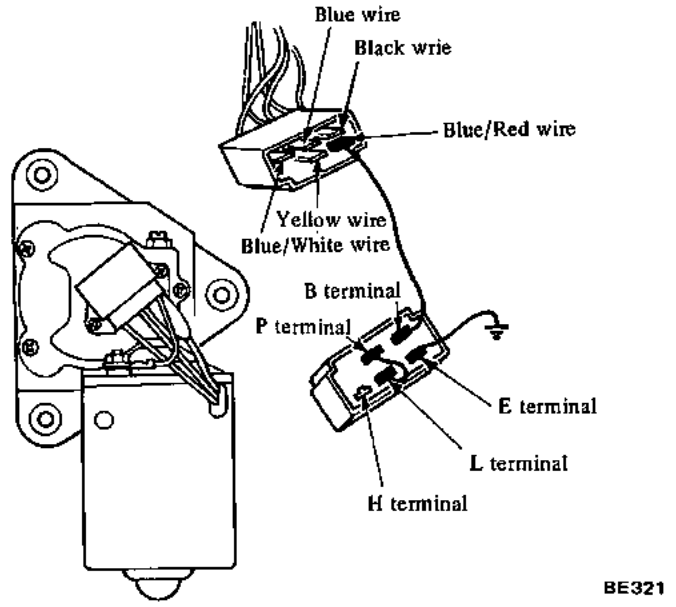


Fig. BE-34 Wiper motor

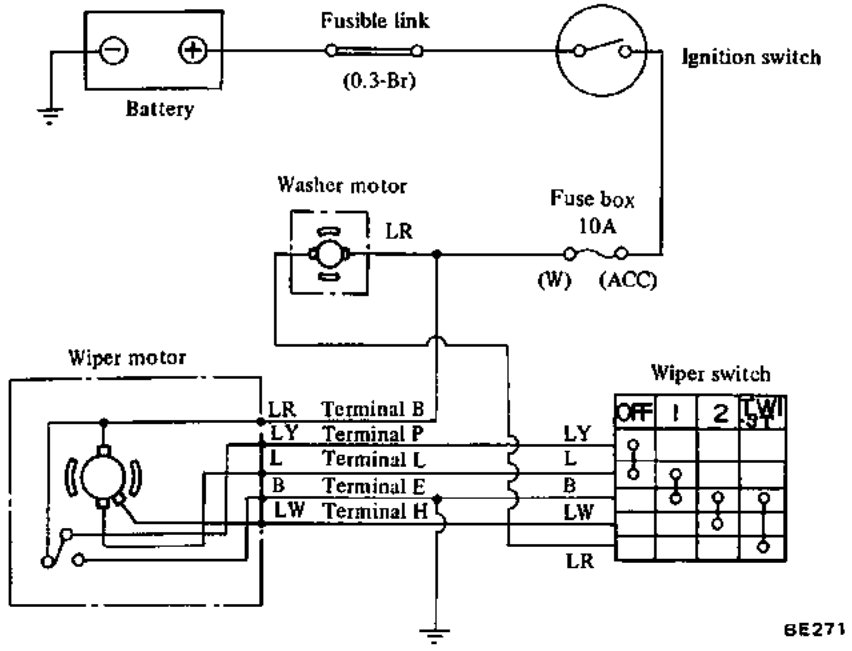


Fig. BE-35 Circuit diagram for windshield wiper—washer system

Wiper and washer switch

Continuity test

Remove wiper switch from vehicle as outlined in "Wiper switch."

Test continuity through wiper switch by using test lamp or ohmmeter.

TERMINAL	SWITCH POSITION			
	OFF	1	2	TWIST
1	○			
2	○	○		
3		○	○	○
4			○	
5				○

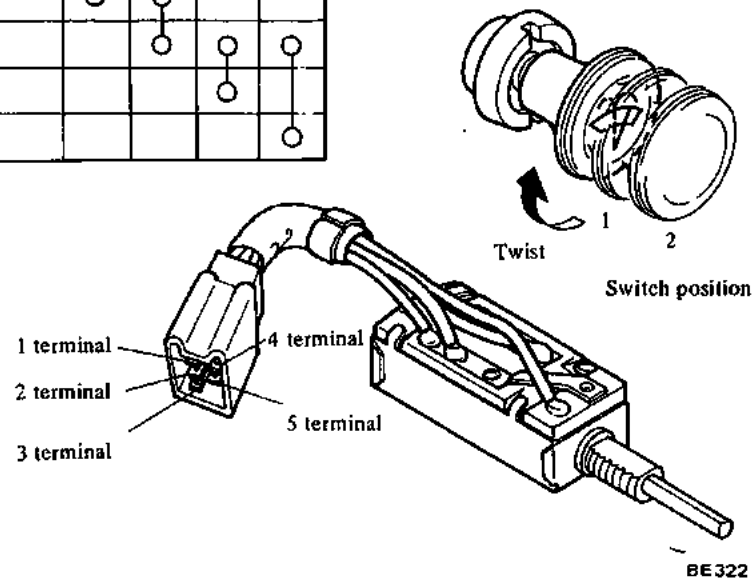


Fig. BE-36 Wiper switch

TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Windshield wiper motor does not operate.	Burnt fuse.	Correct cause and replace fuse.
	Defective motor. (Check wiper motor as outlined in "INSPECTION.")	Replace wiper motor.
	Loose connection.	Repair.
	Defective wiper and washer switch. (Test continuity through switch as outlined in "INSPECTION.")	Replace.
	Open power circuit or ground circuit.	oooooooooooo
Wiper operating speed is too slow.	Defective motor.	Replace motor.
	Loose or poor connection.	Repair.
	Seized or rusted wiper linkage. (Humming occurs on motor in wiper blade operating cycle.)	Lubricate or replace.
	Wiper blades stick on windshield glass. (Raise arm and operate wiper without load.)	Clean windshield glass and/or replace wiper blade.
Wiper speed cannot be changed correctly.	Defective wiper switch.	Replace.
	Defective motor.	Replace.

Condition	Probable cause	Corrective action
Wiper motor continues to run after switch is turned off or wiper blades do not return to correct position.	Faulty auto-stop operation.	Remove auto-stop device cover, and check relay contacts. Clean dirty contacts or repair relay plate bending if necessary.
	Poor connection.	Repair.
	Defective switch.	Replace.

RADIO

CONTENTS

REMOVAL AND INSTALLATION

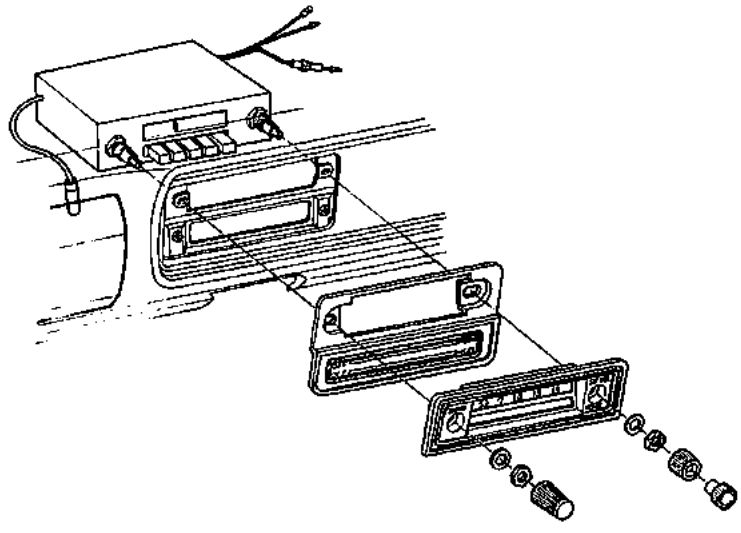
Radio

Removal

1. Pull radio knobs off radio control shafts.
2. Remove radio holding nuts and washer from radio control shafts.
3. Remove radio bezel from the front of radio.
4. From under instrument panel, disconnect antenna cable and lead wires (power lead and speaker lead).
5. Remove radio from instrument panel.

Installation

1. From behind instrument panel position radio to instrument panel.
2. Install radio bezel to the front of radio.
3. Install washers and nuts on radio control shafts and tighten them securely. Then install control knobs.
4. Connect antenna cable and lead wires (power lead and speaker lead).



BE323

Fig. BE-37 Radio

Antenna and antenna cable

Removal

1. From behind instrument panel disconnect antenna cable at connector.
2. Remove plug on antenna base and remove antenna base retaining screw.
3. Remove antenna and cable assembly from front pillar.
4. Unscrew antenna clip from front pillar if necessary.

Installation

1. Remove rubber plugs that cover antenna mounting opening in front pillar (when installing radio antenna to vehicle that is not equipped with radio).
2. Thread mounting stud of antenna clip into (upper) antenna mounting opening.
3. Insert antenna cable into (lower) antenna mounting opening and place antenna base in position.
4. Install antenna base retaining screw.
5. Route antenna cable along upper dash panel to radio.
5. Connect antenna cable at connector.

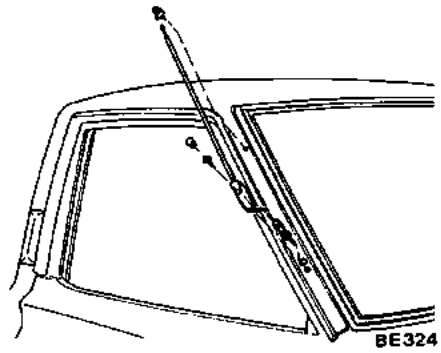


Fig. BE-38 Radio antenna

ADJUSTMENT

Antenna trimmer

When a new radio receiver, antenna or antenna feeder is installed, antenna trimmer should be adjusted.

1. Extend antenna completely.
2. Tune in the weakest station between 12 and 16 (1,200 to 1,600KC) on dial.

Noise may be generated but disregard it.

3. Turn antenna trimmer to left and right slowly and set it at a position where receiving sensitivity is highest.

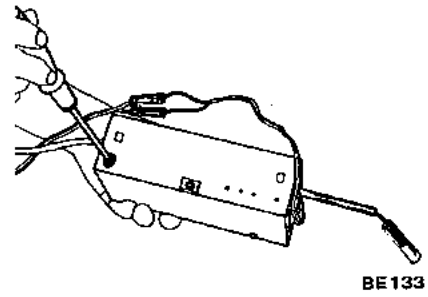


Fig. BE-39 Adjusting antenna trimmer

TROUBLE DIAGNOSES AND CORRECTIONS

Noise prevention chart

Position vehicle in an open area away from steel buildings, run engine, extend antenna to its maximum length, set volume control to maximum and set dial at a medium point without catching broadcasting wave.

Condition	Probable cause	Corrective action
Ignition system		
Noise occurs when engine is operated.	High tension cable.	Install new high tension cable.
	Ignition coil.	Install a 0.5μF capacitor to primary side + terminal of ignition coil.
		Note: Be careful not to install capacitor to secondary or primary breaker side, otherwise engine becomes improper.
		Install bond strap.
	Distributor.	Secure contact of carbon electric pole and rotor.
		Eliminate sharp tip on rotor pole or cap pole by scrubbing with a screwdriver.
		Check stagger between rotor and stator.

Condition	Probable cause	Corrective action
Charging system. Sound of alternating current presents.	Alternator.	Install a 0.5μF capacitor to charging terminal A. Note: **Do not use a larger capacitor. If capacitor is installed to terminal F, alternator coil will be damage.**
When accelerator pedal is depressed or released, noise presents.	Regulator.	Install a 0.5μF capacitor to "IGN" terminal of voltage regulator.
Supplement equipment When engine starts, noise presents. Noise still presents even after stopping engine.	Operative noise of water temperature and fuel meters.	Install 0.1μF capacitor between terminal and ground wire. Note: **If a capacitor having a larger capacity is used, indication of meter will be deviated.**

Notes:

a. Be sure to locate capacitor as close as to noise source and connect in parallel.
b. Cut lead wire as short as possible.
c. Ground wire should be attached on the body completely.
d. Make installation and connection securely.
e. Carefully identify "+," "–," "IN" or "OUT" marks.

CLOCK

CONTENTS

REMOVAL

R. H. drive vehicle

1. Remove battery ground cable.
2. Disconnect three wire connectors of clock, two from combination meter printed circuit, one from instrument harness wiring.
3. Remove one retaining screw from clock opening of instrument panel.
4. Remove one screw retaining clock to lower panel of instrument.
5. Remove clock from instrument panel.

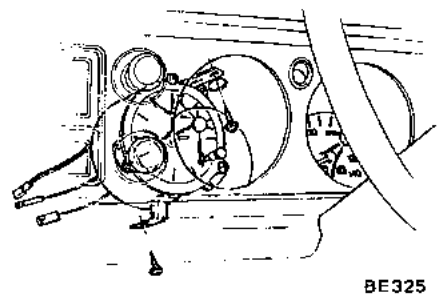


Fig. BE-40 Removing clock

L. H. drive vehicle

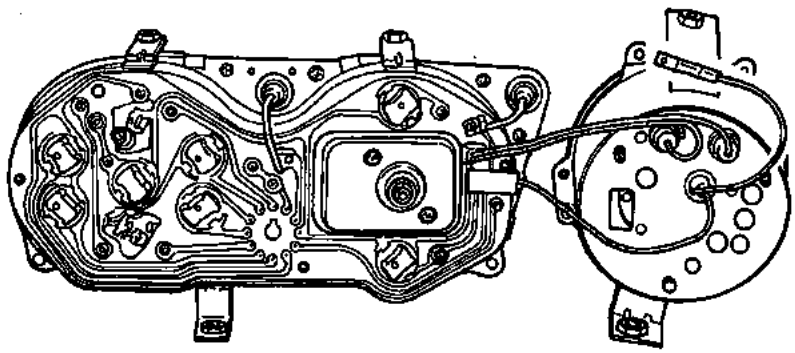
1. Remove battery ground cable.
2. Remove cluster lid as per instruction in step 1 to 4 of "Removal" in "COMBINATION METER."
3. Disconnect three wire connectors of clock from combination meter printed circuit and instrument harness wiring.
4. Remove three screws and remove clock from cluster lid.

INSTALLATION

R. H. drive vehicle

1. From behind instrument panel, position clock to instrument panel and install two retaining screws.

2. Connect three wire connectors of clock to each connection, two to combination meter printed circuit, one to instrument harness wiring as shown in Figure BE-41.
3. Connect battery ground cable.



BE326

Fig. BE-41 Clock

L. H. drive vehicle

1. Position clock to cluster lid and install three screws.
2. Connect three wire connectors of clock to each connection, two to combination meter printed circuit, one to instrument harness wiring.
3. Install cluster lid to instrument panel.
4. Connect battery ground cable.

HEATER

CONTENTS

DESCRIPTION

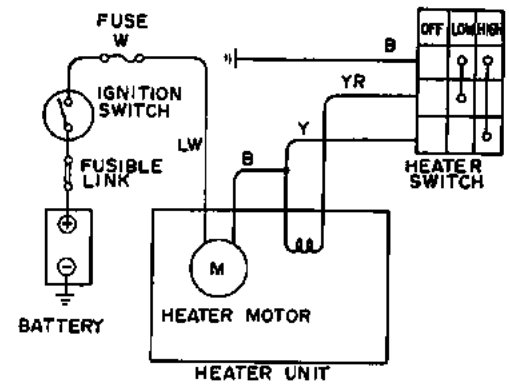
Operation of the heater is controlled by two control levers located on the instrument panel and a hand operated knob on the center of the heater unit.

The AIR LEVER controls the air intake valve and/or room valve by its lever positions (OFF, DEFROST and ROOM) through the control cables. The air intake valve draws the fresh outside air from the cowl top grille and supplies the air into the heater unit. The room valve is located at the bottom of the heater unit. The air coming through the air intake valve opening is forced through the heater core to the room valve, where the air is distributed to the floor outlet and/or defroster outlets, depending on the position of the room valve.

The VENT KNOB is directly linked to the vent valve which provides fresh air for the passenger. Push the knob all the way in to open the valve. The fresh ventilating air comes out of the heater center outlet.

The TEMP LEVER is a dual purpose control; one is for regulating the flow of engine coolant flowing into the heater unit and the other is for the operation of the fan motor. When the lever is in the OFF position, the water cock is closed and the circulation of engine coolant through the heater core stops. When the lever is slided to any other position than OFF, the water cock opens in proportion to the lever setting and allow engine coolant to flow into heater core.

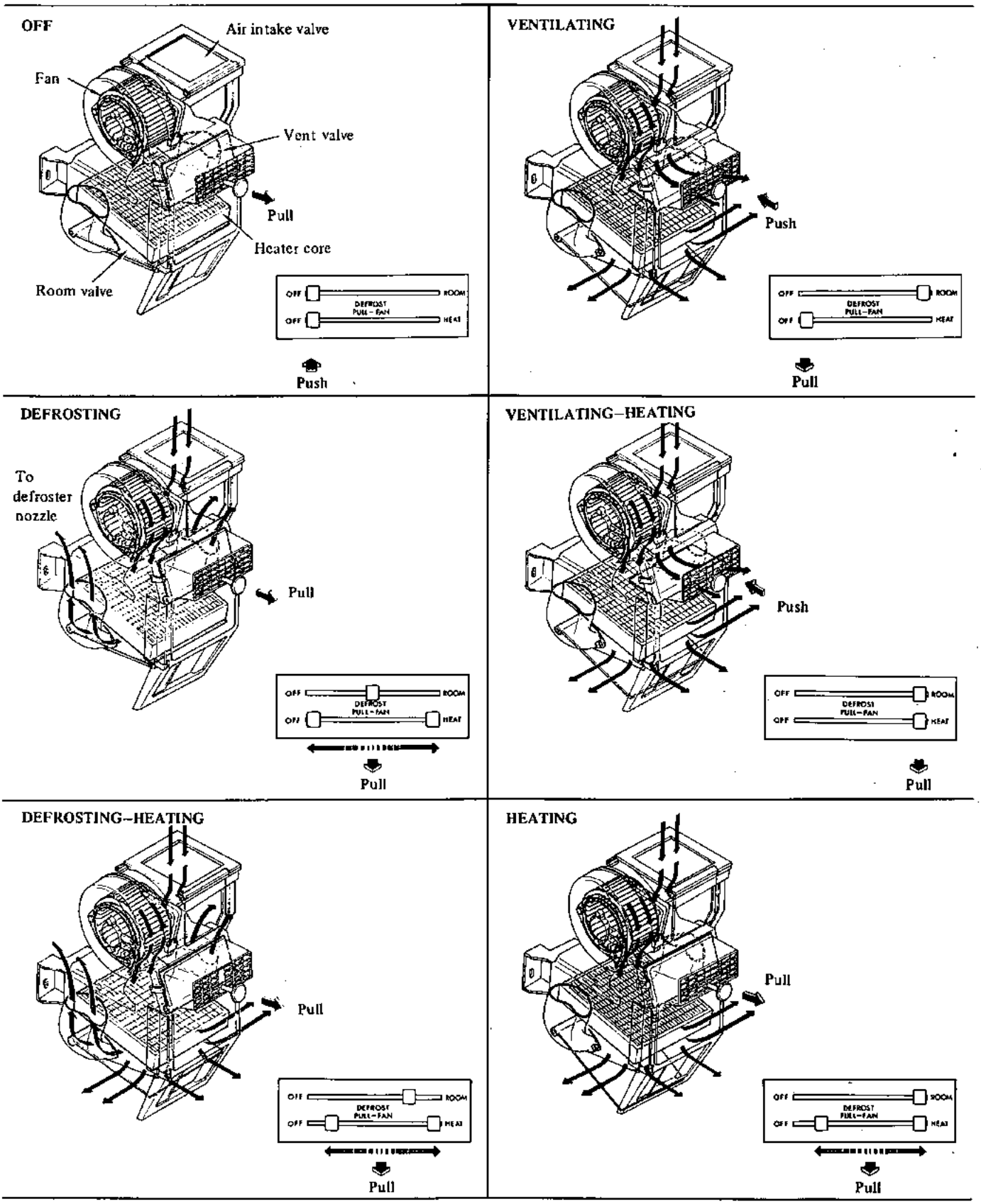
To control the fan motor operation, push or pull the lever knob. Two speeds are provided for the fan motor by means of a three position switch.



BE327

Fig. BE-42 Circuit diagram of heater

Air flow



BE328

Fig. BE-43 Air flow

HEATER UNIT ASSEMBLY

Removal

1. Disconnect battery ground cable.
2. Drain engine coolant.
3. Remove defroster hoses.
4. Remove three cable retaining clips and disconnect control cables from valves and water cock.
5. Disconnect two fan motor lead wires from each connector.
6. Disconnect two resistor lead wires from each connector.
7. Disconnect water hoses from core and water cock.
8. Remove three heater housing mounting bolts and dismount heater unit from vehicle.

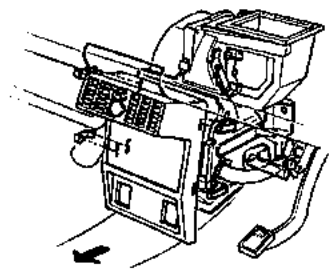
Installation

1. Position heater unit under instrument panel and install three heater unit securing bolts.
2. Install water hoses.
3. Position heater control cables to room valve, air intake valve and water cock.
4. Adjust control cable length for proper operation as outlined in "ADJUSTMENT."
5. Connect fan motor wires and resistance wires to each connector plug.
6. Install defroster hoses.
7. Connect battery ground cable.
8. Fill cooling system.
9. Run engine at 2,000 rpm with air lever in the "HEAT" position. Make sure that engine coolant is filled upto correct level.

HEATER CORE

Removal and installation

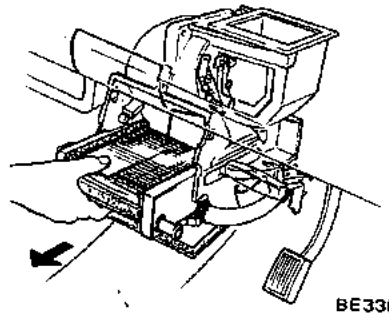
1. Drain engine coolant.
2. Remove defroster hoses.
3. Disconnect water hoses from inlet and outlet pipes of heater core.
4. Remove four clips and front cover.



BE329

Fig. BE-44 Removing front cover

5. Withdraw heater core from heater housing.



BE330

Fig. BE-45 Removing heater core

6. Install heater core in the reverse sequence of removal.

FAN MOTOR

Removal and installation

1. Dismount heater unit assembly from vehicle as outlined in "Removal" of "HEATER UNIT ASSEMBLY."
2. Remove nine spring clips and disassembly heater housing.
3. Remove fan from fan motor.
4. Remove fan motor retaining screws and fan motor.
5. Assembly heater housing and install heater unit to vehicle in the reverse sequence of removal as outlined in "Installation" of "HEATER UNIT ASSEMBLY."

CONTROL ASSEMBLY

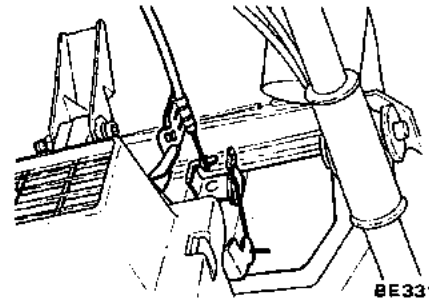
Removal and installation

1. Remove three cable retaining clips and disconnect control cables from valves and cock.
2. Disconnect three lead wires from each connector plug.
3. Remove radio bezel from the front of radio as per instructions in step 1 through 3 in "Removal" of "RADIO."
4. Remove heater control knobs and heater bezel.
5. Remove two retaining bolts and heater control assembly.
6. Install control assembly in the reverse sequence of removal. When connecting control cables to valves and cock, adjust control cable length as outlined in "ADJUSTMENT."

ADJUSTMENT

AIR lever

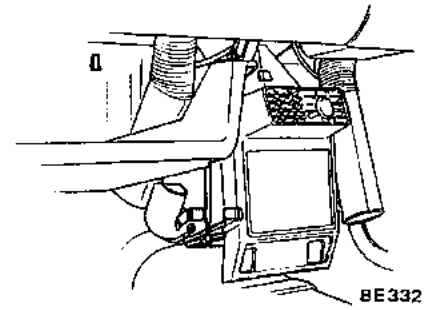
1. Move AIR lever to the "DEF" position.
2. Open air intake valve and connect control cable to air intake valve.
3. Clip control cable with cable retaininig clip.



BE331

Fig. BE-46 Air intake valve

4. Pull room valve upward and connect control cable to room valve.
5. Clip control cable with cable retaining clip.



BE332

Fig. BE-47 Room valve

TEMP lever

1. Move TEMP lever to the "OFF" position.
2. Connect control cable to the lever of water cock when water cock lever is pulled forward (fully closed).
3. Install control cable on water cock bracket with cable retaining clip.

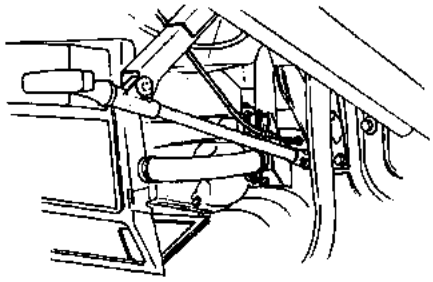


Fig. BE-48 Water cock

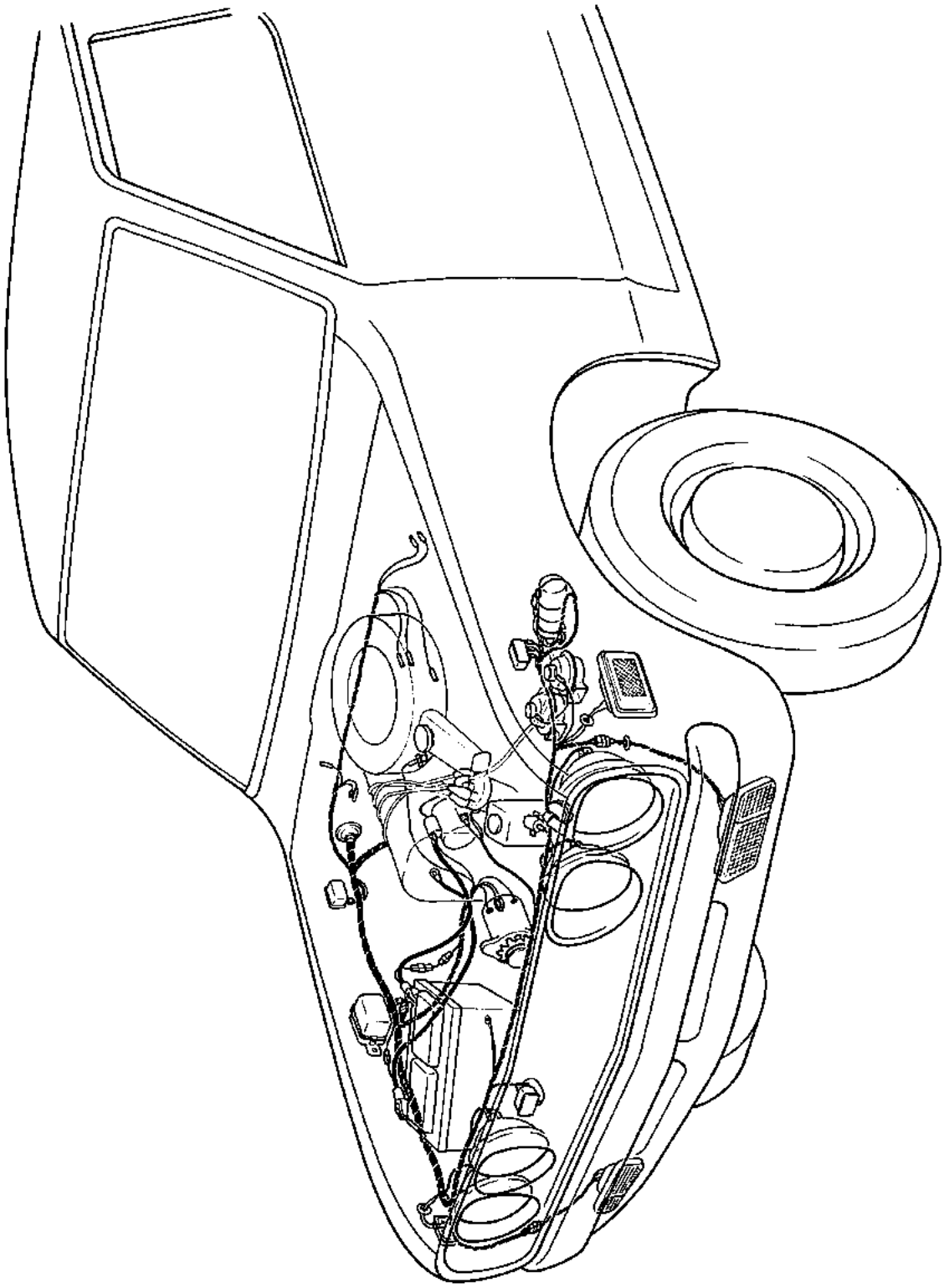
SPECIFICATIONS

Item		General use	Extremely cold weather use
FAN MOTOR			
Rated power consumption		12V less than 36W	12V less than 55W
Revolution	rpm	3,600	2,800
Fan dia.	mm (in)	110 (4.331)	110 (4.331)

SERVICE JOURNAL OR BULLETIN REFERENCE

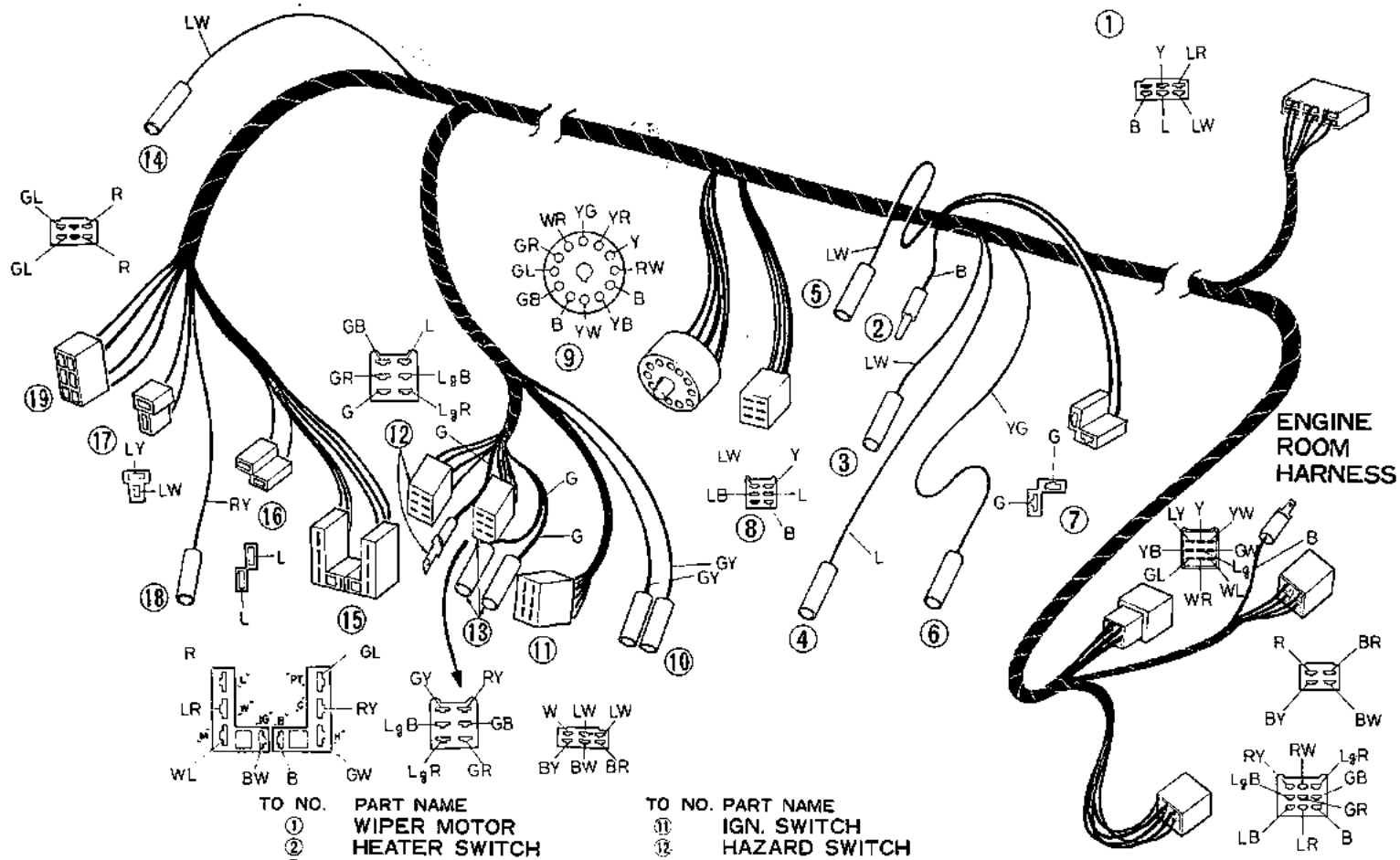
DATE	JOURNAL or BULLETIN No.	PAGE No.	SUBJECT

USA & Canada



BE339

Fig. 54 Engine compartment



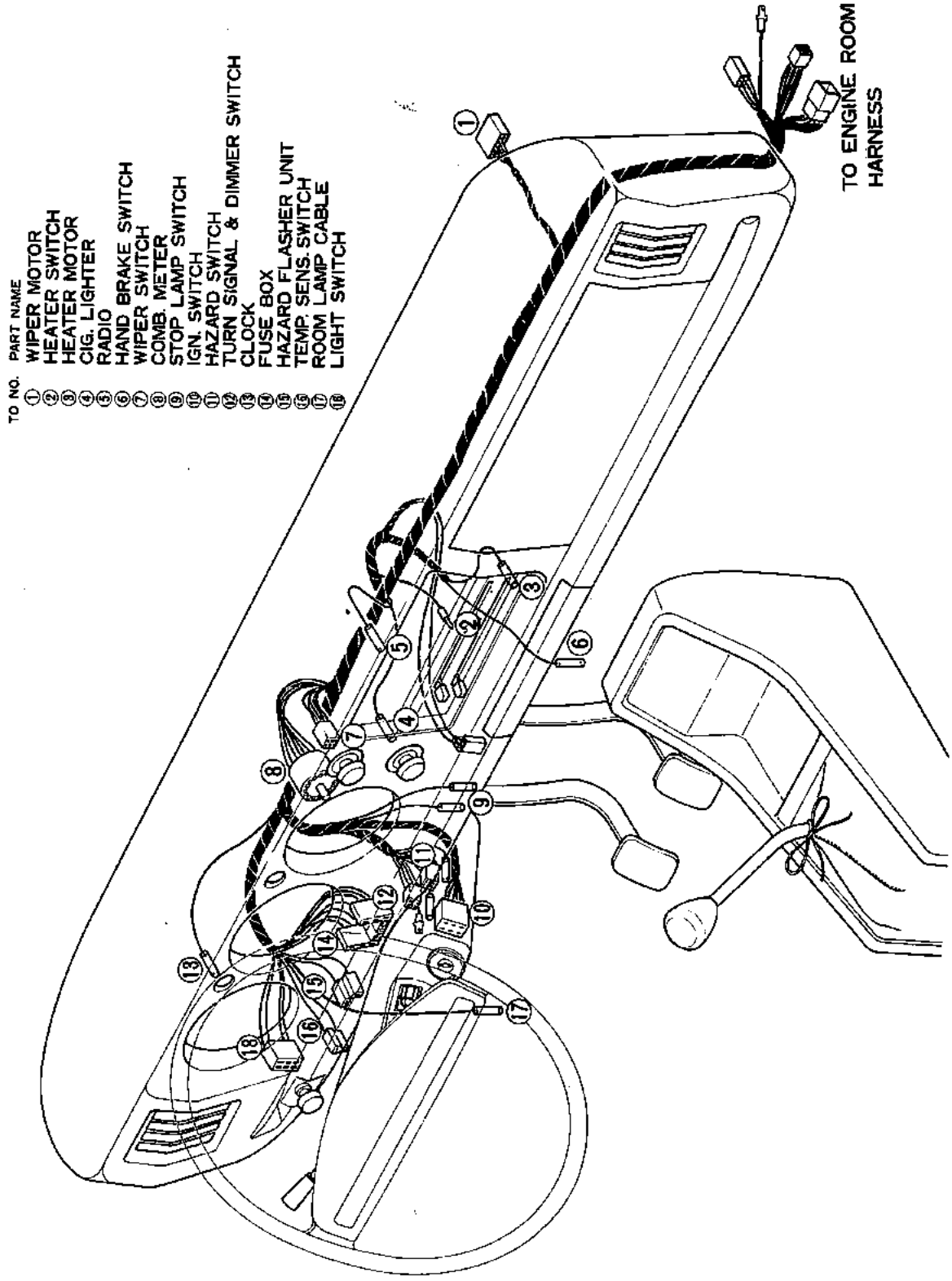
TO NO.	PART NAME	TO NO.	PART NAME
①	WIPER MOTOR	⑪	IGN. SWITCH
②	HEATER SWITCH	⑫	HAZARD SWITCH
③	CIG. LIGHTER	⑬	TURN & DIMMER SWITCH
④	HEATER MOTOR	⑭	CLOCK
⑤	RADIO	⑮	FUSE BOX
⑥	HAND BRAKE SWITCH	⑯	HAZARD FLASHER UNIT
⑦	FLASHER UNIT	⑰	TEMP. SENS. SWITCH
⑧	WIPER SWITCH	⑱	ROOM LAMP CABLE
⑨	COMB. METER	⑲	LIGHT SWITCH
⑩	STOP LAMP		

COLOR CODE	
B ..... Black	G ..... Green
W ..... White	L ..... Blue
R ..... Red	Br..... Brown
Y ..... Yellow	Lg..... Light green

BE340

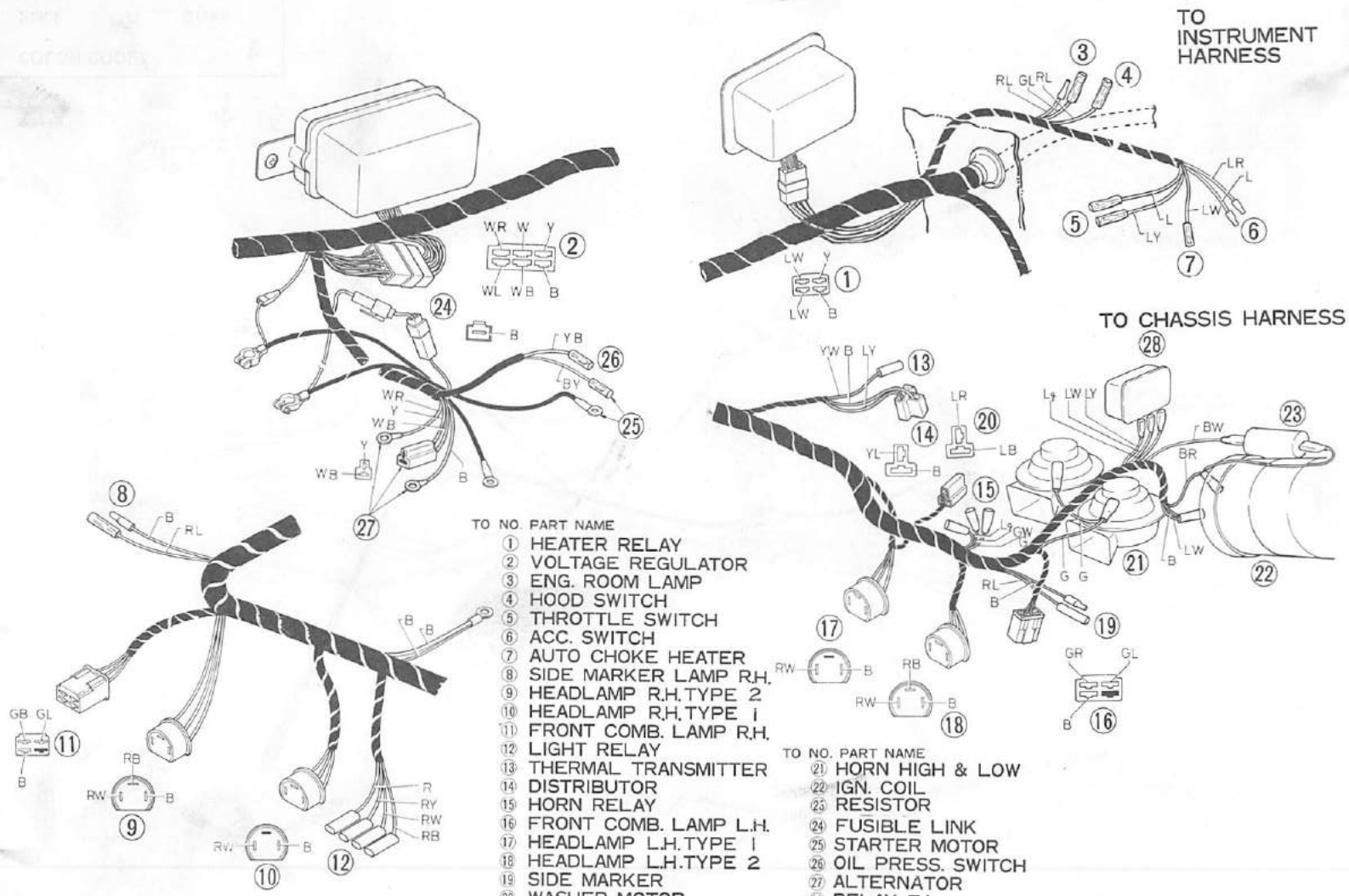
Fig. 55 Engine compartment

USA & Canada



BE341

Fig. 56 Instrument



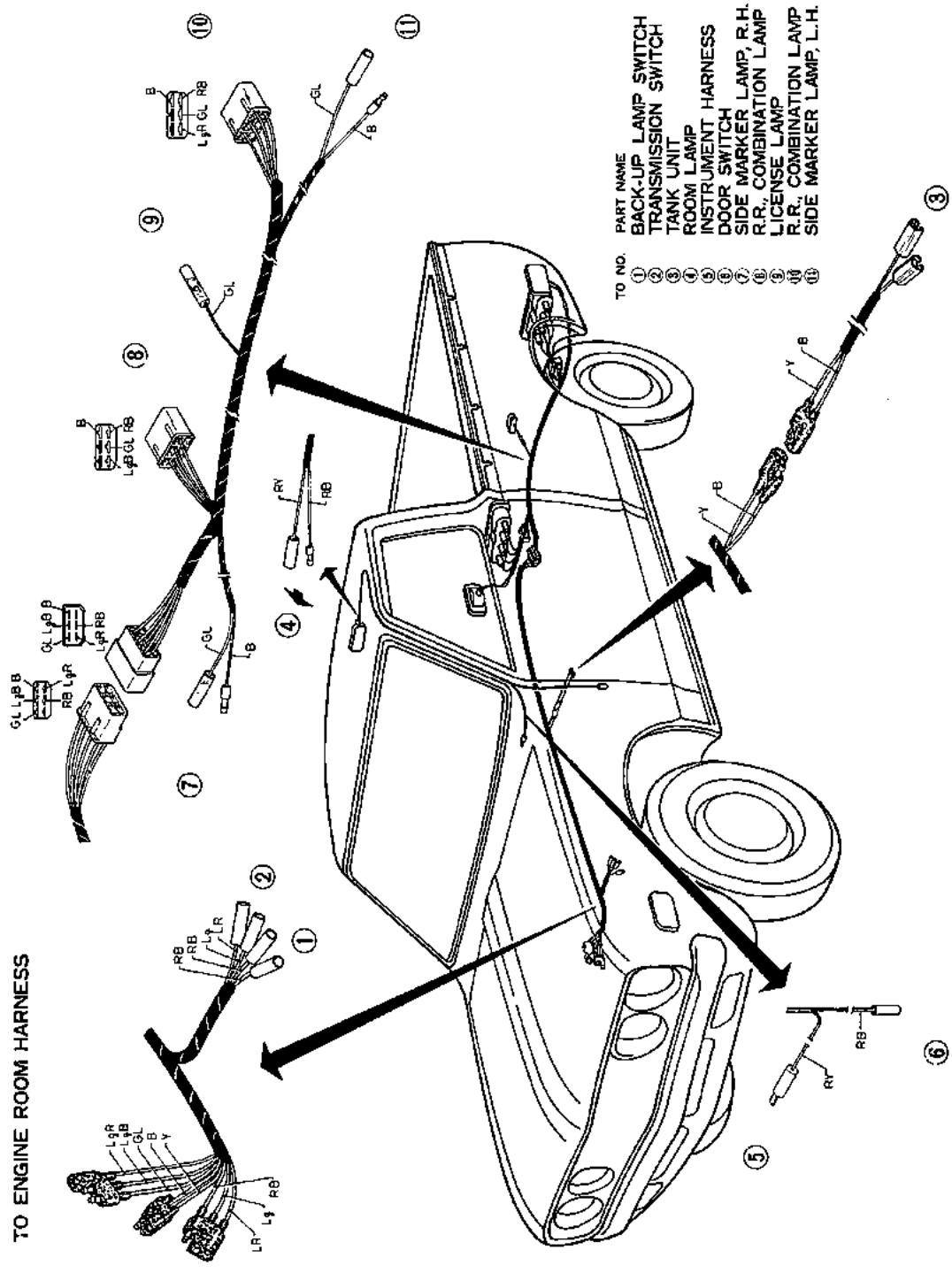
TO NO.	PART NAME
①	HEATER RELAY
②	VOLTAGE REGULATOR
③	ENG. ROOM LAMP
④	HOOD SWITCH
⑤	THROTTLE SWITCH
⑥	ACC. SWITCH
⑦	AUTO CHOKE HEATER
⑧	SIDE MARKER LAMP R.H.
⑨	HEADLAMP R.H.TYPE 2
⑩	HEADLAMP R.H.TYPE 1
⑪	FRONT COMB. LAMP R.H.
⑫	LIGHT RELAY
⑬	THERMAL TRANSMITTER
⑭	DISTRIBUTOR
⑮	HORN RELAY
⑯	FRONT COMB. LAMP L.H.
⑰	HEADLAMP L.H.TYPE 1
⑱	HEADLAMP L.H.TYPE 2
⑲	SIDE MARKER
⑳	WASHER MOTOR

TO NO.	PART NAME
㉑	HORN HIGH & LOW
㉒	IGN. COIL
㉓	RESISTOR
㉔	FUSIBLE LINK
㉕	STARTER MOTOR
㉖	OIL PRESS. SWITCH
㉗	ALTERNATOR
㉘	RELAY E I

COLOR CODE	
B ..... Black	G ..... Green
W ..... White	L ..... Blue
R ..... Red	Br..... Brown
Y ..... Yellow	Lg..... Light green

Fig. 57 Instrument

USA & Canada



BE343

Fig. 58 Body

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS AND BODY

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

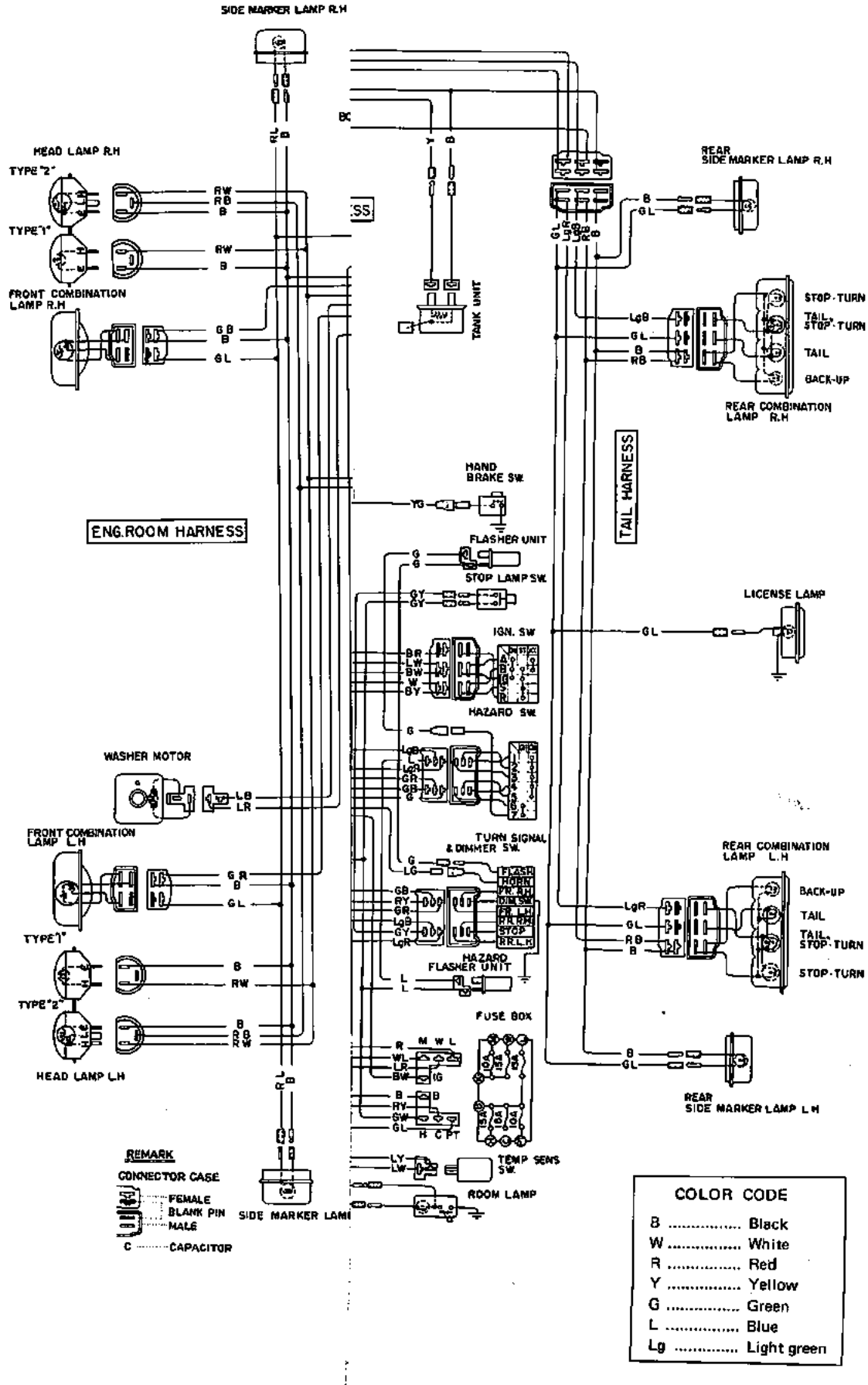
SECTION SE

SERVICE EQUIPMENT

SE

	Tool Number	Tool Name	ST0902 0000 Set A	ST0903 0000 Set B	Class	Remark
	ST32110001	Side bearing cap gauge	O		5	Former tool No. ST32110000
	ST30611000	Drive pinion outer race drift bar	O		2	
	ST30612000	Drive pinion outer race drift adapter	O		2	
	ST30613000	Drive pinion outer race drift adapter	O		2	
	ST23510000	Fork rod punch	O		2	
4	Front Axle					
	ST35380000	King pin bush drift	O	O	2	
	HT56802000	King pin bush reamer	O	O	2	
	ST36070000	Lower link bush drift	O	O	2	
	ST35390000	Grease seal drift	O	O	2	Newly established
5	Rear Axle					
	ST38020000	Bearing lock nut wrench	O	O	2	
	ST07630000	Rear axle stand	O	O	2	
	ST36230000	Sliding hammer	O		5	
	ST37140000	Bearing puller	O	O	2	
6	Steering					
	ST27140000	Steering gear arm puller	O		2	
	ST27180000	Steering wheel puller	O		2	
	ST27850000	Steering ball joint puller	O		2	
7	Brake					
	GG94310000	Brake pipe torque wrench			2	
	ST08060000	Master-Vac oil seal press-fit tool			3	
	ST08080000	Master-Vac wrench			3	

USA & Canada



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