

GROUP 36

PARKING BRAKES

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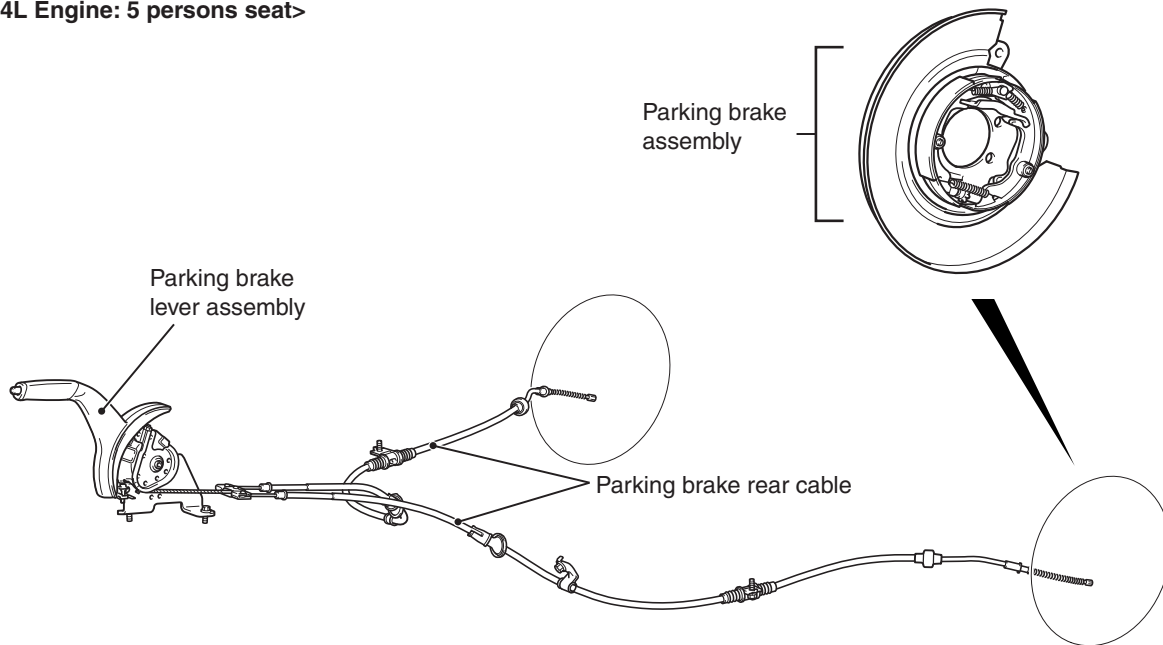
GENERAL INFORMATION

M1361000100902

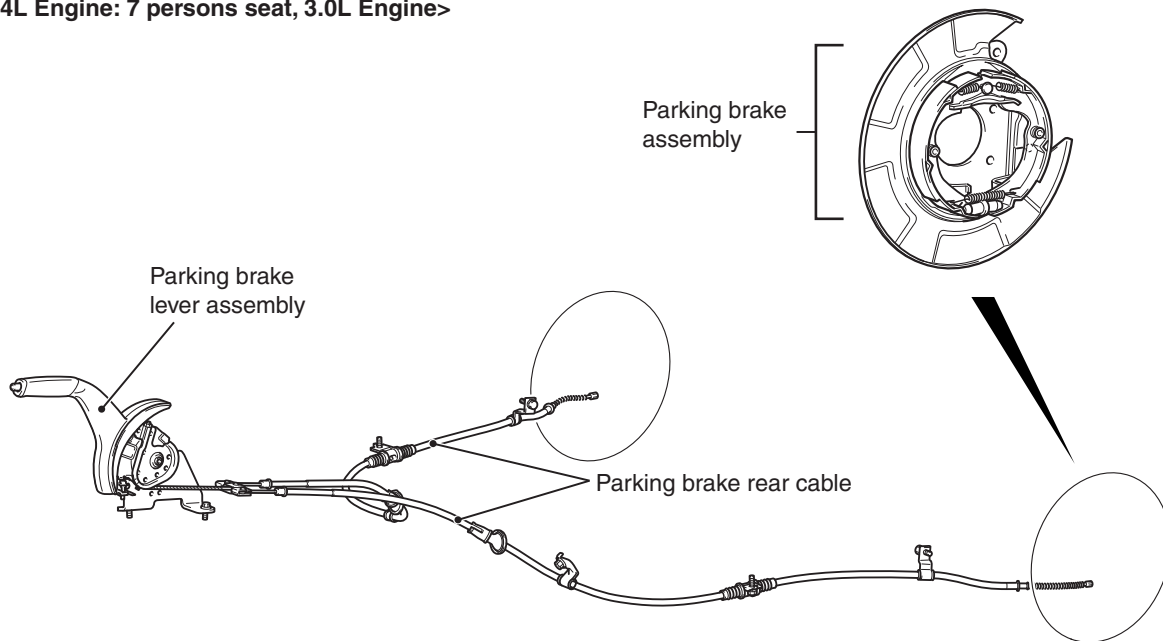
The mechanical rear-wheel acting type parking brake is adopted, and a parking brake lever is used for that operation.

CONSTRUCTION DIAGRAM

<2.4L Engine: 5 persons seat>



<2.4L Engine: 7 persons seat, 3.0L Engine>



AC709975AC

SERVICE SPECIFICATIONS

M1361000301125

| Item | | Standard value | Limit |
|--|--|----------------|--------------|
| Parking brake lever stroke [Control force approx. 200 N (45 pounds)] | | 3 to 5 notches | – |
| Brake lining thickness mm (in) | | 2.8 (0.11) | 1.0 (0.04) |
| Brake drum inside diameter mm (in) | 2.4L Engine: 5 persons seat | 168.0 (6.61) | 169.0 (6.65) |
| | 2.4L Engine: 7 persons seat, 3.0L Engine | 190.0 (7.48) | 191.0 (7.52) |

PARKING BRAKE DIAGNOSIS

INTRODUCTION

M1361003700334

If the parking brake is faulty, parking brake effort will become insufficient. The cause may be a malfunction of parking brake parts or the parking brake lever being out of adjustment.

TROUBLESHOOTING STRATEGY

M1361003800342

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 parking brakes 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

M1361004100443

| SYMPTOM | INSPECTION PROCEDURE | REFERENCE PAGE |
|--|----------------------|---|
| Brake drag | – | Refer to GROUP 35A, Basic Brake System Diagnosis –Symptom Chart P.35A-5 . |
| Brake warning light stays ON with the parking brake lever released. | – | Refer to GROUP 35B, ABS Diagnosis –Symptom Chart P.35B-155 . |
| Insufficient parking brake function | 1 | P.36-4 |
| When the parking brake lever is pulled, the brake warning light does not illuminate. | 2 | P.36-5 |

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Insufficient Parking Brake Function

DIAGNOSIS

STEP 1. Check the excessive parking brake lever stroke.

Refer to [P.36-9](#).

Q: Is the parking brake lever stroke adjusted properly?

YES : Go to Step 2.

NO : Adjust the parking brake lever stroke or check the parking brake cable routing (Refer to [P.36-9](#)). Then go to Step 5.

STEP 2. Check the parking brake cable for sticking.

Q: Is the parking brake cable stuck?

YES : Replace the cable (Refer to [P.36-12](#)). Then go to Step 5.

NO : Go to Step 3.

STEP 3. Check the brake lining and brake drum for wear.

Refer to [P.36-19](#).

Q: Is the brake lining thickness or brake drum inside diameter outside of specification?

YES : Replace the rear brake shoe assembly or rear brake disk (Refer to [P.36-13](#) <2.4L Engine: 5 persons seat> or [P.36-16](#) <2.4L Engine: 7 persons seat, 3.0L Engine>). Then go to Step 5.

NO : Go to Step 4.

STEP 4. Check for oil, water, etc., on the lining contact surfaces.

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

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

NO : Carry out the parking brake lining seating procedure (Refer to [P.36-10](#)) and then go to Step 5.

STEP 5. Retest the system.

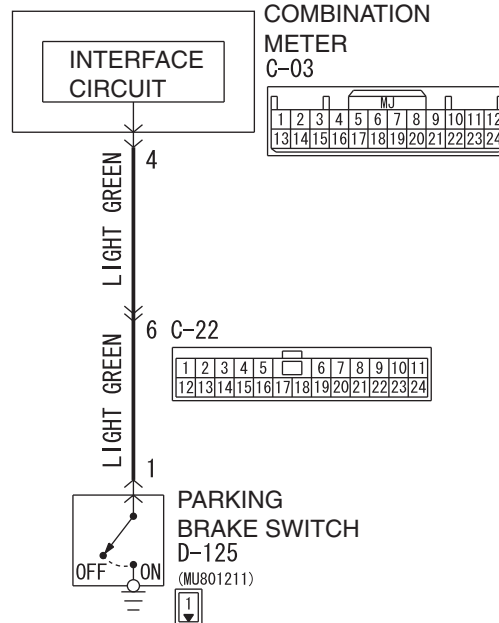
Q: Is the malfunction eliminated?

YES : The procedure is complete.

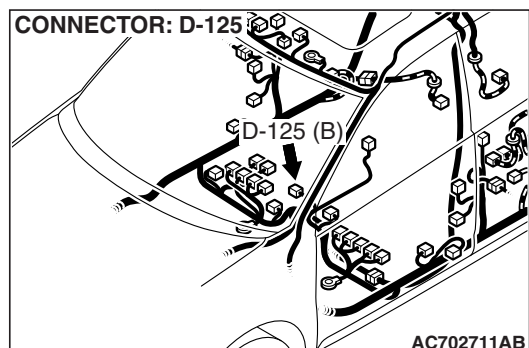
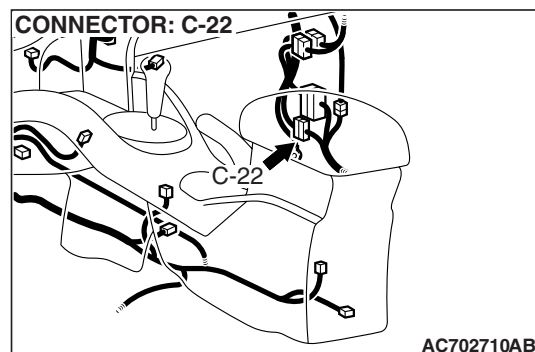
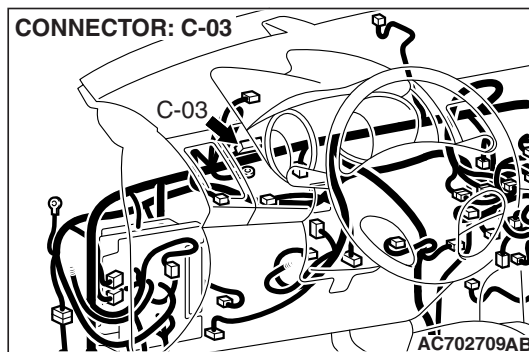
NO : Recheck from Step 1.

INSPECTION PROCEDURE 2: When the Parking Brake Lever is Pulled, the Brake Warning Light does not illuminate.

Brake Warning Light Circuit



AC702708 AB



TECHNICAL DESCRIPTION (COMMENT)

The parking brake switch turns on and off by operating the parking brake lever, and the brake warning light illuminates and goes out, indicating the operating status of parking brake to a driver.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CASE:)

- Damaged wiring harness or connector
- Parking brake switch defective
- Combination meter defective

DIAGNOSIS**Required Special Tools:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicle Communication Interface (V.C.I.)
 - MB991827: M.U.T.-III USB Cable
 - MB991910: M.U.T.-III Main Harness A

STEP 1. Using scan tool MB991958, check combination meter actuator test.**⚠ CAUTION**

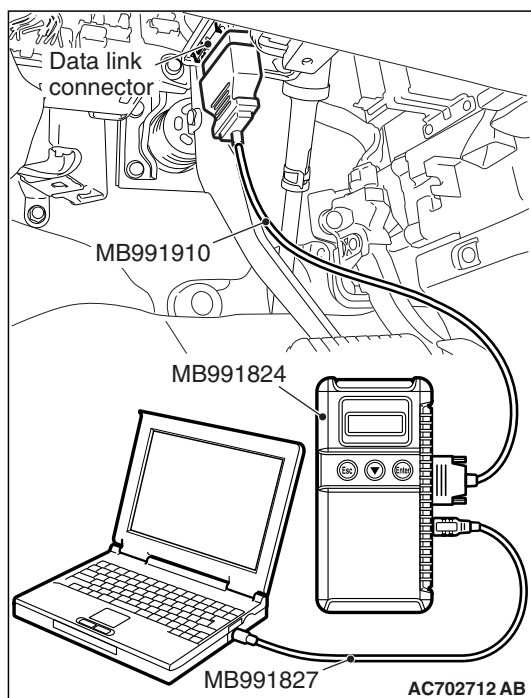
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the parking brake switch and brake fluid level switch to "OFF" position.
- (4) Set scan tool MB991958 to the actuator test mode.
 - Item 13: Indicator4: ON
 - The brake warning light illuminates.
 - Item 13: Indicator4: OFF
 - The brake warning light goes out.
- (5) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the combination meter (Refer to GROUP 54A, Combination meter assembly [P.54A-123](#)).

**STEP 2. Check the parking brake switch.**

Refer to [P.36-10](#).

Q: Is the parking brake switch normal?

YES : Go to Step 3.

NO : Replace the parking brake switch (Refer to [P.36-11](#)). Then go to Step 6.

STEP 3. Connector check: D-125 parking brake switch connector, C-22 intermediate connector and C-03 combination meter connector

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair or replace the faulty connector (Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#)). Then go to Step 6.

STEP 4. Check the wiring harness for an open circuit between D-125 parking brake switch connector terminal No.1 and C-03 combination meter connector terminal No.4.

- (1) Disconnect D-125 parking brake switch connector from C-03 combination meter connector, and measure at the wiring harness side connector.
- (2) Measure the resistance between D-125 parking brake switch connector terminal No.1 and C-03 combination meter connector terminal No.4.

OK: Continuity exists (2 Ω or less)

Q: Is the check result normal?

YES : Go to Step 5.

NO : A open circuit may be present in the wiring harness between D-125 parking brake switch connector terminal No.1 and C-03 combination meter connector terminal No.4. Repair the wiring harness if necessary, and then go to Step 6.

STEP 5. Retest the system.

Q: Does the brake warning light illuminate when the parking brake lever is pull?

YES : It can be assumed that this malfunction is intermittent (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunction [P.00-15](#)).

NO : Replace the combination meter (Refer to GROUP 54A, Combination meter assembly [P.54A-123](#)).

STEP 6. Retest the system.

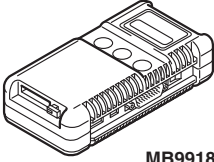
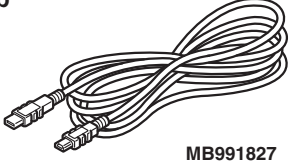
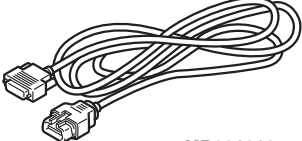
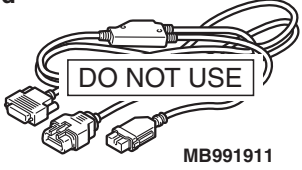
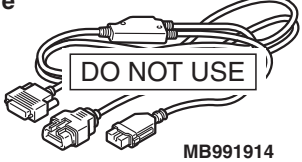
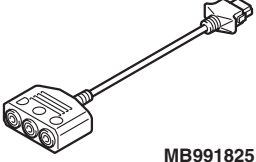
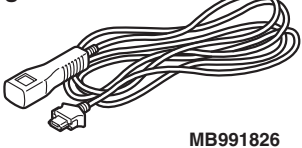
Q: Does the brake warning light illuminate when the parking brake lever is pulled?

YES : The procedure is complete.

NO : Return to Step 1.

SPECIAL TOOL

M1361000600093

| Tool | Tool number and name | Supersession | Application |
|--|---|---------------------|--|
| <p>a</p>  <p>MB991824</p> <p>b</p>  <p>MB991827</p> <p>c</p>  <p>MB991910</p> <p>d</p>  <p>MB991911</p> <p>e</p>  <p>MB991914</p> <p>f</p>  <p>MB991825</p> <p>g</p>  <p>MB991826 MB991958</p> | <p>MB991958</p> <p>a. MB991824</p> <p>b. MB991827</p> <p>c. MB991910</p> <p>d. MB991911</p> <p>e. MB991914</p> <p>f. MB991825</p> <p>g. MB991826</p> <p>M.U.T.-III sub assembly</p> <p>a. Vehicle communication interface (V.C.I.)</p> <p>b. M.U.T.-III USB cable</p> <p>c. M.U.T.-III main harness A (Vehicles with CAN communication system)</p> <p>d. M.U.T.-III main harness B (Vehicles without CAN communication system)</p> <p>e. M.U.T.-III main harness C (for Daimler Chrysler models only)</p> <p>f. M.U.T.-III measurement adapter</p> <p>g. M.U.T.-III trigger harness</p> | <p>MB991824-KIT</p> | <p>⚠ CAUTION</p> <p>M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.</p> <p>Actuator test check</p> |

ON-VEHICLE SERVICE

PARKING BRAKE LEVER STROKE CHECK AND ADJUSTMENT

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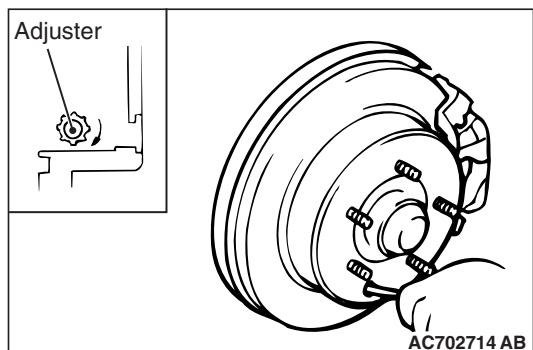
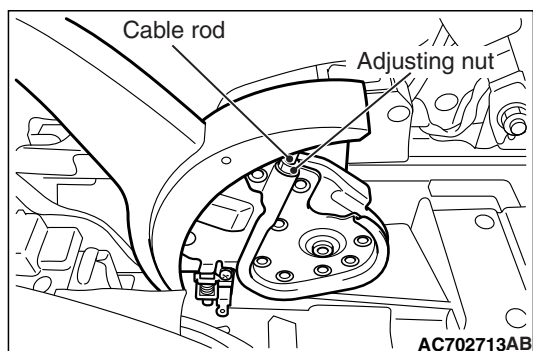
STROKE CHECK [CONTROL FORCE APPROX. 200 N (45 pounds)]

Standard value: 3 to 5 notches

STROKE ADJUSTMENT

If the parking brake lever stroke is out of the standard range, adjust as described below:

1. Remove the rear floor console assembly (Refer to GROUP 52A –Rear Floor Console Assembly [P.52A-8](#)).
2. Loosen the adjusting nut to the end of the cable rod in order to allow slack in the cables.

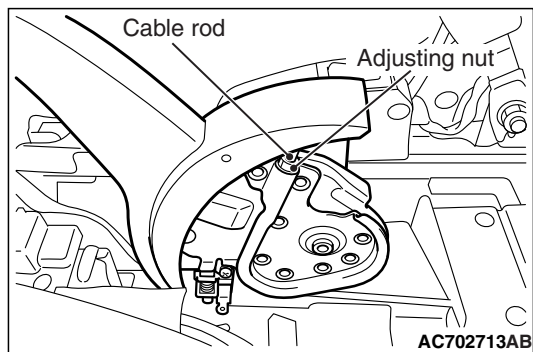


3. Remove the rear brake disc adjusting hole plug. Then insert a flat-tipped screwdriver to turn the adjuster to the arrow direction (to expand the shoe) until the parking brake shoe makes contact and the disc can no longer be turned. Back off the adjuster to the opposite direction by five notches.

CAUTION

Be careful that the parking brake lever notch number should be within the standard range. If the notch number is too low, rear brake dragging can be caused.

4. Adjust the parking brake lever stroke to the standard value by turning the adjusting nut. After adjustment, check that there is no free play between the adjusting nut and the parking brake lever.
5. After the parking brake lever stroke is adjusted, raise the rear of the vehicle. Release the parking brake, and turn the rear wheels to confirm that the rear brakes are not dragging.



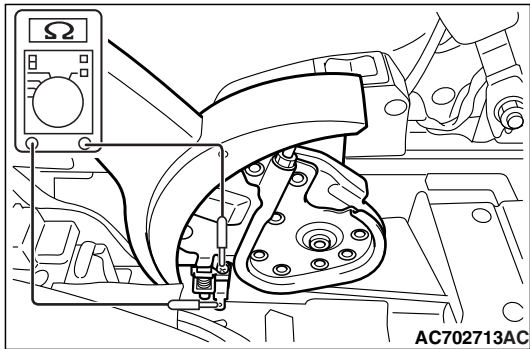
PARKING BRAKE SWITCH CHECK

M1361003301157

⚠ 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.

- 1. Remove the rear floor console assembly (Refer to GROUP 52A –Rear Floor Console P.52A-8).
- 2. Check for continuity between the parking brake switch terminal and the switch mounting bolt.



| Check condition | Normal condition |
|---------------------------------------|---------------------------------|
| When parking brake lever is pulled. | Continuity exists (2 Ω or less) |
| When parking brake lever is released. | No continuity |

PARKING BRAKE LINING SEATING PROCEDURE

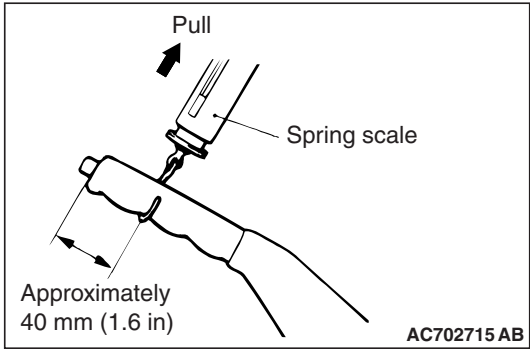
M1361005100101

⚠ CAUTION

Perform lining seating in a place with good visibility, and pay special attention to safety.

Perform lining seating by the following procedure when replacing the parking brake shoe assemblies or the rear brake discs, or when brake performance is insufficient.

- 1. Adjust the parking brake lever stroke to the standard value (Refer to P.36-9).
- 2. Hook a spring scale onto the center of the parking brake lever grip and pull it with a force of 98 –147 N (22 –33 pounds) in a direction perpendicular to the handle.
- 3. Drive the vehicle at a constant speed of 35 –50 km/h (22 –31 mph) for 100 meters (328 feet).
- 4. Release the parking brake and let the brakes cool for five to ten minutes.
- 5. Repeat the procedure in steps 2. to 4. four to five times.



PARKING BRAKE LEVER

REMOVAL AND INSTALLATION

M1361001300921

CAUTION

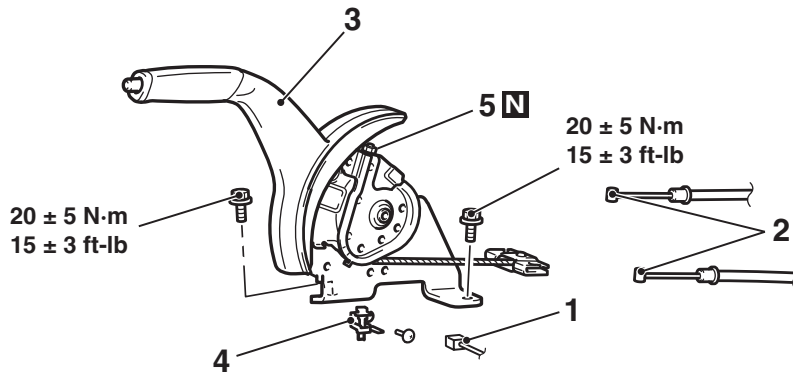
Do not apply grease or lubricant to the switch and the switch installation section to avoid malfunction of the switch. In addition, do not use gloves which have grease on them.

Pre-removal operation

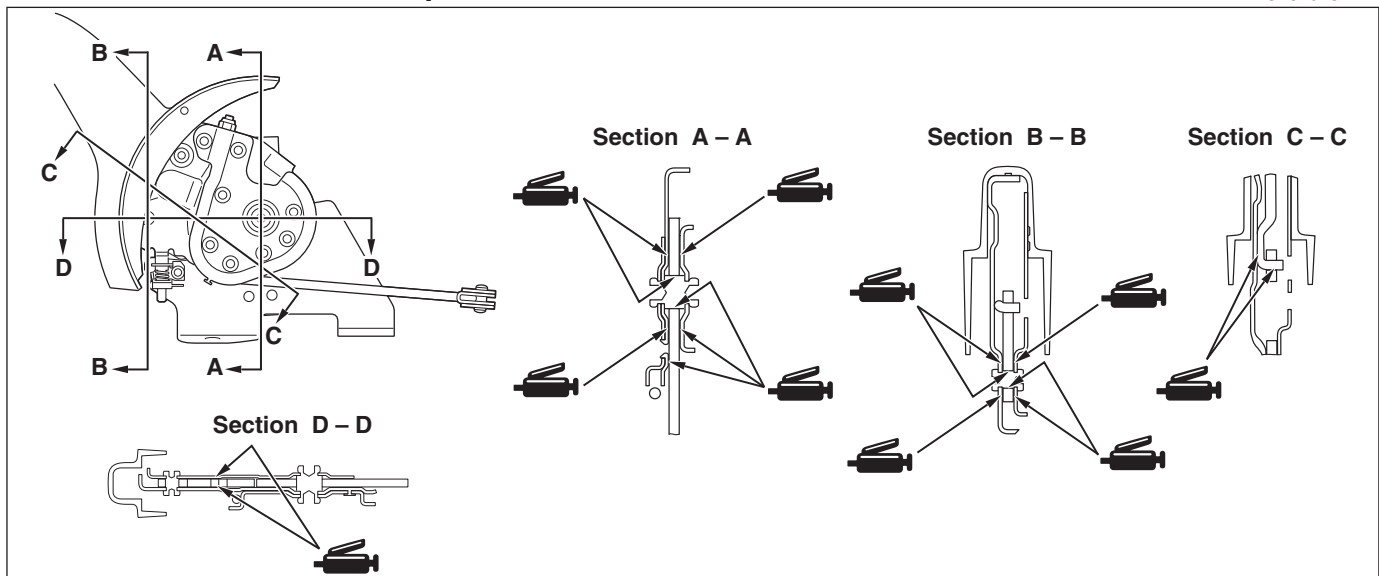
Rear Floor Console Assembly Removal (Refer to GROUP 52A –Rear Floor Console [P.52A-8](#)).

Post-installation operation

- Parking Brake Lever Stroke Check (Refer to [P.36-9](#)).
- Rear Floor Console Assembly Installation (Refer to GROUP 52A –Rear Floor Console [P.52A-8](#)).



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Removal steps

- Release the parking brake lever.
 - Loosen the adjusting nut.
1. Parking brake switch connector connection

Removal steps (Continued)

2. Parking brake rear cable assembly connection
3. Parking brake lever assembly
4. Parking brake switch
5. Adjusting nut

PARKING BRAKE CABLE

REMOVAL AND INSTALLATION

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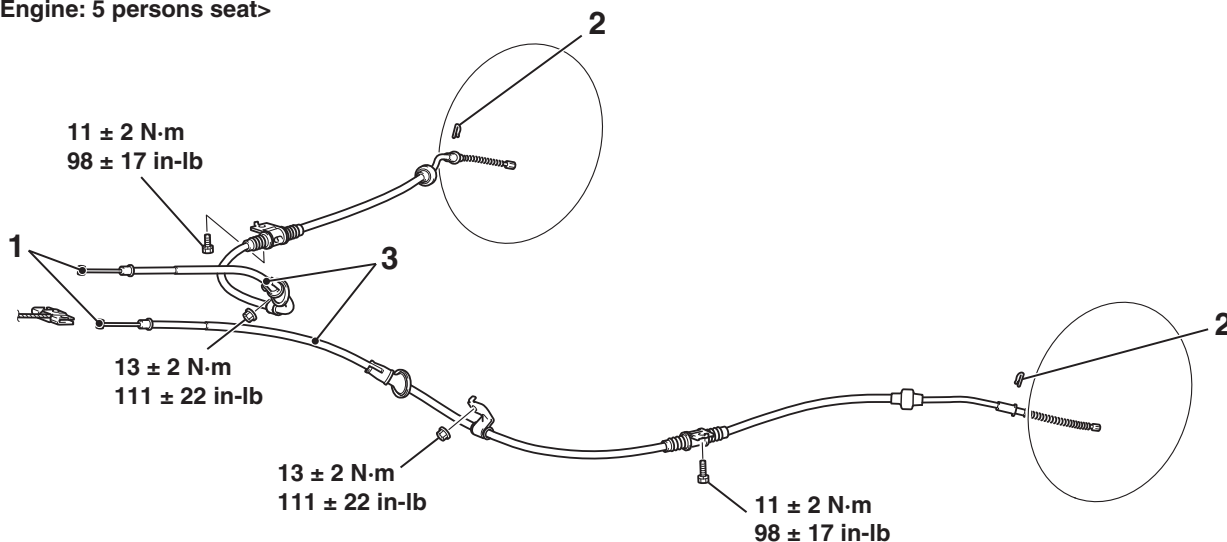
Pre-removal operation

- Rear Floor Console Assembly Removal (Refer to GROUP 52A –Rear Floor Console Assembly [P.52A-8](#)).
- Second Seat Assembly Removal (Refer to GROUP 52A –Second Seat Assembly [P.52A-24](#)).
- Shoe and Lining Assembly Removal (Refer to [P.36-13](#) <2.4L Engine: 5 persons seat> or [P.36-16](#) <2.4L Engine: 7 persons seat, 3.0L Engine>).

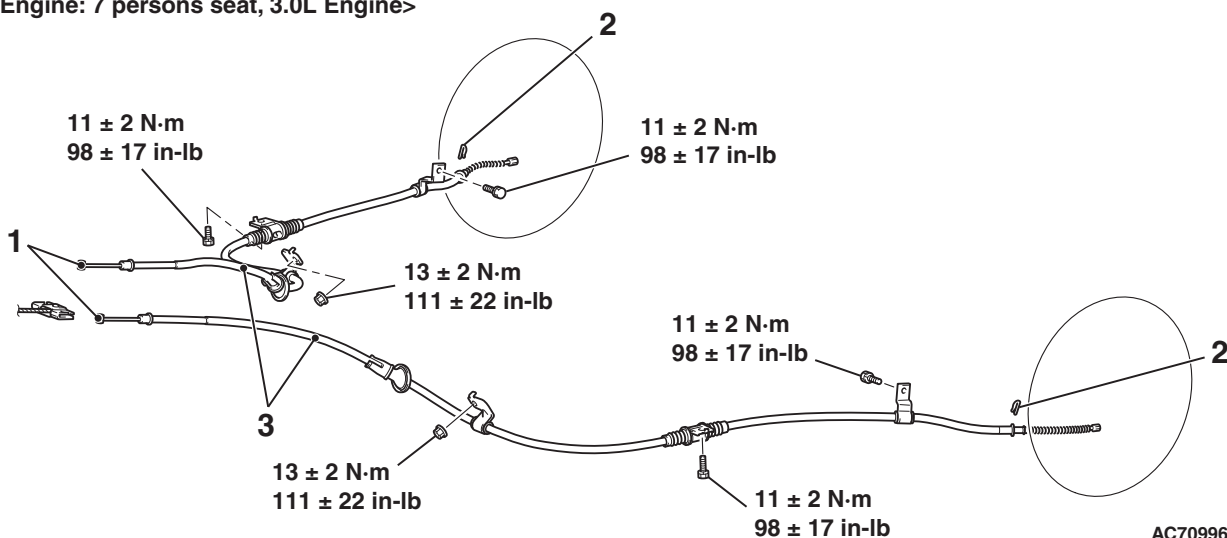
Post-installation operation

- Shoe and Lining Assembly Installation (Refer to [P.36-13](#) <2.4L Engine: 5 persons seat> or [P.36-16](#) <2.4L Engine: 7 persons seat, 3.0L Engine>).
- Second Seat Assembly Installation (Refer to GROUP 52A –Second Seat Assembly [P.52A-24](#)).
- Parking Brake Lever Stroke Check and Adjustment (Refer to [P.36-9](#)).
- Rear Floor Console Assembly Installation (Refer to GROUP 52A –Rear Floor Console Assembly [P.52A-8](#)).
- Parking brake lining seating procedure (Refer to [P.36-10](#)).

<2.4L Engine: 5 persons seat>



<2.4L Engine: 7 persons seat, 3.0L Engine>



AC709969AE

Removal steps

- Release the parking brake lever.
- Loosen the adjusting nut.

Removal steps (Continued)

1. Parking brake rear cable assembly connection
2. Clip
3. Parking brake rear cable assembly

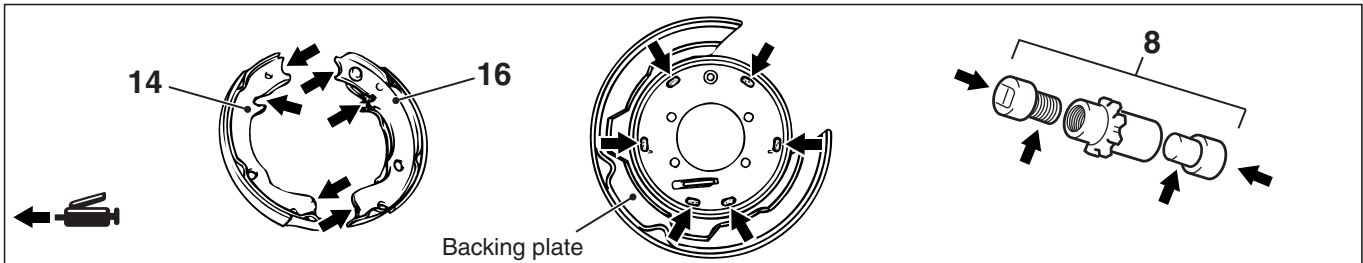
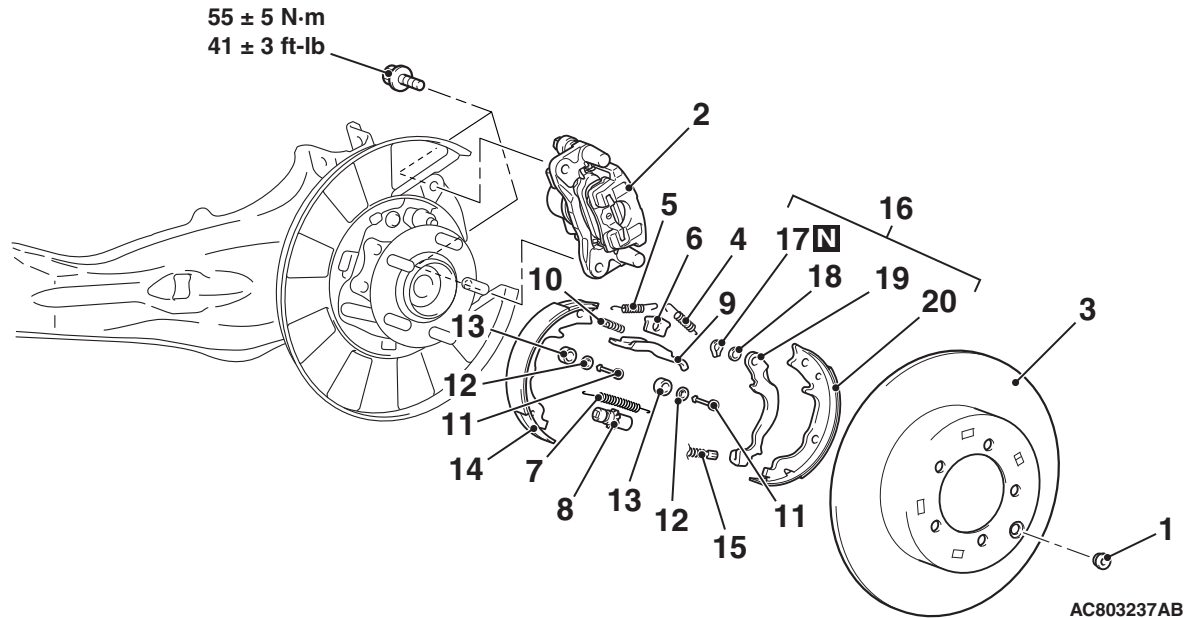
PARKING BRAKE LINING AND DRUM

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

M1361002500939

Post-installation Operation

- Parking Brake Lever Stroke Check and Adjustment (Refer to P.36-9).
- Parking Brake Lining Seating Procedure (Refer to P.36-10).



Removal steps

- Release the parking brake lever.

<<A>>

1. Plug
2. Rear brake caliper assembly
3. Rear brake disk
- >>D<< 4. Shoe-to-anchor spring
- >>D<< 5. Shoe-to-anchor spring
6. Shoe guide plate
7. Adjusting wheel spring
- >>C<< 8. Adjuster assembly
9. Strut
10. Strut shoe-to-spring

Removal steps (Continued)

<>

>>B<<

>>A<<

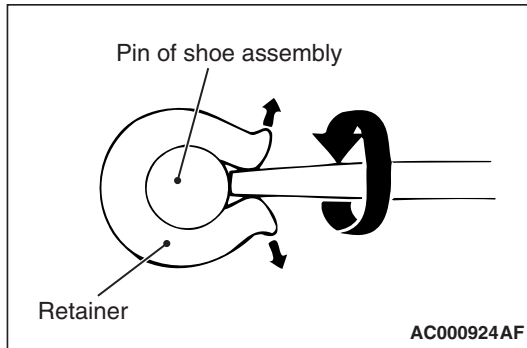
11. Shoe hold down pin
12. Shoe hold down cup
13. Shoe hold down spring
14. Shoe and lining assembly
15. Parking brake rear cable assembly connection
16. Shoe and lever assembly
17. Retainer
18. Wave washer
19. Parking lever
20. Shoe and lining assembly

REMOVAL SERVICE POINTS**<<A>> REAR BRAKE CALLIPER ASSEMBLY
REMOVAL**

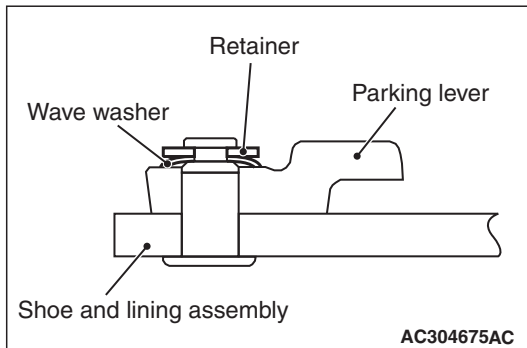
1. Remove the rear brake caliper assembly with the brake hose.
2. Secure the removed rear brake caliper assembly with a wire or other similar material at a position where it will not interfere with the removal and installation operations.

<> RETAINER REMOVAL

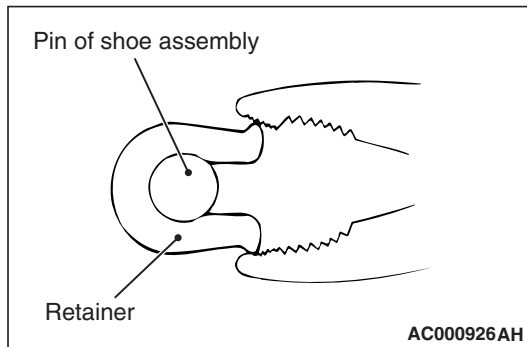
Use a flat-tipped screwdriver or a similar tool to open up the retainer joint. Then remove the retainer.

**INSTALLATION SERVICE POINTS****>>A<< WAVE WASHER INSTALLATION**

Install the wave washer in the direction shown in the illustration.

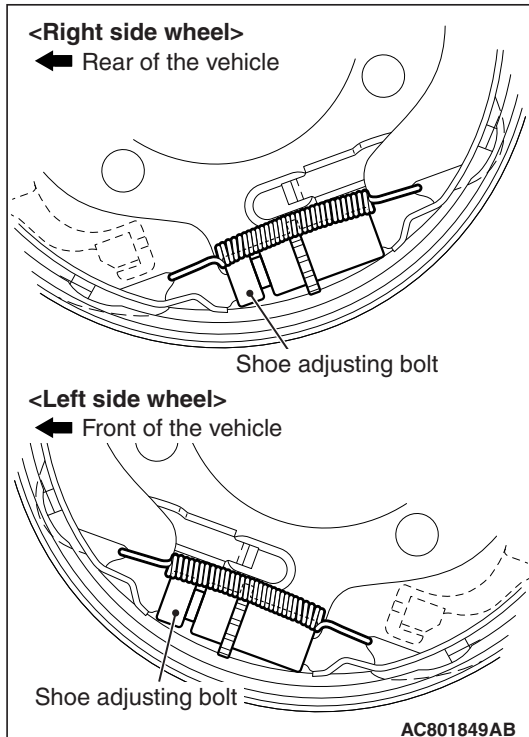
**>>B<< RETAINER INSTALLATION**

Use pliers or a similar tool to close the retainer end onto the pin.



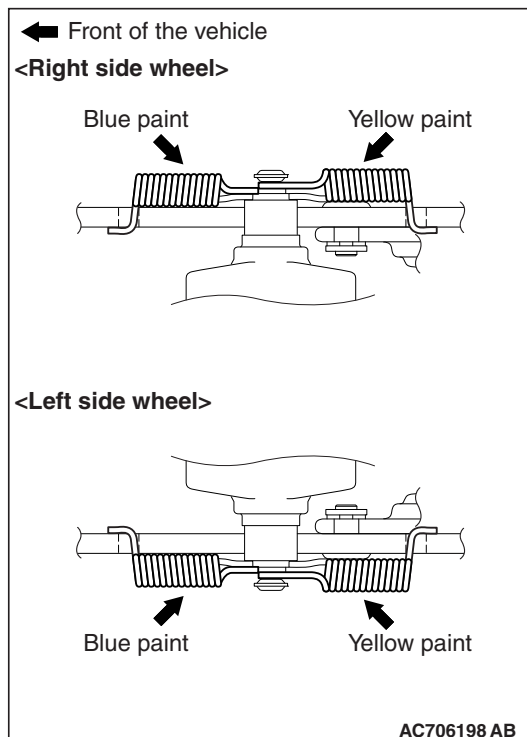
>>C<< ADJUSTER ASSEMBLY INSTALLATION

Install the adjuster assemblies. The shoe adjusting bolt should be mounted to the rear of the vehicle for the right wheel, and to the front of the vehicle for the left wheel.



>>D<< SHOE-TO-ANCHOR SPRING INSTALLATION

The shoe-to-anchor springs are not interchangeable because their spring loads are different. The one with blue paint mark should be installed to the front of the vehicle, and the other with yellow paint to the rear of the vehicle, respectively.

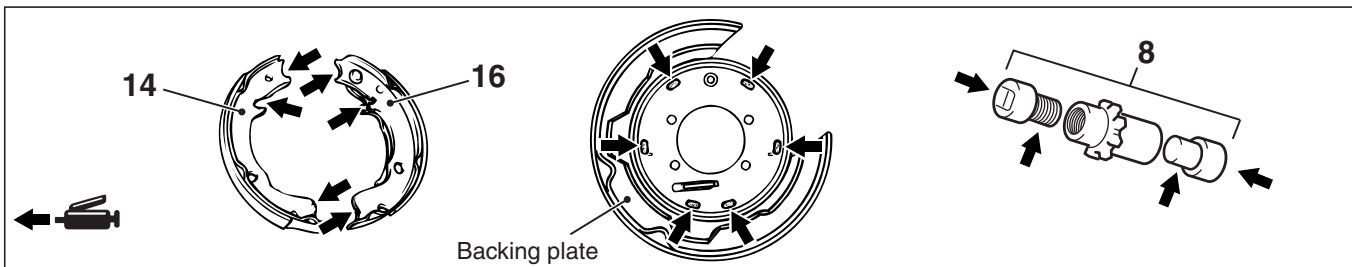
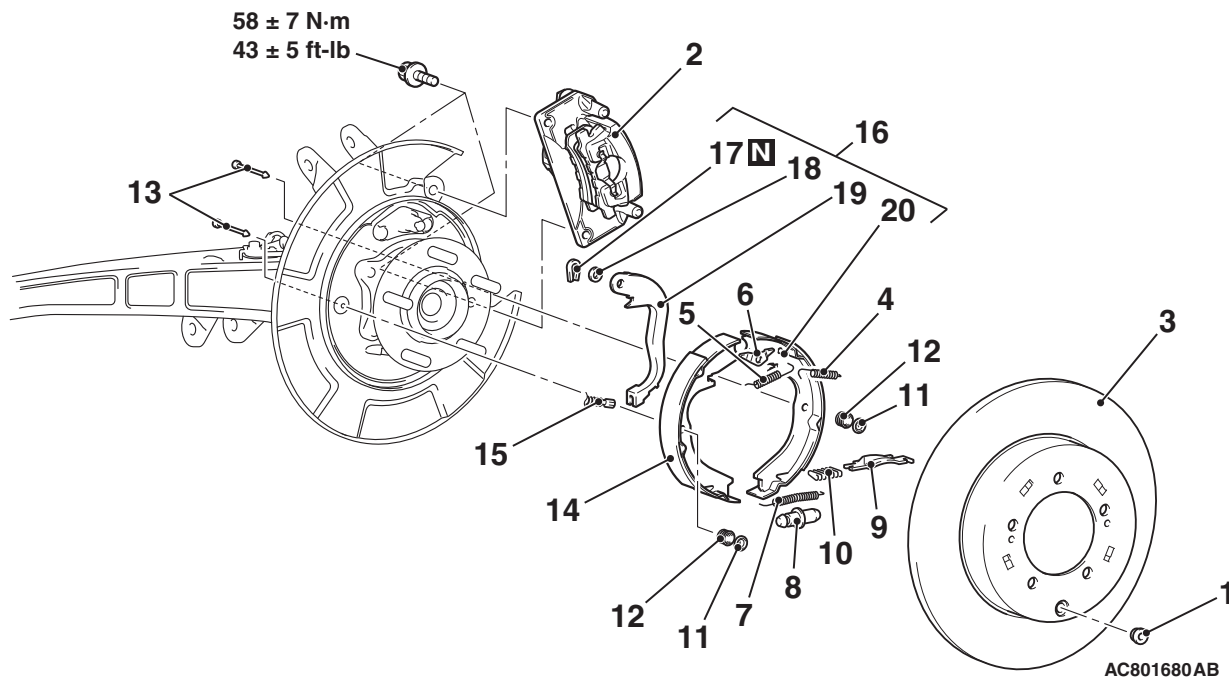


REMOVAL AND INSTALLATION <2.4L ENGINE: 7 PERSONS SEAT, 3.0L ENGINE>

M1361002500940

Post-installation Operation

- Parking Brake Lever Stroke Check and Adjustment (Refer to P.36-9).
- Parking Brake Lining Seating Procedure (Refer to P.36-10).

**Removal steps**

- Release the parking brake lever.

<<A>>

1. Plug
2. Rear brake caliper assembly
3. Rear brake disk
- >>D<< 4. Shoe-to-anchor spring
- >>D<< 5. Shoe-to-anchor spring
6. Shoe guide plate
7. Adjusting wheel spring
- >>C<< 8. Adjuster assembly
9. Strut
10. Strut shoe-to-spring

Removal steps (Continued)

11. Shoe hold down cup
12. Shoe hold down spring
13. Shoe hold down pin
14. Shoe and lining assembly
15. Parking brake rear cable assembly connection
16. Shoe and lever assembly
- <> >>B<< 17. Retainer
- >>A<< 18. Wave washer
19. Parking lever
20. Shoe and lining assembly

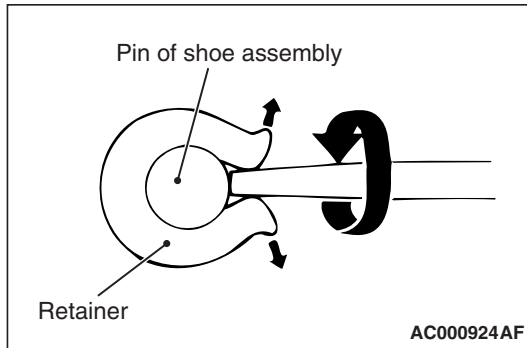
REMOVAL SERVICE POINTS

<<A>> REAR BRAKE CALLIPER ASSEMBLY REMOVAL

1. Remove the rear brake caliper assembly with the brake hose.
2. Secure the removed rear brake caliper assembly with a wire or other similar material at a position where it will not interfere with the removal and installation operations.

<> RETAINER REMOVAL

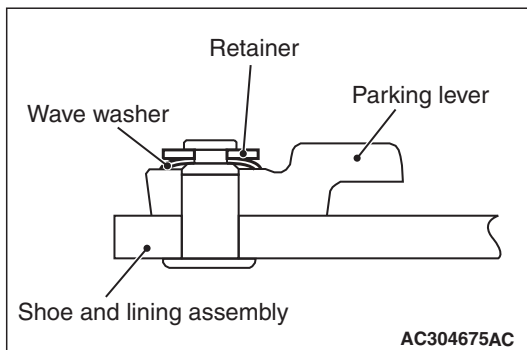
Use a flat-tipped screwdriver or a similar tool to open up the retainer joint. Then remove the retainer.



INSTALLATION SERVICE POINTS

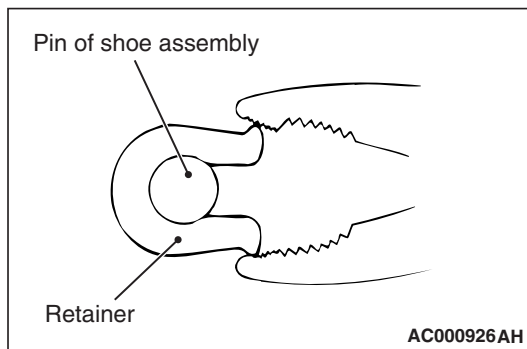
>>A<< WAVE WASHER INSTALLATION

Install the wave washer in the direction shown in the illustration.



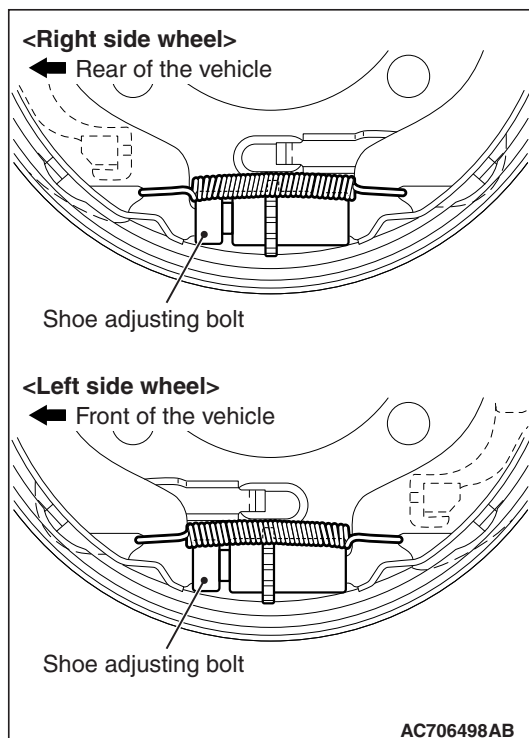
>>B<< RETAINER INSTALLATION

Use pliers or a similar tool to close the retainer end onto the pin.

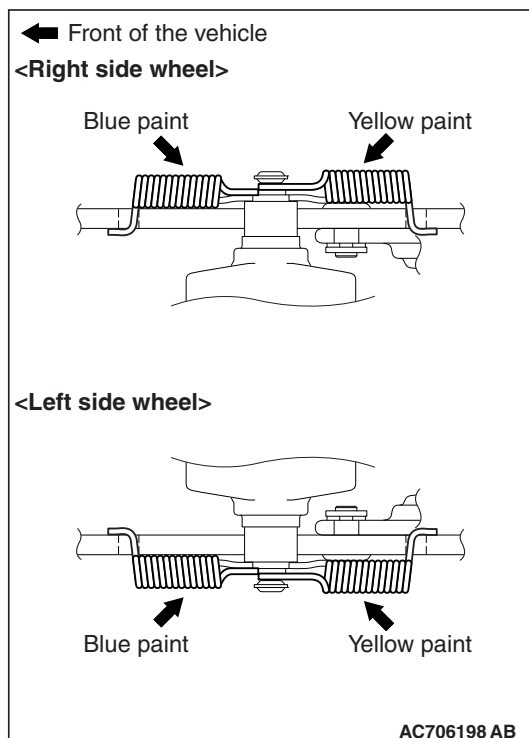


>>C<< ADJUSTER ASSEMBLY INSTALLATION

Install the adjuster assemblies. The shoe adjusting bolt should be mounted to the rear of the vehicle for the right wheel, and to the front of the vehicle for the left wheel.

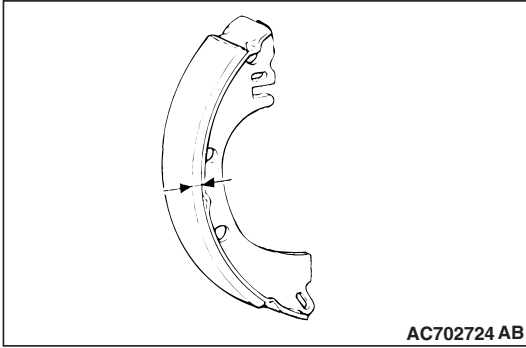
**>>D<< SHOE-TO-ANCHOR SPRING INSTALLATION**

The shoe-to-anchor springs are not interchangeable because their spring loads are different. The one with blue paint mark should be installed to the front of the vehicle, and the other with yellow paint to the rear of the vehicle, respectively.



BRAKE LINING THICKNESS CHECK

M1361005800025



1. Measure the lining thickness at the most worn area.

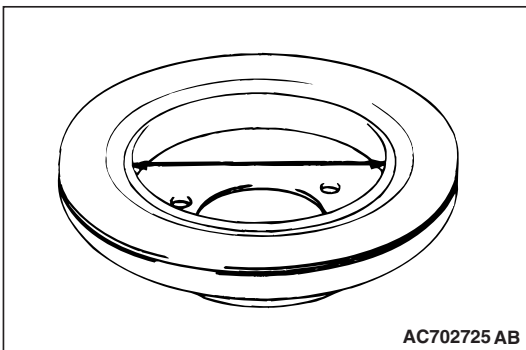
Standard value: 2.8 mm (0.11 inch)

Limit: 1.0 mm (0.04 inch)

2. If the thickness is less than the limit value, replace the right and left shoe and lining assemblies as a set.

BRAKE DRUM INSIDE DIAMETER CHECK

M1361005900033



1. Measure the inside diameter of the brake drum at two positions or more.

Standard value:

168.0 mm (6.61 inch) <2.4L Engine: 5 persons seat>

**190.0 mm (7.48 inch) <2.4L Engine: 7 persons seat,
3.0L Engine>**

Limit:

169.0 mm (6.65 inch) <2.4L Engine: 5 persons seat>

**191.0 mm (7.52 inch) <2.4L Engine: 7 persons seat,
3.0L Engine>**

2. If the inside diameter is more than limit value or if there is excessive wear, replace the brake disk.

NOTES