
FRONT SUSPENSION

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GENERAL INFORMATION

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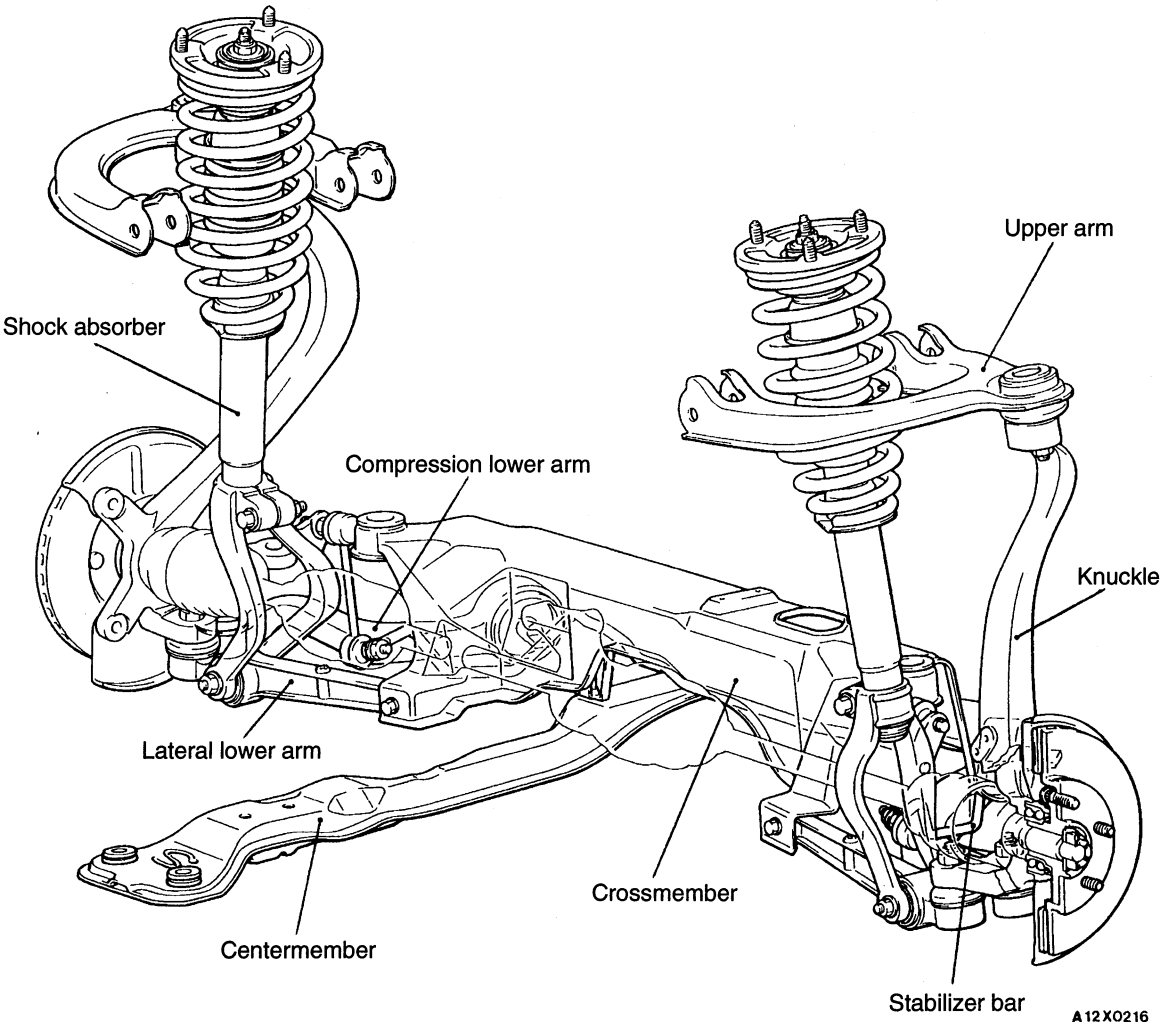
The front suspension is of a multi-link construction with two lower arms which create the ideal virtual kingpin axis for the suspension system. In addition,

by mounting the upper arm in a higher position than the tires, excellent steering stability and ride comfort are obtained.

COIL SPRING

Items	Specifications
Wire dia. × O.D. free length mm	13.1 × 71.1 – 111.1 × 309.5

CONSTRUCTION DIAGRAM



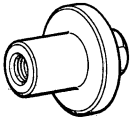
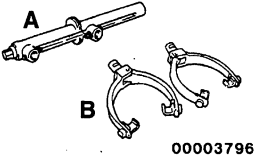
SERVICE SPECIFICATIONS

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Items		Standard value
Toe-in	At the centre of tyre tread mm	0±3
	Toe-angle (per wheel)	0°±0°09'
Toe-out angle on turns (inner wheel when outer wheel at 20°)		22.3°
Camber		−0°05'±30'
Caster		4°40'±1°30'
Kingpin inclination		7°45'±1°30'
Upper arm ball joint starting torque Nm		0.3–1.5
Compression lower arm ball joint starting torque Nm		0.5–2.5
Lateral lower ball joint starting torque Nm		1.0–3.5
Stabilizer link ball joint starting torque Nm		0.5–1.5

SPECIAL TOOLS

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Tools	Number	Name	Use
	MB991004	Wheel alignment gauge attachment	Wheel alignment measurement
 00003796	A: MB991237 B: MB991239	A: Spring compressor body B: Arm set	Front coil spring compression
	MB991113	Steering linkage puller	Lower arm ball joint removal
	MB990326	Preload socket	Ball joint starting torque measurement
	MB990800	Ball joint remover and installer	Dust cover installation

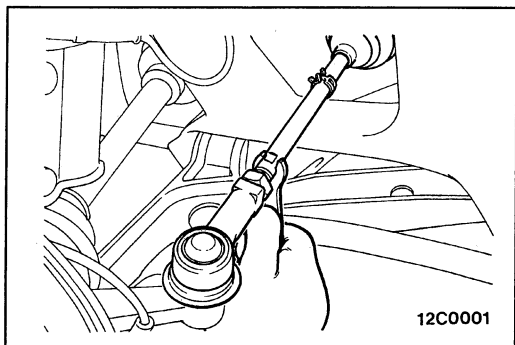
ON-VEHICLE SERVICE

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FRONT WHEEL ALIGNMENT CHECK AND ADJUSTMENT

Measure wheel alignment with alignment equipment 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) $0 \pm 0^\circ 09'$**

- (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 turnbuckles by the same amount (in opposite directions).

NOTE

The toe will move out as the left turnbuckle is turned towards the front of the vehicle and the right turnbuckle is turned towards the rear of the vehicle.

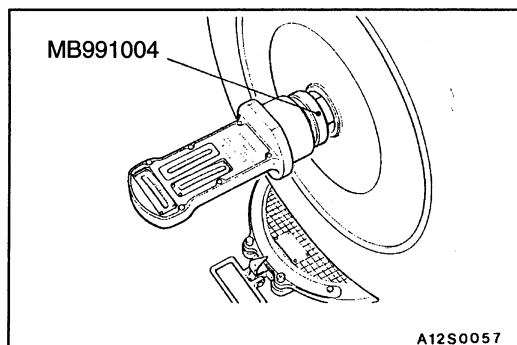
- (2) Use a turning radius gauge to check that the steering angle is at the standard value.
(Refer to GROUP 37A – On-vehicle Service.)

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: 22.3°

CAMBER**Standard value:** **$-0^\circ 05' \pm 30'$** **CASTER****Standard value:** **$4^\circ 40' \pm 1^\circ 30'$** **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 [196–255 Nm] as the drive shaft nut.

Caution

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

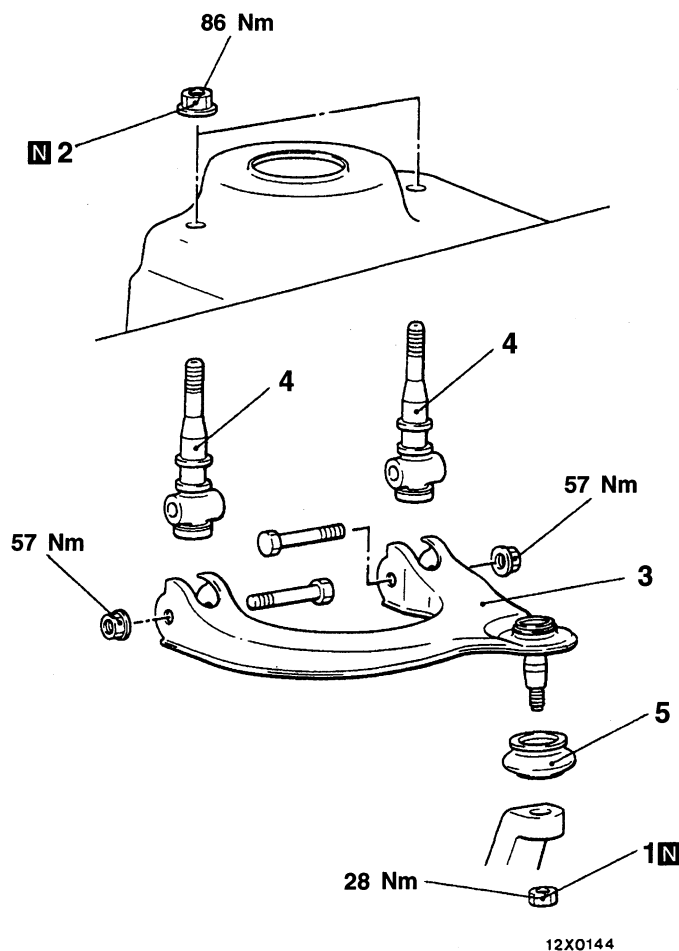
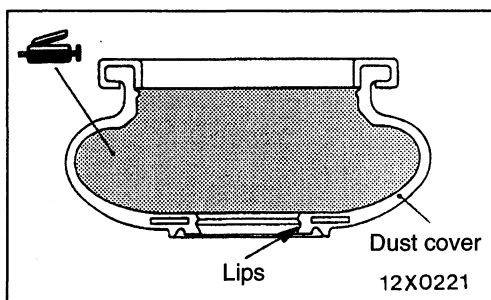
UPPER ARM ASSEMBLY

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REMOVAL AND INSTALLATION

Post-installation Operation

- Front Wheel Alignment Adjustment
(Refer to P.33A-4.)



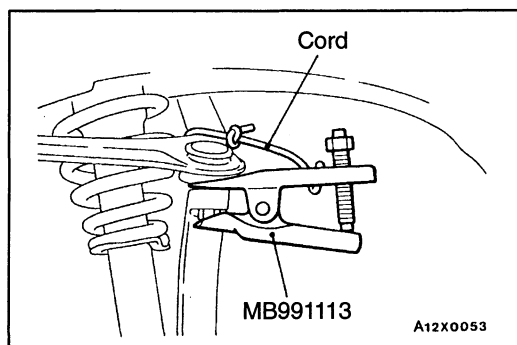
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Removal steps

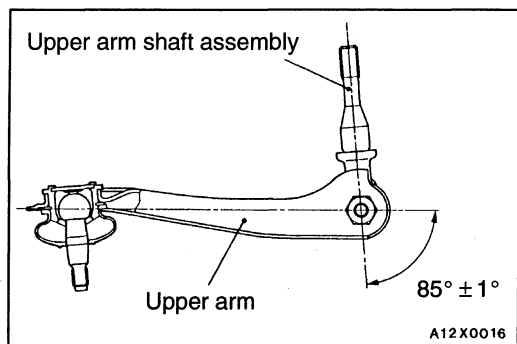
1. Upper arm ball joint and knuckle connection
2. Self-locking nut for upper arm



3. Upper arm assembly
4. Upper arm shaft assembly
5. Dust cover

**REMOVAL SERVICE POINT****◀A▶ UPPER ARM BALL JOINT AND KNUCKLE DISCONNECTION****Caution**

1. Use the special tool to 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◄ UPPER ARM SHAFT ASSEMBLY INSTALLATION

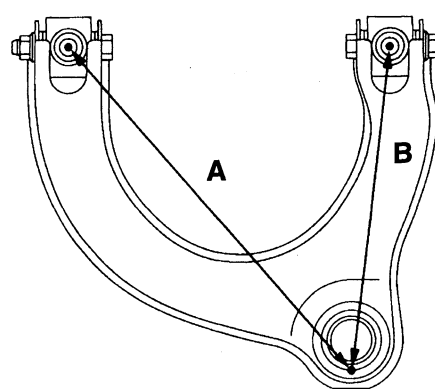
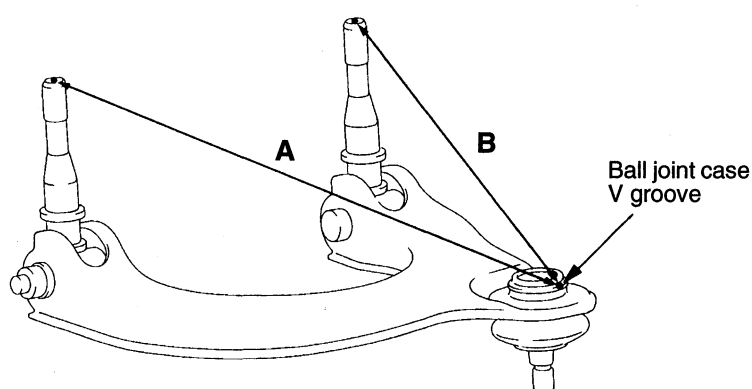
Install the upper arm shaft assembly at the angle shown in the illustration.

NOTE

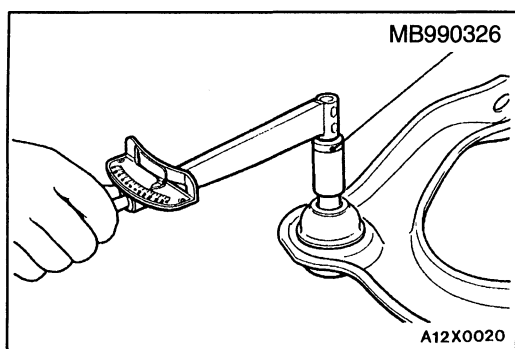
If the upper arm shaft is installed at the above-mentioned angle, the reference dimension is determined as follows;

A : 299.9 mm

B : 234.0 mm



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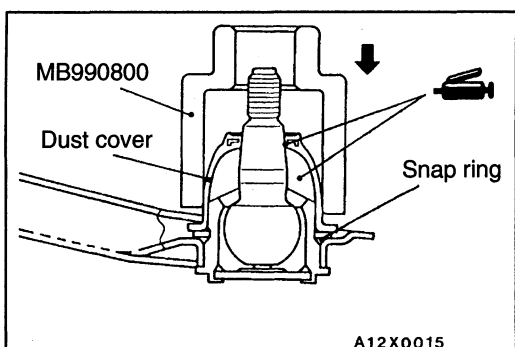


INSPECTION

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BALL JOINT STARTING TORQUE CHECK

Standard value: 0.3–1.5 Nm



UPPER ARM BALL JOINT DUST COVER REPLACEMENT

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- (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.

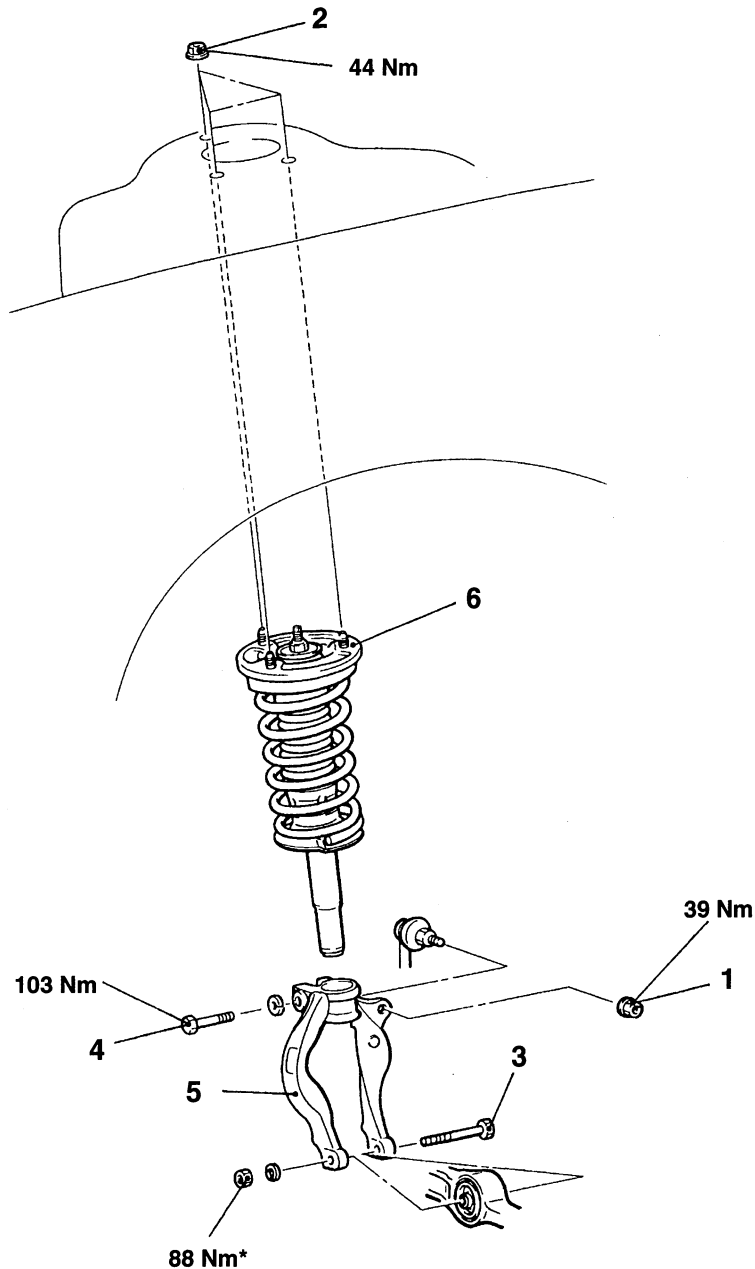
SHOCK ABSORBER ASSEMBLY

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REMOVAL AND INSTALLATION

Post-installation Operation

- Front Wheel Alignment Adjustment
(Refer to P.33A-4.)



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Removal steps

1. Stabilizer link mounting nut
2. Shock absorber upper mounting nuts
3. Shock absorber lower mounting bolt
4. Damper fork mounting bolt

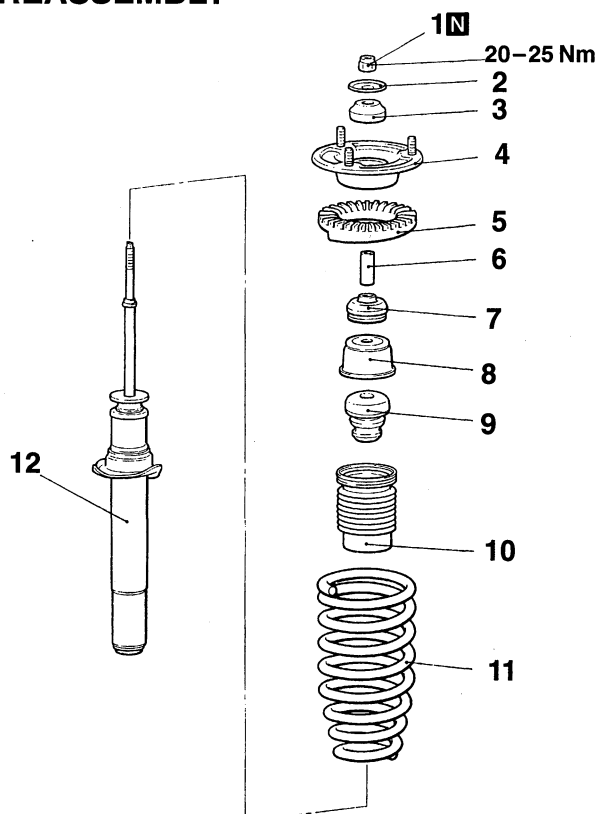
5. Damper fork
6. Shock absorber assembly

Caution

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

DISASSEMBLY AND REASSEMBLY

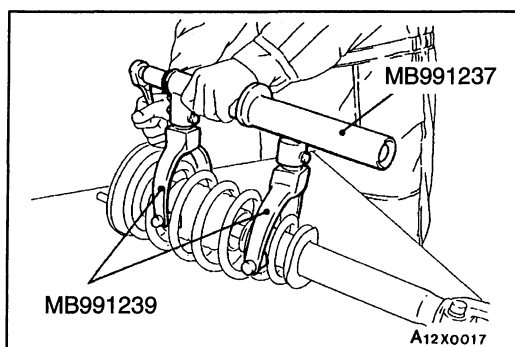
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Disassembly steps

- ◀A▶ ▶C▶ 1. Self-locking nut
2. Washer
▶B▶ 3. Upper bushing A
4. Upper bracket assembly
5. Upper spring pad
6. Collar

7. Upper bushing B
8. Cup assembly
9. Bump rubber
10. Dust cover
▶A▶ 11. Coil spring
12. Shock absorber assembly



DISASSEMBLY SERVICE POINT

◀A▶ SELF-LOCKING NUT REMOVAL

- (1) Compress the coil spring using the special tools.

NOTE

Install the special tools evenly so that the maximum length will be attained within the installation range.

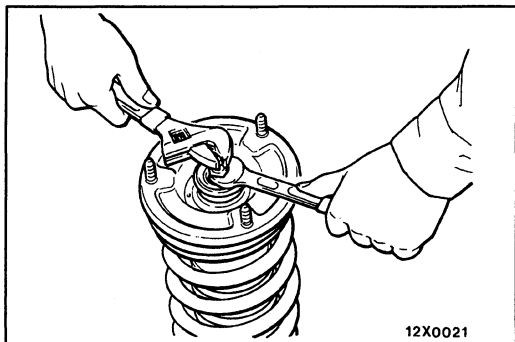
Caution

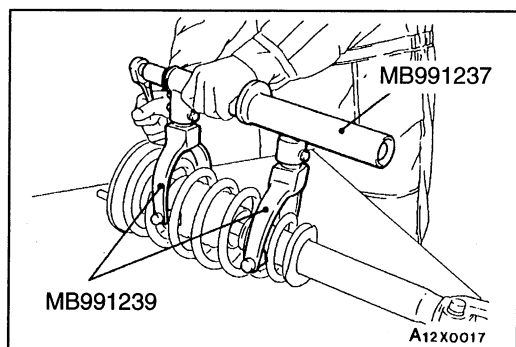
Do not use an impact wrench to tighten the special tool bolt.

- (2) While holding the piston rod, remove the self-locking nut.

Caution

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





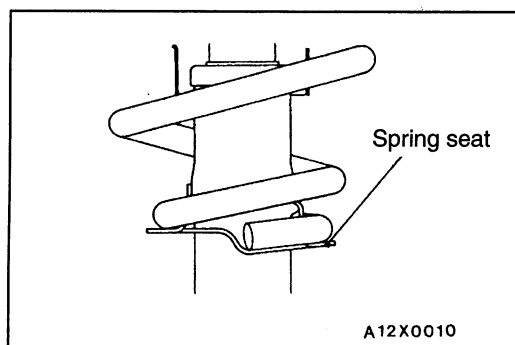
REASSEMBLY SERVICE POINTS

►A◄ COIL SPRING INSTALLATION

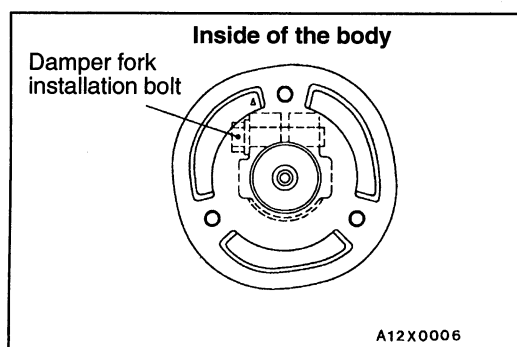
- (1) Use the special tools to compress the coil spring and install it to the shock absorber.

Caution

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



- (2) Align the edge of the coil spring to the stepped part of the shock absorber spring seat.



►B◄ UPPER BRACKET ASSEMBLY INSTALLATION

Install so that the position of the three bolts are as shown in the illustration with respect to the damper fork installation bolt.

►C◄ SELF-LOCKING NUT INSTALLATION

- (1) Temporarily tighten the self-locking nut.
- (2) Remove the special tools (MB991237, MB991239), and tighten the self-locking nut to the specified torque.

Caution

Do not use an impact wrench.

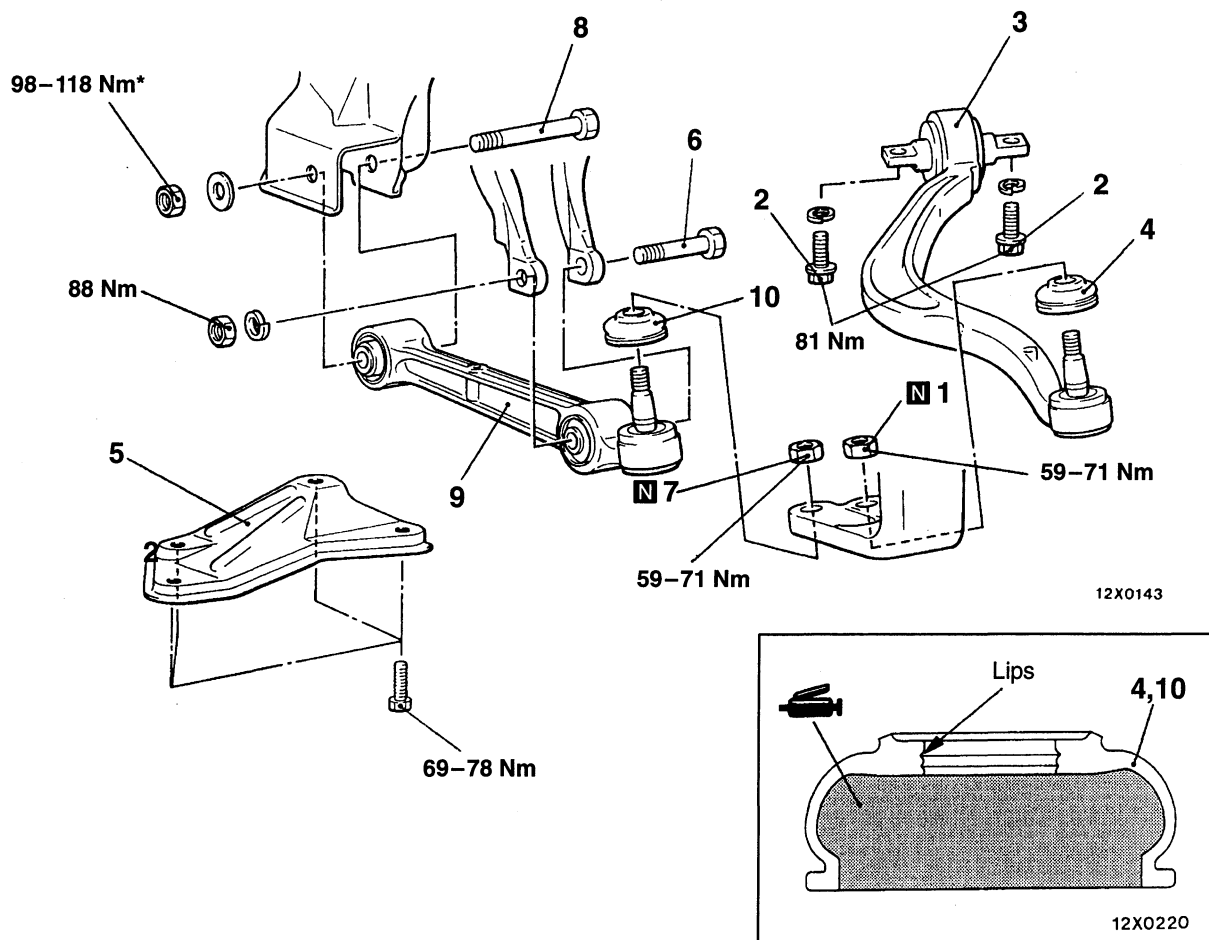
COMPRESSION LOWER ARM AND LATERAL LOWER ARM ASSEMBLIES

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REMOVAL AND INSTALLATION

Post-installation Operation

- Front Wheel Alignment Adjustment
(Refer to P.33A-4.)



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Compression lower arm assembly removal steps

◀A▶

1. Compression lower arm ball joint and knuckle connection
2. Compression lower arm mounting bolts
3. Compression lower arm assembly
4. Dust cover

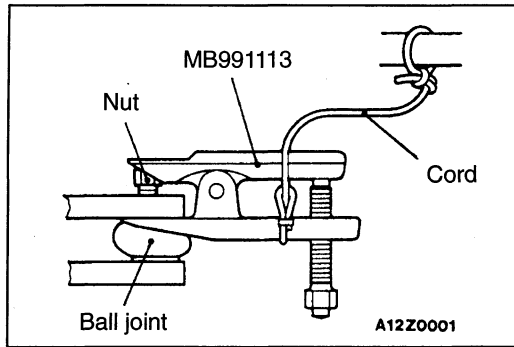
Lateral lower arm assembly removal steps

◀A▶

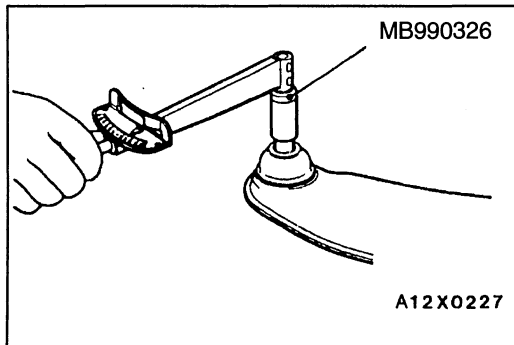
5. Stay
6. Shock absorber lower mounting bolt
7. Lateral lower arm ball joint and knuckle connection
8. Lateral lower arm mounting bolt
9. Lateral lower arm assembly
10. Dust cover

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****◀A▶ COMPRESSION LOWER ARM BALL JOINT AND KNUCKLE/LATERAL LOWER ARM BALL JOINT AND KNUCKLE DISCONNECTION****Caution**

1. Use the special tool to 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.

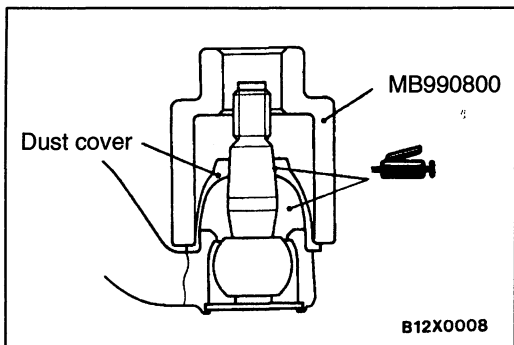
**BALL JOINT STARTING TORQUE CHECK**

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Compression lower arm ball joint

Standard value: 0.5–2.5 Nm

Lateral lower arm ball joint [When load is 3727 N]

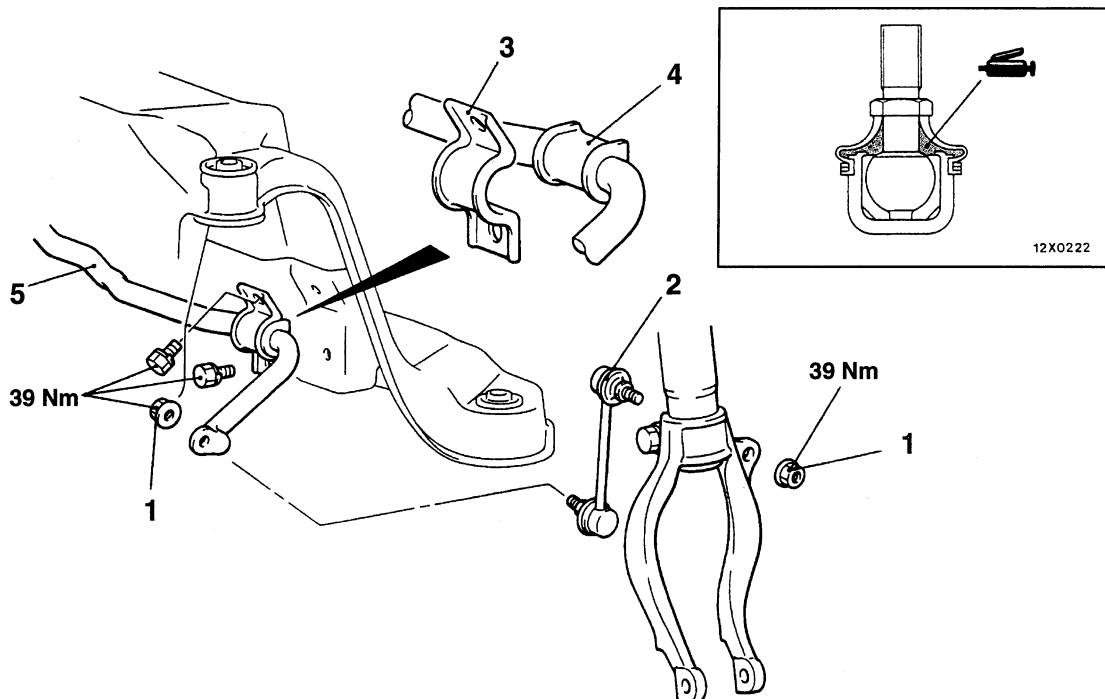
Standard value: 1.0–3.5 Nm**TOE CONTROL ARM BALL JOINT DUST COVER REPLACEMENT**

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- (1) Remove the dust cover.
- (2) Apply multipurpose grease to the lip and inside of the dust cover.
- (3) Using the special tool, drive in the dust cover to the position shown in the illustration.

STABILIZER BAR

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REMOVAL AND INSTALLATION

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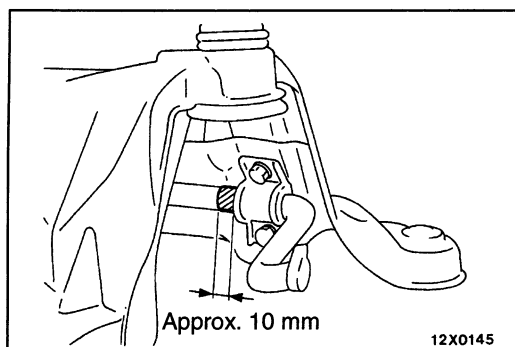
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Removal steps

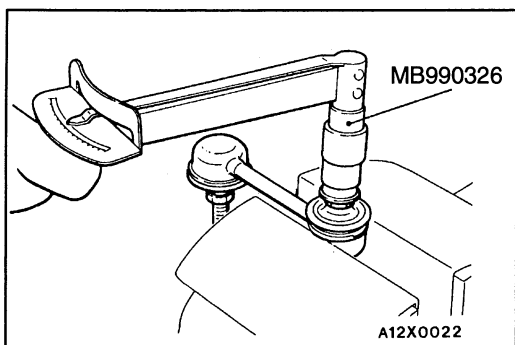
1. Stabilizer link mounting nut
2. Stabilizer link
3. Stabilizer bar bracket



4. Bushing
5. Stabilizer bar

**INSTALLATION SERVICE POINT****►A◄ STABILIZER BAR BRACKET INSTALLATION**

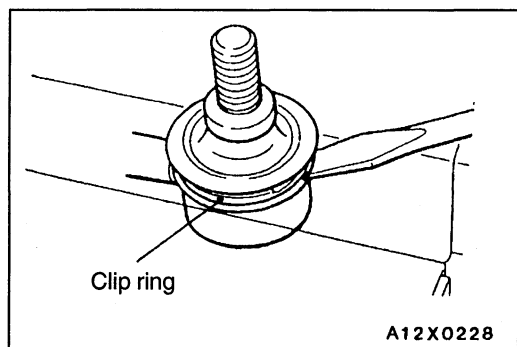
Position the stabilizer bar so that the marking on the stabilizer bar and the edge of the bracket becomes the reference value, and then tighten the stabilizer bar bracket mounting bolt.

**INSPECTION**

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STABILIZER LINK BALL JOINT STARTING TORQUE CHECK

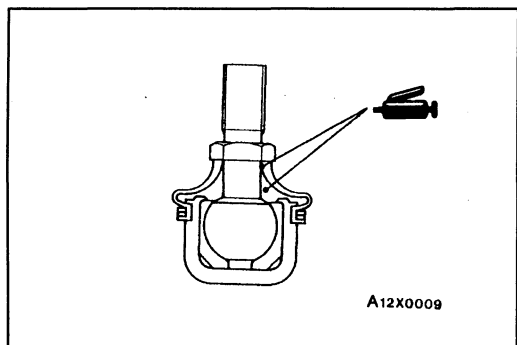
Standard value: 0.5–1.5 Nm



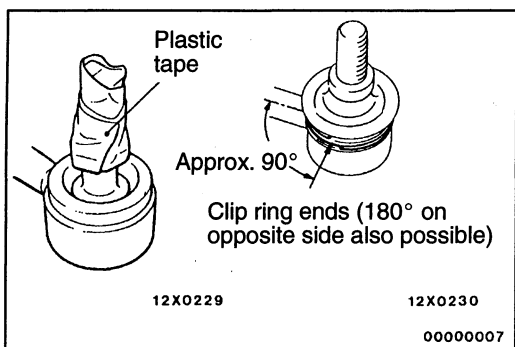
STABILIZER LINK BALL JOINT DUST COVER REPLACEMENT

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- (1) Remove the clip ring and the dust cover.



- (2) Apply multipurpose grease to the lip and inside of the dust cover.



- (3) Use plastic tape on the stabilizer link threads as shown in the illustration, and then install the dust cover to the stabilizer link.

- (4) Secure the dust cover by the clip ring.

NOTE

When installing the clip ring, align the ends at a 90° angle from the axis of the stabilizer link.