

GROUP 36

PARKING BRAKES

CONTENTS

SERVICE SPECIFICATIONS.....	36-2	PARKING BRAKE CABLE.....	36-13
GREASE.....	36-2	REMOVAL AND INSTALLATION.....	36-13
PARKING BRAKES DIAGNOSIS.....	36-2	PARKING BRAKE LINING AND DRUM	
INTRODUCTION.....	36-2		36-14
TROUBLESHOOTING STRATEGY.....	36-2	REMOVAL AND INSTALLATION.....	36-14
SYMPTOM CHART.....	36-2	BRAKE LINING THICKNESS CHECK	
SYMPTOM PROCEDURES.....	36-3		36-17
INSPECTION PROCEDURE 1: Insufficient		BRAKE DRUM INSIDE DIAMETER CHECK	
Parking Brake Function.....	36-3		36-17
INSPECTION PROCEDURE 2: When the			
Parking Brake Lever is Pulled, the			
Brake Warning Light does not			
Illuminate.....	36-4		
INSPECTION PROCEDURE 3: When the			
Parking Brake Lever is Released, the			
Brake Warning Light does not Turn Off.			
.....	36-7		
SPECIAL TOOL.....	36-10		
ON-VEHICLE SERVICE.....	36-11		
PARKING BRAKE LEVER STROKE CHECK AND			
ADJUSTMENT.....	36-11		
PARKING BRAKE SWITCH CHECK.....	36-12		
PARKING BRAKE LINING SEATING			
PROCEDURE.....	36-12		
PARKING BRAKE LEVER.....	36-12		
REMOVAL AND INSTALLATION.....	36-12		

SERVICE SPECIFICATIONS

M13601000034USA0000010000

Item	Standard value	Limit value
Parking brake lever stroke (Control force approximately 200 N)	3 to 5	-
Brake lining thickness mm	2.8	1.0
Brake drum inside diameter mm	190.0	191.0

GREASE

M13601000004USA0000010000

Item	Brand name	Capacity
Backing plate	Chuo Yuka AKB 100	Adequate
Shoe and lining assembly		
Adjuster		

PARKING BRAKES DIAGNOSIS

INTRODUCTION

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.

M13601000037USA0000010000

TROUBLESHOOTING STRATEGY

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.

M13601000038USA0000010000

SYMPTOM CHART

M13601000041USA0000010000

SYMPTOM	INSPECTION PROCEDURE	REFERENCE PAGE
Brake drag	-	Refer to GROUP 35A, Basic Brake System Diagnosis - Symptom Chart P.35A-5.
Insufficient parking brake function	1	P.36-3
When the parking brake lever is pulled, the brake warning light does not illuminate.	2	P.36-4
When the parking brake lever is released, the brake warning light does not turn off.	3	P.36-7

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Insufficient Parking Brake Function

M13601000049USA0000010000

DIAGNOSIS

STEP 1. Check the excessive parking brake lever stroke.

Refer to P.36-11.

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. 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. Then go to Step 5.

NO: Go to Step 3.

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

Refer to P.36-17.

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

YES: Replace the rear brake shoe assembly or rear brake disc (Refer to P.36-14). 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.36-12) and then go to Step 5.

STEP 5. Retest the system.

Q:Is the malfunction eliminated?

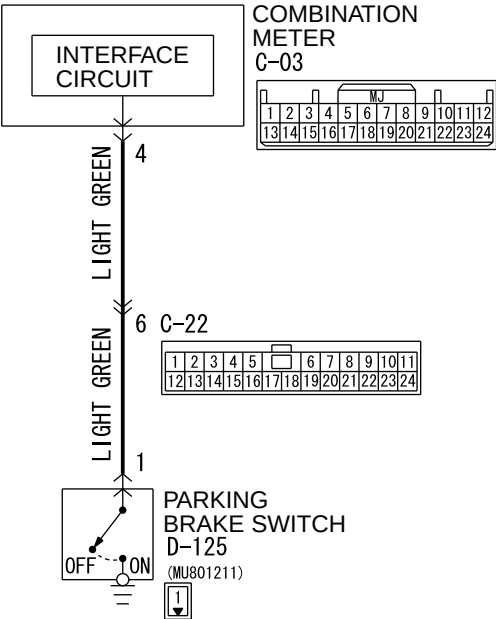
YES: The procedure is complete.

NO: Recheck from Step 1.

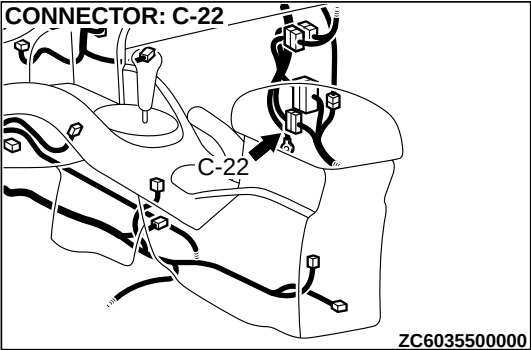
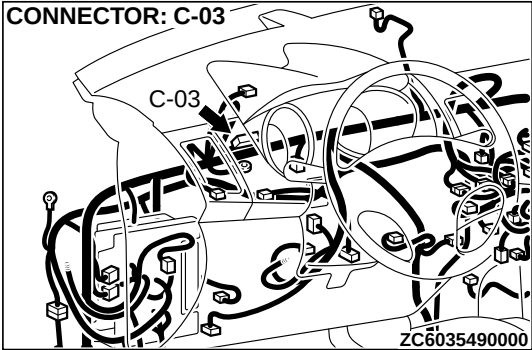
INSPECTION PROCEDURE 2: When the Parking Brake Lever is Pulled, the Brake Warning Light does not Illuminate.

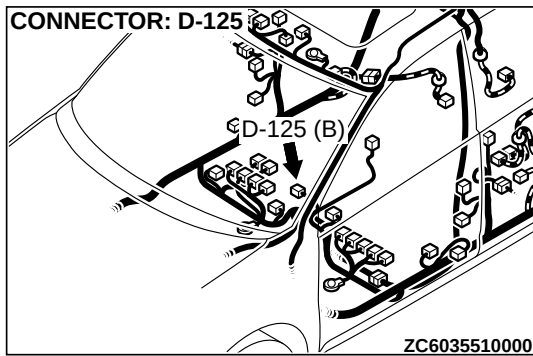
M13601000903USA0000010000

Brake Warning Light Circuit



D7G36M000A00





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 10: Indicator lamp 4: ON
 - The brake warning light illuminates.
 - Item 10: Indicator lamp 4: 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.

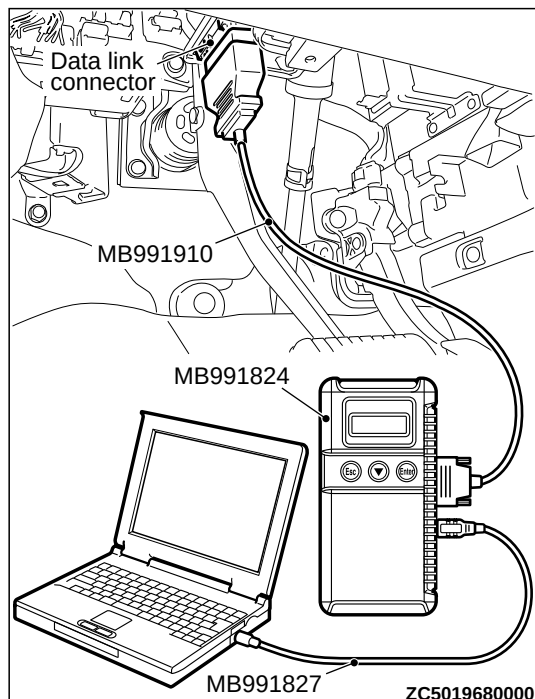
NO: Replace the combination meter (Refer to GROUP 54Ab, Combination meter assembly P.54Ab-77).

STEP 2. Check the parking brake switch.

Refer to P.36-12.

Q:Is the parking brake switch normal?

YES: Go to Step 3.



NO: Replace the parking brake switch. Then go to Step 7.

STEP 3. Check parking brake switch connector D-125, intermediate connector C-22 and combination meter connector C-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Are the connectors and terminals in good condition?

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 7.

STEP 4. Check the harness wire parking brake switch connector D-125 terminal 1 and combination meter connector C-03 terminal 4 for damage.

Q:Are the harness wires in good condition?

YES: Go to Step 5.

NO: Repair the damaged harness wire. Then go to Step 7.

STEP 5. Check the parking brake switch ground for damage.

Q:Is the parking brake switch ground in good condition?

YES: Go to Step 6.

NO: Repair the ground or damaged harness wire. Then go to Step 7.

STEP 6. 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 54Ab, Combination meter assembly P.54Ab-77).

STEP 7. Retest the system.

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

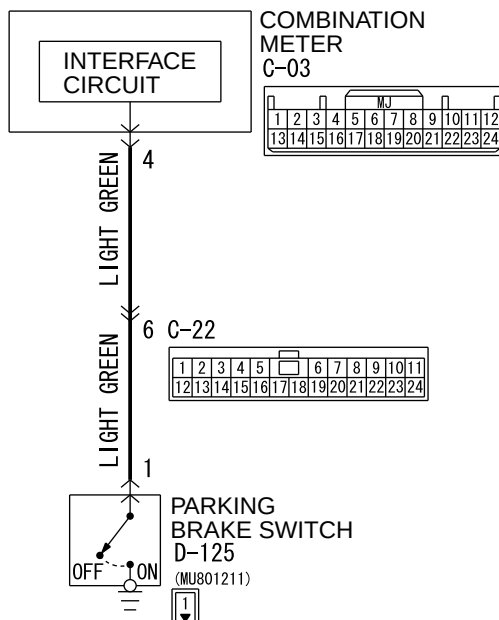
YES: The procedure is complete.

NO: Return to Step 1.

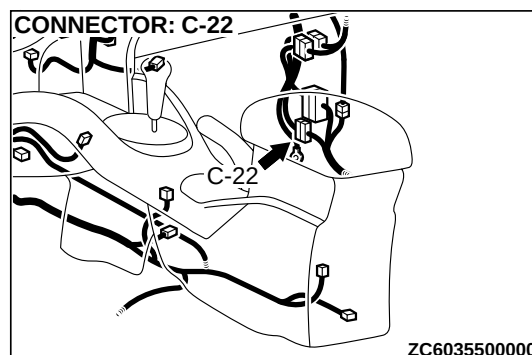
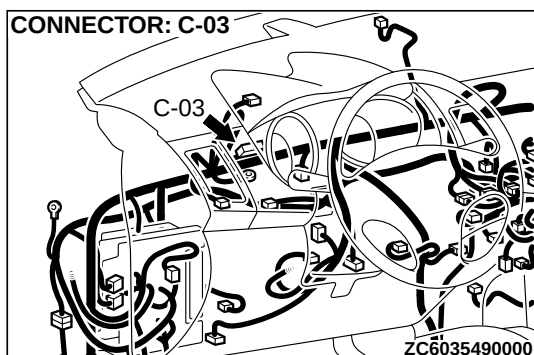
INSPECTION PROCEDURE 3: When the Parking Brake Lever is Released, the Brake Warning Light does not Turn Off.

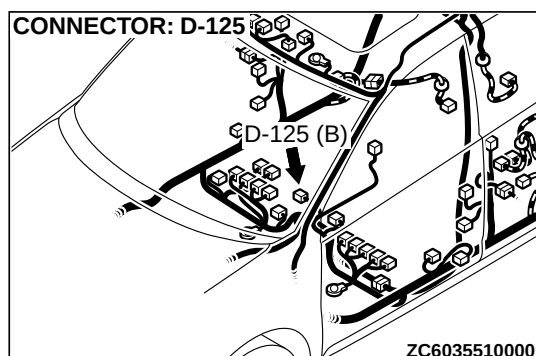
M13601000904USA0000010000

Brake Warning Light Circuit



D7G36M000A00





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 10: Indicator lamp 4: ON
 - The brake warning light illuminates.
 - Item 10: Indicator lamp 4: 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.

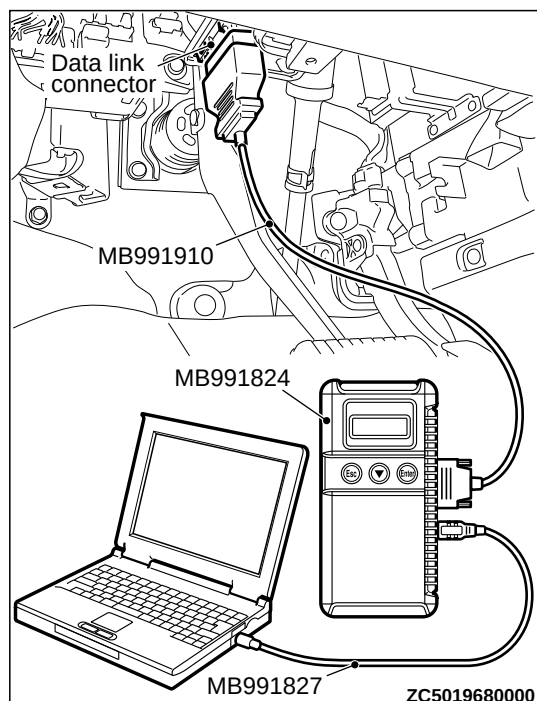
NO: Replace the combination meter (Refer to GROUP 54Ab, Combination meter assembly P. 54Ab-77).

STEP 2. Check the parking brake switch.

Refer to P.36-12.

Q:Is the parking brake switch normal?

YES: Go to Step 3.



NO: Replace the parking brake switch. Then go to Step 7.

STEP 3. Check parking brake switch connector D-125, intermediate connector C-22 and combination meter connector C-03 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q:Are the connectors and terminals in good condition?

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 7.

STEP 4. Check the harness wire parking brake switch connector D-125 terminal 1 and combination meter connector C-03 terminal 4 for damage.

Q:Are the harness wires in good condition?

YES: Go to Step 5.

NO: Repair the damaged harness wire. Then go to Step 7.

STEP 5. Check the parking brake switch ground for damage.

Q:Is the parking brake switch ground in good condition?

YES: Go to Step 6.

NO: Repair the ground or damaged harness wire. Then go to Step 7.

STEP 6. Retest the system.

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

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 54Ab, Combination meter assembly P.54Ab-77).

STEP 7. Retest the system.

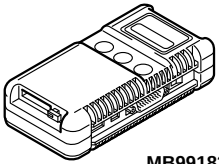
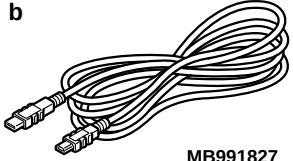
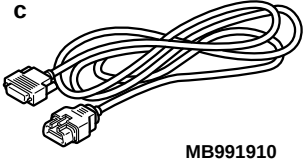
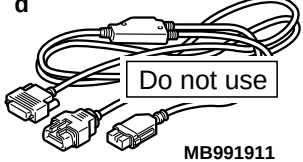
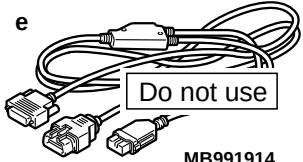
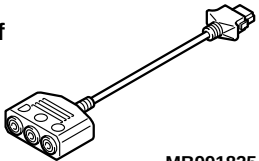
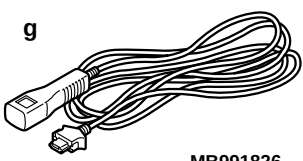
Q:Does the brake warning light illuminate when the parking brake lever is pulled?

YES: The procedure is complete.

NO: Return to Step 1.

SPECIAL TOOL

M13601000006USA0000010000

Tool	Tool number and name	Supersession	Application
a  MB991824 b  MB991827 c  MB991910 d  MB991911 e  MB991914 f  MB991825 g  MB991826 YB9919580000	MB991958 a. MB991824 b. MB991827 c. MB991910 d. MB991911 e. MB991914 f. MB991825 g. MB991826 M.U.T.-III sub assembly a. Vehicle communication interface (V.C.I.) b. M.U.T.-III USB cable c. M.U.T.-III main harness A (Vehicles with CAN communication system) d. M.U.T.-III main harness B (Vehicles without CAN communication system) e. M.U.T.-III main harness C (for Daimler Chrysler models only) f. M.U.T.-III measurement adapter g. M.U.T.-III trigger harness	MB991824-KIT	⚠ CAUTION 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. Actuator test check

ON-VEHICLE SERVICE

PARKING BRAKE LEVER STROKE CHECK AND ADJUSTMENT

M13601000009USA0000010000

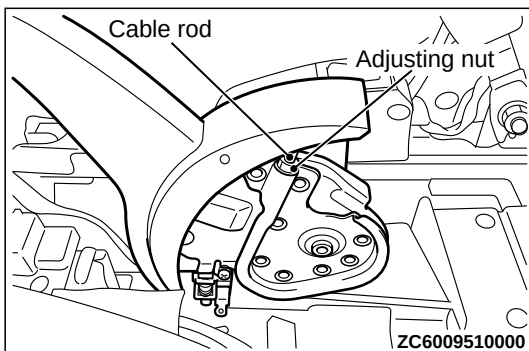
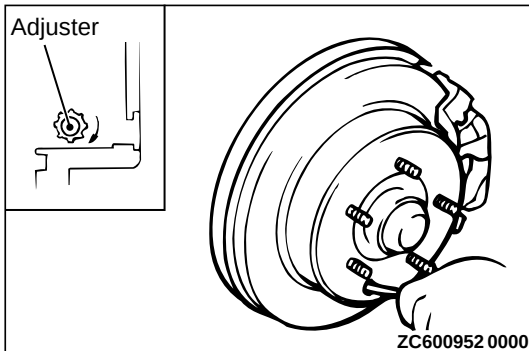
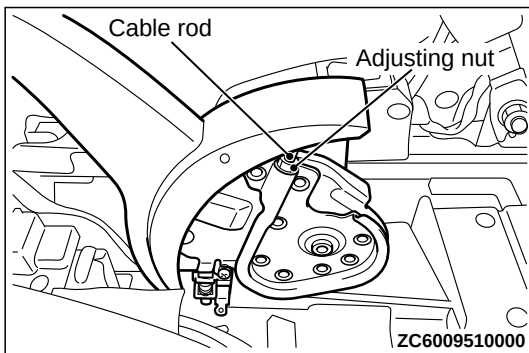
STROKE CHECK (CONTROL FORCE APPROXIMATELY 200 N)

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-9.)
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

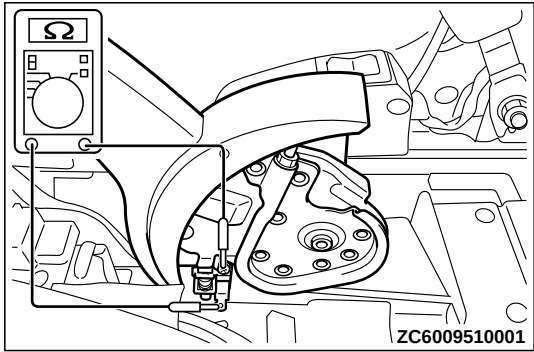
Be careful that the parking brake lever notch number should be within the standard range. If the notch number is too low, rear brake dragging can be caused.

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

M13601000033USA0000010000

1. Remove the rear floor console assembly. (Refer to GROUP 52A - Rear Floor Console P.52A-9.)
2. Check for continuity between the parking brake switch terminal and the switch mounting bolt.



When the parking brake lever is pulled up:	Continuity exists
When the parking brake lever is released:	No continuity

PARKING BRAKE LINING SEATING PROCEDURE

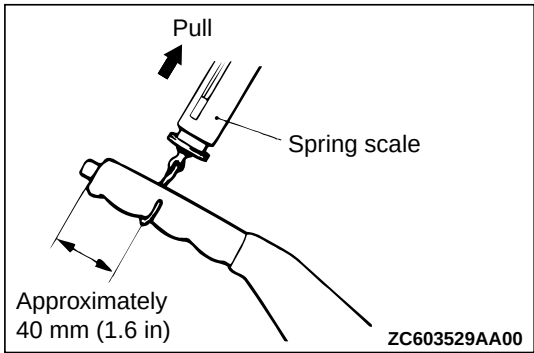
M13601000011USA0000010000

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.36-11).
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

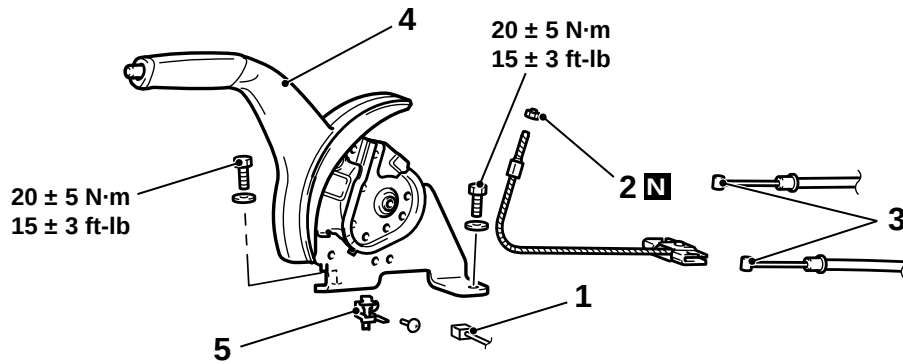
M13601000013USA0000010000

Pre-removal operation

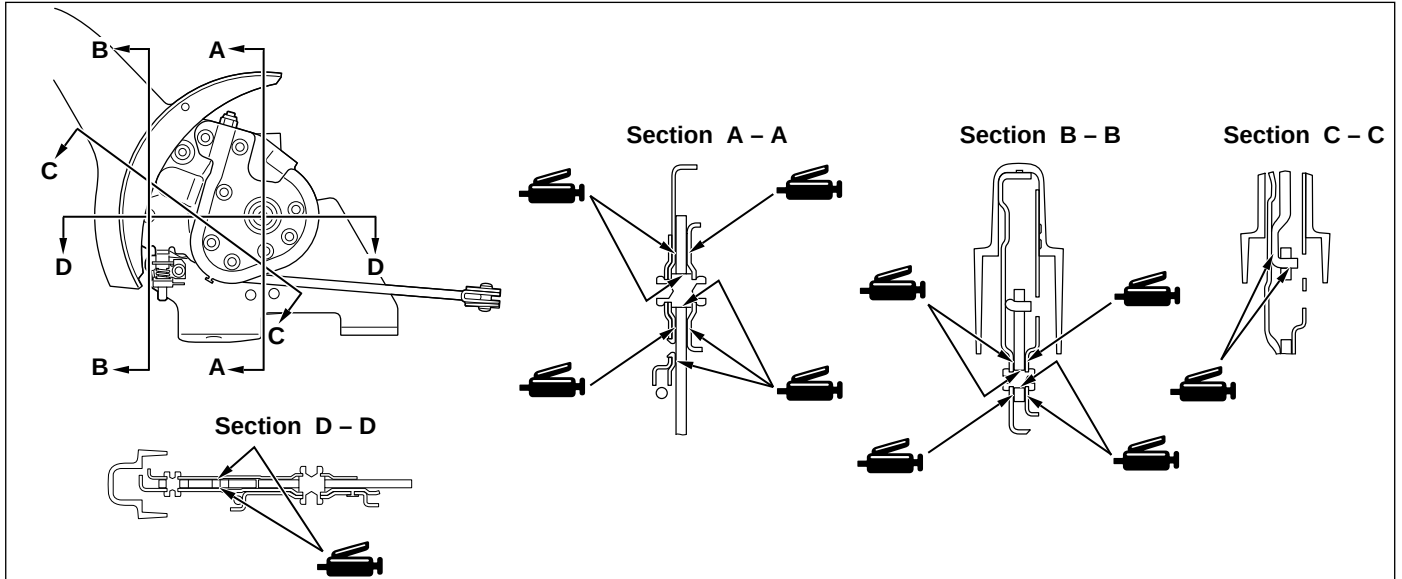
Rear Floor Console Assembly Removal (Refer to GROUP 52A - Rear Floor Console P.52A-9.)

Post-installation operation

- Parking Brake Lever Stroke Check (Refer to P.36-11.)
- Rear Floor Console Assembly Installation (Refer to GROUP 52A - Rear Floor Console P.52A-9.)



ZC600953AA00



Removal steps

1. Parking brake switch connector
2. Adjusting nut
3. Parking brake rear cable connection

Removal steps

4. Parking brake lever assembly
5. Parking brake switch

PARKING BRAKE CABLE

REMOVAL AND INSTALLATION

M13601000019USA0000010000

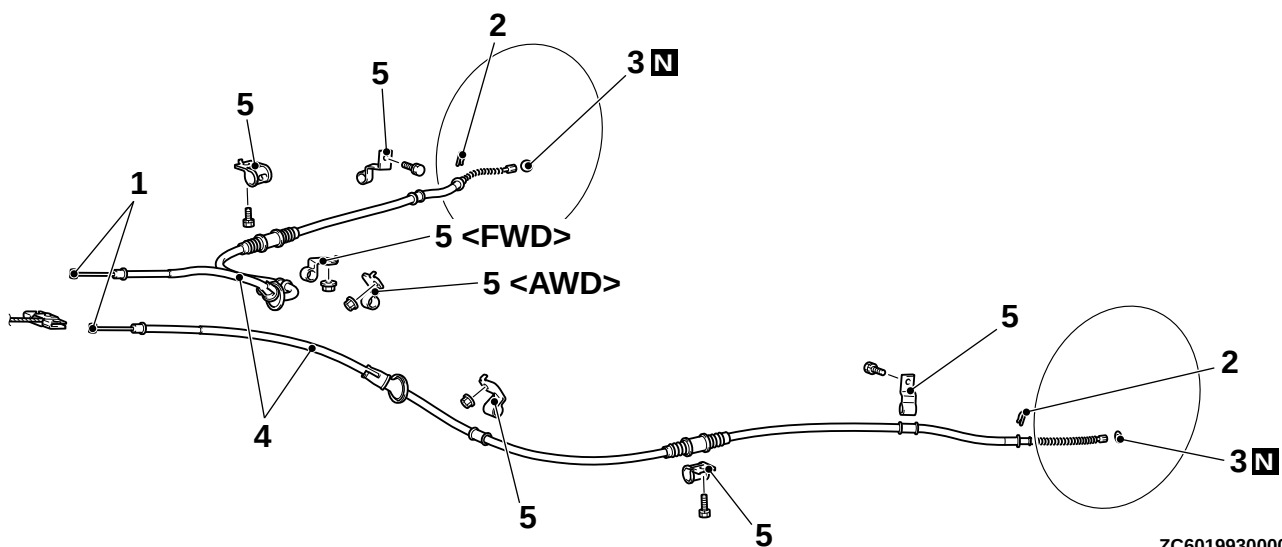
Pre-removal operation

- Rear Floor Console Assembly Removal (Refer to GROUP 52A - Rear Floor Console Assembly P.52A-9.)
- Rear Seat Assembly Removal (Refer to GROUP 52A - Rear Seat Assembly P.52A-21.)

Post-installation operation

- Rear Seat Assembly Installation (Refer to GROUP 52A - Rear Seat Assembly P.52A-21.)
- Rear Floor Console Assembly Installation (Refer to GROUP 52A - Rear Floor Console Assembly P.52A-9.)
- Parking Brake Lever Stroke Check and Adjustment (Refer to P. 36-11.)

PARKING BRAKES PARKING BRAKE LINING AND DRUM



Removal steps

- Release the parking brake lever.
- 1. Parking brake front cable and parking brake rear cable connection
- 2. Clip
- Shoe and lining assembly (Refer to P. 36-14.)

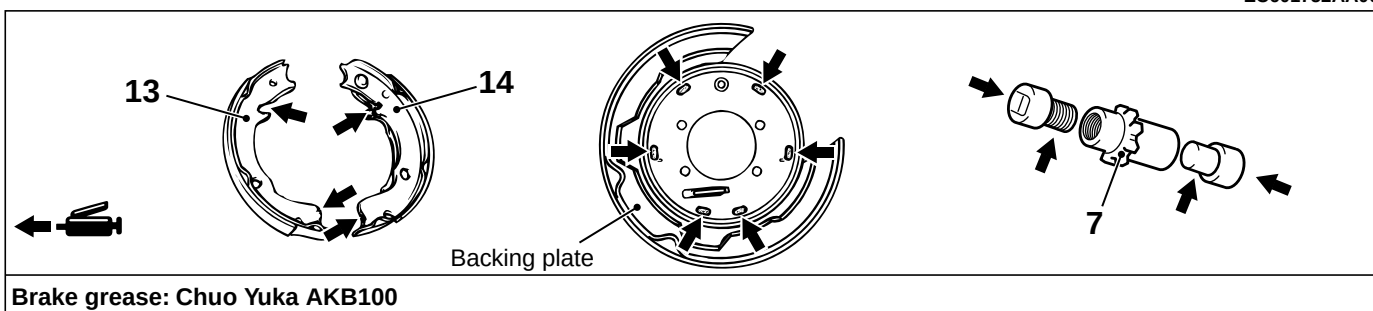
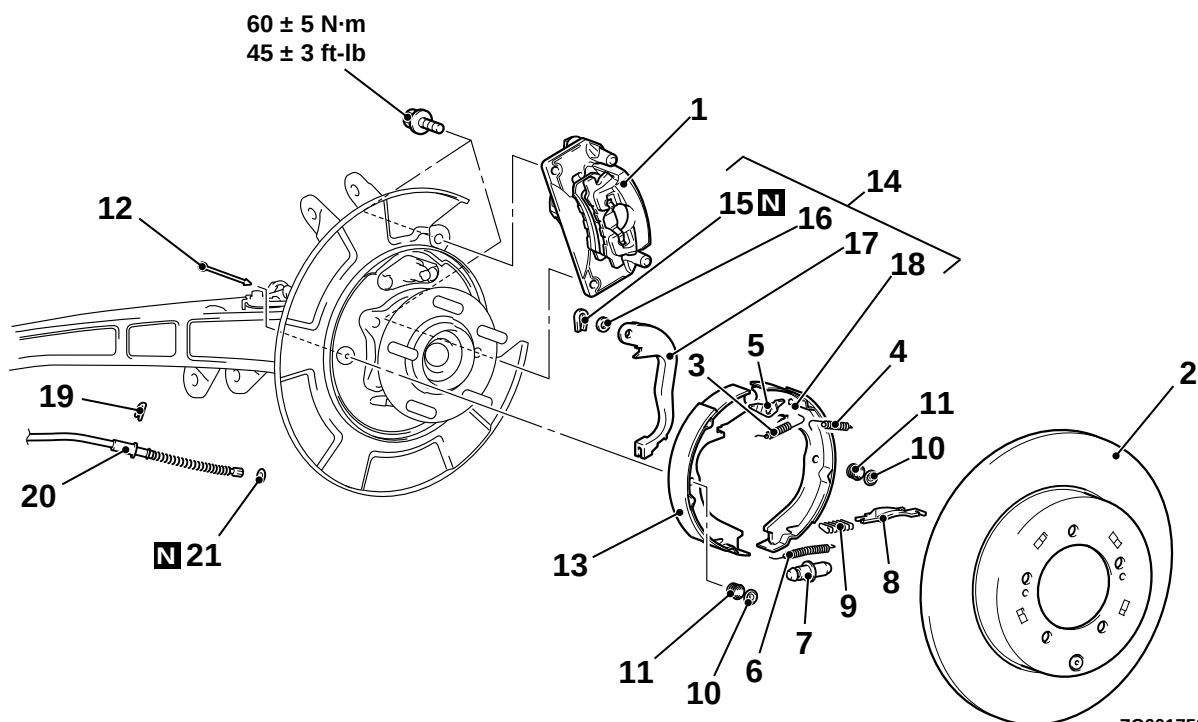
Removal steps

- 3. O-ring
- 4. Parking brake rear cable
- 5. Clip

PARKING BRAKE LINING AND DRUM

REMOVAL AND INSTALLATION

M13601000025USA0000010000



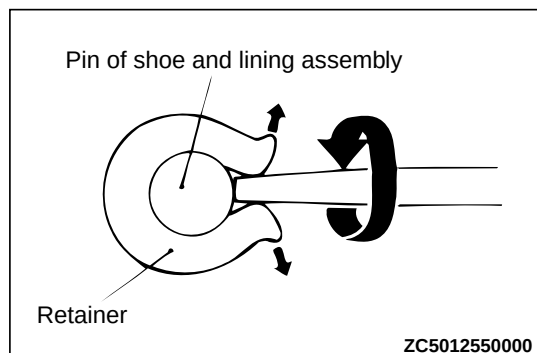
- Removal steps**
- <<A>> 1. Rear brake caliper assembly
2. Rear brake disc
- >>D<< 3. Shoe-to-anchor spring
- >>D<< 4. Shoe-to-anchor spring
5. Shoe guide plate
- >>C<< 6. Adjusting wheel spring
7. Adjuster assembly
8. Strut
9. Strut shoe-to-spring
10. Shoe hold down cup
11. Shoe hold down spring

- Removal steps**
12. Shoe hold down pin
13. Shoe and lining assembly
14. Shoe and lever assembly
- <> >>B<< 15. Retainer
- >>A<< 16. Wave washer
17. Parking lever
18. Shoe and lining assembly
19. Pin
20. Parking brake rear cable
21. O-ring

REMOVAL SERVICE POINTS

<<A>> REAR BRAKE CALLIPER ASSEMBLY REMOVAL

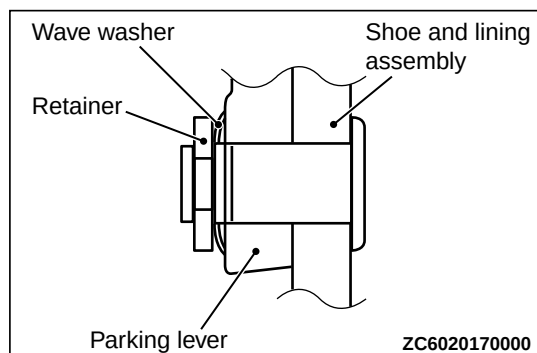
Remove the rear brake calliper assembly and hold it with a wire.

**<> RETAINER REMOVAL**

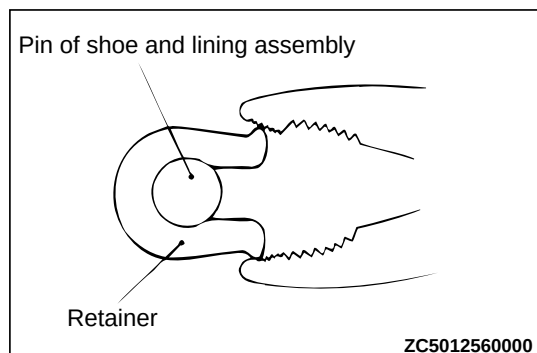
Use a flat-tipped screwdriver or the like to open up the retainer joint, and remove retainer.

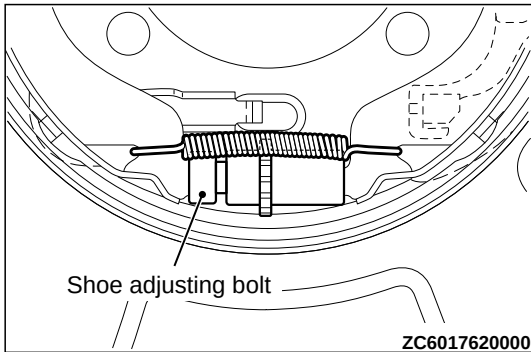
INSTALLATION SERVICE POINTS**>>A<< WAVE WASHER INSTALLATION**

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

**>>B<< RETAINER INSTALLATION**

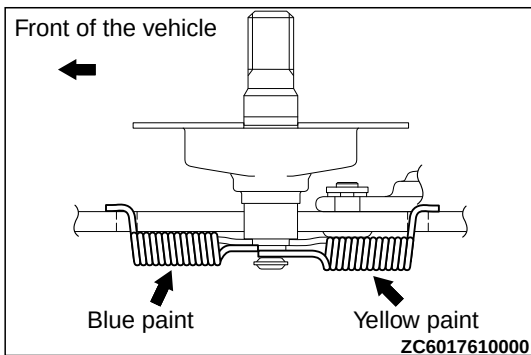
Use pliers or the like to close the retainer end onto the pin.





>>C<< ADJUSTER ASSEMBLY INSTALLATION

Install the adjuster assemblies. Install the adjuster assembly with the left side of the shoe adjusting bolt facing forward of the vehicle, and the right side facing rearward.



>>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.

NOTE: The figure describes the left rear wheel. The right rear wheel is symmetrical to that.

BRAKE LINING THICKNESS CHECK

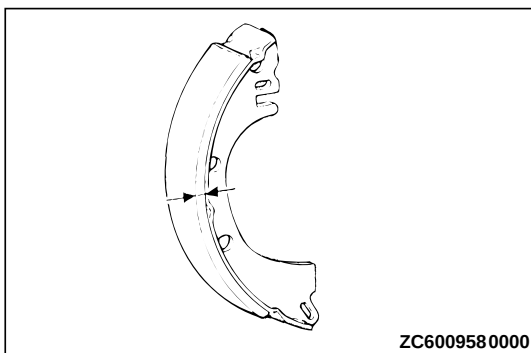
M13601000901USA0000010000

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

Standard value: 2.8 mm

Limit: 1.0 mm

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

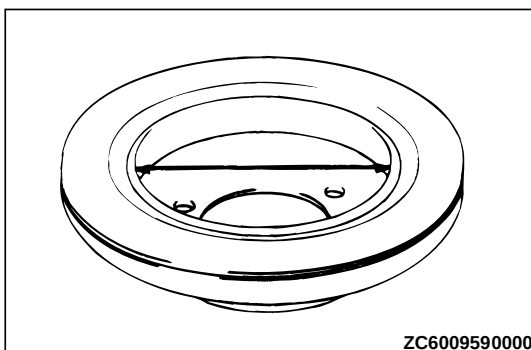
M13601000902USA0000010001

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

Standard value: 190.0 mm

Limit: 191.0 mm

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



MEMO