
FRONT SUSPENSION

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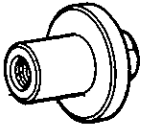
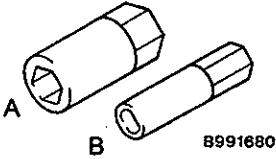
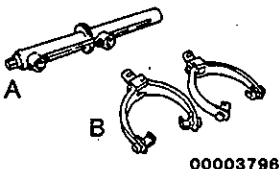
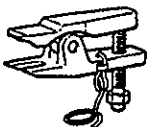



SERVICE SPECIFICATIONS

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Items		Standard value
Toe-in	At the centre of tyre tread mm	0 ± 3
	Toe-angle (per wheel)	$0^{\circ}00' \pm 09'$
Toe-out angle on turns (inner wheel when outer wheel at 20°)		$21^{\circ}48'$
Steering angle	Inner wheel	$38^{\circ}00' \pm 1^{\circ}30'$
	Outer wheel	$31^{\circ}00'$
Camber		$0^{\circ}00' \pm 30'$ (difference between right and left wheel: less than $30'$)
Caster		$2^{\circ}51' \pm 30'$ (difference between right and left wheel: less than $30'$)
Kingpin inclination		$12^{\circ}52'$
Lower arm ball joint starting torque Nm		1.0 – 6.4
Lower arm ball joint turning torque Nm		1.0–2.5
Protruding length of stabilizer bar mounting bolt mm		22

SPECIAL TOOLS

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Tools	Number	Name	Use
	MB991004	Wheel alignment gauge attachment	Measurement of the wheel alignment
	MB991680 A: MB991681 B: MB991682	Wrench set A: Wrench B: Socket	Disassembly/assembly of the strut assembly
	A: MB991237 B: MB991238	A: Spring compressor body B: Arm set	Compression of the front coil spring
	MB991113	Steering linkage puller	Removal of the ball joint
	MB990800	Ball joint remover and installer	Installation of the dust cover
	MB990326	Preload socket	Measurement of the ball joint rotation starting torque and turning torque
	MB990968	Torque wrench	

ON-VEHICLE SERVICE

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FRONT WHEEL ALIGNMENT CHECK AND ADJUSTMENT

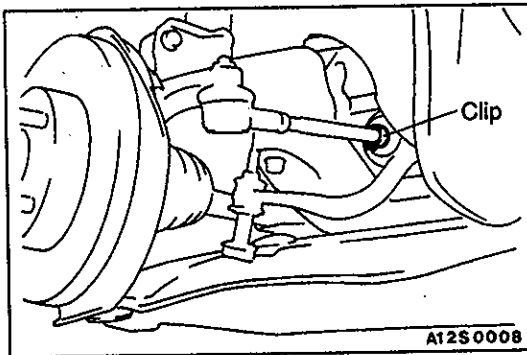
Measure the wheel alignment with the vehicle parked on a level surface.

The front suspension, steering system, and wheels should be serviced to normal condition prior to measurement of wheel alignment.

TOE-IN**Standard value:**

At the centre of tyre tread 0 ± 3 mm

Toe angle (per wheel) $0^{\circ}00' \pm 09'$

**NOTE**

1. If the toe-in is not within the standard value, adjust the toe-in by undoing the clips and turning the left and right tie rod turn buckles by the same amount (in opposite directions).
2. The toe will move out as the left turnbuckle is turned toward the front of the vehicle and the right turnbuckle is turned toward the rear of the vehicle.
For each one turn of the left and right tie rods, the toe-in will be adjusted by approx. $1^{\circ}05'$ (per wheel).

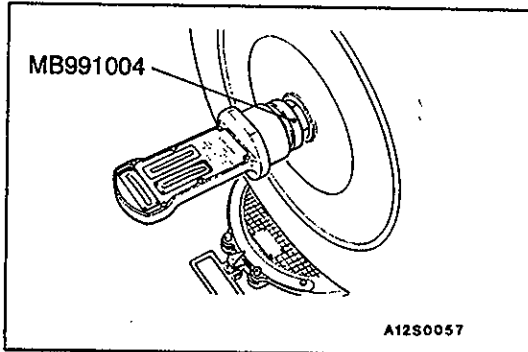
TOE-OUT ANGLE ON TURNS

To check the steering linkage, especially after the vehicle has been involved in an accident or if an accident is presumed, it is advisable to check the toe-out angle on turns in addition to the wheel alignment.

Conduct this test on the left turn as well as on the right turn.

Standard value:

$21^{\circ}48'$ (inner wheel when outer wheel at 20°)

STEERING ANGLE**Standard value:**Inner wheel $38^{\circ}00' \pm 1^{\circ}30'$ Outer wheel $31^{\circ}00'$ **CAMBER, CASTER AND KINGPIN INCLINATION****Standard value:**Camber $0^{\circ}00' \pm 30'$ (difference between right and left wheel: less than $30'$)Caster $2^{\circ}51' \pm 30'$ (difference between right and left wheel: less than $30'$)Kingpin inclination $12^{\circ}52'$ **NOTE**

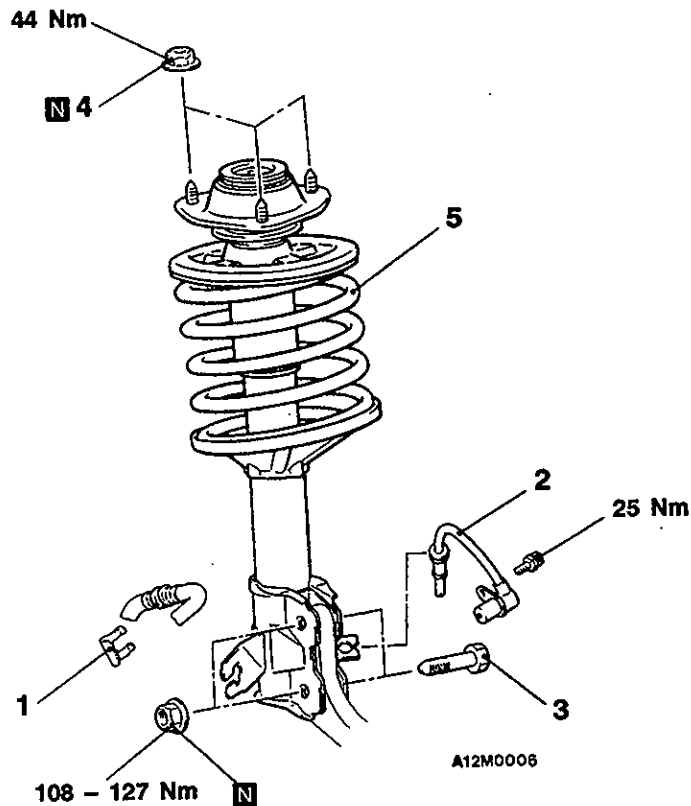
1. Camber and caster are preset at the factory and cannot be adjusted.
2. If camber is not within the standard value, check and replace bent or damaged parts.
3. For vehicles with aluminium type wheels, attach the camber/caster/kingpin gauge to the drive shaft by using the special tool. Tighten the special tool to the same torque 216–255 Nm as the drive shaft nut.

Caution

Never subject the wheel bearings to the vehicle load when the drive shaft nuts are loosened.

STRUT ASSEMBLY**REMOVAL AND INSTALLATION****Post-Installation Operation**

- Front Wheel Alignment Adjustment
(Refer to P.33A-5.)

**Removal steps**

1. Brake hose clamp
2. Front speed sensor
<Vehicles with ABS>
3. Bolts
4. Self-locking nut
5. Strut assembly

Caution

For vehicles with ABS, be careful when handling the pole piece at the tip of the speed sensor so as not to damage it by striking against other parts.

REMOVAL SERVICE POINT**◀▶ BOLTS REMOVAL**

- (1) Suspend the lower arm from the vehicle with wire.
- (2) Remove the strut and knuckle connection.

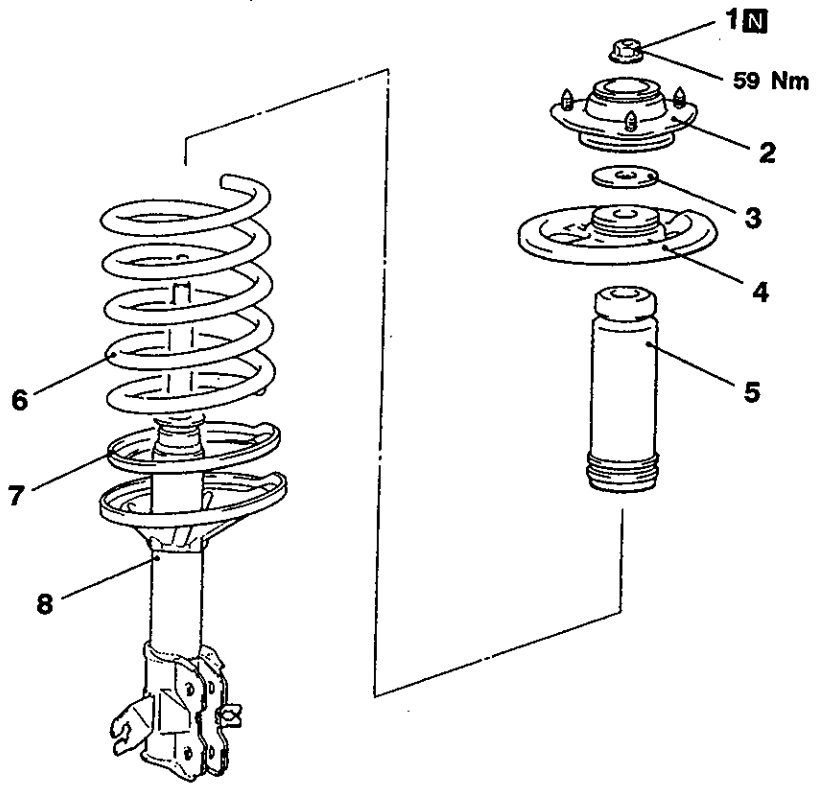
INSPECTION

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- Check for oil leaks from the strut assembly.
- Check the strut assembly for damage or deformation.

DISASSEMBLY AND REASSEMBLY

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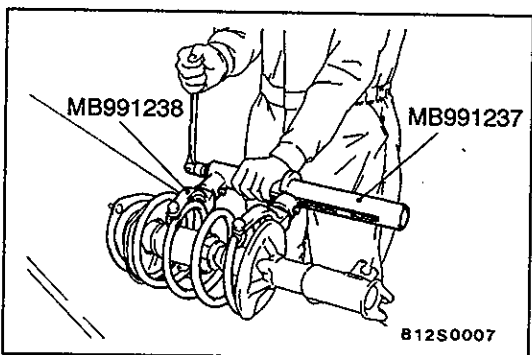
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Disassembly steps



1. Self-locking nut
2. Strut insulator
3. Washer
4. Spring seat, upper

5. Bump rubber
6. Coil spring
7. Spring pad, lower
8. Strut assembly



DISASSEMBLY SERVICE POINTS

◀A▶ SELF-LOCKING NUT REMOVAL

(1) Use the special tools to compress the coil spring.

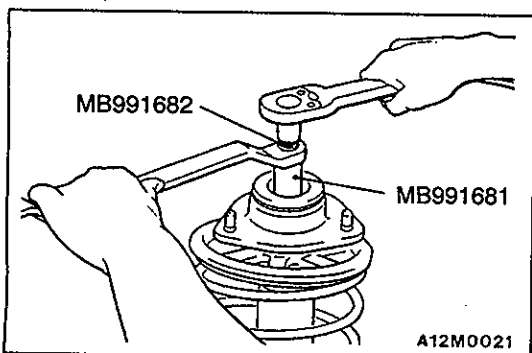
Caution

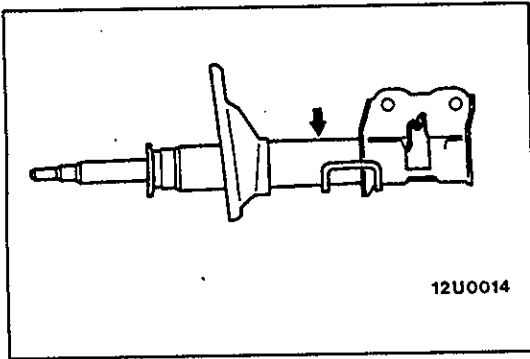
1. Install the special tools evenly, and so that the maximum length will be attained within the installation range.
2. Do not use an impact wrench to tighten the special tool bolt.

(2) Use the special tools to remove the self-locking nut.

Caution

Do not use an impact wrench.





►B◄ **STRUT ASSEMBLY REMOVAL <VEHICLES WITHOUT HIGH GROUND CLEARANCE SUSPENSION>**

To discard the strut assembly, place the assembly horizontally with its piston rod extended. Then drill a hole approx. 3 mm in diameter at the location shown in the illustration and discharge the gas.

Caution

The gas itself is harmless but it may issue out of the hole together with chips generated by the drill. Therefore, be sure to wear goggles.

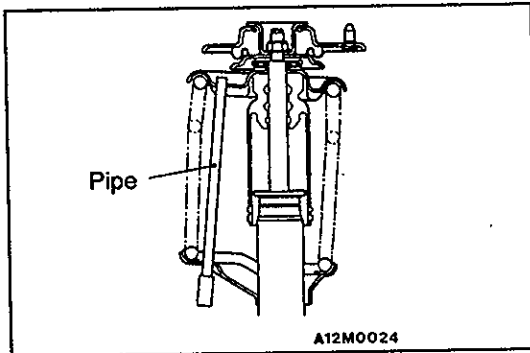
REASSEMBLY SERVICE POINT

►A◄ **SELF-LOCKING NUT INSTALLATION**

- (1) With the coil spring held compressed by the special tools (MB991237 and MB991238), provisionally tighten the self-locking nut.

Caution

Do not use an impact wrench to tighten the special tool bolt.

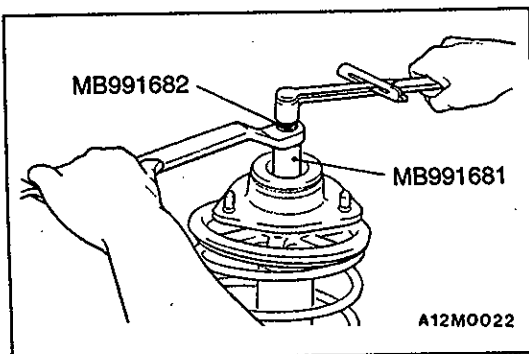


- (2) Line up the holes in the strut assembly spring lower seat with the hole in the spring upper seat.

NOTE

The job is easily accomplished with a pipe.

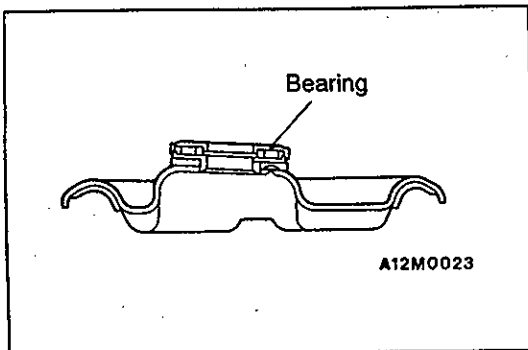
- (3) Correctly align both ends of the coil spring with the grooves in the spring seat, and then loosen the special tools (MB991237 and MB991238).



- (4) Using the special tool, tighten the self-locking nut to the specified torque.

Caution

Do not use an impact wrench.



INSPECTION

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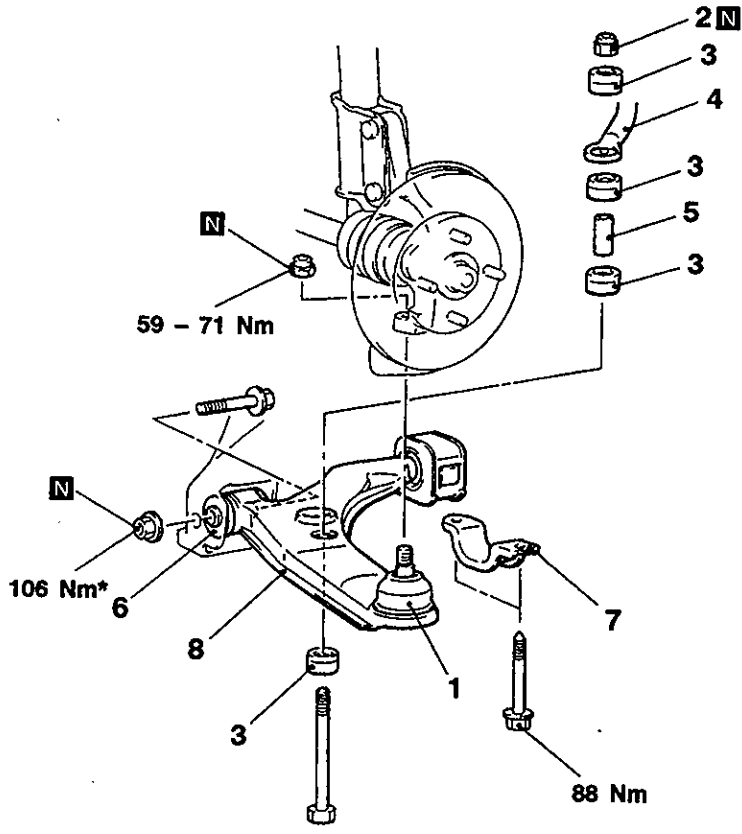
- Check the bearing for wear or rust.
- Check the rubber parts for damage or deterioration.
- Check the spring for deformation, deterioration or damage.
- Check the shock absorber for deformation.

LOWER ARM

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REMOVAL AND INSTALLATION

Post-installation Operation
 • Front Wheel Alignment Adjustment
 (Refer to P.33A-5.)



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Removal steps



1. Lower arm ball joint connection
2. Self-locking nut
3. Stabilizer rubber
4. Stabilizer bar
5. Collar
6. Lower arm front bushing connection

7. Support bracket
8. Lower arm assembly

Caution
 *: Indicates parts which should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.

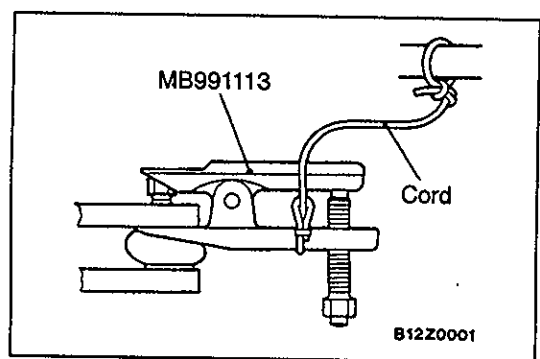
REMOVAL SERVICE POINT

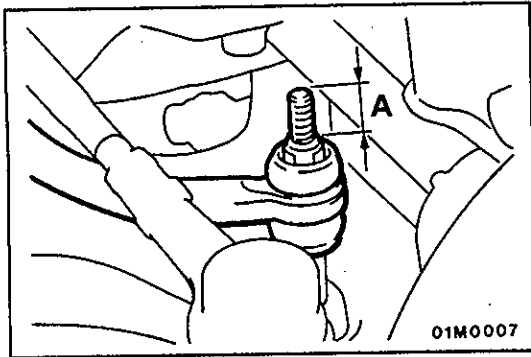
LOWER ARM BALL JOINT DISCONNECTION

Use the special tool to disconnect the lower arm ball joint from the knuckle.

Caution

1. Using the special tool, loosen the tie rod end mounting nut. Only loosen the nut; do not remove it from the ball joint.
2. Support the special tool with a cord, etc. to prevent it from coming off.



**INSTALLATION SERVICE POINT****▶A◀ SELF-LOCKING NUT INSTALLATION**

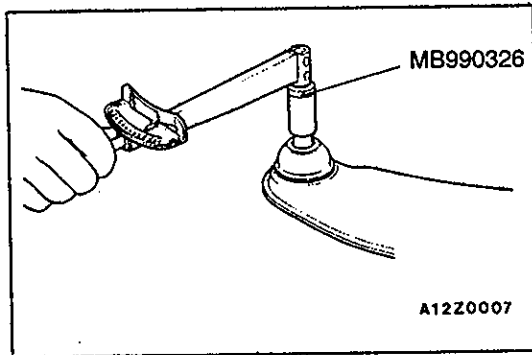
Tighten the self-locking nut so that the amount of protrusion of the end of the stabilizer bar mounting bolt is at the standard value.

Standard value (A): 22 mm

INSPECTION

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- Check the bushing for wear and deterioration.
- Check the lower arm for bend or breakage.
- Check the support bracket for deterioration or damage.
- Check the ball joint dust cover for cracks.
- Check all bolts for condition and straightness.

**BALL JOINT STARTING TORQUE/TURNING TORQUE CHECK**

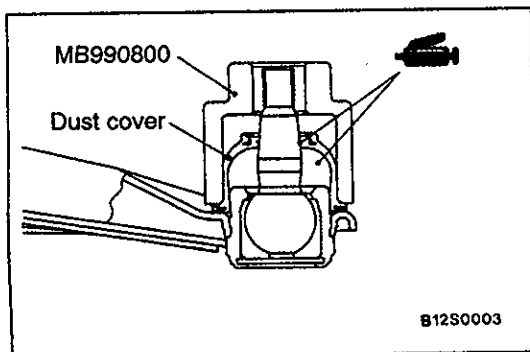
- (1) After shaking the ball joint stud several times, install the nut to the stud and use the special tool to measure the starting/turning torque of the ball joint.

Standard value:

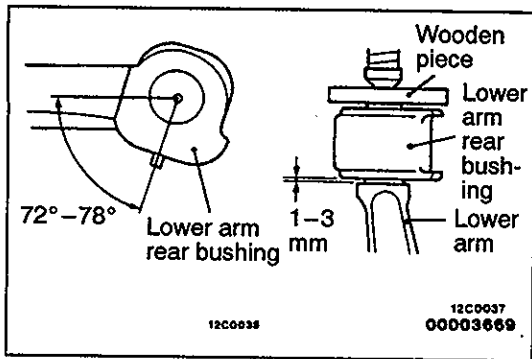
Starting torque 1.0–6.4 Nm

Turning torque 1.0–2.5 Nm

- (2) If the measured values exceed the standard values, replace the ball joint.
- (3) If the measured values are lower than the standard values, check that the ball joint does not feel stiff. If it doesn't feel stiff, it is possible to use the ball joint.

**BALL JOINT DUST COVER REPLACEMENT**

- (1) Remove the dust cover.
- (2) Apply multipurpose grease to the lip and inside of the dust cover.
- (3) Drive in the dust cover with special tool until it is fully seated.



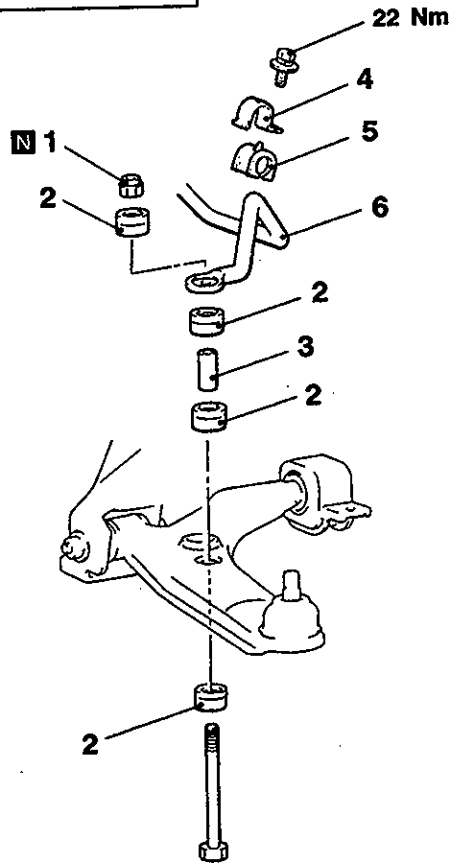
LOWER ARM REAR BUSHING REPLACEMENT

- (1) Apply soapy water between the shaft and old bushing, and pry up bushing using a screwdriver.
- (2) Apply soapy water to the shaft and new bushing and install new bushing into the shaft at the angle shown in the illustration.
- (3) Press in the bushing as illustrated.

STABILIZER BAR

REMOVAL AND INSTALLATION

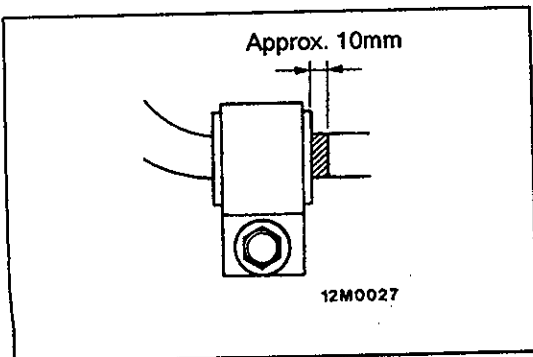
Pre-removal and Post-Installation Operation
 • Crossmember Removal and Installation
 (Refer to GROUP 32 – Crossmember.)



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- Removal steps**
- ▶B◀ 1. Self-locking nut
 - 2. Stabilizer rubber
 - 3. Collar

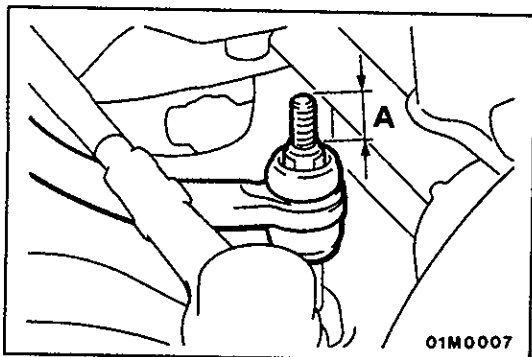
- ▶A◀ 4. Fixture
- ▶A◀ 5. Bushing
- 6. Stabilizer bar



INSTALLATION SERVICE POINT

▶A◀ BUSHING/FIXTURE INSTALLATION

Place the identification mark of the stabilizer bar to the left, and install the bushing so that the identification mark protrudes approximately 10 mm from the edge of the inside of the bushing.

**▶B◀ SELF-LOCKING NUT INSTALLATION**

Tighten the self-locking nut so that the amount of protrusion of the end of the stabilizer bar mounting bolt is at the standard value.

Standard value (A): 22 mm

INSPECTION

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- Check the bushing for wear and deterioration.
- Check the stabilizer bar for deterioration or damage.