FRONT SUSPENSION

CONTENTS

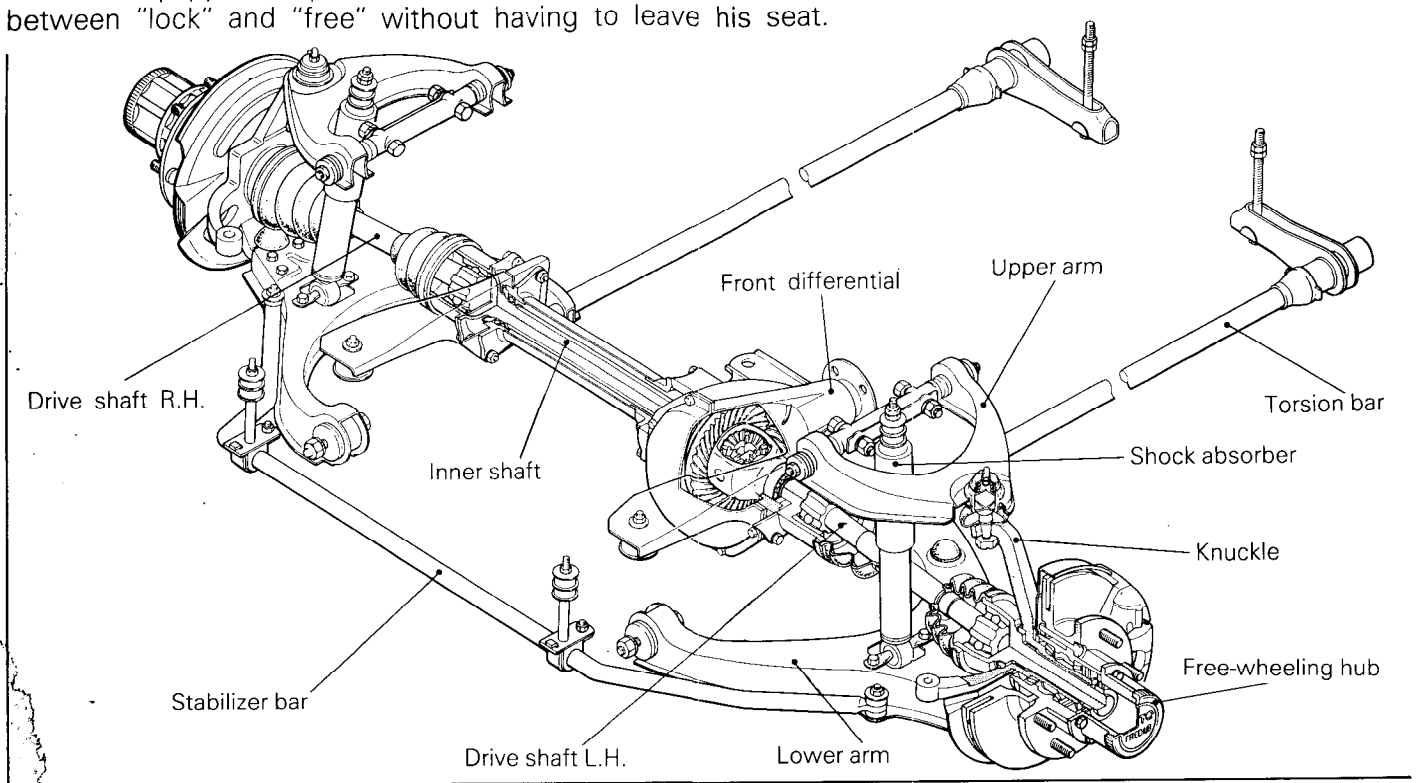
N02AA--

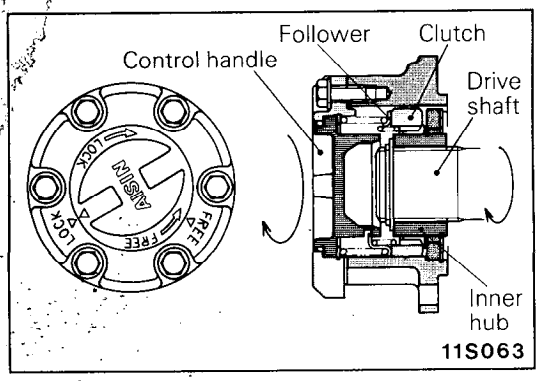
GENERAL INFORMATION

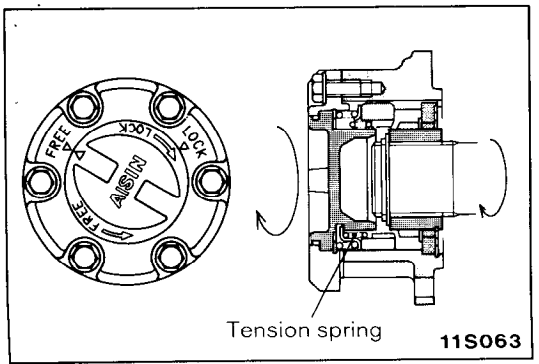
N02BBAA

The front suspension is an independent suspension which is a combination of the double-wishbone and torsion bar spring.

The front axle assembly consists of a front differential, a housing tube, an inner shaft, drive shafts, etc.
For better serviceability of the differential, the spacer for backlash adjustment of the final drive gear is placed between the side bearing outer race and the gear carrier.
The double-offset-joint which can slide in the axial direction, is used at the differential carrier side; the Birfield joint, with large operation angle, is used at the axle hub side.
To reduce vibration, noise, and fuel consumption when 2WD is applied, manual or automatic free-wheeling hubs are equipped; in particular, tha automatic one is an outstanding feature in that the driver can switch between "lock" and "free" without having to leave his seat.







MANUAL FREE-WHEELING HUB OPERATION

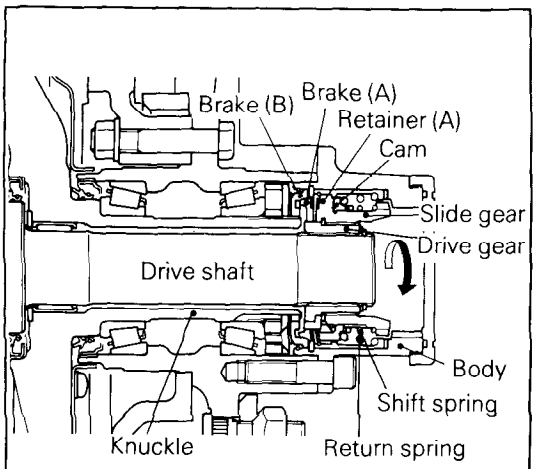
N02BCAA

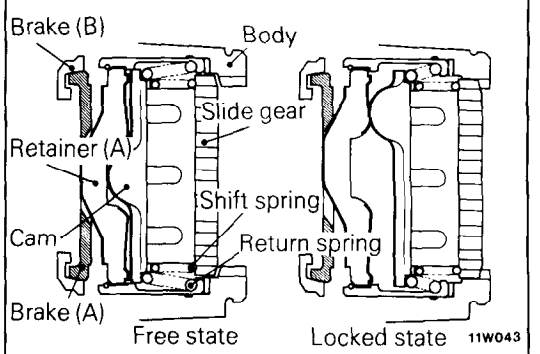
Free State → Locked State

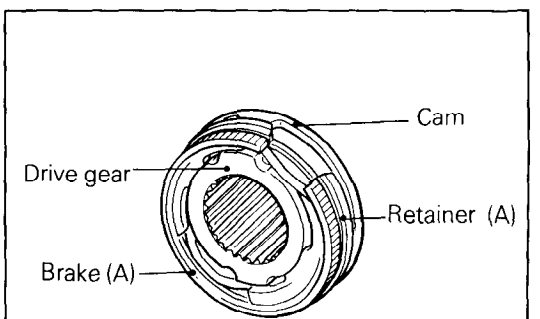
When the control handle is set to the LOCK position, the follower moves along the oblique groove in the control handle and causes the clutch (which is always in mesh with the free-wheeling hub body) to engage the splines of the inner hub, thus coupling the free-wheeling hub body with the drive shaft.

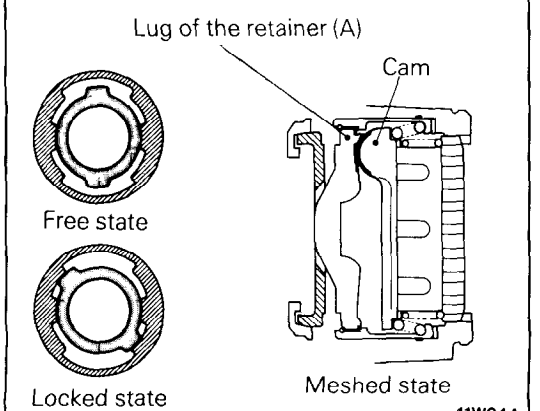
Locked State → Free State

When the control handle is set to the FREE position, the follower moves along the oblique groove in the control handle and uses the tension spring to disengage the clutch from the splines of the inner hub, thus separating the free-wheeling hub body from the drive shaft.









AUTOMATIC FREE-WHEELING HUB OPERATION N02BDAA

Free State → Locked State

When the transfer is shifted from 2WD to 4WD and driving is begun, rotation of the drive shaft is transmitted from the drive gear to the slide gear to the cam to retainer (A) to brake (A). When this happens, brake (A) is pressed against brake (B) by the function of the cam of retainer (A), and friction force is generated.

Because brake (B) is secured to the knuckle, retainer (A) ceases to rotate, and therefore, the cam, while compressing the return spring, rises out of the cam groove of the retainer (A) and compresses the shift spring. The slide gear is pushed by the shift spring, and then engages with the gear of the housing when the two are in phase and enters the locked state.

The cam turns until the lug of the drive gear contacts the lug of brake (A). Because of this contact, brake (A) is turned by the drive gear, and therefore, there is also no longer any force of retainer (A) with a tendency to turn brake (A). As a result, there is also no longer any force which presses brake (A) against brake (B) and the drive gear causes brake (A) to turn lightly (there is no friction force).

Because the cam remains meshed, it turns until it contacts the lug of retainer (A), and is locked.

Locked State → Free State

When the transfer is shifted from 4WD to 2WD and the vehicle is driven in reverse, rotation of the gear of the body is transmitted from the slide gear to cam to retainer (A) to brake (A), but retainer (A) ceases to turn, just as when the shift is made from the free state to the locked state. The cam, therefore, turns as far as the cam groove of retainer (A) and is pushed into the cam groove by the return spring.

The slide gear moves with the cam, disengages from the gear of the doby, and enters a free state.

SPECIFICATIONS

GENERAL SPECIFICATIONS

N02CA--

Items	Specifications
Suspension system	Independent double wishbone with torsion bar and telescopic shock absorber
Kingpin inclination angle	8°
Torsion bar	
Length x O.D. mm (in.)	1,277.5 x 24.5 (50.295 x .965)
Spring constant N/mm (lbs./in.)	22 (123)
Shock absorber	
Type	Hydraulic cylindrical double-acting type
Maximum length mm (in.)	335 (13.19)
Compressed length mm (in.)	215 (8.46)
Stroke mm (in.)	120 (4.72)
Damping force [at 0.3m/sec. (.984 ft./sec.)]	
Expansion N (lbs.)	1,940–2,560 (428–564)
Contraction N (lbs.)	900–1,300 (198–287)
Front axle hub bearing	
Type	Tapered roller bearing
Dimensions (O.D. x I.D.) mm (in.)	
Outer	73.431 x 45.242 (2.8910 x 1.7811)
Inner	73.431 x 45.242 (2.8910 x 1.7811)
Drive shaft	
Joint type Outer	B.J. (Birfield Joint)
Inner	D.O.J. (Double Offset Joint)
Length Right mm (in.)	267 (10.5)
(Joint to joint) Left mm (in.)	294 (11.6)
Inner shaft	
Shaft overall length mm (in.)	432 (17.0)
Bearing	
O.D. x I.D. mm (in.)	62 x 35 (2.44 x 1.38)
Differential	
Final drive gear type	Hypoid gear
Reduction ratio	4.625
Differential gear type	Straight bevel gear
Number of teeth	
Drive gear	37
Drive pinion	8
Side gear	14
Pinion gear	10

SERVICE SPECIFICATIONS

N02CB--

Items	Specifications
Standard values	
Toe-in mm (in.)	2–9 (.08–.35)
Camber	1° ± 30'
Caster	2°57' ± 30'
Drive shaft end play mm (in.)	0.2–0.5 (.008–.020)
Front hub turning resistance Ncm (in.lbs.)	30–130 (2.6–11.3)
[Spring scale reading] N (lbs.)	5–18 (1.1–4.0)
Front hub play in the axial direction mm (in.)	0.05 (.0020) or less
Automatic free-wheeling hub	
Brake contact surface height mm (in.)	11.8–12.2 (.465–.480)
Brake assembly thickness mm (in.)	10.5 (.41)
Upper ball joint starting torque Ncm (in.lbs)	80–350 (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	
with oil seal Nm (in.lbs.)	0.6–0.7 (5.2–6.1)
without oil seal Nm (in.lbs.)	0.4–0.5 (3.5–4.3)
Limits	
Front axle total backlash mm (in.)	14 (.55)
Automatic free-wheeling hub	
Free-wheeling hub turning resistance Ncm (in.lbs.)	100 (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.)	6.8 (1.5)
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

N02CC--

Items	Nm	ft.lbs
Automatic free-wheeling hub cover	18–35	13–25
Manual free-wheeling hub cover	10–14	7–10
Free wheeling jub body or drive flange	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
Companion flange	160–220	116–159
Cover	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

NO2CD--

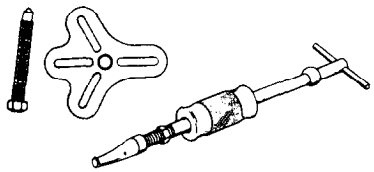
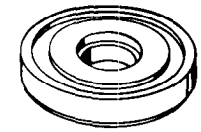
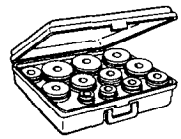
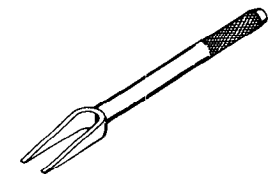
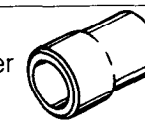
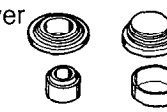
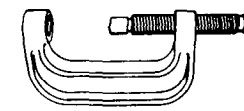
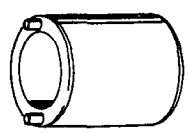
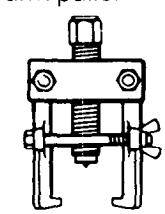
Items	Specified lubricants	Quantity
Front axle gear oil		
Front differential	Hypoid gear oil API classification GL-4 or higher SAE viscosity No. 80 W, 90	1.10 lit. (1.16 U.S. qts., 0.97 Imp. qts.)
Front axle hub bearing	Multipurpose grease SAE J310, NLGI No. 2	As required
Oil seal lip	Multipurpose grease SAE J310, NLGI No. 2	As required
Automatic free wheeling hub	Multipurpose grease SAE J310, NLGI No. 2	As required
Manual free wheeling hub	Multipurpose grease SAE J310, NLGI No. 2	As required
Upper and lower ball joints	Multipurpose grease SAE J310, NLGI No. 2	As required
Torsion bar serrations, anchor arm assembly serrations, anchor arm B serrations, dust cover inside and anchor bolt thread	Multipurpose grease SAE J310, NLGI No. 2	As required
Needle bearing	Multipurpose grease SAE J310, NLGI No. 2	As required
Contact surface of knuckle and spacer	Multipurpose grease SAE J310, NLGI No. 2	As required
D.O.J. boot grease B.J. boot grease	Repair kit grease Repair kit grease	110 g (1.9 oz.) 110 g (1.9 oz.)
Housing tube dust seal lip	Multipurpose grease SAE J310, NLGI No. 2	As required
Housing tube dust cover	Multipurpose grease SAE J310, NLGI No. 2	As required
Companion flange contacting surface of the washer	Multipurpose grease SAE J310, NLGI No. 2	As required

SEALANTS AND ADHESIVES

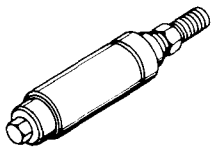
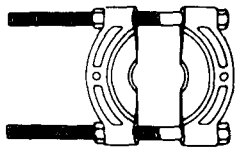
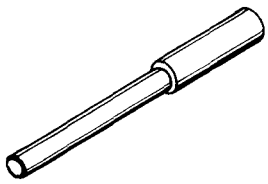
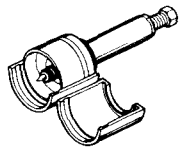
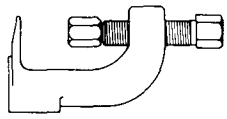
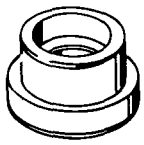
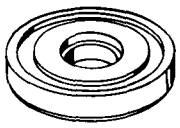
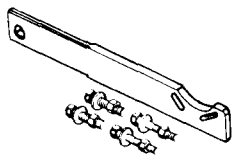
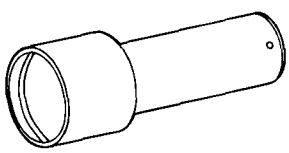
Items	Specified sealants and adhesives
Slot of the upper or lower ball joint	3M ART Part No. 8663, No. 8661 or equivalent
Contact surface of free-wheeling hub and front axle hub	3M ART Part No. 8661, No. 8663 or equivalent
Drive gear threaded hole	3M Adhesive STUD LOCKING 4170 or equivalent
Gasket	3M ART Part No. 8661, No. 8663 or equivalent

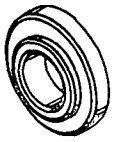
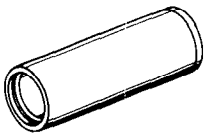
SPECIAL TOOLS

N02DA--

Tool (Number and name)	Use	Tool (Number and name)	Use
MB990241-01 Drive shaft attachment MB990211-01 Sliding hammer 	Removal and insertion of inner shaft assembly	MB990955-01 Oil seal installer 	Pressing of front axle hub oil seal Pressing of housing tube oil seal
MB990925-01 Bearing and oil seal installer set 	Pressing of front axle hub bearing outer race Pressing of drive pinion bearing outer race Pressing of differential carrier oil seal	MB990811-01 Sidebearing cup remover step plate 	Disassembly and reassembly of automatic free-wheeling hub Removal of side bearing inner race
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	MB990778-01 Ball joint remover 	Removal of knuckle Disconnection of upper ball joint
		MB990799-01 Ball joint remover and installer A  MB990800-01 Ball joint remover and installer B  MB990840-01 Universal joint remover and installer 	Removal and installation of upper arm ball joint
MB990954-01 Lock nut wrench 	Removal and adjustment of lock nut	MB990809-01 Pitman arm puller 	Removal of knuckle Disconnection of lower ball joint

STB Revision

Tool (Number and name)	Use	Tool (Number and name)	Use
MB990958-01 Torsion bar bushing remover and installer 	Removal and pressing of bushing A	MD998348-01 Bearing separator 	Removal and pressing of inner shaft bearing
MB990883-01 Arbor 	Removal and pressing of the bushing B	MB990339-01 Pinion carrier bearing puller 	Removal of side bearing inner race Removal of drive pinion front bearing inner race
MB990635-01 Steering linkage puller 	Removal of knuckle Disconnection of tie rod	MIT303173 Insert 	Removal of side bearing inner race Removal of drive pinion front bearing inner race
MB990956-01 Needle bearing installer 	Pressing of knuckle needle bearing	MIT44801 Collet set 	Removal of side bearing inner race Removal of drive pinion front bearing inner race
MB990985-01 Oil seal installer 	Pressing of knuckle oil seal	MB990767-01 End yoke holder 	Holding of end yoke
MB991150 Dust cover installer 	Pressing of drive shaft dust cover	MB990901-01 Pinion height gauge set 	Adjustment of pinion height

Tool (Number and name)	Use	Tool (Number and name)	Use
MB990802-01 Bearing installer 	Pressing of drive pinion front bearing inner race Pressing of side bearing inner race	MIT304180 Handle 	Pressing of the drive pinion oil seal
MB990031-01 Drive pinion oil seal installer 	Pressing of drive pinion oil seal		

TROUBLESHOOTING

N02EA--

Symptom	Probable cause	Remedy	Reference page
MANUAL FREE WHEELING HUB, FRONT AXLE HUB, KNUCKLE Noise due to excessive play of wheel in turning direction	Free wheeling hub serration play	Replace	2-33
Noise due to excessive wheel end play	Front axle hub bearing play, seizure, wear	Check and adjust or replace if necessary	2-15 2-23
	Knuckle needle bearing play, seizure, wear	Replace	2-46
	Free wheeling hub serration play	Replace	2-33
	Free wheeling hub looseness	Tighten or replace	2-29
AUTOMATIC FREE WHEELING HUB Does not lock	Brake sliding portion worn	Replace parts and adjust hub attaching surface shims	2-21 2-25
	Brake (B) lug portion broken Housing damaged Drive gear damaged Slide gear damaged Retainer (A) damaged Cam damaged Shift spring deteriorated Slide gear C ring out of position	Replace parts	2-25
	Automatic free wheeling hub attaching bolt loose	Retighten attaching bolts	2-18
Locks but does not become free	Return spring deteriorated Slide gear C ring out of position	Replace parts	2-25
	Foreign substances on tooth surfaces of drive gear and slide gear Foreign substances on tooth surfaces of slide gear and housing gear	Clean tooth surfaces or replace parts	
	Excessive front power train resistance	Adjust differential preload	2-21
Ratcheting readily occurs	Water in brake portion	Clean and then apply grease	2-25
	Retainer (B) worn Slide gear damaged Housing gear damaged Shift spring deteriorated Slide gear C ring out of position	Replace parts	
	Automatic free wheeling hub attaching bolts loose	Retighten the attaching bolts	2-18

Symptom	Probable cause	Remedy	Reference page
DRIVE SHAFT, INNER SHAFT			
Noise during wheel rotation	Housing tube bent Inner shaft bent	Replace	2-62
	Inner shaft bearing worn, pounding	Replace	2-64
	Drive shaft assembly worn damaged, bent	Check or replace	2-52
Noise due to excessive play of wheel in turning direction	Inner shaft and side gear serration play	Replace	2-62 2-74
	Drive shaft and side gear serration play	Replace	2-52 2-74
	Drive shaft and drive flange serration play	Replace	2-52 2-62
Noise due to excessive wheel end play	Drive shaft and drive flange end play	Adjust or replace	2-16
	Drive flange looseness	Tighten or replace	2-62
DIFFERENTIAL			
Constant noise	Improper adjustment of drive gear and drive pinion (poor meshing)	Correct or replace	2-68
	Loose, worn or damaged side bearing	Correct or replace	2-73, 76
	Loose, worn or damaged drive pinion bearing	Correct or replace	2-73, 2-76
	Worn drive gear, drive pinion	Correct or replace	2-73, 76
	Worn side gear thrust washer or pinion shaft	Replace	2-73, 76
	Deformed drive gear or differential case	Replace	2-73, 76
	Damaged gear	Replace	2-73, 76
	Foreign material	Eliminate the foreign material and check; replace the parts if necessary	2-73, 2-76
	No oil	Fill or change	2-16
Gear noise while driving	Poor gear engagement	Correct or replace	2-69
	Improper gear adjustment	Correct or replace	2-69
	Improper drive pinion preload adjustment	Correct or replace	2-77
	Damaged gear	Replace	2-73, 76
	Foreign material	Eliminate the foreign material and check; replace the parts if necessary	2-73, 2-76
	Insufficient oil	Fill or change	2-16

Symptom	Probable cause	Remedy	Reference page
Gear noise while coasting	Improper drive pinion rotation torque adjustment	Correct or replace	2-77
	Damaged differential gear	Replace	2-73, 76
Bearing noise while driving or coasting	Cracked or damaged drive pinion rear bearing	Replace	2-73, 2-76
Noise while turning	Loose side bearing	Replace	2-73, 76
	Damaged side gear, pinion gear or pinion shaft	Replace	2-73, 2-76
Heat	Improper differential gear backlash Excessive preload	Adjust	2-69
	Insufficient oil	Fill or change	2-16
Oil leakage	Clogged vent plug	Clean or replace the parts	–
	Cover tightened not Seal malfunction	Retighten, apply sealant, or replace the gasket	2-73, 2-76
	Worn or damaged oil seal	Replace	2-73, 76
	Excessive oil	Adjust the oil level	2-16

SERVICE ADJUSTMENT PROCEDURES N02FBAC

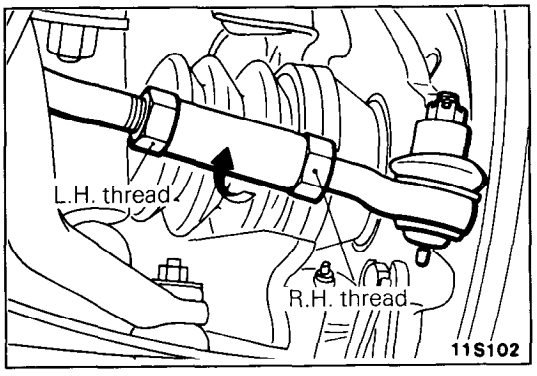
INSPECTION AND ADJUSTMENT OF WHEEL ALIGNMENT

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.

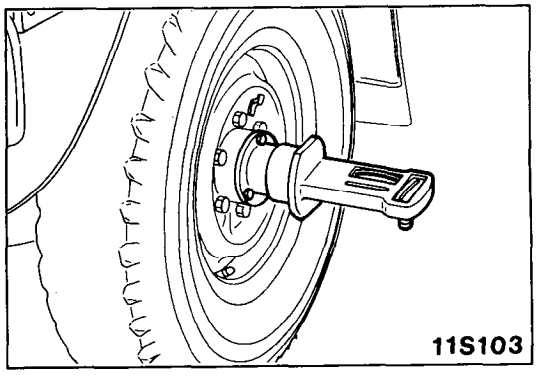
TOE-IN

1. Measure the toe-in.

Standard value : 2–9 mm (.08–.35 in.)



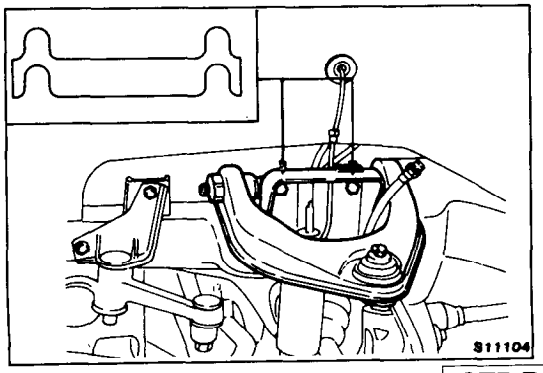
2. If the toe-in does not agree with the standard value, use the left and right tie rod turnbuckles to adjust it.
3. Make the adjustment by turning the left and right turnbuckles the same amount in opposite directions. The toe-in value will decrease if the left turnbuckle is turned toward the front of 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′

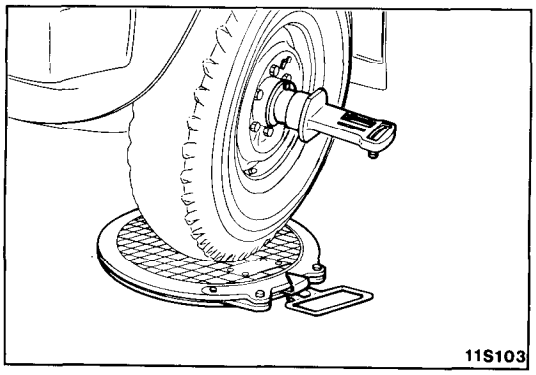


3. Make adjustment of the camber by incerasing or decreasing the thickness of the adjusting shims between the upper arm shaft and the crossmember.
A total of 4 mm (.16 in.) shim thickness is normally required for standard camber. A 1.0 mm (.039 in.) adjustment in thickness of shims will provide about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

Camber adjustment shim (yellow plating)

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

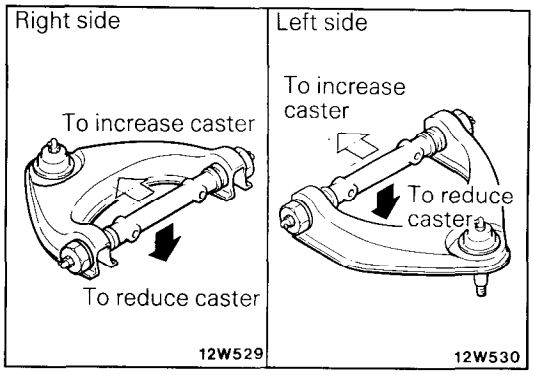
STB Revision



CASTER

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

   Standard value : 2°57′ ± 30′



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.

CHECKING FRONT AXLE TOTAL BACKLASH

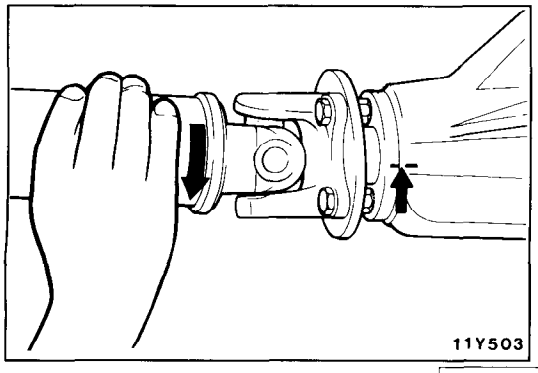
N02FDAA

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) Set the hubs for 4WD.

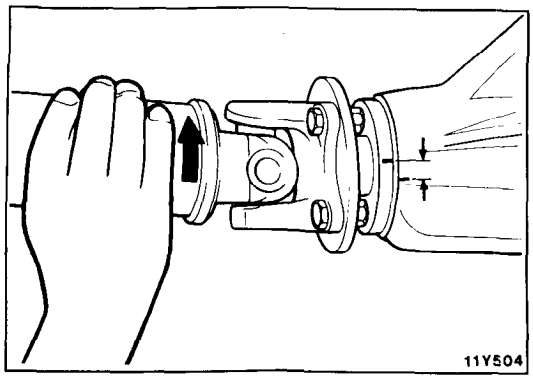
   NOTE
   On vehicles with manual free-wheeling hubs, place the control handles in the LOCK position.
   On vehicles with automatic free-wheeling hubs, place the transfer shift lever in 4H position and drive the vehicle 1 to 2 m (3.3 to 6.5 ft.) to engage the hubs with the drive shafts.

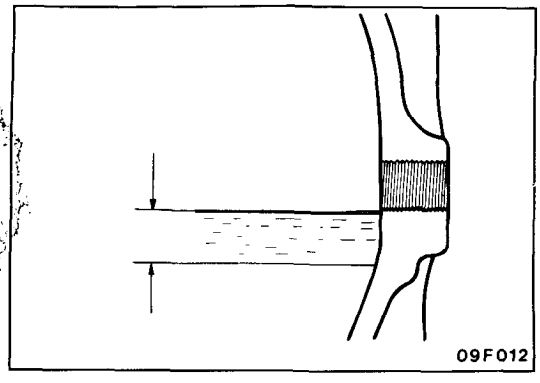
   (2) Secure the wheels and set the transfer control lever to "2H".

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



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





(4) Turn the companion flange counterclockwise until all play is removed and measure the amount of distance through which the mating marks moved.
(5) If the backlash exceeds the limit, remove the differential carrier assembly and adjust the backlash and drive shaft or inner shaft spline play.

Limit : 14 mm (.55 in.)

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

CHECKING GEAR OIL LEVEL 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-4 or higher SAE viscosity No. 80W, 90 [1.10 lit. (1.16 U.S.qts., 0.97 Imp.qts.)]

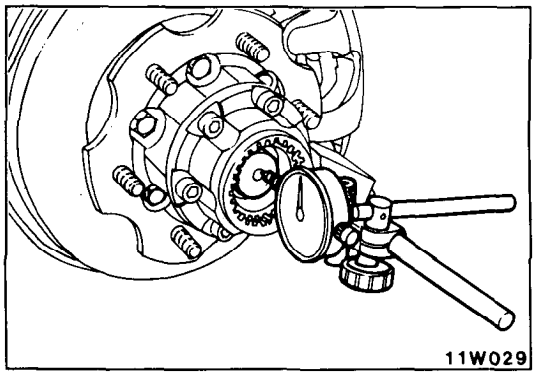
CHECKING DRIVE SHAFT END PLAY N02FFAA

VEHICLES WITH AUTOMATIC FREE-WHEELING HUBS

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

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

2. Jack the vehicle up and remove the front wheels.
3. Remove the free-wheeling hub covers.
4. Rotate the drive shaft forward, and backward and then set the drive shaft to the position (the position where end play is maximum) mid-way between where the rotation feels "heavy" for each (where there is a stopping feeling).
5. Set the dial gauge as shown in the figure; then move the drive shaft in the axial direction and measure the play.

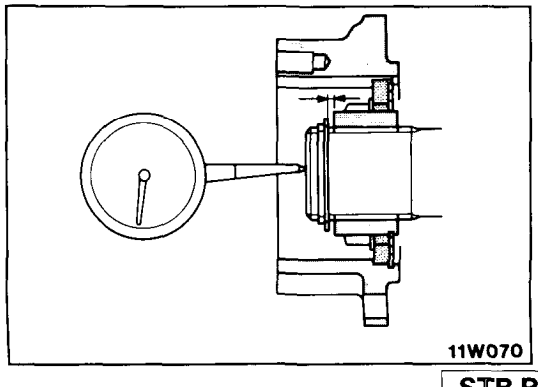


Standard value : 0.2–0.5 mm (.008–.020 in.)

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

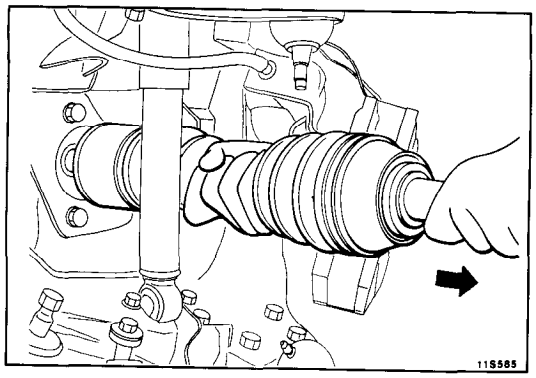
VEHICLES WITH MANUAL FREE-WHEELING HUBS

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



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

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

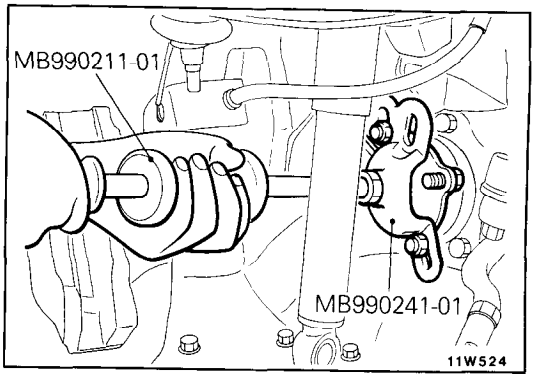


REPLACEMENT OF DIFFERENTIAL CARRIER OIL SEAL

N02FGAB

1. Remove the under cover. (Refer to 2-40.)
2. Remove the front hub and knunkle assembly.
3. Remove the left drive shaft. (Refer to 2-52.)

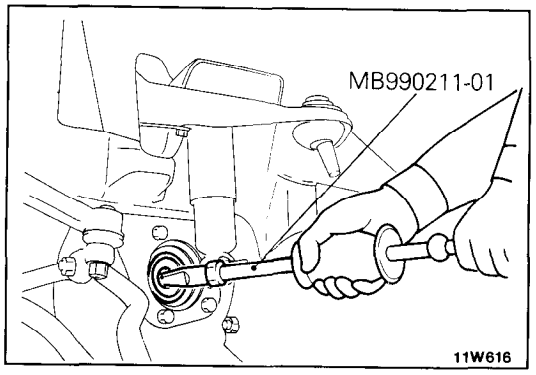
Caution
When pulling the left drive shaft from the differential carrier assembly, be careful that the drive shaft spline does not damage the oil seal.

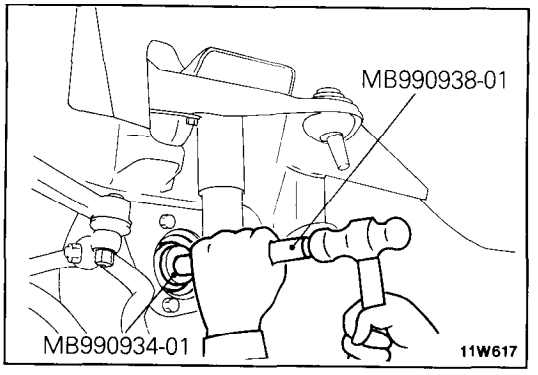


4. Remove the right drive shaft from the inner shaft assembly.
5. Remove the inner shaft assembly by using the special tools.

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 2-66, 68.)
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 specified grease to the lip of the oil seal.

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

9. Install the drive shaft using care not to damage the oil seal lip.

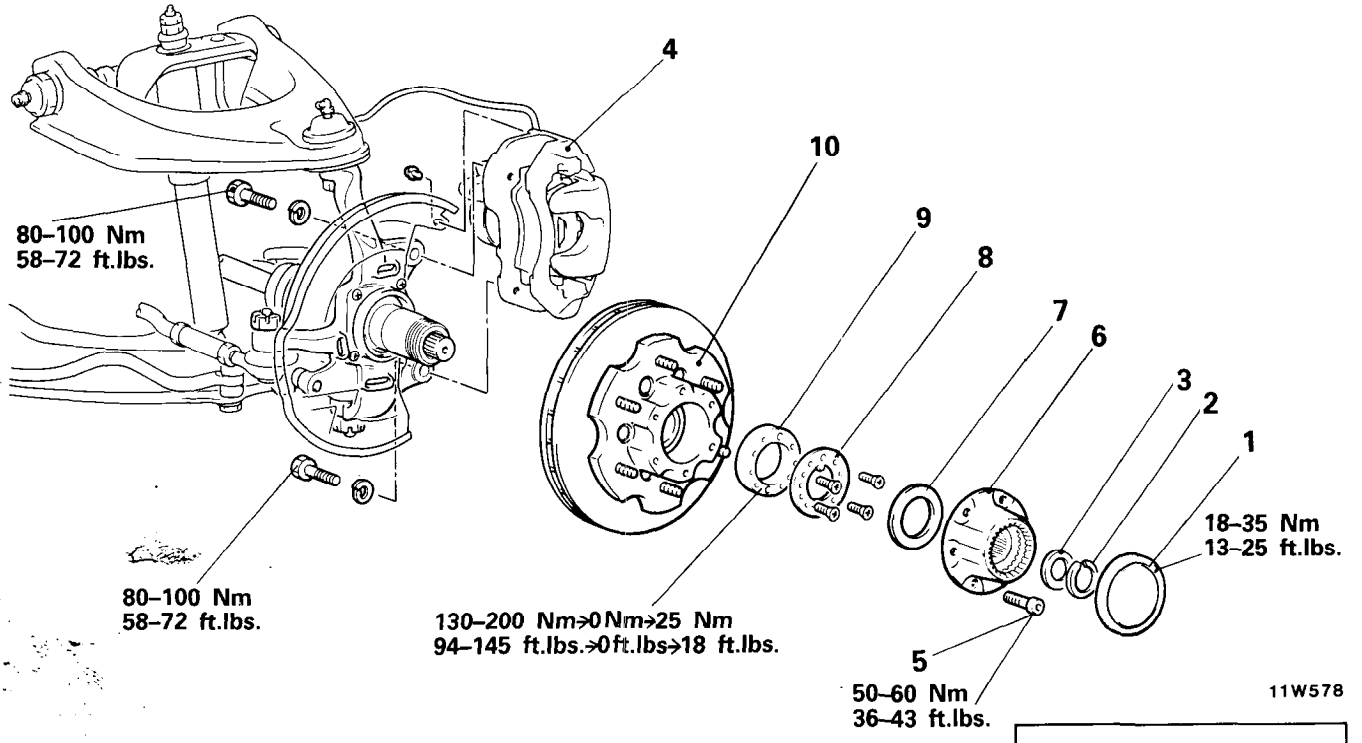
NOTE
On R.H. side, after installation of the oil seal, install the housing tube and differential mounting bracket (R.H.).
Install the inner shaft with care not to damage the oil seal lip, and install the drive shaft.

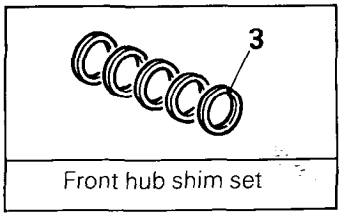
Caution
Be careful not to damage the lip of the oil seal. Replace the circlip which is attached to the B.J. side spline with a new one.

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

AXLE HUB AND FREE-WHEELING HUB

REMOVAL AND INSTALLATION (Vehicles with Automatic Free-Wheeling Hubs) N02GA--



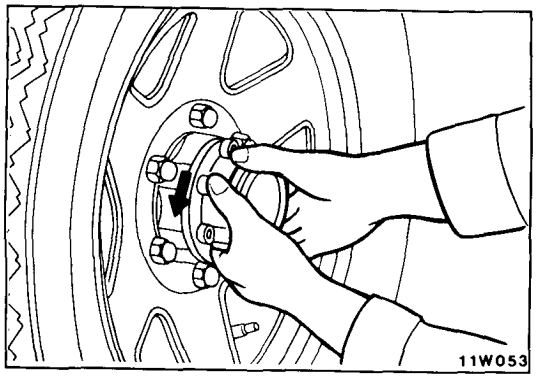


Front hub shim set

Removal steps

- ◆◆ 1. 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
- ◆◆ Height adjustment of brake contact surface
- 7. Shim
- 8. Lock washer
- ◆◆ Adjustment of wheel bearing preload
- ◆◆ 9. Lock nut
- ◆◆ 10. 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 N02GBAB

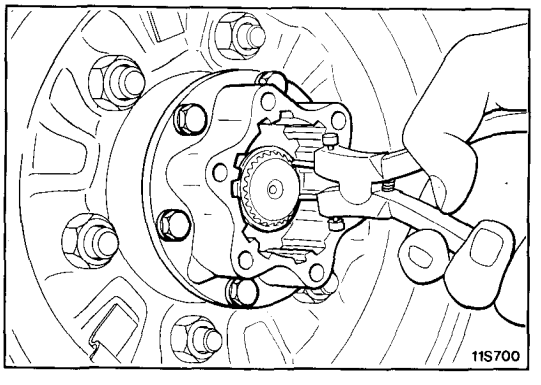
1. REMOVAL OF COVER

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

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

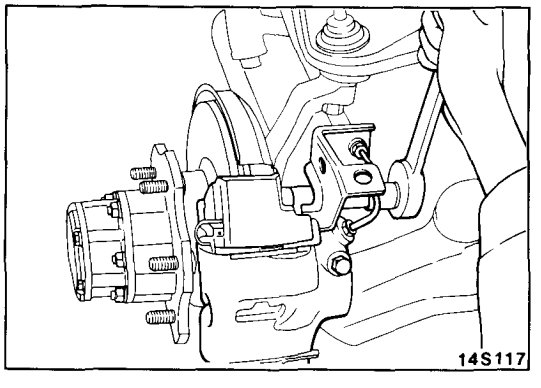
(2) Remove the automatic free-wheeling hub cover.

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



2. REMOVAL OF SNAP RING

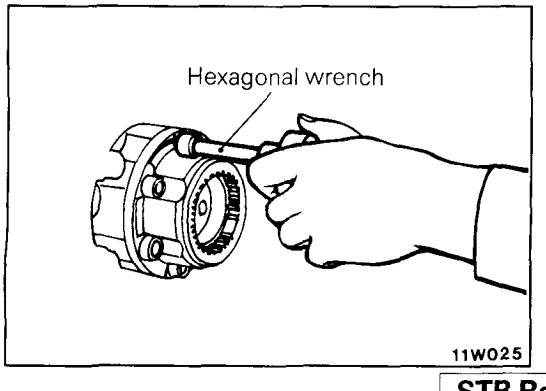
Using a snap ring pliers, remove the snap ring from the drive shaft.



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.

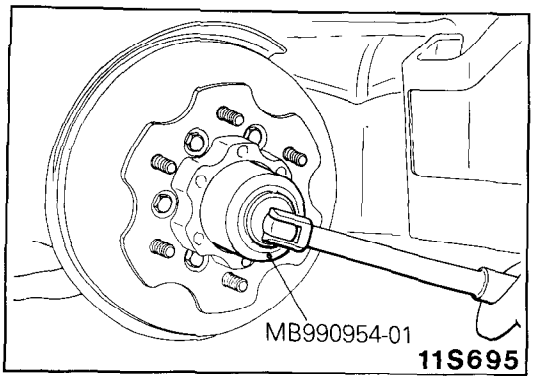
Caution
Do not twist the brake hose.



5. REMOVAL OF BOLTS

Remove tha automatic free-wheeling hub by using the hexagonal wrench.

STB Revision

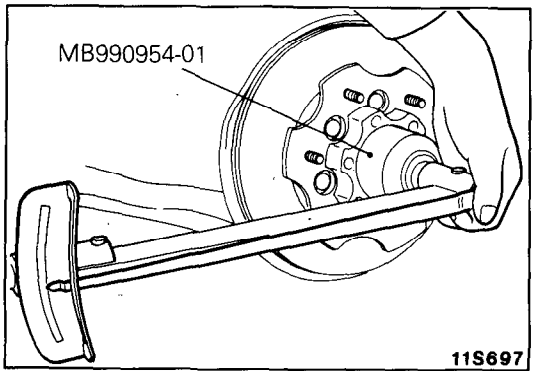


9. REMOVAL OF LOCK NUT/10. FRONT HUB ASSEMBLY

(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.

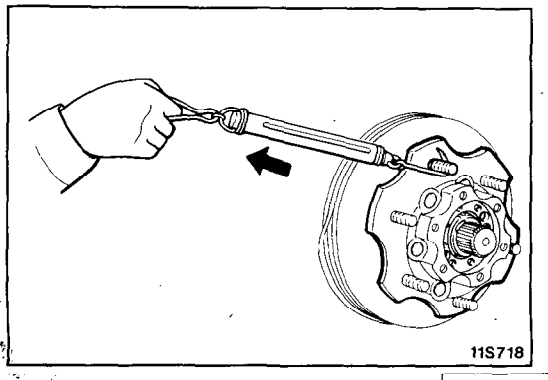


SERVICE POINTS OF INSTALLATION N02GDAB

- **ADJUSTMENT OF WHEEL BEARING PRELOAD**

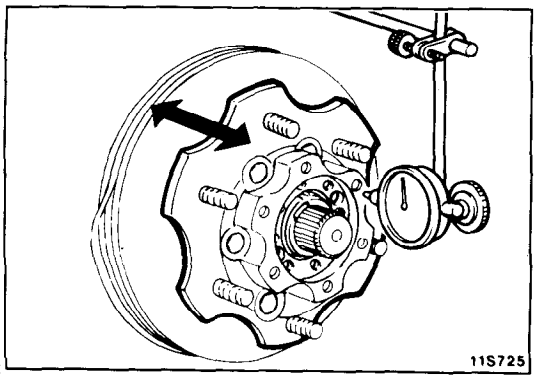
(1) Using the special tool, tighten the lock nut by the following procedures.

Tighten to 130-200 Nm (94–145 ft.lbs.)
↓
Loosen to 0 Nm (0 ft.lbs.)
↓
Retighten to 25 Nm (18 ft.lbs.) and then loosen 30°–40°



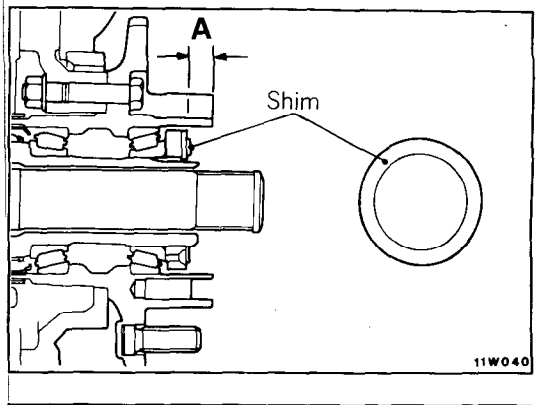
(2) Loosen the lock nut approximately 30 to 40 degrees to adjust the front hub's turning resistance and play in the axial direction so that they agree with the standard values.

Standard value : 30–130 Ncm
(2.6–11.3 in.lbs.)
[Spring scale reading]
5–18 N (1.1–4.0 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.



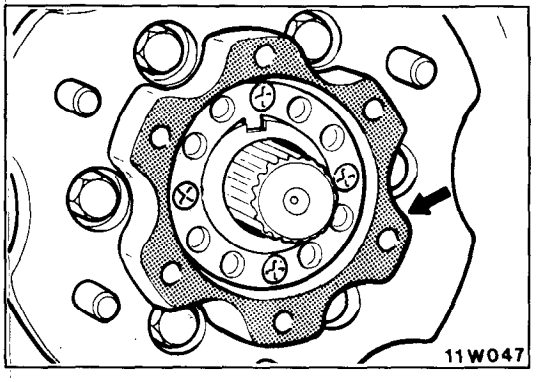
- **HEIGHT ADJUSTMENT OF BRAKE CONTACT SURFACE**

Measure the height of brake contact surface.

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

Standard value : 11.8–12.2 mm (.465–.480 in.)

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

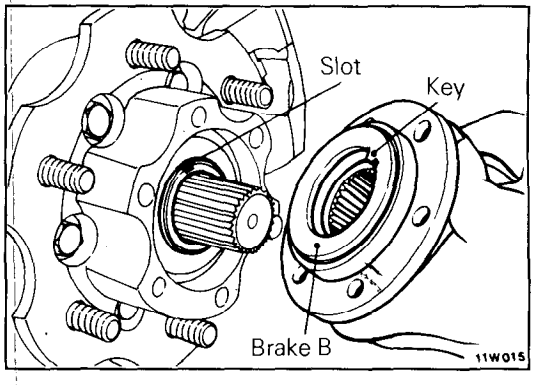


6. INSTALLATION OF AUTOMATIC FREE-WHEELING HUB ASSEMBLY

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

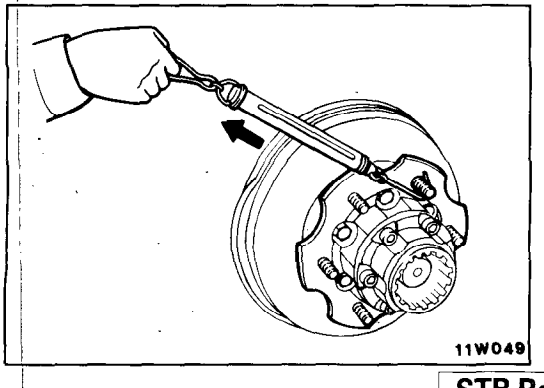
Specified sealant : 3M ART Part No. 8661 or No. 8663, or equivalent

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



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

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



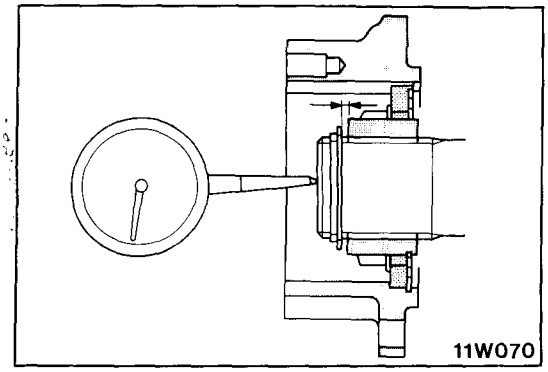
- **ADJUSTMENT OF AUTOMATIC FREE-WHEELING HUB TURNING RESISTANCE**

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

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

Limit : 100 Ncm (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**

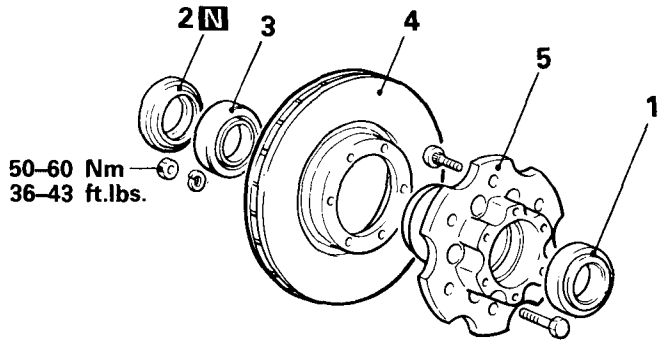
After the installation of shim and snap ring, check the drive shaft end play by the following procedure.

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

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

DISASSEMBLY AND REASSEMBLY (Front Axle Hub) N02HA--

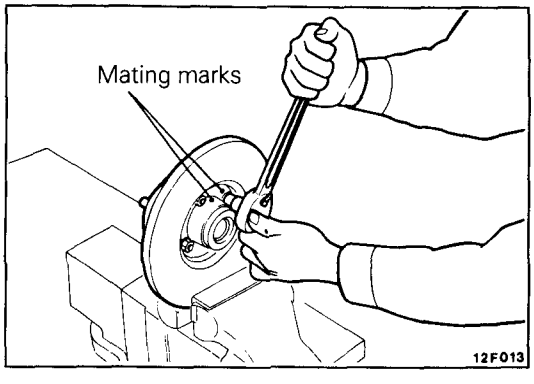


11W041

Disassembly steps

1. Outer bearing
2. Oil seal
3. Inner bearing
4. Brake disc
5. Front hub

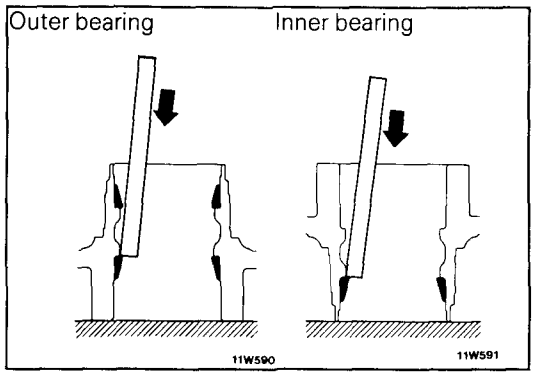
NOTE
(1) Reverse the disassembly procedures to reassemble.
(2) ◆◆ : Refer to "Service Points of Disassembly".
(3) ◆◆ : Refer to "Service Points of Reassembly".
(4) N : Non-reusable parts



SERVICE POINTS OF DISASSEMBLY N02HBAA

4. REMOVAL OF BRAKE DISC

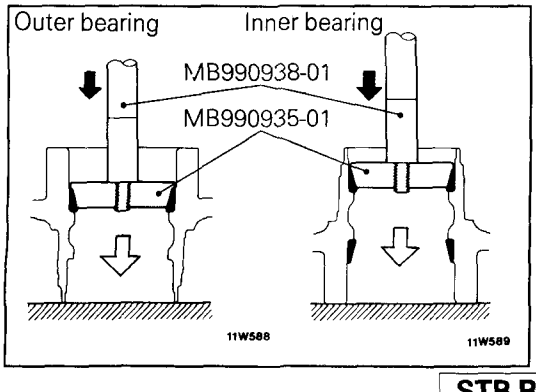
Make the mating marks on the brake disc and front hub, and then separate the front hub and brake disc, if necessary.



REPLACEMENT OF BEARING N02HDAB

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

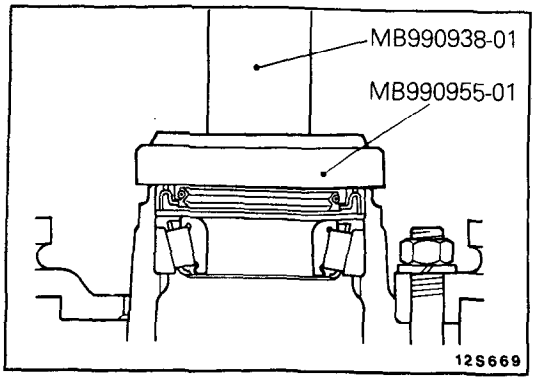
Specified grease : Multipurpose grease SAE J310, NLGI No. 2



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

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

STB Revision



SERVICE POINTS OF REASSEMBLY N02HEAB

2. INSTALLATION OF OIL SEAL

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

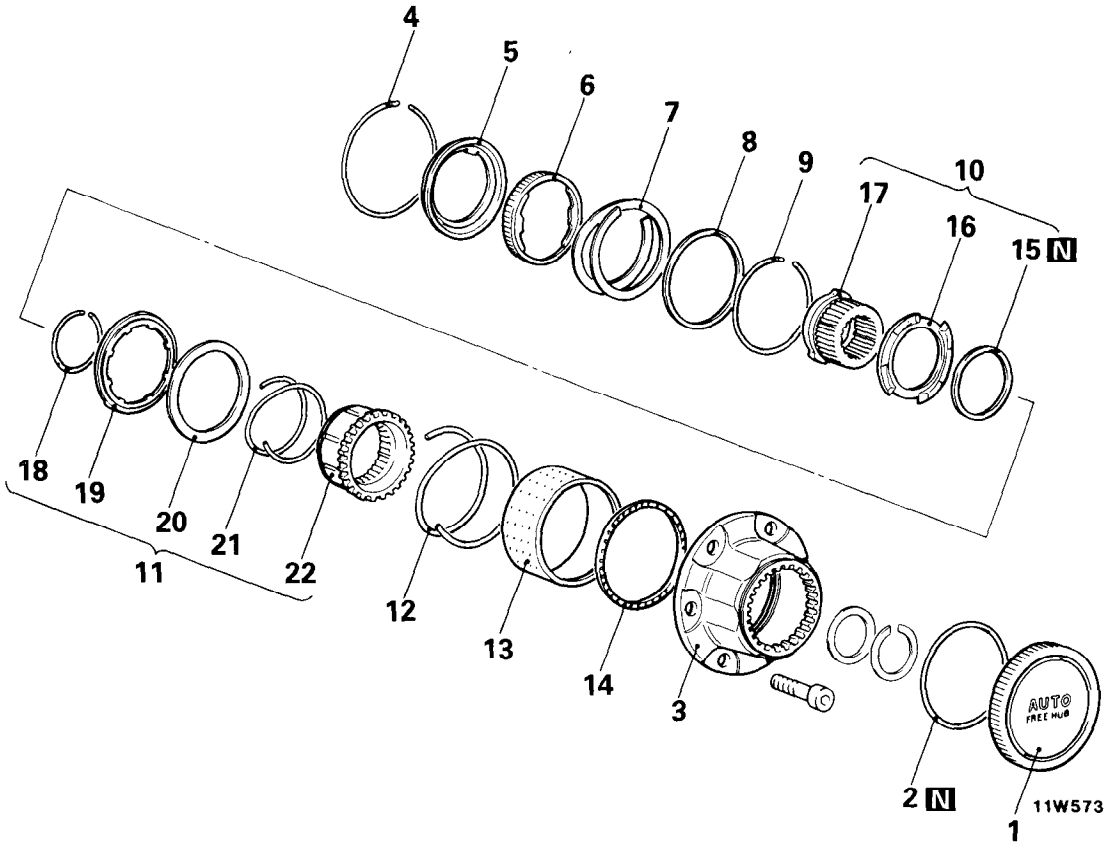
Specified grease : Multipurpose grease SAE J310, NLGI No. 2

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

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

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

DISASSEMBLY AND REASSEMBLY (Automatic Free-Wheeling Hub) N02JA-

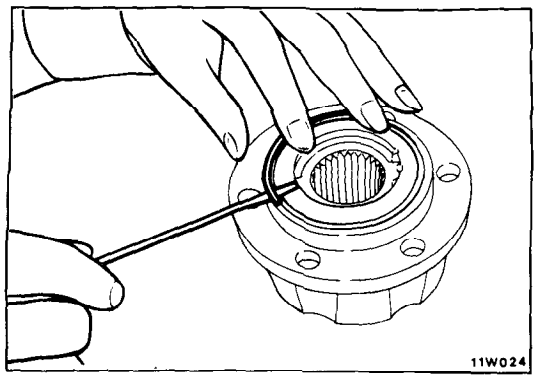


Disassembly steps

1. 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 ◆◆
10. Drive gear assembly ◆◆
11. Slide gear assembly ◆◆
12. Return spring ◆◆ ◆◆
13. Retainer (B) ◆◆
14. Retainer bearing
15. Drive gear snap ring ◆◆
16. Retainer (A)
17. Drive gear
18. Slide gear C ring ◆◆
19. Cam
20. Spring holder
21. Shift spring
22. Slide gear

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

STB Revision

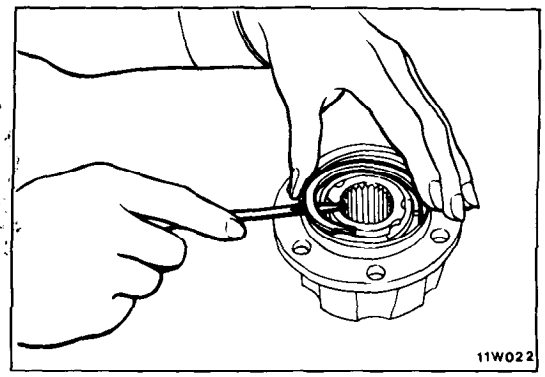


SERVICE POINTS OF DISASSEMBLY N02JBAA

4. REMOVAL OF HOUSING C RING

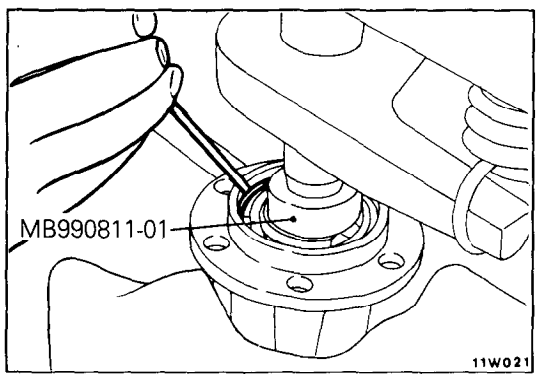
Remove the housing C ring.

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



8. REMOVAL OF HOUSING SNAP RING

Remove the housing snap ring.

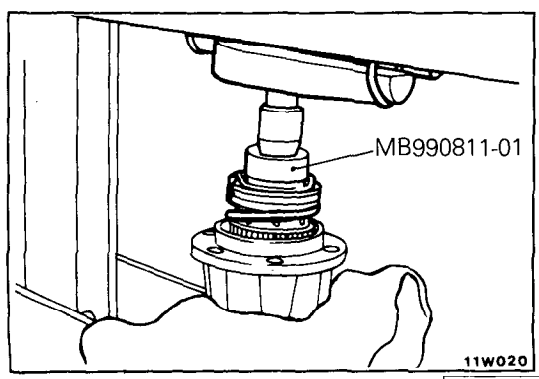


9. REMOVAL OF RETAINER (B) C RING

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

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

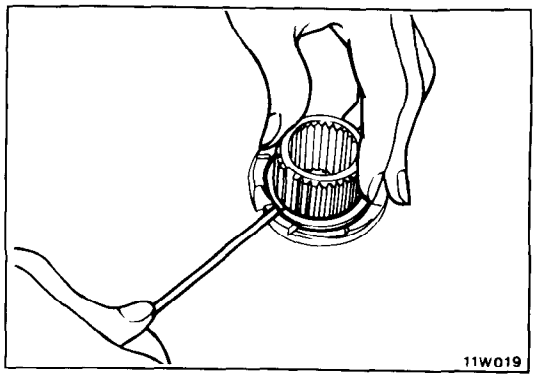
Caution
1. **Place a protective cover not to damage the cover attaching surface of the housing before setting on the press table.**
2. **Make sure that the pressing force does not exceed 200 N (44.1 lbs.).**



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

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

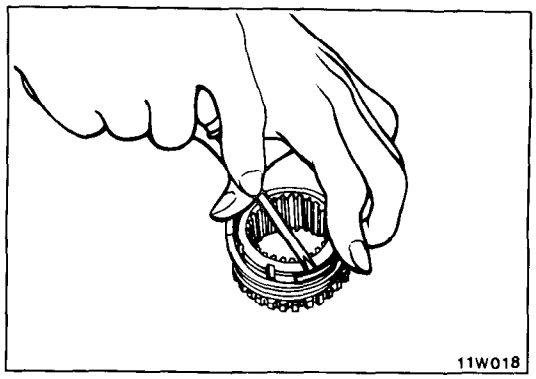
Caution
When the pressure of the press is removed, make sure that the retainer (A) is not caught by the retainer (B).



15. REMOVAL OF DRIVE GEAR SNAP RING

Remove the drive gear snap ring.

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

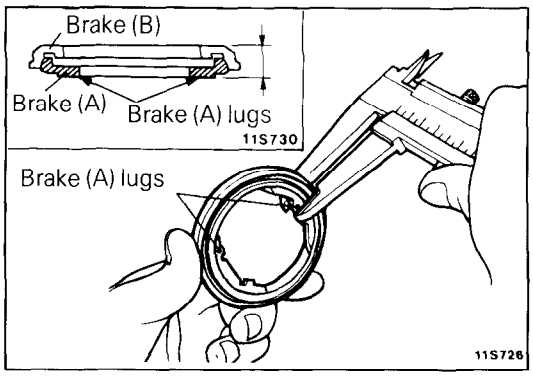


18. REMOVAL OF SLIDE GEAR C RING

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

INSPECTION N02JCAA

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



BRAKE ASSEMBLY THICKNESS

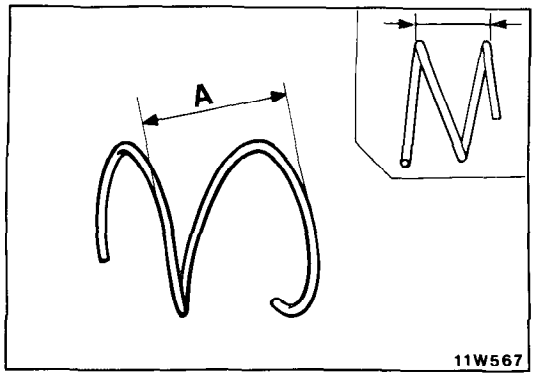
Check the brake assembly thickness by following the steps below.

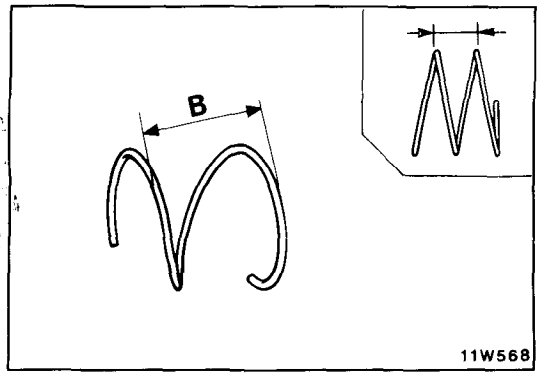
(1) Assemble brake (A) and brake (B) and then use slide calipers to measure the thickness of the assembly at the two lugs on brake (A).

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 the return spring for deterioration by following the steps below.

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

Limit : 35 mm (1.38 in.)

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

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

DETERIORATION OF SHIFT SPRING

Check the shift spring for 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 N02JDAB

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

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

13. APPLICATION OF GREASE TO RETAINER (B)

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

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

12. INSTALLATION OF RETURN SPRING

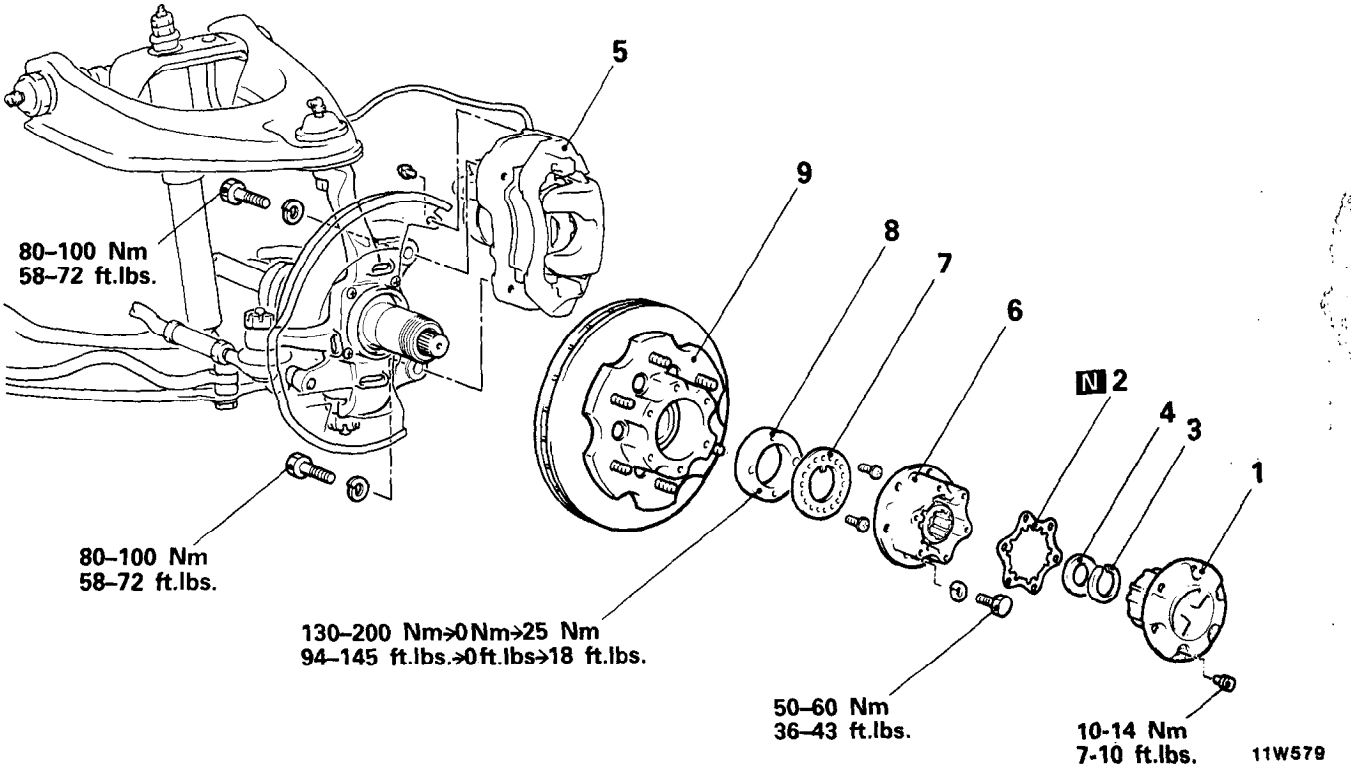
Install the return spring with the smaller coil diameter side toward the cam.

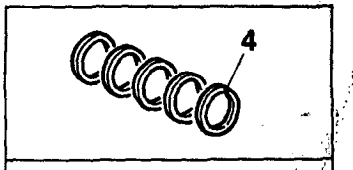
5. APPLICATION OF GREASE TO BRAKE (B)

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

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

REMOVAL AND INSTALLATION (Vehicles with Manual Free-Wheeling Hubs) N02GA-



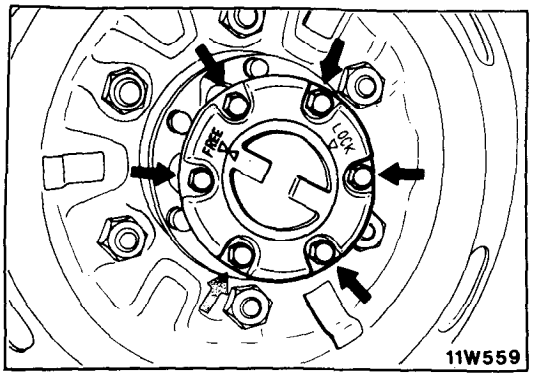


Front hub shim set

Removal steps

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

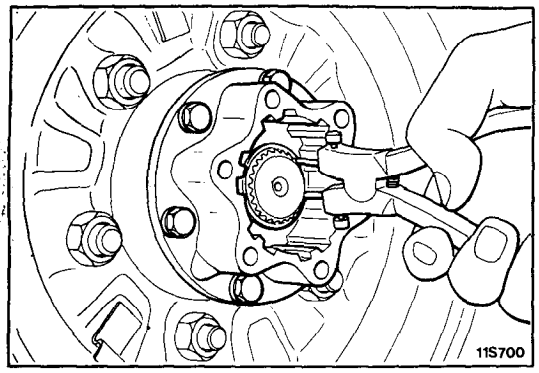
NOTE
(1) Reverse the removal procedures to reinstall.
(2) ◆◆ : Refer to "Service Points of Removal".
(3) ▶◀ : Refer to "Service Points of Installation".
(4) N: Non-reusable parts



SERVICE POINTS OF REMOVAL N02GBBA

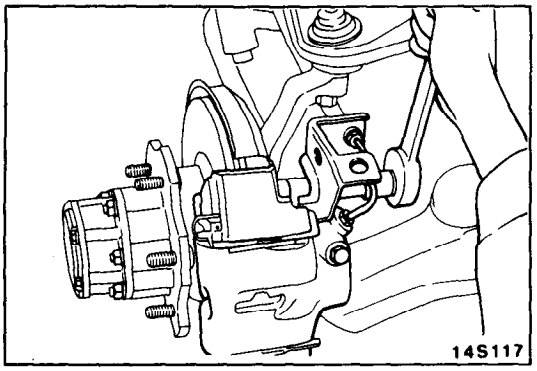
1. REMOVAL OF FREE-WHEELING HUB COVER

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



3. REMOVAL OF SNAP RING

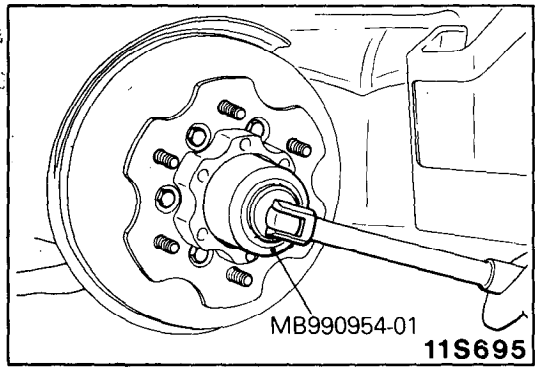
Using a snap ring pliers, remove the snap ring from the drive shaft.



5. 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 wont't fall.

Caution
Do not twist the brake hose.



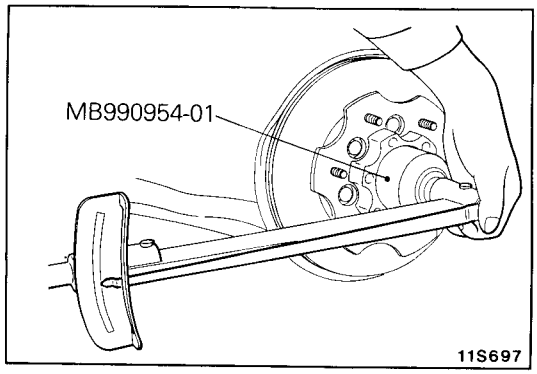
8. REMOVAL OF LOCK NUT/9. FRONT HUB ASSEMBLY

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

INSPECTION N02GCAA

- Check the wheel bearing for seizure, discoloration and rough raceway surface.
- Check the front hub for cracks.
- Check the oil seal for cracks and damage.

STB Revision

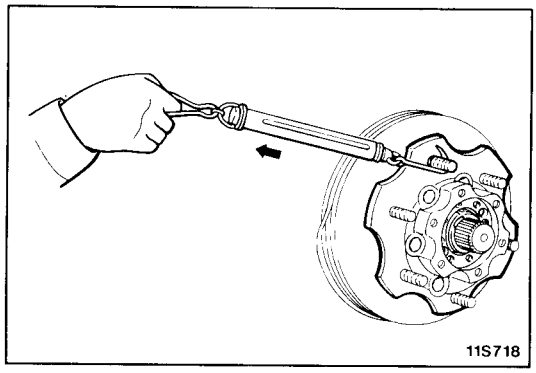


SERVICE POINTS OF INSTALLATION N02GDBB

● ADJUSTMENT OF WHEEL BEARING PRELOAD

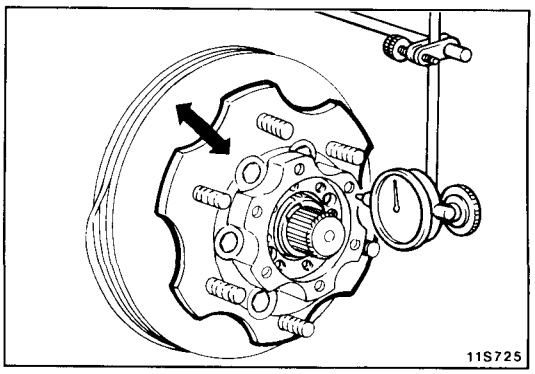
(1) Using the special tool, tighten the lock nut by the following procedure.

Tighten to 130-200 Nm (94–145 ft.lbs.)
↓
Loosen to 0 Nm (0 ft.lbs.)
↓
Retighten to 25 Nm (18 ft.lbs.) and then loosen 30°–40°



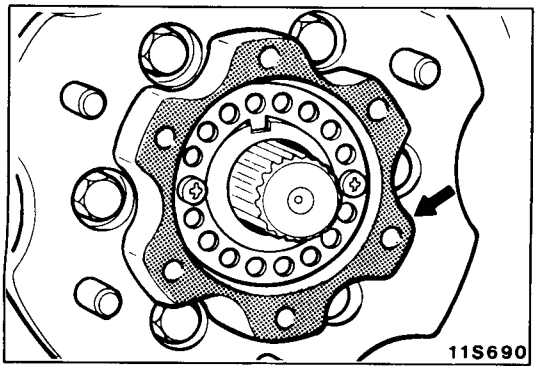
(2) Loosen the lock nut approximately 30 to 40 degrees to adjust the front hub's turning resistance and play in the axial direction so that they agree with the standard values.

Standard value : 30–130 Ncm (2.6–11.3 in.lbs.)
[Spring scale reading]
5–18 N (1.1–4.0 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.

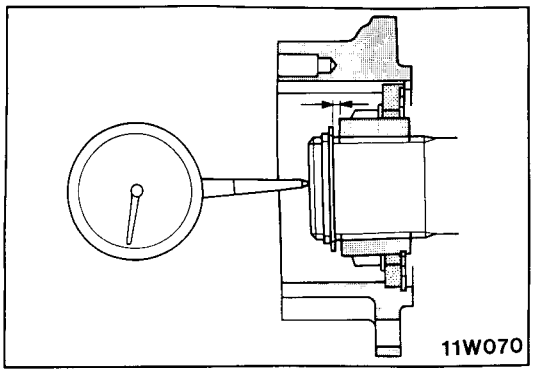


6. INSTALLATION OF MANUAL FREE-WHEELING HUB ASSEMBLY

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

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

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



- **ADJUSTMENT OF DRIVE SHAFT END PLAY**

After assembly in the order of the shim and then the snap ring, check the drive shaft end play.

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.)

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

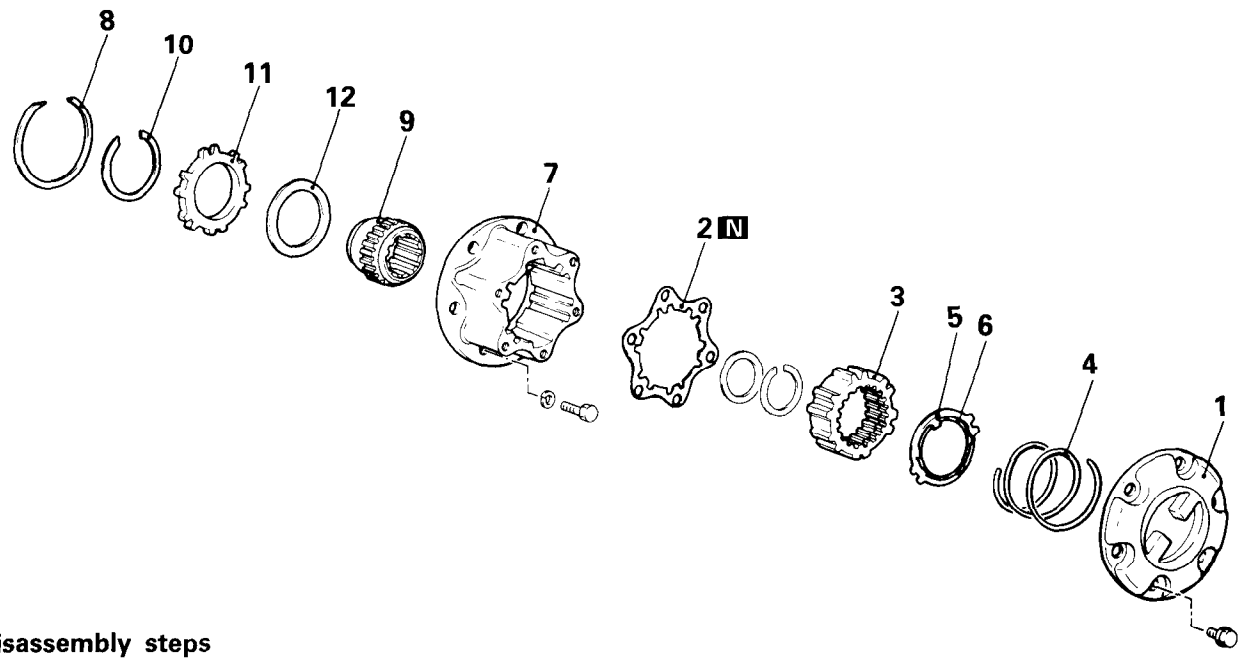
DISASSEMBLY AND REASSEMBLY (Front Axle Hub)

N02HA--

Refer to P.2-23.

DISASSEMBLY AND REASSEMBLY (Manual free-Wheeling Hub)

N02JA--

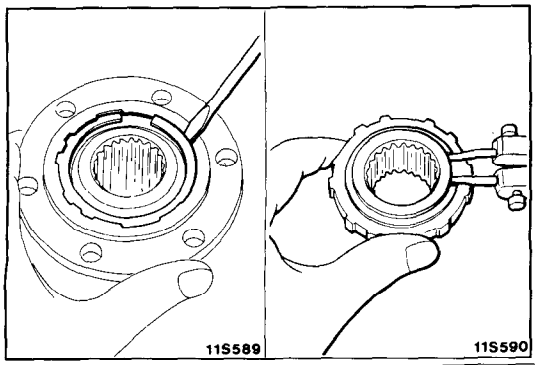


11W574

Disassembly steps

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

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



SERVICE POINTS OF DISASSEMBLY

N02JBBA

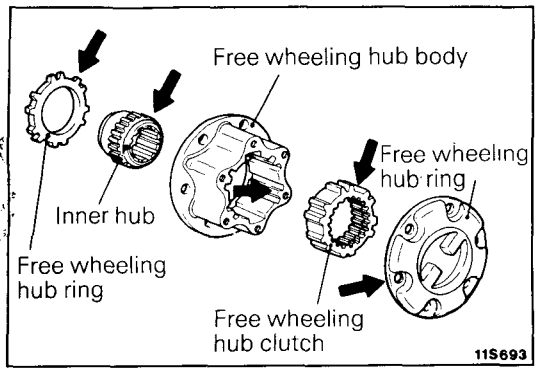
8. REMOVAL OF WHEEL SNAP RING/10. SHAFT SNAP RING

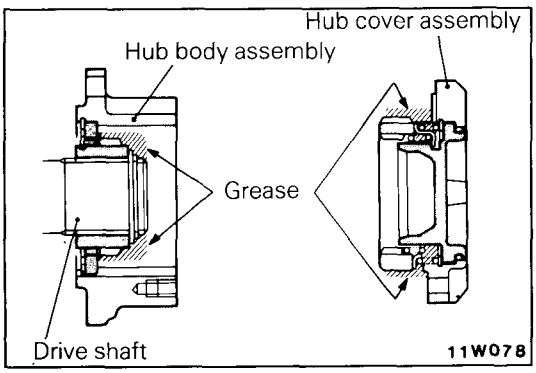
(1) Using a screwdriver, remove the snap ring and remove the inner hub from the free wheeling hub body.
(2) Remove the snap ring from the inner hub with a snap ring pliers.

INSPECTION

N02JCBA

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





SERVICE POINTS OF REASSEMBLY

N02JDBB

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

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

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

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

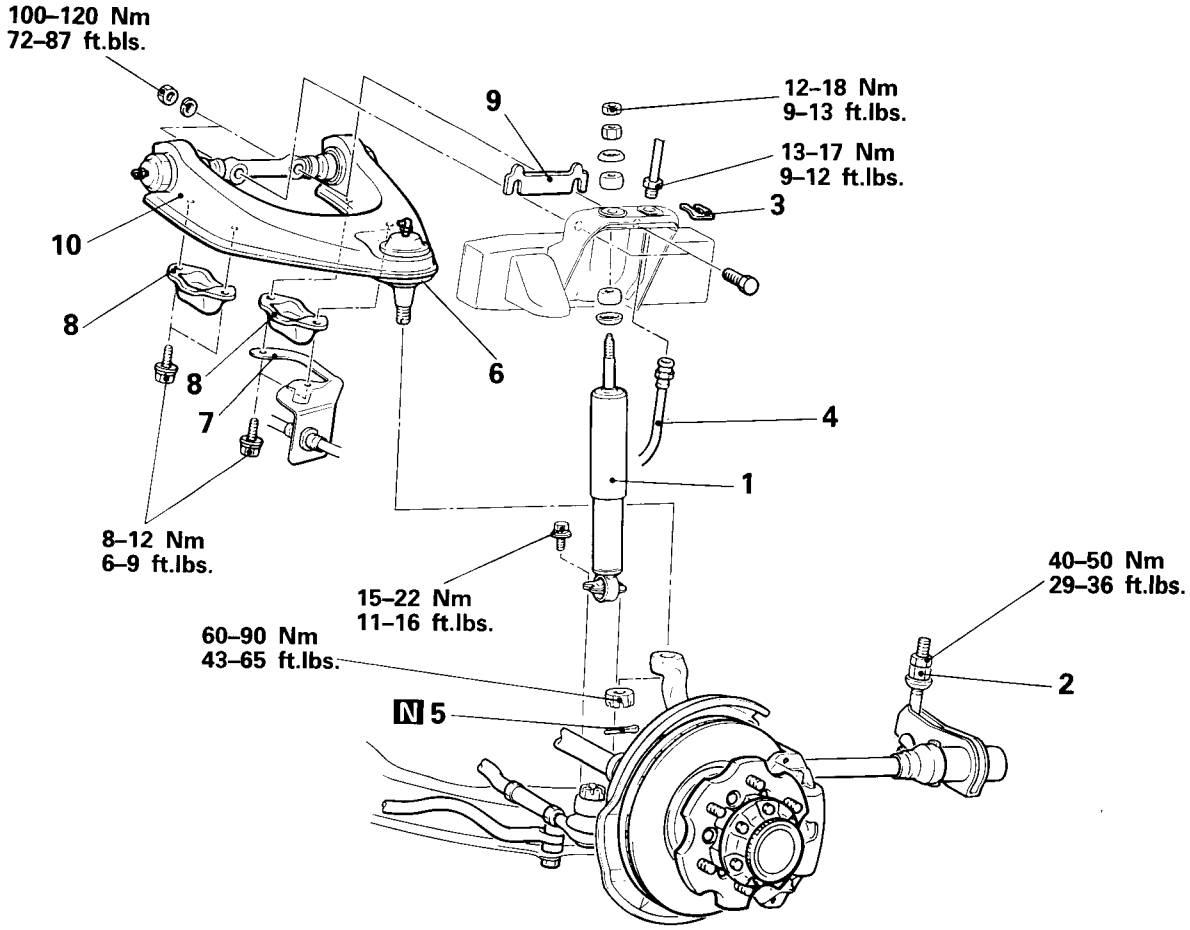
(3) Add more grease if necessary.

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

SHOCK ABSORBER AND UPPER ARM

REMOVAL AND INSTALLATION

N02MA--



12W557

Post-installation Operation
- Inspection and Adjustment of Wheel Alignment
  (Refer to P.2-14.)

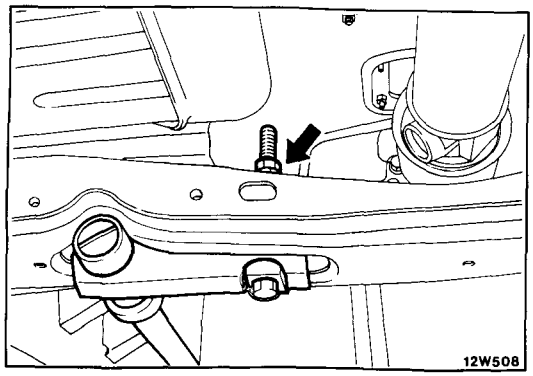
Shock absorber removal steps

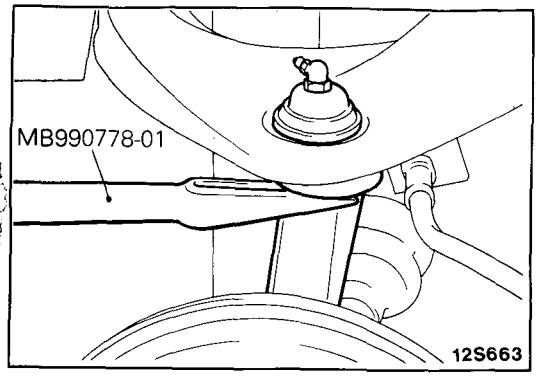
- ◆◆ 1. Shock absorber

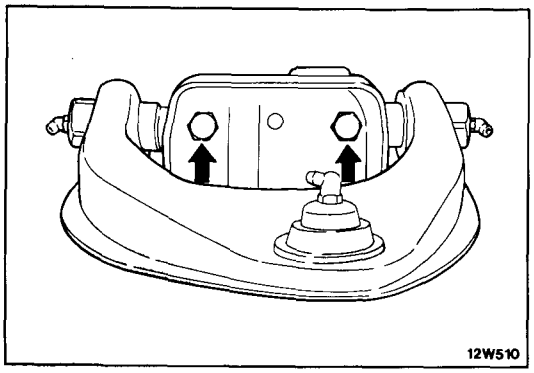
Upper arm removal steps

- ◆◆ 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

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 N02MBAA

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 FROM 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.

Caution
Tie the special tool to the upper arm, for example, with a string to prevent bouncing.

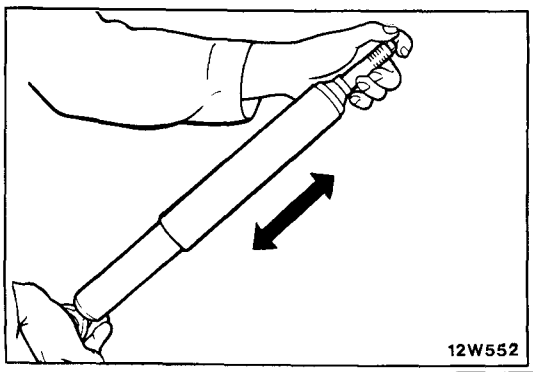
10. REMOVAL OF UPPER ARM

Remove the upper arm from the crossmember.

NOTE
The camber adjustment shims should be stored for reference at assembly.
Do not turn the upper arm shaft, as it changes caster.

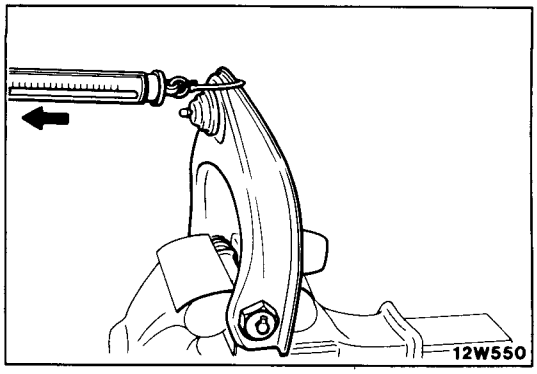
INSPECTION N02MCAA

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



SHOCK ABSORBER

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



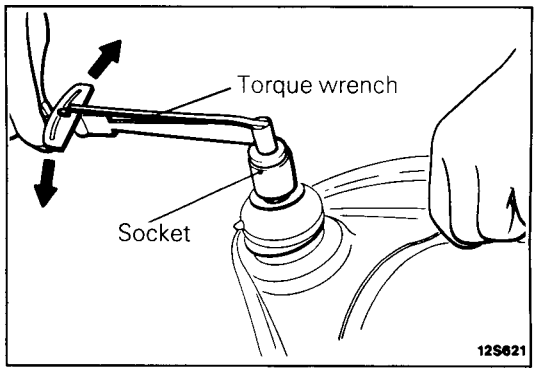
UPPER ARM SHAFT STARTING TORQUE

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 (11ft.lbs.)
   [Spring scale reading]
   6.8 N (1.5 lbs.)

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



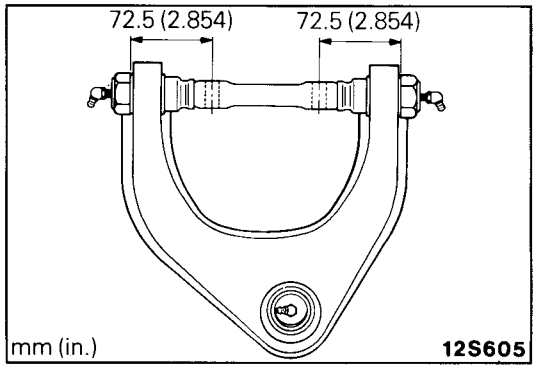
UPPER BALL JOINT STARTING TORQUE

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 : 80–350 Ncm (7–30 in.lbs.)

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

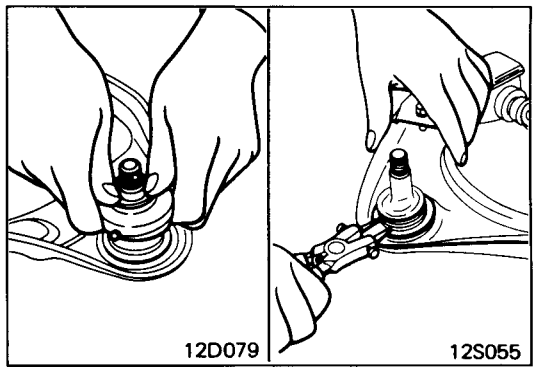


UPPER ARM SHAFT TIGHTENING AMOUNT

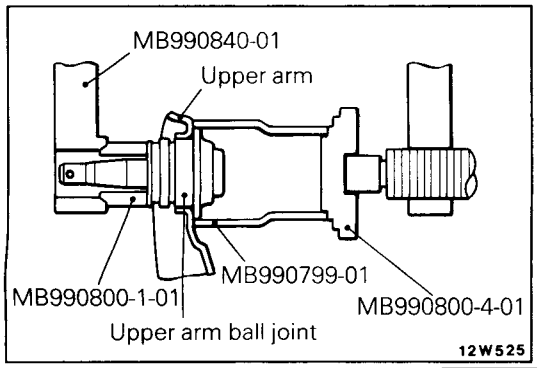
Give appropriate amount of turn to the shaft so as to obtain the specified dimension.

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

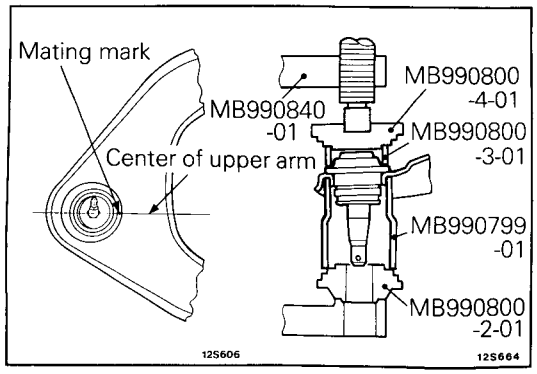
REPLACEMENT OF UPPER BALL JOINT NO2MDAB



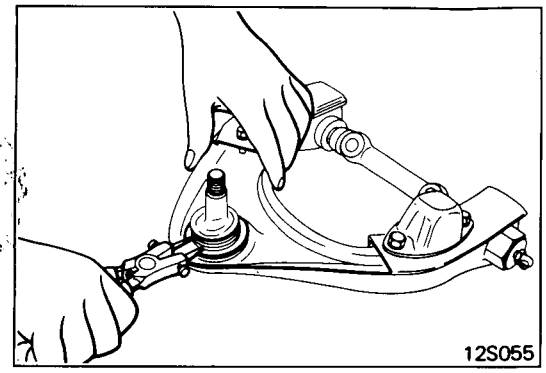
1. Remove the dust cover together with the ring.
2. Remove the snap ring from the upper ball joint by using a snap ring pliers.



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

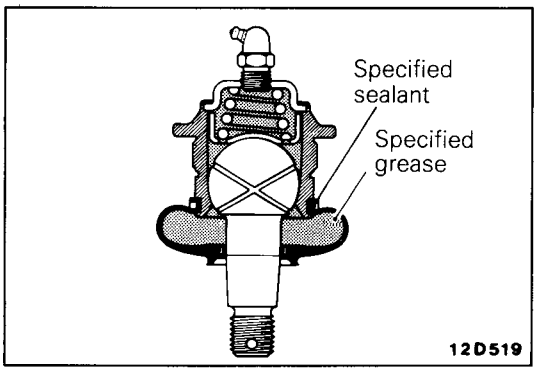


4. Press-fit the new upper ball joint with special tools aligning the mating mark with the upper arm center.



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.



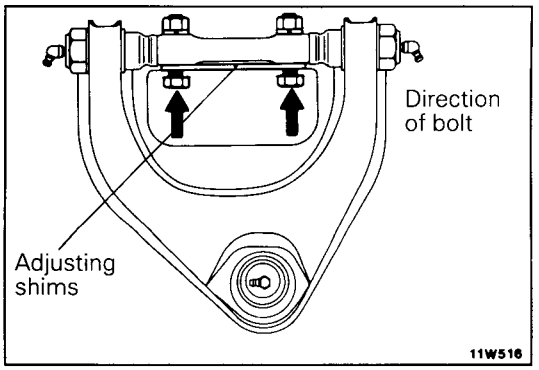
6. Apply the specified grease to both the interior of dust cover and the upper ball joint.

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

7. Apply the specified sealant to the grooves in the upper ball joint.

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

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



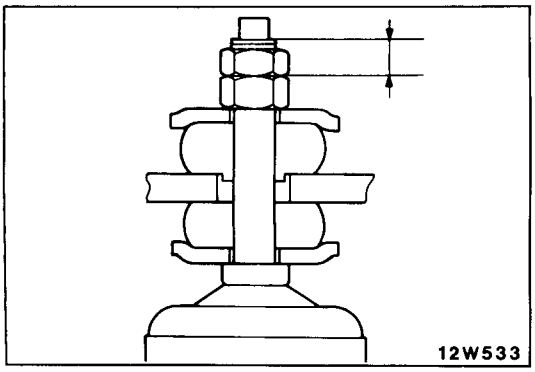
SERVICE POINTS OF INSTALLATION N02MEAA

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 TO BUMP STOPPER BRACKET**

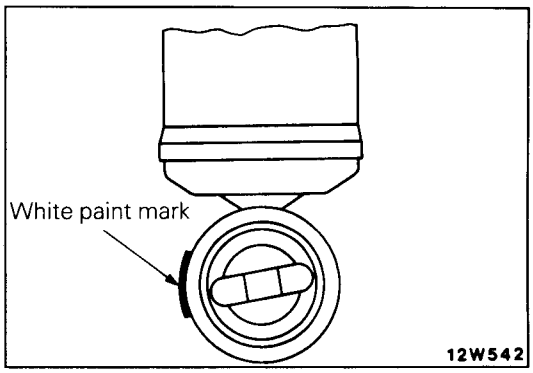
Refer to P.2-49.



1. INSTALLATION OF SHOCK ABSORBER

(1) 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.)

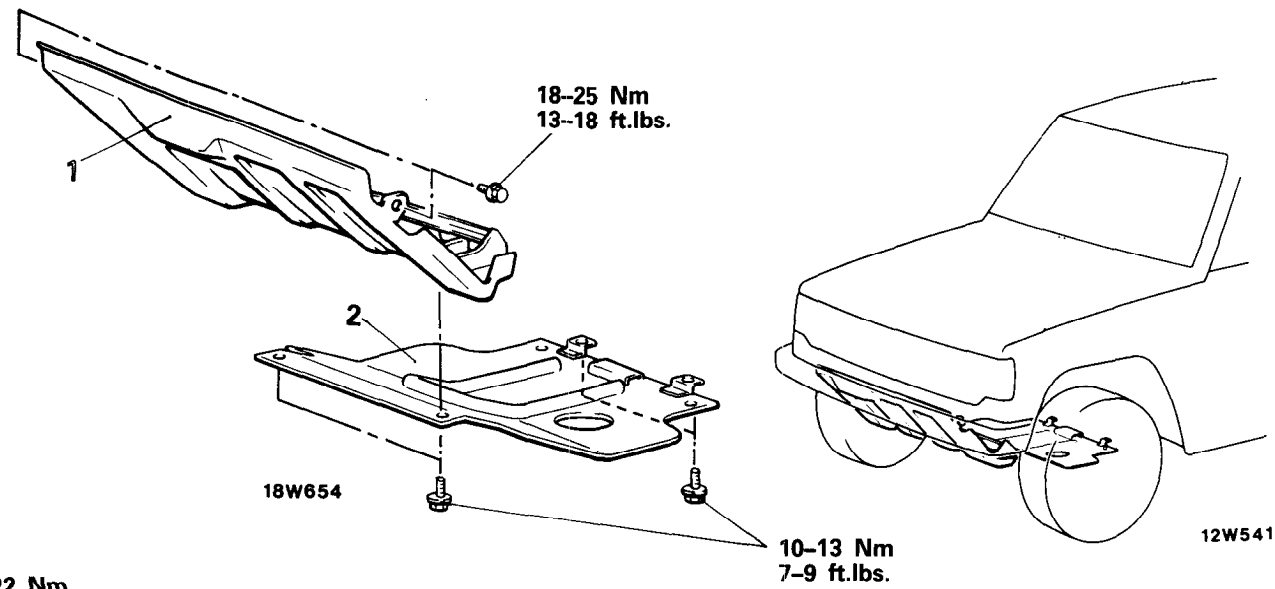


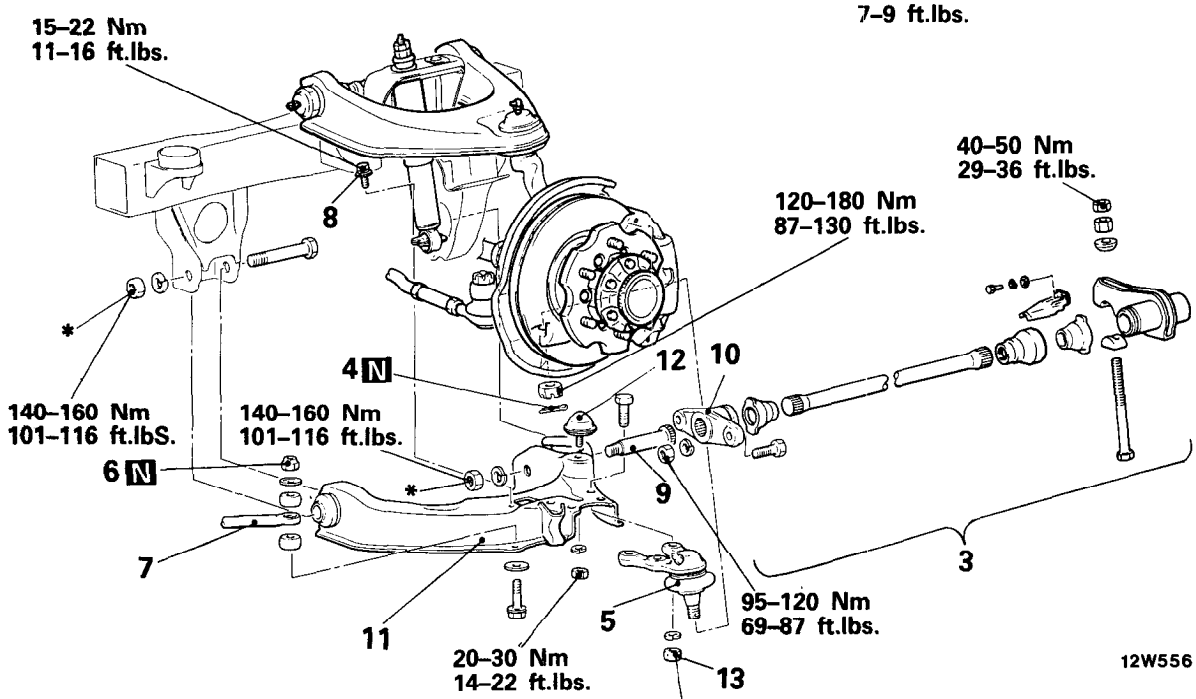
(2) Install the shock absorber so that the white paint mark at the lower side of the shock absorber faces the outer side of the vehicle.

LOWER ARM

REMOVAL AND INSTALLATION

N02NA--





Post-installation Operation
- Inspection and Adjustment of Wheel Alignment (Refer to P.2-14.)

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

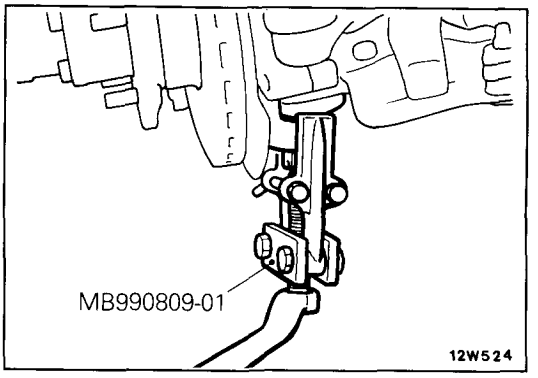
NOTE
(1) Reverse the removal procedures to reinstall.
(2) ◆◆ : Refer to "Service Points of Removal".
(3) ◆◆ : Refer to "Service Points of Installation".
(4) N : Non-reusable parts
(5) * : Must be tightened while vehicle is unladen.

STB Revision

SERVICE POINTS OF REMOVAL N02NBAA

3. REMOVAL OF TORSION BAR

Refer to P.2-48.

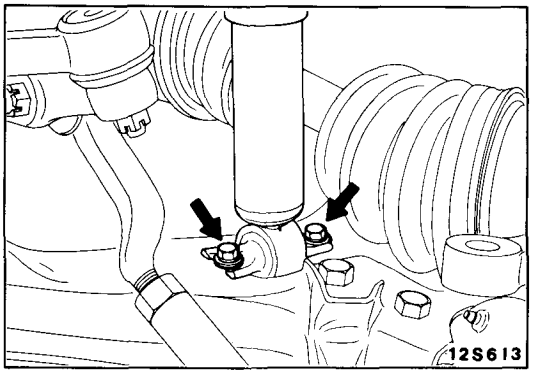


5. DISCONNECTION OF LOWER BALL JOINT FROM KNUCKLE

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

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

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

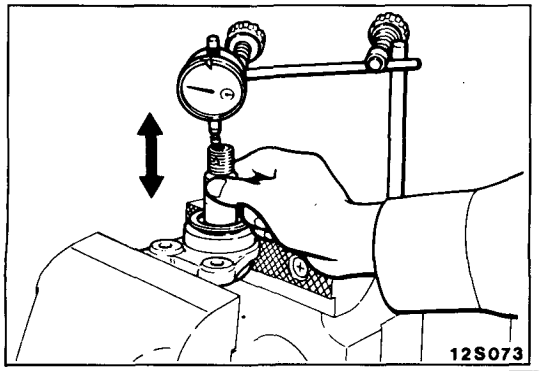


8. REMOVAL OF SHOCK ABSORBER MOUNTING BOLTS

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

INSPECTION N02NCAA

- 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.



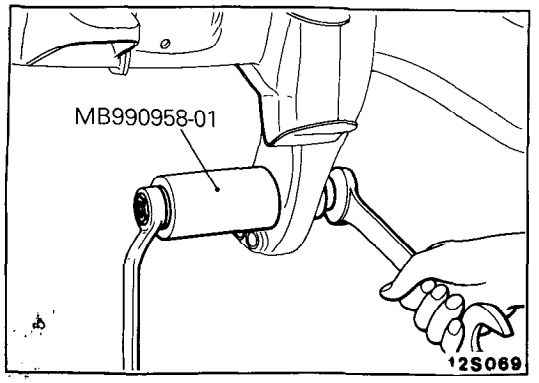
LOWER BALL JOINT END PLAY

Check 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.)

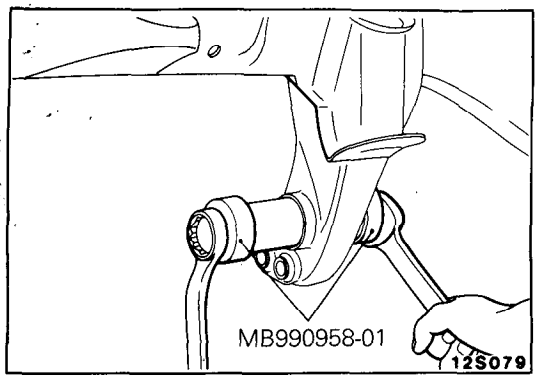
2. If the lower ball joint end play exceeds the limit, replace the lower ball joint.



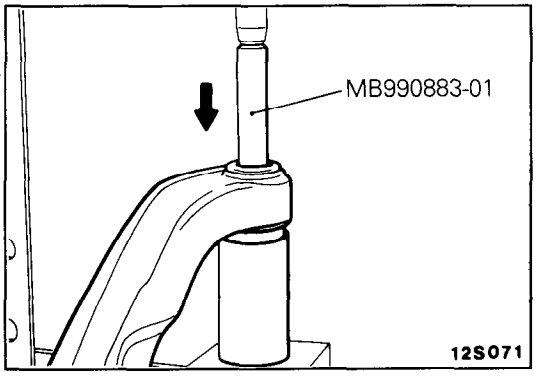
REPLACEMENT OF LOWER ARM BUSHING N02NDAA

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

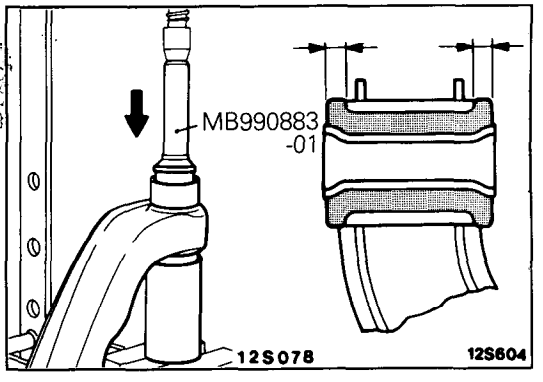
   NOTE
   When removing the left hand bushing A, detach the differential carrier. (Refer to P.2-69.)



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



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



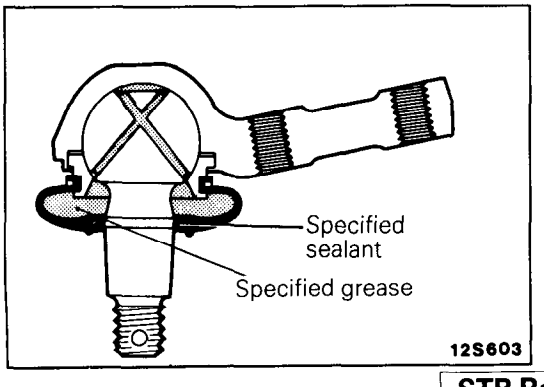
4. Coat the bushing B and the lower arm with soap solution and press-fit the bushing B into the lower arm by using special tools and taking care not to twist or tilt the bushing B.

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

REPLACEMENT OF LOWER BALL JOINT DUST COVER NO2NEAB

1. Apply the specified grease to the interior of the dust cover and the lower ball joint.

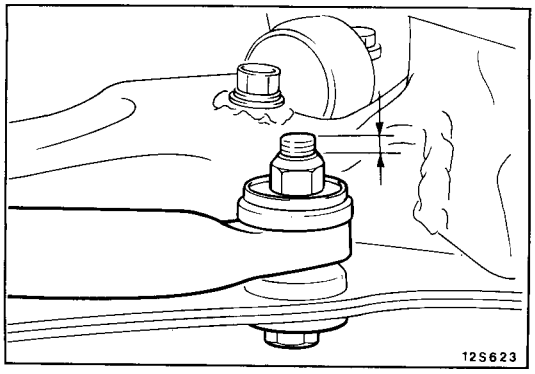
   Specified grease : Multipurpose grease SAE J310, NLGI No. 2



2. Apply the specified sealant to the grooves in the lower ball joint.

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

3. 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.2-48.

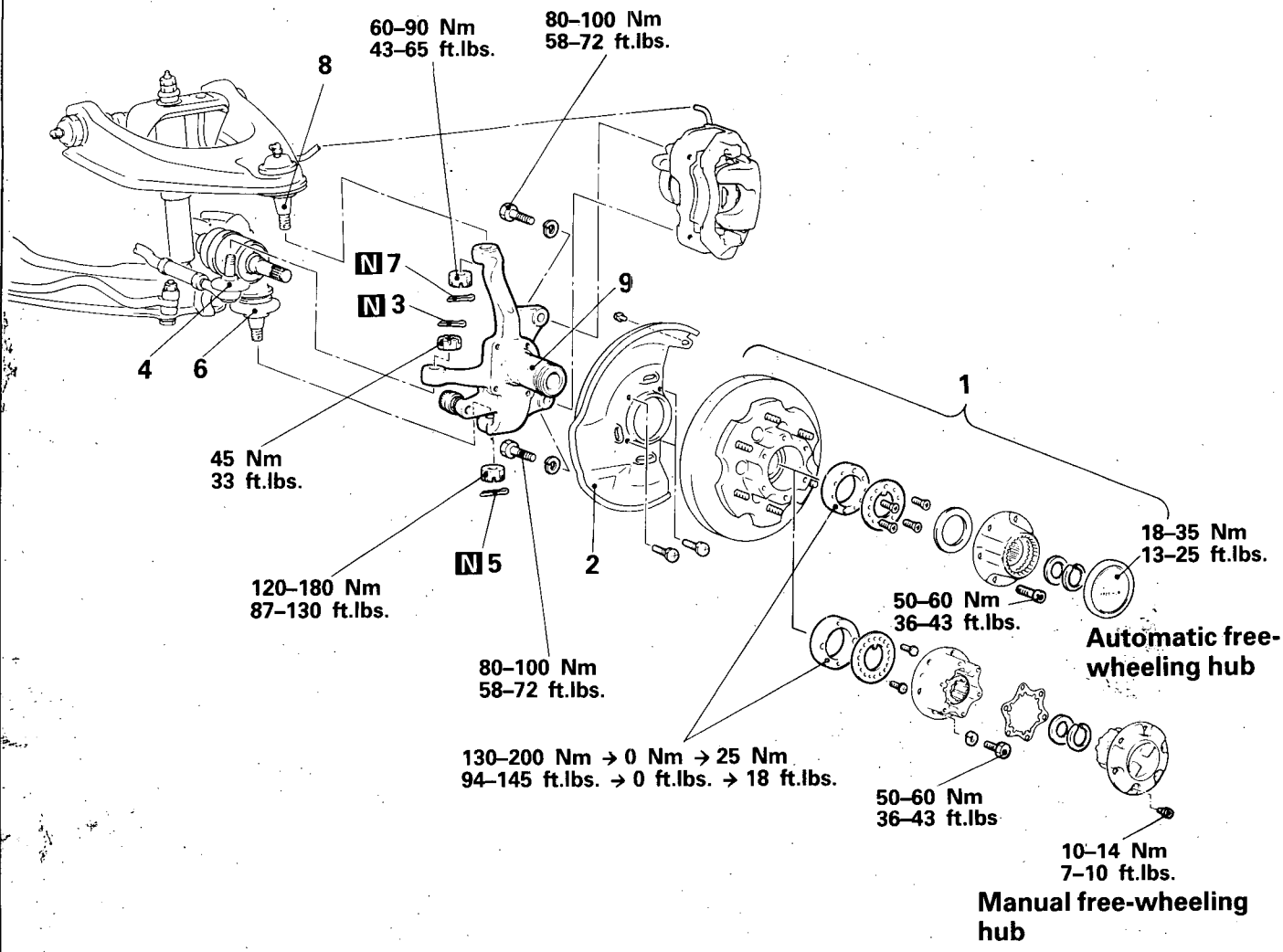
- **ADJUSTMENT OF CLEARANCE BETWEEN BUMP STOPPER AND BUMP STOPPER BRACKET**

Refer to P.2-49

KNUCKLE

REMOVAL AND INSTALLATION

N02PA--



Removal steps

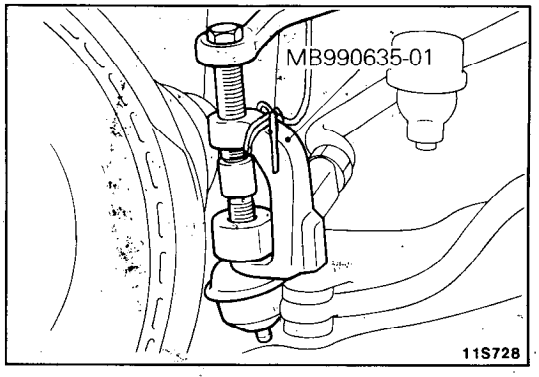
◆◆ ◆◆ 1. Front axle hub and free-wheeling hub
2. Dust cover
3. Cotter pin
◆◆ 4. Connection of tie rod assembly and knuckle
5. Cotter pin
◆◆ 6. Connection of lower ball joint and knuckle
7. Cotter pin
◆◆ 8. Connection of upper ball joint and knuckle
9. Knuckle

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 N02PBAA

1. REMOVAL OF FRONT AXLE HUB AND FREE WHEELING HUB

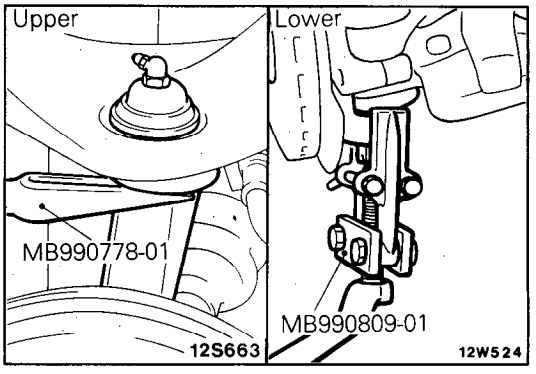
For models equipped with the automatic free-wheeling hub, refer to page 2-18; for models equipped with the manual free-wheeling hub, refer to page 2-29.



4. DISCONNECTION OF TIE ROD ASSEMBLY FROM KNUCKLE

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

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



6. DISCONNECTION OF LOWER BALL JOINT FROM KNUCKLE/8. UPPER BALL JOINT FROM 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.**

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.

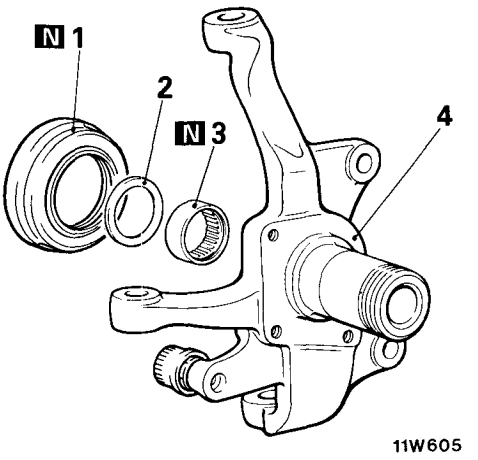
SERVICE POINT OF INSTALLATION N02PDAA

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

For models equipped with the automatic free-wheeling hub, refer to page 2-18; for models equipped with the manual free-wheeling hub, refer to page 2-29.

DISASSEMBLY AND REASSEMBLY

N02PE--

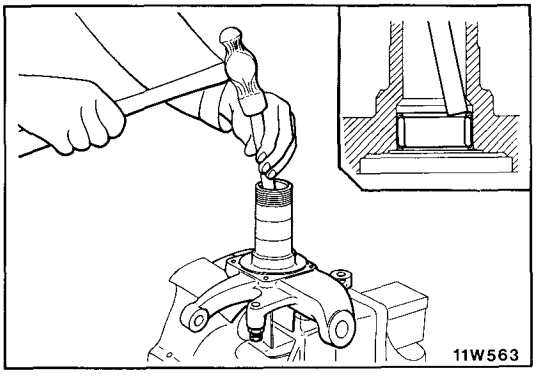


11W605

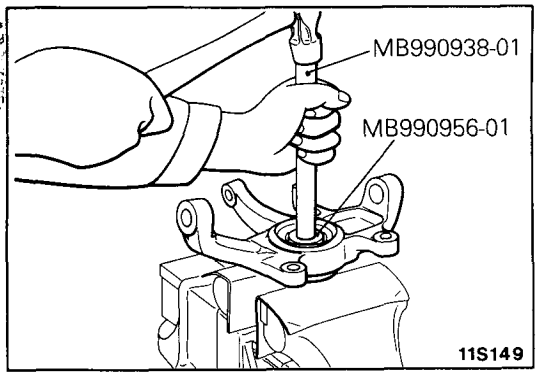
Disassembly steps

- ◆◆ 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



11W563



11S149

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.

SERVICE POIINTS OF REASSEMBLY

NO2PGAB

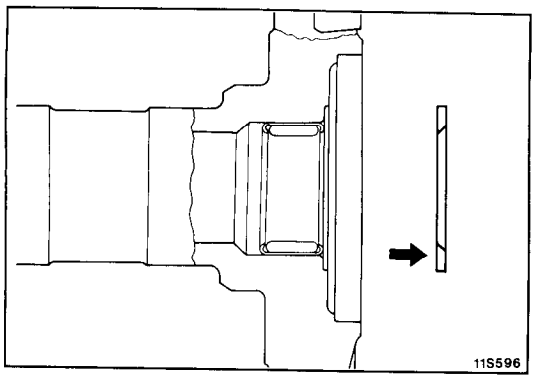
3. INSTALLATION OF NEEDLE BEARING

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

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

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

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

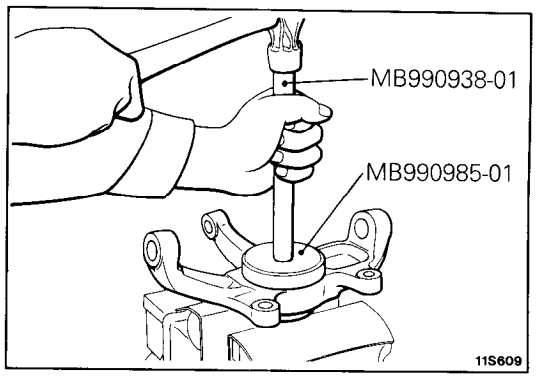


2. INSTALLATION OF SPACER

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

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

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



1. INSTALLATION OF OIL SEAL

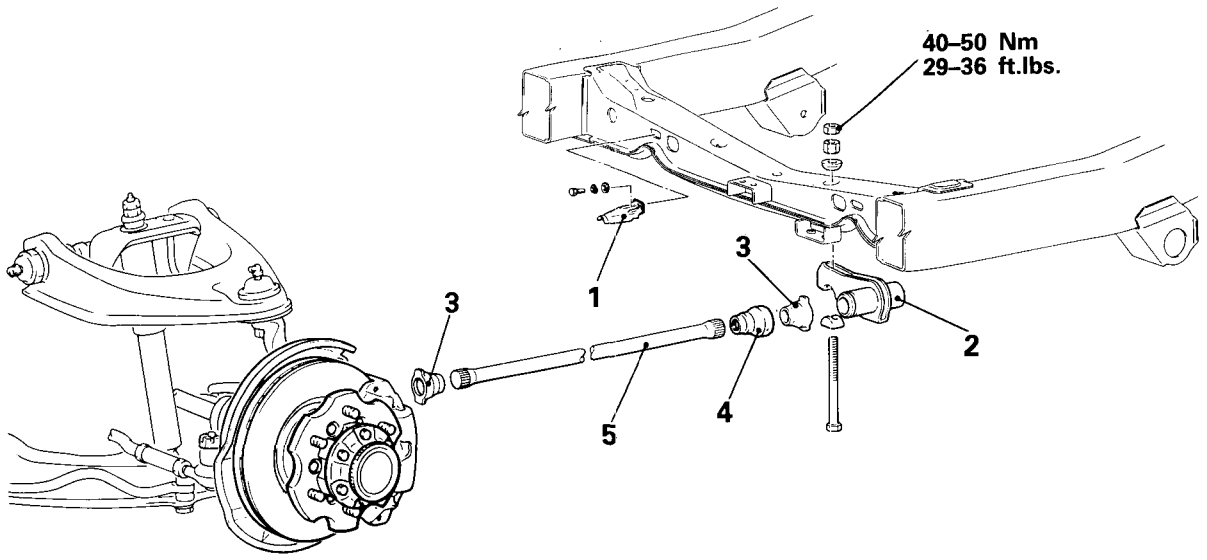
(1) Press-fit the new oil seal by using the special tools, until it is flush with the knuckle end face.
(2) Pack the specified grease in the oil seal inside and lip.

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

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

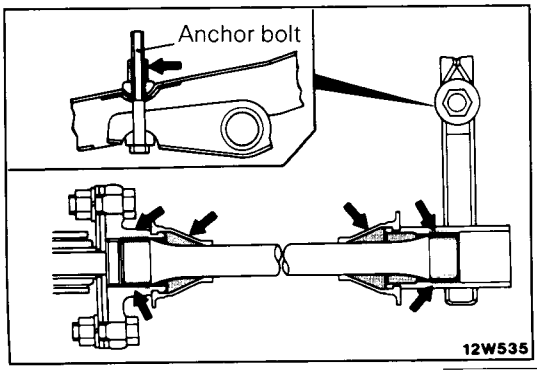
2. REMOVAL OF ANCHOR ARM ASSEMBLY

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.



12W535

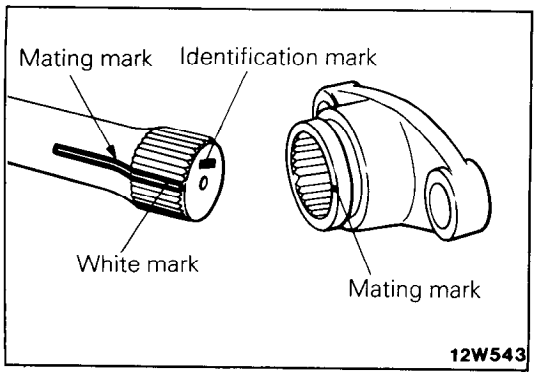
SERVICE POINTS OF INSTALLATION

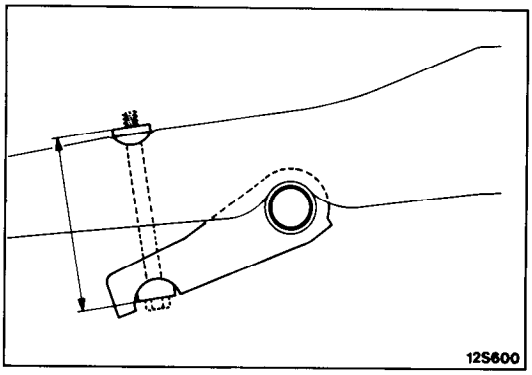
N02SDAB

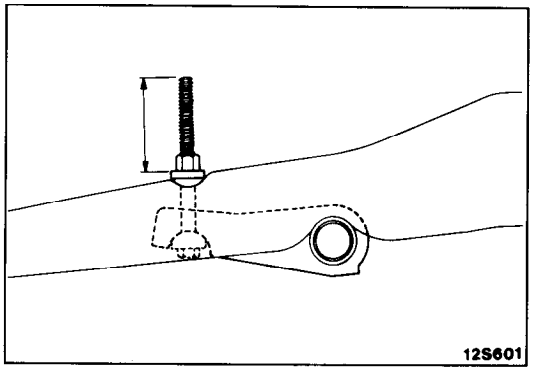
Apply the specified grease to the torsion bar serrations, the anchor arm assembly serrations, the anchor arm B serrations, the dust cover inside and the anchor bolt thread.

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

STB Revision







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.)

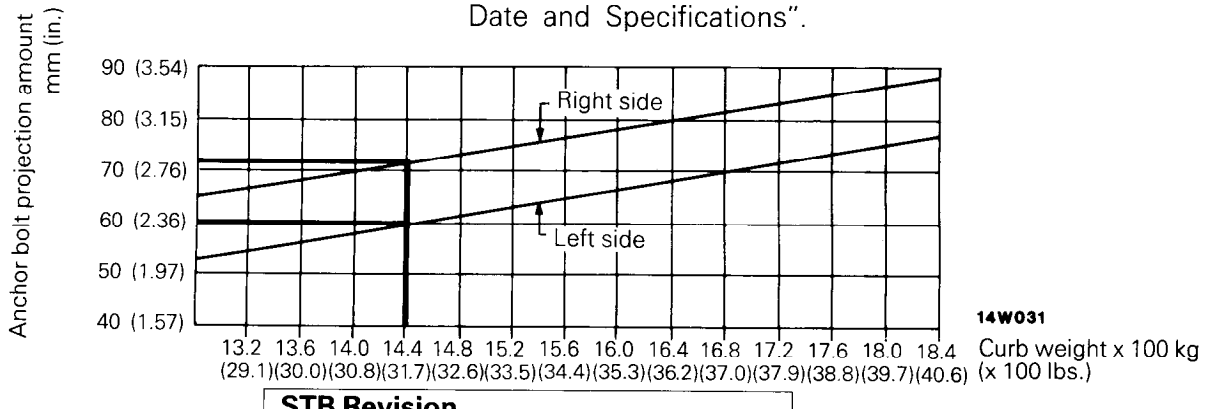
- **ADJUSTMENT OF CLEARANCE BETWEEN BUMP STOPPER AND BUMP STOPPER BRACKET**

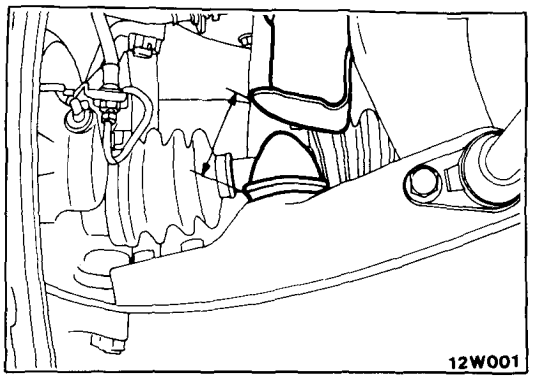
(1) Use the curb weight to obtain the amount of anchor bolt projection from the following table.

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.

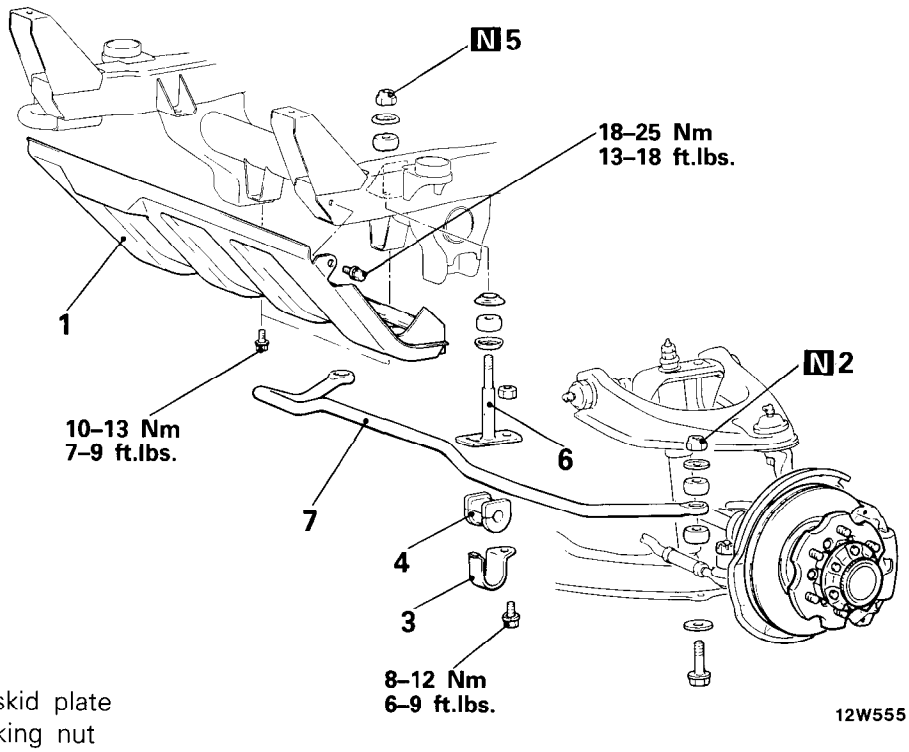
Standard value : 71 mm (2.80 in.)

(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

N02TCAA

- 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

N02TDAA

7. INSTALLATION OF STABILIZER BAR

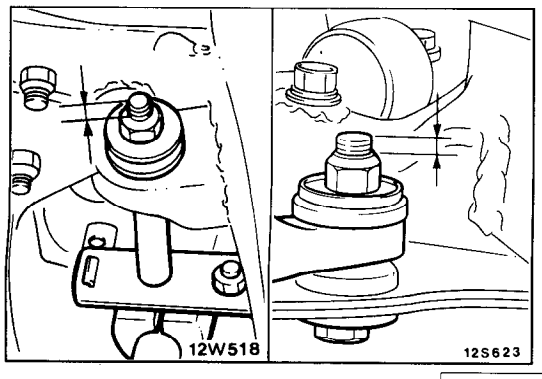
When installing the hanger to the stabilizer bracket, tighten the nut so as to obtain the specified dimension.

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.

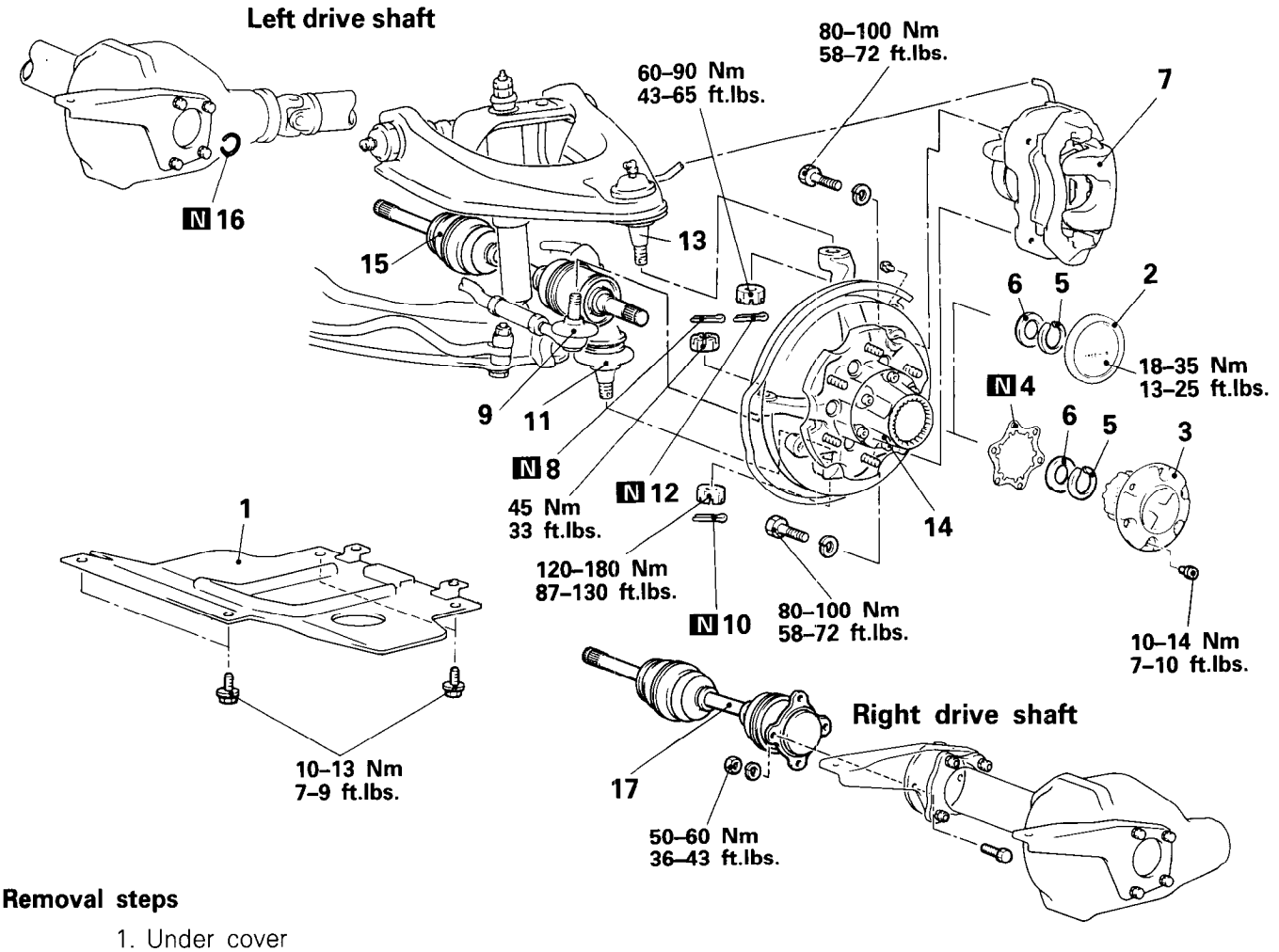


STB Revision

DRIVE SHAFT

REMOVAL AND INSTALLATION

NO2QA--

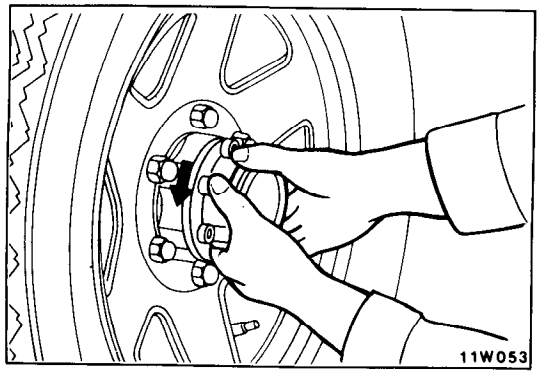


11W581

Removal steps

1. Under cover
2. ◆◆ Cover (automatic free-wheeling hub)
3. ◆◆ Free-wheeling hub cover (manual free-wheeling hub)
4. Gasket (manual free-wheeling hub)
- ◆◆ Adjustment of driveshaft end play
5. ◆◆ Snap ring
6. Shim
7. ◆◆ Front brake assembly
8. Cotter pin
9. ◆◆ Connection of tie rod assembly and knuckle
10. Cotter pin
11. ◆◆ Connection of lower ball joint and knuckle
12. Cotter pin
13. ◆◆ Connection of upper ball joint and knuckle
14. Front hub and knuckle assembly
15. ◆◆ ◆◆ Left drive shaft
16. Circlip
17. 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 NO2QBAC

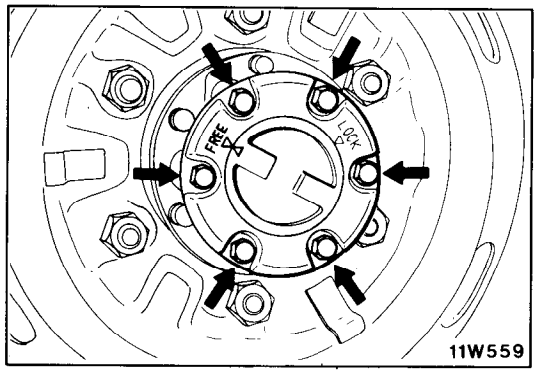
2. REMOVAL OF COVER (Automatic free wheeling hub)

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

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

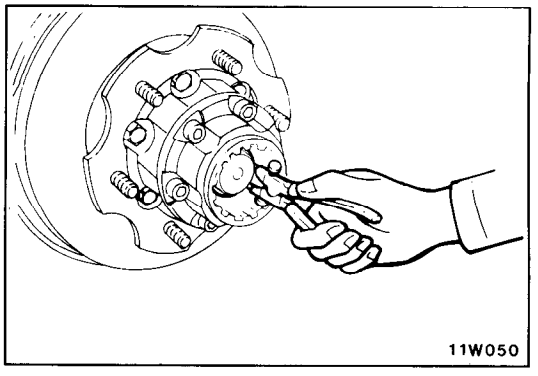
(2) Remove the automatic free wheeling hub cover.

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



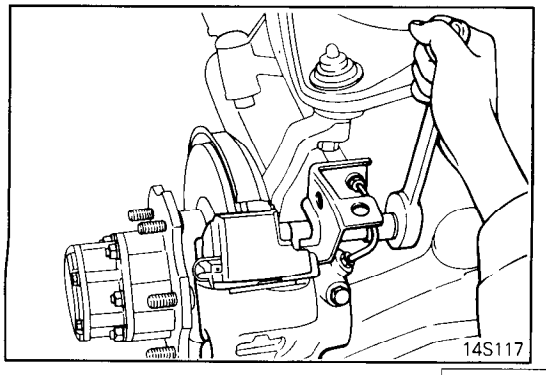
3. REMOVAL OF FREE WHEELING HUB COVER (Manual free wheeling hub)

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



5. REMOVAL OF SNAP RING

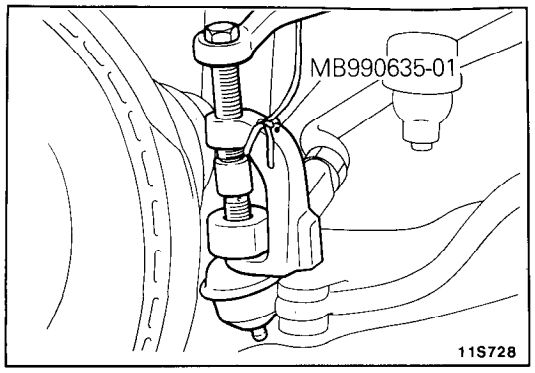
Using a snap ring pliers, remove the snap ring from the drive shaft.



7. 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.

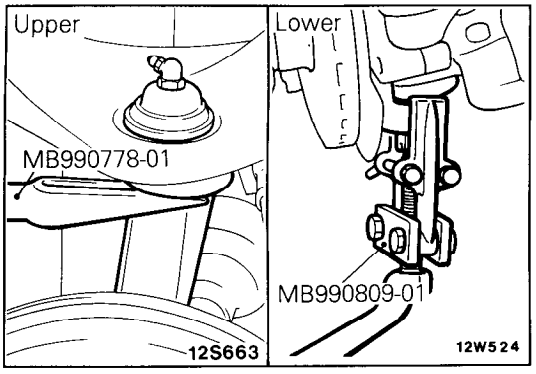


9. DISCONNECTION OF TIE ROD ASSEMBLY FROM KNUCKLE

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

Cuation

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

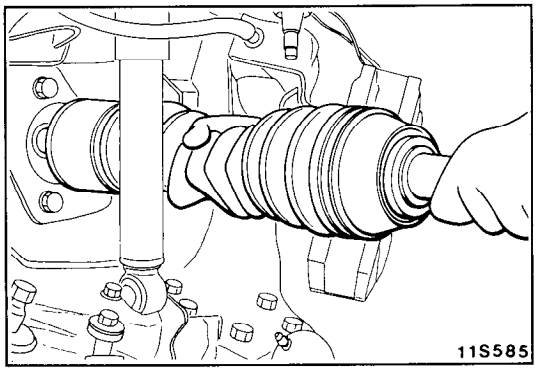


11. DISCONNECTION OF LOWER BALL JOINT FROM KNUCKLE/13. UPPER BALL JOINT FROM KNUCKLE

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.**



15. REMOVAL OF LEFT DRIVE SHAFT

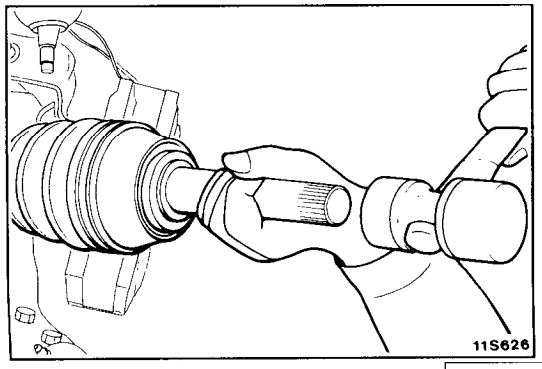
Pull the drive shaft out from the differential carrier.

Caution

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

INSPECTION 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.



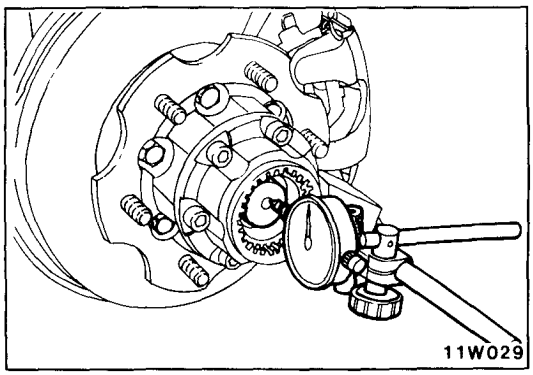
SERVICE POINTS OF INSTALLATION N02QDAC

15. INSTALLATION OF LEFT DRIVE SHAFT

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

Caution

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



- **ADJUSTMENT OF DRIVE SHAFT END PLAY**

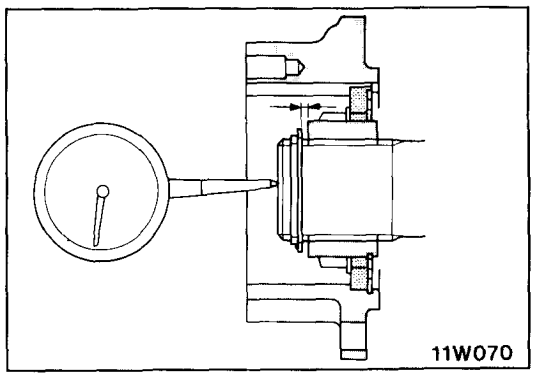
Vehicles with automatic free-wheeling hubs

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

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

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

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



Vehicles with manual free-wheeling hubs

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

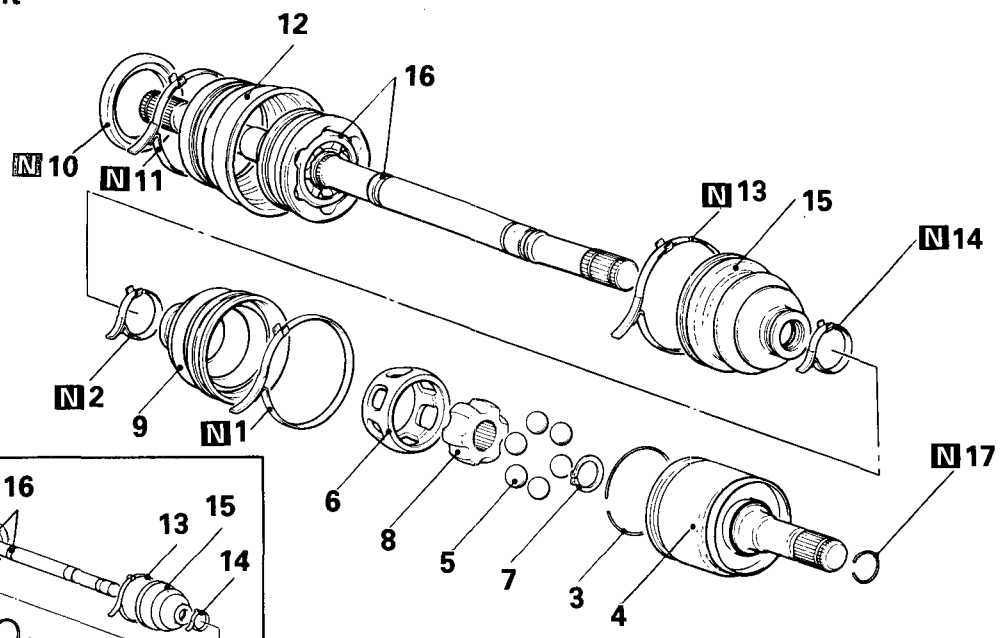
Standard value : 0.2–0.5 mm (.008–.020 in.)

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

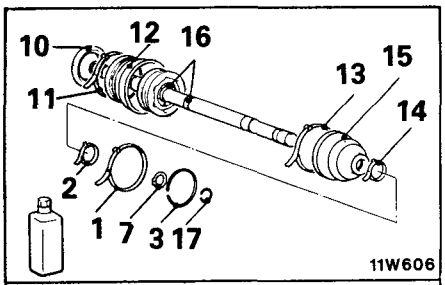
DISASSEMBLY AND REASSEMBLY

N02QE--

Left drive shaft

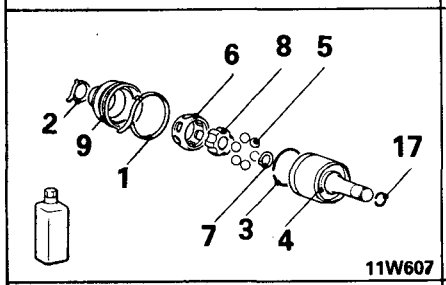


11B0025



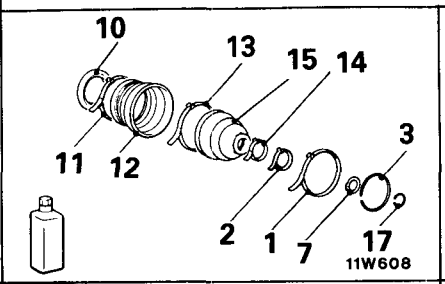
11W606

Drive shaft kit LH



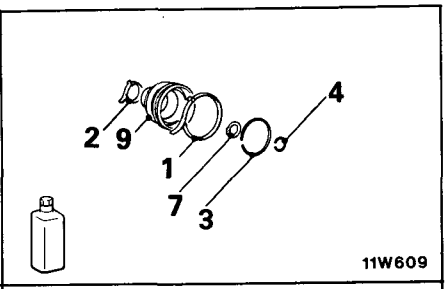
11W607

D.O.J. kit



11W608

Boot repair kit (B.J.)



11W609

Boot repair kit (D.O.J.)

Disassembly steps

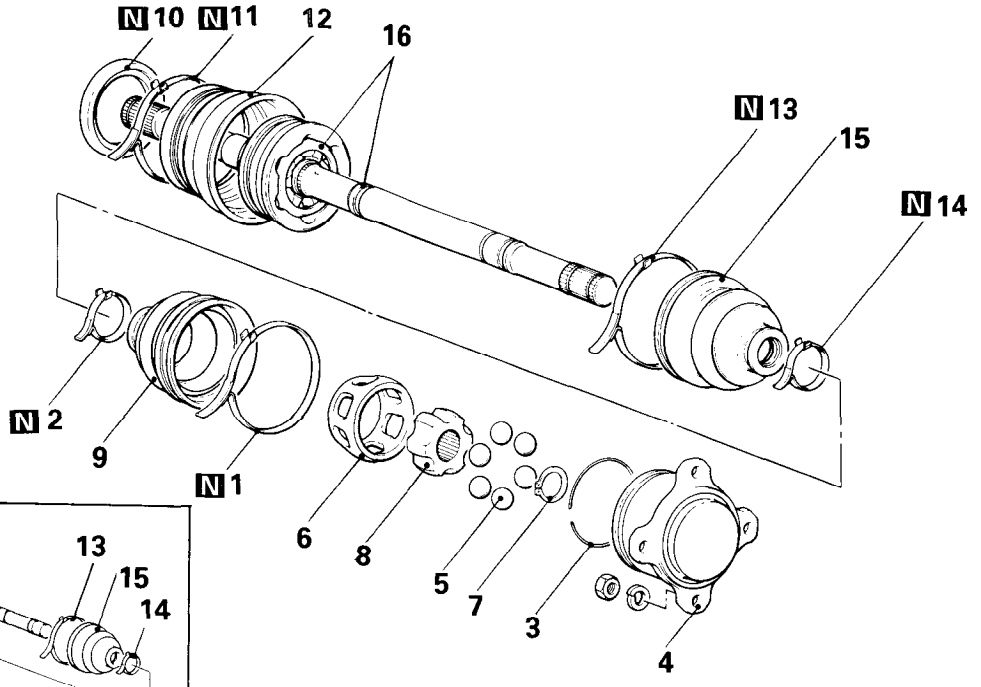
1. Boot band A
2. Boot band B
3. Circlip
4. D.O.J. outer race
5. Balls ◆◆
6. D.O.J. cage ◆◆
7. Snap ring ◆◆
8. D.O.J. inner race
9. D.O.J. boot ◆◆
10. Dust cover ◆◆
11. Boot protector band
12. Boot protector ◆◆
13. Boot band A
14. Boot band B
15. B.J. boot ◆◆
16. Drive shaft and B.J.
17. Circlip

Reassembly steps

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

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

Right drive shaft



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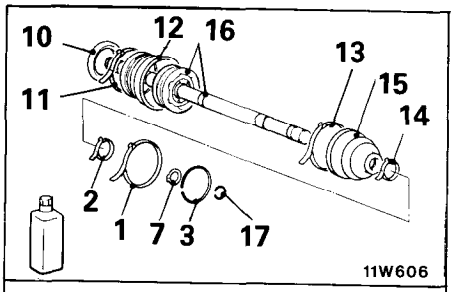
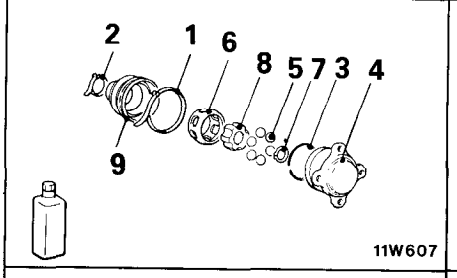
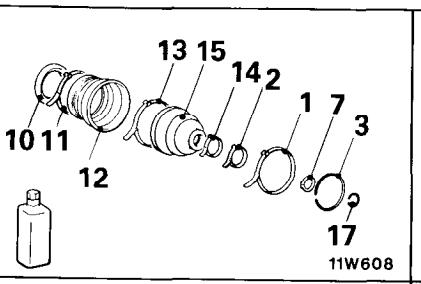


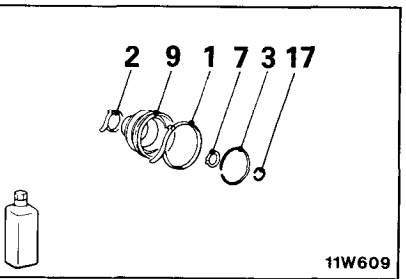
Drive shaft kit RH



D.O.J. kit



Boot repair kit (B.J.)



Boot repair kit (D.O.J.)

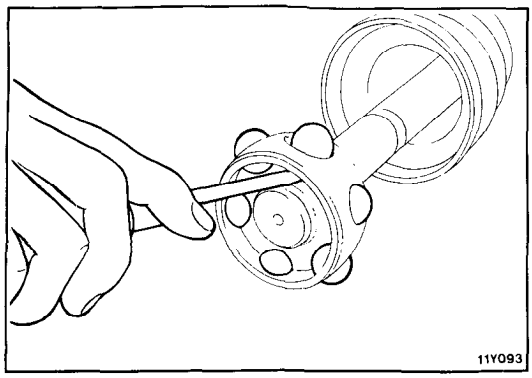
Disassembly steps

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

Reassembly steps

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

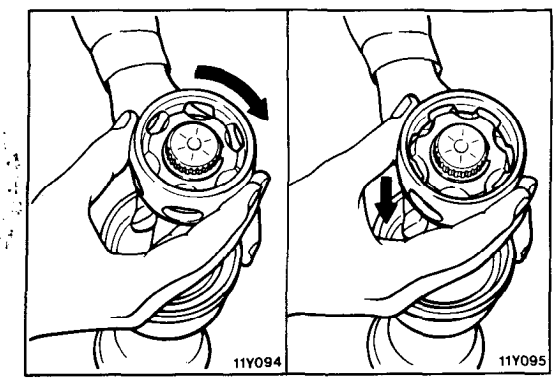
NOTE
(1) ◆◆ : Refer to "Service Points of Disassembly".
(2) ◆◆ : Refer to "Service Points of Reassembly".
(3) N : Non-reusable parts
(4) B.J. : Birfield Joint
(5) D.O.J. : Double Offset Joint



SERVICE POINTS OF DISASSEMBLY N02QFAB

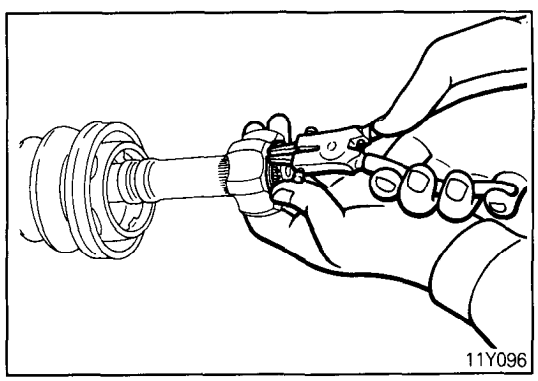
5. REMOVAL OF BALLS

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



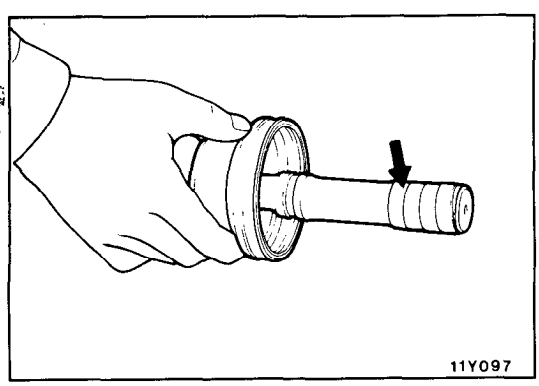
6. REMOVAL OF D.O.J. CAGE

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



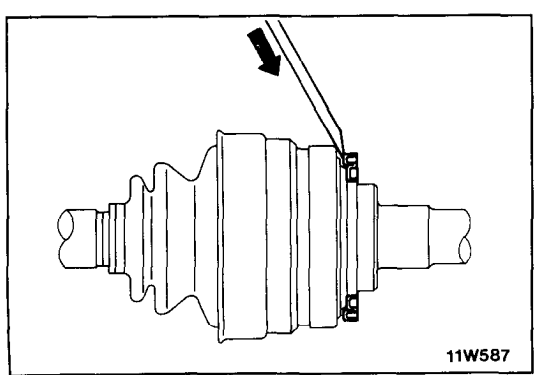
7. REMOVAL OF SNAP RING

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.



9. REMOVAL OF D.O.J. BOOT

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



10. REMOVAL OF DUST COVER

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

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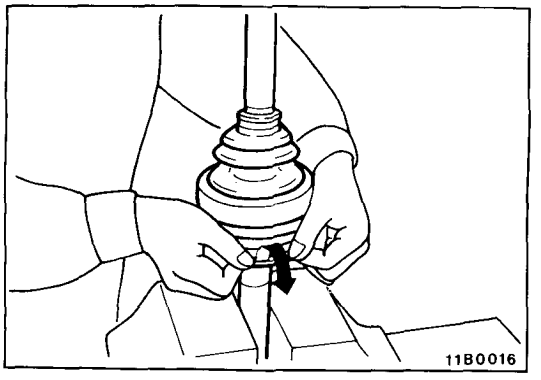
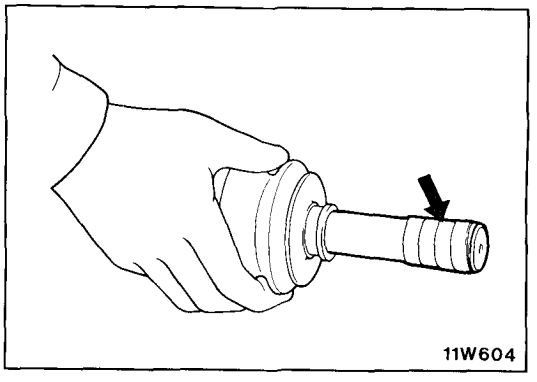


12. REMOVAL OF BOOT PROTECTOR

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.



15. REMOVAL OF B.J. BOOT

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

Caution
Do not disassemble the B.J.

INSPECTION N02QGAB

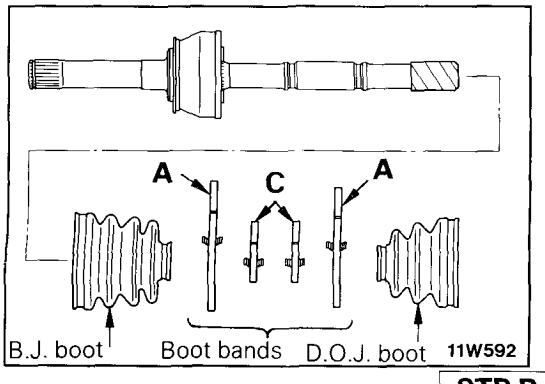
- Check the drive shaft for bending or wear.
- Check the B.J. for entry of water, foreign matter and rust.
- Check the B.J. ball for damage.
- Check the D.O.J. cage, D.O.J. inner race and ball for rust, wear and damage.
- Check the circlip for damage or deformation.
- Check the D.O.J. outer race for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

SERVICE POINTS OF REASSEMBLY N02QHAB

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

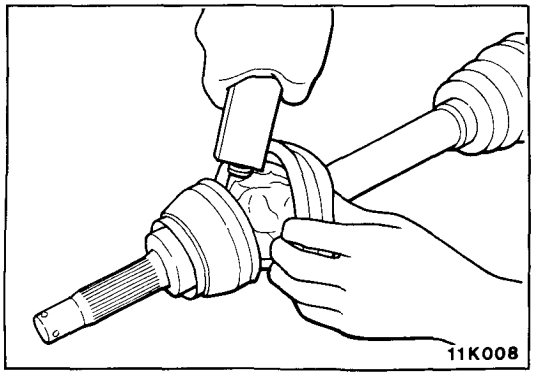
(1) Apply the specified grease to the drive shaft, and wrap vinyl tape around the spline part on the D.O.J. side of the drive shaft.

Specified grease : Repair kit grease



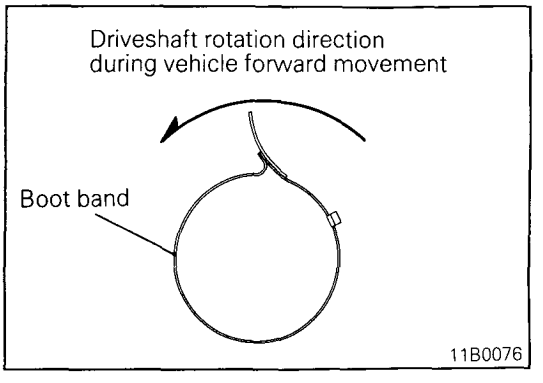
(2) Install the B.J. boot, boot bands (new ones), and D.O.J. boot on the drive shaft, in that order.

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



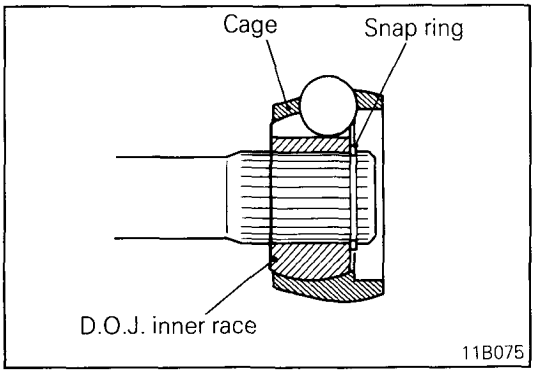
(3) Apply all the specified grease, half of it to the inner side of the B.J., and the other half to the inner side of the B.J. boot.

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



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

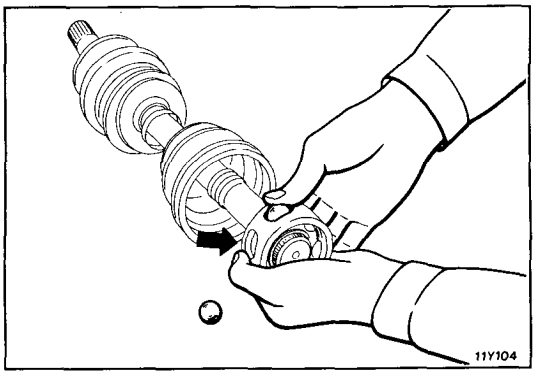
Caution
Be sure that the installation direction of the boot bands is correct.



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

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

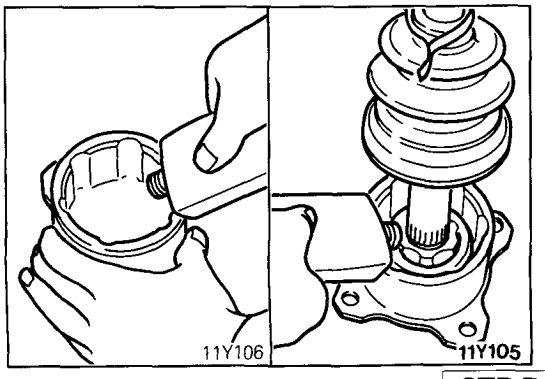
Specified grease : Repair kit grease



5. 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



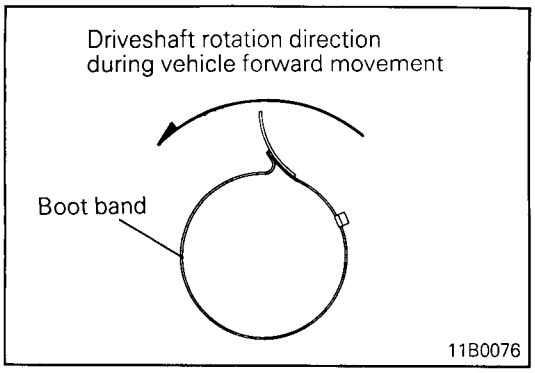
4. INSTALLATION OF D.O.J. OUTER RACE

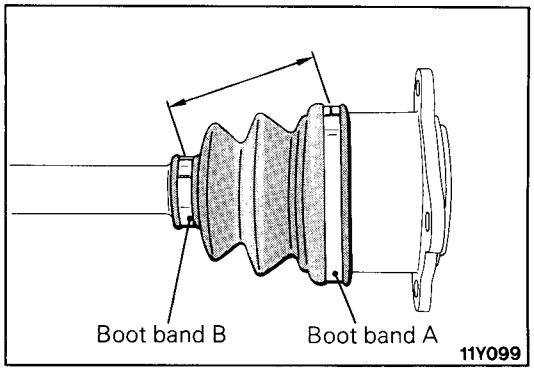
(1) Apply the specified grease to the D.O.J. outer race.

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

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

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





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

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

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

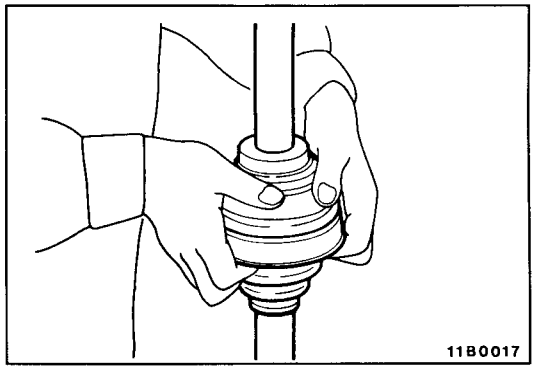
Caution
Do not secure the boot band A

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

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

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

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

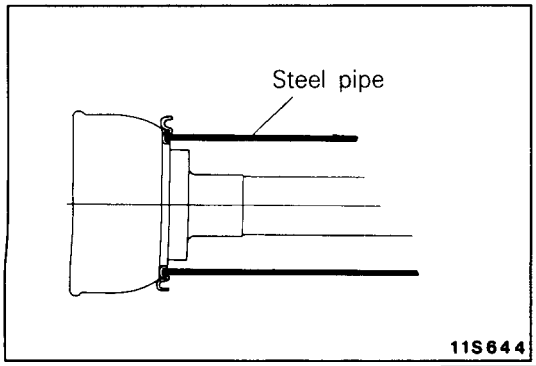


12. INSTALLATION OF BOOT PROTECTOR / 11. BOOT PROTECTOR BAND

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

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

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



10. INSTALLATION OF DUST COVER

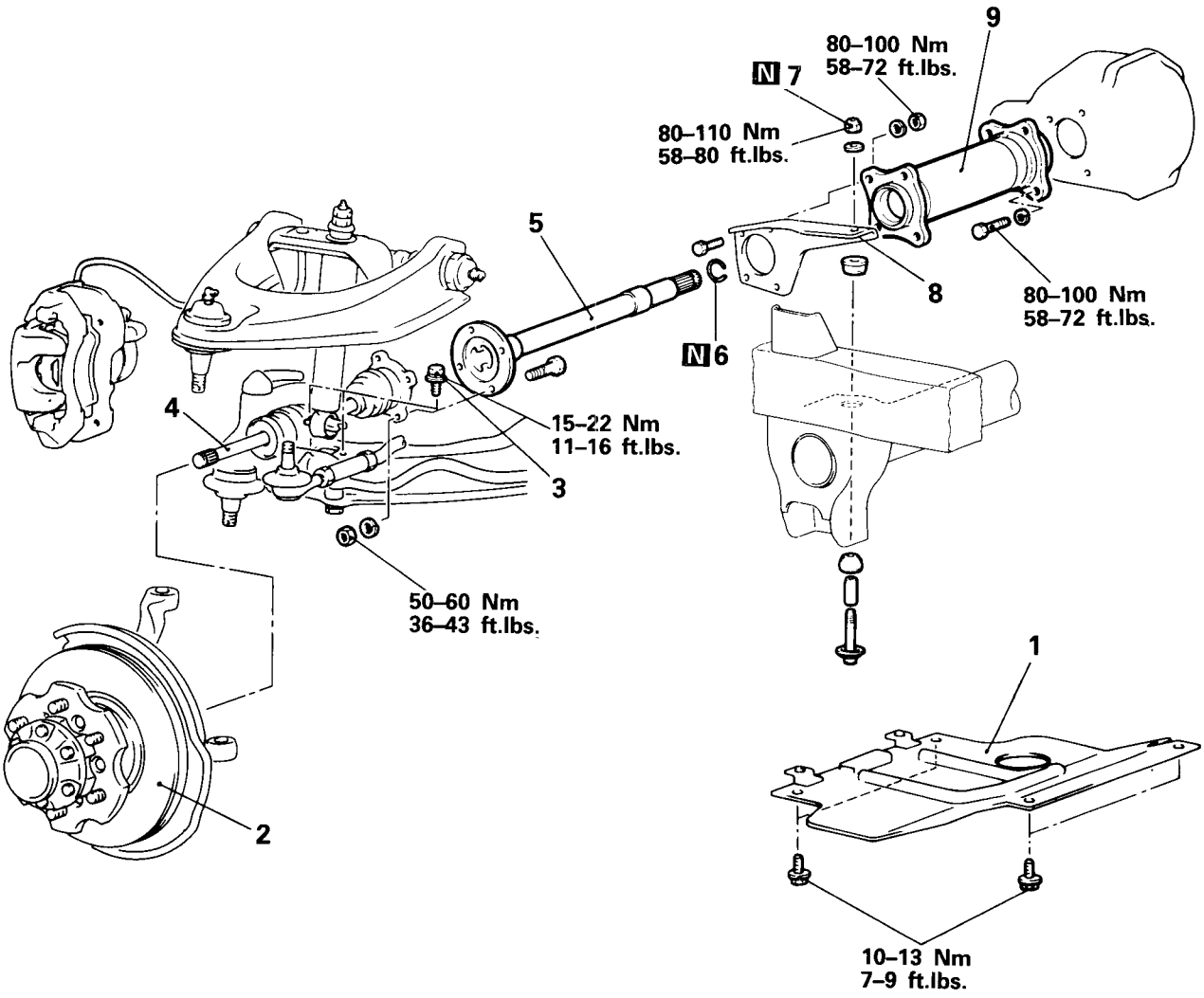
Using the steel pipe as specified below, force the dust cover to the drive shaft.

Steel Pipe	mm (in.)
Overall length	170 (6.70)
Outside diameter	68.9 (2.71)
Wall thickness	2.3 (.09)

INNER SHAFT

REMOVAL AND INSTALLATION

N02RA--



Removal steps

11W582

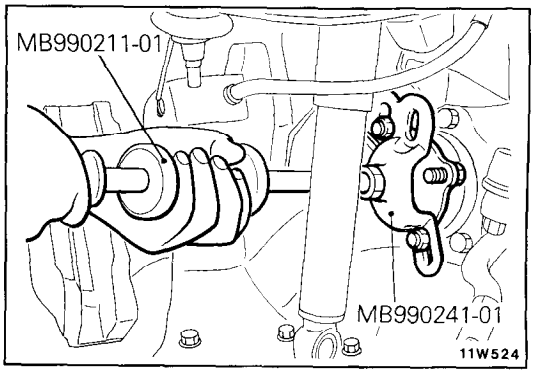
1. Under cover
2. Front hub and knuckle assembly
3. Shock absorber lower mounting bolts
4. Drive shaft assembly (R.H.)
5. Inner shaft
6. Circlip
7. Self locking nut
8. Differential mounting bracket (R.H.)
9. Housing tube

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 2-44, 52.



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 N02DAB

5. INSTALLATION OF INNER SHAFT

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

Caution

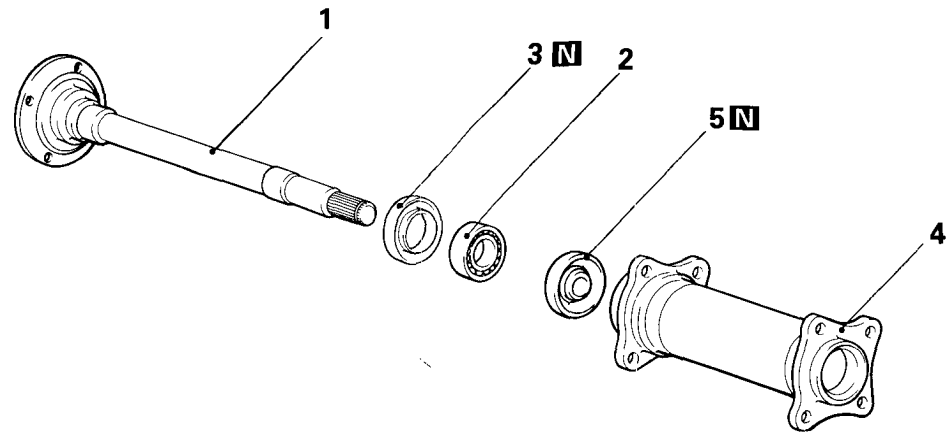
1. **Replace the circlip which is attached to the inner shaft spline part with a new one.**
2. **Be careful not to damage the lip of the dust seal and oil seal.**

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

Refer to 2-44, 52.

DISASSEMBLY AND REASSEMBLY

N02RE--

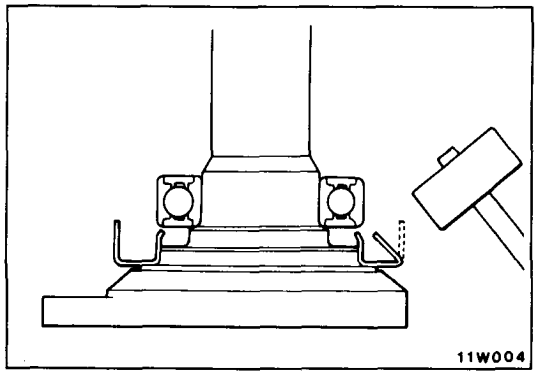


11W597

Disassembly steps

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

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

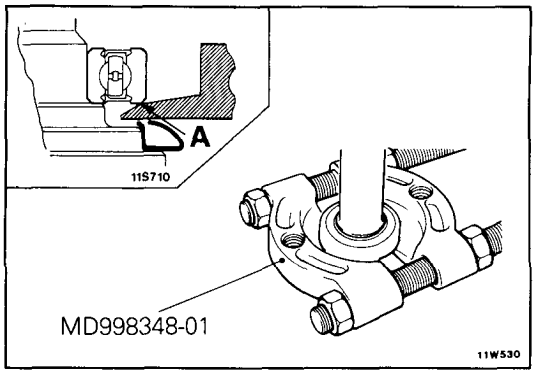


SERVICE POINTS OF DISASSEMBLY

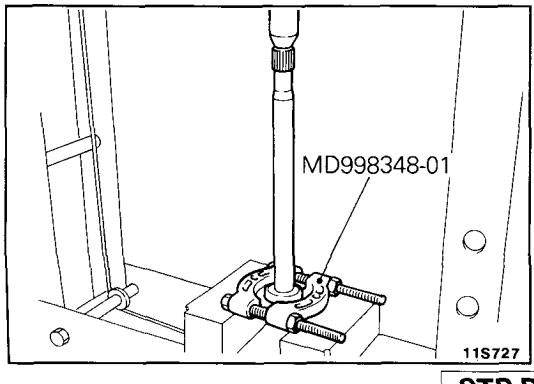
N02RFAB

2. REMOVAL OF BEARING

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



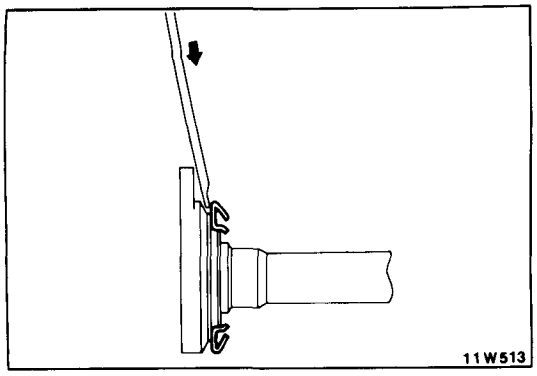
(2) After the special tool has been installed as shown, tighten the nut of the special tool until the portion "A" of the special tool touches the bearing outer race.



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

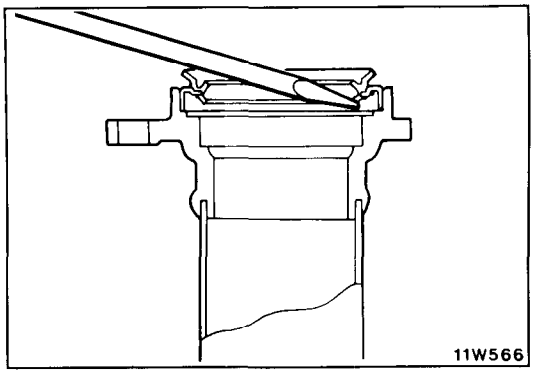
Caution
Do not allow the inner shaft to drop.

STB Revision



3. REMOVAL OF DUST COVER

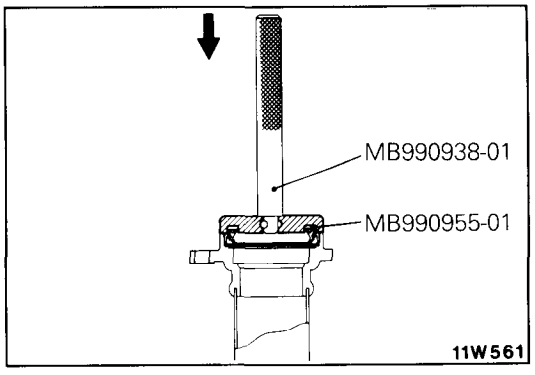
Remove the dust cover from the inner shaft.



5. REMOVAL OF DUST SEAL

Remove the dust seal from the housing tube.

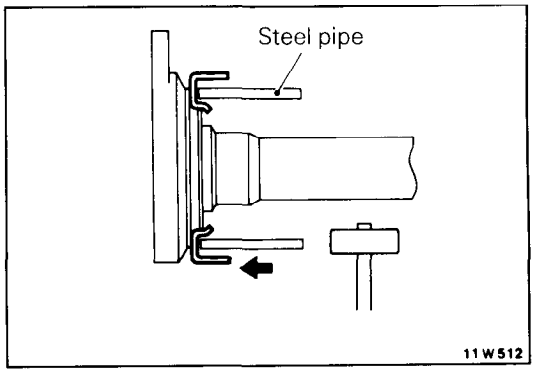
SERVICE POINTS OF REASSEMBLY NO2RHAD



5. INSTALLATION OF DUST SEAL

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

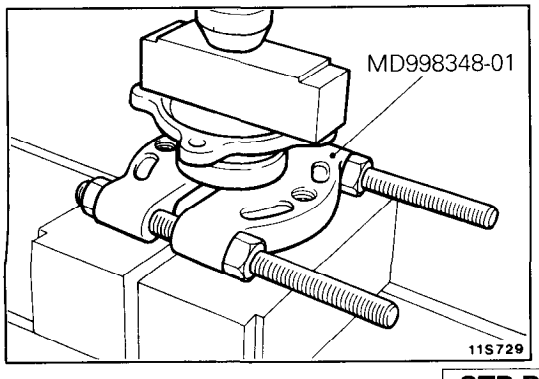
Specified grease : Multipurpose grease SAE J310, NLGI No. 2



3. INSTALLATION OF DUST COVER

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

Steel pipe	mm (in.)
Overall length	50 (1.97)
Outside diameter	75 (2.95)
Wall thickness	4 (.16)



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

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

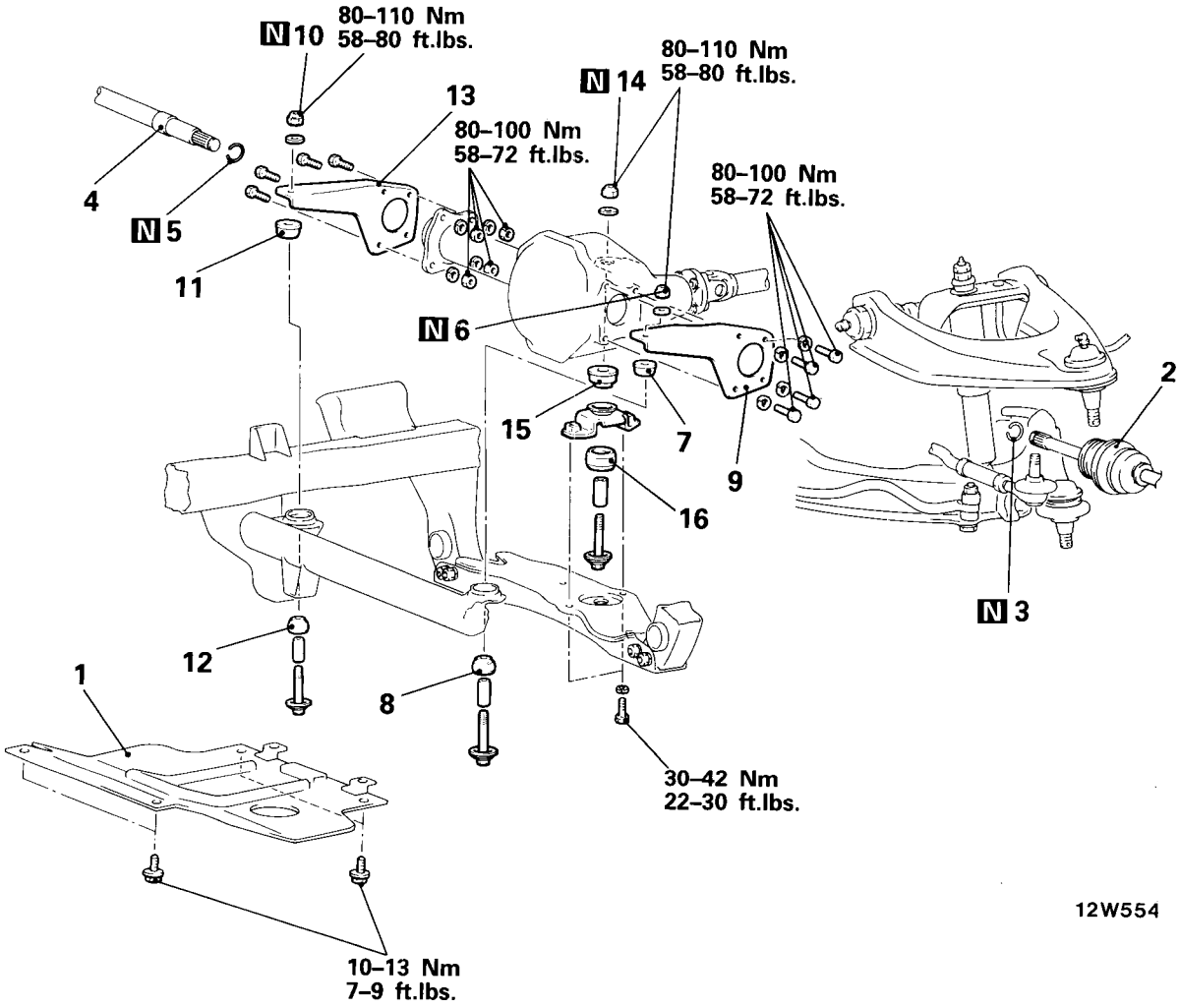
2. INSTALLATION OF BEARING

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

FRONT DIFFERENTIAL MOUNTING

REMOVAL AND INSTALLATION

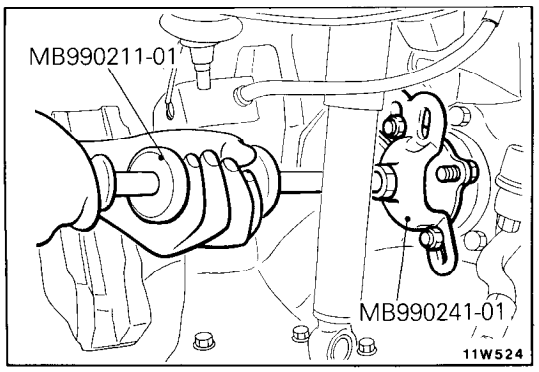
N02UA--



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.2-52.

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.**

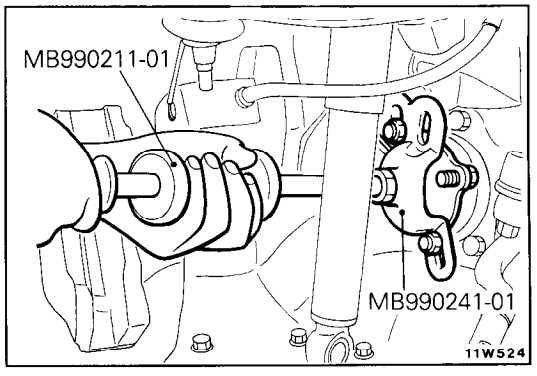
9. REMOVAL OF DIFFERENTIAL MOUNTING BRACKET (L.H.) / 13. DIFFERENTIAL MOUNTING BRACKET (R.H.)

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 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.

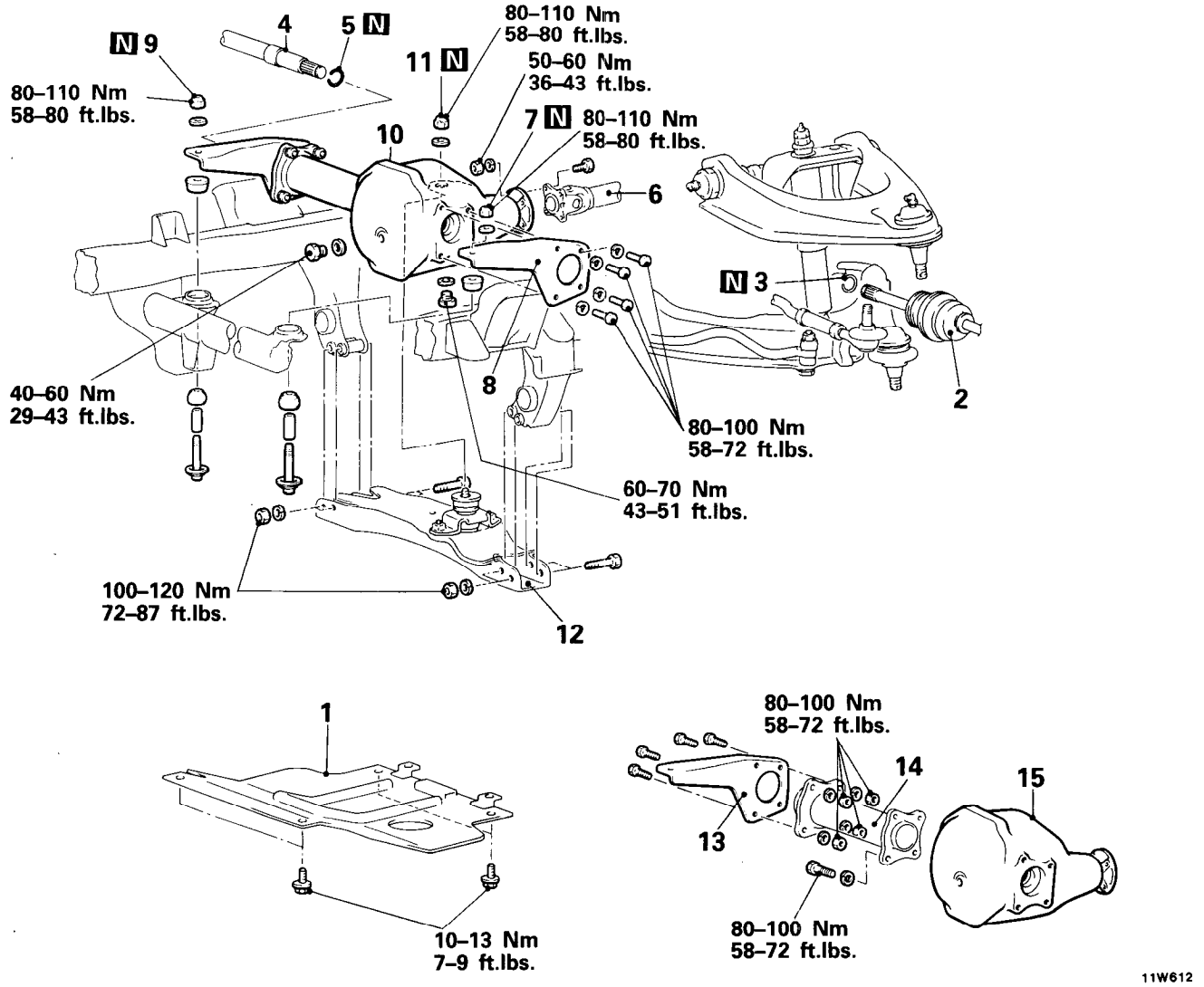
2. INSTALLATION OF DRIVE SHAFT

Refer to P.2-52.

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 (Refer to P.2-16.)

Post-installation Operation
- Supplying Gear Oil (Refer to P.2-16.)

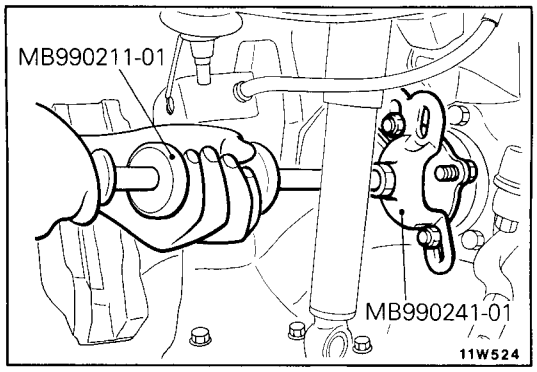
NOTE
(1) Reverse the removal procedures to reinstall.
(2) ◆◆ : Refer to "Service Points of Removal".
(3) ◆◆ : Refer to "Service Points of Installation".
(4) N : Non-reusable parts

STB Revision

SERVICE POINTS OF REMOVAL N02VBAB

2. REMOVAL OF KNUCKLE AND DRIVE SHAFT ASSEMBLY

Refer to P.2-44, 52.

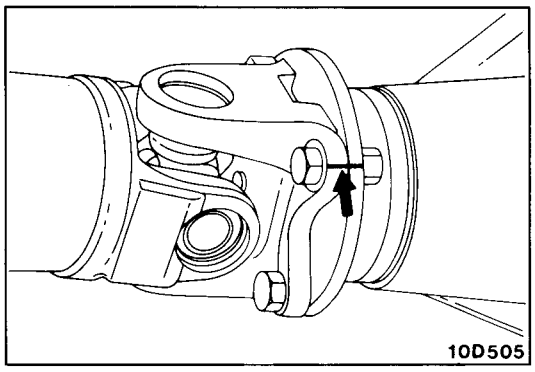


4. REMOVAL OF INNER SHAFT

Attach the special tools to the flange of the shaft, and pull 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.**

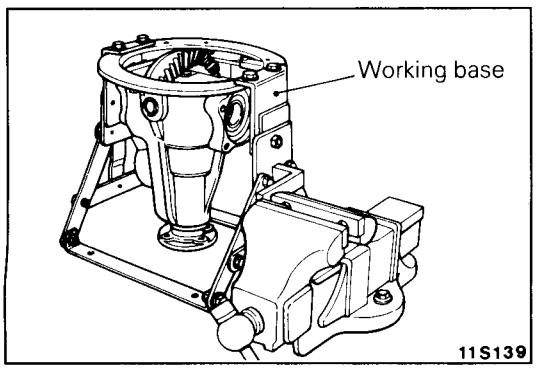


6. REMOVAL OF FRONT PROPELLER SHAFT

Make the mating marks on the flange yoke and the differential companion flange.
Detach the propeller shaft from the front differential carrier assembly.

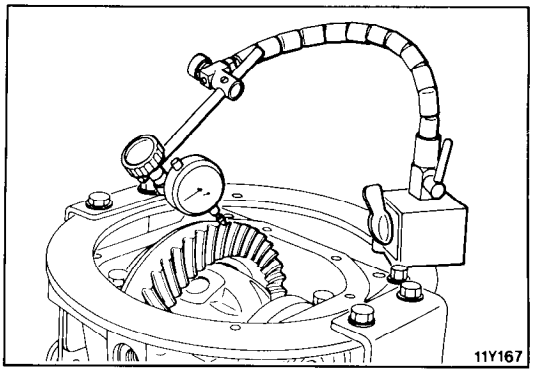
8. REMOVAL OF DIFFERENTIAL MOUNTING BRACKET (L.H.)

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



INSPECTION BEFORE DISASSEMBLY N02VCAA

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

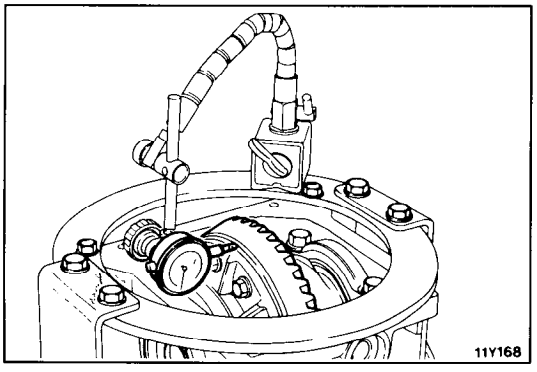
Check the final drive gear backlash by following the steps below.

(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.



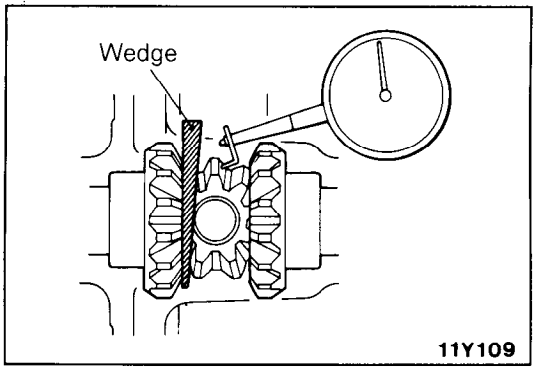
DRIVE GEAR RUNOUT

Check 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

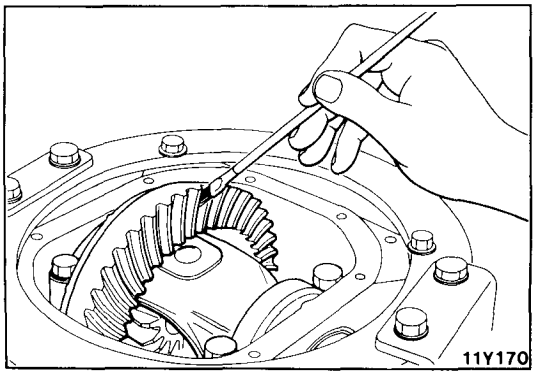
Check the differential gear backlash by following the steps below.

(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 (.0079 in.)

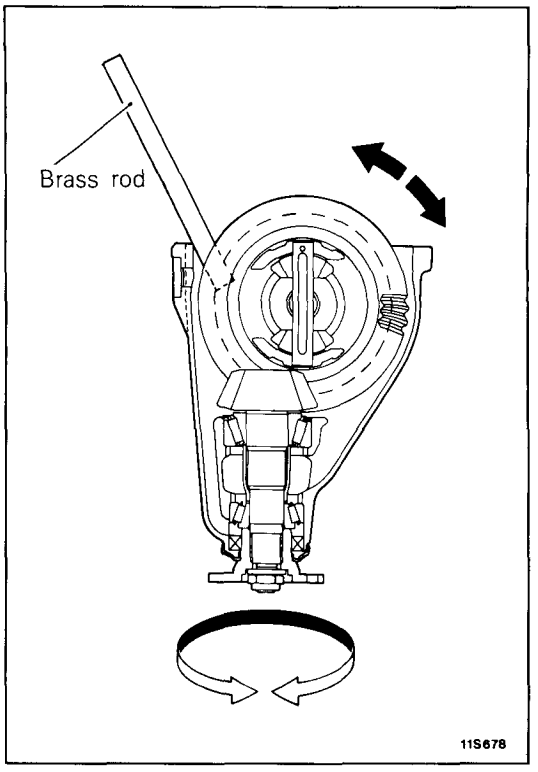
(2) If the backlash exceeds the limit, adjust by using the side gear thrust spacers.



FINAL DRIVE GEAR TOOTH CONTACT

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

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



(2) Insert the brass between the differential carrier and the differential case, and then rotate the companion flange by hand (once in the normal direction, and then once in the reverse direction) while applying a load to the drive gear so that the revolution torque [approximately 2.5 to 3.0 Nm (1.8 to 2.2 ft.lbs.)] is applied to the drive pinion.

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

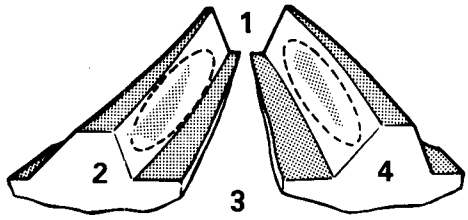
(3) Check the tooth contact condition of th drive gear and drive pinion.

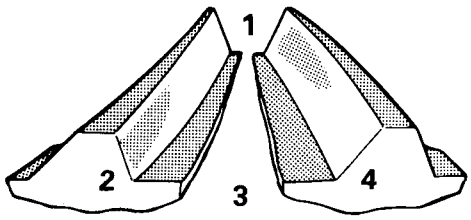
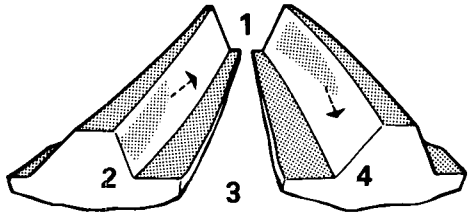
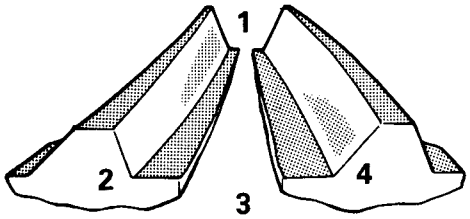
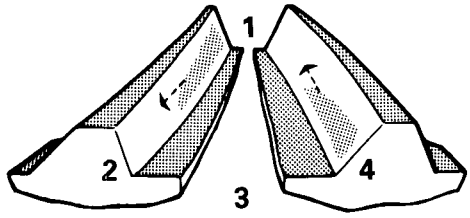
NOTE
1. Checking the tooth contack pattern is the way to confirm that the adjustments of the pinion height and backlash have been done properly.
2. Continue to adjust the pinion height and backlash nutil the tooth contact pattern resembles the standard pattern.
3. If, even after adjustments have been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

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

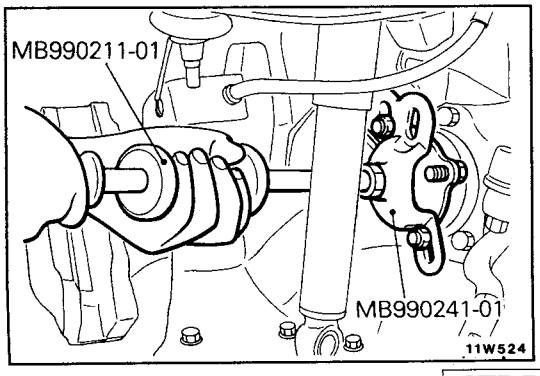
Standard tooth contact pattern

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



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

11S642



SERVICE POINTS OF INSTALLATION NO2VDAB

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.

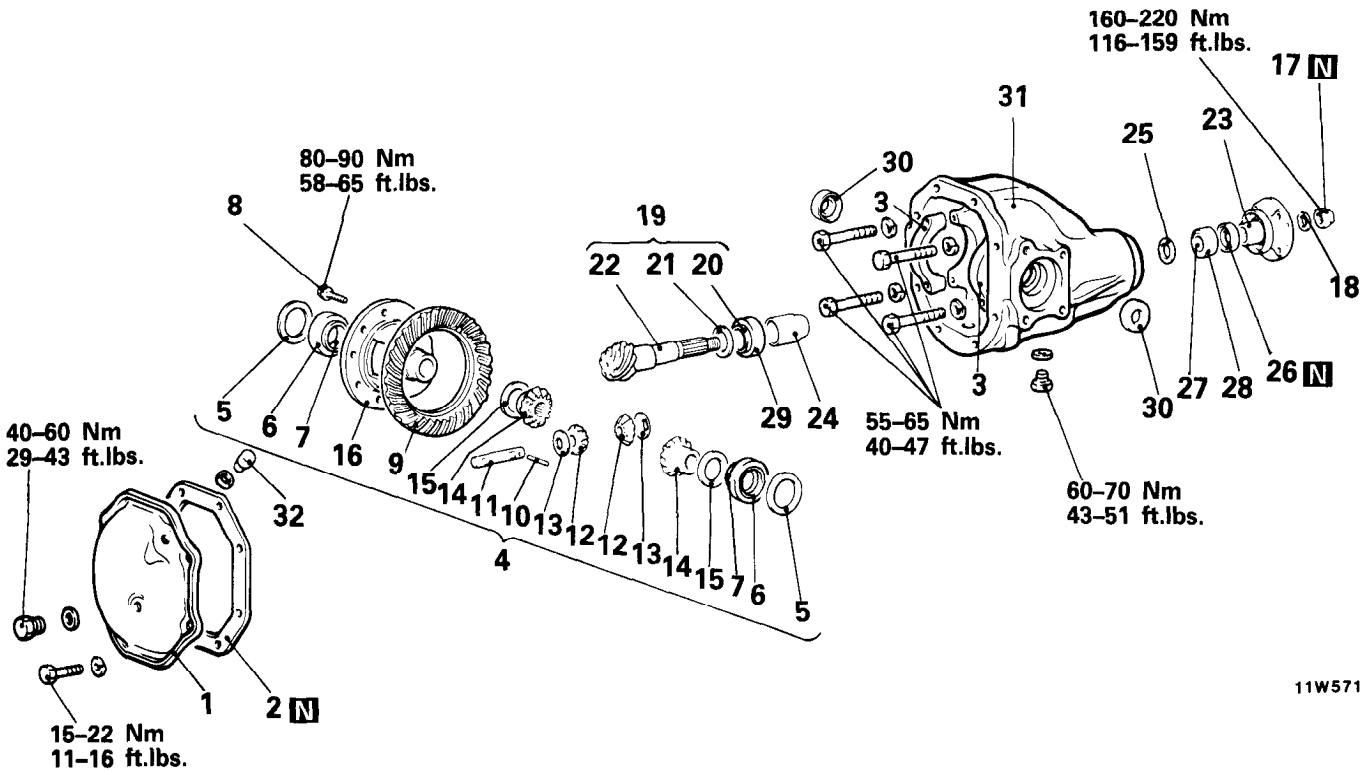
2. INSTALLATION OF DRIVE SHAFT

Refer to P.2-52.

STB Revision

DISASSEMBLY

N02VE--



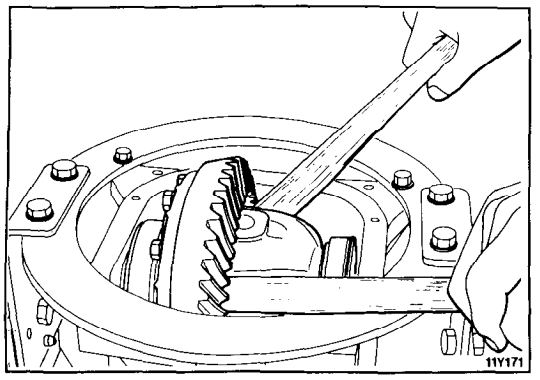
Inspection before Disassembly
- Final Drive Gear Backlash
- Drive Gear Backlash
- Differential Gear Backlash
- Final Drive Gear Tooth Contact

} Refer to P.2-69-72.

Disassembly steps

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

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



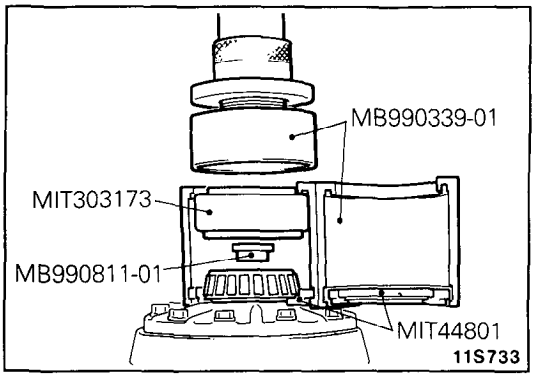
SERVICE POINTS OF DISASSEMBLY N02VFAA

4. REMOVAL OF DIFFERENTIAL CASE ASSEMBLY

Take out the differential case assembly with a hammer handle.

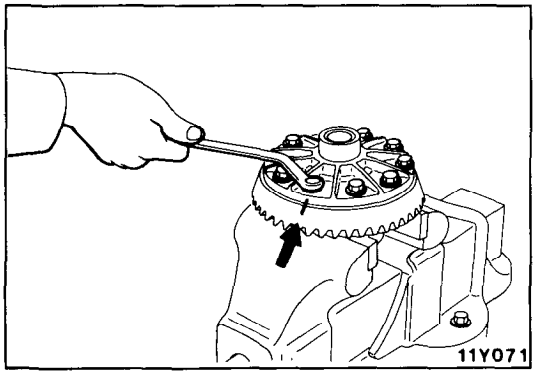
Caution
When taking out the differential case assembly, be careful not to drop and damage the side bearing outer races.

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



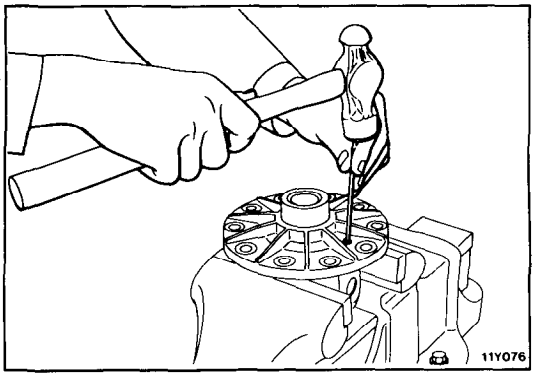
7. REMOVAL OF SIDE BEARING INNER RACES

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



9. REMOVAL OF DRIVE GEAR

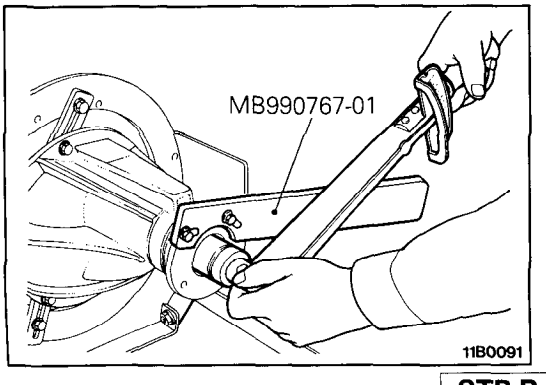
(1) Make the mating marks to the differential case and the drive gear.
(2) Loosen the drive gear attaching bolts in diagonal sequence to remove the drive gear.



10. REMOVAL OF 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.



17. REMOVAL OF COMPANION FLANGE SELF-LOCKING NUT

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

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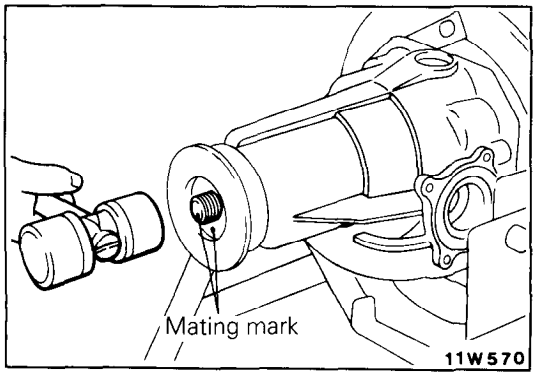
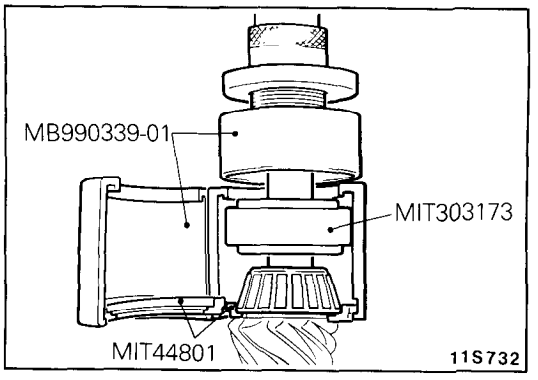


19. REMOVAL OF DRIVE PINION ASSEMBLY

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

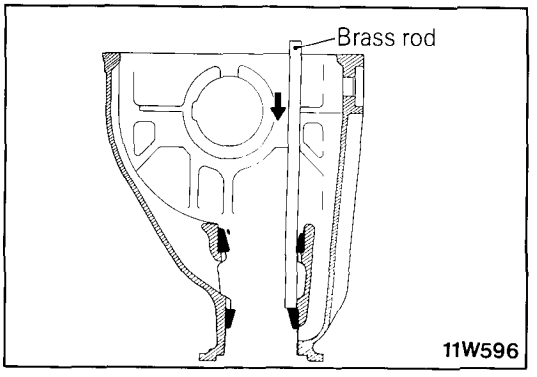
Caution
The mating mark made on the companion flange must not be on the coupling surface of the flange yoke and the front propeller shaft.

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



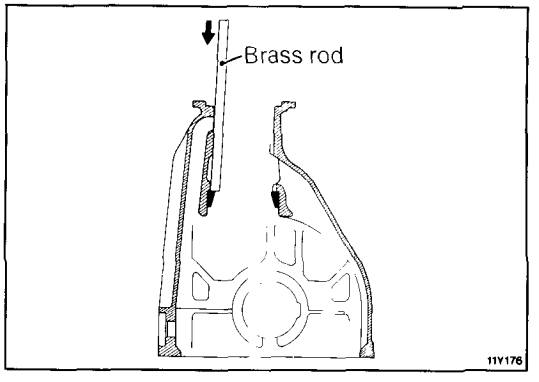
20. REMOVAL OF DRIVE PINION FRONT BEARING INNER RACE

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



28. REMOVAL OF DRIVE PINION REAR BEARING OUTER RACE

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



29. REMOVAL OF DRIVE PINION FRONT BEARING OUTER RACE

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

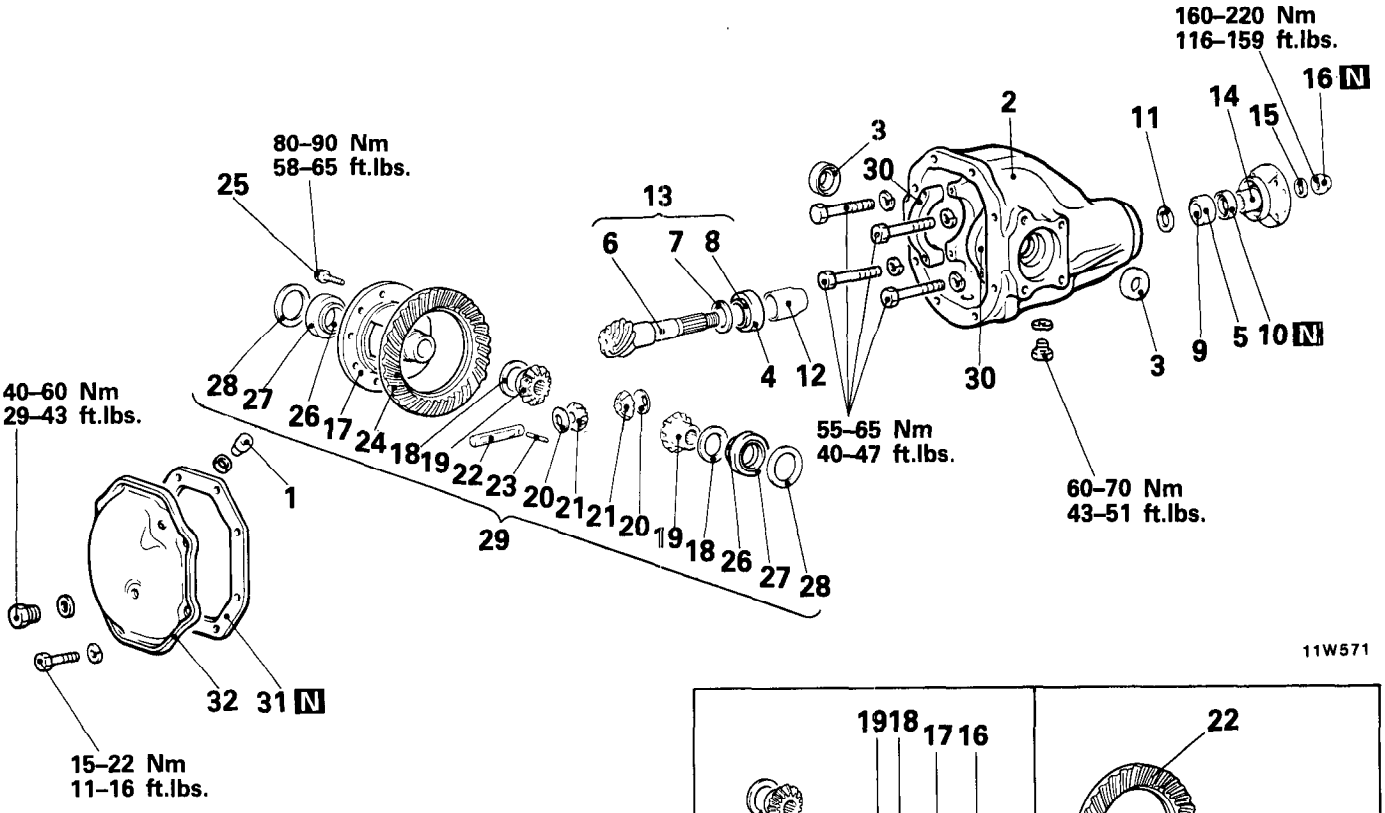
INSPECTION

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--



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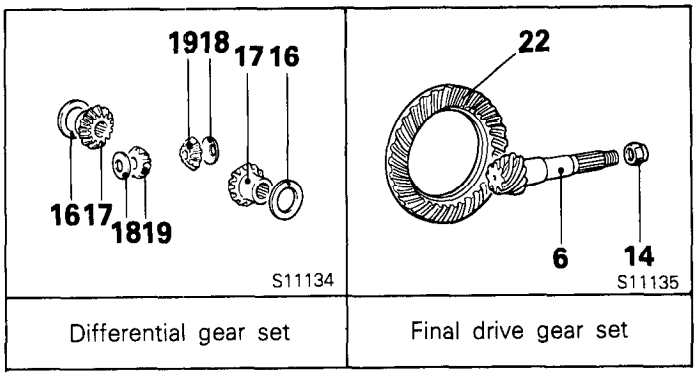


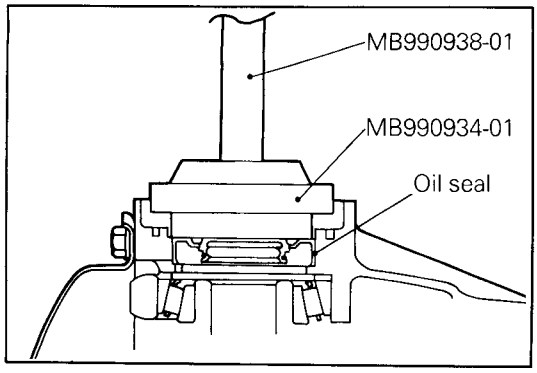
Differential gear set	Final drive gear set

Reassembly steps

1. Vent plug
2. Gear carrier
3. ◆◆ Oil seals
4. ◆◆ Drive pinion front bearing outer race
5. ◆◆ Drive pinion rear bearing outer race
- ◆◆ 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
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 backlash
28. Side bearing adjusting spacers
29. Differential case assembly
30. Bearing caps
- 31. ◆◆ Gasket
32. Cover

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

STB Revision

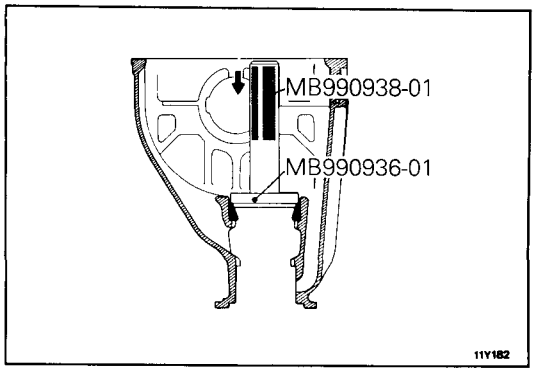


SERVICE POINTS OF REASSEMBLY N02VIAB

3. INSTALLATION OF OIL SEALS

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

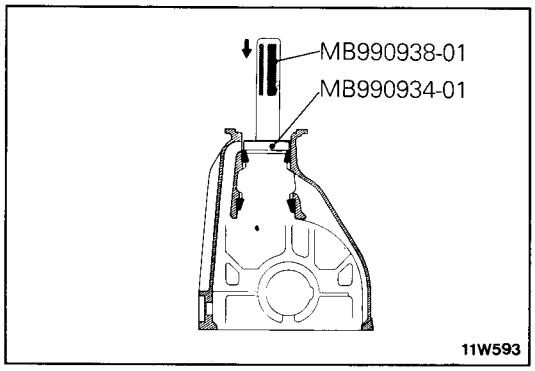
Specified grease : Multipurpose grease SAE J310, NLGI No. 2



4. INSTALLATION OF DRIVE PINION FRONT BEARING OUTER RACE

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

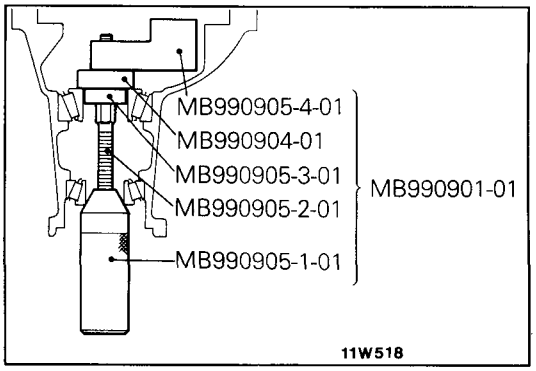
NOTE
Perform press-fitting carefully so as not to tilt the outer race.



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

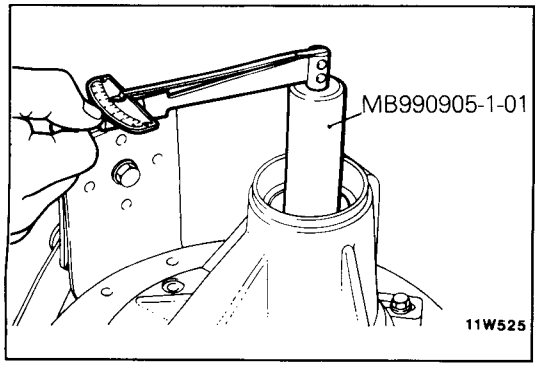
Adjustment the drive pinion height by the following procedures:

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

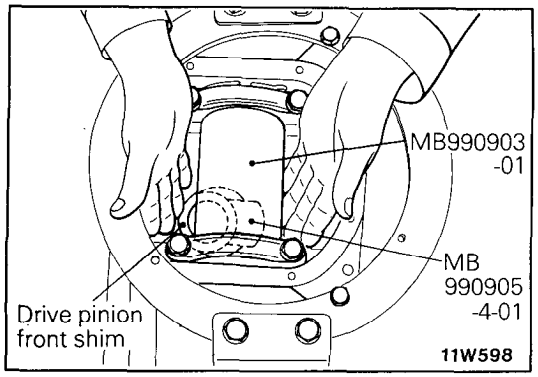
(2) Tighten the handle of the special tool until the standard value of drive pinion rotation torque is obtained.

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

Standard value : 0.4–0.5 Nm (3.5–4.3 in. lbs.)

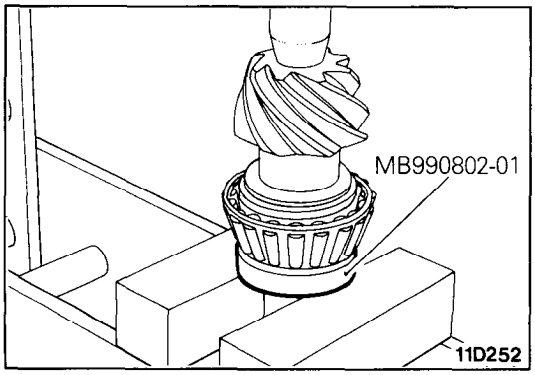


NOTE
1. Gradually tighten the hardle of the special tool while checking the drive pinion preload.
2. Because one rotation can't be made when the special tool is in contact with the gear carrier, move it a few times and, after seating the bearing, measure the rotation torque.



(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.

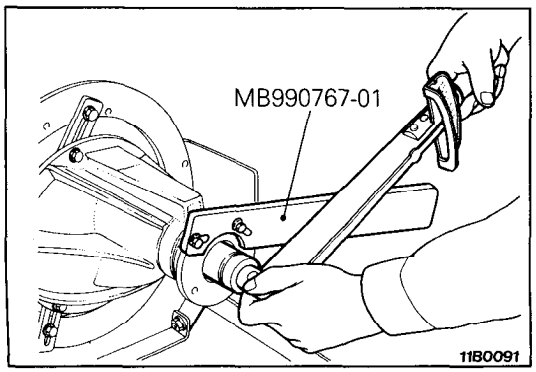
- **ADJUSTMENT OF DRIVE PINION PRELOAD**

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

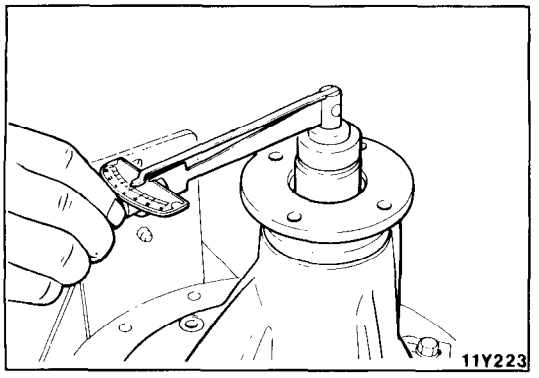
Without Oil Seal

(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.



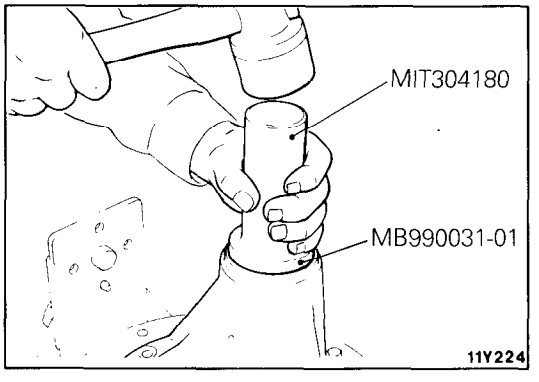
(3) Measure the drive pinion rotation torque (without the oil seal).

Standard value : 0.4–0.5 Nm (3.5-4.3 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.

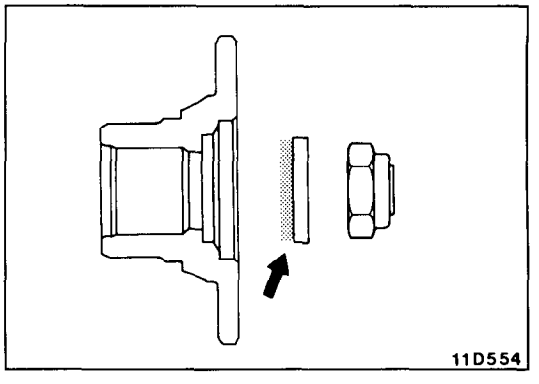
(5) Remove the companion flange and drive pinion once again.



With Oil Seal

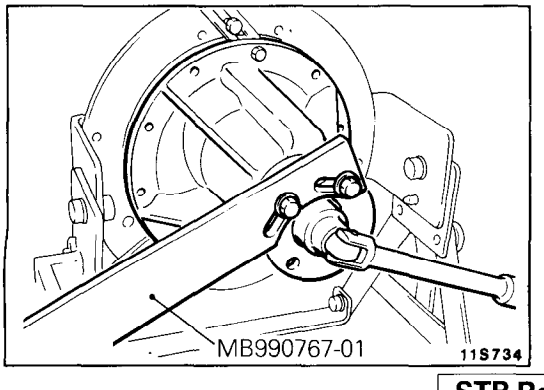
(1) After setting the drive pinion rear bearing inner race, drive the oil seal into the gear carrier front lip by using the special tool.
(2) Apply the specified grease to the oil seal lip.

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

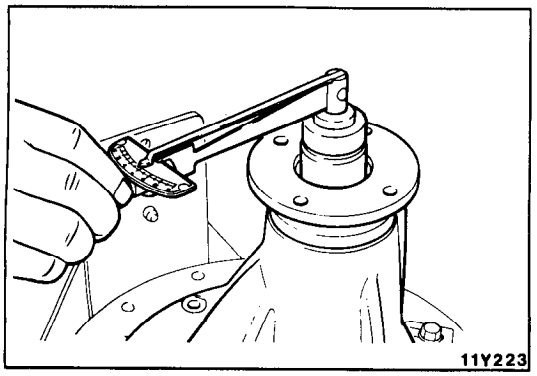


(3) Apply a thin coat of specified grease to the companion flange contacting surface of the washer before installing drive pinion assembly.

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



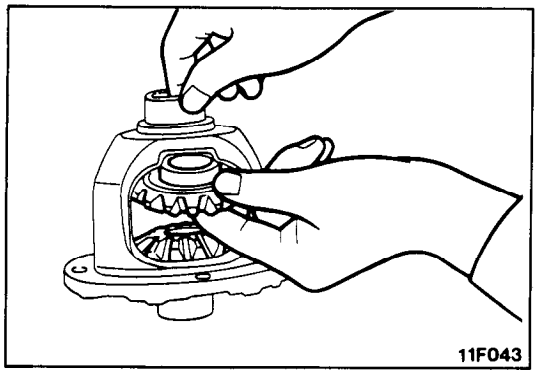
(4) Install the drive pinion assembly and companion flange with mating marks properly aligned, and tighten the companion flange self-locking nut to the specified torque by using the special tools.



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

Standard value : 0.6–0.7 Nm (5.2–6.1 in.lbs.)

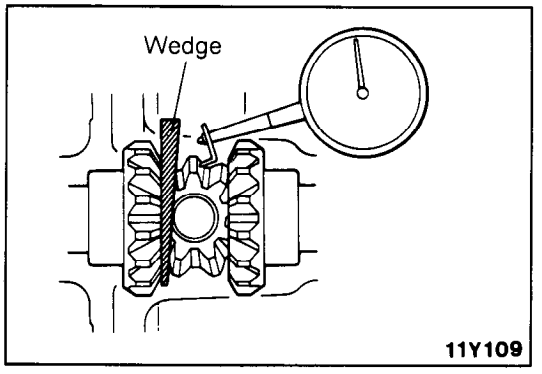
(6) If the measured value is not within the standard value range, check for faulty installation of the oil seal or faulty tightening of the self-locking nut.



- **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.

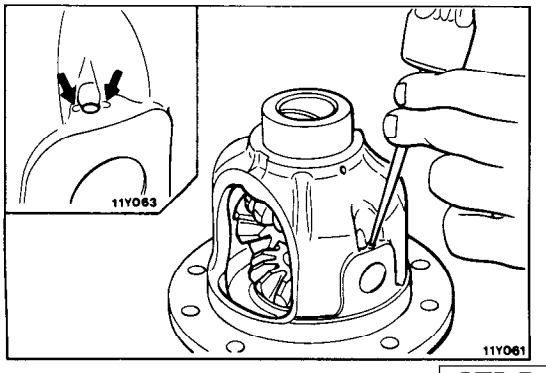
NOTE
Do not drive in the lock pin yet.



(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.

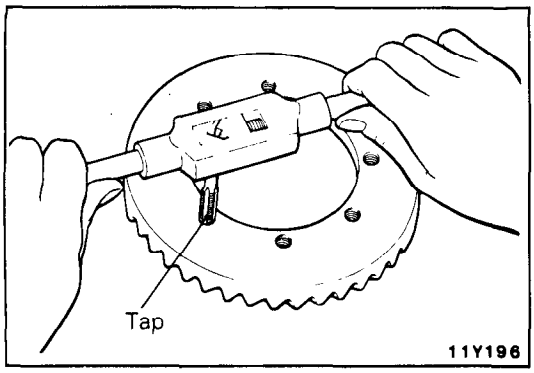
Standard value : 0–0.076 mm (0–.0030 in.)
Limit : 0.2 mm (.008 in.)

(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.



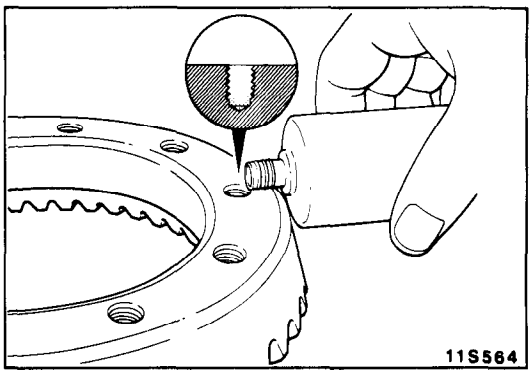
23. INSTALLATION OF LOCK PIN

(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

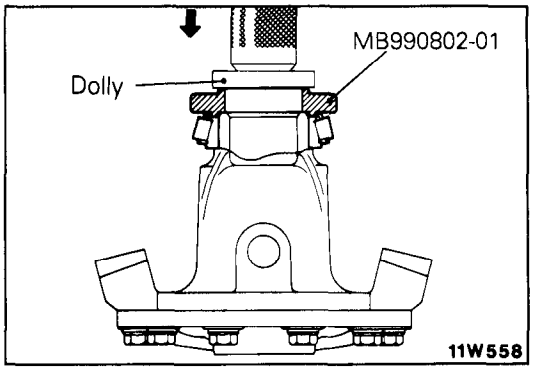
(1) Clean the drive gear attaching bolts.
(2) Remove the adhesive adhered to the threaded holes of the drive gear by turning the tap tool (M10 x 1.25), and then clean the threaded holes by applying compressed air.



(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.



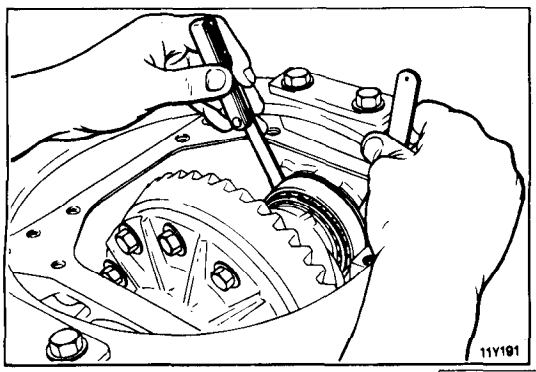
26. INSTALLATION OF SIDE BEARING INNER RACES

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

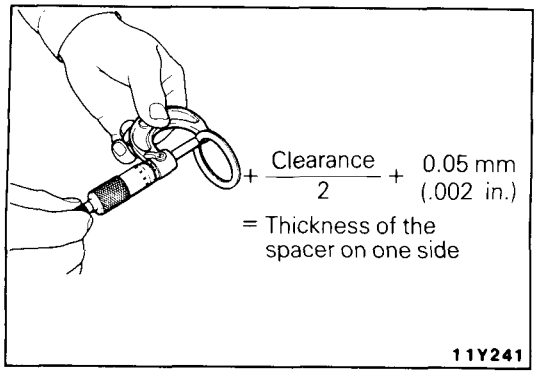
• ADJUSTMENT OF FINAL DRIVE GEAR BACKLASH

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

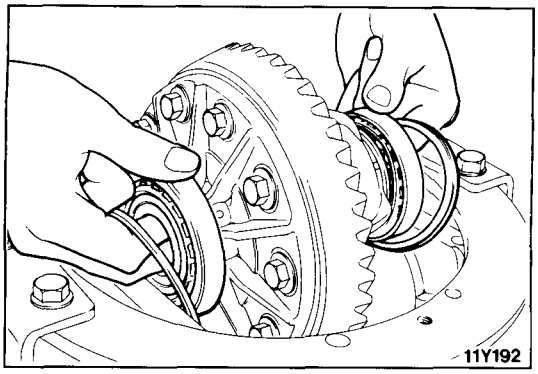
NOTE
Select side bearing adjusting spacers with the same thickness for both the drive pinion side and the drive gear side.



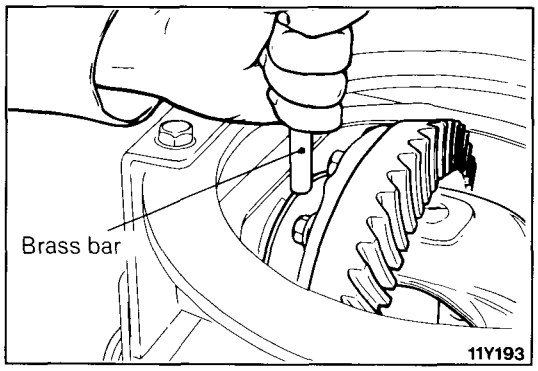
(2) Push the differential case assembly to one side, and measure the clearance between the gear carrier and the side bearing adjusting spacer with a feeler gauge.



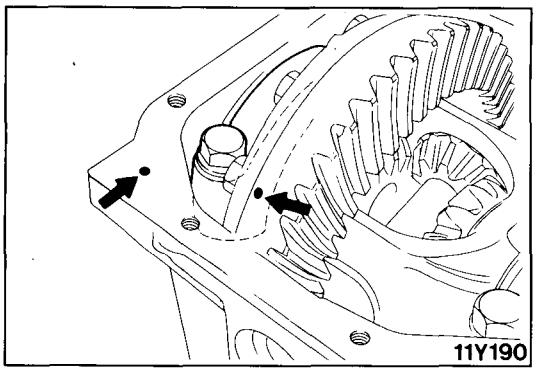
(3)Measure the thickness of the side bearing adjusting spacers on one side, select two pairs of spacers which correspond to that thickness plus one half of the clearance plus 0.05 mm (.002 in.), and then install one pair each to the drive pinion side and the drive gear side.



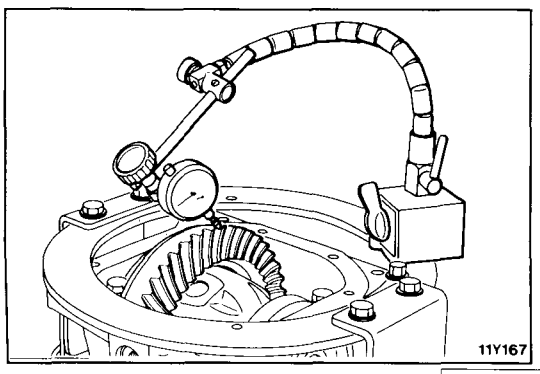
(4)Install the side bearing adjusting spacers and differential case assembly, as shown in the illustration, to the gear carrier.



(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.)

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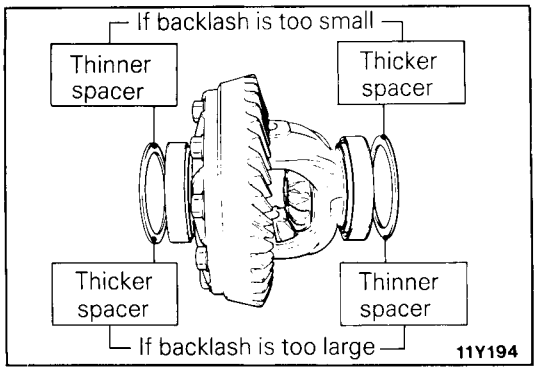

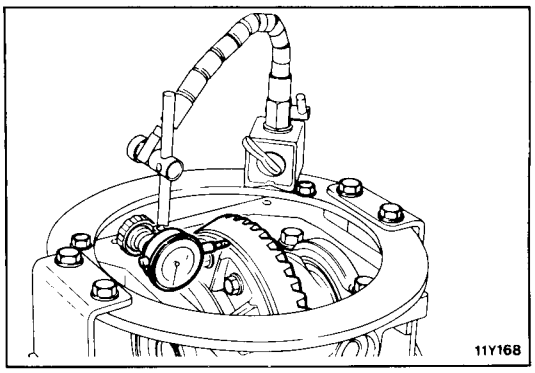

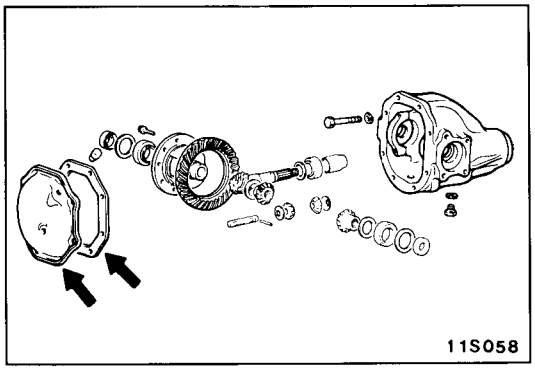

(8) Change the side bearing adjusting spacers as illustrated, and then adjust the final drive gear backlash between the drive gear and the drive pinion.

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

(9) Check the drive gear and drive pinion for tooth contact. If poor contact is evident, make adjustment. (Refer to P.2-71)

(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 GASKET

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

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