GROUP 34

REAR SUSPENSION

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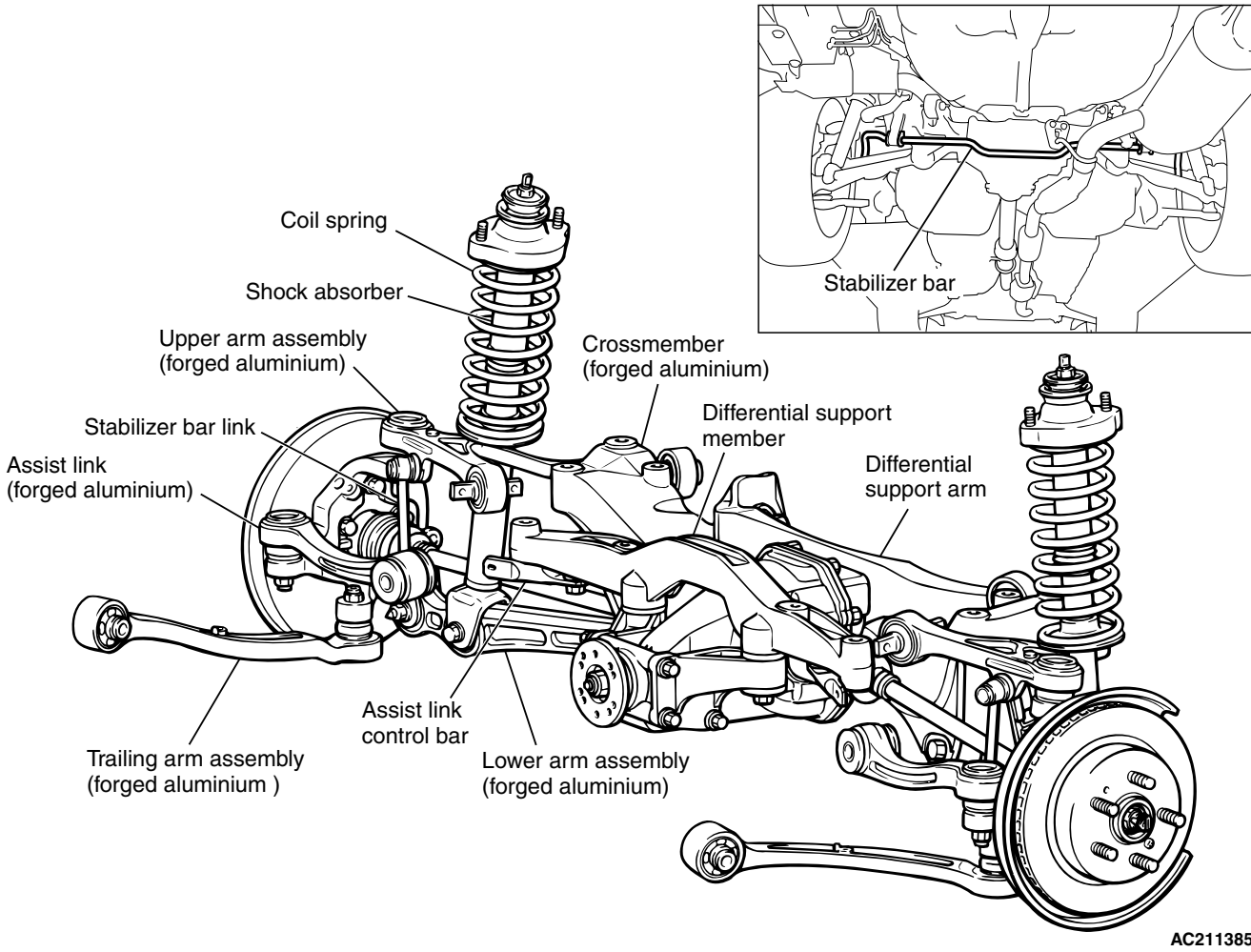
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GENERAL INFORMATION

M1341000100438

A trailing arm type multi-link suspension is used for the rear suspension. In contrast to the trailing arm multi-link system used on the Lancer, the Lancer Evolution uses a newly developed multi-link system built on a double wishbone base to achieve superior handling stability. Optimum design of the suspension points and use of aluminium parts for the suspension arms and crossmember reduces weight. In addition, use of ball joints on the suspension arms reduce friction and creates a suspension system that exhibits superior stroke characteristics that respond well under all driving conditions.

CONSTRUCTION DIAGRAM



SPECIFICATION

COIL SPRING

Item	Specification
Wire diameter mm	12
Average diameter mm	88
Free length mm	287

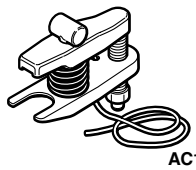
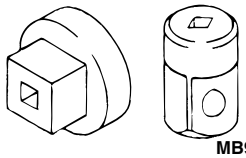
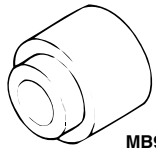
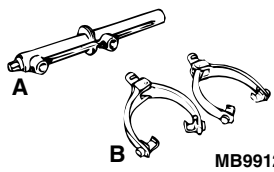
SERVICE SPECIFICATIONS

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Item	Standard value
Toe-in mm	3 ± 2
Camber	–1°00’ ± 30’ (Difference between right and left within 30’)
Thrust angle	0°00’ ± 0°09’
Upper arm ball joint turning torque N·m	0.5 – 2.5
Trailing arm ball joint turning torque N·m	0.5 – 2.5
Assist link ball joint turning torque N·m	0.5 – 2.5
Assist link slide bushing turning torque N·m	0.5 – 2.0
Lower arm pillow ball bushing turning N·m	0.5 – 3.0
Stabilizer bar link ball joint turning torque N·m	1.7 – 3.1

SPECIAL TOOLS

M1341000600477

Tool	Number	Name	Use
 AC106827	MB991897	Ball joint remover	Ball joint and Knuckle disconnection *NOTE: Steering linkage puller (MB990635 or MB991113) is also available to disconnect ball joint and Knuckle.*
 MB990326	MB990326	Preload socket	Ball joints, side bushing and pillow ball bushing turning torque measurement
 MB990800	MB990800	Ball joint dust cover installer	Ball joint dust cover press-fitting
 A B MB991237	A: MB991237 B: MB991239	A: Spring compressor body B: Arm set	Coil spring removal and installation

ON-VEHICLE SERVICE

REAR WHEEL ALIGNMENT CHECK AND ADJUSTMENT

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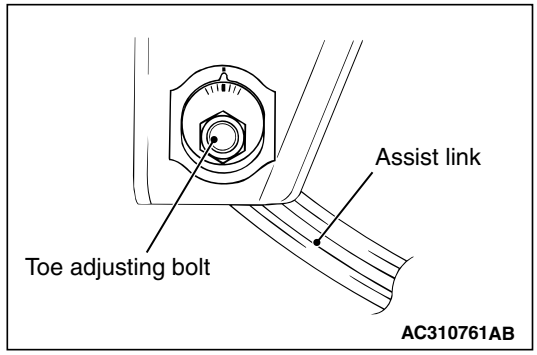
1. The rear suspension, wheels and tires should be serviced to normal condition prior to measurement of wheel alignment.
2. Measure the wheel alignment with the vehicle parked on a level surface.

TOE-IN

Standard value: 3 ± 2 mm

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

1. Be sure to adjust the camber before making toe adjustment.



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

Left wheel: Turning clockwise (+) toe-in

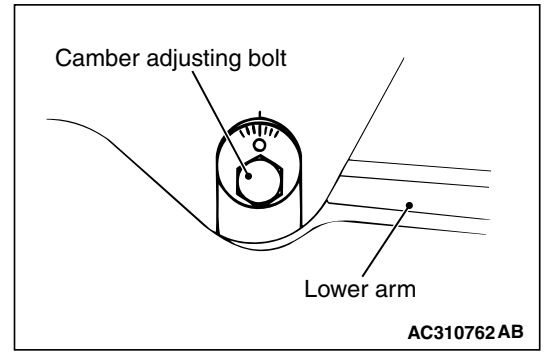
Right wheel: Turning clockwise (–) toe-in

NOTE: The scale has gradations of approximately 3.3 mm (single side toe angle equivalent to 19').

CAMBER

Standard value:
– 1° 00' ± 30' (difference between right and left wheel: less than 30')

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



1. Carry out camber adjustment by turning the camber adjusting bolt (lower arm to rear crossmember mounting bolt).

Left wheel: Turning clockwise (+) camber

Right wheel: Turning clockwise (–) camber

NOTE: The scale has gradations of approximately 14'

2. After adjusting the camber, the toe should be adjusted.

BALL JOINT DUST COVER INSPECTION

M1341012800326

Check the toe control arm assembly and the stabilizer bar link assembly ball joint dust cover as follows.

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

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

REAR SUSPENSION ASSEMBLY

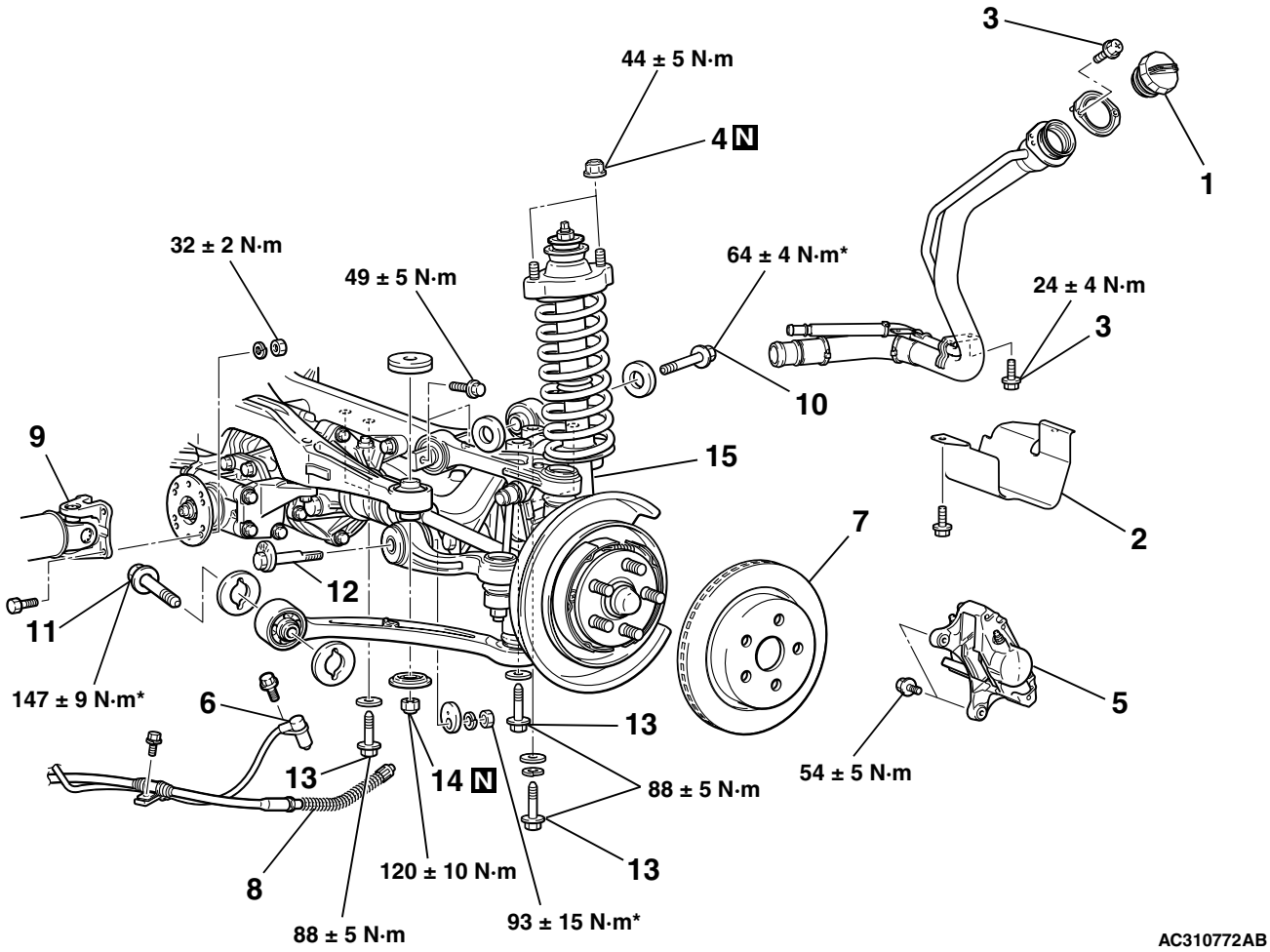
REMOVAL AND INSTALLATION

M1341001000199

⚠ CAUTION

- **During maintenance, take care not to contact the parts or tools to the caliper, because the paint of caliper will be scratched. And contact the parts or tools to the caliper, wipe out quickly.**
- ***:To prevent bushings from breakage, the parts indicated by * should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.**

Pre-removal Operation	Post-installation Operation
• Centre Exhaust Pipe Removal (Refer to GROUP 15, Exhaust Pipe and Main Muffler P.15-19).	• Centre Exhaust Pipe Installation (Refer to GROUP 15, Exhaust Pipe and Main Muffler P.15-19). • Parking Brake Lever Stroke Check (Refer to GROUP36-On-vehicle Service – Parking Brake Lever Stroke Check and Adjustment P.36-3). • Wheel Alignment Check And Adjustment (Refer to P.34-4).



AC310772AB

Removal steps

1. Fuel filler cap
2. Protector
3. Bolt
4. Shock absorber mounting nut

<<A>> 5. Brake caliper assembly

6. Rear ABS sensor
7. Brake disc
8. Parking brake cable end

Removal steps (Continued)

<<B>> >>B<< 9. Propeller shaft connection
10. Upper arm mounting bolt
11. Trailing arm mounting bolt
12. Assist link mounting bolt

<<C>> >>A<< 13. Crossmember mounting bolt
14. Differential support assembly mounting nut
15. Rear suspension assembly

REMOVAL SERVICE POINTS

<<A>> BRAKE CALIPER ASSEMBLY REMOVAL

⚠ CAUTION
Take care not to contact the parts or tools to the caliper because the paint of caliper will be scratched. And if there is brake fluid on the caliper, wipe it off quickly.
Remove the brake caliper assembly and support with wire.

<<B>> PROPELLER SHAFT DISCONNECTION

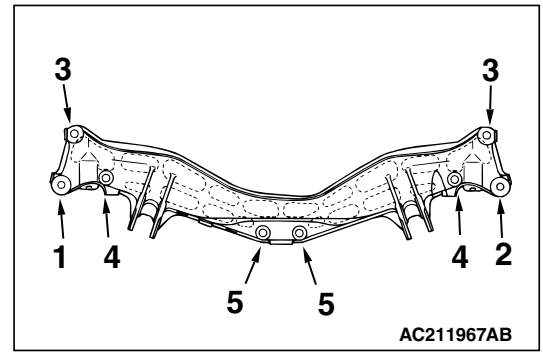
1. Mark the mating mark on the companion flange of the differential carrier and the flange yoke of the propeller shaft.
2. Remove the propeller shaft mounting bolt and nut.

<<C>> CROSSMEMBER MOUNTING BOLT REMOVAL

Support the differential case with a garage jack or transmission jack, then remove the crossmember mounting bolt.

INSTALLATION SERVICE POINTS

>>A<< CROSSMEMBER MOUNTING BOLT INSTALLATION



Tighten the bolt by following the order shown in the illustration. The sort and size of each bolt is different, so tighten by following the table below.

NOTE: In order to maintain accuracy and for ease of installing, the attachment hall diameter of the crossmember is different on forward/rearward. Follow the tightening order of the mounting bolts.

No.	Sort of bolt	Size of bolt (Screw diameter × Length) mm
1,2,3	Flange bolt (with washer)	12 × 105
4	Bolt (with spring washer and washer)	12 × 152
5	Flange bolt (with washer)	12 × 70

>>B<< PROPELLER SHAFT CONNECTION

⚠ CAUTION
If there is oil or grease on the thread of the mounting bolt or nut, they will loosen. So after wiping off oil or grease from the threads, tighten the mounting bolt.
Install the differential carrier and propeller shaft by aligning the mating marks.

UPPER ARM ASSEMBLY

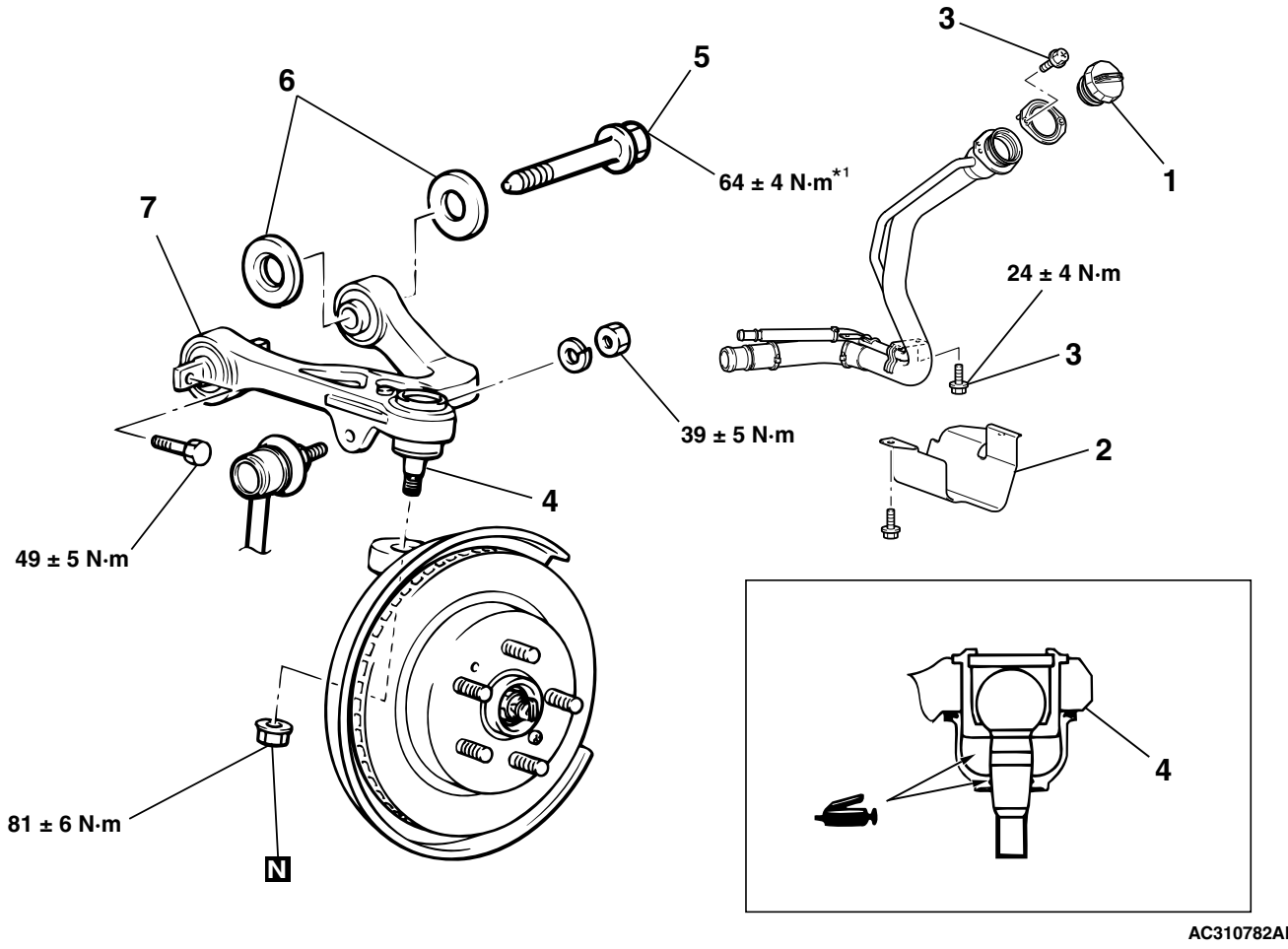
REMOVAL AND INSTALLATION

M1341003600283

⚠ CAUTION

- **During maintenance, take care not to contact the parts or tools to the caliper, because the paint of caliper will be scratched. And if there is brake fluid on the caliper, wipe out quickly.**
- ***1: To prevent bushings from breakage, the parts indicated by *1 should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.**

Post-installation Operation
- Press the dust cover with your finger to check that there are no cracks or damage in the dust cover.
- Wheel Alignment Check and Adjustment (Refer to P.34-4).



AC310782AB

Removal steps
1. Fuel filler cap*2
2. Protector*2
3. Bolt*2

<<A>> 4. Upper arm assembly and knuckle connection
5. Upper arm assembly mounting bolt

Removal steps (Continued)
6. Upper arm stopper
7. Upper arm assembly

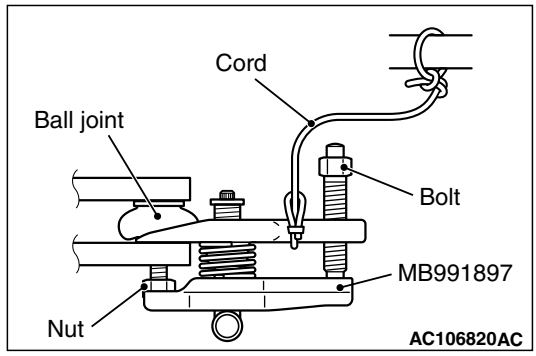
*NOTE: Install/remove the parts with the mark "*2" when installing/removing the LH side upper arm assembly.*

REMOVAL SERVICE POINT

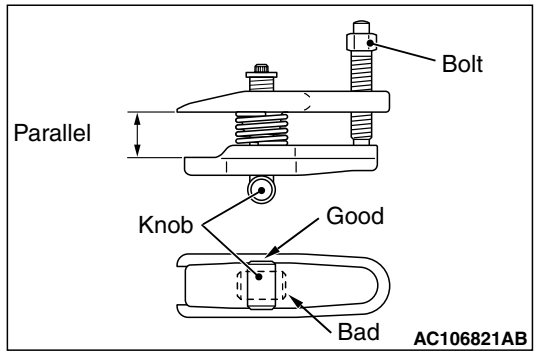
<<A>> UPPER ARM BALL JOINT AND KNUCKLE DISCONNECTION

⚠ CAUTION

- **Do not remove the nut from ball joint. Loosen it and use special tool ball joint remover (MB991897) to avoid possible damage to ball joint threads.**
- **Hang special tool ball joint remover (MB991897) with a cord to prevent it from falling.**



1. Install the special tool ball joint remover (MB991897) as shown in the figure.



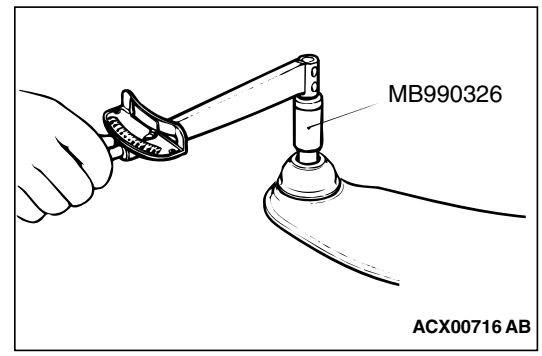
2. Turn the bolt and knob as necessary to make the jaws of the special tool ball joint remover (MB991897) parallel, tighten the bolt by hand and confirm that the jaws are still parallel.

   NOTE: When adjusting the jaws in parallel, make sure the knob is in the position shown in the figure.
3. Tighten the bolt with a wrench to disconnect the upper arm assembly and the knuckle.

INSPECTION

M1341015500131

UPPER ARM BALL JOINT TURNING TORQUE CHECK



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

   Standard value: 0.5 – 2.5 N·m
2. When the measured value exceeds the standard value, replace the upper arm assembly.
3. When the measured value is lower than the standard value, check that the upper arm ball joint turns smoothly without excessive play. If there is no excessive play, the ball joint can be reused

UPPER ARM 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 upper arm assembly.

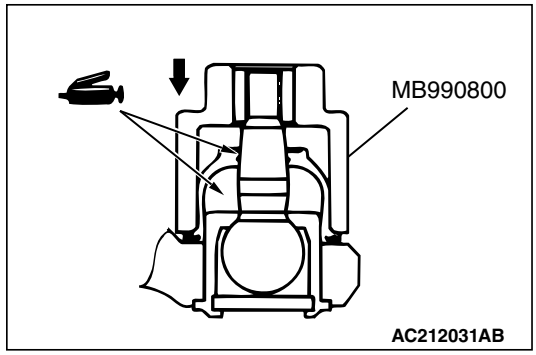
   NOTE: Cracks or damage of the dust cover may cause damage to the ball joint. When it is damaged during service work, replace the dust cover.

UPPER ARM BALL JOINT DUST COVER REPLACEMENT

M1341010900316

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

1. Remove the dust cover.



2. Fill the multipurpose grease in the dust cover and lubricate the lip. (Amount of filling grease in the dust cover: approximately 7g).
3. Using the special tool ball joint remover and installer (MB990800), punch the dust cover until it contacts the snap ring.
4. Press the dust cover with your finger to check that there are no cracks or damage in the dust cover.

TRAILING ARM

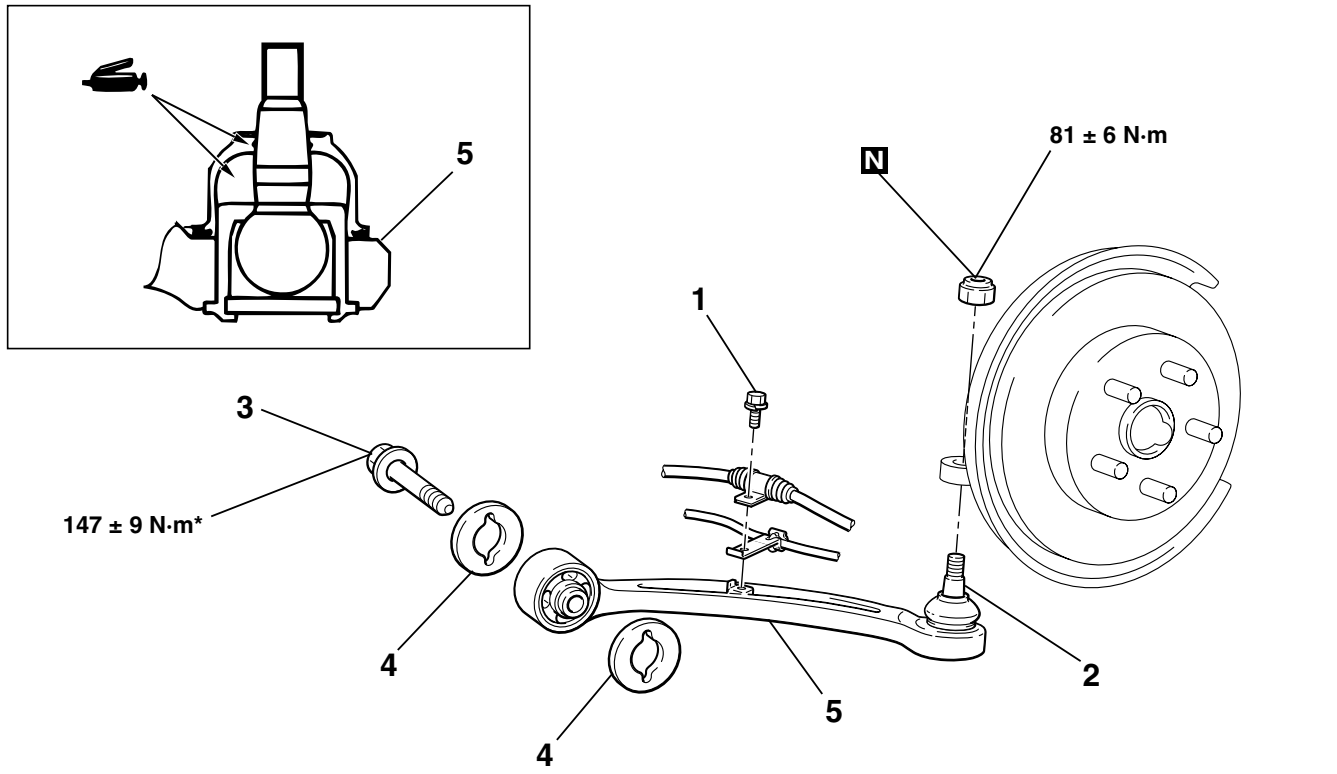
REMOVAL AND INSTALLATION

M1341002200475

⚠ CAUTION

- **During maintenance, take care not to contact the parts or tools to the caliper, because the paint of caliper will be scratched. And if there is brake fluid on the caliper, wipe out quickly.**
- ***: To prevent bushings from breakage, the parts indicated by * should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.**

Post-installation Operation
- Press the dust cover with your finger to check that there are no cracks or damage in the dust cover.
- Wheel Alignment Check and Adjustment (Refer to P.34-4).



AC310784AB

Removal steps
1. Parking brake cable bolt
<<A>> 2. Trailing arm assembly and knuckle connection

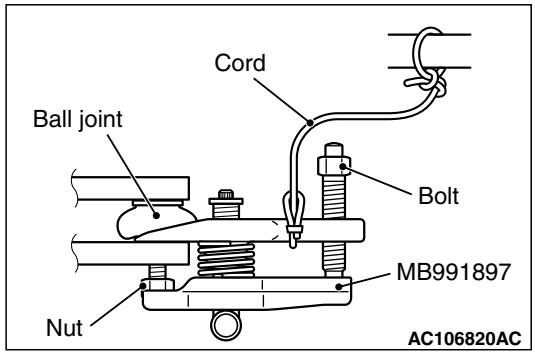
Removal steps (Continued)
3. Trailing arm assembly mounting bolt
4. Trailing arm bushing stopper
5. Trailing arm assembly

REMOVAL SERVICE POINT

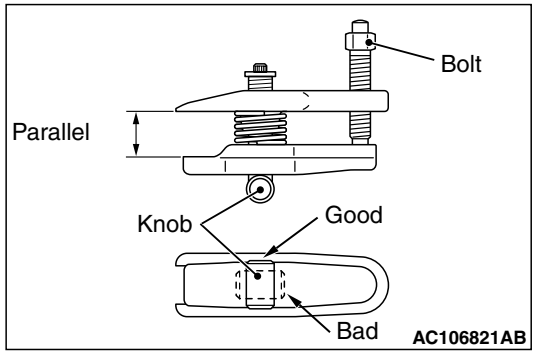
<<A>> TRAILING ARM ASSEMBLY AND KNUCKLE DISCONNECTION

⚠ CAUTION

- **Do not remove the nut from ball joint. Loosen it and use special tool ball joint remover (MB991897) to avoid possible damage to ball joint threads.**
- **Hang special tool ball joint remover (MB991897) with a cord to prevent it from falling.**



1. Install the special tool ball joint remover (MB991897) as shown in the figure.



2. Turn the bolt and knob as necessary to make the jaws of the special tool ball joint remover (MB991897) parallel, tighten the bolt by hand and confirm that the jaws are still parallel.

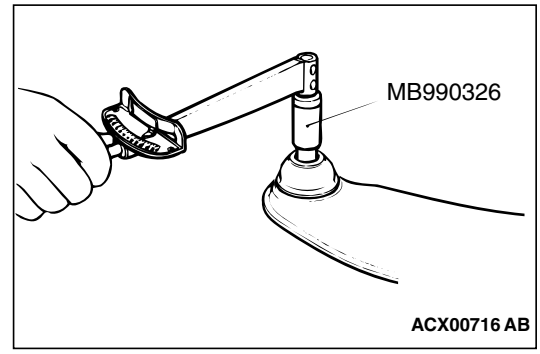
   NOTE: When adjusting the jaws in parallel, make sure the knob is in the position shown in the figure.

3. Tighten the bolt with a wrench to disconnect the trailing arm assembly and the knuckle.

INSPECTION

M1341002300234

TRAILING ARM BALL JOINT TURNING TORQUE CHECK



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

   Standard value: 0.5 – 2.5 N·m

2. When the measured value exceeds the standard value, replace the trailing arm assembly.
3. When the measured value is lower than the standard value, check that the trailing arm ball joint turns smoothly without excessive play. If there is no excessive play, the ball joint can be reused.

TRAILING ARM 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 trailing arm assembly.

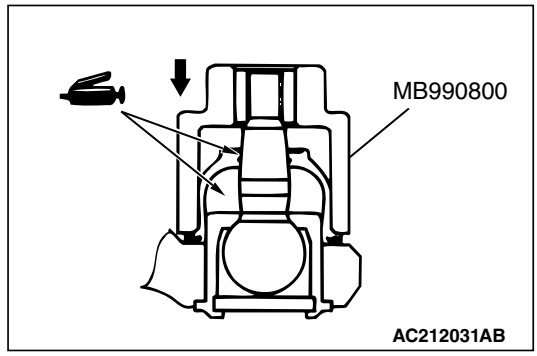
   NOTE: Cracks or damage to the dust cover may cause damage to the ball joint. When it is damaged during service work, replace the dust cover.

TRAILING ARM BALL JOINT DUST COVER REPLACEMENT

M1341010900327

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

1. Remove the dust cover.



2. Fill the multipurpose grease in the dust cover and lubricate the lip (Amount of filling grease in the dust cover: approximately 7g).
3. Using special tool ball joint remover and installer (MB990800), punch the dust cover until it contacts the snap ring.
4. Press the dust cover with your finger to check that there are no cracks or damage in the dust cover.

LOWER ARM ASSEMBLY AND ASSIST LINK

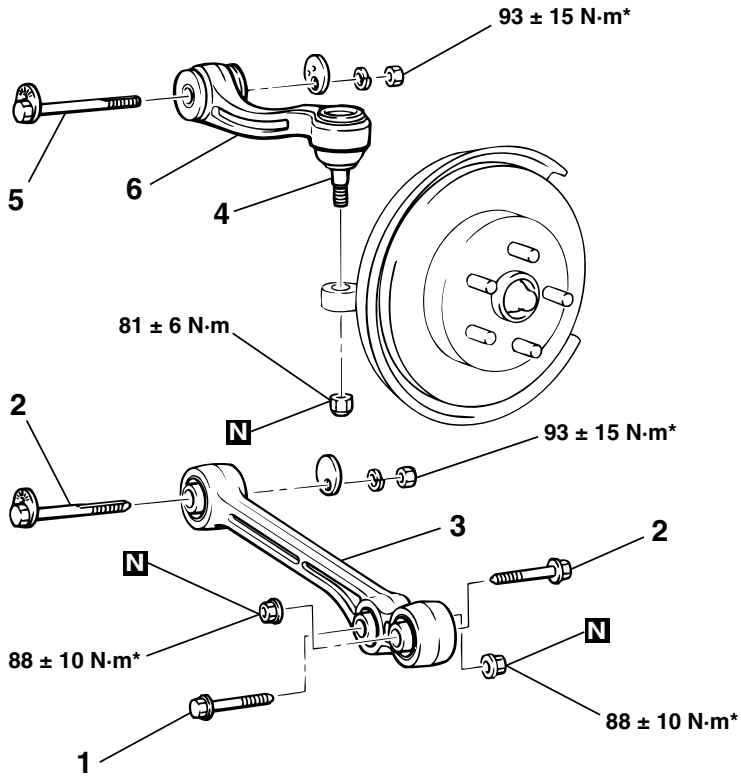
REMOVAL AND INSTALLATION

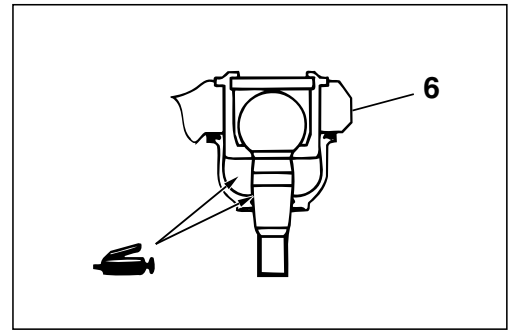
M1341017100032

⚠ CAUTION

- **During maintenance, take care not to contact the parts or tools to the caliper, because the paint of caliper will be scratched. And if there is brake fluid on the caliper, wipe out quickly.**
- ***: To prevent bushings from breakage, the parts indicated by * should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.**

Post-installation Operation
- Press the dust cover with your finger to check that there are no cracks or damage in the dust cover.
- Wheel Alignment Check and Adjustment (Refer to P.34-4).





AC310785AB

Lower arm assembly removal steps

1. Lower arm assembly to shock absorber connecting bolt

<<A>> 2. Lower arm assembly mounting bolt

>>A<< 3. Lower arm assembly

<<B>>

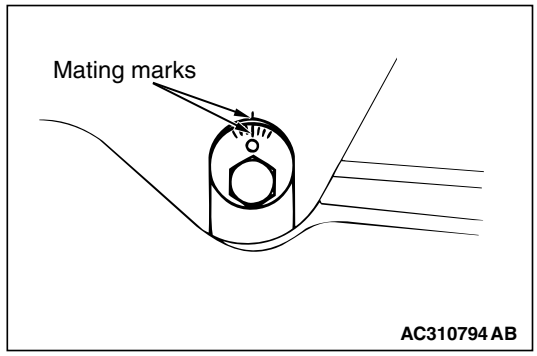
<<C>>

Assist link removal steps

4. Assist link and knuckle connection
5. Assist link mounting bolt
6. Assist link assembly

REMOVAL SERVICE POINTS

<<A>> LOWER ARM ASSEMBLY MOUNTING BOLT REMOVAL

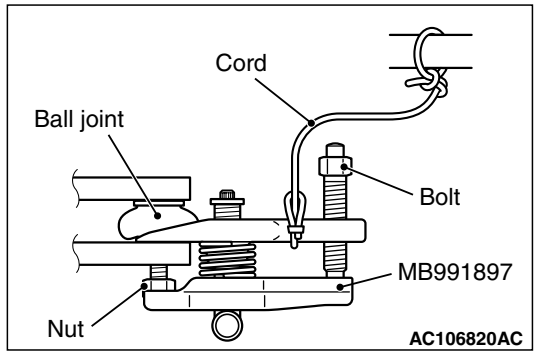


Make mating marks on the lower arm and the decentering cam bolt, then remove the lower arm and the decentering cam bolt.

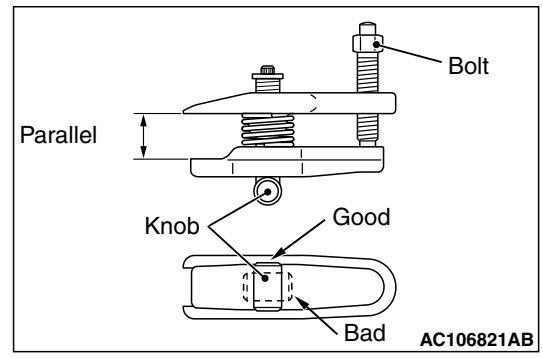
<<B>> ASSIST LINK AND KNUCKLE DISCONNECTION

⚠ CAUTION

- **Do not remove the nut from ball joint. Loosen it and use special tool ball joint remover (MB991897) to avoid possible damage to ball joint threads.**
- **Hang special tool ball joint remover (MB991897) with a cord to prevent it from falling.**



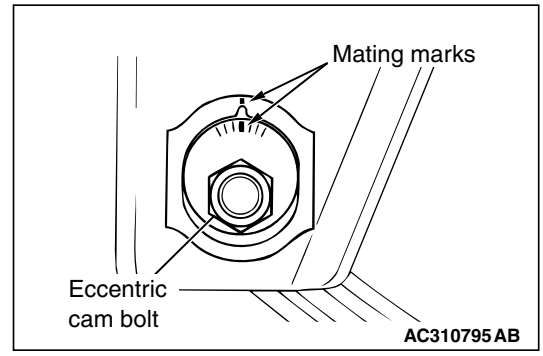
1. Install special tool ball joint remover (MB991897) as shown in the figure.



2. Turn the bolt and knob as necessary to make the jaws of special tool ball joint remover (MB991897) parallel, tighten the bolt by hand and confirm that the jaws are still parallel.

   NOTE: When adjusting the jaws in parallel, make sure the knob is in the position shown in the figure.
3. Tighten the bolt with a wrench to disconnect the assist link assembly and the knuckle.

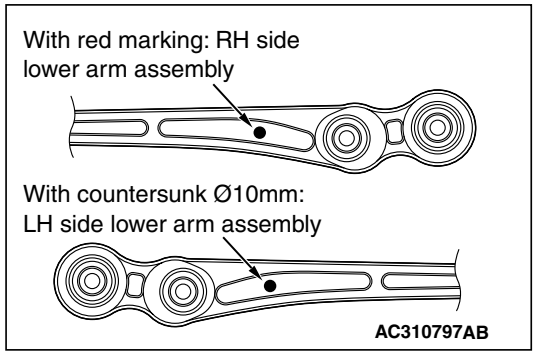
<<C>> ASSIST LINK MOUNTING BOLT REMOVAL



Make mating marks on the assist link and the decentering cam bolt, then remove the toe control arm and the decentering cam bolt.

INSTALLATION SERVICE POINT

>>A<< LOWER ARM ASSEMBLY INSTALLATION

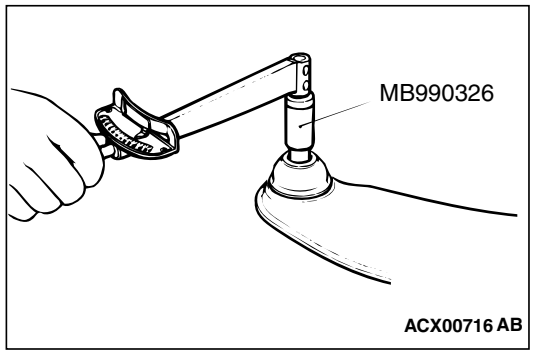


Check the identification mark, install the lower arm assembly.

INSPECTION

M1341017200039

ASSIST LINK BALL JOINT TURNING TORQUE CHECK

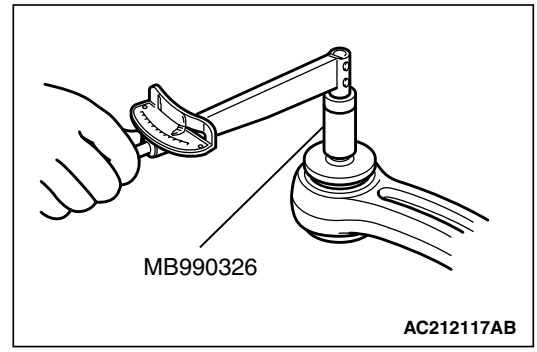


1. After shaking the assist link ball joint stud several times, measure the turning torque of the assist link ball joint by using special tool preload socket (MB990326).

   Standard value: 0.5 – 2.5 N·m

2. When the measured value exceeds the standard value, replace the assist link.
3. When the measured value is lower than the standard value, check that the assist link ball joint turns smoothly without excessive play. If there is no excessive play, the ball joint can be reused.

ASSIST LINK SLIDE BUSHING TURNING TORQUE CHECK



1. After inserting the bolt to the assist link slide bush and attaching the washer in the opposite direction, install the nut. After rotating the inner sleeve (include the washer) several times, measure the turning torque of the assist link slide bushing by using special tool preload socket (MB990326).

   Standard value: 0.5 – 2.0 N·m

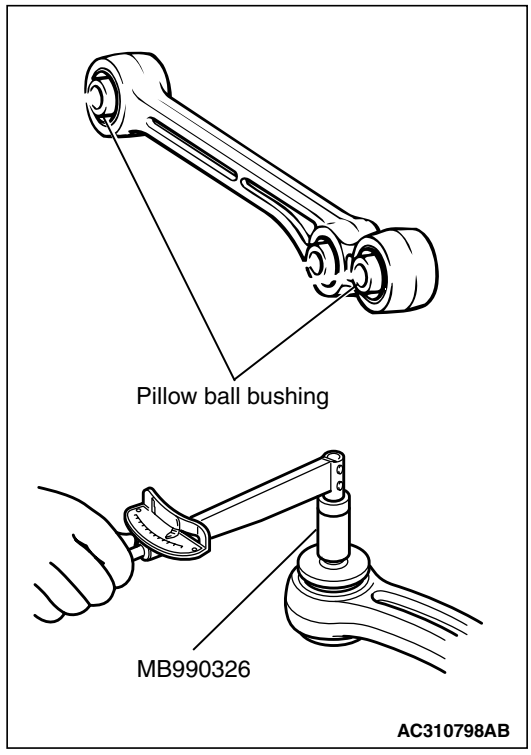
2. When the measured value exceeds the standard value, replace the assist link.
3. When the measured value is lower than the standard value, check that the assist link slide bushing turns smoothly without excessive play. If there is no excessive play, the slide bushing can be reused.

ASSIST 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 trailing arm assembly.

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.

LOWER ARM PILLOW BALL BUSHING TURNING TORQUE CHECK



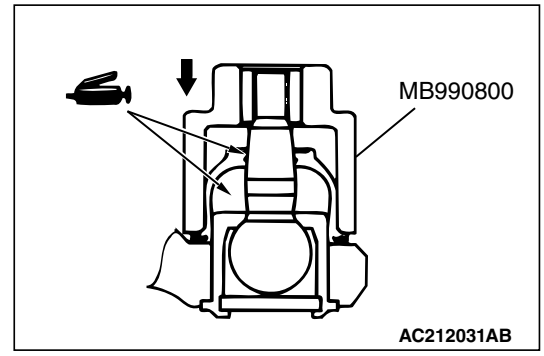
1. Insert the bolt to the lower arm pillow ball bushing, in the opposite direction, insert the washer then install the nut. After rotating the inner sleeve (contained washer) several times, measure the turning torque of the lower arm below ball bushing using special tool preload socket (MB990326).

   Standard value: 0.5 – 3.0 N·m

2. When the measured value exceeds the standard value, replace the lower arm assembly.
3. When the measured value is lower than the standard value, check that the lower arm pillow ball bushing turns smoothly without excessive play. If there is no excessive play, the pillow ball bushing can be reused.

ASSIST LINK BALL JOINT DUST COVER REPLACEMENT

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

1. Remove the dust cover.
2. Fill the multipurpose grease in the dust cover and lubricate the lip (Amount of filling grease in the dust cover: approximately 7g).
3. Using special tool ball joint remover and installer (MB990800), punch the dust cover until it contacts the snap ring.
4. Press the dust cover with your finger to check that there are no cracks or damage in the dust cover.

SHOCK ABSORBER ASSEMBLY

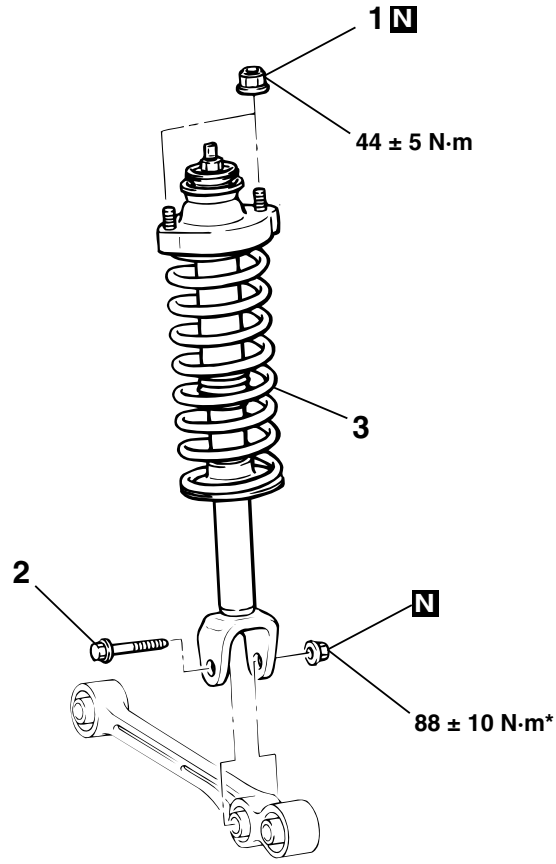
REMOVAL AND INSTALLATION

M1341002500391

⚠ CAUTION

- **During maintenance, take care not to contact the parts or tools to the caliper, because the paint of caliper will be scratched. And if there is brake fluid on the caliper, wipe out quickly.**
- ***: To prevent bushings from breakage, the parts indicated by * should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.**

Pre-removal and Post-installation Operation
- Trunk Room Side Trim Removal and Installation (Refer to GROUP 52A, Trims P.52A-10).



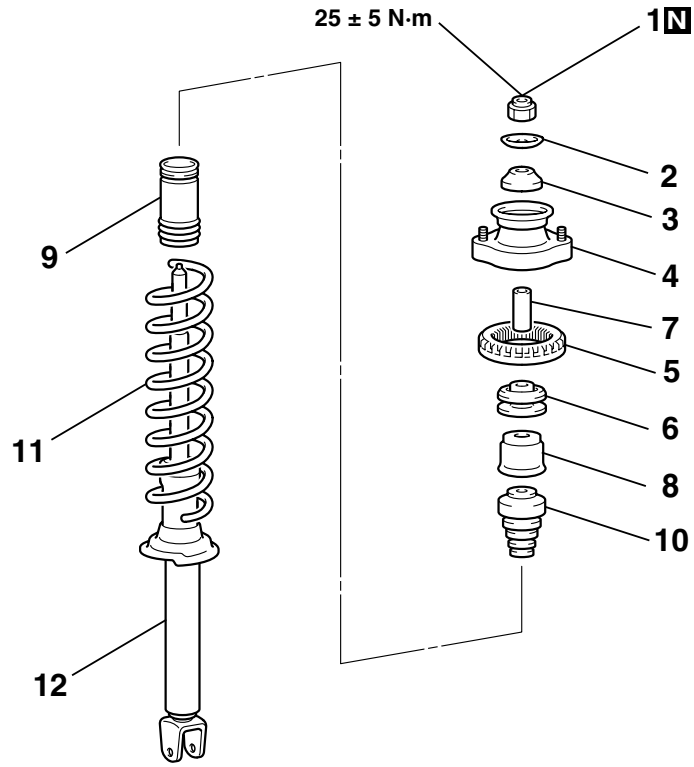
AC310799AB

Removal steps
1. Coil spring nut

Removal steps (Continued)
2. Coil spring bolt
3. Shock absorber assembly

DISASSEMBLY AND ASSEMBLY

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Disassembly steps

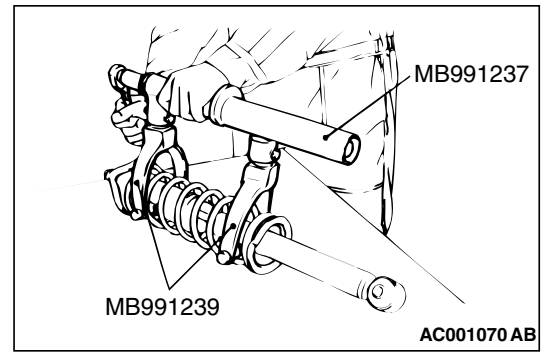
<<A>> >>D<< 1. Coil spring nut
2. Coil spring washer
3. Coil spring bushing
>>C<< 4. Shock absorber insulator
>>B<< 5. Spring upper pad
6. Coil spring bushing
7. Coil spring collar
8. Shock absorber cup
9. Shock absorber cover
10. Shock absorber damper
>>A<< 11 Coil spring
12 Shock absorber assembly

DISASSEMBLY SERVICE POINT

<<A>> COIL SPRING NUT REMOVAL

⚠ CAUTION

- **Install special tools spring compressor body (MB991237) and arm set (MB991239) evenly, and so that the maximum length will be attained within the installation range.**
- **Do not use an impact wrench, as it will cause the bolt of special tool spring compressor body (MB991237) to be seized.**

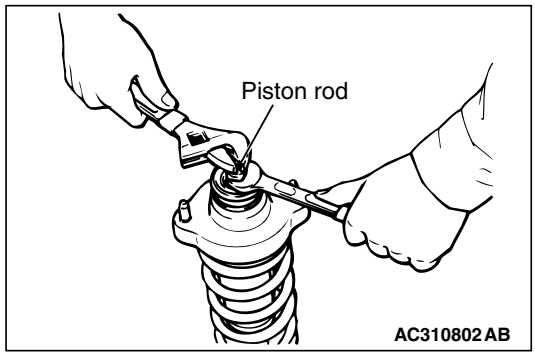


AC001070 AB

1. Use special tools spring compressor body (MB991237) and arm set (MB991239) to compress the coil spring.

⚠ WARNING

To prevent the piston rod lock nut inside the shock absorber from loosening, do not use an impact wrench when the coil spring nut is loosened.



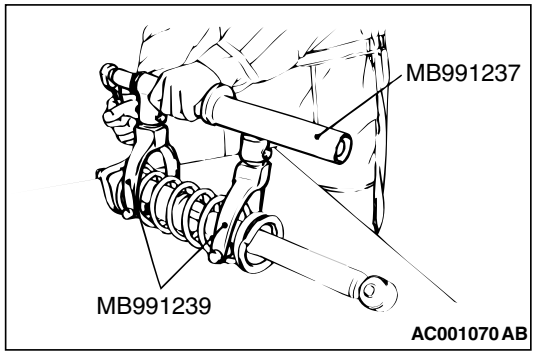
2. Holding the piston rod, remove the coil spring nut.

ASSEMBLY SERVICE POINTS

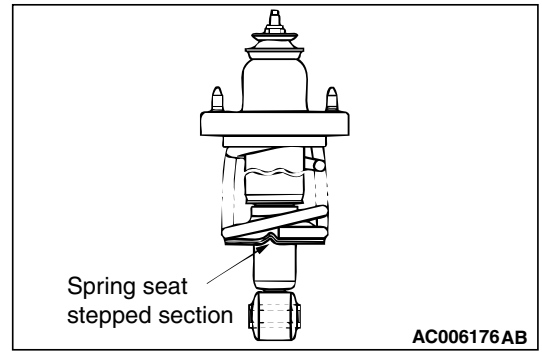
>>A<< COIL SPRING INSTALLATION

⚠ CAUTION

Do not use an impact wrench, as it will cause the bolt of the special tool spring compressor body (MB991237) to be seized.

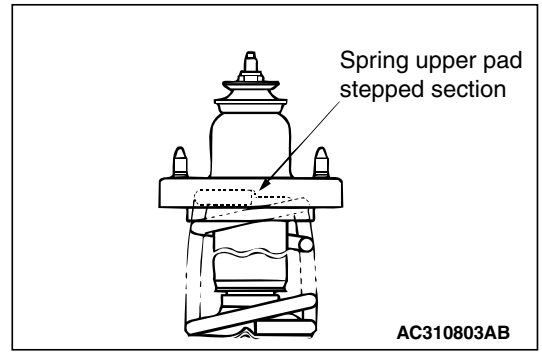


1. Use special tools spring compressor body (MB991237) and arm set (MB991239) to compress the coil spring, and install it to the spring seat of the shock absorber.



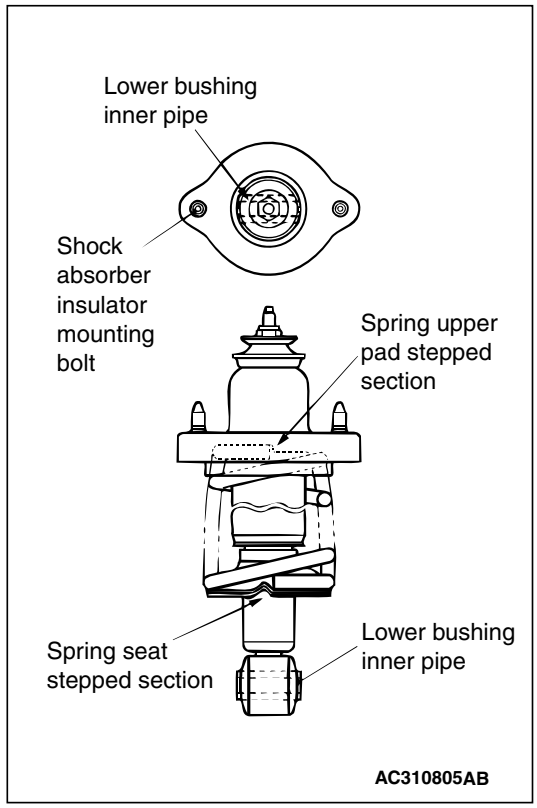
2. Align the end of the coil spring with the stepped section of the spring seat of the shock absorber.

>>B<< SPRING UPPER PAD INSTALLATION



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

>>C<< SHOCK ABSORBER INSULATOR INSTALLATION



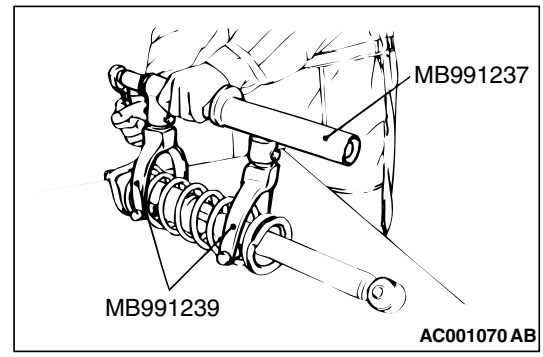
Install the shock absorber insulator so that the lower bushing inner pipe of the shock absorber and the line between the shock absorber insulator mounting bolts are straight when looking from above.

>>D<< COIL SPRING NUT INSTALLATION

⚠ CAUTION

To prevent the piston rod lock nut inside the shock absorber from loosening, do not use an impact wrench when the coil spring nut is tightened.

1. Provisionally tighten the coil spring nut.



2. After removing special tools spring compressor body (MB991237) and arm set (MB991239), tighten the coil spring nut to 25 ± 5 N·m.

STABILIZER BAR

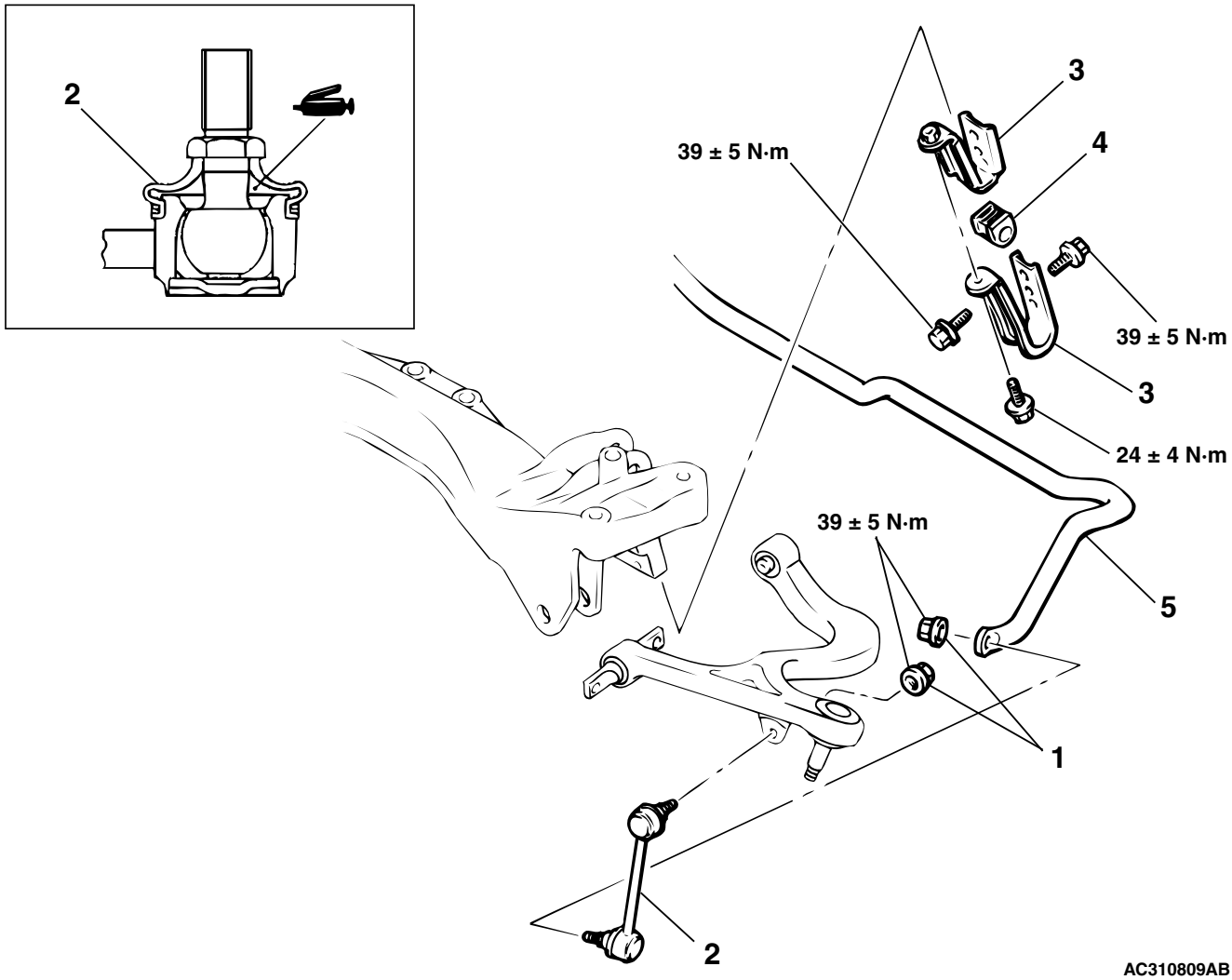
REMOVAL AND INSTALLATION

M1341003000322

⚠ CAUTION

During maintenance, take care not to contact the parts or tools to the caliper, because the paint of caliper will be scratched. And if there is brake fluid on the caliper, wipe it off quickly.

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
1. Stabilizer nut
2. Stabilizer bar link

>>A<< 3. Stabilizer bar bracket

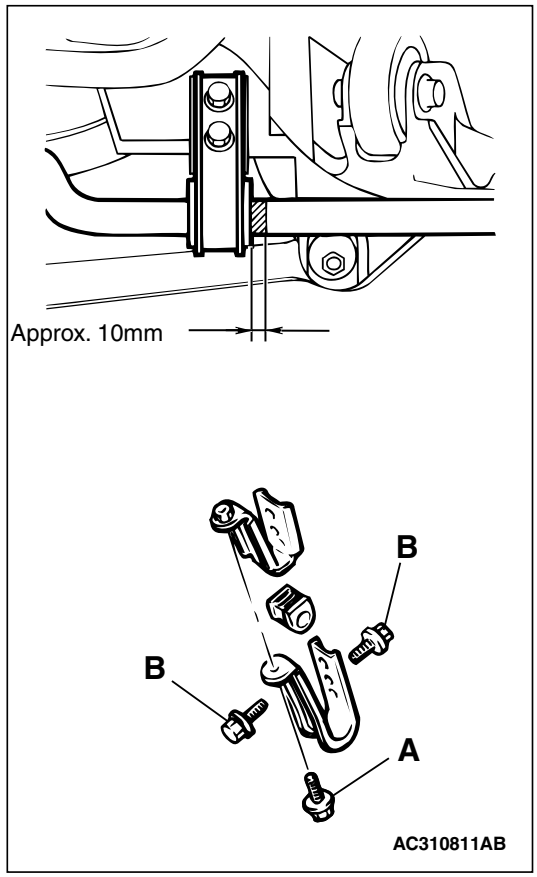
Removal steps (Continued)

>>A<< 4. Stabilizer bushing

>>A<< 5. Stabilizer bar

INSTALLATION SERVICE POINT

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

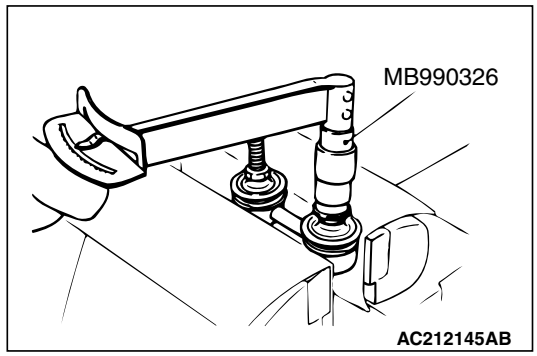


Align the stabilizer bar until the identification colour of the stabilizer bar is out of the dimension shown as the illustration from the stabilizer bush to the vehicle centre. After tightening the stabilizer bracket mounting bolt A, tighten mounting bolt B.

INSPECTION

M1341001400368

STABILIZER BAR LINK BALL JOINT TURNING TORQUE CHECK



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

   Standard value: 1.7 – 3.0 N·m
2. When the measured value exceeds the standard value, replace the stabilizer bar link.
3. When 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 reuse that ball joint.

STABILIZER BAR LINK BALL JOINT DUST COVER CHECK

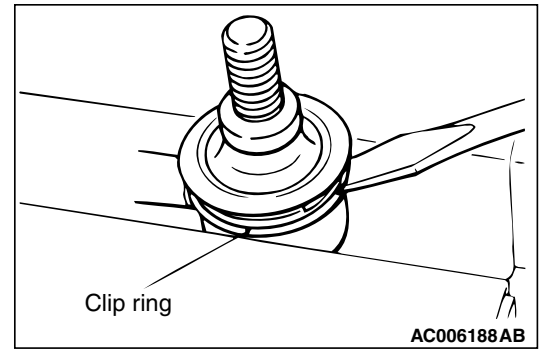
1. Check the dust cover for cracks or damage by pushing it with your finger.
2. If the dust cover is cracked or damaged, replace the stabilizer bar link.

   NOTE: Cracks or damage of the dust cover may cause damage of the ball joint. When it is damaged during service work, replace the dust cover.

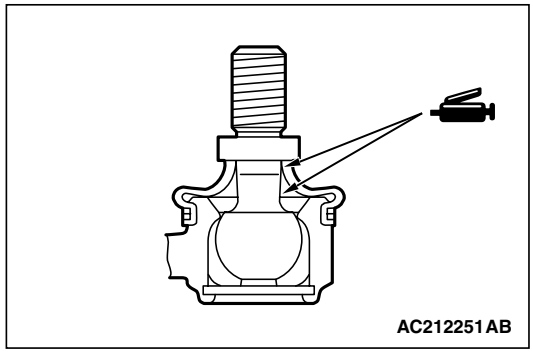
STABILIZER BAR LINK BALL JOINT DUST COVER REPLACEMENT

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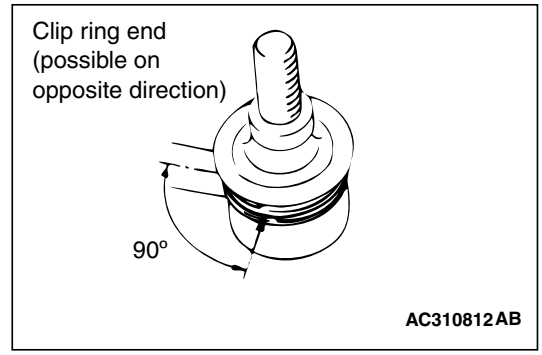
Only when the dust cover is damaged accidentally during service work, replace the dust cover as follows:



1. Remove the clip ring and the dust cover.


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2. Apply multipurpose grease to the inside of the dust cover.
3. Wrap plastic tape around the stabilizer bar link stud, and then install the dust cover to the stabilizer bar link.



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4. Secure the dust cover by the clip ring. Then install the clip ring end in order to position it 90 degrees from the axis of the link.
5. Check the dust cover for cracks or damage by pushing it with your finger.

NOTES