

SERVICE MANUAL

DATSUN

**MODEL 330 SERIES
CHASSIS AND BODY**



SUPPLEMENT 1

Z·ONE·DATSUN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN



FOREWORD

This supplement contains information concerning revised service procedures and relevant data which has been introduced in the Service Journals and Service Bulletins issued during the period from March, 1975 through August, 1977 and which are considered to be necessary for servicing 330 models.

1. This supplement contains only those items which have been revised and must be used in conjunction with the 330 Service Manual.
2. This supplement provides information on all revised service procedures and data.
3. The information has been divided into the same sections and paragraphs found in the 330 Service Manual.
4. Future revisions to this supplement will be issued in the Service Journal and Service Data and Specifications.
5. Rights for alteration of specifications and methods at any time are reserved.

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN



SERVICE MANUAL

SUPPLEMENT 1

MODEL 330 SERIES CHASSIS AND BODY

SECTION : GENERAL INFORMATION (GI)

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General Information

MODEL VARIATION

- New types of car models have been added to the 330 series.
- The L28 engine has replaced the L26 engine.
- The designs of cars differ according to the destination areas.

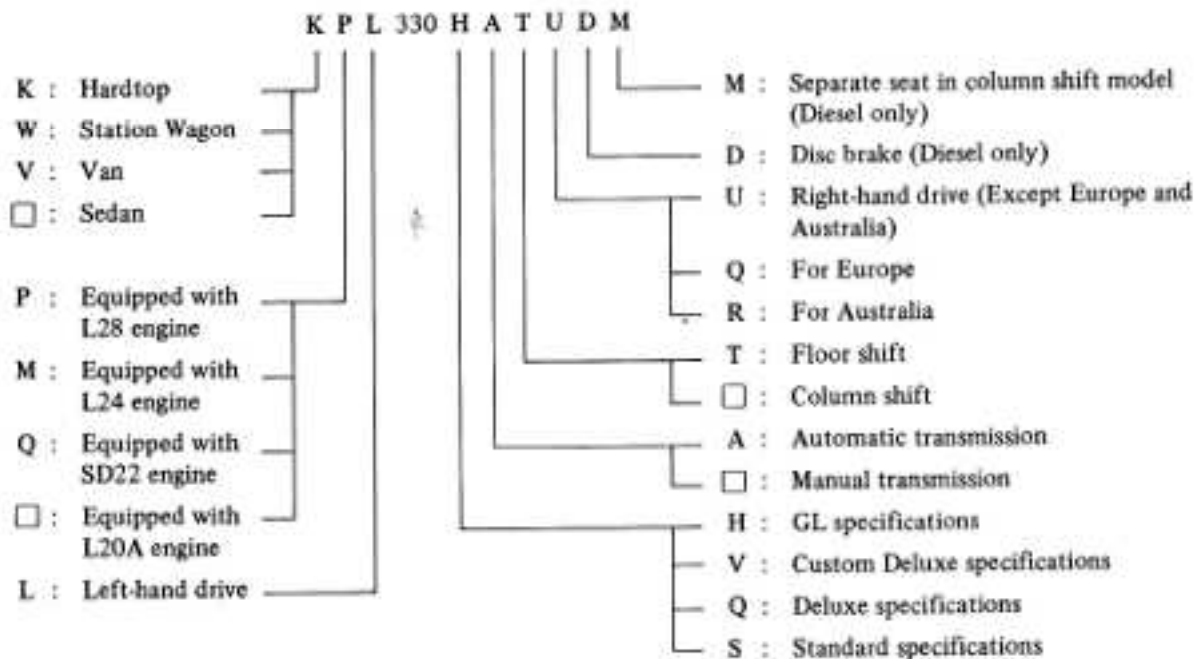
Destination	Car type	Class	Car model		Engine model	Transmission		Front seat	Differential carrier	
			Right-hand drive	Left-hand drive		Type	Model		Model	Gear ratio
All except Europe and Australia	4-door Sedan	Custom Deluxe	P330VU	PL330V	L28	R3	R3W71B	Bench	H190	4.111
			P330VTU	PL330VT		F4	F4W71B	Separate reclining		
			P330VAU	PL330VA		RA	3N71B	Bench		
			P330VATU	PL330VAT		FA	3N71B	Separate reclining		
			-	ML330VT	L24	F4	F4W71B	Separate reclining		
			-	ML330VAT		FA	3N71B			
		Deluxe	P330QU	PL330Q	L28	R3	R3W71B	Bench		
			P330QAU	-		RA	3N71B			
			330QTU	L330QT	L20A	F4	F4W71B	Separate reclining		
			-	PL330S	L28	R4	R4W71B	Bench		
	Q330SU(D)	QL330S(D)	SD22	Separate reclining						
	-	QL330S(D)M								
	2-door Hardtop	GL	KP330HTU	KPL330HT	L28	F4	F4W71B	Separate reclining		
			KP330HATU	KPL330HAT		FA	3N71B			
Station Wagon	Custom Deluxe	-	WPL330V	L28	R4	R4W71B	Bench			
		WP330VTU	WPL330VT		F4	F4W71B	Separate reclining			
		WP330VATU	WPL330VAT		FA	3N71B				
Europe	4-door Sedan	Custom Deluxe	P330VTQ	PL330VTQ	L28	F4	F4W71B	Separate reclining	3.889	
			P330VATQ	PL330VATQ		FA	3N71B		4.111	
			-	QL330VTQ		F5	F55W71B			
		Standard	-	QL330SQ	SD22	R4	R4W71B	Bench	3.889	
			-	QL330SQM				Separate reclining		

General Information

Destination	Car type	Class	Car model		Engine model	Transmission		Front seat	Differential carrier	
			Right-hand drive	Left-hand drive		Type	Model		Model	Gear ratio
Europe	2-door Hardtop	GL	-	KPL330HTQ	L28	F4	F4W71B	Separate reclining	H190	3.889
			-	KPL330HATQ		FA	3N71B			4.111
	Van	Custom Deluxe	VP330VTQ	-		F4	F4W71B	Separate reclining		3.889
			VP330VATQ	-		FA	3N71B			4.111
Australia	4-door Sedan	Custom Deluxe	P330VTR	-	F4	F4W71B	Separate reclining	4.111		
			P330VATR	-	FA	3N71B				
	2-door Hardtop	GL	KP330HTR	-	F4	F4W71B				
			KP330HATR	-	FA	3N71B				
	Station Wagon	Custom Deluxe	WP330VTR	-	F4	F4W71B				
			WP330VATR	-	FA	3N71B				

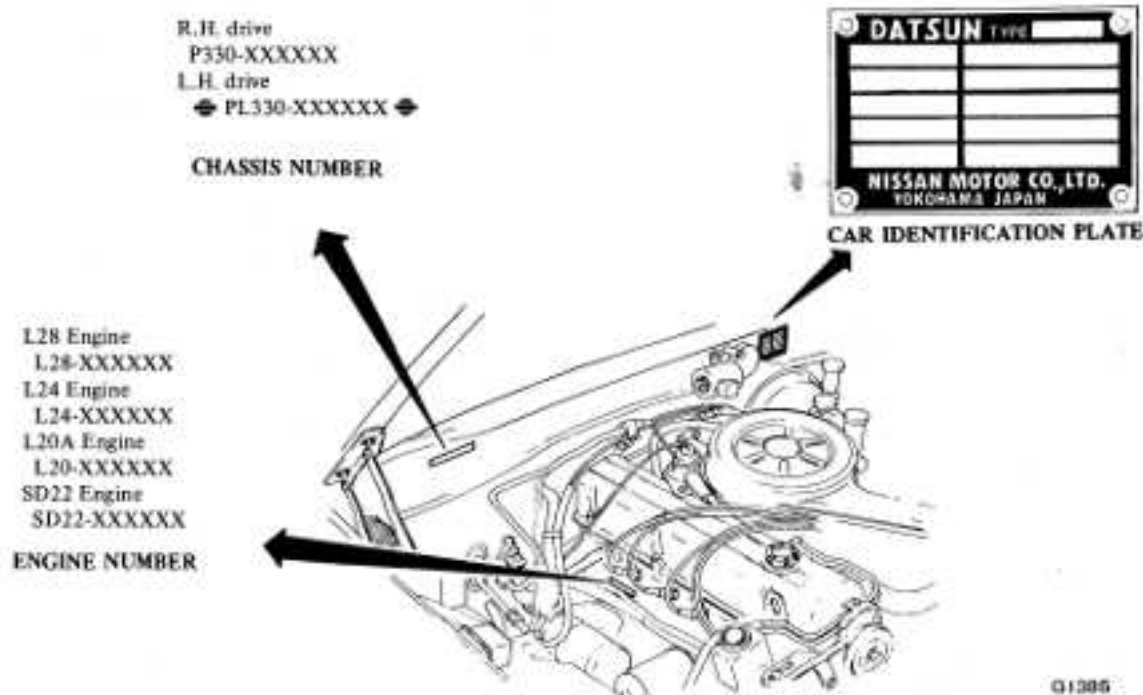
Transmission type	R3	: Manual, column shift, 3-speed
	R4	: Manual, column shift, 4-speed
	F4	: Manual, floor shift, 4-speed
	F5	: Manual, floor shift, 5-speed
	RA	: Automatic, column control
	FA	: Automatic, floor control

The meaning of prefix and suffix characters:



IDENTIFICATION NUMBERS

Along with the change in the model variation and engine, the identification symbols have been revised. The car identification plate also has been revised.



CAR IDENTIFICATION PLATE

L.H. DRIVE MODEL EXCEPT EUROPE AND R.H. DRIVE MODEL

The plate contains the car type, engine capacity, maximum horse power, wheelbase, engine type and chassis number.

L.H. DRIVE MODEL FOR EUROPE

The plate contains the car type, chassis number, gross vehicle weight, gross axle weight and gross combination weight.

General Information

CHASSIS NUMBER

Car type	Engine type	Chassis number (Car type – Serial number)	
		Right-hand drive	Left-hand drive
Sedan	L28	P330-XXXXXX	⊕ PL330-XXXXXX ⊕
	L24	–	⊕ ML330-XXXXXX ⊕
	L20A	330-XXXXXX	⊕ L330-XXXXXX ⊕
	SD22	Q330-XXXXXX	⊕ QL330-XXXXXX ⊕
Hardtop	L28	KP330-XXXXXX	⊕ KPL330-XXXXXX ⊕
Station Wagon		P330-XXXXXX	⊕ WPL330-XXXXXX ⊕
Van		VP330-XXXXXX	–

ENGINE SERIAL NUMBER

Engine model	Engine serial number (Engine model – Serial number)
L28	L28-XXXXXX
L24	L24-XXXXXX
L20A	L20-XXXXXX
SD22	SD22-XXXXXX

APPROXIMATE REFILL CAPACITIES

- On the L28 engine, the amount of engine coolant has been listed.
- The amount of gear oil in the FS5W71B type transmission case has been listed.
- On the L26, L24 and L20 engines, the amounts of engine coolant have been amended.
- On the SD22 engine, the amount of oil in the crankcase has been amended.

Item		Liter	US measure	Imp measure	
Engine cooling system	Without heater	L28	9.6	10 1/4 qt	8 1/4 qt
		L26, L24 & L20A	8.6	9 3/4 qt	7 3/4 qt
		SD22	9.5	10 qt	8 3/4 qt
	With heater	L28	10.4	11 qt	9 3/4 qt
		L26, L24 & L20A	9.6	10 3/4 qt	8 3/4 qt
		SD22	10.4	11 qt	9 3/4 qt
Engine crankcase	L28, L24 & L20A	4.1 4.7*	4 3/4 qt 5 qt*	3 3/4 qt 4 1/4 qt*	
	SD22	5.5 6.2*	5 3/4 qt 6 3/4 qt*	4 3/4 qt 5 3/4 qt*	
Manual transmission case	4-speed (F4W71B)	1.7	3 3/4 pt	3 pt	
	5-speed (FS5W71B)	2.0	4 1/4 pt	3 3/4 pt	
Automatic transmission case		5.5	5 3/4 qt	4 3/4 qt	
Differential carrier		0.9	1 1/4 pt	1 1/4 pt	
Manual steering gear box		0.33	3/4 pt	3/4 pt	
ZF power steering system	R.H. drive	1.3	1 3/4 qt	1 3/4 qt	
	L.H. drive	1.5	1 3/4 qt	1 3/4 qt	
Fuel tank	Sedan & Hardtop	67	17 3/4 gal	14 3/4 gal	
	Station Wagon & Van	60	15 3/4 gal	13 3/4 gal	
Air conditioning system	Refrigerant	R.H. drive	0.8 to 1.0 kg	1.8 to 2.2 lb	1.8 to 2.2 lb
		L.H. drive	0.9 to 1.1 kg	2.0 to 2.4 lb	2.0 to 2.4 lb
	Compressor oil		0.27	9.1 fl oz	9.5 fl oz
Windshield washer reservoir		1.5	1 3/4 qt	1 3/4 qt	
Rear window washer reservoir		1.3	1 3/4 qt	1 3/4 qt	

* Including oil filter

General Information

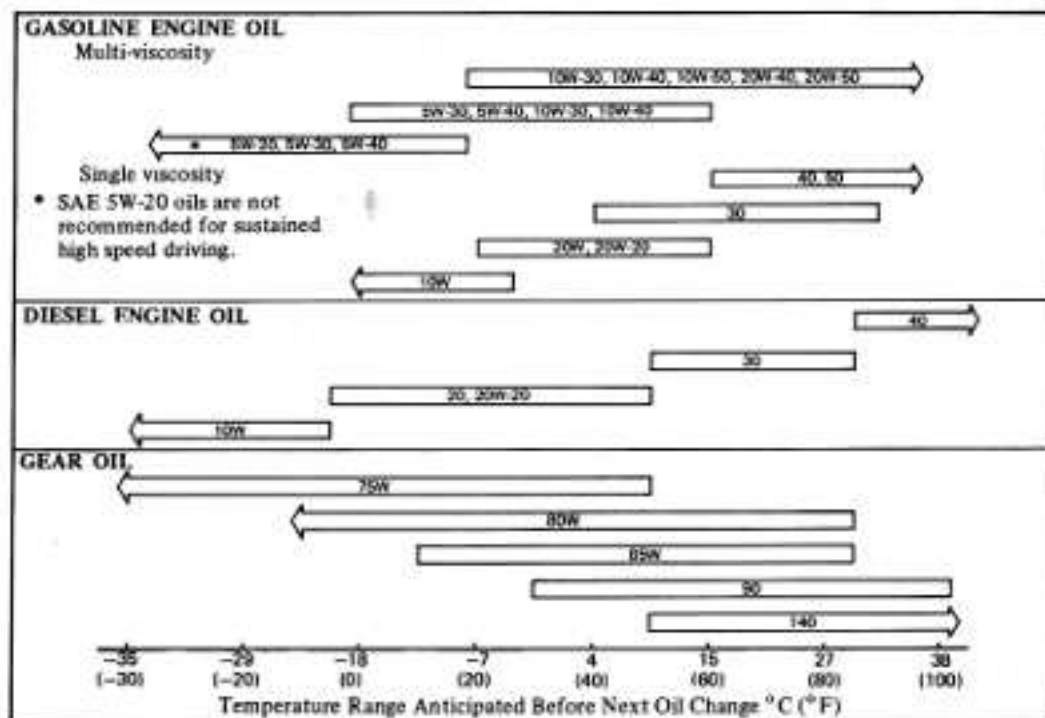
RECOMMENDED LUBRICANTS

Information on the diesel engine oil, differential gear oil, automatic transmission fluid and power steering fluid has been added.

RECOMMENDED LUBRICANTS

Item		Specifications	Remarks
Engine oil	Gasoline	SAE Classification SD or SE (MIL-L-2104B)	Refer to Recommended SAE Viscosity Chart
	Diesel	SAE Classification CC or CD (MIL-L-46152 or MIL-L-2104C)	
Gear oil	Transmission and Steering	API GL-4 (MIL-L-2105)	
	Differential	API GL-5 (MIL-L-2105B)	
Automatic T/M and Power Steering fluid		Type DEXRON	—
Multi-purpose grease		N.L.G.I. 2	Lithium soap base
Brake and Clutch fluid		DOT 3 (F.M.V.S.S. No. 116)	F.M.V.S.S.: Federal Motor Vehicle Safety Standard
Anti-freeze		—	Permanent anti-freeze (Ethylene glycol base)

RECOMMENDED SAE VISCOSITY NUMBER



THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 435

LECTURE 1

THE CLASSICAL LIMIT

1.1. THE CLASSICAL LIMIT

1.2. THE CLASSICAL LIMIT

1.3. THE CLASSICAL LIMIT

1.4. THE CLASSICAL LIMIT

1.5. THE CLASSICAL LIMIT

1.6. THE CLASSICAL LIMIT

SERVICE MANUAL

SUPPLEMENT 1

MODEL 330 SERIES CHASSIS AND BODY

SECTION : ENGINE REMOVAL & INSTALLATION (ER)

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Tightening torque	ER-4

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ENGINE REMOVAL AND INSTALLATION

Despite the addition of L24 engine equipped models and the replacement of the L26 engine with the L28 engine, the service procedure and tightening torque remain unchanged.

REMOVAL

It is much easier to remove engine and transmission as a single unit than to remove them separately. After removal, engine can be separated from transmission assembly.

Notes:

- Be sure to hoist engine and jack up transmission in a safe manner.
- Fender covers should be used to protect car body.
- When installing, be sure to check that electrical harnesses are connected correctly.

1. Remove engine hood. Refer to Section BF.

Note: Have an assistant help you so as to prevent damage to body.

- Disconnect battery ground cable.
- Drain radiator coolant.
- Disconnect upper and lower radiator hoses from engine.
- Remove radiator shroud.
- Remove radiator grille. Then, loosen radiator securing bolts.
- Remove air cleaner assembly.

Note: Keep carburetor away from dust and foreign matter by placing cover over air inlet opening.

8. Disconnect following cables, wires and hoses:

- Battery cable to starter motor
- Wire to starter motor
- Wires to back-up lamp switch.
- Engine ground cable
- Wire to distributor
- Wire to oil pressure switch
- Wires to alternator
- Wire to thermal transmitter
- Heater inlet and outlet hoses if so equipped
- Master-Vac vacuum hose at intake manifold if so equipped

L28, L24 and L20A Engines

- Disconnect high tension cables.
- Disconnect fuel hoses.
- Detach accelerator linkage and choke control wire from carburetor. Refer to Section FE.

SD22 Engine

- Disconnect fuel hoses.
- Detach accelerator linkage and disconnect engine control and idle control wires. Refer to Section FE.
- Disconnect exhaust tube from clutch housing.
- Disconnect hose connecting vacuum pump to vacuum tank at pump, if Master-Vac is installed.

9. Remove clutch operating cylinder from clutch housing. Refer to Section CL.

Notes: On automatic transmission equipped cars;

- Disconnect oil cooler hoses from tube.
- Disconnect vacuum tube.

10. Disconnect speedometer cable from rear extension housing.

11. Remove transmission control linkage. Refer to Section TM.

12. Disconnect propeller shaft from rear extension housing. Refer to Section PD.

13. Disconnect exhaust front tube from exhaust manifold.

Tightening torque of nuts:

2.0 to 2.6 kg-m
(14 to 19 ft-lb)

14. Support transmission with jack.

15. Remove bolts securing rear engine mounting member to body. See Figure ER-1.

16. Remove rear engine mount and rear engine mounting insulator. See Figure ER-1.

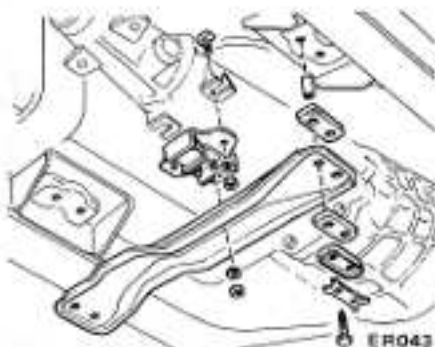


Fig. ER-1 Removing rear engine mounting insulator

Air conditioner equipped model

Note: Never discharge gas from compressor while work is being performed.

a. Disconnect water hoses from engine. See Figure ER-2.

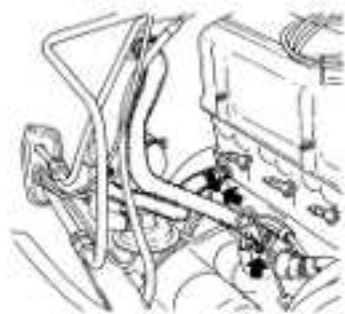
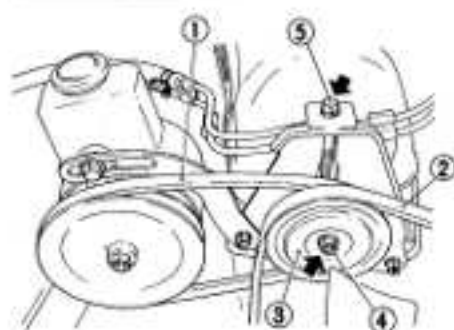


Fig. ER-2 Air conditioner water hoses

b. Remove compressor belt. To remove, loosen idler pulley nut and adjusting bolt. See Figure ER-3.



- 1 Power steering oil pump belt ER267
- 2 Compressor belt
- 3 Compressor idler pulley
- 4 Compressor idler pulley nut
- 5 Adjust bolt

Fig. ER-3 Compressor pulley assembly

c. Remove compressor retaining bolts and move compressor toward fender to facilitate removal of engine. See Figure ER-4.

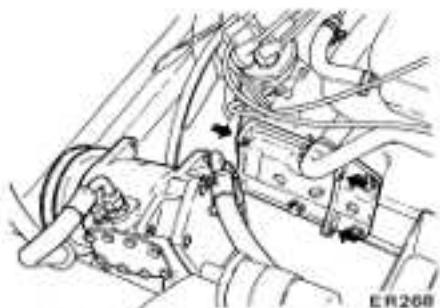


Fig. ER-4 Moving compressor away from engine

Power steering equipped model

Note: Never drain power steering oil while work is being performed.

- a. Remove belt from power steering oil pump.
- b. Remove oil pump retaining bolts and move oil pump toward fender to facilitate removal of engine. See Figure ER-5.



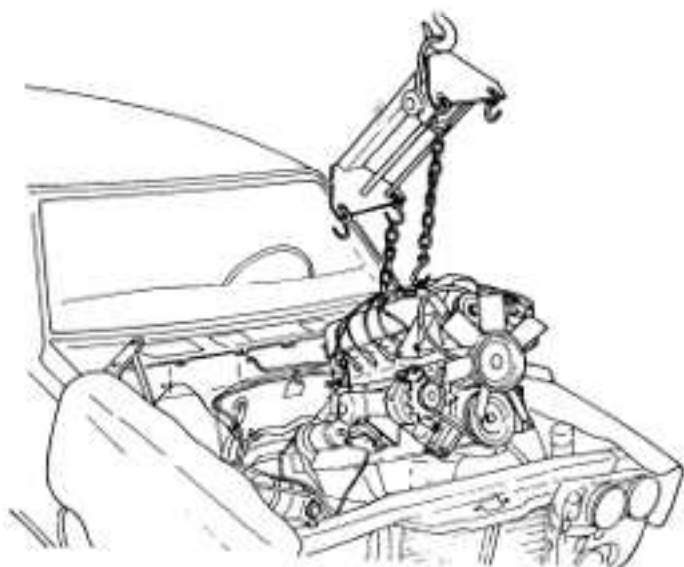
Fig. ER-5 Moving oil pump away from engine

- 17. Connect suitable wire or chain to engine slingers and raise engine to take weight off front mounting insulators.
- 18. Remove bolts securing front mounting insulator to suspension member.
- 19. Raise engine and transmission, and remove from car as a single unit. See Figure ER-6.

INSTALLATION

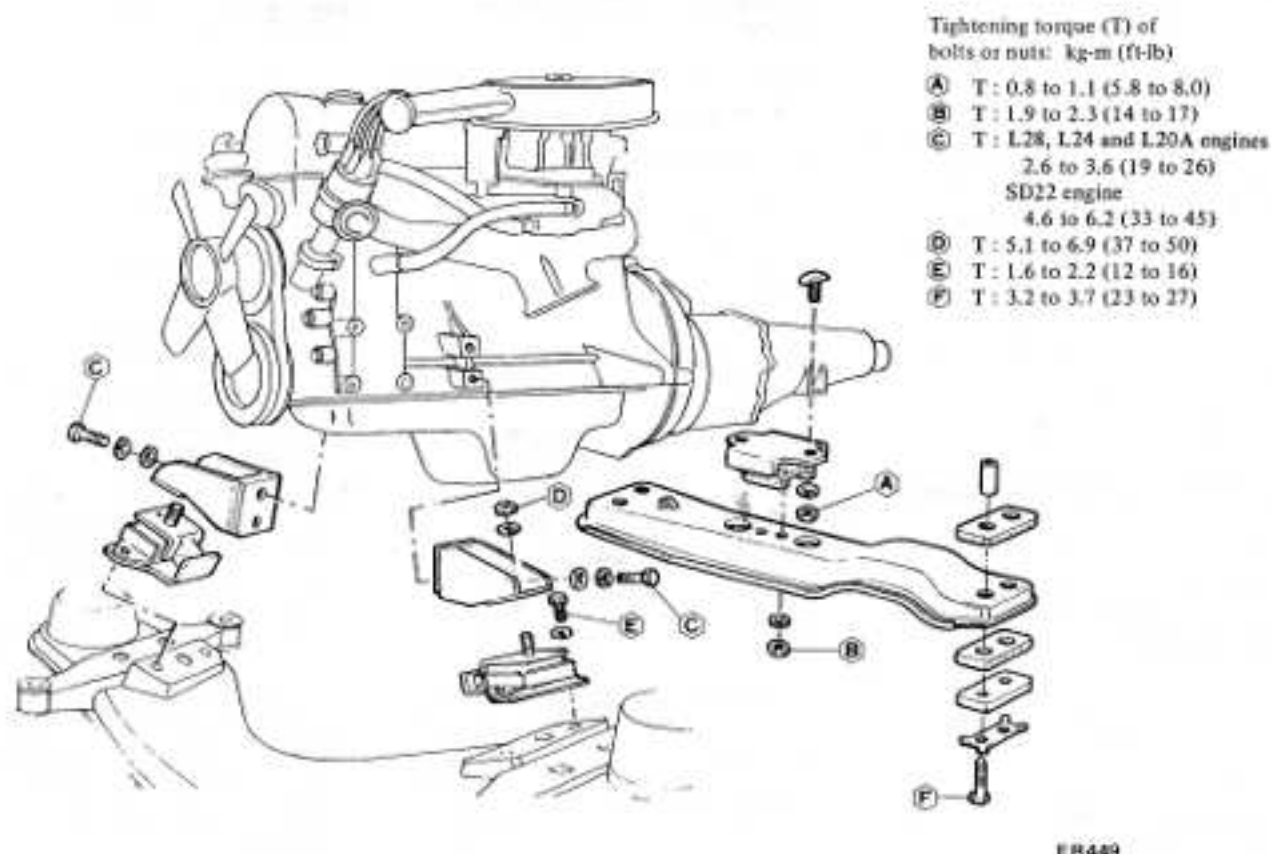
Install in the reverse order of removal, observing the following:

- 1. When installing, first secure rear engine mounting member to body.
- 2. Refer to applicable section when installing and adjusting any parts.
 - Adjust clutch pedal free play. Refer to Section CL.
 - Adjust accelerator and choke control system. Refer to Section FE.
 - For installation of power steering oil pump and belt adjustment, refer to Section ST.
 - For installation of air conditioner compressor and belt adjustment, refer to Manual for Air Conditioning systems.
- 3. When installing exhaust front tube on exhaust manifold, be sure to use new gasket.
- 4. When installing hood following engine installation, be sure that it is properly centered and that hood lock operates securely. Refer to Section BF for Adjustment.



ER270

Fig. ER-6 Removing engine



- Tightening torque (T) of bolts or nuts: kg-m (ft-lb)
- (A) T: 0.8 to 1.1 (5.8 to 8.0)
 - (B) T: 1.9 to 2.3 (14 to 17)
 - (C) T: L28, L24 and L20A engines
2.6 to 3.6 (19 to 26)
SD22 engine
4.6 to 6.2 (33 to 45)
 - (D) T: 5.1 to 6.9 (37 to 50)
 - (E) T: 1.6 to 2.2 (12 to 16)
 - (F) T: 3.2 to 3.7 (23 to 27)

ER449

Fig. ER-7 Structural view of engine mounting

SERVICE DATA AND SPECIFICATIONS

Tightening torque

Rear engine mounting to body	kg-m (ft-lb)	3.2 to 3.7 (23 to 27)
Rear insulator to rear engine mounting member	kg-m (ft-lb)	1.9 to 2.3 (14 to 17)
Rear insulator to transmission	kg-m (ft-lb)	0.8 to 1.1 (5.8 to 8.0)
Front engine mounting bracket to engine		
L28, L24 and L20A engines	kg-m (ft-lb)	2.6 to 3.6 (19 to 26)
SD22 engine	kg-m (ft-lb)	4.6 to 6.2 (33 to 45)
Front insulator to engine mounting bracket	kg-m (ft-lb)	5.1 to 6.9 (37 to 50)
Front insulator to suspension member	kg-m (ft-lb)	1.6 to 2.2 (12 to 16)
Clutch operating cylinder to clutch housing	kg-m (ft-lb)	2.5 to 3.0 (18 to 22)
Front tube to exhaust manifold	kg-m (ft-lb)	2.0 to 2.6 (14 to 19)
Propeller shaft to companion flange	kg-m (ft-lb)	2.5 to 3.2 (18 to 23)

SERVICE MANUAL

SUPPLEMENT 1

MODEL 330 SERIES CHASSIS AND BODY

SECTION : CLUTCH (CL)

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SPECIAL SERVICE TOOL CHANGES	CL-5

CLUTCH CONTROL

CLUTCH PEDAL

INSTALLATION AND ADJUSTMENT

On the right-hand drive model equipped with a diesel engine, a low rigid clutch hose has been connected to the clutch piping as a damper for pulsating hydraulic pressure to prevent vibration from being transmitted to the clutch pedal. To correspond with this, the clutch pedal height has been changed to increase the total pedal travel. The clutch pedal free travel due to the clearance between the clevis pin and the clevis pin hole of the pedal has been changed for standardization purposes.


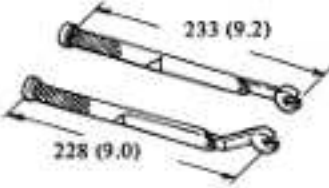
Service Manual reference page	Item	Applied model		New	Former
CL-7	Pedal height mm (in)	Diesel engine equipped model	R.H. drive	186 (7.32)	167 (6.57)
			L.H. drive		186 (7.32)
		Gasoline engine equipped model		167 (6.57)	
	Free play mm (in)	All		1 to 5 (0.04 to 0.20)	2 to 5 (0.08 to 0.20)

SERVICE DATA AND SPECIFICATIONS

Clutch cover type	C225S
Diaphragm spring	
Distance to flywheel	mm (in) 33 to 35 (1.30 to 1.38)
Unevenness of spring height	mm (in) Less than 0.5 (0.020)
Installed load	kg (lb) 500 (1,103) for L28 Engine 400 (882) for L20 and SD22 Engines 450 (992) for L24 Engine
Clutch disc	
Facing size (outer dia. x inner dia. x thickness)	mm (in) 225 x 150 x 3.5 (8.86 x 5.91 x 0.138)
Thickness of disc assembly	mm (in) 7.8 (0.307)
Allowable minimum depth of rivet head from surface	mm (in) 0.3 (0.012)
Allowable free play of spline	mm (in) 0.4 (0.016)
Clutch pedal	
Height	
Gasoline engine equipped model	mm (in) 167 (6.57)
Diesel engine equipped model	mm (in) 186 (7.32)
Free play	mm (in) 1 to 5 (0.04 to 0.20)
Clutch master cylinder	
Diameter	mm (in) 15.87 (5/8)
Maximum clearance between cylinder bore and piston	mm (in) 0.15 (0.0059)
Clutch operating cylinder	
Diameter	mm (in) 17.46 (9/16)
Maximum clearance between cylinder bore and piston	mm (in) 0.15 (0.0059)
Tightening torque	
Clutch cover bolt	kg-m (ft-lb) 1.6 to 2.1 (12 to 15)
Master cylinder push rod lock nut	kg-m (ft-lb) 0.8 to 1.1 (5.8 to 8.0)
Clutch tube flare nut	kg-m (ft-lb) 1.5 to 1.8 (11 to 13)
Clutch hose to operating cylinder	kg-m (ft-lb) 1.7 to 2.0 (13 to 14)
Master cylinder to dash panel bolt	kg-m (ft-lb) 0.8 to 1.1 (5.8 to 8.0)
Operating cylinder to clutch housing bolt	kg-m (ft-lb) 2.5 to 3.0 (18 to 22)
Flywheel bolt	kg-m (ft-lb) 14 to 16 (101 to 116)
Clutch pedal fulcrum bolt	kg-m (ft-lb) 3.1 to 4.1 (22 to 30)
Pedal stopper lock nut	kg-m (ft-lb) 0.8 to 1.1 (5.8 to 8.0)
Operating cylinder bleeder	kg-m (ft-lb) 0.7 to 0.9 (5.1 to 6.5)
Master cylinder reservoir band	kg-m (ft-lb) 0.25 to 0.4 (1.8 to 2.9)
Master cylinder supply valve stopper	kg-m (ft-lb) 0.15 to 0.3 (1.1 to 2.2)

Clutch

SPECIAL SERVICE TOOL CHANGES

No.	Tool number & tool name		Figure Unit: mm (in)	Interchangeability	Remarks
	New	Former			
1.	ST20660000 Clutch aligning bar	ST20630000 Clutch aligning bar	 SE001	YES	*1
2.	GG94310000 Flare nut torque wrench	—	 SE227		*2

*1 : Standardized with other tools

*2 : Addition of unstated item

STATE OF CALIFORNIA
COUNTY OF LOS ANGELES

BEFORE ME, the undersigned authority, on this _____ day of _____, 20____, personally appeared _____, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

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SERVICE MANUAL

SUPPLEMENT 1

MODEL 330 SERIES CHASSIS AND BODY

SECTION : TRANSMISSION (TM)

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Transmission

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4-SPEED TRANSMISSION (TYPE: F4W71B, R4W71B)

A tool has been added to facilitate the tightening of the mainshaft nut with a torque wrench.

ASSEMBLY GEAR

Gear assembly

1. Assemble 2nd gear needle bearing, 2nd gear, baulk ring, 1st & 2nd speed synchronizer assembly, 1st gear baulk ring, 1st gear bush, needle bearing, 1st gear, steel ball, and thrust washer on mainshaft. Before installing a steel ball, apply grease to it.



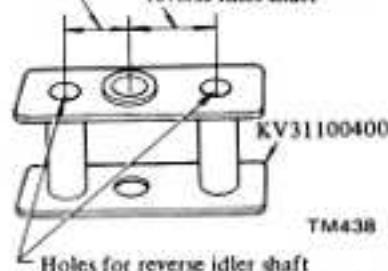
TM358

Fig. TM-1 Installing thrust washer

2. Set Transmission Press Stand KV31100400 and place adapter plate assembly on it.

For counter gear and reverse idler shaft

For mainshaft and reverse idler shaft



TM438

Fig. TM-2 Transmission Press Stand

3. Install mainshaft assembly to adapter plate assembly. Be sure to place bearing squarely against shaft and press it into place on shaft gradually.



TM439

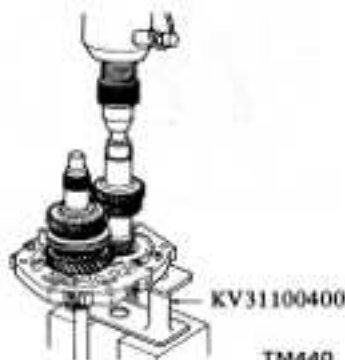
Fig. TM-3 Installing mainshaft assembly

4. Place new woodruff keys in grooves in counter gear and tap them lightly until they are seated securely.

Use a soft hammer to avoid damaging keys.

5. Place adapter plate assembly and mainshaft assembly so that counter gear rear bearing rests on Transmission Press Stand KV31100400 properly.

6. Install counter gear into adapter plate by pressing it.



TM440

Fig. TM-4 Installing counter gear

7. Position needle bearing, 3rd main gear, baulk ring and 3rd & 4th synchronizer assembly on the front of mainshaft.

8. Install thrust washer on mainshaft and secure it with snap ring of proper thickness that will minimize clearance of groove in mainshaft.

Available snap ring

No.	Thickness mm (in)
1	1.4 (0.055)
2	1.5 (0.059)
3	1.6 (0.063)



TM441

Fig. TM-5 Installing snap ring

9. Position baulk ring on cone surface of main drive gear. Apply gear oil to mainshaft pilot bearing and install it on mainshaft.

Assemble main drive gear assembly on the front end of mainshaft.

10. Press counter drive gear onto counter gear with Counter Gear Drift ST23860000 by meshing gears and secure counter drive gear with thicker snap ring.

Note:
Be sure to drive in counter drive gear and main drive gear simultaneously.



12. Support adapter plate in a vise with Setting Plate Adapter ST23810001, with mainshaft facing down.

13. Install reverse main gear, plain washer on the rear of mainshaft and install mainshaft nut.

Tighten mainshaft nut temporarily.

14. Install counter reverse gear on the rear of counter gear and secure with snap ring.

Use snap ring to give a minimum gear end play.

No.	Thickness mm (in)
1	1.4 (0.055)
2	1.5 (0.059)
3	1.6 (0.063)



Explanation of converted torque

Mainshaft nut should be tightened to 14.0 to 17.0 kg-m (101 to 123 ft-lb) torque with the aid of Wrench ST22520000. When doing so, the amount of torque to be read on wrench needle should be modified according to the following formula:

$$C \text{ kg-m} = 14 \times \left(\frac{L}{L + 0.10} \right) \text{ to } 17 \times \left(\frac{L}{L + 0.10} \right)$$

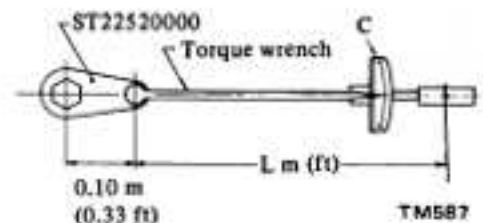
or

$$C \text{ (ft-lb)} = 101 \times \left(\frac{L}{L + 0.33} \right) \text{ to } 123 \times \left(\frac{L}{L + 0.33} \right)$$

Where,

C: Value read on the torque wrench kg-m (ft-lb)

L: Effective length of torque wrench m (ft)

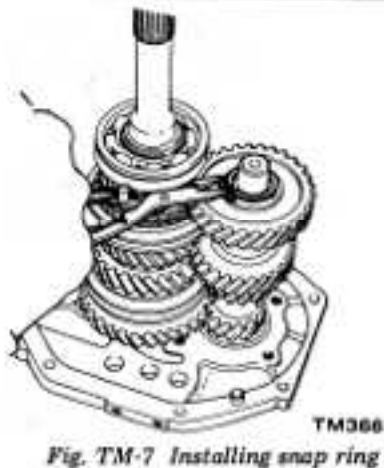


Example,

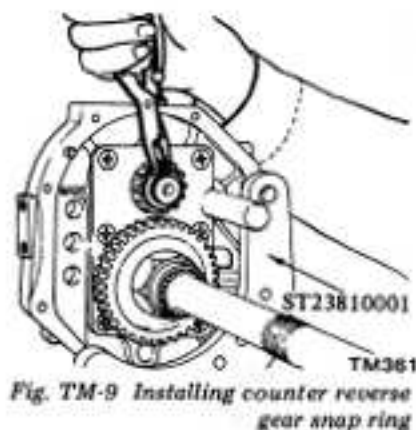
When a 0.40 m (1.31 ft)-long torque wrench is used, the "C" in Fig. TM-12 will be 11.2 to 13.6 kg-m (81 to 98 ft-lb).

Available counter drive gear snap ring

No.	Thickness mm (in)
1	1.4 (0.055)
2	1.5 (0.059)
3	1.6 (0.063)



11. Press counter gear front bearing onto counter gear with Bearing Drift ST22360002.



15. Install reverse idler gear on reverse idler shaft.

16. With gears doubly engaged, tighten mainshaft nut to the converted torque "C" (See Fig. TM-12) using Wrench ST22520000.

Transmission

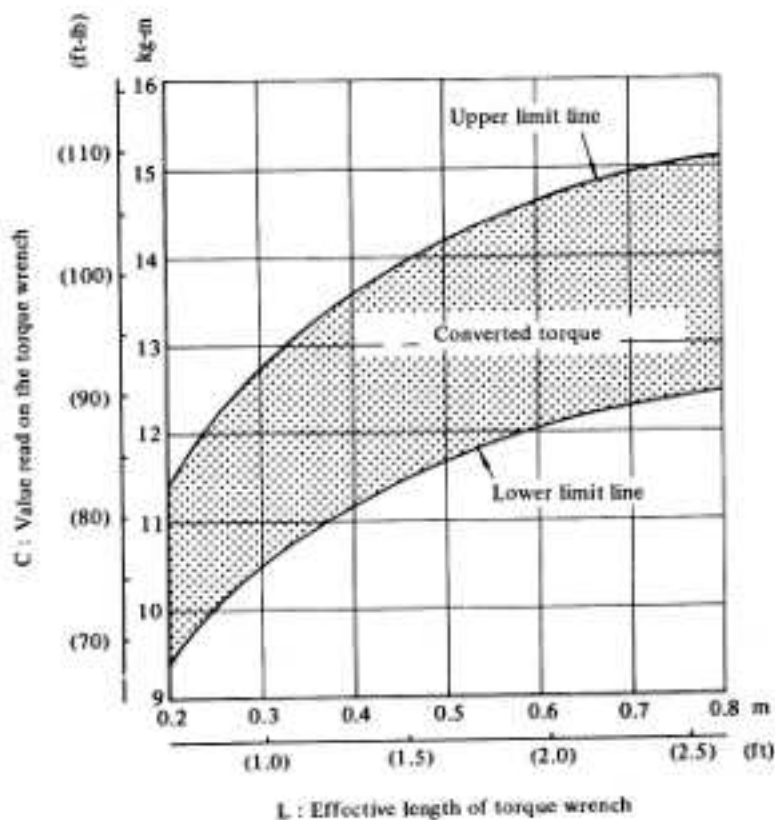


Fig. TM12 Converted torque

17. Stake mainshaft nut to groove of mainshaft with a punch.

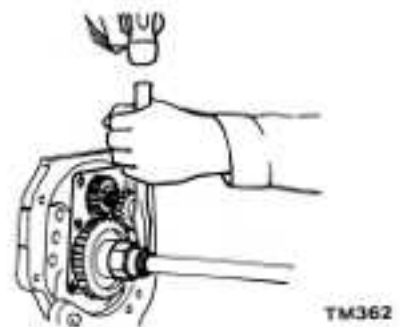


Fig. TM-13 Staking mainshaft nut

18. Measure gear end play and backlash.

Make sure that they are held within the specified values.

For details, refer to the instructions under topic "Inspection".

Note:

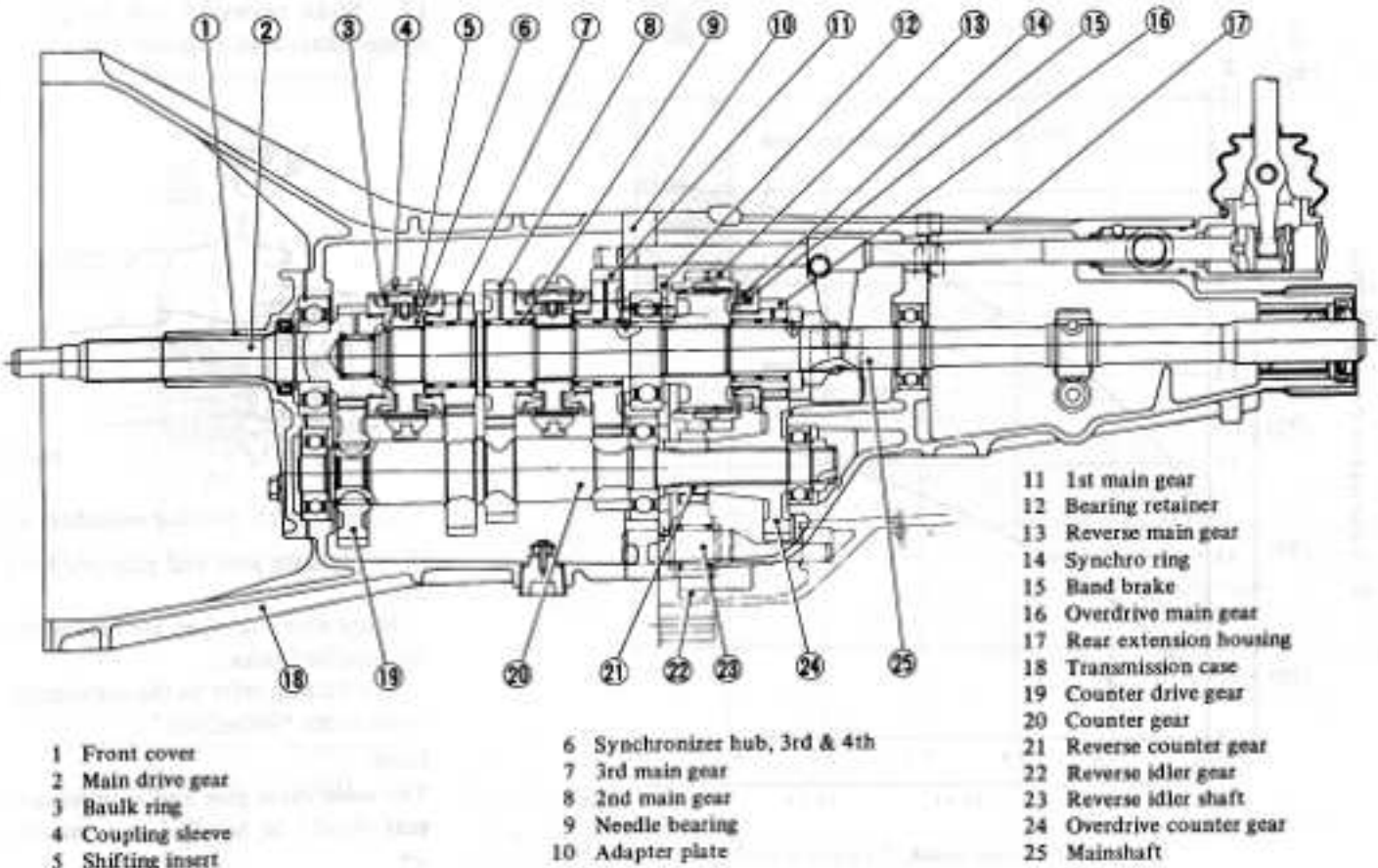
The main drive gear and counter drive gear should be handled as a matched set.

When you replace a main drive gear or counter drive gear, be sure to replace as a set of main drive gear and counter drive gear.

5-SPEED TRANSMISSION (TYPE: FS5W71B)

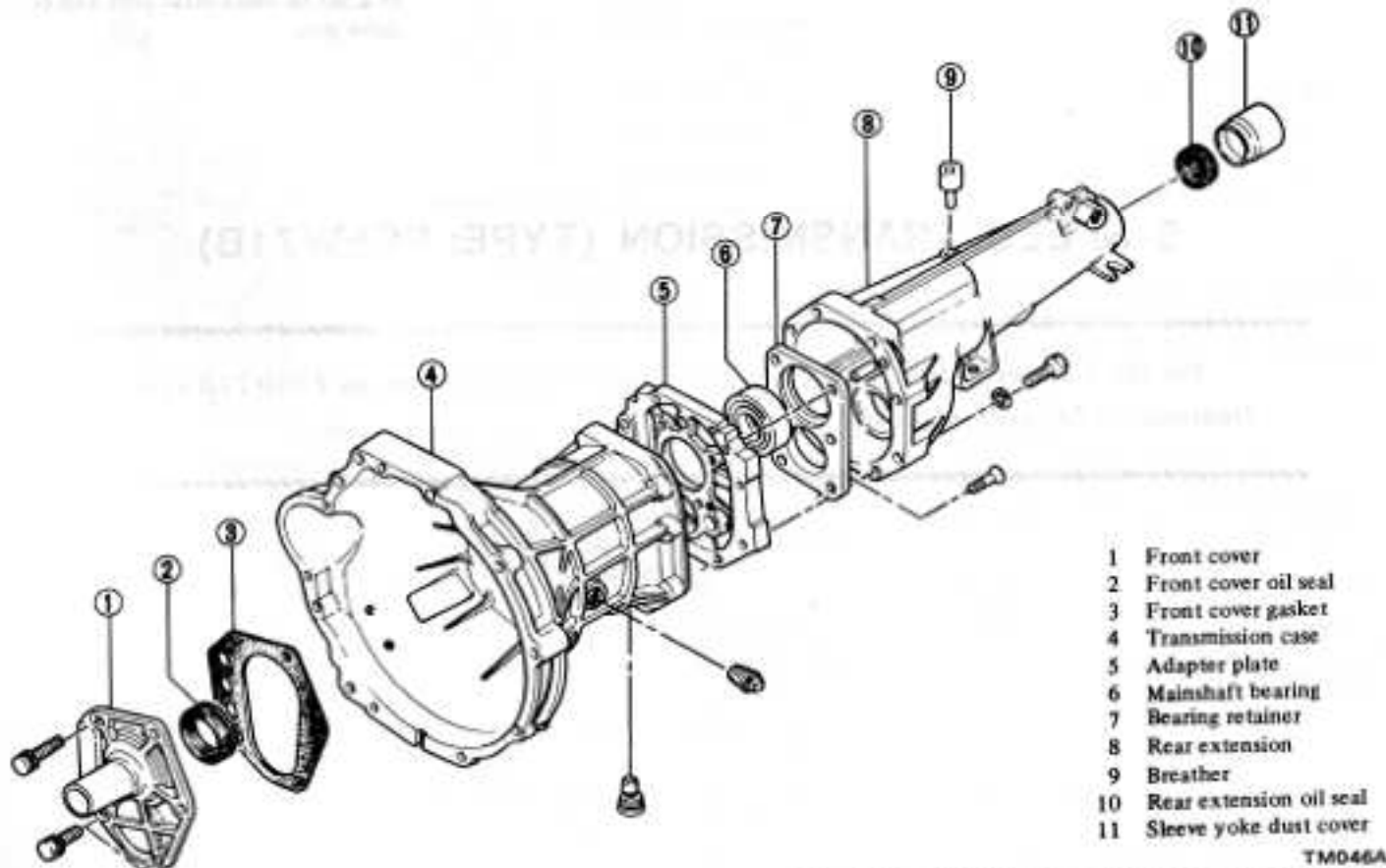
On the Custom Deluxe model equipped with a diesel engine, an FS5W71B type transmission has been adopted.

Transmission



TM128A

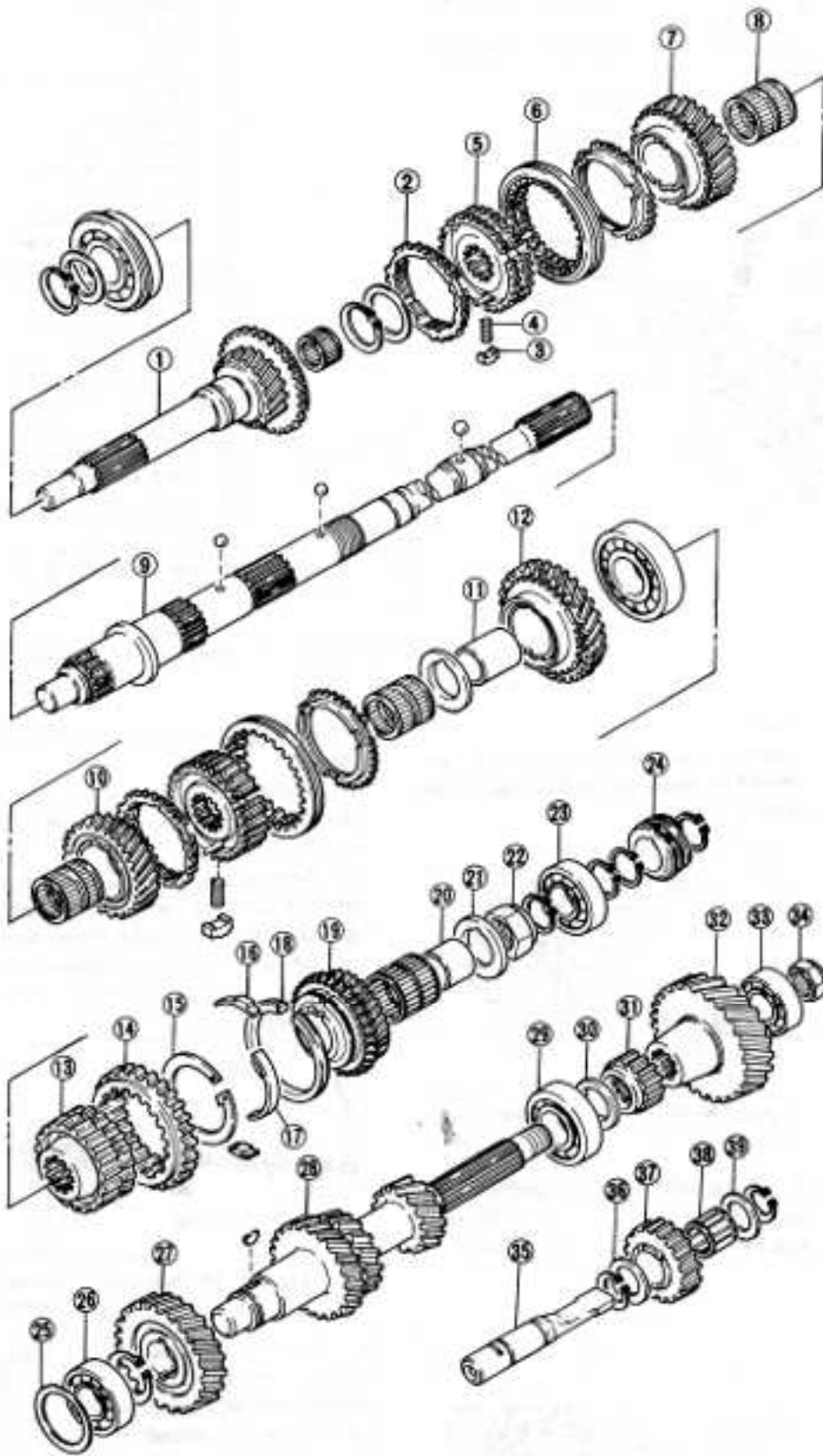
Fig. TM-14 FS5W71B transmission



TM046A

Fig. TM-15 FS5W71B transmission case components

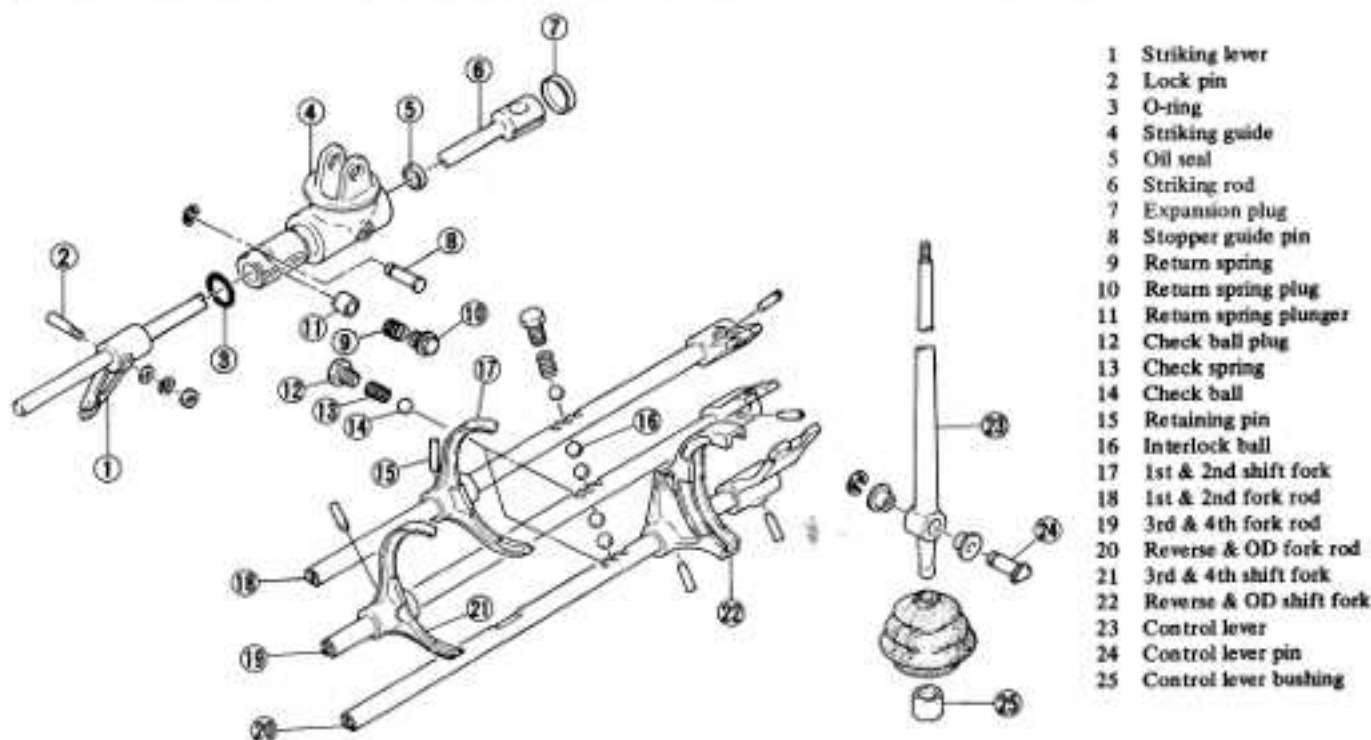
Transmission



- 1 Main drive gear
- 2 Baulk ring
- 3 Shifting insert
- 4 Shifting insert spring
- 5 Synchronizer hub
- 6 Coupling sleeve
- 7 3rd main gear
- 8 Needle bearing
- 9 Mainshaft
- 10 2nd main gear
- 11 Bushing
- 12 1st main gear
- 13 OD-reverse synchronizer hub
- 14 Reverse main gear
- 15 Circlip
- 16 Thrust block
- 17 Brake band
- 18 Synchronizer ring
- 19 Overdrive main gear
- 20 Overdrive gear bushing
- 21 Washer
- 22 Mainshaft nut
- 23 Mainshaft rear bearing
- 24 Speedometer drive gear
- 25 Counter gear front bearing shim
- 26 Counter gear front bearing
- 27 Counter drive gear
- 28 Counter gear
- 29 Counter gear bearing
- 30 Reverse counter gear spacer
- 31 Reverse counter gear
- 32 Overdrive counter gear
- 33 Counter gear rear bearing
- 34 Counter gear nut
- 35 Reverse idler shaft
- 36 Reverse idler thrust washer
- 37 Reverse idler gear
- 38 Reverse idler gear bearing
- 39 Reverse idler thrust washer

TM047A

Fig. TM16 FS5W71B transmission gear components



- 1 Striking lever
- 2 Lock pin
- 3 O-ring
- 4 Striking guide
- 5 Oil seal
- 6 Striking rod
- 7 Expansion plug
- 8 Stopper guide pin
- 9 Return spring
- 10 Return spring plug
- 11 Return spring plunger
- 12 Check ball plug
- 13 Check spring
- 14 Check ball
- 15 Retaining pin
- 16 Interlock ball
- 17 1st & 2nd shift fork
- 18 1st & 2nd fork rod
- 19 3rd & 4th fork rod
- 20 Reverse & OD fork rod
- 21 3rd & 4th shift fork
- 22 Reverse & OD shift fork
- 23 Control lever
- 24 Control lever pin
- 25 Control lever bushing

Fig. TM-17 FS5W71B transmission shift control components

REMOVAL AND INSTALLATION

Same as for the F4W71B.

DISASSEMBLY

Disassembly and assembly procedures are almost the same as those for the F4W71B. Unless otherwise noted, refer to the F4W71B.

HOUSING

Same as for the F4W71B.

FORK ROD

Same as for the F4W71B.

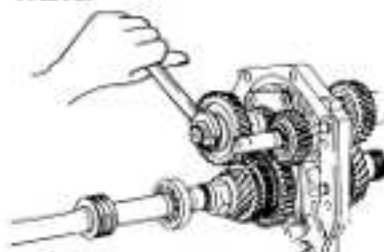
GEAR

Gear assembly

1. Remove counter gear front bearing.
2. Remove counter drive gear snap ring.
3. Draw out counter drive gear and main drive gear.
4. With gears doubly engaged, release staking on counter gear nut and mainshaft nut then loosen them.
Remove counter gear nut.

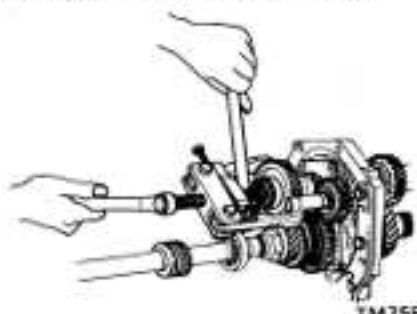
Note:

Counter gear nut and mainshaft nut should be discarded and should not be reused.



TM757
Fig. TM-18 Removing counter gear nut

5. Draw out counter overdrive gear and bearing from countershaft rear end by using a suitable gear puller.



TM758
Fig. TM-19 Removing counter overdrive gear and bearing

6. Remove reverse counter gear and spacer.
7. Remove snap ring from reverse idler shaft, and remove reverse idler gear.
8. Remove snap rings and then draw out speedometer gear and bearing from mainshaft rear side. When drawing out mainshaft rear bearing, use Mainshaft Rear Bearing Puller KV32101330.



TM760
Fig. TM-20 Removing mainshaft rear bearing

9. Remove mainshaft nut, thrust washer, reverse main gear, OD synchronizer and overdrive gear.
10. Draw out mainshaft gear assembly together with countershaft by lightly tapping the rear end with a soft hammer while holding the front of mainshaft gear assembly by hand.
Be careful not to drop off counter gear.

Mainshaft

Same as for the F4W71B.

Main drive gear

Same as for the F4W71B.

Counter gear

Same as for the F4W71B.

REAR EXTENSION

Same as for the F4W71B.

ADAPTER PLATE

Same as for the F4W71B.

INSPECTION

Same as for the F4W71B.

ASSEMBLY**FRONT COVER**

Same as for the F4W71B.

REAR EXTENSION

Same as for the F4W71B.

ADAPTER PLATE

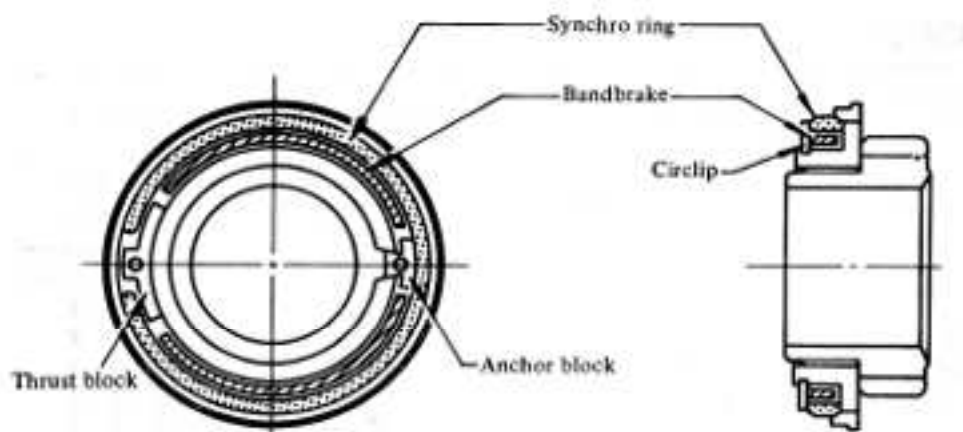
Same as for the F4W71B.

GEAR**1st & 2nd and 3rd & 4th gear synchronizer**

Same as for the F4W71B.

OD gear synchronizer

Position synchronizer ring, band brake, thrust block and anchor block on overdrive clutch gear; install circlip.



TM449

Fig. TM-21 Installing overdrive gear assembly

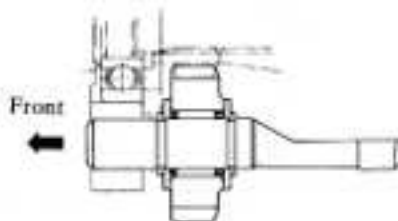
Main drive gear

Same as for the F4W71B.

Gear assembly

Assembly procedure for the front side is the same as that for the F4W71B. So only rear side is described here.

1. After front side is assembled, assemble snap ring, spacer, needle bearing, reverse idler gear, spacer and snap ring.



TM451

Fig. TM-22 Reverse idler gear

2. Assemble OD-reverse synchronizer hub, reverse gear, OD gear bush-

ing, needle bearing, OD gear assembly, steel ball and thrust washer on mainshaft rear side. Before installing a steel ball, apply grease to it.

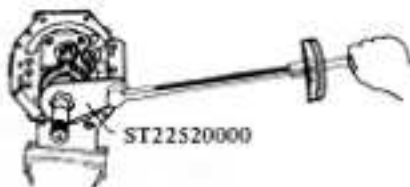
3. Assemble new mainshaft nut, and tighten it temporarily.

4. Assemble spacer, reverse counter gear, overdrive counter gear, bearing and new counter gear lock nut.

Tightening torque:

Counter gear lock nut:
10.0 to 13.0 kg-m
(72 to 94 ft-lb)

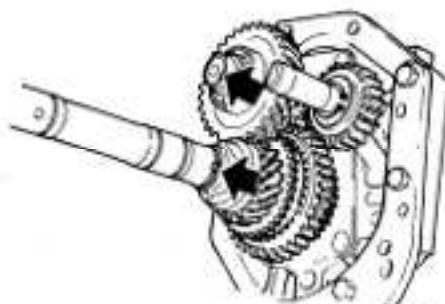
5. With gears doubly engaged, tighten mainshaft lock nut.



TM76B

Fig. TM-23 Tightening mainshaft nut

6. Stake mainshaft and counter gear nuts to groove of mainshaft and counter gear with a punch.



TM130A

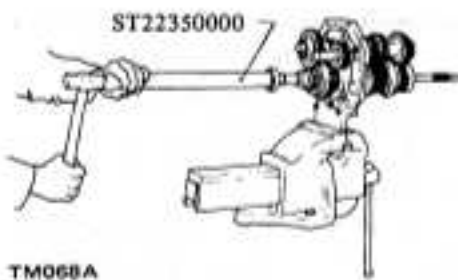
Fig. TM-24 Staking mainshaft nuts

7. Assemble mainshaft rear bearing using Bearing Drift ST22350000. Fit thick snap ring to the rear side of bearing to eliminate end play.

Available snap ring

No.	Thickness mm (in)
1	1.1 (0.043)
2	1.2 (0.047)
3	1.3 (0.051)
4	1.4 (0.055)

Transmission



TM068A

Fig. TM-25 Assembling mainshaft rear bearing

8. Fit snap ring to front of speedometer drive gear.
9. Assemble steel ball, speedometer drive gear and rear snap ring.

Shift forks and fork rods

Same as for the F4W71B.

HOUSING

Same as for the F4W71B.

SERVICE DATA AND SPECIFICATIONS

To accommodate adoption of the L28 engine, the gear ratio of the 4-speed transmission has been changed.

Information on the FS5W71B type transmission has been added.

GENERAL SPECIFICATIONS

Transmission type	R3W71B	F4W71B		R4W71B		FS5W71B
Synchromesh type	Warner					1st to 4th: Warner 5th: Servo
Shift pattern						
Applied engine	L28	L28	L24 & L20A	L28	SD22	SD22
Gear ratio						
1st	3.143	3.321	3.592	3.321	3.592	3.592
2nd	1.641	2.077	2.246	2.077	2.246	2.246
3rd	1.000	1.308	1.415	1.308	1.415	1.415
4th	—	1.000	1.000	1.000	1.000	1.000
5th	—	—	—	—	—	0.882
Reverse	3.657	3.382	3.657	3.382	3.657	3.657

Transmission

Transmission type	R3W71B	F4W71B		R4W71B		FS5W71B
Number of teeth						
Main drive gear	21	22	21	22	21	21
Main gear	1st	33	33	33	33	33
	2nd	28	28	28	28	28
	3rd	—	26	26	26	26
	5th	—	—	—	—	22
	Reverse	36	36	36	36	36
Counter drive gear	32	31	32	31	32	32
Counter gear	1st	16	14	14	14	14
	2nd	26	19	19	19	19
	3rd	—	28	28	28	28
	5th	—	—	—	—	38
	Reverse	15	15	15	15	15
Reverse idler gear	23	23	23	23	23	23
Oil capacity Liter (US pt, Imp pt)	1.7 (3 $\frac{3}{4}$, 3)					2.0 (4 $\frac{1}{4}$, 3 $\frac{1}{2}$)

Transmission

SPEEDOMETER PINION GEAR RATIO TABLE

Final gear ratio	Tire size					
	6.40-14-4PR	6.95-14-4PR	6.95S-14-4PR	7.35S-14-4PR	175SR14	195/70HR14
3.889	18/6	19/6	18/6	18/6	19/6	19/6
4.111	19/6	20/6	19/6	19/6	20/6	20/6
4.375	20/6	21/6	21/6	—	21/6	21/6

INSPECTION AND REPAIR

Transmission type		R3W71B	R4W71B, F4W71B	FS5W71B
Gear backlash mm (in)	Main drive gear to counter drive gear	0.05 to 0.10 (0.0020 to 0.0039)		
	1st gear	0.05 to 0.20 (0.0020 to 0.0079)		
	2nd gear	0.05 to 0.20 (0.0020 to 0.0079)		
	3rd gear	—	0.05 to 0.20 (0.0020 to 0.0079)	
	5th gear	—		0.05 to 0.20 (0.0020 to 0.0079)
	Reverse counter gear to reverse idler gear	0.05 to 0.20 (0.0020 to 0.0079)		
	Reverse idler gear to reverse main gear	0.05 to 0.20 (0.0020 to 0.0079)		
Gear end play mm (in)	1st gear	0.12 to 0.19 (0.0047 to 0.0075)	0.32 to 0.39 (0.0126 to 0.0154)	
	2nd gear	0.13 to 0.37 (0.0051 to 0.0146)	0.12 to 0.19 (0.0047 to 0.0075)	
	3rd gear	—	0.13 to 0.37 (0.0051 to 0.0146)	
	5th gear	—		0.12 to 0.19 (0.0047 to 0.0075)
	Reverse counter gear	—	Less than 0.20 (0.0079)	—
	Reverse idler gear	0.05 to 0.45 (0.0020 to 0.0177)	—	0.05 to 0.50 (0.0020 to 0.0200)
Baulk ring to cone gap	mm (in)	1.20 to 1.60 (0.047 to 0.063)		
Standard		0.80 (0.031)		
Allowable limit				

Transmission

Transmission type	R3W71B	R4W71B, F4W71B	FS5W71B
Main drive gear snap ring mm (in)		1.73 (0.0681) 1.80 (0.0709) 1.87 (0.0736) 1.94 (0.0764) 2.01 (0.0791) 2.08 (0.0819)	
Mainshaft front snap ring mm (in)		1.4 (0.055) 1.5 (0.059) 1.6 (0.063)	
Mainshaft bearing snap ring mm (in)	2.4 (0.094) 2.5 (0.098) 2.6 (0.102) 2.7 (0.106) 2.8 (0.110) 2.9 (0.114)		-
Mainshaft rear bearing snap ring mm (in)	-		1.1 (0.043) 1.2 (0.047) 1.3 (0.051) 1.4 (0.055)
Counter drive gear snap ring mm (in)		1.4 (0.055) 1.5 (0.059) 1.6 (0.063)	
Reverse counter gear snap ring mm (in)	-	1.4 (0.055) 1.5 (0.059) 1.6 (0.063)	-
Reverse idler gear front spacer mm (in)	2.50 (0.0984) 2.83 (0.1114)		-
Countergear front bearing shim mm (in)		0.1 (0.004) 0.2 (0.008) 0.3 (0.012) 0.4 (0.016) 0.5 (0.020) 0.6 (0.024)	

TIGHTENING TORQUE**Transmission installation**



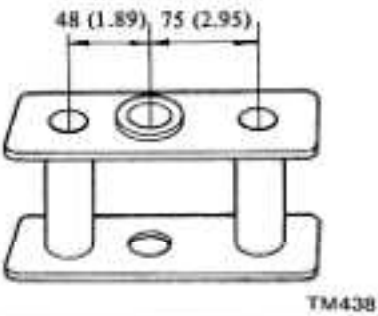

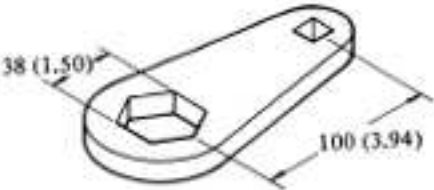
Transmission to engine bolt	kg-m (ft-lb)	4.4 to 5.9 (32 to 43)
Transmission to engine rear plate bolt	kg-m (ft-lb)	0.9 to 1.2 (6.5 to 8.7)
Clutch operating cylinder bolt	kg-m (ft-lb)	2.5 to 3.0 (18 to 22)
Rear mounting insulator to transmission bolt	kg-m (ft-lb)	0.8 to 1.1 (5.8 to 8.0)
Rear mounting insulator to crossmember nut	kg-m (ft-lb)	1.9 to 2.3 (14 to 17)
Crossmember to body bolt	kg-m (ft-lb)	3.2 to 3.7 (23 to 27)
Propeller shaft to differential	kg-m (ft-lb)	3.5 to 4.5 (25 to 33)
Center bearing bracket to body nut	kg-m (ft-lb)	3.2 to 3.7 (23 to 27)
Dynamic damper to rear extension nut	kg-m (ft-lb)	1.3 to 1.8 (9 to 13)
Steering wheel nut	kg-m (ft-lb)	4.0 to 5.0 (29 to 36)

Gear assembly

Rear extension bolt	kg-m (ft-lb)	1.6 to 2.1 (12 to 15)
Front cover bolt	kg-m (ft-lb)	1.6 to 2.1 (12 to 15)
Bearing retainer to adapter plate screw	kg-m (ft-lb)	1.9 to 2.5 (14 to 18)
Mainshaft lock nut	kg-m (ft-lb)	14.0 to 17.0 (101 to 123)
Counter gear lock nut (FS5W71B only)	kg-m (ft-lb)	10.0 to 13.0 (72 to 94)
Check ball plug	kg-m (ft-lb)	1.9 to 2.5 (14 to 18)
Rear extension upper cover installation bolt	kg-m (ft-lb)	0.4 to 0.5 (2.9 to 3.6)
Return spring plug	kg-m (ft-lb)	1.0 to 2.0 (7 to 14)
Reverse lamp switch	kg-m (ft-lb)	2.0 to 3.0 (14 to 22)
Filler plug	kg-m (ft-lb)	2.5 to 3.5 (18 to 25)
Drain plug	kg-m (ft-lb)	2.5 to 3.5 (18 to 25)

Transmission

SPECIAL SERVICE TOOL CHANGES


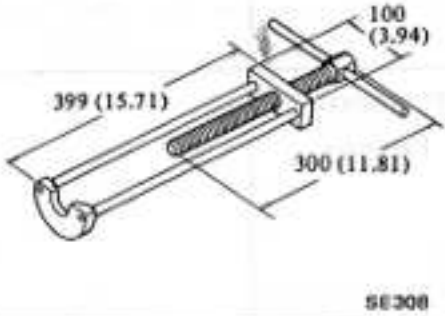
No.	Tool number & tool name		Figure Unit: mm (in)	Interchangeability	Remarks
	New	Former			
1.	KV31100300 Fork rod pin punch	ST23540000 Fork rod pin punch		No.	*3
2.	Eliminated	ST23840000 Expander			*5
3.	KV31100400 Transmission press stand	ST23870000 Transmission press stand		YES	*7
4.	ST22520000 Wrench				*3

*3 : Modified specifications, Changed working method, Addition of unstated item.

*5 : Discontinued

*7 : Change in tool number only.

Transmission

No.	Tool number & tool name		Figure Unit: mm (in)	Interchangeability	Remarks
	New	Former			
5.	ST22350000 Mainshaft bearing drift	—	 <p style="text-align: center;">480 (18.9)</p> <p style="text-align: center;">Outer dia. 44 (1.73) Inner dia. 31 (1.22)</p> <p style="text-align: right;">SE037</p>		*4
6.	KV32101330 Bearing puller	—	 <p style="text-align: center;">399 (15.71)</p> <p style="text-align: center;">100 (3.94)</p> <p style="text-align: center;">300 (11.81)</p> <p style="text-align: right;">SE308</p>		*4

*4: Added

SERVICE MANUAL

SUPPLEMENT 1

MODEL 330 SERIES CHASSIS AND BODY

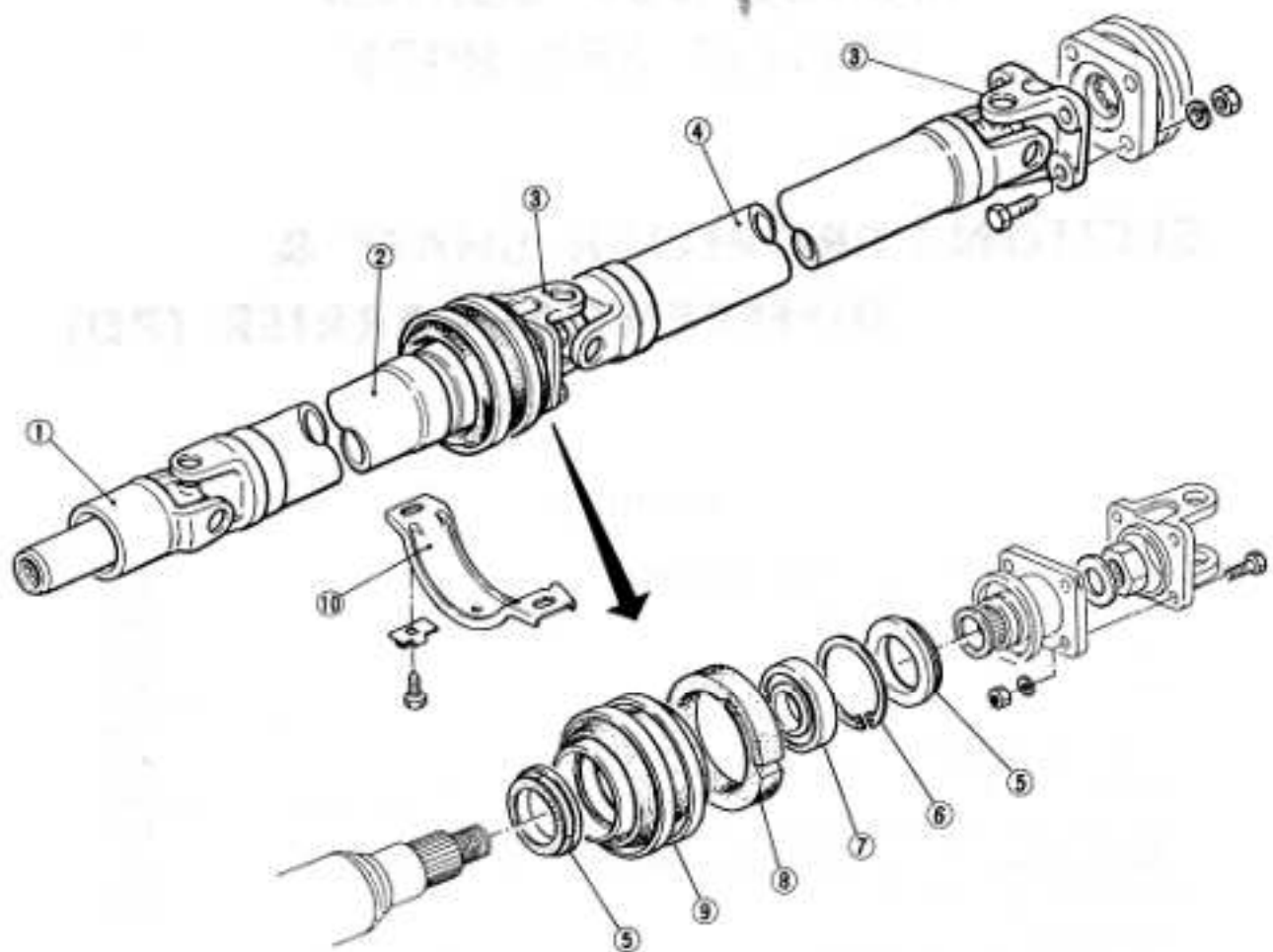
SECTION : PROPELLER SHAFT & DIFFERENTIAL CARRIER (PD)

CONTENTS

PROPELLER SHAFT AND CENTER BEARING	PD-2
DESCRIPTION	PD-3
DISASSEMBLY	PD-3
INSPECTION	PD-3
ASSEMBLY	PD-3
CENTER BEARING	PD-3
INSTALLATION	PD-3
SERVICE DATA AND SPECIFICATIONS	PD-3
TROUBLE DIAGNOSES AND CORRECTIONS	PD-4
DIFFERENTIAL CARRIER	PD-5
DISASSEMBLY	PD-5
ASSEMBLY AND ADJUSTMENT	PD-6
ASSEMBLY OF DIFFERENTIAL GEAR CASE	PD-6
SERVICE DATA AND SPECIFICATIONS	PD-7
SPECIAL SERVICE TOOL CHANGES	PD-9

PROPELLER SHAFT AND CENTER BEARING

- The journal bearing has been changed from a snap ring type to a stake-retention type.
- On diesel engine equipped models, a 3-joint propeller shaft has been adopted.
- Along with the change in the engine, the tightening torque specifications of the bolts and nuts attaching the propeller shaft have been revised for improved strength.



- | | |
|--------------------|----------------------------|
| 1 Sleeve yoke | 6 Snap ring |
| 2 Front shaft | 7 Ball bearing |
| 3 Companion flange | 8 Cushion |
| 4 Rear shaft | 9 Center bearing insulator |
| 5 Dust seal | 10 Bracket |

PD456

Fig. PD-1 Propeller shaft

Propeller Shaft & Differential Carrier

DESCRIPTION

The propeller shaft and universal joint assembly is carefully balanced during original assembly, so that the dynamic unbalance is below 35 gr-cm (0.49 in-oz) at 5,800 rpm. Therefore, when the car is to be undercoated, cover the propeller shaft and universal joints to prevent application of the undercoating material. The 3-joint shaft utilizes a center bearing complete with a rubber insulator to keep noise and vibration to a minimum.

The universal joint is a non-disassembly type. If it appears damaged, replace it with the propeller shaft assembly.

DISASSEMBLY

Note: Journal cannot be disassembled.

INSPECTION

1. Check journal for axial play. If play exists, replace propeller shaft assembly.
2. Check center bearing by rotating bearing race. Discard if it is rough, noisy or damaged. Cracked bearing insulator cannot be tolerated here. Replace with service kit if necessary.
3. Check propeller shaft tube surface for dent or crack. If necessary, replace propeller shaft assembly.

ASSEMBLY

CENTER BEARING

Service Manual reference page	Tightening torque kg-m (ft-lb)	
PD-4	Flange yoke (rear shaft) to companion flange (front shaft) nuts	3.5 to 4.5 (25 to 33)

INSTALLATION

Service Manual reference page	Tightening torque kg-m (ft-lb)	
PD-5	Propeller shaft to companion flange nuts (Differential carrier side)	3.5 to 4.5 (25 to 33)

SERVICE DATA AND SPECIFICATIONS

Dynamic unbalance	gr-cm (in-oz)	35 (0.49) at 5,800 rpm
Spider journal axial play	mm (in)	0 (0)
Tightening torque:		
Propeller shaft to companion flange nuts (Differential carrier side)	kg-m (ft-lb)	3.5 to 4.5 (25 to 33)
Companion flange nut	kg-m (ft-lb)	20 to 24 (145 to 174)
Flange yoke (rear shaft) to companion flange (front shaft) nuts	kg-m (ft-lb)	3.5 to 4.5 (25 to 33)
Center bearing bracket nut	kg-m (ft-lb)	3.2 to 3.7 (23 to 27)

Propeller Shaft & Differential Carrier

TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Vibration during at medium or high speed.	Worn or damaged universal joint needle bearing. Unbalance due to bent or dented propeller shaft. Loose propeller shaft installation. Worn transmission rear extension bushing. Damaged center bearing or insulator. Undercoating or mud on the shaft causing unbalance. Tire unbalance. Balance weights missing.	Replace propeller shaft assembly. Replace propeller shaft assembly. Retighten. Replace. Replace. Clean up shaft. Balance wheel and tire assembly. Replace propeller shaft assembly.
Knocking sound during starting or noise during coasting on propeller shaft.	Worn damaged universal joint. Worn sleeve yoke and main shaft spline. Loose propeller shaft installation. Damaged center bearing or insulator. Loose or missing bolts at center bearing bracket to body.	Replace propeller shaft assembly. Replace propeller shaft assembly. Retighten. Replace. 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

DISASSEMBLY

A tool has been adopted to remove the differential case assembly from the carrier.

1. Put match marks on side bearing caps and carrier, and remove side bearing caps and take out differential case assembly using Slide Hammer HT72400000.



Fig. PD-2 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. See Figure PD-3.

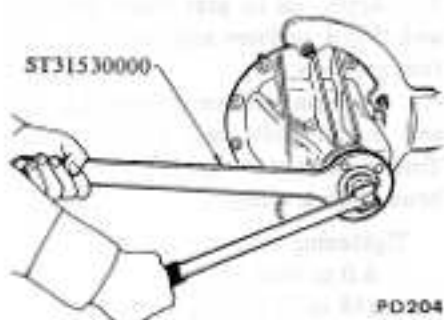


Fig. PD-3 Removing drive pinion nut

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: Oil seal must not be reused.

5. Hold rear bearing inner race with Drive Pinion Rear Bearing Inner Race Puller ST30031000 and extract from drive pinion with a press. See Figure PD-4.

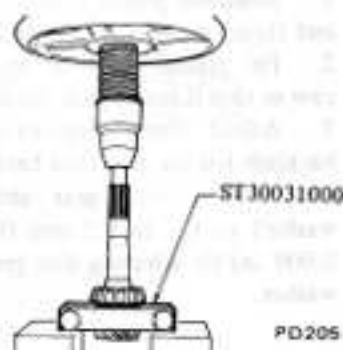


Fig. PD-4 Removing pinion rear bearing inner race

6. To remove outer races of both front and rear bearings, apply a brass drift to race side surface, and withdraw them by tapping the top of drift with a hammer. See Figure PD-5.

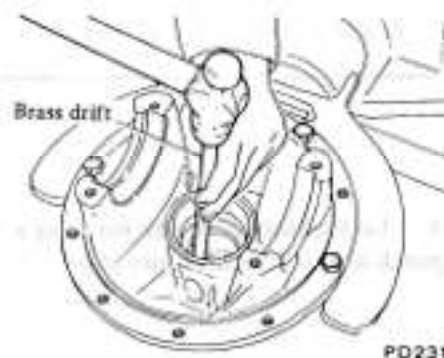


Fig. PD-5 Removing pinion front and rear bearing outer races

ASSEMBLY AND ADJUSTMENT

ASSEMBLY OF DIFFERENTIAL GEAR CASE

- For improved durability, the lock strap (washer) has been strengthened and the tightening torque of the gear bolt has been increased.
- A special tool which is used to measure the side bearing width has been adopted.

1. Assemble pinion mates, side gears and thrust washers in differential case.
 2. Fit pinion shaft to differential case so that it meets lock pin holes.
 3. Adjust pinion mate-to-side gear backlash (or the clearance between the rear face of side gear and thrust washer) to 0.1 to 0.2 mm (0.004 to 0.008 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:
 8.0 to 10.0 kg-m
 (58 to 72 ft-lb)

Notes:

- a. Use only genuine drive gear bolts and new lock washers.
- b. Tighten bolts in criss-cross fashion lightly tapping around bolt heads with a hammer.

7. When replacing side bearing, measure bearing width using Master Gauge KV38101900 and Weight Block ST32501000 prior to installation. See Figure PD-6.

Standard bearing width:
 20.00 mm (0.7874 in)

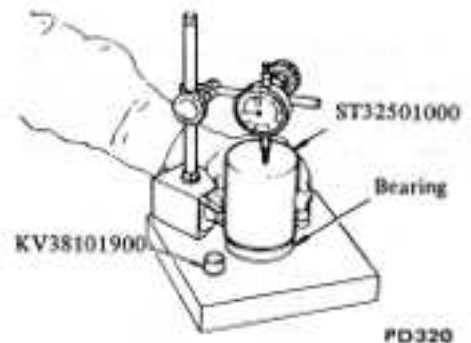


Fig. PD-6 Measuring bearing width

8. Press fit side bearing cone into differential case using Gear Carrier Side Bearing Drift ST33230000 and Adapter ST33061000. See Figure PD-7.

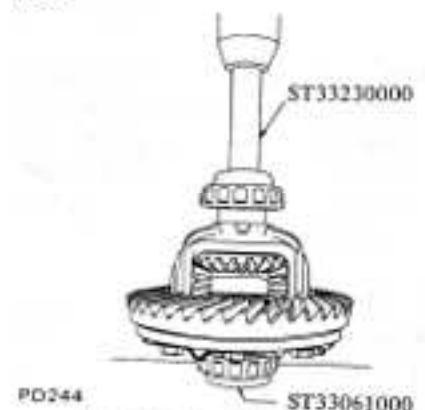


Fig. PD-7 Installing side bearing cone

SERVICE DATA AND SPECIFICATIONS

Along with the change in the engine, the tightening torque specifications of the bolts and nuts attaching the propeller shaft have been revised for improved strength.

Type	H190
Final gear ratio (number of teeth)	4.111 (37/9)
	Optional 3.889 (35/9)
	4.375 (35/8)
Drive pinion preload adjusted by	Spacer
Oil capacity	liter (US pt, Imp.pt)
	0.9 (1 $\frac{3}{8}$, 1 $\frac{3}{8}$)
Drive pinion	
Preload (without oil seal)	kg-cm (in-lb)
(with oil seal)	kg-cm (in-lb)
	10 to 13 (8.7 to 11.2)
	11 to 14 (9.5 to 12.2)
At companion flange bolt hole	
(without oil seal)	kg (lb)
(with oil seal)	kg (lb)
	2.9 to 3.7 (6.4 to 8.2)
	3.2 to 4.0 (7.1 to 8.8)
Thickness of drive pinion bearing adjust washers	mm (in)
	3.81 to 4.09 (0.1500 to 0.1610)
	Spacing 0.02 (0.0008)
Length of drive pinion bearing spacers	mm (in)
	54.50 to 56.00 (2.1457 to 2.2047)
	Spacing 0.30 (0.0118)
Side gear and pinion mate	
Thickness of side gear thrust washers	mm (in)
	0.775 (0.0305), 0.825 (0.0325)
	0.875 (0.0344), 0.925 (0.0364)
Clearance between side gear and thrust washer	mm (in)
	0.1 to 0.2 (0.004 to 0.008)
Ring gear	
Backlash between drive gear and pinion	mm (in)
	0.15 to 0.20 (0.0059 to 0.0079)
Runout of rear side	mm (in)
	less than 0.07 (0.0028)
Thickness at side bearing adjusting shim	mm (in)
	0.05 (0.0020), 0.07 (0.0028)
	0.10 (0.0039), 0.20 (0.0079)
	0.50 (0.0197)
"L" dimension	mm (in)
	198.40 to 198.55 (7.8110 to 7.8169)
Side bearing	
Preload	kg-cm (in-lb)
	12 to 20 (10 to 17)
Preload at ring gear bolt	kg (lb)
	1.7 to 2.8 (3.7 to 6.2)
Standard width	mm (in)
	20.00 (0.7874)

Propeller Shaft & Differential Carrier


Tightening torque

Drive pinion nut	kg-m (ft-lb)	.....	14 to 17 (101 to 123)
Ring gear bolts	kg-m (ft-lb)	.....	8.0 to 10.0 (58 to 72)
Side bearing cap bolts	kg-m (ft-lb)	.....	4 to 5 (29 to 36)
Differential carrier to axle housing fix nuts	kg-m (ft-lb)	.....	1.7 to 2.5 (12 to 18)
Companion flange to propeller shaft nut	kg-m (ft-lb)	.....	3.5 to 4.5 (25 to 33)

Adjusting methods

Variable numbers expressed by	.....	mm x 0.01
Dummy shaft	.....	Used
Drive pinion adjusting formula	.....	$T = N - (H - D' - S) \times 0.01 + 2.18$
Side bearing adjusting formula	.....	$T_1 = (A - C + D - H') \times 0.01 + 0.175 + E$ $T_2 = (B - D + H') \times 0.01 + 0.150 + F$


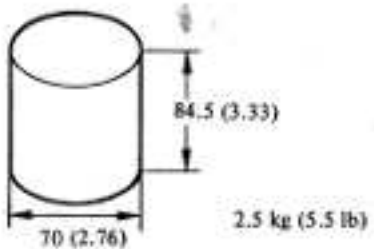
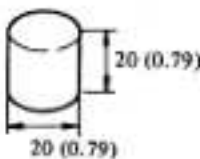

SPECIAL SERVICE TOOL CHANGES

No.	Tool number & tool name		Figure	Interchangeability	Remarks
	New	Former			
1.	Eliminated	ST3110S000 Drive pinion setting gauge set	—		*5
2.	KV381025S0 Oil seal drift ST30720000 Drift bar KV38102510 Drift	ST30720000 Gear carrier front oil seal drift			*8
3.	Eliminated	ST33290001 Gear carrier oil seal puller	—		*5
4.	Eliminated	ST32110001 Diff. side bearing cap gauge	—		*5

*5 : Discontinued

*8 : Amended

Propeller Shaft & Differential Carrier

No.	Tool number & tool name		Figure Unit: mm (in)	Interchangeability	Remarks
	New	Former			
5.	KV31100300 Solid punch	ST23550001 Solid punch	 SE068	YES	*7
6.	ST32501000 Weight block	—	 SE417		*3
7.	KV38101900 Master gauge	—	 SE419		*3
8.	HT72400000 Slide hammer	—	 SE384		*3

*3: Modified specifications, Changed working method, Addition of unstated item
 *7: Change in tool number only

SERVICE MANUAL

SUPPLEMENT 1

MODEL 330 SERIES CHASSIS AND BODY

SECTION : FRONT AXLE & FRONT SUSPENSION (FA)

CONTENTS

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SERVICE DATA AND SPECIFICATIONS	FA-2
WHEEL ALIGNMENT	FA-2
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MANUAL STEERING, POWER STEERING	FA-3
COIL SPRING	FA-3
CHOCK ABSORBER	FA-4
STABILIZER	FA-4
TIGHTENING TORQUE	FA-5

FRONT SUSPENSION

To standardize parts with those of the 620 model, the diameter of the stud and the size of the nut have been changed. The tightening torque also has been changed.

UPPER LINK AND UPPER BALL JOINT

INSTALLATION

Service Manual reference page	Tightening torque kg-m (ft-lb)	
	FA-11	Upper link joint stud nut	8 to 10 (58 to 72)

SERVICE DATA AND SPECIFICATIONS

WHEEL ALIGNMENT

For prolonged tire life, toe-in has been changed.

(When car is unloaded and tire pressure is specified value.)

Applied model	Condition Seating capacity	Unladen				
		Camber degree	Caster degree	Kingpin inclination degree	Toe-in	
					mm (in) (Extreme front and rear of tire center)	degree (Total angle of both tires)
Sedan	6	0° to 1°	20' to 1°20'	7°20'	Bias and bias belted tire: 2 to 4 (0.08 to 0.16) Radial tire: 1 to 3 (0.04 to 0.12)	Bias and bias belted tire: 10' to 20' Radial tire: 5' to 16'
Sedan and Hardtop	5	10' to 1°10'	30' to 1°30'			
Sedan (diesel)	5, 6	0° to 1°	30' to 1°30'			
Station Wagon and Van	5, 6	-10' to 50'	5' to 1°5'			

STEERING ANGLE

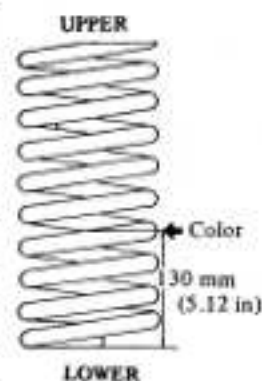
MANUAL STEERING, POWER STEERING

Inner wheel	37°30' to 38°30'
Outer wheel	29°30' to 30°30'

COIL SPRING

To optimize car posture, the spring combination has been revised.

Applied model	Item	Spring location	Wire diameter mm (in)	Coil diameter mm (in)	Free length mm (in)	Spring constant kg/mm (lb/in)	Identification color	Spacer
Sedan (Custom deluxe and Deluxe) Hard-top, Station Wagon	R.H.D.	R.H.	16.0 (0.630)	113.0 (4.45)	398.5 (15.69)	5.34 (299.0)	White	-
		L.H.	16.0 (0.630)	113.0 (4.45)	383.5 (15.10)	5.34 (299.0)	Red	-
	L.H.D.	R.H.	16.0 (0.630)	113.0 (4.45)	391.0 (15.39)	5.34 (299.0)	Yellow	-
		L.H.	16.0 (0.630)	113.0 (4.45)	391.0 (15.39)	5.34 (299.0)	Yellow	-
Sedan (Diesel)	R.H.D.	R.H.	16.0 (0.630)	113.0 (4.45)	406.0 (15.98)	5.34 (299.0)	Blue	-
		L.H.	16.0 (0.630)	113.0 (4.45)	406.0 (15.98)	5.34 (299.0)	Blue	-
	L.H.D.	R.H.	16.5 (0.650)	113.5 (4.47)	355.5 (14.00)	7.24 (405.4)	Green	A
		L.H.	16.5 (0.650)	113.5 (4.47)	355.5 (14.00)	7.24 (405.4)	Green	B



Spacer A : 6 mm (0.24 in) thick
 Spacer B : 11 mm (0.43 in) thick

Effective turns : 7.0 (Green) 8.5 (Others)

SHOCK ABSORBER

For improved steering stability, the damping force of the shock absorber has been increased on European models (except Diesel and Van models). On non-European models, the new shock absorber is optionally available.

Model		Stroke mm (in)	Damping force kg (lb) [at 0.3 m (1.0 ft)/sec.]		Piston diameter mm (in)	Remarks
			Expansion	Compression		
Sedan (except Diesel), Hardtop	Non-European model	130 (5.12)	137 (302)	88 (194)	40 (1.57)	*1
	European model (Option for non-European model)	130 (5.12)	210 (463)	80 (176)	40 (1.57)	
Sedan (Diesel)	R.H. drive	140 (5.51)	120 (265)	28 (62)	30.2 (1.189)	*2
	L.H. drive	130 (5.12)	174 (384)	94 (207)	40 (1.57)	*1
Station Wagon, Van		130 (5.12)	174 (384)	94 (207)	40 (1.57)	

- *1 : Gas-filled
*2 : Conventional

STABILIZER

For improved steering stability, the diameter of the stabilizer has been increased on European models (except Diesel and Van models). On non-European models, the new stabilizer is optionally available.

Front Axle & Front Suspension

Model		Diameter mm (in)
Sedan (except Diesel), Hardtop	Non-European model	20 (0.79)
	European model (Option for non-European model)	23 (0.91)
Sedan (Diesel)	R.H. drive	20 (0.79)
	L.H. drive	23 (0.91)
Station Wagon and Van		23 (0.91)

Wheel bearing

Rotation starting torque:

With new bearings	kg-cm (in-lb)	7 to 22 (6.1 to 19.1)
With used bearings	kg-cm (in-lb)	Less than 7 (6.1)

Rotation starting force (hooked at hub bolt)

With new bearings	kg (lb)	1.2 to 3.9 (2.6 to 8.6)
With used bearings	kg (lb)	Less than 1.2 (2.6)

Lower ball joint

Stud end play (Standard)	mm (in)	0 to 0.8 (0 to 0.031)
--------------------------	---------------	-----------------------

Upper ball joint

Stud swinging torque (Standard)	kg-cm (in-lb)	20 to 125 (17 to 109)
---------------------------------	---------------------	-----------------------

TIGHTENING TORQUE

Schock absorber

Lower side fixing bolt	kg-m (ft-lb)	1.3 to 1.8 (9 to 13)
Upper side lock nut	kg-m (ft-lb)	1.6 to 2.2 (12 to 16)

Stabilizer

Connecting rod fixing bolt	kg-m (ft-lb)	5.1 to 6.9 (37 to 50)
----------------------------	--------------------	-----------------------

Front Axle & Front Suspension

Lower link and ball joint

Lower ball joint to lower link	kg-m (ft-lb)	3.3 to 4.3 (24 to 31)
Lower link bushing lower link	kg-m (ft-lb)	24 to 25 (174 to 181)
Lower link spindle to suspension member	kg-m (ft-lb)	9.3 to 10.7 (67 to 77)
Lower link ball joint stud nut	kg-m (ft-lb)	17.2 to 19.5 (124 to 141)

Upper link and ball joint

Upper ball joint to upper link	kg-m (ft-lb)	1.7 to 2.2 (12 to 16)
Upper link bushing to upper link	kg-m (ft-lb)	20 to 21 (145 to 152)
Upper link spindle to suspension member	kg-m (ft-lb)	9.5 to 11.0 (69 to 80)
Upper link joint stud nut	kg-m (ft-lb)	8 to 10 (58 to 72)

Knuckle arm

Side rod ball joint to knuckle arm	kg-m (ft-lb)	5.5 to 10 (40 to 72)
Side rod lock nut	kg-m (ft-lb)	7.7 to 10.5 (56 to 76)
Front hub to rotor	kg-m (ft-lb)	3.9 to 5.3 (28 to 38)

Suspension member

Suspension member to frame		
Upper side	kg-m (ft-lb)	4.0 to 5.0 (29 to 36)
Lower side	kg-m (ft-lb)	3.7 to 4.5 (27 to 33)

SERVICE MANUAL

SUPPLEMENT 1

MODEL 330 SERIES CHASSIS AND BODY

SECTION : REAR AXLE & REAR SUSPENSION (RA)

CONTENTS

SERVICE DATA AND SPECIFICATIONS	RA-2
SPECIFICATIONS	RA-2
TIGHTENING TORQUE	RA-4
SPECIAL SERVICE TOOL CHANGES	RA-5

SERVICE DATA AND SPECIFICATIONS

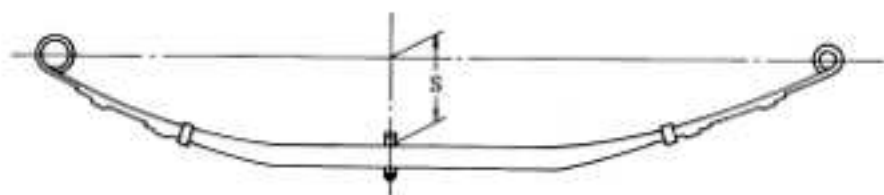
- To optimize car posture, the spring of the Sedan (except Diesel models) has been changed.
- For improved steering stability, the damping force of the shock absorber and the diameter of the stabilizer have been changed on European models (except Diesel and Van models). On non-European models, the new parts are optionally available.

SPECIFICATIONS

Axle type	Semi-floating banjo type.
Suspension type	Rigid-axle type employing parallel, semi-elliptical leaf springs.
Shock absorber type	
Sedan (except R.H. drive Diesel) and Hardtop	Gas-filled type.
Station Wagon, Van and R.H. drive Diesel	Conventional type.
Leaf spring	
Dimensions (Length x width x thickness - number)	
mm (in)	
Hardtop and Sedan (except Diesel)	1,400 x 70 x 6 - 1
	7 - 3
	(55.12 x 2.76 x 0.24 - 1)
	0.28 - 3)
R.H. drive Diesel	1,400 x 60 x 6 - 1
	7 - 4
	(55.12 x 2.36 x 0.24 - 1)
	0.28 - 4)
Station Wagon, Van and L.H. drive Diesel	1,400 x 60 x 7 - 5
	(55.12 x 2.36 x 0.28 - 5)
Free camber	
mm (in)	
Sedan (except Diesel) and Hardtop	151 (5.94)
R.H. drive Diesel	149 (5.87)
L.H. drive Diesel	130 (5.12)
Station Wagon and Van	
Floor shift model	161 (6.34)
Column shift model (with 3rd seat)	176.5 (6.95)
Laden camber	
mm/kg (in/lb)	
Sedan (except Diesel) and Hardtop	0/310 (0/684)
R.H. drive Diesel	0/340 (0/750)
L.H. drive Diesel	0/330 (0/728)
Station Wagon and Van	
Floor shift model	25/345 (0.98/761)
Column shift model (with 3rd seat)	25/385 (0.98/849)

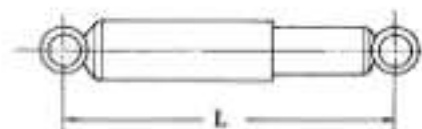
Rear Axle & Rear Suspension

Spring constant	kg/mm (lb/in)	
Hardtop and Sedan (Except Diesel)		2.05 (115)
R.H. drive Diesel		2.28 (128)
Station Wagon, Van and L.H. drive Diesel		2.53 (142)
Shock absorber		
Stroke x Maximum length "L"	mm (in)	
Hardtop and Sedan (Except R.H. drive Diesel)		195 x 532 (7.68 x 20.94)
Station Wagon, Van and R.H. drive Diesel		230 x 568 (9.06 x 22.36)
Damping force at 0.3 m (1.0 ft)/sec. kg (lb)		
Sedan (except Diesel) and Hardtop		
Non-European model		
Expansion		86 (190)
Compression		65 (143)
European model (Option for non-European model)		
Expansion		137 (302)
Compression		88 (194)
R.H. drive Diesel, Station Wagon and Van		
Expansion		80 (176)
Compression		20 (44)
L.H. drive Diesel		
Expansion		86 (190)
Compression		65 (143)
Stabilizer diameter mm (in)		
Sedan (except Diesel) and Hardtop		
Non-European model		16 (0.63)
European model (Option for non-European model)		22 (0.87)
Rear axle mm (in)		
End play		0 to 0.1 (0 to 0.004)
Rear axle case end shim thickness		0.05 (0.0020)
		0.10 (0.0039)
		0.20 (0.0079)
		0.30 (0.0118)



Camber "S"

RA503




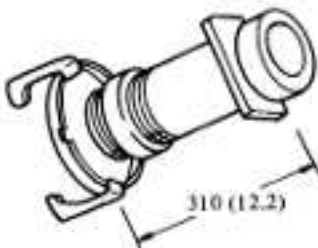
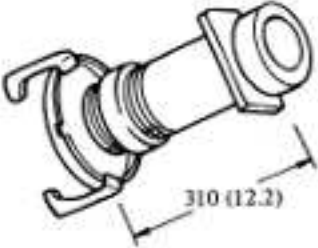
Shock absorber length "L"

TIGHTENING TORQUE

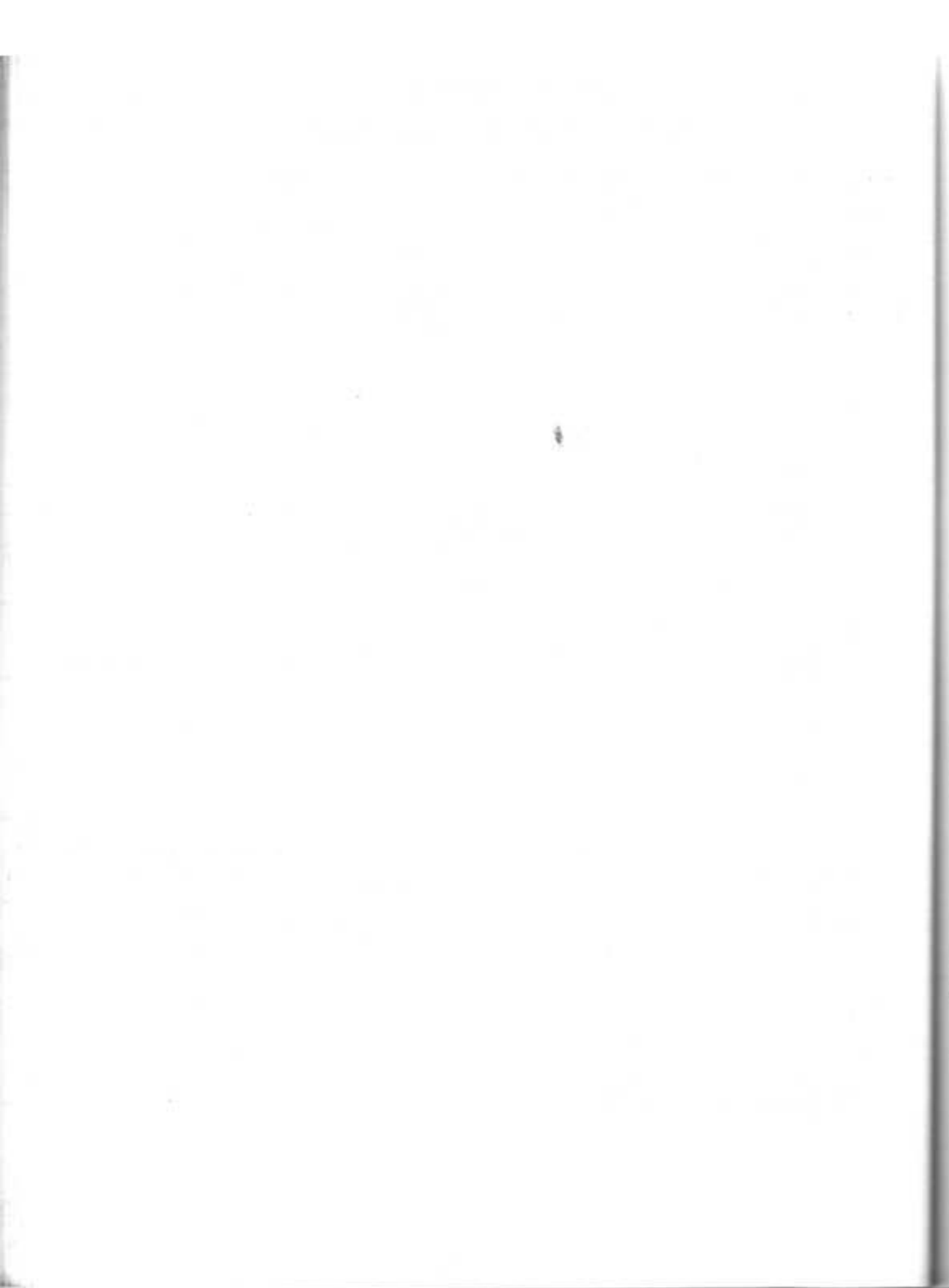
Shock absorber		
Upper end bolt (or nut)	kg-m (ft-lb)	5.9 to 7.7 (43 to 56)
Lower end bolt (or nut)	kg-m (ft-lb)	5.9 to 7.7 (43 to 56)
Rear spring U-bolt	kg-m (ft-lb)	4.0 to 4.8 (29 to 35)
Spring		
Front pin (or nut)	kg-m (ft-lb)	8.9 to 12.2 (64 to 88)
Shackle nut	kg-m (ft-lb)	5.1 to 6.9 (37 to 50)
Brake		
Brake hose connector	kg-m (ft-lb)	2.0 to 2.8 (14 to 20)
Brake tube connector	kg-m (ft-lb)	1.5 to 1.8 (11 to 13)
Propeller shaft companion flange bolt	kg-m (ft-lb)	3.5 to 4.5 (25 to 33)
Wheel nut		
Steel wheel	kg-m (ft-lb)	8.0 to 9.0 (58 to 65)
Aluminum wheel	kg-m (ft-lb)	8.0 to 10.0 (58 to 72)
Bearing cage bolt	kg-m (ft-lb)	2.7 to 3.7 (20 to 27)
Differential carrier and axle case	kg-m (ft-lb)	1.7 to 2.5 (12 to 18)

Rear Axle & Rear Suspension

SPECIAL SERVICE TOOL CHANGES

No.	Tool number & tool name		Figure Unit: mm (in)	Interchange-ability	Remarks
	New	Former			
1.	KV40101000 Rear axle stand	ST07620000 Rear axle stand	 SE402	YES	*1
2.	HT72480000 Rear axle shaft bearing puller	ST37110000 Rear axle shaft bearing puller	 SE266	YES	*2
3.	Eliminated	ST37152000 Drift	—		*5
4.	HT72480000 Rear axle shaft bearing puller	ST38220000 Bearing inserter	 SE266	YES	*1

- *1 : Standardized with other tools
- *2 : Replaced by a general-purpose tool
- *5 : Discontinued



SERVICE MANUAL

SUPPLEMENT 1

MODEL 330 SERIES CHASSIS AND BODY

SECTION : BRAKE SYSTEM (BR)

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Brake drum	BR-5
REAR DRUM BRAKE	BR-6
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GENERAL DESCRIPTION

- The identification code of the disc brake caliper has been revised.
- The NP valve is now standard equipment on models equipped with front drum brakes.

The 330 series cars are equipped with hydraulically operated service brakes on all four wheels, and mechanically operated hand brakes on rear wheels.

The front brake is either a single cylinder type disc brake N22A or a two-leading type drum brake. The N22A disc brake has been newly developed by NISSAN. The rear brake is a leading-trailing type drum brake.

A Master-Vac and a tandem master cylinder are standard equipment on all models. The Master-Vac diaphragm is 228.6 mm (9 in) in diameter for front disc brake type, and 152.4 mm (6 in) in diameter for front drum brake type. The master cylinder is equipped with a brake fluid level warning lamp switch.

For added safety, an NP (NISSAN proportioning) valve is installed in all

models.

The hand brake is a mechanical type which brakes the rear wheels. It is engaged or released through a stick type lever or a center type lever. When this brake is engaged, the brake warning lamp, located on the instrument panel, will come on to indicate that the hand brake is in "engaged" condition.

SERVICE BRAKE

MASTER CYLINDER

DISASSEMBLY AND ASSEMBLY

"Notes" have been added.

Notes:

a. The brake master cylinder is available in both NABCO make and TOKICO make. There is no interchangeability of repair kits or component parts between NABCO and TOKICO makes.

When replacing the repair kit or component parts, ascertain the brand of the brake master cylinder body. Be sure to use parts of the same make as the former ones.

b. On models equipped with front disc brakes, the front and rear check

valves of the master cylinder differ from each other.

c. Check valves of TOKICO make differ in construction between models equipped with front disc brakes and models equipped with front drum brakes.

FRONT DISC BRAKE

DESCRIPTION

The identification code of the disc brake caliper has been revised.

The N22A type disc brake, newly designed by NISSAN, is installed on all 330 models. The N22A type disc brake has two pistons in a single cylinder.

When the brake is operated, the

inner pad is directly pushed against the rotor by piston "B", and the outer pad is indirectly pushed by piston "A". The yoke and cylinder body slide through the grippers, and there is no metallic contact. The gripper is useful

for preventing dragging and reducing the knock-back phenomenon.

The pad-to-rotor clearance is automatically adjusted due to the elasticity of the piston seal.

PAD REPLACEMENT

Installation

"Notes" have been added.

1. Clean piston end and surroundings of gripper.

Note: Do not use mineral oil to clean. Be careful not to get oil on rotor.

2. Loosening air bleeder, push piston B (outer piston) in cylinder until dust seal groove of piston B coincides with end surface of retaining ring on dust seal. After piston B is at the point, tighten air bleeder. Inner pad can then be installed.

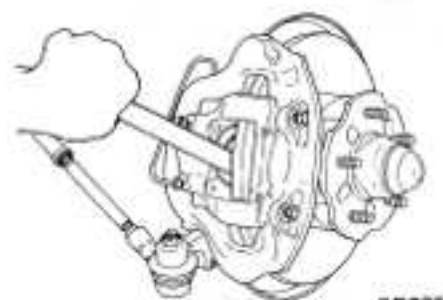


Fig. BR-1 Pushing piston B

Note: Piston can be easily pushed in by hand, but if pushed too far, groove of piston will go inside of piston seal as shown in Figure BR-2. At this point, if piston is pressured or moved, piston seal will be damaged. If piston has been pushed in too far, remove caliper assembly and disassemble it. Then, push piston out in direction shown by arrow.

Assemble it again, referring to following section.



Fig. BR-2 Position of piston

3. Push piston A (inner piston) in cylinder by pulling yoke. Outer pad can then be installed.

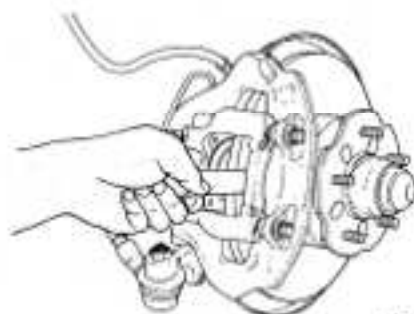


Fig. BR-3 Pulling in piston A

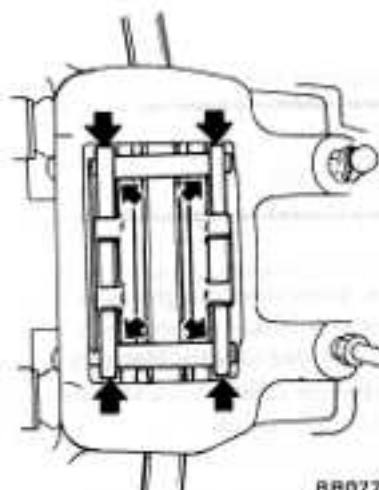
Notes:

a. Apply a film of pad grease to the following points:

- Cylinder body-to-pad clearance
- Pad pin-to-pad clearance

b. Do not grease friction surface of pad.

Brake System



BR077A

Fig. BR-4 Greasing points

4. After installing pads, install retaining pin and pad spring, and fix with clip.

5. Depress brake pedal several times, and pads will settle into proper position.

Add brake fluid to reservoir tank of master cylinder.

6. Install wheels and lower car to ground.

Note: If necessary, bleed brake system.

ASSEMBLY

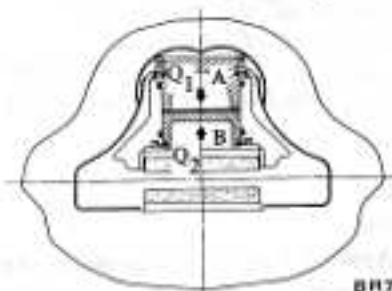
- A part number has been adopted for the disc brake grease.
- "Notes" have been added.

1. Install piston seals, taking care not to damage them.

2. Apply castor oil to sliding portions of piston, inside of cylinder, and insert piston A and piston B one by one.

Notes:

- a. Insert piston A in direction shown by arrow Q1 and piston B in direction shown by arrow Q2.



BR743

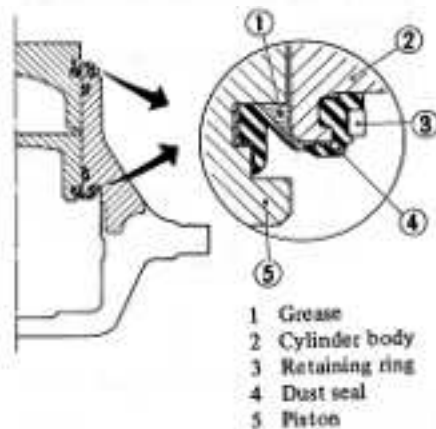
Fig. BR-5 Inserting piston

- b. When inserting pistons, be careful not to insert too far. Refer to "Pad Replacement".
- c. Install piston A so that its yoke groove coincides with yoke groove of cylinder.

3. Install dust seal and clamp securely with retainer ring.

Notes:

- a. Apply genuine Nissan disc brake grease KR60900010 or equivalent to sealing surface of dust seal.
- b. Be careful not to deform dust seal.
- c. Wipe off excess grease with alcohol.



BR788

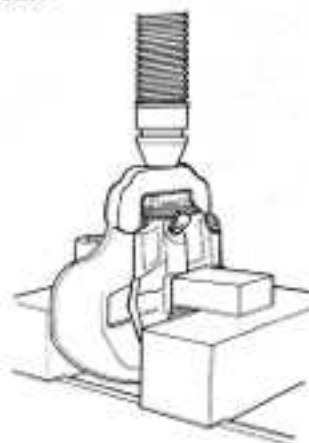
Fig. BR-6 Installing dust seal

4. Install yoke holder to piston A.
5. Install gripper to yoke. Apply a coating of 1% soap water to inner wall of gripper, and drive in collar.

Note: Use only 1% soap water on gripper.

6. Install yoke to yoke holder and, supporting end of piston B, press yoke into yoke holder by a force of 20 to 30 kg (44 to 66 lb).

Note: When pressing yoke into yoke holder, be sure to insert yoke vertically so as not to crack or chip yoke holder. If yoke holder is damaged or pressing force is out of specification, replace with a new one.

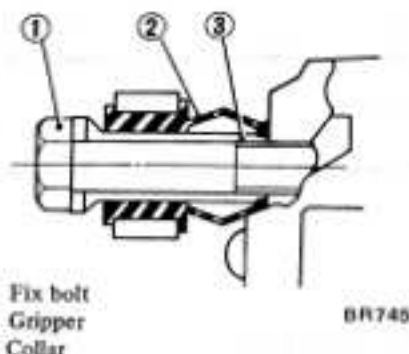


BR959

Fig. BR-7 Installing yoke

7. Tighten fixing bolts.

Tightening torque:
1.6 to 2.1 kg-m
(12 to 15 ft-lb)



- 1 Fix bolt
- 2 Gripper
- 3 Collar

Fig. BR-8 Tightening bolt

Note: Be careful not to hold portions between cylinder body and collar with gripper.

8. Install pad, retaining pin, pad spring, and fix with clip.

Note: Apply a film of pad grease to the following points:

- Cylinder body-to-pad clearance
- Pad pin-to-pad clearance

FRONT DRUM BRAKE DISASSEMBLY AND ASSEMBLY

Wheel cylinder

A "Note" has been added.

Note: The brake wheel cylinder is available in both NABCO make and TOKICO make. There is no interchangeability of repair kits or com-

ponent parts between NABCO and TOKICO makes.

When replacing the repair kit or component parts, ascertain the

brand of the brake wheel cylinder body. Be sure to use parts of the same make as the former ones.

INSPECTION

Brake drum

Inspection items have been added.

1. Check inner diameter of brake drum to make sure it is properly round and tapered. If it is not, repair or replace brake drum.

Inner diameter:

Standard diameter
241.3 mm (9½ in)

Maximum diameter
242.3 mm (9.54 in)

Out-of-roundness (ellipticity):
less than 0.02 mm (0.0008 in)

Radial run-out:

less than 0.1 mm (0.004 in)
Total indicator reading

Taper:

less than 0.02 mm (0.0008 in)
Measured at a point 50 mm
(1.97 in) from inlet

2. Contact surface with which linings come into contact should be fine-finished with No. 120 to 150

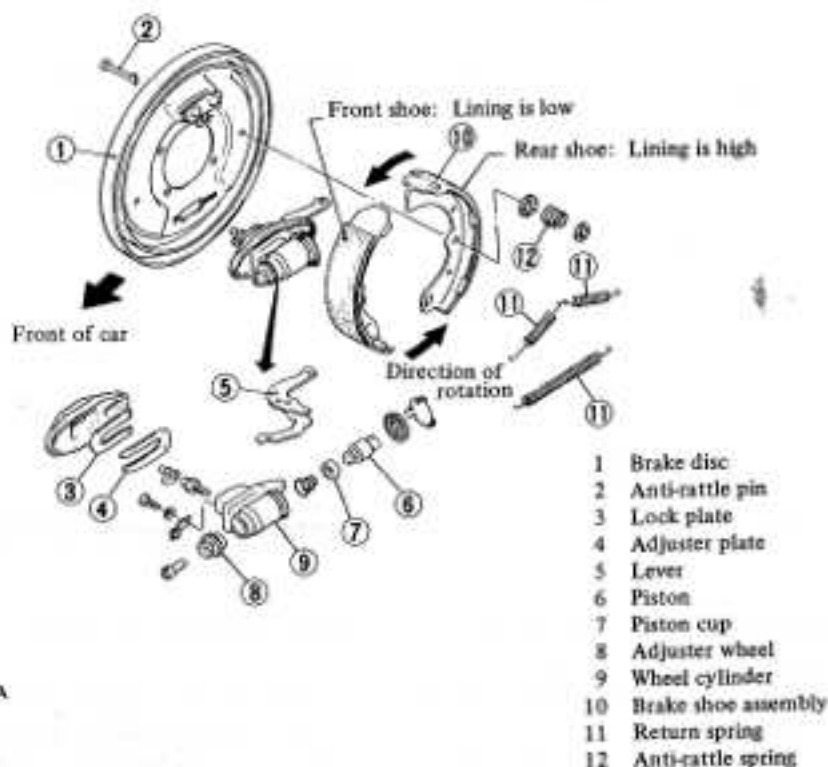
sandpaper.

3. 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 has been completely re-conditioned or replaced, check drum and shoes for proper contact pattern.

REAR DRUM BRAKE

A "Note" has been added.



- 1 Brake disc
- 2 Anti-rattle pin
- 3 Lock plate
- 4 Adjuster plate
- 5 Lever
- 6 Piston
- 7 Piston cup
- 8 Adjuster wheel
- 9 Wheel cylinder
- 10 Brake shoe assembly
- 11 Return spring
- 12 Anti-rattle spring

Fig. BR-9 Left rear brake

BR078A

DISASSEMBLY AND ASSEMBLY

Wheel cylinder

Note: The brake wheel cylinder is available in both NABCO make and TOKICO make. There is no interchangeability of repair kits or component parts between NABCO and TOKICO makes.

When replacing the repair kit or component parts, ascertain the brand of the brake wheel cylinder body. Be sure to use parts of the same make as the former ones.

INSTALLATION

Note: There are two types of adjusters which have right thread or left thread.

- R.H. brake:
Right thread adjuster
- L.H. brake:
Left thread adjuster

MASTER-VAC

DESCRIPTION

The vacuum tank for use with the Master-Vac has been eliminated from the diesel engine model.

A Master-Vac is installed between the brake pedal and the master cylinder. The Master-Vac for models equipped with front drum brakes contains a spring loaded diaphragm of

228.6 mm (9 in) in diameter. The Master-Vac diaphragm of models equipped with front disc brakes is 152.4 mm (6 in) in diameter.

The Master-Vac operates on the

negative pressure produced in the engine intake manifold. In a diesel engine, the negative pressure is supplied by the vacuum pump.

SERVICE DATA AND SPECIFICATIONS

- The free play of the brake pedal has been changed for standardization purposes.
- The diameter of the rear wheel cylinder has been changed.

Brake pedal

Free height	mm (in)	167 to 170 (6.57 to 6.69)
Free play at pedal pad	mm (in)	1 to 5 (0.04 to 0.20)
Full stroke at pedal pad	mm (in)	140 (5.51)
Depressed height	mm (in)	More than 65 (2.56)

Master cylinder

Inner diameter	mm (in)	22.22 (3/4)
Piston to cylinder clearance	mm (in)	0.15 (0.0059)

Master-Vac

Item	Model	Front disc brake equipped models	Front drum brake equipped models
		M90	M60
Diaphragm diameter	mm (in)	228.6 (9)	152.4 (6)
Maximum vacuum leakage (after 15 sec.)	mmHg (inHg)	10 (0.39)	
Shell seal depth length A	mm (in)	10.2 to 10.8 (0.402 to 0.425)	6.7 to 7.0 (0.264 to 0.276)
Push rod length B	mm (in)	10.00 to 10.50 (0.3937 to 0.4134)	

Front disc brake

Type		N22A
Wheel cylinder inner diameter	mm (in)	54.00 (2.1260)
Pad		51.6 x 9.7 x 77.8
Width x thickness x length	mm (in)	(2.031 x 0.382 x 3.063)
Pad wear limit	mm (in)	2 (0.08)

Brake System

Front drum brake

Type		Two leading
Wheel cylinder inner diameter	mm (in)	25.40 (1)
Lining	mm (in)	63 x 5.0 x 232
Width x thickness x length		(2.48 x 0.197 x 9.13)
Lining wear limit	mm (in)	1.5 (0.059)

Rear drum brake

Type		Leading-trailing
Wheel cylinder inner diameter		
Front disc brake equipped model	mm (in)	20.64 (3/4)
Front drum brake equipped model	mm (in)	25.40 (1)
Lining	mm (in)	50 x 5.0 x 232
Width x thickness x length		(1.97 x 0.197 x 9.13)
Lining wear limit	mm (in)	1.5 (0.59)
Wheel cylinder sliding resistance	kg (lb)	2 to 7 (4 to 15)

Brake rotor

Outer diameter x thickness	mm (in)	271 x 12.5 (10.67 x 0.492)
Runout	mm (in)	0.15 (0.0059) maximum
Repair limit of thickness	mm (in)	10.5 (0.413)

Brake drum

Repair limit		
Inner diameter	mm (in)	242.3 (9.54)
Out-of-roundness	mm (in)	less than 0.02 (0.0008)
Radial run-out	mm (in)	less than 0.1 (0.004)
Taper	mm (in)	less than 0.02 (0.0008)

Parking brake

	Type	Stick type	Center lever type
Item			
Stroke	mm (in)	105 to 115 (4.13 to 4.53)	90 to 100 (3.54 to 3.94)
Notches		9 to 11	7 to 8

Brake System

Tightening torque

Master cylinder to Master-Vac	kg-m (ft-lb)	0.8 to 1.1 (5.8 to 8.0)
Brake tube flare nut	kg-m (ft-lb)	1.5 to 1.8 (11 to 13)
Brake hose connector	kg-m (ft-lb)	1.8 to 2.1 (13 to 15)
Air bleeder valve	kg-m (ft-lb)	0.7 to 0.9 (5.1 to 6.5)
Fulcrum pin of brake pedal	kg-m (ft-lb)	3.1 to 4.1 (22 to 30)
Brake pedal stopper lock nut	kg-m (ft-lb)	0.8 to 1.1 (5.8 to 8.0)
NP-valve to body	kg-m (ft-lb)	0.54 to 0.74 (3.9 to 5.4)
Caliper fixing bolt	kg-m (ft-lb)	7.3 to 9.9 (53 to 72)
Front brake disc fixing bolt	kg-m (ft-lb)	7.3 to 9.9 (53 to 72)
Front brake disc fixing bolt with knuckle arm	kg-m (ft-lb)	5.1 to 6.9 (37 to 50)
Front wheel cylinder mounting nut		
Stud side	kg-m (ft-lb)	0.5 to 0.7 (3.6 to 5.1)
Hexagon side	kg-m (ft-lb)	1.6 to 2.2 (12 to 16)
Rear brake disc fixing bolt	kg-m (ft-lb)	2.7 to 3.7 (20 to 27)

Master-Vac

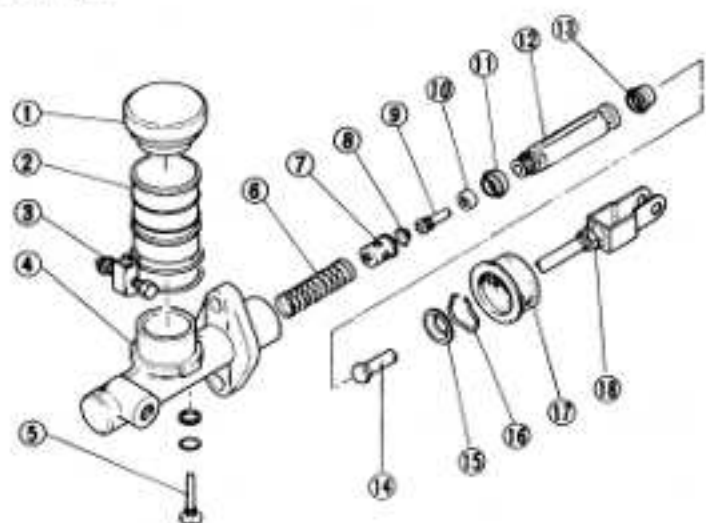
Master-Vac to body	kg-m (ft-lb)	0.8 to 1.1 (5.8 to 8.0)
Operating rod lock nut	kg-m (ft-lb)	1.6 to 2.2 (12 to 16)
Flange to shell cover	kg-m (ft-lb)	0.8 to 1.1 (5.8 to 8.0)



CLUTCH MASTER CYLINDER

For improved reliability, the master cylinder construction has been changed.

DISASSEMBLY



1 Reservoir cap	6 Return spring	11 Primary cup	16 Stopper ring
2 Reservoir	7 Spring seat	12 Piston	17 Dust cover
3 Reservoir band	8 Valve spring	13 Secondary cup	18 Lock nut
4 Cylinder body	9 Supply valve rod	14 Push rod	
5 Supply valve stopper	10 Supply valve	15 Stopper	

CL282

Fig. CL-1 Clutch master cylinder

1. Remove dust cover and take off stopper ring from body.
2. Then, the push rod and stopper can be taken out.
3. Loosen supply valve stopper and take it out.
4. The piston, spring seat, and return spring can be taken out.

Notes:

- Discard piston cup and dust cover.
- Never detach reservoir. If it is removed for any reason, discard it and install new one.

INSPECTION

Note: To clean or wash all parts of master cylinder, 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 bore and piston for score or rust and if found, replace.
2. Check cylinder bore and piston for wear. If the clearance between

cylinder bore and piston exceeds the specified value, replace piston assembly or master cylinder assembly.

3. Check the condition of piston cup and dust cover. Always replace them after disassembly.
4. Check all recesses, openings and internal passages to ensure that they are clean and free from foreign matter.

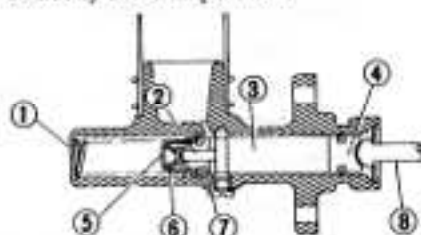
Clearance between cylinder bore and piston:

Less than 0.15 mm (0.0059 in)

ASSEMBLY

Assemble clutch master cylinder in the reverse order of disassembly. Observe the following:

1. Dip piston cup in brake fluid before installing. Make sure that it is correctly faced in position.



1 Return spring	5 Spring seat
2 Supply valve rod	6 Valve spring
3 Piston	7 Primary cap
4 Secondary cap	8 Push rod

CL283

Fig. CL-2 Piston assembly

2. Apply a coating of brake fluid to cylinder and piston when assembling.

Tightening torque:

Reservoir band
0.25 to 0.4 kg-m
(1.8 to 2.9 ft-lb)

Supply valve stopper
0.15 to 0.3 kg-m
(1.1 to 2.2 ft-lb)