

GROUP 34

REAR SUSPENSION

CONTENTS

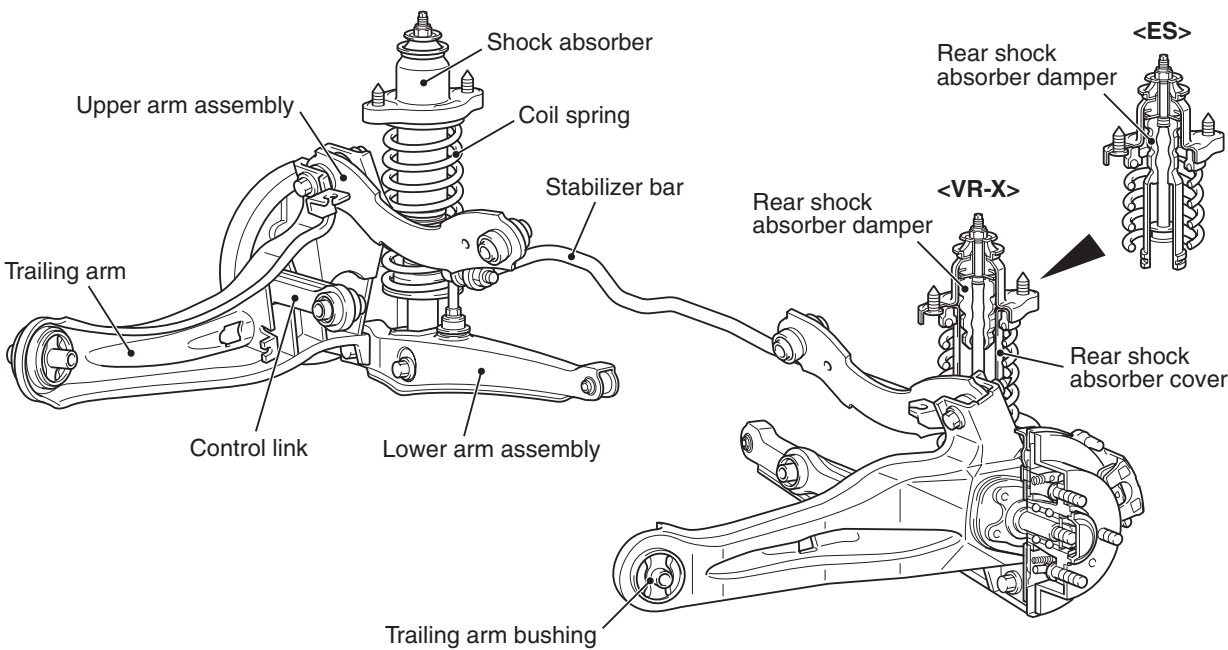
GENERAL INFORMATION	34-2	REMOVAL AND INSTALLATION	34-8
SERVICE SPECIFICATIONS	34-3	INSPECTION	34-10
LUBRICANT	34-3	LOWER ARM BUSHING AND LOWER ARM PILLOW BALL BUSHING REPLACEMENT	34-10
SPECIAL TOOLS	34-3	TRAILING ARM ASSEMBLY	34-12
ON-VEHICLE SERVICE	34-5	REMOVAL AND INSTALLATION	34-12
REAR WHEEL ALIGNMENT CHECK AND ADJUSTMENT	34-5	INSPECTION	34-13
CONTROL LINK PILLOW BALL BUSHING AXIAL PLAY CHECK <VR-X>	34-6	TRAILING ARM BUSHING REPLACEMENT	34-13
UPPER ARM PILLOW BALL BUSHING AXIAL PLAY CHECK <VR-X>	34-7	SHOCK ABSORBER ASSEMBLY ...	34-15
LOWER ARM PILLOW BALL BUSHING AXIAL PLAY CHECK	34-7	REMOVAL AND INSTALLATION	34-15
STABILIZER LINK BALL JOINT DUST COVER INSPECTION	34-7	INSPECTION	34-16
CONTROL LINK, UPPER ARM AND LOWER ARM	34-8	DISASSEMBLY AND REASSEMBLY	34-16
		STABILIZER BAR	34-19
		REMOVAL AND INSTALLATION	34-19
		INSPECTION	34-19
		STABILIZER LINK BALL JOINT DUST COVER REPLACEMENT	34-20

GENERAL INFORMATION

M1341000100610

A trailing arm type multi-link suspension has been adopted as the rear suspension. The shock absorber is a hydraulic, cylindrical double-acting type.

CONSTRUCTION DIAGRAM



AC403315AB

SPECIFICATION
COIL SPRING

Item	ES	VR-X
Wire diameter mm	10	10
Average diameter mm	78 – 90	78 – 90
Free length mm	390	368

SERVICE SPECIFICATIONS

M1341000300614

Item		Standard value
Camber (Difference between right and left within 30')		$-0^{\circ}40' \pm 0^{\circ}30'$
Toe-in	At the centre of tyre tread mm	3 ± 2
	Toe-angle (per wheel)	$0^{\circ}08' \pm 0^{\circ}05'$
Thrust angle		$0^{\circ}00' \pm 0^{\circ}09'$
Control link pillow ball bushing starting torque <VR-X> N· m		0.5 – 3.0
Upper arm pillow ball bushing starting torque <VR-X> N· m		0.5 – 3.0
Lower arm pillow ball bushing starting torque N· m		0.5 – 3.0
Protruding length of stabilizer link bolt mm		6 – 8
Stabilizer link ball joint continuous turning torque N· m		0.5 – 1.5


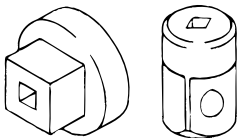
LUBRICANT

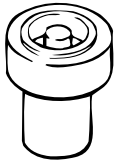
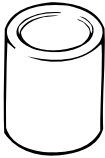
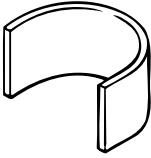
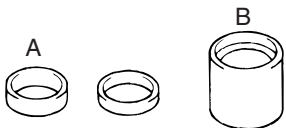
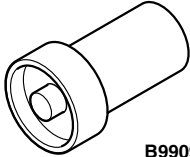
M1341000400235

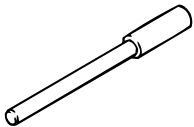

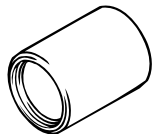
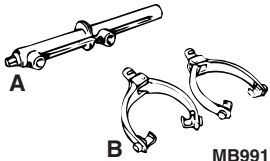
Item	Specified lubricant	Quantity
Stabilizer link ball joint (inside of dust cover)	Multipurpose grease SAE J310, NLGI No.2 or equivalent	As required

SPECIAL TOOLS

M1341000600552

Tool	Number	Name	Use
 MB991004	MB991014	Wheel alignment gauge attachment	Wheel alignment measurement <vehicles with aluminium wheels>
 MB990326	MB990326	Preload socket	<ul style="list-style-type: none"> Pillow ball bushing starting torque check Stabilizer link ball joint turning torque check

Tool	Number	Name	Use
	MB991447	Bushing remover and installer	Lower arm bushing removal and press-fitting
	MB991448	Bushing remover and installer base	
	MB991449	Bushing remover and installer supporter	
 MB990957	MB990957 A: MB990969 B: MB990971	Lower arm bushing remover and installer A: Guide B: Base	Lower arm pillow ball bushing removal and press-fitting
 B990996	MB990996	Lower arm bushing arbour	

Tool	Number	Name	Use
 MB990947	MB990947	Lower arm bushing arbour	Trailing arm bushing removal and press-fitting
	MB991816	Bushings remover and installer base	
 MB990890	MB990890	Rear suspension bushing base	
 A B MB991237	A: MB991237 B: MB991239	A: Spring compressor body B: Small arm set	Coil spring compressing

ON-VEHICLE SERVICE

REAR WHEEL ALIGNMENT CHECK AND ADJUSTMENT

M1341011000606

Measure wheel alignment with an alignment equipment on level earth.

The rear suspension, wheels, and tyres should be serviced to the normal condition prior to wheel alignment measurement.

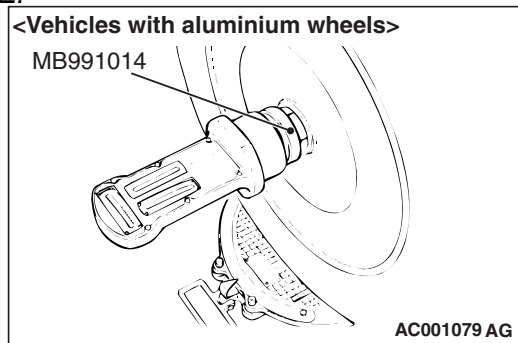
CAMBER

Standard value: $-0^{\circ}40' \pm 0^{\circ}30'$ (Left/right deviation within 30')

CAUTION

Never subject the wheel bearings to the vehicle load when the rear wheel hub nuts (self-locking nuts) or special tool wheel alignment gauge attachment (MB991014) are loosened.

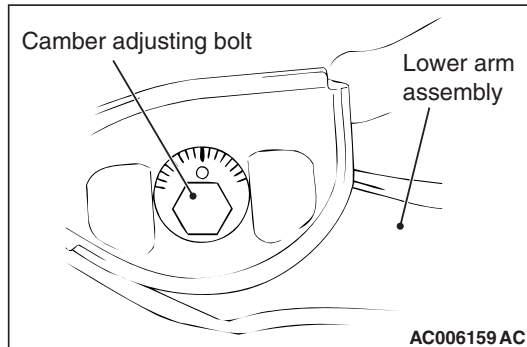
NOTE:



For vehicles with aluminium wheels, attach the camber/caster/kingpin gauge to the trailing arm spindle by using special tool wheel alignment gauge attachment (MB991014). Tighten the special tool to the same torque $175 \pm 25 \text{ N} \cdot \text{m}$ as the rear wheel hub nut (self-locking nut).

If camber is not within the standard value, adjust by following procedures.

1. Disconnect the conjunction of the control link and the trailing arm.

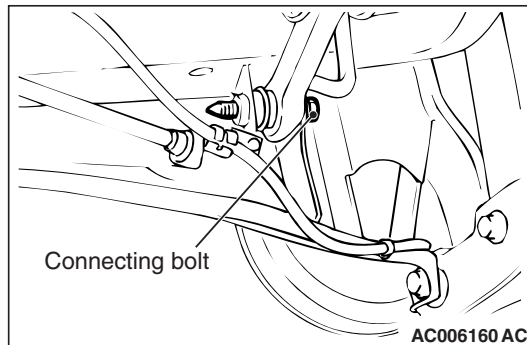


2. Carry out adjustment by turning the camber adjusting bolt (lower arm assembly mounting bolt which is located on the inner side of the body).

NOTE:

- LH: Clockwise viewed from the front → (+) camber
- RH: Clockwise viewed from the front → (–) camber
- The scale has gradations of approximately 14'.

CAUTION



To prevent bushings from breakage, the connecting bolt should be temporarily tightened, and then fully tightened to 90 ± 10 N·m with the vehicle on the earth in the unladen condition.

3. Tighten the control link to the trailing arm.
4. After adjusting the camber, the toe should be adjusted.

TOE-IN

Standard value:

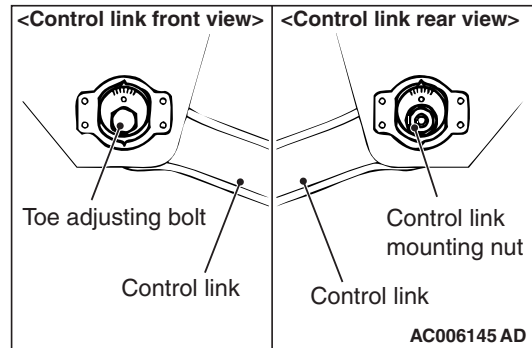
At the centre of tyre tread: 3 ± 2 mm

Toe angle (per wheel): $0^\circ 08' \pm 0^\circ 05'$

If toe-in is not within the standard value, adjust by following procedures.

CAUTION

To prevent bushings from breakage, the control link mounting nut should be temporarily tightened, and then fully tightened to 120 ± 10 N·m with the vehicle on the earth in the unladen condition.



Carry out adjustment by turning the toe adjusting bolt (control link mounting bolt which is located on the inner side of the body).

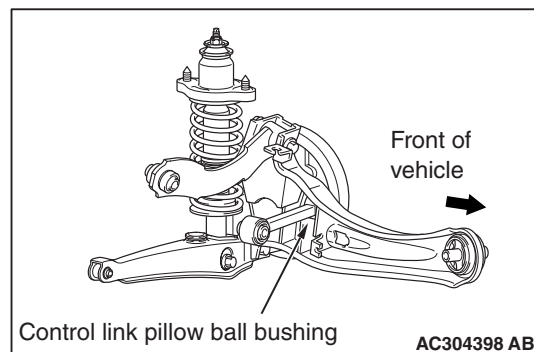
NOTE:

- LH: Clockwise viewed from the front → Toe-in
- RH: Clockwise viewed from the front → Toe-out
- Turning the toe adjusting bolt by one groove of the scale, toe can be changed approximately 2.6 mm (single side toe angle equivalent to 16').

CONTROL LINK PILLOW BALL BUSHING AXIAL PLAY CHECK <VR-X>

M1341018500055

1. Raise the vehicle.

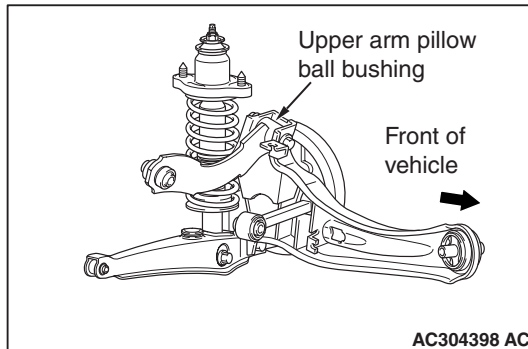


2. Move the control link up and down with your hands to check for an excessive play in the axial direction of the pillow ball bushing. If there is an excessive play, replace the control link (Refer to P.34-8).

UPPER ARM PILLOW BALL BUSHING AXIAL PLAY CHECK <VR-X>

M1341018400058

1. Raise the vehicle.

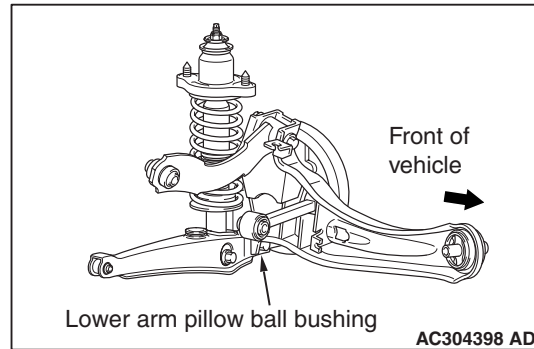


2. Move the upper arm up and down with your hands to check for an excessive play in the axial direction of the pillow ball bushing. If there is an excessive play, replace the upper arm (Refer to P.34-8).

LOWER ARM PILLOW BALL BUSHING AXIAL PLAY CHECK

M1341016900057

1. Raise the vehicle.
2. Remove the stabilizer link and shock absorber from the lower arm assembly.



3. Move the lower arm up and down with your hands to check for an excessive play in the axial direction of the pillow ball bushing. If there is an excessive play, replace the lower arm pillow ball bushing (Refer to P.34-10).
4. After inspection, install the stabilizer link and shock absorber to the lower arm assembly (Refer to P.34-8).

STABILIZER LINK BALL JOINT DUST COVER INSPECTION

M1341012800274

1. Check stabilizer link ball joint dust covers for cracks or damage by pushing it with your finger.
2. If a dust cover is cracked or damaged, replace the stabilizer link assembly.

NOTE: Cracks or damage to the dust cover may cause damage to the ball joint.

CONTROL LINK, UPPER ARM AND LOWER ARM

REMOVAL AND INSTALLATION

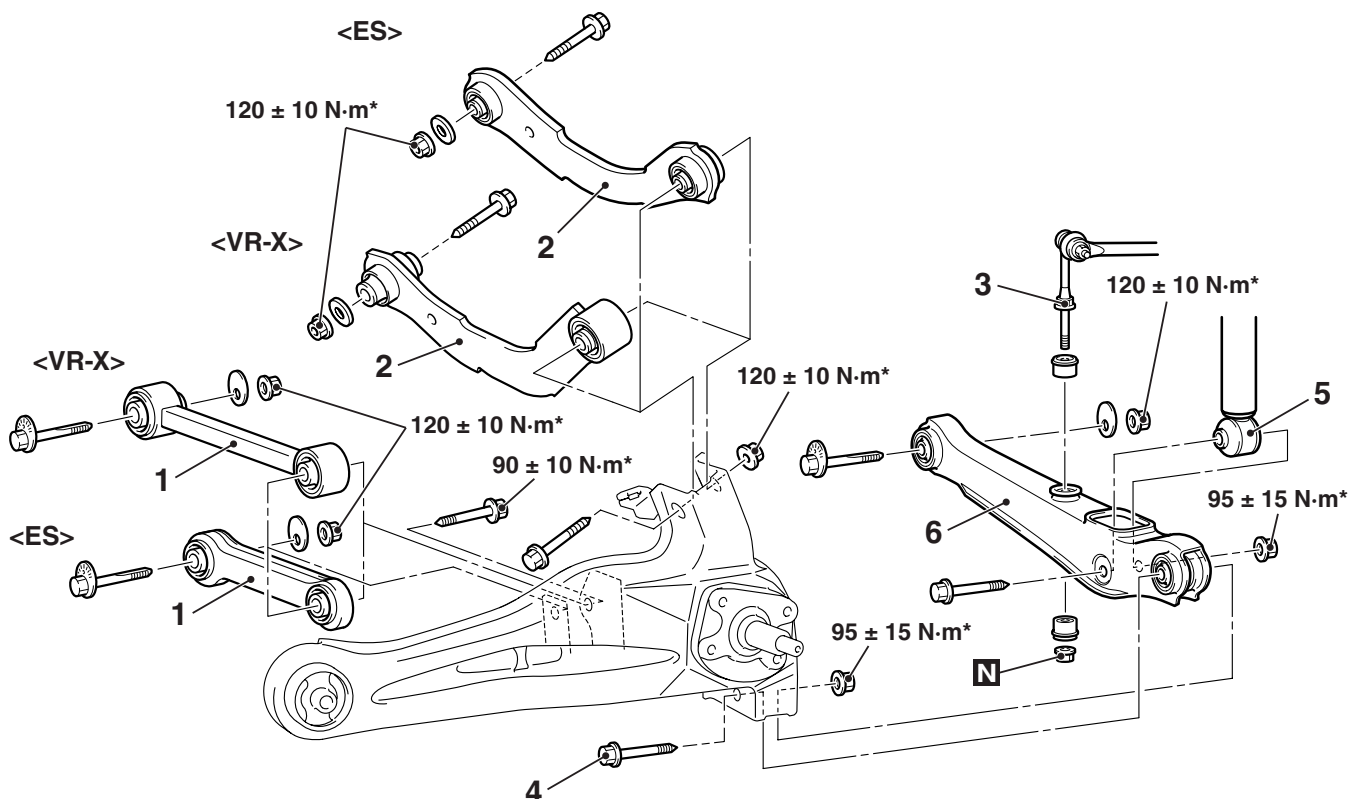
M1341004800280

CAUTION

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

Post-installation Operation

- Rear Wheel Alignment Check and Adjustment (Refer to P.34-5).



AC304154 AC

Control link and upper arm assembly removal steps

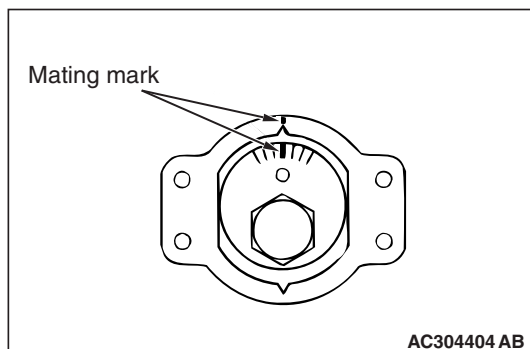
- <<A>> >>B<< 1. Control link
<> >>B<< 2. Upper arm assembly

Lower arm assembly removal steps

- >>A<< 3. Stabilizer link connection
<> 4. Lower arm assembly and trailing arm connection
5. Shock absorber connection
<<A>> 6. Lower arm assembly

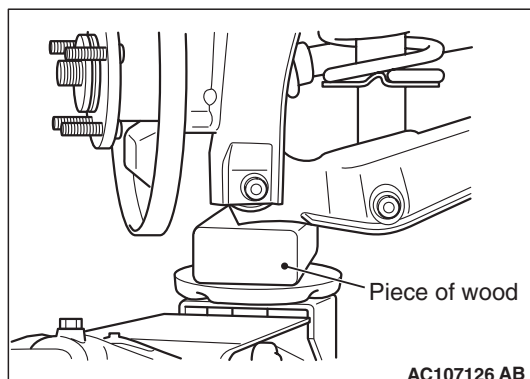
REMOVAL SERVICE POINTS

<<A>> CONTROL LINK/LOWER ARM ASSEMBLY REMOVAL



After making a mating mark on the toe adjusting bolt or camber adjusting bolt, remove the control link or lower arm assembly.

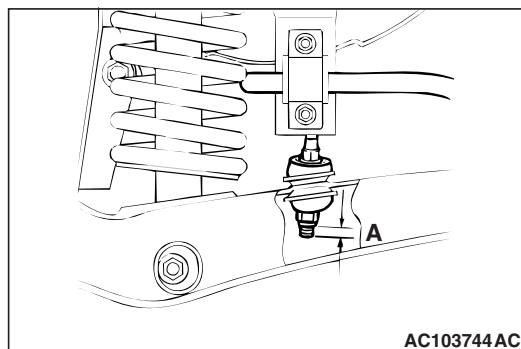
<> UPPER ARM ASSEMBLY/LOWER ARM ASSEMBLY AND TRAILING ARM DISCONNECTION



After supporting the lower arm with a jack, separate the upper arm assembly/lower arm assembly and the trailing arm.

INSTALLATION SERVICE POINTS

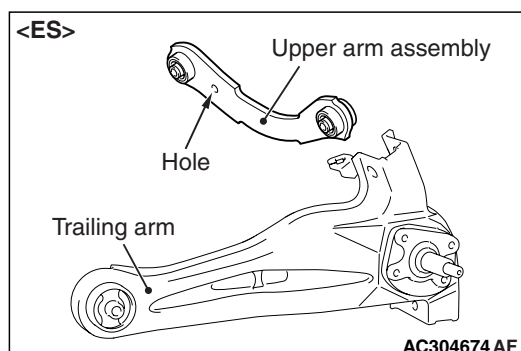
>>A<< STABILIZER LINK CONNECTION



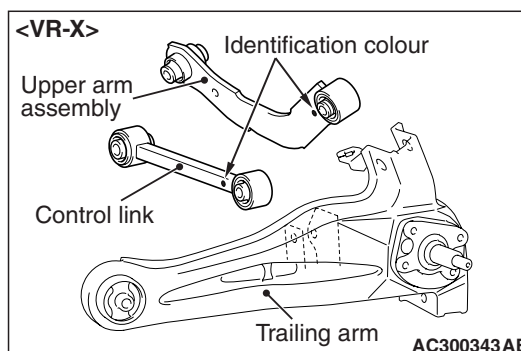
Tighten the self-locking nut until the stabilizer link thread part protruding length meets the standard value.

Standard value (A): 6 – 8 mm

>>B<< UPPER ARM ASSEMBLY/CONTROL LINK INSTALLATION



Install the upper arm assembly as shown so that its hole is body side. <ES>



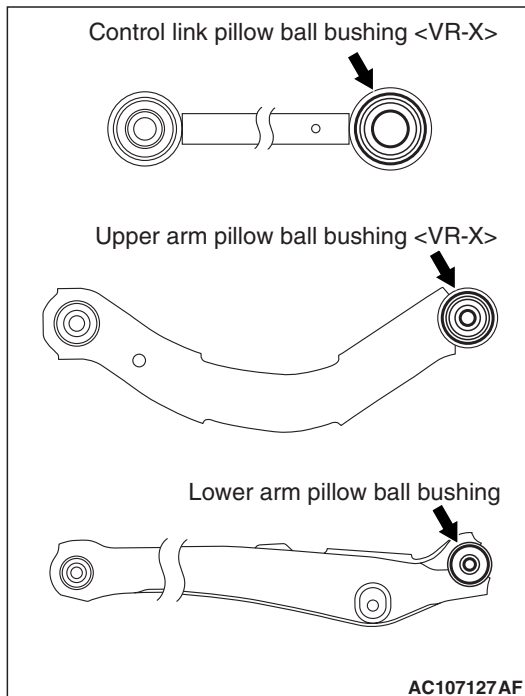
Install the upper arm assembly/control link as shown so that its identification colour faces the trailing arm. <VR-X>

INSPECTION

M1341004900232

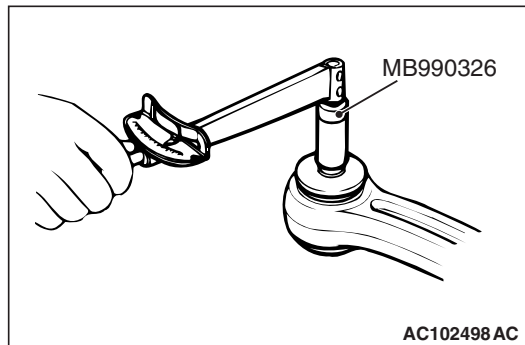
- Check the bushings for wear and deterioration.
- Check the control link, upper arm and lower arm for bending or breakage.
- Check all bolts for condition and straightness.

CONTROL LINK <VR-X>/UPPER ARM <VR-X>/LOWER ARM PILLOW BALL BUSHING STARTING TORQUE CHECK



Check each pillow ball bushing as follows.

1. Insert the mounting bolt to the pillow ball bushing. In the opposite direction, insert a washer, then install the mounting nut.



2. After rotating the inner sleeve (contained washer) several times, measure the starting torque of the pillow ball bushing using special tool preload socket (MB990326).

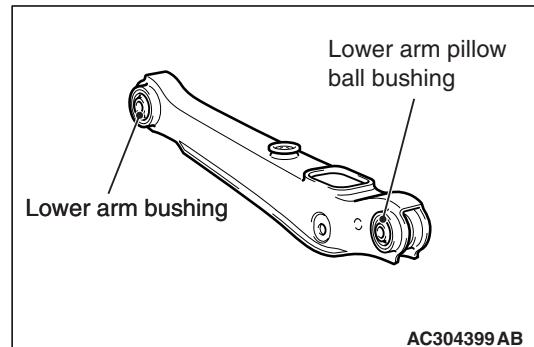
Standard value: 0.5 – 3.0 N·m

3. If the measured value exceeds the standard value, replace the control link, the upper arm, or the lower arm pillow ball bushing.

4. If the measured value is lower than the standard value, check that the pillow ball bushing turns smoothly without excessive play. If there is no excessive play and it turns smoothly, the pillow ball bushing can be reused.

LOWER ARM BUSHING AND LOWER ARM PILLOW BALL BUSHING REPLACEMENT

M1341011800204

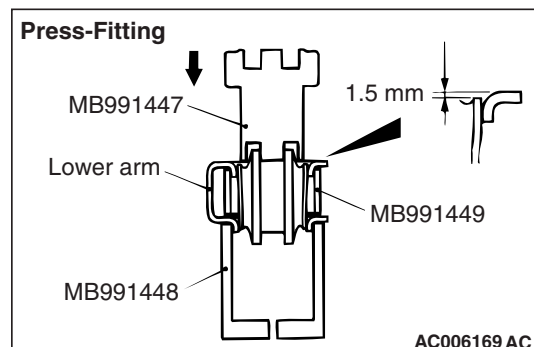
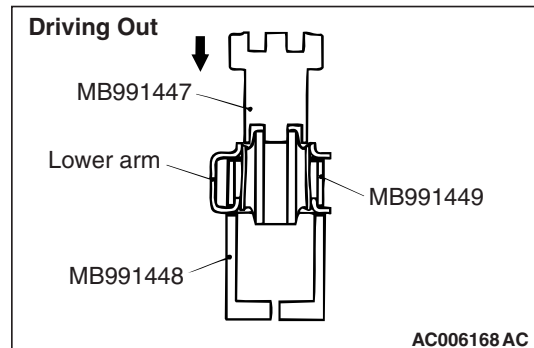


Replace the lower arm bushing and lower arm pillow ball bushing as follows.

LOWER ARM BUSHING REPLACEMENT

⚠ CAUTION

Because the outside diameter of both edges of the bushing are different, be careful not to mistake the direction.

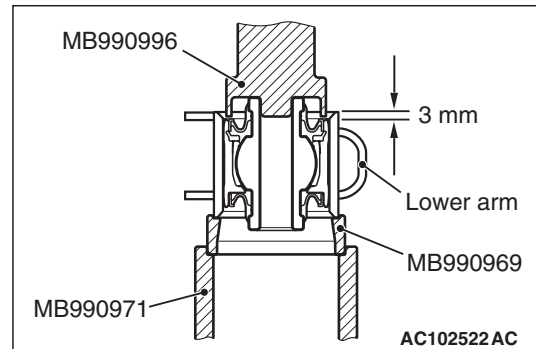


Use following special tools to drive out and press fit the bushing.

- Bushing remover and installer (MB991447)
- Bushing remover and installer base (MB991448)
- Bushing remover and installer supporter (MB991449)

After press fitting, the space between the edges of the bushing outer sleeve and of the lower arm should be 1.5 mm.

LOWER ARM PILLOW BALL BUSHING REPLACEMENT



Use following special tools to drive out and press fit the bushing.

- Lower arm bushing remover and installer (MB990957)
 - Guide (MB990969)
 - Base (MB990971)
- Lower arm bushing arbor (MB990996)

After press fitting, the space between the edges of the bushing outer sleeve and of the lower arm should be 3 mm.

TRAILING ARM ASSEMBLY

REMOVAL AND INSTALLATION

M1341002200668

CAUTION

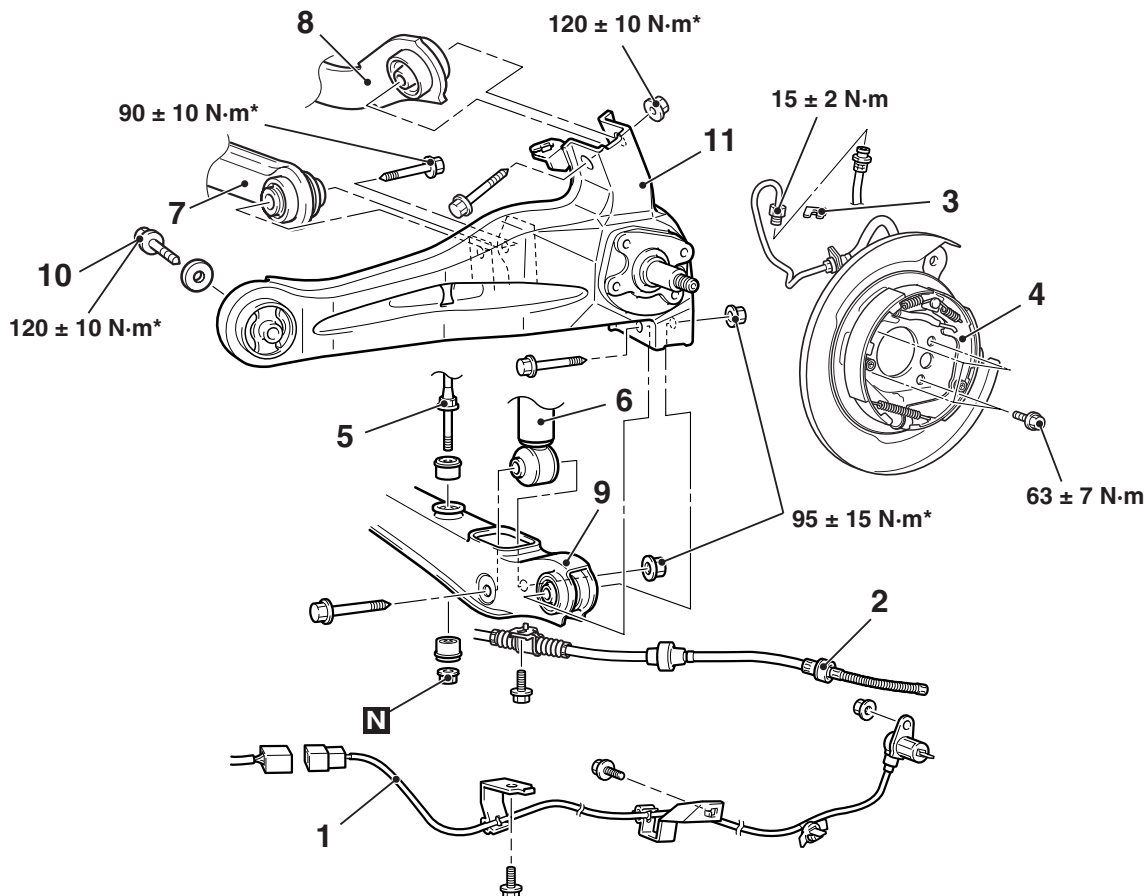
*: Indicates parts which should be temporarily tightened, and then fully tightened with the vehicle on the earth in the unladen condition.

Pre-removal Operation

- Brake Fluid Draining
- Rear Hub Assembly Removal (Refer to GROUP 27, Rear Axle Hub Assembly P.27-5).

Post-installation Operation

- Rear Hub Assembly Installation (Refer to GROUP 27, Rear Axle Hub Assembly P.27-5).
- Brake Fluid Supplying and Bleeding (Refer to GROUP 35A, On-vehicle Service –Bleeding P.35A-6).
- Rear Wheel Alignment Check and Adjustment (Refer to P.34-5).
- Parking Brake Lever Stroke Adjustment (Refer to GROUP 36, On-vehicle Service –Parking Brake Lever Stroke Check and Adjustment P.36-3).



AC304155 AB

<<A>>

Removal steps

- Lifting point
- 1. Rear ABS Sensor (Refer to GROUP 35B, ABS Sensor P.35B-56).
- 2. Parking brake cable
- 3. Brake hose and trailing arm connection
- 4. Rear parking brake assembly

>>A<<

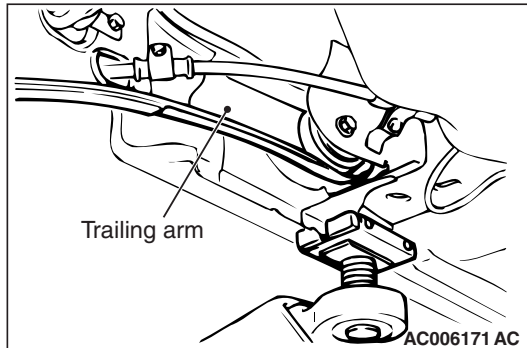
Removal steps (Continued)

- 5. Lower arm assembly and stabilizer link connection
- 6. Lower arm assembly and shock absorber connection
- 7. Control link and trailing arm connection
- 8. Upper arm assembly and trailing arm connection

- <>
- Removal steps (Continued)**
9. Lower arm assembly and trailing arm connection
 10. Trailing arm and body connection
 11. Trailing arm

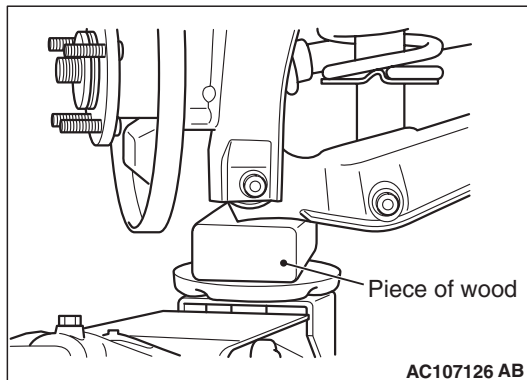
REMOVAL SERVICE POINTS

<<A>> LIFTING POINT



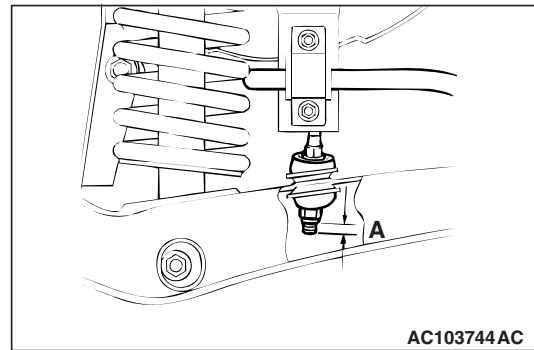
When removing the trailing arm, move the lifting arm slightly towards the front of the vehicle so that it will not be in the way.

<> LOWER ARM ASSEMBLY AND TRAILING ARM DISCONNECTION



After supporting the lower arm assembly with a jack, separate the lower arm assembly and trailing arm connection.

INSTALLATION SERVICE POINT >>A<< LOWER ARM ASSEMBLY AND STABILIZER LINK INSTALLATION



Tighten the self-locking nut until the stabilizer link thread part protruding length meets the standard value.

Standard value (A): 6 – 8 mm

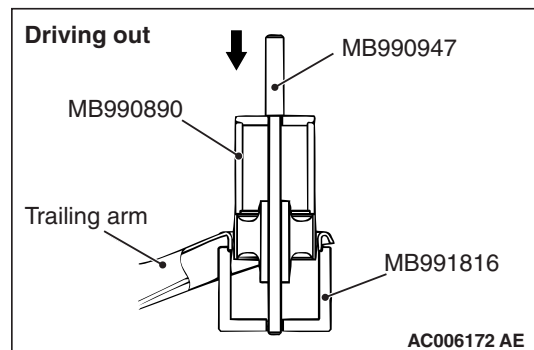
INSPECTION

M1341002300267

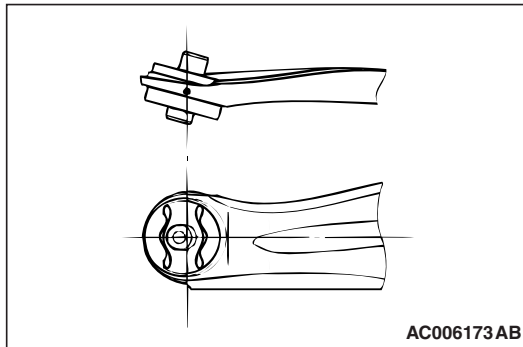
- Check the bushings for wear and deterioration.
- Check the trailing arm for bending or damage.

TRAILING ARM BUSHING REPLACEMENT

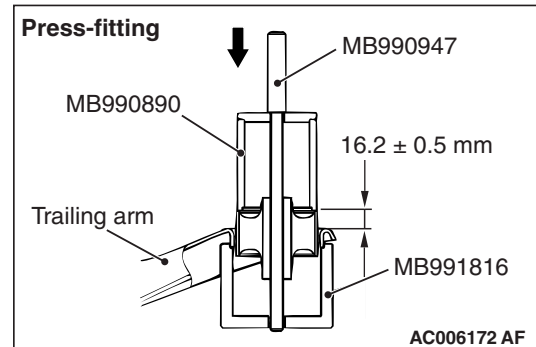
M1341011300306



1. Use the following special tools to drive out the trailing arm bushing.
 - Rear suspension bushing base (MB990890)
 - Lower arm bushing arbour (MB990947)
 - Bushing remover and installer base (MB991816)



2. Set the installation direction and installation location of the trailing arm bushing.
 - (1) Place the long projection end of the trailing arm bushing inner pipe towards the inside of the vehicle.
 - (2) Make sure that the hollow of the trailing arm bushing is located as shown in the illustration.



3. Using the special tools, press the trailing arm bushing into the position shown.
 - Rear suspension bushing base (MB990890)
 - Lower arm bushing arbour (MB990947)
 - Bushing remover and installer base (MB991816)

SHOCK ABSORBER ASSEMBLY

REMOVAL AND INSTALLATION

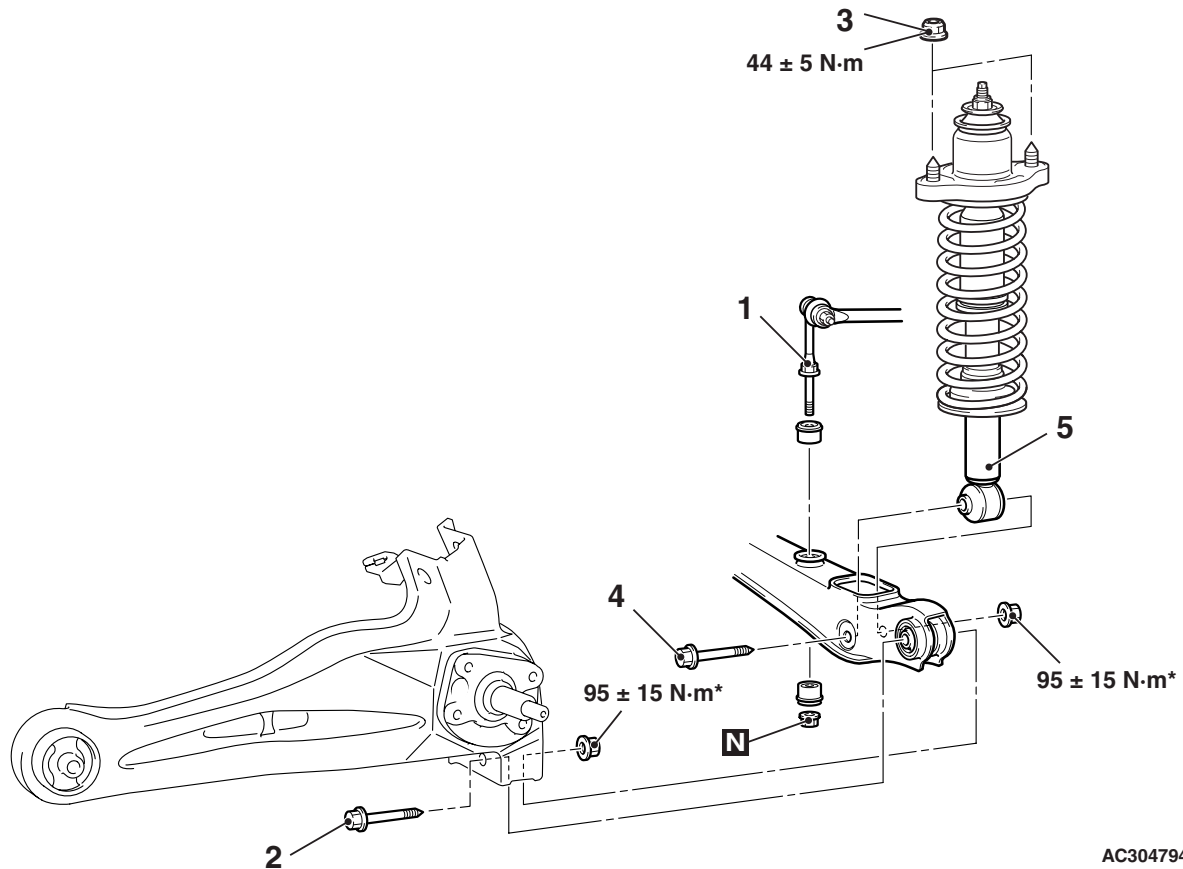
M1341002500465

CAUTION

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

Pre-removal and Post-installation Operation

- Centre Luggage Floor Lid Removal and Installation
- Centre Luggage Floor Box Removal and Installation



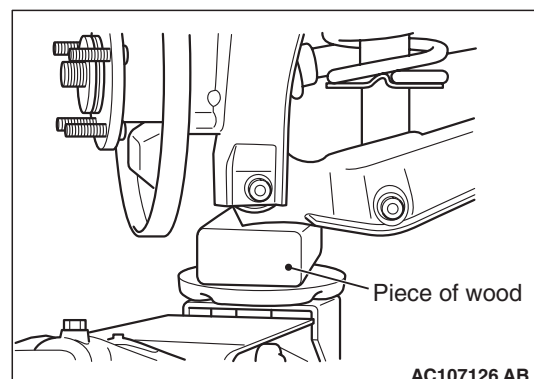
AC304794 AB

Removal steps

- >>B<< 1. Stabilizer link connection
<<A>> 2. Lower arm bolt
3. Coil spring nut
4. Coil spring bolt
>>A<< 5. Shock absorber assembly

REMOVAL SERVICE POINT

<<A>> LOWER ARM BOLT REMOVAL

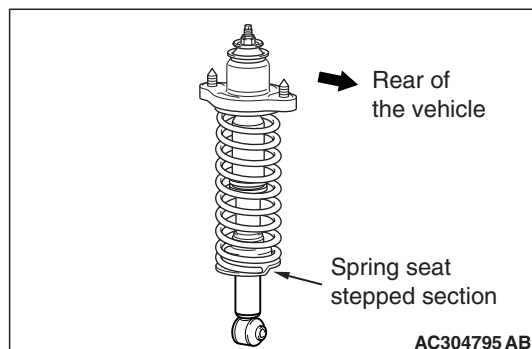


AC107126 AB

After supporting the lower arm with a jack, remove the lower arm bolt.

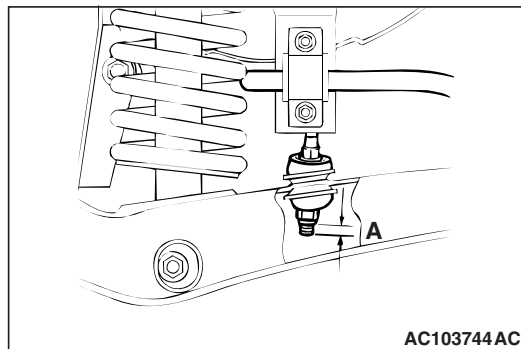
INSTALLATION SERVICE POINTS

>>A<< SHOCK ABSORBER ASSEMBLY INSTALLATION



Install the spring seat stepped section so that it points towards the rear side of the vehicle.

>>B<< STABILIZER LINK INSTALLATION



Tighten the self-locking nut until the stabilizer link thread part protruding length meets the standard value.

Standard value (A): 6 – 8 mm

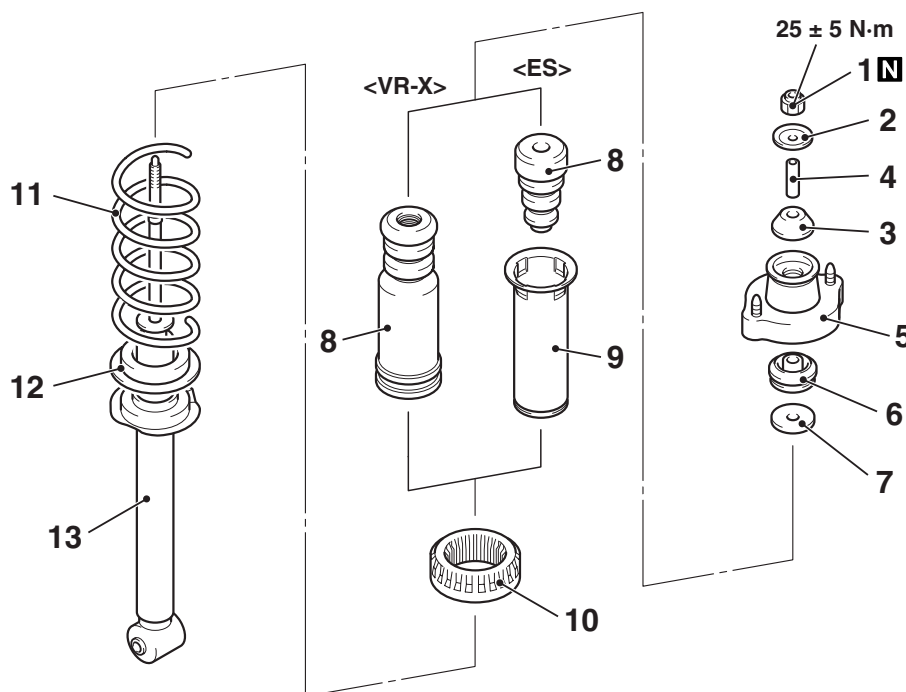
INSPECTION

M1341002600213

- Check the rubber parts for cracks and wear.
- Check the shock absorber for malfunctions, oil leakage, or abnormal noise.

DISASSEMBLY AND REASSEMBLY

M1341005300437



AC304156AD

Disassembly steps

- <<A>> >>E<<
1. Rear suspension coil spring nut (self-locking nut)
 2. Rear suspension coil spring washer
 3. Rear suspension coil spring bushing
 4. Rear suspension coil spring collar
- >>D<<
5. Rear shock absorber insulator

Disassembly steps (Continued)

6. Rear suspension coil spring bushing
 7. Rear suspension spring damper plate
 8. Rear shock absorber damper
 9. Rear shock absorber cover <ES>
- >>C<<
10. Rear suspension spring upper pad
- >>B<<
11. Rear suspension coil spring

Disassembly steps (Continued)

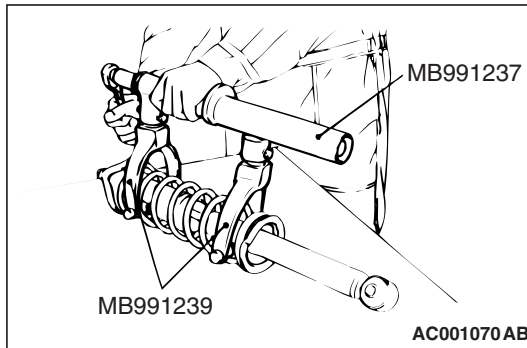
- >>A<< 12. Rear suspension spring lower pad
<> 13. Rear suspension shock absorber

DISASSEMBLY SERVICE POINTS

<<A>> REAR SUSPENSION COIL SPRING NUT (SELF-LOCKING NUT) REMOVAL

CAUTION

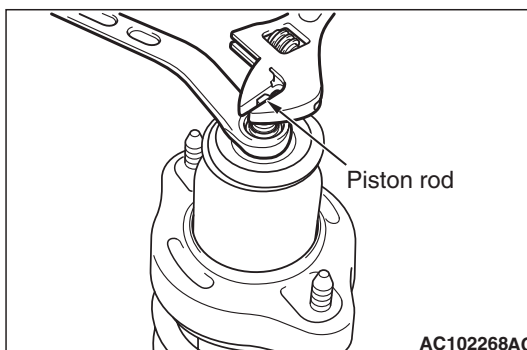
- To hold the coil spring securely, install special tool arm set (MB991239) evenly, and so that the space between both arms of the special tool will be maximum within the installation range.
- Do not use an impact wrench to tighten the bolt of special tool spring compressor body (MB991237). It will break the special tool.



1. Use following special tools to compress the coil spring.
 - Spring compressor body (MB991237)
 - Small arm set (MB991239)

WARNING

Do not use an impact wrench to remove the rear suspension coil spring nut (self-locking nut). Vibration of the impact wrench will cause special tools (MB991237 and MB991239) to slip and cause personal injury.

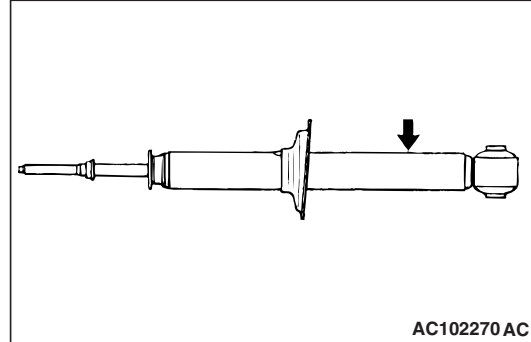


2. While holding the piston rod, remove the rear suspension coil spring nut (self-locking nut).

<> REAR SUSPENSION SHOCK ABSORBER DISPOSAL

WARNING

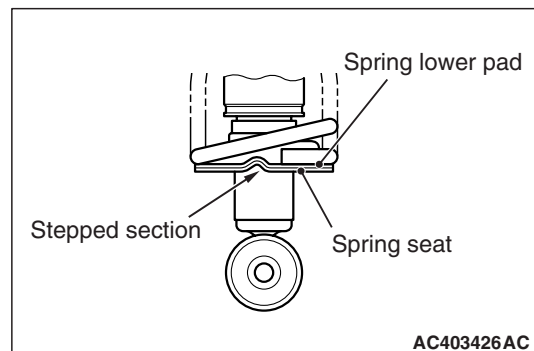
Wear goggles when drilling to protect your eyes from flying metal debris.



The gas must be discharged from the shock absorber before discarding it. Place the shock absorber horizontally with its piston rod extended. Then drill a hole of approximately 3 mm in diameter at the location shown in the illustration and discharge the gas.

REASSEMBLY SERVICE POINTS

>>A<< REAR SUSPENSION SPRING LOWER PAD INSTALLATION

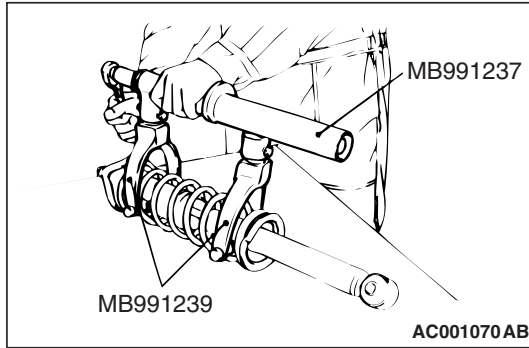


Align the stepped section of the spring lower pad with the stepped section of the spring seat of the shock absorber, and install the spring lower pad.

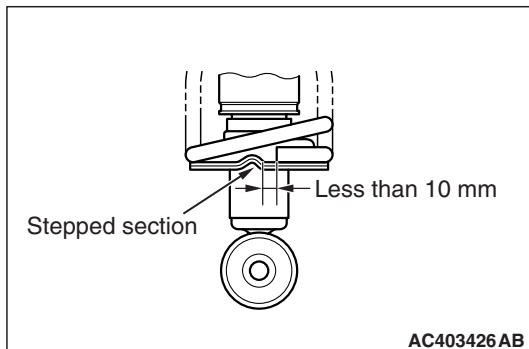
>>B<< REAR SUSPENSION COIL SPRING INSTALLATION

⚠ CAUTION

Do not use an impact wrench to tighten the bolt of special tool spring compressor body (MB991237). It will break the special tool.

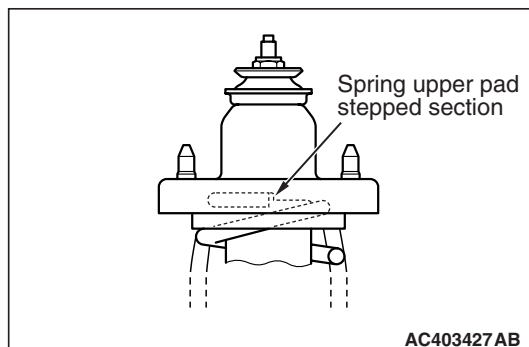


1. Use following special tools to compress the coil spring, and install the rear suspension coil spring to the spring lower pad.
 - Spring compressor body (MB991237)
 - Small arm set (MB991239)



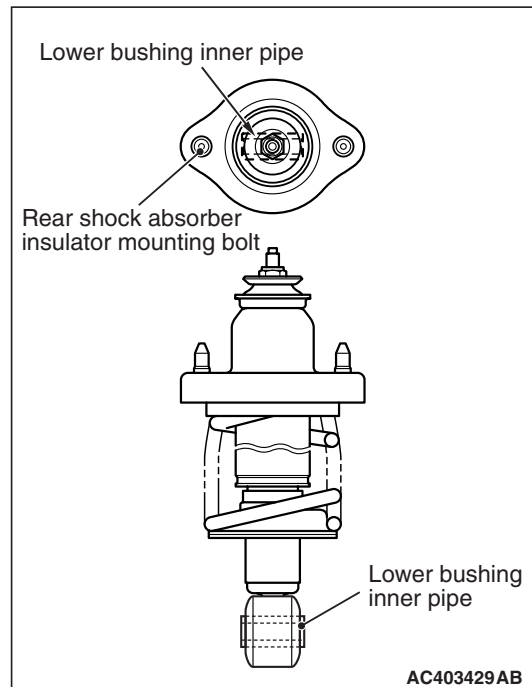
2. The rear suspension coil spring lower end must be positioned as illustrated.

>>C<< REAR SUSPENSION SPRING UPPER PAD INSTALLATION



Align the stepped section of the spring upper pad with the upper end of the coil spring, and install the spring upper pad.

>>D<< REAR SHOCK ABSORBER INSULATOR INSTALLATION



Install the rear shock absorber insulator so that the axis of the lower bushing inner pipe of the shock absorber and the line between the rear shock absorber insulator mounting bolts are straight when looking from above.

>>E<< REAR SUSPENSION COIL SPRING NUT (SELF-LOCKING NUT) INSTALLATION

1. Temporarily tighten the rear suspension coil spring nut (self-locking nut).

⚠ CAUTION

Do not use an impact wrench to tighten the rear suspension coil spring nut (self-locking nut), otherwise the piston rod locking nut inside the shock absorber will be damaged.

2. Remove the special tools (MB991237, MB991239), and then tighten the rear suspension coil spring nut (self-locking nut) to 25 ± 5 N·m.

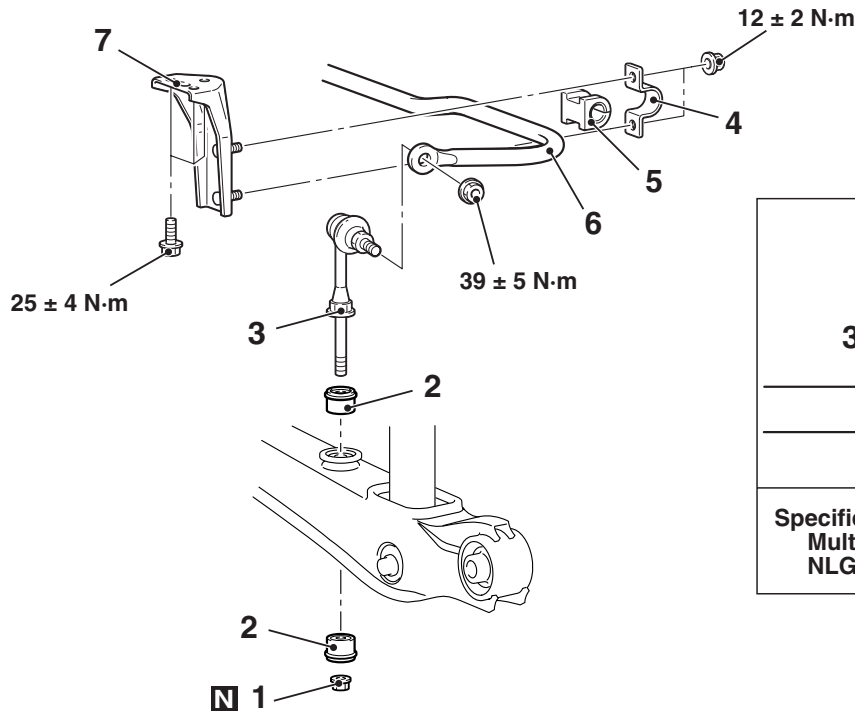
STABILIZER BAR

REMOVAL AND INSTALLATION

M1341003000258

Post-installation Operation

- Press the dust cover with your finger to check that there are no cracks or damage in the dust cover.

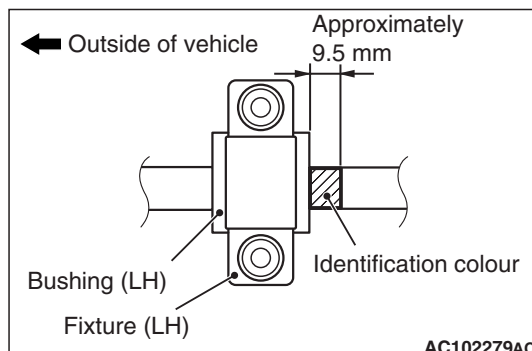


Removal steps

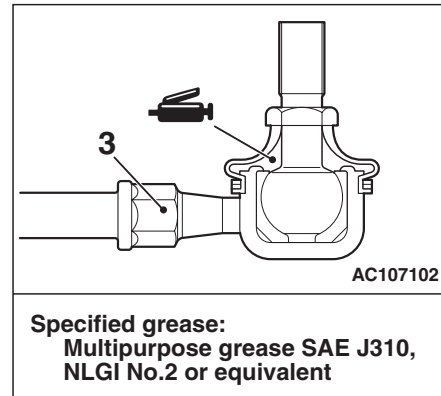
- >>B<< 1. Self-locking nut
2. Stabilizer rubber
3. Stabilizer link
>>A<< 4. Fixture
>>A<< 5. Bushing
>>A<< 6. Stabilizer bar
7. Stabilizer bracket

INSTALLATION SERVICE POINTS

>>A<< STABILIZER BAR/BUSHING/FIXTURE INSTALLATION

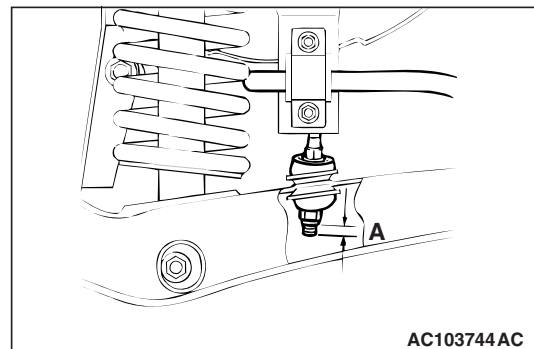


Install the stabilizer bar, the bushings and the fixtures as illustrated.



AC304232 AB

>>B<< SELF-LOCKING NUT INSTALLATION



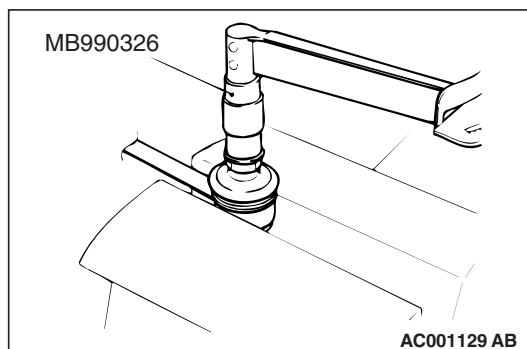
Tighten the self-locking nut until the stabilizer link thread part protruding length meets the standard value.

Standard value (A): 6 – 8 mm

INSPECTION

M1341001400294

- Check the bushings for wear and deterioration.
- Check the stabilizer bar for deterioration or damage.
- Check all bolts for condition and straightness.

**STABILIZER LINK BALL JOINT TURNING
TORQUE CHECK**

1. After shaking the ball joint stud several times, install the nut to the stud and use special tool preload socket (MB990326) to measure the turning torque of the ball joint.

Standard value: 0.5 – 1.5 N·m

2. If the measured value exceeds the standard value, replace the stabilizer link.
3. If the measured value is lower than the standard value, check that the ball joint turns smoothly without excessive play. If so, it is possible to re-use that ball joint.

**STABILIZER LINK BALL JOINT DUST
COVER CHECK**

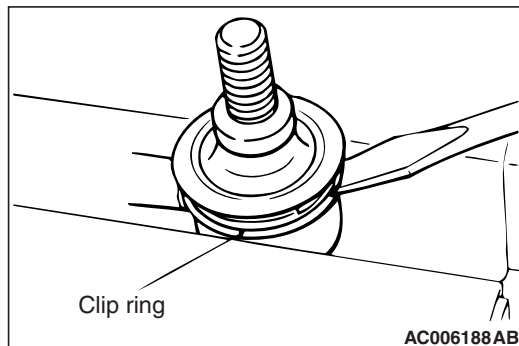
1. Check the dust cover for cracks or damage by pushing it with your finger.
2. If the dust cover is cracked or damaged, replace the stabilizer link.

NOTE: Cracks or damage of the dust cover may cause damage to the ball joint. When it is damaged during service work, replace the dust cover (Refer to P.34-20).

**STABILIZER LINK BALL JOINT DUST
COVER REPLACEMENT**

M1341010900383

Only when the dust cover is damaged accidentally during service work, replace the dust cover as follows:



1. Remove the clip ring and the dust cover.
2. Apply specified grease to the inside of a new dust cover.

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

3. Wrap plastic tape around the stabilizer link stud, and then install the dust cover to the stabilizer link.
4. Secure the dust cover by the clip ring.
5. Check the dust cover for cracks or damage by pushing it with finger.