GROUP 34

REAR SUSPENSION

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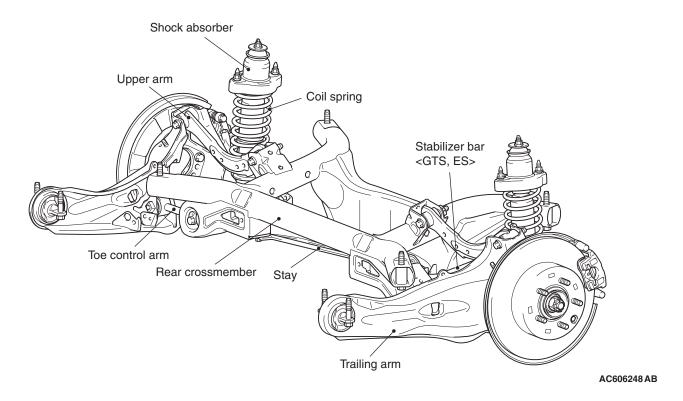
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GENERAL INFORMATION

M1341000101066

The trailing arm type multi-link suspension has been adopted.

CONSTRUCTION DIAGRAM



SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

M1341012700415

Item	Specification	
Control link	,	
Control link to crossmember nut	71 ±10 N· m (52 ±2 ft-lb)	
Control link to rear height sensor nut	9.5 ±2.5 N⋅ m (84 ±22 in-lb)	
Control link to trailing arm nut	71 ±10 N· m (52 ±2 ft-lb)	
Lower arm	·	
Lower arm to crossmember nut	71 ±10 N· m (52 ±2 ft-lb)	
Lower arm to trailing arm nut	71 ±10 N· m (52 ±2 ft-lb)	
Lower arm to shock absorber nut	71 ±10 N· m (52 ±2 ft-lb)	
Lower arm to stabilizer link nut	39 ±6 N⋅ m (29 ±4 ft-lb)	
Rear suspension crossmember	·	
Crossmember bracket mounting bolt	71 ±10 N· m (52 ±2 ft-lb)	
Crossmember stay mounting bolt	11 ±3 N⋅ m (97 ±26 in-lb)	
Rear wheel speed sensor clamp bolt	11 ±2 N⋅ m (98 ±17 ft-lb)	

Item	Specification	
Shock absorber assembly		
Shock absorber assembly to body nut	45 ±7 N⋅ m (33 ±5 ft-lb)	
Shock absorber assembly to lower arm nut	71 ±10 N· m (52 ±2 ft-lb)	
Shock absorber self-locking nut	25 ±5 N⋅ m (19 ±3 ft-lb)	
Stabilizer bar		
Stabilizer link nut	39 ±6 N⋅ m (29 ±4 ft-lb)	
Stabilizer bracket bolt	31 ±4 N⋅ m (23 ±3 ft-lb)	
Trailing arm		
Trailing arm to rear hub assembly bolt	95 ±14 N⋅ m (70 ±10 ft-lb)	
Trailing arm to brake hose bracket nut	11 ±2 N⋅ m (98 ±17 in-lb)	
Trailing arm to body bolt	110 ±11 N⋅ m (81 ±8 ft-lb)	
Rear wheel speed sensor to trailing arm bolt	11 ±2 N⋅ m (98 ±17 in-lb)	
Upper arm	,	
Upper arm to crossmember bolt	71 ±10 N· m (52 ±2 ft-lb)	
Upper arm to trailing arm	71 ±10 N· m (52 ±2 ft-lb)	

GENERAL SPECIFICATIONS

M1341000200424

COIL SPRING

Item	Specification	
	DE, ES	GTS
Wire diameter mm (in)	11 (0.4)	11 (0.4)
Average out side diameter mm (in)	91 (3.6)	91 (3.6)
Free length mm (in)	351 (13.8)	334 (13.1)

SERVICE SPECIFICATIONS

M1341000300904

Item	Standard value
Toe in mm (in)	3 ±2 (0.12 ±0.08)
Camber	-0° 55' $\pm 0^{\circ}$ 30' (left/right difference 30'max)
Control link pillow ball bushing and upper arm pillow ball bushing rotation torque N· m (in-lb)	2.0 –3.5 (17.7 –31.0)
Stabilizer link ball joint rotation torque N· m (in-lb)	0.5 –2.9 (4.4 –25.7)

REAR SUSPENSION DIAGNOSIS

INTRODUCTION TO REAR SUSPENSION DIAGNOSIS

M1341013100160

If the rear suspension is faulty, the vehicle will not run straightforward or noise will occur. Incorrect wheel alignment, malfunction of shock absorber, stabilizer bar, coil spring, control arms or worn or out-of-balance will cause these problems.

REAR SUSPENSION DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1341013200167

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a rear suspension fault.

- 1. Gather information from the customer.
- 2. Verify that the condition described by the customer exists.
- 3. Find the malfunction by following the Symptom Chart.
- 4. Verify malfunction is eliminated.

SYMPTOM CHART

M1341013500306

Symptom	Inspection procedure	Reference page
Squeaks or other abnormal noise	1	P.34-4
Poor ride	2	P.34-5
Body tilting	3	P.34-5

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Squeaks or other Abnormal Noise

DIAGNOSIS

STEP 1. Check for loose rear suspension installation bolts and nuts.

Q: Are the rear suspension installation bolts and nuts loose?

YES: Retighten them, then go to Step 5.

NO: Go to Step 2.

STEP 2. Check the malfunction of shock absorbers (worn bushings).

Q: Are the shock absorbers (bushings) in good condition?

YES: Go to Step 3.

NO: Replace the faulty part, then go to Step 5.

STEP 3. Check the upper arms and/or lower arms and/or control links for deformity or damage.

Q: Are the upper arms and/or lower arms and/or control links in good condition?

YES: Go to Step 4.

NO: Replace the faulty part, then go to Step 5.

STEP 4. Check the trailing arms for deformity or damage.

Q: Are the trailing arms in good condition?

YES: Go to Step 5.

NO: Replace the faulty part, then go to Step 5.

STEP 5. Retest the system.

Q: Is the malfunction eliminated?

YES: The procedure is complete.

NO: Return to Step 1.

INSPECTION PROCEDURE 2: Poor Ride

DIAGNOSIS

STEP 1. Check the excessive tire inflation pressure.

Refer to GROUP 31, On-vehicle Service —Tire Inflation Pressure Check P.31-7.

Q: Is the tire inflation pressure in good condition?

YES: Go to Step 2.

NO: Adjust the pressure, then go to Step 4.

STEP 2. Check for malfunction of shock absorbers (weak or broken springs).

Q: Are the shock absorbers in good condition?

YES: Go to Step 3.

NO: Replace the faulty part, then go to Step 4.

STEP 3. Check the stabilizer bar and/or stabilizer links for deformity or damage.

Q: Are the stabilizer bar and/or stabilizer link deformed or damaged?

YES: Replace the faulty part, then go to Step 4.

NO: Go to Step 4.

STEP 4. Retest the system.

Q: Is the malfunction eliminated?

YES: The procedure is complete.

NO: Return to Step 1.

INSPECTION PROCEDURE 3: Body Tilting

DIAGNOSIS

STEP 1. Check for weak or deteriorated bushings.

Q: Are the bushings in good condition?

YES: Go to Step 2.

NO: Replace the faulty part, then go to Step 5.

STEP 2. Check for weak or broken springs.

Q: Are the springs in good condition?

YES: Go to Step 3.

NO: Replace the faulty part, then go to Step 5.

STEP 3. Check the upper arms and/or lower arms and/or control links for deformity or damage.

Q: Are the upper arms and/or lower arms and/or control links deformed or damaged?

YES: Replace the faulty part, then go to Step 5.

NO: Go to Step 4.

STEP 4. Check the trailing arms for deformity or damage.

Q: Are the trailing arms deformed or damaged?

YES: Replace the faulty part, then go to Step 5.

NO: Go to Step 5.

STEP 5. Retest the system.

Q: Is the malfunction eliminated?

YES: The procedure is complete.

NO: Return to Step 1.

SPECIAL TOOL

M1341000600767

Tool	Tool number	Supersession	Application
MB991447	and name MB992123 Arm bushing remover and installer	_	Lower arm bushing removal and press-fit
	MB991448 Bushing remover and installer base	MB991448-01	
	MB991449 Bushing remover and installer supporter	_	
B992121	MB992121 Arm bushing remover and installer	_	Trailing arm bushing removal and press-fit
MB992125	MB992125 Arm bushing base	_	
MB990326	MB990326 Preload socket	General service tool	Stabilizer link ball joint rotation torque measurement
A B MB991237	 A: MB991237 Spring compressor body B: MB991239 Arm set 	MIT221369 or general service tool	Coil spring removal and installation

ON-VEHICLE SERVICE

REAR WHEEL ALIGNMENT CHECK AND ADJUSTMENT

M1341011000899

- 1. Before the wheel alignment measurement, adjust the rear suspension, wheel, and tires in good condition.
- 2. Park the vehicle on a level surface to measure the wheel alignment.

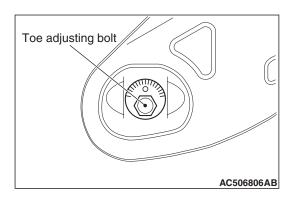
TOE-IN

Standard value: 3 ± 2 mm (0.12 ± 0.08 inch)

If it is out of the standard range, adjust as follows: Turn the toe adjusting bolt (the mounting bolt inside the body on the control link) to adjust.

Left wheels: Clockwise \rightarrow (+) Toe in Right wheels: Clockwise \rightarrow (-) Toe in

Toe-in varies approximately 2.6 mm (0.10inch) (equivalent to 0° 16' of the toe angle for one side) for each scale mark.

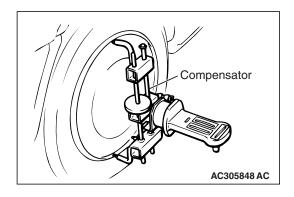


CAMBER

Standard value: -0° 55' $\pm 0^{\circ}$ 30' (left/right difference 0° 30' max)

NOTE:

- For vehicles with aluminum wheels, attach the camber/caster/kingpin gauge by using a compensator.
- The camber is pre-adjusted at factory and is not adjustable.



STABILIZER LINK BALL JOINT DUST COVER INSPECTION

M1341019100027

- 1. Using your fingers, press the dust cover to check for a crack or damage.
- If the dust cover has a crack or damage, replace the stabilizer link.

NOTE: If the dust cover has a crack or damage, the ball joint could be damaged.

CONTROL LINK, UPPER ARM AND LOWER ARM

REMOVAL AND INSTALLATION

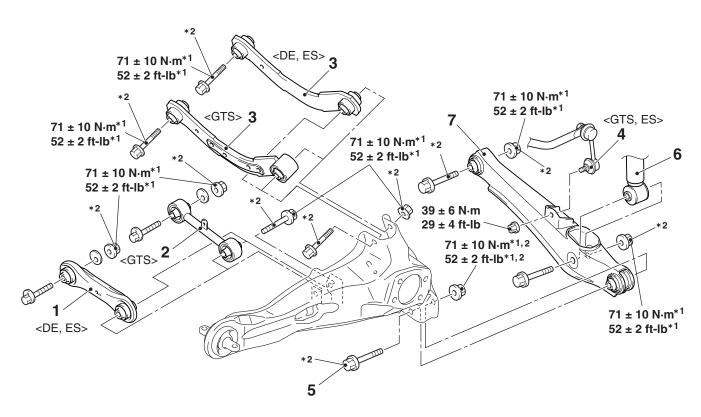
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⚠ CAUTION

- The parts indicated by *1 should be temporarily tightened, and then fully tightened with the vehicle standing on the ground at the curb weight condition.
- The parts indicated by *2 are the bolts/nuts with friction coefficient stabilizer. In removal, ensure there is no damage, clean dust and soiling from the bearing and thread surfaces, and tighten them to the specified torque.

Post-installation operation

- Using your fingers, press the Ball Joint Dust Cover to check for a crack or damage.
- Wheel alignment check and adjustment (Refer to P.34-7.)



AC606721AB

Control link and upper arm removal

<<A>>> <<A>> >> B<<

>>**A**<<

- 1. Control link <DE, ES>
- 2. Control link <GTS>
- 3. Upper arm
- Fuel tank vapor hose connection (Refer to GROUP 13B, Fuel tank P.13B-9.)

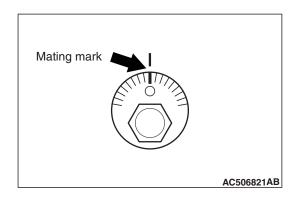
Lower arm removal steps

- Stabilizer link connection <GTS, ES>
- 5. Lower arm and trailing arm connection
- 6. Shock absorber connection
- Rear suspension crossmember stay (Refer to P.34-22.)
- 7. Lower arm

REMOVAL SERVICE POINT

<<A>> CONTROL LINK REMOVAL

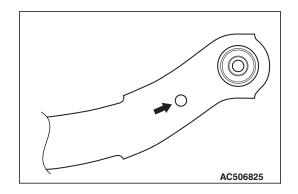
Make a mating mark on the toe adjusting bolt, and remove the control link.



INSTALLATION SERVICE POINTS

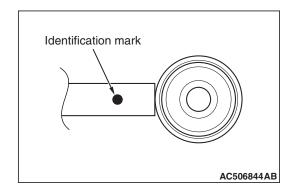
>>A<< UPPER ARM INSTALLATION

Install the upper arm so that the hole faces the body side.



>>B<< CONTROL LINK <GTS> INSTALLATION

Install the control link so that the identification mark faces the outside of the body.



CONTROL LINK, UPPER ARM AND LOWER ARM INSPECTION

M1341004900298

- 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.

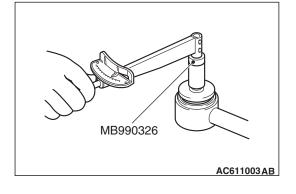




- MB990326: Preload socket
- Insert the bolts to the control link and the upper arm pillow ball bushing (vehicle body outside bushing) respectively, and install the nuts with the washers from the opposite side. Rotate the inner cylinder (including washer) for several turns, and measure the rotation starting torque of the control link and the upper arm pillow ball bushing respectively using the special tool MB990326.

Standard value: 2.0 –3.5 N⋅ m (17.7 –31.0 in-lb)

- 2. When the measured value exceeds the standard range, replace the control link or the upper arm pillow ball bushing.
- 3. When the measured value is less than the standard range, check that the control link and the upper arm ball joint has no looseness or gritty feeling. If there is no looseness or gritty feeling, it is judged as usable.

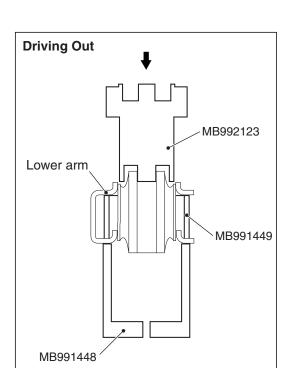


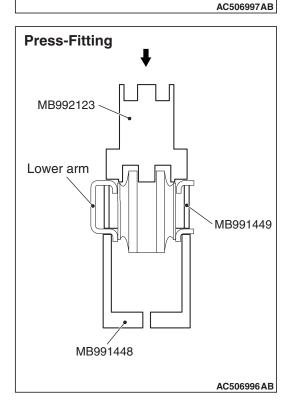
LOWER ARM BUSHING REPLACEMENT

M1341011800312

Required Special Tools:

- MB992123: Arm Bushing Remover and Installer
- MB991448: Bushing Remover and Installer Base
- MB991449: Bushing Remover and Installer Supporter





⚠ CAUTION

As the bushing has different outer diameters at both ends, be careful not to confuse the removal direction with the press-fit direction.

Use the special tools MB992123, MB991448 and MB991449 to remove and press-fit the lower arm bushing.

TRAILING ARM

REMOVAL AND INSTALLATION

M1341002200851

⚠ CAUTION

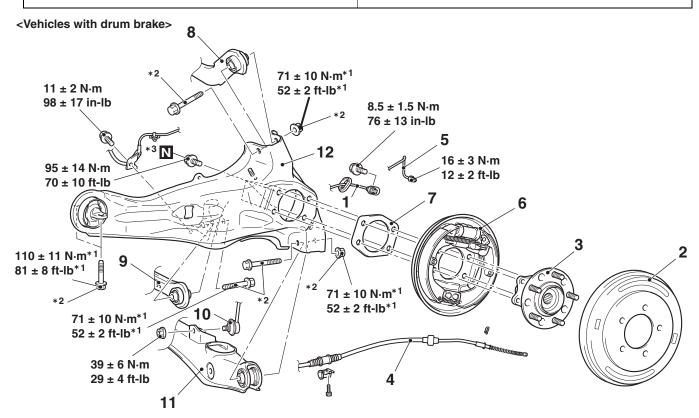
- The parts indicated by *1 should be temporarily tightened, and then fully tightened with the vehicle standing on the ground at the curb weight condition.
- The parts indicated by *2 are the bolts/nuts with friction coefficient stabilizer. In removal, ensure there is no damage, clean dust and soiling from the bearing and thread surfaces, and tighten them to the specified torque.
- The part indicated by *3 is the bolt/nut with friction coefficient stabilizer. In removal, replace it with new one.

Pre-removal operation

 Brake Fluid Draining (Refer to GROUP 35A, On-vehicle Service–Basic Brake System Bleeding P.35A-25.)

Post-installation operation

- Using your fingers, press the Ball Joint Dust Cover to check for a crack or damage.
- Brake Fluid Refilling and Bleeding (Refer to GROUP 35A, On-vehicle Service–Basic Brake System BleedingP.35A-25).
- Wheel Alignment Check and Adjustment (Refer to P.34-7.)
- Parking Brake Pedal Stroke Check and Adjustment (Refer to GROUP 36, On-vehicle Service –Parking Brake Pedal Stroke Check and Adjustment P.36-10.)



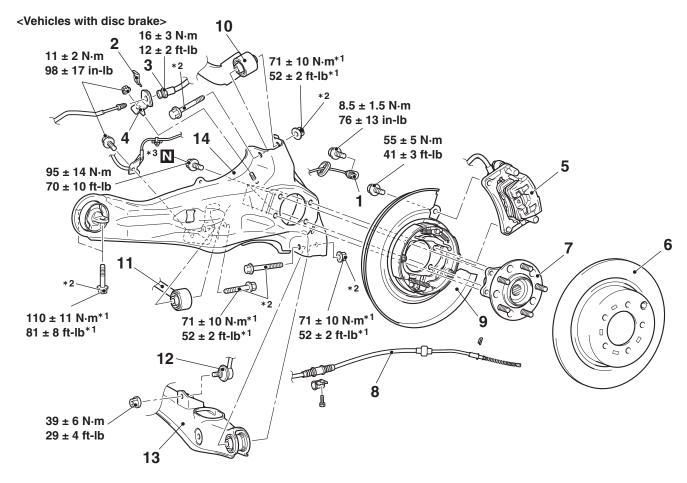
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Removal steps

- Rear wheel speed sensor Vehicles with ABS>
- 2. Rear brake drum
- 3. Rear hub assembly
- 4. Parking brake cable
- 5. Rear brake tube

Removal steps (Continued)

- 6. Rear brake assembly
- 7. Spacer
- 8. Upper arm connection
- Control link connection
- 10. Stabilizer link connection
- 11. Lower arm connection12. Trailing arm assembly



AC606788 AB

Removal steps

- Rear wheel speed sensor Vehicles with ABS>
- 2. Clamp
- 3. Brake hose connection
- 4. Brake hose bracket
- 5. Caliper assembly
- 6. Brake disc
- 7. Rear hub assembly

Removal steps (Continued)

- 8. Parking brake cable
- 9. Rear brake assembly
- 10. Upper arm connection
- 11. Control link connection
- 12. Stabilizer link connection
- 13. Lower arm connection
- 14. Trailing arm assembly

REMOVAL SERVICE POINT

<<A>> CALIPER ASSEMBLY REMOVAL

Retain the removed caliper assembly with a wire and the like to prevent from falling.

INSPECTION

M1341002300290

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

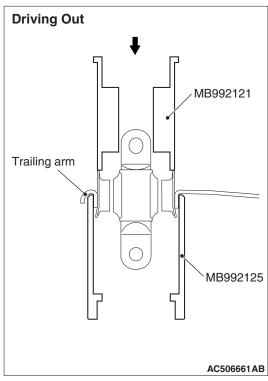
TRAILING ARM BUSHING REPLACEMENT

M1341011300384

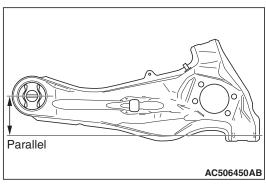
Required Special Tools:

MB992121: Arm Bushing Remover and Installer

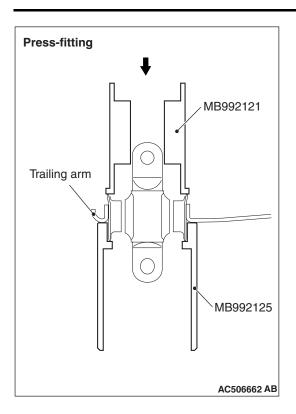




- MB992125: Arm Bushing Base
- 1. Use the special tools MB992121 and MB992125 to remove the trailing arm bushing:



- 2. Determine the installation direction and the installation position of the trailing arm bushing.
 - (1) Install so that the protruding side of the trailing arm bushing inner pipe faces inside the body.
 - (2) Position the trailing arm bushing inner space as shown in the figure.



3. Use the special tools MB992121 and MB992125 to press-fit the trailing arm bushing up to the position shown in the figure:

SHOCK ABSORBER ASSEMBLY

REMOVAL AND INSTALLATION

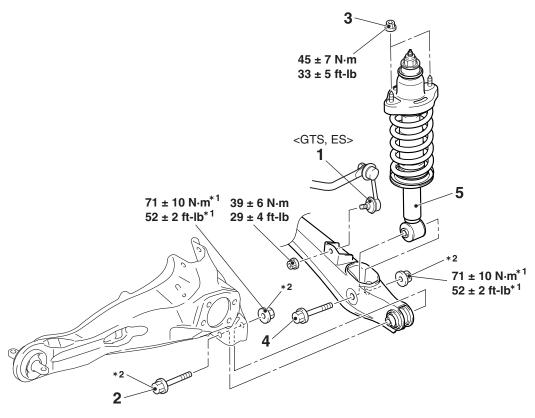
M1341002500603

⚠ CAUTION

- The parts indicated by *1 should be temporarily tightened, and then fully tightened with the vehicle standing on the ground at the curb weight condition.
- The parts indicated by *2 are the bolts/nuts with friction coefficient stabilizer. In removal, ensure there is no damage, clean dust and soiling from the bearing and thread surfaces, and tighten them to the specified torque.

Pre-removal and post-installation operation

- Using your fingers, press the Ball Joint Dust Cover to check for a crack or damage.
- Trunk Side Trim Removal and Installation (Refer to GROUP 52A –Trim P.52A-10.)



Removal steps

- Stabilizer link connection <GTS, ES>
- 2. Lower arm and trailing arm connection

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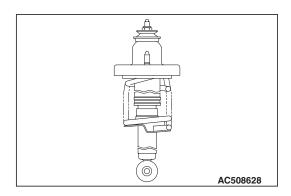
Removal steps (Continued)

- 3. Shock absorber mounting nut
- 4. Shock absorber and lower arm connection
- >>A<< 5. Shock absorber assembly

INSTALLATION SERVICE POINT

>>A<< SHOCK ABSORBER ASSEMBLY INSTAL-**LATION**

Install the shock absorber assembly so that the coil spring end faces the rear of the vehicle.



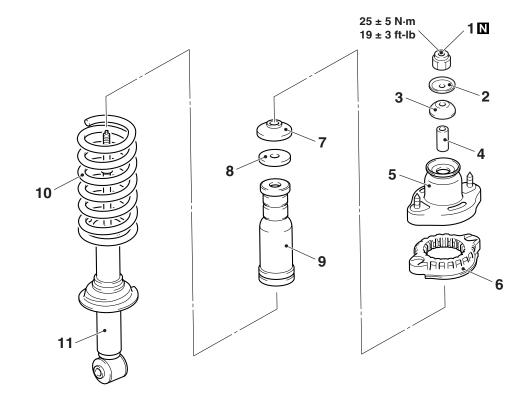
INSPECTION

M1341002600246

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

DISASSEMBLY AND ASSEMBLY

M1341002700180



AC506862AB

Disassembly steps

- <<**A**>> >B<< 1. Self-locking nut
 - 2. Washer
 - 3. Bushing B
 - 4. Collar
 - 5. Spring upper bracket assembly
 - Spring upper pad 6.
 - 7. Bushing A

Disassembly steps (Continued)

- 8. Plate
- Bump rubber 9.
- >>**A**<< 10. Coil spring
 - 11. Shock absorber

Required Special Tools:

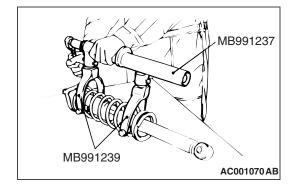
- MB991237: Spring Compressor Body
- MB991239: Arm Set

DISASSEMBLY SERVICE POINT

<<A>> SELF-LOCKING NUT REMOVAL

⚠ CAUTION

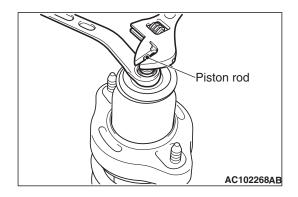
- To hold the coil spring securely, install the special tool MB991239 evenly, and so that the space between both arms of the special tool will be maximum within the installation range.
- Do not use an impact wrench to tighten the bolt of the special tool MB991237. It will break the special tool.
- 1.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



⚠ CAUTION

The locking nut for the piston rod inside the shock absorber may be loose. Do not use an impact wrench to loosen the self-locking nut.

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



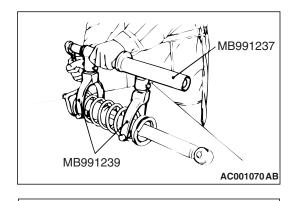
ASSEMBLY SERVICE POINTS

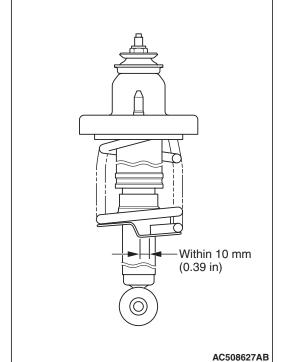
>>A<< COIL SPRING INSTALLATION

⚠ CAUTION

Do not use an impact wrench to loosen the bolt of the special tool MB991237. It will break the special tool.

1. Use the special tools MB991237 and MB991239 to compress the coil spring, and install it to the lower spring pad.





2. Align the end of the coil spring with the shock absorber as shown in the figure.

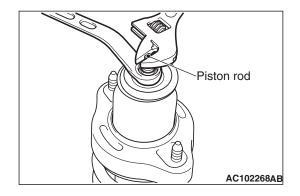
>>B<< SELF-LOCKING NUT INSTALLATION



The locking nut for the piston rod inside the shock absorber may be loose. Do not use an impact wrench to tighten the self-locking nut.

Counter the piston rod of the shock absorber as shown in the figure, and tighten the self-locking nut to the specified torque.

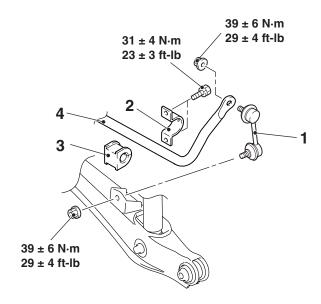
Tightening torque: $25 \pm 5 \text{ N} \cdot \text{m}$ (19 $\pm 3 \text{ ft-lb}$)



STABILIZER BAR <GTS, ES>

REMOVAL AND INSTALLATION

M1341003000496



AC611124AB

Removal steps

- 1. Stabilizer link
- >>**A**<< 2. Stabilizer bracket
- >>**A**<< 3. Bushing

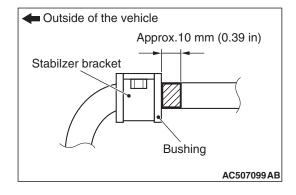
Removal steps (Continued)

- Rear suspension crossmember (Refer to P.34-22.)
- >>A<< 4. Stabilizer bar

INSTALLATION SERVICE POINT

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

Position the identification mark of the stabilizer bar at the left side of the vehicle as shown in the figure, and tighten the stabilizer bracket mounting bolt.



INSPECTION

M1341001400540

- 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 ROTATION TORQUE CHECK

M1341019300032

Required Special Tool:

- MB990326: Preload socket
- Move the stabilizer link ball joint stud back and forth for several times, install the stud with nut, and measure the stabilizer link ball joint rotation torque using the special tool MB990326.

Standard value: 0.5 –2.9 N· m (4.4 –25.7 in-lb)

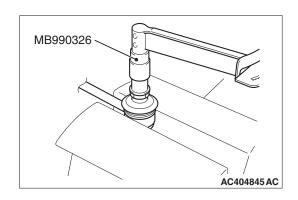
- 2. When the measured value exceeds the standard range, replace the stabilizer link.
- When the measured value is lower than the standard value, check the stabilizer link ball joint that there is no looseness or gritty feeling. If there is no looseness or gritty feeling, it is judged as usable.

STABILIZER LINK BALL JOINT DUST COVER CHECK

M134101300010

- 1. Using your fingers, press the dust cover to check for a crack or damage.
- 2. If the dust cover has a crack or damage, replace the stabilizer link.

NOTE: If the dust cover has a crack or damage, the ball joint could be damaged.



REAR SUSPENSION CROSSMEMBER

REMOVAL AND INSTALLATION

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⚠ CAUTION

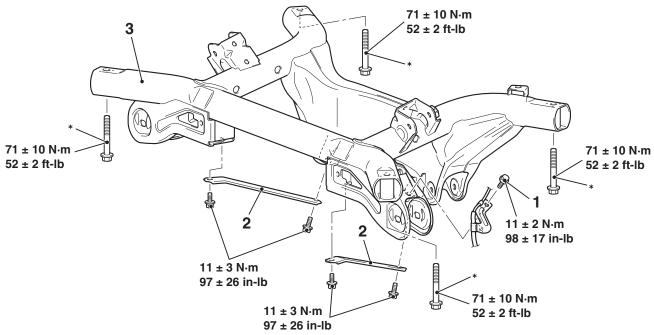
• The part indicated by *is the bolt with friction coefficient stabilizer. In removal, ensure there is no damage, clean dust and soiling from the bearing and thread surfaces, and tighten them to the specified torque.

Pre-removal operation

- Control link arm removal (Refer to P.34-8.)
- Upper arm removal (Refer to P.34-8.)
- Lower arm removal (Refer to P.34-8.)
- Rear suspension stabilizer bar removal (Refer to P.34-20.)
- Center exhaust pipe and main muffler removal (Refer to GROUP 15 –Exhaust Pipe and Muffler P.15-11.)

Post-installation operation

- Center exhaust pipe and main muffler installation (Refer to GROUP 15 –Exhaust Pipe and Muffler P.15-11.)
- Rear suspension stabilizer bar installation (Refer toP.34-20.)
- Lower arm installation (Refer to P.34-8.)
- Upper arm installation (Refer to P.34-8.)
- Control link installation (Refer to P.34-8.)
- Rear wheel alignment check and adjustment (Refer toP.34-7.)



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Removal steps

 Rear wheel speed sensor clamp Vehicles with ABS>

<<**A**>>

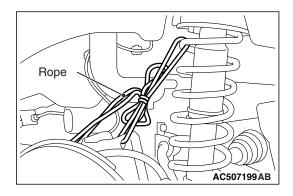
Removal steps (Continued)

- 2. Rear suspension crossmember stay
- 3. Rear suspension crossmember

REMOVAL SERVICE POINTS

<<A>> REAR SUSPENSION CROSSMEMBER REMOVAL

To avoid the brake hose load, fix the trailing arm assembly with a rope as shown in the figure.



INSPECTION

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- Check the crossmember for cracks or deformation.
- Check all bolts for condition and straightness.

NOTES