FRONT AXLE

CONTENTS

E26AA--

FRONT AXLE (2WD)

SPECIFICATIONS

GENERAL SPECIFICATIONS

E26CA--

Item		2WD
Wheel bearing (O.D.×I.D.) mm (in.)	Inner	65.1×34.9 (2.56×1.37)
	Outer	50.0×21.4 (1.97×0.84)

SERVICE SPECIFICATIONS

E26CB--

Items	Vehicles with stabilizer
Standard Value Stabilizer attaching bolt end attaching dimension mm (in.)	10–12 (0.39–0.47)

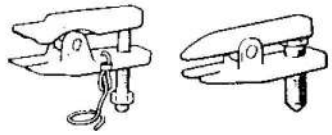
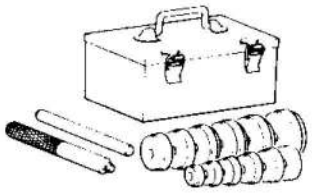
TORQUE SPECIFICATIONS

E26CC--

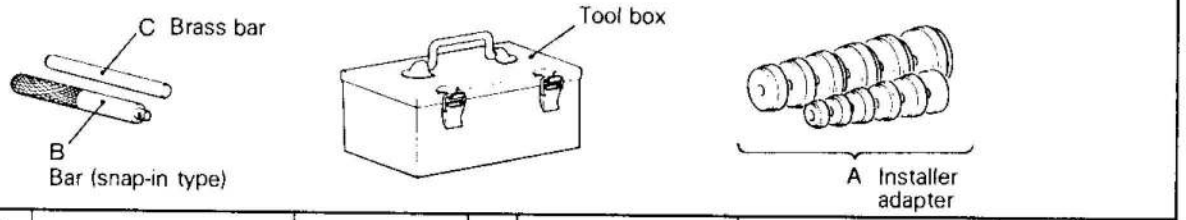
Items	Nm	Kgm	ft.lbs.
Knuckle to caliper assembly (vehicles with disc brakes)	80–100	8.0–10.0	58–72
Front hub to brake disc (vehicles with disc brakes)	47–52	4.7–5.2	34–38
Knuckle to tie rod assembly	35–45	3.5–4.5	25–33
Knuckle to lower ball joint	120–180	12–18	87–130
Knuckle to upper ball joint	120–180	12–18	87–130
Brake tube flare nut	13–17	1.3–1.7	9–12
Lower arm to strut bar	85–110	8.5–11	61–80
Knuckle to backing plate (vehicles with drum brakes)	50–60	5.0–6.0	36–43
Knuckle to dust cover (vehicles with disc brakes)	50–60	5.0–6.0	36–43

SPECIAL TOOLS

E26DA

Tool (Number and name)	Use	Tool (Number and name)	Use
MB991113 or MB990635 Stearing linkage puller 	Disconnection of the tie rod	MB990804 Knuckle arm puller 	Disassembly of upper/ lower ball joint and knuckle
MB990925 Bearing and oil seal installer set 	Removal and press fitting of hub bearing outer race		

MB990925

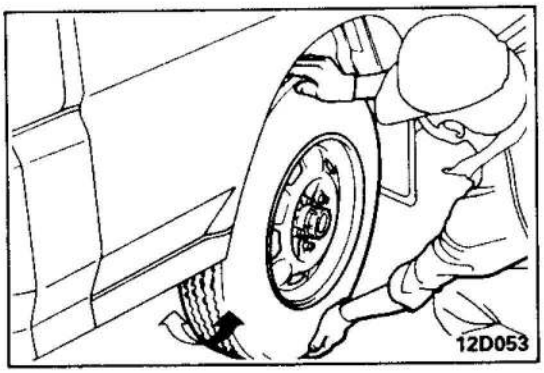


	Part Nos. of New Tools (MB990925)	Part Nos. of Conventional Tools	Outer diameter mm (in.)		Part Nos. of New Tools (MB990925)	Part Nos. of Conventional Tools	Outer diameter mm (in.)
A	MB990926	MB990272 MB990658 MB990659	39 (1.54)	A	MB990933	MB990307 MB990724	63.5 (2.50)
					MB990934	MB990766 MB990807	67.5 (2.66)
	MB990927	MB990264 MB990680	45 (1.77)		MB990935	MB990133 MB990308 MB990762	71.5 (2.81)
	MB990928	MB990271 MB990808	49.5 (1.95)				
	MB990929	MB990306	51 (2.01)		MB990936	MB990718	75.5 (2.97)
	MB990930	MB990283	54 (2.13)		MB990937	MB990309	79 (3.11)
	MB990931	MB990681 MB990764	57 (2.24)	B	MB990938	MB990124	–
	MB990932	MB990263	61 (2.40)	C	MB990939	–	–

TROUBLESHOOTING

E26EAAC

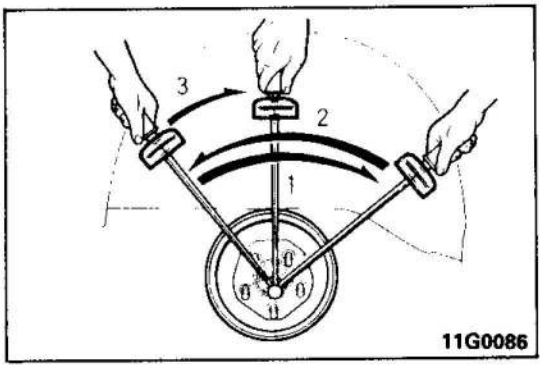
Symptom	Probable cause	Remedy	Reference page
Noise due to excess wheel axial play	Loosen, seized or worn wheel bearing	Check, adjust or replace if required	P.26–4



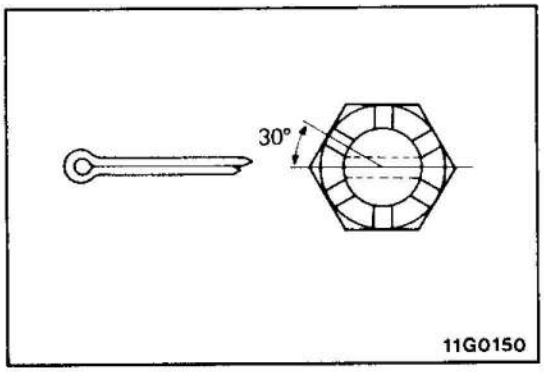
SERVICE ADJUSTMENT PROCEDURES E26FAAA

WHEEL BEARING PLAY INSPECTION

1. Inspect the play of the bearings while the vehicle is jacked up.
2. If there is any play, remove the hub cap, split pin, and then loosen the slotted nut.
3. Tighten the slotted nut by the following procedures.



(1) Tighten to 30 Nm (3.0 kgm, 22 ft.lbs.)
↓
(2) Loosen to 0 Nm (0 kgm, 0 ft.lbs.)
↓
(3) Retighten to 8 Nm (0.8 kgm, 6 ft.lbs.)



4. Fit the split pin. If the knuckle spindle hole and slotted nut groove are not in alignment, back off the slotted nut 30° maximum.

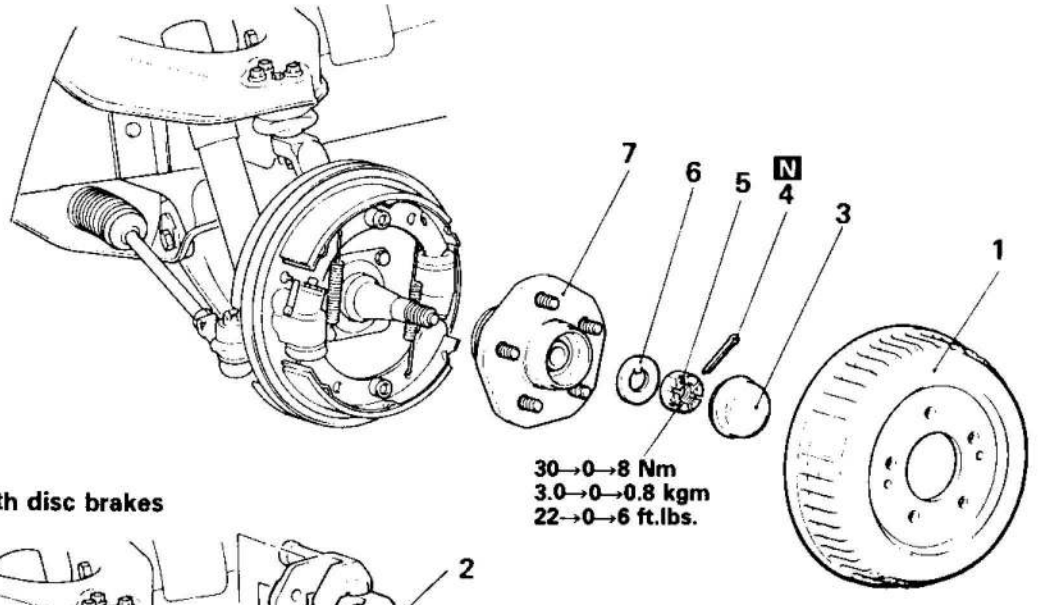
NOTE
If a bearing is worn, it should be replaced.

FRONT HUB

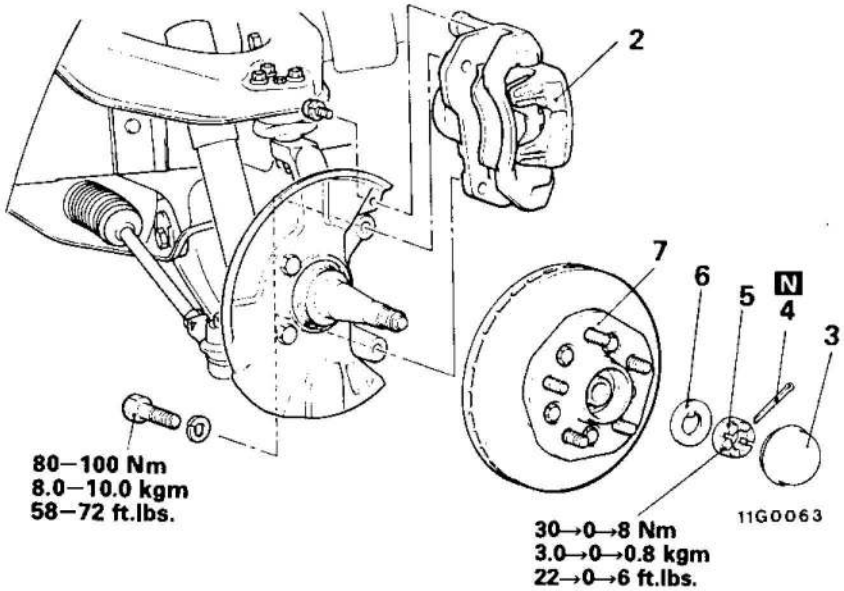
E26IA--

REMOVAL AND INSTALLATION

Vehicles with drum brakes



Vehicles with disc brakes



11G0060

Removal steps

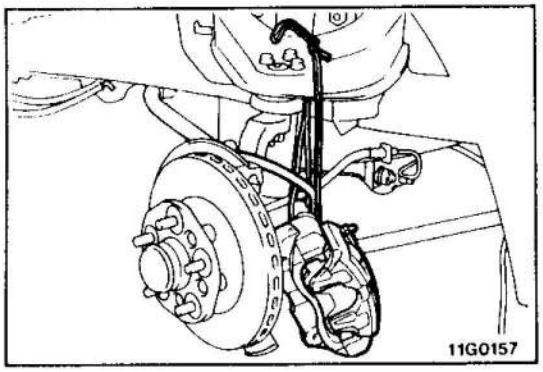
Vehicles with drum brakes

1. Brake drum
◆◆ 3. Hub cap
◆◆ 4. Split pin
◆◆ Adjustment of wheel bearing
5. Slotted nut
6. Washer
◆◆ ◆◆ 7. Front hub assembly

Vehicles with disc brakes

◆◆ 2. Caliper assembly
◆◆ 3. Hub cap
◆◆ 4. Split pin
◆◆ Adjustment of wheel bearing
5. Slotted nut
6. Washer
◆◆ ◆◆ 7. Front hub assembly

NOTE
(1) Reverse the removal procedures to reinstall.
(2) ◆◆ : Refer to "Service Points of Removal".
(3) ◆◆ : Refer to "Service Points of Installation".
(4) N : Non-reusable parts

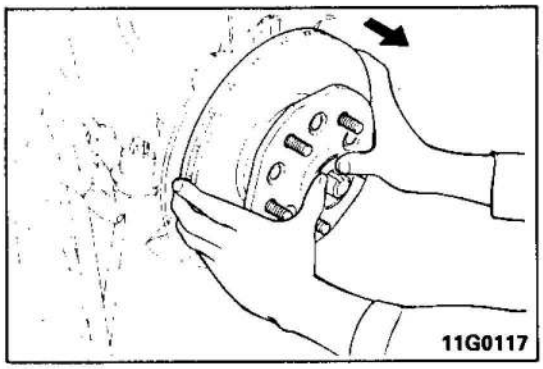


SERVICE POINTS OF REMOVAL E26IBBC

2. REMOVAL OF CALIPER ASSEMBLY (Vehicles with disc brakes)

(1) Remove the caliper assembly with the brake hose connected.
(2) Use wire to suspend the caliper assembly from the upper arm so that the caliper assembly won't fall.

Caution
Do not twist the brake hose.

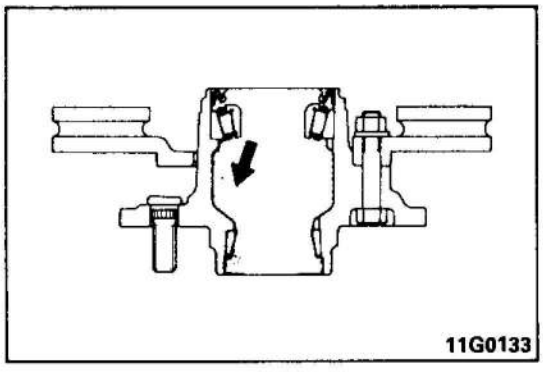


7. REMOVAL OF FRONT HUB ASSEMBLY

Remove the front hub assembly from the knuckle together with the outer bearing and washer.

INSPECTION E26ICBC

- Check the oil seal for cracks and damage.
- Check the bearings for seizure and discoloration.
- Check the front hub for cracks.
- Check grease in front hub.
- Check for loose brake disc or front hub securing bolt.

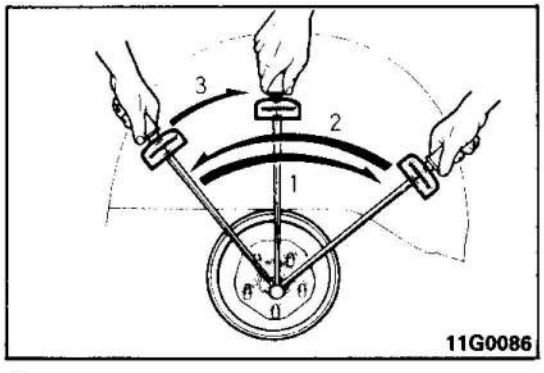


SERVICE POINTS OF INSTALLATION E26IDBB

7. INSTALLATION OF FRONT HUB ASSEMBLY

Pack entire inner hub wall with specified grease before installing front hub assembly to knuckle.

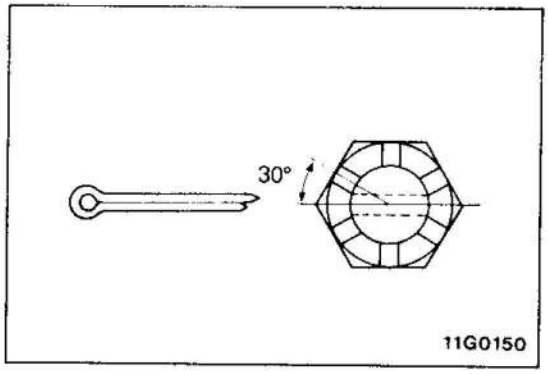
Specified grease: Multipurpose grease SAE J310, NLGI No. 2



• ADJUSTMENT OF WHEEL BEARING

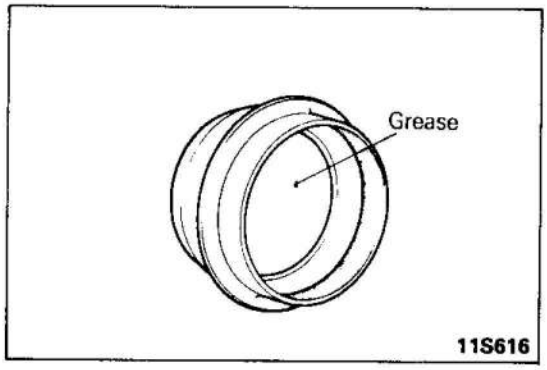
Tighten the slotted nut by the following procedures.

(1) Tighten to 30 Nm (3.0 kgm, 22 ft.lbs.)
↓
(2) Loosen to 0 Nm (0 kgm, 0 ft.lbs.)
↓
(3) Retighten to 8 Nm (0.8 kgm, 6 ft.lbs.)



4. INSTALLATION OF SPLIT PIN

Fit the split pin. If the knuckle spindle hole and slotted nut groove are not in alignment, back off the slotted nut 30° maximum.



3. GREASING HUB CAP

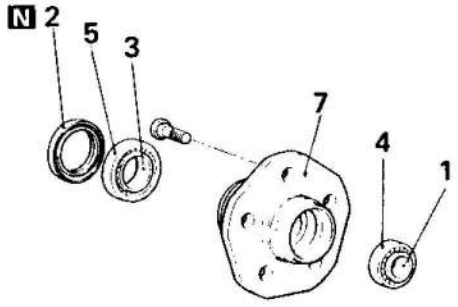
Fill cap with specified grease.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2

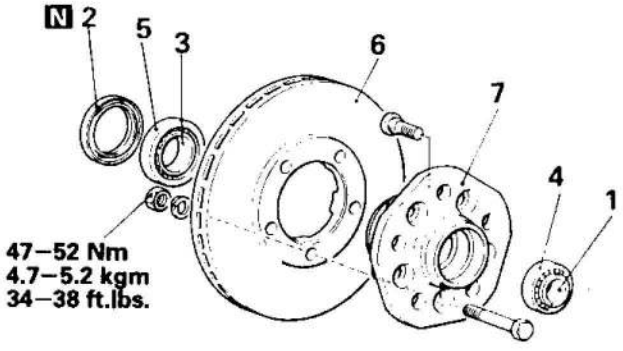
DISASSEMBLY AND REASSEMBLY

E26II--

Vehicles with drum brakes



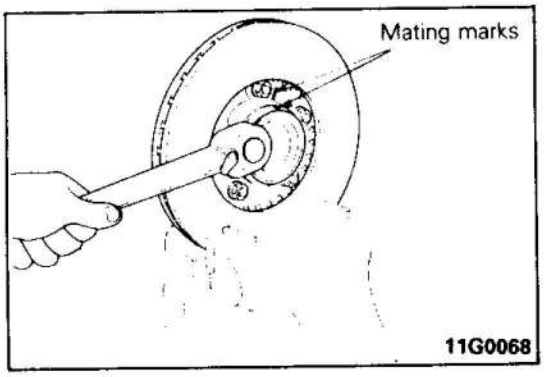
Vehicles with disc brakes



Disassembly steps

1. Outer bearing inner race
◆◆ 2. Oil seal
3. Inner bearing inner race
4. Outer bearing outer race
5. Inner bearing outer race
◆◆ 6. Brake disc (vehicles with disc brakes)
7. Front hub

NOTE
(1) Reverse the disassembly procedures to reassemble.
(2) ◆◆ : Refer to "Service Points of Disassembly".
(3) ◆◆ : Refer to "Service Points of Reassembly".
(4) N : Non-reusable parts

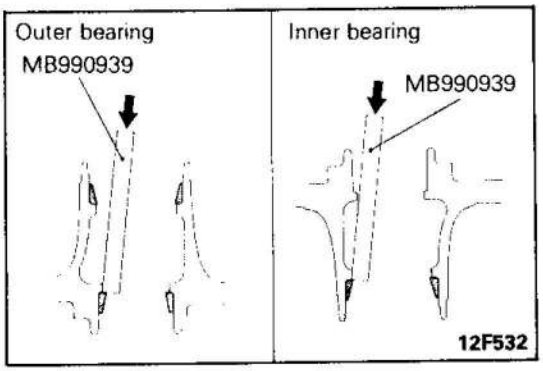


SERVICE POINTS OF DISASSEMBLY E26IJAB

6. REMOVAL OF BRAKE DISC

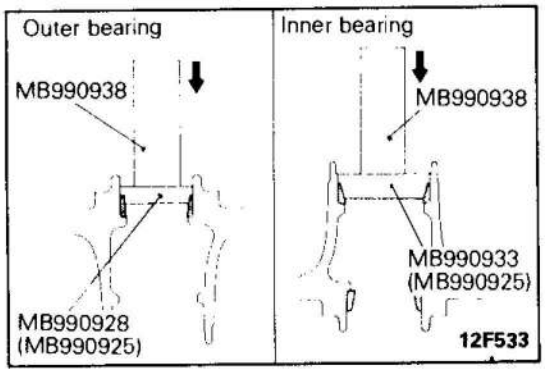
Make the mating marks on the brake disc and front hub, and then separate the front hub and brake disc, if necessary.

Caution
When locking disc in vice, grip with copper or aluminum board.



BEARING REPLACEMENT E26IKAC

(1) Remove the oil seal.
(2) Wipe off grease from the front hub interior.
(3) Using the special tool, drive out the inner and outer bearing outer races by tapping them uniformly.



(4) Apply the specified grease to the outside surface of the new inner and outer bearing outer races.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2

(5) Press-fit the inner and outer bearing outer races by using the special tools.

NOTE
The bearing inner race and bearing outer race should be replaced as an assembly.

SERVICE POINTS OF REASSEMBLY E26INAA

2. INSTALLATION OF OIL SEAL

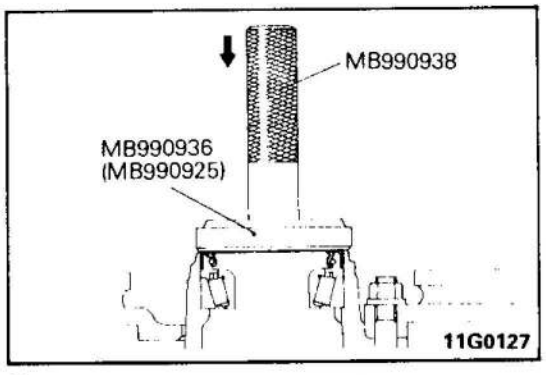
(1) Apply the specified grease to the oil seal lip and inside surface of the front hub.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2

(2) Apply the specified grease to the inner bearing inner race and install the inner race into the front hub.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2

(3) Press-fit the new oil seal into the front hub by using the special tools, until it is flush with the front hub end face.

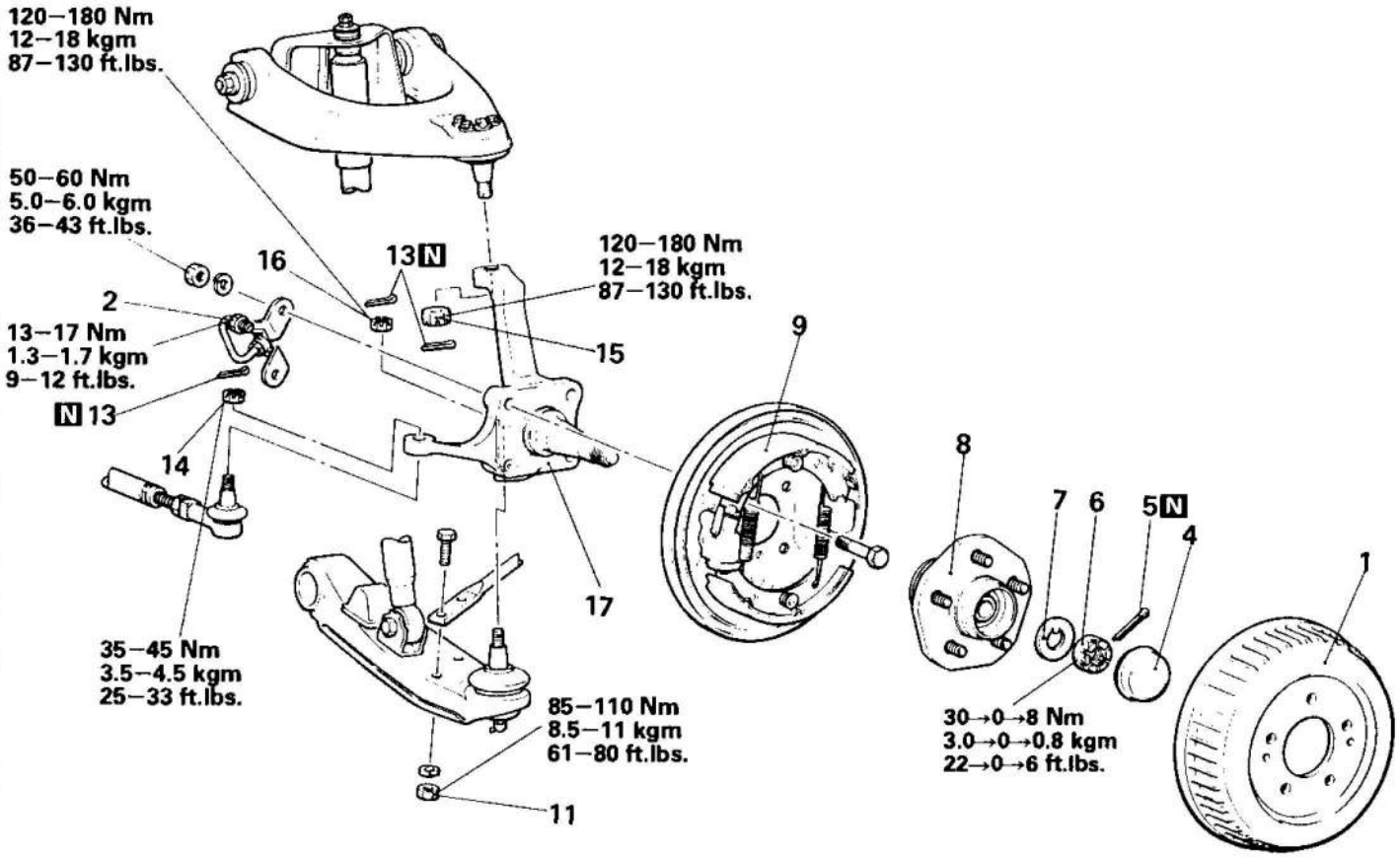


KNUCKLE

E26NA---

REMOVAL AND INSTALLATION

Vehicles with drum brakes



11G0148

Removal steps

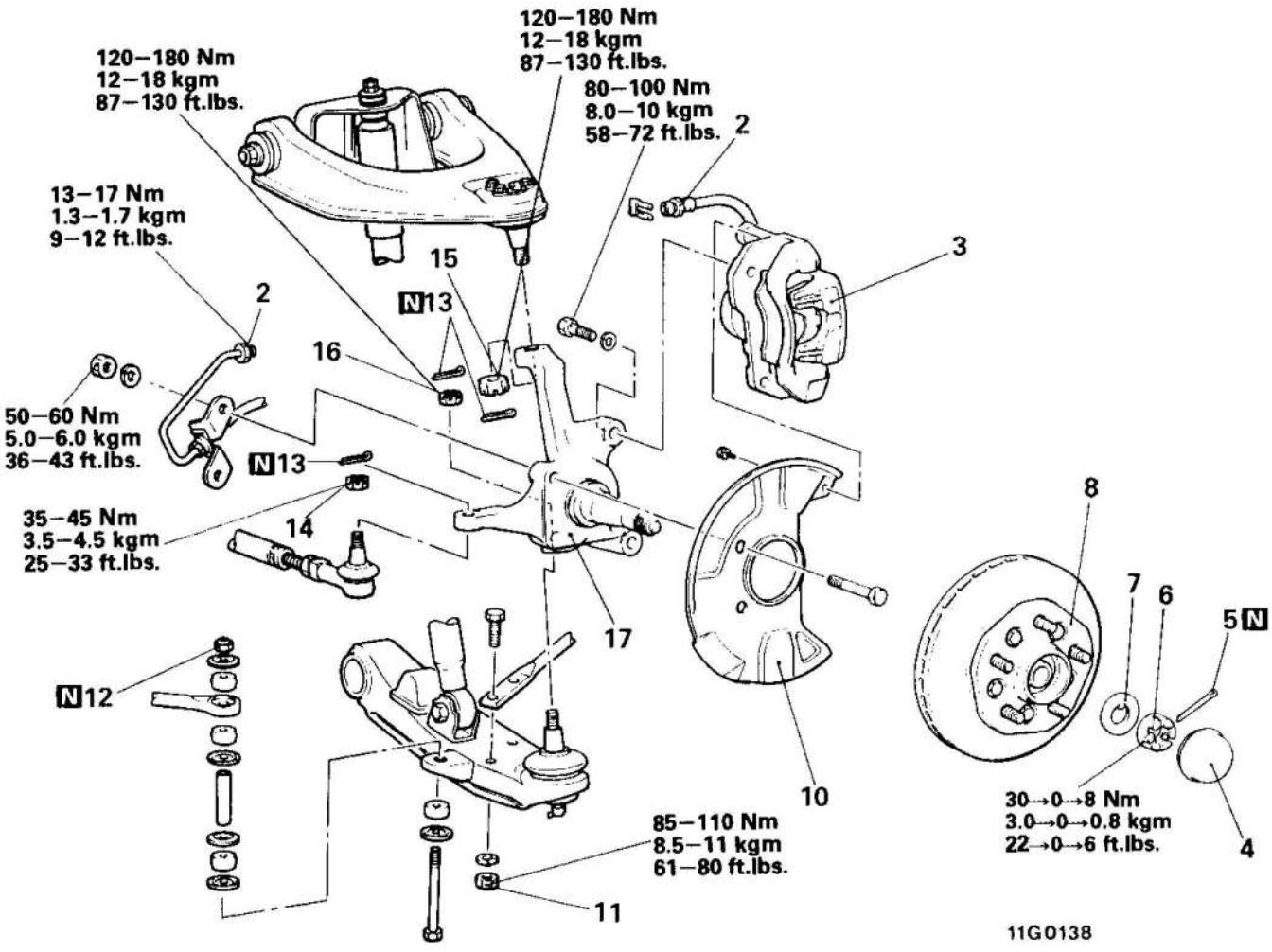
1. Brake drum
2. Connection of brake tube and front brake
◆◆ 4. Hub cap
◆◆ 5. Split pin
◆◆ Adjustment of wheel bearing
6. Slotted nut
7. Washer
◆◆ ◆◆ 8. Front hub assembly
9. Front brake assembly
11. Nuts
13. Split pins
◆◆ 14. Connection of tie rod assembly and knuckle
◆◆ 15. Connection of upper ball joint and knuckle
◆◆ 16. Connection of lower ball joint and knuckle
17. Knuckle

Pre-removal Operation
- Draining brake fluid
(Refer to GROUP 35 SERVICE BRAKES–Service Adjustment Procedures)

Post-installation Operation
- Bleeding brake system
(Refer to GROUP 35 SERVICE BRAKES–Service Adjustment Procedures)

NOTE
(1) Reverse the removal procedures to reinstall.
(2) ◆◆ : Refer to "Service Points of Removal".
(3) ◆◆ : Refer to "Service Points of Installation".
(4) N : Non-reusable parts

Vehicles with disc brakes



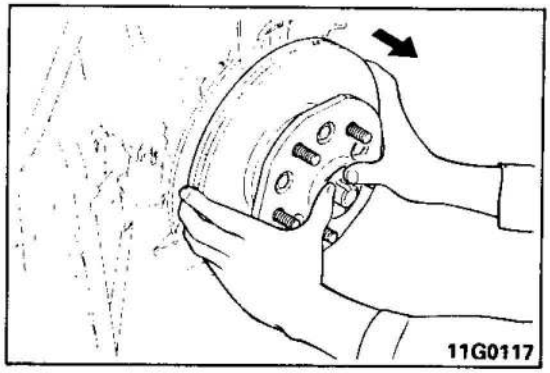
Removal steps

- 2. Connection of brake tube and front brake
- 3. Caliper assembly
- ◆◆ 4. Hub cap
- ◆◆ 5. Split pin
- ◆◆ Adjustment of wheel bearing
- 6. Slotted nut
- 7. Washer
- ◆◆ ◆◆ 8. Front hub assembly
- 10. Dust cover
- 11. Nut
- ◆◆ 12. Self locking nut
- 13. Split pins
- ◆◆ 14. Connection of tie rod assembly and knuckle
- ◆◆ 15. Connection of upper ball joint and knuckle
- ◆◆ 16. Connection of lower ball joint and knuckle
- 17. Knuckle

Pre-removal Operation
- Draining brake fluid
  (Refer to GROUP 35 SERVICE BRAKES–Service Adjustment Procedures)

Post-installation Operation
- Bleeding brake system
  (Refer to GROUP 35 SERVICE BRAKES–Service Adjustment Procedures)

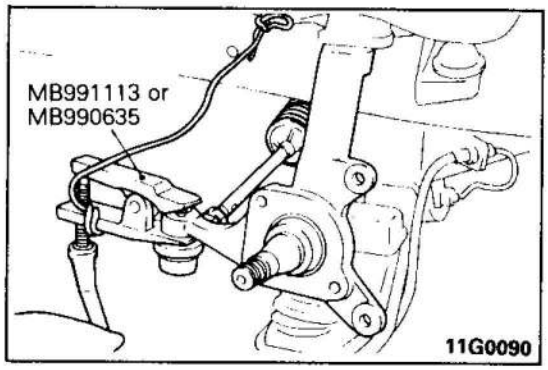
NOTE
(1) Reverse the removal procedures to reinstall.
(2) ◆◆ : Refer to "Service Points of Removal".
(3) ◆◆ : Refer to "Service Points of Installation".
(4) N : Non-reusable parts



SERVICE POINTS OF REMOVAL E26NBB8

8. REMOVAL OF FRONT HUB ASSEMBLY

Remove the front hub assembly from the knuckle together with the outer bearing and washer.



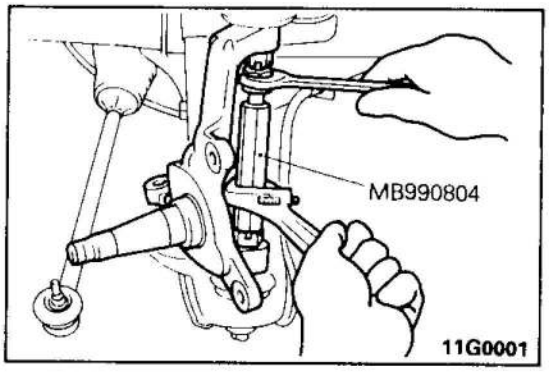
14. DISCONNECTION OF TIE ROD ASSEMBLY AND KNUCKLE

(1) Loosen the slotted nut tightening the tie rod assembly to the knuckle.

Caution
Loosen nut but do not remove.

(2) Disassembly tie rod assembly and knuckle with special tool.

Caution
Tie the string tightely to prevent special tool from loosening.



15. DISCONNECTION OF UPPER BALL JOINT AND KNUCKLE/16. LOWER BALL JOINT AND KNUCKLE

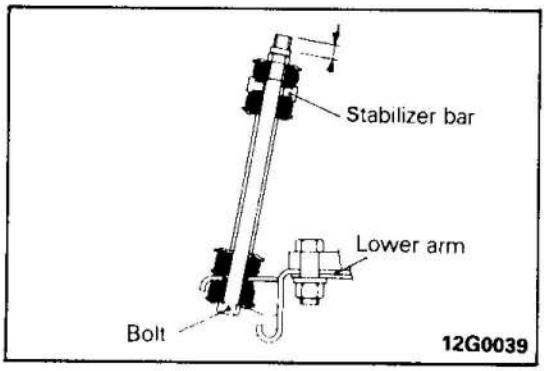
(1) Loosen slotted nuts on upper and lower ball joint.

Caution
Loosen nut but do not remove.

(2) Disconnect upper/lower ball joint and knuckle with special tool.

INSPECTION E26NCB8

- Check the knuckle for cracks and deformation.
- Check the knuckle spindle for wear and damage.

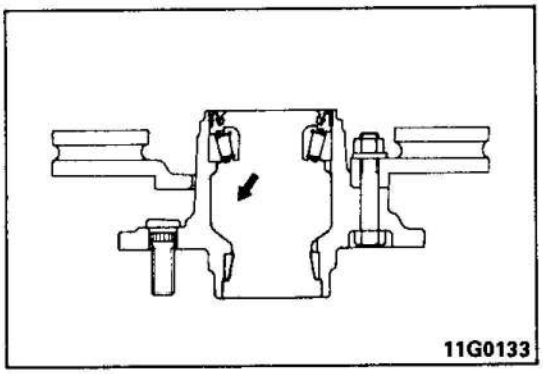


SERVICE POINTS OF INSTALLATION E26NGB8

12. TIGHTENING OF SELF-LOCKING NUT (Vehicles with stabilizer bar)

Install cup and bushes as illustrated and tighten self-locking nut to specified value.

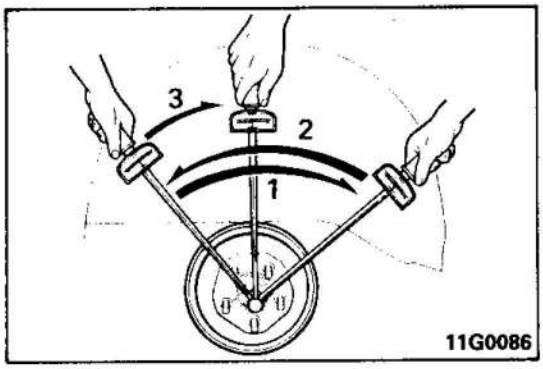
Standard value: 10–12 mm (0.39–0.47 in.)


11G0133

8. INSTALLATION OF FRONT HUB ASSEMBLY

Pack entire inner hub wall with specified grease before reinstalling front hub assembly to knuckle.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2

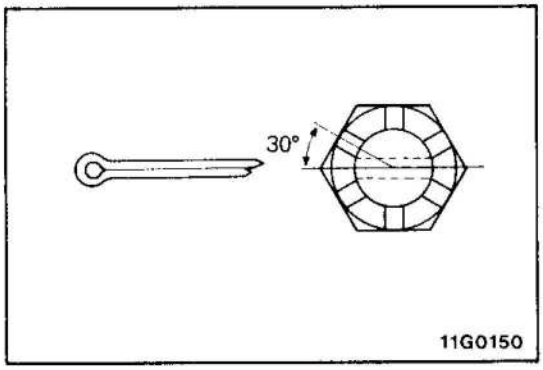


11G0086

• ADJUSTMENT OF WHEEL BEARING

Tithten slotted nut as follows and adjust wheel bearing.

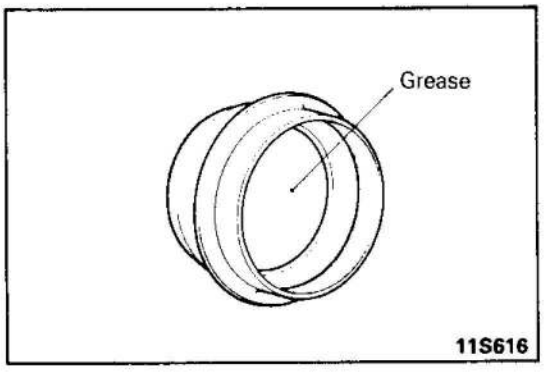
(1) Tighten to 30 Nm (3.0 kgm, 22 ft.lbs.)
↓
(2) Loosen to 0 Nm (0 kgm, 0 ft.lbs.)
↓
(3) Retighten to 8 Nm (0.8 kgm, 6 ft.lbs.)



11G0150

5. INSTALLATION OF SPLIT PIN

Fit the split pin. If the knuckle spindle hole and slotted nut groove are not in alignment, back off the slotted nut 30° maximum.



11S616

4. GREASING HUB CAP

Fill inner cap with specified grease.

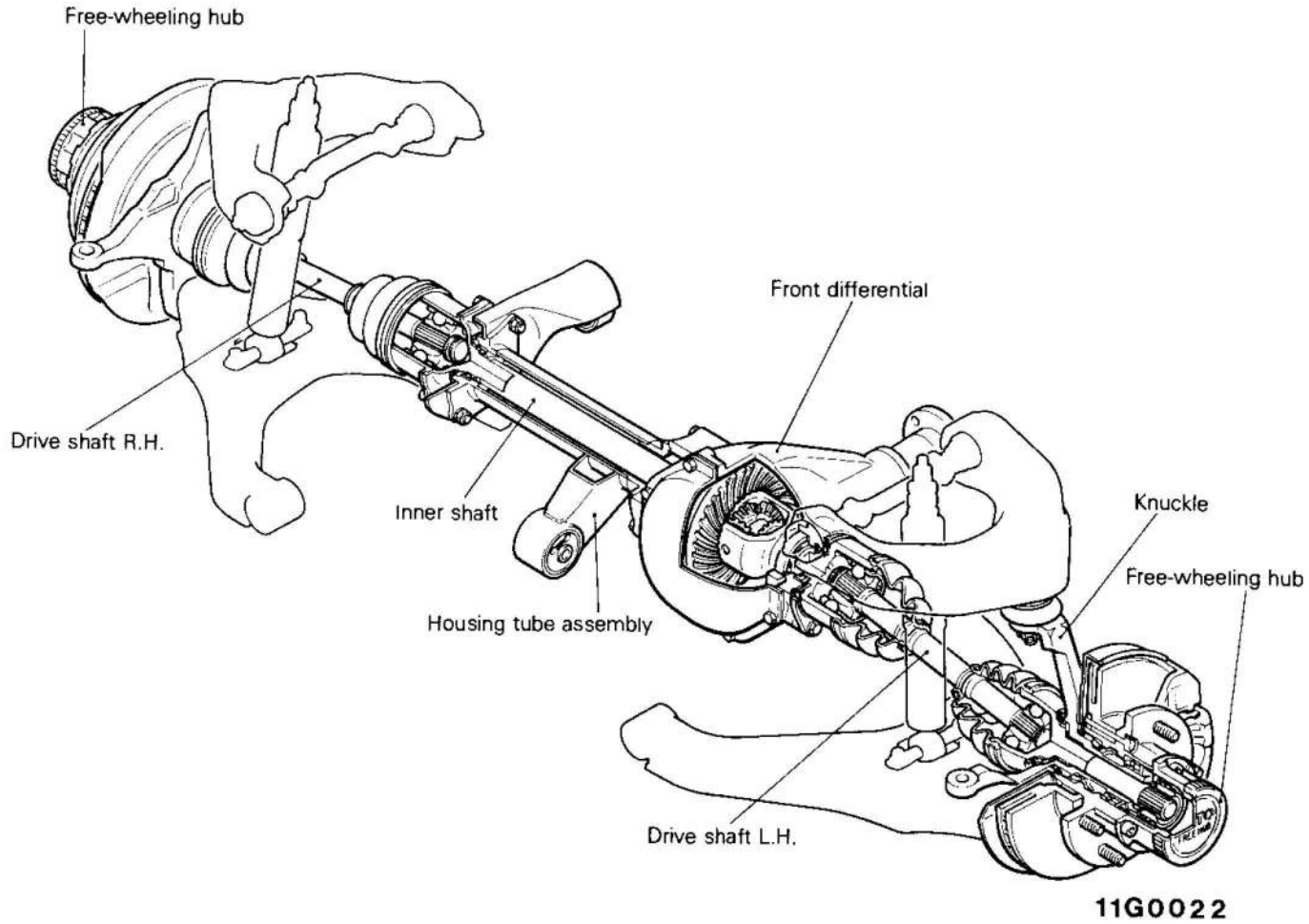
Specified grease: Multipurpose grease SAE J310, NLGI No. 2

FRONT AXLE (4WD)

GENERAL INFORMATION

E26BAAE

The front axle assembly consists of a front differential, a housing tube, and inner shaft, drive shafts, etc.
For better serviceability of the differential, the spacer for backlash adjustment of the final drive gear is placed between the side bearing outer race and the gear carrier.
The double-offset-joint which can slide in the axial direction, is used at the differential carrier side; the birfield joint, with large operation angle, is used at the axle hub side.
To reduce vibration, noise, and fuel consumption when two-wheel drive is applied, manual or automatic free-wheeling hubs are equipped; in particular, the automatic one is an outstanding feature in that the driver can switch between "lock" and "free" without having to leave his seat.



11G0022

SPECIFICATIONS

GENERAL SPECIFICATIONS

E26CA--

Items	P23V, P23W	P24V, P24W	P25V, P25W	P45V
Front axle hub bearing				
Type	Taper roller bearing			
Dimensions (O.D. x I.D.) mm (in.)				
Outer	73.4 x 45.2 (2.89 x 1.78)			
Inner	73.4 x 45.2 (2.89 x 1.78)			
Drive shaft				
Joint type				
Outer	Birfield joint	Birfield joint	Birfield joint	Birfield joint
Inner	Double offset joint	Double offset joint	Double offset joint	Double offset joint
Length (joint to joint)				
Left hand shaft mm (in.)	294 (11.6)	294 (11.6)	294 (11.6)	294 (11.6)
Right hand shaft mm (in.)	299 (11.8)	299 (11.8)	299 (11.8)	299 (11.8)
DOJ assembly spline area shaft diameter mm (in.)	27.5 (1.08)	29.0 (1.14)	29.0 (1.14)	27.5 (1.08)
Inner shaft				
Shaft dimension				
Bearing portion dia. mm (in.)	35 (1.38)	35 (1.38)		35 (1.38)
Center portion dia. mm (in.)	31.5 (1.24)	31.5 (1.24)		31.5 (1.24)
Overall length mm (in.)	432 (17.0)	432 (17.0)		432 (17.0)
Spline shaft diameter mm (in.)	27.5 (1.08)	29.0 (1.14)		27.5 (1.08)
Bearing				
Type	Radial ball bearing	Radial ball bearing		Radial ball bearing
Dimensions (O.D. x I.D.) mm (in.)	62 x 35 (2.4 x 1.4)	62 x 35 (2.4 x 1.4)		62 x 35 (2.4 x 1.4)
Differential				
Final drive gear type	Hypoid gear	Hypoid gear	Hypoid gear	Hypoid gear
Reduction ratio	5.285	4.625	4.875	4.875
Pinion gear type	2 pinion	4 pinion	4 pinion	4 pinion
Differential gear type	Straight bevel gear	Straight bevel gear	Straight bevel gear	Straight bevel gear
Number of teeth				
Drive gear	37	37	39	39
Drive pinion	7	8	8	8
Side gear	14	14	14	14
Pinion gear	10	10	10	10

SERVICE SPECIFICATIONS

E26CB--

Items		Specifications
Standard value		
Drive shaft end play	mm (in.)	0.4–0.7 (0.016–0.028)
Front hub turning resistance	Nm (kgcm, in.lbs.)	0.3–1.3 (3–13, 2.6–11.3)
[spring scale reading N (kg, lbs.)]		[5–18 (0.5–1.8, 1.1–4.0)]
Front hub play in the axial direction	mm (in.)	0.05 (0.0020) or less

Items		Specifications
Automatic free-wheeling hub		
Brake contact surface height	mm (in.)	11.7–12.3 (0.46–0.48)
Brake assembly thickness	mm (in.)	10.5 (0.41)
Setting of D.O.J. boot length	mm (in.)	77–83 (3.03–3.27)
Differential		
Final drive gear backlash	mm (in.)	0.11–0.16 (0.0043–0.0063)
Differential gear backlash (2 pinion)	mm (in.)	0–0.076 (0–0.0030)
Differential gear backlash (4 pinion)	mm (in.)	0.01–0.25 (0.0004–0.0098)
Drive pinion turning torque	Nm (kgcm, in.lbs.)	
With oil seal		0.6–0.7 (6.0–7.0, 5.2–6.1)
Without oil seal		0.4–0.5 (4.0–5.0, 3.5–4.3)
Shock absorber attaching dimension	mm (in.)	7–8 (0.28–0.31)
Stabilizer attaching bolt end attaching dimension	mm (in.)	8–10 (0.31–0.39)
Limit		
Front axle total backlash	mm (in.)	14 (0.55)
Automatic free-wheeling hub		
Free-wheeling hub turning resistance	Nm (kgcm, in.lbs.)	1 (10, 8.7)
[Spring scale reading N (kg, lbs.)]		[14 (1.4, 3.1)]
Brake assembly thickness	mm (in.)	9.6 (0.378)
Return spring deterioration	mm (in.)	35 (1.38)
Shift spring deterioration	mm (in.)	30 (1.18)
Differential		
Drive gear runout	mm (in.)	0.05 (0.0020)
Differential gear backlash (2 pinion)	mm (in.)	0.2 (0.008)

TORQUE SPECIFICATIONS

E26CC--

Items	Nm	kgm	ft.lbs.
Automatic free-wheeling hub cover	18–35	1.8–3.5	13–25
Manual free-wheeling hub cover	10–14	1.0–1.4	7–10
Free wheeling hub body	50–60	5.0–6.0	36–43
Front hub to brake disc	50–60	5.0–6.0	36–43
Knuckle to front brake assembly	80–100	8.0–10	58–72
Upper ball joint to knuckle	120–180	12–18	87–130
Front shock absorber locknut	12–18	1.2–1.8	9–13
Front shock absorber to lower arm	28–35	2.8–3.5	20–25
Lower ball joint to knuckle	120–180	12–18	87–130
Upper arm ball joint to upper arm	35–55	3.5–5.5	25–39
Knuckle to tie rod assembly	35–45	3.5–4.5	25–33
Right drive shaft to inner shaft	50–60	5.0–6.0	36–43
Left differential mounting bracket to differential carrier	80–100	8.0–10	58–72
Right differential mounting bracket to housing tube	80–100	8.0–10	58–72
Differential mounting brackets to suspension crossmember	60–80	6.0–8.0	43–58
Housing tube to differential carrier	160-190	16-19	116-137
Housing tube to gear mounting crossmember	70-95	7.0-9.5	51-69
Front propeller shaft to differential carrier	50-60	5.0-6.0	36-43

Items	Nm	Kgm	ft.lbs.
Drain plug	60–70	6.0–7.0	43–51
Filler plug	40–60	4.0–6.0	29–43
Companion flange	160–220	16–22	116–159
Cover	15–25	1.5–2.5	11–18
Bearing cap	55–65	5.5–6.5	40–47
Differential case to drive gear	80–90	8.0–9.0	58–65

LUBRICANTS

E26CD--

Items	Specified lubricants	Quantity
Front axle gear oil Front differential	Hypoid gear oil API classification GL-5 or higher SAE viscosity No. 90, 80W	1.10 lit. (1.16 U.S.qts., 0.97 Imp.qts.)
Front axle hub bearing	Multipurpose grease SAE J310, NLGI No. 2	As required
Oil seal lip	Multipurpose grease SAE J310, NLGI No. 2	As required
Automatic free wheeling hub	Multipurpose grease SAE J310, NLGI No. 2	As required
Manual free wheeling hub	Multipurpose grease SAE J310, MLGI No. 2	As required
Needle bearing	Multipurpose grease SAE J310, NLGI No. 2	As required
Contact surface of knuckle and spacer	Multipurpose grease SAE J310, NLGI No. 2	As required
D.O.J. boot grease	Repair kit grease	110 g (1.9 oz.)
B.J. boot grease	Repair kit grease	110 g (1.9 oz.)
Housing tube dust seal lip	Multipurpose grease SAE J310, NLGI No. 2	As required
Housing tube dust cover	Multipurpose grease SAE J310, NLGI No. 2	As required
Companion flange contacting surface of the washer	Multipurpose grease SAE J310, NLGI No. 2	As required

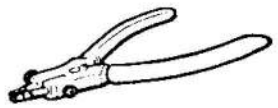
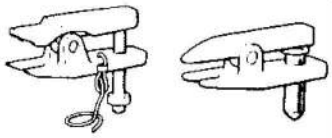
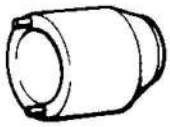
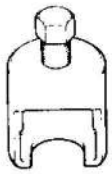
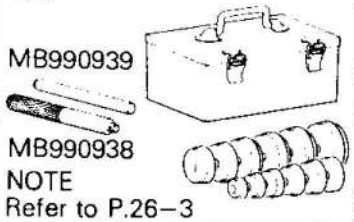
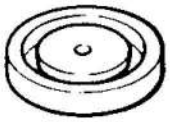
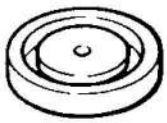
SEALANTS AND ADHESIVES

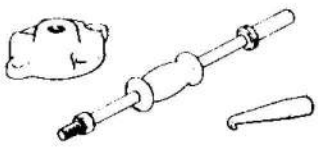
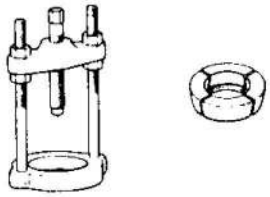
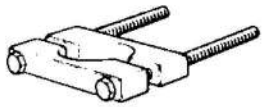
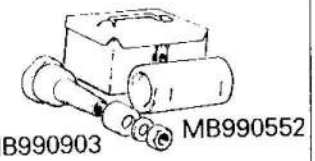
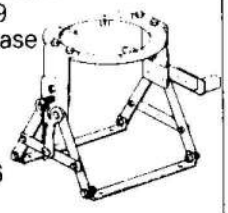
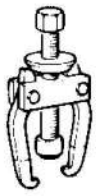
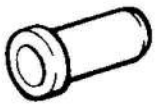
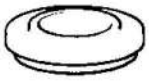
E26CE--

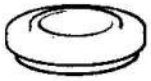
Items	Specified sealants and adhesives	Remarks
Contact surface of free-wheeling hub and front axle hub Gasket	3M ATD Part No.8661, 8663 or equivalent	Semi–drying sealant
Drive gear threaded hole	3M Stud Locking Part No.4170 or equivalent	Anaerobic adhesive

SPECIAL TOOLS

E26DA--

Tool (Number and name)	Use	Tool (Number and name)	Use
MB990628 Snap ring pliers 	To remove and install the manual free wheeling hub shaft snap ring	MB990811 Differential side bearing cup 	Disassembly and reassembly of automatic free wheeling hub To remove the side bearing inner race
MD998360 (MD998001) Cylinder head bolt wrench  L: 90 mm (3.54 in.): (MD998001) L: 80 mm (3.15 in.): MD998360	Removal, installation and retightening of automatic free wheeling hub	MB991113 or MB990635 Steering linkage puller 	Disconnection of the tie rod Disconnection of the upper ball joint
MB990954 Lock nut wrench 	Removal and adjustment of the lock nut	MB990809 Pitman arm puller 	Disconnection of the lower ball joint Disconnection of the upper ball joint
MB990925 Bearing and oil seal installer set  MB990939 MB990938 NOTE Refer to P.26–3	Press-fitting of the front axle hub bearing outer race Driving-out and press-fitting of the drive pinion bearing outer race	MB990956 Needle bearing installer 	Press-fitting of the needle bearing
MB990955 Oil seal installer 	Press-fitting of the front axle hub oil seal Press-fitting of the housing tube dust seal	MB990985 Oil seal installer 	Press-fitting of the knuckle oil seal

Tool (Number and name)	Use	Tool (Number and name)	Use
MB990906 Drive shaft attachment MB990590 Sliding hammer 	To remove and install the inner shaft assembly To remove the differential oil seal	MB990339 (WT-00104) Bearing puller MB990648 Bearing remover 	To remove the drive pinion front bearing inner race
MB990560 (A800ST15) Bearing remover 	Removal and press-fitting of the inner shaft bearing	MB990901 Pinion height gauge set  MB990903 MB990552	Measurement of the drive pinion height
MB990909 Working base  MB991116 Adapter 	Supporting of the front differential carrier asssembly	MB991151 Torque wrench  MB990326 Preload socket 	Measurement of the drive pinion turning torque
MB990810 Side bearing puller 	Removal of the side bearing inner race	MB990031 Drive pinion oil seal installer 	Press-fitting of the drive pinion seal
MB990850 End yoke holer 	To remove and install the companion flange	MB990802 Bearing installer 	Press-fitting of the side bearing inner race

Tool (Number and name)	Use	Tool (Number and name)	Use
MB990813 Tap 	Removal of adhesive	MB990728 Bearing installer 	Press-fitting of the drive pinion front bearing inner race
MB991150 Dust cover installer 	Press fitting of BJ dust cover		

TROUBLESHOOTING

E26EAAA

Symptom	Probable cause	Remedy	Reference page
MANUAL FREE WHEELING HUB, FRONT AXLE HUB, KNUCKLE Noise due to excessive play of wheel in turning direction	Free wheeling hub serration play	Replace	26-36
Noise due to excessive wheel end play	Front axle hub bearing play, seizure, wear	Check and adjust or replace if necessary	26-30, 36
	Knuckle needle bearing play, seizure, wear	Replace	26-41, 44
	Free wheeling hub serration play	Replace	26-36
	Free wheeling hub looseness	Tighten or replace	26-36
AUTOMATIC FREE WHEELING HUB Does not lock	Brake sliding portion worn	Replace parts and adjust hub attaching surface shims	26-32
	Brake (B) lug portion broken Housing damaged Drive gear damaged Slide gear damaged Retainer (A) damaged Cam damaged Shift spring deteriorated Slide gear C ring out of position	Replace parts	26-32
	Automatic free wheeling hub attaching bolt loose	Retighten attaching bolts	26-26

Symptom	Probable cause	Remedy	Reference page
Locks but does not become free	Return spring deteriorated Slide gear C ring out of position	Replace parts	26-32
	Foreign substances on tooth surfaces of drive gear and slide gear Foreign substances on tooth surfaces of slide gear and housing gear	Clean tooth surfaces or replace parts	26-32
	Excessive front power train resistance	Adjust differential preload	26-22, 64
Ratcheting readily occurs	Water in brake portion	Clean and then apply grease	26-32
	Retainer (B) worn Slide gear damaged Housing gear damaged Shift spring deteriorated Slide gear C ring out of position	Replace parts	26-32
	Automatic free wheeling hub attaching bolts loose	Retighten the attaching bolts	26-26
DRIVE SHAFT, INNER SHAFT Noise during wheel rotation	Housing tube bent Inner shaft bent	Replace	26-57
	Inner shaft bearing worn, pounding	Replace	26-57, 60
	Drive shaft assembly worn damaged, bent	Check or replace	26-46
Noise due to excessive play of wheel in turning direction	Inner shaft and side gear serration play	Replace	26-57
	Drive shaft and side gear serration play	Replace	26-46
	Drive shaft and drive flange serration play	Replace	26-46
Noise due to excessive wheel end play	Drive shaft and drive flange end play	Adjust or replace	26-23
	Drive flange looseness	Tighten or replace	26-26, 36
DIFFERENTIAL Constant noise	Improper adjustment of drive gear and drive pinion (poor meshing) Loose, worn or damaged side bearing Loose, worn or damaged drive pinion bearing Worn drive gear, drive pinion	Correct or replace	26-64, 67, 70, 78, 81
	Worn side gear thrust washer or pinion shaft Deformed drive gear or differential case Damaged gear	Replace	26-67, 70, 78, 81, 88
	Foreign material	Eliminate the foreign material and check; replace the parts if necessary	26-67, 70, 78, 81, 88
	Insufficient oil	Replenish	26-22

Symptom	Probable cause	Remedy	Reference page
DIFFERENTIAL			
Gear noise while driving	Poor gear engagement Improper gear adjustment Improper drive pinion preload adjustment	Correct or replace	26-64, 67 70, 78 81
	Damaged gear	Replace	
	Foreign material	Eliminate the foreign material and check; replace the parts if necessary	26-67, 70, 78, 81 88
	Insufficient oil	Fill or change	26-22
Gear noise while coasting	Improper drive pinion turning torque adjustment	Correct or replace	26-72, 83
	Damaged differential gear	Replace	26-67, 70 78, 81, 88
Bearing noise while driving or coasting	Cracked or damaged drive pinion rear bearing	Replace	26-67, 70, 78, 81
Noise while turning	Loose side bearing Damaged side gear, pinion gear or pinion shaft	Replace	26-67, 70 78, 81 88
Heat	Improper differential gear backlash Excessive preload	Adjust	26-64, 72 83
	Insufficient oil	Fill or change	26-22
Oil leakage	Clogged vent plag	Clean or replace teh parts	–
	Cover tightened not Seal malfunction	Retighten, apply sealant, or replace the gasket	26-67, 70 78, 81
	Worn or damaged oil seal	Replace	26-23
	Excessive oil	Adjust the oil level	26-22

SERVICE ADJUSTMENT PROCEDURES

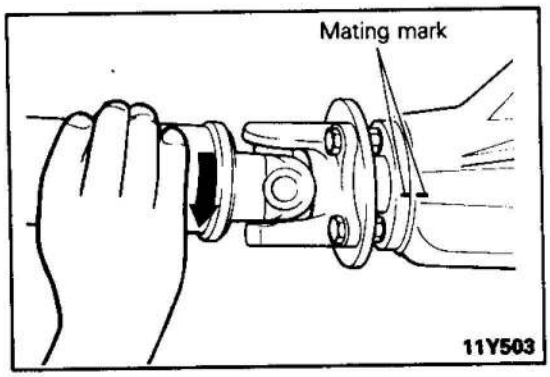
CHECKING OF THE FRONT AXLE TOTAL BACKLASH E26FBAD

1. If the vehicle vibrates and produces a booming sound due to the unbalance of the drivetrain, measure the front axle total backlash as follows to see if the differential carrier assembly required removal.
   (1) Set the hubs for 4WD

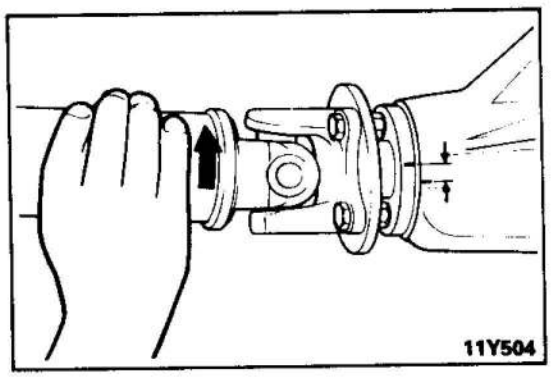
   NOTE
   On vehicles with manual free-wheeling hubs, place the control handles in the LOCK position.
   On vehicles with automatic free-wheeling hubs, place the transfer shift lever in 4H position and drive the vehicle 1 to 2 m (3.3 to 6.5 ft.) to engage the hubs with the drive shafts.

   (2) Secure the wheels and set the transfer control lever to "2H".

   NOTE
   If the vehicle is raised on a jack, the wheels will turn and it will not be possible to measure the backlash.



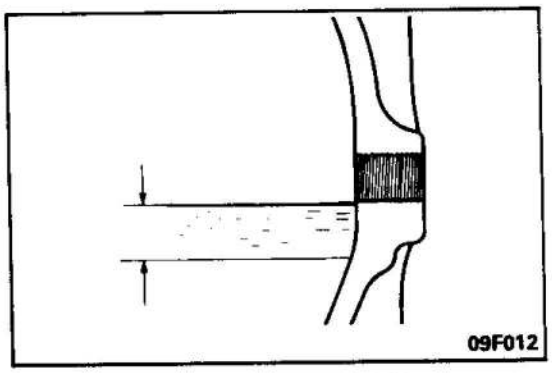
   (3) Turn the companion flange clockwise until all play is removed. Make mating marks on the dust cover of the companion flange and on the differential carrier.



   (4) Turn the companion flange counterclockwise until all play is removed and measure the amount of distance through which the mating marks moved.

   Limit: 14 mm (0.55 in.)

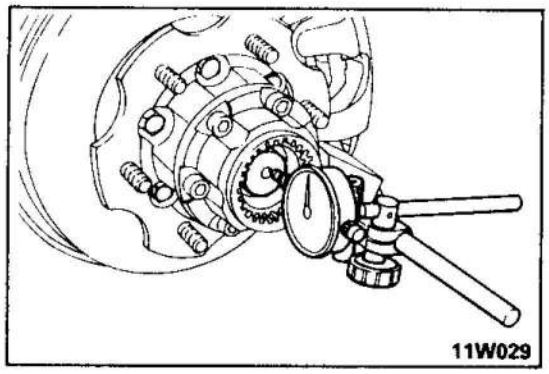
2. If the backlash exceeds the limit, remove the differential carrier assembly and final drive gear, and check for differential gear meshing condition and drive shaft or inner shaft spline looseness.



CHECKING OF THE FRONT AXLE GEAR OIL LEVER E26FCAA

Remove the filler plug and check the oil level. The oil level should be somewhere within 8 mm (0.31 in.) from the bottom of the filler plug hole.

Specified gear oil: Hypoid gear oil API classification GL-5 or higher SAE viscosity No. 90, 80W [1.10 lit. (1.16 U.S.qts., 0.97 Imp.qts.)]



CHECKING OF THE DRIVE SHAFT AXIAL PLAY E26FDAD

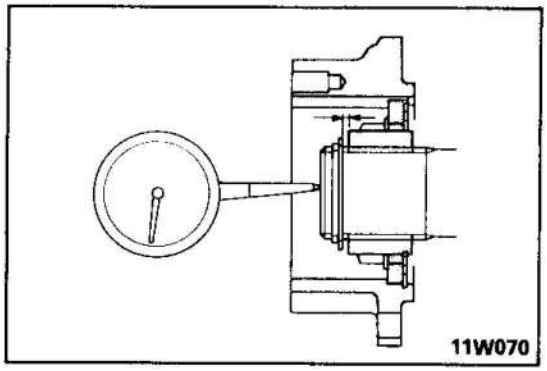
VEHICLES WITH AUTOMATIC FREE-WHEELING HUBS

1. Place the free-wheeling hubs in the free condition.

   NOTE
   The free condition can be obtained by shifting the transfer shift lever to the 2H position and then moving in reverse for 1 to 2 m (3.3 to 6.5 ft.).
2. Jack the vehicle up and remove the front wheels.
3. Remove the free-wheeling hub covers.
4. Rotate the drive shaft forward, and backward and then set the drive shaft to the position (the position where end play is maximum) mid-way between where the rotation feels "heavy" for each (where there is a stopping feeling).
5. Set the dial gauge as shown in the figure; then move the drive shaft in the axial direction and measure the play.

   Standard value: 0.2–0.5 mm (0.008–0.020 in.)
6. If the play is out of standard value, adjust by adding or removing shims.

VEHICLES WITH MANUAL FREE-WHEELING HUBS



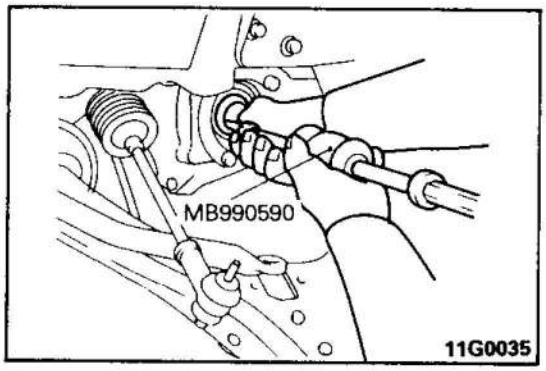
1. Jack the vehicle up and remove the front wheels.
2. Move the control handles for the free-wheeling hub to the FREE position.
3. Remove the free-wheeling hub covers.
4. Set the dial gauge as shown in the figure; then move the drive shaft in the axial direction and measure the play.

   Standard value: 0.2–0.5 mm (0.008–0.020 in.)
5. If the play is out of standard value, adjust by adding or removing shims.

REPLACEMENT OF DIFFERENTIAL CARRIER OIL SEAL E26FFAB

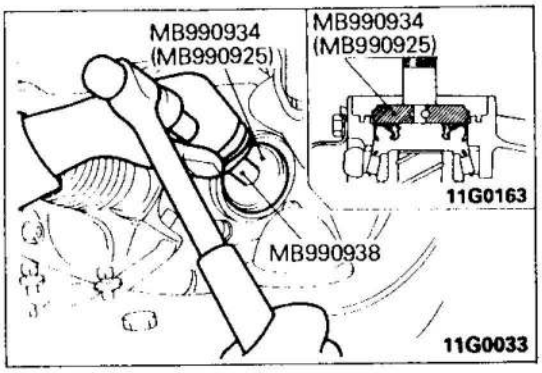
LEFT SIDE OIL SEAL

(1) Remove drive shaft (L.H). (Refer to 26–46.)



(2) Remove oil seal from differential carrier assembly with special tool.

NOTE
Press special tool hook so that it does not slip off oil seal and use sliding hammer.



(3) Use special tool to press fit oil seal into the differential carrier.

NOTE
Oil seal lip bore is different at P23V, P23W and P24V, P24W, P25V, P25W.

Identification
[Applicable through November production, 1987]
P23V, P23W: Brown
P24V, P24W: Black
[Applicable from December production, 1987]
P23V, P23W: None
P24V, P24W, P25V, P25W: White

(4) Apply light film of specified grease on oil seal lip.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2

(5) Install drive shaft taking care not to damage the oil seal with the drive shaft spline.

Caution
Replace circlip in DOJ assembly.

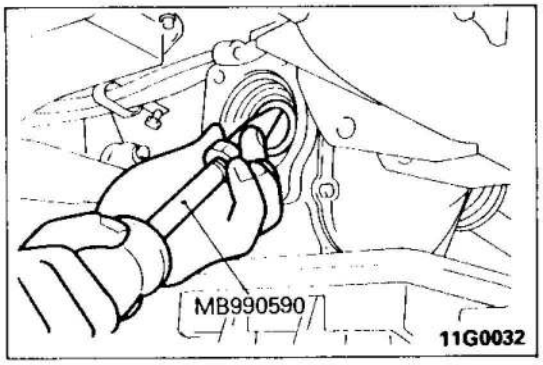
NOTE
Circlip outer diameters are different at P23V, P23W and P24V, P24W, P25V, P25W.

Identification
P23V, P23W: Clip outer diameter 27.0 mm (1.06 in.)
P24V, P24W, P25V, P25W: Clip outer diameter 29.7 mm (1.17 in.)

(6) Install knuckle and front hub assembly.
(Refer to P.26–41.)

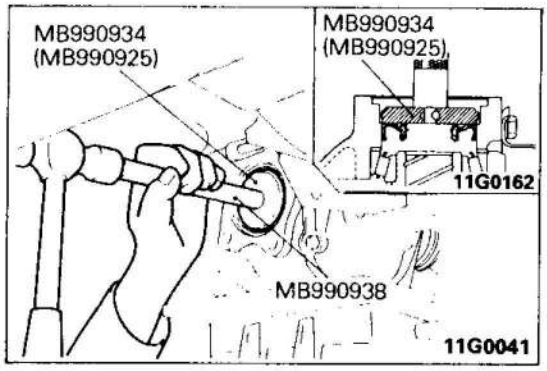
RIGHT SIDE OIL SEAL

(1) Remove inner shaft.
(Refer to P.26–57.)
(2) Remove housing tube assembly.
(Refer to P.26–57.)



(3) Use special tool to remove oil seal from differential carrier.

NOTE
Hold special tool hook so that it does not slip off oil seal and use sliding hammer.



(4) Use special tool to press fit oil seal into differential carrier.

NOTE
Oil seal lip bore is different at P23V, P23W and P24V, P24W, P25V, P25W.

Identification
[Applicable through November production, 1987]
P23V, P23W: Brown
P24V, P24W: Black
[Applicable from December production, 1987]
P23V, P23W: None
P24V, P24W, P25V, P25W: White

(5) Apply thin film of specified grease on oil seal lip.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2

(6) Install housing tube. (Refer to P.26–57.)
(7) Install inner shaft taking care not to damage oil seal with inner shaft spline.(Refer to P.26–57.)

Caution
Replace circlip on inner shaft.

NOTE
Clip diameters are different at P23V, P23W and P24V, P24W, P25V, P25W

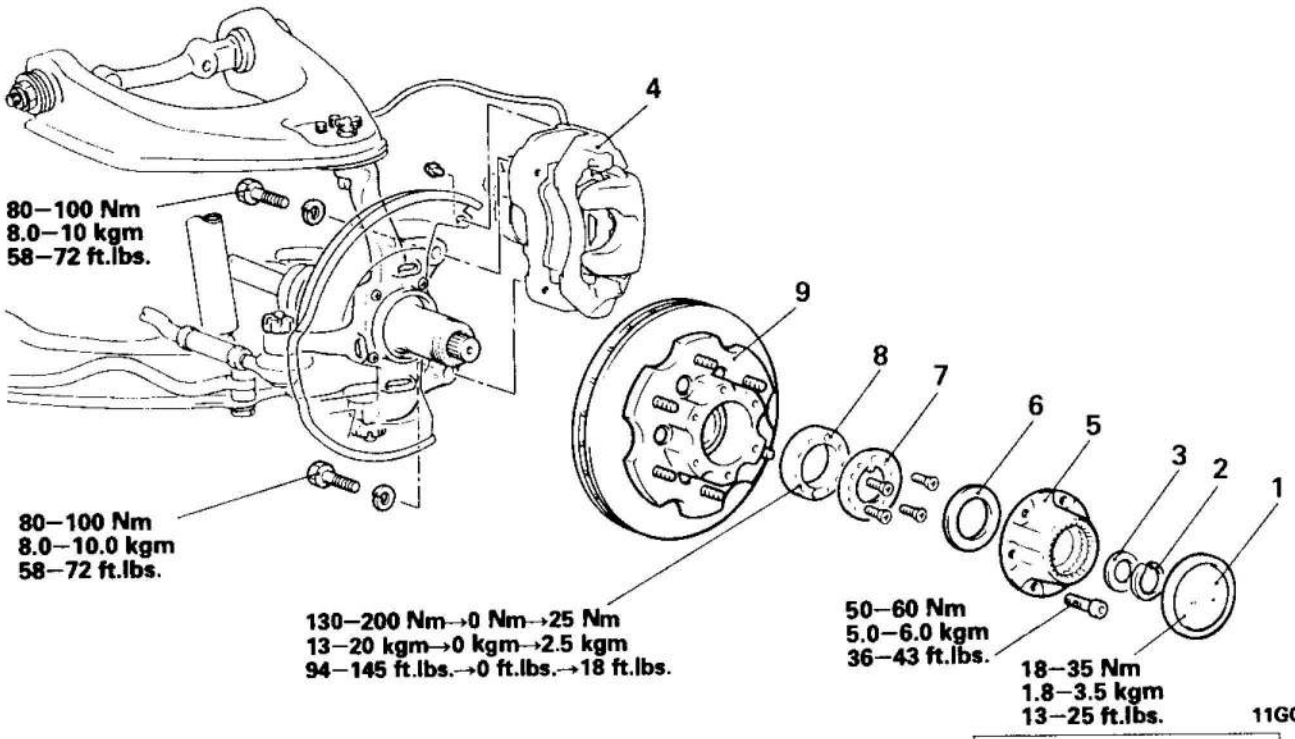
Identification
P23V, P23W: Clip outer diameter 28.0 mm (1.10 in.)
P24V, P24W, P25V, P25W: Clip outer diameter 30.5 mm (1.20 in.)

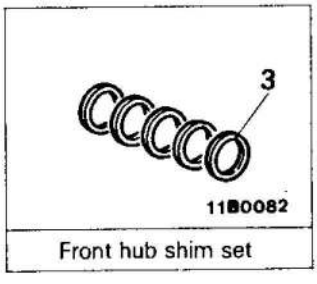
(8) Connect drive shat (RH) and inner shaft.

AXLE HUB AND FREE-WHEELING HUB

E26IA--

REMOVAL AND INSTALLATION (Vehicles with Automatic Free-Wheeling Hubs)



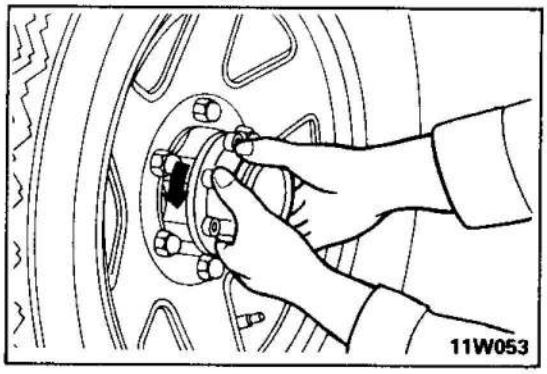


Front hub shim set

Removal steps

◆◆ 1. Cover
◆◆ ◆◆ Adjustment of drive shaft axial play
◆◆ 2. Snap ring
3. Shim
◆◆ 4. Caliper assembly
◆◆ Adjustment of automatic free-wheeling hub turning resistance
◆◆ ◆◆ 5. Automatic free-wheeling hub assembly
6. Shim
◆◆ Height adjustment of brake contact surface
7. Lock washer
◆◆ Adjustment of wheel bearing preload
◆◆ 8. Lock nut
◆◆ 9. Front hub assembly

NOTE
(1) Reverse the removal procedures to reinstall.
(2) ◆◆ : Refer to "Service Points of Removal".
(3) ◆◆ : Refer to "Service Points of Installation".



SERVICE POINTS OF REMOVAL

E26IBAD

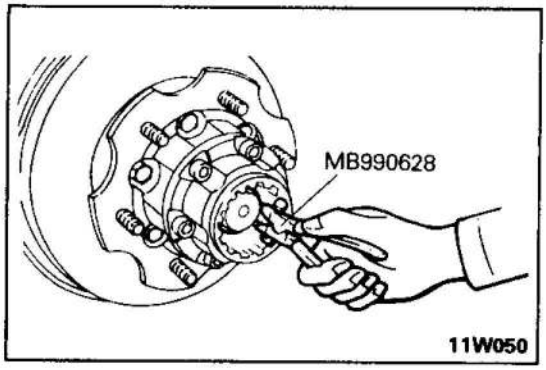
1. REMOVAL OF COVER

(1) Place the free-wheeling hub in the free condition.

NOTE
The free condition can be obtained by shifting the transfer shift lever to the 2H position and then moving in reverse for 1 to 2 meters (3.3 to 6.5 ft.).

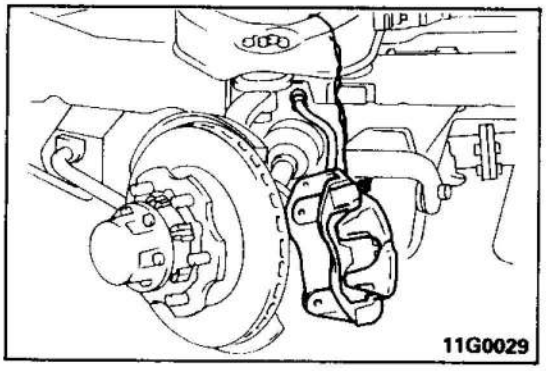
(2) Remove the automatic free-wheeling hub cover.

NOTE
When the cover cannot be loosened by hand, use an oil filter wrench with a protective cloth in between not to damage the cover.



2. REMOVAL OF SNAP RING

Using a snap ring pliers or special tool, remove the snap ring from the drive shaft.

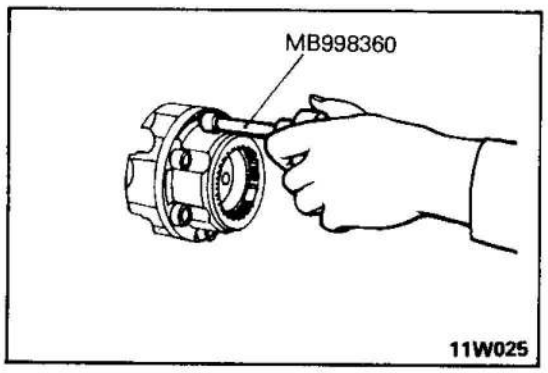


4. REMOVAL OF CALIPER ASSEMBLY

(1) Remove the caliper assembly with the brake hose connected.

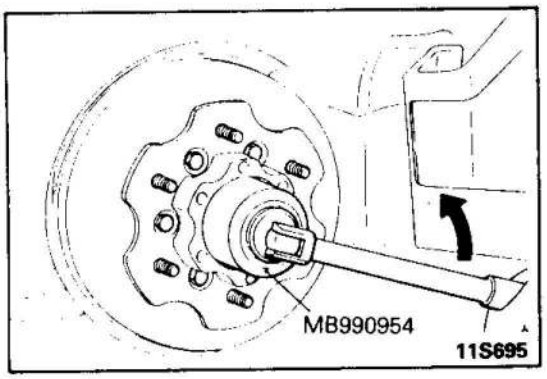
(2) Use wire to suspend the caliper assembly from the upper arm so that the caliper assembly won't fall.

Caution
Do not twist the brake hose.



5. REMOVAL OF AUTOMATIC FREE-WHEELING HUB ASSEMBLY

Remove the automatic free-wheeling hub by using the special tool.



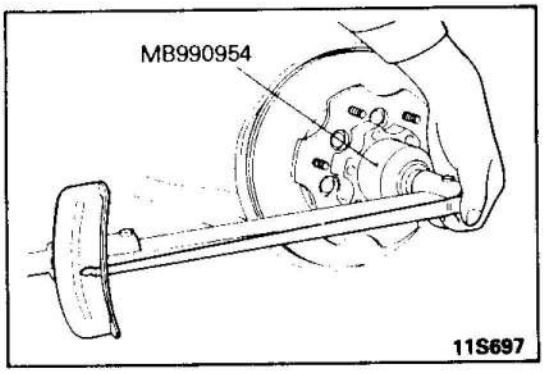
8. REMOVAL OF LOCK NUT/9. FRONT HUB ASSEMBLY

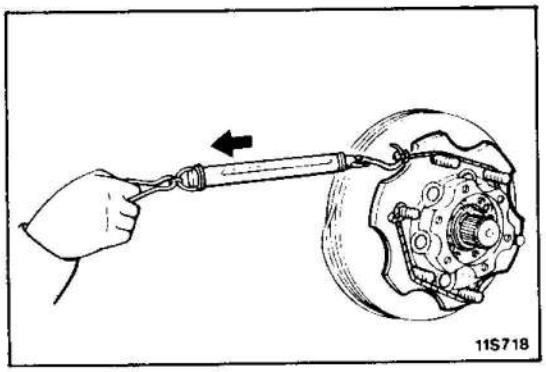
(1) After the lock washer has been removed, remove the lock nut with the speical tool.
(2) Remove the front hub assembly from the knuckle together with the inner and outer bearings.

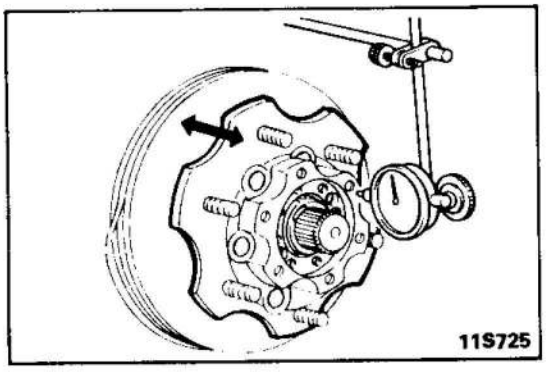
Caution
Do not drop outer bearing inner race.

INSPECTION E26ICAD

- Check the wheel bearing for seizure, discoloration and rough raceway surface.
- Check the front hub for cracks.
- Check the oil seals for cracks and damage.
- Check for loose brake disc and front hub bolts.
- Check grease in inner front hub.







SERVICE POINTS OF INSTALLATION E26IDAF

- **ADJUSTMENT OF WHEEL BEARING PRELOAD**

(1) Using the special tool, tighten the lock nut by the following procedures.

Tighten to 130–200 Nm (13–20 kgm, 94–145 ft.lbs.)
↓
Loosen to 0 Nm (0 kg, 0 ft.lbs.)
↓
Retighten to 25 Nm (2.5 kgm, 18 ft.lbs.)

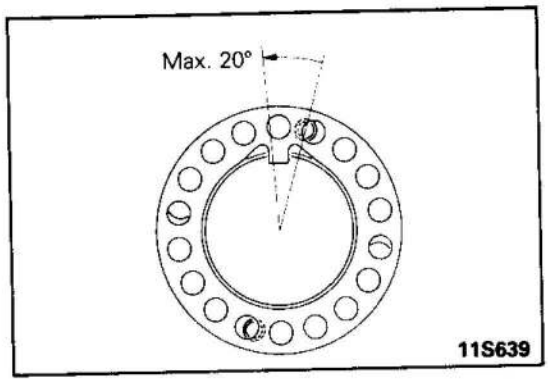
(2) Loosen the lock nut approximately 30 to 40 degrees to adjust the front hub's turning resistance and play in the axial direction so that they agree with the standard values.

Standard value (front hub turning resistance):
0.3–1.3 Nm (3–13 kgcm, 2.6–11.3 in.lbs.)
[Spring scale reading]
5–18 N (0.5–1.8 kg, 1.1–4.0 lbs.)

NOTE
Note required measurements to check drive resistance of auto free-wheel hub.

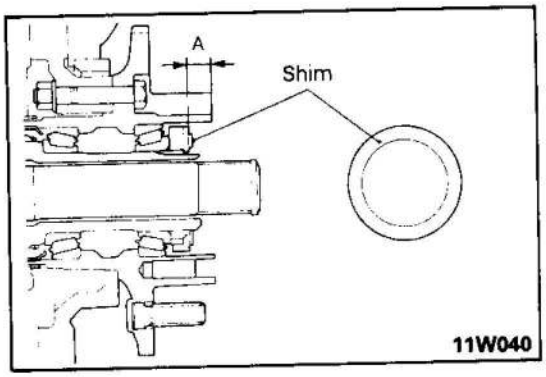
Standard value (front hub end play):
0.05 mm (0.0020 in.) or less

(3) Adjust locknut when measurements are not within standard values.



NOTE
If adjustment is not possible, the bearing may be incorrectly installed; check and, if necessary, repair. The librication condition should also be checked.

(4) Mount the lock washer. If the lock washers holes do not align with the lock nut holes, loosen the lock nut (no more than 20 degrees) to align them.



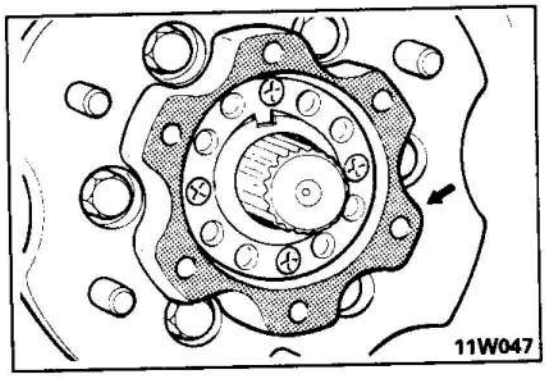
- **HEIGHT ADJUSTMENT OF BRAKE CONTACT SURFACE**

Measure the height of brake contact surface.

(1) Using a depth gauge, measure the dimension A shown in illustration at two points.

Standard value: 11.7–12.3 mm (0.46–0.48 in.)

(2) If the average of the measured values is out of standard value, adjust by inserting shims.



5. INSTALLATION OF AUTOMATIC FREE-WHEELING HUB ASSEMBLY

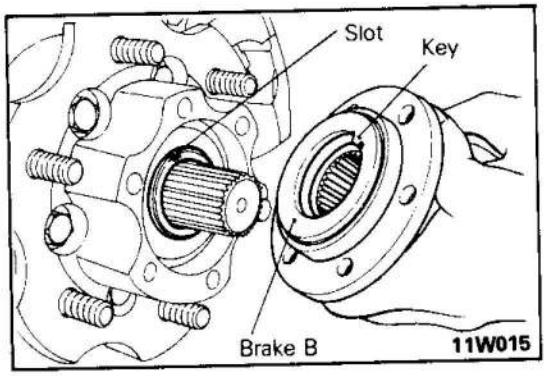
(1) Apply a coating of specified sealant, equally all around and without any missed spots, to the free-wheeling hub body assembly and front hub contact surfaces.

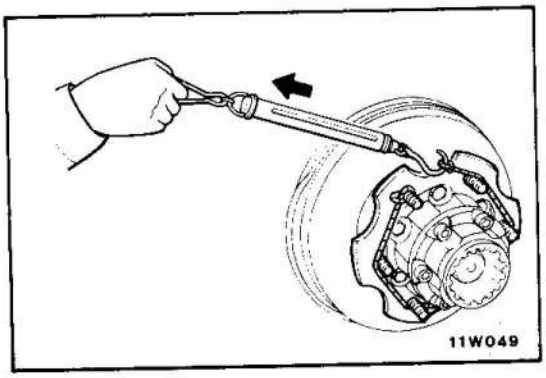
Specified sealant: 3M ATD Part No.8661, 8663 or equivalent

Caution
Make sure that there is no excess specified sealant on the hub outside surface.

(2) Align the key of the brake (B) and the keyway of knuckle spindle and loosely install the automatic free-wheeling hub assembly.

(3) Check that the hub proper and automatic free-wheeling hub assembly are brought into intimate contact when the assembly is fored lightly against the hub proper. If not; turn the hub until intimate contact is achieved.





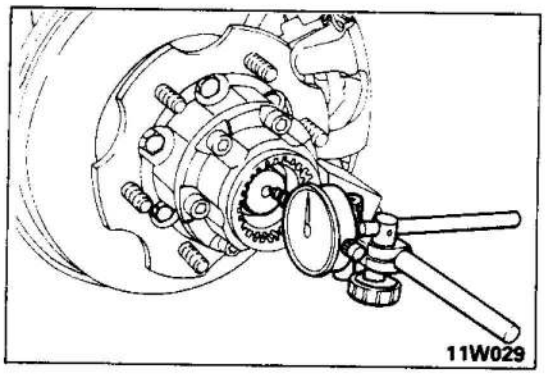
- **ADJUSTMENT OF AUTOMATIC FREE-WHEELING HUB TURNING RESISTANCE**

Check the automatic free-wheeling hub turning resistance by the following procedure.

(1) Use a spring scale to measure the front hub turning resistance again. Subtract the value measured before the installation of the automatic free-wheeling hub from that measured here to find the turning resistance of the free-wheeling hub.

Limit: 1 Nm (10 kgcm, 8.7 In.lbs.)
[Spring scale reading]
14 N (1.4 kg, 3.1 lbs.)

(2) If the free-wheeling hub turning resistance exceeds the limit, disassembly and reassemble the free-wheeling hub again.



- **ADJUSTMENT OF DRIVE SHAFT AXIAL PLAY**

After the installation of shim and snap ring, check the drive shaft axial play by the following procedure.

(1) Rotate the drive shaft forward, and backward and then set the drive shaft to the position (the position where axial play is maximum) mid-way between where the rotation feels "heavy" for each (where there is a stopping feeling).

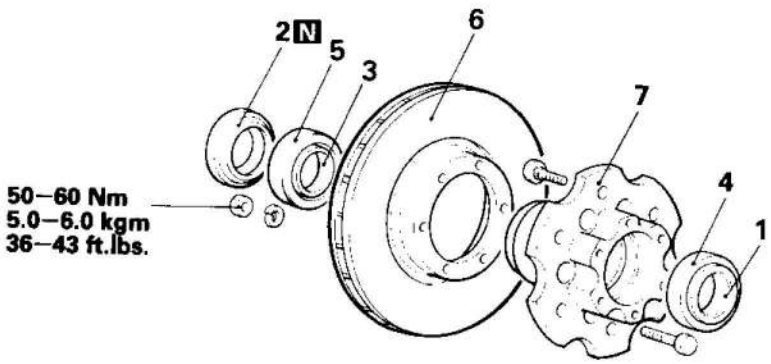
(2) Set the dial gauge as shown in the figure; then move the drive shaft in the axial direction and measure the play.

Standard value: 0.4–0.7 mm (0.016–0.028 in.)

(3) If the play is out of standard value, adjust by adding or removing shims.

DISASSEMBLY AND REASSEMBLY (Front Axle Hub)

E26II--

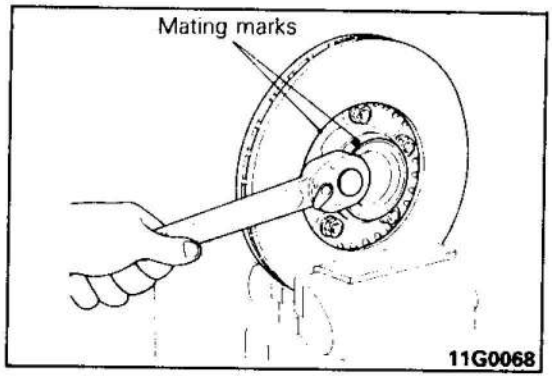


11W041

Disassembly steps

1. Outer bearing inner race
2. ◆◆ Oil seal
3. Inner bearing inner race
4. Outer bearing outer race
5. Inner bearing outer race
6. ◆◆ Brake disc
7. Front hub

NOTE
(1) Reverse the disassembly procedures to reassemble.
(2) ◆◆ : Refer to "Service Points of Disassembly".
(3) ◆◆ : Refer to "Service Points of Reassembly".
(4) N : Non-reusable parts

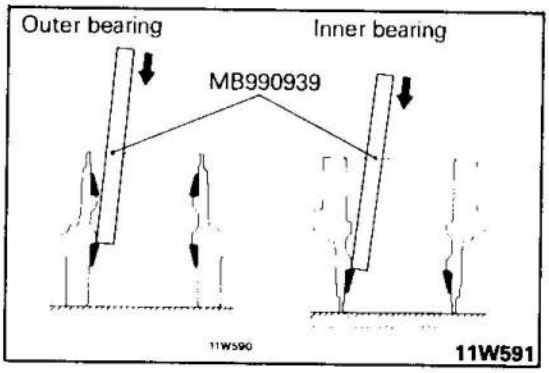


SERVICE POINTS OF DISASSEMBLY E26IJAB

6. REMOVAL OF BRAKE DISC

Make the mating marks on the brake disc and front hub, and then separate the front hub and brake disc, if necessary.

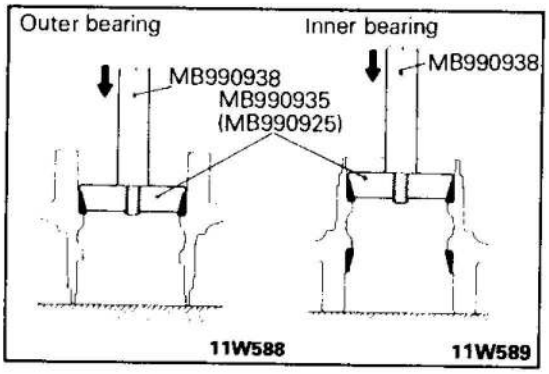
Caution
Lock disc in vice and grip with copper or aluminum board.



BEARING REPLACEMENT E26IKAC

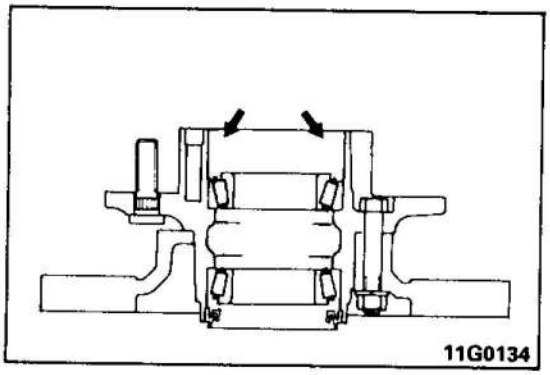
(1) Remove the oil seal.
(2) Wipe off grease from the front hub interior.
(3) Using the special tool, drive out the inner and outer bearing outer races by tapping them uniformly.
(4) Apply the specified grease to the outside surface of the new inner and outer bearing outer races.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2



(5) Press-fit the inner and outer bearing outer races by using the special tools.

NOTE
The bearing inner race and bearing outer race should be replaced as an assembly.



SERVICE POINTS OF REASSEMBLY E26INAB

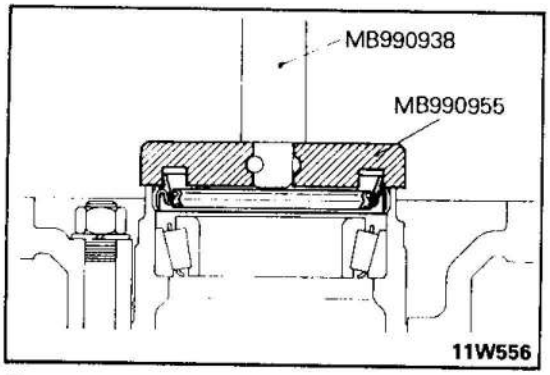
2. INSTALLATION OF OIL SEAL

(1) Apply the specified grease to the oil seal lip and inside surface of the front hub.

Specified grease: Mulfipurpose grease SAE J310, NLGI No. 2

(2) Apply the specified grease to the inner bearing inner race and install the inner race into the front hub.

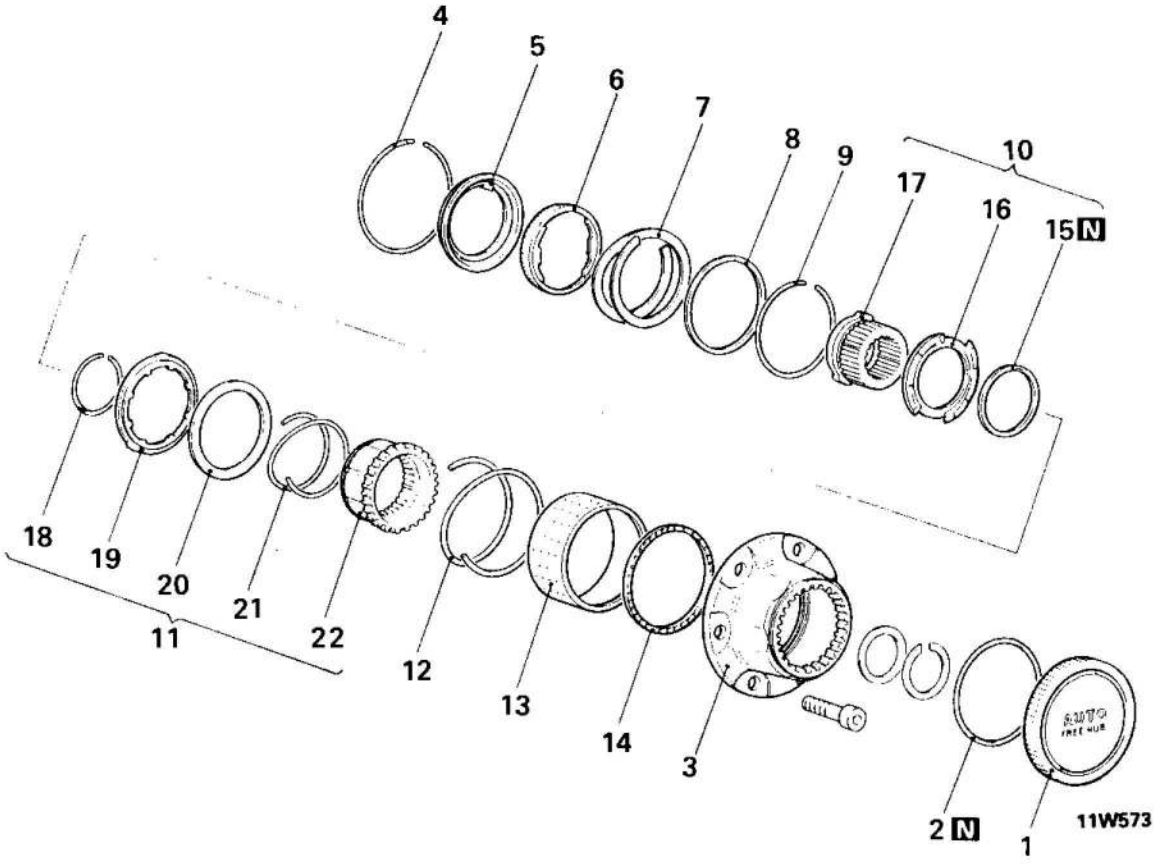
Specified grease: Multipurpose grease SAE J310, NLGI No. 2



(3) Press-fit the new oil seal into the front hub by using the special tools, until it is flush with the front hub end face.

DISASSEMBLY AND REASSEMBLY (Automatic Free-Wheeling Hub)

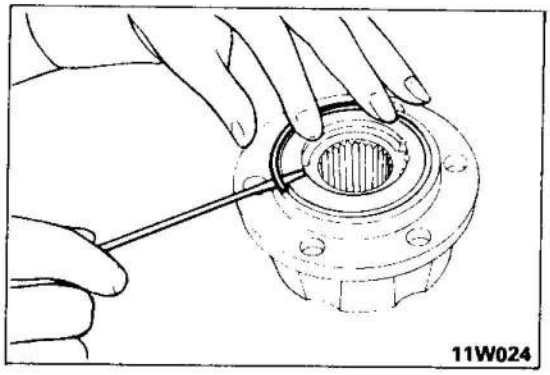
E26JA--



Disassembly steps

1. Cover
2. O-ring
3. Housing assembly
4. ◆◆ Housing C ring
5. ◆◆ Brake (B)
6. Brake (A)
7. Brake spring
8. ◆◆ Housing snap ring
9. ◆◆ Retainer (B) C ring
10. ◆◆ Drive gear assembly
11. ◆◆ Slide gear assembly
12. ◆◆◆◆ Return spring
13. ◆◆ Retainer (B)
14. Retainer bearing
15. ◆◆ Drive gear snap ring
16. Retainer (A)
17. Drive gear
18. ◆◆ Slide gear C ring
19. Cam
20. Spring holder
21. Shift spring
22. Slide gear

NOTE
(1) Reverse the disassemble procedures to reassemble.
(2) ◆◆ : Refer to "Service Points of Disassembly".
(3) ◆◆ : Refer to "Service Points of Reassembly".
(4) N : Non-reusable parts

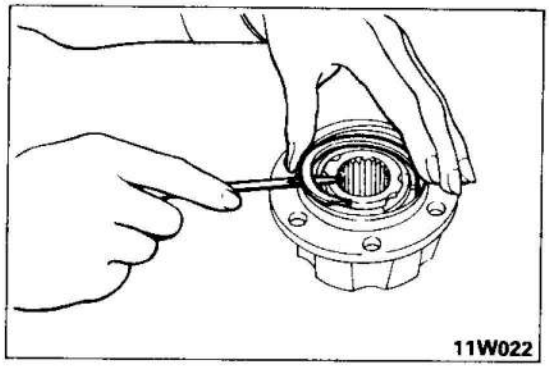


SERVICE POINTS OF DISASSEMBLY E26JBAB

4. REMOVAL OF HOUSING C RING

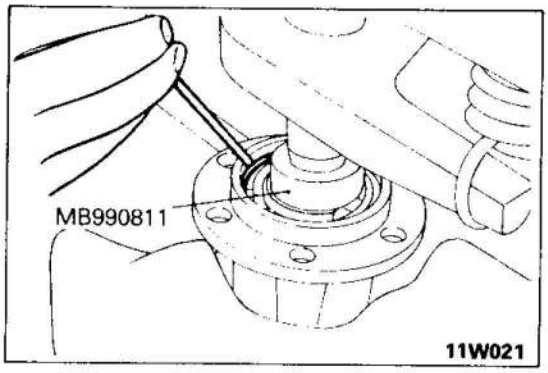
Remove the housing C ring.

NOTE
The ring is easily removable by pushing the brake (B) in and using a small-end screwdriver, etc.



8. REMOVAL OF HOUSING SNAP RING

Remove the housing snap ring.

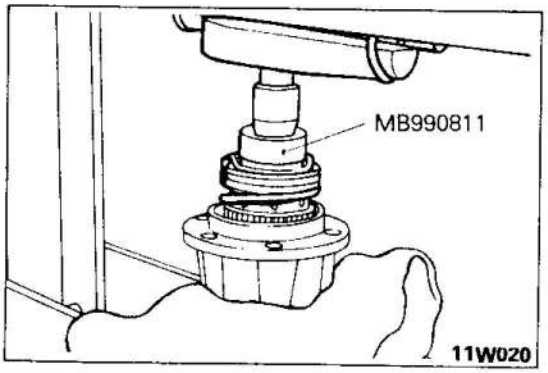


9. REMOVAL OF RETAINER (B) C RING

Using a special tool, lightly push the drive gear in and remove the retainer (B) C ring.

NOTE
Since the return spring relaxes approx. 40 mm (1.57 in.), the stroke of the press should be set to more than 40 mm (1.57 in.)

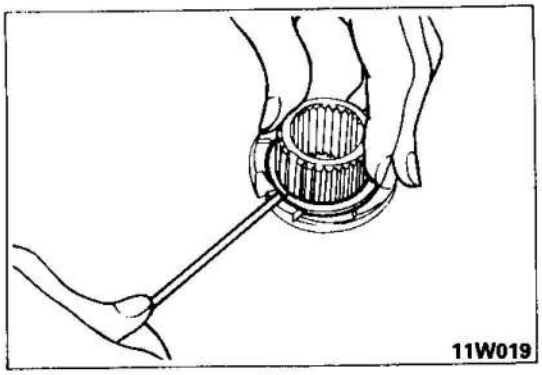
Caution
1. **Place a protective cover not to damage the cover attaching surface of the housing before setting on the press table.**
2. **Make sure that the pressing force does not exceed 200 N (20 kg, 44.1 lbs.)**



10. REMOVAL OF DRIVE GEAR ASSEMBLY/11. SLIDE GEAR ASSEMBLY/12. RETURN SPRING

Slowly reduce the pressure of the press until the return spring fully relaxes.

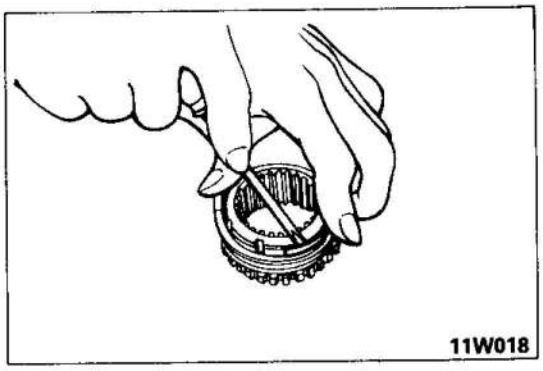
Caution
When the pressure of the press is removed, make sure that the retainer (A) is not caught by the retainer (B).



15. REMOVAL OF DRIVE GEAR SNAP RING

Remove the drive gear snap ring.

Caution
When the drive gear snap ring is removed, be sure to replace it with a new one.

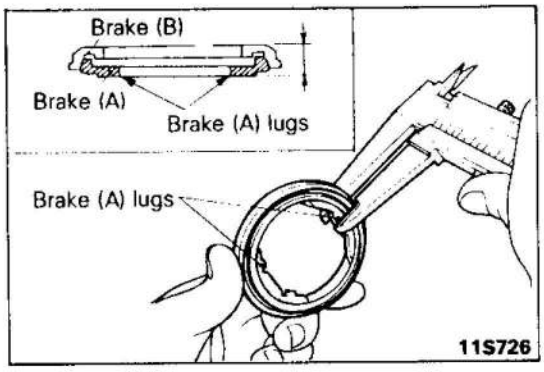


18. REMOVAL OF SLIDE GEAR C RING

Push the cam in and remove the slide gear C ring with the spring compressed.

INSPECTION E26JCAB

- Check the drive gear and slide gear splines for damage.
- Check the cam portion of retainer (A) for wear and damage.
- Check the cam for wear and damage.
- Check the slide gear and housing tooth surfaces for damage.
- Check the retainer B and housing contact surfaces for wear and damage.



BRAKE ASSEMBLY THICKNESS

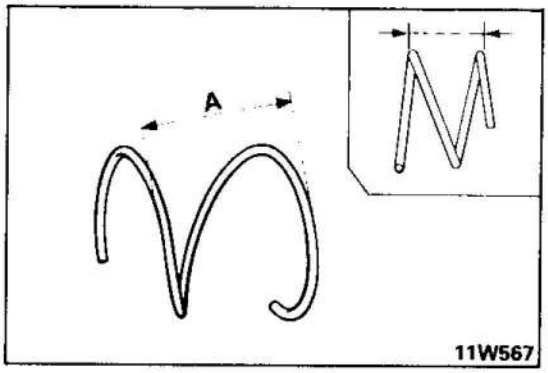
Check the brake assembly thickness by following the steps below.

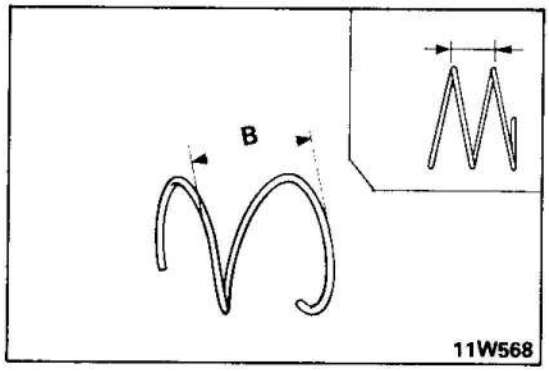
(1) Assembly brake (A) and brake (B) and then use slide calipers to measure the thickness of the assembly at the two lugs on brake (A).

Standard value: 10.5 mm (0.413 in.)
Limit: 9.6 mm (0.378 in.)

NOTE
Measure each side separately.

(2) If the measured value is below the limit, replace brake (A) and brake (B) as a set.





DETERIORATION OF RETURN SPRING

Check the return spring for deterioration by following the steps below.

(1) Measure the dimension A shown in illustration at the opposite side of spring end.

Limit: 35 mm (1.38 in.)

Caution
To measure the dimension A shown in illustration, measure the dimension from the outermost extremity of one wire diameter to that of the other wire diameter.

(2) If the measured value is below the limit, replace the spring.

DETERIORATION OF SHIFT SPRING

Check the shift spring for detrioration by following the steps below.

(1) Measure the dimension B shown in illustration at the opposite side of spring end.

Limit: 30 mm (1.18 in.)

Caution
To measure the dimension B shown in illustration, measure the dimension from the outermost extremity of one wire diameter to that of the other wire diameter.

(2) If the measured value is below the limit, replace the spring.

SERVICE POINTS OF REASSEMBLY E26JDAB

Apply the specified grease to the attaching surfaces of all components.

Specified grase: Multipurpose grease SAE J310, NLGI No. 2

13. APPLICATION OF GREASE TO RETAINER (B)

Pack the grooves of retainer (B) with the specified grease.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2

12. INSTALLATION OF RETURN SPRING

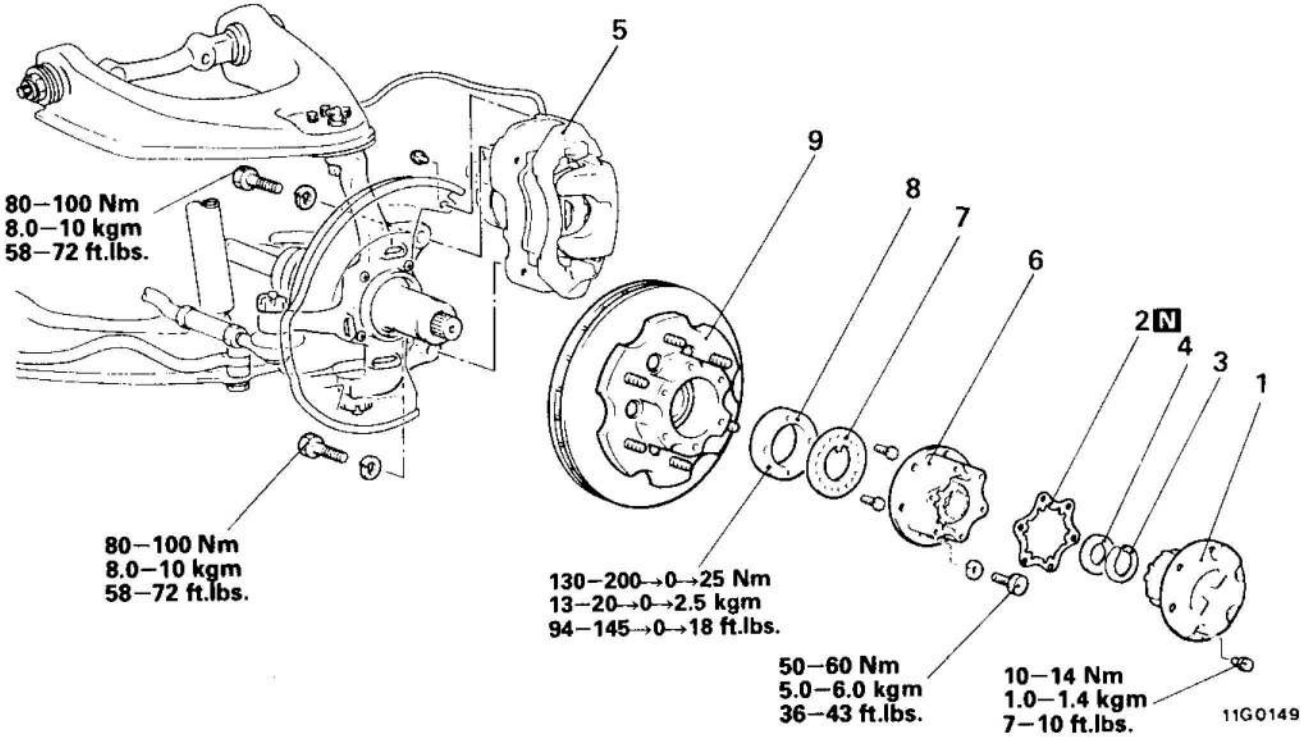
Install the return spring with the smaller coil diameter side toward the cam.

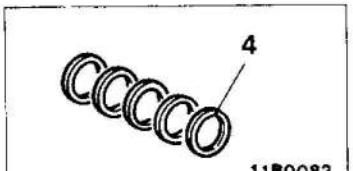
5. APPLICATION OF GREASE TO BRAKE (B)

Pack the grooves of brake (B) with the specified grease.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2

REMOVAL AND INSTALLATION (Vehicles with Manual Free-Wheeling Hubs) E26IA--



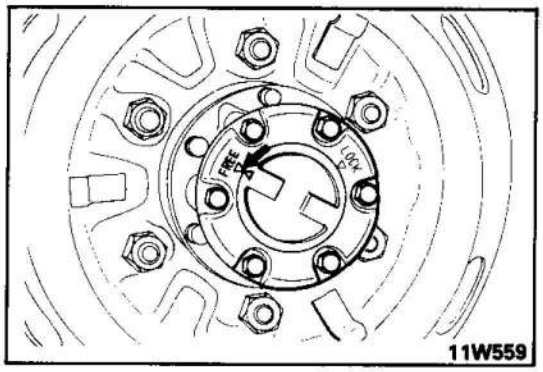


Front hub shim set

Removal steps

- ◆◆ 1. Free-wheeling hub cover
- 2. Gasket
- ◆◆ Adjustment of drive shaft axial play
- ◆◆ 3. Snap ring
- 4. Shim
- ◆◆ 5. Caliper assembly
- ◆◆ 6. Manual free-wheeling hub assembly
- 7. Lock washer
- ◆◆ Adjustment of wheel bearing preload
- ◆◆ 8. Lock nut
- ◆◆ 9. Front hub assembly

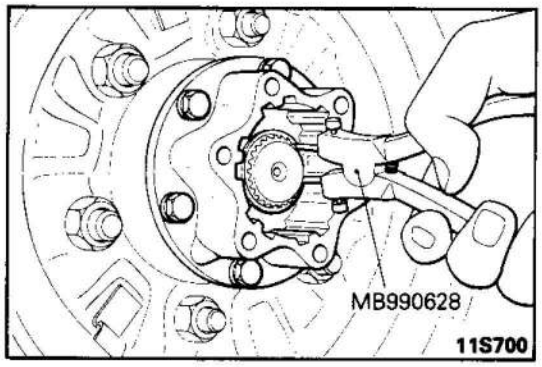
NOTE
(1) Reverse the removal procedures to reinstall.
(2) ◆◆ : Refer to "Service Points of Removal".
(3) ◆◆ : Refer to "Service Points of Installation".
(4) N : Non-reusable parts



SERVICE POINTS OF REMOVAL E26IBAE

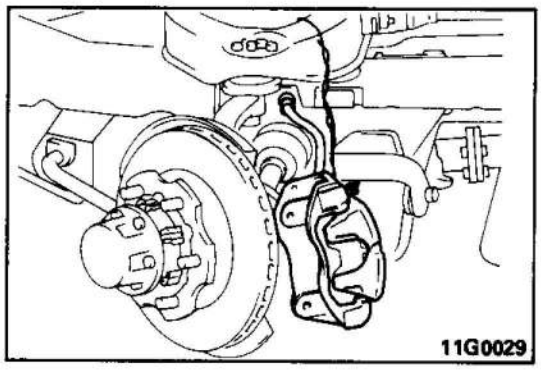
1. REMOVAL OF FREE-WHEELING HUB COVER

(1) Set the control handle to the FREE position.
(2) Remove the free-wheeling hub cover.



3. REMOVAL OF SNAP RING

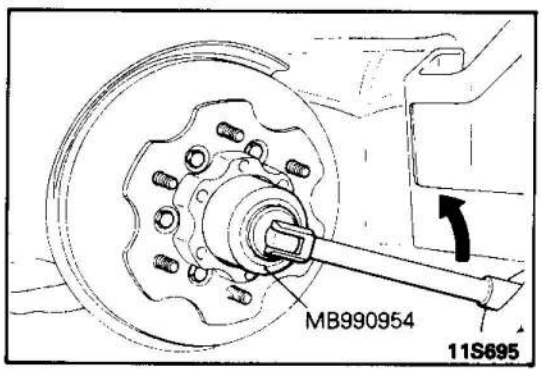
Using a snap ring pliers or special tool, remove the snap ring from the diver shaft.



5. REMOVAL OF CALIPER ASSEMBLY

(1) Remove the caliper assembly with the brake hose connected.
(2) Use wire to suspend the caliper assembly from the upper arm so that the caliper assembly won't fall.

Caution
Do not twist the brake hose.



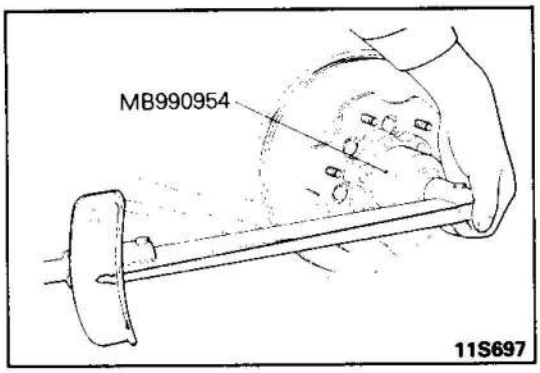
8. REMOVAL OF LOCK NUT/9. FRONT HUB ASSEMBLY

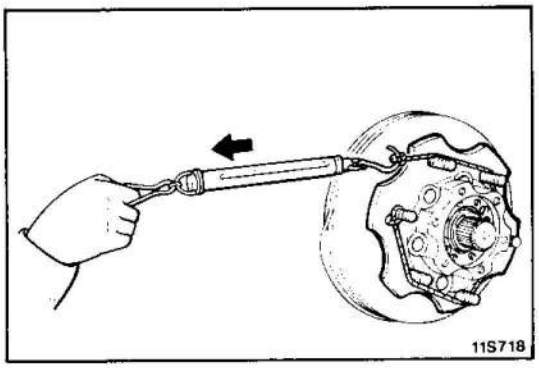
(1) After the lock washer has been removed, remove the lock nut with the special tool.
(2) Remove the front hub assembly from the knuckle together with the inner and outer bearings.

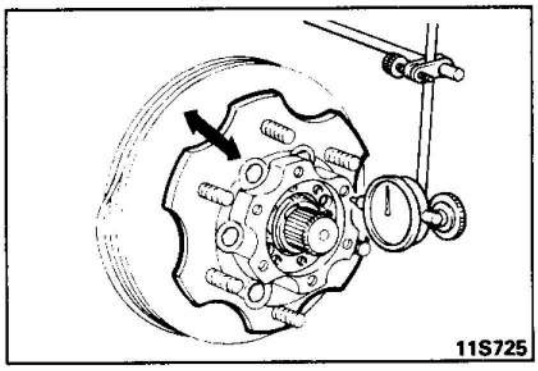
Caution
Do not drop outer bearing inner race.

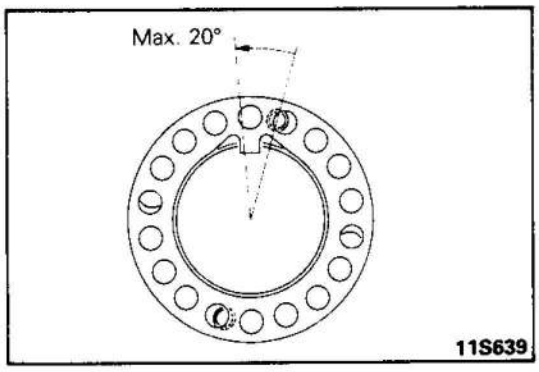
INSPECTION E26ICAD

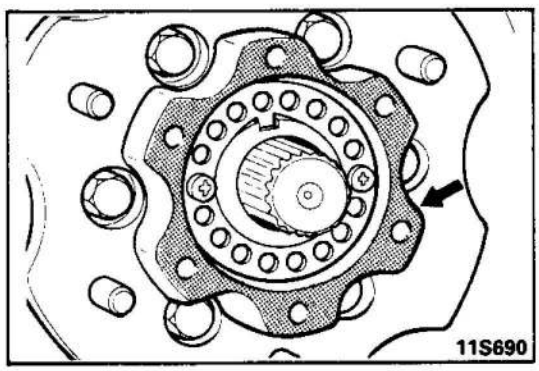
- Check the wheel bearing for seizure, discoloration and rough raceway surface.
- Check the front hub for cracks.
- Check the oil seal for cracks and damage.
- Check for loose brake disc and front hub bolts.
- Check grease in inner front hub.











SERVICE POINTS OF INSTALLATION E26IDAG

- **ADJUSTMENT OF WHEEL BEARING PRELOAD**

(1) Using the special tool, tighten the lock nut by the following procedure.

Tighten to 130–200 Nm (13–20 kgm, 94–145 ft.lbs.)
↓
Loosen to 0 Nm (0 kgm, 0 ft.lbs.)
↓
Retighten to 25 Nm (2.5 kgm, 18 ft.lbs.)

(2) Loosen the lock nut approximately 30 to 40 degrees to adjust the front hub's turning resistance and play in the axial direction so that they agree with the standard values.

Standard value (front hub turning resistance):
0.3–1.3 Nm (3–13 kgcm, 2.6–11.3 in.lbs.)
[Spring scale reading]
5–18 N (0.5–1.8 kg, 1.1–4.0 lbs.)

NOTE
Note required measurements to check drive resistance of auto free-wheel hub.

Standard value (front hub end play):
0.05 mm (0.0020 in.) or less

(3) Adjust locknut when measurements are not within standard values.

NOTE
If adjustment is not possible, the bearing may be incorrectly installed; check and, if necessary, repair. The lubrication condition should also be checked.

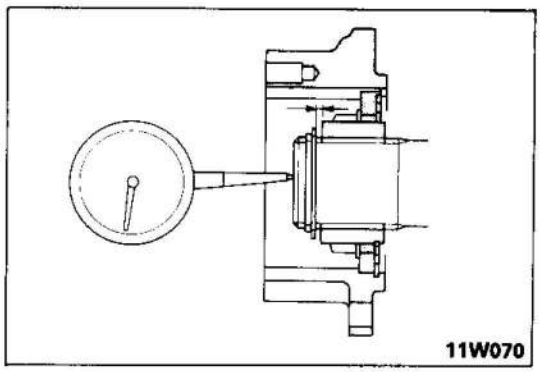
(4) Mount the lock washer. If the lock washer holes do not align with the lock nut holes, loosen the lock nut (no more than 20 degrees) to align them.

6. INSTALLATION OF MANUAL FREE-WHEELING HUB ASSEMBLY

Apply a coating of specified sealant, equally all around and without any missed spots, to the free wheeling hub body assembly and front hub contact surfaces.

Specified sealant: 3M ATD Part No.8661, 8663
or equivalent

Caution
Make sure that there is no excess specified sealant on the hub outside surface.



- **ADJUSTMENT OF DRIVE SHAFT AXIAL PLAY**

After assembly in the order of the shim and then the snap ring, check the drive shaft axial play by the following procedure.

(1) Set the dial gauge as shown in the figure; then move the drive shaft in the axial direction and measure the play.

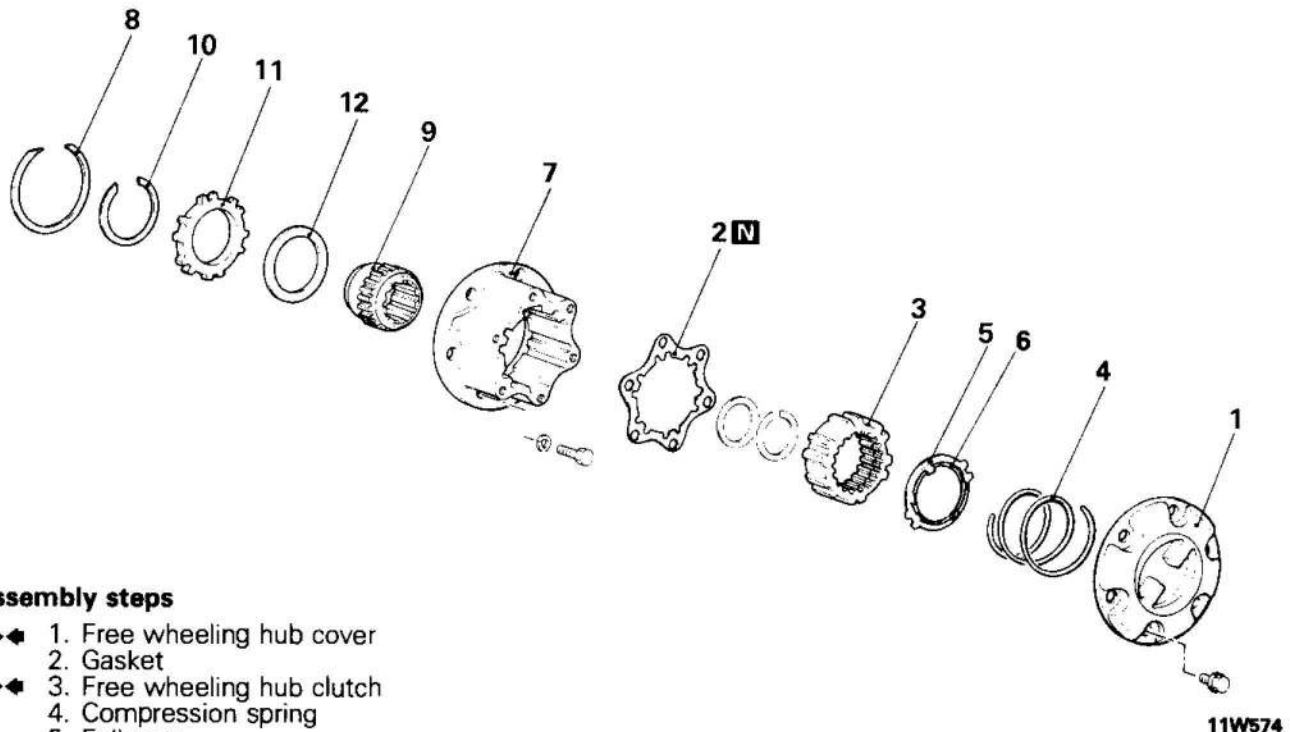
Standard value: 0.4–0.7 mm (0.016–0.028 in.)

(2) If the play is out of standard value, adjust by adding or removing shims.

DISASSEMBLY AND REASSEMBLY (Front Axle Hub) E26II--

Refer to P. 26–30.

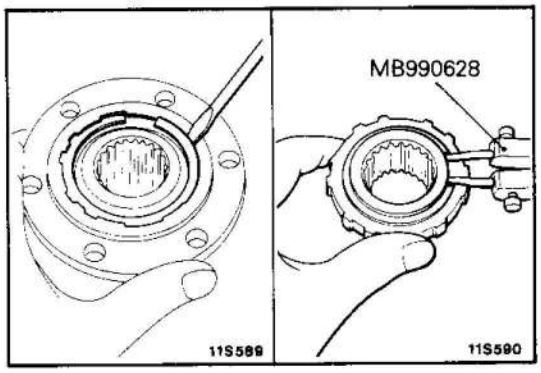
DISASSEMBLY AND REASSEMBLY (Manual Free-Wheeling Hub) E26JA--



Disassembly steps

- ◆◆ 1. Free wheeling hub cover
- 2. Gasket
- ◆◆ 3. Free wheeling hub clutch
- 4. Compression spring
- 5. Follower
- 6. Tension spring
- ◆◆ 7. Free wheeling hub body
- ◆◆ 8. Wheel snap ring
- ◆◆ 9. Inner hub
- ◆◆ 10. Shaft snap ring
- ◆◆ 11. Free wheeling hub ring
- 12. Spacer

NOTE
(1) Reverse the disassembly procedures to reassemble.
(2) ◆◆ : Refer to "Service Points of Disassembly".
(3) ◆◆ : Refer to "Service Points of Reassembly".
(4) N : Non-reusable parts



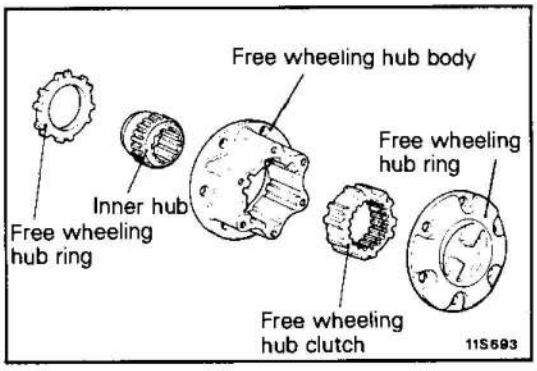
SERVICE POINTS OF DISASSEMBLY E26JB8B

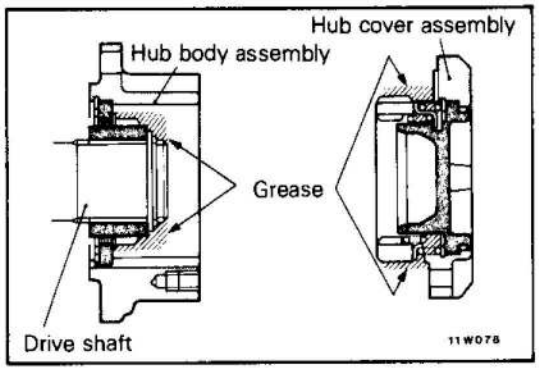
8. REMOVAL OF WHEEL SNAP RING/10. SHAFT SNAP RING

(1) Using a screwdriver, remove the snap ring and remove the inner hub from the free wheeling hub body.
(2) Remove the snap ring from the inner hub with a snap ring pliers or special tool

INSPECTION E26JC8A

- Check the free wheeling hub ring, inner hub, free wheeling hub body, and clutch for wear or seizure.
- Check the gasket for damage.
- Check the compression spring and tension spring for deterioration.





SERVICE POINTS OF REASSEMBLY E26JD8B

11. APPLICATION OF GREASE TO FREE WHEELING HUB RING/9. INNER HUB/7. FREE WHEELING HUB BODY/3. FREE WHEELING HUB CLUTCH/1. FREE WHEELING HUB COVER

(1) Apply the specified grease to the entire periphery of the free wheeling hub ring, inner hub and free wheeling hub clutch, free wheeling hub cover and the inside of the free wheeling hub body.

Specified grease: Multipurpose grease SAE J310, NLGI No .2

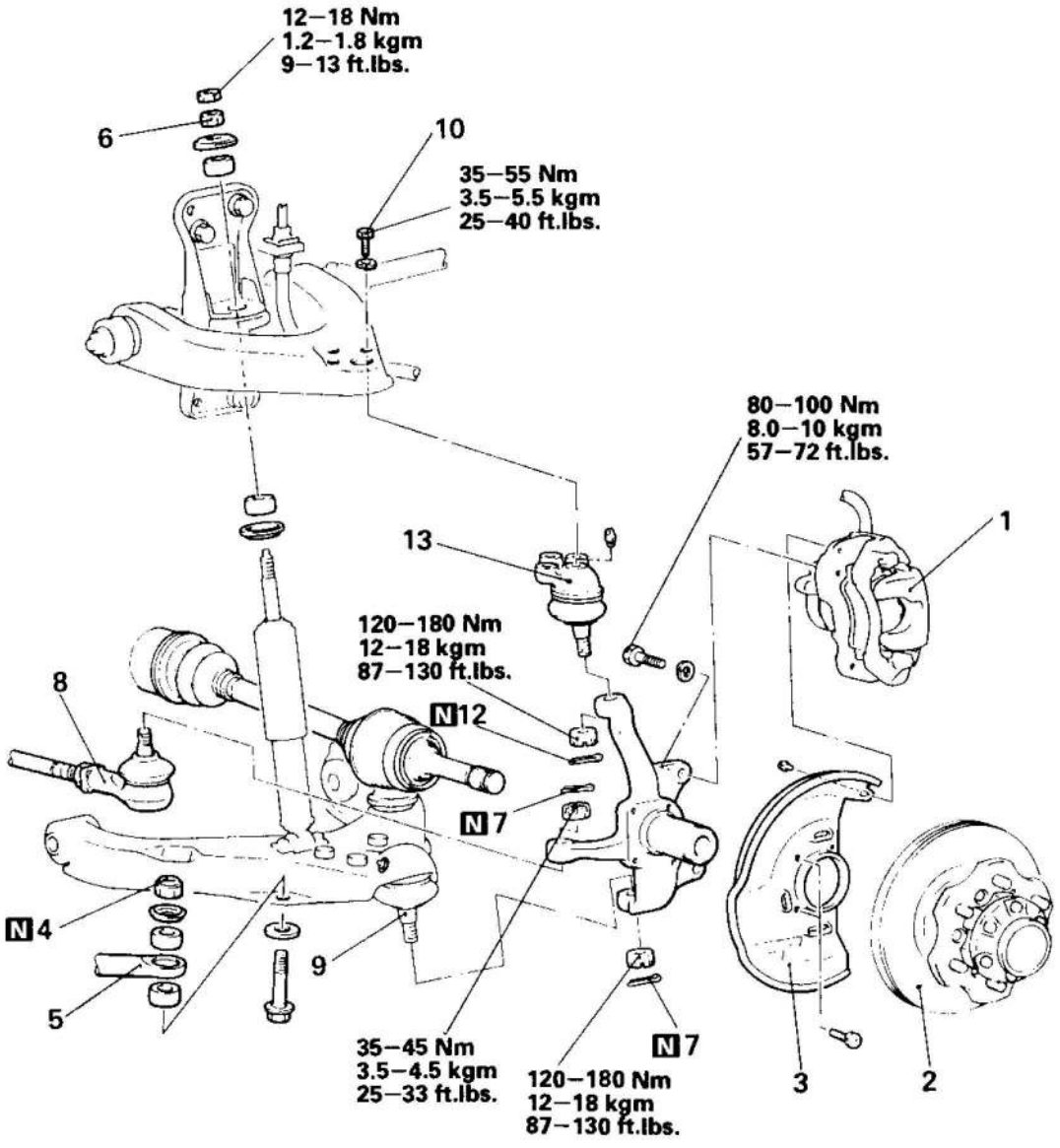
(2) Check to be sure that the hub body assembly and hub cover assembly are coated (at the positions shown in the figure) with a sufficient coating of the specified grease.
(3) Add more grease if necessary.

NOTE
A liberal amount of grease should be applied, especially when grease is wiped away or a new free-wheeling hub is installed.

KNUCKLE

E26NA--

REMOVAL AND INSTALLATION

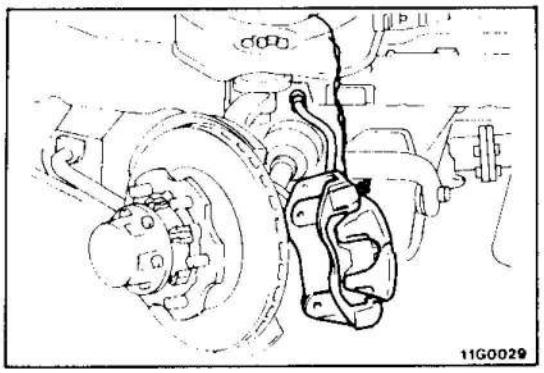


11G0137

Removal steps

◆◆ 1. Caliper assembly
◆◆ ▶◀ 2. Front axle hub and free-wheeling hub
3. Dust cover
▶◀ 4. Self-locking nut
5. Connection of stabilizer bar and lower arm
▶◀ 6. Shock absorber installing nut
7. Split pin
◆◆ 8. Connection of tie rod assembly and knuckle
◆◆ 9. Connection of lower ball joint and knuckle
10. Bolt
◆◆ ▶◀ 11. Knuckle
12. Split pin
◆◆ 13. Upper ball joint

NOTE
(1) Reverse the removal procedures to reinstall.
(2) ◆◆ : Refer to "Service Points of Removal".
(3) ▶◀ : Refer to "Service Points of Installation".
(4) N : Non-reusable parts



SERVICE POINTS OF REMOVAL E26NBAC

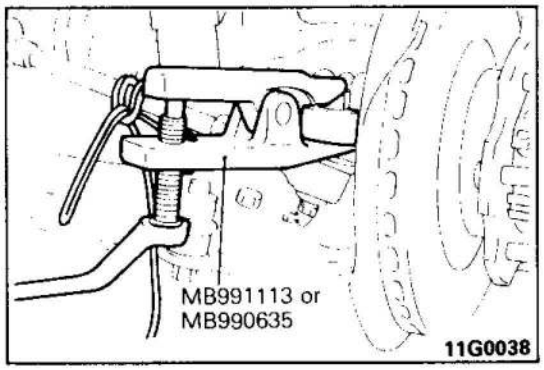
1. REMOVAL OF CALIPER ASSEMBLY

(1) Remove the front brake assembly with the brake hose connectecd.
(2) Use wire to suspend the front brake assembly from the upper arm so that the front brake assembly won't fall.

Caution
Do not twist the brake hose.

2. REMOVAL OF FRONT AXLE HUB AND FREE WHEELING HUB

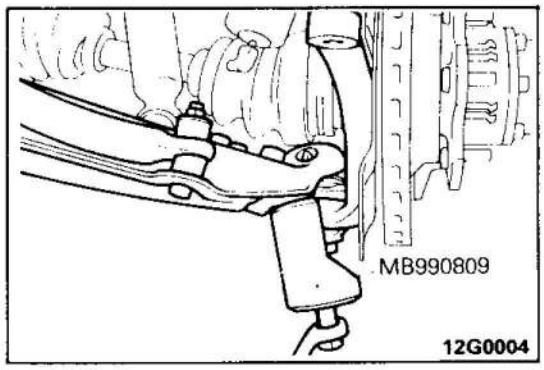
For models equipped with the automatic free-wheeling hub, refer to page 26–26; for models equipped with the manual free-wheeling hub, refer to page 26–36.



8. DISCONNECTION OF TIE ROD ASSEMBLY FROM KNUCKLE

Disconnect the tie rod from the knuckle by using the special tool.

Caution
1. Use cord to bind the special tool closely so it won't become separated.
2. The nut should be loosened only, not removed.

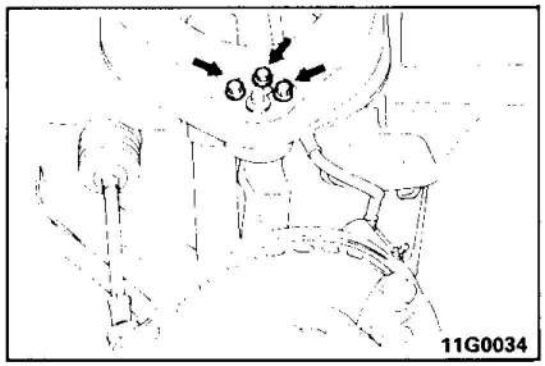


9. DISCONNECTION OF LOWER BALL JOINT FROM KNUCKLE

Using the special tool, disconnect the lower ball joint from the knuckle.

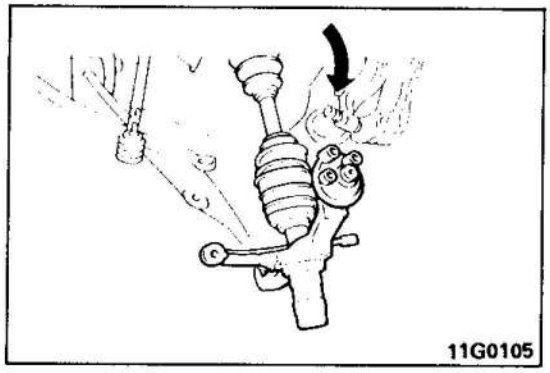
Caution
The nut should be loosened only, not removed.

NOTE
Leave nut on lower ball joint until knuckle and upper arm are disconnected.



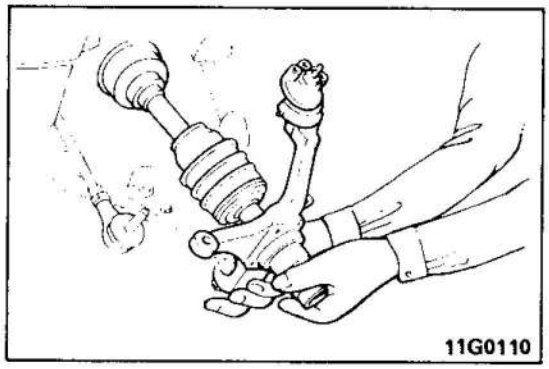
11. REMOVAL OF KNUCKLE

(1) Remove upper ball joint installing bolt.



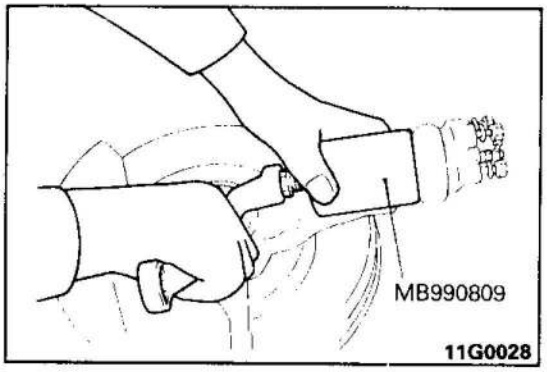
(2) Press lower arm downward and remove upper knuckle towards you.

Caution
Do not damage upper ball joint nipple with upper arm.



(3) Slightly remove drive shaft from knuckle and remove lower ball joint and knuckle holding nut.
(4) Disconnect knuckle and lower ball joint.
(5) Remove knuckle from drive shaft assembly.

Caution
Do not damage knuckle oil seal with drive shaft spline.



13. REMOVAL OF UPPER BALL JOINT

(1) Loosen slotted nut.

Caution
Loosen nut but do not remove.

(2) Disconnect upper ball joint and knuckle with special tool.

INSPECTION E26NCAB

- Check the needle bearing for wear, damage or discoloration.
- Check the knuckle for cracks or bend.
- Check the knuckle spindle for wear or damage.
- Check the oil seal for wear or deterioration.

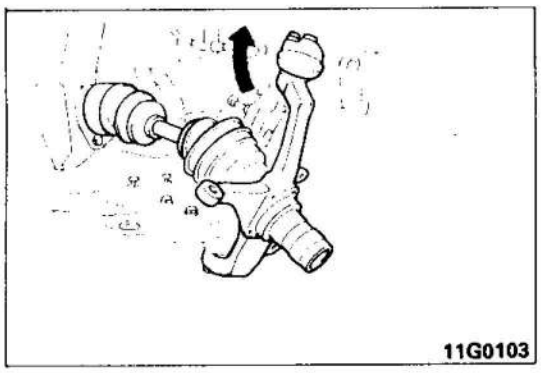
SERVICE POINTS OF INSTASLLATION E26NGAE

11. INSTALLATION OF KNUCKLE

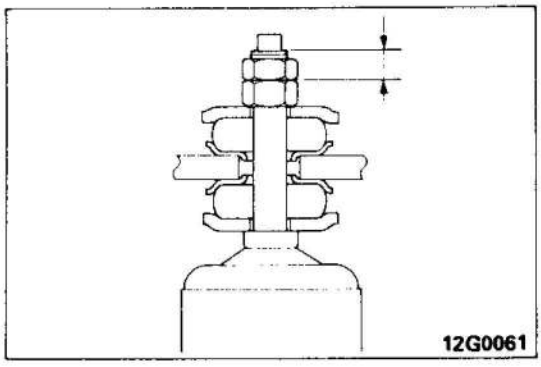
(1) Install upper ball joint on knuckle. Temporarily tighten slotted nut.
(2) Insert knuckle into drive shaft.

Caution
Do not damage oil seal with drive shaft spline.

(3) Assemble knuckle and lower ball joint. Temporarily tighten slotted nut.



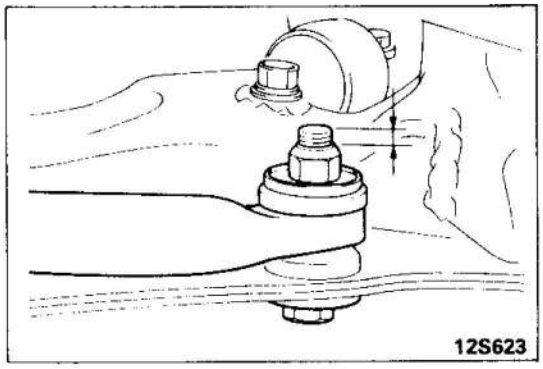
(4) Push up lower arm to lock upper ball joint to upper arm.
(5) Tighten upper and lower ball joint connecting nut to specified torque.



6. TIGHTENING OF SHOCK ABSORBER INSTALLING NUT

Install shock absorber to bracket to set the illustrated measurement at the standard value.

Standard value: 7–8 mm (0.28–0.31 in.)



4. TIGHTENING OF SELF-LOCKING NUT

Tighten the self-locking nut and adjust the installation measurement of stabilizer bar bolt edge to the standard value.

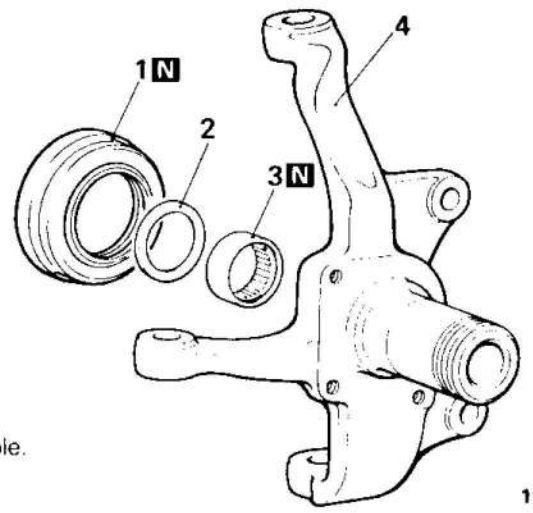
Standard value: 8–10 mm (0.31–0.39 in.)

2. INSTALLATION OF FRONT AXLE HUB AND FREE WHEELING HUB

For models equipped with the automatic free-wheeling hub, refer to page 26–26; for models equipped with the manual free-wheeling hub, refer to page 26–36.

DISASSEMBLY AND REASSEMBLY

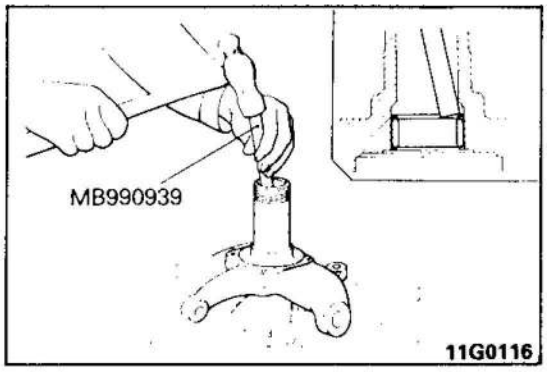
E26NJ--



Disassembly steps

- ◆◆ 1. Oil seal
- ◆◆ 2. Spacer
- ◆◆ ◆◆ 3. Needle bearing
- 4. Knuckle

NOTE
(1) Reverse the disassembly procedures to reassemble.
(2) ◆◆: Refer to "Service Points of Diassembly".
(3) ◆◆: Refer to "Service Points of Reassembly".
(4) N : Non-reusable parts

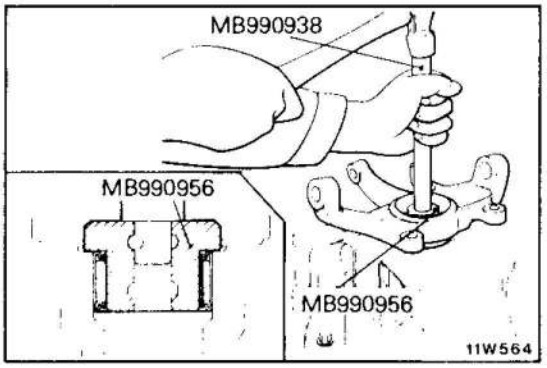


SERVICE POINTS OF DISASSEMBLY E26NKAA

3. REMOVAL OF NEEDLE BEARING

(1) Remove the oil seal and take out the spacer.
(2) Drive out the needle bearing by tapping needles uniformly.

Caution
Once removed, the needle bearing must not be re-used.



SERVICE POINTS OF REASSEMBLY E26NMAA

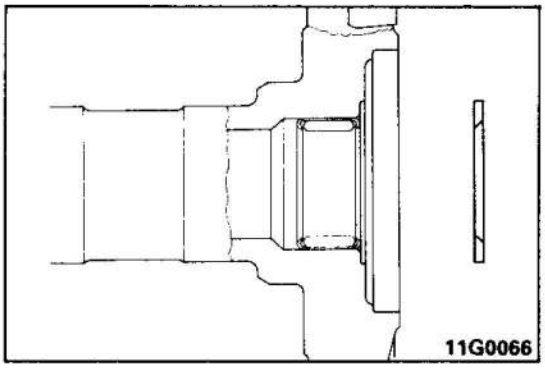
3. INSTALLATION OF NEEDLE BEARING

(1) Apply the specified grease to the roller surface of the new needle bearing.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2

(2) Press-fit the needle bearing by using the special tools, until it is flush with the knuckle end face.

Caution
Use care to prevent driving the needle bearing too far in.

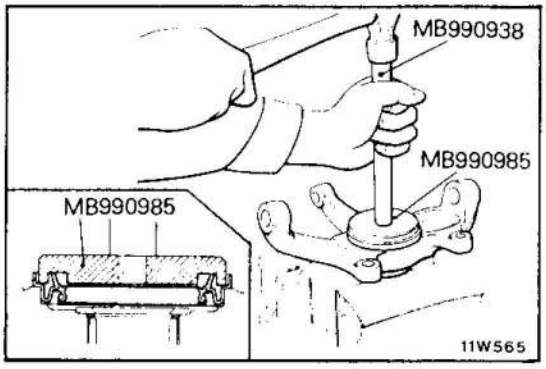


2. INSTALLATION OF SPACER

(1) Apply the specified grease to the knuckle attaching surface of the spacer.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2

(2) Install the spacer to the knuckle with the chamfered side toward the center or vehicle.



1. INSTALLATION OF OIL SEAL

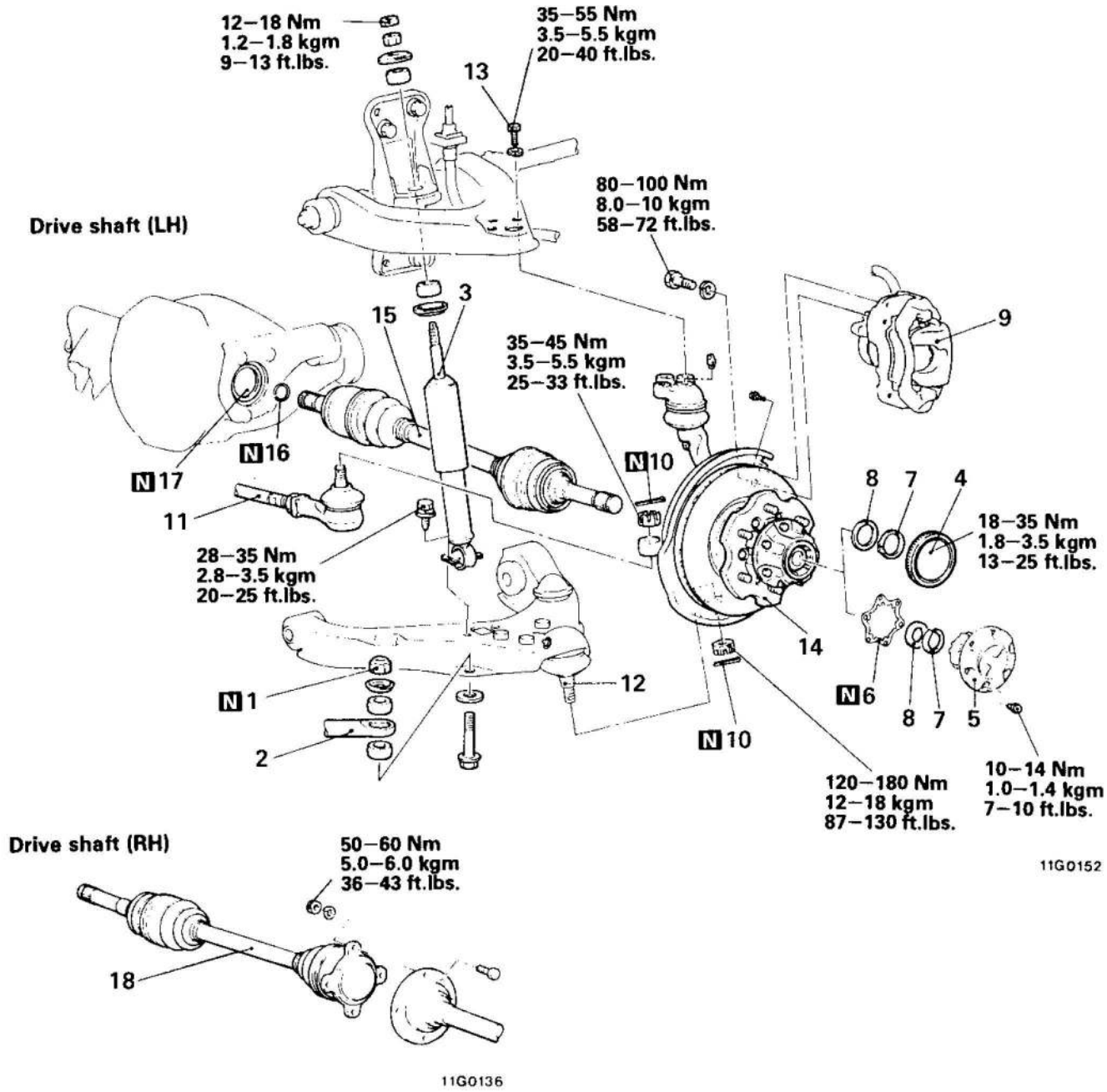
(1) Press-fit the new oil seal by using the special tools, until it is flush with the knuckle end face.
(2) Pack the specified grease in the oil seal inside and lip.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2

DRIVE SHAFT

E26QA--

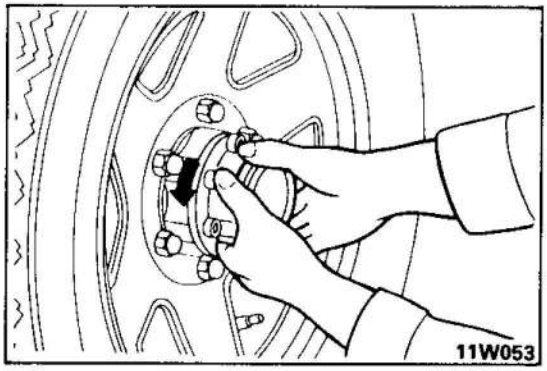
REMOVAL AND INSTALLATION



Removal steps

1. Self-locking nut
◆◆ 2. Connection of stabilizer bar and lower arm
◆◆ 3. Shock absorber
◆◆ 4. Cover (automatic free-wheeling hub)
◆◆ 5. Free-wheeling hub cover (manual free-wheel hub)
6. Gasket (manual free-wheeling hub)
◆◆ Adjustment of axial play of drive shaft
◆◆ 7. Snap ring
8. Shim
◆◆ 9. Caliper assembly
10. Split pins
◆◆ 11. Connection of tie rod assembly and knuckle
◆◆ 12. Connection of lower ball joint and knuckle
◆◆ 13. Upper ball joint installing bolts
◆◆ ◆◆ 14. Knuckle and front hub assembly
◆◆ ◆◆ 15. Left drive shaft
16. Circlip
◆◆ 17. Oil seal
18. Right drive shaft

NOTE
(1) Reverse the removal procedures to reinstall.
(2) ◆◆ : Refer to "Service Points of Removal".
(3) ◆◆ : Refer to "Service Points of Installation".
(4) N : Non-reusable parts



SERVICE POINTS OF REMOVAL N020BAC

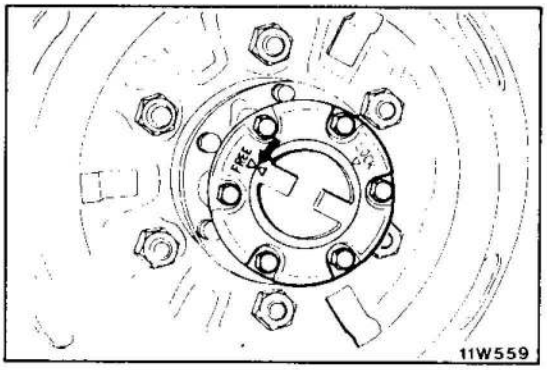
4. REMOVAL OF COVER (Automatic free wheeling hub)

(1) Place the free-wheeling hub in the free condition.

NOTE
The free condition can be obtained by shifting the transfer shift lever to the 2H position and then moving in reverse for 1 to 2 meters. (3.3 to 6.5 ft.)

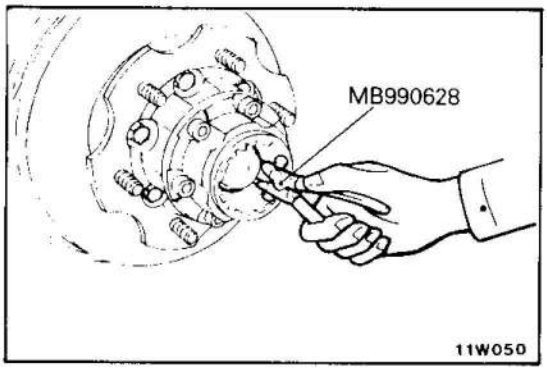
(2) Remove the automatic free wheeling hub cover.

NOTE
When the cover cannot be loosened by hand, use an oil filter wrench with a protective cloth in between not to damage the cover.



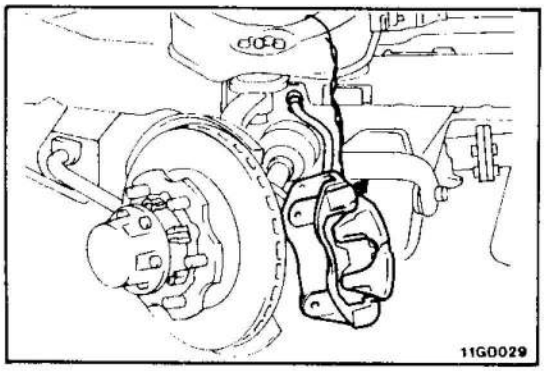
5. REMOVAL OF FREE WHEELING HUB COVER (Manual free wheeling hub)

(1) Set the control handle to the FREE position.
(2) Remove the free wheeling hub cover.



7. REMOVAL OF SNAP RING

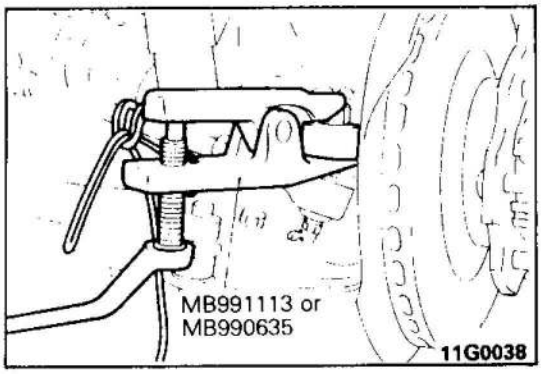
Using a snap ring pliers or special tool, remove the snap ring from the drive shaft.



9. REMOVAL OF CALIPER ASSEMBLY

(1) Remove the caliper assembly with the brake hose connected.
(2) Use wire to suspend the caliper assembly from the upper arm so that the caliper assembly won't fall.

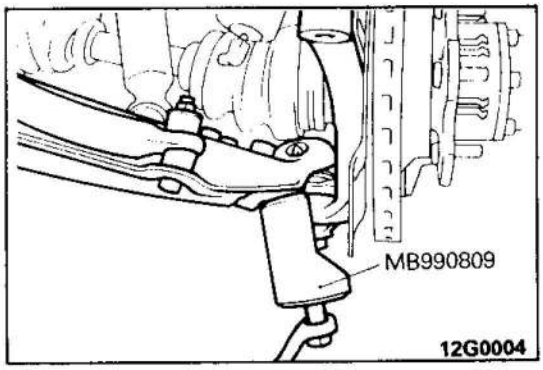
Caution
Do not twist the brake hose.



11. DISCONNECT OF TIE ROD ASSEMBLY FROM KNUCKLE

Disconnect the tie rod from the knuckle by using the special tool.

Caution
1. **Use cord to bind the special tool closely so it won't become separated.**
2. **The nut should be loosened only, not removed.**

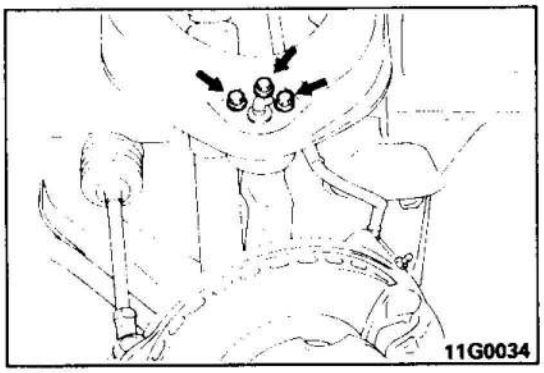


12. DISCONNECTION OF LOWER BALL JOINT FROM KNUCKLE

Using the special tool, disconnect the lower ball joint from the knuckle.

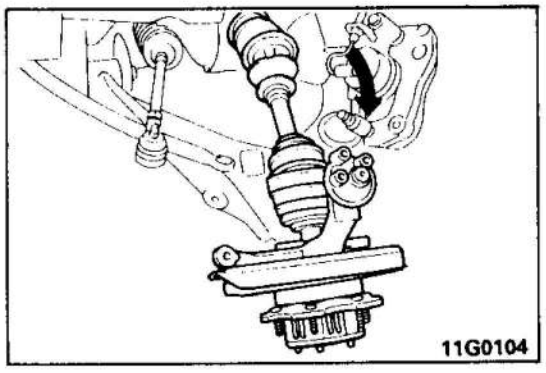
Caution
The nut should be loosened only, not removed.

NOTE
Leave nut on lower ball joint until knuckle and upper arm are disconnected.



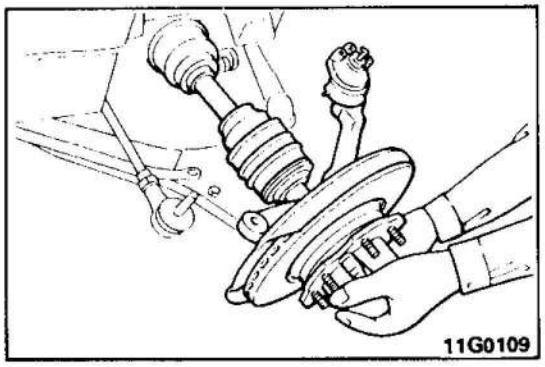
13. REMOVAL OF UPPER BALL JOINT INSTALLING BOLT

(1) Remove upper ball joint holding bolts.



(2) Press down lower arm and remove upper knuckle towards you.

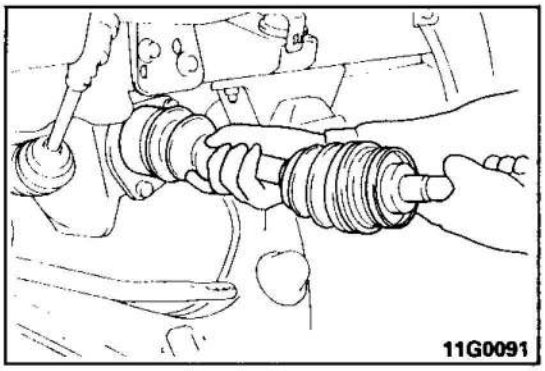
Caution
Do not damage upper ball joint nipple with upper arm.



14. REMOVAL OF KNUCKLE AND FRONT HUB ASSEMBLY

(1) Slightly back off drive shaft from knuckle. Remove lower ball joint and knuckle holding nut.
(2) Disconnect knuckle and lower ball joint.
(3) Remove knuckle and front hub assembly from drive shaft assembly.

Caution
Do not damage knuckle oil seals with drive shaft spline.



15. REMOVAL OF LEFT DRIVE SHAFT

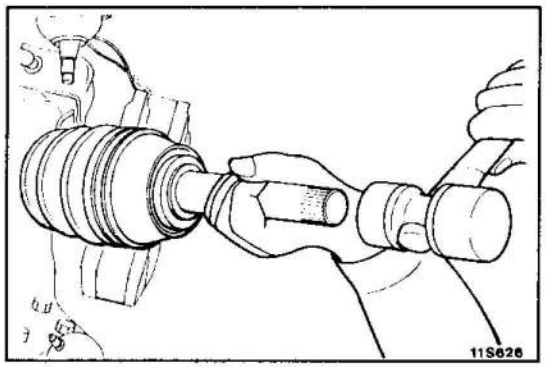
Pull the drive shaft out from the differential carrier.

Caution
When pulling the drive shaft out from the differential carrier, be careful that the spline part of the drive shaft does not damage the oil seal.

INSPECTION E26QCAB

- Check the boot for damage or deterioration.
- Check the ball joint for operating condition and excessive looseness.
- Check the splines for wear or damage.
- Check the differential carrier oil seal (LH) for damaged.

SERVICE POINTS OF INSTALLATION E26QDAD



17. PRESS FITTING OF OIL SEAL

Refer to P. 26–24.

15. INSTALLATION OF LEFT DRIVE SHAFT

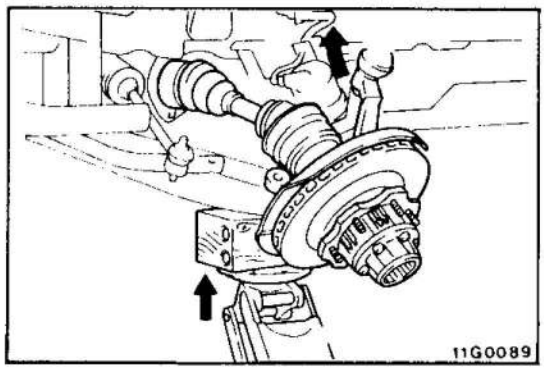
Drive the drive shaft into the front differential carrier with a plastic hammer.

Caution
Be careful not to damage the lip of the oil seal. Replace the circlip which is attached to the D.O.J. side spline part with a new one.

NOTE
The drive shaft diameter of DOJ assembly serrations differ in P23V, P23W and P24V, P24W, P25V, P25W.

Identification
Drive shaft:
P24V, P24W, P25V, P25W: DOJ boots band (small) painted yellow all around

Circlips:
P23V, P23W: Clip outer diameter 27.0 mm (1.06 in.)
P24V, P24W, P25V, P25W: Clip outer diameter 29.7 mm (1.17 In.)

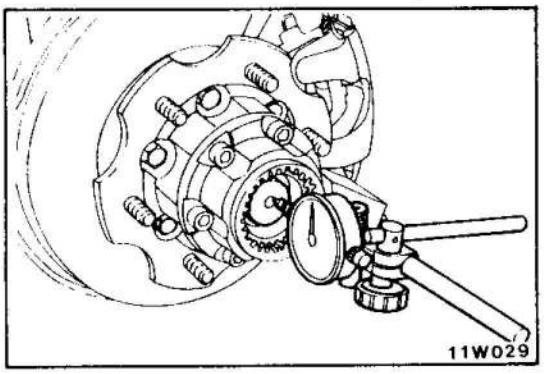


14. INSTALLATION OF KNUCKLE AND FRONT HUB ASSEMBLY

(1) Insert knuckle and front hub assembly to drive shaft.

Caution
Do not damage knuckle oil seal with drive shaft spline.

(2) Assemble knuckle and lower ball joint and temporarily tighten slotted nut.
(3) Press up lower arm and lock upper ball joint onto upper arm.
(4) Tighten upper and lower ball joint slotted nuts to specified torque.



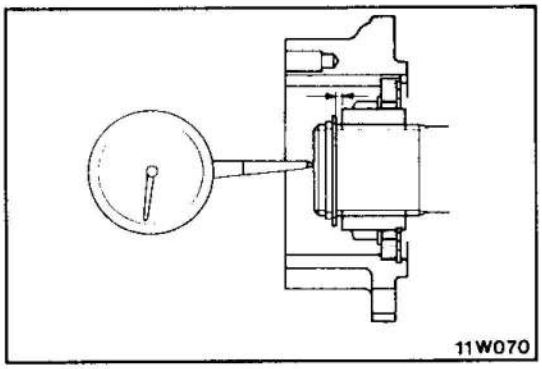
- **ADJUSTMENT OF DRIVE SHAFT END PLAY**
  Vehicles with automatic free-wheeling hubs

(1) Rotate the drive shaft forward, and backward and then set the drive shaft to the position (the position where end play is maximum) mid-way between where the rotation feels "heavy" for each (where there is a stopping feeling.)

(2) Set the dial gauge as shown in the figure; then move the drive shaft in the axial direction and measure the play.

Standard value: 0.2–0.5 mm (0.008–0.020 in.)

(3) If the play is out of standard value, adjust by adding or removing shims.

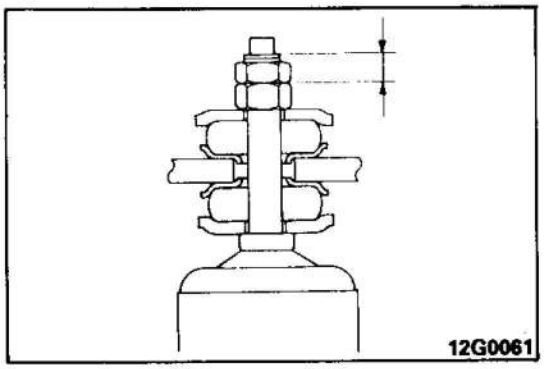


Vehicles with manual free-wheeling hubs.

(1) Set the dial gauge as shown in the figure; then move the drive shaft in the axial direction and measure the play.

Standard value: 0.2–0.5 mm (0.008–0.020 in.)

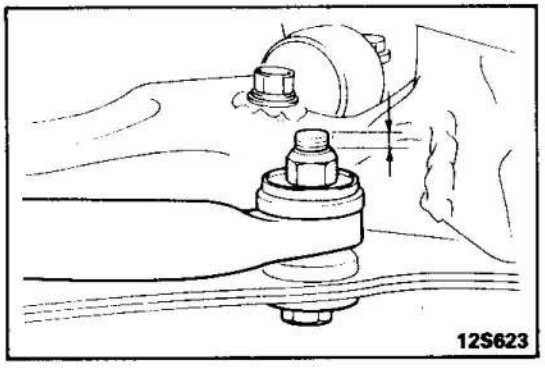
(2) If the play is out of standard value, adjust by adding or removing shims.



3. INSTALLATION OF SHOCK ABSORBER

When installing shock absorber to bracket, set the illustrated measurement to the standard value.

Standard value: 7–8 mm (0.28–0.31 in.)



2. CONNECTING STABILIZER BAR AND LOWER ARM

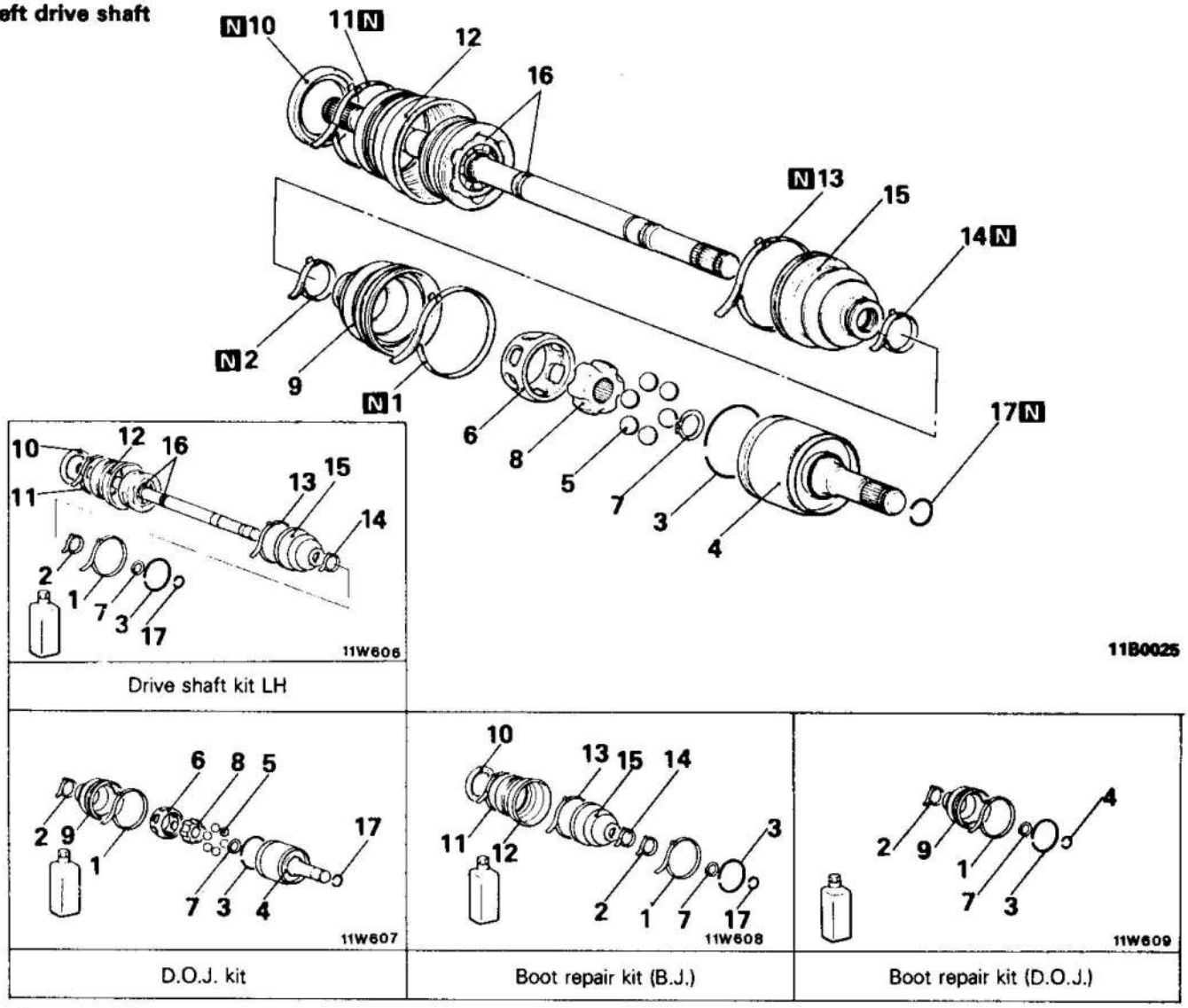
Tighten to have the measurement at stabilizer bar bolt edge at the standard value.

Standard value: 8–10 mm (0.31–0.39 in.)

DISASSEMBLY AND REASSEMBLY

E2608--

Left drive shaft



Drive shaft kit LH

D.O.J. kit

Boot repair kit (B.J.)

Boot repair kit (D.O.J.)

Disassembly steps

1. Boot band B
2. Boot band C
3. Circlip
4. D.O.J. outer race
5. ◆◆ Balls
6. ◆◆ D.O.J. cage
7. Snap ring
8. D.O.J. inner race
9. ◆◆ D.O.J. boot
10. Dust cover
11. Boot protector band
12. ◆◆ Boot protector (Vehicles with boots protector)
13. Boot band A
14. Boot band C
15. ◆◆ B.J. boot
16. Drive shaft and B.J.
17. Circlip

Reassembly steps

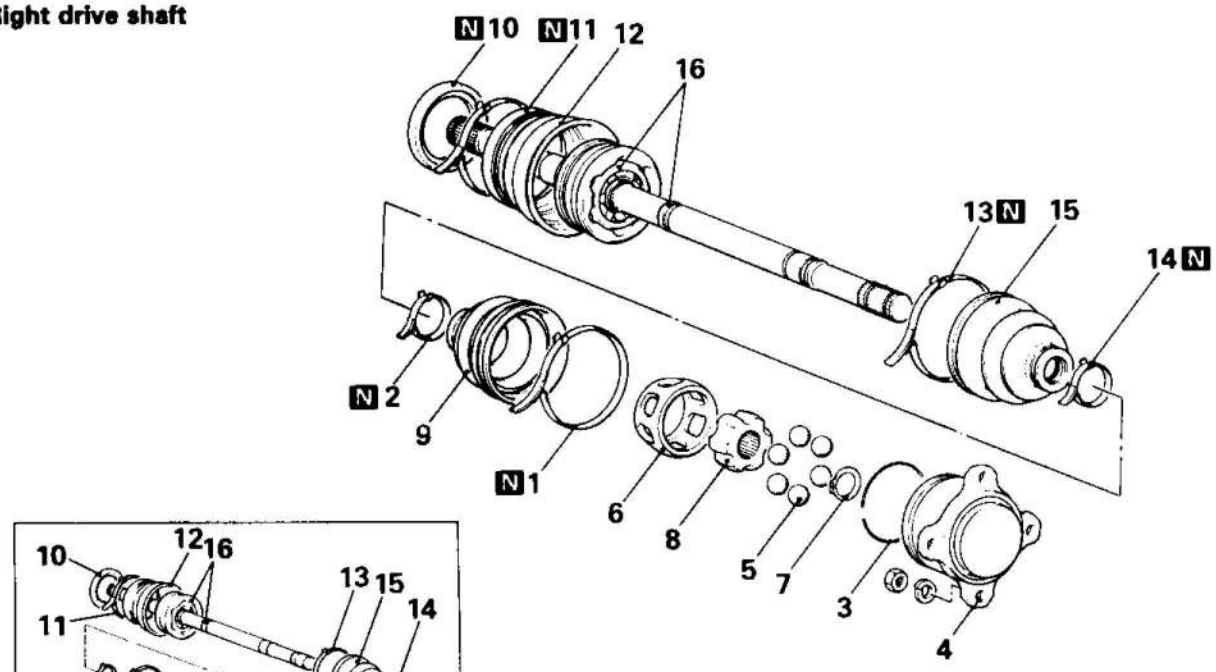
16. Drive shaft and B.J.
- ◆◆ 15. B.J. boot
- ◆◆ 13. Boot band A
- ◆◆ 14. Boot band C
- ◆◆ 2. Boot band C
- ◆◆ 9. D.O.J. boot
- ◆◆ 1. Boot band B
- ◆◆ 6. D.O.J. cage
- ◆◆ 8. D.O.J. inner race

7. Snap ring
- ◆◆ 5. Balls
- ◆◆ 4. D.O.J. outer race

3. Circlip
17. Circlip
- ◆◆ 12. Boot protector
- ◆◆ 11. Boot protector band
- ◆◆ 10. Dust cover

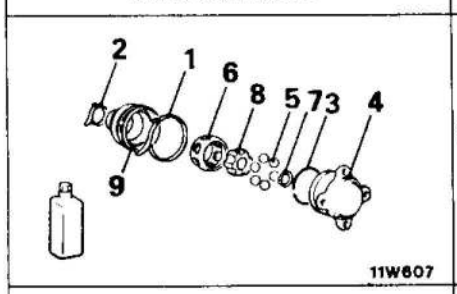
NOTE
(1) ◆◆ : Refer to "Service Points of Disassembly"
(2) ◆◆ : Refer to "Service Points of Reassembly".
(3) N : Non-reusable parts
(4) B.J. : Birfield Joint
(5) D.O.J. : Double Offset Joint

Right drive shaft

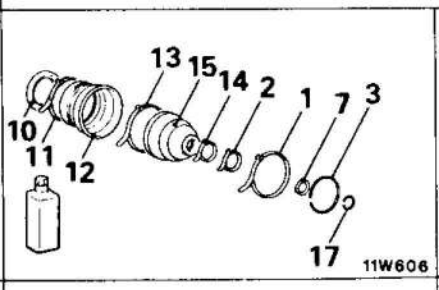


Drive shaft kit RH

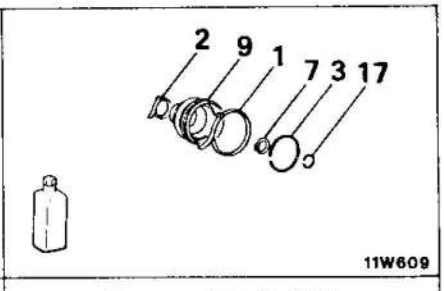
11B0025



D.D.J. kit



Boot repair kit (B.J.)



Boot repair kit (D.O.J.)

Disassembly steps

1. Boot band B
2. Boot band C
3. Circlip
4. D.O.J. outer race
5. ◆◆ Balls
6. ◆◆ D.O.J. cage
7. Snap ring
8. D.O.J. inner race
9. ◆◆ D.O.J. boot
10. Dust cover
11. Boot protector band
12. ◆◆ Boot protector (Vehicles with boots protector)
13. Boot band A
14. Boot band C
15. ◆◆ B.J. boot
16. Drive shaft and B.J.

Reassembly steps

16. Drive shaft and B.J.
- ◆◆ 15. B.J. boot
- ◆◆ 13. Boot band A
- ◆◆ 14. Boot band C
- ◆◆ 2. Boot band C
- ◆◆ 9. D.O.J. boot
- ◆◆ 1. Boot band B
- ◆◆ 6. D.O.J. cage
- ◆◆ 8. D.O.J. inner race

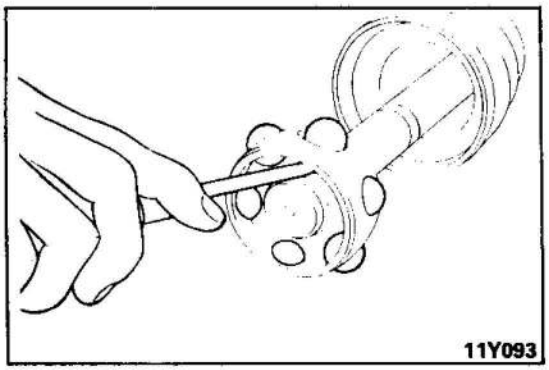
7. Snap ring

- ◆◆ 5. Balls
- ◆◆ 4. D.O.J. outer race

3. Circlip

- ◆◆ 12. Boot protector
- ◆◆ 11. Boot protector band
- ◆◆ 10. Dust cover

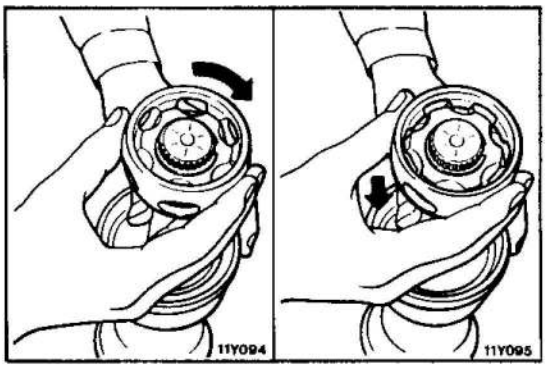
NOTE
(1) ◆◆ : Refer to "Service Points of Disassembly"
(2) ◆◆ : Refer to "Service Points of Reassembly".
(3) N : Non-reusable parts
(4) B.J. : Birfield Joint
(5) D.O.J. : Double Offset Joint



SERVICE POINTS OF DISASSEMBLY E29QFAE

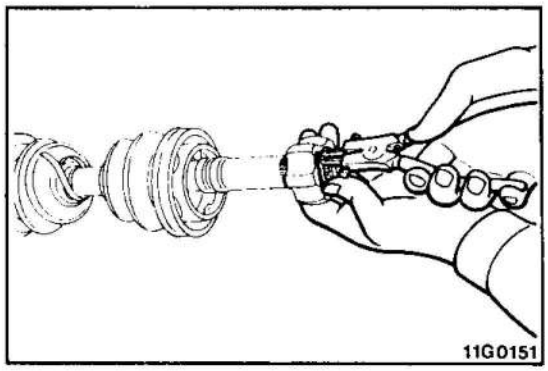
5. REMOVAL OF BALLS

Remove the balls from the D.O.J. cage.

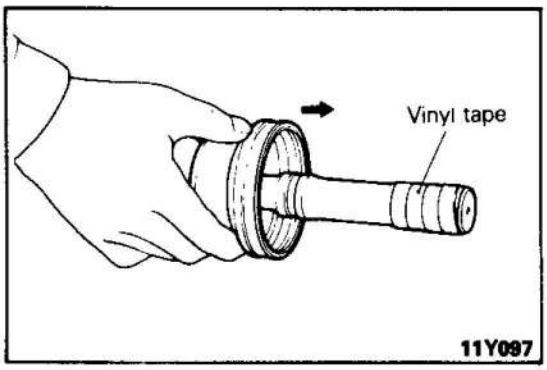


6. REMOVAL OF D.O.J. CAGE

(1) Remove the D.O.J. cage from the D.O.J. inner race in the direction of the B.J.

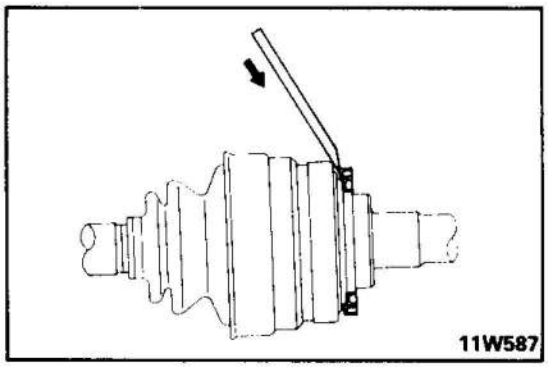


(2) Remove the snap ring from the drive shaft with a snap ring pliers, and then withdraw the D.O.J. Inner race and D.O.J. cage from the drive shaft.



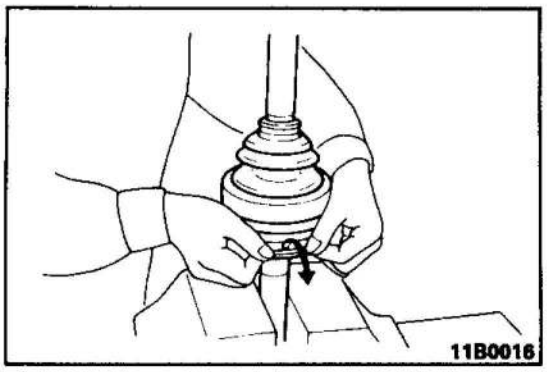
9. REMOVAL OF D.O.J. BOOT

(1) Wrap vinyl tape around the spline part on the D.O.J. side of the drive shaft so that the D.O.J boots are not damaged when they are removed,
(2) Withdraw the D.O.J. boots from the drive shaft.

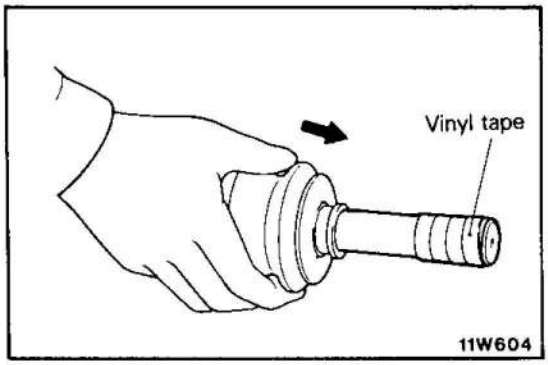


12. REMOVAL OF BOOT PROTECTOR

(1) Remove the dust cover from the drive shaft and B.J.



(2) After extending the folded over part of the boot protector and removing the boot protector band, push the boot protector to the B.J. side and then remove it.



15. REMOVAL OF B.J. BOOT

(1) Wrap vinyl tape around the spline part on the D.O.J. side of the drive shaft so that the B.J. boot are not damaged when they are removed.
(2) Withdraw the B.J. boot from the drive shaft.

Caution
Do not disassembly the B.J.

INSPECTION E26QGAE

- Check the drive shaft for bending or wear.
- Check the B.J. for entry of water, foreign matter and rust.
- Check the B.J. ball for damage.
- Check the D.O.J. cage, D.O.J. inner race and ball for rust, wear and damage.
- Check the circlip for damage or deformation.
- Check the D.O.J. outer race for weat or damage.

SERVICE POINTS OF REASSEMBLY E26QHAE

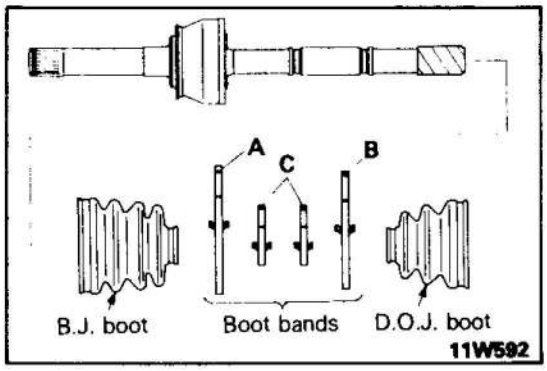
15. INSTALLATION OF B.J. BOOT/13. BOOT BAND A/14. BOOT BAND C/2. BOOT BAND C/9. D.O.J. BOOT/1. BOOT BAND B

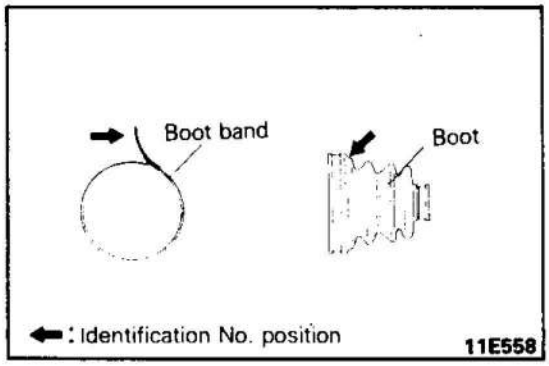
(1) Apply the specified grease to the drive shaft, and wrap vinyl tape around the spline part on the D.O.J. side of the drive shaft.

Specified grease: Reapir kit grease

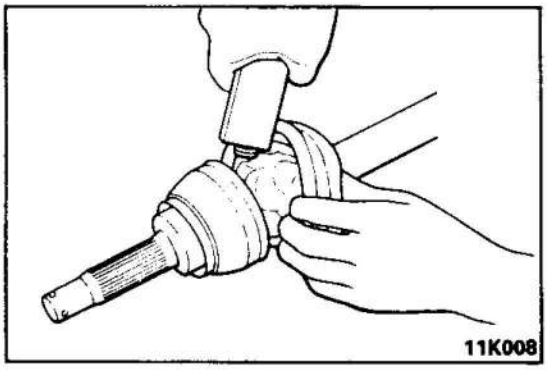
(2) Install the B.J. boot, boot bands (new ones), and D.O.J. boot on the drive shaft, in that order.

Caution
The B.J. and D.O.J. boots are different in size and shape, so make sure they are correct.



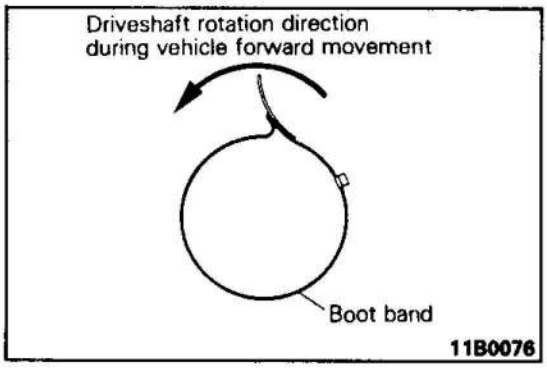


		Vehicles without boots protector	Vehicles with boots protector
Boots Indication No.	D.O.J.	17–28#BJ95	17–28#BJ95
	B.J.	17–161#BJ95L	17–158#BJ95L
Boots Band Indication No.	A	20–13#BJ92L	20–110#BJ95
	B	20–75#BJ95	20–75#BJ95
	C	20–72#BJ100	20–72#BJ100
Protector Band Indication No.		–	98–88#BJ95



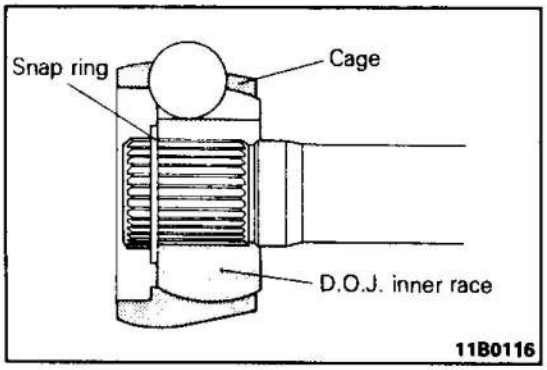
(3) Apply all the specified grease, half of it to the inner side of the B.J., and the other half to the inner side of the B.J. boot.

Specified grease: Repair kit grease [110 g (3.9 oz.)]



(4) Secure the B.J. boot to the driveshaft by boot bands A and C.

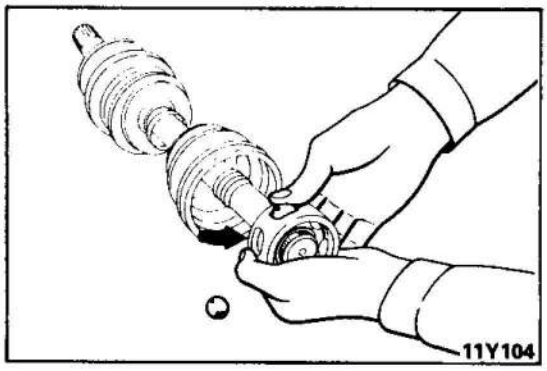
Caution
Be sure that the installation direction of the boot bands is correct.



6. INSTALLATION OF D.O.J. CAGE/8. D.O.J. INNER RACE

(1) Install the D.O.J. cage onto the drive shaft so that the smaller diameter side of the cage is installed first.
(2) Apply the specified grease to the D.O.J. inner race and the D.O.J. cage, and the fit them together.

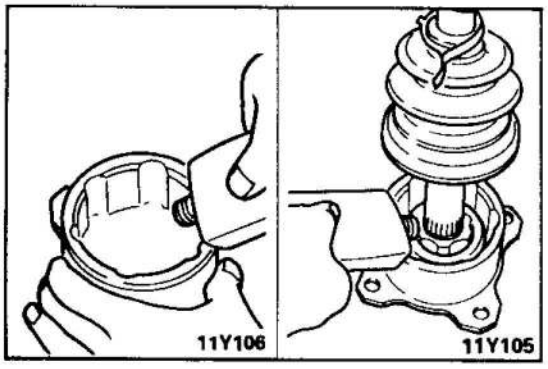
Specified grease: Repair kit grease



5. APPLICATION OF GREASE TO BALLS

Apply athe specified grease to the ball insertion parts of the D.O.J. inner race and D.O.J. cage, and insert the balls.

Specified grease: Repair kit grease



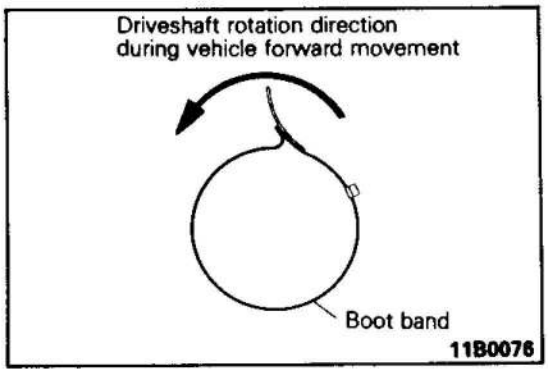
4. INSTALLATION OF D.O.J. OUTER RACE

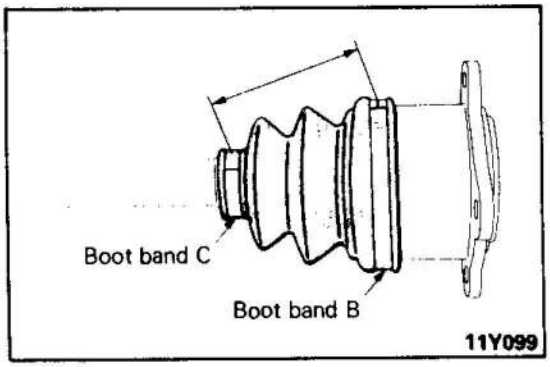
(1) Apply the specified grease to the D.O.J. outer race.

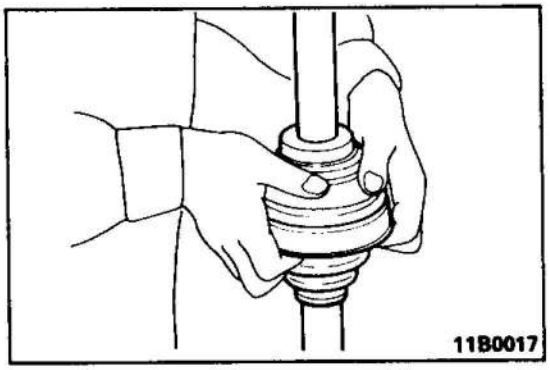
Specified grease:Repair kit grease [55 g (1.9 oz.)]

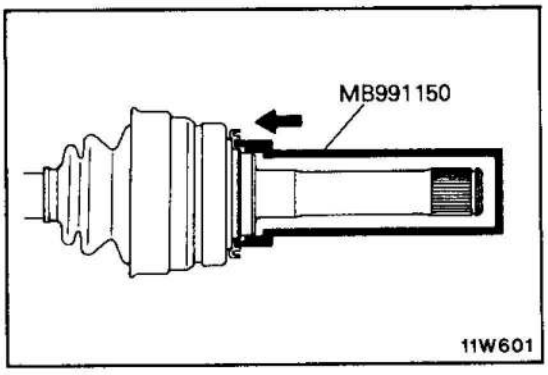
(2) Fit the drive shaft into the D.O.J. outer race.
(3) Add the specified grease to the D.O.J. outer race.

Specified grease:Repair kit grease [55 g (1.9 oz.)]









(4) Install the circlip onto the D.O.J. outer race.
(5) Place the D.O.J. boot over the D.O.J. outer race, and then use boot band B to secure the boot.

Caution
Be sure that the installation direction of the boot bands is correct.

(6) Replace the boot band B on D.O.J. boot.

Caution
Do not secure the boot band B

(7) Secure the driveshaft, and then move the D.O.J. outer race until it is at the position where the D.O.J. boot assembly dimension is the standard value.

Standard value: 77–83 mm (3.03–3.27 in.)

(8) Remove a part of the D.O.J. boot from the D.O.J. outer race and release the air within the boot.
(9) Secure the boot band B on D.O.J. boot.

Caution
Be sure that the installation direction of the boot bands is correct.

12. INSTALLATION OF BOOT PROTECTOR/11. BOOT PROTECTOR BAND

(1) After installating the boot protector to the B.J., secure by the boot protector band.

Caution
Be sure that the installation direction of the boot bands is correct.

(2) Securely fold over the end of the boot protector.

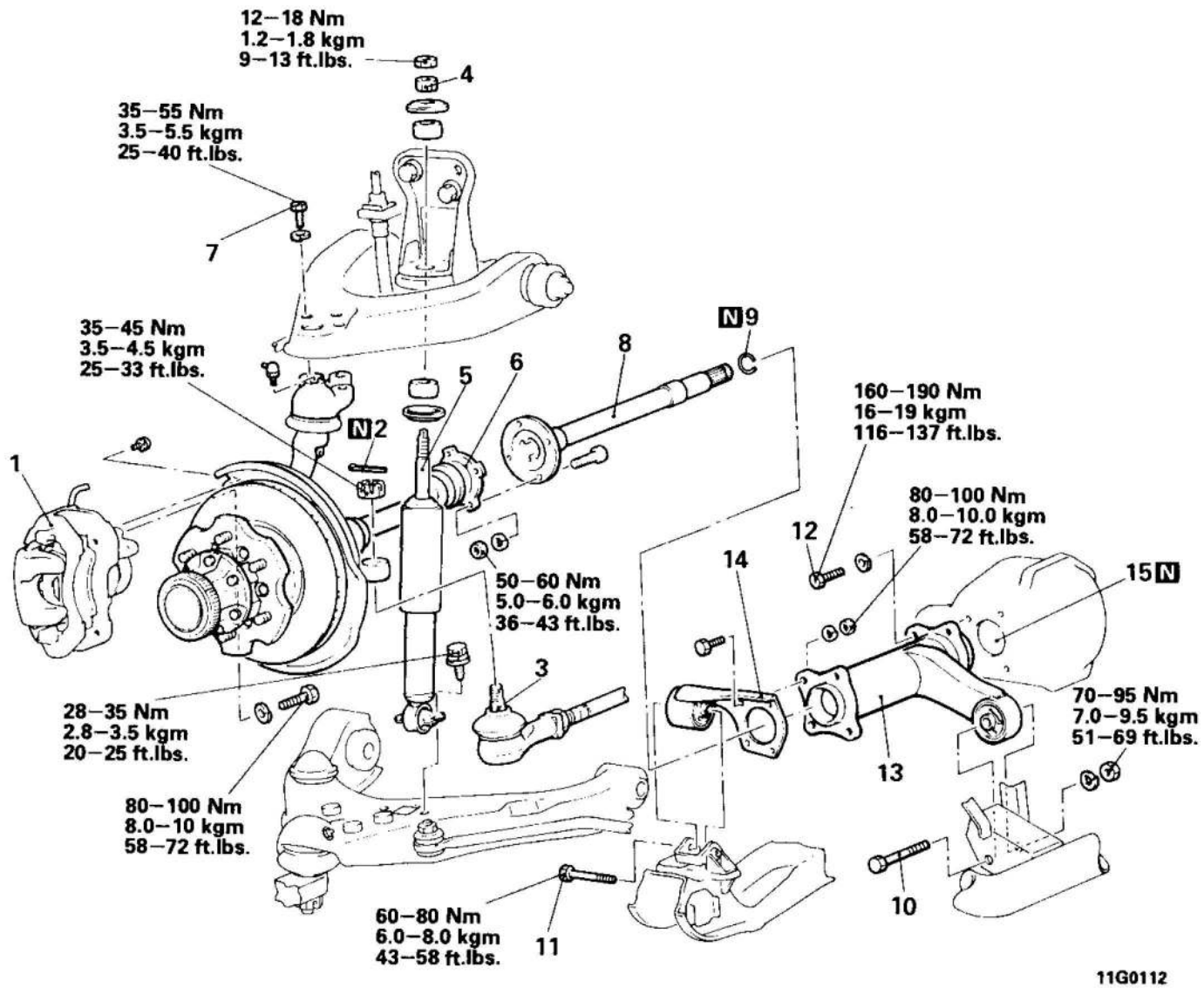
10. INSTALLATON OF DUST COVER

With the special tool applied to dust cover, strike with a plastic hammer to press the cover to the drive shaft.

INNER SHAFT

E26TA--

REMOVAL AND INSTALLATION

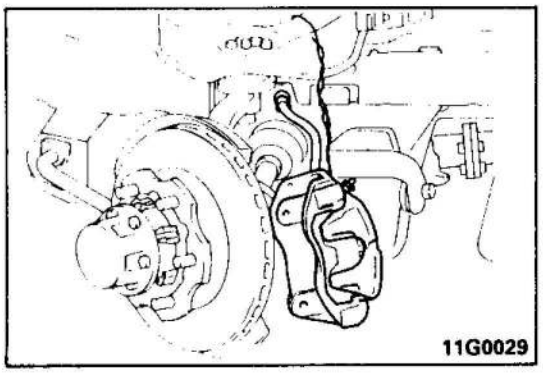


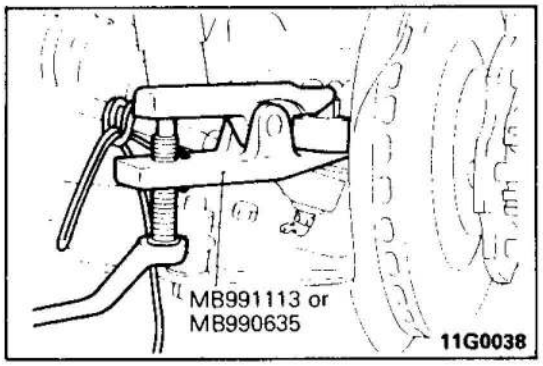
11G0112

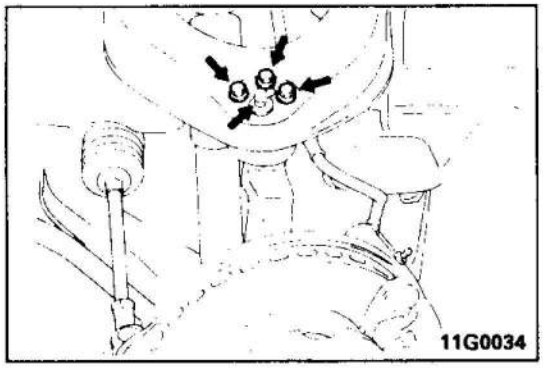
Removal steps

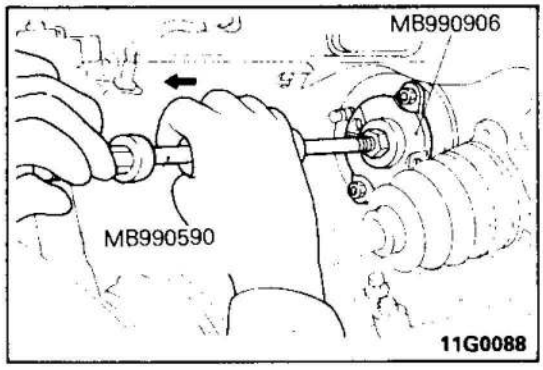
- ◆◆ 1. Caliper assembly
- 2. Split pin
- ◆◆ 3. Connection of tie rod assembly and knuckle
- ◆◆ 4. Shock absorber installing nut
- 5. Shock absorber
- 6. Connection of drive shaft (RH)
- ◆◆ 7. Connection of upper ball joint and upper arm
- ◆◆◆◆ 8. Inner shaft assembly
- 9. Circlip
- 10. Bolt
- 11. Bolt
- 12. Bolt
- 13. Housing tube assembly
- 14. Differential mounting bracket (RH)
- ◆◆ 15. Oil seal

NOTE
(1) Reverse the removal procedures to reinstall.
(2) ◆◆ : Refer to "Service Points of Removal".
(3) ◆◆ : Refer to "Service Points of Installation".
(4) N : Non-reusable parts









SERVICE POINTS OF REMOVAL E26TBAC

1. REMOVAL OF CALIPER ASSEMBLY

(1) Remove the caliper assembly with the brake hose connected.
(2) Use wire to suspend the caliper assembly from the upper arm so that the caliper assembly won't fall.

Caution
Do not twist the brake hose.

3 DISCONNECTION OF TIE ROD ASSEMBLY FROM KNUCKLE

Disconnect the tie rod from the knuckle by using the special tool.

Caution
1. **Use cord to bind the special tool closely so it won't become separated.**
2. **The nut should be loosened only, not removed.**

7. DISCONNECTING UPPER BALL JOINT FROM UPPER ARM

(1) Remove upper ball joint installation bolt and upper ball joint nipple.
(2) Relocate drive shaft so that it will not interfere with removal of inner shaft.

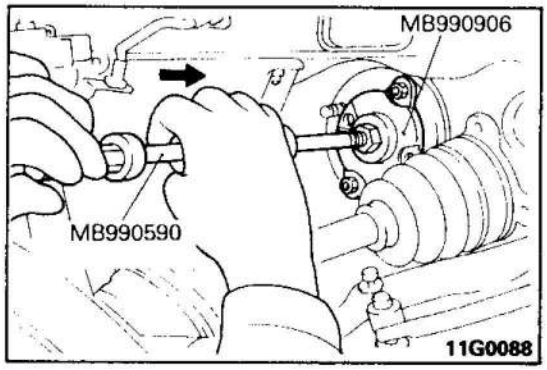
8. REMOVAL OF INNER SHAFT ASSEMBLY

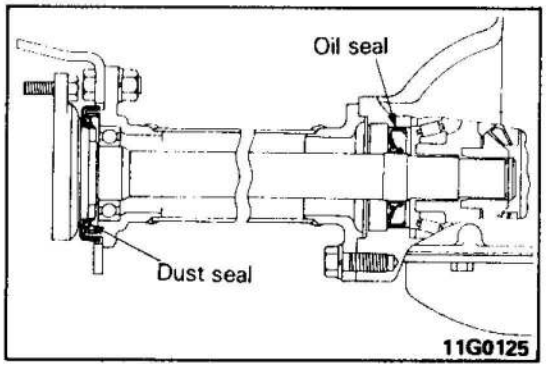
(1) Disconnect inner shaft assembly and differential carrier assembly with special tool.
(2) Slowly remove inner shaft.

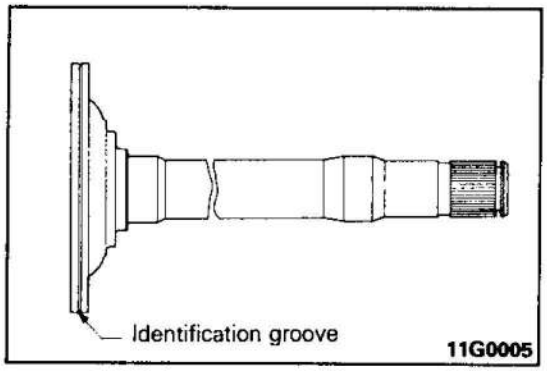
Caution
1. **Do not damage drive shaft when using special tool.**
2. **Do not damage differential carrier oil seal with inner shaft spline when removing inner shaft from housing tube assembly.**

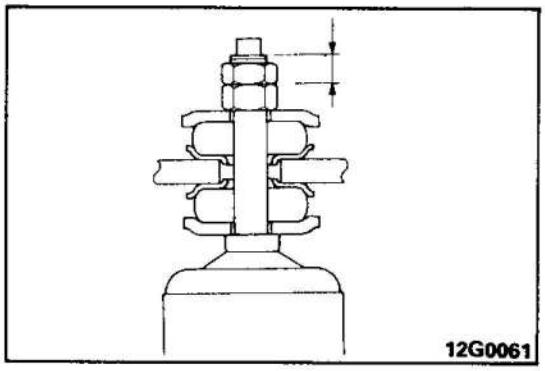
INSPECTION E26TCAB

- Check the inner shaft serrations for damage.
- Check for burn discoloration on bearing and worn roller path surface.
- Check the housing tube assembly for damage.
- Check the housing tube assembly dust seal for damage.









SERVICE POINT OF INSTALLATION E26TDAB

15. PRESS FITTING OF OIL SEAL

Refer to P. 26–25.

8. INSTALLATION OF INNER SHAFT ASSEMBLY

Drive the inner shaft into the front differential carrier by using the special tools.

Caution

1. **Replace the circlip which is attached to the inner shaft spline part with a new one.**
2. **Be careful not to damage the lip of the dust seal and oil seal.**

NOTE

Inner shaft diameter on splines differ in P23V, P23W and P24V, P24W, P25V, P25W.

Identification

Inner shaft:

P24V, P24W, P25V, P25W: Groove on flange

Circlip:

P23V, P23W: Clip outer diameter 28.0 mm (1.10 in.)

P24V, P24W, P25V, P25W: Clip outer diameter 30.5 mm (1.20 in.)

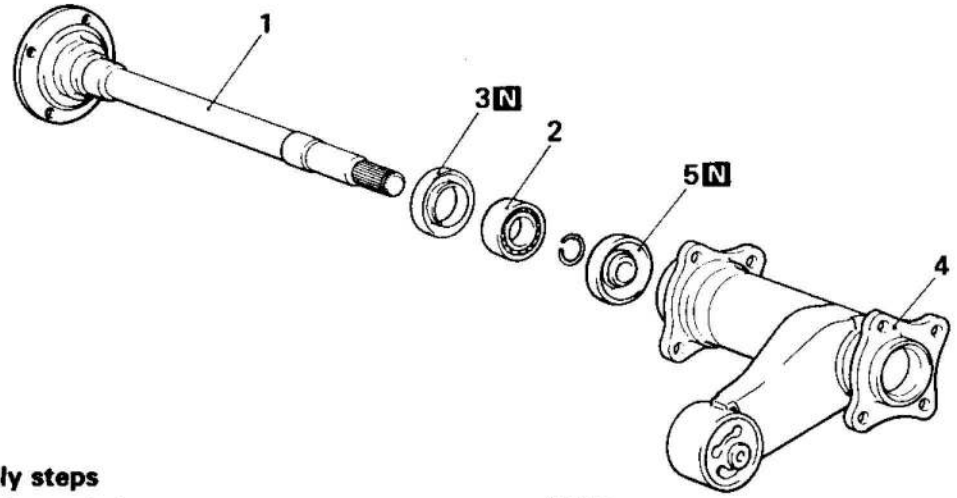
4. TIGHTENING SHOCK ABSORBER INSTALLING NUT

Install shock absorber on bracket and set the illustrated measurement at the standard value.

Standard value: 7–8 mm (0.28–0.31 in.)

DISASSEMBLY AND REASSEMBLY

E26TE--



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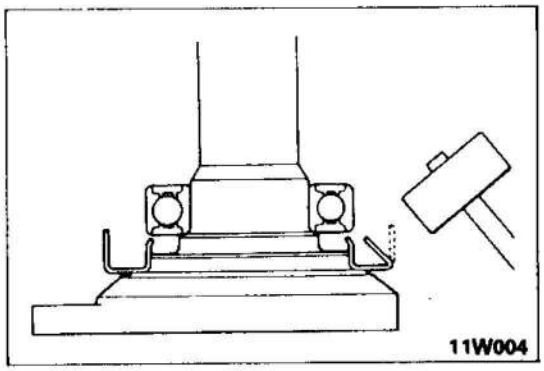
Disassembly steps

1. Inner shaft
2. Bearing
3. Dust cover
4. Housing tube
5. Dust seal

NOTE
(1) Reverse the disassembly procedures to reassemble.
(2) ◆◆ : Refer to "Service Points of Disassembly".
(3) ●◆ : Refer to "Service Points of Reassembly".
(4) N : Non-reusable parts



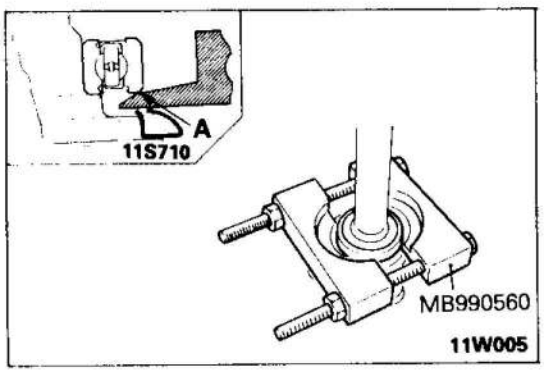
11W004

SERVICE POINTS OF DISASSEMBLY

E26TFAB

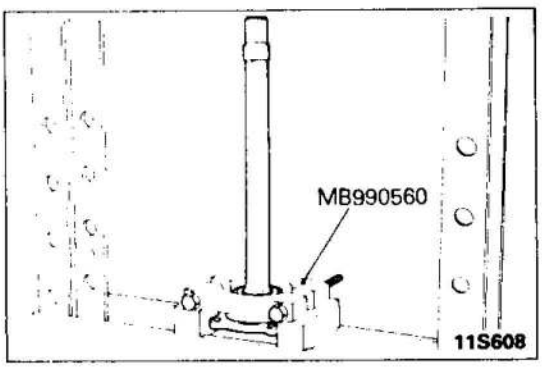
2. REMOVAL OF BEARING

(1) Bend the outside periphery of dust cover inward with a hammer.



11W005

(2) After the special tool has been installed as shown, tighten the nut of the special tool until the portion "A" of the special tool touches the bearing outer race.



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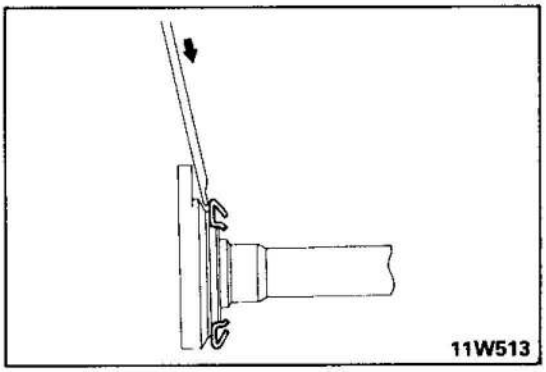
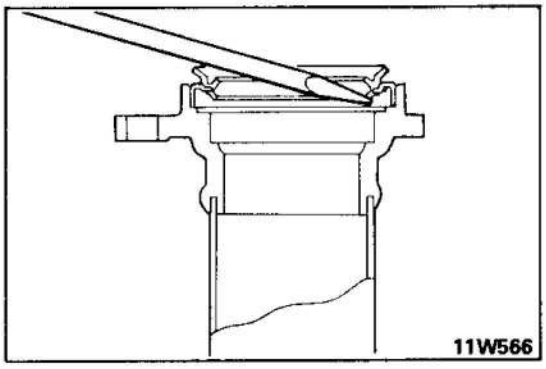
(3) Press out the inner shaft from the bearing.

Caution
Do not allow the inner shaft to drop.



3. REMOVAL OF DUST COVER

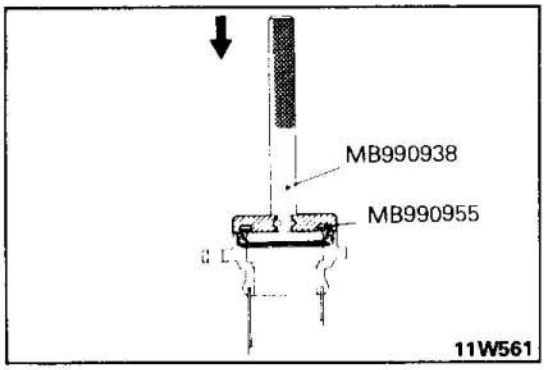
Remove the dust cover from the inner shaft.



5. REMOVAL OF DUST SEAL

Remove the dust seal from the housing tube.

SERVICE POINTS OF REASSEMBLY E26TGAB

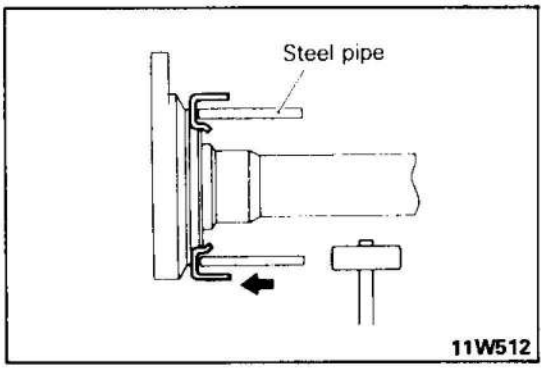


5. INSTALLATION OF DUST SEAL

(1) Press-fit the new dust seal into the housing tube by using the special tools, until it is flush with the housing tube end face.

(2) Apply the specified grease to the dust seal lip.

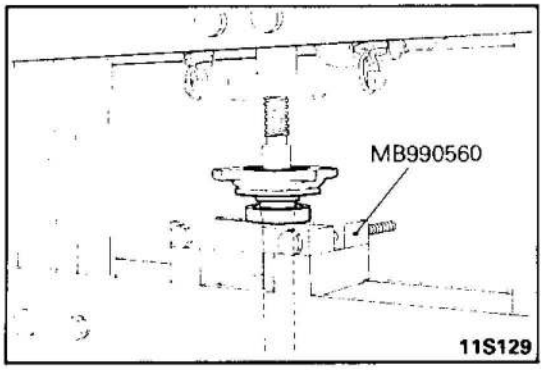
Specified grease: Multipurpose grease SAE J310, NLGI No. 2



3. INSTALLATION OF DUST COVER

Using a steel pipe, force a new dust cover onto the inner shaft.

Steel pipe	mm (in.)
Overall length	50 (1.97)
Outside diameter	75 (2.95)
Wall thickness	4 (0.16)



NOTE
After the dust cover has been installed, apply specified grease to the inside of the dust cover.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2

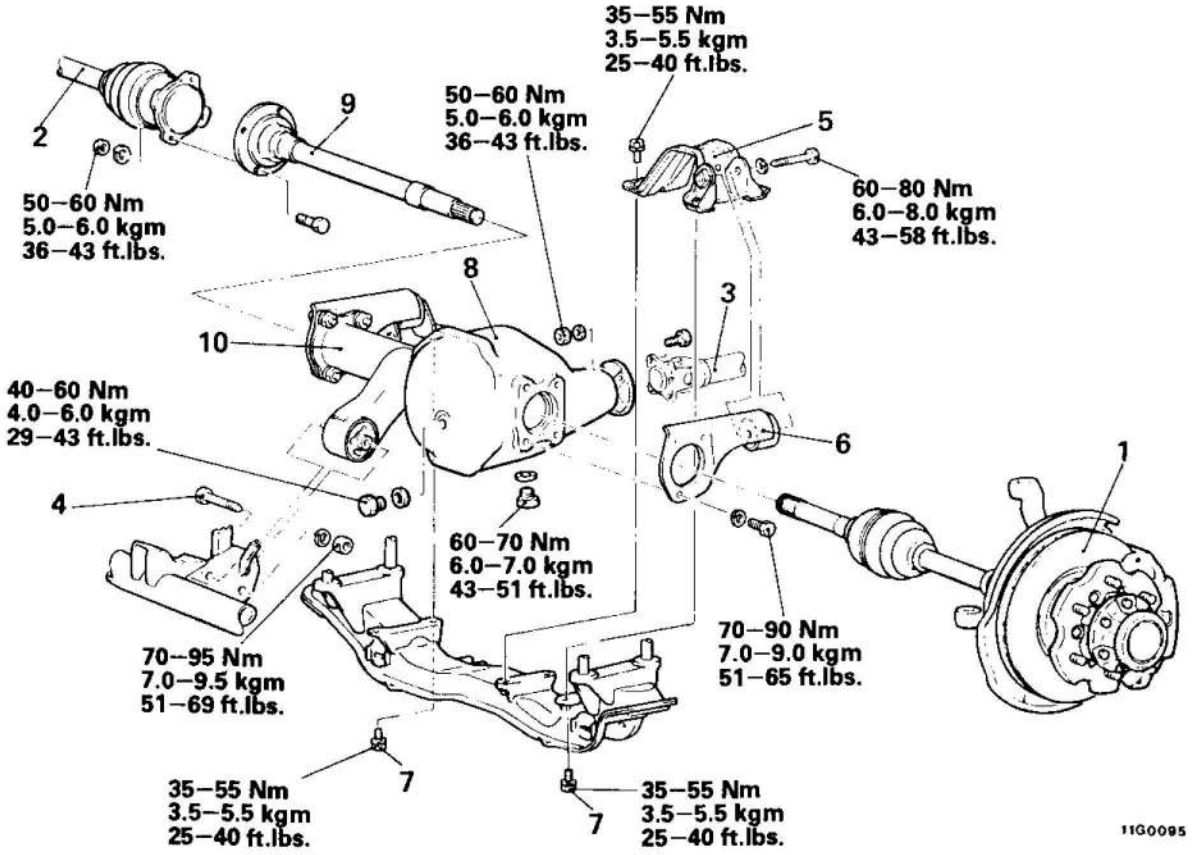
2. INSTALLATION OF BEARING

Using the special tool, force the bearing onto the inner shaft.

DIFFERENTIAL CARRIER ASSEMBLY

E26WA--

REMOVAL AND INSTALLATION



Pre-removal Operation
- Draining differential gear oil

Removal steps

◆◆◆◆ 1. Front hub assembly and drive shaft assembly (LH)
◆◆ 2. Connection of drive shaft assembly (RH)
◆◆ 3. Connection of front propeller shaft
◆◆ 4. Connection of gear mounting crossmember assembly
5. Stopper bracket assembly
6. Differential mounting bracket (LH)
7. Bolt
◆◆ 8. Differential carrier assembly and inner shaft assembly (Part No. 8 to 10)
◆◆ ◆◆ 9. Inner shaft assembly
10. Housing tube assembly

Post-installation Operation
- Injection of differential gear oil (Refer P.26–22.)

NOTE
(1) Reverse the removal procedures to reinstall.
(2) ◆◆ : Refer to "Service Points of Removal".
(3) ◆◆ : Refer to "Service Points of Installation".

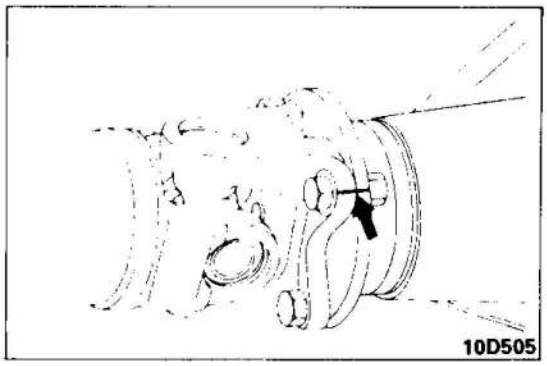
SERVICE POINTS OF REMOVAL E26WBAB

1. REMOVAL OF FRONT HUB ASSEMBLY AND DRIVE SHAFT (LH)

Refer to P.26–46.

2. DISCONNECTION OF DRIVE SHAFT ASSEMBLY (RH)

(1) Remove connecting nuts.
(2) Press in bolts until touching differential mounting (RH), and disconnect drive shaft (RH) and inner shaft.

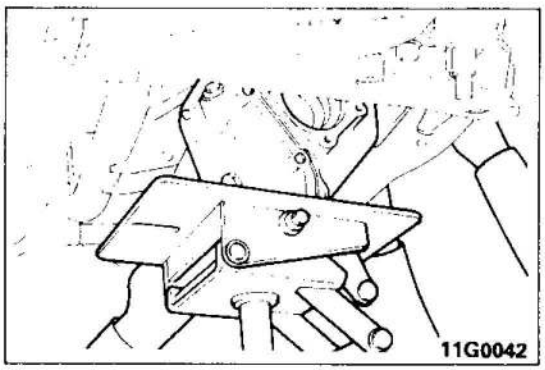


3. DISCONNECTION OF FRONT PROPELLER SHAFT

(1) Make the mating marks on the flange yoke of the front propeller shaft and the companion flange of the differential.
(2) Secure propeller shaft with wire.

4. DISCONNECTION OF GEAR MOUNTING CROSSMEMBER ASSEMBLY

Hold differential carrier assembly with mission jack and remove bolts.



8. REMOVAL OF DIFFERENTIAL CARRIER ASSEMBLY AND INNER SHAFT ASSEMBLY

Lower mission jack slowly to prevent differential carrier assembly and housing tube assembly from interfering with other parts. Remove differential carrier assembly.

Caution
Do not drop differential carrier.

9. REMOVAL OF INNER SHAFT ASSEMBLY

(1) Use special tool (MB990906 and MB990590) to disconnect inner shaft assembly and differential carrier assembly.
(2) Slowly remove inner shaft.

Caution
Do not damage differential carrier assembly oil seal with inner shaft spline.

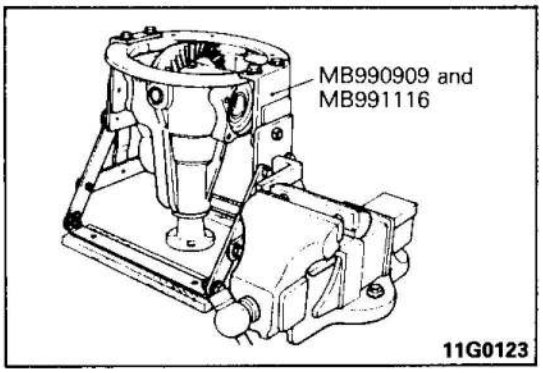
SERVICE POINTS OF INSTALLATION E26WDAB

9. INSTALLATION OF INNER SHAFT

Refer to P.26–57.

1. INSTALLATION OF FRONT HUB ASSEMBLY AND DRIVE SHAFT ASSEMBLY (LH)

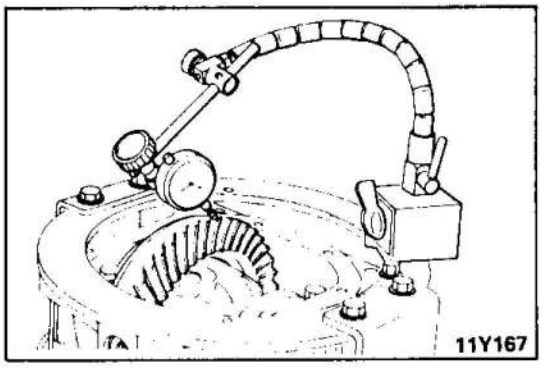
Refer to P.26–46.



INSPECTION BEFORE DISASSEMBLY E26WCAB

Remove the cover and gasket. Hold the special tool in a vice, and install the differential carrier assembly to the special tools.

NOTE
As the front differential is extended for the length of the companion flange, add a supplementary board [about 15 mm (0.6 in.) thick] to the special tool legs.



FINAL DRIVE GEAR BACKLASH

Check the final drive gear backlash by following the steps below.

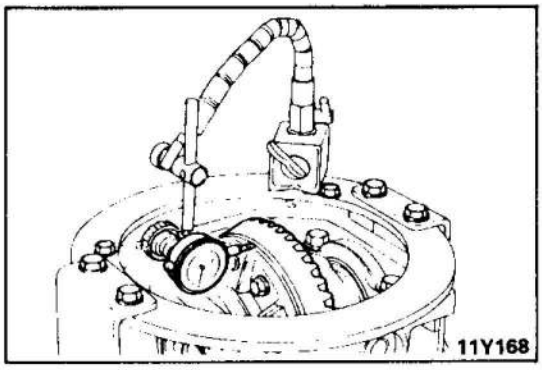
(1) With the drive pinion locked in place, measure the final drive gear backlash with a dial indicator on the drive gear.

NOTE
Measure at four points or more on the circumference of the drive gear.

Standard value: 0.11–0.16 mm (0.0043–0.0063 in.)

(2) If the backlash is not within the standard value, adjust it by using the side bearing adjustment spacers.

NOTE
Check final drive gear tooth contact after adjusting.



DRIVE GEAR RUNOUT

Check the drive gear runout by following the steps below.

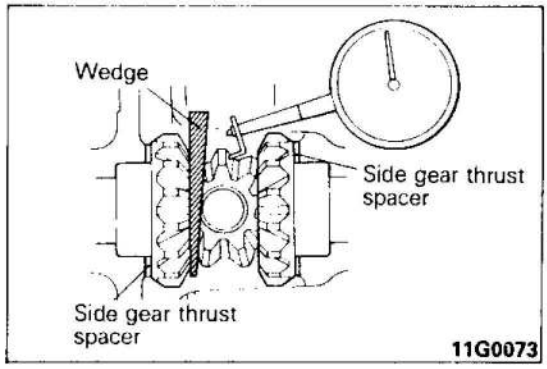
(1) Measure the drive gear runout at the shoulder on the reverse side of the drive gear.

Limit: 0.05 mm (0.0020 in.)

(2) When runout exceeds the limit value, check for foreign object between drive gear rear side and differential case, or for loose drive gear installation bolts.

(3) When check (2) gives normal results, reposition drive gear and differential case and remeasure.

NOTE
If adjustment is impossible, replace differential case, or with drive gear and pinion set.



DIFFERENTIAL GEAR BACKLASH (EXCLUDING 4 PINION DIFFERENTIAL)

Check the differential gear backlash by following the steps below.

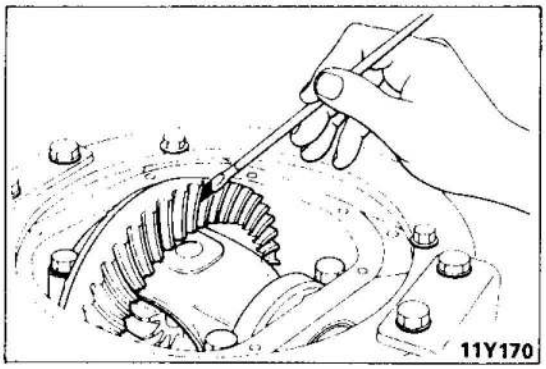
(1) While locking the side gear with the wedge, measure the differential gear backlash with a dial indicator on the pinion gear.

NOTE
The measurement should be made for both pinion gears individually.

Standard value: 0–0.076 mm (0–0.0030 in.)
Limit: 0.2 mm (0.0079 In.)

(2) If the backlash exceeds the limit, adjust by using the side gear thrust spacers.

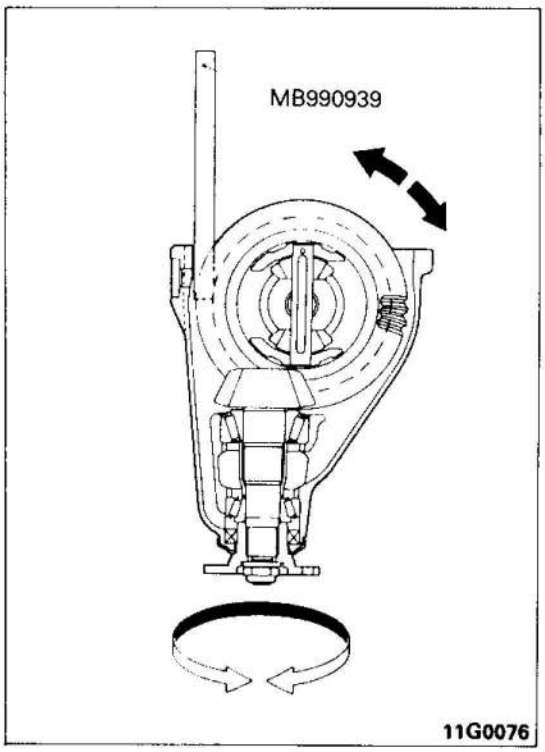
NOTE
If adjustment is impossible, replace with side gear and pinion gear set.



FINAL FRIVE GEAR TOOTH CONTACT

Check the tooth contact of the final drive gear by following the steps below.

(1) Apply a thin, uniform coat of machine blue to both surfaces of the drive gear teeth.



(2) Insert the brass between the differential carrier and the differential case, and then rotate the companion flange by hand (once in the normal direction, and then once in the reverse direction) while applying a load to the drive gear so that the revolution torque [approximately 250–300 Ncm (25–30 kgcm, 28–83 in.lbs.)] is applied to the drive pinion.

Caution
If the drive gear is rotated too much, the tooth contact pattern will become unclear and difficult to check.

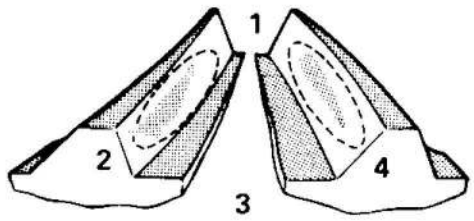
(3) Check the tooth contact condition of the drive gear and drive pinion.

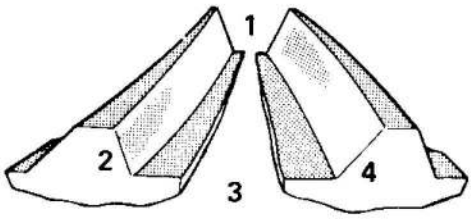
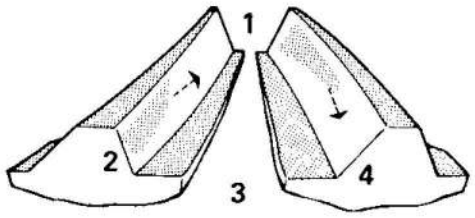
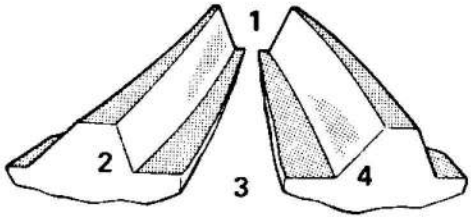
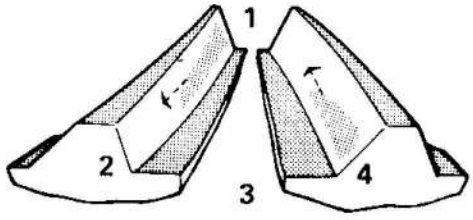
NOTE
1. Checking the tooth contact pattern is the way to confirm that the adjustments of the pinion height and backlash have been done properly.
2. Continue to adjust the pinion height and backlash until the tooth contact pattern resembles the standard pattern.
3. If, even after adjustments have been made, the correct tooth contact pattern cannot be obtained, it means that the drive gear and the drive pinion have become worn beyond the allowable limit; replace the gear set.

Caution
If either the drive gear or the drive pinion is to be replaced, be sure to replace both gears as a set.

Standard tooth contact pattern

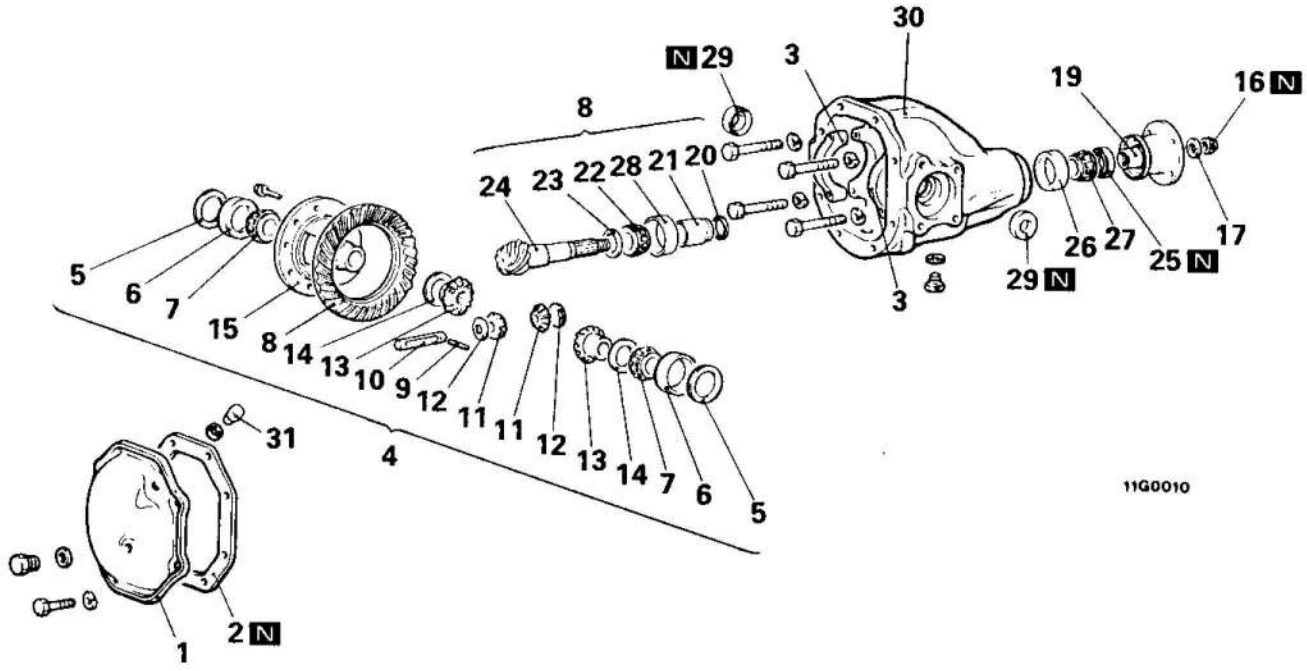
1 Toe
2 Drive-side
3 Heel
4 Coast-side



Problem	Solution
Tooth contact pattern resulting from excessive pinion height	
	
The drive pinion is positioned too far from the center of the drive gear.	Increase the thickness of the pinion height adjusting shim, and position the drive pinion closer to the center of the drive gear. Also, for backlash adjustment, position the drive gear farther from the drive pinion.
Tooth contact pattern resulting from improper pinion height	
	
The drive pinion is positioned too close to the center of the drive gear.	Decrease the thickness of the pinion height adjusting shim, and position the drive pinion farther from the center of the drive gear. Also, for backlash adjustment, position the drive gear closer to the drive pinion.

11S642

DISASSEMBLY (2 PINION)



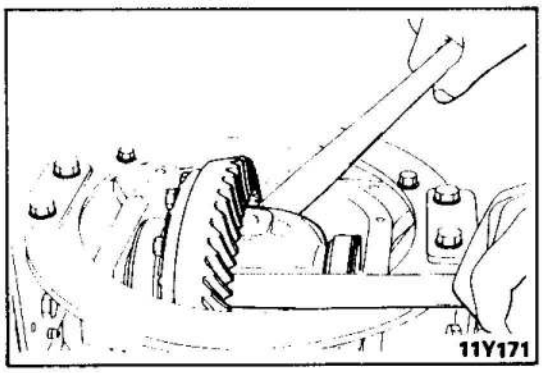
Inspection before Disassembly
- Final Drive Gear Backlash
- Drive gear Runout
- Differential Gear Backlash
- Final Drive Gear Tooth Contact

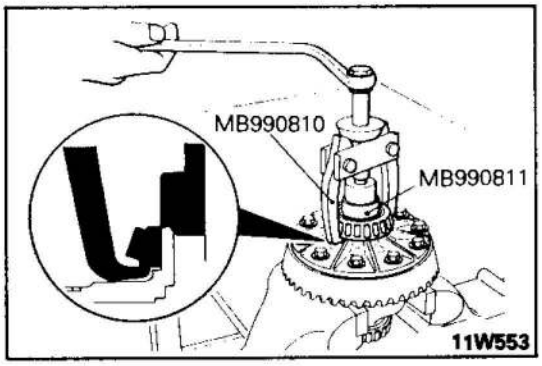
} Refer to P.26–64 to 66.

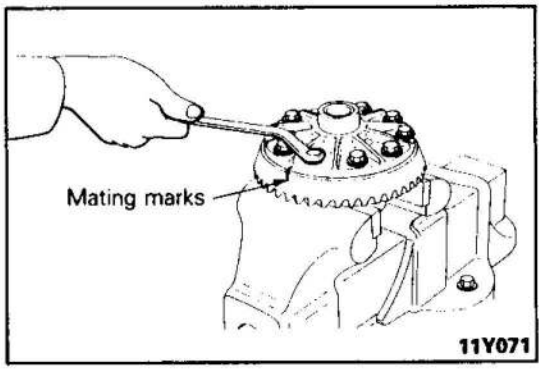
Disassembly steps

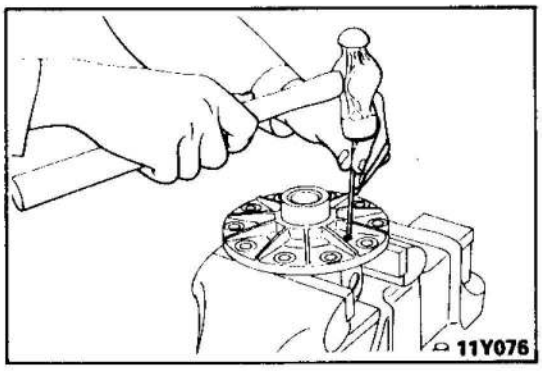
1. Cover
2. Gasket
3. Bearing caps
4. ◆◆ Differential case assembly
5. Side bearing adjusting spacers
6. Side bearing outer races
7. ◆◆ Side bearing inner races
8. ◆◆ Drive gear
9. ◆◆ Lock pin
10. Pinion shaft
11. Pinion gears
12. Pinion washers
13. Side gears
14. Side gear thrust spacers
15. Differential case
16. ◆◆ Companion flange self-locking nut
17. Washer
18. ◆◆ Drive pinion assembly
19. Companion flange
20. Drive pinion rear shim (for preload adjustment)
21. Drive pinion spacer
22. ◆◆ Drive pinion front bearing inner race
23. Drive pinion front shim (for pinion height adjustment)
24. Drive pinion
25. Oil seal
26. Drive pinion rear bearing inner race
27. ◆◆ Drive pinion rear bearing outer race
28. ◆◆ Drive pinion front bearing outer race
29. Oil seals
30. Gear carrier
31. Vent plug

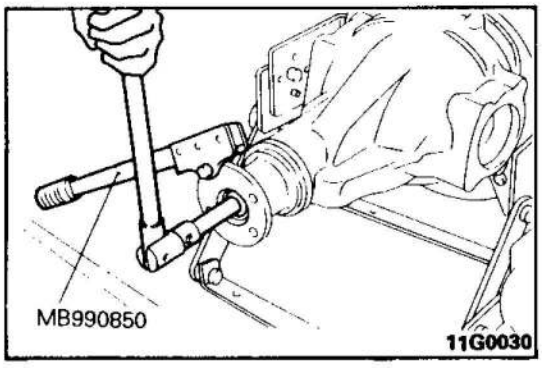
NOTE
(1) ◆◆ : Refer to "Service Points of Disassembly".
(2) N : Non-reusable parts











SERVICE POINTS OF DISASSEMBLY E26WFAB

4. REMOVAL OF DIFFERENTIAL CASE ASSEMBLY

Take out the differential case assembly with a hammer handle.

Caution
When taking out the differential case assembly, be careful not to drop and damage the side bearing outer races.

NOTE
Keep the right and left side bearings and side bearing adjusting spacers separate, so that they do not become mixed at the time of reassembly.

7. REMOVAL OF SIDE BEARING INNER RACES

Pull out the side bearing inner races by using the special tools.

NOTE
Locate special tool hook on side bearing inner race using notches (2 locations) on differential case side.

8. REMOVAL OF DRIVE GEAR

(1) Make the mating marks to the differential case and the drive gear.
(2) Loosen the drive gear attaching bolts in diagonal sequence to remove the drive gear.

9. REMOVAL OF LOCK PIN

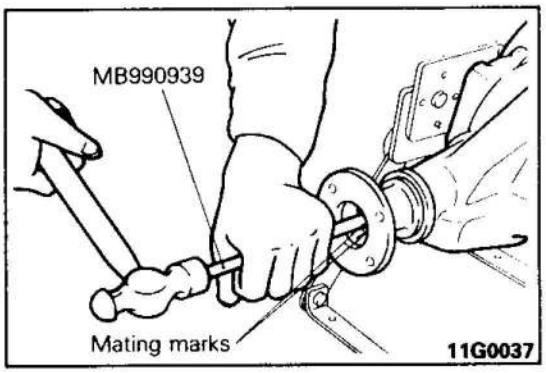
(1) Drive out the lock pin with a punch.
(2) Remove the component parts from the differential case.

NOTE
The removed side gears and side gear thrust spacers, left and right, should be retained for reassembly.

16. REMOVAL OF COMPANION FLANGE SELF-LOCKING NUT

Use the special tool to hold the companion flange and remove the companion flange self-locking nut.

NOTE
Loosen self-locking nut to the drive pinion edge but do not remove.

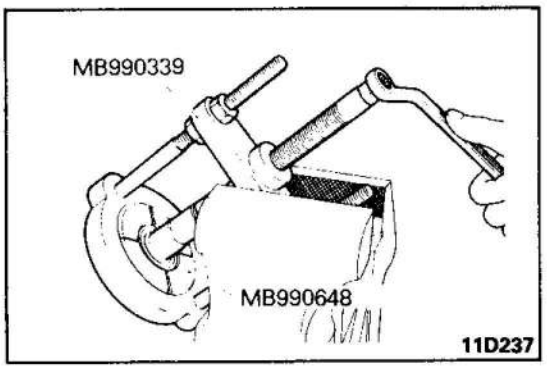


18. REMOVAL OF DRIVE PINION ASSEMBLY

(1) Make mating marks on the drive pinion and companion flange.

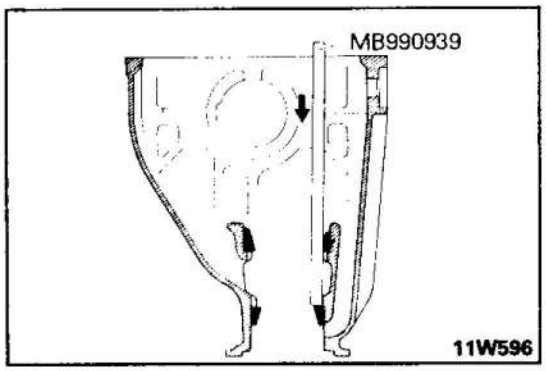
Caution
The mating mark made on the companion flange must not be on the coupling surface of the flange yoke and the front propeller shaft.

(2) Place brass rod on drive pinion edge and hammer to remove drive pinion assembly.



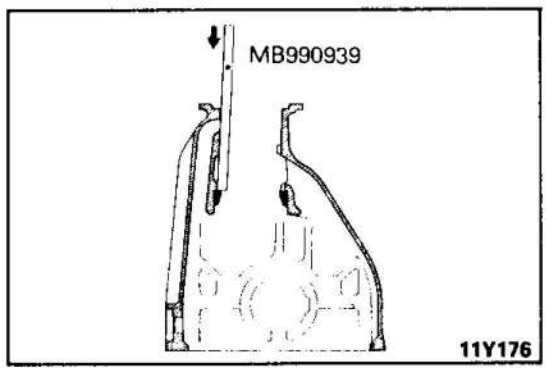
22. REMOVAL OF DRIVE PINION FRONT BEARING INNER RACE

Pull out the drive pinion front bearing inner race by using the special tools.



27. REMOVAL OF DRIVE PINION REAR BEARING OUTER RACE

Drive out the drive pinion rear bearing outer race from the gear carrier by using the brass rod.



28. REMOVAL OF DRIVE PINION FRONT BEARING OUTER RACE

Drive out the drive pinion front bearing outer race from the gear carrier by using the brass rod.

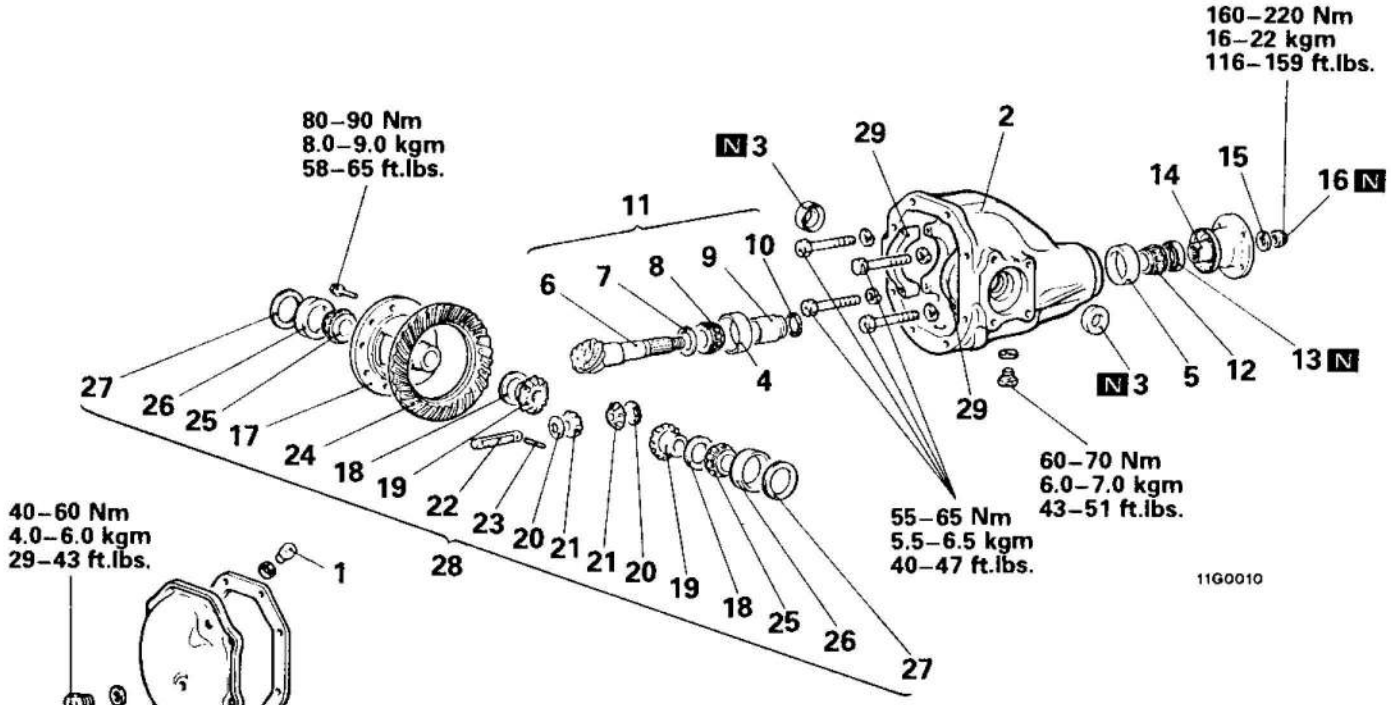
INSPECTION

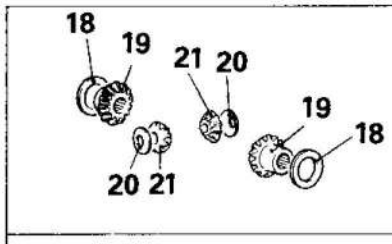
E26WGAB

- Check the companion flange for wear or damage.
- Check the oil seal for wear or deterioration.
- Check the bearings for wear or discoloration.
- Check the gear carrier for cracks.
- Check the drive pinion and ring gear for wear or cracks.
- Check the side gears, pinion gears and pinion shaft for wear or damage.
- Check the side gear spline for wear or damage.

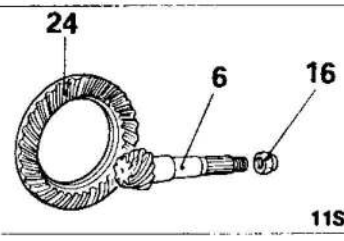
REASSEMBLY (2 PINION)

E26WE---





Differential gear set

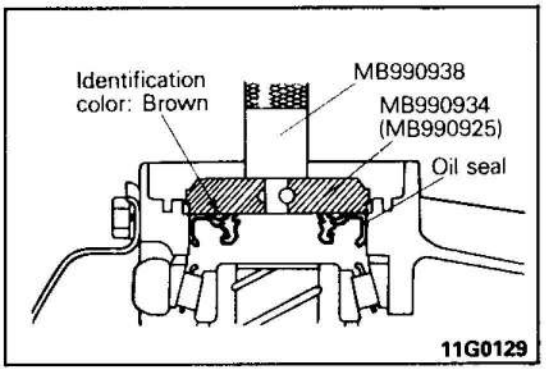


Final drive gear set

Reassemly steps

1. Vent plug
2. Gear carrier
- ◆◆ 3. Oil seals
- ◆◆ 4. Drive pinion front bearing outer race
- ◆◆ 5. Drive pinion rear bearing outer race
- ◆◆ Adjustment of pinion height
6. Drive pinion
7. Drive pinion front shim (for pinion height adjustment)
8. Drive pinion front bearing inner race
- ◆◆ Adjustment of drive pinion turning torque
9. Drive pinion spacer
10. Drive pinion rear shim (for turning torque adjustment)
11. Drive pinion assembly
12. Drive pinion rear bearing inner race
13. Oil seal
14. Companion flange
15. Washer
16. Companion flange self-locking nut
17. Differential case
- ◆◆ Adjustment of differential gear backlash
18. Side gear thrust spacers
19. Side gears
20. Pinion washers
21. Pinion gears
22. Pinion shaft
- ◆◆ 23. Lock pin
- ◆◆ 24. Drive gear
- ◆◆ 25. Side bearing inner races
26. Side bearing outer races
- ◆◆ Adjustment of final drive gear backlash
27. Side bearing adjusting spacers
28. Differential case assembly
29. Bearing caps
- ◆◆ 30. Gasket
- ◆◆ 31. Cover

NOTE
(1) ◆◆ : Refer to "Service Points of Reassembly".
(2) N : Non-reusable parts

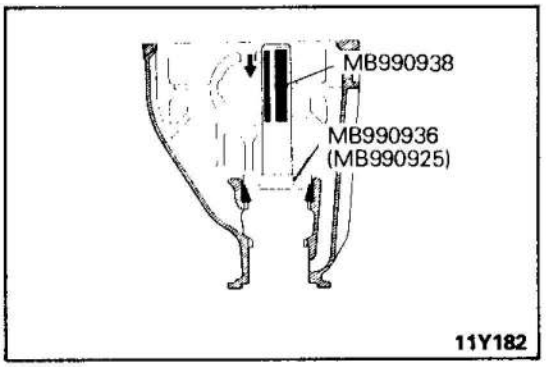


SERVICE POINTS OF REASSEMBLY E26WHAC

3. INSTALLATION OF OIL SEALS

Install the oil seal with the special tool and apply a thin coat of specified grease to the lip of the oil seal.

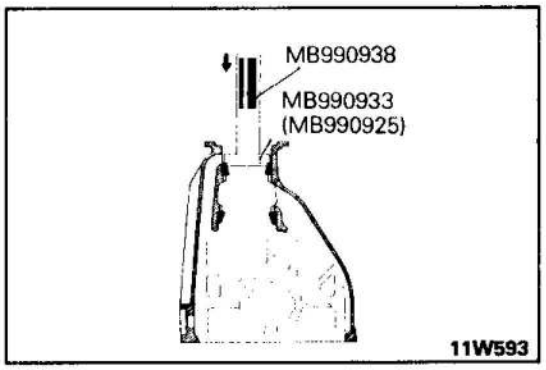
Specifled grease: Multipurpose grease SAE J310, NLGI No. 2



4. INSTALLATION OF DRIVE PINION FRONT BEARING OUTER RACE

Press-fit the drive pinion front bearing outer races into the gear carrier by using the special tools.

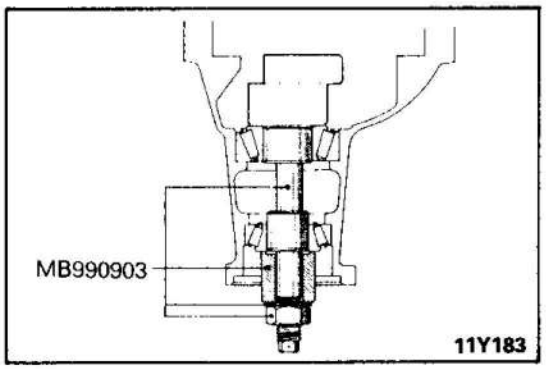
Caution
Perform press-fitting carefully so as not to tilt the outer race.



5. INSTALLATION OF DRIVE PINION REAR BEARING OUTER RACE

Press-fit the drive pinion rear bearing outer races into the gear carrier by using the special tools.

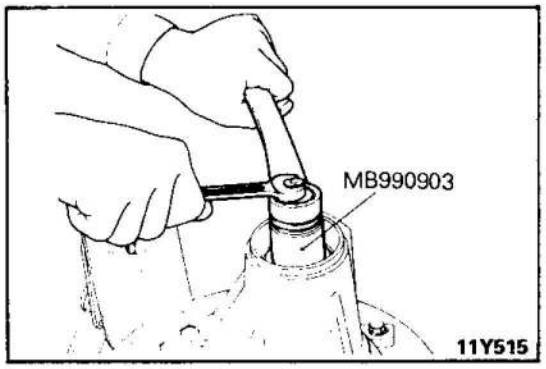
Caution
Perform press-fitting carefully so as not to tilt the outer race.



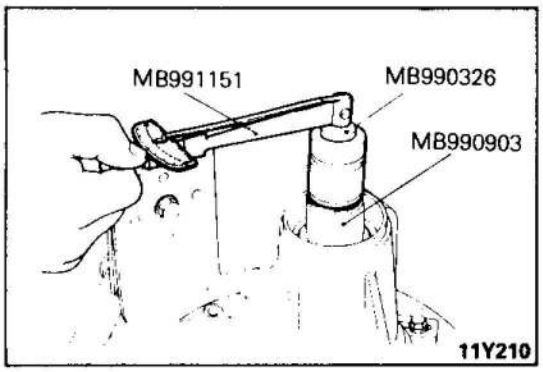
• ADJUSTMENT OF PINION HEIGHT

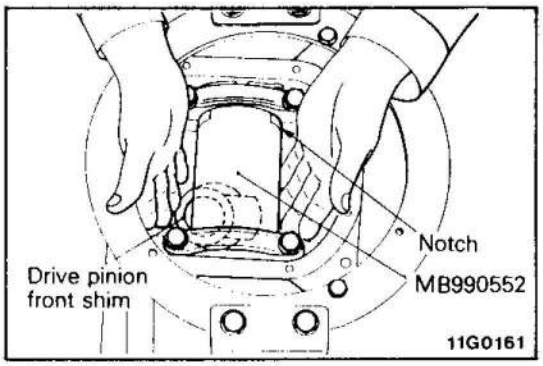
Adjustment the drive pinion height by the following procedures:

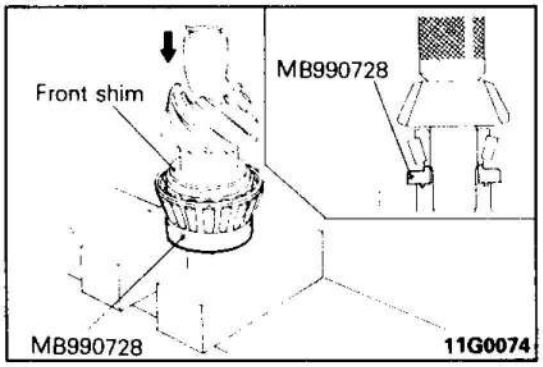
(1) Install special tools and drive pinion front and rear bearing inner races to the gear carrier in the sequence shown in the illustration.



(2) Tighten the nut of the special tool until the standard value of drive pinion turning torque is obtained.







(3) Measure the drive pinion turning torque (without the oil seal) by using the special tools.

Standard value: 0.4–0.5 Nm (4.0–5.0 kgcm, 3.5–4.3 in.lbs.)

NOTE
1. Gradually tighten the handle of the special tool while checking the drive pinion preload.
2. Because one ratation can't be made when the special tool is in contact with the gear carrier, move it a few times and, after seating the bearing, measure the rotation torque.

(4) Position the special tool in the side bearing seat of the gear carrier, and then select a drive pinion front shim of a thickness which corresponds to the gap between the special tools.

NOTE
1. Be sure to clean the side bearing seat thoroughly.
2. When positioning the special tool, be sure that the cut-out sections of the special tool are in the position shown in the illustration, and also confirm that the special tool is in close contact with the side bearing seat.
3. When selecting the drive pinion front shims, keet the number of shims to a minimum.

(5) Fit the selected drive pinion front shim (s) to the drive pinion, and press-fit the drive pinion front bearing inner race by using the special tool.

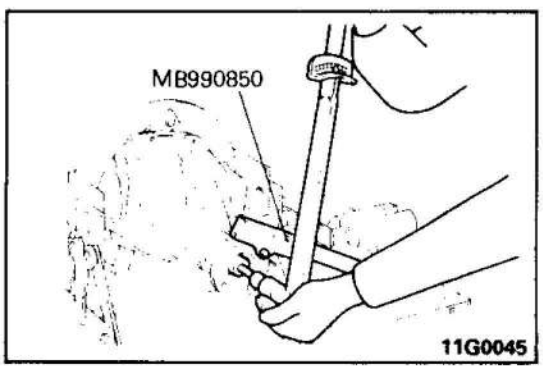
- **ADJUSTMENT OF DRIVE PINION TURNING TORQUE**

Adjust the drive pinion turning torque by using the following procedure:

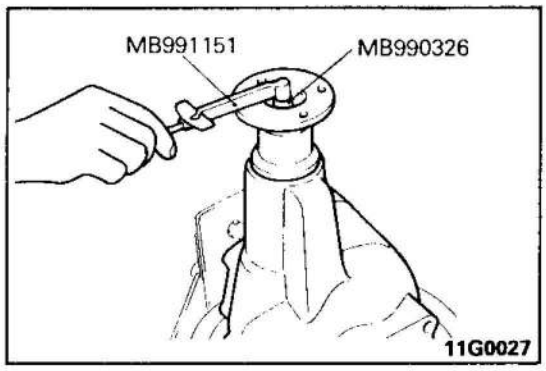
Without Oil Seal

(1) Insert the drive pinion into the gear carrier, and then install, from the front side of the carrier, the drive pinion spacer, the drive pinion rear shim, the drive pinion rear bearing inner race, and the companion flange in that order.

NOTE
Do not install the oil seal.



(2) Tighten the companion flange to the specified torque by using the special tool.



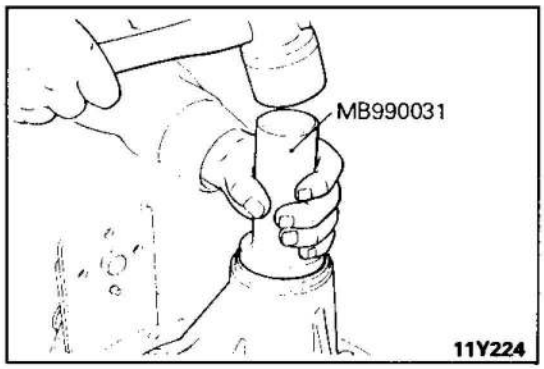
(3) Meaure the drive pinion turning torque (without the oil seal)

Standard value: 0.4–0.5 Nm (4.0–5.0 kgcm, 3.5–4.3 in.lbs.)

(4) If the drive pinion turning torque is not within the range of the standard value, adjust the preload by replacing the drive pinion rear shim (s) or the drive pinion spacer.

NOTE
When selecting the drive pinion rear shims, if the number of shims is large, reduce the number of shims to a minimum by selecting the drive pinion spacers.

(5) Remove the companion flange and drive pinion once again.

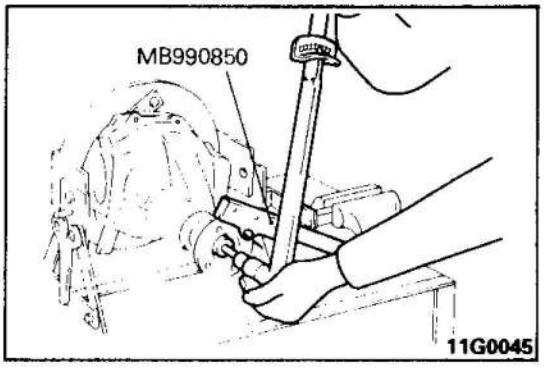


With Oil Seal

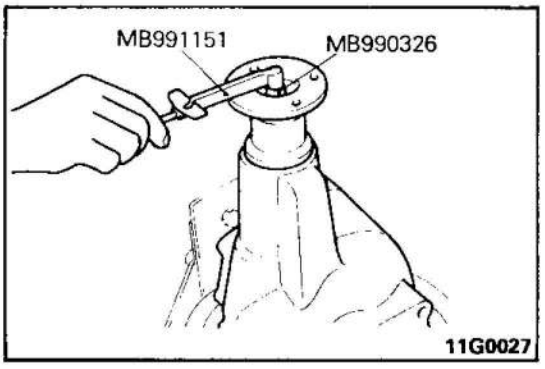
(1) After setting the drive pinion rear bearing inner race, drive the oil seal into the gear carrier front lip by using the special tool.

(2) Apply the specified grease to the oil seal lip.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2



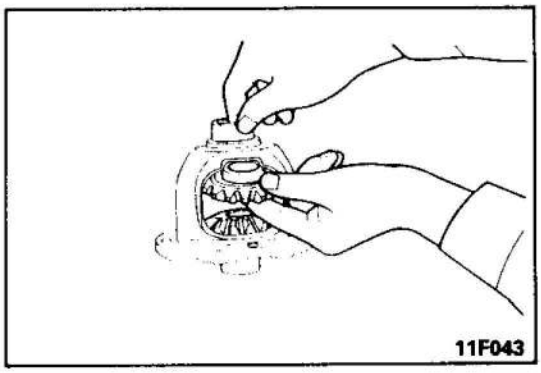
(3) Install the drive pinion assembly and companion flange with mating marks properly aligned, and tighten the companion flange self-locking nut to the specified torque by using the special tools.



(4) Measure the drive pinion turning torque (with oil seal) to verify that the drive pinion preload complies with the standard value.

Standard value: 0.6–0.7 Nm (6.0–7.0 kgcm, 5.2–6.1 In.lbs.)

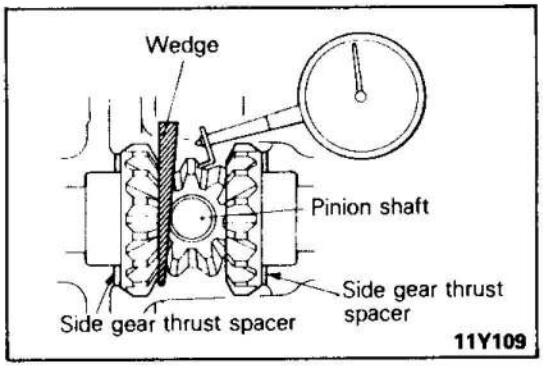
(5) If the measured value is not within the standard value range, check for faulty installation of the oil seal or faulty tightening of the self-locking nut.


11F043

- **ADJUSTMENT OF DIFFERENTIAL GEAR BACKLASH**

(1) Assemble the side gears, side gear thrust spacers, pinion gears, and pinion washers into the differential case.
(2) Temporarily install the pinion shaft.

NOTE
Do not drive in the lock pin yet.



11Y109

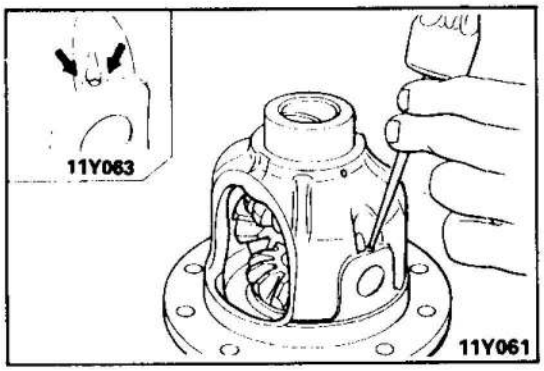
(3) Insert a wedge between the side gear and the pinion shaft to lock the side gear.
(4) Measure the differential gear backlash with a dial indicator on the pinion gear.

NOTE
Measure backlash on 2 pinions.

Standard value: 0–0.076 mm (0–0.0030 in.)
Limit: 0.2 mm (0.008 in.)

(5) If the differential gear backlash exceeds the limit, adjust the backlash by installng thicker side gear thrust spacers.

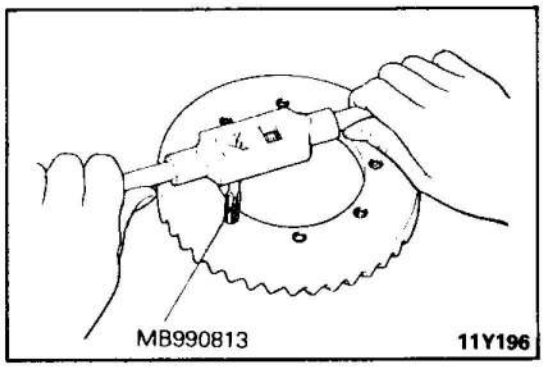
NOTE
1. Assure that backlash value is under the limit value and that differential gear turns smoothly after adjusting.
2. If adjustment is impossible, replace side gear and pinion gear set.



11Y061

23. INSTALLATION OF LOCK PIN

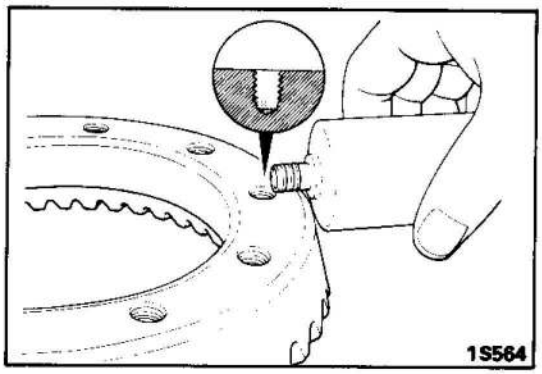
(1) Align the pinion shaft lock pin hole with the differential case lock pin hole, and drive in the lock pin.
(2) Stake the lock pin with a punch at two points.



11Y196

24. INSTALLATION OF DRIVE GEAR

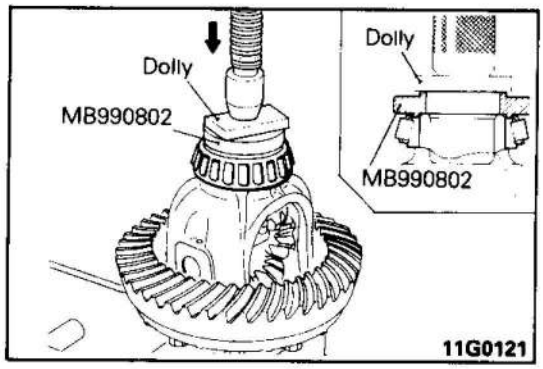
(1) Clean the drive gear attaching bolts.
(2) Remove the adhesive adhered to the threaded holes of the drive gear by turning the special tool (tap M10×1.25), and then clean the threaded holes by applying compressed air.



(3) Apply the specified adhesive to the threaded holes of the drive gear.

Specified adhesive: 3M Stud Locking Part No.4170 or equivalent

(4) Install the drive gear onto the differential case with the mating marks properly aligned. Be sure to tighten the bolts to the specified torque in a diagonal sequence.



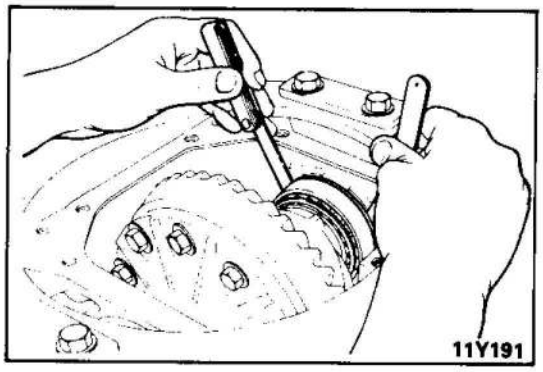
25. INSTALLATION OF SIDE BEARING INNER RACES

Press-fit the side bearing inner races to the differential case by using the special tool.

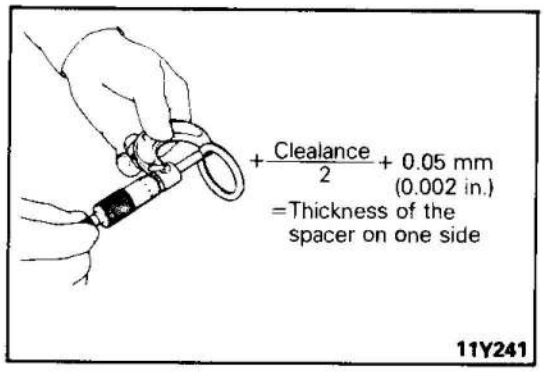
• ADJUSTMENT OF FINAL DRIVE GEAR BACKLASH

(1) Install the side bearing adjusting spacers, which are thinner than those removed, to the side bearing outer races, and then mount the differential case assembly into the gear carrier.

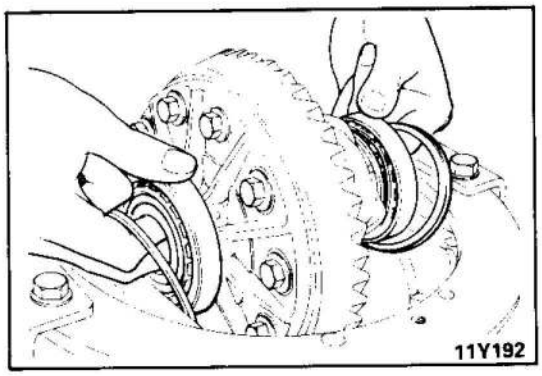
NOTE
Select side bearing adjusting spacers with the same thickness for both the drive pinion side and the drive gear side.



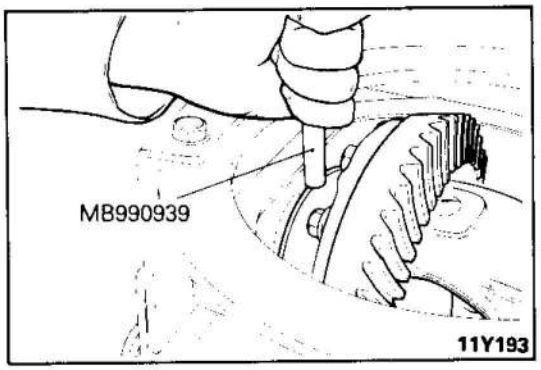
(2) Push the differential case assembly to one side, and measure the clearance between the gear carrier and the side bearing adjusting spacer with a feeler gauge.



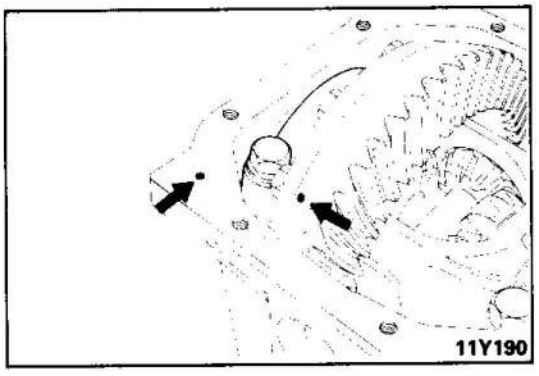
(3) Measure the thickness of the side bearing adjusting spacers on one side, select two pairs of spacers which correspond to that thickness plus one half of the clearance plus 0.05 mm (0.002 in.), and then install one pair each to the drive pinion side and the drive gear side.



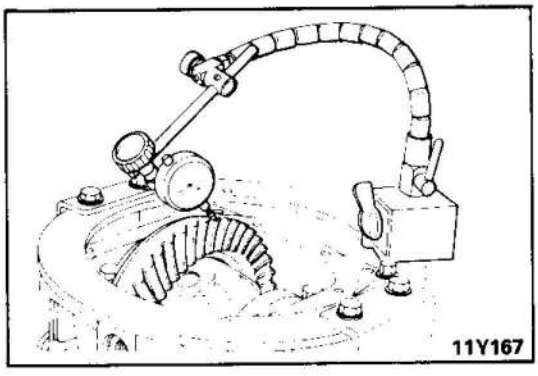
(4) Install the side bearing adjusting spacers and differential case assembly, as shown in the illustration, to the gear carrier.



(5) Tap the side bearing adjusting spacers with the brass bar to fit them to the side bearing outer race.



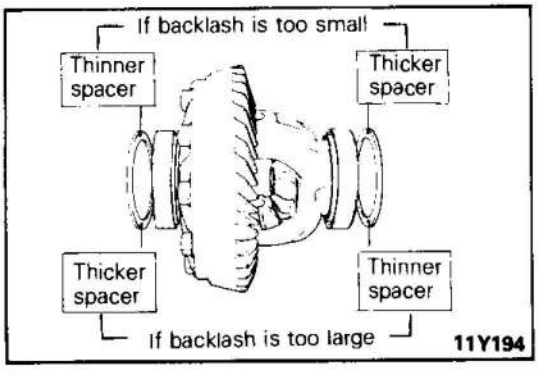
(6) Align the mating marks on the gear carrier and the bearing cap, and then tighten the bearing cap.



(7) With the drive pinion locked in place, measure the final drive gear backlash with a dial indicator on the drive gear.

NOTE
Measure at four points or more on the circumference of the drive gear.

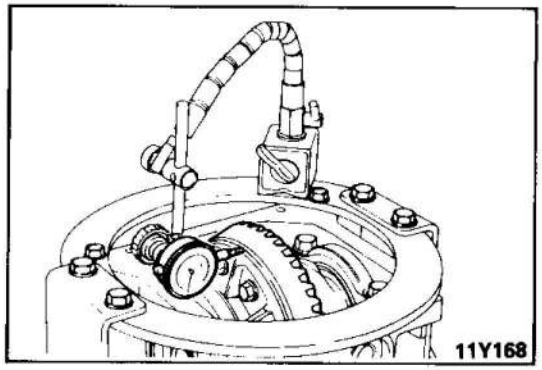
Standard value: 0.11–0.16 mm (0.0043–0.0063 in.)



(8) Change the side bearing adjusting spacers as illustrated, and then adjust the final drive gear backlash between the drive gear and the drive pinion.

NOTE
When increasing the number of side bearing adjusting spacers, use the same number for each, and as few as possible.

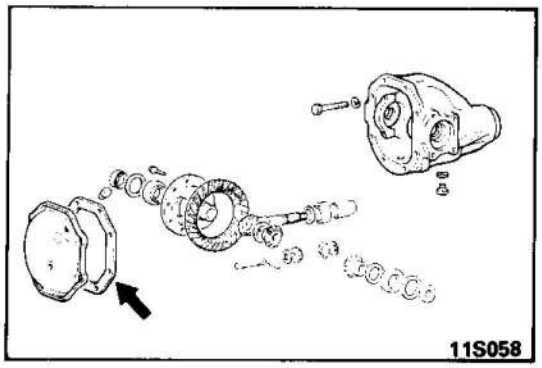
(9) Check the drive gear and drive pinion for tooth contact. If poor contact is evident, make adjustment. (Refer to P.26–65.)



(10)Measure the drive gear runout at the shoulder on the reverse side of the drive gear.

Limit: 0.05 mm (0.0020 in.)

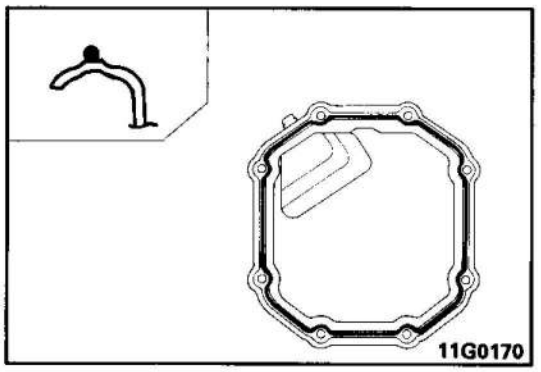
(11)If the drive gear runout exceeds the limit, reinstall by changing the phase of the drive gear and differential case and remeasure.



30. APPLICATION OF SEALANT TO GASKET (when there is a gasket present)

Apply the specified sealant to both sides of the gasket and install the differential cover to the differential carrier.

Specified sealant: 3M ATD Part No.8661, 8663 or equivalent



31. APPLICATION OF SEALANT TO COVER (when there is no gasket present)

Apply the indicated sealant to the cover flange face as illustrated, then install the differential cover to the differential carrier.

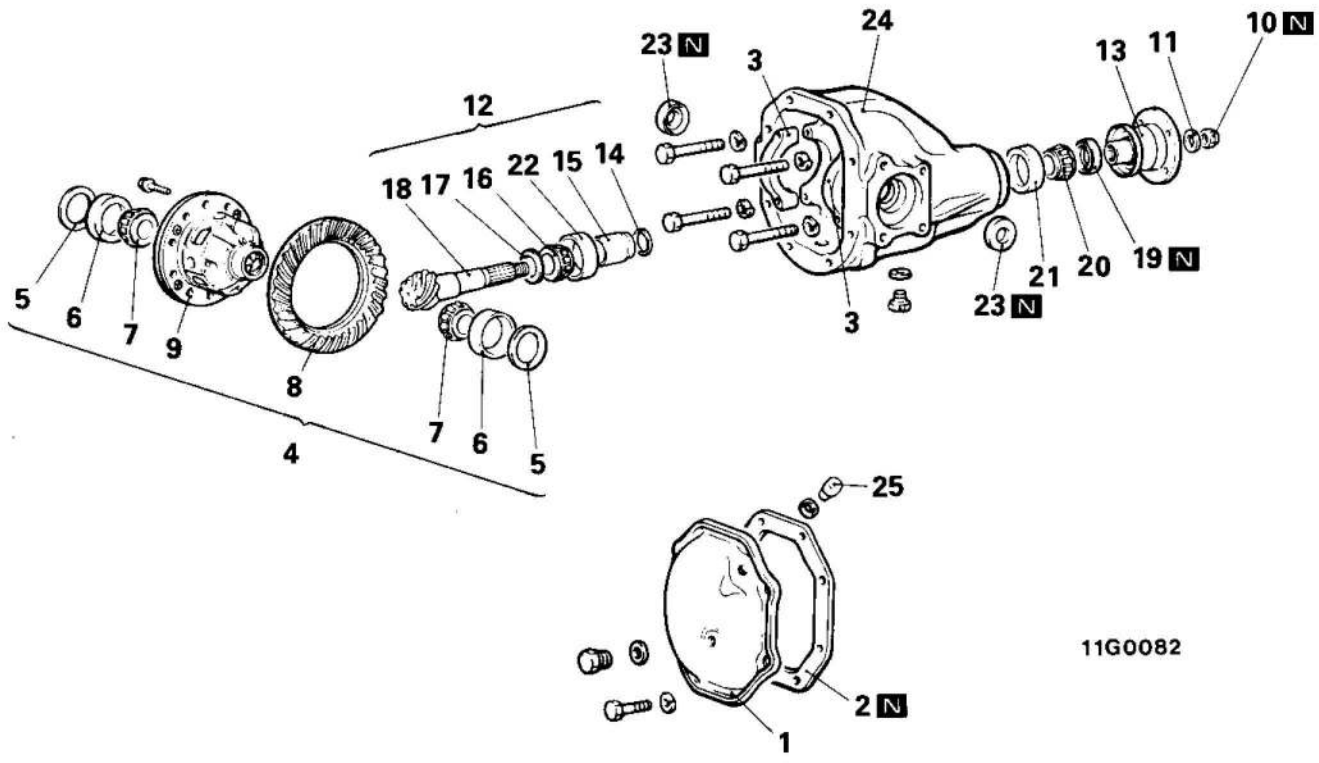
Specified sealant: Three bond TB1216 (silicon sealer) or equivalent

DISASSEMBLY (4 PINION)

E26WE

Inspection before Disassembly
- Final drive gear backlash
- Runout of drive gear rear side
- Final drive gear tooth contact

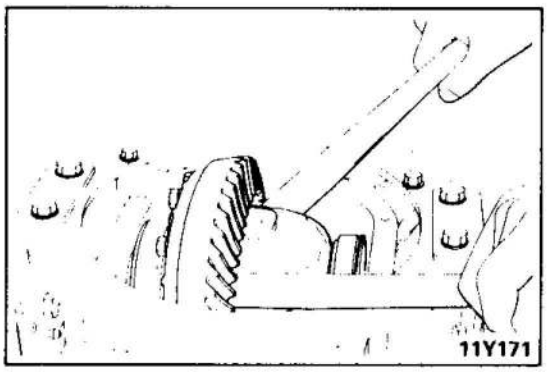
} Refer to P.26–64 to 66.



Disassembly steps

1. Cover
2. Gasket
3. Bearing caps
4. ◆◆ Differential case assembly
5. Side bearing adjusting spacers
6. Side bearing outer races
7. ◆◆ Side bearing inner races
8. ◆◆ Drive gear
9. 4 pinion case asssembly
10. ◆◆ Companion flange self-locking nut
11. Washer
12. ◆◆ Drive pinion assembly
13. Companion flange
14. Drive pinion rear shim (for drive pinion torque adjustment)
15. Drive pinion spacer
16. ◆◆ Drive pinion front bearing inner race
17. Drive pinion front shim (for drive pinion height adjustment)
18. Drive pinion
19. Oil seal
20. Drive pinion rear bearing inner race
21. ◆◆ Drive pinion rear bearing outer race
22. ◆◆ Drive pinion front bearing outer race
23. Oil seal
24. Gear carrier
25. Vent plug

NOTE
(1) ◆◆ : Refer to "Service Points of Disassembly".
(2) N : Non-reusable parts



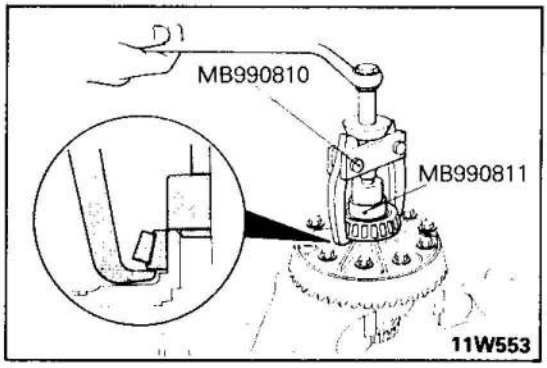
SERVICE POINTS OF DISASSEMBLY E26WFAC

4. REMOVAL OF DIFFERENTIAL CASE ASSEMBLY

Take out the differential case assembly with a hammer handle.

Caution
When taking out the differentail case assembly, be careful not to drop and damage the side bearing outer races.

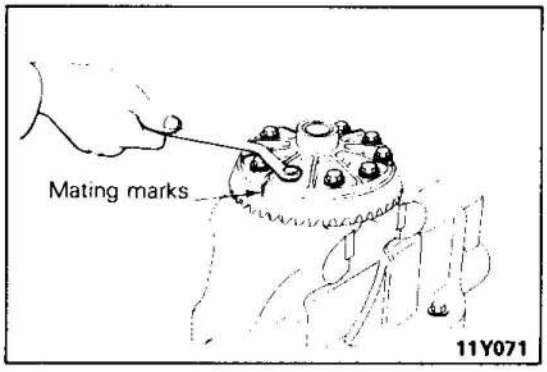
NOTE
Keep the right and left side bearings and side bearing adjusting spacers separate, so that they do not become mixed at the time of reassembly.



7. REMOVAL OF SIDE BEARING INNER RACES

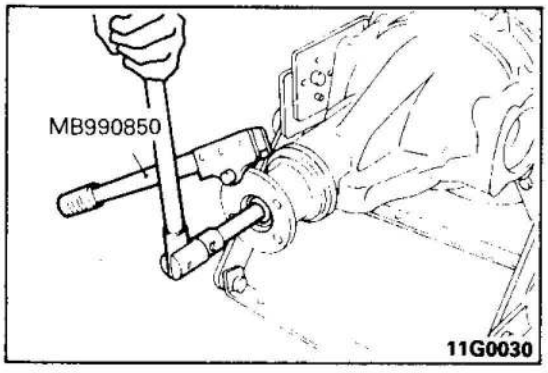
Pull out the side bearing inner races by using the special tools.

NOTE
There are two notches provided (at the differential case side) for the claw part of the special tool; use the special tool at that position.



8. REMOVAL OF DRIVE GEAR

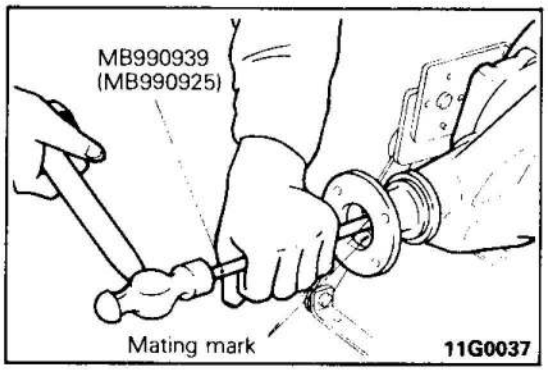
(1) Make the mating marks to the differential case and the drive gear.
(2) Loosen the drive gear attaching bolts in diagonal sequence to remove the drive gear.



10. REMOVAL OF COMPANION FLANGE SELF-LOCKING NUT

Use the special tool to hold the companion flange and remove the companion flange self-locking nut.

NOTE
Loosen self-locking nut to drive pinion edge but do not remove.

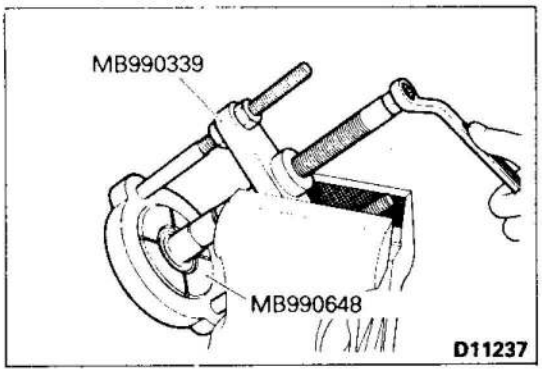


12. REMOVAL OF DRIVE PINION ASSEMBLY

(1) Make mating marks on the drive pinion and companion flange.

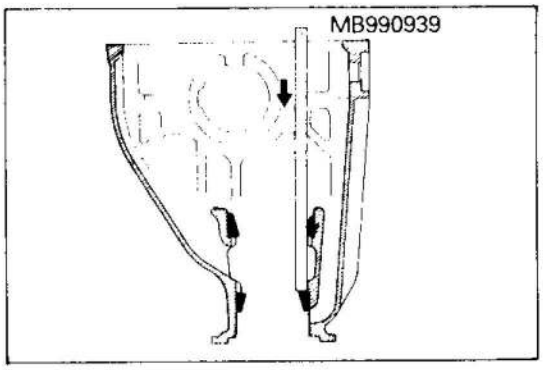
Caution
The mating mark made on the companion flange must not be on the coupling surface of the flange yoke and the frontpropeller shaft.

(2) Place brass rod on drive pinion edge and hammer to remove drive pinion assembly.



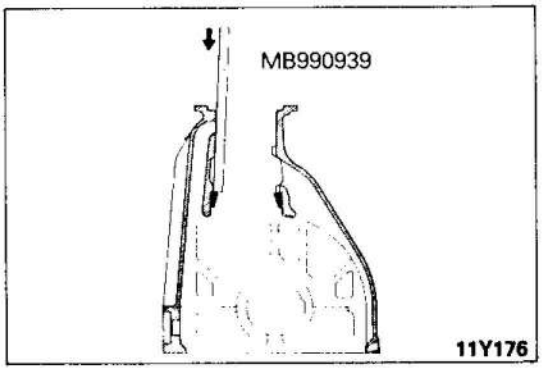
16. REMOVAL OF DRIVE PINION FRONT BEARING INNER RACE

Pull out the drive pinion front bearing inner race by using the special tools.



21. DRIVE PINION REAR BEARING OUTER RACE

Drive out the drive pinion rear bearing outer race from the gear carrier by using the brass rod.



22. REMOVAL OF DRIVE PINION FRONT BEARING OUTER RACE

Drive out the drive pinion rear bearing outer race from the gear carrier by using the brass rod.

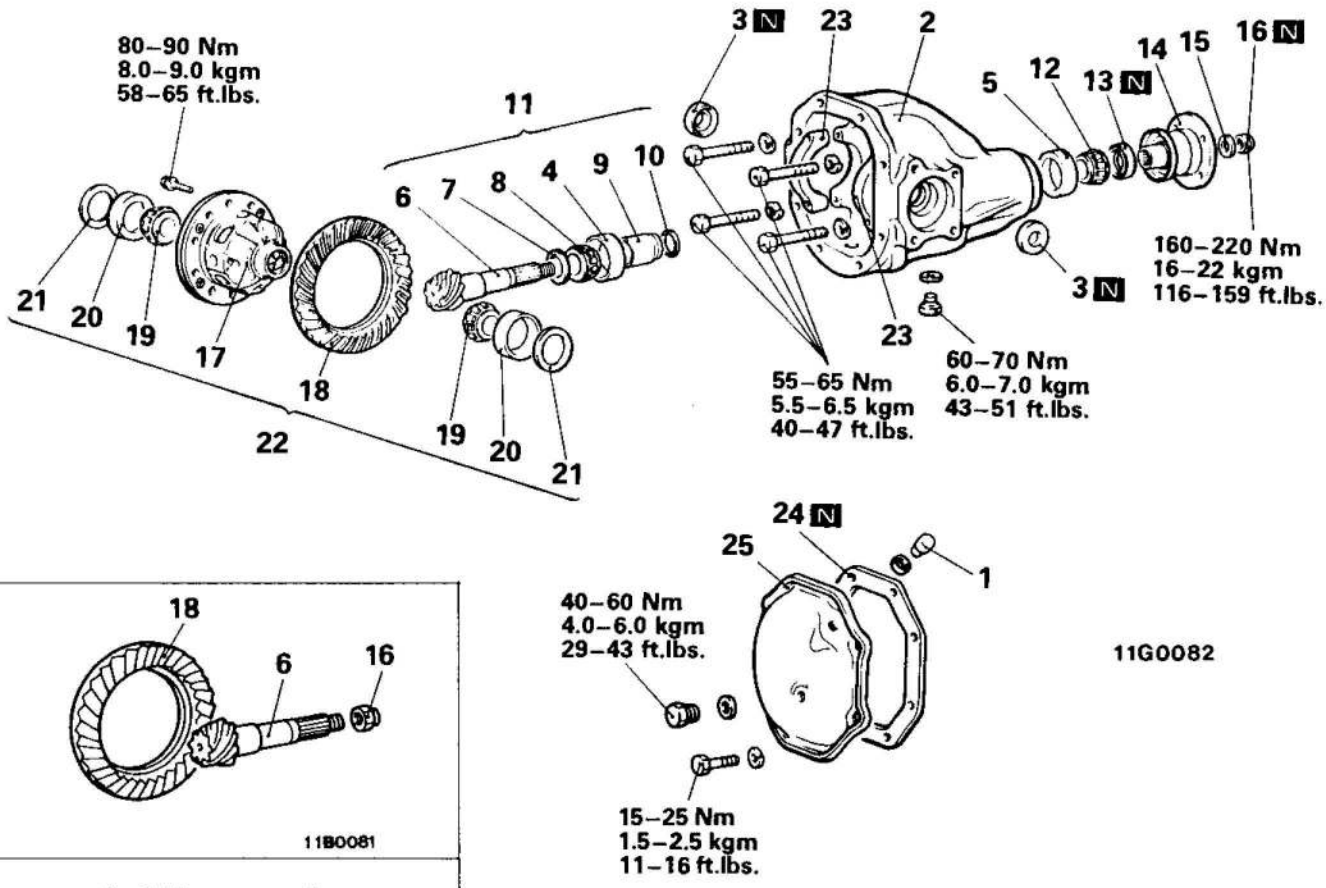
INSPECTION

E26WGAC

- Check the companion flange for wear or damage.
- Check the oil seal for wear or deterioration.
- Check the bearings for wear or discoloration.
- Check the gear carrier for cracks.
- Check the drive pinion and ring gear for wear or cracks.
- Check the side gear spline for wear or damage.

REASSEMBLY (4 PINION)

E26WE--

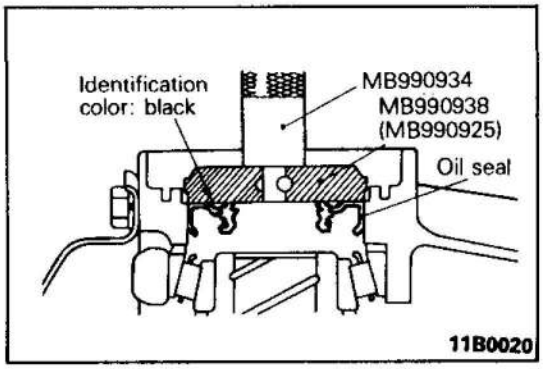


Final drive gear set

Reassembly steps

1. Vent plug
2. Gear carrier
- ◆◆ 3. Oil seals
- ◆◆ 4. Drive pinion front bearing outer race
- ◆◆ 5. Drive pinion rear bearing outer race
- ◆◆ Drive pinion height adjustment
6. Drive pinion
7. Drive pinion front shim (for drive pinion height adjustment)
8. Drive pinion front bearing inner race
9. Drive pinion spacer
- ◆◆ Drive pinion torque adjustment
10. Drive pinion rear shim (for drive pinion torque adjustment)
11. Drive pinion assembly
12. Drive pinion rear bearing inner race
13. Oil seal
14. Companion flange
15. Washer
16. Companion flange self-locking nut
17. 4 pinion case assembly
- ◆◆ 18. Drive gear
- ◆◆ 19. Side bearing inner races
20. Side bearing outer races
- ◆◆ Final drive gear backlash adjustment
21. Side bearing adjusting spacers
22. Differential case assembly
23. Bearing caps
- ◆◆ 24. Gasket
- ◆◆ 25. Cover

NOTE
(1) ◆◆ : Refer to "Service Points of Reassembly".
(2) N : Non-reusable parts

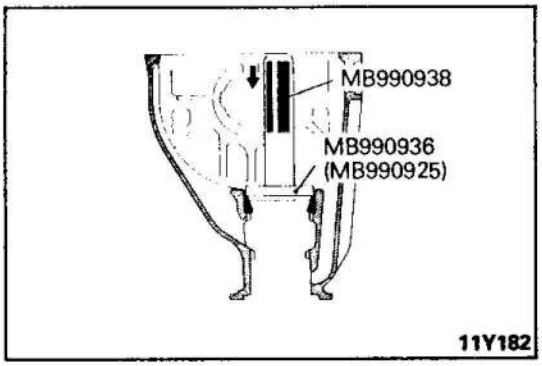


SERVICE POINTS OF REASSEMBLY E26WHAD

3. INSTALLATION OF OIL SEALS

Install the oil seal and apply a thin coat of specified grease to the lip of the oil seal.

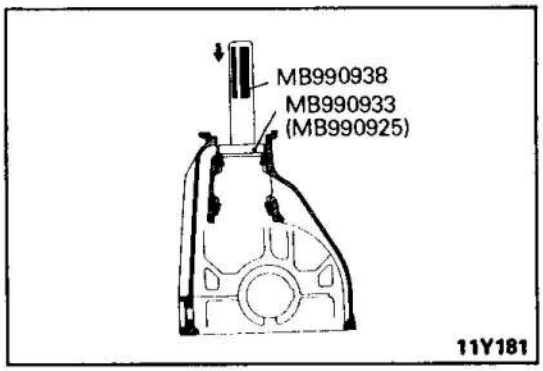
Specified grease: Multipurpose grease SAE J310, NLGI No. 2



4. INSTALLATION OF DRIVE PINION FRONT BEARING OUTER RACE

Press the drive pinion front bearing outer races into the gear carrier.

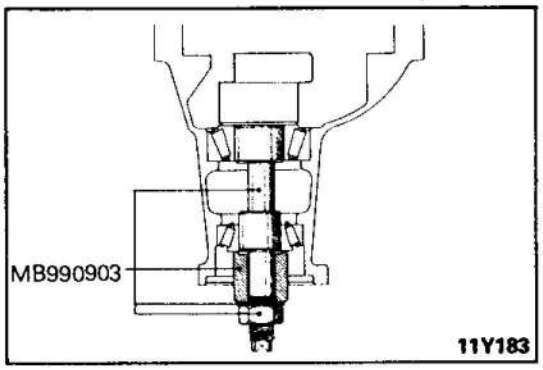
Caution
Perform pressing carefully so as not to tilt the outer race.



5. INSTALLATION OF DRIVE PINION REAR BEARING OUTER RACE

Press the drive pinion rear bearing outer races into the gear carrier.

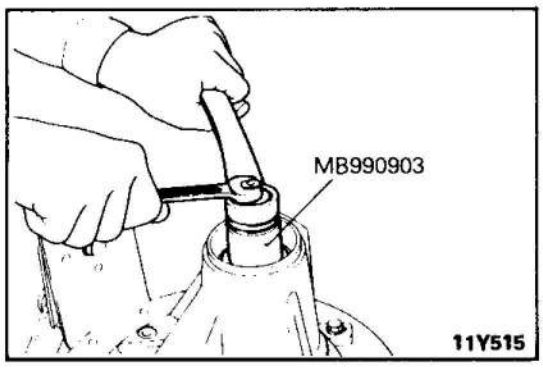
Caution
Perform pressing carefully so as not to tilt the outer race.



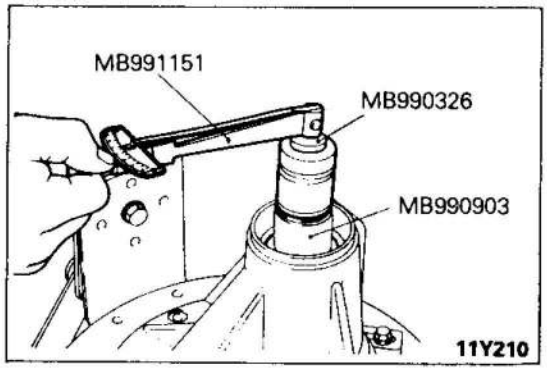
• ADJUSTMENT OF PINION HEIGHT

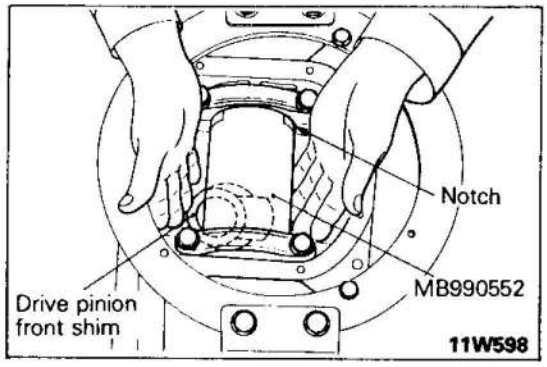
Adjust the drive pinion height by the following procedures:

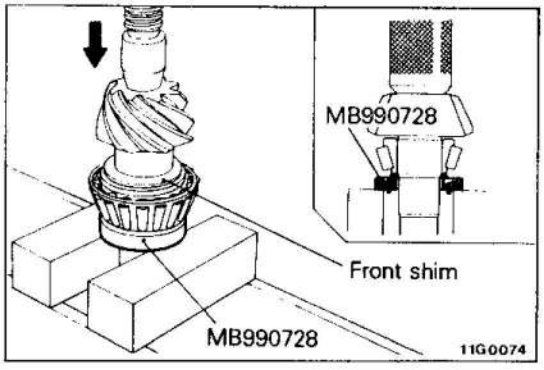
(1) Install special tools and drive pinion front and rear bearing inner races to the gear carrier in the sequence shown in the illustration.



(2) Tighten the nut of the special tool until the standard value of drive pinion turning torque is obtained.







(3) Measure the drive pinion turning torque (without the oil seal) by using the special tools.

Standard value: 0.4–0.5 Nm (4.0–5.0 kgcm, 3.5–4.3 in.lbs.)

NOTE
1. Gradually tighten the nut of the special tool while checking the drive pinion preload.
2. Because one rotation can't be made when the special tool is in contact with the gear carrier, move it a few times and, after seating the bearing, measure the rotation torque.

(4) Position the special tool in the side bearing seat of the gear carrier, and then select a drive pinion front shim of a thickness which corresponds to the gap between the special tools.

NOTE
1. Be sure to clean the side bearing seat thoroughly. When positioning the special tool, be sure that the cut-out sections of the special tool are in the position shown in the illustration, and also confirm that the special tool is in close contact with the side bearing seat.
2. When selecting the drive pinion front shims, keep the number of shims to a minimum.

(5) Fit the selected drive pinion front shim (s) to the drive pinion, and press the drive pinion front bearing inner race by using the special tool.

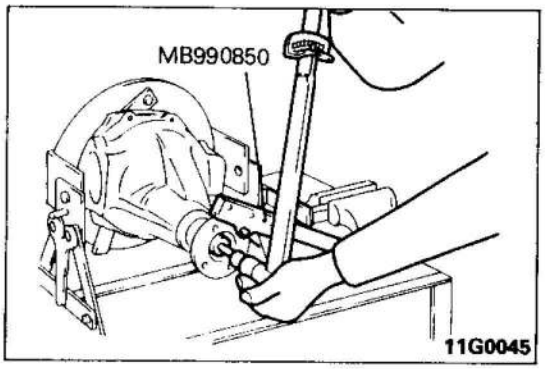
- **ADJUSTMENT OF DRIVE PINION TURNING TORQUE**

Adjust the drive pinion turning torque by using the following procedure:

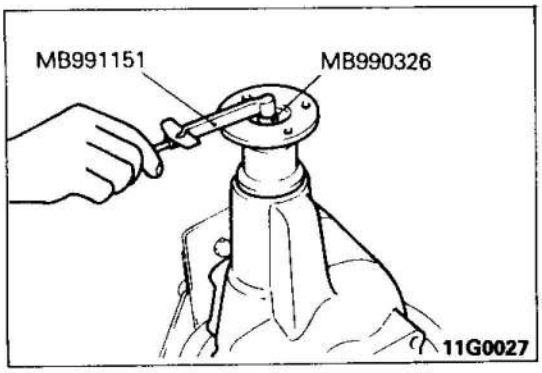
Without Oil Seal

(1) Insert the drive pinion into the gear carrier, and then install, from the front side of the carrier, the drive pinion spacer, the drive pinion rear shim, the drive pinion rear bearing inner race, and the companion flange in that order.

NOTE
Do not install the oil seal.



(2) Tighten the companion flange to the specified torque by using the special tool.



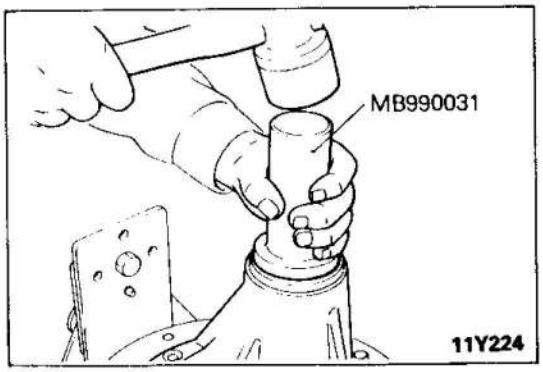
(3) Measure the drive pinion turning torque. (without the oil seal)

Standard value: 0.4–0.5 Nm (4.0–5.0 kgcm, 3.5–4.3 in.lbs.)

(4) If the drive pinion turning torque is not within the range of the standard value, adjust the preload by replacing the drive pinion front shim(s) or the drive pinion spacer.

NOTE
When selecting the drive pinion rear shims, if the number of shims is large, reduce the number of shim to a minimum by selecting the drive pinion spacers.

(5) Remove the companion flange and drive pinion once again.

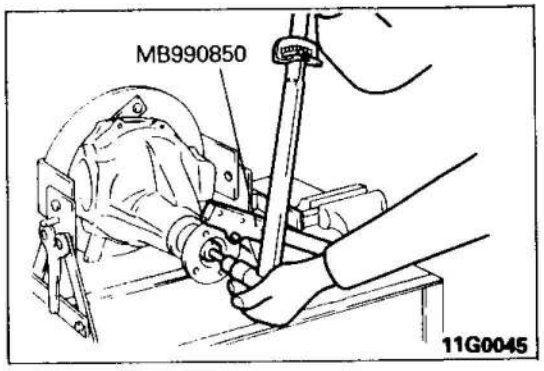


With Oil Seal

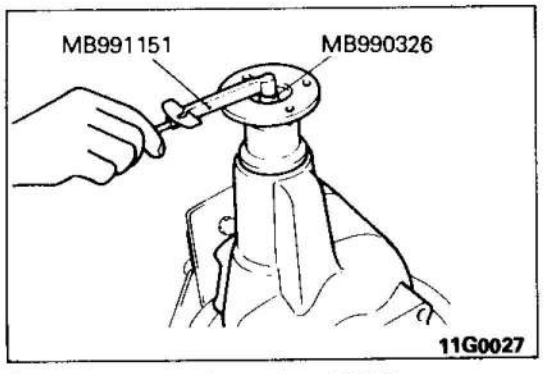
(1) After setting the drive pinion rear bearing inner race, drive the oil seal into the gear carrier front lip by using the special tool.

(2) Apply the specified grease to the oil seal lip.

Specified grease: Multipurpose grease SAE J310, NLGI No. 2



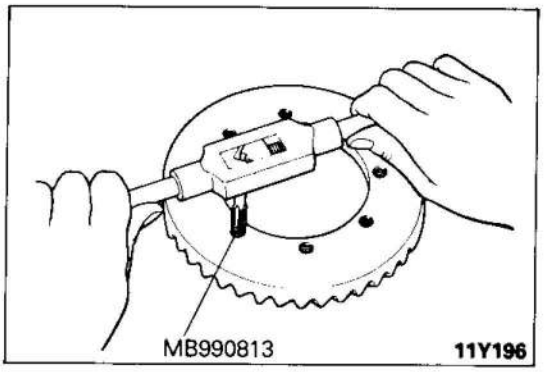
(3) Install the drive pinion assembly and companion flange with mating marks properly aligned, and tighten the companion flange self-locking nut to the specified torque by using the special tools.



(4) Measure the drive pinion turning torque (with oil seal) to verify that the drive pinion preload complies with the standard value.

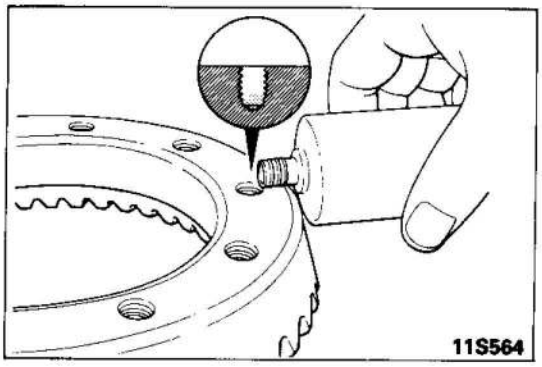
Standard value: 0.6–0.7 Nm (6.0–7.0 kgcm, 5.2–6.1 in.lbs.)

(5) If the measured value is not within the standard value range, check for faulty installation of the oil seal or faulty tightening of the self-locking nut.



18. INSTALLATION OF DRIVE GEAR

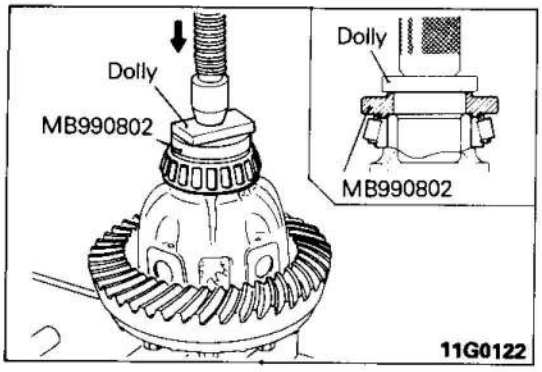
(1) Clean the drive gear attaching bolts.
(2) Remove the adhesive adhered to the threaded holes of the drive gear by turning the special tool (tap M10×1.25), and then clean the threaded holes by applying compressed air.



(3) Apply the specified adhesive to the threaded holes of the drive gear.

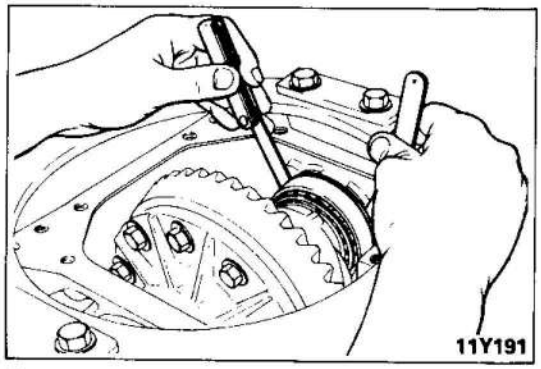
Specified adhesive: 3M Stud Locking Part No.4170 or equivalent

(4) Install the drive gear onto the differential case with the mating marks properly aligned. Be sure to tighten the bolts to the specified torque in a diagonal sequence.



19. INSTALLATION OF SIDE BEARING INNER RACES

Press the side bearing inner races to the differential case by using the special tool.

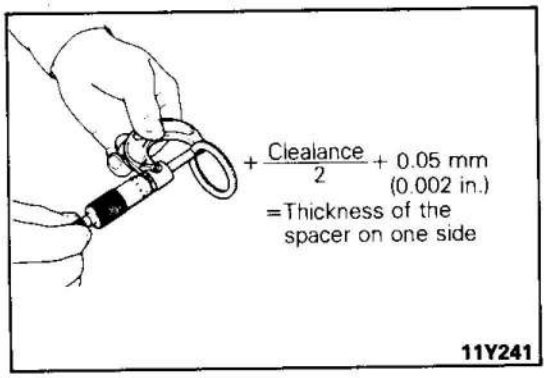


• ADJUSTMENT OF FINAL DRIVE GEAR BACKLASH

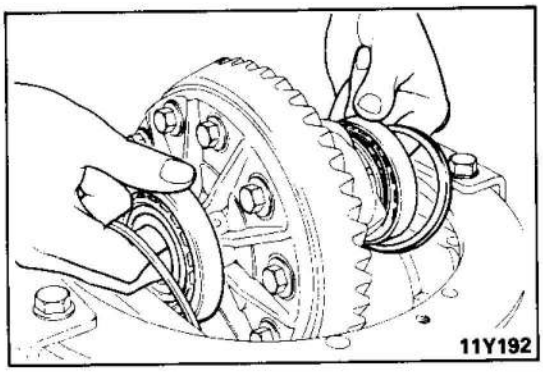
(1) Install the side bearing adjusting spacers, which are thinner than those removed, to the side bearing outer races, and then mount the differential case assembly into the gear carrier.

NOTE
Select side bearing adjusting specers with the same thickness for both the drive pinion side and the drive gear side.

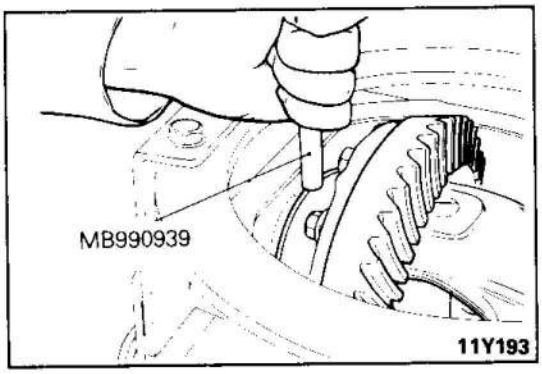
(2) Push the differential case assembly to one side, and measure the clearance between the gear carrier and the side bearing adjusting spacer with a feeler gauge.



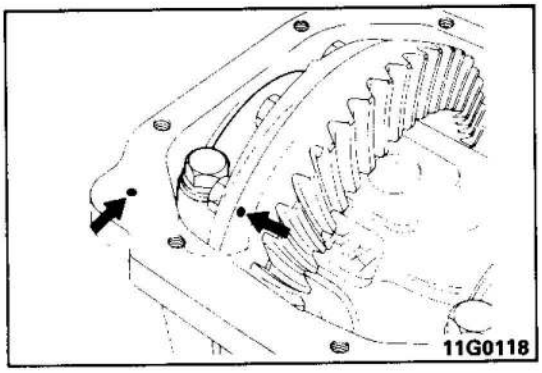
(3) Measure the thickness of the side bearing adjusting spacers on one side, select two pairs of spacers which correspond to that thickness plus one half of the clearance plus 0.05 mm (0.002 in.), and then install one pair each to the drive pinion side and the drive gear side.



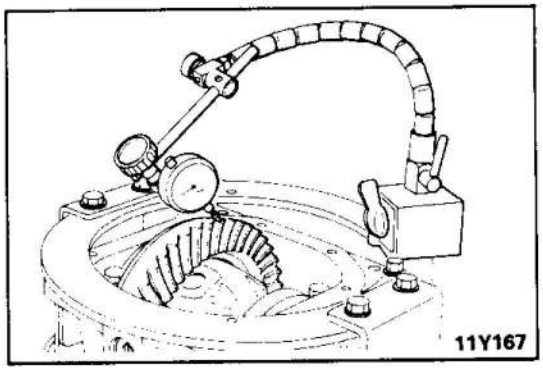
(4) Install the side bearing adjusting spacers and differential case assembly, as shown in the illustration, to the gear carrier.



(5) Tap the side bearing adjusting spacers with the brass bar to fit them to the side bearing outer race.



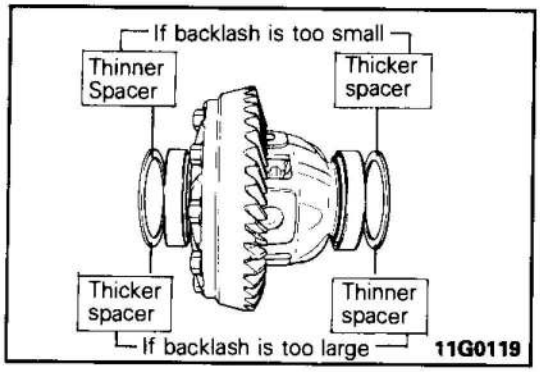
(6) Align the mating marks on the gear carrier and the bearing cap, and then tighten the bearing cap.



(7) With the drive pinion locked in place, measure the final drive gear backlash with a dial indicator on the drive gear.

NOTE
Measure at four points or more on the circumference of the drive gear.

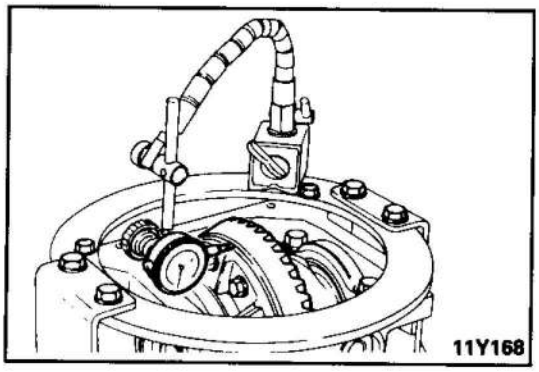
Standard value: 0.11–0.16 mm (0.004–0.006 in.)



(8) Change the side bearing adjusting spacers as illustrated, and then adjust the final drive gear backlash between the drive gear and the drive pinion.

NOTE
When increasing the number of side bearing adjusting spacers, use the same number for each, and as few as possible.

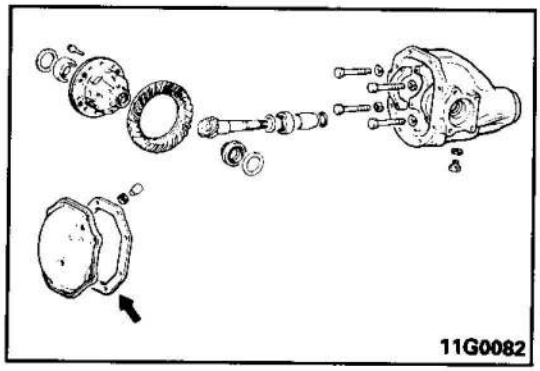
(9) Check the drive gear and drive pinion for tooth contact. If poor contact is evident, make adjustment.
(Refer to P.26–65.)



(10) Measure the drive gear runout at the shoulder on the reverse side of the drive gear.

Limit: 0.05 mm (0.002 In.)

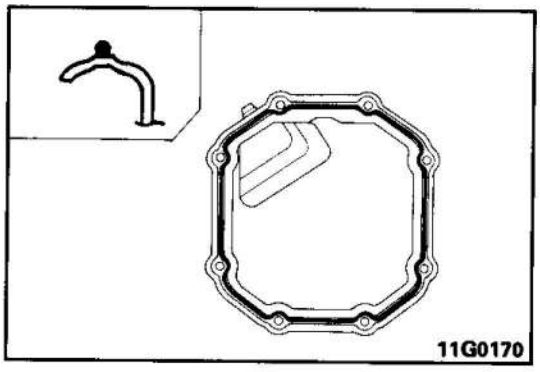
(11) If the drive gear runout exceeds the limit, reinstall by changing the phase of the drive gear and differential case, and remeasure.



24. APPLICATION OF SEALANT TO GASKET (when there is a gasket present)

Apply the semi-drying sealant to both sides of the gasket and install the differential cover to the differential carrier.

Specified sealant: 3M ATD Part No. 8661, 8663 or equivalent



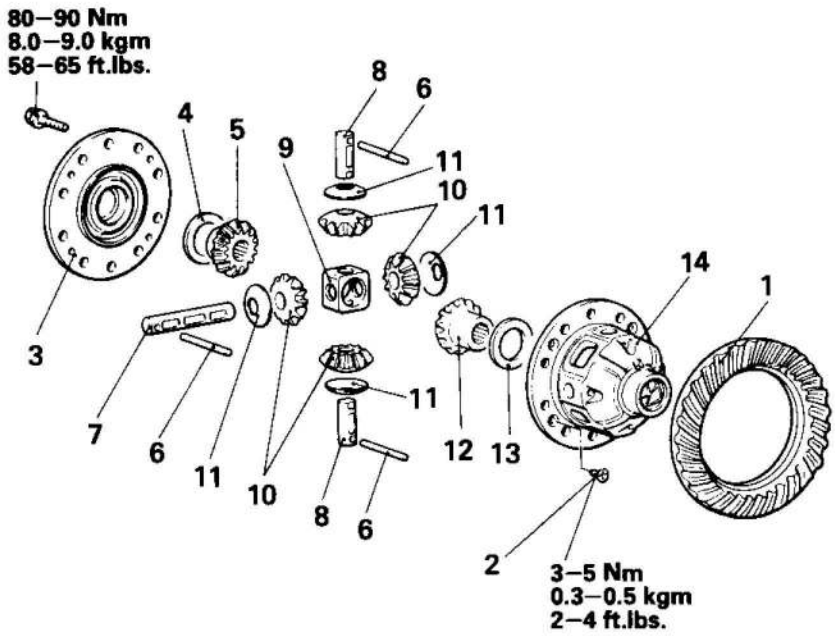
25. APPLICATION OF SEALANT TO COVER (when there is no gasket present)

Apply the indicated sealant to the cover flange face as illustrated, then install the differential cover to the differential carrier.

Specified sealant: Three bond TB1216 (silicon sealer) or equivalent

OVERHAUL (4 PINION CASE ASSEMBLY)

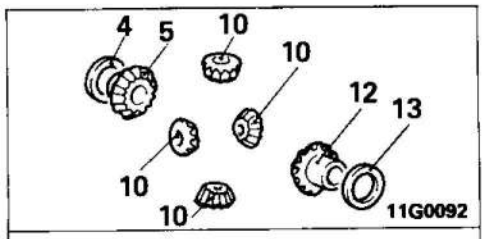
E26WK--



11G0011

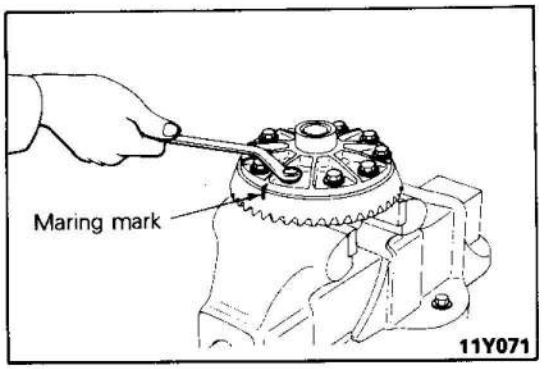
Disassembly steps

◆◆◆◆ 1. Drive gear
◆◆ 2. Screws
3. Case A
4. Side gear spacer (RH)
5. Side gear (RH)
◆◆ Backlash adjustment on differential gear case A side
◆◆ Differential gear backlash check
6. Lock pins
7. Pinion shaft-A
8. Pinion shafts-B
9. Pinion shaft holder
10. Pinion gears
11. Washers
12. Side gear (LH)
13. Side gear spacer (LH)
◆◆ Backlash adjustment on differential gear case B side
14. Case B



Differential gear set

NOTE
(1) Reverse the disassembly procedures to reassemble.
(2) ◆◆ : Refer to "Service Points of Disassembly".
(3) ◆◆ : Refer to "Service Points of Reassembly".



11Y071

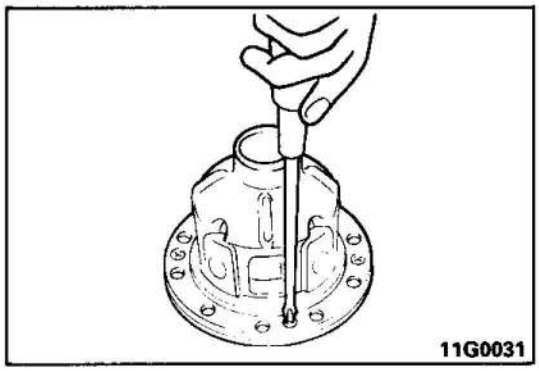
SERVICE POINTS OF DISASSEMBLY

E26WLAA

1. REMOVAL OF DRIVE GEAR

(1) Place match marks on drive gear and differential case for reassembly.
(2) Loosen drive gear holding bolts in diagonal order to remove.

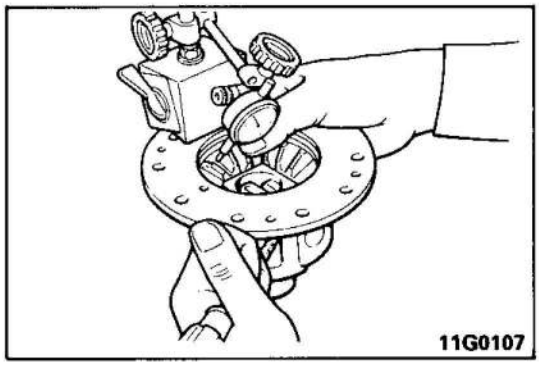
REVISED


11G0031

2. REMOVAL OF SCREW

(1) Evenly loosen 4 screws on case A and B to remove.
(2) Set case B downward and remove case A, side gear spacer (RH) and side gear (RH).

NOTE
Check differential gear backlash to determine necessity of disassembling side gear (RH) and onward.


11G0107

• DIFFERENTIAL GEAR BACKLASH CHECK

Check differential gear backlash as follows.
(1) Insert cloth wrapped screwdriver through side of case B and lock side gear (LH) and pinion gear.(one piece)
(2) Contact dial gauge on pinion gear facing the locked pinion gear and measure backlash within the standard value.

NOTE
Measure 2 pinion gears.

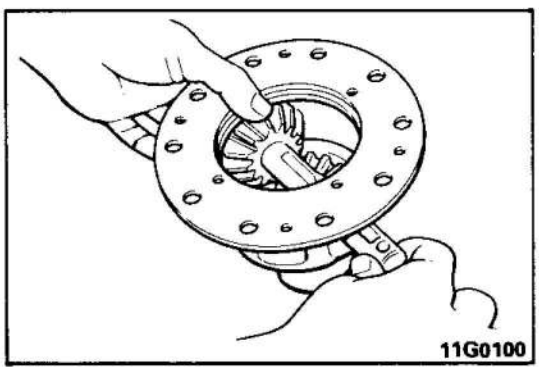
Standard value: 0.01–0.25 mm (0.0004–0.0098 In.)

(3) When backlash exceeds the standard value, adjust side gear spacer (LH).

NOTE
If backlash is within the standard value, assure appropriate gear spacer (RH) thickness and assemble 4 pinion case assembly. (Refer to P. 26-90.)

INSPECTION E26WMAA

- Check the gears for wear or damage.
- Check the side gear spline for wear or damage.
- Check the pinion shaft for wear.

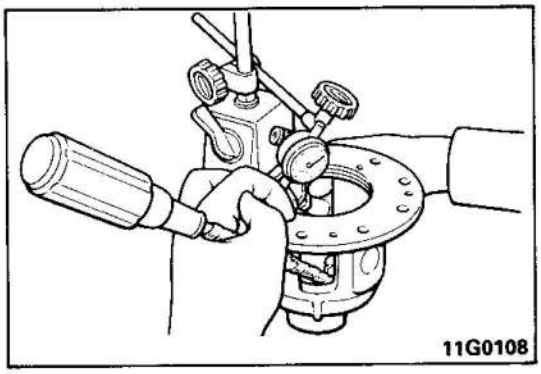

11G0100

SERVICE POINTS OF REASSEMBLY E26WNAA

• BACKLASH ADJUSTMENT OF DIFFERENTIAL GEAR CASE B SIDE

Adjust backlash on differential gear case B side as follows.
(1) Temporarily install side gear spacer (LH), side gear (LH), washers, 2 pinion gears and pinion shaft A on case B.

NOTE
Do not assemble pinion shaft holder, pinion shaft-B or the remaining pinion gears (2).

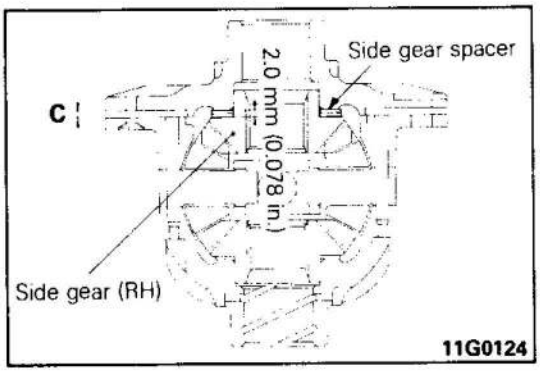

11G0108

(2) Insert wrapped screwdriver through side of case B to lock one side of pinion gear and side gear (LH).
(3) Place dial gauge on unlocked pinion gear and measure differential gear backlash within the standard value.

NOTE
Measure 2 pinion gears.

Standard value: 0.01–0.25 mm (0.0004–0.0098 in.)

(4) When backlash exceeds the standard value, adjust with selected side gear spacer (LH).
(5) Install washers, pinion gears, pinion shaft holder and pinion shaft-A and B. Lock with lock pin through case B.

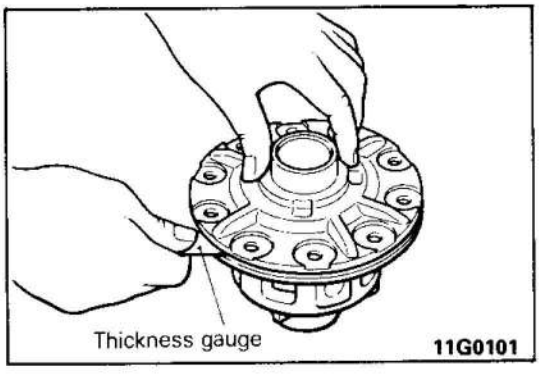


11G0124

- **BACKLASH ADJUSTMENT ON DIFFERENTIAL GEAR CASE A SIDE.**

Adjust backlash as follows.

(1) Install side gear (RH) and 2 side gear spacers [1.0 mm (0.039 in.) thick]. Press differential case A to differential case B.

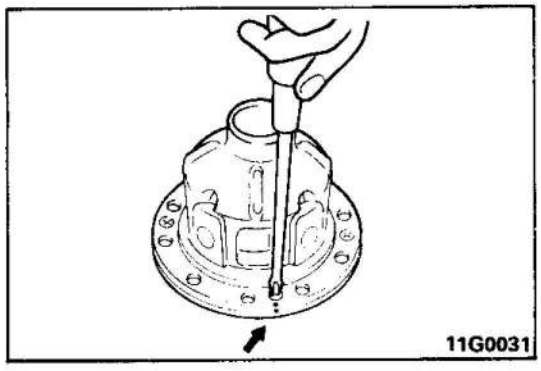


11G0101

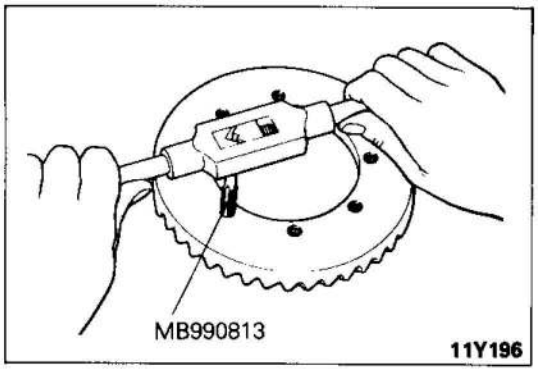
(2) Measure flange space (C) between differential case A and B with feeler gauge.
(3) Calculate side gear spacer (RH) thickness (D) as follows:

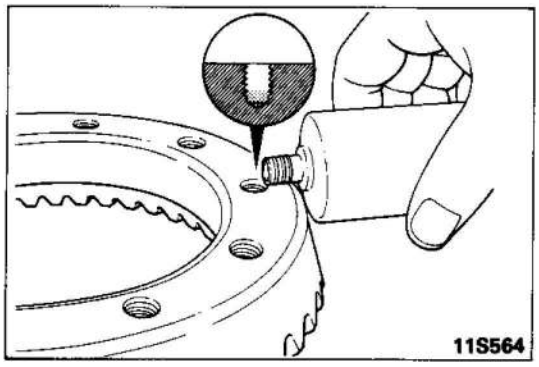
D=2.0 mm (0.078 in.)–[C+0.2 mm (0.008 in.)]

(4) Choose spacer with a thickness nearest D in (3) and adjust differential gear backlash on the right side.


11G0031

(5) Match the match marks and assemble cases A and B.
(6) Assure smooth rotation of inner shaft.





1. INSTALLATION OF DRIVE GEAR

(1) Remove adhesive from drive gear bolts.
(2) Use special tool (tap M10×1.25) to remove adhesive from drive gear bolt holes. Clean by blowing air.

(3) Apply specified adhesive on drive gear bolt holes.
Specified adhesive: 3M Stud Locking Part No.4170 or equivalent

(4) Match the marks and install drive gear on differential case. Tighten to specified torque in diagonal order.

NOTES