

GROUP 35A

BASIC BRAKE

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GENERAL INFORMATION

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Brake systems with higher reliability and durability have achieved distinguished braking performance.

FEATURES

IMPROVEMENT OF BRAKING PERFORMANCE

- In addition to the 10-inch single brake booster, the small and long stroke-type master cylinder is used to achieve the downsizing and secure the assist force.
- The installation of 16-inch ventilated disc brake on the front axle and 16-inch solid disc brake on the rear axle achieves the secure braking force and direct braking feeling.

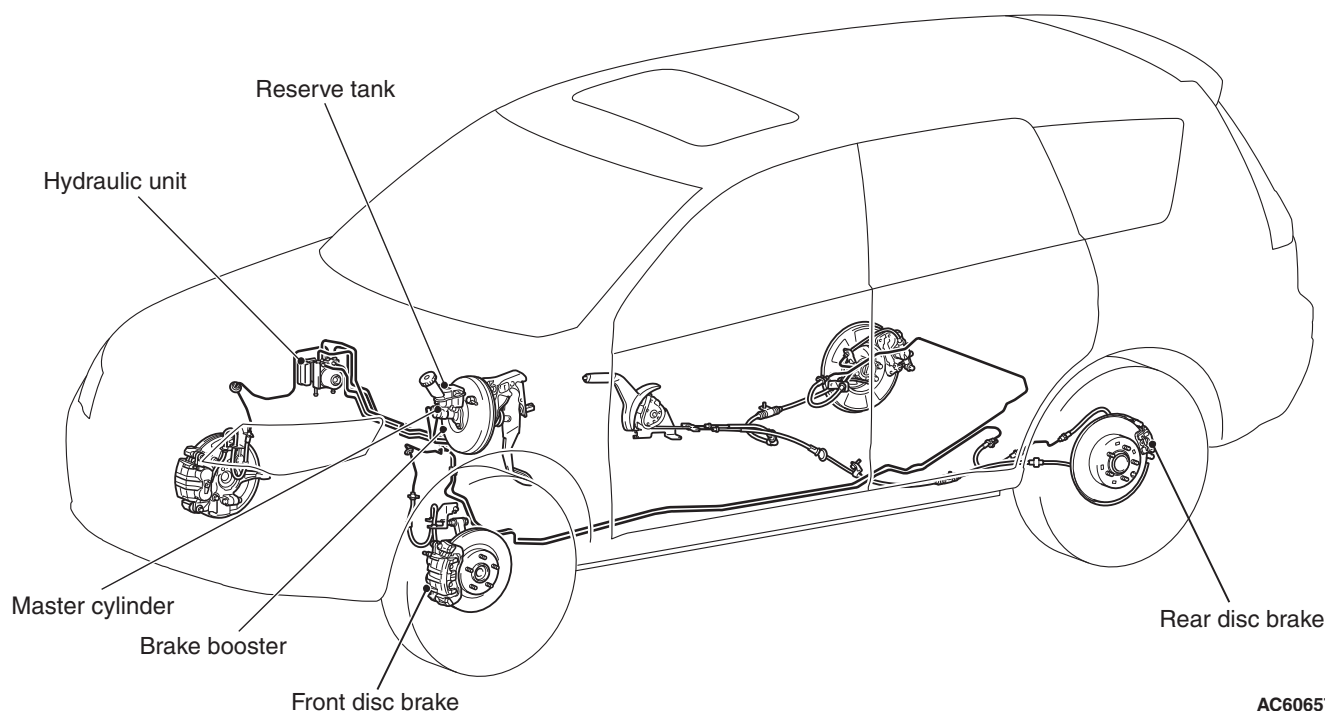
IMPROVEMENT IN SAFETY

- The 4-wheel anti-lock brake system (4ABS) has been installed to prevent slippage resulting from the wheel lock and assure stable vehicle posture and driveability.

- Electronic control braking force distribution system (EBD) has been adopted to assure the maximum braking force independently of the passenger' position in the vehicle.
- X-type piping of brake lines have been adopted for the front and rear wheels.
- Audible wear indicator has been adopted to the front and rear brake pads to warn the driver of the wear limit.
- The 10-inch single brake booster with brake assist mechanism, which determines an emergency exists based on the brake pedal depression speed and force and provides the maximum braking force, has been adopted.

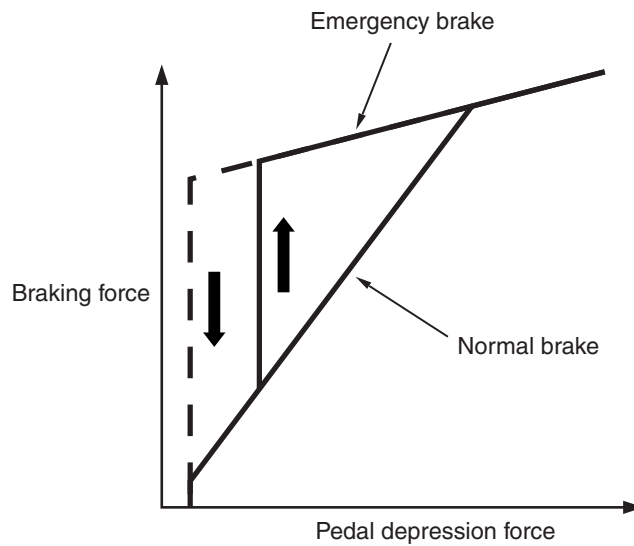
SERVICE QUALITY IMPROVEMENTS

- Diagnostic function has been adopted to ABS for easier inspection.
- Brake fluid reservoir, master cylinder, and brake booster have been integrated for downsizing and better serviceability.



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BRAKE ASSIST MECHANISM



AC905194 AB

When the driver suddenly applies the brake, generally there is a tendency that a driver depresses the brake pedal quickly but not strong enough, or depresses the pedal once but reduces the depression force immediately after that. In this case, a sufficient braking force cannot be obtained, resulting in a longer stopping distance.

This brake booster with brake assist mechanism recognizes the status as emergency when the driver depresses the brake pedal quickly; it increases the assist force to the maximum value and maintains the output value of the brake booster to activate ABS. Even if the driver reduces the depression force immediately after depressing the brake pedal quickly, this brake booster maintains the status where the maximum assist force is being applied until no depression force is applied to the brake pedal.

GENERAL SPECIFICATIONS

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Item			Specification
Master cylinder	Type		Tandem type
	I.D. mm (in)		20.6 (0.81)
Brake booster	Type		Vacuum type, single
	Effective dia. of power cylinder mm (in)		255 (10.0)
	Boosting ratio		8.5 (Pedal pressure: 160N)
Rear wheel hydraulic control method			Electronic control braking force distribution system (EBD)
Front brake	Type (Disk brake nomenclature)		Floating caliper 1 piston ventilated disk (V6-S57)
	Brake disk effective dia × thickness mm (in)		241 × 26 (9.5 × 1.02)
	Cylinder I.D. mm (in)		57.1 (2.25)
	Brake pad thickness mm (in)		10.0 (0.39)
	Clearance adjustment		Automatic adjustment
Rear brake	Type (Disk brake nomenclature)	2.4L Engine: 5 persons seat	Floating caliper 1 piston solid disk (S6-S35)
		2.4L Engine: 7 persons seat, 3.0L Engine	Floating caliper 1 piston solid disk (S6-S38)
	Brake disk effective dia × thickness mm (in)		258 × 10 (10.2 × 0.39)
	Cylinder I.D. mm (in)	2.4L Engine: 5 persons seat	34.9 (1.37)
		2.4L Engine: 7 persons seat, 3.0L Engine	38.1 (1.50)
	Brake pad thickness mm (in)		10.0 (0.39)
	Clearance adjustment		Automatic adjustment

SERVICE SPECIFICATIONS

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Item		Standard value	Limit
Brake pedal height mm (in)		221.8 – 227.8 (8.7 – 9.0)	–
Dimension from the brake booster stud bolt end to the clevis hole center mm (in)		75.8 – 80.2 (2.98 – 3.16)	–
Brake pedal play mm (in)		3 – 8 (0.12 – 0.31)	–
Pedal-to-floor clearance when brake pedal is depressed mm (in) [Pedal depression force: approx. 500 N]		80 (3.15) or more	–
Fluid pressure generated by brake booster non-servo effect test kPa (psi)	Pedal depression force: 100 N	0 – 600 (0 – 87.0)	–
	Pedal depression force: 300 N	1,030 – 2,220 (149.4 – 322.0)	–
Fluid pressure generated by brake booster servo effect test kPa (psi)	Pedal depression force: 100 N	6,030 – 7,780 (874.5 – 1,128.4)	–
	Pedal depression force: 300 N	10,370 – 11,560 (1,504.0 – 1,676.6)	–
Front disc brake	Pad thickness mm (in)	10.0 (0.39)	2.0 (0.08)
	Brake disc thickness mm (in)	26.0 (1.02)	24.4 (0.96)
	Brake disc runout mm (in)	–	0.06 (0.0024)
	Brake drag force N (lb)	68 (15.3) or less	–
Rear disc brake	Pad thickness mm (in)	10.0 (0.39)	2.0 (0.08)
	Brake disc thickness mm (in)	10.0 (0.39)	8.4 (0.33)
	Brake disc runout mm (in)	–	0.08 (0.0032)
	Brake drag force N (lb)	68 (15.3) or less	–
Brake pedal distortion mm (in)		250 – 254 (9.8 – 10.0)	–

LUBRICANTS

M1351000401239

Item		Specified lubricant	Quantity
Brake fluid		DOT3 or DOT4	As required
Front disk brake	Piston, caliper body, piston seal	DOT3 or DOT4	
	Guide pin, lock pin, pin boot, bushing, boot ring, piston boot	Repair kit grease (Color: Translucent red), Niglube RX-2 or equivalent	
Rear disk brake	Piston, caliper body, piston seal	DOT3 or DOT4	
	Guide pin, lock pin, pin boot, bushing	Niglube RM or equivalent	
	Piston boot	Repair kit grease (Color: Translucent red), Niglube RX-2 or equivalent	
	Shim, brake pad assembly	Repair kit grease (Color: Yellow)	

BASIC BRAKE SYSTEM DIAGNOSIS

INTRODUCTION TO BASIC BRAKE SYSTEM DIAGNOSIS

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Hydraulic brakes are composed of the brake pedal, master cylinder, brake booster and disc brakes. Malfunctions such as insufficient braking power or the generation of noise may occur due to wear, damage or incorrect adjustment of these components.

BASIC BRAKE SYSTEM DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1351009800394

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 basic brake system 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

M1351009900421

Symptom	Inspection procedure	Reference page
Vehicle pulls to one side when brakes are applied	1	P.35A-6
Insufficient braking power	2	P.35A-7
Increased pedal stroke (Reduced pedal-to-floor board clearance)	3	P.35A-8
Brake drag	4	P.35A-9
Scraping or grinding noise when brake are applied	5	P.35A-10
Squealing, groaning or chattering noise when brake are applied	6	P.35A-11
Squealing noise when brakes are not applied	7	P.35A-12
Groaning, clicking or rattling noise when brakes are not applied	8	P.35A-13

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Vehicle Pulls to One Side when Brakes are Applied

DIAGNOSIS

STEP 1. Check for oil, water, etc., on the pad contact surface of all brakes.

Q: Is oil, water, etc., on the pad contact surface?

YES : Replace the part and determine the source/cause of foreign material. Then go to Step 5.

NO : Go to Step 2.

STEP 2. Check disc brake pistons for smooth operation.

- (1) With engine not running, depress the brake pedal rapidly several times to deplete booster vacuum reserves.
- (2) Test each disc brake assembly one at a time.
 - a. Remove the lower caliper bolt, then remove caliper from mount.
 - b. Have an assistant slowly depress the brake pedal. Confirm piston(s) extend slowly and smoothly with no jumpiness. Repeat for each disc brake assembly.

Q: Do (does) the piston(s) move correctly?

YES : Go to Step 3.

NO : Disassemble and inspect the brake assembly (Front: refer to [P.35A-35](#), Rear: refer to [P.35A-41](#)). Then go to Step 5.

STEP 3. Check brake disc(s) for runout.

Refer to [P.35A-24](#).

Q: Is runout outside of specifications?

YES : Repair or replace the brake disc(s) as necessary. Then go to Step 5.

NO : Go to Step 4.

STEP 4. Check brake discs for correct thickness.

Refer to [P.35A-24](#).

Q: Is the thickness outside of specifications?

YES : Repair or replace the brake disc(s) as necessary. Then go to Step 5.

NO : Perform the brake line bleeding. Then go to Step 5.

STEP 5. Retest the system.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Start over at Step 1. If a new symptom appears, refer to the appropriate symptom chart.

INSPECTION PROCEDURE 2: Insufficient Braking Power

DIAGNOSIS

STEP 1. Check that the specified brake fluid is used, its level is correct, and no contamination is found.

Q: Is there a fault?

YES : Refill or replace with the specified brake fluid DOT 3 or DOT 4. Bleed the brakes if necessary (Refer to [P.35A-20](#)). Then go to Step 6.

NO : Go to Step 2.

STEP 2. Check for spongy (not firm) brakes.

- (1) With engine not running, depress the brake pedal rapidly several times to deplete the booster vacuum reserve.
- (2) With the brake pedal fully released, depress the brake pedal slowly until it stops.
- (3) With a measuring device (ruler, etc.) next to the brake pedal, depress the pedal firmly and measure the distance the pedal traveled.

Q: Is the distance greater than 20 mm (0.8 inch)?

YES : Bleed the brakes to remove air in the fluid (Refer to [P.35A-20](#)). Then go to Step 6.

NO : Go to Step 3.

STEP 3. Check the brake booster function.

Refer to [P.35A-17](#).

Q: Is there a fault?

YES : Replace the brake booster. Then go to Step 6.

NO : Go to Step 4.

STEP 4. Check for pinched or restricted brake tube or hose.**Q: Is there a pinched or restricted brake tube or hose?****YES :** Replace that complete section of brake tube or brake hose. Then go to Step 6.**NO :** Go to Step 5.**STEP 5. Check for oil, water, etc., on the pad contact surfaces of all brakes.****Q: Is oil, water, etc., on the pad contact surface?****YES :** Replace the part and determine the source/cause of foreign material. Recheck symptom. Then go to Step 6.**NO :** The procedure is complete. If condition persists for vehicles without ABS, go to Step 6.**STEP 6. Recheck symptom.****Q: Is the symptom eliminated?****YES :** The procedure is complete.**NO :** Start over at step 1. If a new symptom surfaces, refer to the appropriate symptom chart.

INSPECTION PROCEDURE 3: Increased Pedal Stroke (Reduced Pedal-to-Floor Board Clearance)

DIAGNOSIS**STEP 1. Check for spongy (not firm) brakes.**

- (1) With engine not running, depress the brake pedal rapidly several times to deplete booster vacuum reserve.
- (2) With the brake pedal fully released, depress the brake pedal slowly until it stops.
- (3) With a measuring device (ruler, etc.) next to the brake pedal, depress the pedal firmly and measure the distance the pedal traveled.

Q: Is the distance greater than 20 mm (0.8 inch)?**YES :** Bleed the brakes to remove air in the fluid (Refer to [P.35A-20](#)). Then go to Step 6.**NO :** Go to Step 2.**STEP 2. Check the pad for wear.**Refer to [P.35A-21](#).**Q: Is the pad thickness outside of specifications?****YES :** Replace the part. Then go to Step 6.**NO :** Go to Step 3.**STEP 3. Check the vacuum hose and check valve for damage.**Refer to [P.35A-19](#).**Q: Is there a damage?****YES :** Replace the part. Then go to Step 6.**NO :** Go to Step 4.**STEP 4. Check for brake fluid leaks.****Q: Is there a leak?****YES :** Check the connection for looseness, corrosion, etc. Clean and repair as necessary. If leaking in any tube or hose section, replace the complete tube or hose. Then go to Step 6 .**NO :** Go to Step 5.**STEP 5. Check the master cylinder assembly.**

- (1) Remove the master cylinder assembly (Refer to [P.35A-30](#)).
- (2) Check for brake fluid leaks from the master cylinder assembly seal.

Q: Is a brake fluid leaking from the master cylinder assembly seal present?**YES :** Replace the master cylinder assembly and the brake booster assembly (Refer to [P.35A-30](#)). Then go to Step 6.**NO :** Go to Step 6.**STEP 6. Recheck symptom.****Q: Is the symptom eliminated?****YES :** The procedure is complete.**NO :** Start over at step 1. If a new symptom surfaces, refer to the symptom chart.

INSPECTION PROCEDURE 4: Brake Drag

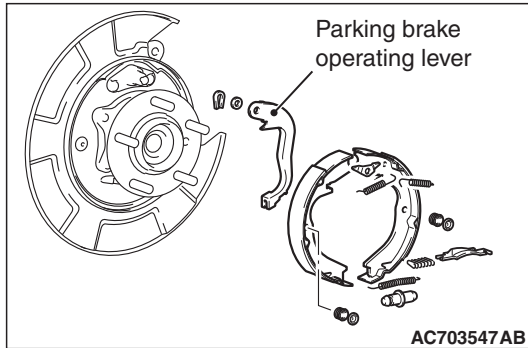
DIAGNOSIS

STEP 1. Check the parking brake operating lever return.

Q: Is the operation faulty?

YES : Repair it. Then go to Step 7.

NO : Go to Step 2.

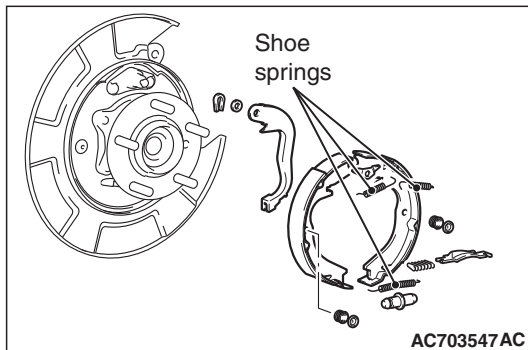


STEP 2. Check the brake shoe springs for breakage.

Q: Are the brake shoe springs broken?

YES : Replace the spring. Then go to Step 7.

NO : Go to Step 3.



STEP 3. Check the amount of grease at each sliding section.

Refer to GROUP 36, Parking Brake Lining and Drum [P.36-15](#) <2.4L Engine: 5 persons seat> or [P.36-18](#) <2.4L Engine: 7 persons seat, 3.0L Engine>.

Q: Is the grease amount low?

YES : Apply grease. Then go to Step 7.

NO : Go to Step 4.

STEP 4. Check the parking brake pull amount.

Refer to GROUP 36, On-vehicle Service – Parking Brake lever Stroke Check and Adjustment [P.36-9](#).

Q: Is there a fault?

YES : Adjust it. Then go to Step 7.

NO : Go to Step 5.

STEP 5. Check port for clogging.

Q: Is the port clogged?

YES : Repair it. Then go to Step 7.

NO : Go to Step 6.

STEP 6. Check disk brake pistons for sticking.

Depress the brake pedal, then release. Confirm each wheel spins freely.

Q: Does any wheel stick?

YES : Inspect that brake assembly. Then go to Step 7.

NO : Go to Step 7.

STEP 7. Recheck symptom.**Q: Is the symptom eliminated?**

YES : The procedure is complete.

NO : Start over at step 1. If a new symptom surfaces, refer to the symptom chart.

INSPECTION PROCEDURE 5: Scraping or Grinding Noise when Brakes are Applied

DIAGNOSIS

STEP 1. Check the front brakes, then rear brakes, for metal-to-metal condition.**Q: Is any metal-to-metal contact evident?**

YES : Repair or replace the components. Then go to Step 6.

NO : Go to Step 2.

STEP 2. Check for interference between the caliper and wheel.**Q: Is there any interference?**

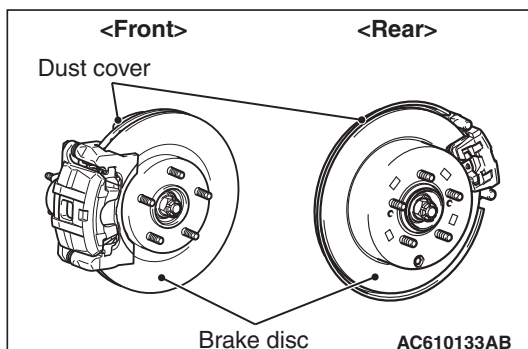
YES : Repair or replace the part. Then go to Step 6.

NO : Go to Step 3.

STEP 3. Check for interference between the dust cover and brake disc.**Q: Is there any interference?**

YES : Repair or replace the part. Then go to Step 6.

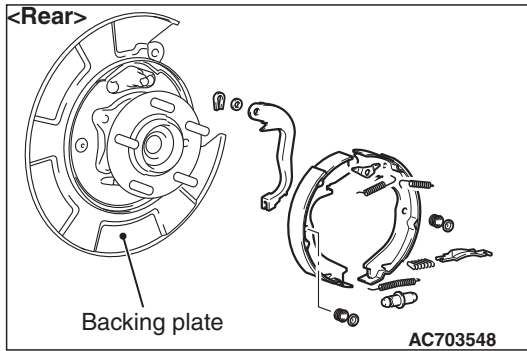
NO : Go to Step 4.



STEP 4. Check the brake drums or discs for cracks.**Q: Are there cracks?**

YES : Repair or replace the part. Then go to Step 6.

NO : Go to Step 5.



STEP 5. Check for bent backing plate(s).

Q: Is (Are) the backing plate(s) bent?

YES : Repair or replace the part. Then go to Step 6.

NO : Go to Step 6.

STEP 6. Recheck symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Start over at step 1. If a new symptom surfaces, refer to the symptom chart.

INSPECTION PROCEDURE 6: Squealing, Groaning or Chattering Noise when Brakes are Applied

DIAGNOSIS

STEP 1. Check the brake disc and pads for wear or cutting.

Q: Is there wear or cutting?

YES : Repair or replace the part. Then go to Step 4.

NO : Go to Step 2.

STEP 2. Check the calipers for rust.

Q: Is there any rust?

YES : Remove the rust. Then go to Step 4.

NO : Go to Step 3.

STEP 3. Adjust the brake pedal.

Refer to [P.35A-15](#).

Q: Is the brake pedal adjusted correctly?

YES : Go to Step 4.

NO : Adjust the brake pedal. Then go to Step 4.

STEP 4. Recheck symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Start over at step 1. If a new symptom surfaces, refer to the symptom chart.

INSPECTION PROCEDURE 7: Squealing Noise when Brakes are not Applied

DIAGNOSIS

STEP 1. Check whether the backing plate is bent or loose and interfering with the drum.**Q: Is there a fault?****YES** : Replace the part. Then go to Step 9.**NO** : Go to Step 2.

STEP 2. Check whether the drum is damaged due to interference with the backing plate or shoe.**Q: Is there any damage?****YES** : Replace the part. Then go to Step 9.**NO** : Go to Step 3.

STEP 3. Check the brake drum for wear and the shoe spring for damage.**Q: Is there any wear or damage?****YES** : Replace the part. Then go to Step 9.**NO** : Go to Step 4.

STEP 4. Check the brake discs for rust.**Q: Are the brake discs rusted?****YES** : Remove the rust by using sand paper. If still rusted, turn the rotors with an on-the-car brake lathe. Then go to Step 9.**NO** : Go to Step 5.

STEP 5. Check the brake pads for correct installation.**Q: Are the pads installed incorrectly?****YES** : Repair the pads. Then go to Step 9.**NO** : Go to Step 6.

STEP 6. Check the calipers for correct installation.**Q: Are the calipers installed incorrectly?****YES** : Repair the calipers. Then go to Step 9.**NO** : Go to Step 7.

STEP 7. Check the wheel bearings for end play.

Refer to GROUP 26 – On-vehicle Service, Wheel bearing end play check [P.26-11](#) <Front>, GROUP 27A – On-vehicle Service, Wheel bearing end play check [P.27A-6](#) <Rear (FWD)> or GROUP 27B – On-vehicle Service, Wheel bearing end play check [P.27B-17](#) <Rear (AWD)>.

Q: Does the measured end play exceed the limit?**YES** : Replace the faulty hub assembly. Then go to Step 9.**NO** : Go to Step 8.

STEP 8. Adjust the brake pedal.

Refer to [P.35A-15](#).

Q: Is the brake pedal adjusted correctly?

YES : Go to Step 9.

NO : Adjust the brake pedal. Then go to Step 9.

STEP 9. Recheck symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Start over at step 1. If a new symptom surfaces, refer to the symptom chart.

INSPECTION PROCEDURE 8: Groaning, Clicking or Rattling Noise when Brakes are not Applied.

DIAGNOSIS

STEP 1. Check whether foreign material has entered the wheel covers.

Q: Is there any foreign material?

YES : Remove it. Then go to Step 5.

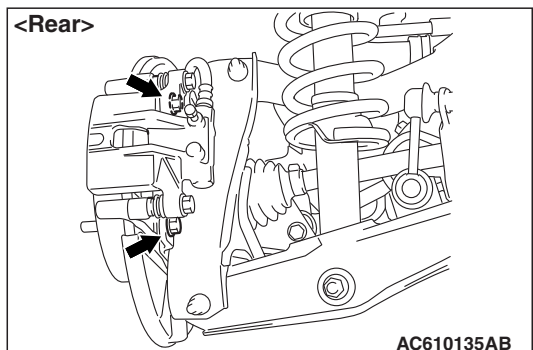
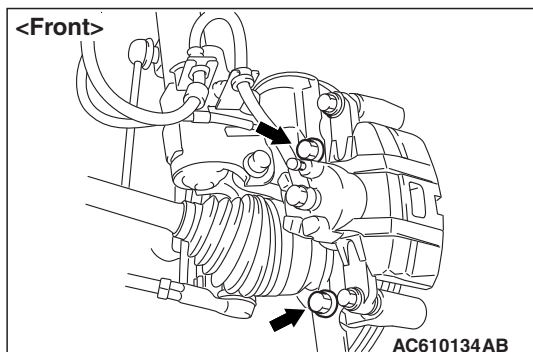
NO : Go to Step 2.

STEP 2. Check for looseness of the wheel nuts.

Q: Are the wheel nuts loose?

YES : Tighten to 98 ± 10 N·m (73 ± 7 ft·lb). Then go to Step 5.

NO : Go to Step 3.



STEP 3. Check for looseness of the caliper installation bolt.**Q: Is the caliper installation bolt loose?**

YES : Tighten to 100 ± 10 N·m (74 ± 7 ft-lb) for the front caliper. Tighten to 55 ± 5 N·m (41 ± 3 ft-lb) <2.4L Engine: 5 persons seat> or 58 ± 7 N·m (43 ± 5 ft-lb) <2.4L Engine: 7 persons seat, 3.0L Engine> for the rear caliper. Then go to Step 5.

NO : Go to Step 4.

STEP 4. Check the wheel bearings for end play.

Refer to GROUP 26 – On-vehicle Service, Wheel bearing end play check [P.26-11](#) <Front>, GROUP 27A – On-vehicle Service, Wheel bearing end play check [P.27A-6](#) <Rear (FWD)> or GROUP 27B – On-vehicle Service, Wheel bearing end play check [P.27B-17](#) <Rear (AWD)>.

Q: Does the measured end play exceed the limit?

YES : Replace the faulty hub assembly. Then go to Step 5.

NO : Go to Step 5.

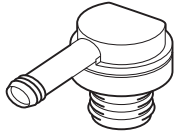
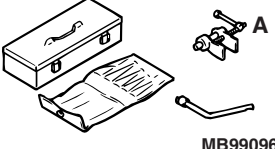
STEP 5. Recheck symptom.**Q: Is the symptom eliminated?**

YES : The procedure is complete.

NO : Start over at step 1. If a new symptom surfaces, refer to the symptom chart.

SPECIAL TOOLS

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Tool	Number	Name	Use
 MB992146	MB992146	Booster test adapter	Inspection using a simplified tester
 MB990964	MB990964 A: MB990520	Brake tool set A: Piston expander	Disk brake piston pushing back

ON-VEHICLE SERVICE

BRAKE PEDAL INSPECTION

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 CAUTION

Do not apply grease or lubricant to the switch and the switch installation section to avoid malfunction of the switch. In addition, do not use gloves which have grease on them.

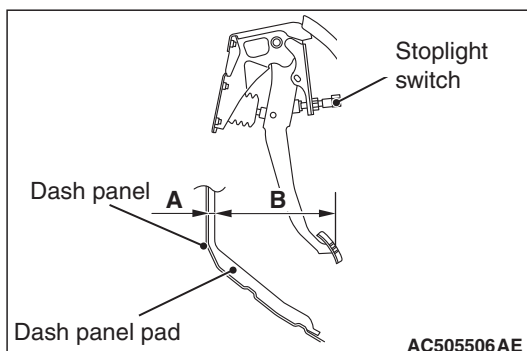
BRAKE PEDAL HEIGHT CHECK

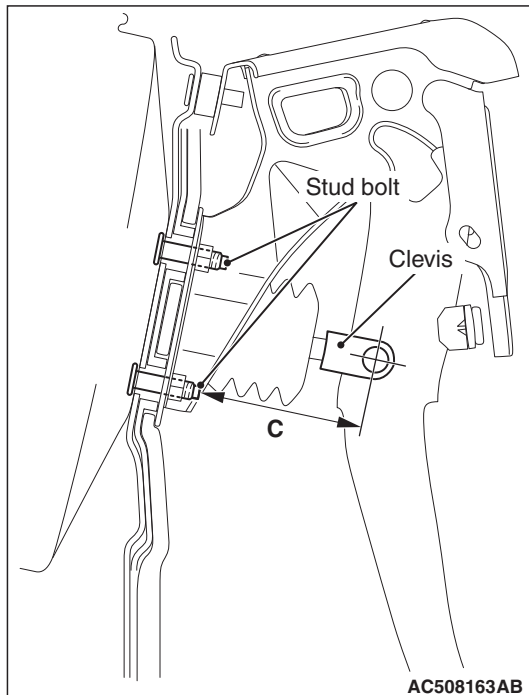
1. Turn up the floor carpet under the brake pedal.
2. Remove the stoplight switch (Refer to [P.35A-28](#)).
3. Use a needle or similar tool to measure the dimension A in the figure (distance from the dash panel pad surface to the dash panel).
4. Measure the dimension B in the figure (distance from the pedal pad surface to the dash panel pad surface).
5. Make sure that the total of the dimensions A and B measured in Steps 2 and 3 (brake pedal height) is within the standard value.

Standard value (A+B): 221.8 – 227.8 mm (8.7 – 9.0 inch)

6. When the brake pedal height is not within the standard value, inspect the brake pedal in the following procedure.
 - (1) Remove the brake pedal assembly (Refer to [P.35A-28](#)).
 - (2) Check the removed brake pedal assembly for distortion, and replace it when deformed (Refer to [P.35A-29](#)).
 - (3) Install the brake pedal assembly (Refer to [P.35A-28](#)).

NOTE: When installing, compress the dash panel pad.

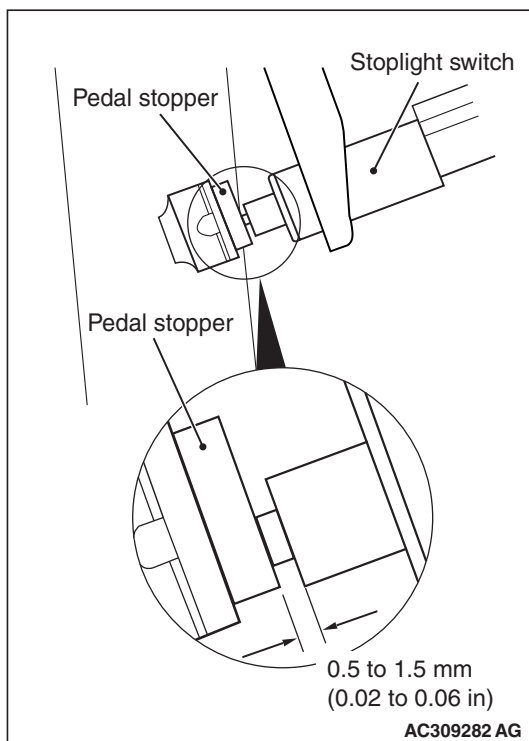




- (4) Measure the brake pedal height again, and make sure that it is within the standard value (A+B). When the measured value is not within the standard value, measure the dimension C in the figure (distance from the stud bolt end to the clevis hole center), and make sure it is within the standard value (C).

Standard value (C): 75.8 – 80.2 mm (2.98 – 3.16 inch)

- (5) When the measured value is not within the standard value (C), replace the brake booster (Refer to [P.35A-30](#)).



7. After checking the brake pedal height, install the stoplight switch in the following procedure:

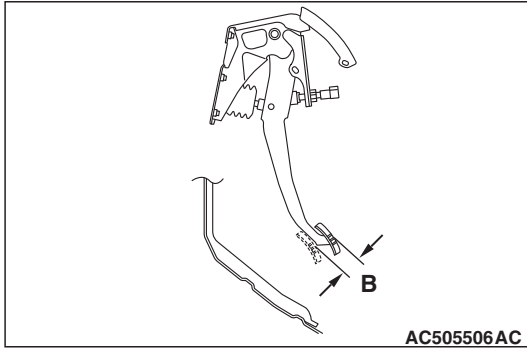
- (1) Screw in the stoplight switch until its thread contacts the pedal stopper, then turn the switch approximately one eighth of a clockwise turn to fix it. While doing this, pull and hold the brake pedal by hand.
- (2) Check that the clearance between the stoplight switch and the pedal stopper is as shown in the figure.

⚠ CAUTION

Make sure that the stoplight is not illuminated when the brake pedal is not depressed.

- (3) Connect the stoplight switch connector.
8. Check the key interlock mechanism and the shift lock mechanism (Refer to GROUP 23A – On-vehicle Service, Key Interlock Mechanism Check [P.23A-149](#), Shift Lock Mechanism Check [P.23A-151](#)).
9. Recover the floor carpet under the brake pedal.

BRAKE PEDAL PLAY CHECK AND ADJUSTMENT

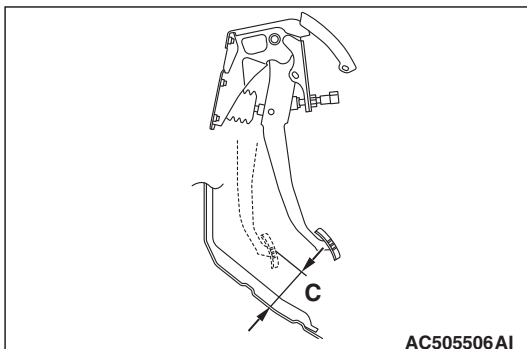


1. With the engine stopped, depress the brake pedal 2 or 3 times to relieve the vacuum in the brake booster. Then, press the brake pedal with your finger and check if the pedal stroke until the pedal becomes heavy (play) is within the standard value.

Standard value (B): 3 – 8 mm (0.12 – 0.31 inch)

2. When the brake pedal play is not within the standard value, check the brake pedal-to-clevis pin looseness, clevis pin-to-booster operating rod looseness, brake pedal height, and stoplight switch position, and adjust or replace as necessary.

BRAKE PEDAL-TO-FLOOR PANEL CLEARANCE CHECK AND ADJUSTMENT



1. Turn up the floor carpet under the brake pedal.
2. Start the engine and depress the brake pedal with approximately 500 N (112 pounds), and measure clearance between the brake pedal and the floor panel.

Standard value (C): 80 mm (3.15 inch) or more

3. When the clearance is not within the standard value, check for the air in the brake line and thickness of the disc brake pad, and correct or replace as necessary.
4. Recover the floor carpet under the brake pedal.

BRAKE BOOSTER OPERATION CHECK

M1351001001256

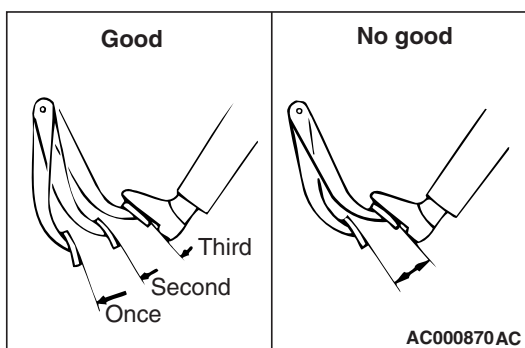
INSPECTION WITHOUT USING TESTER

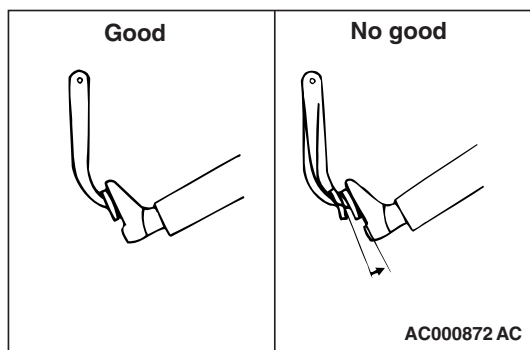
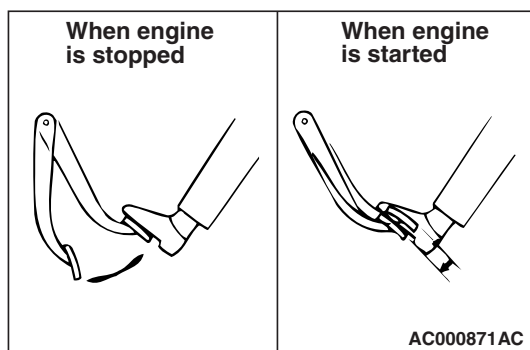
1. Carry out the simplified brake booster operation check in the following procedure:

- (1) Run the engine for 1 to 2 minutes, and then stop.

Depress the brake pedal with normal depression force.

The result is judged as "Good" when the pedal stroke is great at the first depression, and becomes smaller as you repeat depressing the pedal. If the pedal stroke does not change, the result is judged as "No Good."





(2) With the engine stopped, depress the brake pedal several times. Keep the brake pedal depressed and start the engine. At this time, when the pedal moves down slightly, the result is judged as "Good." The result is judged as "No Good" if the pedal does not move down.

(3) With the engine running, depress the brake pedal. Stop the engine in this condition. The result is judged as "Good" when the pedal height does not change for approximately 30 seconds. The result is judged as "No Good" if the pedal moves up.

2. The brake booster is judged as normal when the results of all the above checks are "Good."

When one or more of the above check results are "No Good," then the check valve, vacuum hose, or brake booster is suspected faulty.

INSPECTION USING SIMPLIFIED TESTER

1. Before starting this inspection, remove the brake booster check valve from the vehicle and check its operation. (Refer to [P.35A-30](#).)

2. After checking, install the check valve to the vacuum hose and connect it to the vacuum gauge. Install the booster test adapter (Special tool: MB992146) to the brake booster and connect it to the vacuum gauge. Connect the pressure gauge and pedal depression gauge as shown in the figure. Bleed the pressure gauge and then perform the following tests:

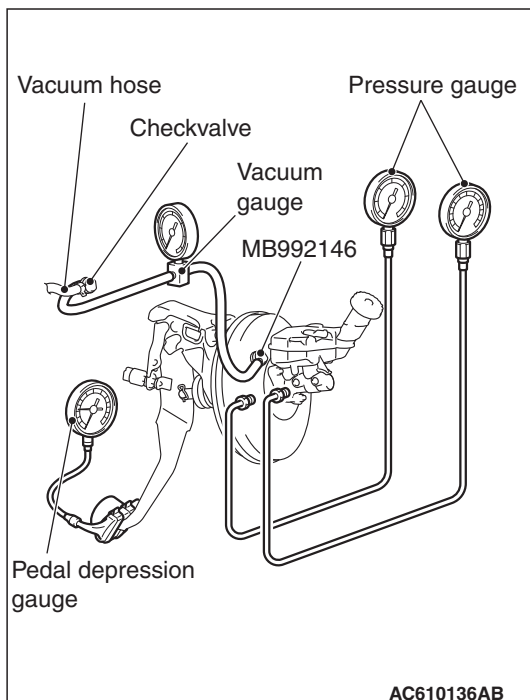
(1) Airtightness test with no load

Start the engine, and stop it when the vacuum gauge indicator has reached approximately -67 kPa (-9.7 psi). The result is judged as "Good" when the drop of the vacuum approximately 15 seconds after the engine was stopped is within -3.3 kPa (-0.5 psi).

(2) Airtightness test with load

Start the engine and depress the brake pedal with 200 N. Stop the engine when the vacuum gauge indicator reached approximately -67 kPa (-9.7 psi). The result is judged as "Good" when the drop of the vacuum approximately 15 seconds after the engine was stopped is within -3.3 kPa (-0.5 psi).

When one or more of the above check results are judged as "No Good," the vacuum hose or brake booster is suspected faulty.



(3) Brake booster characteristics test

Perform this test after the above (1) and (2) were performed.

a. Non-servo effect test

With the engine stopped, make sure that the vacuum gauge reading is 0 kPa (0 psi). Depress the brake pedal with 100 N and 300 N, and measure the fluid pressure generated.

Standard value:

Item	Pedal depression force	
	100 N	300 N
Generated fluid pressure kPa (psi)	0 – 600 (0 – 87.0)	1,030 – 2,220 (149.4 – 322.0)

b. Servo effect test

Start the engine. Depress the brake pedal with 100 N and 300 N when the vacuum gauge indicator reached approximately –67 kPa (–9.7 psi), and measure the fluid pressure generated.

Standard value:

Item	Pedal depression force	
	100 N	300 N
Generated fluid pressure kPa (psi)	6,030 – 7,780 (874.5 – 1,128.4)	10,370 – 11,560 (1,504.0 – 1,676.6)

CHECK VALVE OPERATION CHECK

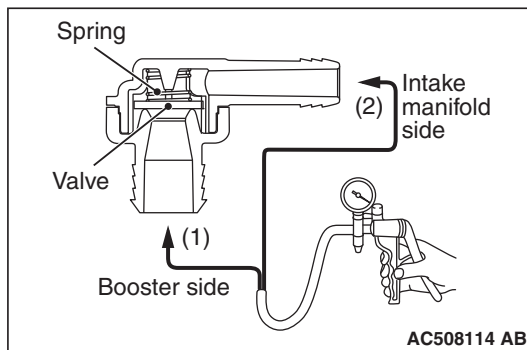
M1351009000837

1. Remove the check valve (Refer to [P.35A-30](#)).

⚠ CAUTION

Replace the check valve when it is faulty.

2. Using a vacuum pump, check operation of the check valve.



Vacuum pump connection	Normal condition
When connected to the booster side (1)	Vacuum is generated and maintained.
When connected to the engine side (2)	No vacuum is generated.

BLEEDING

M1351001401049

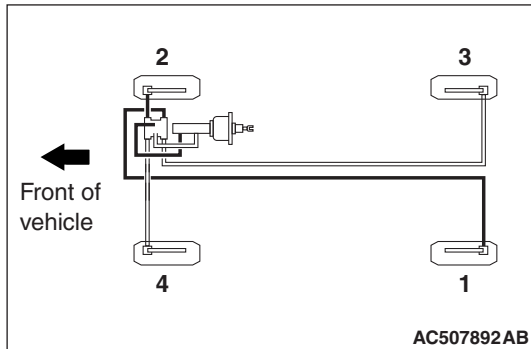
⚠ CAUTION

Be sure to use the specified brand and type of brake fluid.
Avoid mixing with other type of brake fluid.

Brake fluid: DOT3 or DOT4

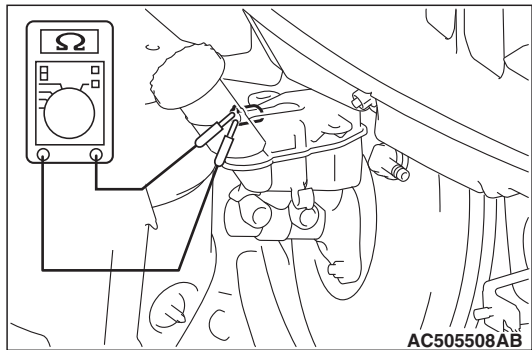
BLEEDING OF BRAKE PIPELINE

Perform the bleeding in the order shown in the figure.

**BRAKE FLUID LEVEL SWITCH CHECK**

M1351009100834

The brake fluid level switch is normal when the following conditions are met: When the brake fluid level is above "MIN," continuity is detected; and when the level is below "MIN," no continuity is detected.



BRAKE PAD CHECK

M1351017300220

CAUTION

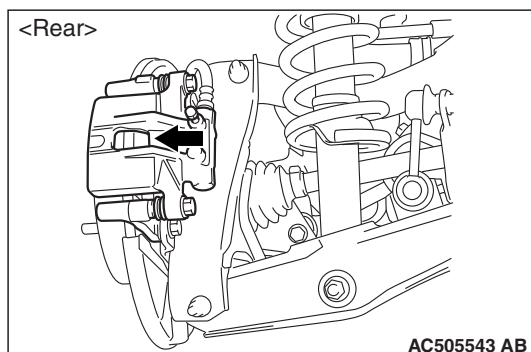
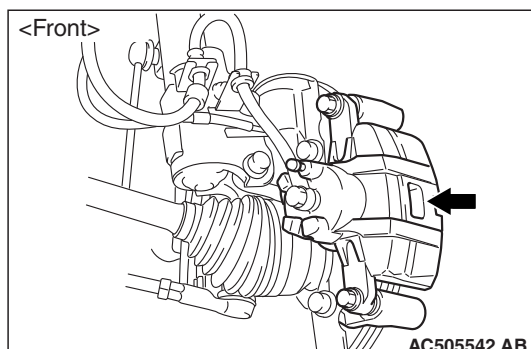
If there is a significant difference in thickness between the brake pads at right and left, check the sliding area and the runout of the brake disk (Refer to [P.35A-24](#)).

1. Visually check the thickness of brake pad from the inspection hole of the caliper body.

Standard value: 10.0 mm (0.39 inch)

Limit: 2.0 mm (0.08 inch)

2. If the brake pad thickness is less than the limit value, replace the brake pad (Refer to [P.35A-21](#)).



BRAKE PAD REPLACEMENT

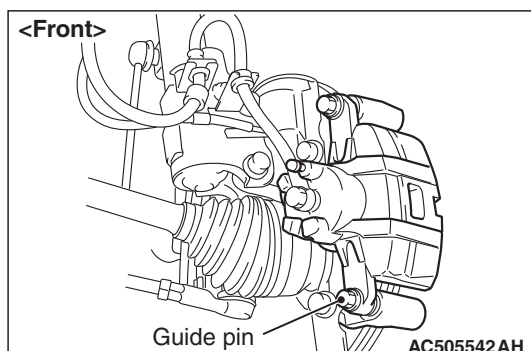
M1351017400294

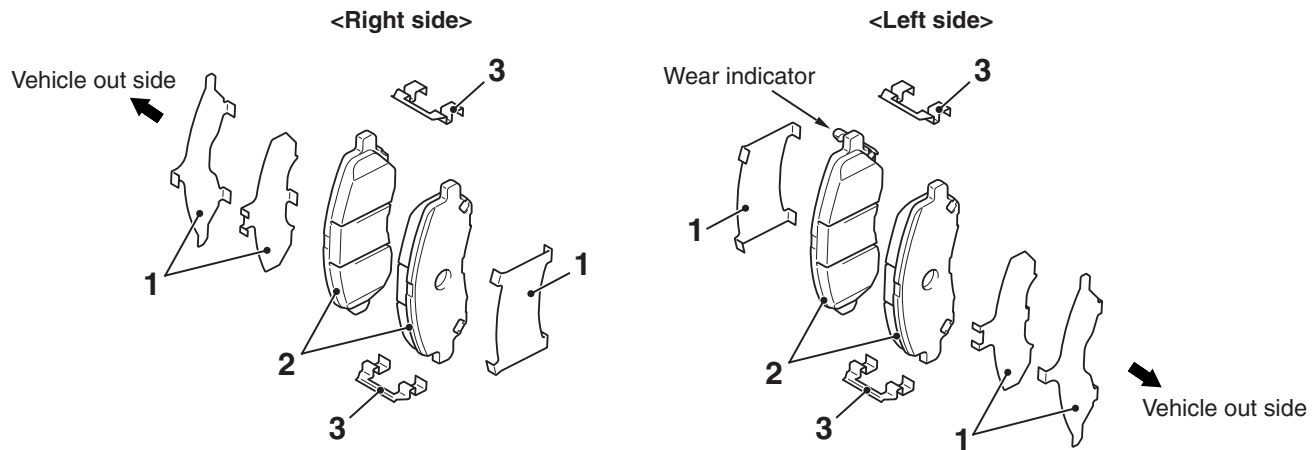
<FRONT>

CAUTION

When replacing, replace both brake pads (right and left) as a set.

1. Remove the parts indicated in the figure, swivel the caliper body upward and retain it with a wire or similar tool.





AC803273AB

2. Remove the following parts from the caliper body.

- (1) Shim
- (2) Brake pad assembly
- (3) Clip

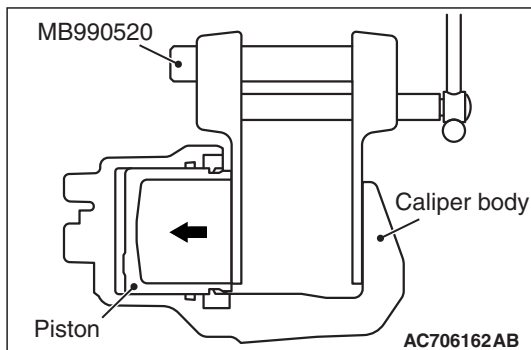
⚠ CAUTION

Keep grease or other soiling off the pad and brake disk friction surfaces.

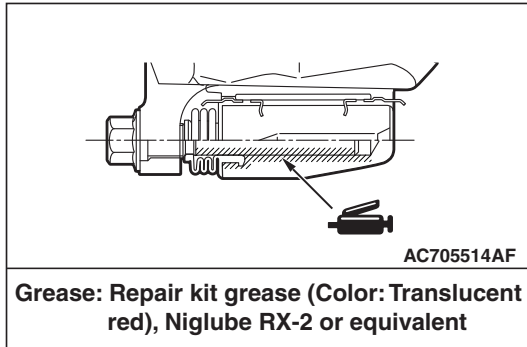
- 3. Clean the piston part, and press the piston into the cylinder using the special tool piston expander (MB990520).
- 4. Assemble the shim, brake pad assembly and clip to the caliper support, and tighten the guide pin to the specified torque.

Tightening torque: 44 ± 5 N·m (32 ± 4 ft-lb)

NOTE: Install the brake pad assembly (with wear indicator) to the inner side of the brake disk, making sure that the wear indicator is located on the top.



LUBRICATION POINT

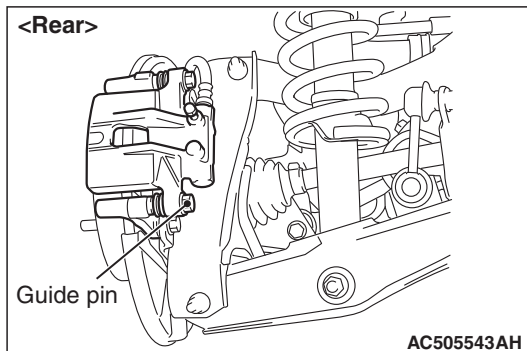


<REAR>

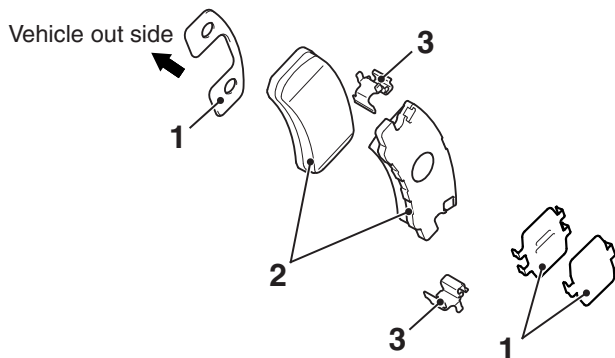
CAUTION

When replacing, replace both brake pads (right and left) as a set.

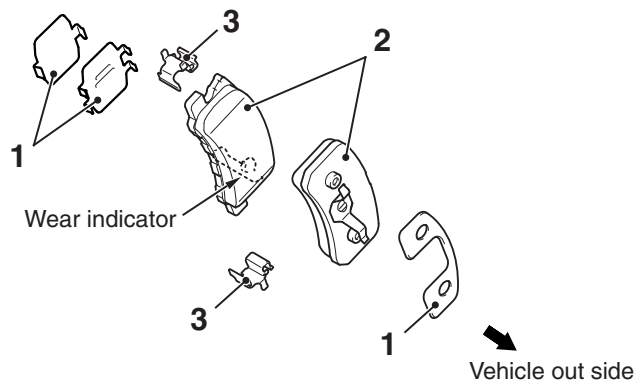
1. Remove the parts indicated in the figure, swivel the caliper body upward and retain it with a wire or similar tool.



<Right side>



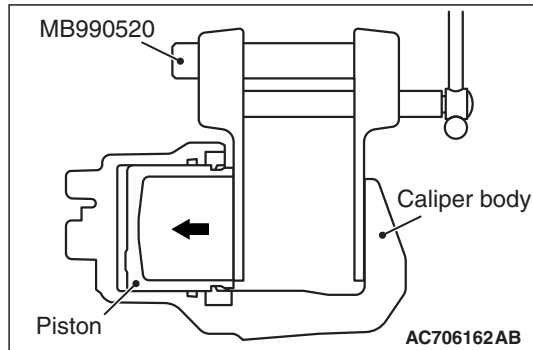
<Left side>



AC900716AB

2. Remove the following parts from the caliper body.

- (1) Shim
- (2) Brake pad assembly
- (3) Clip

**⚠ CAUTION**

Keep grease or other soiling off the pad and brake disk friction surfaces.

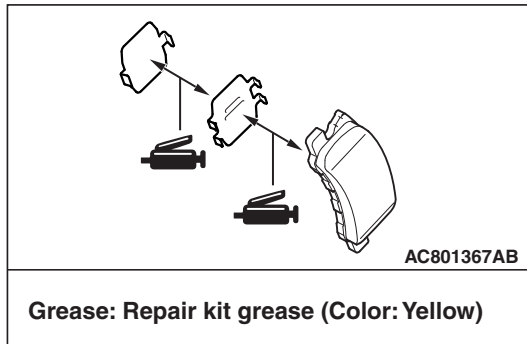
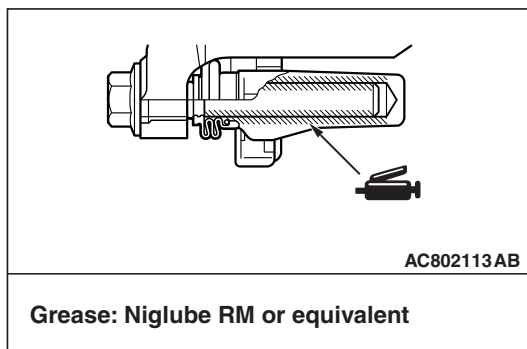
3. Clean the piston part, and press the piston into the cylinder using the special tool piston expander (MB990520).
4. Assemble the shim, brake pad assembly and clip to the caliper support, and tighten the guide pin to the specified torque.

Tightening torque: 44 ± 5 N·m (32 ± 4 ft-lb)

NOTE: Install the brake pad assembly (with wear indicator) to the inner side of the brake disk, making sure that the wear indicator is located on the bottom.

LUBRICATION POINT BRAKE DISC CHECK

M1351018600257

**⚠ CAUTION**

Disc brakes must be kept within the allowable service values in order to maintain normal brake operation.

Before turning the brake disc, the following conditions should be checked.

INSPECTION ITEM	REMARK
Scratches, rust, saturated lining materials and wear	- If the vehicle is not driven for a long period of time, sections of the discs that are not in contact with the pads will become rusty, causing noise and shuddering. - If grooves and scratches resulting from excessive disc wear are not removed prior to installing a new pad assembly, there will be inadequate contact between the disc and the lining (pad) until the pads conform to the disc.
Run-out	Excessive run-out of the discs will increase the pedal depression resistance due to piston kick-back.
Change in thickness (parallelism)	If the thickness of the disc changes, this will cause pedal pulsation, shuddering and surging.
Inset or warping (flatness)	Overheating and improper handling while servicing will cause warping or distortion.

BRAKE DISC THICKNESS CHECK

- Remove contaminants or corrosion from the brake disc surface.
- Use a micrometer to measure the brake disc thickness at minimum eight points which are 10 mm (0.39 inch) inward from its circumference.

Standard value:

26.0 mm (1.02 inch) <Front>

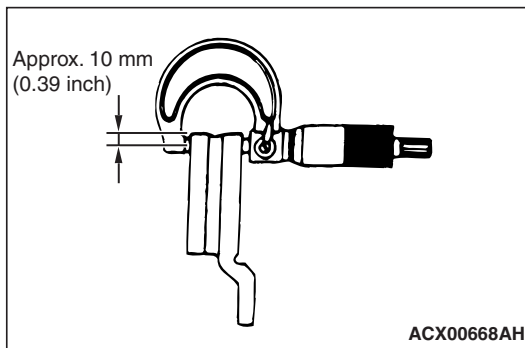
10.0 mm (0.39 inch) <Rear>

Limit:

24.4 mm (0.96 inch) <Front>

8.4 mm (0.33 inch) <Rear>

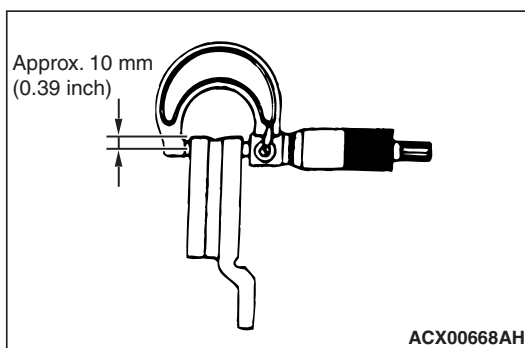
- If the brake disc thickness is worn beyond the limit value at more than one point, replace the brake disc and check its run-out.

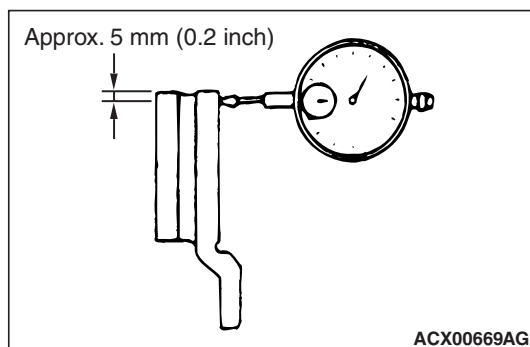
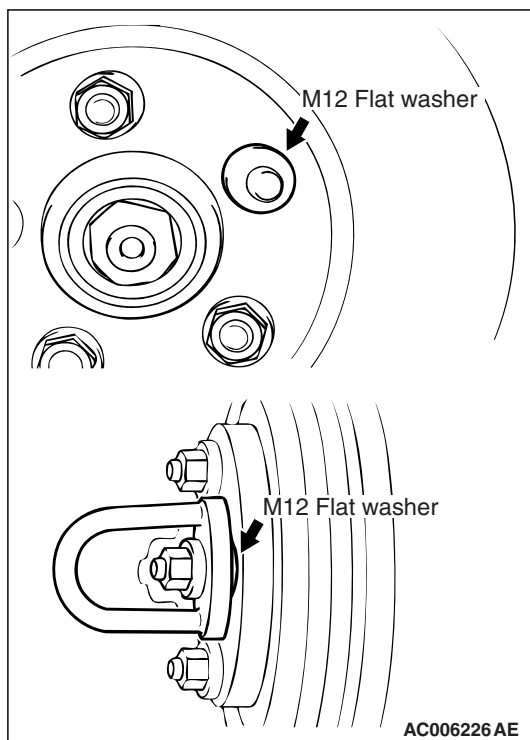


BRAKE DISC THICKNESS UNEVENNESS CHECK AND CORRECTION

- Remove contaminants or corrosion from the brake disc surface.
- Use a micrometer to measure the brake disc thickness at minimum eight points which are 10 mm (0.39 inch) inward from its circumference. Then record the measurements.
- If the brake disc thickness unevenness (the difference between the maximum and minimum values measured above) is 0.015 mm (0.0006 inch) or less, it is within the standard value.
- If the brake disc thickness unevenness exceeds the standard value, grind it according to the procedure below while it is mounted on the vehicle.

NOTE: If it is suspected that the brake disc thickness will become less than the limit value after the grinding, replace the brake disc and check its run-out.





- (1) Check for wheel bearing looseness in the axial direction (Refer to GROUP 26 – On-vehicle Service, Wheel bearing end play check [P.26-11](#) <Front>, GROUP 27A – On-vehicle Service, Wheel bearing end play check [P.27A-6](#) <Rear (FWD)> or GROUP 27B – On-vehicle Service, Wheel bearing end play check [P.27B-17](#) <Rear (AWD)>).

⚠ CAUTION

- Insert M12 plain washer and then install the adapter as shown before grinding. Failure to use the M12 plain washer will cause the brake disc to be deformed and ground incorrectly.
 - To grind the brake disc, ensure that all the nuts (M12 X 1.5) are tightened evenly and in a diagonal sequence to the specified torque [100 N·m (74 ft-lb)]. Failure to use all the nuts (M12×1.5), excessive or uneven tightening torque will cause the brake disc to deform or judder.
- (2) Correct the brake disc uneven thickness by grinding it while in place on the vehicle.

BRAKE DISC RUN-OUT CHECK AND CORRECTION

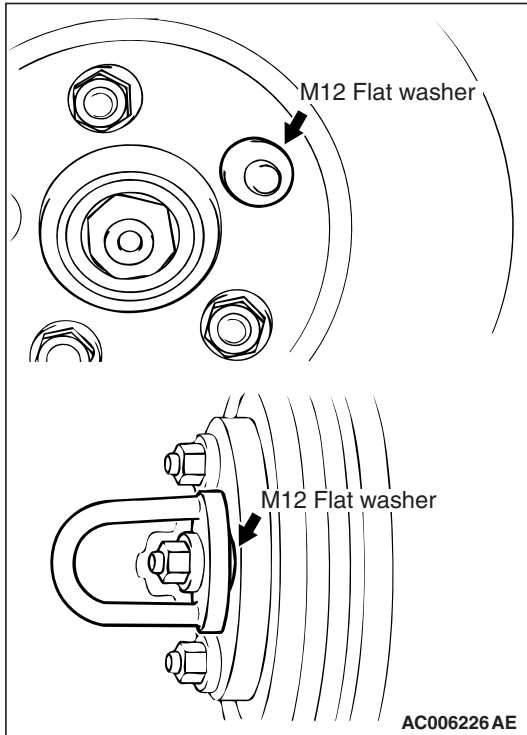
1. Check for wheel bearing looseness in the axial direction (Refer to GROUP 26 – On-vehicle Service, Wheel bearing end play check [P.26-11](#) <Front>, GROUP 27A – On-vehicle Service, Wheel bearing end play check [P.27A-6](#) <Rear (FWD)> or GROUP 27B – On-vehicle Service, Wheel bearing end play check [P.27B-17](#) <Rear (AWD)>).
2. If the end play is within the limit value, secure the brake disc by tightening the nut (M12×1.5) evenly to the specified torque [100 N·m (74 ft-lb)]. If the end play still exceeds the limit value, replace the wheel bearing. Then secure the brake disc by tightening the nut (M12×1.5) evenly to the specified torque [100 N·m (74 ft-lb)].
3. Place a dial gauge ca. 5 mm (0.2 inch) inward from the circumference of the brake disc to measure its run-out.

Limit:

0.06 mm (0.0024 inch) <Front>

0.08 mm (0.0032 inch) <Rear>

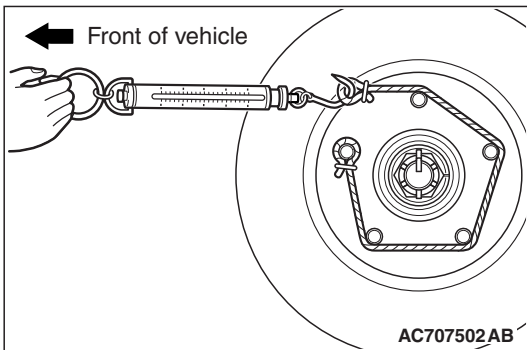
4. If the brake disc run-out exceeds the limit value, rephase the brake disc to the hub so that the minimum brake disc run-out is obtained.



CAUTION

- Insert M12 plain washer and then install the adapter as shown before grinding. Failure to use the M12 plain washer will cause the brake disc to be deformed and ground incorrectly.
 - To grind the brake disc, ensure that all the nuts (M12 X 1.5) are tightened evenly and in a diagonal sequence to the specified torque [100 N·m (74 ft-lb)]. Failure to use all the nuts (M12×1.5), excessive or uneven tightening torque will cause the brake disc to deform or judder.
5. If the brake disc run-out exceeds the limit value after rephasing, grind the disc while in place on the vehicle so that the brake disc run-out is within the limit value.

NOTE: If it is suspected that the brake disc thickness will be below the limit value, replace the brake disc. Then rephase the brake disc so that the minimum brake disc run-out is obtained, or grind the disc while in place on the vehicle so that its run-out is below the limit value.



BRAKE DRAG FORCE CHECK

M1351017200245

1. Remove the brake pad, shim and clip (Refer to [P.35A-21](#)).
2. Using a spring scale, measure the hub sliding torque in the forward direction with the brake pad, shim and clip removed.
3. Install the brake pad, shim and clip (Refer to [P.35A-21](#)).
4. Start the engine, and depress the brake pedal lightly two or three times. Then stop the engine. [Depressing force: approximately 50 – 100 N (11.2 – 22.5 pound)]
5. Turn the brake disc 10 times in the forward direction.
6. Using a spring scale, measure the hub sliding torque in the forward direction with the brake pad, shim and clip installed.
7. Obtain the disk brake drag force (difference between measured values of item 2 and item 6).

Standard value: 68 N (15.3 pounds) or less

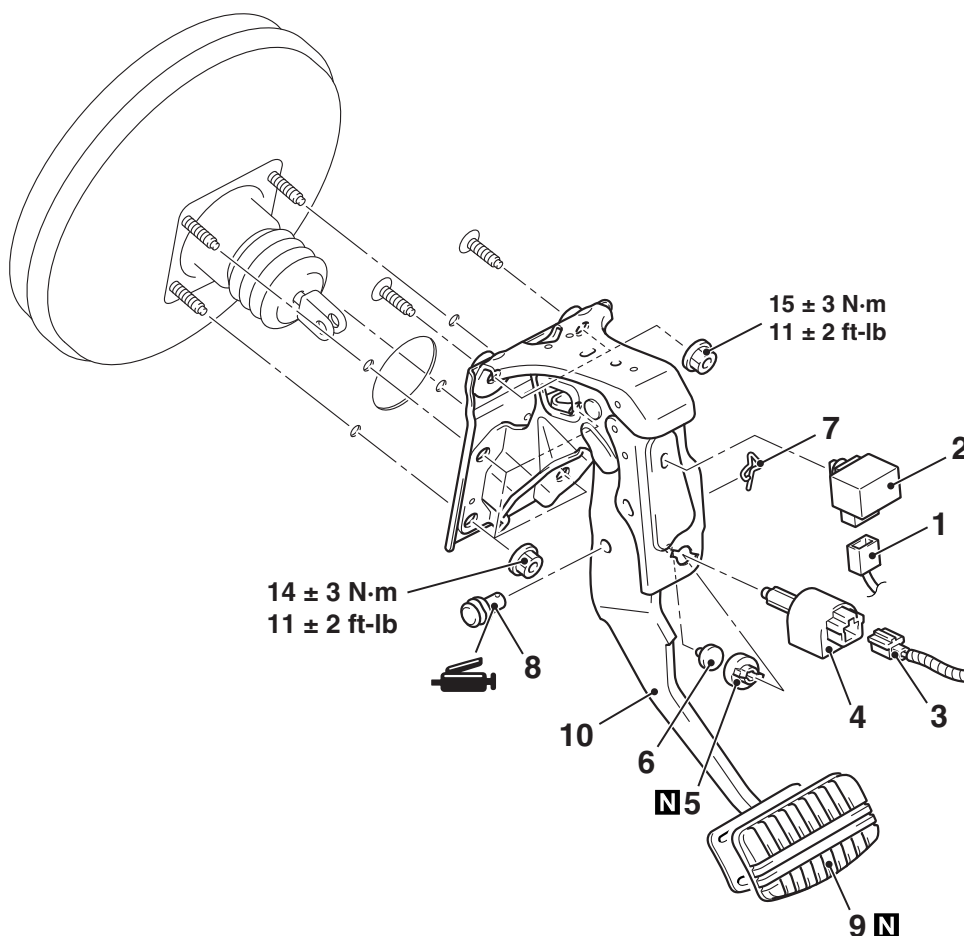
8. If the brake drag force exceeds the standard value, disassemble the brake caliper assembly to check for fouling/rust on the piston sliding section and piston seal deterioration, and confirm whether the guide pin and lock pin slide properly (Refer to [P.35A-35](#) <Front> or [P.35A-41](#) <Rear>).

BRAKE PEDAL**REMOVAL AND INSTALLATION**

M1351003401432

CAUTION

Do not apply grease or lubricant to the switch and the switch installation section to avoid malfunction of the switch. In addition, do not use gloves which have grease on them.



AC900819AB

Removal steps

1. Stoplight relay connector connection
2. Stoplight relay
3. Stoplight switch connector connection
4. Stoplight switch

Removal steps (Continued)

5. Pedal clip
6. Pedal stopper
7. Snap pin
8. Pin assembly
9. Pedal pad
10. Brake pedal assembly

<<A>>

REMOVAL SERVICE POINT**<<A>> BRAKE PEDAL ASSEMBLY REMOVAL**

From the engine compartment side, remove the brake pedal assembly while pulling the brake booster.

INSPECTION

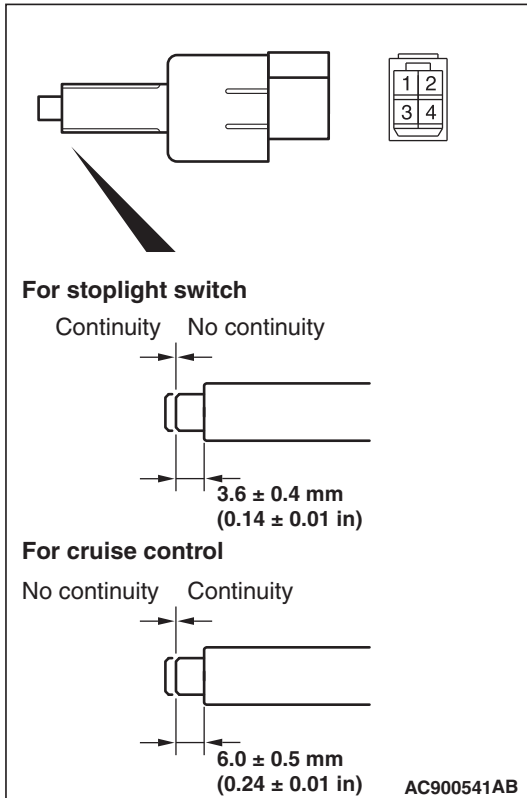
STOPLIGHT SWITCH CHECK

M1351008900633

⚠ CAUTION

Do not apply grease or lubricant to the switch and the switch installation section to avoid malfunction of the switch. In addition, do not use gloves which have grease on them.

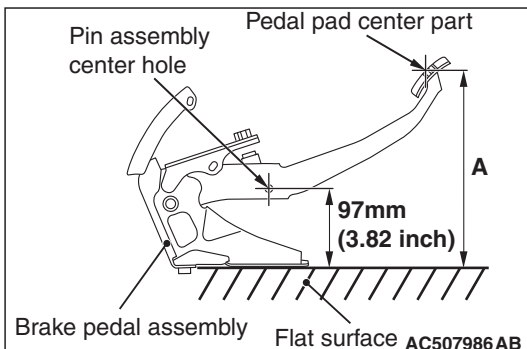
Check for continuity between the terminals of the switch.



Check condition	Terminal connector of tester	Normal condition
At free position	1 – 2 (for stoplight switch)	Continuity exists (2Ω or less)
	3 – 4 (for cruise control)	No continuity
Press the plunger from the edge of the outer case by the dimension shown in the figure.	1 – 2 (for stoplight switch)	No continuity
	3 – 4 (for cruise control)	Continuity exists (2Ω or less)

BRAKE PEDAL DISTORTION CHECK

M1351016300205



- Place the brake pedal assembly on a level surface as shown in the figure, and set the distance from the centre of the pin assembly mounting hole to the level surface to 97 mm (3.82 inch). Make sure that the dimension A in the figure (distance from the pedal pad surface to the level surface) is within the standard value.

Standard value (A): 250 – 254 mm (9.8 – 10.0 inch)

- When dimension A is not within the standard value, replace the brake pedal assembly.

MASTER CYLINDER ASSEMBLY AND BRAKE BOOSTER ASSEMBLY

REMOVAL AND INSTALLATION

M1351003701659

⚠ CAUTION

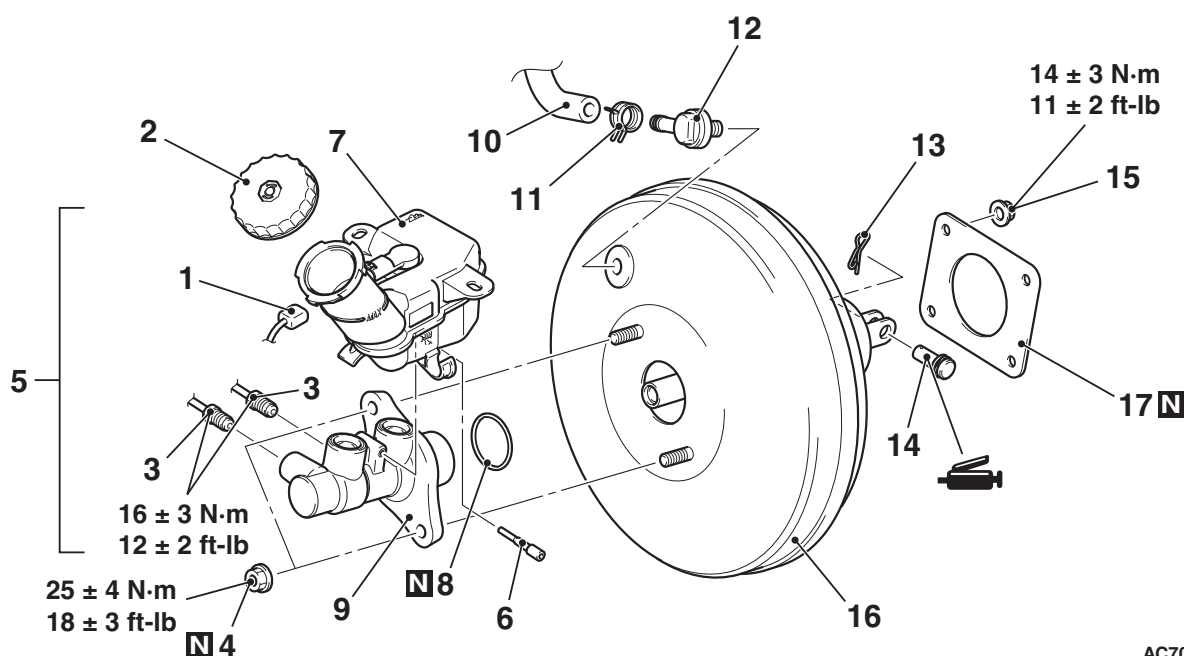
Do not touch the push rod in the brake booster because it is already adjusted.

Pre-removal operation

- Brake Fluid Draining
- Bottom Cover Assembly (driver's seat) Removal (Refer to GROUP 52A – Instrument Panel Assembly P.52A-2).
- Air Cleaner Body Removal (Refer to GROUP 15 – Air Cleaner P.15-4 <2.4L Engine> or P.15-5 <3.0L Engine>).

Post-installation operation

- Air Cleaner Body Installation (Refer to GROUP 15 – Air Cleaner P.15-4 <2.4L Engine> or P.15-5 <3.0L Engine>).
- Brake Fluid Refilling and Air Bleeding (Refer to P.35A-20).
- Bottom Cover Assembly (driver's seat) Installation (Refer to GROUP 52A – Instrument Panel Assembly P.52A-2).



AC709978AB

Master cylinder removal steps

1. Brake fluid level switch connector connection
 2. Reservoir cap
 3. Brake pipe connection
- >>B<<
- Bleeding of master cylinder assembly (only at installation)
4. Master cylinder mounting nuts
 5. Reservoir assembly and master cylinder assembly
 6. Torx bolt
 7. Reservoir assembly
 8. O-ring
 9. Master cylinder assembly

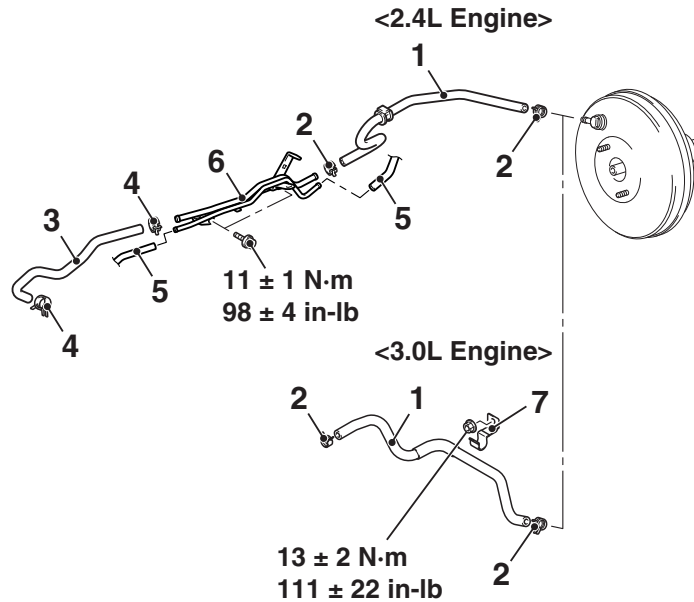
Brake booster removal steps

1. Brake fluid level switch connector connection
3. Brake pipe connection

Brake booster removal steps

- >>B<<
- Bleeding of master cylinder assembly (only at installation)
4. Master cylinder mounting nuts
 5. Reservoir assembly and master cylinder assembly
- >>A<<
10. Vacuum hose connection
 11. Hose clip
 12. Check valve
 13. Snap pin
 14. Pin assembly
 15. Brake booster mounting nut
 - Strut tower bar (Refer to GROUP 42A, Strut Tower Bar P.42A-12.)
 16. Brake booster assembly
 17. Seal

<VACUUM HOSE AND VACUUM PIPE>



AC709979AB

Removal steps

- >>A<< 1. Vacuum hose
2. Hose clip
>>A<< 3. Vacuum hose <2.4L Engine>
4. Hose clip <2.4L Engine>

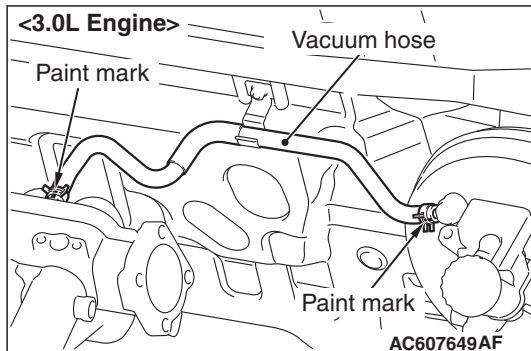
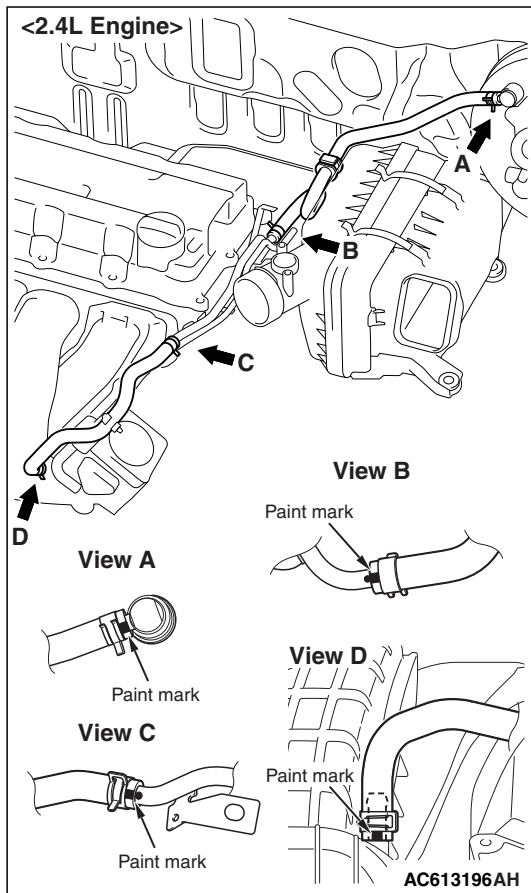
Removal steps (Continued)

5. Emission vacuum hose connection
<2.4L Engine>
6. Vacuum pipe assembly <2.4L Engine>
7. Clamp <3.0L Engine>

INSTALLATION SERVICE POINTS

>>A<< VACUUM HOSE INSTALLATION

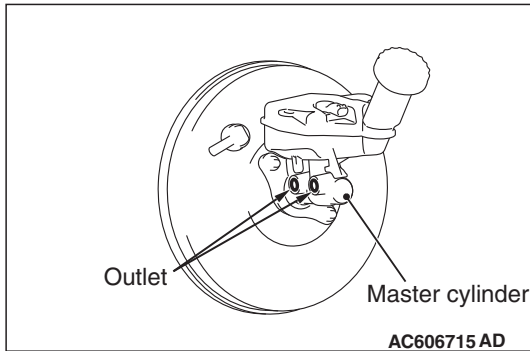
Align the mark as shown in the figure to assemble the vacuum hose.



>>B<< BLEEDING OF MASTER CYLINDER ASSEMBLY

When removed the master cylinder assembly, bleed the master cylinder in the following procedure to make bleeding of the brake pipeline easier (When no brake fluid is in the master cylinder).

1. Fill the brake fluid reservoir with the brake fluid.
2. Depress and hold the brake pedal.



3. Another operator closes the master cylinder outlets with his fingers.
4. In this condition, release the brake pedal.
5. Repeat Steps 2 to 4 for 3 or 4 times to fill the master cylinder with the brake fluid.

FRONT DISC BRAKE ASSEMBLY

REMOVAL AND INSTALLATION

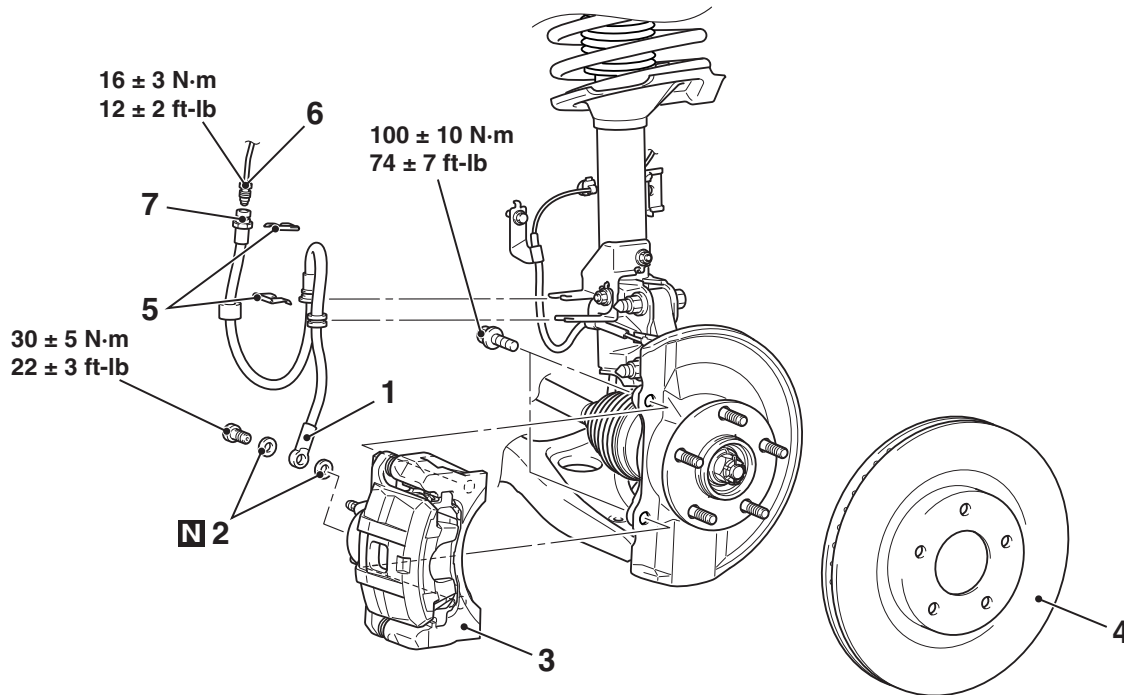
M1351006001358

Pre-removal operation

Brake Fluid Draining

Post-installation operation

- Brake Fluid Refilling and Air Bleeding (Refer to [P.35A-20](#)).
- Brake Disk Runout Inspection/Correction (Refer to [P.35A-24](#)).



AC610142AC

Removal steps

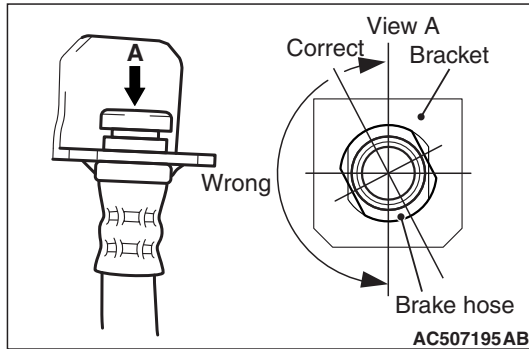
1. Brake hose (brake caliper side) connection
2. Gasket
3. Brake caliper assembly

Removal steps (Continued)

4. Front brake disk
 5. Clip
 6. Brake pipe connection
 7. Brake hose
- >>A<<

INSTALLATION SERVICE POINTS**>>A<< BRAKE HOSE INSTALLATION**

1. Pass the brake hose through the hole in the body-side bracket.
2. Install the brake hose to the brake caliper.
3. Install the brake hose at the two fixing points.
4. Twist the brake hose toward the lesser torsion between the brake hose and body-side bracket as shown in the figure, and fix it to the body-side bracket with a clip.

**INSPECTION**

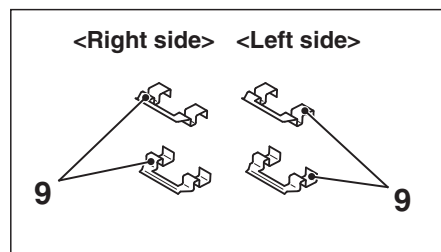
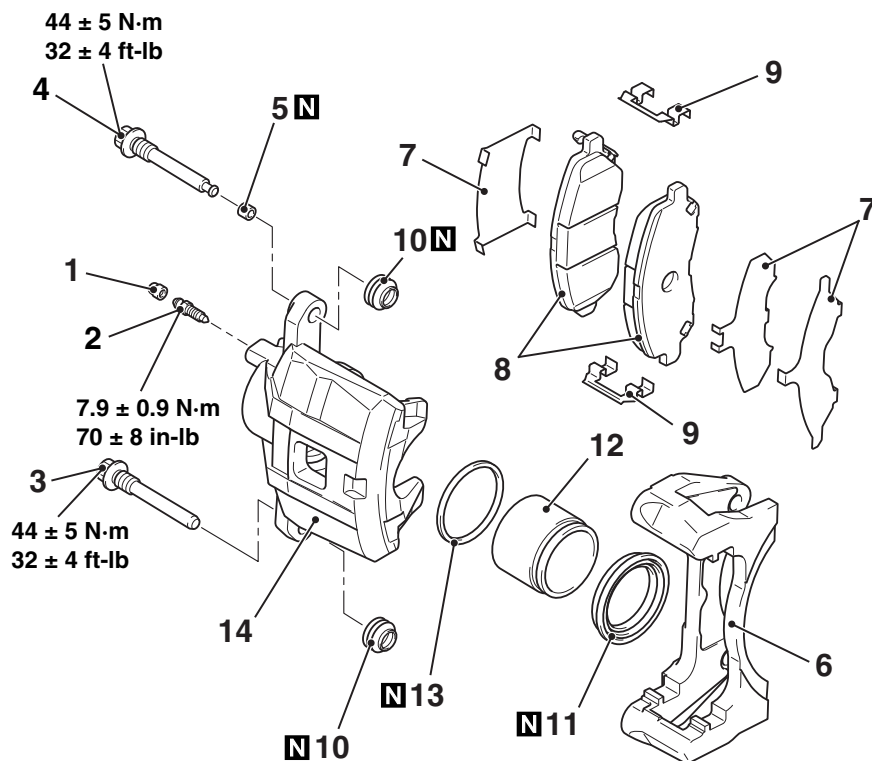
M1351006100460

BRAKE DISC CHECK

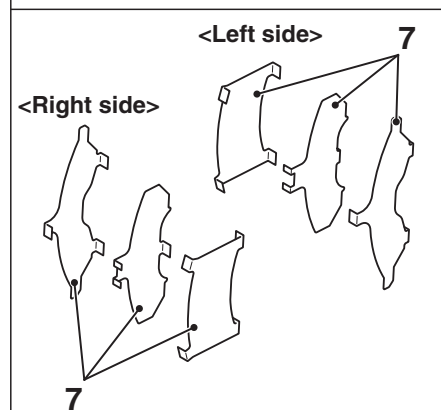
- Disc wear (Refer to [P.35A-24](#)).
- Disc run-out (Refer to [P.35A-24](#)).

DISASSEMBLY AND ASSEMBLY

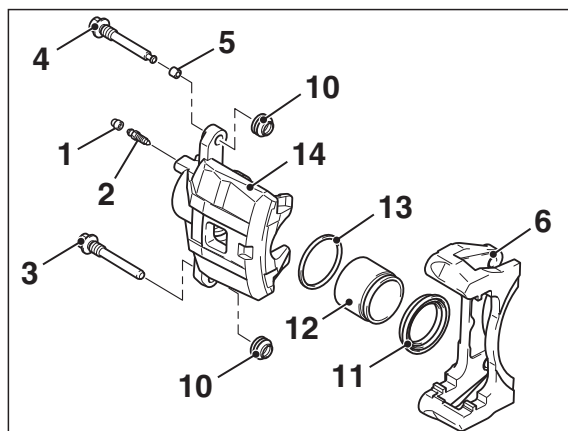
M1351006201716



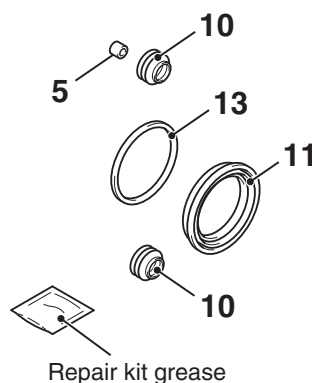
Front brake clip set



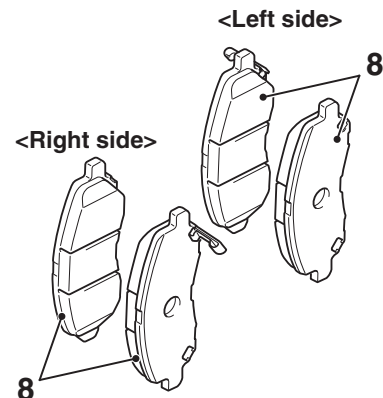
Front brake shim set



Front brake caliper kit



Front brake caliper seal kit



Front brake pad set

AC705550AD

Disassembly steps

1. Bleeder cap
2. Bleeder
3. Guide pin
4. Lock pin
5. Bushing
6. Caliper support
(including brake pad assembly,
clip, and shim)
7. Shim

<<A>>

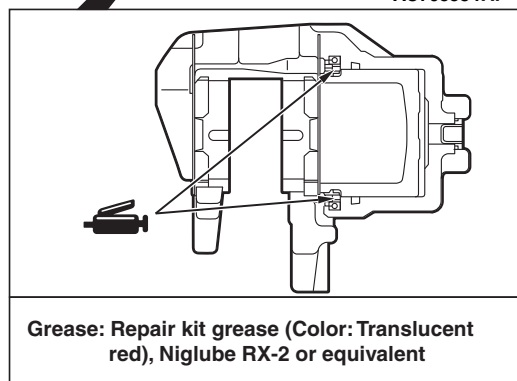
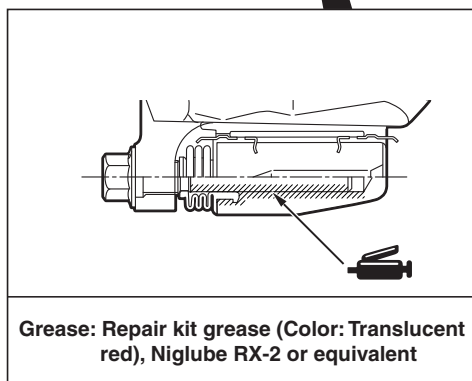
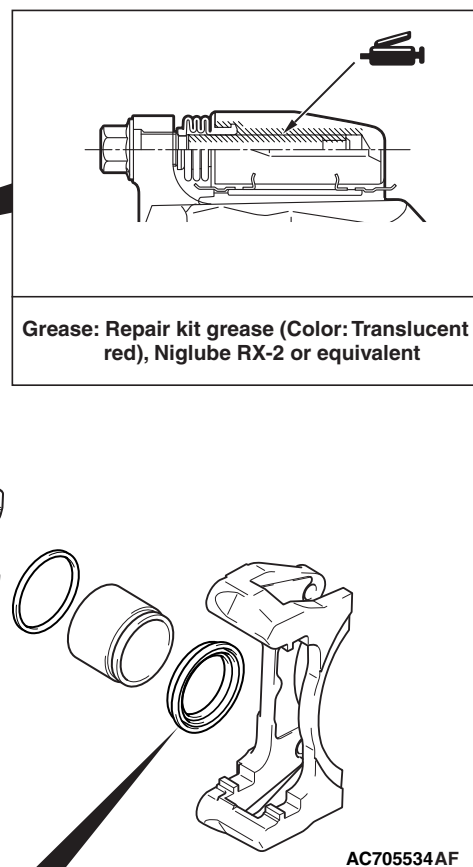
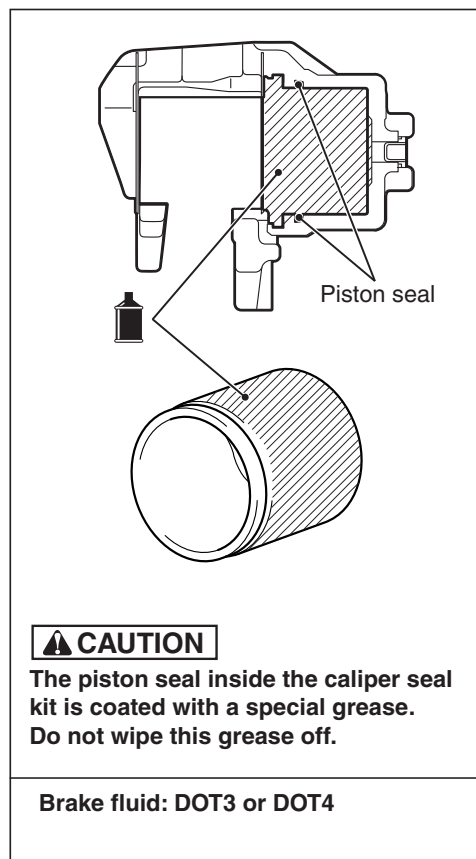
<<A>>

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Disassembly steps (Continued)

8. Brake pad assembly
9. Clip
10. Pin boot
11. Piston boot
12. Piston
13. Piston seal
14. Caliper body

LUBRICATION POINTS



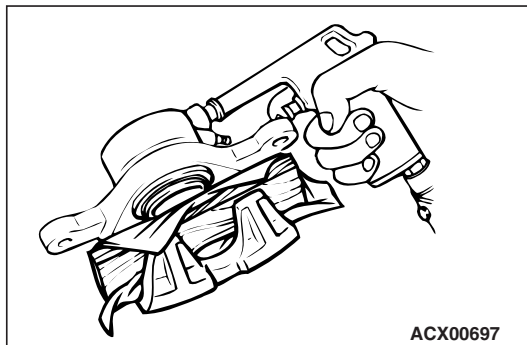
DISASSEMBLY SERVICE POINTS

<<A>> PISTON BOOT/PISTON REMOVAL

CAUTION

Blow air gradually to remove the pistons. The pistons will rush out if a force of air is applied suddenly.

Cover the caliper body outer side with a cloth or similar materials. Blow compressed air through the brake hose installation area to remove the piston and piston boot.



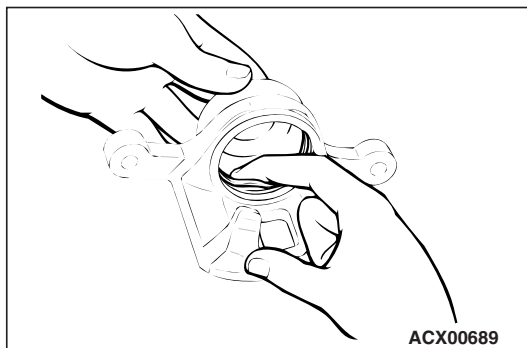
<> PISTON SEAL REMOVAL

CAUTION

Do not use a flat-tipped screwdriver to remove the piston seal. This may damage the inner side of the cylinder.

1. Remove the piston seal with your finger tip.
2. Clean the piston surface and cylinder inner face with alcohol or specified brake fluid.

Brake fluid: DOT3 or DOT4



INSPECTION

M1351015000579

- Check the cylinder for wear, damage or rust.
- Check the piston surface for wear, damage or rust.
- Check the caliper body for wear.
- Check the pad for damage or adhesion of grease, check the backing metal for damage.

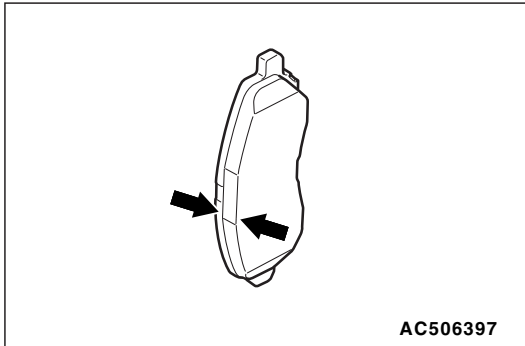
BRAKE PAD WEAR CHECK**⚠ WARNING**

- *Always replace both brake pads on each wheel as a set (both front wheels or both rear wheels). Failure to do so will result in uneven braking, which may cause unreliable brake operation.*
- *If there is significant difference in the thickness of the pads on the left and right sides, check the moving parts.*

Measure thickness at the thinnest, most worn area of the pad.
Replace the pad assembly if pad thickness is less than the limit value.

Standard value: 10.0 mm (0.39 inch)

Limit: 2.0 mm (0.08 inch)



REAR DISC BRAKE ASSEMBLY

REMOVAL AND INSTALLATION <2.4L ENGINE: 5 PERSONS SEAT>

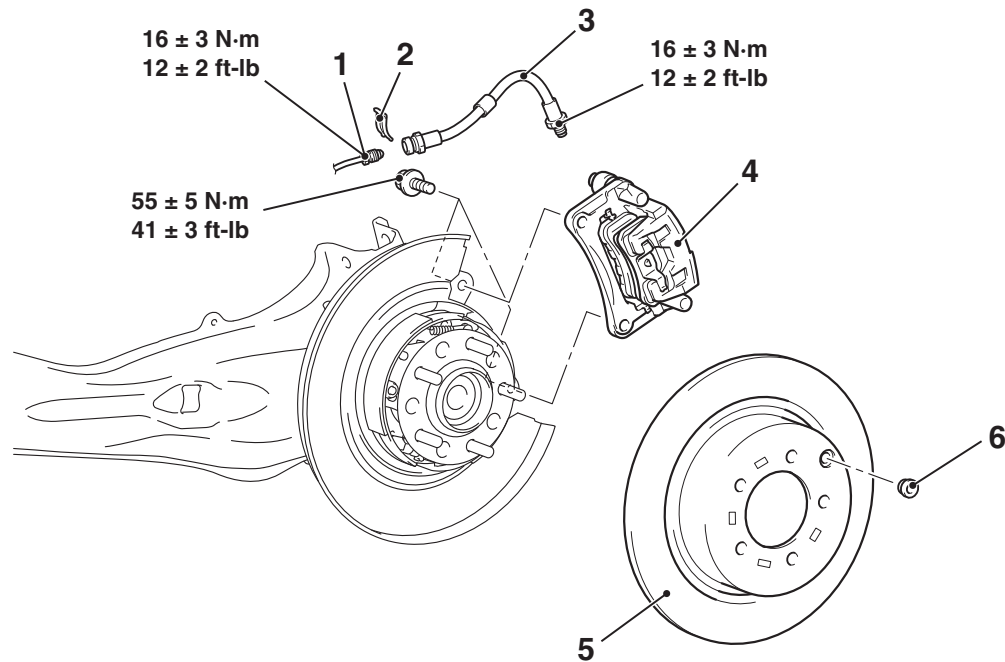
M1351007001027

Pre-removal operation

Brake Fluid Draining

Post-installation operation

- Brake Fluid Refilling and Air Bleeding (Refer to P.35A-20).
- Brake Disk Runout Inspection/Correction (Refer to P.35A-24).
- Parking Brake Lining Seating Procedure (Refer to GROUP 36, Parking Brake Lining Seating Procedure P.36-10).



AC610145AC

Removal steps

1. Brake tube (brake hose side) connection
2. Clip
3. Brake hose

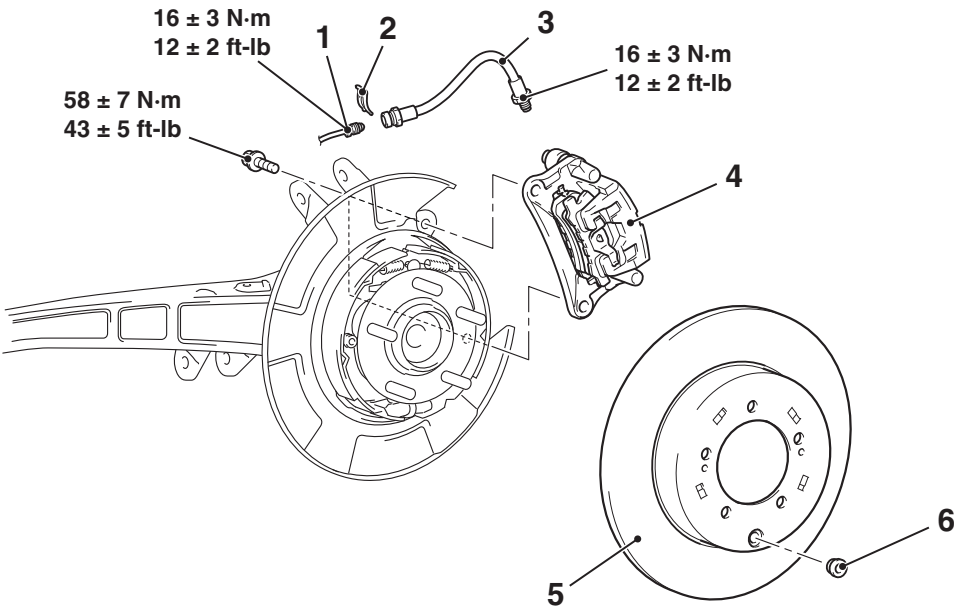
Removal steps (Continued)

4. Rear brake caliper assembly
5. Rear brake disk
6. Plug

REMOVAL AND INSTALLATION <2.4L ENGINE: 7 PERSONS SEAT, 3.0L ENGINE>

M1351007001038

Pre-removal operation Brake Fluid Draining	Post-installation operation • Brake Fluid Refilling and Air Bleeding (Refer to P.35A-20). • Brake Disk Runout Inspection/Correction (Refer to P.35A-24). • Parking Brake Lining Seating Procedure (Refer to GROUP 36, Parking Brake Lining Seating Procedure P.36-10).
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AC800505AB

Removal steps

1. Brake tube (brake hose side) connection
2. Clip
3. Brake hose

Removal steps (Continued)

4. Rear brake caliper assembly
5. Rear brake disk
6. Plug

INSPECTION

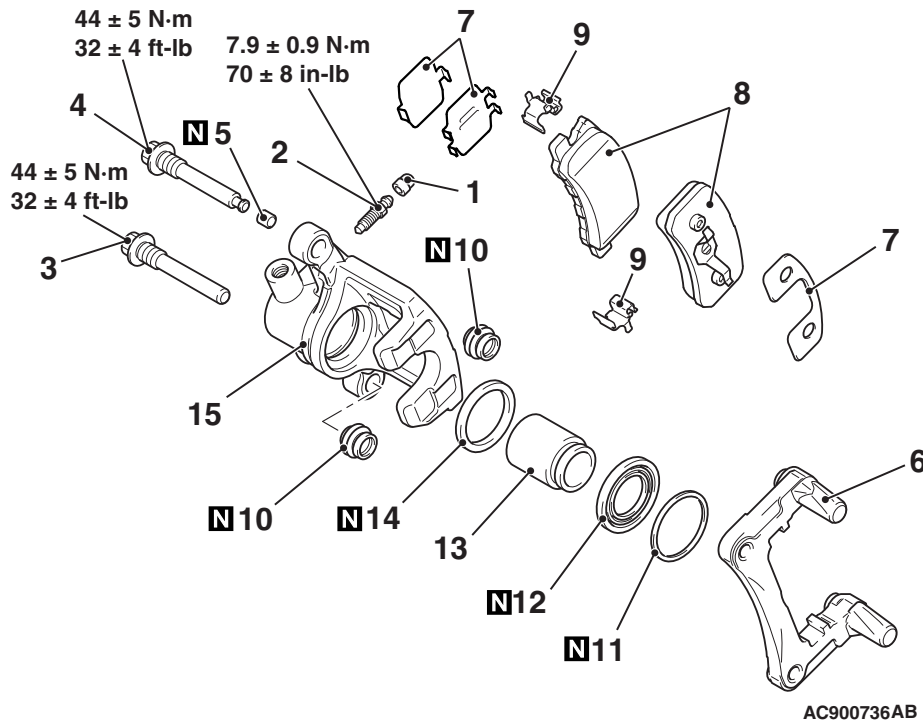
M1351007100399

BRAKE DISC CHECK

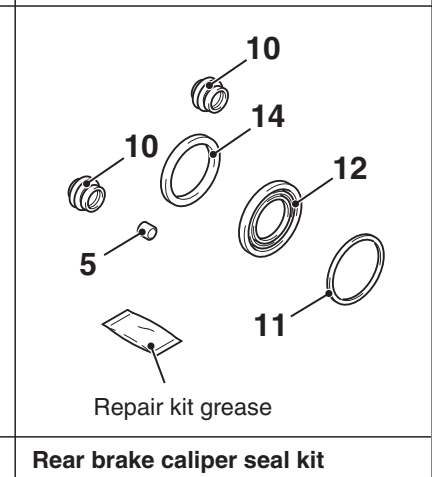
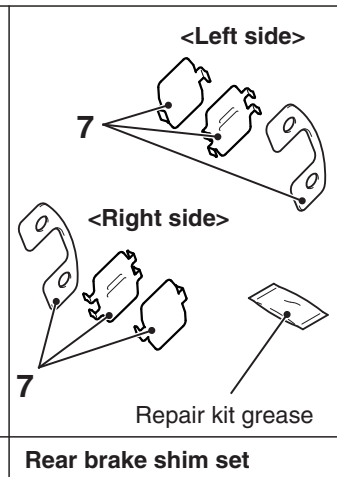
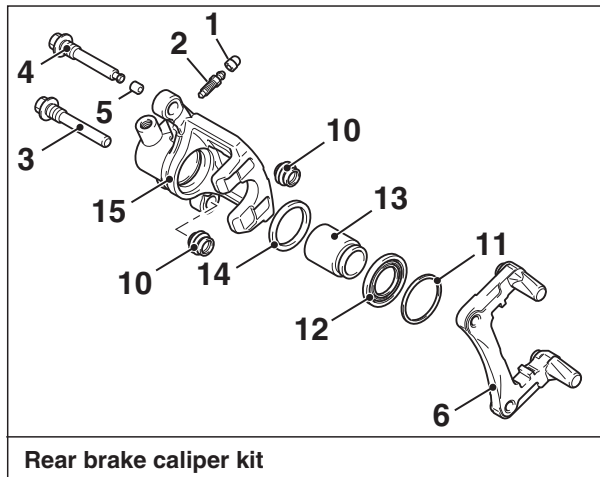
- Disc wear (Refer to [P.35A-24](#)).
- Disc run-out (Refer to [P.35A-24](#)).

DISASSEMBLY AND ASSEMBLY

M1351007201184



<Right side> <Left side>	
Rear brake clip set	
<Right side> <Left side>	
Rear brake pad set	



Rear brake caliper kit

Rear brake shim set

Rear brake caliper seal kit

Disassembly steps

1. Bleeder cap
2. Bleeder
3. Guide pin
4. Lock pin
5. Bushing
6. Caliper support
7. Shim
8. Brake pad assembly
9. Clip
10. Pin boot

<<A>>

<<A>>

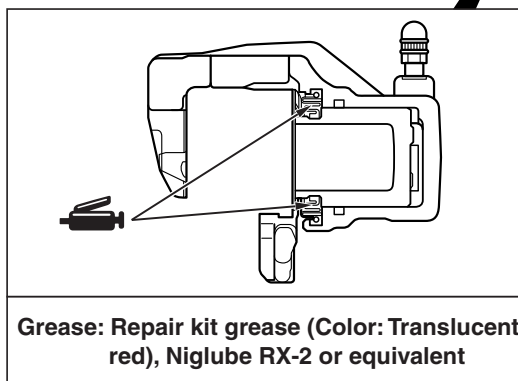
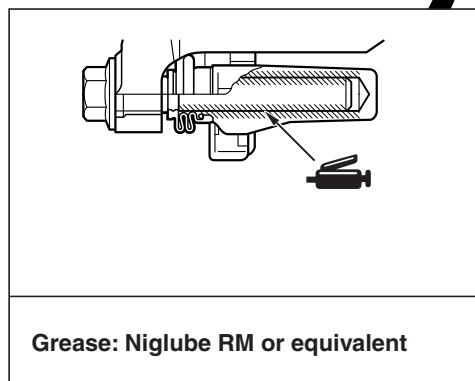
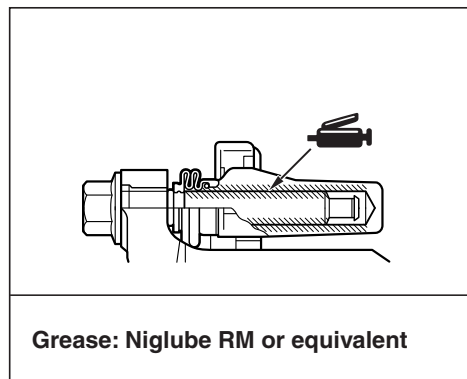
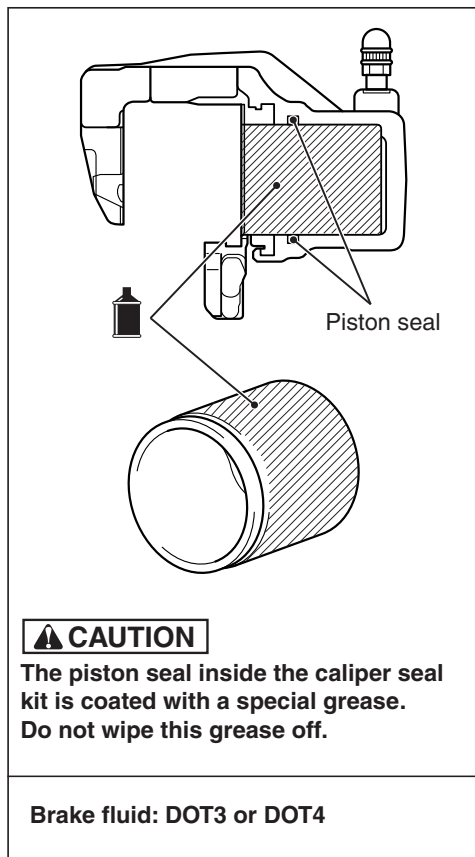
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Disassembly steps (Continued)

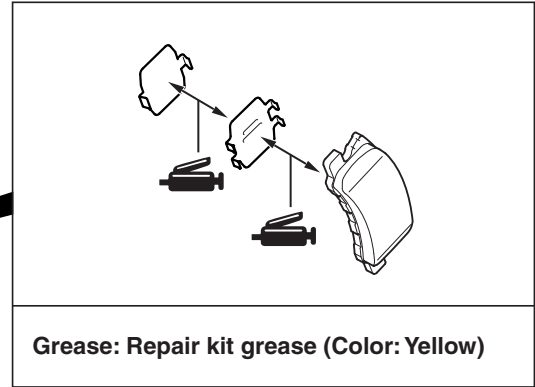
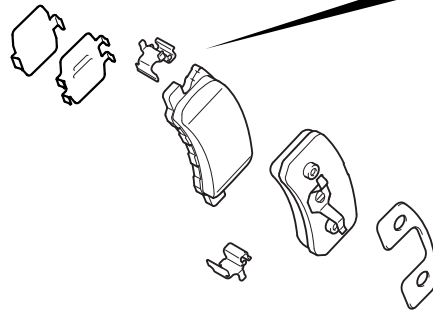
11. Boot ring
12. Piston boot
13. Piston
14. Piston seal
15. Caliper body

NOTE: Install the brake pad assembly (with wear indicator) to the inner side of the brake disk, making sure that the wear indicator is located on the bottom.

LUBRICATION POINTS



AC802115AE



AC900737AB

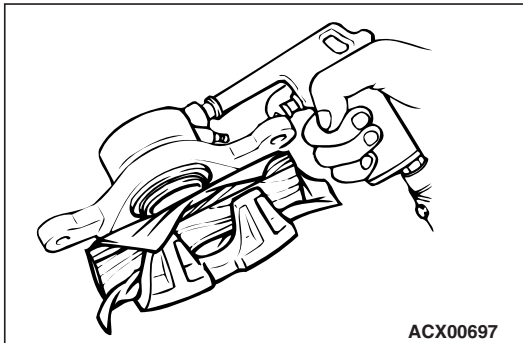
DISASSEMBLY SERVICE POINTS

<<A>> PISTON BOOT/PISTON REMOVAL

⚠ CAUTION

Blow air gradually to remove the pistons. The pistons will rush out if a force of air is applied suddenly.

Cover the caliper body outer side with a cloth or similar materials. Blow compressed air through the brake hose installation area to remove the piston and piston boot.



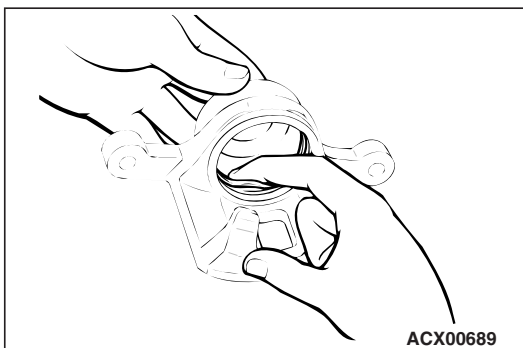
<> PISTON SEAL REMOVAL

⚠ CAUTION

Do not use a flat-tipped screwdriver or similar tool to remove the piston seal. These may damage the inner side of the cylinder.

1. Remove the piston seal with your finger tip.
2. Clean the piston surface and cylinder inner face with alcohol or specified brake fluid.

Brake fluid: DOT3 or DOT4



INSPECTION

M1351015000580

- Check the cylinder for wear, damage or rust.
- Check the piston surface for wear, damage or rust.
- Check the caliper body for wear.
- Check the pad for damage or adhesion of grease, check the backing metal for damage.

BRAKE PAD WEAR CHECK

 WARNING

- ***Always replace both brake pads on each wheel as a set (both front wheels or both rear wheels). Failure to do so will result in uneven braking, which may cause unreliable brake operation.***
- ***If there is significant difference in the thickness of the pads on the left and right sides, check the moving parts.***

Measure thickness at the thinnest, most worn area of the pad. Replace the pad assembly if pad thickness is less than the limit value.

Standard value: 10.0 mm (0.39 inch)

Limit: 2.0 mm (0.08 inch)

