

GENERAL INFORMATION

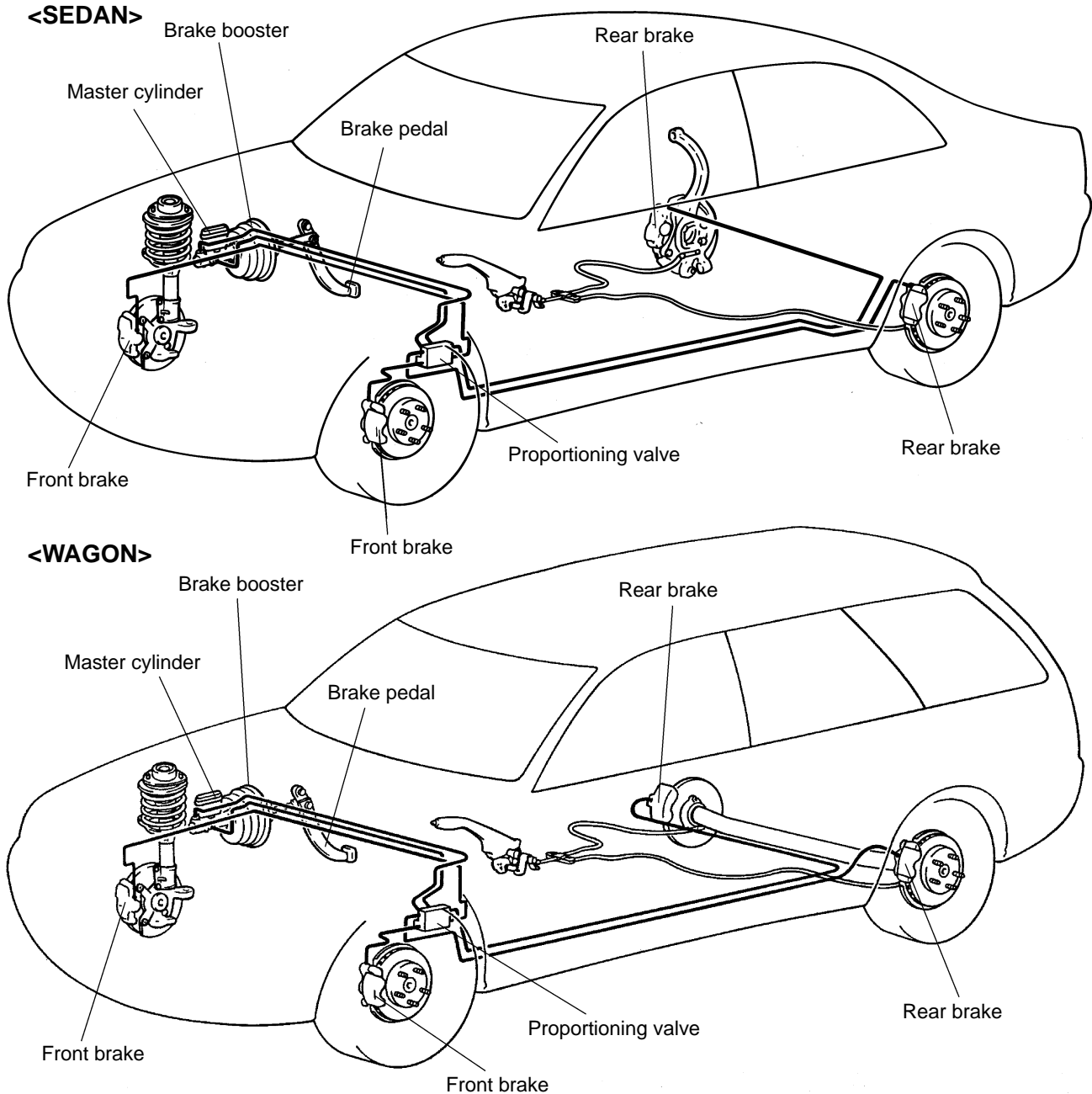
The brake system has high reliability and durability which maintains excellent braking performance. The main features are as follows.

- A dual type master cylinder is equipped on all models.
- A tandem type brake booster has been

adopted.

- Floating caliper, single piston, ventilated disc brakes have been adopted as the front brakes.
- Each rear disc brake is equipped with floating caliper, single piston and solid disc.

CONSTRUCTION DIAGRAM



GENERAL SPECIFICATIONS

Items		
Master cylinder	I.D. mm	25.4
Brake booster	Effective dia. of power cylinder mm	203 /230
	Boosting ratio	6.5 :1
Proportioning valve	Decompression ratio	0.25
Front brakes	Disc effective dia. mm	276
	Disc thickness, mm	24
	Pad thickness, mm	7.9
	Wheel cylinder I.D. mm	60.52
Rear disc brakes	Disc effective dia. mm	258
	Disc thickness, mm	10.4 ± 1
	Pad thickness, mm	8.8
	Wheel cylinder I.D. mm	38.2

SERVICE SPECIFICATIONS

Items		Standard value	Limit
Brake pedal height mm		168–173	–
Brake pedal free play mm		3–8	–
Brake pedal to floorboard clearance mm		85 or more	–
Output pressure of proportioning valve MPa	Split point	2.2–2.7	–
	Output fluid pressure	3.4–3.9	–
Left/right proportioning valve output pressure difference MPa		–	0.4
Front disc brake pad thickness mm		7.9	1.0
Front disc brake drag force (tangential force of wheel mounting bolts) N		69 or less	–
Front brake disc thickness mm		24	22.4
Front brake disc run-out mm		–	0.05
Front hub end play mm		–	0.05
Rear disc brake pad thickness mm		8.8	1.0
Rear disc brake drag force (tangential force of wheel mounting bolts) N		69 or less	–
Rear brake disc thickness mm		10.4	8.4
Rear brake disc run-out mm		–	0.05

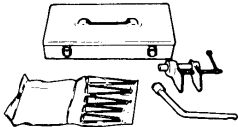
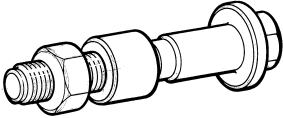
LUBRICANTS

Items	Specified lubricant
Brake fluid	DOT4
Brake piston seal	Repair kit grease (orange)
Slide pin boot and slide pin bush inner surfaces	
Brake piston boot inner surfaces	
Lock pin boot inner surfaces	
Guide pin boot inner surfaces	
Pad assembly and shim contact surface	
Piston boot mounting grooves	
Piston cup surface	

SEALANT

Items	Specified sealant	Remarks
Thread part fitting	3M ATD Part No. 8661 or equivalent	Semi-drying sealant
Vacuum switch		

SPECIAL TOOLS

Tool	Tool number and name	Supersession	Application
	MB990964 MB990520 MB990619 Brake tool set	—	Compressing front disc brake piston Installation of drum brake wheel cylinder piston cup
	E2M45A Front hub remover and installer	—	Removal and installation of front hub

ON-VEHICLE SERVICE

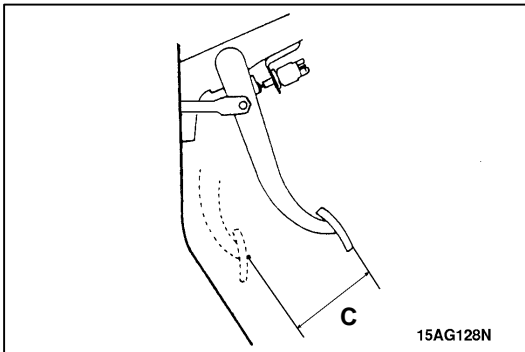
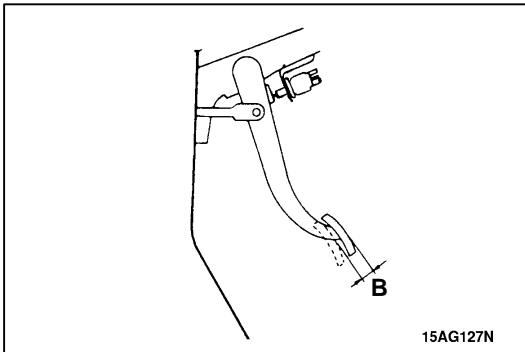
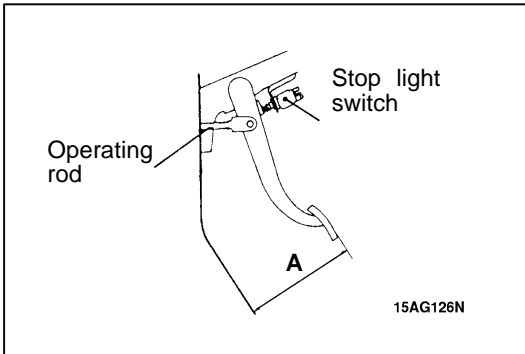
BRAKE PEDAL HEIGHT CHECK

1. Measure the brake pedal height as illustrated.

NOTE: Brake pedal height is non-adjustable.

NOTE: Ensure stop light switch is adjusted correctly before measuring brake pedal height.

Standard value (A): 163–173 mm



2. With the engine stopped, press the brake pedal two or three times. After eliminating the vacuum in the power brake booster, press the pedal down by hand, and confirm that the amount of movement before feeling resistance (the free play) is within the standard value range.

Standard value (B): 3–8 mm

If the free play exceeds the standard value, it is probably due to excessive play between the clevis pin and brake pedal arm.

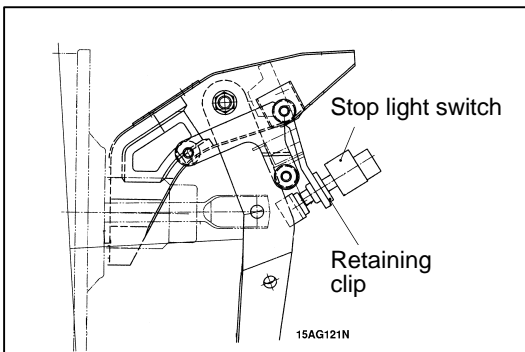
Check for excessive clearance and replace faulty parts as required.

3. Depress the brake pedal with approximately 196 N (45 lbs.) of force, and measure the clearance between the brake pedal and the floorboard. Calculate the difference between the brake pedal height and the depressed height.

Standard value (C): 65 mm or less

If the clearance is more than the standard value, check for air trapped in the brake line.

Adjust and replace defective parts as required.



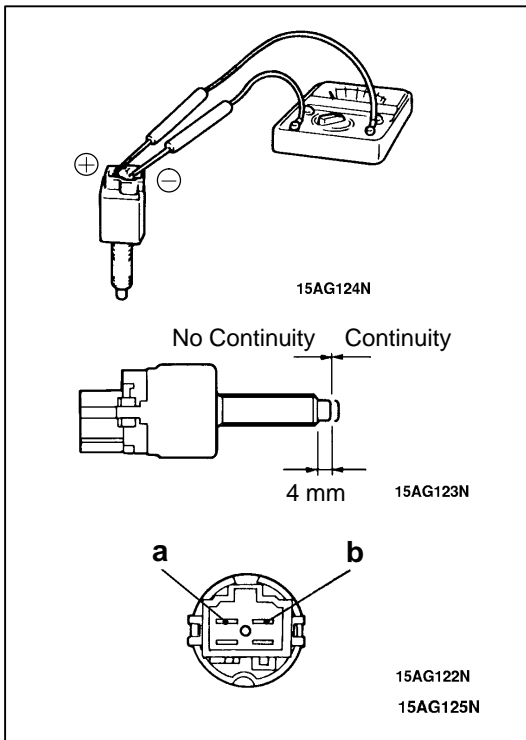
STOP LIGHT SWITCH ADJUSTMENT

- (1) Turn the stop light switch anticlockwise 1/8 turn to release the switch.
- (2) Push the switch through the retaining clip until the switch plunger body just contacts the brake pedal stopper.
- (3) Turn switch 1/8 turn clockwise to securely lock the switch.
- (4) Check to be sure that the stop light is not illuminated with the brake pedal released.

STOP LIGHT SWITCH CHECK

Connect a circuit tester to stop light switch terminals “a” and “b” and check whether or not there is continuity when the plunger of the stop light switch is pushed in and when it is released.

The stop light switch is in good condition if there is no continuity when the plunger is pushed in to a depth of within 4 mm from the outer case edge surface, and if there is continuity when it is released.



BRAKE BOOSTER OPERATING TEST

For simple checking of the brake booster operation, carry out the following tests:

1. Run the engine for one or two minutes, and then turn the engine off.

If the pedal depresses fully the first time but gradually becomes higher when depressed succeeding times, the booster is operating properly. If the pedal height remains unchanged, the booster is defective.

2. With the engine stopped, step on the brake pedal several times.

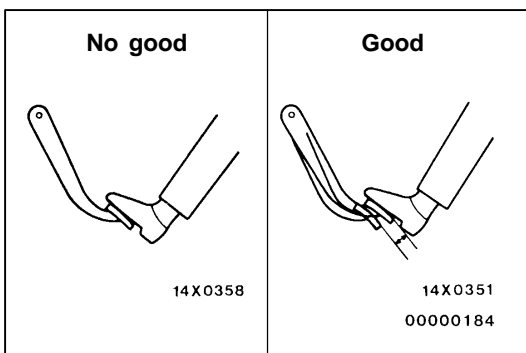
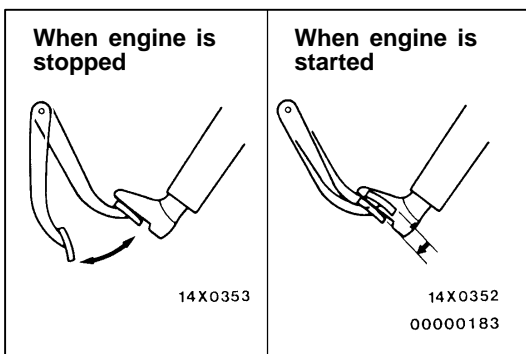
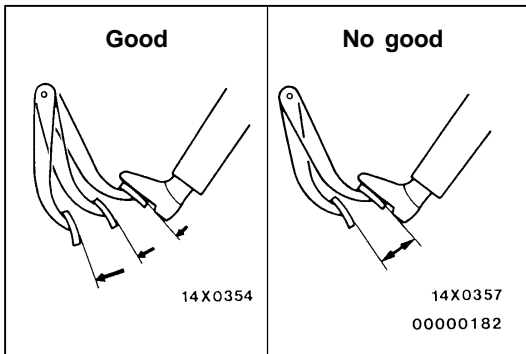
Then step on the brake pedal and start the engine. If the pedal moves downward slightly, the booster is in good condition. If there is no change, the booster is defective.

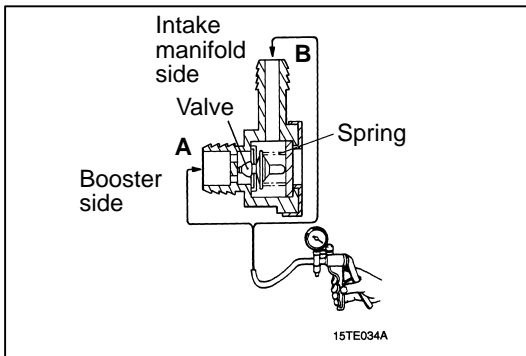
3. With the engine running, step on the brake pedal and then stop the engine.

Hold the pedal depressed for 30 seconds. If the pedal height does not change, the booster is in good condition. If the pedal rises, the booster is defective.

Brake booster performance is satisfactory if it passes all three operating tests.

If the brake booster does not pass all three tests, there may be a fault in the check valve, vacuum hose or in the booster itself.





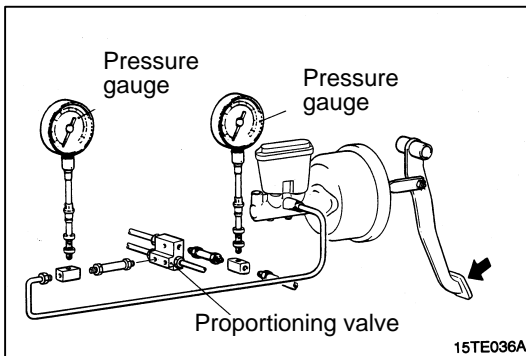
CHECK VALVE OPERATION CHECK

1. Remove the vacuum hose.
2. Remove the check valve.
3. Check the operation of the check valve by using a vacuum pump.

Vacuum pump connection	Accept/reject criteria
Connection at the brake booster side (A)	A negative pressure (vacuum) is created and held.
Connection at the intake manifold side (B)	A negative pressure (vacuum) is not created.

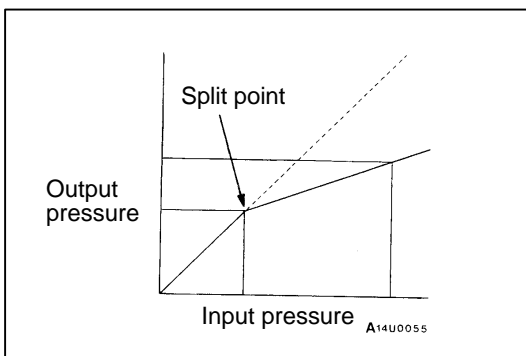
Caution

If the check valve is defective, replace it as an assembly, never attempt to disassemble it.



PROPORTIONING VALVE FUNCTION TEST

1. Connect two pressure gauges, one each to the input side and output side of the proportioning valve, as shown.
2. Air bleed the brake line and the pressure gauge.
3. While gradually depressing the brake pedal, make the following measurements and check to be sure that the measured values are within the allowable range.



- (1) Output pressure begins to drop relative to input pressure (split point).

Standard value:

Sedan 1.72 – 2.7 MPa

Wagon 3.68 – 4.67

- (2) <SEDAN> Output fluid pressure when input fluid pressure is 7.0 MPa.

Standard value: 2.9–3.5 MPa

<WAGON> Output fluid pressure when input fluid pressure is 9.0 MPa.

Standard value: 4.8–5.45 MPa

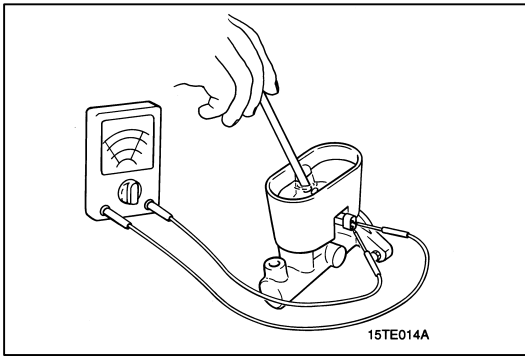
- (3) Output pressure difference between left and right brake lines

Limit: 0.4 MPa

4. If the measured pressures are not within allowable ranges, replace the proportioning valve.

BRAKE FLUID LEVEL SENSOR CHECK

The brake fluid level sensor is in good condition if there is no continuity when the float surface is above “MIN” or “A” and if there is continuity when the float surface is below “MIN” or “A”.



BLEEDING

Caution

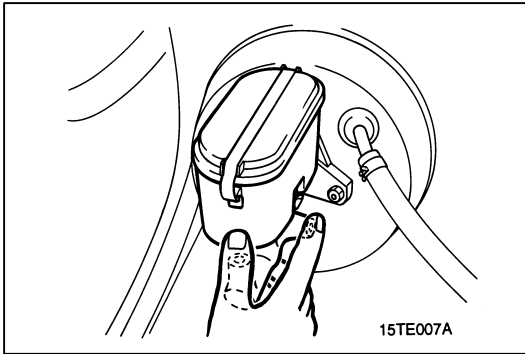
Use the specified brake fluid. Don't use a mixture of the specified brake fluid and another non-specified fluid.

Specified brake fluid: DOT4

MASTER CYLINDER BLEEDING

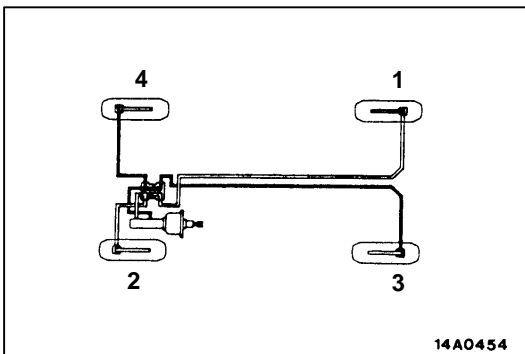
The master cylinder has no check valve, so if bleeding is carried out by the following procedure, bleeding of air from the brake line will become easier.

- (1) Fill the reserve tank with brake fluid.
- (2) Keep the brake pedal depressed.
- (3) Have another person cover the master cylinder outlet with a finger.
- (4) With the outlet still closed, release the brake pedal.
- (5) Repeat steps 2.–4. three or four times to fill the inside of the master cylinder with brake fluid.

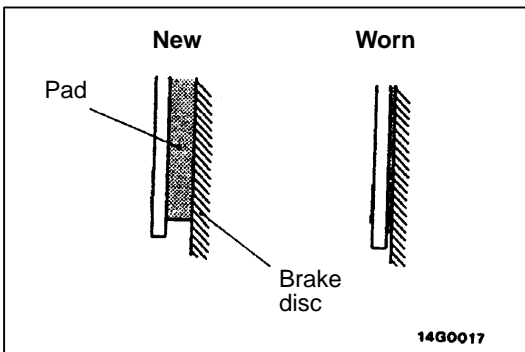


BRAKE LINE BLEEDING

Start the engine and bleed the air in the sequence shown in the figure.



FRONT DISC BRAKE PAD CHECK AND REPLACEMENT



FRONT DISC BRAKE PAD INSPECTION

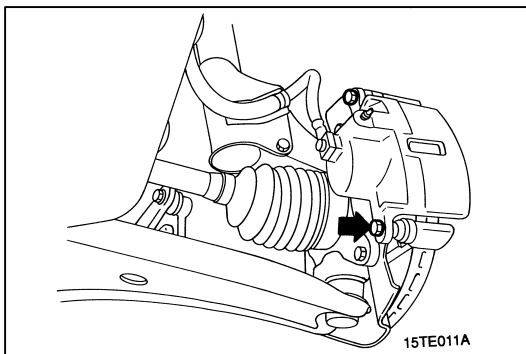
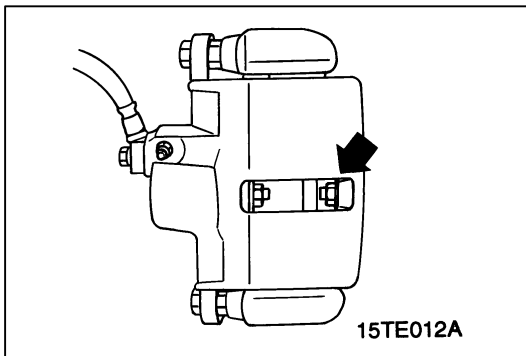
1. Check brake pad thickness through caliper body check port.

Standard value: 7.9 mm

Limit: 1.0 mm

Caution

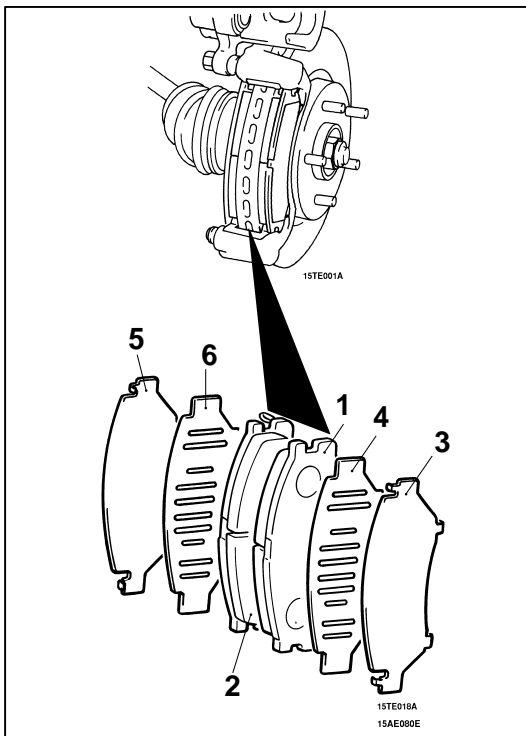
1. When the limit is exceeded, the brake pads on both the left and right wheels must be replaced as a set.
2. If there is a significant difference in the thicknesses of the pads on the left and right sides, check the sliding condition of the piston, lock pin and guide pin.



2. Remove guide lower pin locking bolt. Lift caliper assembly upwards and support it with wires.

Caution

Do not wipe off the special grease that is on the guide pin or allow it to contaminate the bolt thread.

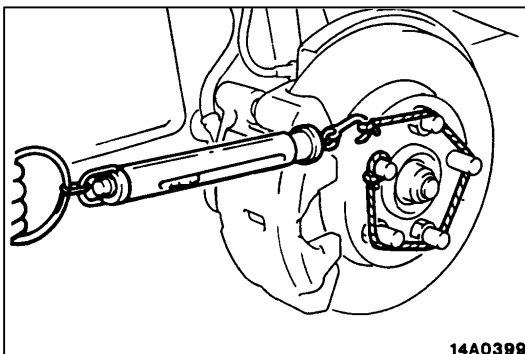
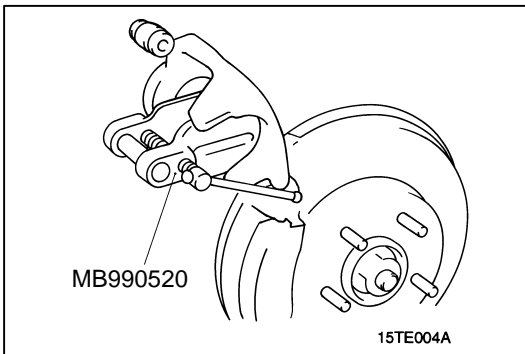
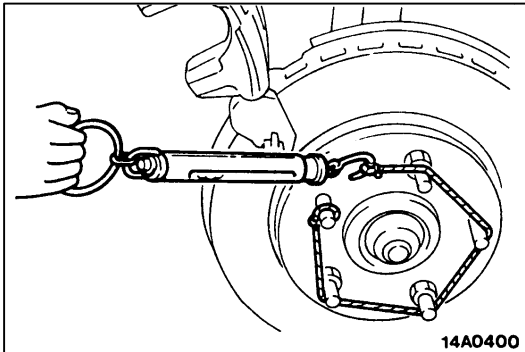
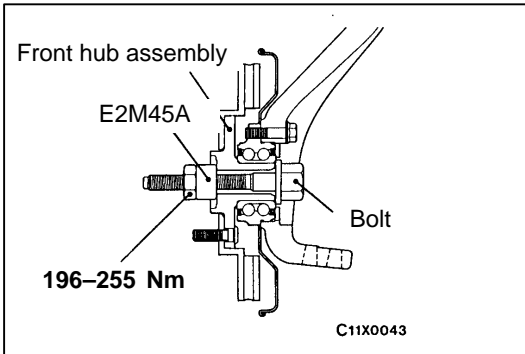


3. Remove the following parts from caliper support.

1. Pad assembly
2. Pad assembly
3. Outer shim (stainless)
4. Inner shim (coated with rubber)
5. Outer shim (stainless)
6. Inner shim (coated with rubber)

NOTE

Shims must be cleaned and inspected for serviceability, if found to be unserviceable new shims must be fitted.



4. Take out the drive shaft.
(Refer [Group 26](#).)
5. Set the special tool to the front hub assembly as shown in the illustration.

6. Measure hub torque (A) with pads removed to measure brake drag torque. Torque value will be used later to calculate brake drag force with the pads installed.

NOTE

Tighten the nuts in order to secure the disc to the hub.

7. Fit the pad clip and pads to the caliper support.
8. Clean piston and push into cylinder (caliper) with special tool.
9. Be careful that the piston boot does not catch and tear as the caliper assembly is swung into position. Replace guide pin locking bolt and torque dry to the specified torque.
10. Check brake drag torque as follows.
 - (1) Start engine and hold brake pedal down for 5 seconds.
[Pedal depression force: approx. 196 N]
 - (2) Stop engine.
 - (3) Turn brake disc forward 10 times.
 - (4) Check hub torque (B) with spring scale.
 - (5) Calculate the drag torque of the disc brake [difference between hub torque (B) and hub torque (A)].

Standard value:
69 N [4 Nm] or less
11. If the difference between brake drag torque and hub torque exceeds the standard value, disassemble piston and clean the piston. Check for corrosion or worn piston seal, and check the sliding condition of the lock pin and guide pin.
12. Reinstall the drive shaft.
(Refer [Group 26](#).)

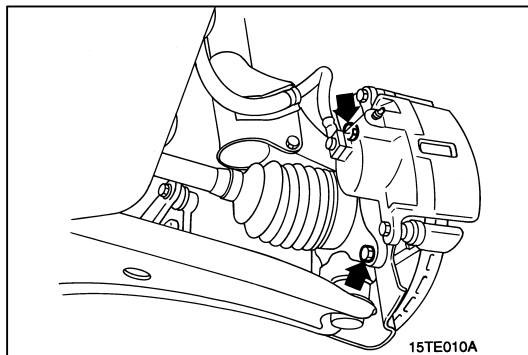
DISC BRAKE ROTOR CHECK

Caution

To maintain safe braking performance, the disc brake rotors must be kept within allowable service specifications.

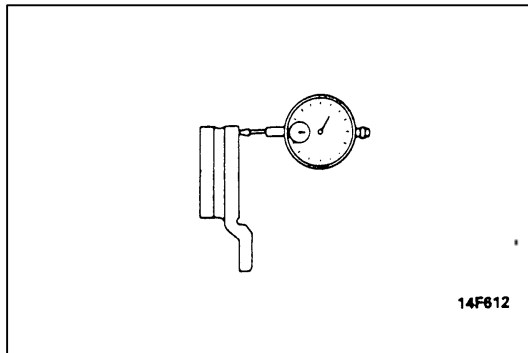
Before re-finishing or re-processing the brake disc surface, the following conditions should be checked.

Inspection items	Remarks
Scratches, rust, saturated lining materials and wear	<ul style="list-style-type: none"> If the vehicle is not driven for a certain period, the sections of the discs that are not in contact with lining will become rusty, causing noise and shuddering. If grooves resulting from excessive disc wear and scratches are not removed prior to installing a new pad assembly, there will momentarily be inappropriate contact between the disc and the lining (pad).
Run-out or drift	Excessive run-out or drift of the discs will increase the pedal depression resistance due to piston knock-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 inset or warping.



FRONT BRAKE DISC RUN-OUT CHECK

1. Remove the caliper support bolts, then raise the caliper assembly upward and secure by using wire.
2. Inspect the disc surface for grooves, cracks, and rust. Clean the disc thoroughly and remove all rust.

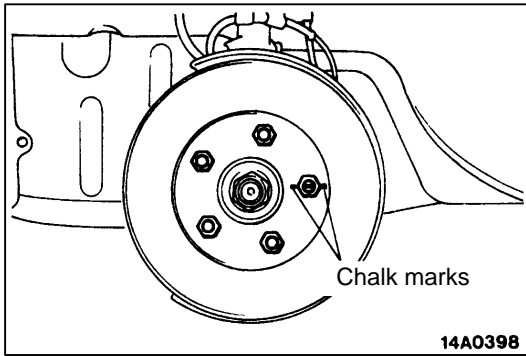


3. Place a dial gauge approximately 5 mm from the outer circumference of the brake disc, and measure the runout of the disc.

Limit: 0.05 mm

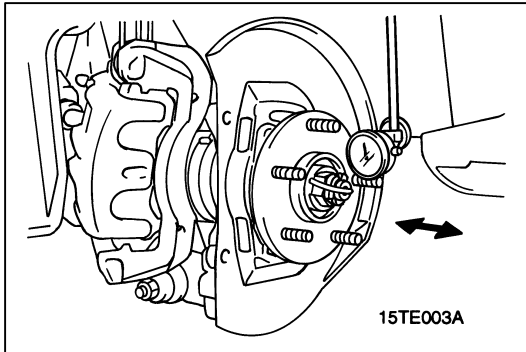
NOTE

Tighten the nuts in order to secure the disc to the hub.



FRONT BRAKE DISC RUN-OUT CORRECTION

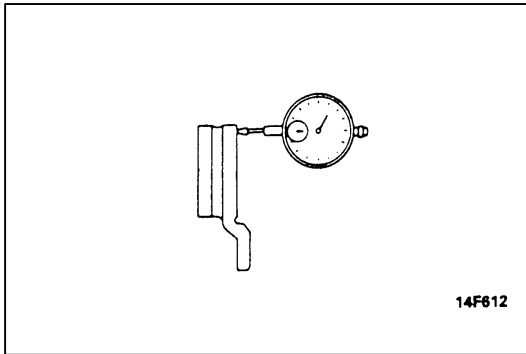
1. If the run-out of the brake disc is equivalent to or exceeds the limit specification, change the phase of the disc and hub, and then measure the run-out again.
 - (1) Before removing the brake disc, chalk both sides of the wheel stud on the side at which run-out is greatest.



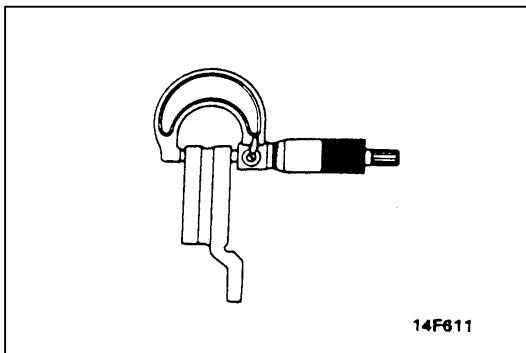
- (2) Remove the brake disc, and then place a dial gauge as shown in the illustration; then move the hub in the axial direction and measure the play.

Limit: 0.01 mm

If the play is equivalent to or exceeds the limit, disassemble the hub knuckle and check each part.



- (3) If the play does not exceed the limit specification, install the brake disc at a position 180° away from the chalk mark, and then check the run-out of the brake disc once again.
2. If the run-out cannot be corrected by changing the phase of the brake disc, replace the brake disc or turn the rotor with a high quality on the car type brake lathe. Be sure to follow the exact brake lathe manufacturer instructions. Rotors turned on the vehicle will often have a lower run-out than a new brake disc.



FRONT BRAKE DISC THICKNESS CHECK

1. Using a micrometer, measure disc thickness at eight positions, approximately 45° apart and 10 mm in from the outer edge of the disc.

Brake disc thickness

Standard value: 24 mm

Limit: 22.4 mm

Thickness variation (at least 8 positions)

The difference between any thickness measurements should not be more than 0.015 mm.

2. If the disc is beyond the limits for thickness, remove it and install a new one. If thickness variation exceeds the specification, replace the brake disc or turn the rotor with a high quality on the car type brake lathe. Be sure to follow the exact brake lathe manufacturer instructions.

REAR DISC BRAKE PAD CHECK AND REPLACEMENT

1. Check brake pad thickness through caliper body check port.

Standard value: 8.8 mm

Limit: 1.0 mm

Caution

1. When the limit is exceeded, the brake pads on both the left and right wheels must be replaced as a set.
2. If there is a significant difference in the thicknesses of the pads on the left and right sides, check the sliding condition of the piston, lock pin sleeve and guide pin sleeve.

2. Remove the lower guide pin caliper bolt. Lift caliper assembly and retain with wire.

Caution

Do not wipe off the special grease that is on the guide pin or allow it to contaminate the bolt thread.

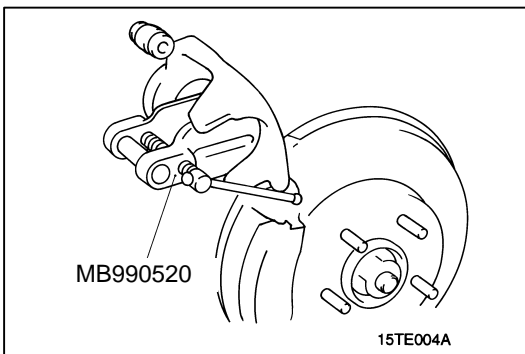
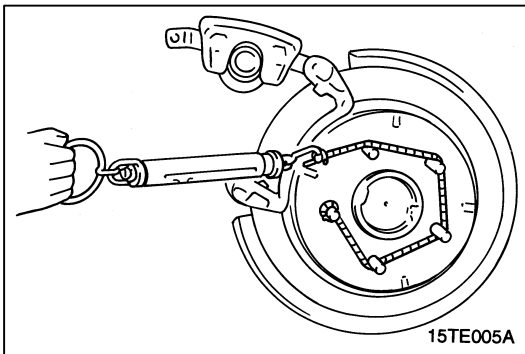
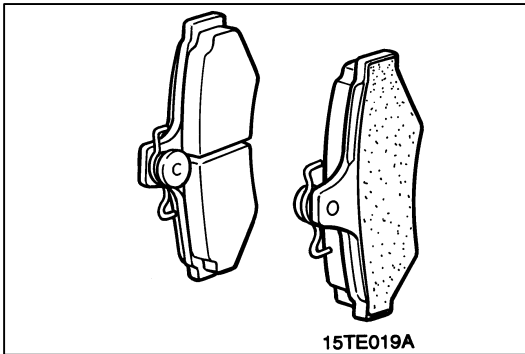
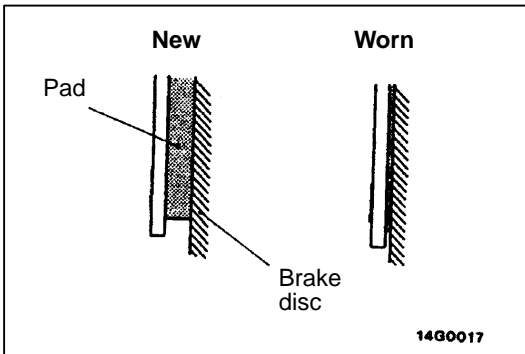
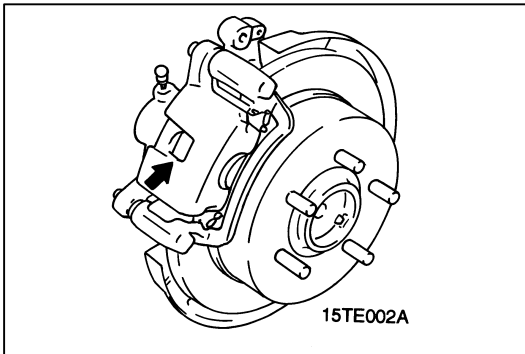
3. Remove the brake pads parts from the caliper support.

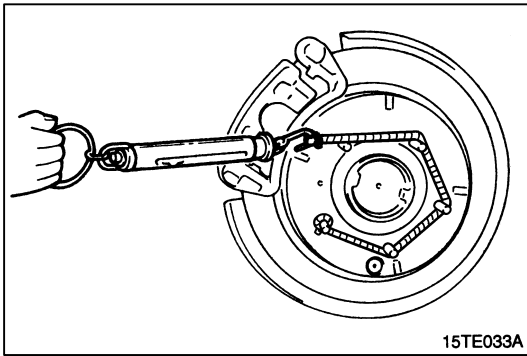
4. Measure hub torque (A) with pads removed to measure brake drag torque. Torque value (A) will be used later to calculate brake drag force with the pads installed.

NOTE

To secure the disc to the hub, tighten the nuts.

5. Clean the piston; then use the special tool to push the piston into the cylinder (caliper).
6. Be careful that the piston boot does not catch and tear as the caliper assembly is swung back into position. Replace guide pin locking bolt and torque dry to specified torque.

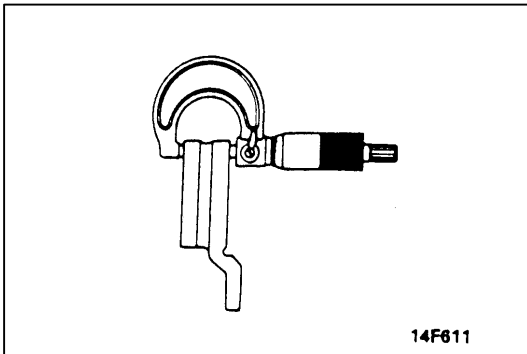




7. Check brake drag torque as follows.
 - (1) Start engine and hold brake pedal down for 5 seconds. [Pedal depression force: approx. 196 N]
 - (2) Stop engine.
 - (3) Turn brake disc forward 10 times.
 - (4) Check brake hub torque (B) with spring scale.
 - (5) Calculate the drag torque of the disc brake [difference between hub torque (B) and hub torque (A)].

Standard value: 69 N [4 Nm] or less

8. If the difference between brake drag torque and hub torque exceeds the standard value, disassemble piston and clean piston. Check for corrosion or worn piston seal, and check the sliding condition of the lock pin and guide pin.



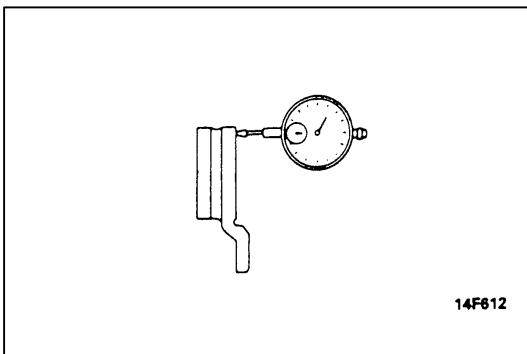
REAR BRAKE DISC THICKNESS CHECK

1. Remove dirt and rust from brake disc surface.
2. Measure disc thickness at 4 locations or more.

Standard value: 10.4 mm

Limit: 8.4 mm

Replace the discs and pad assembly for both sides left and right of the vehicle if they are worn beyond the specified limit.



REAR BRAKE DISC RUN-OUT CHECK

1. Remove the caliper support, raise the caliper assembly, and secure it by using a wire, etc.
2. Place a dial gauge approximately 5 mm from the outer circumference of the brake disc, and measure the run-out of the disc.

Limit: 0.05 mm

NOTE

To secure the disc to the hub, tighten the nuts.

REAR BRAKE DISC RUN-OUT CORRECTION

1. If the run-out of the brake disc is equivalent to or exceeds the limit specification, change the phase of the disc and hub, and then measure the run-out again.

NOTE

The procedures for checking and changing the rear disc phase are the same as those for the front brake discs.

2. If the problem cannot be corrected by changing the phase of the brake disc, replace the disc or turn rotor using an on the car type brake lathe. Be sure to follow the exact brake lathe manufacturer instructions. Rotors turned on the vehicle will often have a lower run-out than a new brake disc.

BRAKE PEDAL

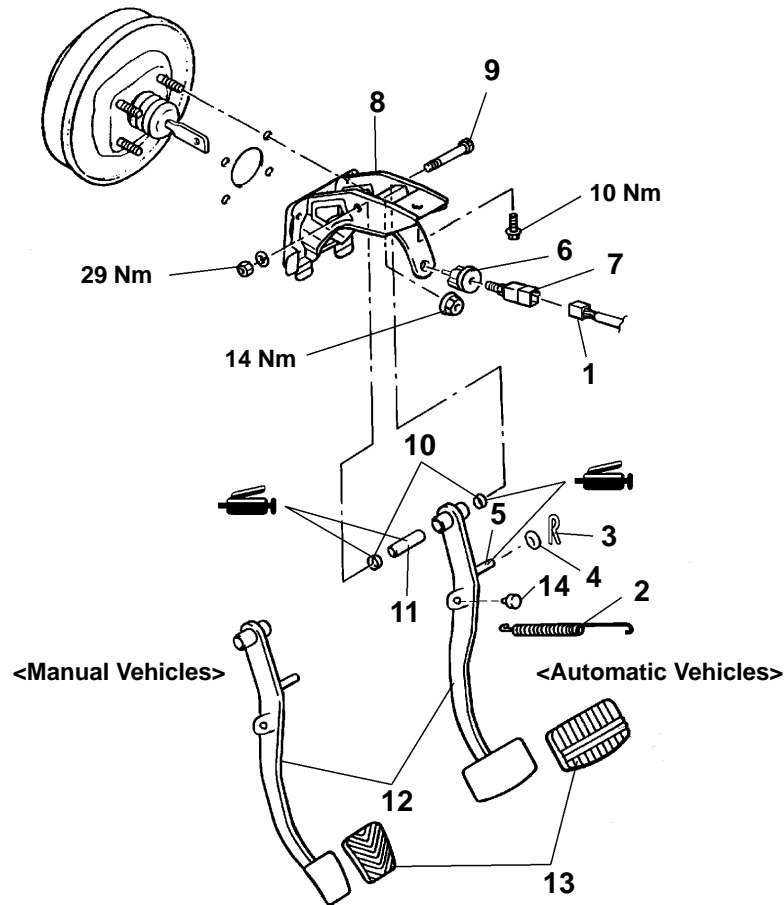
REMOVAL AND INSTALLATION

Pre-removal Operation

- Instrument panel lower cover removal (Refer [Group 52A.](#))
- Steering column assembly removal (Refer [Group 37A.](#))

Post-installation Operation

- Adjust the brake pedal (Refer [On vehicle service.](#))
- Fit the steering column assembly (Refer [Group 37A.](#))
- Fit the lower cover of the instrument panel (Refer [Group 52A.](#))



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Removal steps

- | | |
|------------------------------|---------------------------|
| 1. Harness connector | 8. Pedal support member |
| 2. Brake pedal return spring | 9. Brake pedal shaft bolt |
| 3. R clip | 10. Bushing |
| 4. Washer | 11. Spacer |
| 5. Booster attaching pin | 12. Brake pedal |
| 6. Stop lamp switch retainer | 13. Pedal pad |
| 7. Stop lamp switch | 14. Stopper |

MASTER CYLINDER AND BRAKE BOOSTER

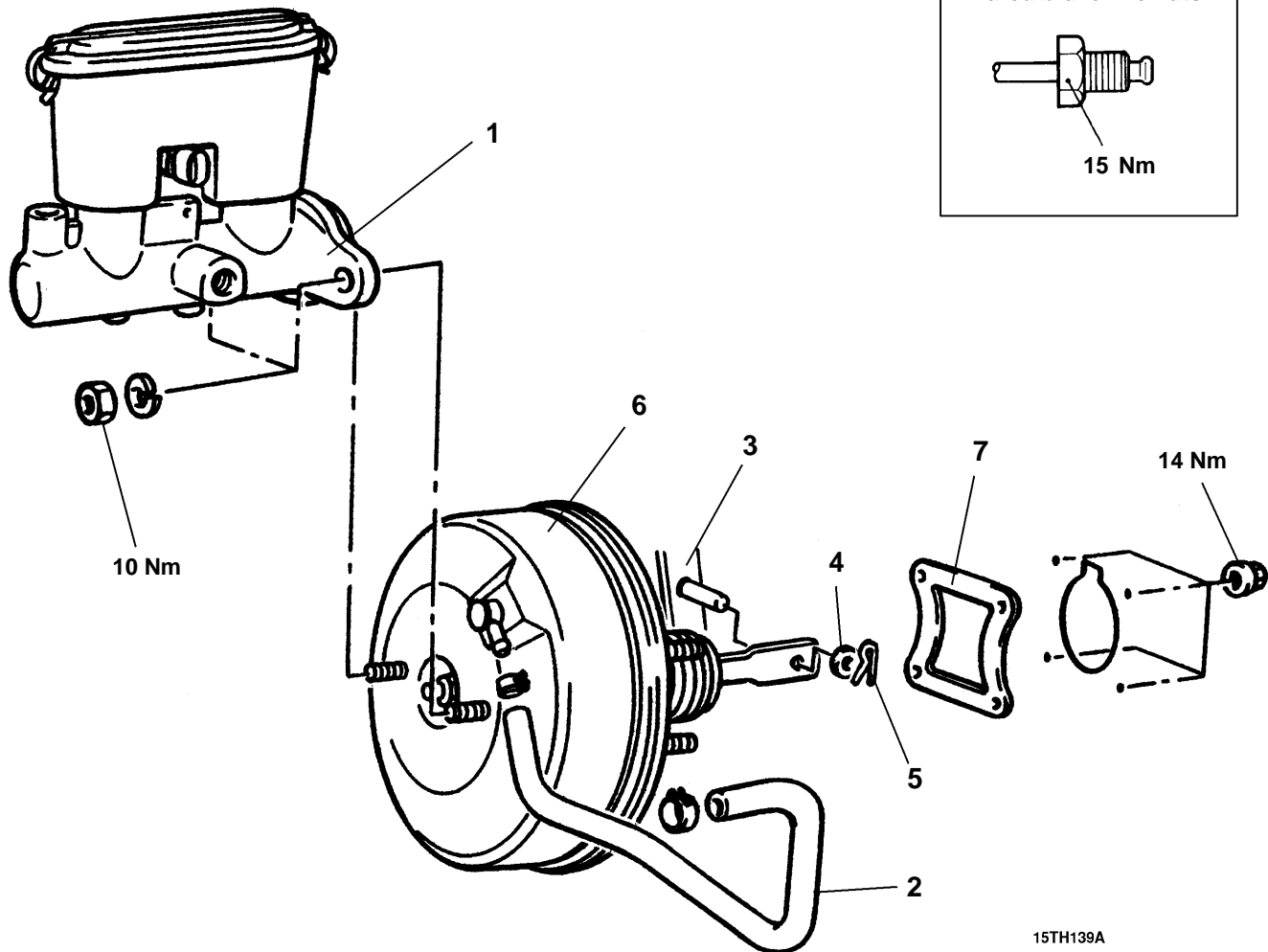
REMOVAL AND INSTALLATION

Pre-removal Operation

- Brake Fluid Draining

Post-installation Operation

- Brake Fluid Supplying
- Brake Line Bleeding (Refer [On vehicle service.](#))
- Brake Pedal Adjustment (Refer [On vehicle service.](#))



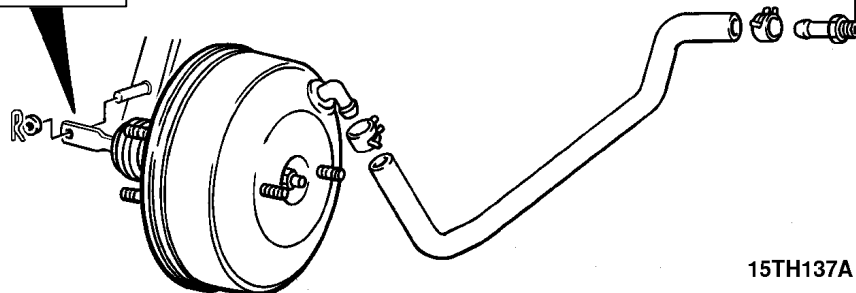
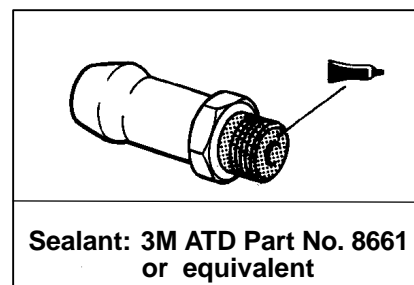
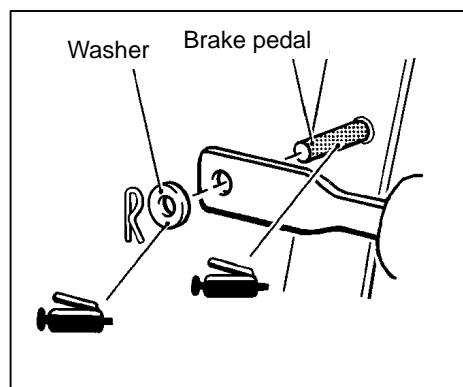
Master cylinder removal steps

1. Master cylinder

Brake booster removal steps

1. Master cylinder
2. Vacuum hose
(With built-in check valve)
3. Brake pedal
4. Washer
5. R-clip
6. Brake booster
7. Sealer

Grease points

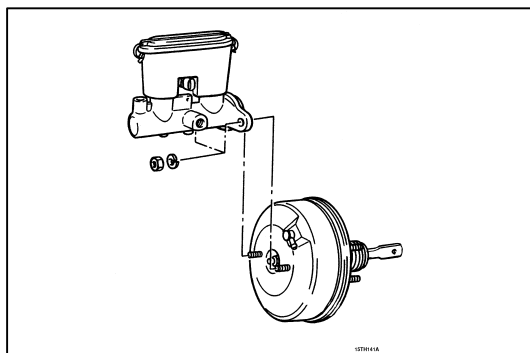
**INSTALLATION SERVICE POINTS****BRAKE BOOSTER PUSH ROD ADJUSTMENT****NOTE:**

This adjustment is factory set and should not be altered. However, if the adjustment has been disturbed the following checks and adjustments can be applied.

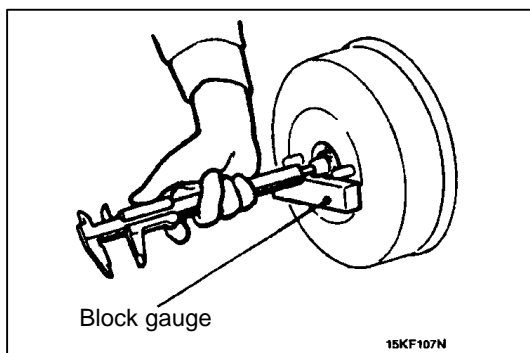
1. The servo must be stroked at least twice with the master cylinder in place and the engine running then allowed to return freely and stabilised for a minimum of 10 seconds prior to setting.

CAUTION:

After removing the master cylinder from the brake booster, care must be taken not to disturb the pushrod and not to depress the brake pedal. Failure to observe this caution may result in the brake booster re-action disc becoming dislodged inside the brake booster.

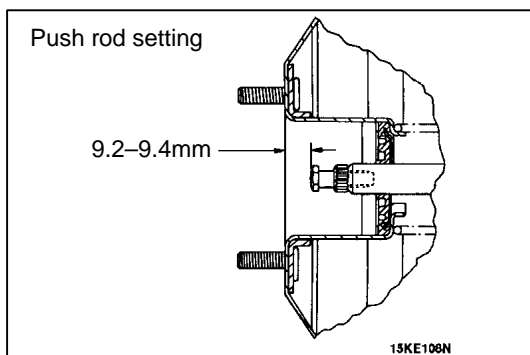


2. Remove master cylinder.

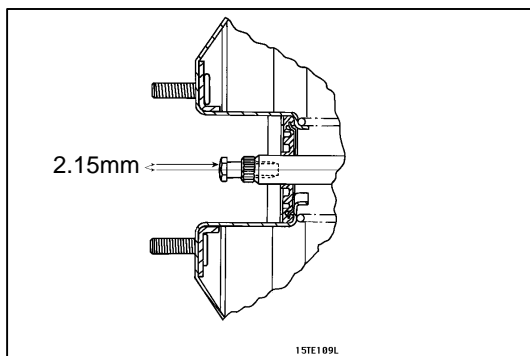


3. Using a block gauge and vernier caliper, set the vernier at 9.3mm plus the thickness value of the block gauge.

Standard Value: 9.2 – 9.4 mm



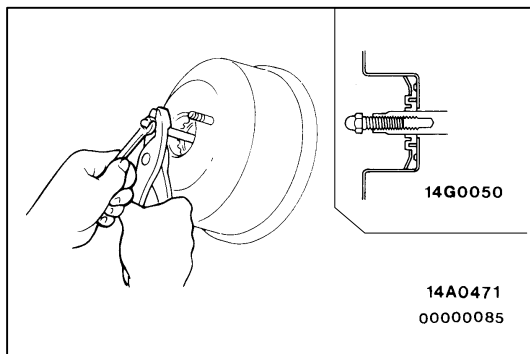
4. Check the position of the push rod with the vernier set at the calculated dimension.



NOTE:

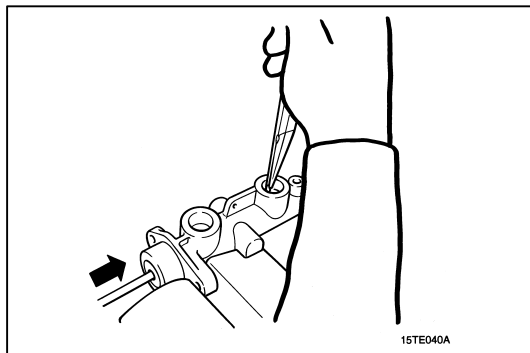
1. The measurement is to be taken on the radial face of the push rod 2.15mm from the centre.

2. Setting procedure must be carried out with 68kpa \pm 5kpa of vacuum applied to the servo.



5. Adjust only if necessary by turning the pushrod screw to achieve the desired length.

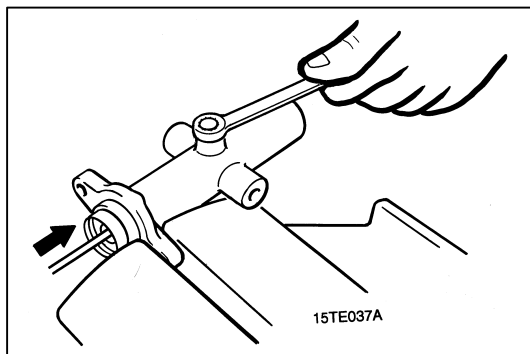
Do not disassemble the primary and secondary piston assemblies.



DISASSEMBLY SERVICE POINT

◀A▶ PISTON STOPPER PIN REMOVAL <WITH ABS>

Remove the piston stopper pin, while depressing the piston.

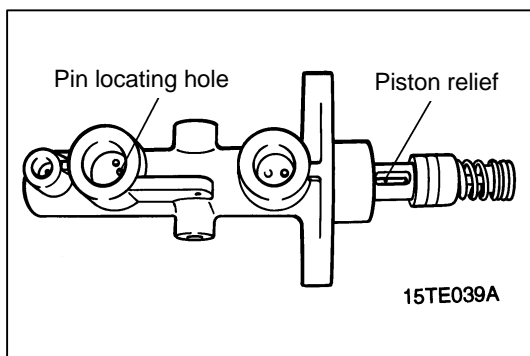


◀B▶ PISTON STOPPER BOLT REMOVAL <WITHOUT ABS>

Remove the piston stopper bolt while depressing the piston.

INSPECTION

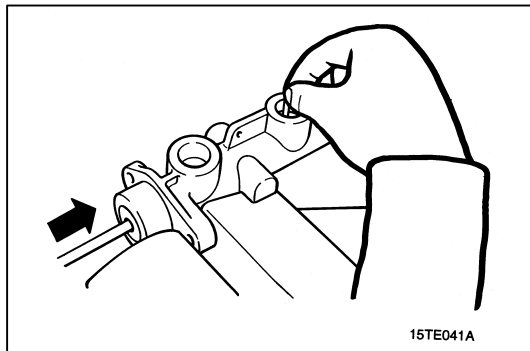
- Check the inner surface of master cylinder body for rust or pitting.
- Check the primary and secondary pistons for rust, scoring, wear or damage.
- Check the diaphragm for cracks and wear.



REASSEMBLY SERVICE POINT

▶A◀ PISTON STOPPER PIN <WITH ABS>

1. Align the relief in the secondary piston with the piston stopper pin locating hole and push the piston into the bore.



2. Push the primary piston into the bore and then while depressing the primary piston drop the piston stopper pin through the locating hole into the secondary piston relief.

NOTE

Ensure the pin goes all the way through the secondary piston and locates in the bottom of the master cylinder bore.

FRONT DISC BRAKE

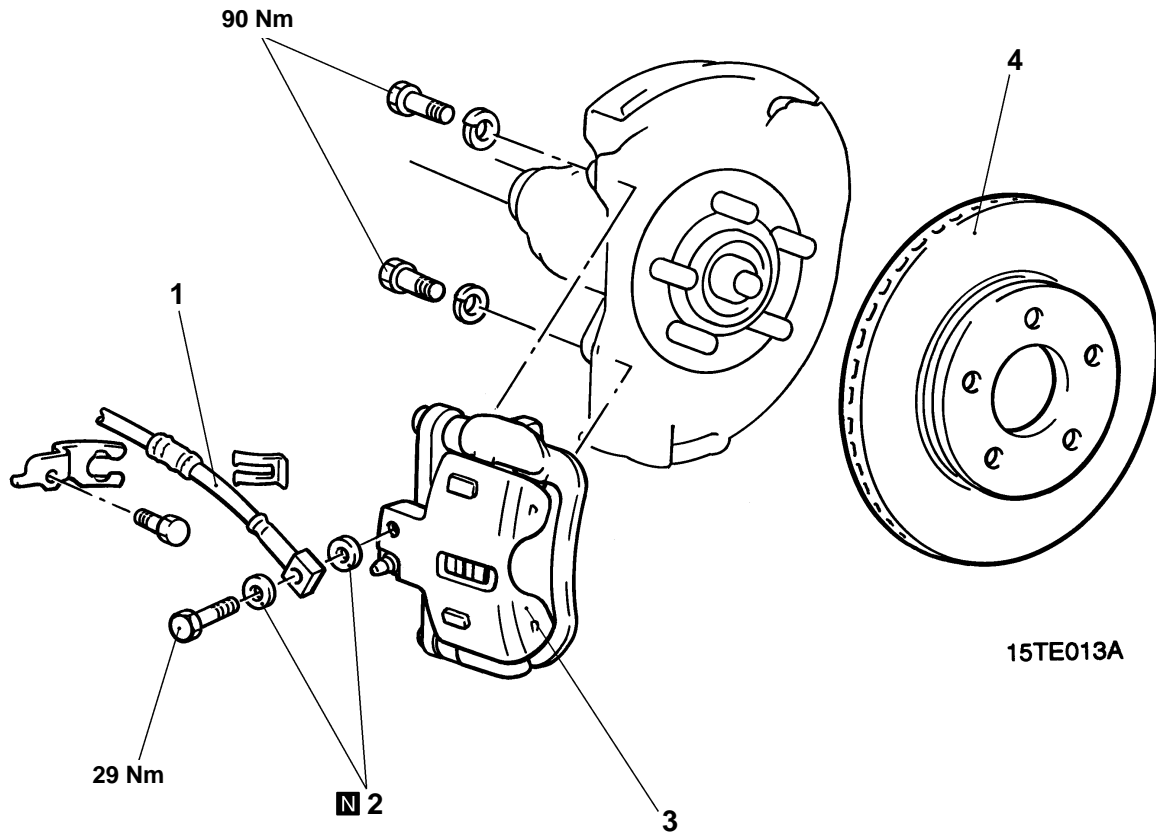
REMOVAL AND INSTALLATION

Pre-removal Operation

- Brake Fluid Draining

Post-installation Operation

- Brake Fluid Supplying
- Brake Line Bleeding (Refer [On vehicle service.](#))



Removal steps

1. Connection for the brake hose
2. Gasket
3. Front brake assembly
4. Brake disc



INSTALLATION SERVICE POINTS

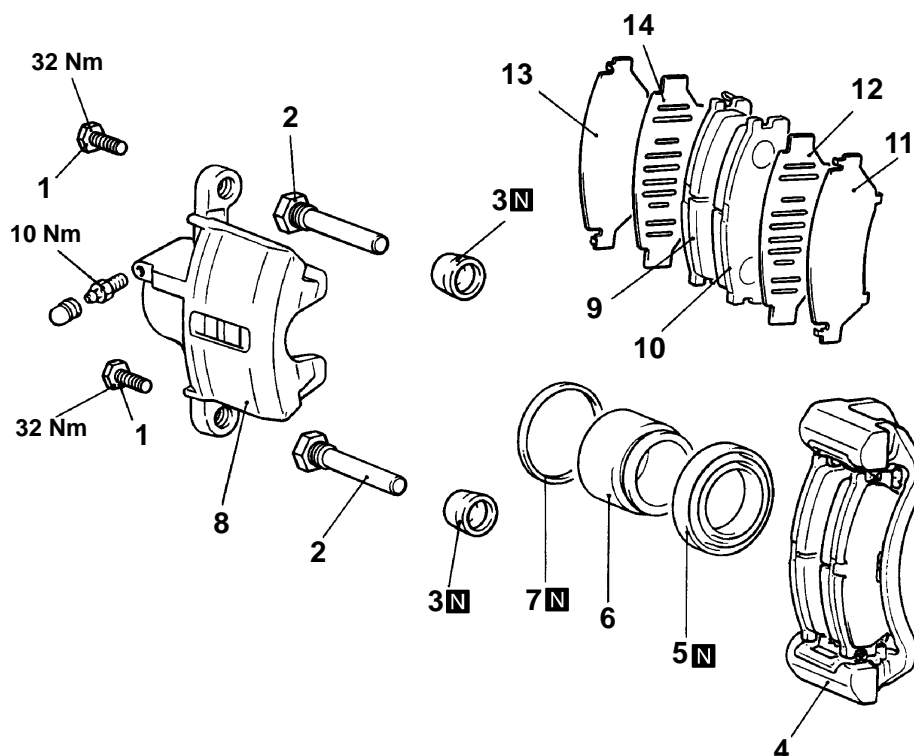
►A◄ FRONT BRAKE ASSEMBLY INSTALLATION

Install the front brake assembly and measure the disc brake drag torque. (Refer [On vehicle service.](#))

INSPECTION

Check the brake disc for damage.

DISASSEMBLY AND REASSEMBLY

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15AE082E

<p>15AE081E</p>	<p>15TE028A</p>	<p>15TE029A</p>
Brake caliper kit	Pad kit	Seal and boot kit

caliper Disassembly steps

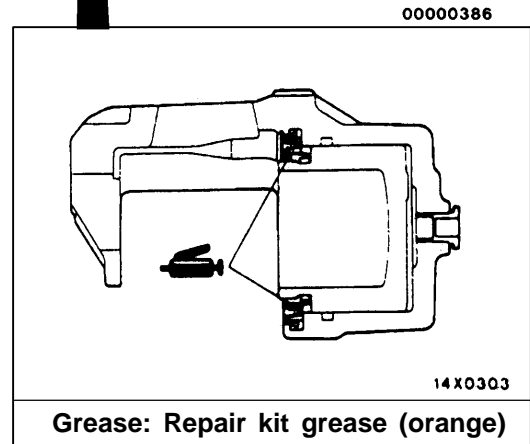
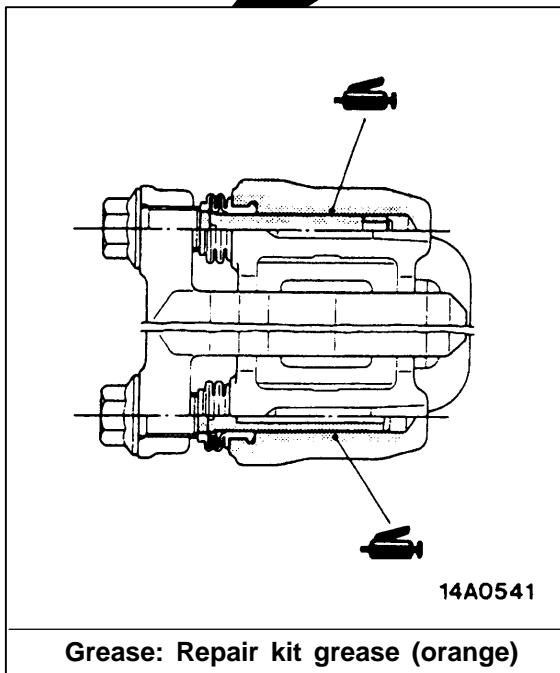
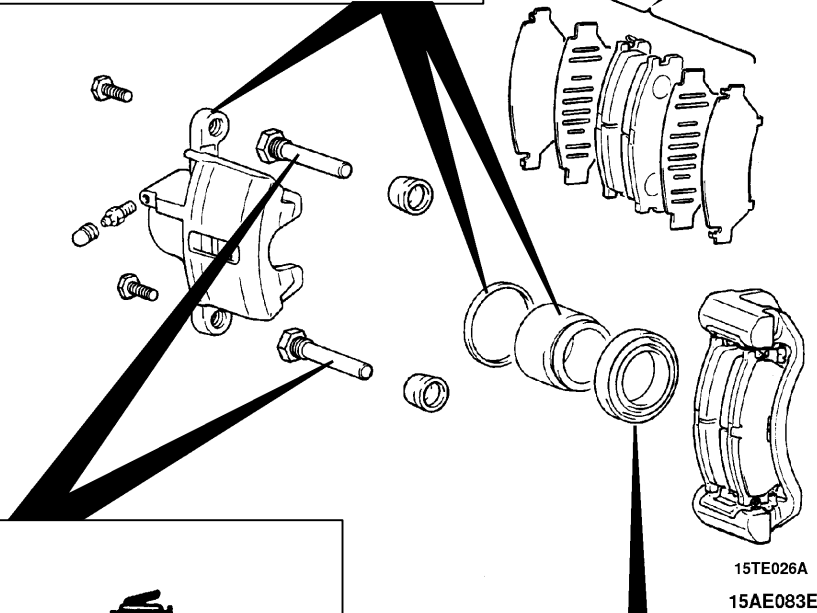
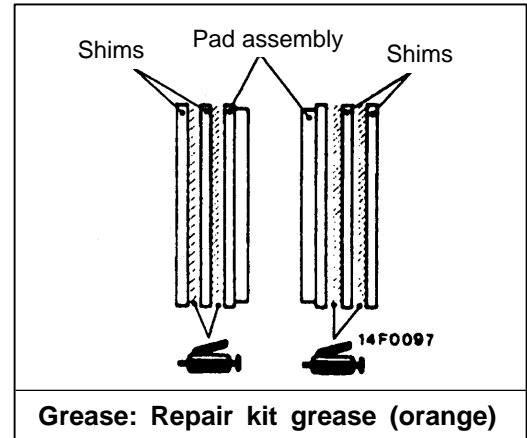
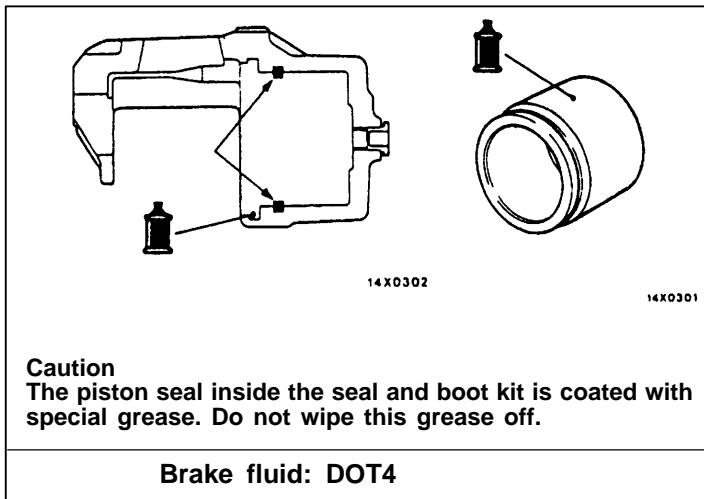
1. Guide pin locking bolts
2. Guide pins
3. Boot
4. caliper support (pad, shims)
5. Piston boot
6. Piston
7. Piston seal
8. caliper body

Pad Disassembly steps

1. Guide pin locking bolts
2. Guide pins
3. Boot
4. caliper support (pad, shims)
9. Pad assembly
10. Pad assembly
11. Outer shim (stainless)
12. Inner shim (coated with rubber)
13. Outer shim (stainless)
14. Inner shim (coated with rubber)

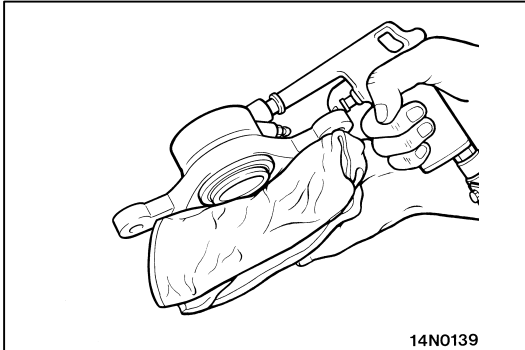


LUBRICATION POINTS



DISASSEMBLY SERVICE POINTS

When disassembling the disc brakes, disassemble both sides (left and right) as a set.



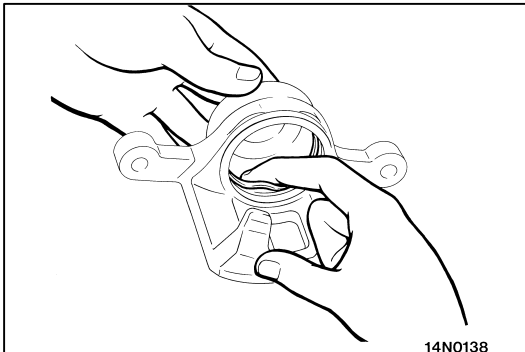
14N0139

◀A▶ PISTON BOOT/PISTON REMOVAL

Protect caliper body with cloth. Blow compressed air through brake hose to remove piston boot and piston.

Caution

Blow compressed air gently.



14N0138

◀B▶ PISTON SEAL REMOVAL

1. Remove piston seal with finger tip.

Caution

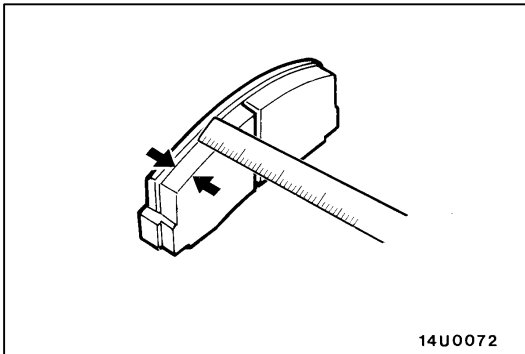
Do not use a flat-tipped screwdriver or other tool to prevent damage to inner cylinder.

2. Clean piston surface and inner cylinder with alcohol, or specified brake fluid.

Specified brake fluid: DOT4

INSPECTION

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



PAD WEAR CHECK

Measure thickness at the thinnest and worn area of the pad. Replace pad assembly when pad thickness is less than the limit value.

Standard value: 7.9 mm

Limit value: 1.0 mm

Caution

1. When the limit is exceeded, the brake pads on both the left and right wheels must be replaced as a set.
2. If there is a significant difference in the thicknesses of the pads on the left and right sides, check the sliding condition of the piston and guide pin.

REAR DISC BRAKE

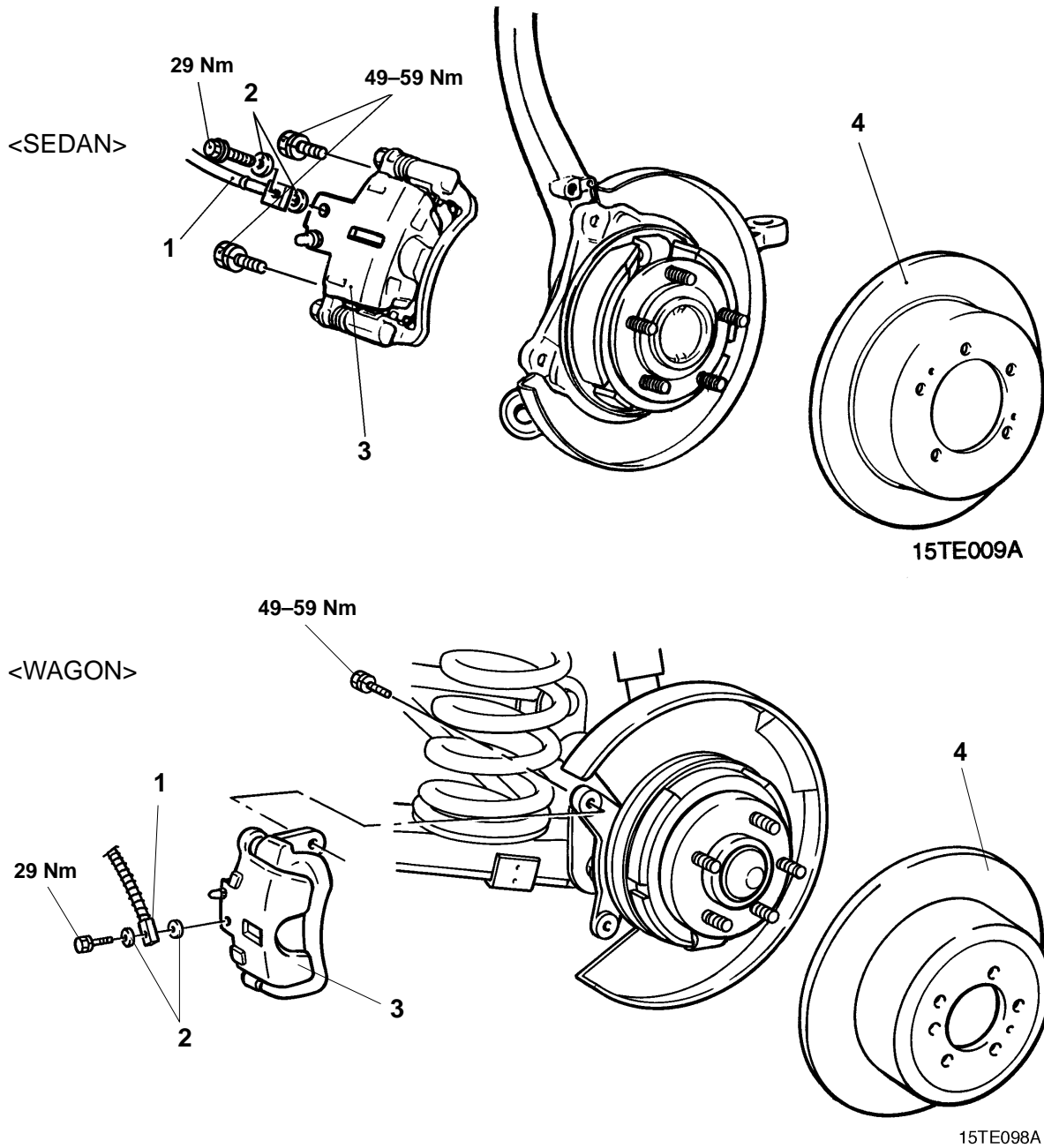
REMOVAL AND INSTALLATION

Pre-removal Operation

- Loosening Parking Brake Cable Adjusting Nut.
- Brake Fluid Draining

Post-installation Operation

- Brake Fluid Filling and Air Bleeding (Refer [On vehicle service.](#))
- Parking Brake Lever Stroke Adjustment (Refer [Group 36.](#))



Removal steps

- Connection for the brake hose
- Gasket
- Rear brake assembly
- Brake disc



INSTALLATION SERVICE POINT

►A◄ REAR BRAKE ASSEMBLY INSTALLATION

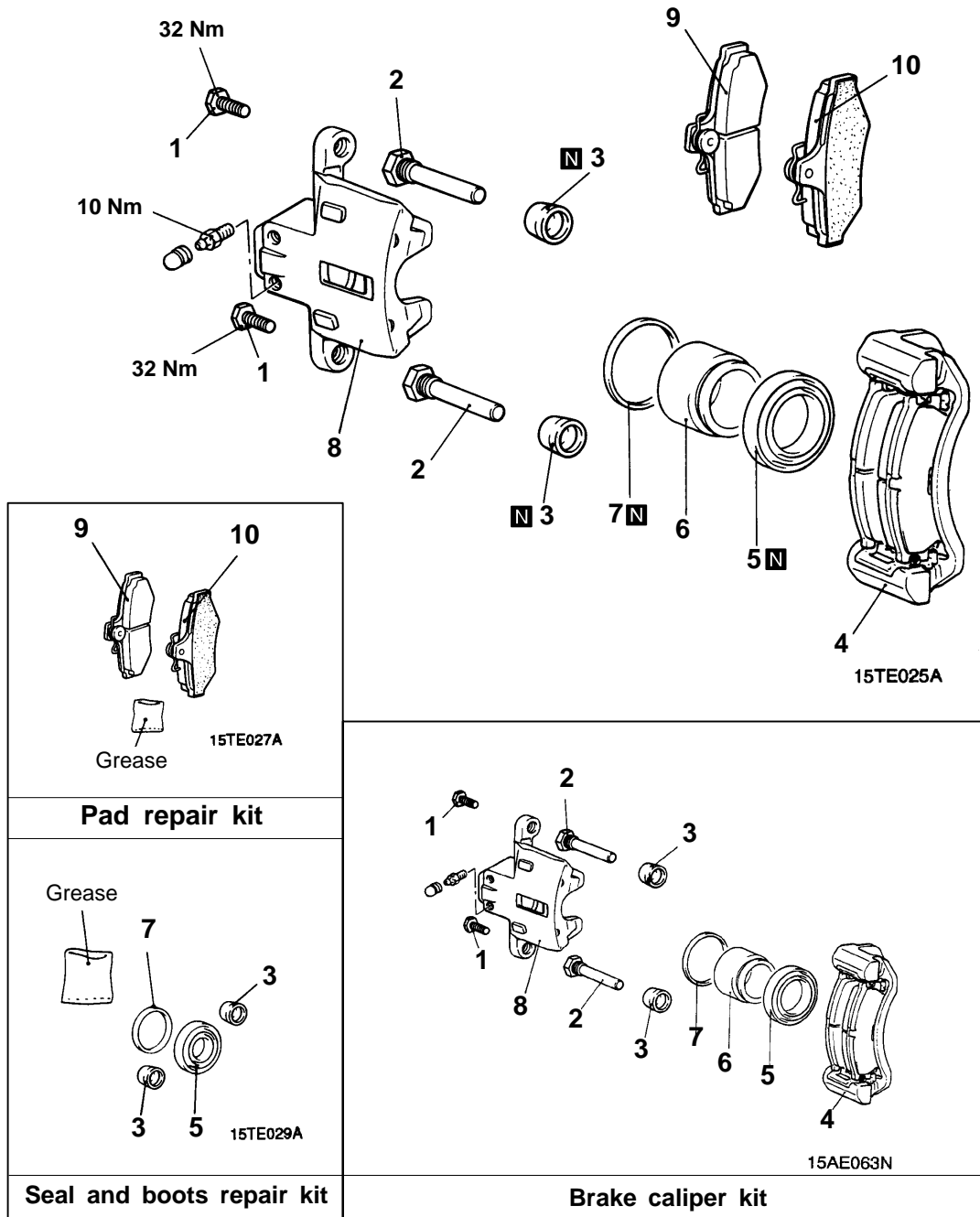
Install the rear brake assembly and measure the disc brake drag torque. (Refer [On vehicle service.](#))

INSPECTION

- Check the brake disc for damage.
- Check the brake disc for thickness.
- Check the brake disc for run-out.

DISASSEMBLY AND REASSEMBLY

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15AE062N

Caliper assembly disassembly steps

1. Guide pin locking bolts
2. Guide pin
3. Boot
4. Calliper support (pads)
5. Piston boot
6. Piston
7. Piston seal

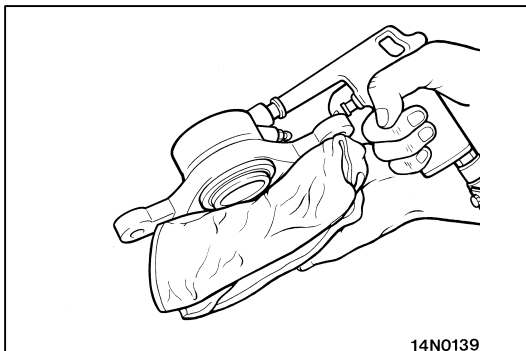
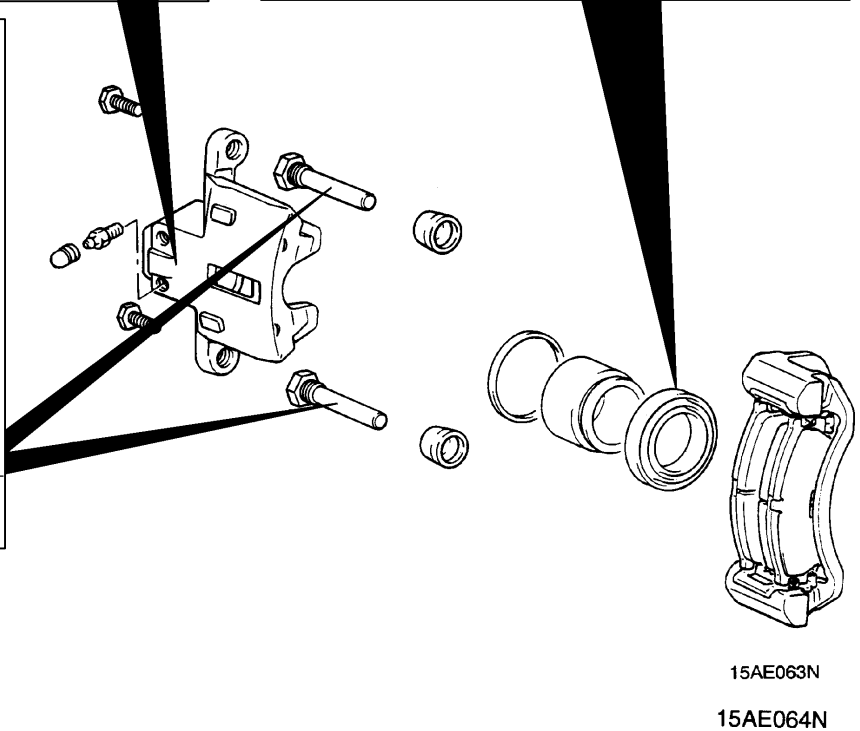
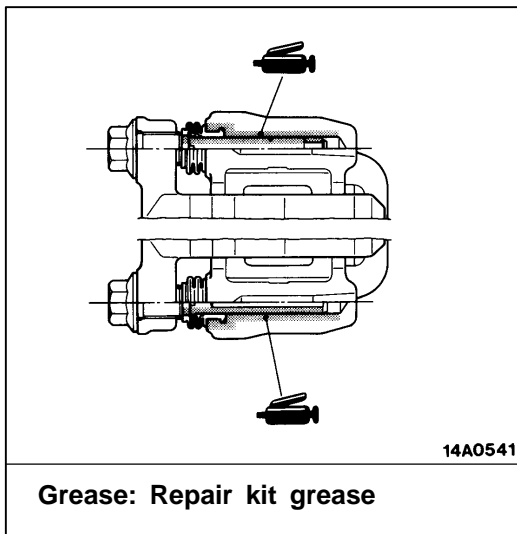
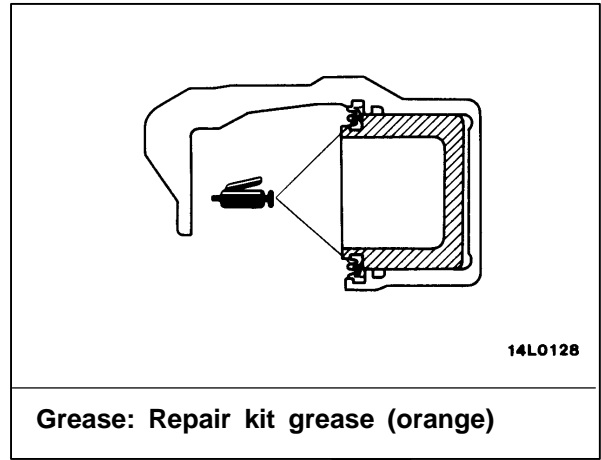
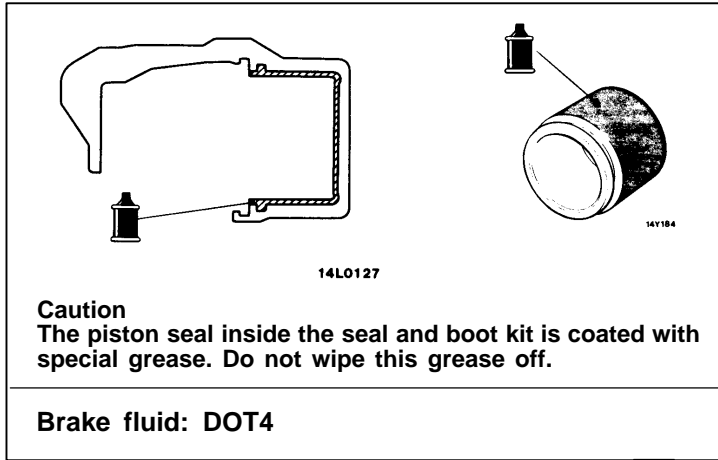
8. caliper body

Pad assembly disassembly steps

1. Locking bolts
2. Guide pin
3. Boot
4. caliper support (pads)
9. Pad and wear indicator assembly
10. Pad assembly



Lubrication Points



DISASSEMBLY SERVICE POINTS

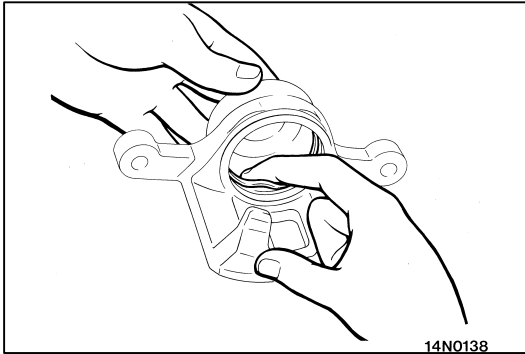
When disassembling the disc brakes, disassemble both sides (left and right) as a set.

◀▶ PISTON BOOT/PISTON REMOVAL

Protect caliper body with cloth. Blow compressed air through brake hose to remove piston boot and piston.

Caution

Blow compressed air gently.



◀B▶ PISTON SEAL REMOVAL

1. Remove piston seal with finger tip.

Caution

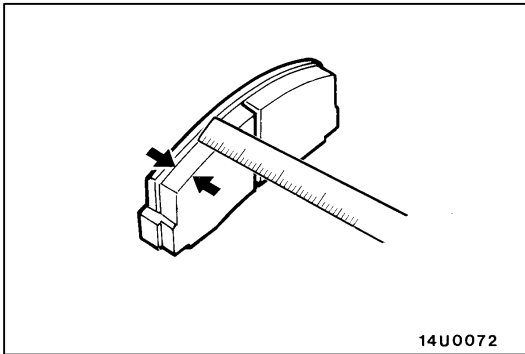
Do not use a flat-tipped screwdriver or other tool to prevent damage to inner cylinder.

2. Clean piston surface and inner cylinder with approved brake cleaning fluid, alcohol or specified brake fluid.

Specified brake fluid: DOT4

INSPECTION

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



PAD WEAR CHECK

Measure thickness at the thinnest and worn area of the pad. Replace pad assembly when pad thickness is less than the limit value.

Standard value: 8.8 mm

Limit value: 1.0 mm

Caution

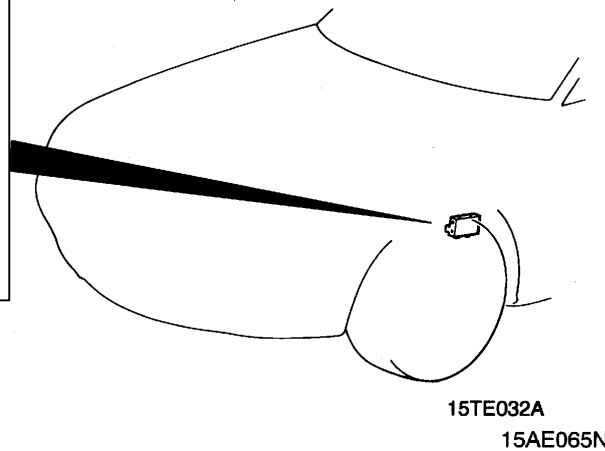
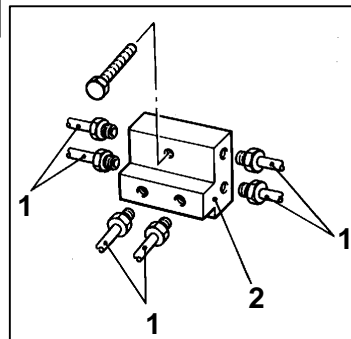
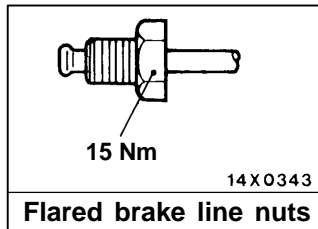
1. When the limit is exceeded, the brake pads on both the left and right wheels must be replaced as a set.
2. If there is a significant difference in the thicknesses of the pads on the left and right sides, check the sliding condition of the piston, lock pin and guide pin.

PROPORTIONING VALVE <VEHICLES WITHOUT ABS>**REMOVAL AND INSTALLATION****Pre-removal Operation**

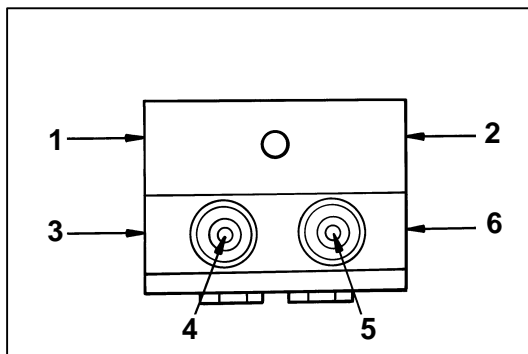
- Brake Fluid Draining
- Air Intake Hose Removal

Post-installation Operation

- Brake Fluid Supplying
- Brake Line Bleeding (Refer [On vehicle service.](#))
- Air Intake Hose Installation

**Removal steps**

- A◄
1. Connection for the brake pipe
 2. Proportioning valve

**INSTALLATION SERVICE POINT****►A◄ BRAKE PIPE CONNECTION**

Connect the pipes to the hydraulic unit as shown in the illustration.

1. Proportioning valve – Rear brake (L.H.)
2. Proportioning valve – Rear brake (R.H.)
3. Proportioning valve – Front brake (R.H.)
4. Proportioning valve – Front brake (L.H.)
5. Master cylinder (for right front and left rear)
6. Master cylinder (for left front and right rear)