

## GROUP 27

# REAR AXLE

## CONTENTS

<b>GENERAL DESCRIPTION.....</b>	<b>27-2</b>	REAR HUB ROTARY-SLIDING RESISTANCE CHECK <VEHICLES WITH DRUM BRAKE> .....	27-6
<b>REAR AXLE DIAGNOSIS .....</b>	<b>27-2</b>	REAR HUB ROTARY-SLIDING RESISTANCE CHECK<VEHICLES WITH DISC BRAKE> .	27-6
INTRODUCTION TO REAR AXLE DIAGNOSIS .....	27-2	HUB BOLT REPLACEMENT <VEHICLES WITH DRUM BRAKE> .....	27-7
REAR AXLE DIAGNOSTIC TROUBLESHOOTING STRATEGY .....	27-2	HUB BOLT REPLACEMENT <VEHICLES WITH DISC BRAKE> .....	27-8
SYMPTOM CHART.....	27-2		
SYMPTOM PROCEDURES .....	27-3	<b>REAR AXLE HUB ASSEMBLY .....</b>	<b>27-9</b>
<b>SPECIAL TOOLS.....</b>	<b>27-4</b>	REMOVAL AND INSTALLATION .....	27-9
		INSPECTION.....	27-11
<b>ON-VEHICLE SERVICE.....</b>	<b>27-5</b>	<b>SPECIFICATIONS .....</b>	<b>27-12</b>
WHEEL BEARING END PLAY CHECK <VEHICLES WITH DRUM BRAKE> .....	27-5	FASTENER TIGHTENING SPECIFICATIONS.....	27-12
WHEEL BEARING END PLAY CHECK <VEHICLES WITH DISC BRAKE> .....	27-5	SERVICE SPECIFICATIONS .....	27-12
		SEALANT .....	27-12

GENERAL DESCRIPTION

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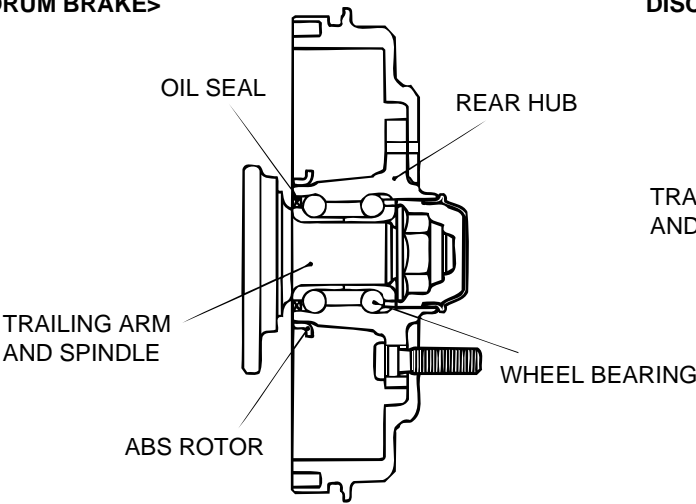
The rear axle has the following features:

- The wheel bearing is a unit ball bearing (double-row angular contact ball bearing) which incorporates the oil seals and is highly resistant to a thrust load.

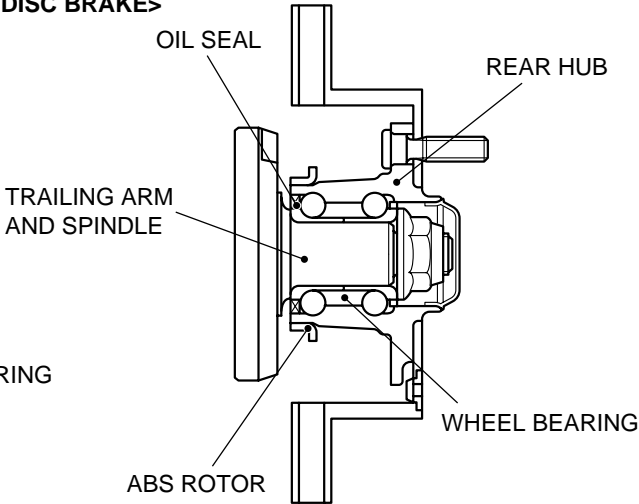
- ABS rotor for detecting the wheel speeds is press-fitted to the rear hub in vehicles with ABS.

CONSTRUCTION DIAGRAM

<VEHICLES WITH  
DRUM BRAKE>



<VEHICLES WITH  
DISC BRAKE>



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REAR AXLE DIAGNOSIS

INTRODUCTION TO REAR AXLE DIAGNOSIS

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Noise from the rear axle may be caused by defects in the components.

REAR AXLE DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1271004200284

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 axle 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

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SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Abnormal noise	1	P.27-3

## SYMPTOM PROCEDURES

### INSPECTION PROCEDURE 1: Abnormal Noise

#### DIAGNOSIS

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**STEP 1. Check the wheel nut for looseness.**

**Q: Are the wheel nuts loosened?**

**YES :** Tighten the nuts, then go to Step3.

**NO :** Go to Step 2.

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**STEP 2. Check the wheel bearing end play.**

Refer to [P.27-5](#) <Vehicles with drum brake>, [P.27-5](#) <Vehicles with disc brake>.

**Q: Is the wheel bearing end play within the limit?**

**YES :** Go to Step 3.

**NO :** Replace the rear hub assembly, then go to Step 4.

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**STEP 3. Check the rear hub rotary-sliding resistance.**

Refer to [P.27-6](#) <Vehicles with drum brake>, [P.27-6](#) <Vehicles with disc brake>.

**Q: Is the rear hub rotary-sliding resistance within the standard value?**

**YES :** Go to Step 4.

**NO :** Replace the rear hub assembly, then go to Step 4.

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**STEP 4. Retest the system.**

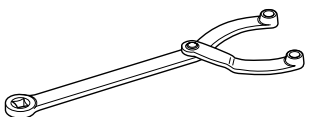
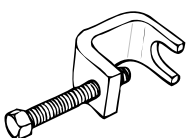
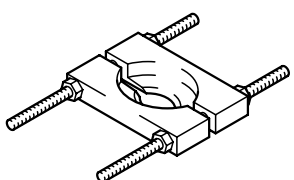
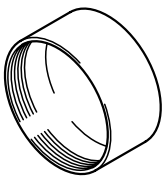
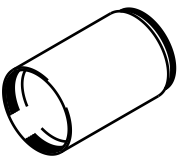
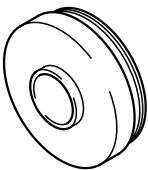
**Q: Are any noises generated?**

**YES :** Return to Step 1.

**NO :** The procedure is complete.

**SPECIAL TOOLS**

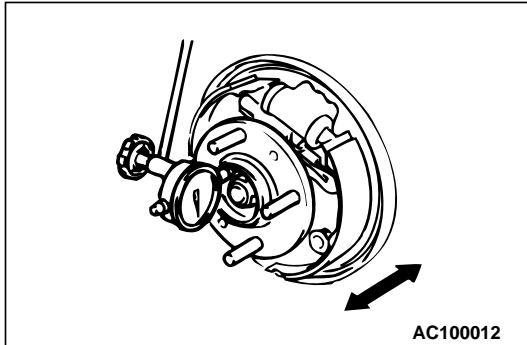
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TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
 B990767	MB990767 End yoke holder	MB990767-01	Hub fixing
 MB991618	MB991618 Hub bolt remover	General service tool	Hub bolt removal
	MD998801 Remover	MD998348-01 or general service tool	Remove of ABS rotor <Vehicles with ABS>
	MD998812 Installer Cap	—	
	MD998813 Installer 100	—	
	MD998815 Installer adapter	—	

## ON-VEHICLE SERVICE

### WHEEL BEARING END PLAY CHECK<VEHICLES WITH DRUM BRAKE>

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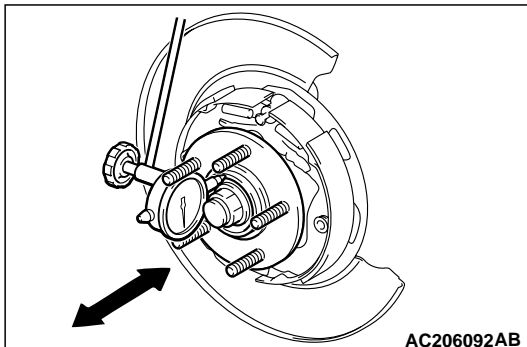
1. Remove the hub cap and brake drum.
2. Check the bearing's end play. Place a dial gauge against the hub surface; then move the hub in the axial direction and check whether or not there is end play.

**Limit: 0.05 mm (0.002 inch)**

3. If the play exceeds the limit, the self-locking nut should be tightened to the specified torque  $175 \pm 25$  N·m ( $130 \pm 18$  ft-lb) and check the end play again.
4. Replace the rear hub assembly if an adjustment cannot be made to within the limit.

### WHEEL BEARING END PLAY CHECK<VEHICLES WITH DISC BRAKE>

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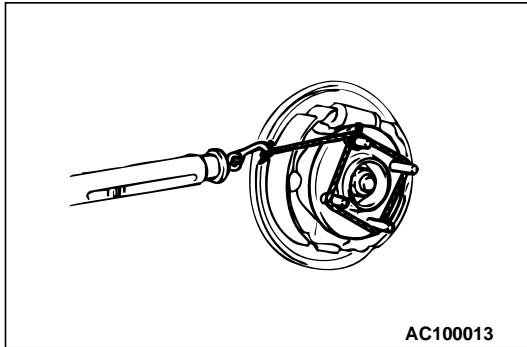
1. Remove the caliper assembly, and suspend the caliper assembly with a wire and remove the brake disc.
2. Check the bearing's end play. Place a dial gauge against the hub surface; then move the hub in the axial direction and check whether or not there is end play.

**Limit: 0.05 mm (0.002 inch)**

3. If the play exceeds the limit, the self-locking nut should be tightened to the specified torque  $175 \pm 25$  N·m ( $130 \pm 18$  ft-lb) and check the end play again.
4. Replace the rear hub assembly if an adjustment cannot be made to within the limit.

## REAR HUB ROTARY-SLIDING RESISTANCE CHECK<VEHICLES WITH DRUM BRAKE>

M1271001100277



1. Remove the brake drum.
2. After turning the hub a few times to seat the bearing, wind a rope around the hub bolt and turn the hub by pulling at a 90 degree angle with a spring balance. Measure to determine whether or not the rotary-sliding resistance of the rear hub is at the limit value.

**Limit:**

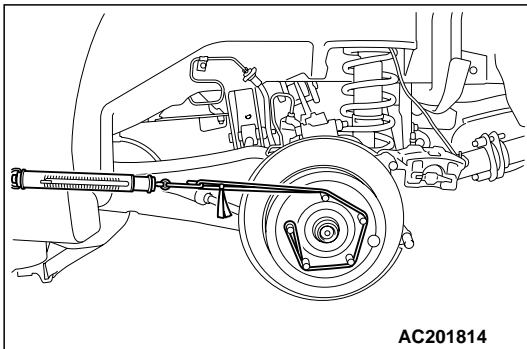
**22 N (4.9 pounds) <LL, L>**

**19 N (4.3 pounds) <M, SPORT>**

3. If limit value is exceeded, loosen the self-locking nut and then tighten it to the specified torque  $175 \pm 25 \text{ N}\cdot\text{m}$  ( $130 \pm 18 \text{ ft}\cdot\text{lb}$ ) and check the rear hub rotary sliding resistance again.
4. Replace the rear hub assembly if an adjustment cannot be made to within the limit.

## REAR HUB ROTARY-SLIDING RESISTANCE CHECK<VEHICLES WITH DISC BRAKE>

M1271001100288



1. Remove the caliper assembly, and suspend the caliper assembly with a wire and remove the brake disc.
2. After turning the hub a few times to seat the bearing, wind a rope around the hub bolt and turn the hub by pulling at a 90 degree angle with a spring balance. Measure to determine whether or not the rotary-sliding resistance of the rear hub is at the limit value.

**Limit: 19 N (4.3 pounds)**

3. If limit value is exceeded, loosen the self-locking nut and then tighten it to the specified torque  $175 \pm 25 \text{ N}\cdot\text{m}$  ( $130 \pm 18 \text{ ft}\cdot\text{lb}$ ) and check the rear hub rotary sliding resistance again.
4. Replace the rear hub assembly if an adjustment cannot be made to within the limit.

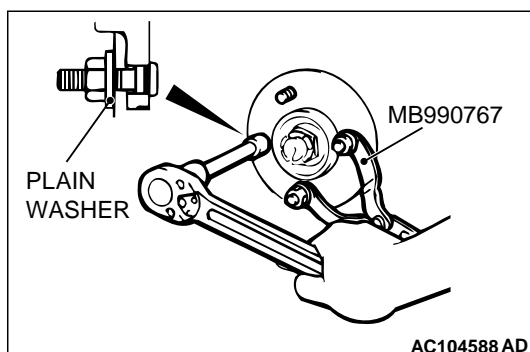
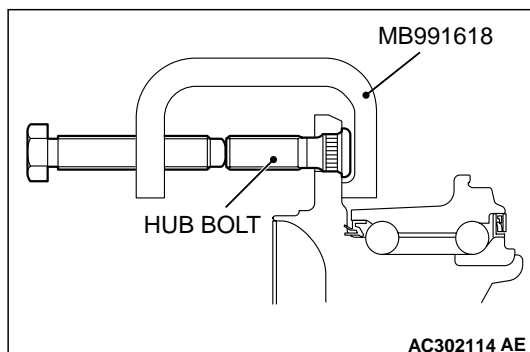
## HUB BOLT REPLACEMENT<VEHICLES WITH DRUM BRAKE>

M1271001000281

### Required Special Tools:

- MB990767: End Yoke Holder
- MB991618: Hub Bolt Remover

1. Remove the brake drum.
2. Use special tool MB991618 to remove the hub bolts.



3. Install the plain washer to the new hub bolt, and install the bolt with a nut while holding the hub with special tool MB990767.

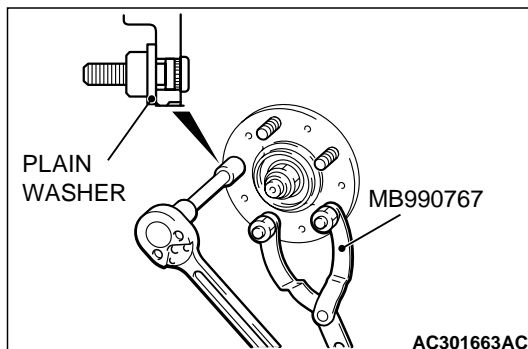
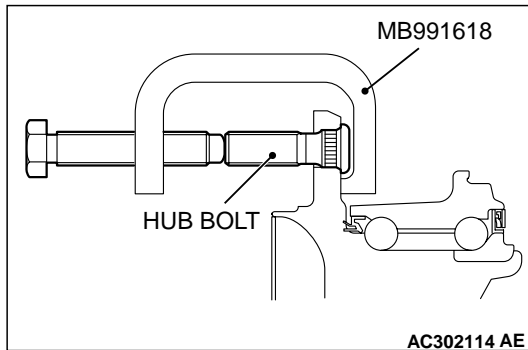
**HUB BOLT REPLACEMENT<VEHICLES WITH  
DISC BRAKE>**

M1271001000292

**Required Special Tools:**

- MB990767: End Yoke Holder
- MB991618: Hub Bolt Remover

1. Remove the caliper assembly and suspend it with a wire so that it does not fall.
2. Remove the brake disc.
3. Use special tool MB991618 to remove the hub bolts.



4. Install the plain washer to the new hub bolt, and install the bolt with a nut while holding the hub with special tool MB990767.
5. Install the brake disc, caliper assembly and tighten the caliper assembly mounting bolts to the specified torque.

**Tightening torque:  $60 \pm 5$  N·m ( $45 \pm 3$  ft-lb)**



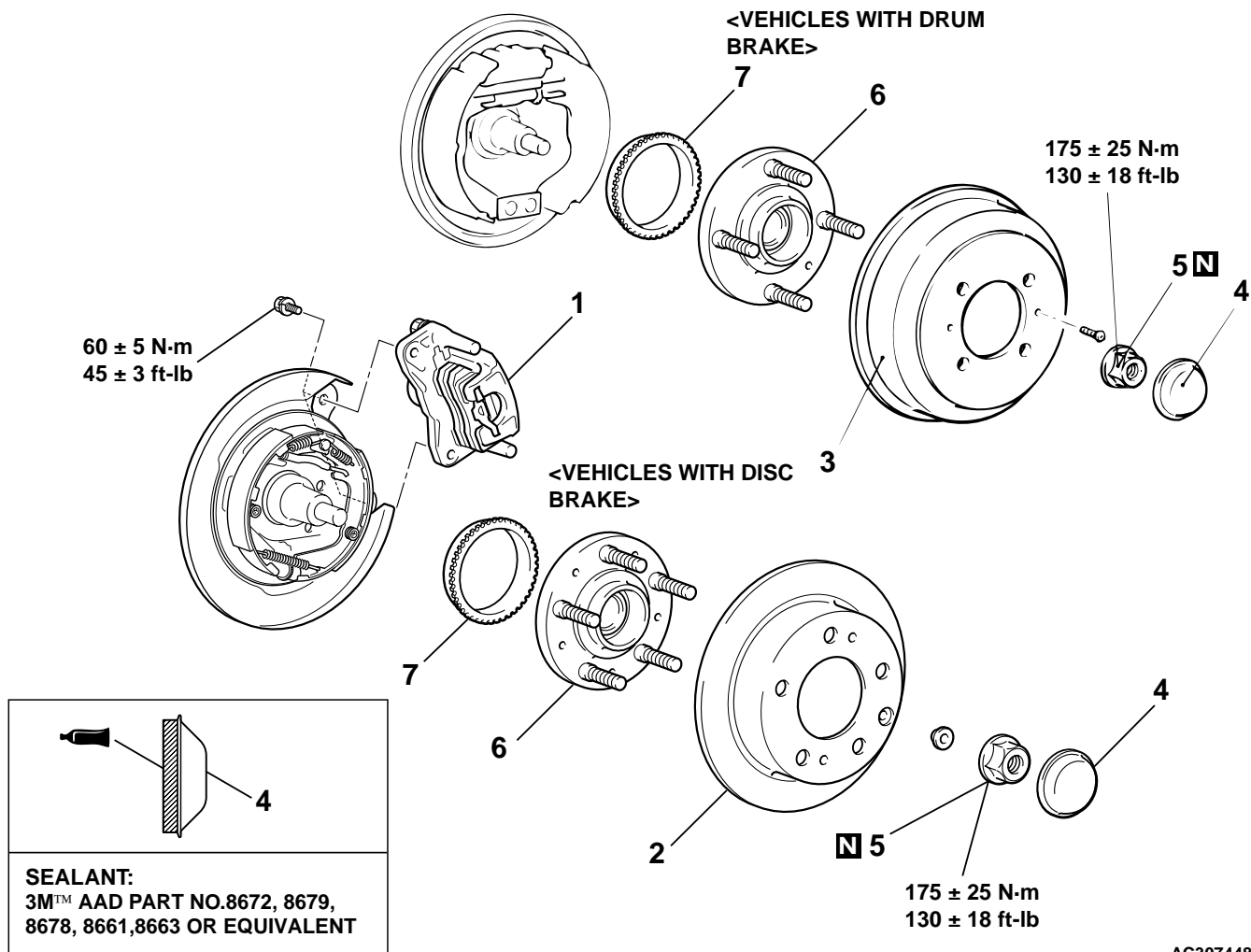
# REAR AXLE HUB ASSEMBLY

## REMOVAL AND INSTALLATION

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### CAUTION

1. For vehicles with ABS, care must be taken not to scratch or damage the teeth of the ABS rotor. The ABS rotor must never be dropped. If the teeth of the ABS rotor are chipped, resulting in a deformation of the ABS rotor, it will not be able to accurately detect the wheel rotation speed, and the system will not function normally.
2. The rear hub assembly should not be dismantled. When removing the rear hub assembly, the wheel bearing inner race may be left at the spindle side. In this case, always replace the rear hub assembly, otherwise the hub will damage the oil seal, causing oil leaks or excessive play.



AC307448 AB

### REMOVAL STEPS

- <<A>>
1. CALIPER ASSEMBLY
  2. BRAKE DISC
  3. REAR DRUM
  4. HUB CAP
- <<B>> >>B<<
5. SELF-LOCKING NUT
  6. REAR HUB ASSEMBLY
- <<C>> >>A<<
7. ABS ROTOR <VEHICLES WITH ABS>

### Required Special Tool:

- MD998801: Remover
- MD998812: Installer Cap
- MD998813: Installer 100
- MD998815: Installer Adapter

## REMOVAL SERVICE POINTS

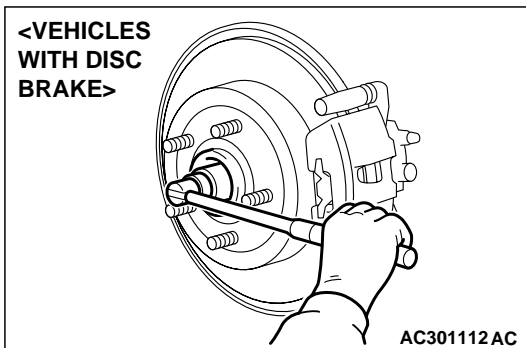
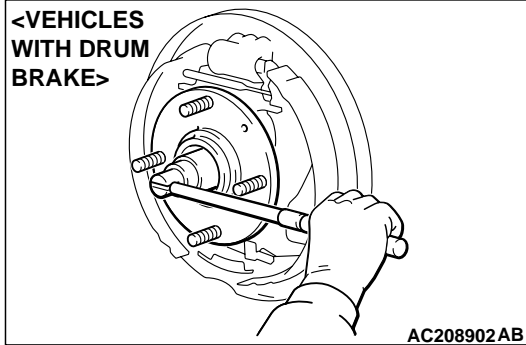
### <<A>> CALIPER ASSEMBLY REMOVAL

Secure the removed caliper assembly with a wire, etc.

### <<B>> SELF-LOCKING NUT REMOVAL

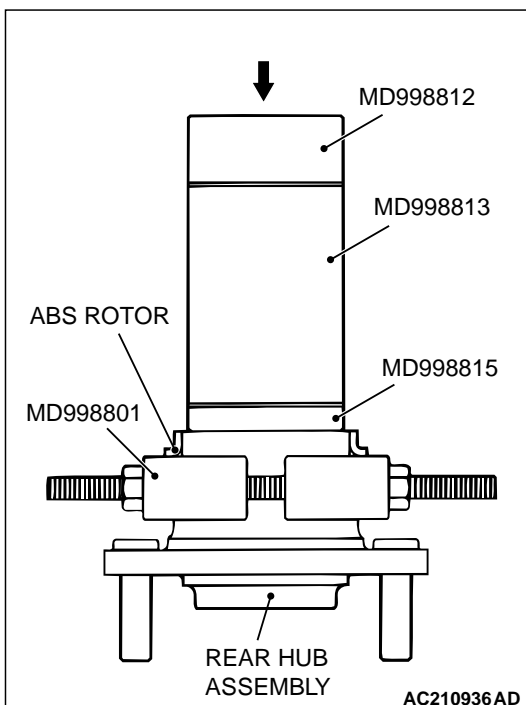
#### **⚠ CAUTION**

Do not apply the vehicle weight to the wheel bearing while loosening the self-locking nut, or the wheel bearing will be damaged.



### <<C>> ABS ROTOR REMOVAL

Use special tools MD998812, MD998813, MD998815 and MD998801 to press out ABS rotor from the rear hub assembly.

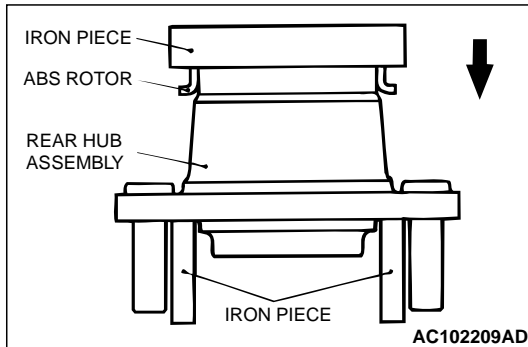


## INSTALLATION SERVICE POINT

### >>A<< ABS ROTOR INSTALLATION

#### CAUTION

When installing, take care not to deform the ABS rotor.  
Press-fit the ABS rotor to the rear hub assembly.

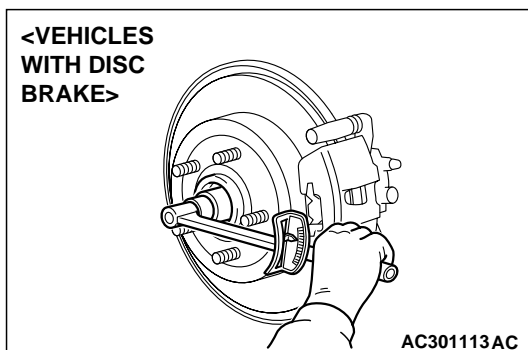
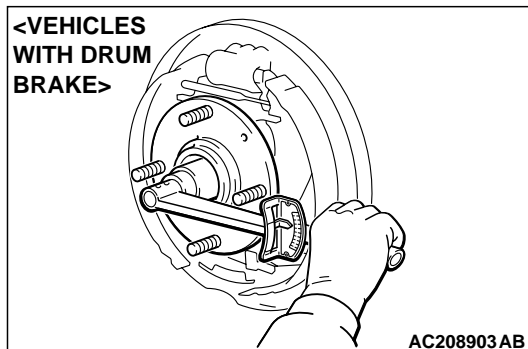


### >>B<< SELF-LOCKING NUT INSTALLATION

#### CAUTION

Before securely tightening the self-locking nuts, make sure there is no load on the wheel bearings. Otherwise the wheel bearing will be damaged.

Tighten the self-locking nut to the specified torque.



## INSPECTION

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- Check the oil seal of the rear hub unit bearing for crack or damage.
- Check the rear hub unit bearing for wear or damage.
- Check the ABS rotor for chipped teeth.

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

M1271004000343

ITEM	SPECIFICATION
Caliper assembly mounting bolt	60 ± 5 N·m (45 ± 3 ft-lb)
Rear hub assembly self-locking nut	175 ± 25 N·m (130 ± 18 ft-lb)

SERVICE SPECIFICATIONS

M1271000300513

ITEM		LIMIT
Wheel bearing end play mm (in)		0.05 (0.002)
Rear hub rotary-sliding resistance N (lb)	Vehicles with drum brake <LL, L>	22 (4.9)
	Vehicles with drum brake <M, SPORT>, Vehicles with disc brake	19 (4.3)

SEALANT

M1271000500283

ITEM	SPECIFIED SEALANT	REMARK
Hub cap	3M™ AAD Part No.8672, 8679, 8678, 8661, 8663 or equivalent	Semi-drying sealant