

FRONT SUSPENSION

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SPECIFICATIONS

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GENERAL SPECIFICATIONS

Items	2.6L Engine	3.0L Engine
Suspension system	Independent double wishbone with torsion bar and telescopic shock absorber	Independent double wishbone with torsion bar and telescopic shock absorber
Kingpin inclination angle	8°	8°
Torsion bar		
Length x O.D. mm (in.)		
2-door vehicles	1,277.5 x 24.5 (50.295 x .965)	1,277.5 x 23.5 (50.295 x .925)
4-door vehicles	–	1,277.5 x 24.5 (50.295 x .965)
Spring constant (wheel position when body set) N/mm (lbs./in.)		
2-door vehicles	22 (123)	–
4-door vehicles	–	22 (123)
Torsion spring constant Nm/deg (ft.lbs./deg)		
2-door vehicles	–	34.61 (25.03)
4-door vehicles	–	–
Shock absorber		
Type	Hydraulic cylindrical double-acting type	Hydraulic cylindrical double-acting type
Maximum length mm (in.)	335 (13.19)	335 (13.19)
Compressed length mm (in.)	215 (8.46)	215 (8.46)
Stroke mm (in.)	120 (4.72)	120 (4.72)
Damping force [at 0.3m/sec. (.984 ft./sec.)]		
Expansion N (lbs.)	1,940–2,560 (428–564)	1,940–2,560 (428–564)
Contraction N (lbs.)	900–1,300 (198–287)	900–1,300 (198–287)
Front axle hub bearing		
Type	Tapered roller bearing	Tapered roller bearing
Dimensions (O.D. x I.D.) mm (in.)		
Outer	73.431 x 45.242 (2.8910 x 1.7811)	73.431 x 45.242 (2.8910 x 1.7811)
Inner	73.431 x 45.242 (2.8910 x 1.7811)	73.431 x 45.242 (2.8910 x 1.7811)
Drive shaft		
Joint type Outer	B.J. (Birfield Joint)	B.J. (Birfield Joint)
Inner	D.O.J. (Double Offset Joint)	D.O.J. (Double Offset Joint)
Length (Joint to joint) mm (in.)		
Left		
Manual transmission	267 (10.5)	265.5 (10.45)
Automatic Transmission	–	267 (10.5)
Right		
Manual transmission	294 (11.6)	283.5 (11.16)
Automatic Transmission	–	294 (11.6)
Inner shaft		
Shaft overall length mm (in.)	432 (17.0)	432 (17.0)
Bearing dimensions (O.D. x I.D.) mm (in.)	62 x 35 (2.44 x 1.38)	62 x 35 (2.44 x 1.38)

Items	2.6L Engine	3.0L Engine
Differential		
Final drive gear type	Hypoid gear	Hypoid gear
Reduction ratio	4.625	4.625
Differential gear type	Straight bevel gear	Straight bevel gear
Number of teeth		
Drive gear	37	37
Drive pinion	8	8
Side gear	14	14
Pinion gear	10	10

SERVICE SPECIFICATIONS

N02CB--

Items	Specifications
Standard values	
Toe-in mm (in.)	5.5±3.5 (.217±.138)
Camber	1°±30' (Left/right deviation: within 30')
Caster	2°55'±1° (Left/right deviation: within 30')
Drive shaft end play mm (in.)	0.2–0.5 (.008–.020)
Front hub turning resistance Nm (in.lbs.)	0.3–1.3 (2.6–11.3)
[Spring scale reading] N (lbs.)	4.3–18.6 (0.94–4.10)
Front hub play in the axial direction mm (in.)	0.05 (.0020) or less
Automatic free-wheeling hub	
Brake assembly thickness mm (in.)	10.5 (.41)
Upper ball joint starting torque Nm (in.lbs)	0.8–3.5 (7–30)
Clearance between bump stopper and bump stopper bracket mm (in.)	71 (2.80)
Shock absorber attaching dimension mm (in.)	7–8 (.27–.31)
Stabilizer attaching bolt end attaching dimension mm (in.)	6–8 (.24–.31)
Anchor arm attaching dimension mm (in.)	
L.H.	135.2–143.2 (5.323–5.638)
R.H.	124.3–132.3 (4.894–5.210)
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 (.0043–.0063)
Differential gear backlash mm (in.)	0–0.076 (0–.0030)
Drive pinion rotation torque Nm (in.lbs.)	
With oil seal	
<2.6L Engine>	0.35–0.45 (3.04–3.91)
<3.0L Engine>	0.6–0.7 (5.21–6.08)
Without oil seal	
<2.6L Engine>	0.15–0.25 (1.30–2.17)
<3.0L Engine>	0.4–0.5 (3.47–4.34)

Items	Specifications
Limits	
Front axle total backlash mm (in.)	14 (.55)
Automatic free-wheeling hub	
Free-wheeling hub turning resistance Nm (in.lbs.)	1.0 (8.7)
[Spring scale reading] N (lbs.)	14 (3.1)
Brake assembly thickness mm (in.)	9.6 (.378)
Return spring deterioration mm (in.)	35 (1.38)
Shift spring deterioration mm (in.)	30 (1.18)
Upper arm shaft starting torque Nm (ft.lbs.)	15 (11)
[Spring scale reading] N (lbs.)	6.5 (1.4)
Lower ball joint end play mm (in.)	0.5 (.020)
Differential	
Drive gear runout mm (in.)	0.05 (.0020)
Differential gear backlash mm (in.)	0.2 (.008)

TORQUE SPECIFICATIONS

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Items	Nm	ft.lbs
Automatic free-wheeling hub cover	18–35	13–25
Free wheeling hub body or front hub assembly	50–60	36–43
Front hub to brake disc	50–60	36–43
Knuckle to front brake assembly	80–100	58–72
Upper arm shaft to crossmember	100–120	72–87
Rebound stopper to upper arm	8–12	6–9
Upper ball joint to knuckle	60–90	43–65
Front shock absorber to crossmember	12–18	9–13
Front shock absorber to lower arm	15–22	11–16
Lower ball joint to knuckle	120–180	87–130
Lower arm shaft	140–160	101–116
Lower arm ball joint to lower arm	54–75	39–54
Bump stopper to lower arm	20–30	14–22
Anchor arm B	95–120	69–87
Anchor arm lock nut	40–50	29–36
Stabilizer bar clamp A	8–12	6–9
Knuckle to tie rod assembly	45	33
Right drive shaft to inner shaft	50–60	36–43
Left differential mounting bracket to differential carrier	80–100	58–72
Right differential mounting bracket to housing tube	80–100	58–72
Differential mounting brackets to frame	80–110	58–80
Housing tube to differential carrier	80–100	58–72
Bracket to differential carrier	80–110	58–80
Front propeller shaft to differential carrier	50–60	36–43
Front suspension crossmember mounting bolts	100–120	72–87
Drain plug	60–70	43–51
Filler plug	40–60	29–43

Items	Nm	ft.lbs
Companion flange to drive pinion <2.6L Engine>	160–220	116–159
<3.0L Engine>	190–250	137–181
Differential cover to differential carrier	15–22	11–16
Bearing cap	55–65	40–47
Differential case to drive gear	80–90	58–65
Under skid plate to side frame	18–25	13–18
Under cover to frame	10–13	7–9
Brake tube flare nut	13–17	9–12

LUBRICANTS

N02CD--

Items	Specified lubricants	Quantity
Front axle gear oil Front differential	Hypoid gear oil API classification GL-5 or higher SAE viscosity No. 80W, 90	1.10 lit. (2.3 pints)
D.O.J. boot grease	Repair kit grease	110 g (3.9 oz.)* ¹ , 130 g (4.6 oz)* ²
B.J. boot grease	Repair kit grease	110 g (3.9 oz.)* ¹ , 130 g (4.6 oz)* ²

*¹: 2.6L Engine, *²: 3.0L Engine


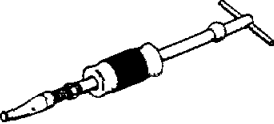



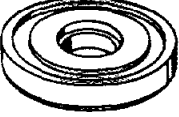

SEALANTS AND ADHESIVES

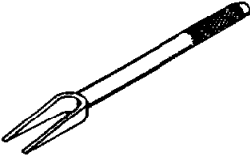
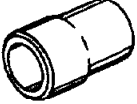
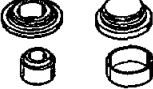
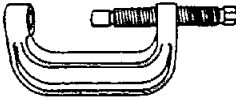
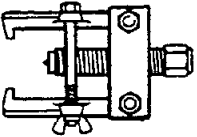
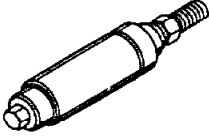
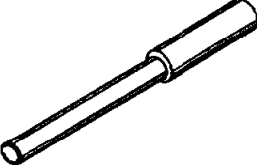
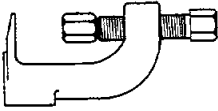
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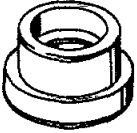

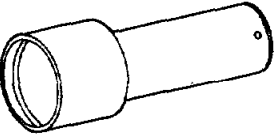
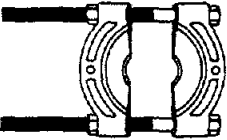
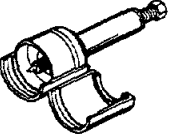


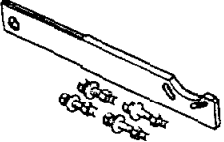
Items	Specified sealants and adhesives
Slot of the upper or lower ball joint	3M ART Part No. 8663 or equivalent
Contact surface of free-wheeling hub and front axle hub	3M ART Part No. 8663 or equivalent
Drive gear threaded hole	3M Adhesive STUD LOCKING 4170 or equivalent
Differential cover	3M ART Part No. 8663 or equivalent

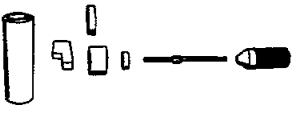


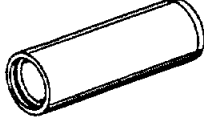
SPECIAL TOOLS

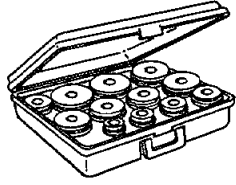
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Tool	Number	Name	Use
	MB990241-01	Drive shaft attachment	Removal and insertion of inner shaft assembly (use with MB990211-01)
	MB990211-01	Sliding hammer	Removal of housing tube oil seal Removal and insertion of inner shaft assembly (use with MB990241-01)
	MB990925-01	Bearing and oil seal installer set	Pressing of front axle hub bearing outer race MB990935-01 Pressing of drive pinion bearing outer race MB990934-01, MB990935-01, MB990936-01 Pressing of differential carrier oil seal MB990934-01
	MB990938-01	Handle	Pressing of front axle hub bearing outer race Pressing of front axle hub oil seal Pressing of knuckle needle bearing Pressing of knuckle oil seal Pressing of housing tube oil seal Pressing of differential carrier oil seal Pressing of drive pinion bearing outer race
	MB990954-01	Lock nut wrench	Removal and adjustment of lock nut
	MB990955-01	Oil seal installer	Pressing of front axle hub oil seal Pressing of housing tube oil seal
	MB990811-01	Sidebearing cup remover step plate	Disassembly and reassembly of automatic free-wheeling hub Removal of side bearing inner race

Tool	Number	Name	Use
	MB990778-01	Ball joint remover	Removal of knuckle Disconnection of upper ball joint
	MB990799-01	Ball joint remover and installer A	Removal and installation of upper arm ball joint
	MB990800-01	Ball joint remover and installer B	
	MB990840-01	Universal joint remover and installer	
	MB990809-01	Pitman arm puller	Removal of knuckle Disconnection of lower ball joint
	MB990958-01	Torsion bar bushing remover and installer	Removal and pressing of bushing A
	MB990883-01	Arbor	Removal and pressing of the bushing B
	MB990635-01	Steering linkage puller	Removal of knuckle Disconnection of tie rod

Tool	Number	Name	Use
	MB990956-01	Needle bearing installer	Pressing of knuckle needle bearing
	MB990985-01	Oil seal installer	Pressing of knuckle oil seal
	MB991150	Dust cover installer	Pressing of drive shaft dust cover
	MD998348-01	Bearing separator	Removal and pressing of inner shaft bearing
	MB990339-01	Pinion carrier bearing puller	Removal of side bearing inner race Removal of drive pinion front bearing inner race
	MIT303173	Insert	
	MIT44801	Collet set	
	MB990767-01	End yoke holder	Holding of end yoke

Tool	Number	Name	Use
	MB990901-01	Pinion height gauge set	Adjustment of pinion height
	MB990802-01	Bearing installer	Pressing of drive pinion front bearing inner race Pressing of side bearing inner race
	MB990031-01	Drive pinion oil seal installer	Pressing of drive pinion oil seal
	MIT304180	Handle	

MB990925-01	Tool number	Installer disc O.D. mm (in.)
		MB990926-01
	MB990927-01	45.0 (1.77)
	MB990928-01	49.5 (1.95)
	MB990929-01	51.0 (2.01)
	MB990930-01	54.0 (2.13)
	MB990931-01	57.0 (2.24)
	MB990932-01	61.0 (2.40)
	MB990933-01	63.5 (2.50)
	MB990934-01	67.5 (2.66)
	MB990935-01	71.5 (2.81)
	MB990936-01	75.5 (2.97)
	MB990937-01	79.0 (3.11)

TROUBLESHOOTING

N02EA-A

Symptom	Probable cause	Remedy
AUTOMATIC FREE WHEELING HUB Does not lock	Brake sliding portion worn	Replace and adjust hub attaching surface shims
	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
	Automatic free wheeling hub attaching bolt loose	Retighten attaching bolts
Locks but does not become free	Return spring deteriorated Slide gear C ring out of position	Replace
	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
	Excessive front power train resistance	Adjust differential preload
Ratcheting readily occurs	Water in brake portion	Clean and then apply grease
	Retainer (B) worn Slide gear damaged Housing gear damaged Shift spring deteriorated Slide gear C ring out of position	Replace
	Automatic free wheeling hub attaching bolts loose	Retighten the attaching bolts
DRIVE SHAFT, INNER SHAFT Noise during wheel rotation	Housing tube bent Inner shaft bent	Replace
	Inner shaft bearing worn, pounding	Replace
	Drive shaft assembly worn damaged, bent	Check or replace
Noise due to excessive play of wheel in turning direction	Inner shaft and side gear serration play	Replace
	Drive shaft and side gear serration play	Replace

Symptom	Probable cause	Remedy
DIFFERENTIAL Constant noise	Improper adjustment of drive gear and drive pinion (poor meshing)	Correct or replace
	Loose, worn or damaged side bearing	Correct or replace
	Loose, worn or damaged drive pinion bearing	Correct or replace
	Worn drive gear, drive pinion	Correct or replace
	Worn side gear thrust washer or pinion shaft	Replace
	Deformed drive gear or differential case	Replace
	Damaged gear	Replace
	Foreign material	Eliminate the foreign material and check; replace if necessary
	No oil	Fill or change
Gear noise while driving	Poor gear engagement	Correct or replace
	Improper gear adjustment	Correct or replace
	Improper drive pinion preload adjustment	Correct or replace
	Damaged gear	Replace
	Foreign material	Eliminate the foreign material and check; replace if necessary
	Insufficient oil	Fill or change

Symptom	Probable cause	Remedy
Gear noise while coasting	Improper drive pinion rotation torque adjustment	Correct or replace
	Damaged differential gear	Replace
Bearing noise while driving or coasting	Cracked or damaged drive pinion rear bearing	Replace
Noise while turning	Loose side bearing	Replace
	Damaged side gear, pinion gear or pinion shaft	Replace
Heat	Improper differential gear backlash Excessive preload	Adjust
	Insufficient oil	Fill or change
Oil leakage	Clogged vent plug	Clean or replace
	Cover tightened not Seal malfunction	Retighten, apply sealant, or replace the gasket
	Worn or damaged oil seal	Replace
	Excessive oil	Adjust the oil level

SERVICE ADJUSTMENT PROCEDURES

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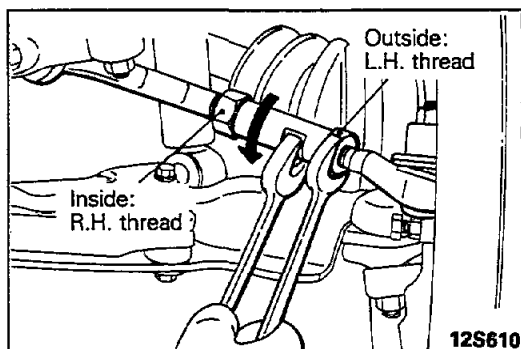
WHEEL ALIGNMENT INSPECTION AND ADJUSTMENT

1. Measure the wheel alignment with the vehicle parked on level ground and with the front wheels placed in the straight ahead positions.
2. Front suspension, steering system, wheels and tires should be serviced to normal condition prior to measurement of wheel alignment.

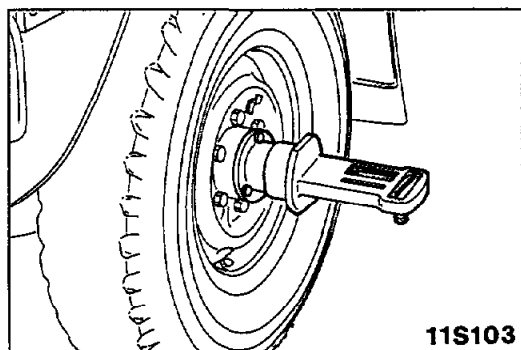
TOE-IN

1. Measure the toe-in.

Standard value : 5.5±3.5 mm (.217±.138 in.)



2. If the toe-in does not agree with the standard value, use the left and right tie rod turnbuckles to adjust it.
3. Make the adjustment by turning the left and right turnbuckles the same amount in opposite directions. The toe-in value will decrease if the left turnbuckle is turned toward the front of vehicle and the right one is turned toward the rear, and vice a half-turn of the turnbuckles will result in an approximately 15 mm (.59 in.) adjustment in the toe-in.

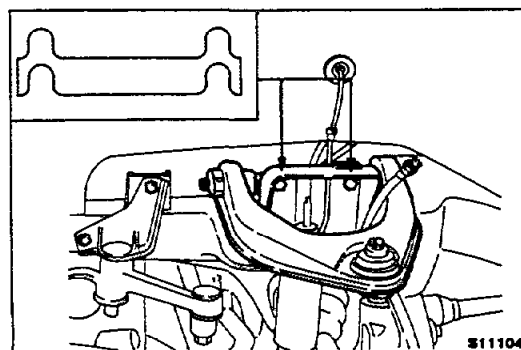


CAMBER

1. Remove the free-wheeling hub.
2. Measure the camber with a camber/caster/kingpin gauge.

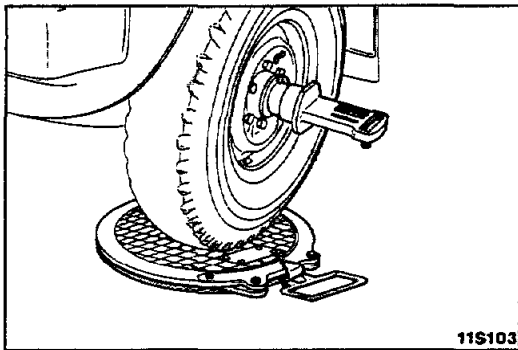
Standard value : 1°±30' (Left/right deviation: within 30')

3. Make adjustment of the camber by increasing or decreasing the thickness of the adjusting shims between the upper arm shaft and the crossmember. A total of 4 mm (.16 in.) shim thickness is normally required for standard camber. A 1.0 mm (.039 in.) adjustment in thickness of shims will provide about 13 minutes adjustment of camber.



Camber adjustment shim (yellow plating)

Part number	Thickness mm (in.)
MB176288	1.0 (.039)
MB176289	2.0 (.079)

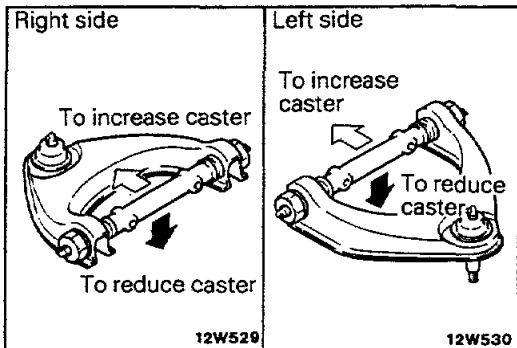


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CASTER

1. Remove the free-wheeling hub.
2. Measure caster with a camber/caster/kingpin gauge and a turning radius gauge.

Standard value : $2^{\circ}55' \pm 1^{\circ}$ (Left/right deviation: within 30')



12W529

12W530

3. If caster does not meet specifications, remove the upper arm from the crossmember and then adjust by turning the upper arm shaft.
A half turn of upper arm shaft will cause 1.25 mm (.049 in.) fore or aft movement of the upper arm shaft, resulting in about 17 minutes adjustment of caster.
The adjustment must be made so that the difference between the caster's left side and right side is within 30 minutes.

FRONT AXLE TOTAL BACKLASH CHECK

N02FDAB*

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 requires removal.

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

NOTE

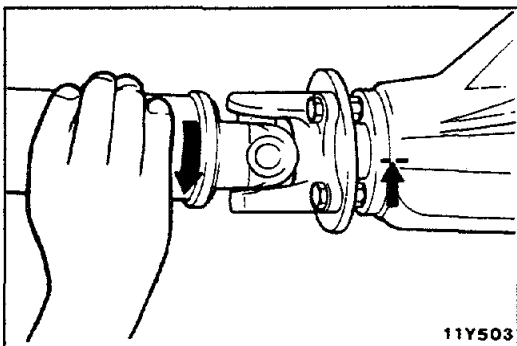
Place the transfer shift lever in 4H position and drive the vehicle 1 to 2 meters (3.3 to 6.5 ft.) to engage the hub with the drive shaft.

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

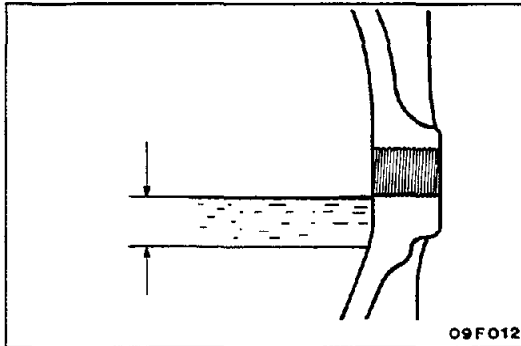
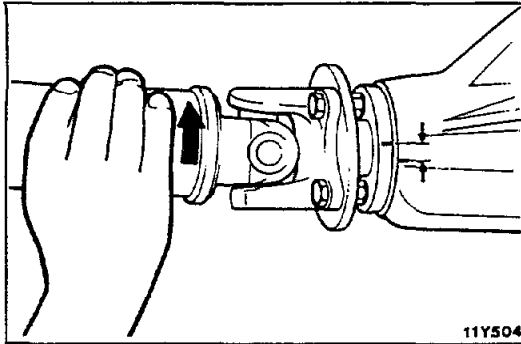
NOTE

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.



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- (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 (.55 in.)

- (5) If the backlash exceeds the limit, remove the differential carrier assembly and adjust the backlash and drive shaft or inner shaft spline play.
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.

FRONT AXLE GEAR OIL LEVEL CHECK

N02FEAB

Remove the filler plug and check the oil level. The oil level should be somewhere within 8 mm (.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. 80W, 90 [1.10 lit. (2.3 pints)]

DRIVE SHAFT END PLAY CHECK

N02FFABa

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

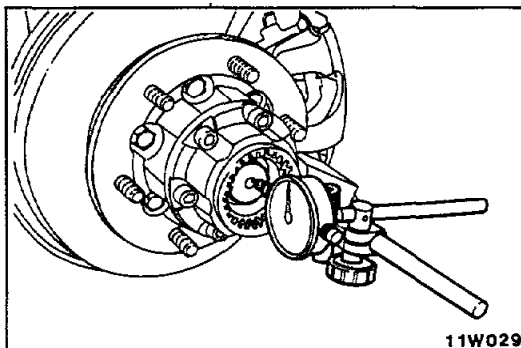
NOTE

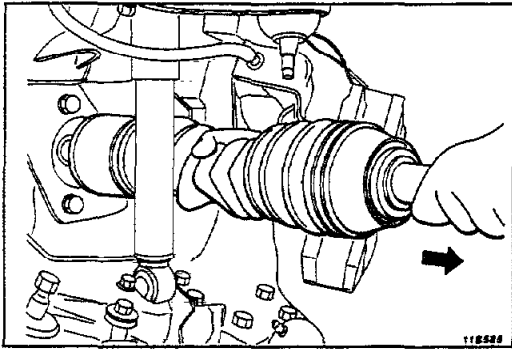
The free condition can be obtained by shifting the transfer shift lever to the 2H position and then moving in reverse for 1 to 2 m (3.3 to 6.5 ft.).

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 (.008–.020 in.)

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





DIFFERENTIAL CARRIER OIL SEAL REPLACEMENT

N02FGABb

1. Remove the under cover. (Refer to P.2-30.)
2. Remove the front hub and knuckle assembly.
3. Remove the left drive shaft. (Refer to P.2-40.)

Caution

When pulling the left drive shaft from the differential carrier assembly, be careful that the drive shaft spline does not damage the oil seal.

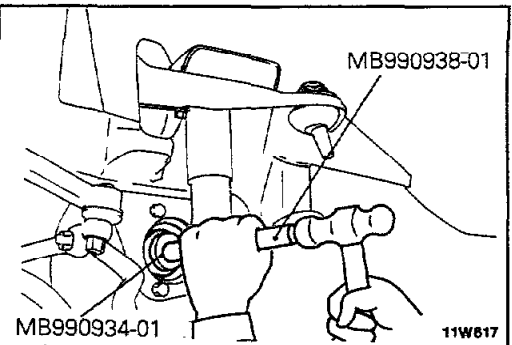
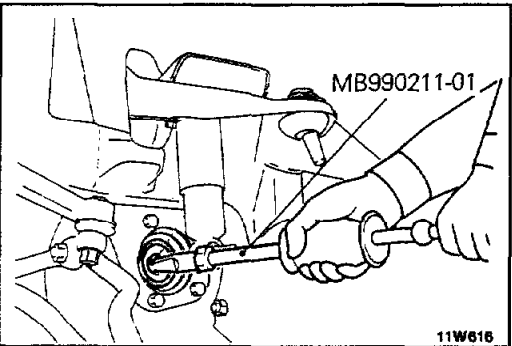
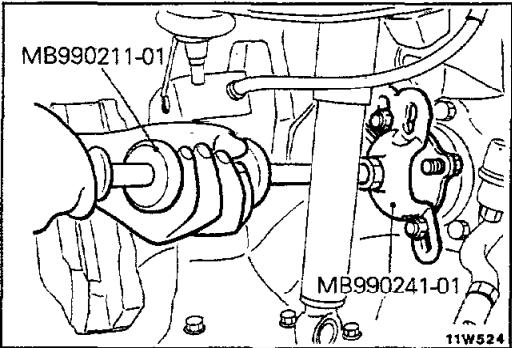
4. Remove the right drive shaft from the inner shaft assembly.
5. Remove the inner shaft assembly.

Caution

When pulling the inner shaft assembly from the differential carrier, be careful that the spline of the inner shaft does not damage the oil seal.

6. Remove the differential mounting bracket (R.H.) and housing tube. (Refer to P.2-48.)

7. Use the special tool to remove the oil seal.



8. Press-fit the oil seal positively with the special tool and apply a thin coat of multipurpose grease to the lip of the oil seal.
9. Install the drive shaft using care not to damage the oil seal lip.

NOTE

On R.H. side, after installation of the oil seal, install the housing tube and differential mounting bracket (R.H.). Install the inner shaft with care not to damage the oil seal lip, and install the drive shaft.

Caution

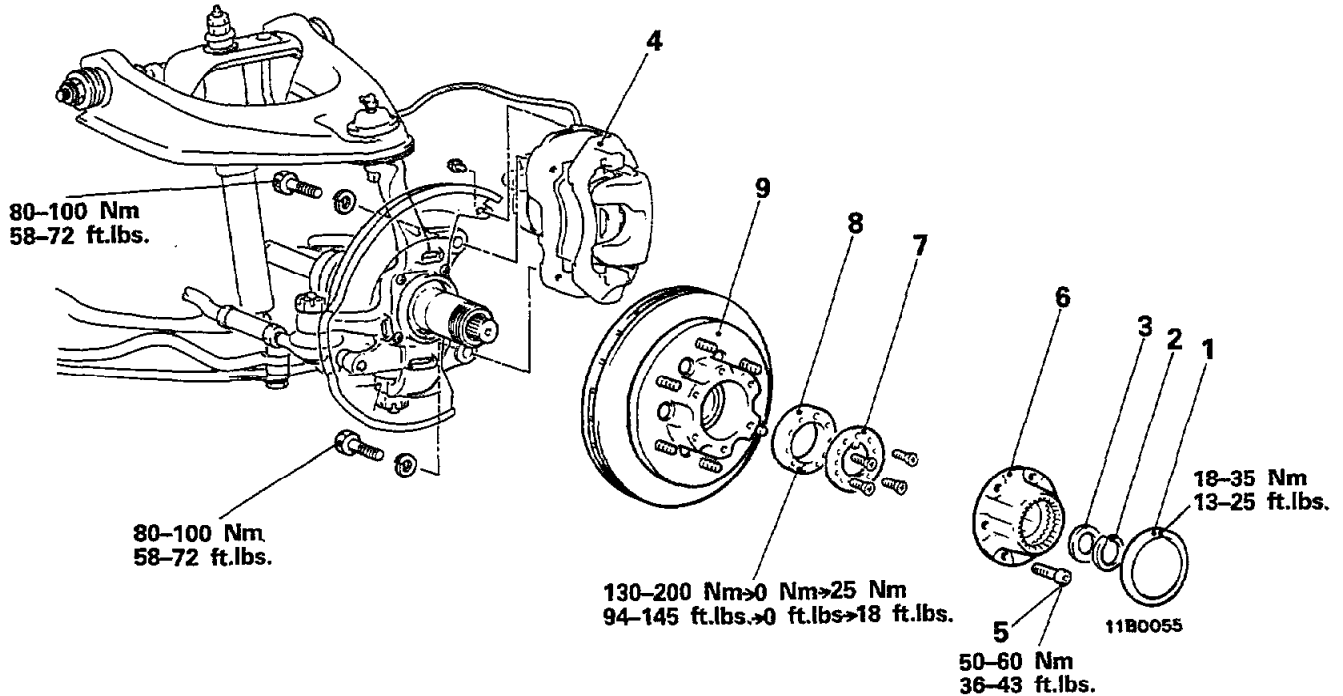
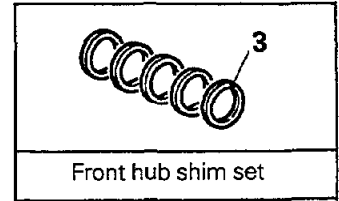
Be careful not to damage the lip of the oil seal. Replace the circlip which is attached to the B.J. side spline with a new one.

10. Install the front hub and knuckle assembly.
11. Install the under cover.

N02GA-A

AXLE HUB AND FREE-WHEELING HUB

REMOVAL AND INSTALLATION



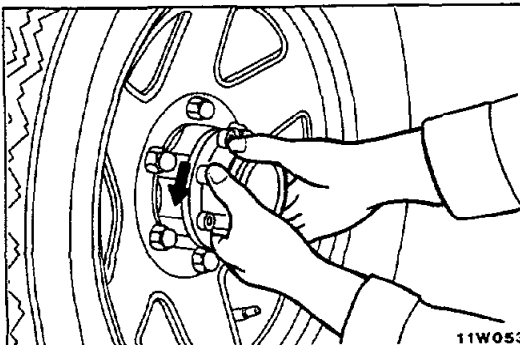
Removal steps

- ↔ 1. Hub cover
- ↔↔ Adjustment of drive shaft end play
- ↔ 2. Snap ring
- ↔ 3. Shim
- ↔ 4. Front brake assembly
- ↔↔ Adjustment of automatic free-wheeling hub turning resistance
- ↔ 5. Bolts

- ↔↔ 6. Automatic 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".



SERVICE POINTS OF REMOVAL

N02GBAG

1. REMOVAL OF HUB COVER

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

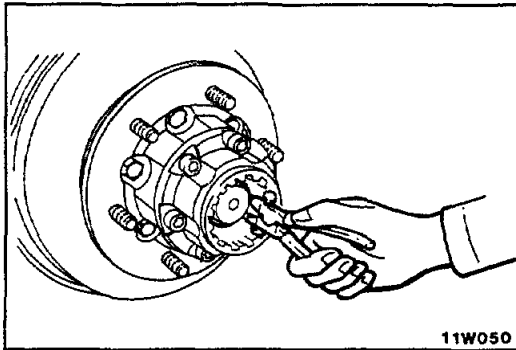
NOTE

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 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.

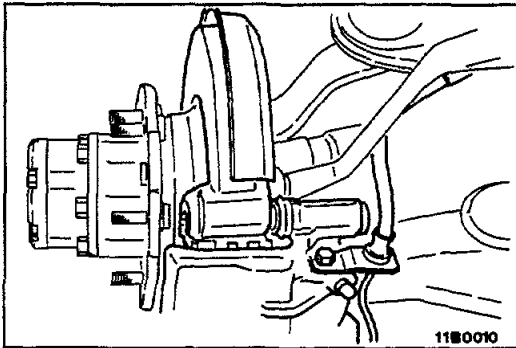


2. REMOVAL OF SNAP RING

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

Caution

The proper tool for removing and installing the snap ring is a pair of snap ring pliers. Use of a screwdriver or other tool can deform or spread the snap ring beyond its yield point. Please be sure to use only snap ring pliers for removing and installing this snap ring.

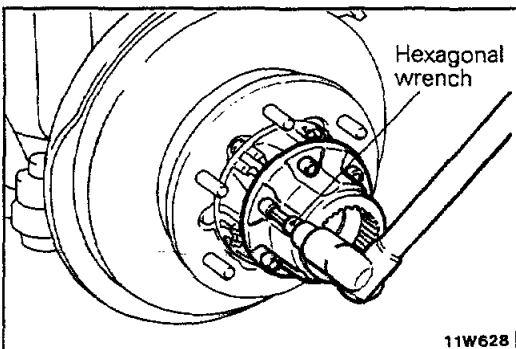


4. REMOVAL OF FRONT BRAKE ASSEMBLY

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

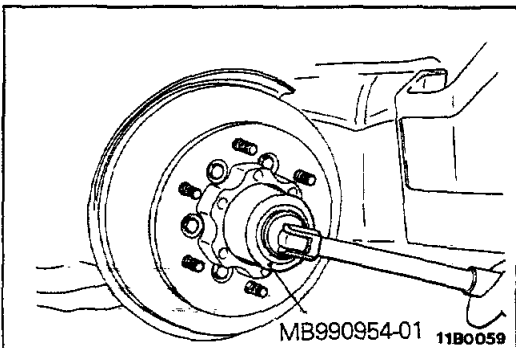
Caution

Do not twist the brake hose.



5. REMOVAL OF BOLTS

Using the hexagonal wrench, remove the automatic free-wheeling hub.



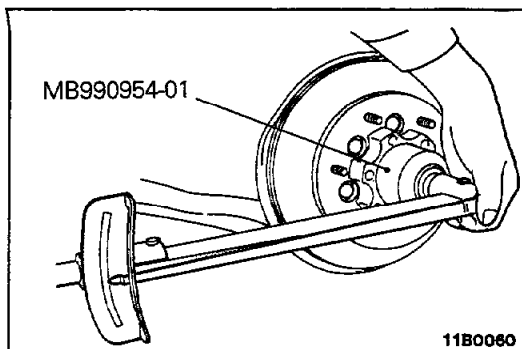
8. REMOVAL OF LOCK NUT/9. FRONT HUB ASSEMBLY

- (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.

INSPECTION

N02GCAA

- 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.

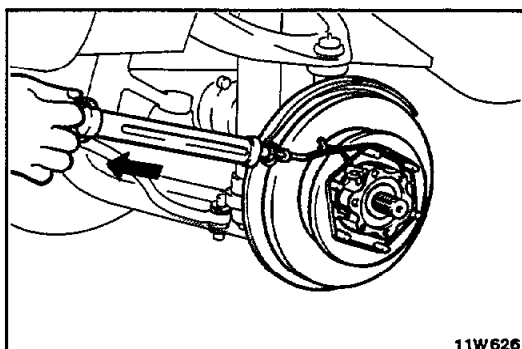
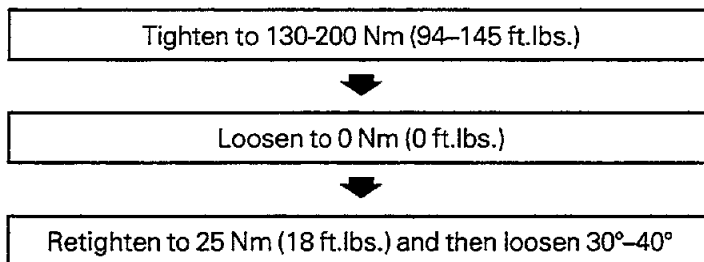


SERVICE POINTS OF INSTALLATION

N02GDAH

● **ADJUSTMENT OF WHEEL BEARING PRELOAD**

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



- (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.

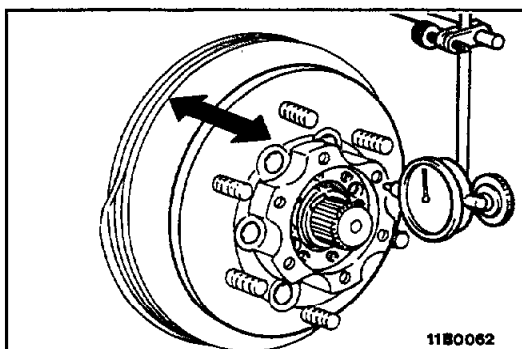
**Standard value : 0.3-1.3 Nm
(2.6-11.3 in.lbs.)
[Spring scale reading]
4.3-18.6 N (0.94-4.10 lbs.)**

Standard value : 0.05 mm (.0020 in.) or less

NOTE

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

- (3) Mount the lock washer. If the lock washer holes do not align with the lock nut holes, loosen the lock nut (no more than 30 to 40 degrees) to align them.



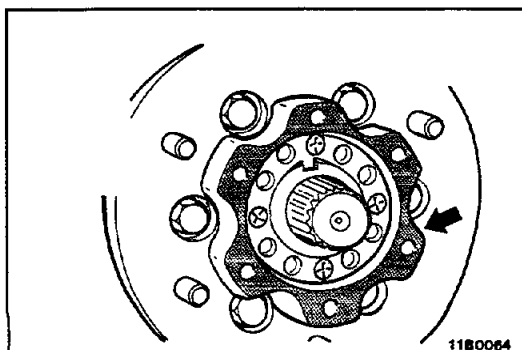
6. INSTALLATION OF AUTOMATIC FREE-WHEELING HUB ASSEMBLY

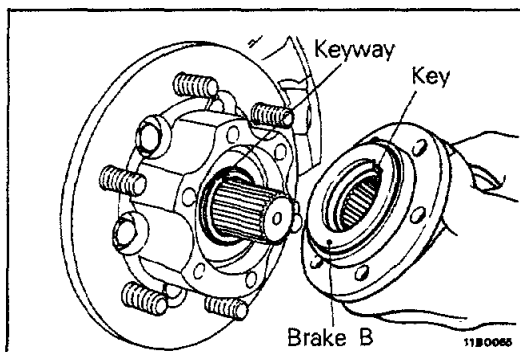
- (1) Apply a coating of specified sealant, equally all around and without any missed spots, to the free-wheeling hub body assembly and front hub contact surfaces.

Specified sealant : 3M ART Part No. 8663 or equivalent

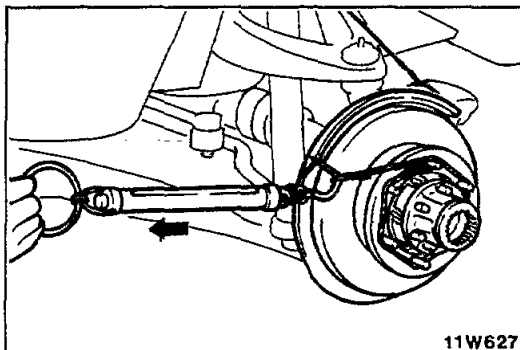
Caution

Make sure that there is no excess semi-drying 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 forced lightly against the hub proper. If not; turn the hub until intimate contact is achieved.

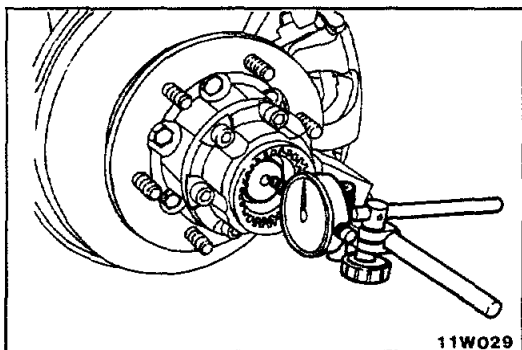


● ADJUSTMENT OF AUTOMATIC FREE-WHEELING HUB TURNING RESISTANCE

- (1) Use a spring scale to measure the front hub turning resistance again. Ensure that the difference of the turning resistance between automatic free wheeling hub and hub without automatic free wheeling hub) is within the limit.

Limit : 1.0 Nm (8.7 in. lbs.)
[Spring scale reading]
14 N (3.1 lbs.)

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



● ADJUSTMENT OF DRIVE SHAFT END PLAY

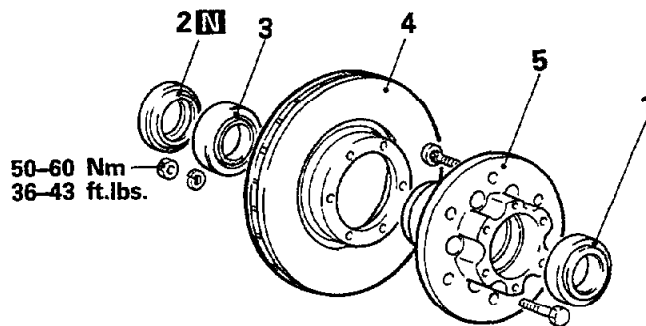
- (1) Rotate the drive shaft forward, and backward and then set the drive shaft to the position (the position where end play is maximum) mid-way between where the rotation feels "heavy" for each (where there is a stopping feeling).
- (2) Set the dial gauge as shown in the figure; then move the drive shaft in the axial direction and measure the play.

Standard value : 0.2–0.5 mm (.008–.020 in.)

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

DISASSEMBLY AND REASSEMBLY (Front Axle Hub)

N02HA-



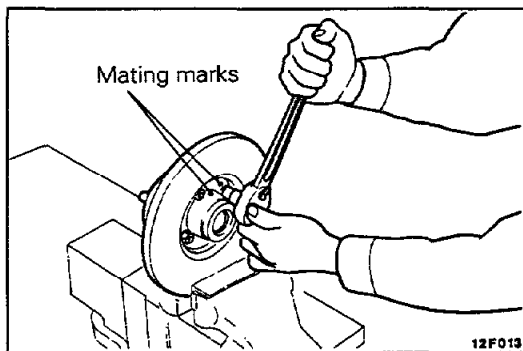
Disassembly steps

11W630

- 1. Outer bearing
- 2. Oil seal
- 3. Inner bearing
- 4. Brake disc
- 5. 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) : Non-reusable parts

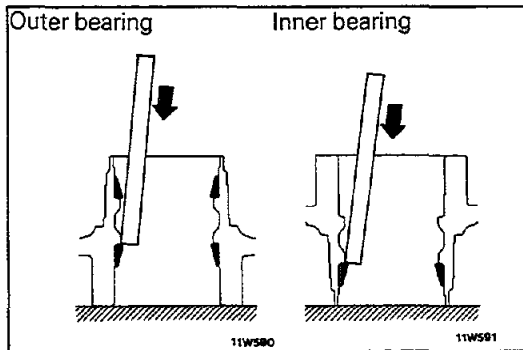


SERVICE POINTS OF DISASSEMBLY

N02HBAA

4. REMOVAL OF BRAKE DISC

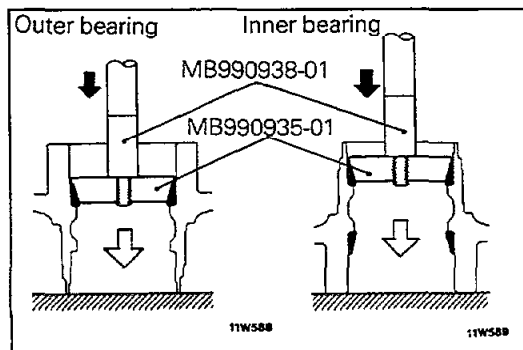
Make the mating marks on the brake disc and front hub, and then separate the front hub and brake disc, if necessary.



REPLACEMENT OF BEARING

N02HDABa

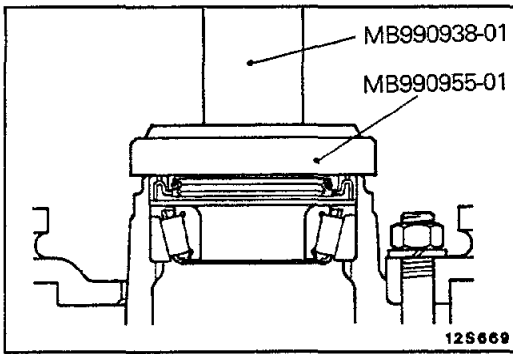
- (1) Remove the oil seal.
- (2) Wipe off grease from the front hub interior.
- (3) Using the drift against, drive out the inner and outer bearing outer races by tapping them uniformly.
- (4) Apply the multipurpose grease to the outside surface of the new inner and outer bearing outer races.



- (5) Press-fit the inner and outer bearing outer races by using the suitable drift

NOTE

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



SERVICE POINTS OF REASSEMBLY

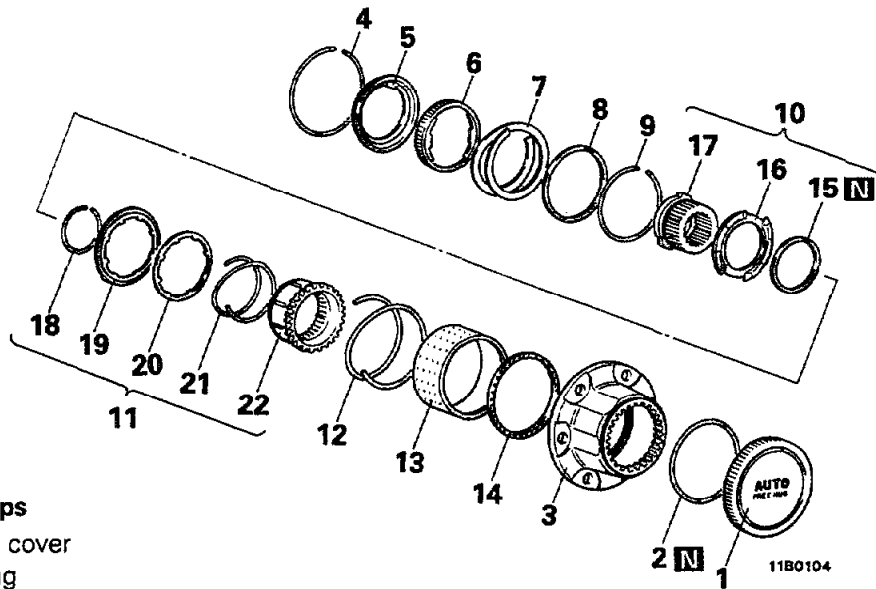
N02HEA8a

2. INSTALLATION OF OIL SEAL

- (1) Apply the multipurpose grease to the oil seal lip and inside surface of the front hub.
- (2) Apply the multipurpose grease to the inner bearing inner race and install the inner race into the front hub.
- (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 (Free-Wheeling Hub)

N02JA--

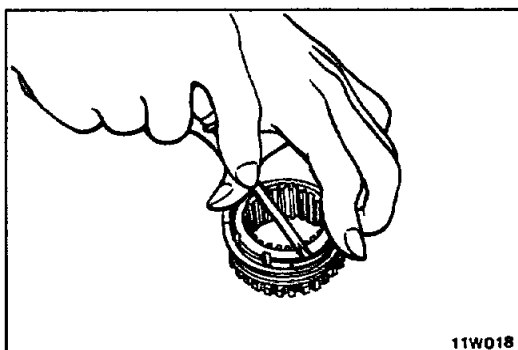
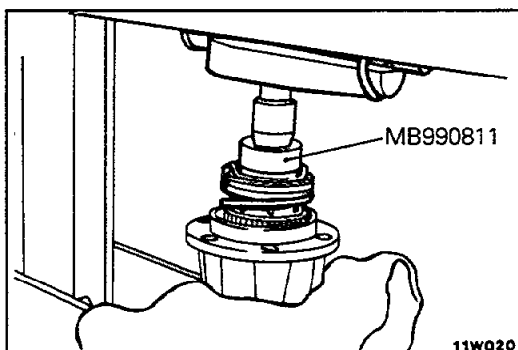
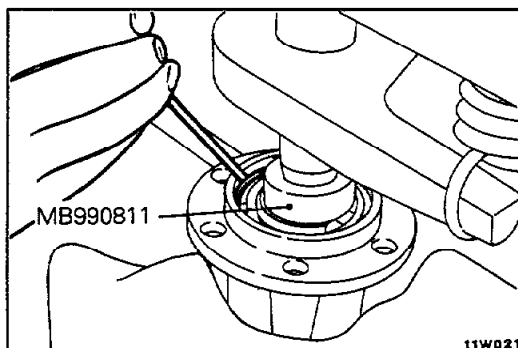
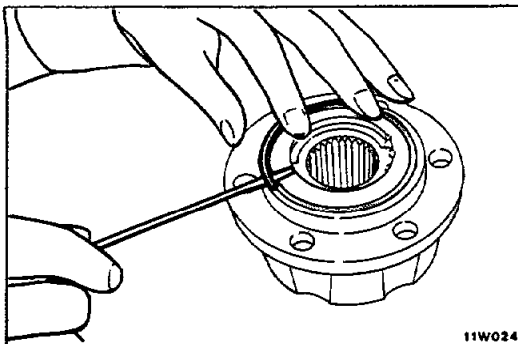


Disassembly steps

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

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**

N02JBAD

4. REMOVAL OF HOUSING C RING**NOTE**

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

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 (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).

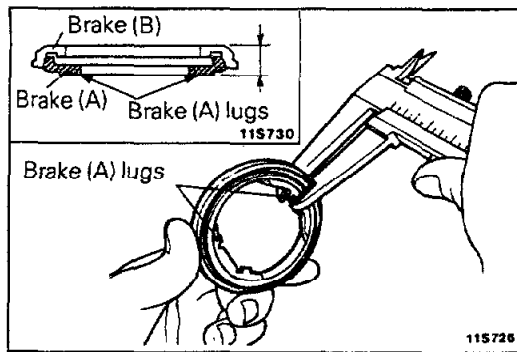
18. REMOVAL OF SLIDE GEAR C RING

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

INSPECTION

N02JCAAs

- 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**

Check the brake assembly thickness by following the steps below.

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

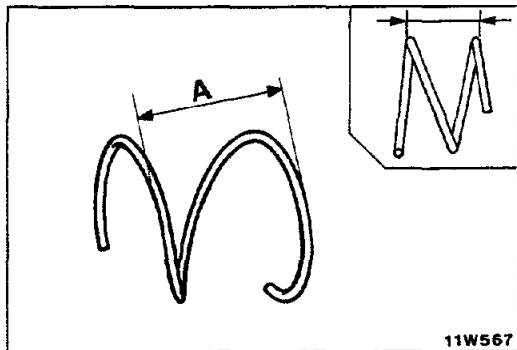
Standard value : 10.5 mm (.413 in.)

Limit : 9.6 mm (.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**

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

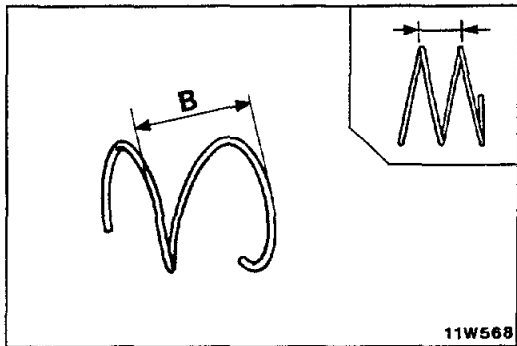
- (1) Measure the dimension A shown in illustration at the opposite side of spring end.

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**

Check the shift spring for deterioration 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

N02JDAAb

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

13. APPLICATION OF GREASE TO RETAINER (B)

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

12. INSTALLATION OF RETURN SPRING

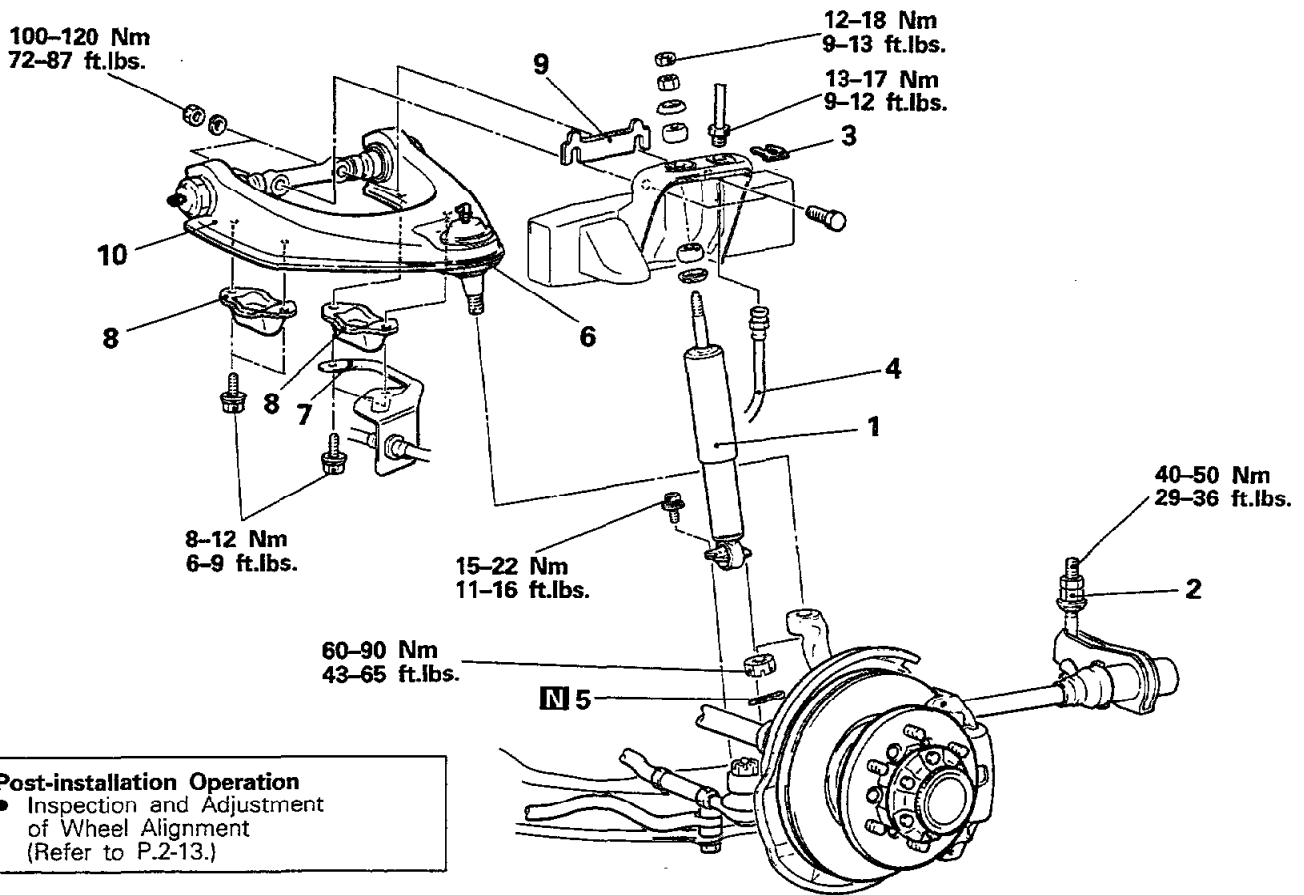
Install the return spring with the smaller coil diameter side toward the cam.

5. APPLICATION OF GREASE TO BRAKE (B)

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

**SHOCK ABSORBER AND UPPER ARM
REMOVAL AND INSTALLATION**

NO2MA--



12W557

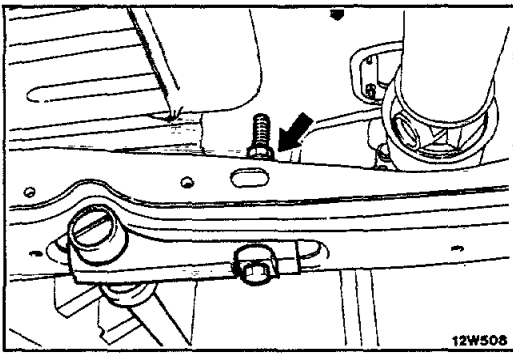
Shock absorber removal steps

- ⇄⇄ 1. Shock absorber

Upper arm removal steps

- ⇄⇄ Adjustment of clearance between bump stopper and bump stopper bracket
- ⇄⇄ 2. Anchor arm assembly adjusting nut
- ⇄⇄ 3. Hose clip
- ⇄⇄ 4. Connection of brake hose
- ⇄⇄ 5. Cotter pin
- ⇄⇄ 6. Connection of upper ball joint and knuckle

- 7. Brake hose support
- 8. Rebound stopper
- 9. Shim
- ⇄⇄⇄⇄ 10. Upper arm

**SERVICE POINTS OF REMOVAL**

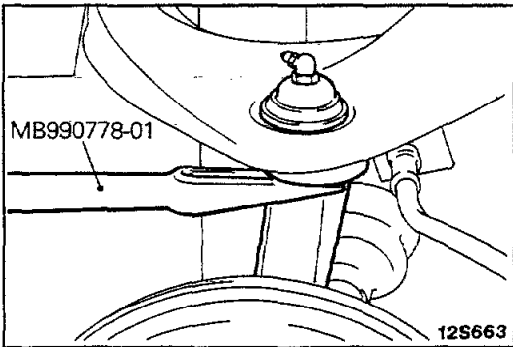
A02MBAF

2. LOOSENING OF ANCHOR ARM ASSEMBLY ADJUSTING NUT

Loosen the anchor bolt of the torsion bar all the way.

NOTE

When the anchor arm assembly adjusting nut is loosened, use a jack to support the lower arm of the side to be loosened, thus the work easier.

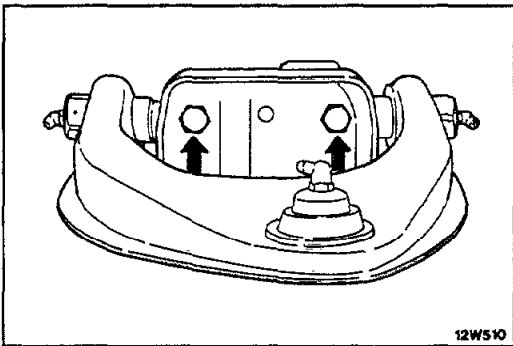
**6. DISCONNECTION OF UPPER BALL JOINT AND KNUCKLE**

(1) Loosen the nut tightening the upper ball joint to the knuckle.

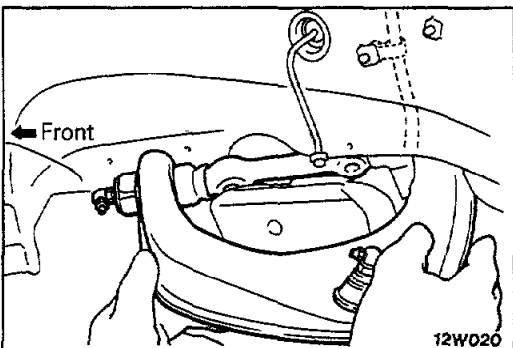
NOTE

The nut should be partially loosened and should not be removed.

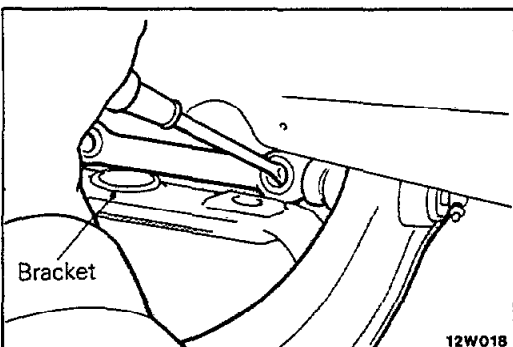
(2) Using a special tool, disconnect the upper ball joint from the knuckle.

**10. REMOVAL OF UPPER ARM**

(1) Remove the upper arm installation bolts.

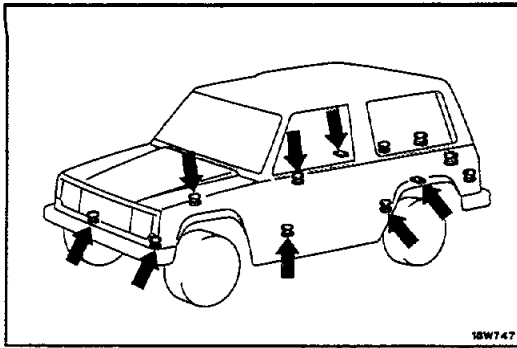


(2) Move the rear end of upper arm toward the rear and take out the front end.

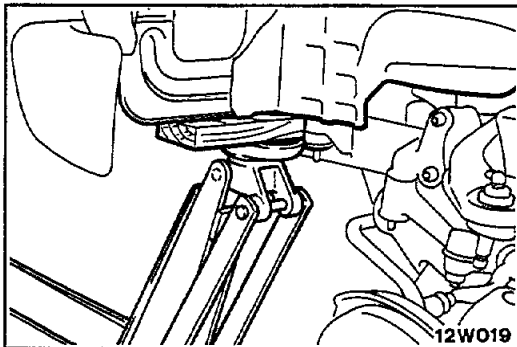


(3) Take out the rear end of upper arm.

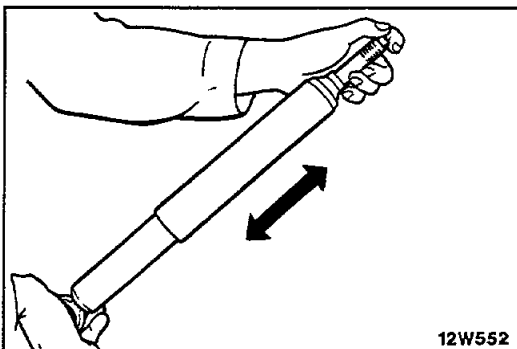
If the shaft comes in touch with the bracket, turn the shaft to take it out.



(4) If the upper arm cannot be removed by steps (1) through (3), loosen the body mount attaching nuts or screws except those four at the rear.



(5) Use a floor jack to raise the body approx. 5 mm (.2 in.) and take out the upper arm.



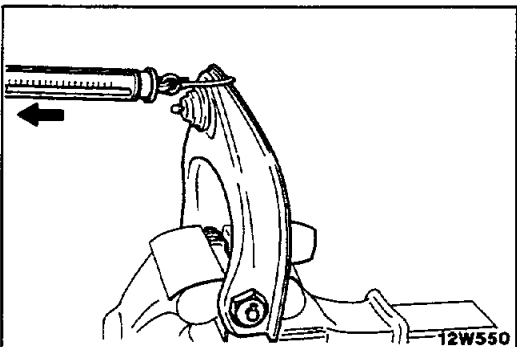
INSPECTION

N02MCAAa

- Check the upper arm for cracks or deformation.
- Check the upper arm shaft for cracks or bends.

SHOCK ABSORBER CHECK

Expand and contract the shock absorber to check it for damage, oil leakage or abnormal noise.



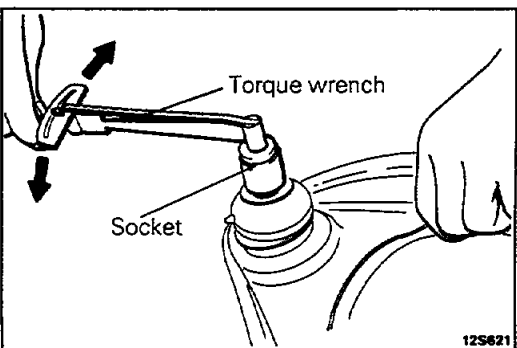
UPPER ARM SHAFT STARTING TORQUE CHECK

Check the upper arm shaft starting torque by following the steps below.

1. With the upper arm shaft held in a vice, measure the upper arm shaft starting torque with a spring balance.

Limit : 15 Nm (11 ft.lbs.)
[Spring scale reading]
6.5 N (1.4 lbs.)

2. If the upper arm shaft starting torque exceeds the limit, replace the upper arm assembly



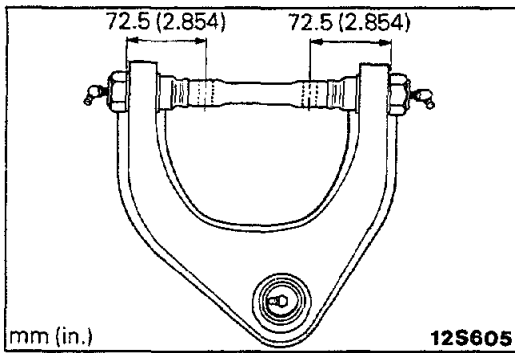
UPPER BALL JOINT STARTING TORQUE CHECK

Check the upper ball joint starting torque by following the steps below.

1. Measure the upper ball joint starting torque with a torque wrench.

Standard value : 0.8–3.5 Nm (7–30 in.lbs.)

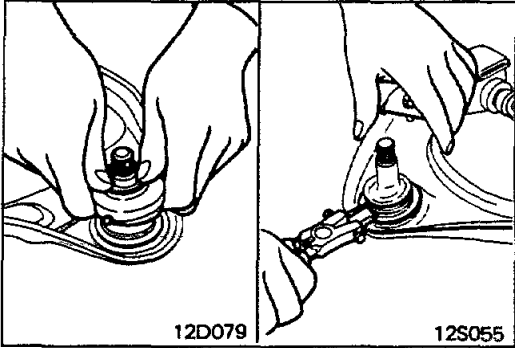
2. If the upper ball joint starting torque is out of specification, replace the upper ball joint.

**UPPER ARM SHAFT TIGHTENING AMOUNT**

Give appropriate amount of turn to the shaft so as to obtain the specified dimension.

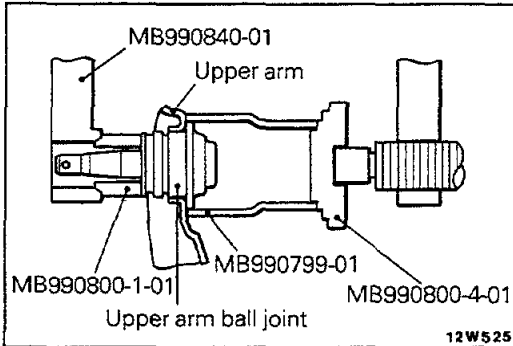
Caution

The dimensions shown in the illustration are important dimensions that determine the caster.

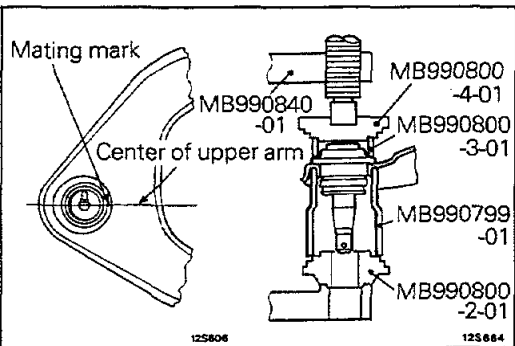
**REPLACEMENT OF UPPER BALL JOINT**

N02MDABa

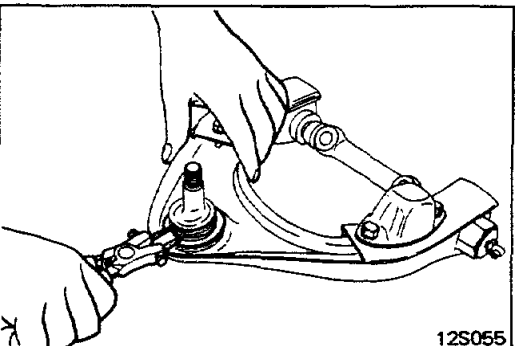
1. Remove the dust cover together with the ring.
2. Remove the snap ring from the upper ball joint by using a snap ring pliers.



3. Press the upper ball joint out of the upper arm by using the special tools.



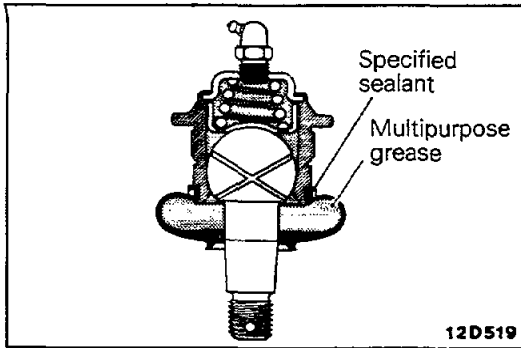
4. Press-fit the new upper ball joint with special tools aligning the mating mark with the upper arm center.



5. Using a snap ring pliers, fit the snap ring securely in the groove of the joint case.

Caution

Limit the opening of the snap ring to a minimum.



6. Apply the multipurpose grease to both the interior of dust cover and the upper ball joint.
7. Apply the specified sealant to the grooves in the upper ball joint.

Specified sealant : 3M ART Part No. 8663 or equivalent

8. Secure the dust cover to the upper ball joint with a ring.

SERVICE POINTS OF INSTALLATION

N02MEAD

10. INSTALLATION OF UPPER ARM

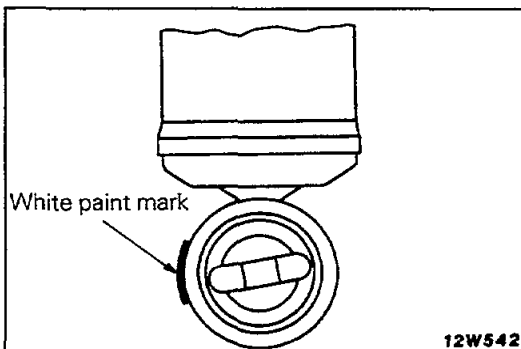
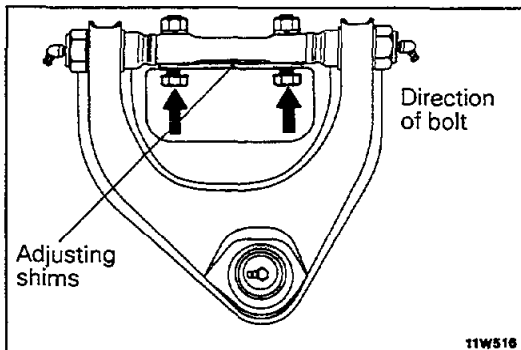
When the upper arm assembly is installed to the crossmember, insert the upper arm shaft attaching bolts from outside the crossmember and put adjusting shims between the crossmember and upper arm shaft.

• ADJUSTMENT OF CLEARANCE BETWEEN BUMP STOPPER AND BUMP STOPPER BRACKET

Refer to P. 2-38.

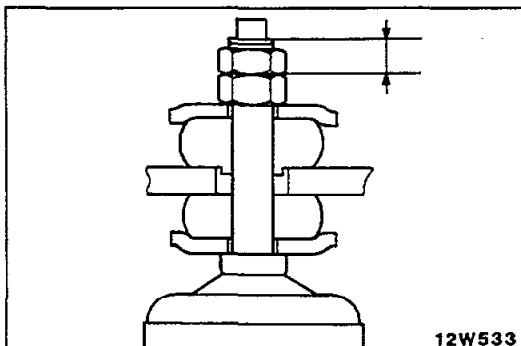
1. INSTALLATION OF SHOCK ABSORBER

- (1) Install the shock absorber so that the white paint mark at the lower side of the shock absorber faces the outer side of the vehicle.



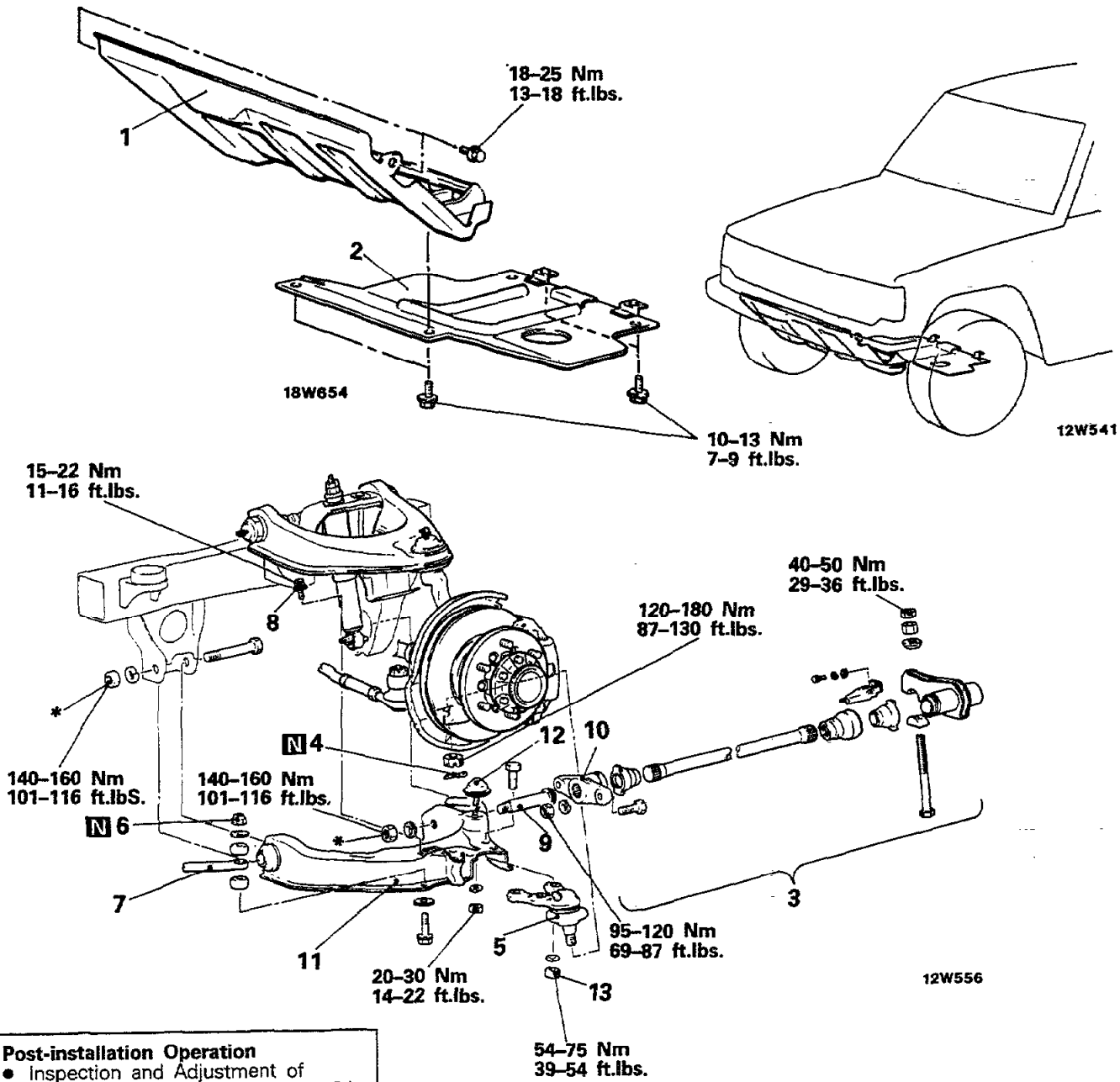
- (2) Tighten the shock absorber installation nut so that the dimension shown in the figure is the standard value.

Standard value : 7-8 mm (.27-.31 in.)



**LOWER ARM
REMOVAL AND INSTALLATION**

N02NA--



Post-installation Operation
 • Inspection and Adjustment of Wheel Alignment (Refer to P.2-13.)

Removal steps

- 1. Under skid plate
- 2. Under cover
 - ↔ Adjustment of clearance between bump stopper and bump stopper bracket
- ↔↔ 3. Torsion bar
- 4. Cotter pin
- ↔ 5. Connection of lower ball joint and knuckle
- ↔ 6. Self-locking nut
- ↔ 7. Stabilizer bar
- ↔ 8. Shock absorber mounting bolts

- 9. Lower arm shaft
- 10. Anchor arm B
- 11. Lower arm
- 12. Bump stopper
- 13. Lower ball joint mounting nuts

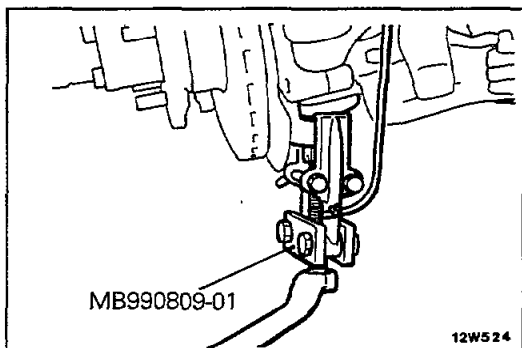
NOTE
 (1) Reverse the removal procedures to reinstall.
 (2) ↔ : Refer to "Service Points of Removal".
 (3) ↔↔ : Refer to "Service Points of Installation".
 (4) [N] : Non-reusable parts
 (5) * : Must be tightened while vehicle is unladen.

SERVICE POINTS OF REMOVAL

N02NBAK

3. REMOVAL OF TORSION BAR

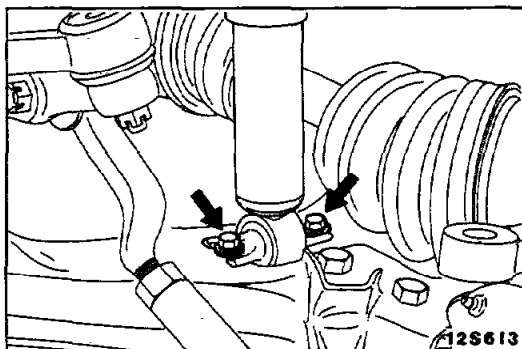
Refer to P.2-36:

**5. DISCONNECTION OF LOWER BALL JOINT AND KNUCKLE**

- (1) Loosen the nut tightening the lower ball joint to the knuckle.
- (2) Using a special tool, disconnect the lower ball joint from the knuckle.

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.

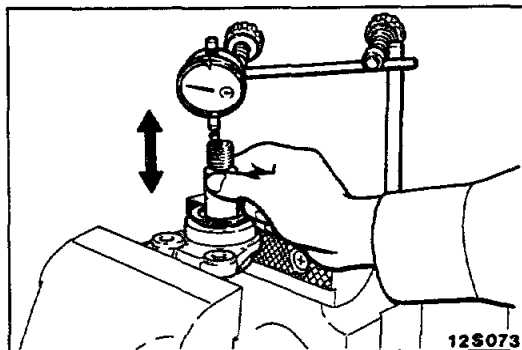
**8. REMOVAL OF SHOCK ABSORBER MOUNTING BOLTS**

Remove the shock absorber lower part and compress the shock absorber.

INSPECTION

N02NCAAa

- Check the lower arm for cracks or deformation.
- Check the anchor arm assembly for wear or damage.
- Check the lower ball joint dust cover for cracks or deterioration.

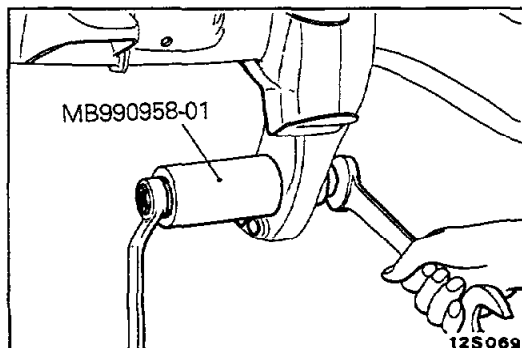
**LOWER BALL JOINT END PLAY CHECK**

Check the lower ball joint end play by following the steps below.

1. Measure the lower ball joint end play with a dial indicator.

Limit : 0.5 mm (.020 in.)

2. If the lower ball joint end play exceeds the limit, replace the lower ball joint.

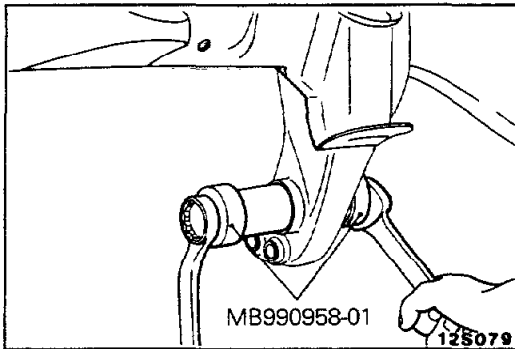
**REPLACEMENT OF LOWER ARM BUSHING**

N02NDAA

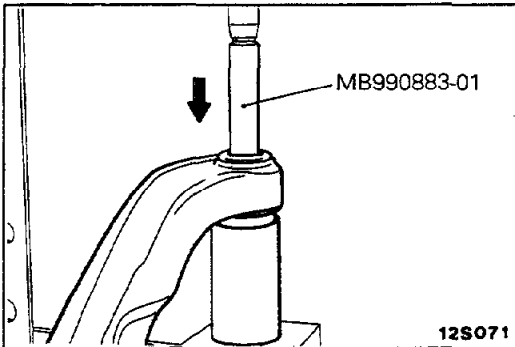
1. Using a special tool, remove the bushing A from the bracket.

NOTE

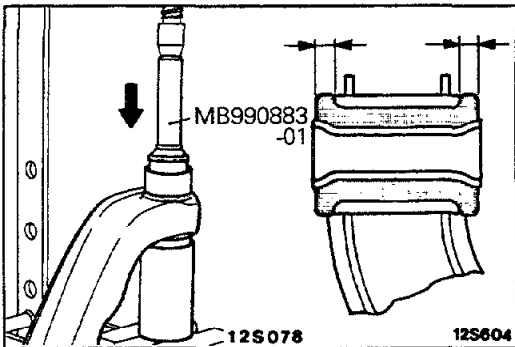
When removing the left hand bushing A, detach the differential carrier. (Refer to P.2-53.)



- Using a special tool, press-fit the bushing A into the bracket.



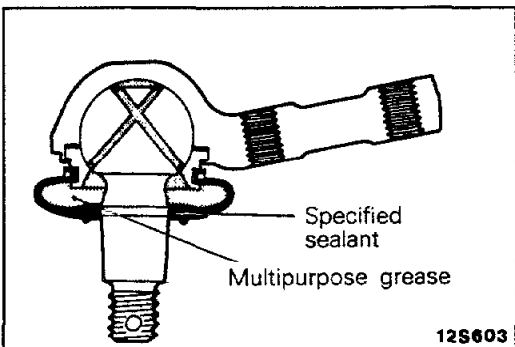
- Remove the bushing B from the lower arm by using special tools.



- Coat the bushing B and the lower arm with soap solution and press-fit the bushing B into the lower arm by using special tools and taking care not to twist or tilt the bushing B.

NOTE

Press-fit the bushing again from the opposite side to equalize bushing projections at both ends.



REPLACEMENT OF LOWER BALL JOINT DUST COVER

N02NEAB

- Apply the multipurpose grease to the interior of the dust cover and the lower ball joint.
- Apply the specified sealant to the grooves in the lower ball joint.

Specified sealant : 3M ART Part No. 8663 or equivalent

- Secure the dust cover to the lower ball joint with a ring.

SERVICE POINTS OF INSTALLATION

N02NFAA

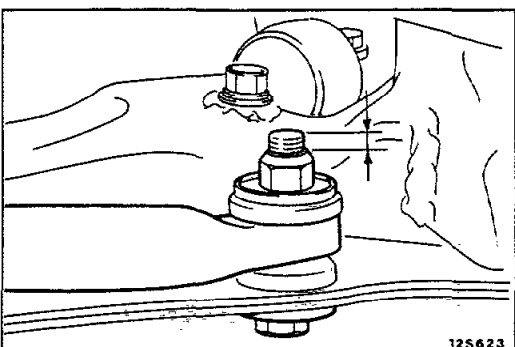
7. INSTALLATION OF STABILIZER BAR

Install the stabilizer bar to the lower arm in such a way that the amount of protrusion of the stabilizer bar installation bolt is the standard value.

Standard value : 6–8 mm (.24–.31 in.)

NOTE

The dimension show in figure is the value when a new bushing is used.



3. INSTALLATION OF TORSION BAR

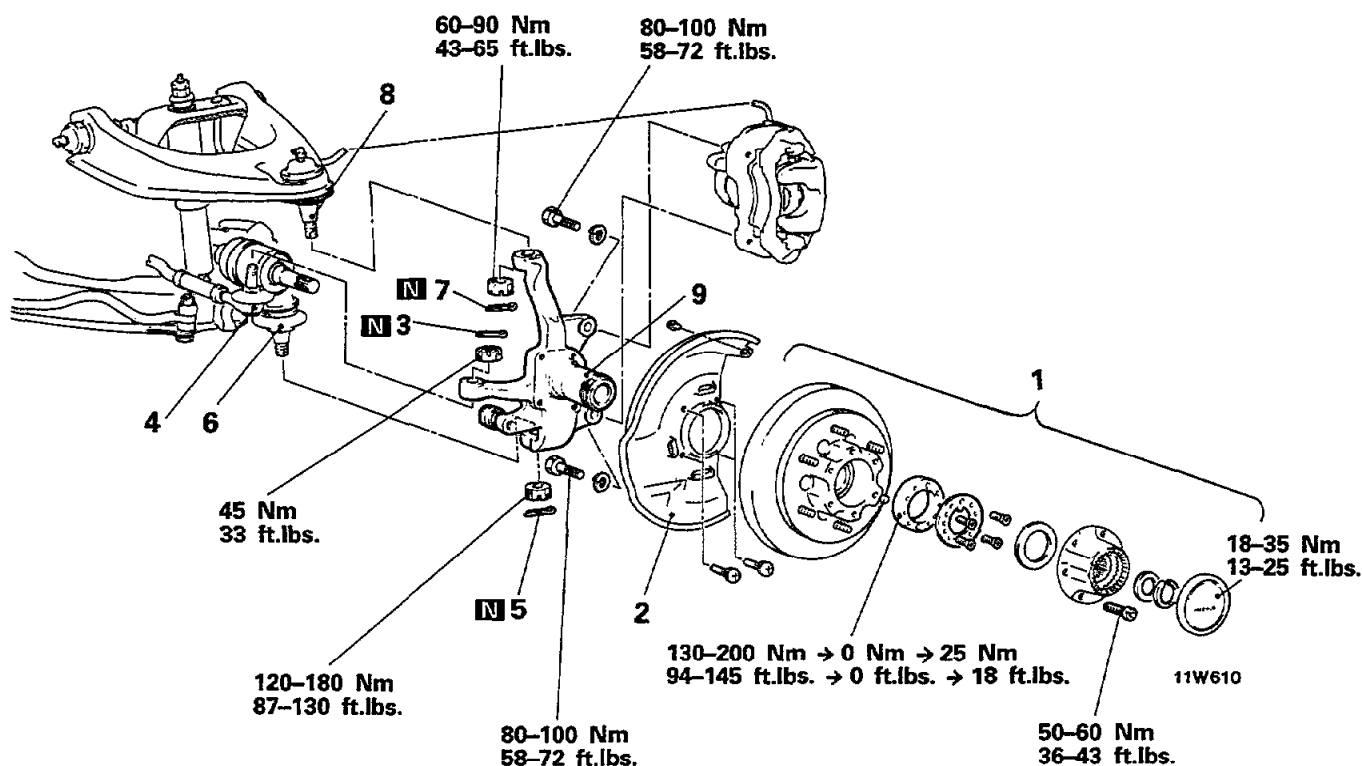
Refer to P.2-36.

- ADJUSTMENT OF CLEARANCE BETWEEN BUMP STOPPER AND BUMP STOPPER BRACKET

Refer to P.2-38.

**KNUCKLE
REMOVAL AND INSTALLATION**

N02PA-



Removal steps

- ◄◄ ◄◄ 1. Front axle hub and free-wheeling hub
- 2. Dust cover
- 3. Cotter pin
- ◄◄ 4. Connection of tie rod assembly and knuckle
- 5. Cotter pin
- ◄◄ 6. Connection of lower ball joint and knuckle
- 7. Cotter pin
- ◄◄ 8. Connection of upper ball joint and knuckle
- 9. Knuckle

NOTE

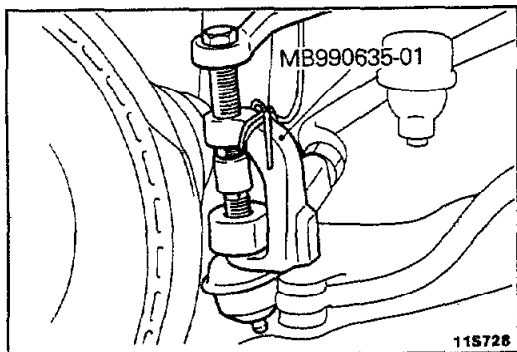
- (1) Reverse the removal procedures to reinstall.
- (2) ◄◄ : Refer to "Service Points of Removal".
- (3) ◄◄◄ : Refer to "Service Points of Installation".
- (4) **N** : Non-reusable parts

SERVICE POINTS OF REMOVAL

N02PBAJ

1. REMOVAL OF FRONT AXLE HUB AND FREE-WHEELING HUB

Refer to P.2-17.

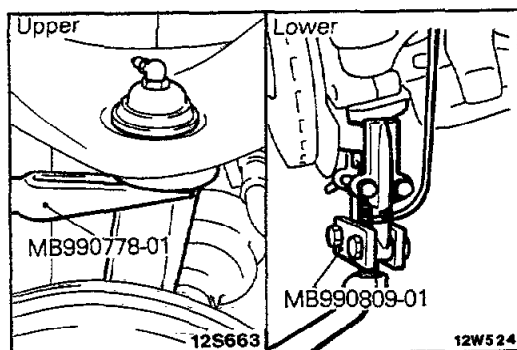


4. DISCONNECTION OF TIE ROD ASSEMBLY AND KNUCKLE

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.



6. DISCONNECTION OF LOWER BALL JOINT AND KNUCKLE/ 8. UPPER BALL JOINT AND KNUCKLE

Using the special tool, remove the lower ball joint and upper ball joint.

Caution

1. Support the lower arm with a jack when removing the knuckle from the lower ball joint or the upper ball joint.
2. After the knuckle has been removed, lower the jack slowly.
3. Use cord to bind the special tool closely so it won't become separated.
4. The nut should be loosened only, not removed.

INSPECTION

N02PCAA

- Check the needle bearing for wear or damage.
- Check the knuckle for cracks or bends.
- Check the knuckle spindle for wear or pounding.

SERVICE POINTS OF INSTALLATION

N02PDAB

1. INSTALLATION OF FRONT AXLE HUB AND FREE-WHEELING HUB

Refer to P.2-17.

DISASSEMBLY AND REASSEMBLY

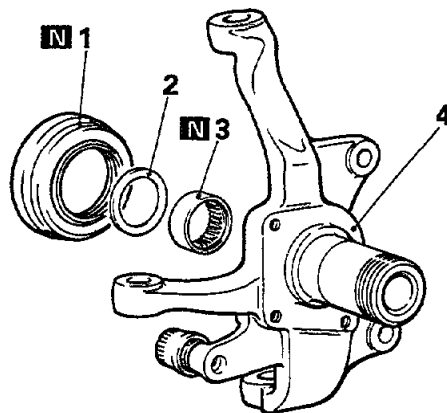
N02PE-

Disassembly steps

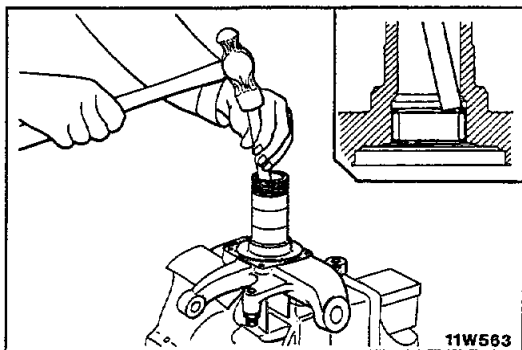
- ◆◆ 1. Oil seal
- ◆◆ 2. Spacer
- ◆◆◆ 3. Needle bearing
- ◆◆ 4. Knuckle

NOTE

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



11W605



11W563

SERVICE POINTS OF DISASSEMBLY

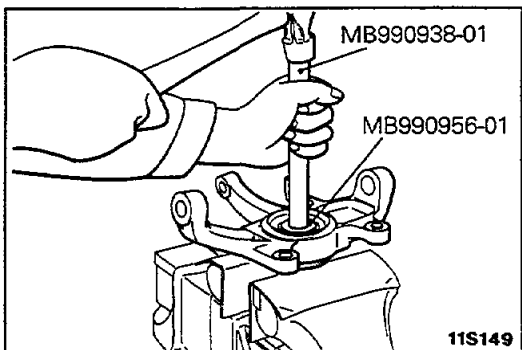
N02PFAA

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 reused.



11S149

SERVICE POINTS OF REASSEMBLY

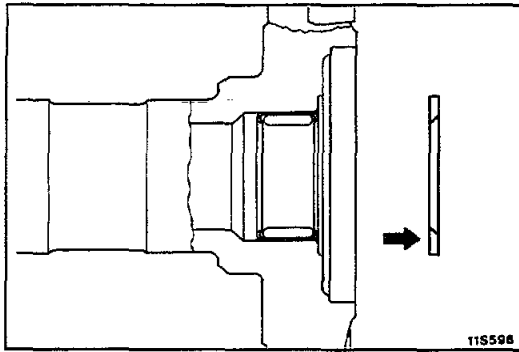
N02PGAB

3. INSTALLATION OF NEEDLE BEARING

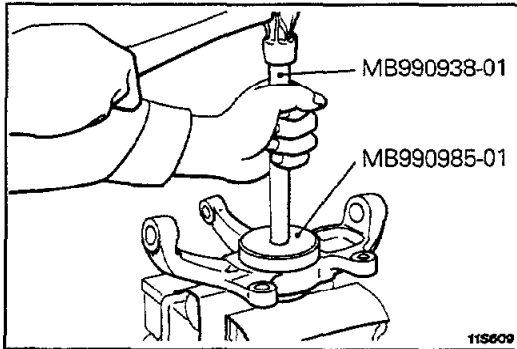
- (1) Apply the multipurpose grease to the roller surface of the new needle bearing.
- (2) Press-fit the needle bearing by using the special tools, until it is flush with the knuckle end face.

Caution

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



11S598



11S609

2. INSTALLATION OF SPACER

- (1) Apply the multipurpose grease to the knuckle attaching surface of the spacer.
- (2) Install the spacer to the knuckle with the chamfered side toward the center of vehicle.

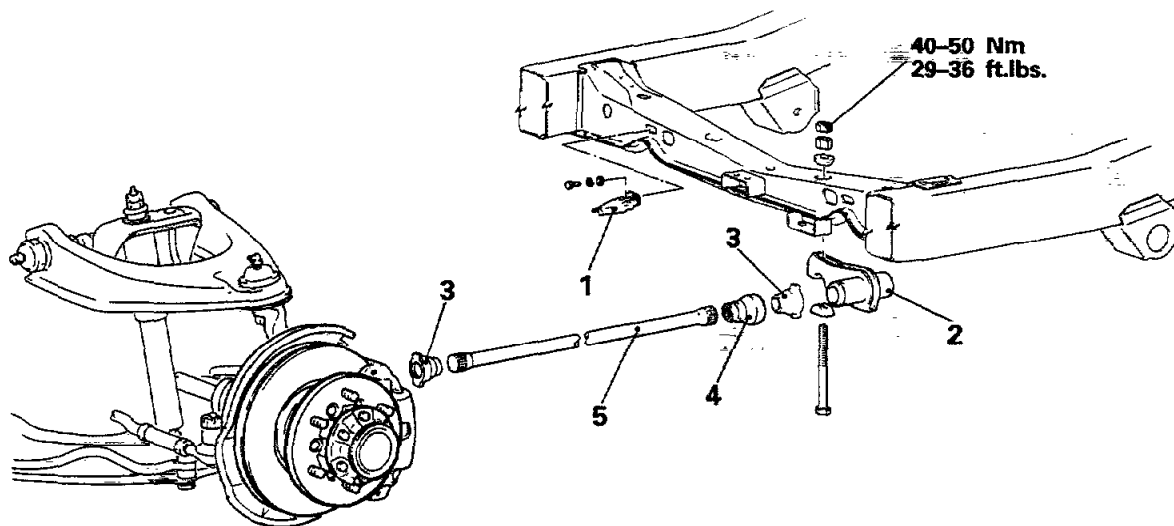
1. INSTALLATION OF OIL SEAL

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

TORSION BAR

REMOVAL AND INSTALLATION

N02SA--



12W558

Removal steps

1. Heat protector (right side only)
 - ◆◆ Adjustment of clearance between bump stopper and bump stopper bracket
- ↔ 2. Anchor arm assembly
3. Dust covers
4. Heat cover (left side only)
- ◆◆ 5. Torsion bar

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

N02SBAA

2. REMOVAL OF ANCHOR ARM ASSEMBLY

Support the lower arm from which the torsion bar is to be removed, with a jack.

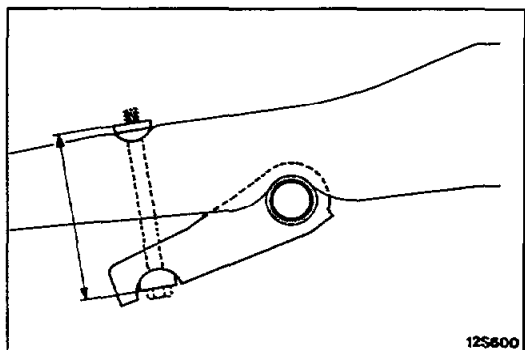
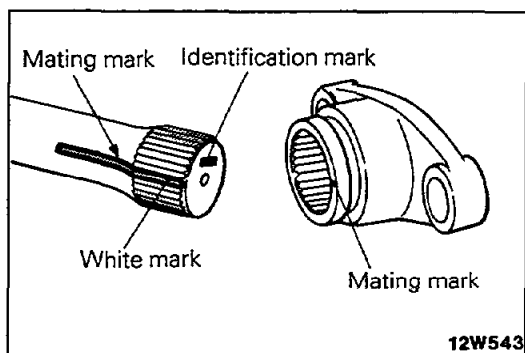
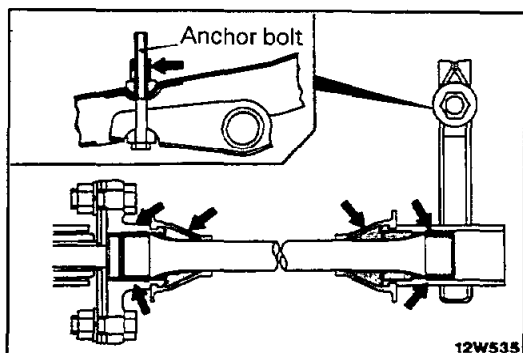
INSPECTION

N02SCAA

- Check the torsion bar for bends or damage.
- Check the dust cover for cracks or damage.

SERVICE POINTS OF INSTALLATIONN02SDAB₂

Apply the multipurpose grease to the torsion bar serrations, the anchor arm assembly serrations, the anchor arm B serrations, the dust cover inside and the anchor bolt thread.

**5. INSTALLATION OF TORSION BAR**

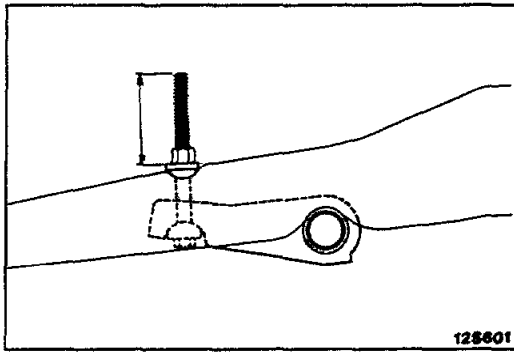
- (1) Identify the right and left torsion bars referring to the identification mark put on the torsion bars. Face the end having identification mark forward, and align the mark on anchor arm B with the mating mark on torsion bar when the torsion bar is inserted in the anchor arm B.

NOTE

When installing a new torsion bar, align the serration painted white with the mark on anchor arm B.

- (2) Select the relative position of the torsion bar serrations and the anchor arm serrations so that the length shown in the illustration may have specified dimension when the torsion bar and the anchor arm are assembled, with the upper arm rebound stopper in contact with the crossmember.

Standard value : L.H. 135.2–143.2 mm (5.323–5.638 in.)
R.H. 124.3–132.3 mm (4.894–5.210 in.)



● **ADJUSTMENT OF CLEARANCE BETWEEN BUMP STOPPER AND BUMP STOPPER BRACKET**

(1) Use the curb weight to obtain the amount of anchor bolt projection from the following table.

NOTE

The anchor bolt projection amount is a reference dimension used when the torsion bar spring is installed.

Finally, adjust so that the distance to the bump stopper bracket is the standard value.

This method can also be used to make the adjustment on previously sold vehicles.

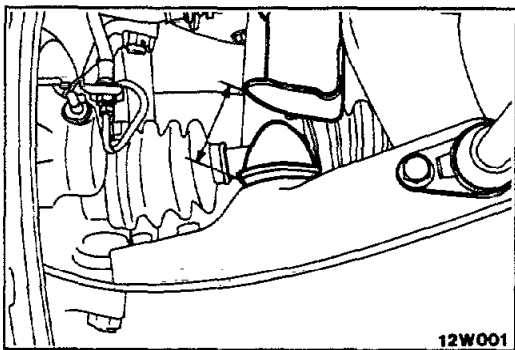
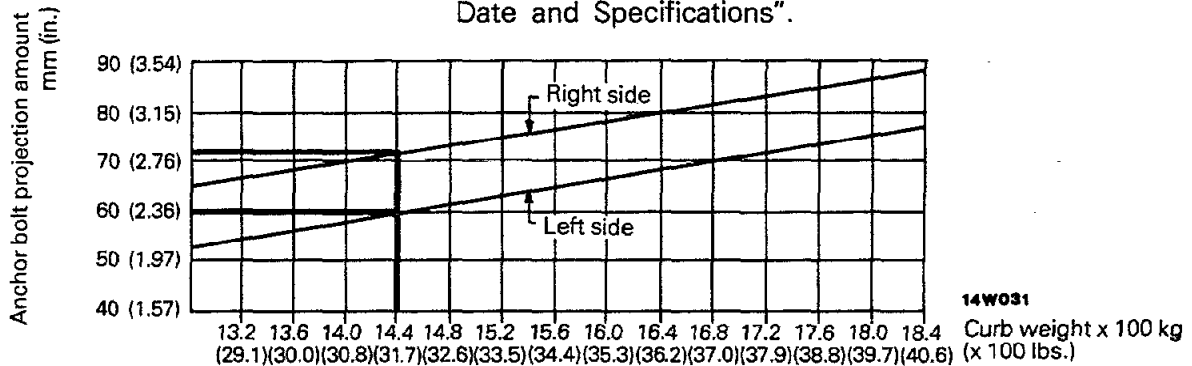
Example

For a vehicle with a curb weight of 1,440 kg (3,175 lbs.), the table shows the following left and right anchor bolt projections.

Left 60 mm (2.36 in.)
 Right 71 mm (2.80 in.)

NOTE

For curb weights of the various models, refer to "INTRODUCTION AND MASTER TROUBLESHOOTING - General Date and Specifications".



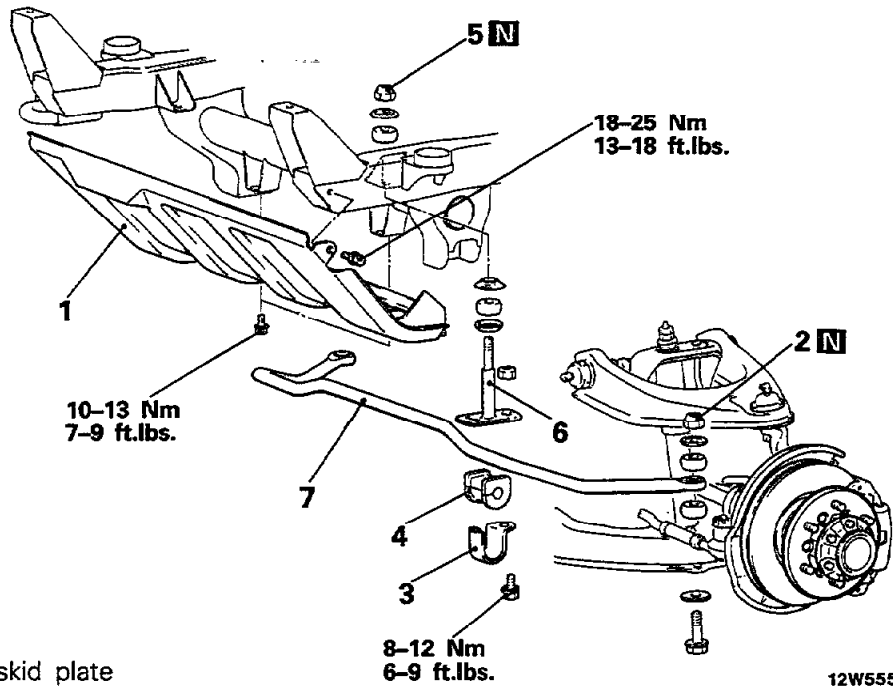
(2) With the vehicle unladen, measure the dimension from the bump stopper to the bump stopper bracket to check for conformance with standard value.

Standard value : 71 mm (2.80 in.)

(3) If it is out of specification, adjust with the adjusting nut on the anchor bolt.

**STABILIZER BAR
REMOVAL AND INSTALLATION**

N02TA--



Removal steps

1. Under skid plate
2. Self-locking nut
3. Clamp A
4. Stabilizer bushing
5. Self-locking nut
6. Hanger
7. Stabilizer bar

NOTE

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

INSPECTION

N02CAA

- Check the stabilizer bar for deformation or damage.
- Check the hanger for bends or damage.
- Check the rubber parts for cracks, deterioration or wear.

SERVICE POINTS OF INSTALLATION

N02DAA

7. INSTALLATION OF STABILIZER BAR

When installing the hanger to the stabilizer bracket, tighten the nut so as to obtain the specified dimension.

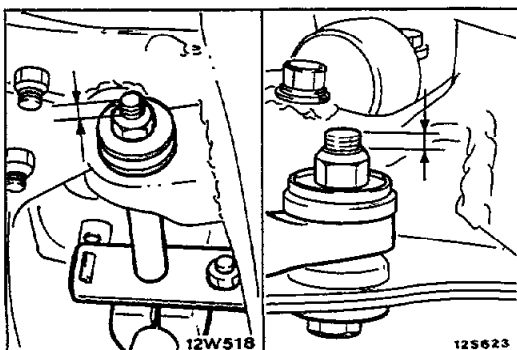
Standard value : 6-8 mm (.24-.31 in.)

When installing both ends of the stabilizer bar to the lower arms, tighten the nut so as to obtain the specified dimension.

Standard value : 6-8 mm (.24-.31 in.)

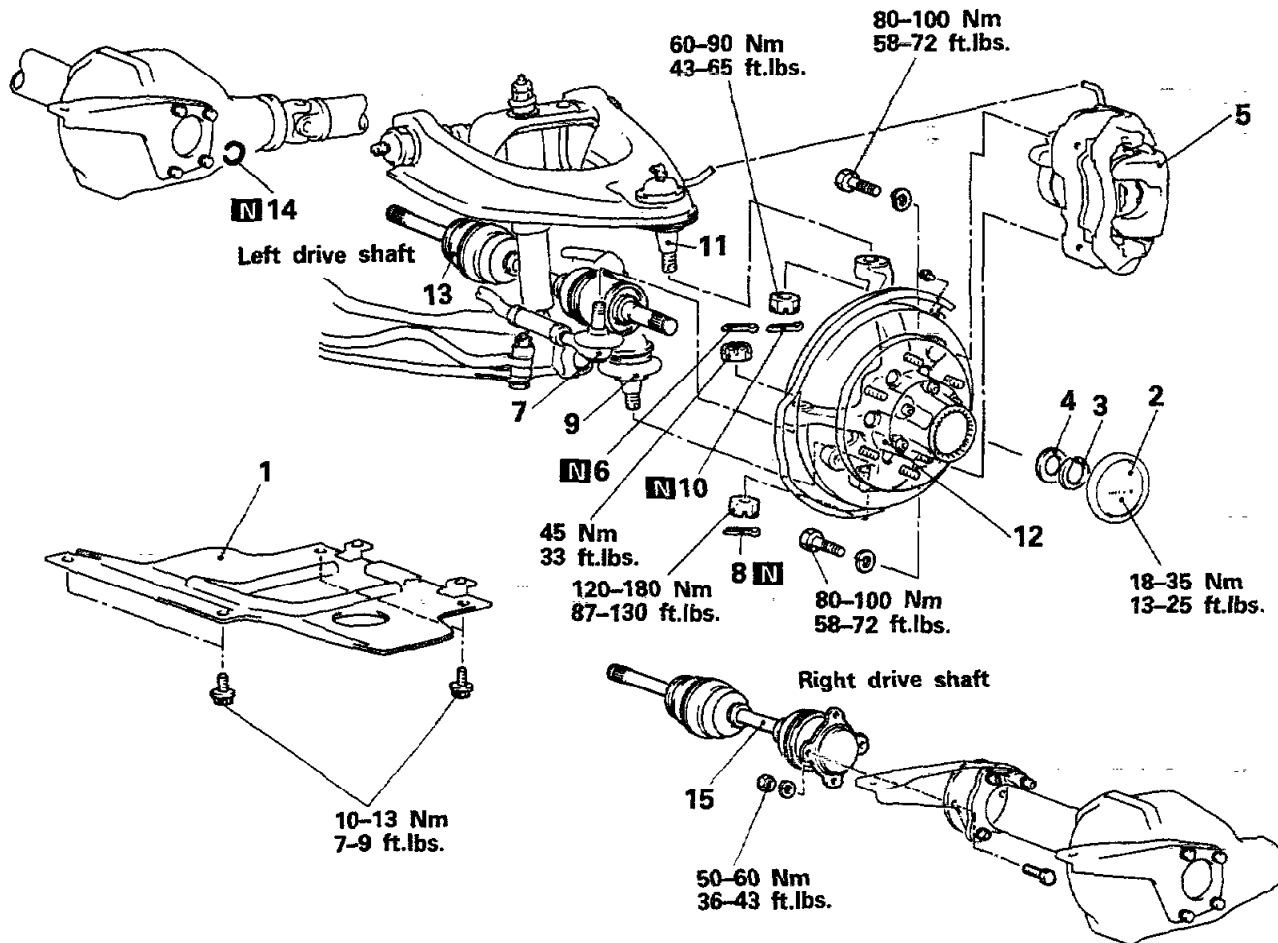
NOTE

The dimension shown in the figure is the value when a new bushing is used.



**DRIVE SHAFT
REMOVAL AND INSTALLATION**

N020A--



11W581

Removal steps

- 1. Under cover
- ↔ 2. Hub cover
- ↔ ↔ 3. Adjustment of drive shaft end play
- ↔ 4. Snap ring
- ↔ 5. Shim
- ↔ 6. Front brake assembly
- ↔ 7. Cotter pin
- ↔ 8. Connection of tie rod assembly and knuckle
- ↔ 9. Cotter pin
- ↔ 10. Connection of lower ball joint and knuckle
- ↔ 11. Cotter pin
- ↔ 12. Connection of upper ball joint and knuckle
- ↔ 13. Front hub and knuckle assembly
- ↔ ↔ 14. Left drive shaft
- ↔ 15. Circlip
- ↔ 16. 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

N02QBA0

2. REMOVAL OF HUB COVER

Refer to P.2-17.

3. REMOVAL OF SNAP RING

Refer to P.2-17.

5. REMOVAL OF FRONT BRAKE ASSEMBLY

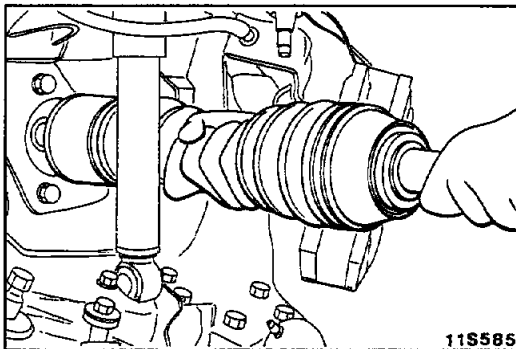
Refer to P.2-17.

7. DISCONNECTION OF TIE ROD ASSEMBLY AND KNUCKLE

Refer to P.2-34.

9. DISCONNECTION OF LOWER BALL JOINT AND KNUCKLE / 11. UPPER BALL JOINT AND KNUCKLE

Refer to P.2-34.

**13. 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

N02QCAB

- Check the boot for damage or deterioration.
- Check the ball joint for operating condition and excessive looseness.
- Check the splines for wear or damage.

SERVICE POINTS OF INSTALLATION

N02QDAM

13. INSTALLATION OF LEFT DRIVE SHAFT

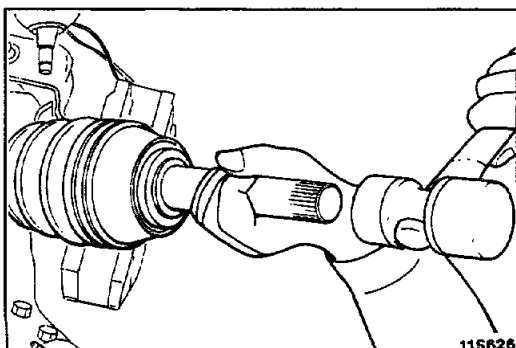
Drive the drive shaft into the front differential carrier with a plastic hammer.

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.

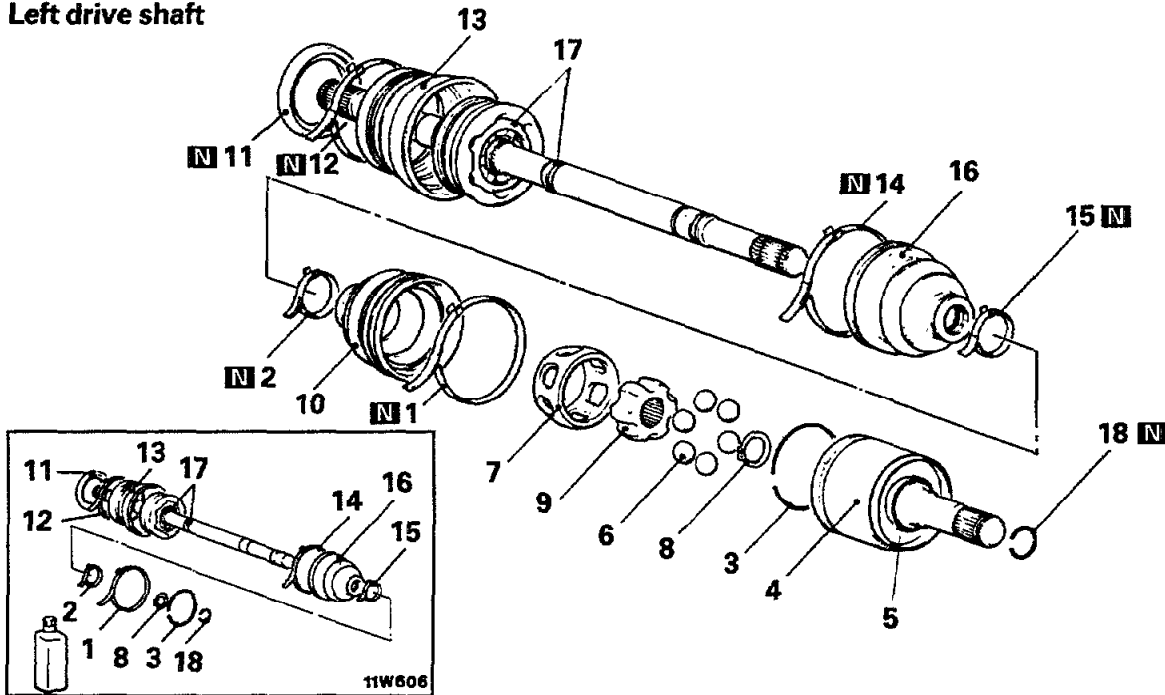
- **ADJUSTMENT OF DRIVE SHAFT END PLAY**

Refer to P.2-20.



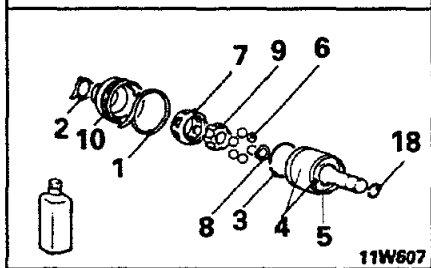
DISASSEMBLY AND REASSEMBLY

Left drive shaft

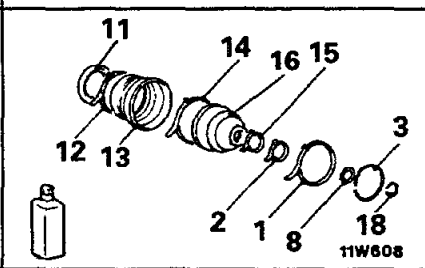


11B0025

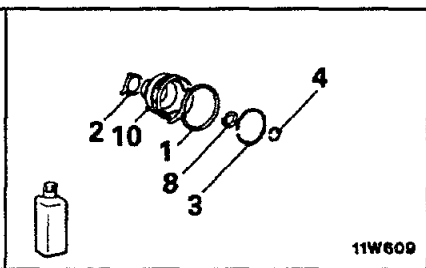
B.J. repair kit LH
11W606



D.O.J. repair kit
11W607



Boot repair kit (B.J.)
11W608



Boot repair kit (D.O.J.)
11W609

Disassembly steps

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

Reassembly steps

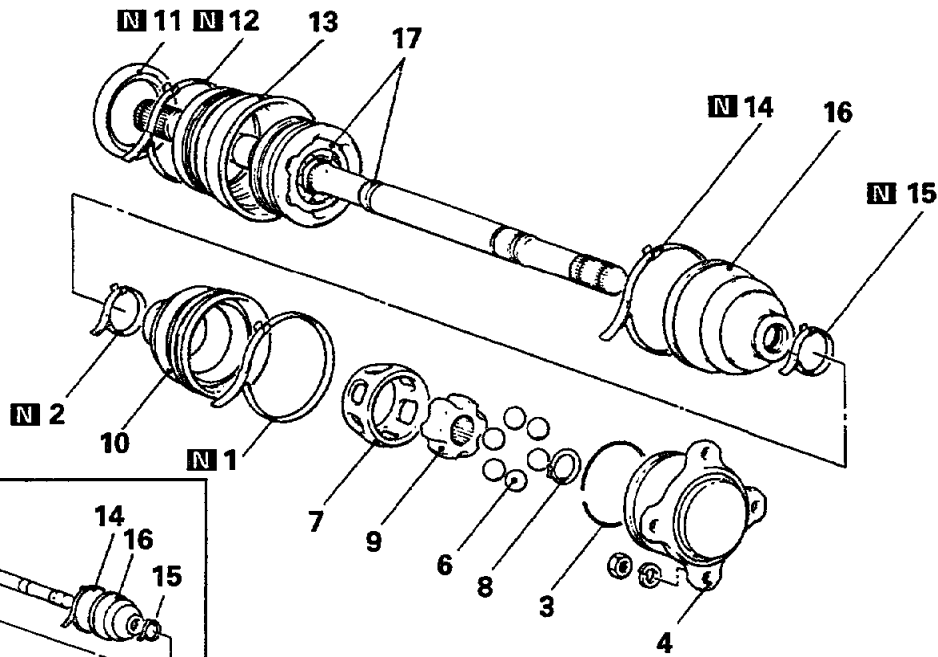
- 17. Drive shaft and B.J.
- 16. B.J. boot
- 14. Boot band A
- 15. Boot band B
- 2. Boot band B
- 10. D.O.J. boot
- 1. Boot band A
- 7. D.O.J. cage
- 9. D.O.J. inner race
- 8. Snap ring
- 6. Balls
- 5. Dust cover
- 4. D.O.J. outer race
- 3. Circlip
- 18. Circlip
- 13. Boot protector
- 12. Boot protector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

NOTE

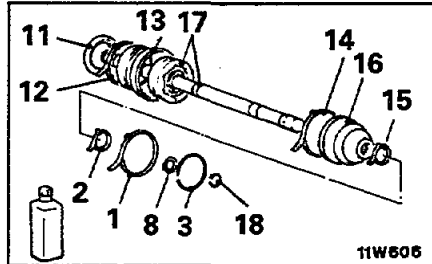
(1) ⇄ : Refer to "Service Points of Disassembly".
 (2) ⇄ : Refer to "Service Points of Reassembly".

(3) [N] : Non-reusable parts
 (4) B.J. : Birfield Joint
 (5) D.O.J. : Double Offset Joint

Right drive shaft

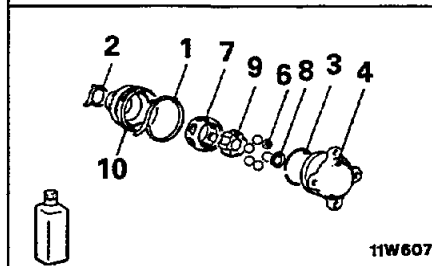


11B0025



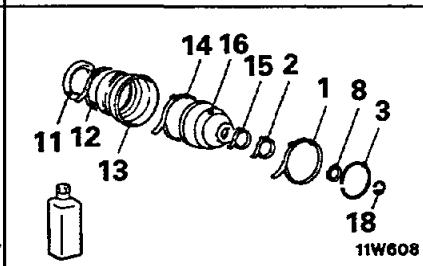
11W606

B.J. repair kit RH



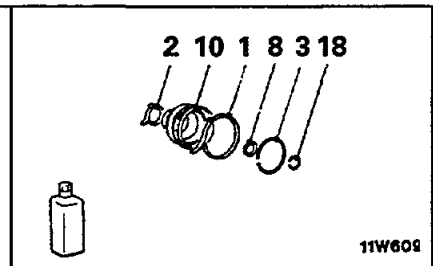
11W607

D.O.J. repair kit



11W608

Boot repair kit (B.J.)



11W609

Boot repair kit (D.O.J.)

Disassembly steps

- 1. Boot band A
- 2. Boot band B
- 3. Circlip
- 4. D.O.J. outer race
- ↔ 6. Balls
- ↔ 7. D.O.J. cage
- ↔ 8. Snap ring
- ↔ 10. D.O.J. boot
- ↔ 11. Dust cover
- ↔ 12. Boot protector band
- ↔ 13. Boot protector
- ↔ 14. Boot band A
- ↔ 15. Boot band B
- ↔ 16. B.J. boot
- 17. Drive shaft and B.J.

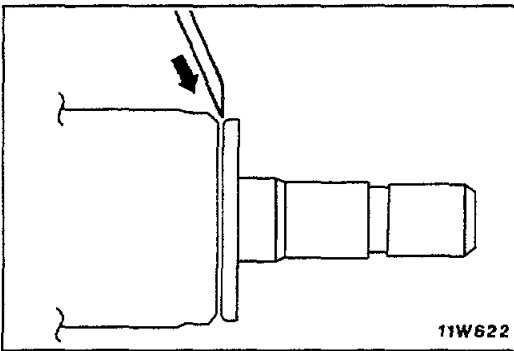
Reassembly steps

- 17. Drive shaft and B.J.
- ↔↔ 16. B.J. boot
- ↔↔ 14. Boot band A
- ↔↔ 15. Boot band B
- ↔↔ 2. Boot band B
- ↔↔ 10. D.O.J. boot
- ↔↔ 1. Boot band A
- ↔↔ 7. D.O.J. cage
- ↔↔ 9. D.O.J. inner race
- ↔↔ 8. Snap ring
- ↔↔ 6. Balls
- ↔↔ 4. D.O.J. outer race
- ↔↔ 3. Circlip
- ↔↔ 13. Boot protector
- ↔↔ 12. Boot protector band
- ↔↔ 11. 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



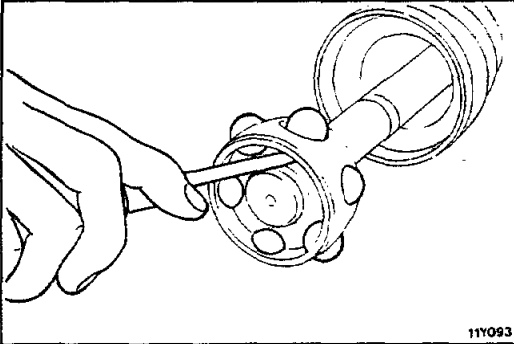
11W622

SERVICE POINTS OF DISASSEMBLY

N020FAF

5. REMOVAL OF DUST COVER

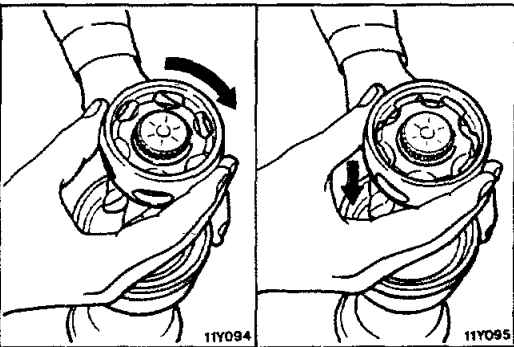
Remove the dust cover from the D.O.J. outer race.



11Y093

6. REMOVAL OF BALLS

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

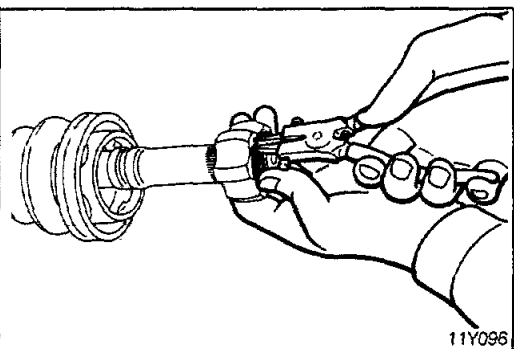


11Y094

11Y095

7. REMOVAL OF D.O.J. CAGE

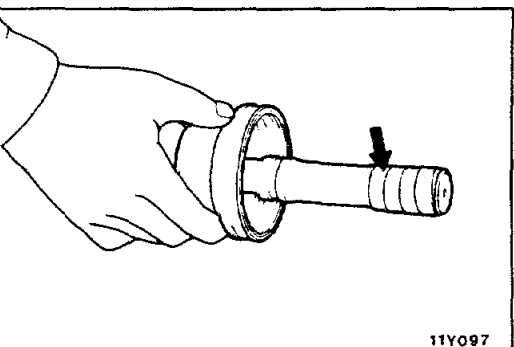
Remove the D.O.J. cage from the D.O.J. inner race in the direction of the B.J.



11Y096

8. REMOVAL OF SNAP RING

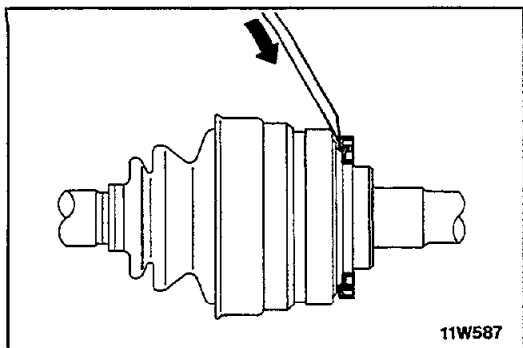
Remove the snap ring from the drive shaft with a snap ring pliers, and then withdraw the D.O.J. inner race and D.O.J. cage from the drive shaft.



11Y097

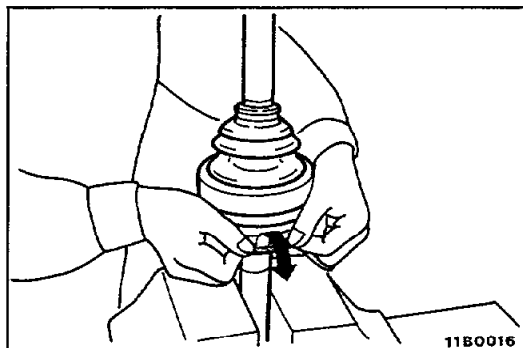
10. REMOVAL OF D.O.J. BOOT

- (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.



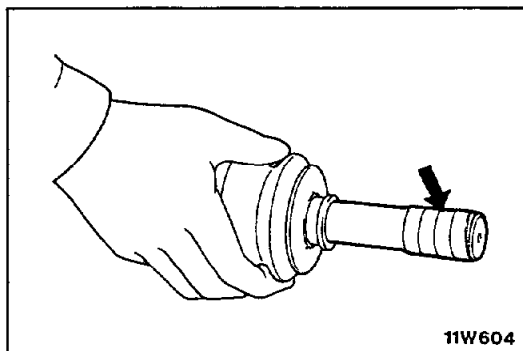
11. REMOVAL OF DUST COVER

Remove the dust cover from the drive shaft and B.J.



13. REMOVAL OF BOOT PROTECTOR

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.



16. 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 disassemble the B.J.

INSPECTION

N02QGAB

- 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 wear or damage.

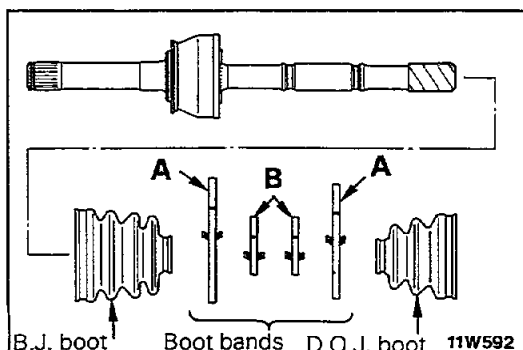
SERVICE POINTS OF REASSEMBLY

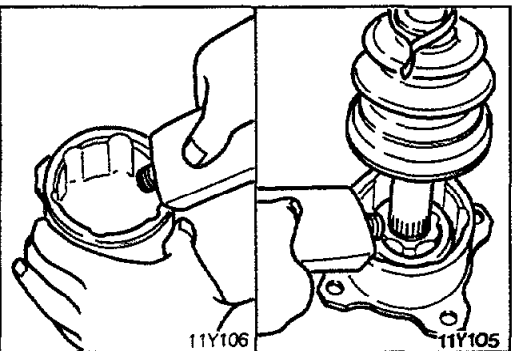
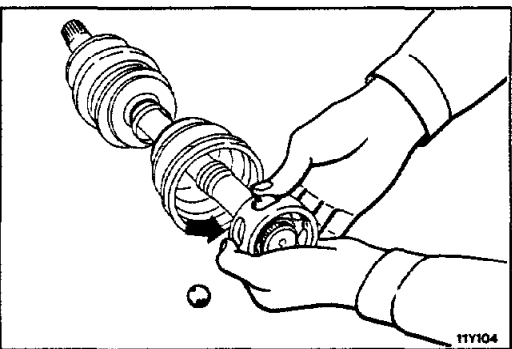
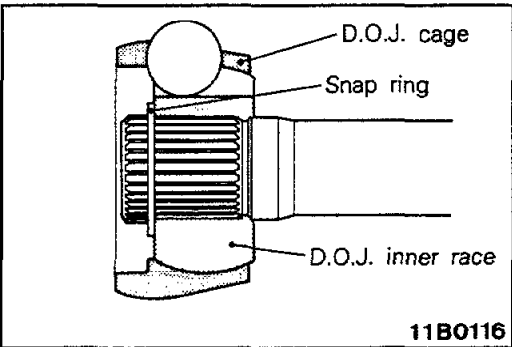
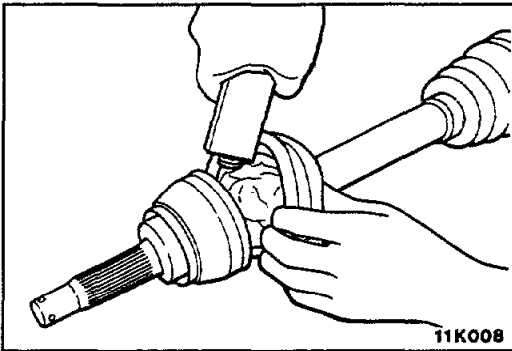
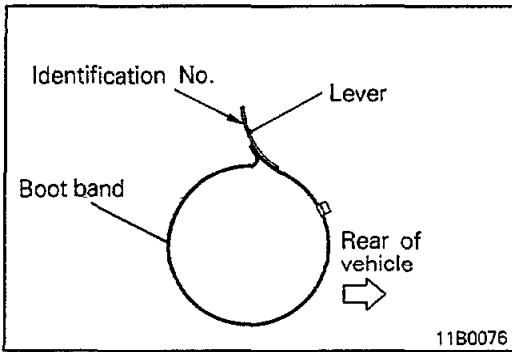
N02QHAI

16. /14. / 15. / 2. / 10. / 1. INSTALLATION OF BOOTS AND BOOT BANDS

- (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 : Repair kit grease





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

Boot bands A identification No.	D.O.J.	B.J.
2.6 L Engine, 3.0 L Engine (A/T)	20-75	20-110
3.0 L Engine (M/T)	20-69	20-70

NOTE

Install the boot so that when it is tightened, its lever may be located toward the rear of vehicle.

Caution

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

- (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

<2.6 L Engine> [110 gr (3.9 oz.)]

<3.0 L Engine> [130 gr (4.6 oz.)]

- (4) Secure the B.J. boot to the drive shaft by boot bands A and B.

7. INSTALLATION OF D.O.J. CAGE / 9. 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 then fit them together.

Specified grease : Repair kit grease

6. APPLICATION OF GREASE TO BALLS

Apply the 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

<2.6 L Engine> [55 gr (1.9 oz.)]

<3.0 L Engine> [60 gr (2.3 oz.)]

- (2) Fit the drive shaft into the D.O.J. outer race.

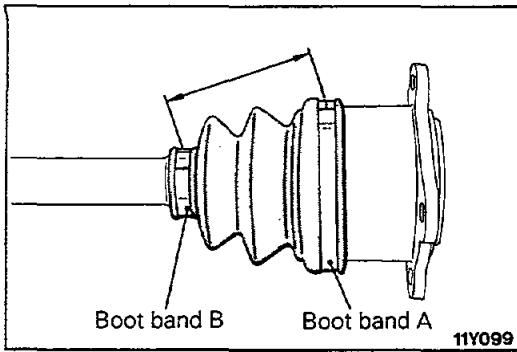
- (3) Add the specified grease to the D.O.J. outer race.

Specified grease :

Repair kit grease

<2.6 L Engine> [55 gr (1.9 oz.)]

<3.0 L Engine> [60 gr (2.3 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

Do not secure the boot band A

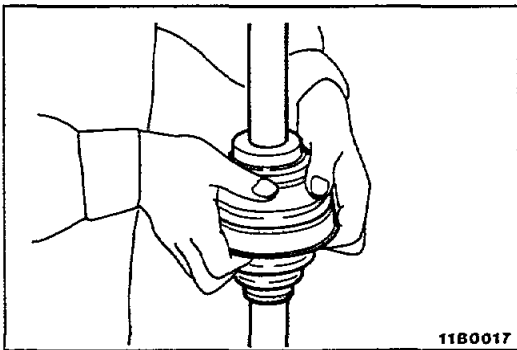
- (6) Secure the driveshaft, and then move the D.O.J. outer race until it is at the position where the D.O.J. boot assembly dimension is the standard value.

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

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

Caution

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



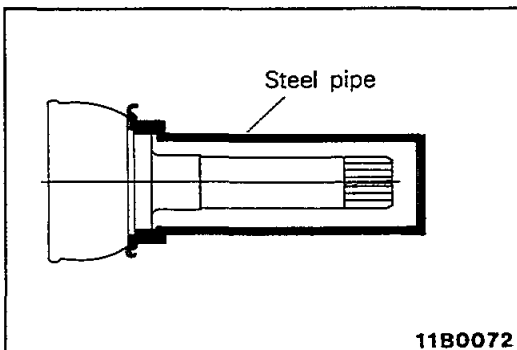
13. INSTALLATION OF BOOT PROTECTOR / 12. BOOT PROTECTOR BAND

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

Caution

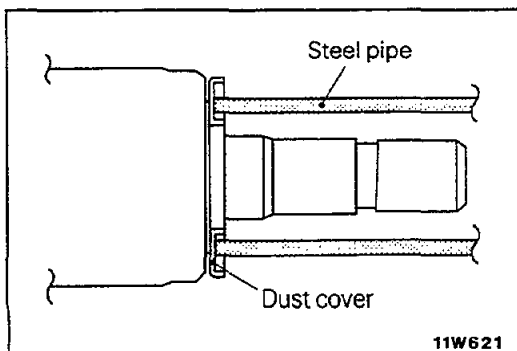
Be sure that the installation direction of the boot bands is correct.

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



11. INSTALLATION OF DUST COVER

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



5. INSTALLATION OF DUST COVER

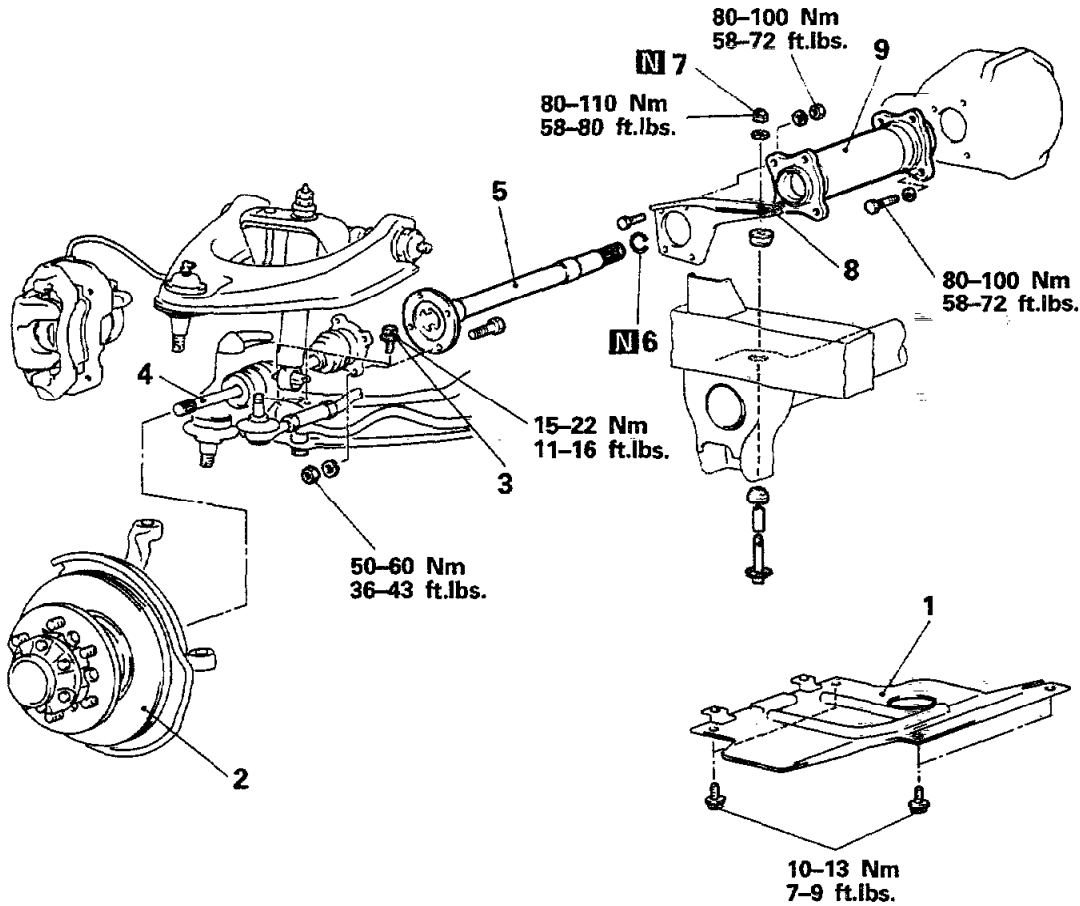
Using the steel pipe as specified below, force the dust cover to the D.O.J. outer race.

Steel Pipe	mm (in.)
Outside diameter	77 (3.0)

INNER SHAFT

REMOVAL AND INSTALLATION

N02RA--



11W582

Removal steps

1. Under cover
- ↔ ↔ 2. Front hub and knuckle assembly
- ↔ ↔ 3. Shock absorber lower mounting bolts
- ↔ ↔ 4. Drive shaft assembly (R.H.)
- ↔ ↔ 5. Inner shaft
6. Circlip
7. Self locking nut
8. Differential mounting bracket (R.H.)
9. Housing tube

NOTE

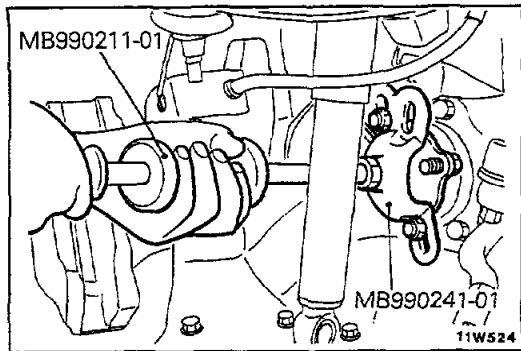
- (1) Reverse the removal procedures to reinstall.
- (2) ↔ ↔ : Refer to "Service Points of Removal".
- (3) ↔ ↔ : Refer to "Service Points of Installation".
- (4) N : Non-reusable parts

SERVICE POINTS OF REMOVAL

N02RBAB

2. REMOVAL OF FRONT HUB AND KNUCKLE ASSEMBLY / 4. DRIVE SHAFT ASSEMBLY (R.H.)

Refer to P.2-40.



5. REMOVAL OF INNER SHAFT

Attach the special tools to the flange of the shaft, and drive the inner shaft out from the front differential carrier.

Caution

1. Being careful not to scratch or scar the shock absorber with the special tool, remove the lower mounting bolts of the shock absorber, and compress the shock absorber as much as possible.
2. When pulling the inner shaft out from the front differential carrier, be careful that the spline part of the inner shaft does not damage the oil seal.

INSPECTION

N02RCAA

- Check the inner shaft for bend.
- Check the bearing for wear or discoloration.
- Check the housing tube for cracks.
- Check the dust seal for cracks or damage.

SERVICE POINTS OF INSTALLATION

N02RDAB

5. INSTALLATION OF INNER SHAFT

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

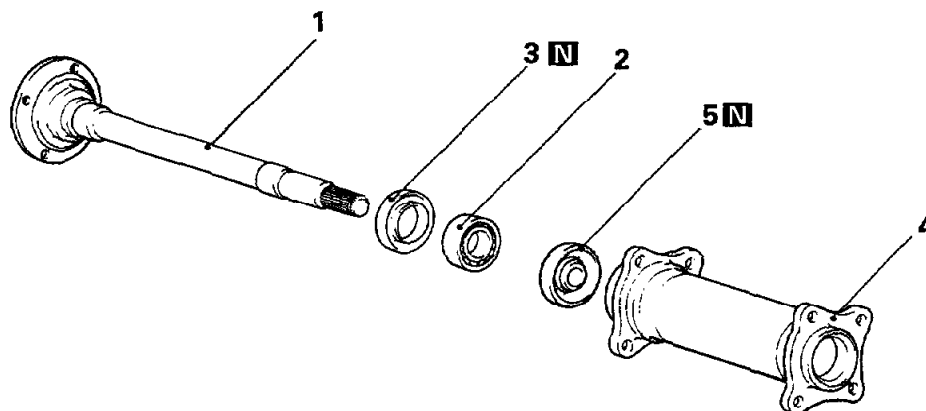
Caution

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.

4. INSTALLATION OF DRIVE SHAFT ASSEMBLY (R.H.)/2. FRONT HUB AND KNUCKLE ASSEMBLY

Refer to P.2-40.

DISASSEMBLY AND REASSEMBLY



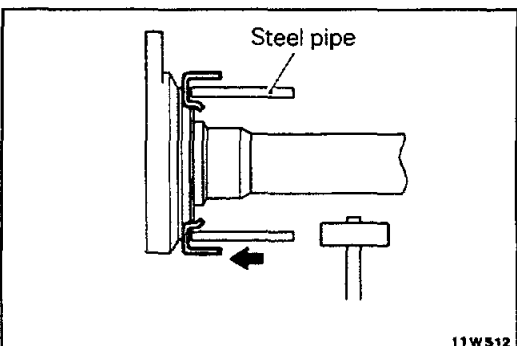
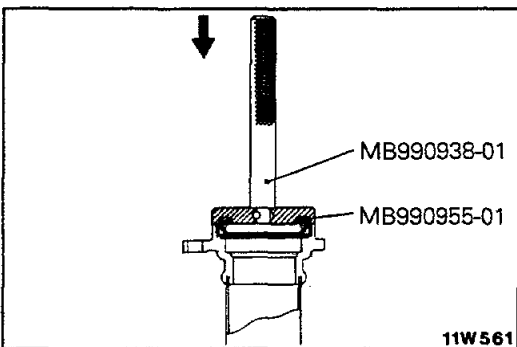
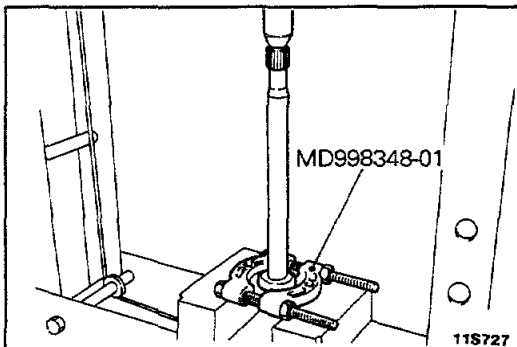
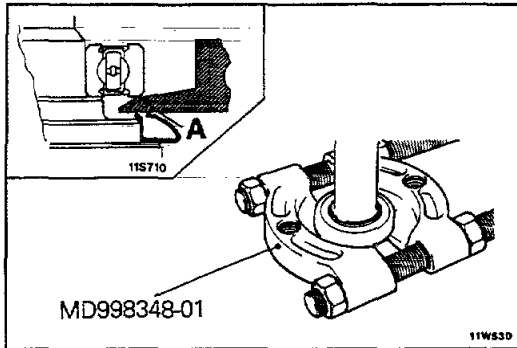
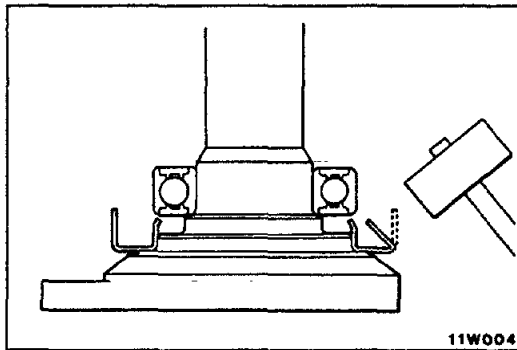
Disassembly steps

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

11W597

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**

N02RFAB

2. REMOVAL OF BEARING

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

- (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.

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

Caution**Do not allow the inner shaft to drop.****SERVICE POINTS OF REASSEMBLY**

N02RHAD

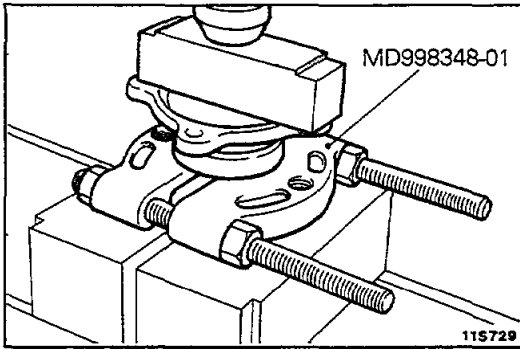
5. INSTALLATION OF DUST SEAL

- (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 multipurpose grease to the dust seal lip.

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 (.16)



NOTE

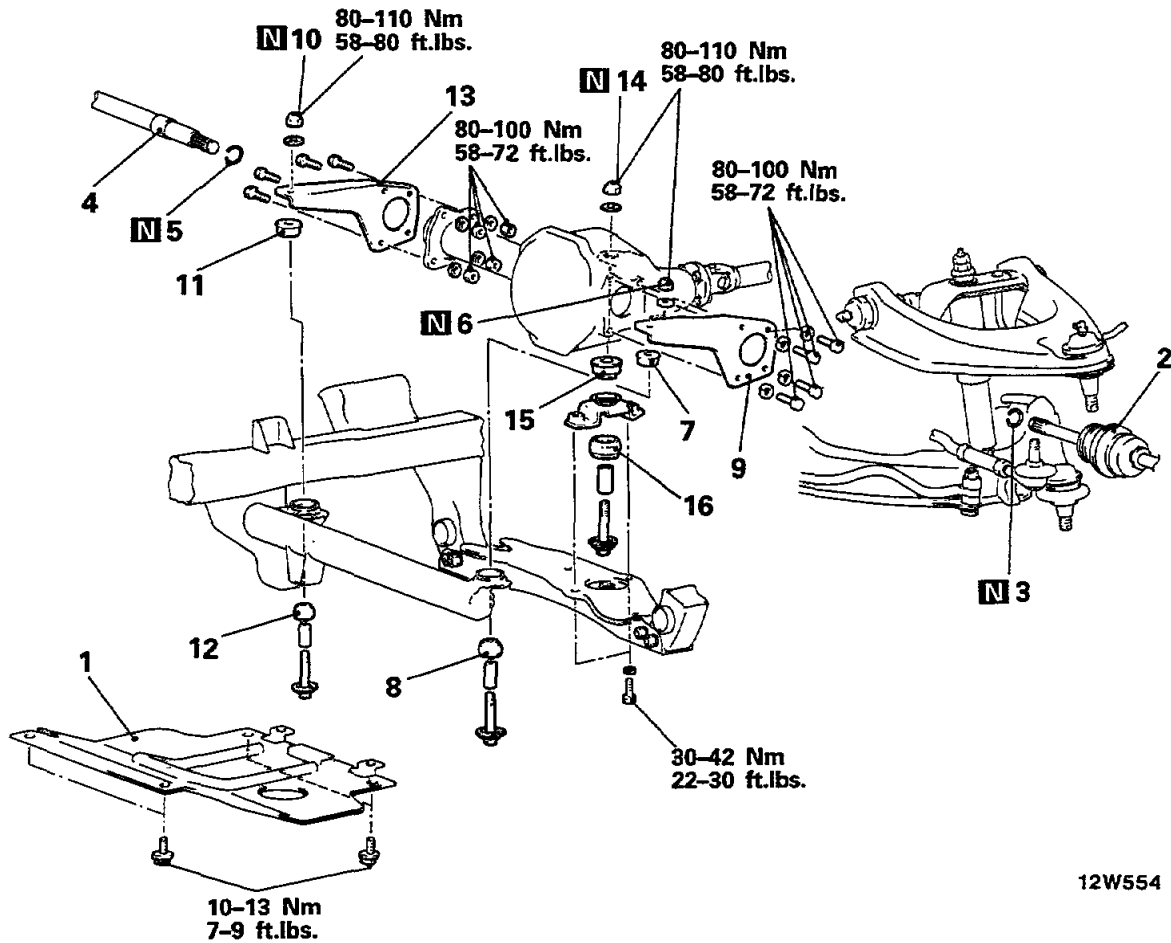
After the dust cover has been installed, apply multipurpose grease to the inside of the dust cover.

2. INSTALLATION OF BEARING

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

**FRONT DIFFERENTIAL MOUNTING
REMOVAL AND INSTALLATION**

N02UA-



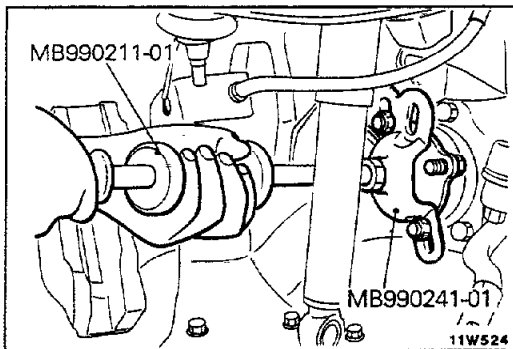
12W554

Removal steps

- | | |
|---|--|
| 1. Under cover | |
| ↔ ↔ 2. Drive shaft | ↔ |
| 3. Circlip | |
| ↔ ↔ 4. Inner shaft | |
| 5. Circlip | |
| 6. Self-locking nut | |
| 7. Differential mounting rubber A | |
| 8. Differential mounting rubber B | |
| ↔ 9. Differential mounting bracket (L.H.) | |
| 10. Self-locking nut | |
| | 11. Differential mounting rubber A |
| | 12. Differential mounting rubber B |
| | ↔ 13. Differential mounting bracket (R.H.) |
| | 14. Self-locking nut |
| | 15. Differential mounting rubber C |
| | 16. Differential mounting rubber D |

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**

N02UBAB

2. REMOVAL OF DRIVE SHAFT

Refer to P. 2-40.

4. REMOVAL OF INNER SHAFT

Attach the special tools to the flange of the shaft, and drive the inner shaft out from the front differential carrier.

Caution

1. Being careful not to scratch or scar the shock absorber with the special tool, remove the lower mounting bolts of the shock absorber, and compress the shock absorber as much as possible.
2. When pulling the inner shaft out from the front differential carrier, be careful that the spline part of the inner shaft does not damage the oil seal.

9. REMOVAL OF DIFFERENTIAL MOUNTING BRACKET (L.H.) / 13. DIFFERENTIAL MOUNTING BRACKET (R.H.)

While supporting the differential carrier with a jack, remove the differential mounting bracket.

NOTE

Support the differential carrier with a jack until installing the differential mounting bracket.

INSPECTION

N02UCAA

- Check the differential mounting bracket for deformation and damage.
- Check the bracket for deformation and damage.
- Check the differential mounting rubber for cracks and damage.

SERVICE POINTS OF INSTALLATION

N02UDAA

4. INSTALLATION OF INNER SHAFT

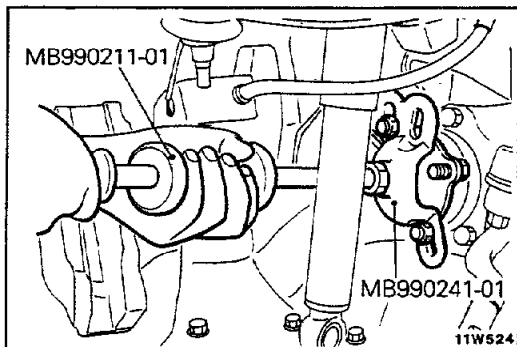
Drive the inner shaft into the front differential carrier by using the special tools.

Caution

Be careful not to damage the lip of the dust seal and oil seal.

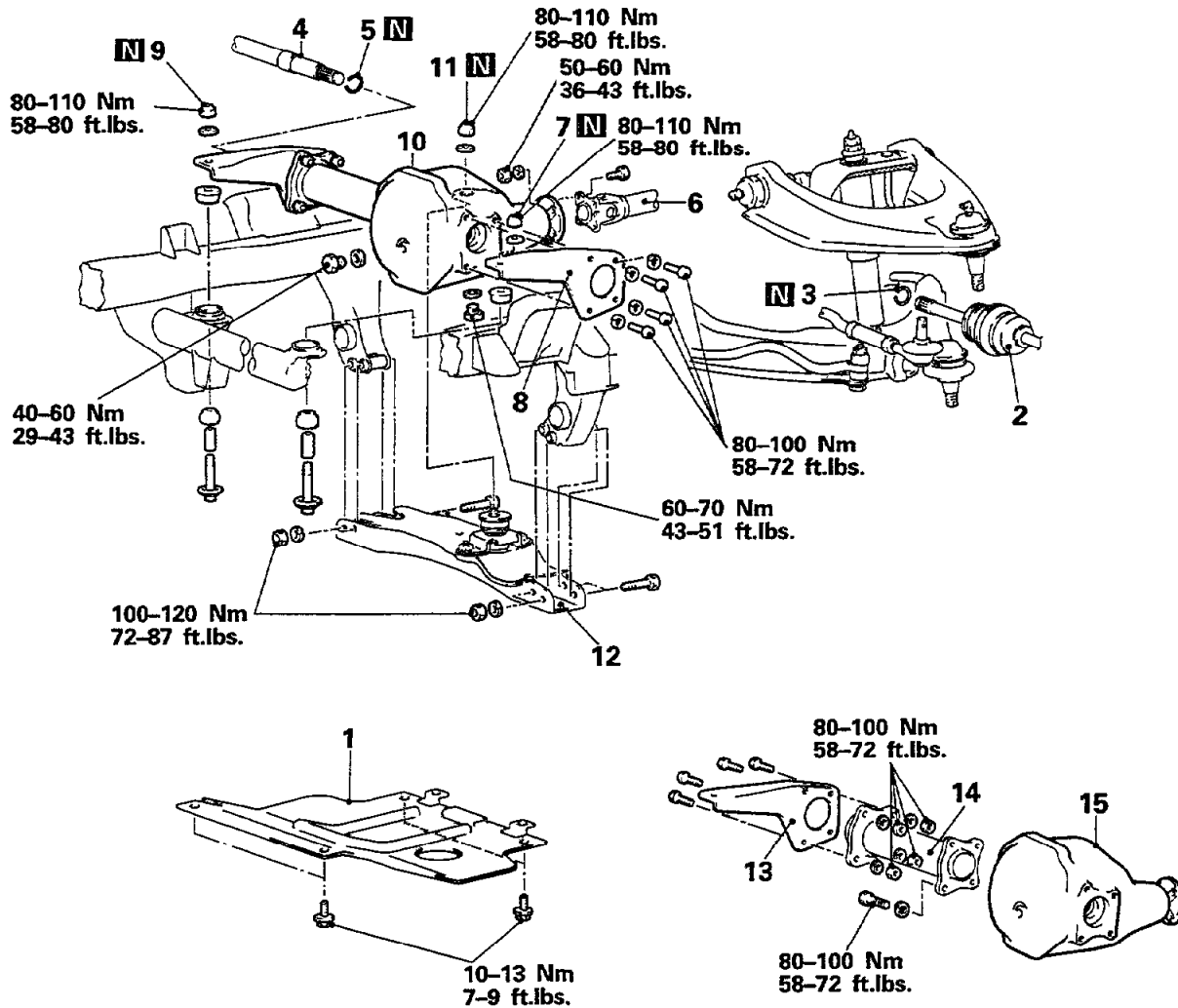
2. INSTALLATION OF DRIVE SHAFT

Refer to P. 2-40.



**DIFFERENTIAL CARRIER
REMOVAL AND INSTALLATION**

N02VA--



11W612

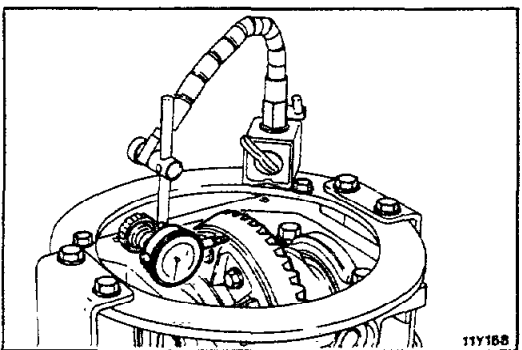
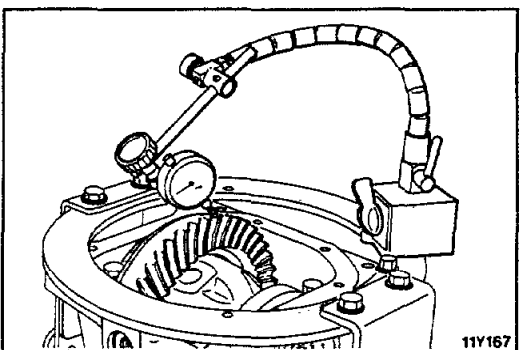
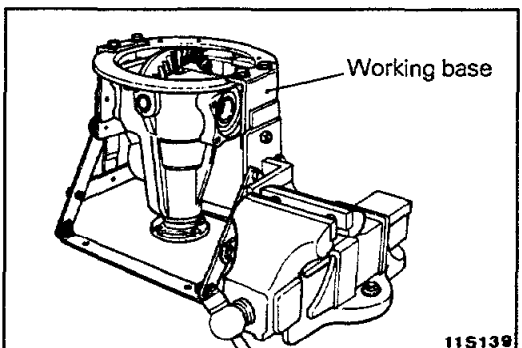
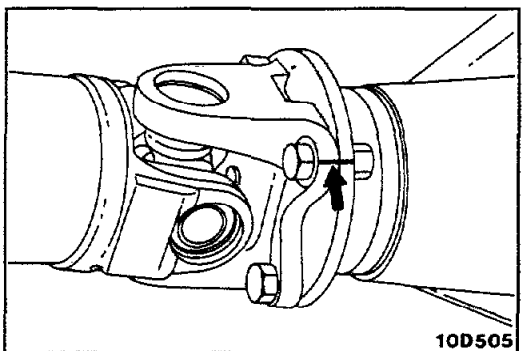
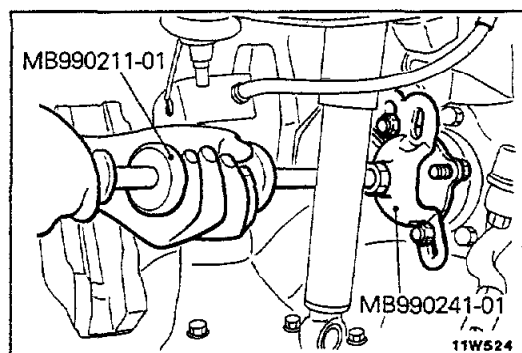
Removal steps

- 1. Under cover
- ◄◄ ►► 2. Drive shaft
- ◄◄ ►► 3. Circlip
- ◄◄ ►► 4. Inner shaft
- ◄◄ 5. Circlip
- ◄◄ 6. Front propeller shaft
- ◄◄ 7. Self-locking nut
- ◄◄ 8. Differential mounting bracket (L.H.)
- 9. Self-locking nut
- 10. Front suspension crossmember and front differential carrier assembly
- 11. Self-locking nut
- 12. Front suspension crossmember
- 13. Differential mounting bracket (R.H.)
- 14. Housing tube
- 15. Front differential carrier assembly

Pre-removal Operation
 ● Draining of Gear Oil

Post-installation Operation
 ● Supplying Gear Oil (Refer to P. 2-15.)

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

N02VBAB

2. REMOVAL OF DRIVE SHAFT

Refer to P.2-40.

4. REMOVAL OF INNER SHAFT

Drive the inner shaft out from the front differential carrier.

Caution

1. Being careful not to scratch or scar the shock absorber with the special tool, remove the lower mounting bolts of the shock absorber, and compress the shock absorber as much as possible.
2. When pulling the inner shaft out from the front differential carrier, be careful that the spline part of the inner shaft does not damage the oil seal.

6. REMOVAL OF FRONT PROPELLER SHAFT

Make the mating marks on the flange yoke and the differential companion flange.

Detach the propeller shaft from the front differential carrier assembly.

8. REMOVAL OF DIFFERENTIAL MOUNTING BRACKET (L.H.)

While supporting the differential carrier with a jack, remove the differential mounting bracket.

INSPECTION BEFORE DISASSEMBLY

N02VCAC

Remove the cover and gasket. Hold the working base in a vice, and install the differential carrier assembly to the working base.

FINAL DRIVE GEAR BACKLASH CHECK

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 (.0043–.0063 in.)

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

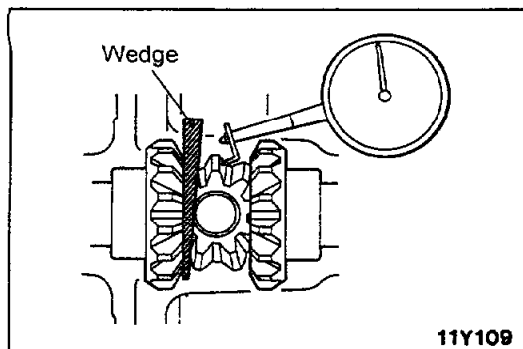
DRIVE GEAR RUNOUT CHECK

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 (.0020 in.)

- (2) If the runout exceeds the limit, check for improper tightening of the drive gear and differential case.

**DIFFERENTIAL GEAR BACKLASH CHECK**

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–.0030 in.)

Limit : 0.2 mm (.008 in.)

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

FINAL DRIVE GEAR TOOTH CONTACT CHECK

Refer to GROUP 3 – Differential Carrier (Inspection Before Disassembly).

SERVICE POINTS OF INSTALLATION

N02VDAB

4. INSTALLATION OF INNER SHAFT

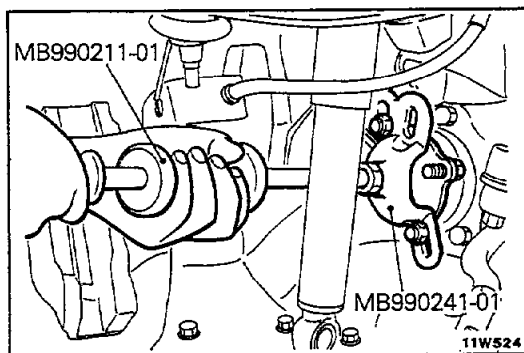
Drive the inner shaft into the front differential carrier by using the special tools.

Caution

Be careful not to damage the lip of the dust seal and oil seal.

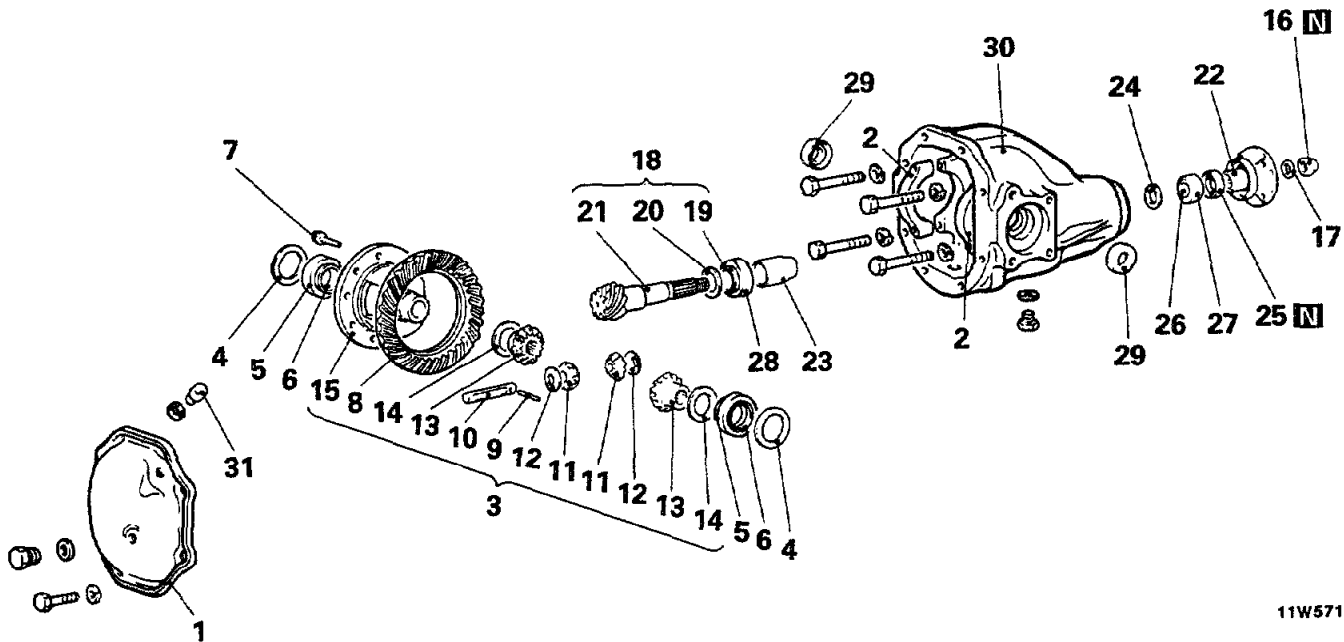
2. INSTALLATION OF DRIVE SHAFT

Refer to P.2-40.



DISASSEMBLY

NOZVE--



11W571

Inspection before Disassembly

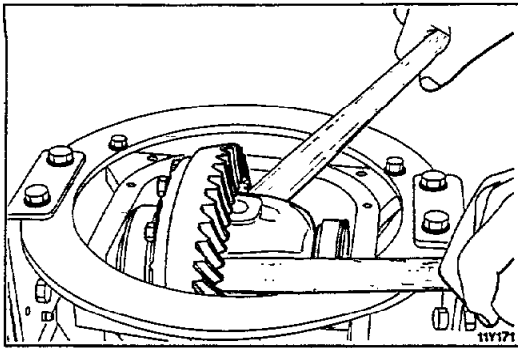
- Final Drive Gear Backlash
 - Drive Gear Runout
 - Differential Gear Backlash
 - Final Drive Gear Tooth Contact
- } Refer to P.2-54-55.

Disassembly steps

- | | |
|---|---|
| <ul style="list-style-type: none"> 1. Differential cover 2. Bearing caps ↔ 3. Differential case assembly 4. Side bearing adjusting spacers 5. Side bearing outer races ↔ 6. Side bearing inner races 7. Bolts (10) ↔ 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. Drive pinion front bearing inner race | <ul style="list-style-type: none"> 20. Drive pinion front shim (for pinion height adjustment) 21. Drive pinion 22. Companion flange 23. Drive pinion spacer 24. Drive pinion rear shim (for preload adjustment) 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**

N02VFAC

3. REMOVAL OF DIFFERENTIAL CASE ASSEMBLY

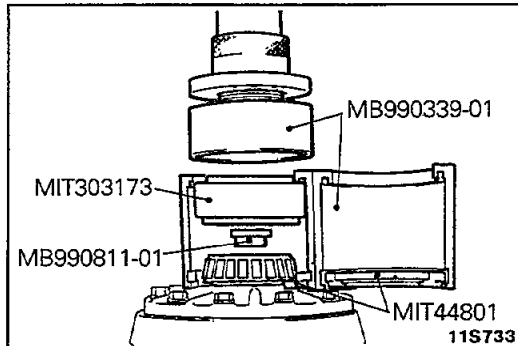
Take out the differential case assembly with a hammer handle.

Caution

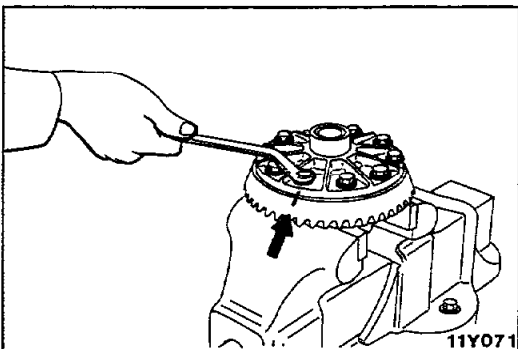
When taking out the differential case assembly, be careful not to drop and damage the side bearing outer races.

NOTE

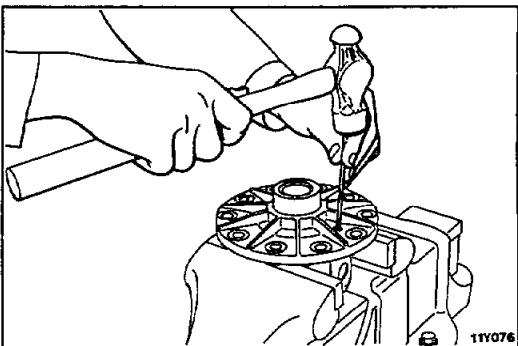
Keep the right and left side bearings and side bearing adjusting spacers separate, so that they do not become mixed at the time of reassembly.

**6. REMOVAL OF SIDE BEARING INNER RACES**

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

**8. REMOVAL OF DRIVE GEAR**

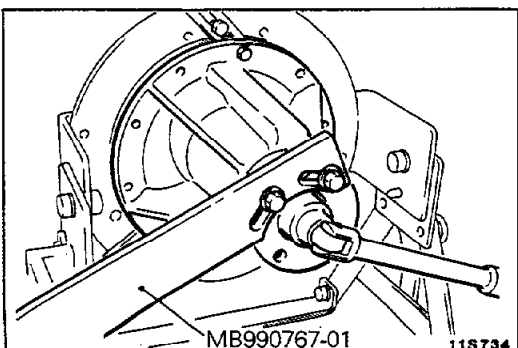
- (1) Make the mating marks to the differential case and the drive gear.
- (2) Loosen the drive gear attaching bolts in diagonal sequence to remove the drive gear.

**9. REMOVAL OF LOCK PIN**

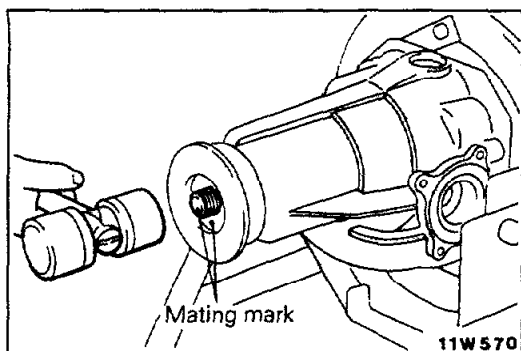
Drive out the lock pin with a punch.

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.

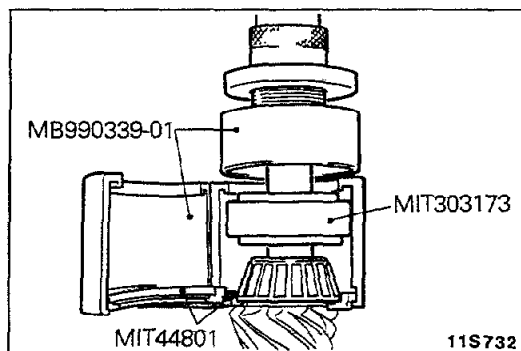
**18. REMOVAL OF DRIVE PINION ASSEMBLY**

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

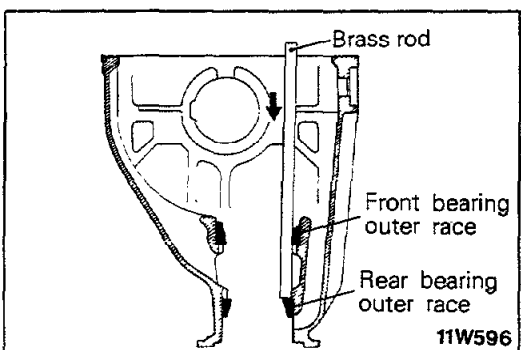
Caution

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) Drive out the drive pinion together with the drive pinion spacer and drive pinion shims.

**19. 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 /28. DRIVE PINION FRONT BEARING OUTER RACE**

- (1) Drive out the drive pinion rear bearing outer race from the gear carrier by using the brass rod.
- (2) Drive out the front bearing outer race in the same manner.

INSPECTION

N02VGAA

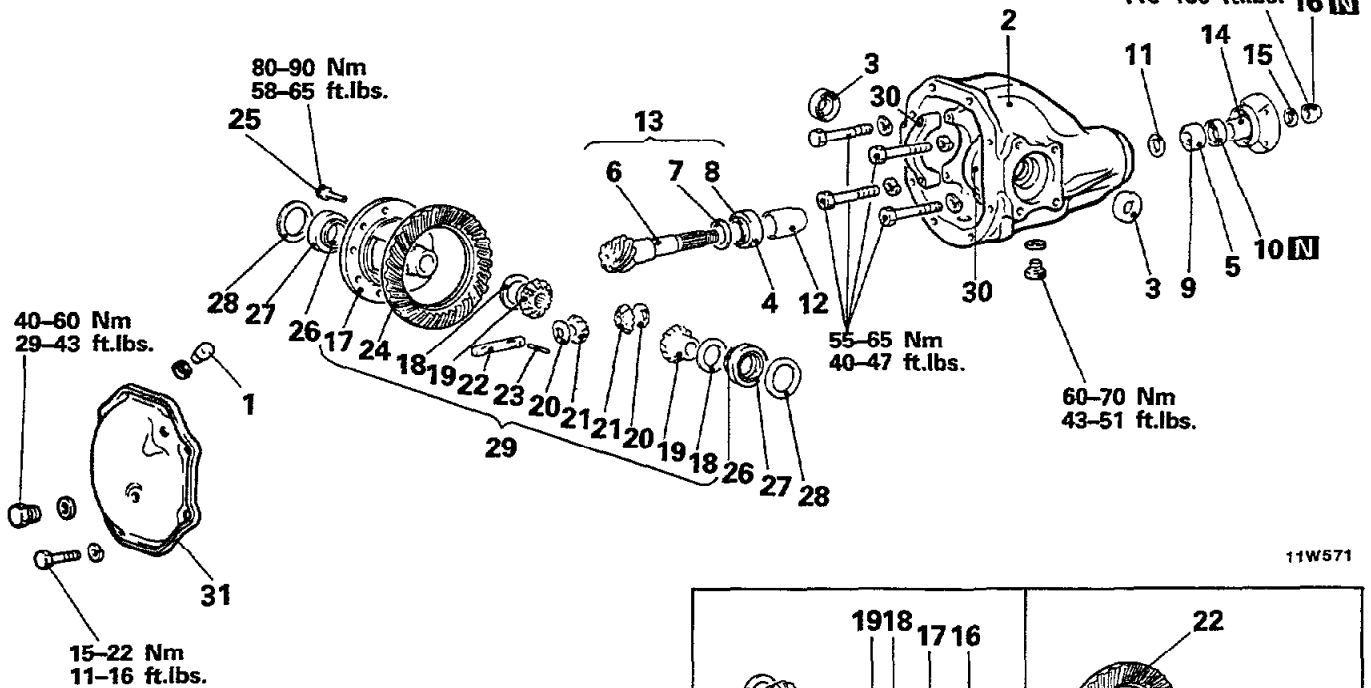
- Check the companion flange for wear or damage.
- Check the oil seal for wear or deterioration.
- Check the bearings for wear or discoloration.
- Check the gear carrier for cracks.
- Check the drive pinion and ring gear for wear or cracks.
- Check the side gears, pinion gears and pinion shaft for wear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

REASSEMBLY

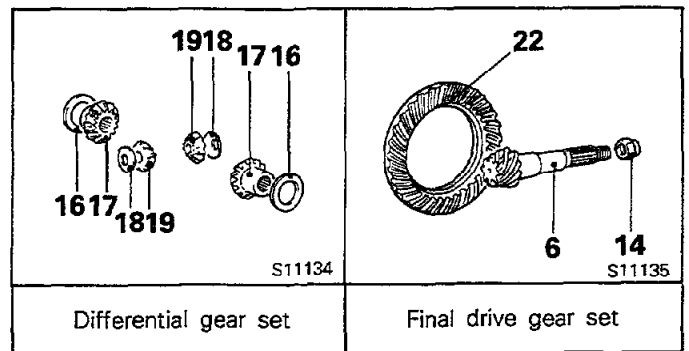
N02VH-

<3.0L Engine>
190-250 Nm
137-181 ft.lbs.

<2.6L Engine>
160-220 Nm
116-159 ft.lbs.



11W571

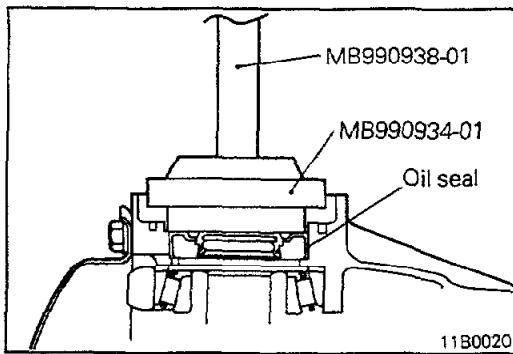


Reassembly steps

- | | |
|--|--|
| <ul style="list-style-type: none"> 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 preload 9. Drive pinion rear bearing inner race 10. Oil seal 11. Drive pinion rear shim (for preload adjustment) 12. Drive pinion spacer 13. Drive pinion assembly 14. Companion flange 15. Washer 16. Companion flange self-locking nut 17. Differential case | <ul style="list-style-type: none"> 18. Side gear thrust spacers 19. Side gears 20. Pinion washers 21. Pinion gears ◆◆ Adjustment of differential gear backlash 22. Pinion shaft ◆◆ 23. Lock pin ◆◆ 24. Drive gear 25. Bolts (10) ◆◆ 26. Side bearing inner races 27. Side bearing outer races ◆◆ Adjustment of final drive gear back lash 28. Side bearing adjusting spacers 29. Differential case assembly 30. Bearing caps ◆◆ 31. Differential cover |
|--|--|

NOTE

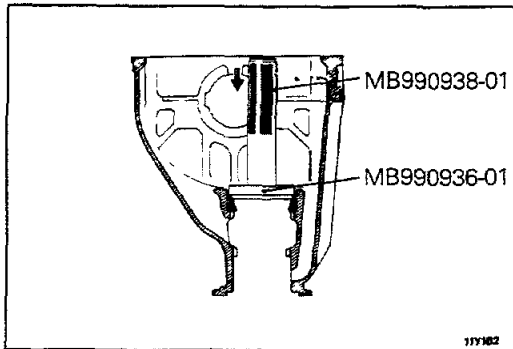
- (1) ◆◆ : Refer to "Service Points of Reassembly".
- (2) N : Non-reusable parts

**SERVICE POINTS OF REASSEMBLY**

N02VIAF

3. INSTALLATION OF OIL SEALS

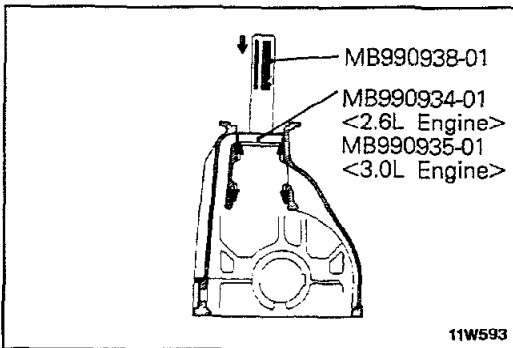
Install the oil seal with the special tool and apply a thin coat of multipurpose grease to the lip of the oil seal.

**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.

NOTE

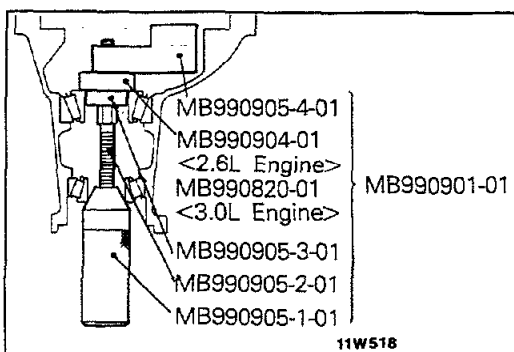
Perform press-fitting carefully so as not to tilt the outer race.

**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.

NOTE

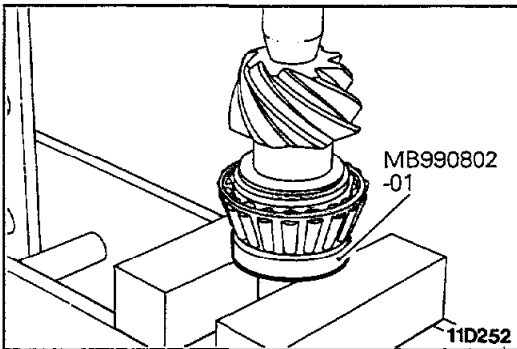
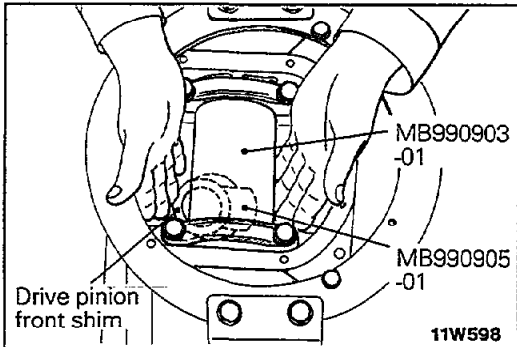
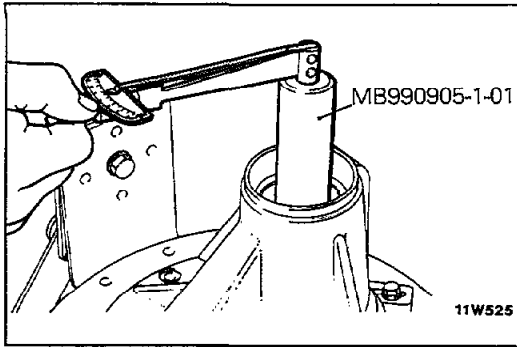
Perform press-fitting carefully so as not to tilt the outer race.

**● 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 handle of the special tool until the standard value of drive pinion rotation torque is obtained.



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

Standard value :

<2.6L Engine>
 0.15–0.25 Nm (1.30–2.17 in.lbs.)

<3.0L Engine>
 0.4–0.5 Nm (3.47–4.34 in.lbs.)

NOTE

1. Gradually tighten the handle 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-fit the drive pinion front bearing inner race by using the special tool.

● **ADJUSTMENT OF DRIVE PINION PRELOAD**

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

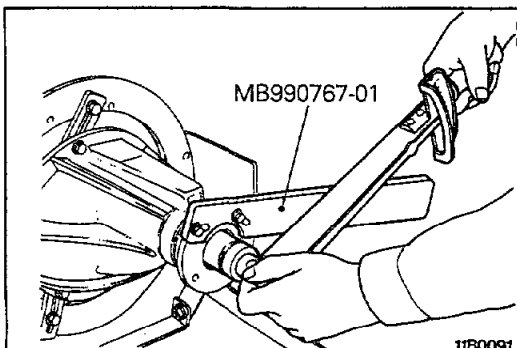
Without Oil Seal

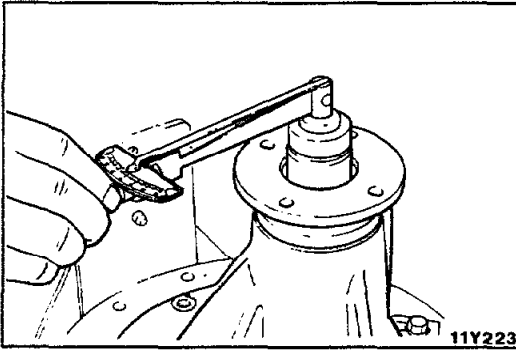
(1) Insert the drive pinion into the gear carrier, and then install, from the front side of the carrier, the drive pinion spacer, the drive pinion rear shim, the drive pinion rear bearing inner race, and the companion flange in that order.

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 rotation torque (without the oil seal).

Standard value :

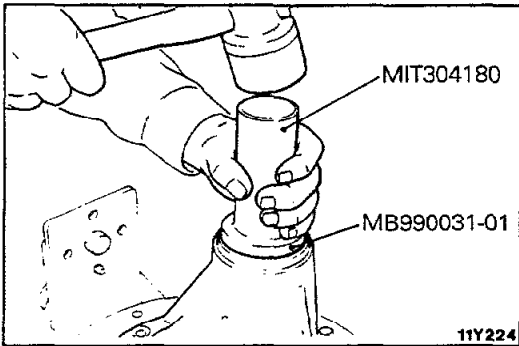
- <2.6L Engine>
0.15–0.25 Nm (1.30–2.17 in.lbs.)
<3.0L Engine>
0.4–0.5 Nm (3.47–4.34 in.lbs.)

- (4) If the drive pinion rotation 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

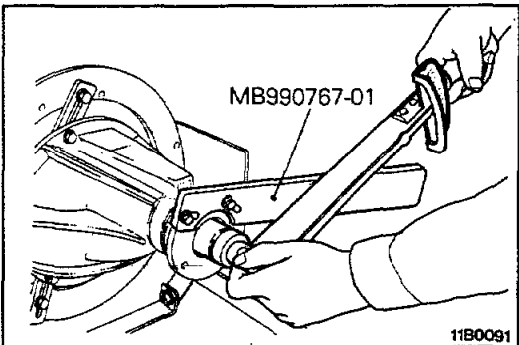
When selecting the drive pinion rear shims, if the number of shims is large, reduce the number of shims to a minimum by selecting the drive pinion spacers.

- (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 multipurpose grease to the oil seal lip.



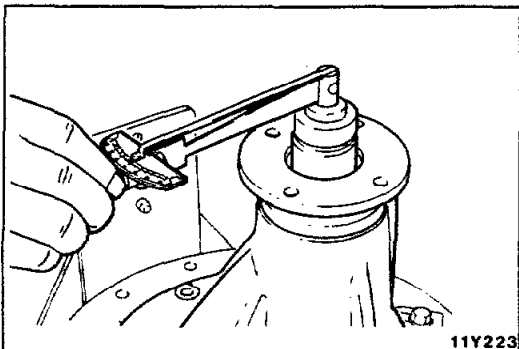
- (4) Install the drive pinion assembly and companion flange with mating marks properly aligned, and tighten the companion flange self-locking nut to the specified torque by using the special tools.

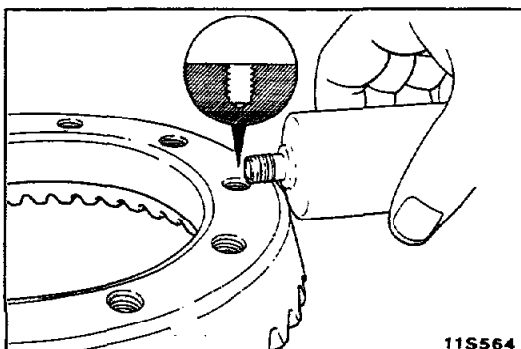
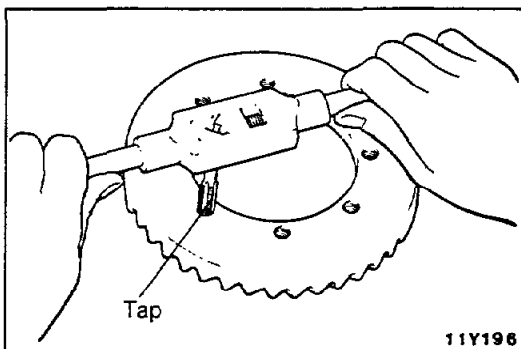
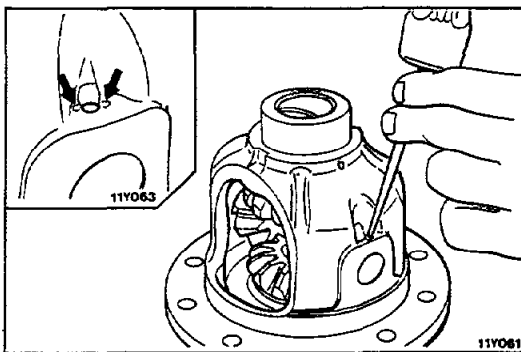
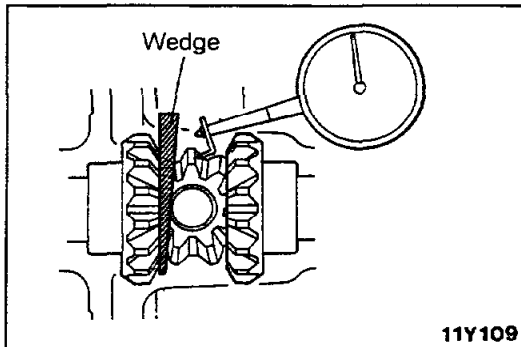
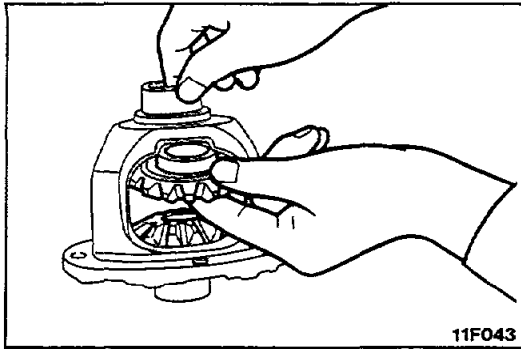
- (5) Measure the drive pinion rotation torque (with oil seal) to verify that the drive pinion preload complies with the standard value.

Standard value :

- <2.6L Engine>
0.35–0.45 Nm (3.04–3.91 in.lbs.)
<3.0L Engine>
0.6–0.7 Nm (5.21–6.08 in.lbs.)

- (6) 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.





● 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.

- (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.

Standard value : 0–0.076 mm (0–.0030 in.)

Limit : 0.2 mm (.008 in.)

- (5) If the differential gear backlash exceeds the limit, adjust the backlash by installing thicker side gear thrust spacers.
- (6) Measure the differential gear backlash once again, and confirm that it is within the limit.
If adjustment is not possible, replace the side gears and pinion gears as a set.

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.

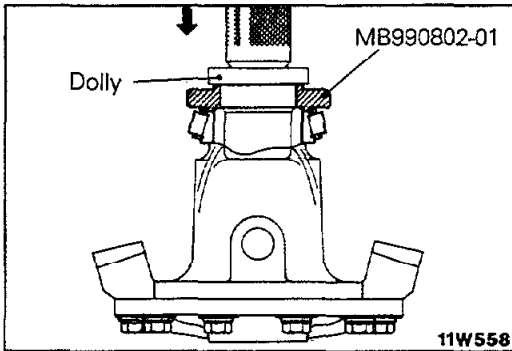
24. INSTALLATION OF DRIVE GEAR

- (1) Clean the drive gear attaching bolts.
- (2) Remove the adhesive adhered to the threaded holes of the drive gear by turning the tap tool (M10 x 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 Adhesive stud locking 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.



26. INSTALLATION OF SIDE BEARING INNER RACES

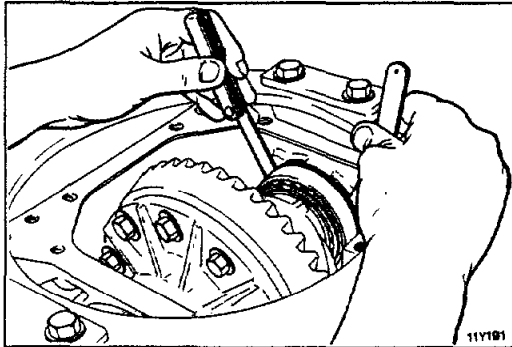
Press-fit the side bearing inner races to the differential case by using the special tool.

● ADJUSTMENT OF FINAL DRIVE GEAR BACKLASH

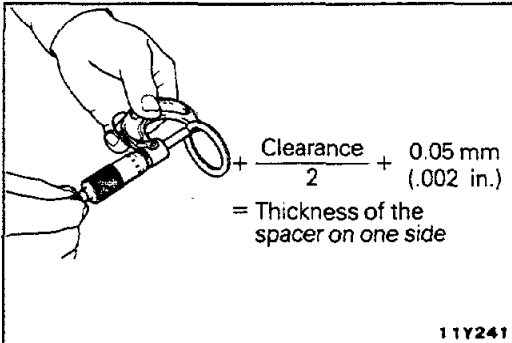
- (1) Install the side bearing adjusting spacers, which are thinner than those removed, to the side bearing outer races, and then mount the differential case assembly into the gear carrier.

NOTE

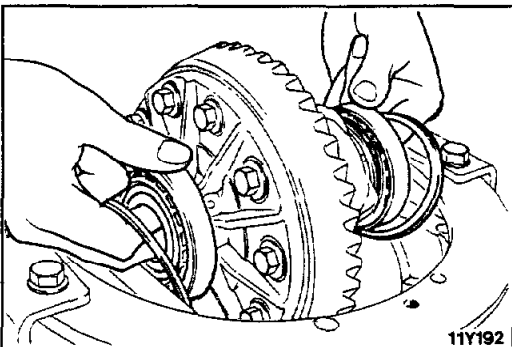
Select side bearing adjusting spacers with the same thickness for both the drive pinion side and the drive gear side.



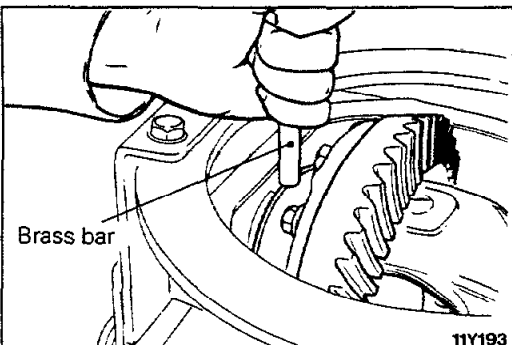
- (2) Push the differential case assembly to one side, and measure the clearance between the gear carrier and the side bearing adjusting spacer with a feeler gauge.



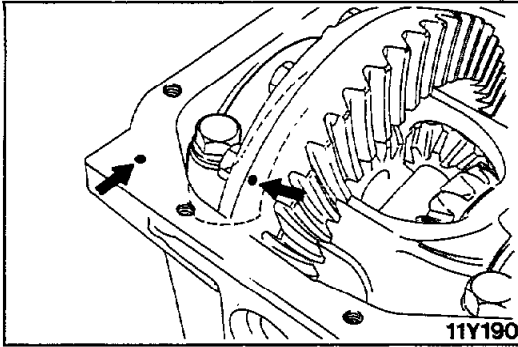
- (3) Measure the thickness of the side bearing adjusting spacers on one side, select two pairs of spacers which correspond to that thickness plus one half of the clearance plus 0.05 mm (.002 in.), and then install one pair each to the drive pinion side and the drive gear side.



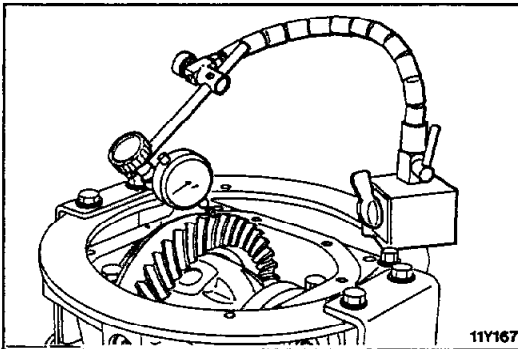
- (4) Install the side bearing adjusting spacers and differential case assembly, as shown in the illustration, to the gear carrier.



- (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.

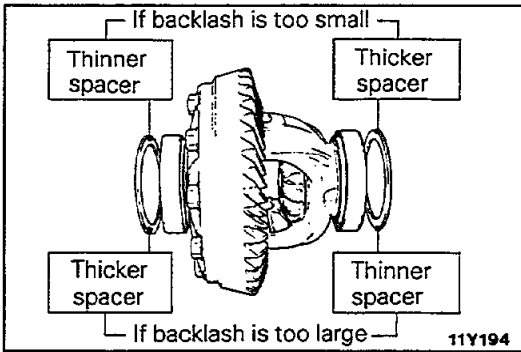


- (7) With the drive pinion locked in place, measure the final drive gear backlash with a dial indicator on the drive gear.

NOTE

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

Standard value : 0.11–0.16 mm (.0043–.0063 in.)

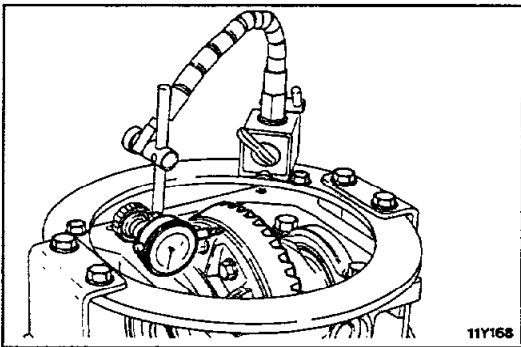


- (8) Change the side bearing adjusting spacers as illustrated, and then adjust the final drive gear backlash between the drive gear and the drive pinion.

NOTE

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

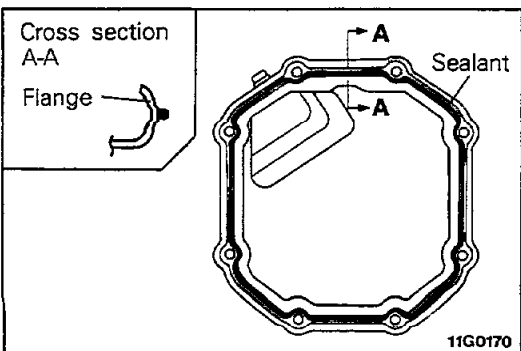
- (9) Check the drive gear and drive pinion for tooth contact. If poor contact is evident, make adjustment. [Refer to GROUP 3 – Differential Carrier (Inspection Before Disassembly)]



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

Limit : 0.05 mm (.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.



31. APPLICATION OF SEALANT TO DIFFERENTIAL COVER

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

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

NOTE