

DAIHATSU

F300

BRAKE

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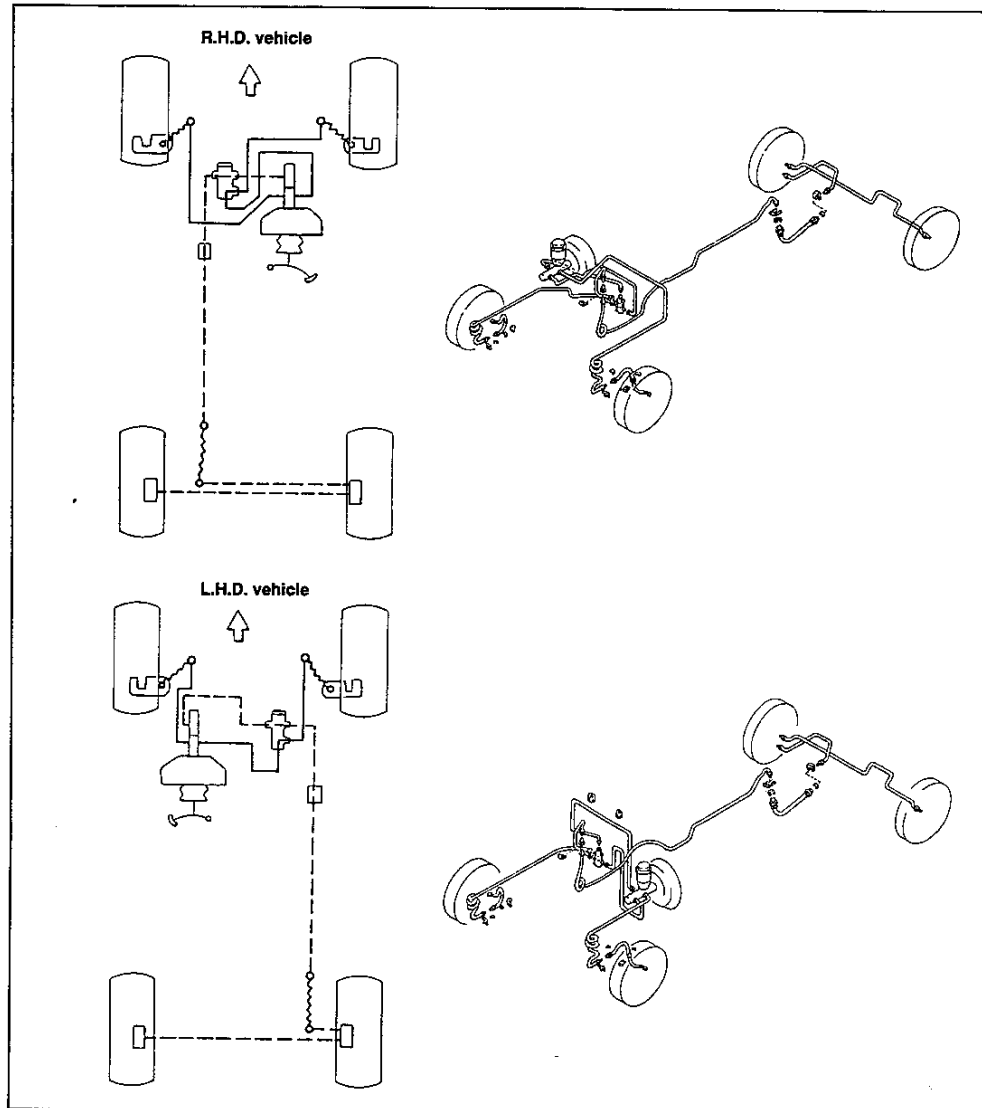
WFE30-BR001

BRAKE

OUTLINE OF BRAKE SYSTEMS

BRAKE LINE

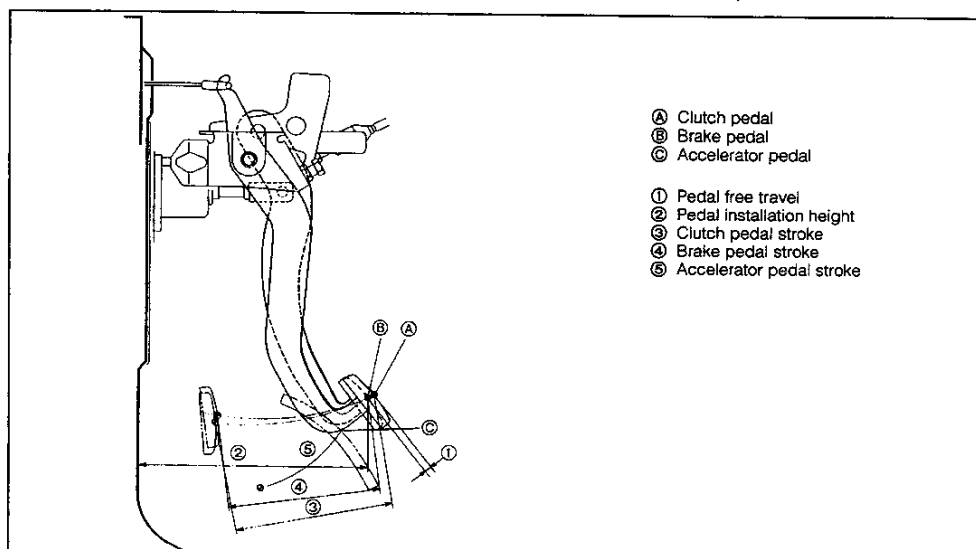
The brake line comes in two kinds; one for the R.H.D. vehicles and the other for the L.H.D. vehicles. On all models, the disc brake is provided at the front wheels, while the drum brake is installed at the rear wheels. The front and rear brake systems are operated through a proportioning valve. The brake pipe employs a two-winding copper tube, the inside of which is treated with Cu plating, while the outside is treated with Cu-Zn plating and resin coating as anticorrosion treatment.



WFE90-BR002

PEDALS

All the operating pedals, such as the clutch pedal, accelerator pedal and brake pedal, adopt a hanging type whose pedal fulcrum is provided at the pedal support located upward of each pedal.



WFE90-BR003

Pedal-related specifications

Item		Type	RHD	LHD	Remarks
Pedal installation height mm	Clutch		216 - 226	216 - 226	Measured with dash board vertical wall as reference.
	Brake		211 - 221	211 - 221	Measured from dash board steel sheet with silencer turned over.
Stroke mm	Clutch		150	150	<Accelerator pedal> Adjust in such a way that stopper bolt-to-pedal stopper clearance becomes 0 to 3 mm when throttle valve is opened fully.
	Brake		143	143	
	Accelerator	Carburetor-equipped vehicle	57	58	
		EFI-equipped vehicle	55	60	
Pedal free travel mm	Clutch		18 - 27	18 - 27	<Brake pedal> With engine stopped, depress brake pedal strongly several times so that vacuum no longer exists inside brake booster. Measure free travel by pushing pedal lightly with your finger.
	Brake		1 - 3	1 - 3	
	Accelerator		1 - 5	1 - 5	

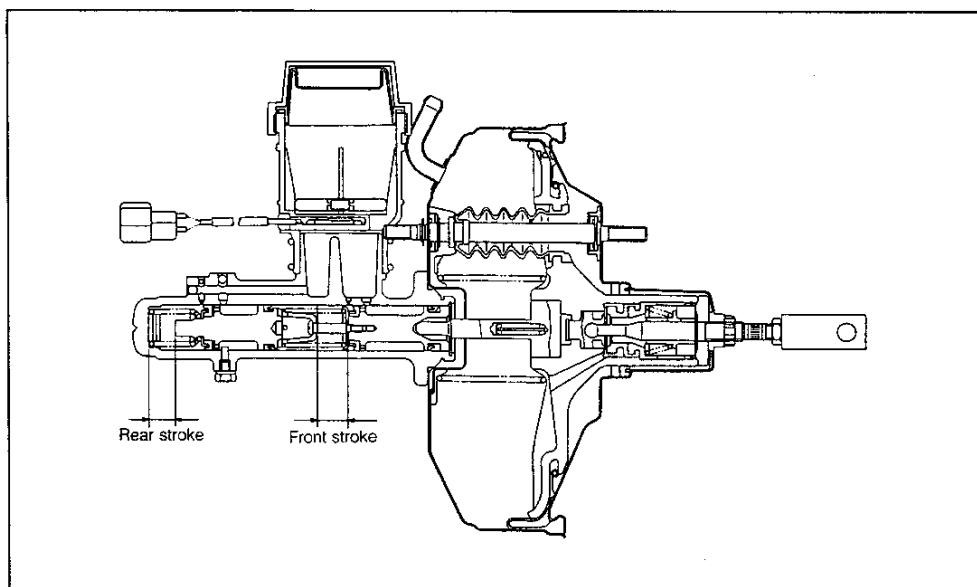
WFE90-BR004

BRAKE

BRAKE BOOSTER & MASTER CYLINDER

The brake booster employs a direct acting brake booster having an 8-inch effective diameter in order that the pedal applying force may be reduced during the braking and the braking performance may be improved. The master cylinder is an aluminum alloy-made tandem master cylinder located inside the engine compartment.

The reservoir adopts a sealed type incorporating a diaphragm. In this reservoir, the brake fluid is shut from the atmosphere, thus preventing deterioration of the brake fluid and improving the reliability.



WFE90-BR006

Brake booster

Diaphragm effective diameter	mm	203
Effective stroke	mm	31.5 or more
Servo ratio		3.5
Jumping amount	kgf	10 kgf

WFE90-BR006

Master cylinder

Stroke	Front	mm	18.5
	Rear	mm	11.5
Inner diameter		mm	22.22
Reserve tank capacity	Front	cc	16
	Rear	cc	12
	Portion shared in common		114

WFE90-BR007

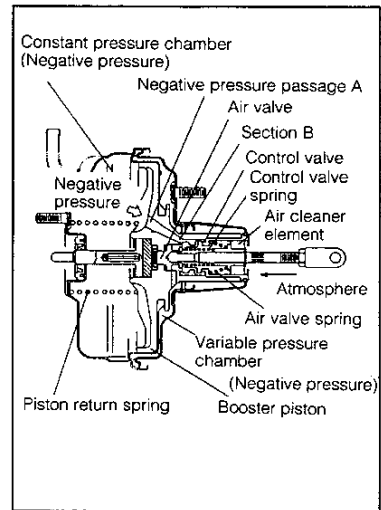
OPERATION OF BRAKE BOOSTER

Non-operating condition

The air valve is butted against the control valve by means of the control valve spring.

Therefore, the atmosphere that has passed through the air cleaner element is interrupted at the air valve and no air can enter into the variable pressure chamber.

Moreover, the air valve is pulled to the right by the air valve spring, until it contacts the valve stopper key. Also, the booster piston is apart from the control valve (because of the section B). As a result, the negative pressure of the constant pressure chamber is applied through the passage A also to the variable pressure chamber. Consequently, the booster piston is pushed to the right by the tension of the piston return spring.



WFE90-BR008

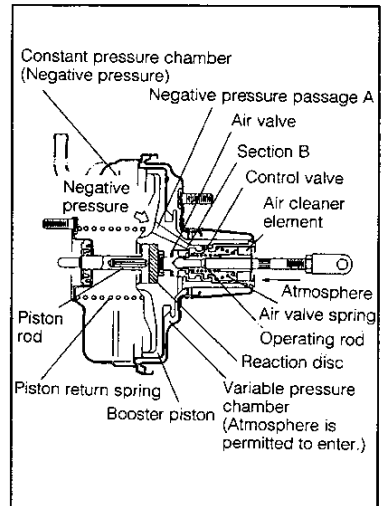
Jumping condition

When the brake pedal is depressed and the air valve spring tension is overtaken, the operating rod starts moving toward the left side. Finally, the control valve becomes butted against the booster piston (see the section B), thus closing the negative pressure passage A.

When the operating rod farther travels toward the left side, the control valve becomes apart from the air valve. Consequently, the atmosphere that has passed through the air cleaner element is permitted to enter into the variable pressure chamber. In this way, the booster piston begins moving toward the left side, thereby generating a booster output.

At this point, the reaction disc is compressed between the booster piston and the piston rod because of a gap which has been already provided between the air valve and the reaction disc. Then, the compressed reaction disc changes its shape in such a way that the gap between the air valve and the reaction disc may be filled with the reaction disc. As a result, no reaction force from the master cylinder is transmitted to the air valve, until the reaction disc contacts the air valve.

The booster output at this point is represented as the jumping amount.



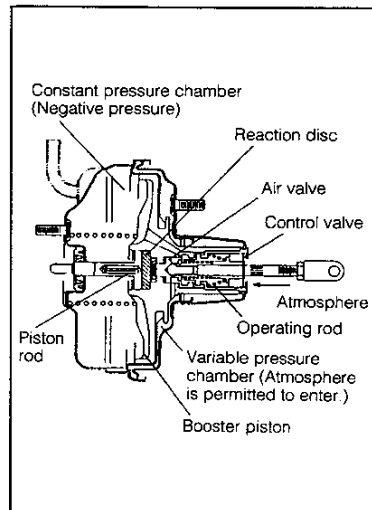
WFE90-BR009

BRAKE

Operating condition

The deformation of the reaction disc that was being compressed between the booster piston and the piston rod further progresses and the reaction disc eventually makes contact with the air valve.

When the pedal applying force increases further from this condition and the operating rod travels farther toward the left, the air valve and control valve are held apart from each other, thus permitting the atmosphere to enter into the variable pressure chamber continually. Consequently, the power assist of the booster increases further and the hydraulic pressure of the master cylinder, too, continues to rise.

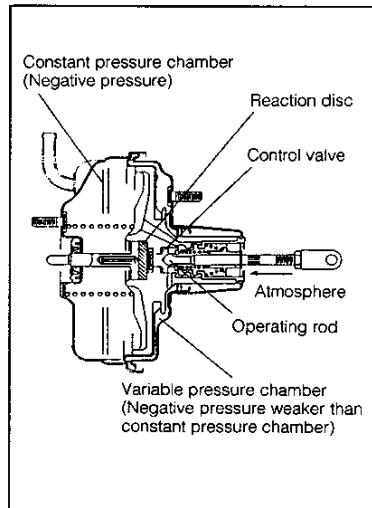


Holding condition

When the force being applied to the operating rod (the pedal applying force) is kept at a constant value, soon the control valve and air valve are closed, thereby stopping the atmosphere flow to the variable pressure chamber.

As a result, the power assist of the booster piston becomes stabilized.

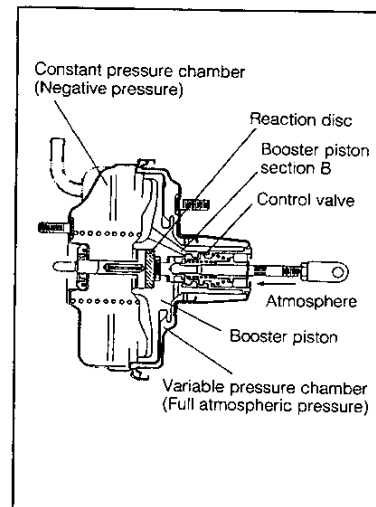
When the pedal applying force and power assist become stabilized, the force being applied to the reaction disc also becomes a constant value. Furthermore, the hydraulic pressure of the master cylinder becomes equal to the force which is transmitted from the reaction disc. This condition of equilibrium continues until any change in the pedal applying force occurs.



BRAKE

Maximum power assist condition

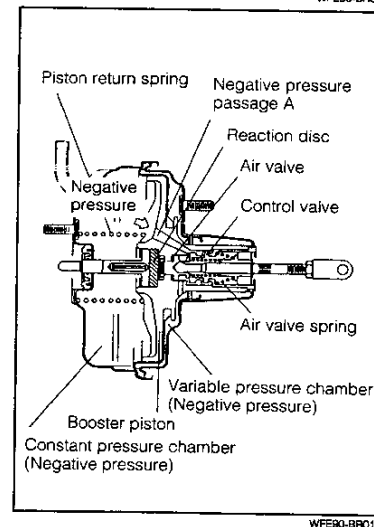
When the pedal applying force increases further, the variable pressure chamber eventually is filled with the atmosphere, thereby fully reaching to the atmospheric pressure. At this point, the differential pressure that is applied to the booster piston reaches to the maximum value. In this way, the power assist of the booster also reaches its limit. Simultaneously, the movement of the control valve also is restricted. Consequently, a condition where the control valve is held closely against the booster piston (section B) is retained. If the pedal applying force is increased further from this condition, this additional force is added to the reaction disc. As a result, the hydraulic pressure of the master cylinder also rises, corresponding to that additional portion of force.



Released condition

As the pedal applying force decreases, the force equilibrium condition between the reaction disc and the air valve is lost, thereby pushing back the air valve toward the right side. Then, the air valve makes contact with the control valve, thus interrupting the atmosphere circuit from the air cleaner to the variable pressure chamber. Simultaneously, the control valve also moves toward the right side by the function of the air valve spring.

Hence, the negative pressure of the constant pressure chamber is now applied to the variable pressure chamber through the passage A. When the difference in pressure between the constant pressure chamber and the variable pressure chamber no longer exists because of the negative pressure supplied from the constant pressure chamber, the booster piston completely returns to the original position owing to the tension of the piston return spring.

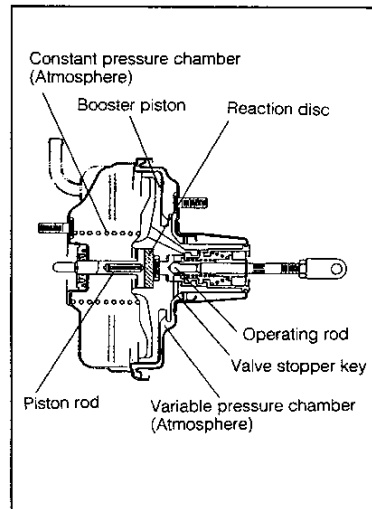


BRAKE

In case where no negative pressure is available:

In instances where no negative pressure is applied to the booster owing to some troubles, both the constant pressure chamber and variable pressure chamber remain under the atmospheric pressure condition, thereby offering no power assist. Nevertheless, when the brake pedal is depressed and the operating rod travels toward the left side, a force is applied to the piston rod from the air valve through the reaction disc.

At this time, the air valve also pushes the valve stopper key, which is inserted into the booster piston, to the left. Then, the force overcomes the tension of the piston return spring and moves the booster piston to the left. As a result, a hydraulic pressure is generated in the master cylinder. In this way, the braking performance of the vehicle is assured at all times.

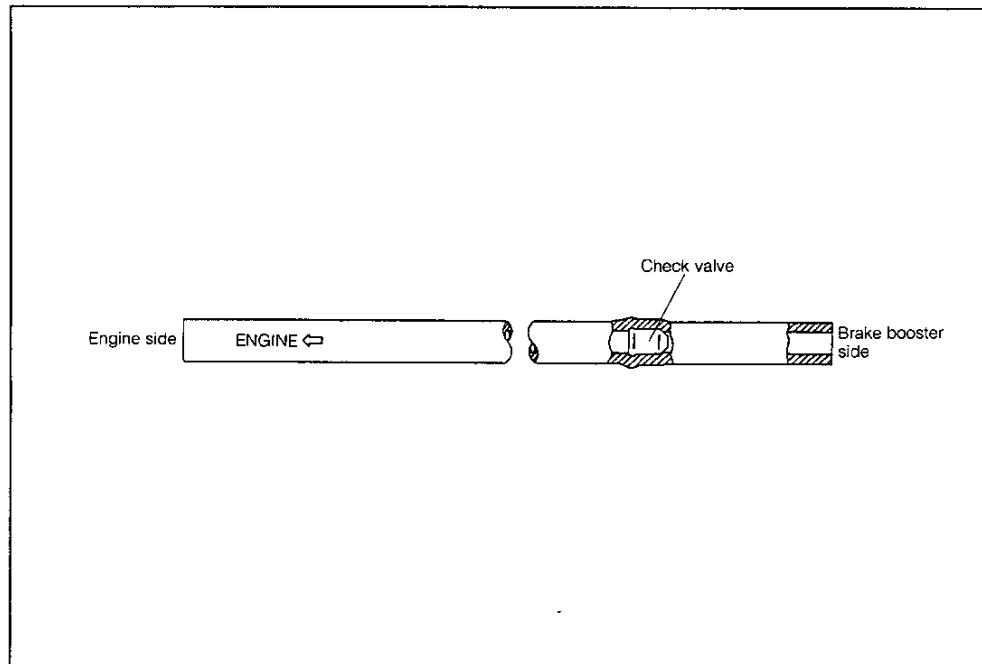


WFE90-BR014

VACUUM HOSE

The vacuum hose provided between the engine suction system and the brake booster incorporates a check valve.

The vacuum hose bears a letter "ENGINE ⇐". The arrowheaded direction must face toward the engine side.



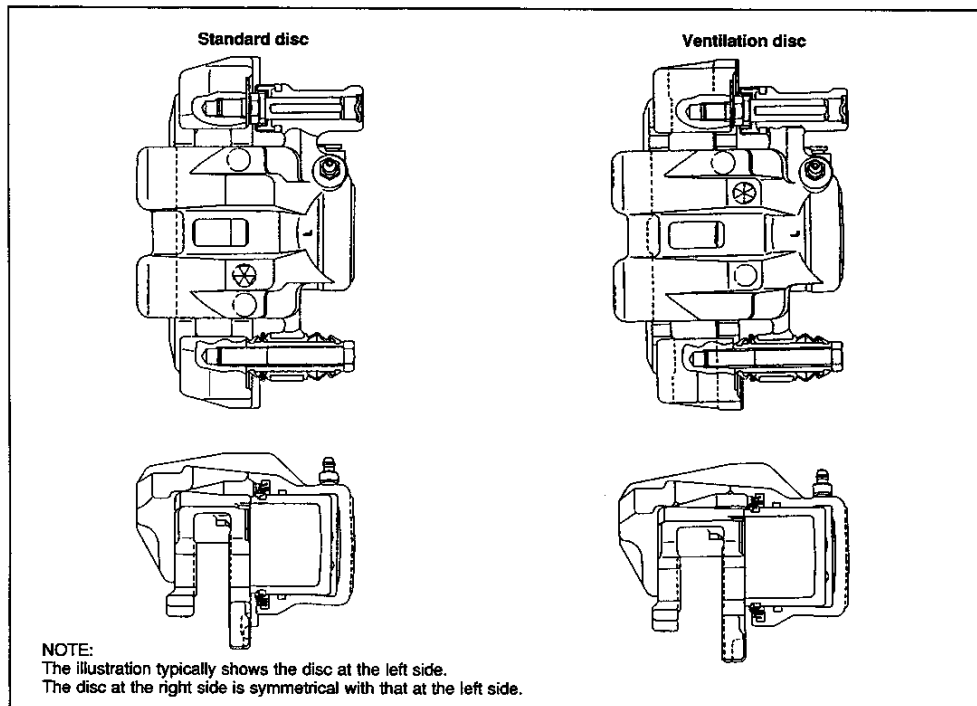
WPU90-BR015

FRONT BRAKE

The front brake employs a disc brake. A ventilation disc is available as optional equipment. The ventilation disc features stable braking force during the braking at high speed running.

The disc brake caliper is also available both for the standard disc and for the ventilation disc.

The flexible hose joint adopts a gasket type. It is, therefore, necessary to use a new gasket at the time of re-assembling.



WFE90-BR015

Front brake specifications

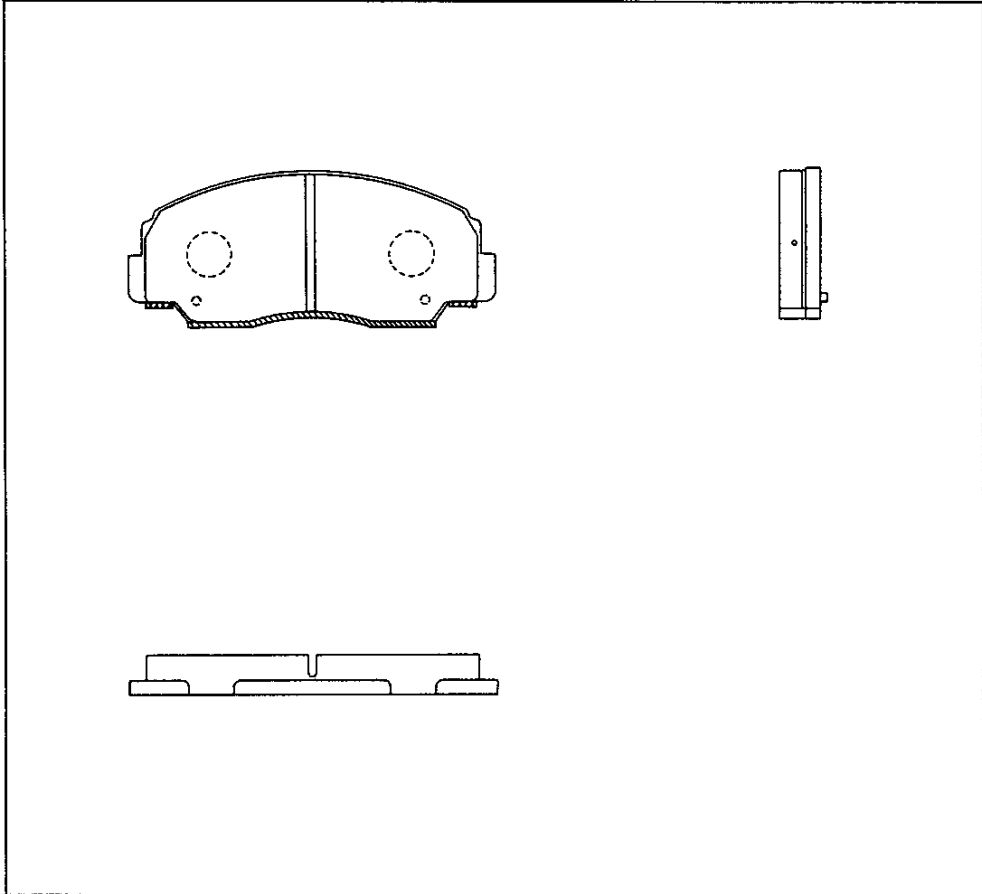
Item		Type	Standard disc	Ventilation disc
Cylinder	Diameter	mm	53.97	53.97
	Area	cm ²	22.89	22.89
Brake effective radius		mm	R115	R115
Rotor	Outer diameter	mm	277	277
	Clearance between pads	mm	12.5	18.0
Pad	Thickness	mm	9	9
	Area	cm ²	48.6	48.6
	Materials		AK NS101 (Asbestos-free)	AK NS101 (Asbestos-free)

WFE90-BR016

BRAKE

DISC BRAKE PADS

The disc brake pad comes in two kinds according to materials; AK S405 (asbestos) and AK NS101 (Asbestos-free). The disc brake pad is used selectively depending upon its destination.
As regards the disc brake pads, both the standard disc and ventilated disc employ a brake pad having the same shape.



WFE90-BR017

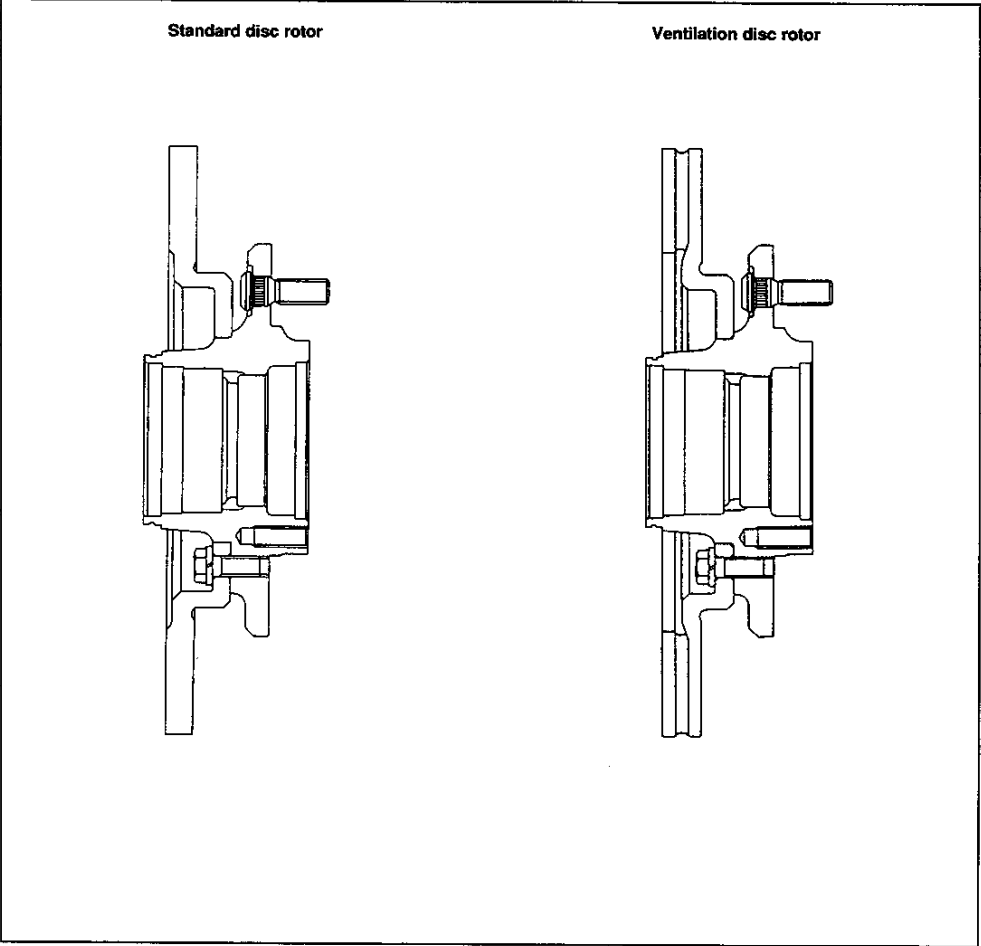
Disc brake pad specifications

Pad thickness	mm	9
Lining area	cm ²	48.6
Materials	AK NS101 (Asbestos-free)	

WFE90-BR018

DISC ROTORS

As for the disc rotor, a solid type disc rotor is standard, whereas a ventilated disc rotor having improved heat fade-resistance is optional equipment.



WFE90-BR019

Disc rotor specifications

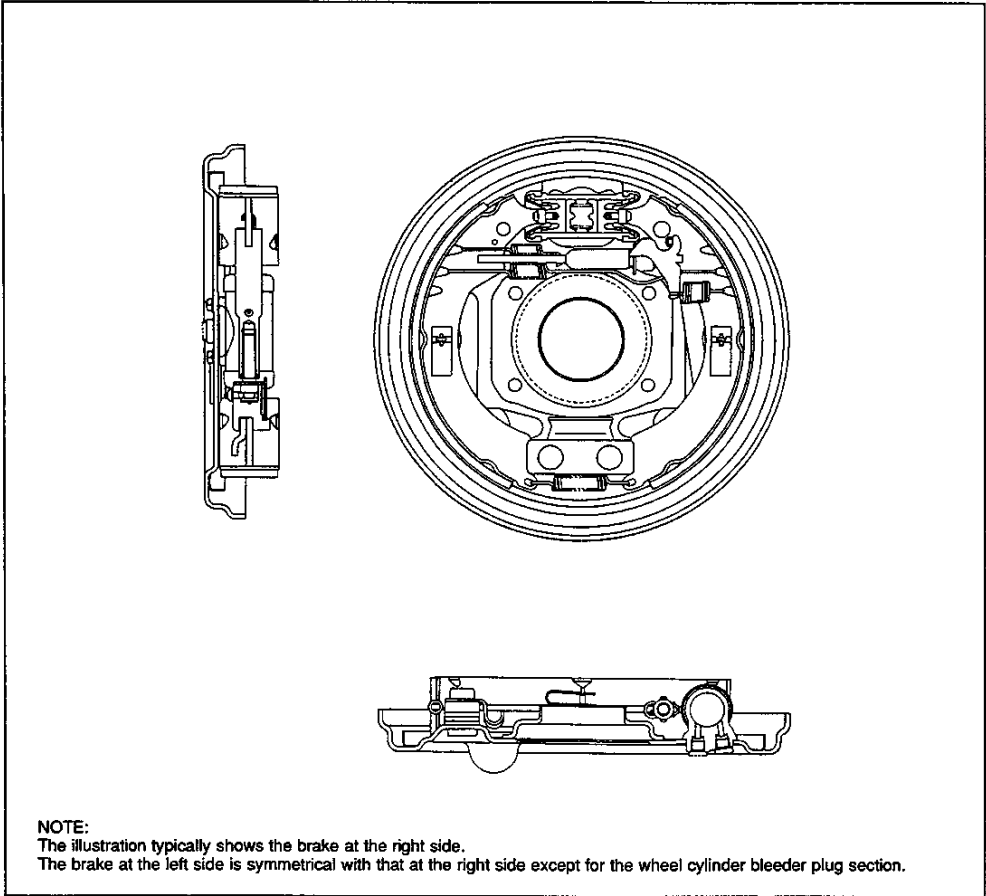
Item	Type	Standard disc rotor	Ventilation disc rotor
Disc rotor outer diameter	mm	277	277
Disc rotor thickness	mm	12.5	18.0

WFE90-BR020

BRAKE

REAR BRAKE

The rear brake is a leading and trailing type, in which the virtually same braking effectiveness can be attained both during the forward and reverse movement of the vehicle.
The parking brake is built inside the rear brake system, where the automatic adjuster of the rear brake shoe functions when the parking brake lever is actuated.



WFE90-BR021

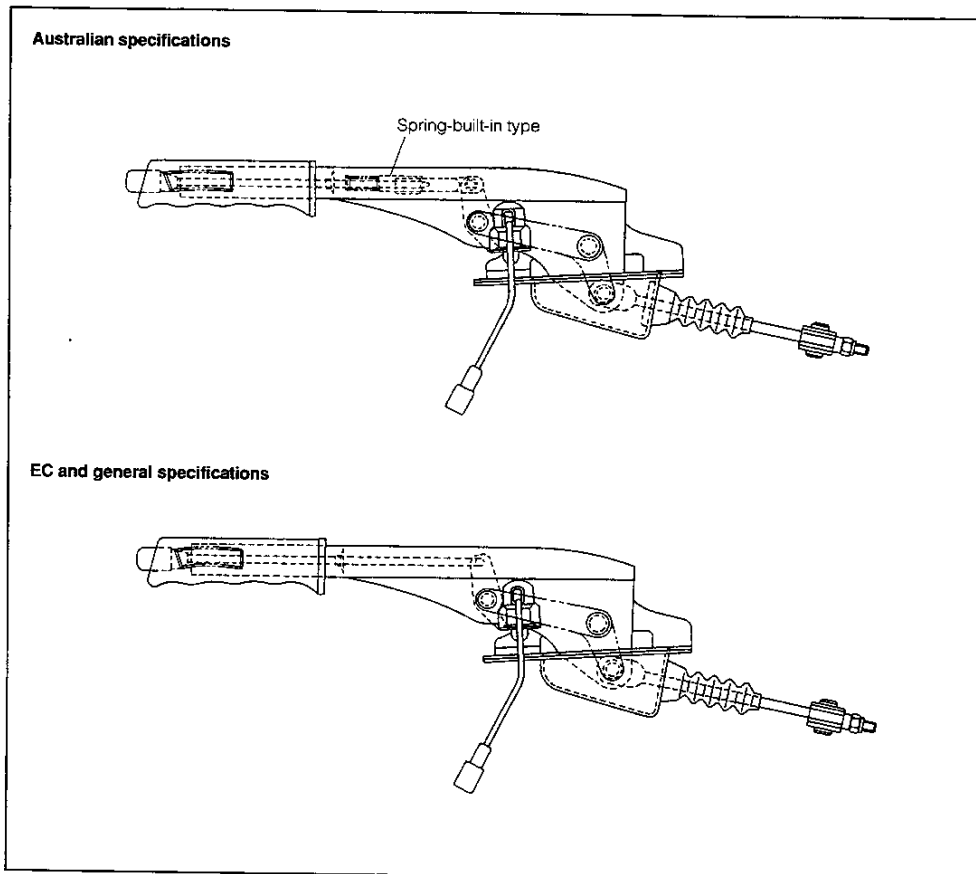
Rear brake specifications

Lining dimensions (Length x width x Thickness)	mm	266 x 44.0 x 5.0
Lining area	cm ²	117 x 2-piece x 2-wheel
Material		AK L610 (asbestos-free)
Brake drum inner diameter	mm	φ254
Wheel cylinder bore diameter	mm	φ22.22

WFE90-BR022

PARKING BRAKE

The parking brake is a mechanically-operated, rear wheel braking type. The parking brake lever is located at the center between the right and left front seats. The cable adjustment method employs a center lever type which can be adjusted from the passenger room exterior. The parking brake comes in two kinds; one for the EC and general specifications and the other for the Australian specifications.



WFE90-BR023

Parking brake specifications

Type			Mechanically-operated, wheel braking type
Braked wheel			Two rear wheels
Lining	Area	cm ²	117 × 2-piece × 2-wheel
	Material		AK L610 (asbestos-free)
	Dimensions	mm	265.9 × 44.0 × 5.0
Brake drum inner diameter			φ254

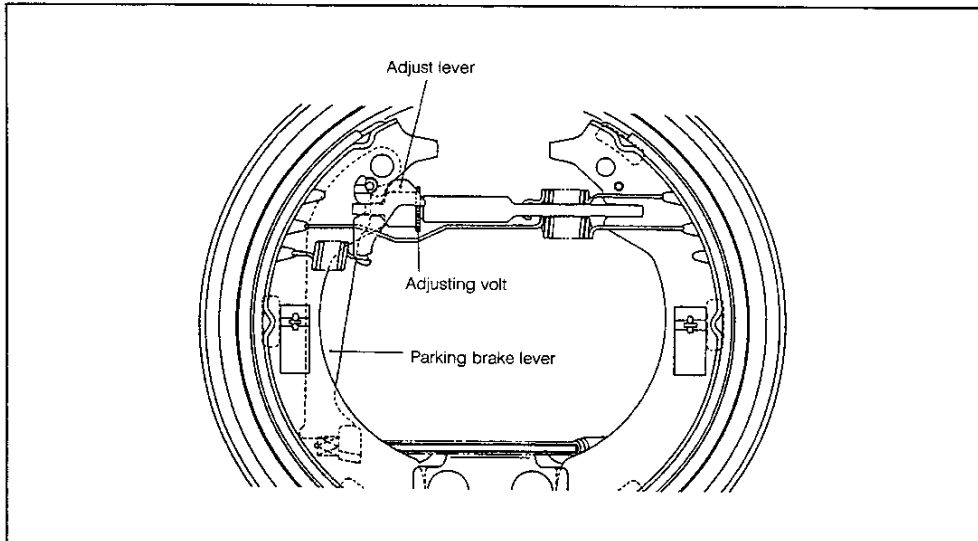
WFE90-BR024

BRAKE

Operation of automatic adjuster

The automatic rear brake shoe clearance adjuster is activated when the parking brake is operated. As shown in the figure below, the adjuster adjust lever is fixed to the parking brake lever.

This adjust lever serves to hold the adjuster teeth, thus locking it in place. It acts in such a manner as causes the adjuster teeth to advance when the parking brake is applied. If the shoe clearance is normal, the amount of shift of the adjust lever is not big enough to move one tooth of the adjuster. But if the lining is worn and the shoe clearance is bigger, the lever operating angle is big, and as a result, the amount of shift of the adjust lever is big enough to cause the adjuster to advance by one tooth. Thus normal shoe clearance is maintained.



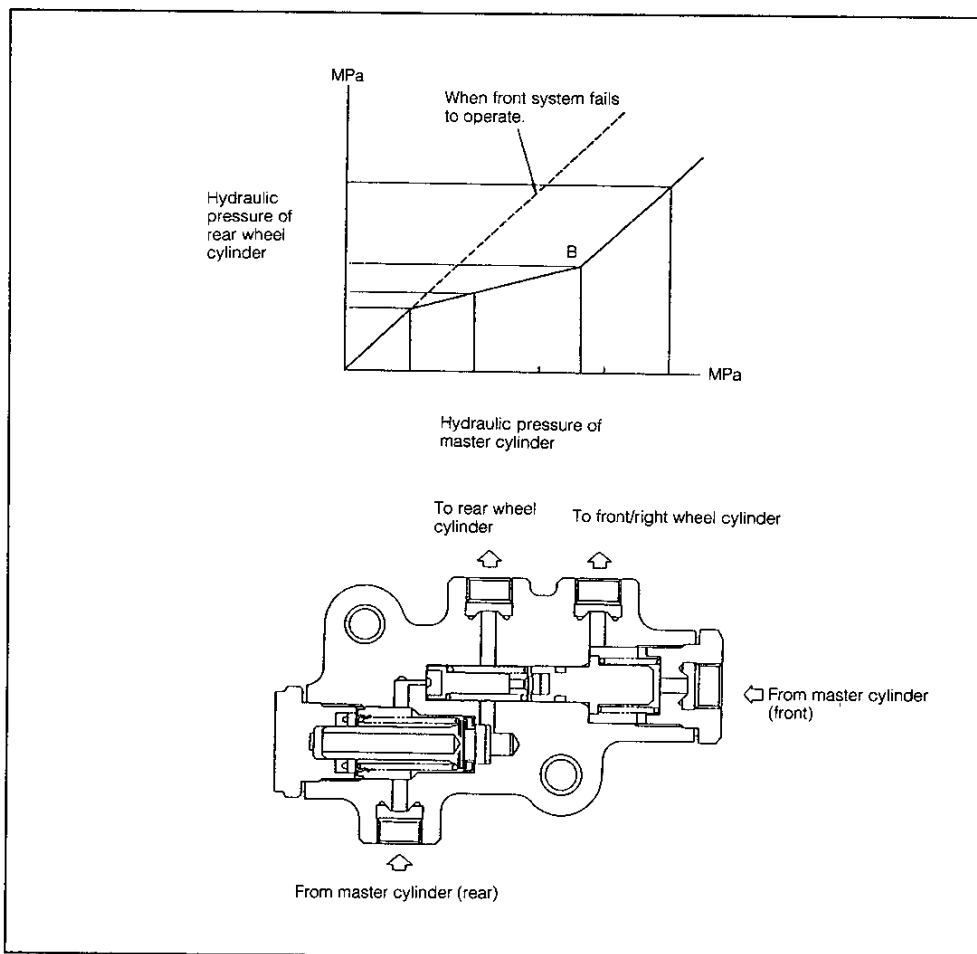
WFE90-BR025

P & B VALVE (Proportioning & By-pass Valve)

A "P & B" valve is provided in the brake line between the front and rear wheel brake systems. The purpose of the P & B valve is to assure braking stability by distributing the braking forces of the front and rear wheels at an optimum ratio. The P & B valve is provided with a mechanism whereby the hydraulic pressure of the rear wheel cylinder bypasses the proportioning valve and is applied directly to the rear wheel cylinder in the event that the front brake system is encountered with a malfunction.

The proportioning valve employs a secondary turning point type.

In addition to the normal proportioning valve functions, the secondary turning point type proportioning valve has such characteristics that the hydraulic pressure ratio for the rear wheels is increased again at a middle point (point B in the figure below) in the hydraulic pressure characteristics diagram. This increase is necessary because the braking forces become insufficient for the rear wheels due to greater rear wheel load when the vehicle is loaded fully.



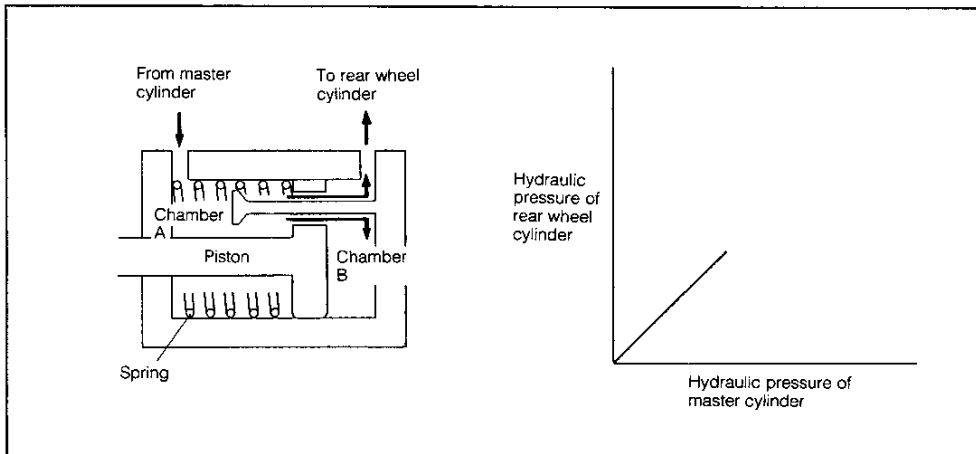
WFE90-BR026

BRAKE

DESCRIPTION OF P & B VALVE OPERATION

Operation principle of proportioning valve

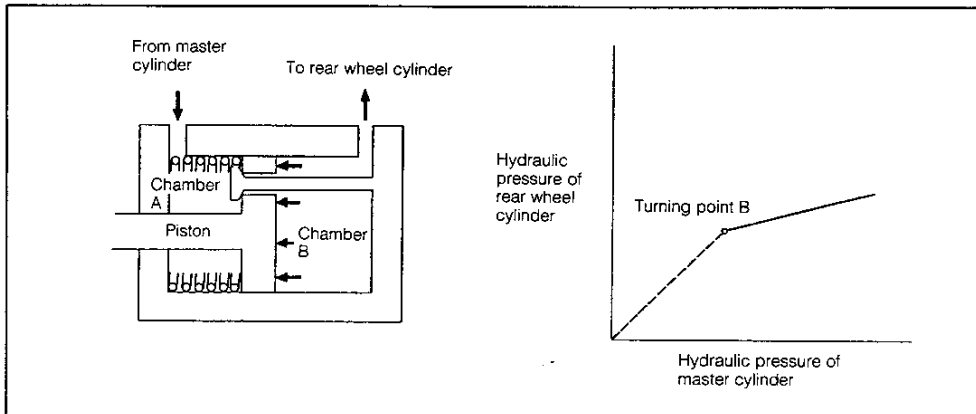
1. The hydraulic pressure from the master cylinder is applied through the chamber A to the chamber B, as shown in the figure below. The same pressure is applied to both the chambers A and B. Since the hydraulic pressure-receiving area of the chamber A is smaller than that of the chamber B, the piston moves to the left. Hence, while the piston is moving, the hydraulic pressure of the master cylinder is equal to that of the rear wheel cylinder.



WFE90-BR027

2. The piston further moves to the left, until the chamber A and the chamber B are shut off completely, thus attaining a balance in pressure. This state is accomplished at a turning point B in the figure below.

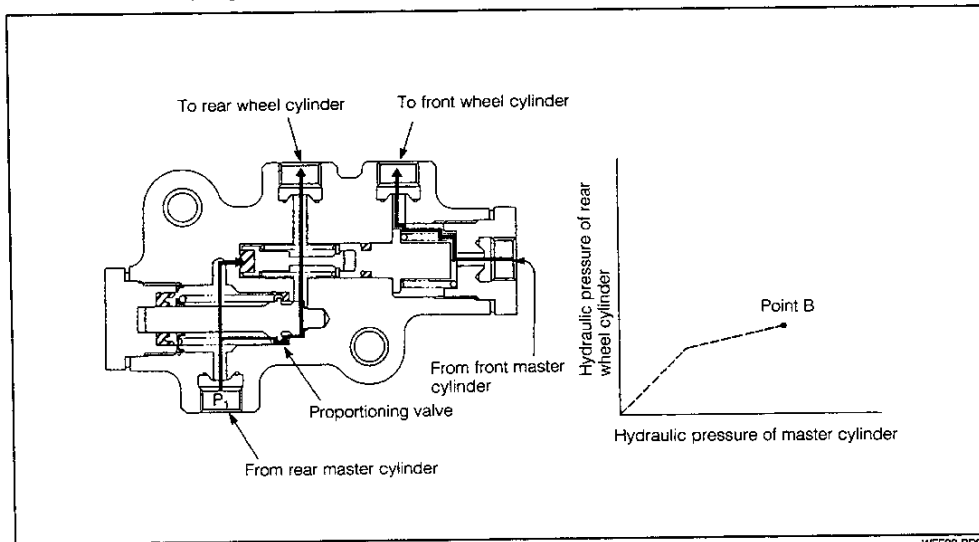
As the hydraulic pressure from the master cylinder continues to rise and the pressure in the chamber A also increases, the piston moves to the right and the valve becomes open. Then, the pressure in the chamber B increases, until the hydraulic pressure of the chamber A equals to that of the chamber B. At this point, the piston, in turn, moves to the left due to the difference in surface area between the chamber A and the chamber B. These operations are repeated, thus making it possible to produce a difference in pressure between the master cylinder and the rear wheel cylinder.



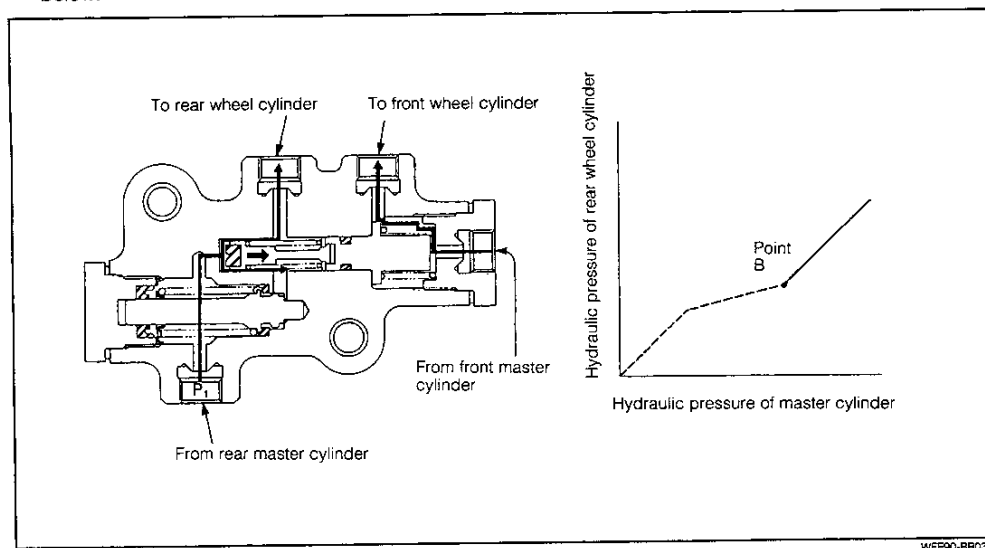
WFE90-BR028

Operation principle of secondary turning point

1. The hydraulic pressure of the rear master cylinder is reduced by the proportioning valve and is applied to the rear wheel cylinder. As the pressure P_1 shown in the figure below rises gradually, the pressure overcomes the spring tension of the by-pass valve. This takes place at a point B in the figure below.



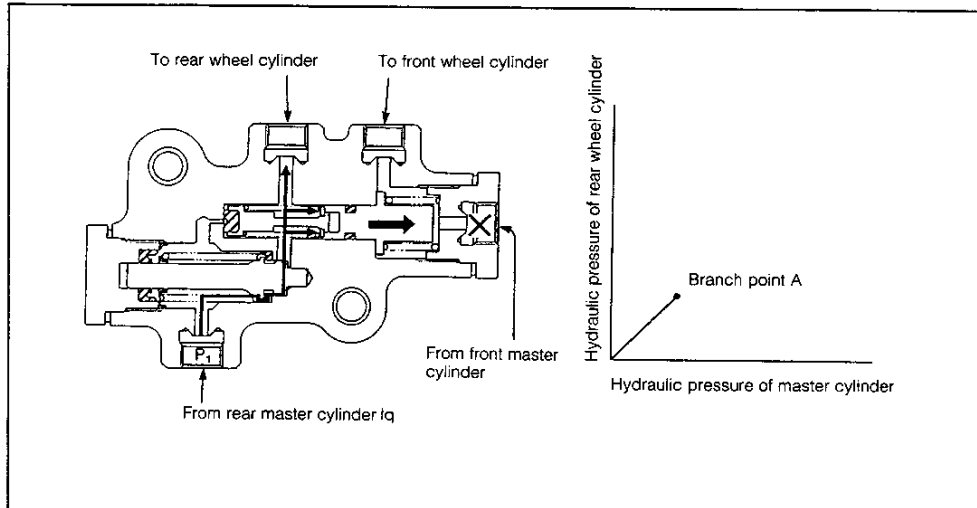
2. The hydraulic pressure of the rear master cylinder which has overcome the spring tension of the by-pass valve is applied to the rear wheel cylinders through the by-pass valve directly rather than through the proportioning valve. As a result, the hydraulic pressure again begins to increase, as shown in the figure below.



BRAKE

Operation principle of by-pass valve

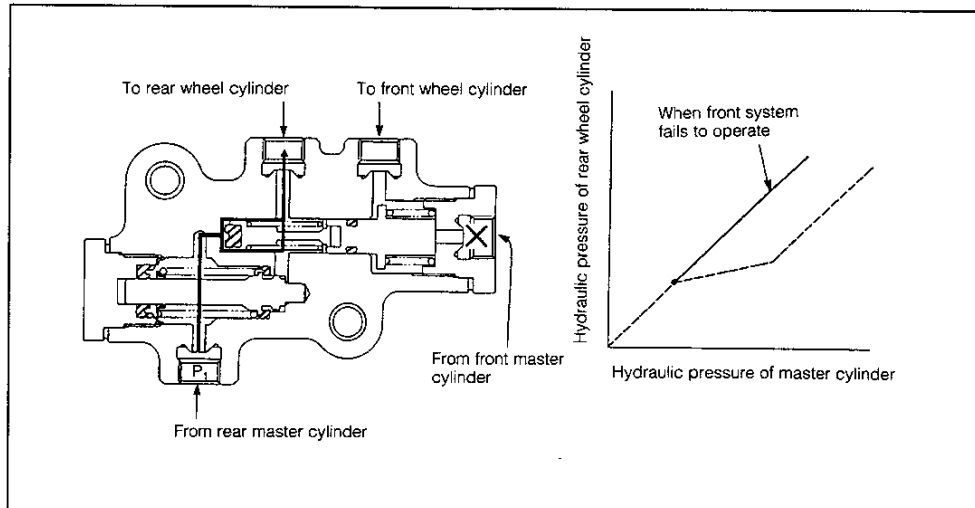
1. If the front brake system should fail to operate due to some reasons, the hydraulic pressure applied to the front wheel cylinders drops. Then, the hydraulic pressure P_1 which has been applied to the rear wheel cylinder overcomes the spring tension of the by-pass valve, thus causing the by-pass valve to start moving to the right. This operation takes place at a branch point A in the figure below.



WFE90-BR031

2. Inasmuch as the hydraulic pressure of the front wheel cylinder drops, the by-pass valve moves to the right.

This by-pass valve's movement to the right forms a by-pass circuit for the hydraulic pressure of the rear wheel cylinders. Hence, the pressure is no longer reduced by the proportioning valve and is applied directly to the rear wheel cylinders. As a result, no turning point exists, as shown in the figure below.

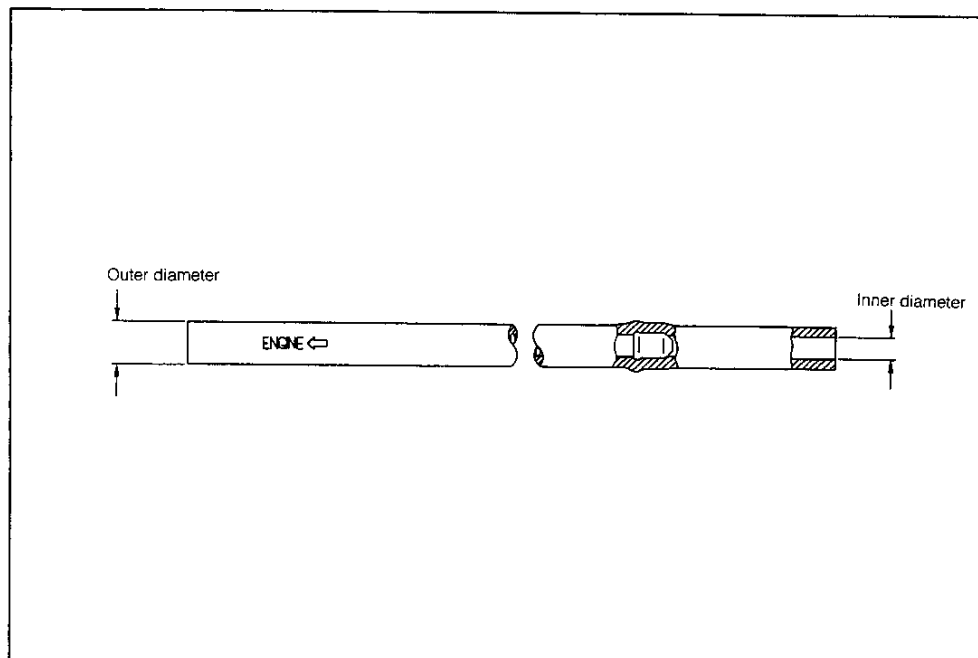


WFE90-BR032

VACUUM CHECK VALVE

The vacuum check valve is built inside the vacuum hose.

The vacuum hose bears a mark of "ENGINE ⇐", which indicates that the arrow headed direction must point toward the engine.



WFE90-BRC33

Vacuum hose specifications

Shape	EFI	RH LH	Straight tube hose Molded hose
	Carburetor	RH LH	Molded hose Molded hose
Outer diameter	mm		17.46
Inner diameter	mm		8.73

WFE90-BRC34

BRAKE

PRECAUTION

Brake piping-related items

1. Never assemble the brake tube by deforming it purposely.
2. When tightening the flare nut, torque it to the specified value, while retaining the way section or the hose union section by means of a spanner or the like.

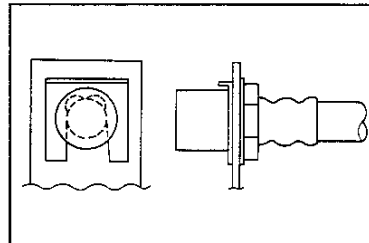
Tightening Torque: 12.7 - 17.7 N·m (1.3 - 1.8 kgf-m, 9.4 - 13.0 ft-lb)

3. Be sure to clamp bending clamps (winding clamps) in such a way that there is no displacement in relation with the brake tube.
4. Care must be exercised to ensure that clamps are installed without deforming the brake tube.
5. Be certain to install clamps in such a way that no gap is formed between the brake tube and the clamp.
6. Be very careful not to get brake fluid and/or mineral oil (e.g. grease and shock absorber oil) to the brake hoses and/or brake tubes.
If such fluid or lubricant, etc. should get to these parts, be sure to wipe it off immediately.
7. Make sure that the flexible hoses are not assembled in a twisted state.
However, if the hexagonal section of the flexible hose is not aligned with the groove of the bracket, it is permissible to twist the flexible hose within the allowable angle.

Allowable Angle: Not to Exceed 30 Degrees

WFE90-BR035

8. As regards the installation of clips, positively insert the clip from the direction as indicated in the right figure, until the protruded section provided at the central part of the clip contacts the hose union, as indicated in the right figure.
9. Do not reuse the clips.
10. After completion of brake air bleeding, depress the brake pedal at a force of 25 kgf and hold the pedal in a depressed state. Make sure that the brake system exhibits no fluid leakage.
11. Be very careful not to scratch the brake hose and/or brake tube surfaces.



WFE90-BR036

Parking brake-related items

1. Special caution must be paid so as not to scratch the cable.
2. Make sure not to deform the cable forcibly.
3. Be very careful not to damage the boot section.
4. Do not remove the boot.
5. Ensure that the boot is not detached.
6. As regards the parking brake switch, ensure that the switch functions positively at the first notch. Also, ensure that the switch makes correct contact with the parking brake lever attaching bolt when the parking brake lever is returned to the original position.
7. As for the section where the parking brake cables are crossed with each other, make sure that there exists a gap of at least 20 mm between the cables under the unloaded state of the vehicle.

WFE90-BR037

BRAKE SYSTEM TROUBLE SHOOTING

Symptom	Possible causes	Checking points
Brake juddering	Runout of front disc rotor Rear brake drum out-of round	Check disc rotor for runout. Check rear brake drum.
Improper height of brake pedal	Brake pedal improperly installed or adjusted	Check installation height of brake pedal.
Abnormal noise	Brake pedal emitting abnormal noise Disc pad improperly installed Brake shoe improperly installed Disc rotor bearing damaged or improperly lubricated Dust cover distortion	Check brake pedal for proper lubrication. Check disc pad. Check brake shoe. Check disc rotor bearing. Check dust cover.
Car pulls to one side on application of brakes.	Faulty disc pad or brake shoe Disc pad and brake shoe contaminated by lubricant, etc. Attachment curvature of parking brake cable too sharp	Check pad or shoe. Check pad or shoe. Check parking brake cable.
Low or spongy brake pedal	Air trapped in brake line	Perform air bleeding operation.
Brake will not work effectively.	Brake fluid leaky Brake vacuum line leaky	Check brake tube, etc. Check brake vacuum line.

WFE90-BR038

CHECK OF BRAKE SYSTEM

1. Check of brake pedal height

Measure the distance between the center of the pedal applying surface and the dash panel surface which is in parallel to the brake pedal applying center surface. Ensure that the measured value complies with the specifications. Also, ensure that the center of the brake pedal surface is located higher than the center of the accelerator pedal surface by 40 ± 6 mm in the case of the R.H.D. vehicle; 47 ± 6 mm in the case of the L.H.D. vehicle.

Specified Brake Pedal Height: 216 ± 5 mm

If not, adjust the brake pedal height. (See page BR-26.)

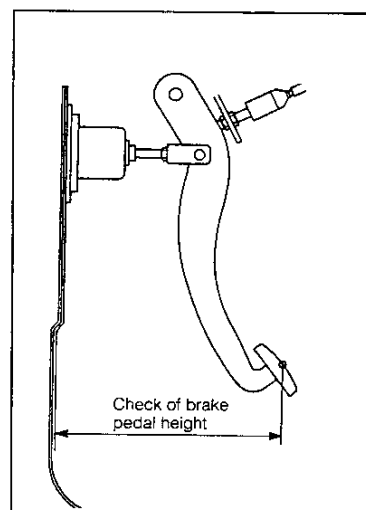
2. Check of brake pedal free travel

(1) After stopping the engine, depress the brake pedal firmly four or five times so that no vacuum may remain in the brake booster.

(2) Measure the brake pedal free travel by pushing the brake pedal lightly with fingers. Ensure that the free travel is with the specifications.

Specified Value: 1 - 3 mm

If not, adjust the brake pedal free travel.
(See page BR-26.)



WFE90-BR039

BRAKE

3. Check of brake pedal reserve travel

- (1) With the engine running at the idling speed and with the parking brake lever released, apply the specified load to the brake pedal. Measure the distance between the center of the brake pedal applying surface and the lower end of the dash panel. Ensure that the distance complies with the specifications.

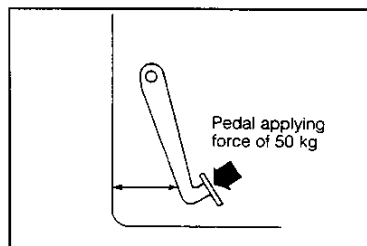
Specified Load: 50 kgf

Specified Value: 80 mm or more

If the measured value is lower than the specified value, check the air bleeding condition and/or check and repair the brake automatic adjustment system.

- (2) When the brake pedal is held under the specified load in (1), ensure that the height of the brake pedal applying surface remains unchanged.

If the brake pedal applying surface drops, check the brake fluid for leakage and/or repair the brake fluid leakage, as required. Moreover, perform the brake master cylinder overhauling, as required.



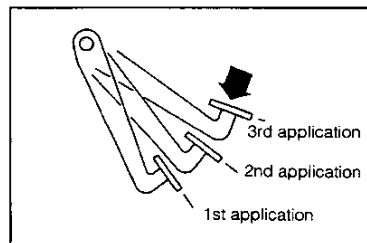
WFE90-BRD40

4. Check of brake booster

- (1) Check of brake booster air-tight performance

- ① Start the engine. After allowing the brake booster to hold negative pressure, stop the engine.

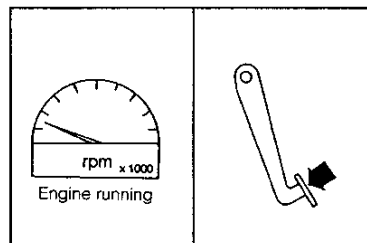
- ② Depress the brake pedal several times, applying force used during normal brake applications and allowing at least five seconds between each application. Ensure that the position of the brake pedal rises progressively at the second and third applications.



WFE90-BRD41

- (2) Check of brake booster air-tight performance under loaded condition

With the engine running, depress the brake pedal. While maintaining this condition, stop the engine. Ensure that no change in the pedal height occurs in about 30 seconds.

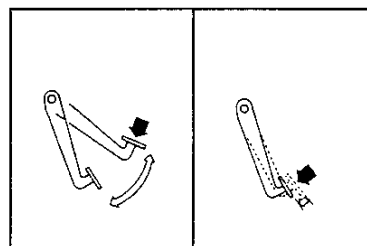


WFE90-BRD42

- (3) Check of booster operation

- ① With the engine stopped, depress the brake pedal several times, until the brake pedal height will not vary at each application.

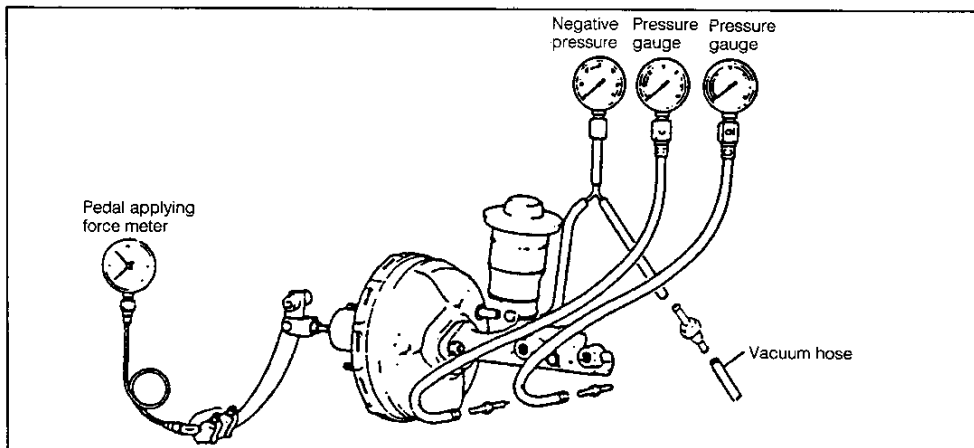
- ② With the engine stopped, depress the brake pedal. While maintaining the same applying force, start the engine. If the brake pedal moves in slightly, it indicates that the booster operates satisfactory.



WFE90-BRD43

5. Check employing portable brake booster tester

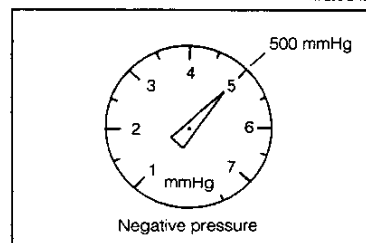
(1) Connect the portable brake booster tester, as indicated in the figure. Perform air bleeding.



WFE90-BR044

(2) Check of booster air-tight performance

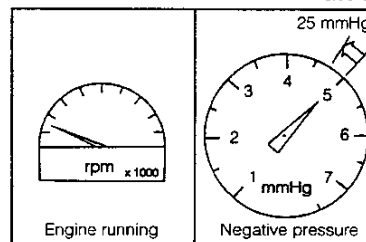
- ① Start the engine. Apply a negative pressure of 500 mmHg to the brake booster.
- ② Stop the engine. Ensure that no negative pressure drops for 15 seconds after the engine has stopped. If not, check the check valve and brake booster.



WFE90-BR045

(3) Check of booster air-tight performance under loaded condition

- ① Start the engine.
- ② Depress the brake pedal with a force of 20 kgf.
- ③ Apply a negative pressure of 500 mmHg to the booster.
- ④ Stop the engine.
- ⑤ Ensure that the negative pressure drop does not exceed 25 mmHg after the engine has stopped. If not, repair the brake booster.



WFE90-BR046

(4) Check of brake hydraulic pressure

- ① With the engine stopped, depress the brake pedal several times so that no negative pressure may not apply to the brake booster.
- ② Ensure that the hydraulic pressure is obtained in accordance with the pedal applying force, as indicated in the right table. If not, check the air bleeding condition.

Pedal applying force kgf	Hydraulic pressure kgf/cm ²
10	0 - 6
20	8 - 18
30	19 - 29

WFE90-BR047

BRAKE

(5) Check of booster operation

- ① Start the engine.
- ② Set the booster negative pressure to 500 mmHg. Ensure that the hydraulic pressure is obtained in accordance with the pedal applying force. If not, repair the brake booster.

Pedal applying force kgf	Hydraulic pressure kgf/cm ²
5	6 - 14
10	24 - 34
20	63 - 73
30	74 - 84

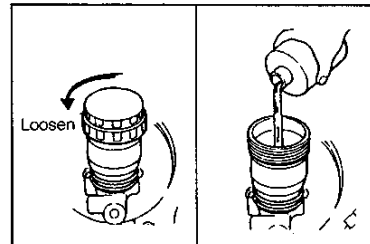
WFE90-BR048

Air bleeding of brake system

1. Filling brake fluid

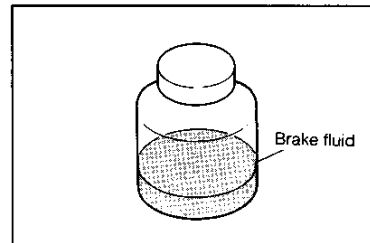
Fill the brake reservoir tank with the specified brake fluid to the full level. Maintain the full level at all times during the brake air bleeding.

Specified Brake Fluid: DOT 3 or SAEJ 1703



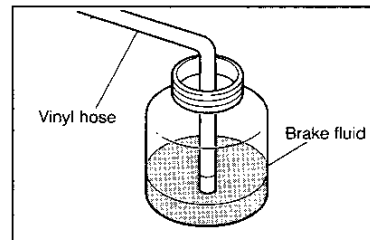
WFE90-BR049

2. Prepare an adequate container for the air bleeding. Fill a small amount of brake fluid in the container.



WFE90-BR050

3. Detach the air bleeder cap connect one end of a suitable vinyl hose to the air bleeder plug. Insert the other end of the vinyl hose into the prepared container in such a way that the vinyl hose may be submerged in the brake fluid in the container. Start this air bleeding operation at the brake which is located at the furthestmost point from the master cylinder.

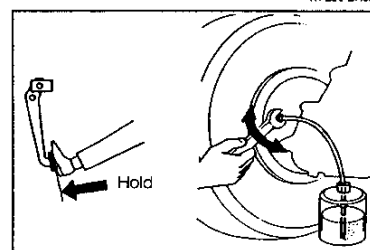


WFE90-BR051

4. Air bleeding

This operation should be performed by two persons.

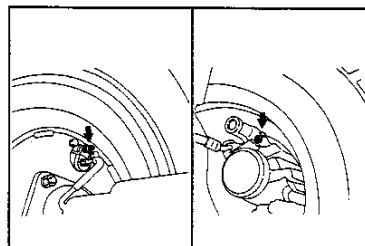
- (1) One person depresses the brake pedal several times and hold it in a depressed state.
- (2) The other person loosens the air bleeder plug 1/3 through 1/2 turn to bleed the air. Tighten the plug again.
- (3) Repeat the steps (1) and (2), until no air or bubble comes from the air bleeder plug.
- (4) Start the engine. Repeat the steps (1) and (2), until no air or bubble comes from the air bleeder plug. (Rear-ABS equipped vehicle only)



WFE90-BR052

BRAKE

5. Tighten the air bleeder plug to the specified torque.
Tightening Torque: 8.8 - 12.7 N·m
(0.9 - 1.3 kgf·m, 6.5 - 9.4 ft·lb)



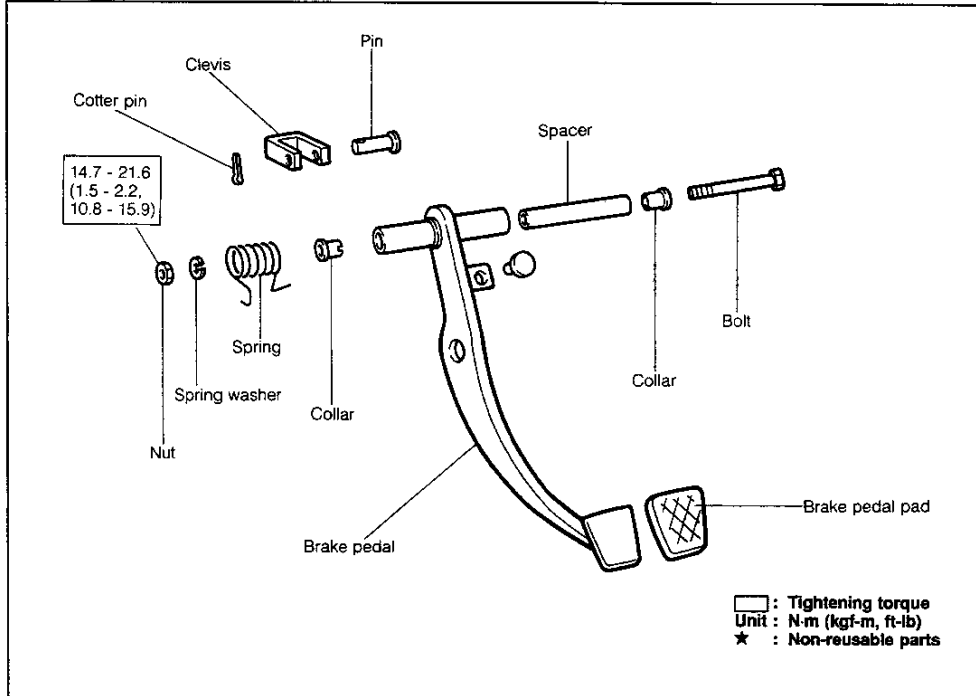
WFE90-BR053

6. Install the bleeder plug cap to the bleeder plug.
7. Perform air bleeding for the other brakes in turn, starting from the step (3).
8. Perform the brake pedal reserve travel check.
(See page BR-22.)

WFE90-BR054

BRAKE

BRAKE PEDAL COMPONENTS



WF890-BR055

ADJUSTMENT OF BRAKE PEDAL HEIGHT

1. Disconnect the connector of the stop lamp switch.
2. Loosen the lock nut (3) of the stop lamp switch.
3. Back off the stop lamp switch.

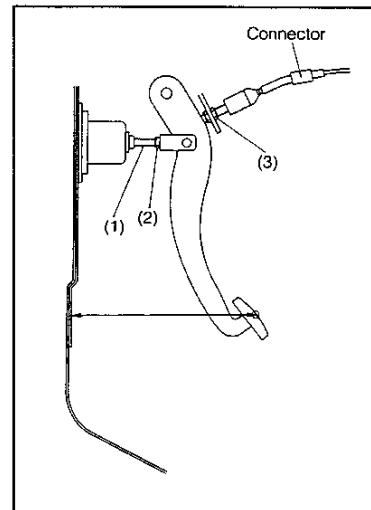
NOTE:

- Be very careful not to twist the cord by turning it together with the switch.

4. Loosen the lock nut of the clevis (2).
5. Turn the push rod (1) to adjust the pedal height to the specified height.

Specified Height: 216 ± 5 mm

The measurement should be made between the center of the brake pedal applying surface and the dash panel surface which is in parallel to the brake pedal applying center surface.

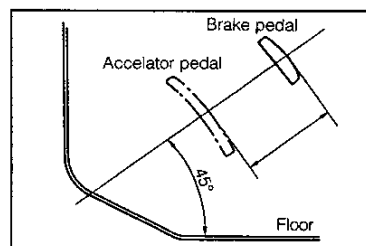


WF890-BR056

BRAKE

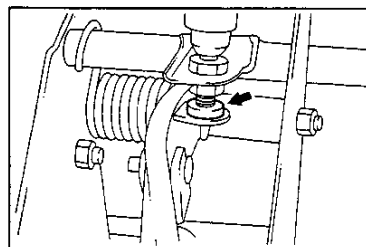
NOTE:

- Adjust the brake pedal height so that the difference in height between the accelerator pedal and the brake pedal may become.
Specified Value: RHD 40 ± 6 mm
LHD 47 ± 6 mm



WF090-BR057

- Screw in the stop lamp switch, until the lower end of the threaded portion is brought into contact with the brake pedal cushion.
- Tighten the stop lamp switch lock nut.
Tightening Torque: $17.7 - 29.4$ N·m
($1.8 - 3.0$ kgf-m, $13.0 - 21.7$ ft-lb)



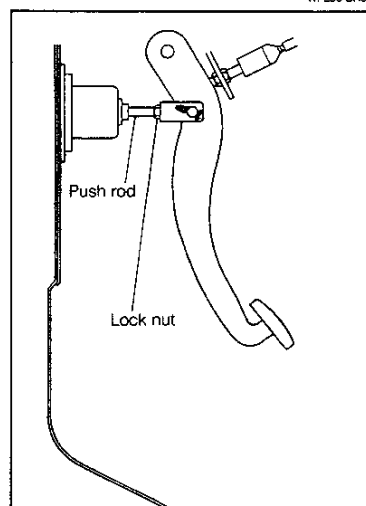
WF090-BR058

- Turn the push rod, until the brake pedal free travel becomes the specified value.
Specified Value: $1 - 3$ mm

NOTE:

- The free travel represents a mechanical play observed before the brake pedal pushes the push rod of the brake booster.

- Tighten the clevis lock nut.
Tightening Torque: 12.7 ± 2.6 N·m
(1.3 ± 0.2 kgf-m, 9.4 ± 1.9 ft-lb)



WF090-BR059

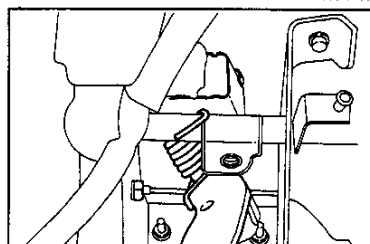
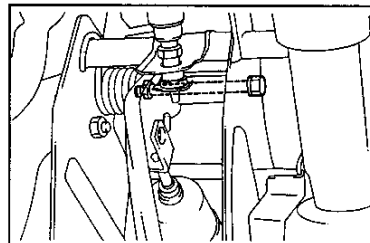
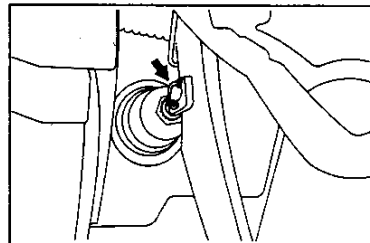
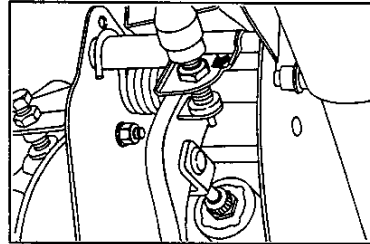
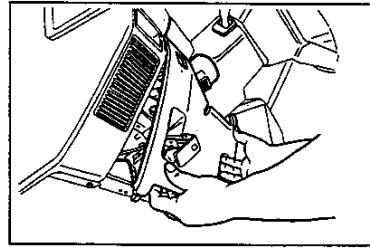
- Check the brake pedal height. (See the step 5.)
If the height fails to conform to the specifications, repeat the operation from the step 2 onward.
- Reconnect the stop lamp switch connector.
- Depress the brake pedal. Ensure that the stop lamp goes on.
If not, check and repair the brake lamp system.
(See the Body Electrical Section.)

WF090-BR060

BRAKE

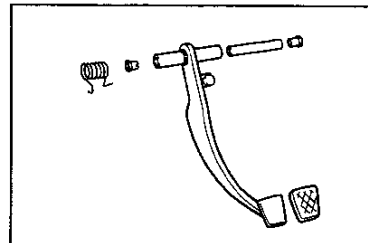
REMOVAL

1. Remove the instrument finish lower panel.
(See the Body Section.)
2. Disconnect the connector of the stop lamp switch.
3. Remove the stop lamp switch by loosening its lock nut.
4. Pull out the clevis pin by removing its cotter pin.
5. Remove the brake pedal set nut and pull out the set bolt.
NOTE:
 - Before pulling out the set bolt, be sure to align the end surface across the two flat sections of the set bolt with the clutch pedal end surface so that they may not interfere with each other.
6. Remove the return spring from the pedal bracket while changing the brake pedal angle.



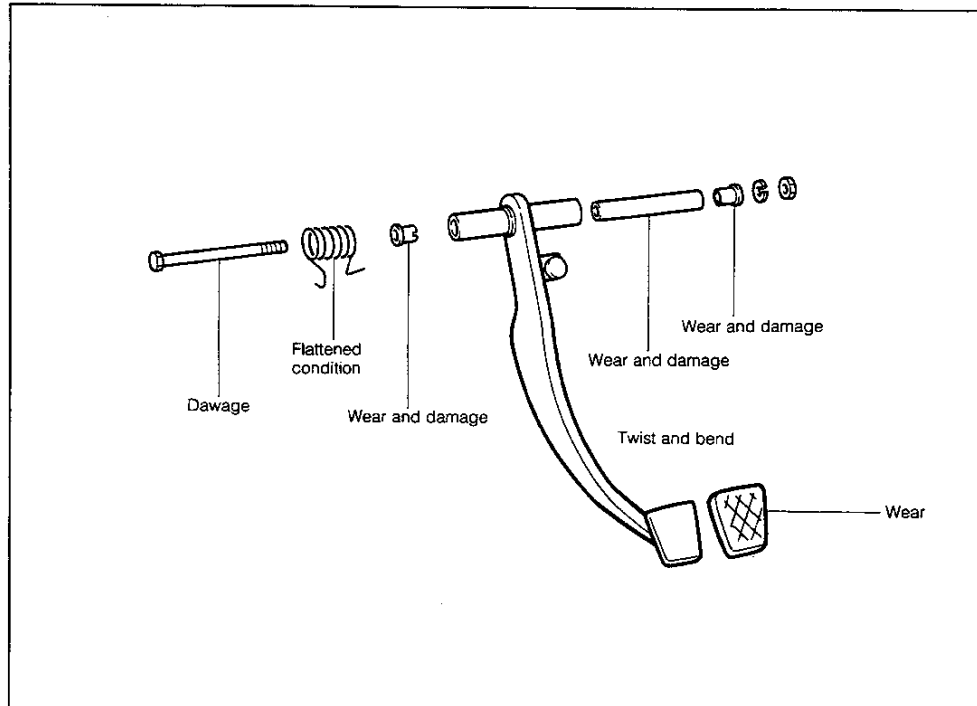
BRAKE

7. Remove the spring, bushes, spacer, cushion and pedal pad from the brake pedal.



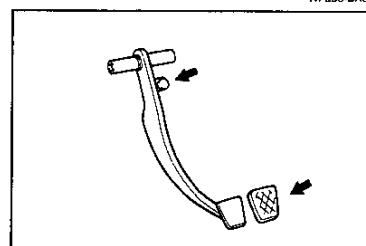
INSPECTION

Inspect the following parts and replace any defective part.



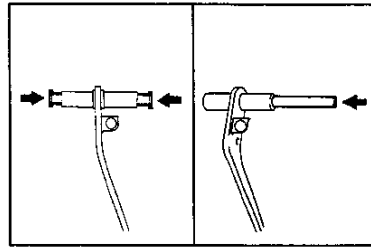
INSTALLATION

1. Install the pedal pad and cushion to the brake pedal.



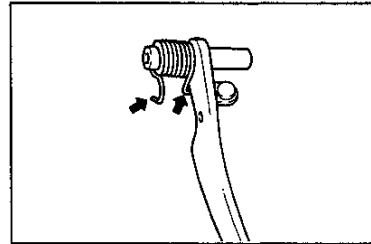
BRAKE

2. Insert the bushes into the brake pedal.
3. Apply a thin film of MP grease to the spacer. Insert the spacer into the bush.



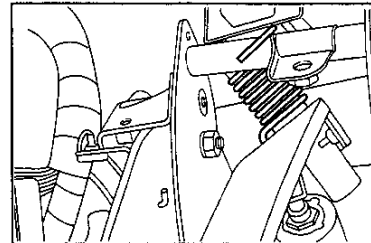
WFE90-BR069

4. Apply a thin film of MP grease to the supporting section of the return spring. Install the return spring to the brake pedal.



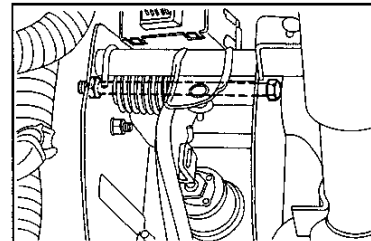
WFE90-BR070

5. Hook the return spring to the pedal bracket.



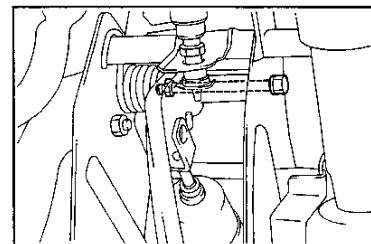
WFE90-BR071

6. With the brake pedal aligned with the attaching hole, insert the attaching bolt.



WFE90-BR072

7. Tighten the attaching nut to the installation specified torque.
Tightening Torque: 14.7 - 21.6 N·m
(1.5 - 2.2 kgf-m, 10.8 - 15.9 ft-lb)



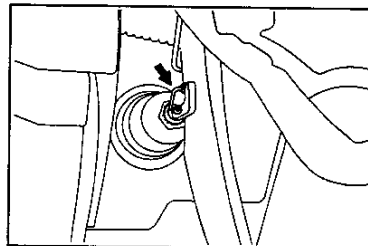
WFE90-BR073

BRAKE

8. Connect the clevis to the brake pedal by means of the clevis pin. Install the cotter pin and bend its legs.

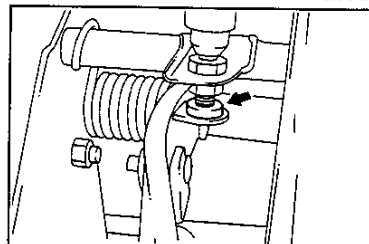
NOTE:

- Be sure to bend the cotter pin beyond 90 degrees.



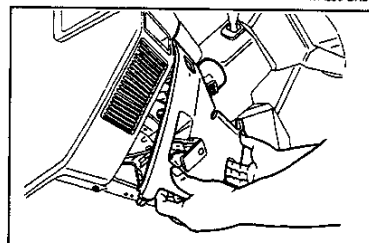
WFE90-BR074

9. Install the stop lamp switch. Adjust the brake pedal height. (See page BR-21.)
10. Operate the brake pedal and check to see if any trouble exists.



WFE90-BR075

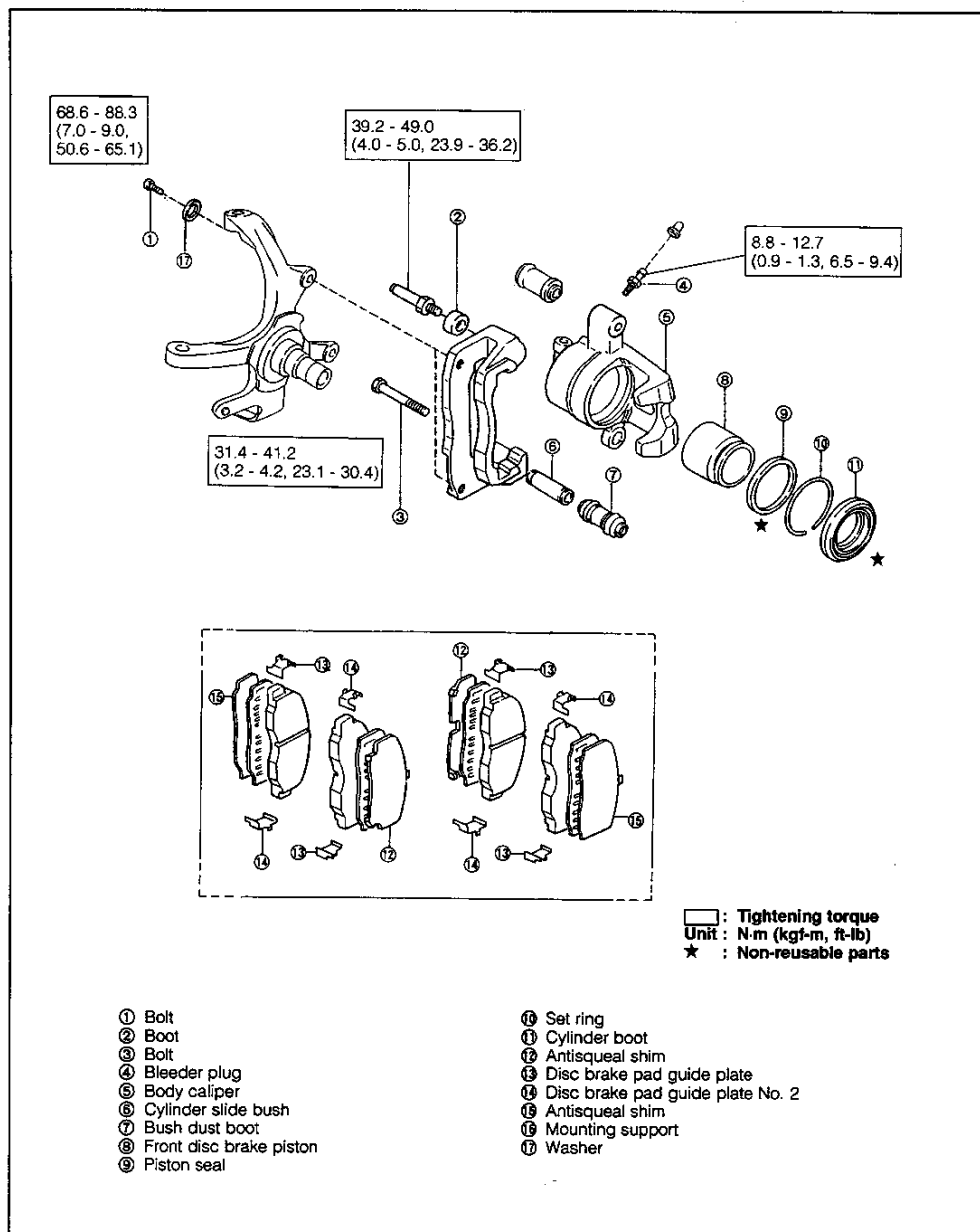
11. Install the instrument finish lower panel. (See the Body Section.)



WFE90-BR076

BRAKE

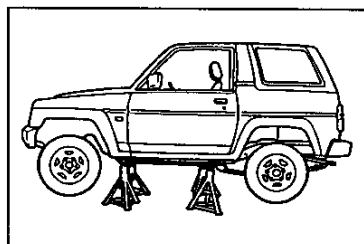
FRONT BRAKE COMPONENTS



WFE90-BP077

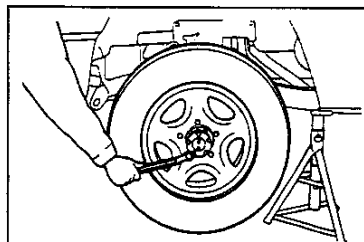
INSPECTION OF BRAKE PAD AND DISC

1. Jack up the vehicle and support it with rigid racks.
(As for the jack-up point and rigid rack supporting position, see GI section.)



WFE90-BR078

2. Remove the front wheel.

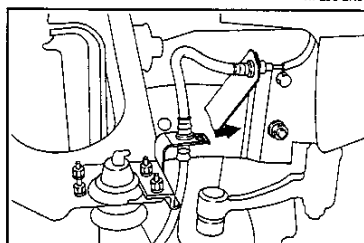


WFE90-BR079

3. Detach the clamp from the brake hose clamp of the upper arm.

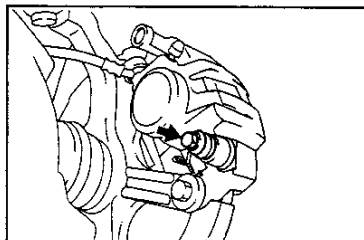
NOTE:

- Do not reuse the clip.



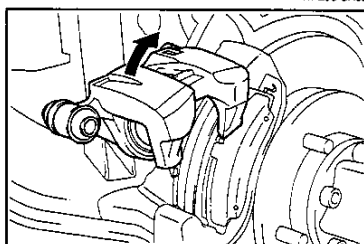
WFE90-BR080

4. Remove the caliper body attaching bolt.



WFE90-BR081

5. Lift the caliper body.



WFE90-BR082

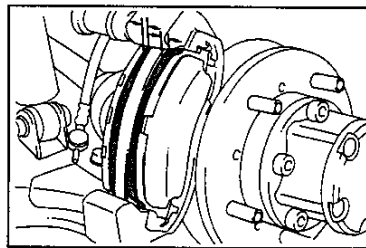
BRAKE

6. Measure the brake pad thickness.

New Part: 9 mm

Minimum Limit: 1.5 mm

If the measure value is lower than the minimum limit, replace the brake pad.

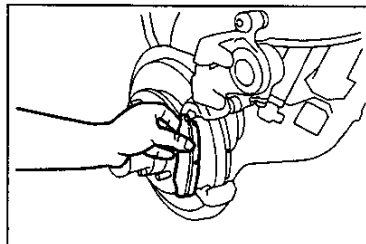


7. Inspection of brake pad

(1) Remove the brake pad.

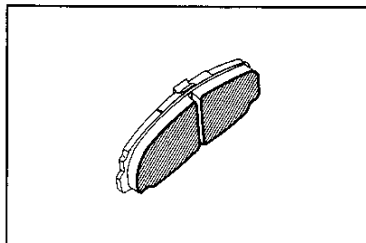
NOTE:

- Be very careful not to disengage the disc brake pad guide plate during this operation.



(2) Inspect the brake pad surface for burning.

If the brake pad exhibits burning, replace the brake pad.

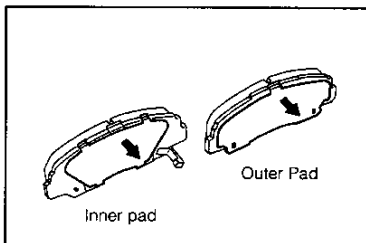


8. Replacement of brake pad

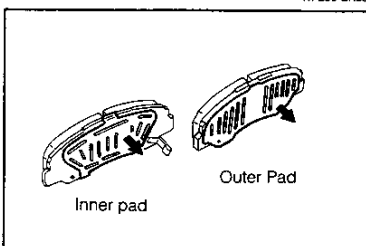
NOTE:

- When replacing the brake pad be sure to replace the pads inside and outside for both the right and left sides as a set. This replacement is required so as to prevent the vehicle from pulling to one side on application of the brakes.

(1) Remove the antisqueal shims No.3 and No.4 from the brake pad.

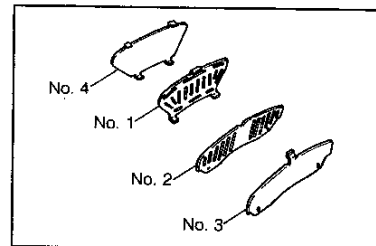


(2) Remove the antisqueal shims No.1 and No.2 from the brake pad.

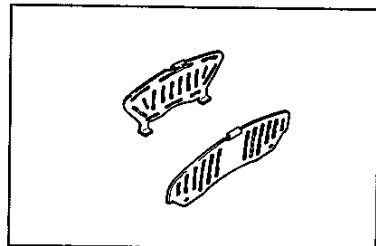


BRAKE

- (3) Clean the antisqueal shims No.1, No.2, No.3 and No.4. Inspect them for damage. Replace any shim which exhibits damage.



- (4) Apply anti-squeal grease to the both side of antisqueal shims No.1 and No.2.

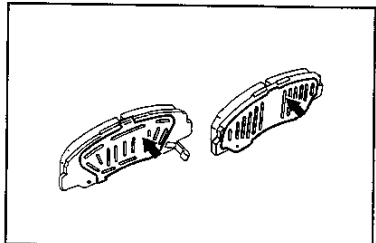


- (5) Install the antisqueal shims No.1 and No.2 to a new brake pad.

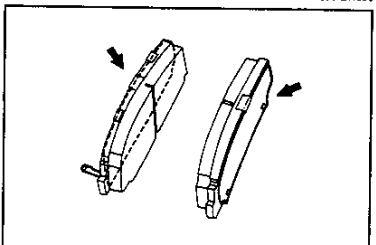
- (6) Apply anti-squeal grease into the slit of the antisqueal shim.

Filling Amount: Antisqual shim No. 1 0.8 - 1.3 grams

Filling Amount: Antisqual shim No. 2 0.6 - 1.1 grams



- (7) Install the antisqueal shims No.3 and No.4 to the brake pad.



9. Inspection of brake disc

NOTE:

- Never allow any oil to get to the disc and/or pad surface.

WFE90-BR092

BRAKE

- (1) Ensure that the disc surface exhibits no damage, such as abnormal wear and cracks.
If any damage exists on the disc surface, replace the disc. (See the front axle & suspension system.)

- (2) Measure the disc thickness. Ensure that the measured value is above the minimum limit.

UNIT: mm

	Standard	Ventilation
New parts thickness	12.5	18.0
Minimum limit thickness	11.5	17.0

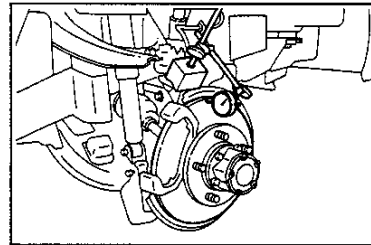
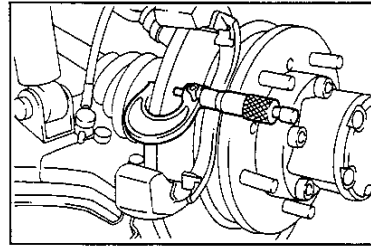
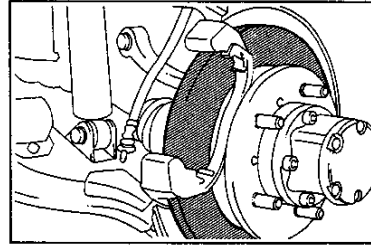
**Difference in disc thickness
on the same circumference: Not to exceed 0.015 mm**

If the measured value is less than the minimum limit,
replace the disc.
(See the front axle & suspension system.)

- (3) Ensure that the runout of the brake disc is within the allowable limit.
Allowable Runout Limit: 0.15 mm

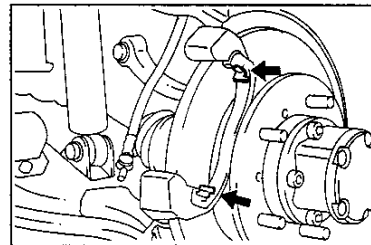
NOTE:

- Measuring point should be point 10 mm inward from outer periphery of rotor.



10. Inspection of disc brake pad guide

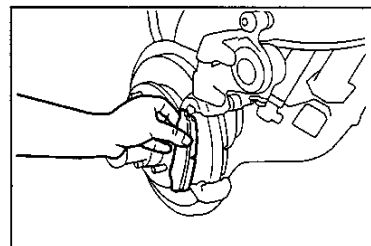
- (1) Ensure that no damage exists on the disc brake pad guide.
If any damage is present, replace the disc brake pad guides.



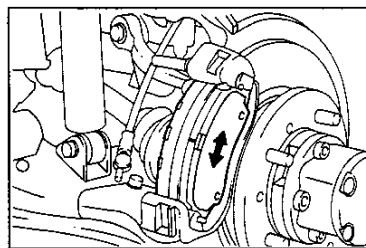
- (2) Install the pad to the mounting support.

NOTE:

- The pad equipped with the warner should come at the inside of the vehicle.
- Never allow any oil to get to the pad.



- (3) Turn the pad in the rotating direction to ensure that no excessive looseness exists.
If any excessive looseness exists, replace the disc brake pad guides.



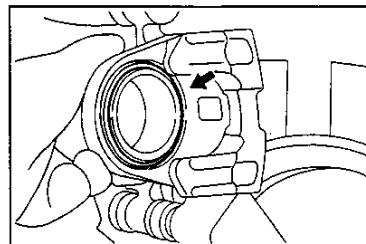
WFE90-BR086

11. Installation of caliper

- (1) Inspect the caliper piston for brake fluid leakage.

NOTE:

- If fluid leakage is present, repair the fluid leakage.

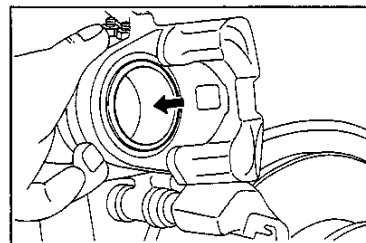


WFE90-BR099

- (2) Push the caliper piston to the cylinder side.

NOTE:

- Prior to this operation, drain the brake oil, as required, so that no brake oil overflows from the brake reservoir tank during this operation.

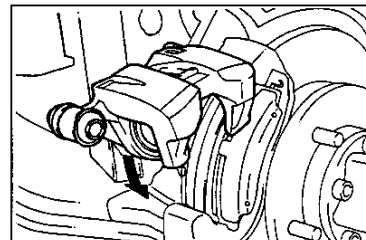


WFE90-BR100

- (3) Install the caliper on the brake pad.

NOTE:

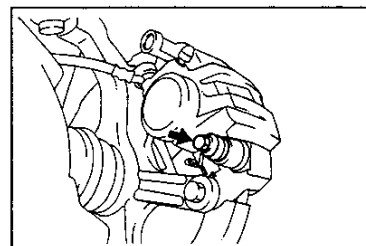
- Care must be exercised not to bring the caliper into contact with the antisqueal shims during this operation.



WFE90-BR101

- (4) Install the caliper attaching bolt and tighten it to the specified torque.

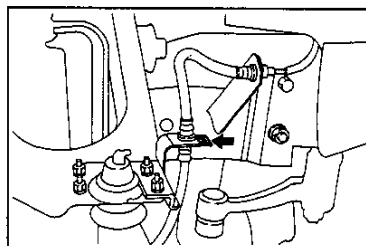
Tightening Torque: 31.4 - 41.2 N·m
(3.2 - 4.2 kgf-m, 23.1 - 30.4 ft-lb)



WFE90-BR102

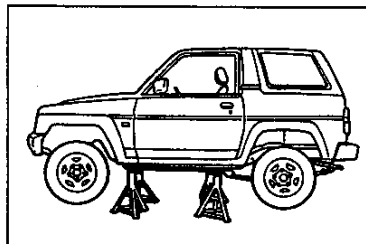
BRAKE

12. Connect the brake hose to the upper arm bracket. Install the new clip.
13. Perform brake tests on a brake tester.

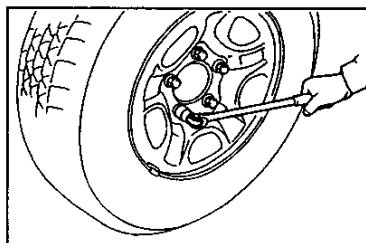


REMOVAL OF BRAKE CALIPER

1. Jack up the vehicle and support it with safety stands. (As for the jacking-up points and supporting points for the safety stands, see page GI section.)



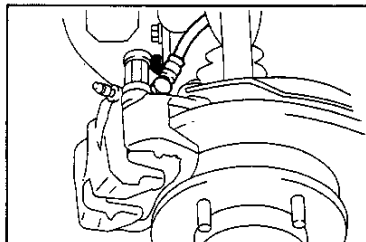
2. Remove the front wheel. (See page FS-27.)
3. Drain the brake fluid of the caliper from the air bleeder plug.



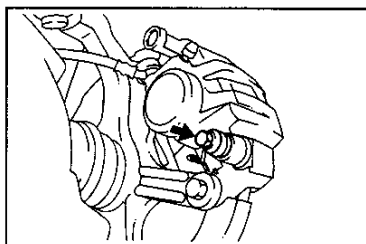
4. Disconnect the brake hose from the caliper.
NOTE:
 - Since the brake fluid flows out, receive the brake fluid with an adequate container.

CAUTION:

- Never reuse the removed gaskets.

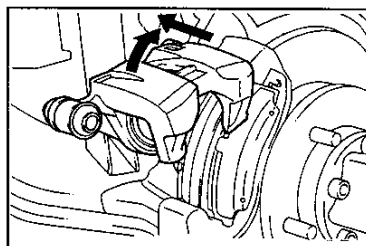


5. Remove the brake caliper attaching bolts.



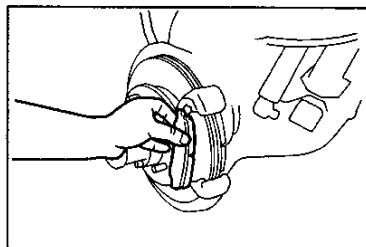
BRAKE

6. Remove the brake caliper from the mounting support.



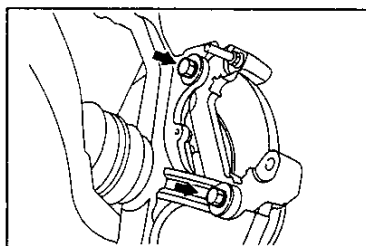
WFE90-BR108

7. Remove the brake pads.



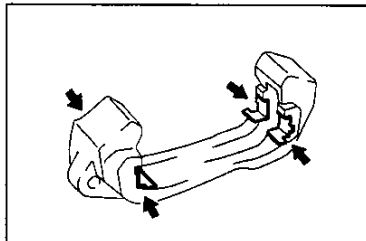
WFE90-BR109

8. Remove the brake mounting support.



WFE90-BR110

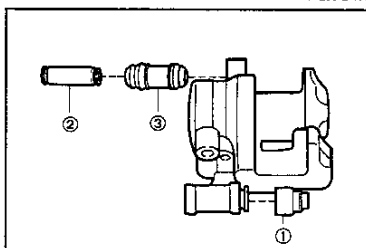
9. Remove the disc brake pad guide plates from the brake mounting support.



WFE90-BR111

DISASSEMBLY OF CALIPER

1. Remove the rubber boot from the caliper.
2. Pull out the cylinder slide bush.
3. Remove the bush dust boot.



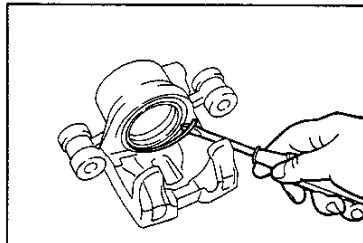
WFE90-BR112

BRAKE

4. Remove the boot set ring.

NOTE:

- Never reuse the removed set ring.

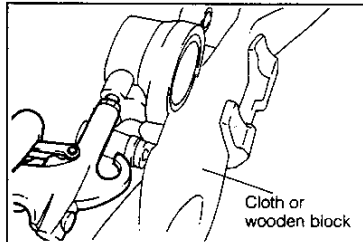


WFE90-BR113

5. Insert a suitable cloth or a wooden block in front of the piston. Then, pull out the piston by applying compressed air from the brake hose connecting section.

WARNING:

- Since the piston jumps out strongly when applying compressed air, care must be exercised so that your fingers or the like may not be caught in.
- Be sure to put on safety goggles when using compressed air.

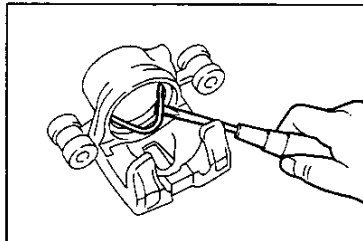


WFE90-BR114

6. Remove the piston seal from the cylinder section.

NOTE:

- Never reuse the removed piston seal.

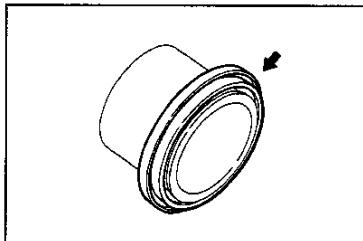


WFE90-BR115

7. Remove the rubber boot from the piston.

NOTE:

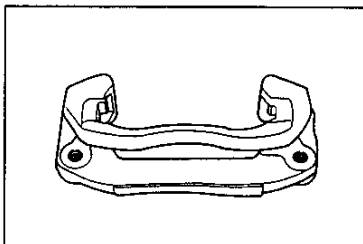
- Never reuse the removed boot.



WFE90-BR116

INSPECTION

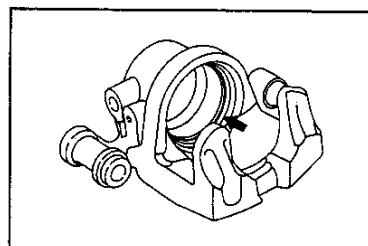
1. Ensure that the mounting support exhibits no damage, such as cracks and/or wear.



WFE90-BR117

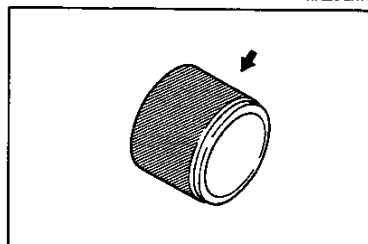
BRAKE

2. Ensure that the caliper exhibits no damage, such as cracks and wear.
3. Ensure that the caliper and inner surface of the piston exhibit no damage, such as rust and/or scratches.



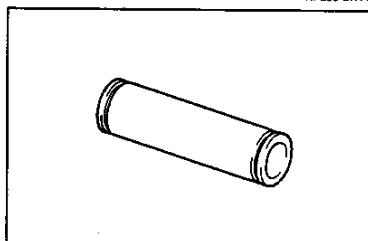
WFE90-BR118

4. Ensure that the piston exhibits no damage, such as rust and scratches.



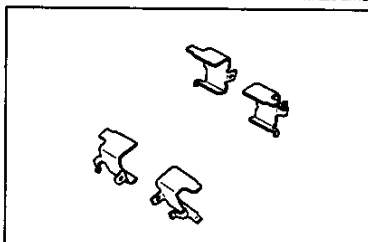
WFE90-BR119

5. Ensure that the cylinder slide bush, bush dust boot and rubber boot exhibit no damage, such as rust and scratches.



WFE90-BR120

6. Ensure that the pad guide plates exhibit no wear or damage.



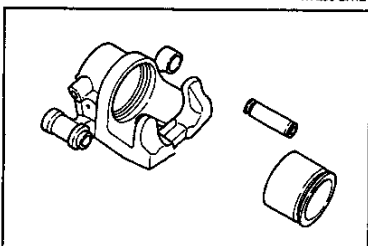
WFE90-BR121

ASSEMBLY OF CALIPER

1. Wash the reassembling parts and dry them with compressed air.

WARNING:

- Be sure to put on safety goggles when using compressed air.



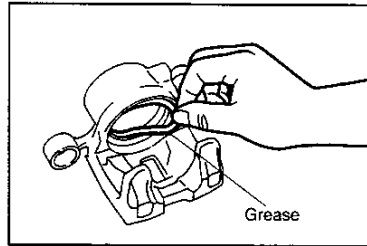
WFE90-BR122

BRAKE

2. Apply rubber grease to the piston seal. Install the piston seal to the cylinder.

CAUTION:

- Never reuse the piston seal.
- Be very careful not to scratch the edge of the piston seal.

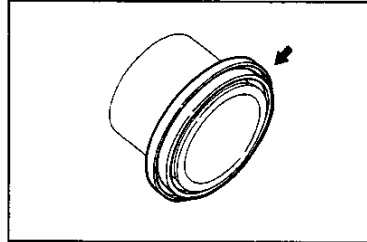


WFE90-BR123

3. Apply rubber grease to the new cylinder boot. Install the cylinder boot to the piston.

CAUTION:

- Never reuse the cylinder boot.

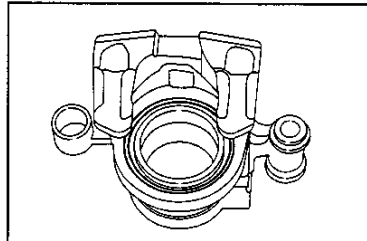


WFE90-BR124

4. Apply rubber grease to the piston sliding surface.
5. Insert the piston into the cylinder.
6. Fit the cylinder boot into the groove at the cylinder side. Fit the set ring into the groove of the cylinder boot.

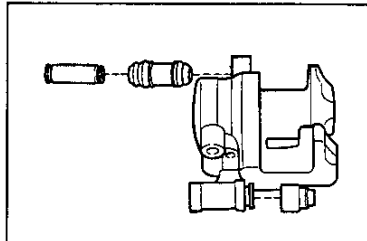
CAUTION:

- Never reuse the set rings.



WFE90-BR125

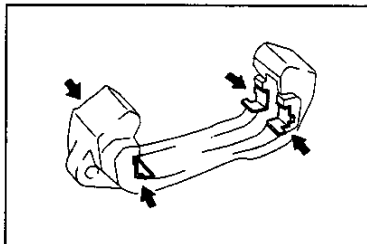
7. Insert the bush dust boot into the caliper.
8. Apply rubber grease to the cylinder slide bush. Insert the cylinder slide bush into the bush dust boot. Then, fit both edge sections of the bush dust boot into the groove sections of the cylinder slide bush.
9. Install the rubber boot to the caliper.



WFE90-BR126

INSTALLATION OF BRAKE CALIPER

1. Install the disc brake pad guide plates to the brake mounting support.

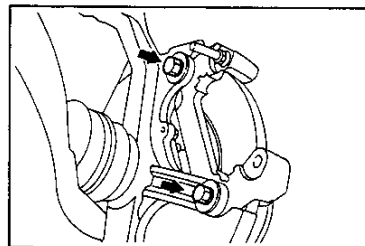


WFE90-BR127

BRAKE

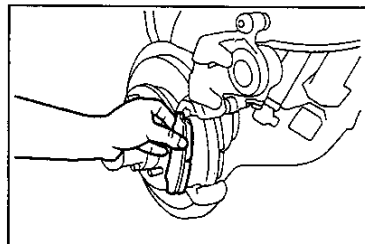
2. Install the brake mounting support to the steering knuckle by attaching bolts with new spring washers interposed.

Tightening Torque: 68.6 - 88.3 N·m
(7.0 - 9.0 kgf-m, 50.6 - 65.1 ft-lb)



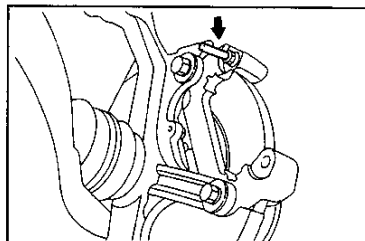
WFE90-BR128

3. Install the brake pad to the brake mounting support.



WFE90-BR129

4. Apply rubber grease to the brake mounting support pin.

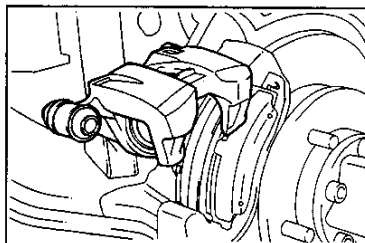


WFE90-BR130

5. Install the brake caliper to the mounting support. Place the mounting support over the brake pad.

NOTE:

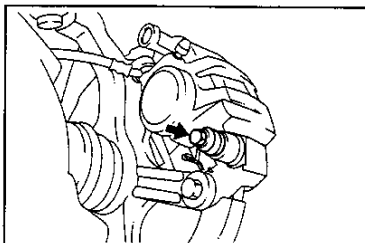
- Be very careful not to damage the antisqueal shim during this operation.



WFE90-BR131

6. Tighten the brake caliper attaching bolts.

Tightening Torque: 31.4 - 41.2 N·m
(3.2 - 4.2 kgf-m, 23.1 - 30.4 ft-lb)



WFE90-BR132

7. Ensure that each boot of the caliper exhibits no damage, such as cracks. Also, ensure that no turning-over is present at the fitting section of each boot.

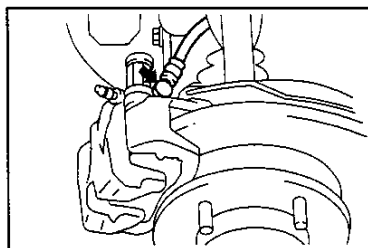
BRAKE

8. Connect the brake hose to the caliper with new gaskets interposed.

Tightening Torque: 20.6 - 26.5 N·m
(2.1 - 2.7 kgf-m, 15.2 - 19.5 ft-lb)

CAUTION:

- Never reuse the gaskets.

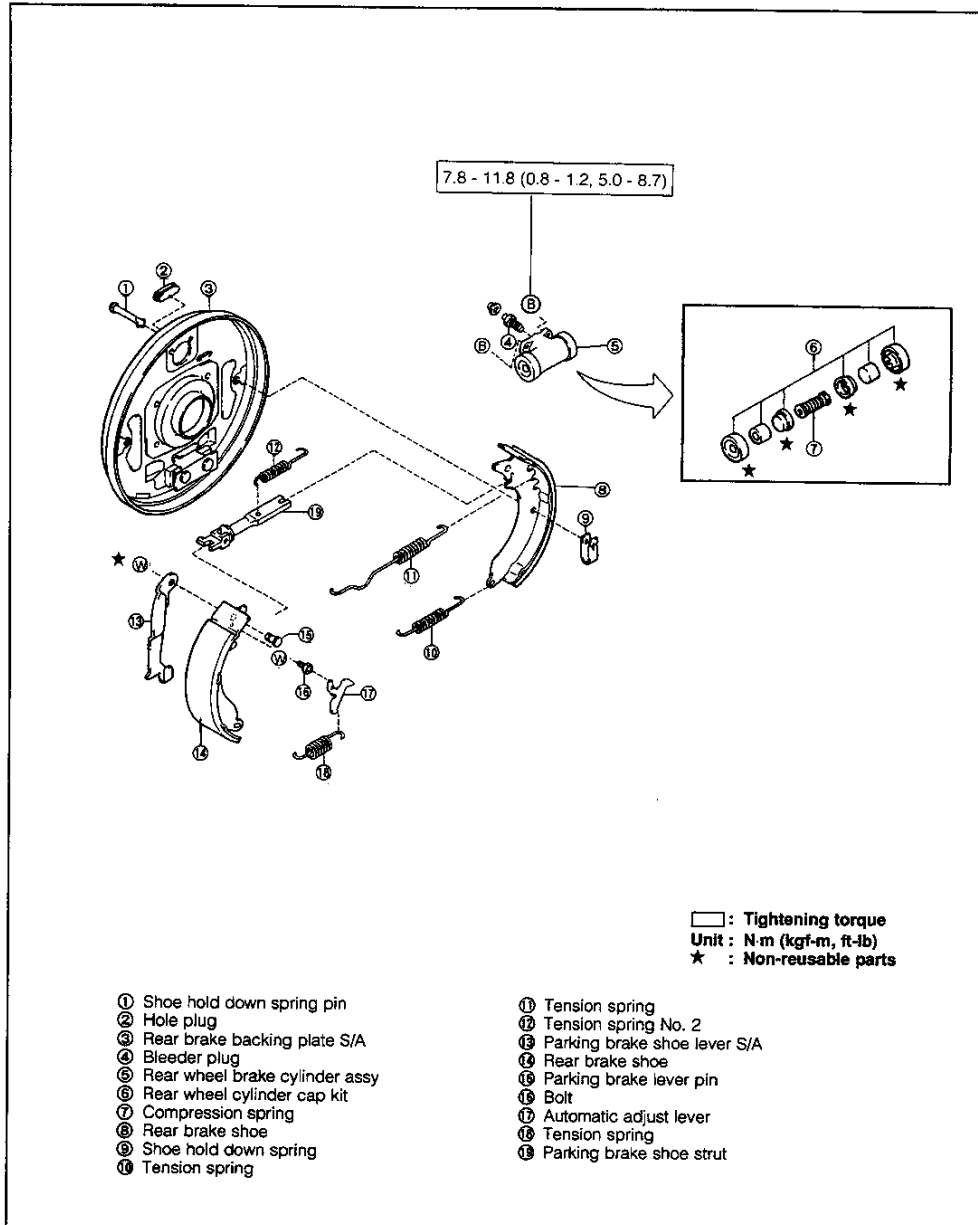


WFE90-BR133

9. Perform brake air bleeding.
(See page BR-24.)
10. Perform the brake test, using a brake tester.

WFE90-BR134

REAR BRAKE COMPONENTS



WFE90-BR135

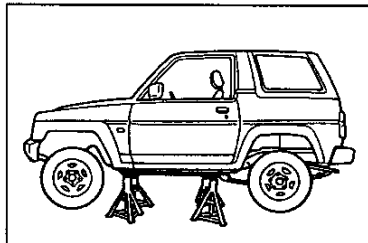
BRAKE

DISASSEMBLY

CAUTION:

- Make sure that no lubricant, such as grease, gets to the brake shoe and/or drum surfaces.

1. Jack up the vehicle and support it with safety stands.
(As for the jacking-up points and supporting points for the safety stands, see page G1 section.)

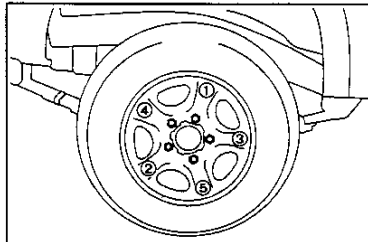


WFE90-BR136

2. Remove the rear wheel.

NOTE:

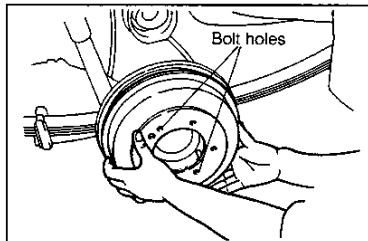
- Be sure to loosen the attaching bolts evenly over two or three stages in the sequence indicated in the right figure.



WFE90-BR137

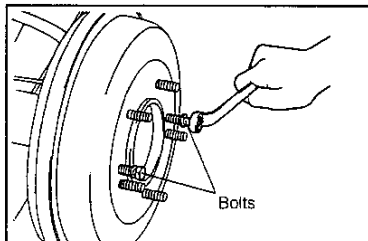
3. Remove the brake drum.

If any difficulty is encountered in removing the brake drum, install the bolts (M10 x 1.25) to each bolt hole, as indicated in the right figure.



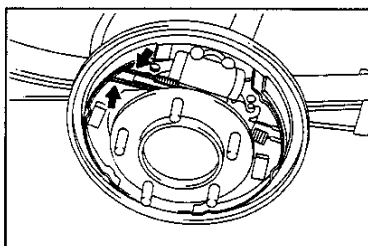
WFE90-BR138

The brake drum can be detached easily when the bolts are tightened alternately.



WFE90-BR139

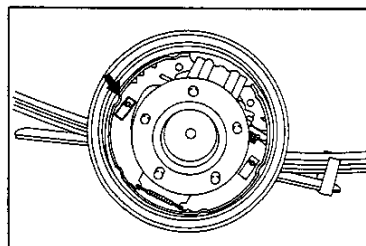
4. Detach the tension springs from the trailing side shoe, using the following SST and remove the tension springs.
SST: 09921-00010-000



WFE90-BR140

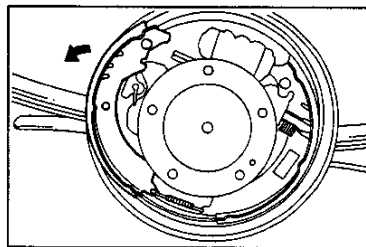
BRAKE

5. Detach the shoe hold down spring pin and hold down spring at the trailing side.



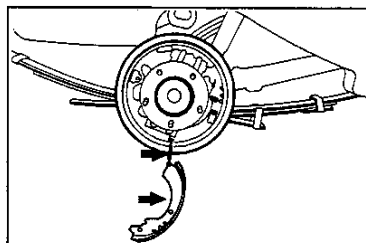
WFE90-BR1141

6. Remove the shoe at the trailing side from the backing plate.



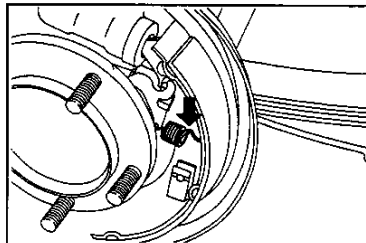
WFE90-BR142

7. Remove the shoe at the trailing side from the tension spring.
8. Remove the tension spring from the shoe at the leading side.



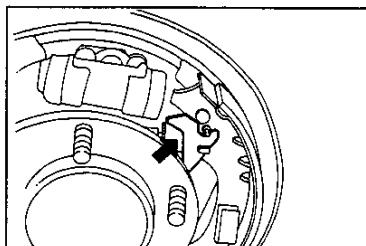
WFE90-BR143

9. Remove the tension spring, using the following SST.
SST: 09921-00010-000



WFE90-BR144

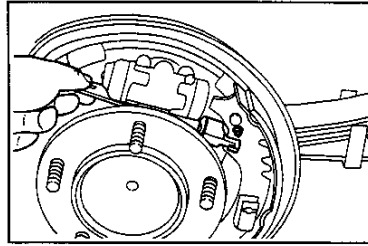
10. Remove the automatic adjusting lever.



WFE90-BR145

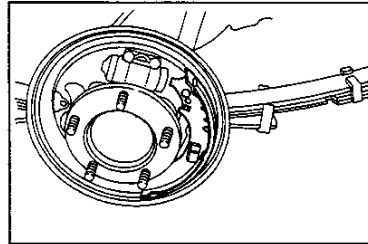
BRAKE

11. Remove the parking brake shoe strut.



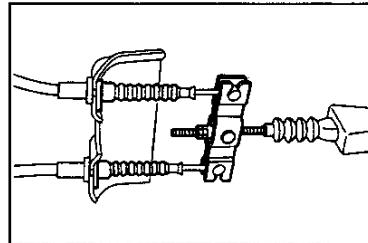
WFE90-BR146

12. Remove the hold-down spring and pin of the leading side shoe.
13. Remove the leading side shoe from the backing plate.



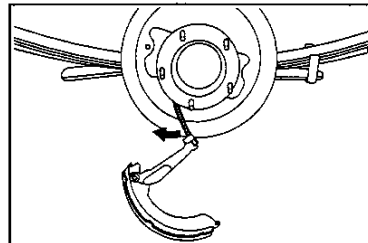
WFE90-BR147

14. Loosen the lock nut of the parking brake lever adjusting screw. Fully loosen the adjusting screw.



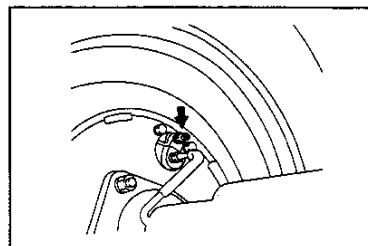
WFE90-BR148

15. Disconnect the parking brake cable from the parking brake shoe lever.



WFE90-BR149

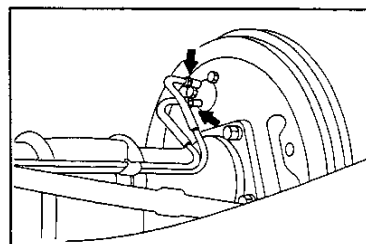
16. Drain the brake fluid by loosening the rear wheel cylinder air bleeder plug.



WFE90-BR353

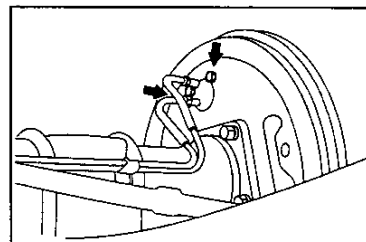
BRAKE

17. Disconnect the brake pipes from the rear wheel cylinder, using a brake pipe spanner.



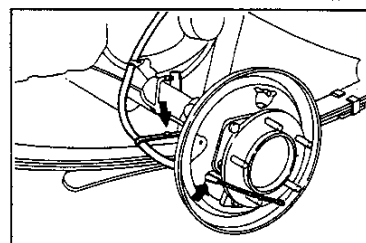
WFE90-BR150

18. Remove the rear wheel cylinder from the backing plate.



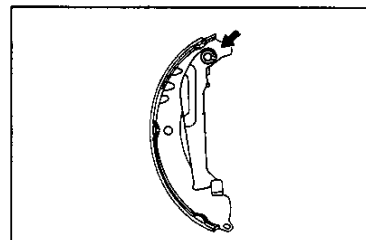
WFE90-BR151

19. Removal of parking brake cable
 (1) Remove the parking brake cable clamp bolt.
 (2) Pull out the parking brake cable from the backing plate by retracting the pawl of the parking brake cable.



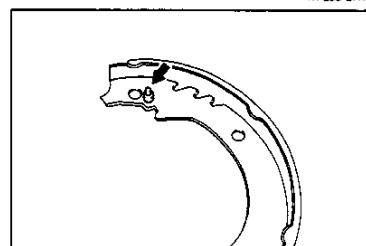
WFE90-BR152

20. Disassembly of leading side shoe
 (1) Remove the "C" washer.
NOTE:
 • Never reuse the "C" washer.
 (2) Remove the parking brake shoe lever and parking brake lever pin.



WFE90-BR153

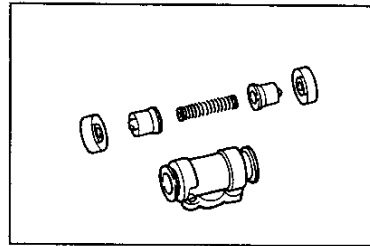
- (3) Remove the washer and automatic adjusting lever pin.



WFE90-BR154

BRAKE

21. Disassembly of rear wheel cylinder
- (1) Remove the wheel cylinder boots.
 - (2) Remove the wheel cylinder pistons.
 - (3) Remove the piston cup.
 - (4) Remove the compression spring.



WFE90-BR155

22. Removal of brake backing plate
(See the Rear Axle section.)

WFE90-BR156

INSPECTION

NOTE:

- When replacing the brake shoe, be sure to replace the leading and trailing shoe for both the right and left side as a set. This replacement required so as to prevent the vehicle from pulling to one side on application of the brakes.

1. Check of brake drum

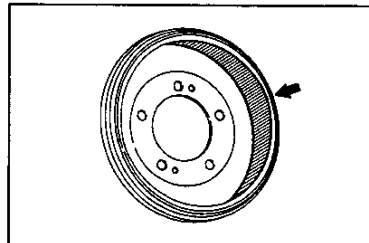
- (1) Ensure that the brake shoe contact surface exhibits no defect, such as severe roughness and abnormal wear. If any defect is present, replace the brake drum with a new one.

- (2) Measure the inner diameter of the brake drum. Ensure that the measured value is less than the maximum limit. If the measured value is greater than the maximum limit, replace the brake drum with a new one.

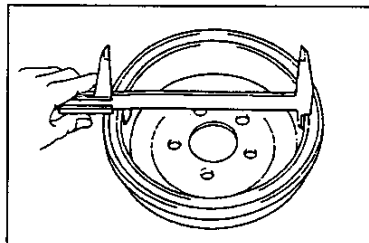
Standard: 254.00 mm

Maximum Limit: 256.00 mm

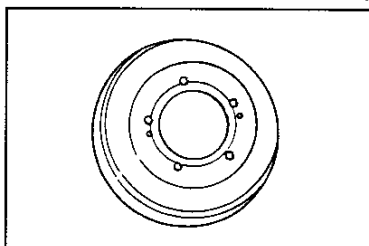
- (3) Ensure that the brake drum exhibits no damage, such as cracks. If any damage is present, replace the brake drum.



WFE90-BR157



WFE90-BR158

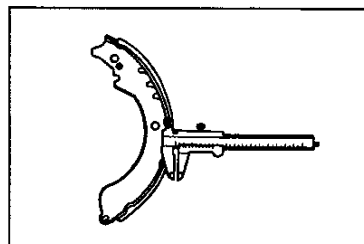


WFE90-BR159

BRAKE

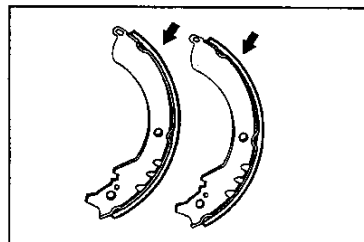
2. Check of brake shoe

- (1) Ensure that the remaining amount of the brake lining exceeds the minimum limit.
If the remaining amount is less than the minimum limit, replace the brake lining as a set.
Standard: 5 mm
Minimum Limit: 1 mm



WFE90-BR160

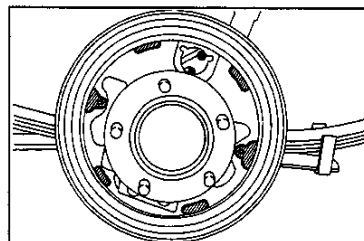
- (2) Ensure that each brake shoe contact surface exhibits no defect, such as abnormal wear and cracks.
If any defect is present, replace the brake shoe as a set.



WFE90-BR161

3. Check of brake backing plate

- (1) Ensure that the brake shoe contact surface exhibits no abnormal wear.
- (2) Ensure that the backing plate exhibits no damage, such as bend.
If any defect is present, replace the backing plate.
(See the Rear Axle section.)



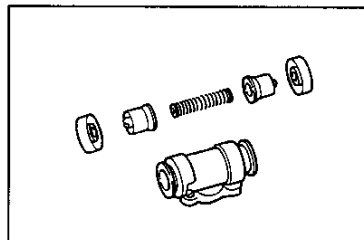
WFE90-BR162

4. Check of wheel cylinder

CAUTION:

- Never reuse the cups and boots.

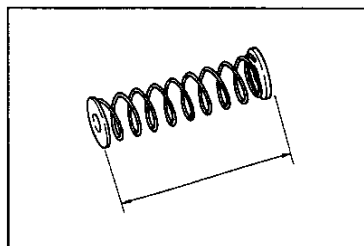
- (1) Ensure that the inner surface of the wheel cylinder exhibits no rust and scratches.
If any rust or scratch is present, replace the wheel cylinder.
- (2) Ensure that no rust or scratch is present at the piston-to-cylinder contact surface and cup-to-cylinder contact surface. Also, ensure that the brake shoe contact surface exhibits no abnormal wear.
If any rust or scratch is present, replace the piston.
- (3) Ensure that the compression spring exhibits no damage, such as flattened condition.
If any damage is present, replace the compression spring.



WFE90-BR163

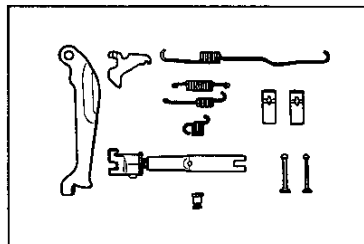
BRAKE

- (4) Ensure that the free length of the compression spring is more than the minimum limit.
Standard: 57 ± 1.5 mm



WFE90-BR164

5. Check of related parts
- (1) Ensure that the tension springs exhibit no damage, such as wear and flattened condition.
 - (2) Ensure that the parking brake strut exhibits no wear and rust. Also, ensure that the screw turns smoothly.
 - (3) Ensure that each of the levers, pins and so forth exhibits no damage, such as wear.
- If any defect is present, replace the defective parts.



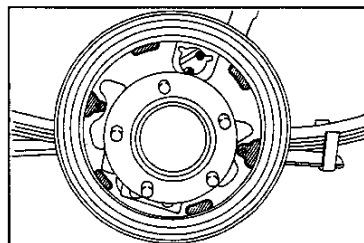
WFE90-BR165

ASSEMBLY

CAUTION:

- Make sure that no lubricant, such as grease, gets to the brake shoe and/or drum surfaces.

1. Clean the backing plate.

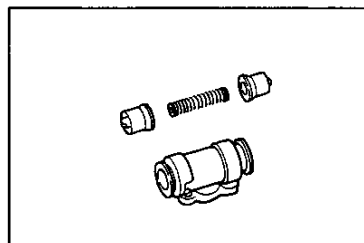


WFE90-BR166

2. Installation of wheel cylinder
 - (1) Thinly apply rubber grease to the pistons and cup. Assemble the pistons and cup to the cylinder together with the compression spring.

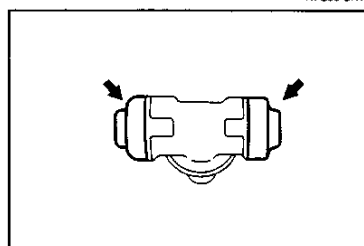
CAUTION:

- Make sure that the cup is installed in the correct direction. The cup should be assembled so that its protruding surface may face toward the piston.



WFE90-BR167

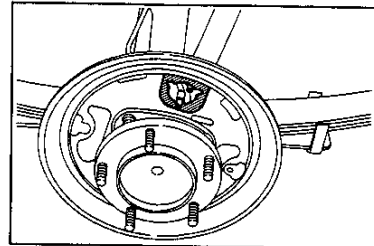
- (2) Install the boot to the cylinder. Assemble the boot to the piston.



WFE90-BR168

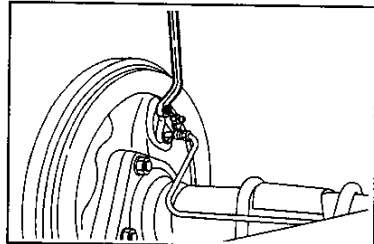
BRAKE

- (3) Apply the Three Bond 1105B to the wheel cylinder installation surface of the backing plate.



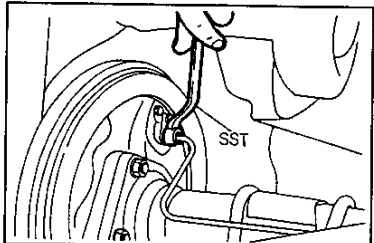
WFE90-BR169

- (4) Install the wheel cylinder to the backing plate.
Tightening Torque: 7.8 - 11.8 N·m
(0.8 - 1.2 kgf-m, 5.8 - 8.7 ft-lb)



WFE90-BR170

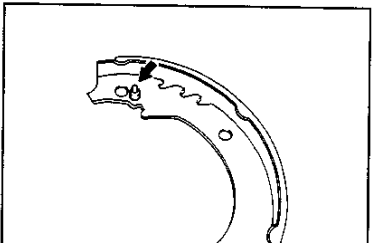
- (5) Connect the brake tube to the wheel cylinder.
Tightening Torque: 12.7 - 17.7 N·m
(1.3 - 1.8 kgf-m, 9.4 - 13.0 ft-lb)



WFE90-BR171

3. Assembly of shoe at leading side

- (1) Install the washer and automatic adjusting lever pin.
Tightening Torque: 2.55 - 4.9 N·m
(0.26 - 0.5 kgf-m, 18.8 - 3.62 ft-lb)

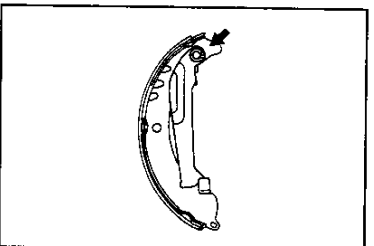


WFE90-BR172

- (2) Thinly apply brake grease to the parking brake lever pin. Install the parking brake lever pin to the shoe.
(3) Install the parking brake lever to the pin.
(4) Install a new "C" washer to the parking brake lever pin. Bend the "C" washer by means of pliers, until both ends of the "C" washer come in contact with each other.

NOTE:

- NEVER reuse the "C" washer.

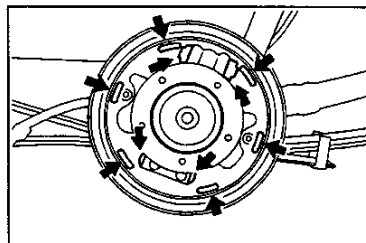


WFE90-BR173

BRAKE

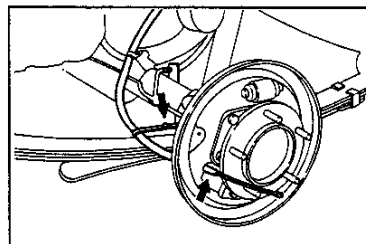
4. Assembly of brake shoe at leading side

- (1) Apply a thin film of brake grease to the shoe contact surface of the backing plate.
- (2) Apply a thin film of brake grease to the pawl section of the wheel cylinder piston.



WFE90-BR174

- (3) Connect the parking brake cable to the backing plate.
- (4) Install the cable clamp.

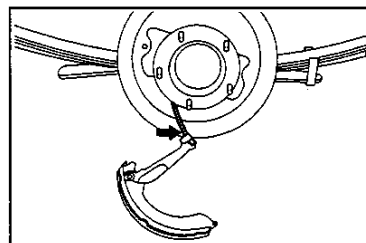


WFE90-BR175

- (5) Connect the parking brake cable to the parking brake lever.

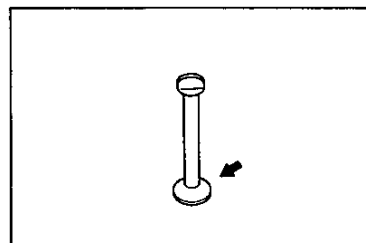
NOTE:

- Be very careful not to bend the parking brake cable by applying undue force to it.



WFE90-BR176

- (6) Apply the Three Bond 1105B_® to the head section of the hold down spring pin.

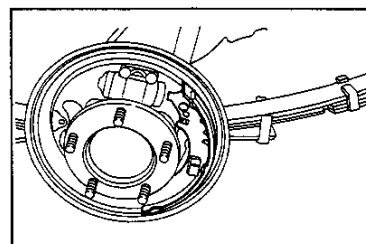


WFE90-BR177

- (7) While holding the shoe toward the backing plate, install the shoe to the backing plate by means of the shoe hold down spring pin and shoe hold down spring.

NOTE:

- Make sure that the head of the shoe hold down spring pin is positively fitted into the groove of the shoe hold down spring.

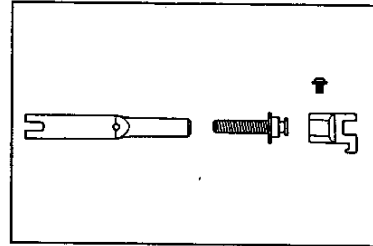


WFE90-BR178

BRAKE

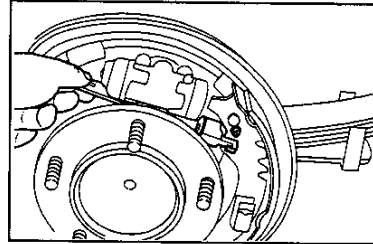
- (8) Disassemble the parking brake shoe strut. Apply a thin film of brake grease to each sliding section. Assemble the parking brake shoe strut.

Tightening Torque: 2.6 - 3.9 N·m
(0.26 - 0.4 kgf-m, 1.88 - 2.9 ft-lb)



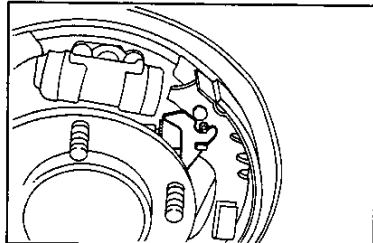
WFE90-BR179

- (9) Connect the parking brake shoe strut to the shoe.



WFE90-BR180

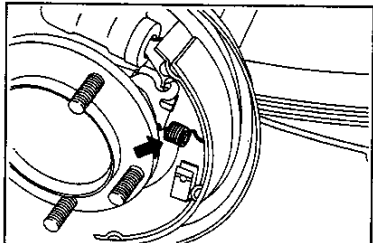
- (10) Apply brake grease to each contact surface of the automatic adjusting lever. Install the automatic adjusting lever to the shoe.



WFE90-BR181

- (11) Install the tension spring, using the following SST or a suitable lever.

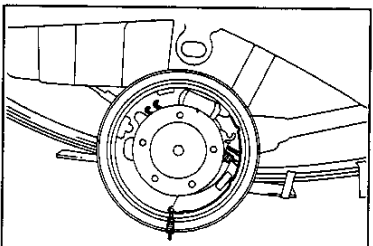
SST: 09921-0001-000



WFE90-BR182

5. Installation of shoe at trailing side

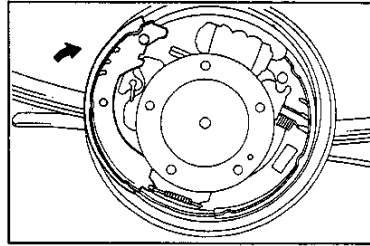
- (1) Install the tension spring to the shoe at the leading side.
- (2) Install the shoe at the trailing side to the tension spring.



WFE90-BR183

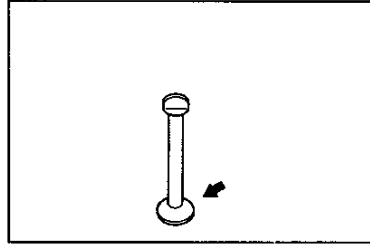
BRAKE

- (3) Lift the shoe at the trailing side over the backing plate.



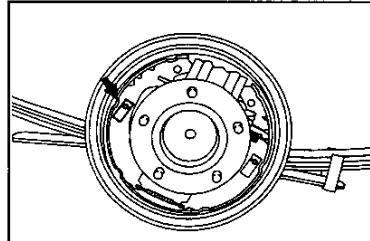
WFE90-BR184

- (4) Apply the Three Bond 1105B to the head section of the shoe hold down spring pin.



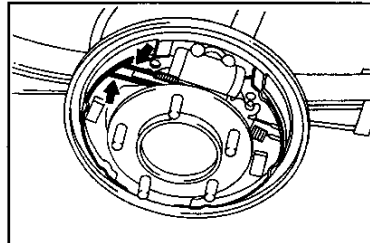
WFE90-BR185

- (5) While holding the shoe at the trailing side toward the backing plate, install the shoe to the backing plate by means of the shoe hold down spring pin and shoe hold down spring.



WFE90-BR186

- (6) Install the tension springs.



WFE90-BR187

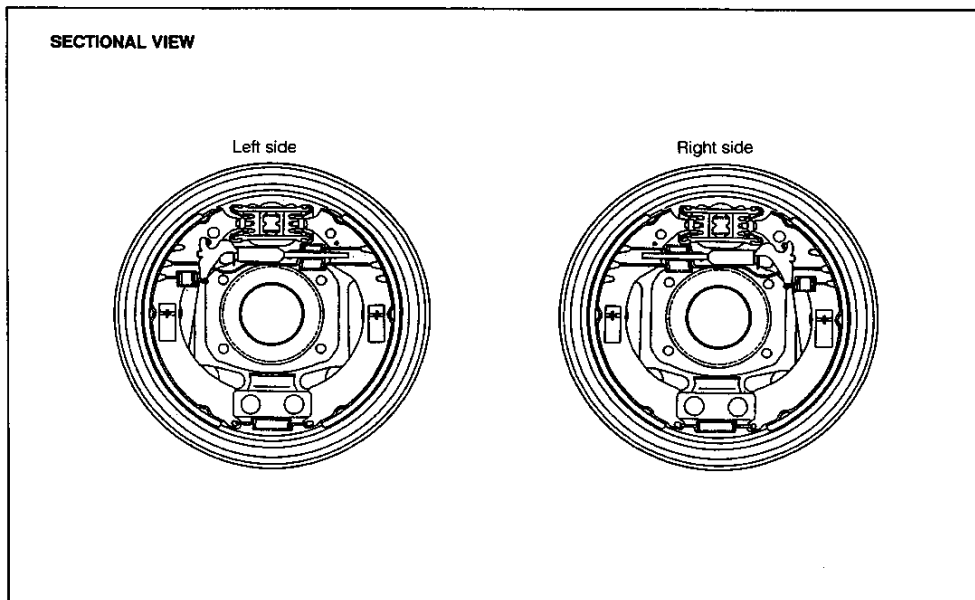
6. Inspection

Be sure to perform the following inspection to assure safe running.

- (1) Ensure that the rear brake is mounted correctly as indicated in the figure below.

WARNING:

If the rear brake is not mounted correctly, it may cause brake failure during the running or parking brake failure.



WFE90-BR188

- (2) Inspect that lubricant, such as oil or grease, gets on the surface of the rear brake drum or brake lining. If any lubricant gets on the surface, remove the lubricant, using abrasive paper.

WARNING:

If any lubricant gets on the surface of the rear brake drum or the brake lining, it may cause inadequate braking.

- (3) Check that the rear wheel cylinder and brake tube attaching sections are tightened to the specified torque. Inspect the attaching sections for brake fluid leakage.

WARNING:

- If the brake tubes are not installed correctly, it may cause brake failure.

WFE90-BR189

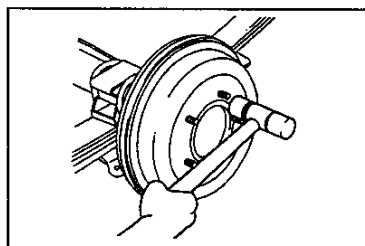
BRAKE

7. Install the brake drum.

Attach the brake drum to the axle shaft. Tap the brake drum lightly into the axle shaft, using a plastic hammer or the like.

WARNING:

If any lubricant, such as grease or oil, gets on the inner surface of the brake drum, be sure to wipe it off. Failure to observe this warning may cause inadequate braking.



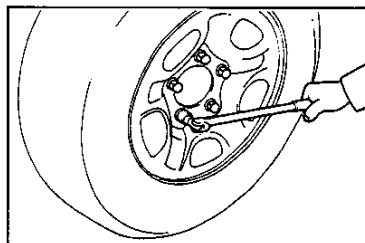
WFE90-BR190

NOTE:

- When assembling the axle shaft, never apply impact strong enough to produce traces inside the bearing. Moreover, be very careful not to damage the oil seal provided at the housing end.
- If paint was removed during the installation, be sure to apply chassis black to such areas to prevent rust formation. However, no paint should be applied to the threaded portions.

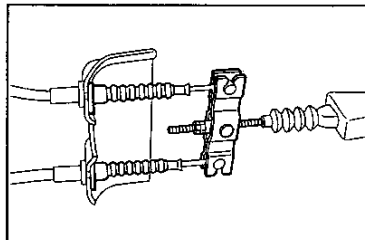
8. Install the wheel. Tighten the attaching bolts to the specified torque evenly over two or three stages in the sequence indicated in the right figure.

Tightening Torque: 88.3 - 118 N·m
(9.0 - 12 kgf-m, 65.1 - 87.0 ft-lb)



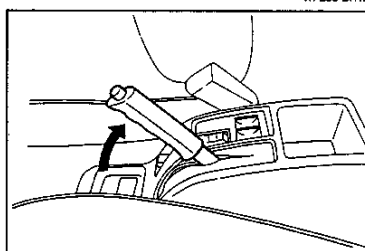
WFE90-BR191

9. Screw in the parking brake lever adjusting screw lock nut about halfway.



WFE90-BR192

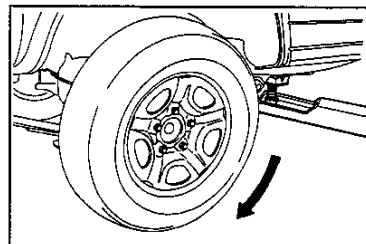
10. Repeat the pulling/returning operation of the parking brake lever, until no clicking noise is emitted from the brake drum.



WFE90-BR193

BRAKE

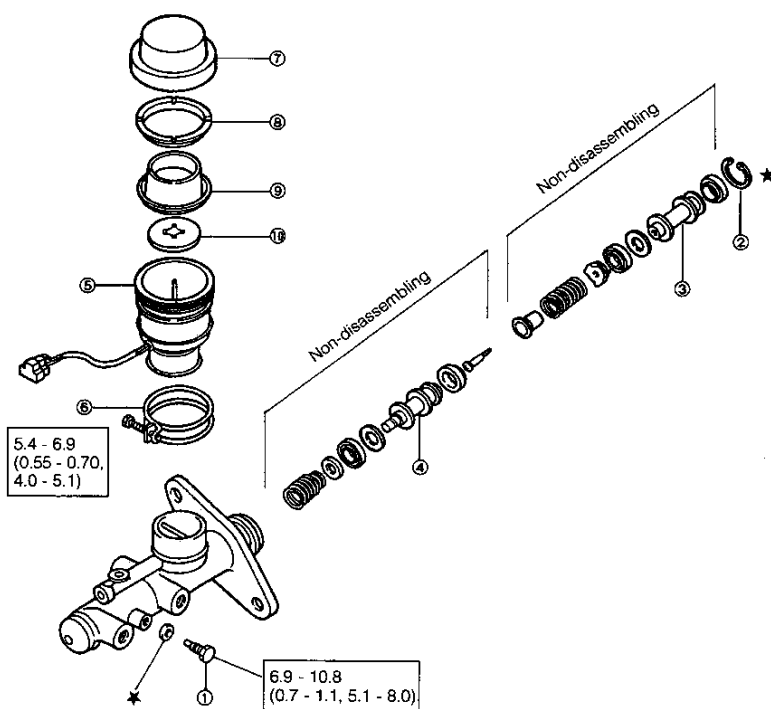
11. Turn the wheel. At this time, ensure that the brake is not dragging.
12. Perform brake air bleeding.
(See page BR-24.)
13. Perform the brake fluid leakage check.
(See page BR-22.)
14. Perform the brake test, using a brake tester.
15. Adjust the height of the parking brake lever.
(See page BR-93.)



WPES0-BR194

BRAKE

BRAKE MASTER CYLINDER COMPONENTS



□ : Tightening torque
Unit : N·m (kgf-m, ft-lb)
★ : Non-reusable parts

- ① Set bolt
- ② Snap ring
- ③ Piston master cylinder No.1
- ④ Piston master cylinder No.2
- ⑤ Hose clamp

- ⑥ Master cylinder reservoir subassembly
- ⑦ Master cylinder reservoir float
- ⑧ Reservoir diaphragm
- ⑨ Spacer
- ⑩ Reservoir filler cap

WFE90-BR195

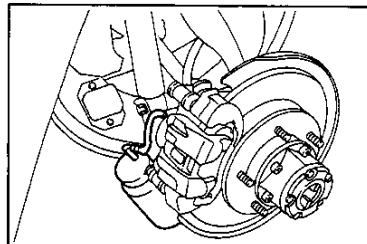
REMOVAL

CAUTION:

- If the brake fluid is spilled inadvertently over the paint-finish surface of the vehicle, quickly wipe off the brake fluid. In addition, wipe the affected area, using white gasoline or the like.

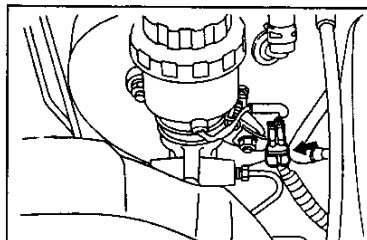
WFE90-BR196

1. Drain the brake fluid from the rear and front wheel cylinder.



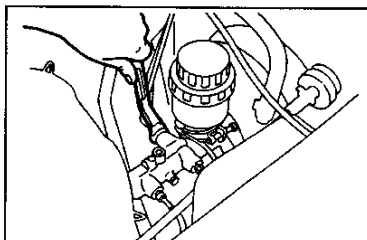
WFE90-BR197

2. Disconnect the brake fluid level switch connector.



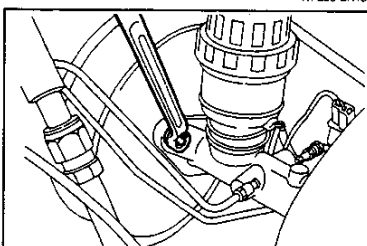
WFE90-BR198

3. Disconnect the brake tubes from the master cylinder, using a flare nut wrench.



WFE90-BR199

4. Remove the brake master cylinder from the brake booster by removing the brake master cylinder attaching nuts.



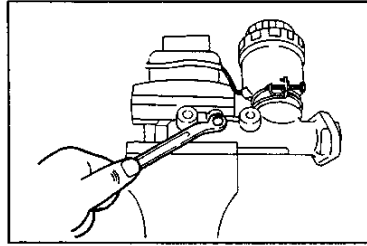
WFE90-BR200

BRAKE

5. Remove the piston set bolt.

NOTE:

- Do not apply excessive force when installing the cylinder to a vise.

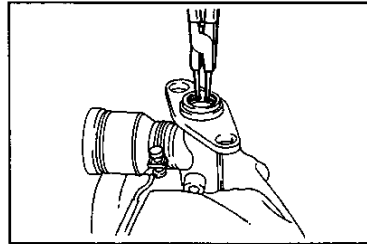


WFE90-BR201

6. While holding the piston by hand, remove the snap ring.

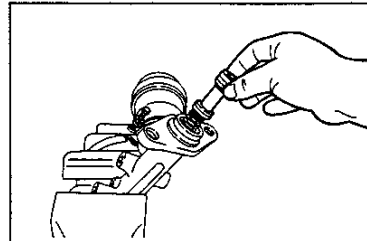
CAUTION:

- Do not scratch the cylinder bore surface.



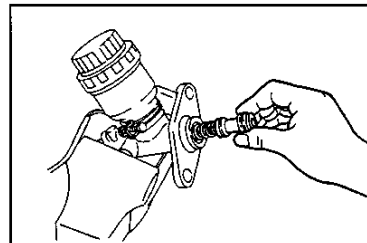
WFE90-BR202

7. Remove the brake master cylinder piston No.1.



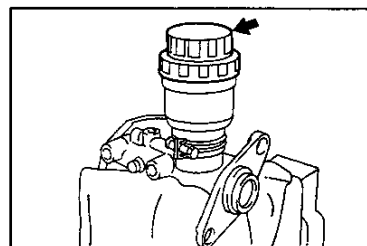
WFE90-BR203

8. Remove the brake master cylinder piston No.2 by blowing air from the brake pipe connecting hole.



WFE90-BR204

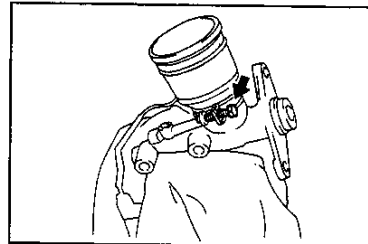
9. Remove the reservoir filler cap. Take out the float.



WFE90-BR205

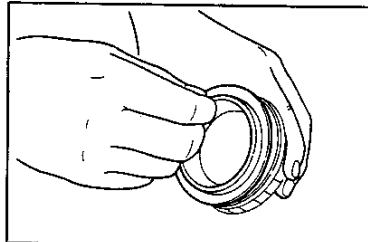
BRAKE

10. Remove the reservoir tank by loosening the reservoir tank hose clamp.



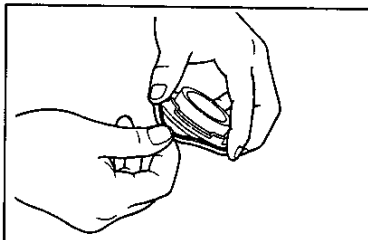
WFE90-BR206

11. Remove the spacer together with the reservoir diaphragm from the reservoir filler cap.



WFE90-BR207

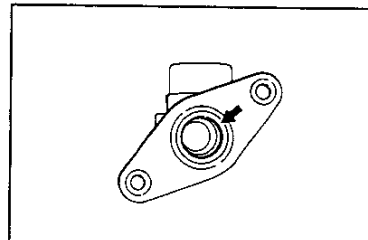
12. Remove the reservoir diaphragm from the spacer.



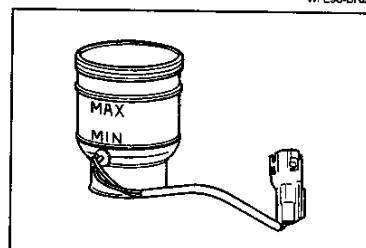
WFE90-BR208

INSPECTION

1. Check of master cylinder
 - (1) Ensure that the inner surface of the master cylinder exhibits no scratches.
 - (2) Ensure that each part of the master cylinder exhibits no damage, such as deformation.
2. Check of reservoir tank
 - (1) Ensure that the reservoir tank exhibits no damage, such as cracks.



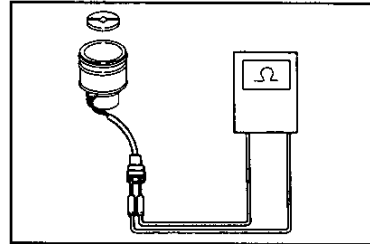
WFE90-BR209



WFE90-BR210

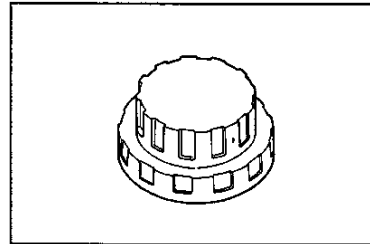
BRAKE

- (2) Ensure that continuity exists between the terminals of the connector when the float is put in the reservoir tank. Also, ensure that no continuity exists when the float is taken out from the reservoir tank. If not, replace the reservoir tank.

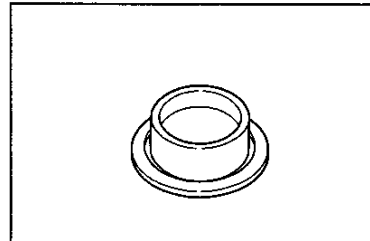


3. Inspection of reservoir tank cap

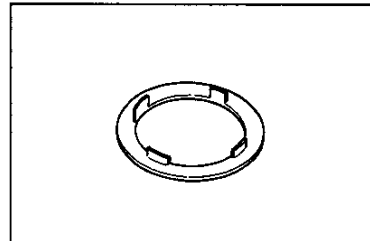
- (1) Ensure that the reservoir tank exhibits no damage, such as cracks.



- (2) Ensure that the reservoir diaphragm exhibits no damage, such as cracks and holes.



- (3) Ensure that the spacer exhibits no damage, such as cracks.

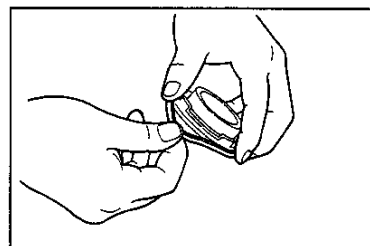


ASSEMBLY

1. Install the reservoir diaphragm to the spacer.

NOTE:

- Be sure to fit the reservoir diaphragm to the recessed section of the spacer.

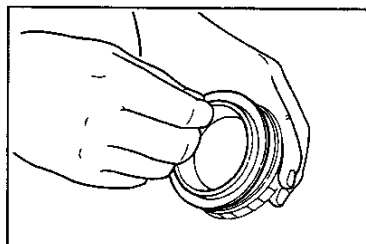


BRAKE

2. Install the spacer together with the reservoir diaphragm to the reservoir tank cap.

NOTE:

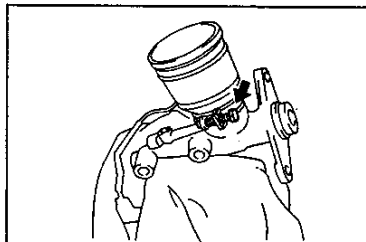
- Fit the pawl section of the spacer into the reservoir tank cap securely.



WFE90-BR216

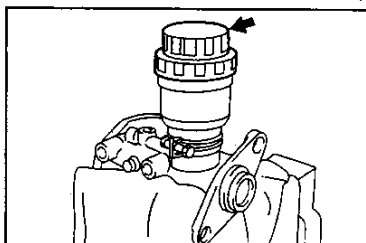
3. Install the reservoir tank to the master cylinder. Tighten the clamp.

Tightening Torque: 5.4 - 6.9 N-m
(0.55 - 0.70 kgf-m , 4.0 - 5.1 ft-lb)



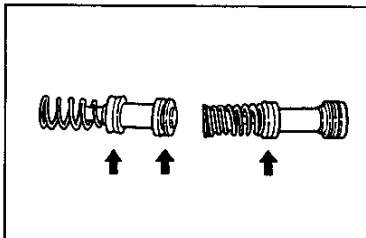
WFE90-BR217

4. Insert the float in the reservoir tank. Install the reservoir tank cap.



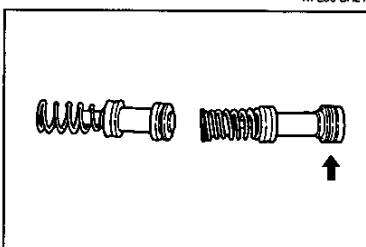
WFE90-BR218

5. Apply brake fluid to the piston cups indicated in the right figure.



WFE90-BR219

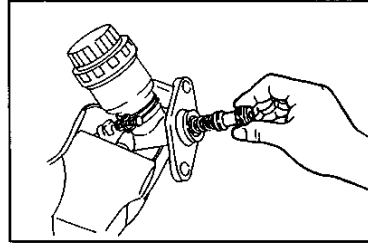
6. Apply rubber grease to the piston cups indicated in the right figure.



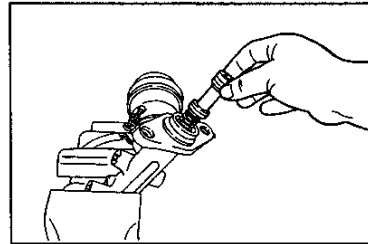
WFE90-BR220

BRAKE

7. Insert the piston No.2 into the master cylinder.



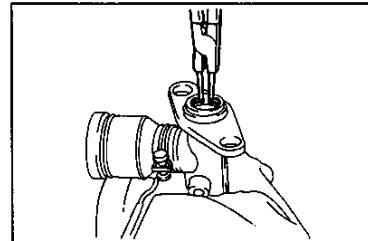
8. Insert the piston No.1 into the master cylinder.



9. While holding the piston No.1 by hand, install a new snap ring.

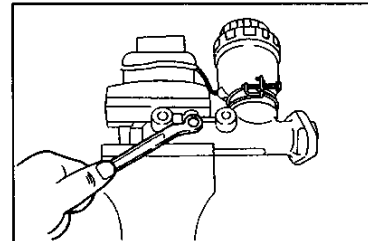
NOTE:

- Never reuse the snap ring.



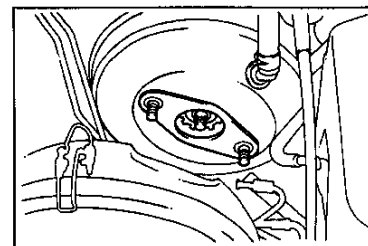
10. Install the set bolt to the master cylinder with a new gasket interposed.

Tightening Torque: 6.9 - 10.8 N·m
(0.7 - 1.1 kgf·m, 5.1 - 8.0 ft·lb)



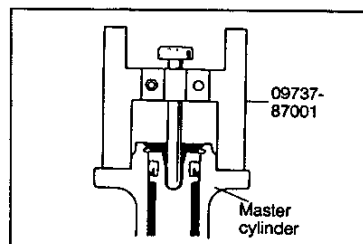
11. Ensure that the gasket at the brake booster side exhibits no damage.

If any damage is present, replace the gasket.



BRAKE

12. Adjust the clearance between the brake booster push rod and the master cylinder.
(See page BR-82.)



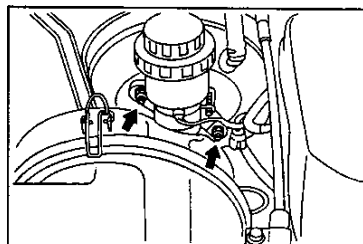
WFE90-BR226

13. Install the master cylinder to the brake booster. Tighten the attaching nuts evenly to the specified torque over two or three stages.

Tightening Torque: 10.2 - 15.3 N·m
(1.04 - 1.56 kgf-m, 7.52 - 11.3 ft-lb)

NOTE:

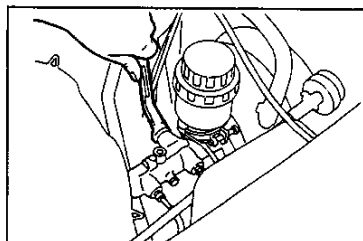
- The installation section at the vehicle exterior side should be tightened together with the connector bracket of the brake fluid level switch.



WFE90-BR227

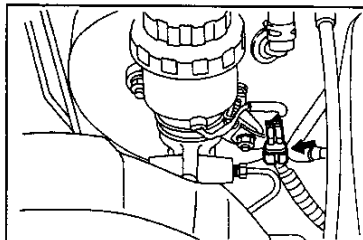
14. Connect the brake tubes to the master cylinder. Tighten the flare nut to the specified torque, using a flare nut wrench.

Tightening Torque: 12.7 - 17.7 N·m
(1.3 - 1.8 kgf-m, 9.4 - 13.0 ft-lb)



WFE90-BR228

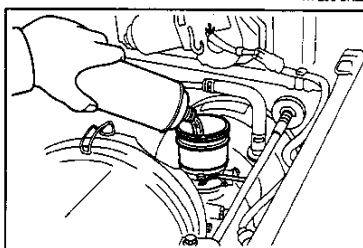
15. Reconnect the brake fluid level switch connector.



WFE90-BR229

16. Fill brake fluid to the reservoir tank.
Specified Brake Fluid: DOT 3 or SAEJ - 1703

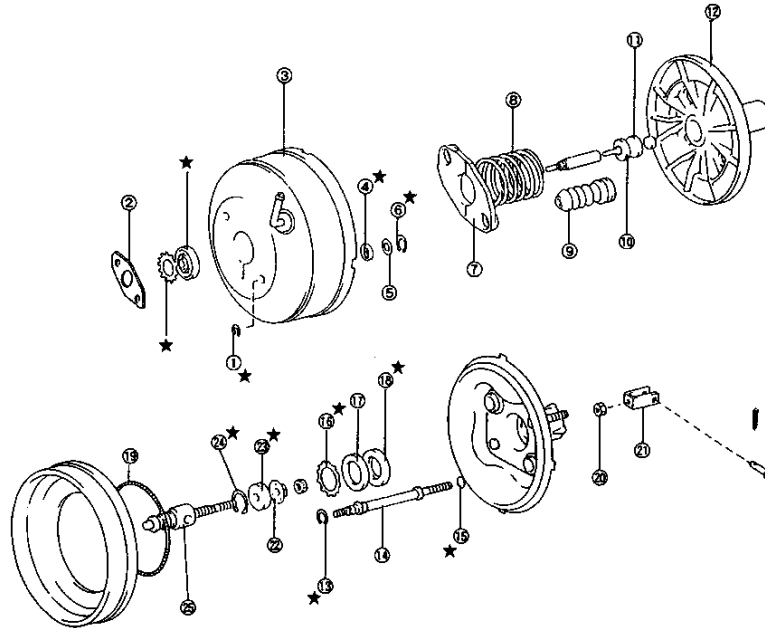
17. Perform air bleeding.
(See page BR-24.)
18. Ensure that no brake fluid leakage is present.
19. Check and adjust the brake pedal height.
(See page BR-21.)



WFE90-BR230

BRAKE

BRAKE BOOSTER COMPONENTS



★ : Non-reusable parts

- ① "E" ring
- ② Gasket
- ③ Booster body
- ④ Tie rod seal
- ⑤ Seal plate
- ⑥ Snap ring
- ⑦ Spring retainer
- ⑧ Booster spring
- ⑨ Tie rod boot
- ⑩ Reaction ring
- ⑪ Reaction rubber
- ⑫ Booster piston
- ⑬ Snap ring

- ⑭ Tie rod
- ⑮ "O" ring
- ⑯ Bush stopper
- ⑰ Bush
- ⑱ Piston seal
- ⑲ Diaphragm band
- ⑳ Nut
- ㉑ Clevis master cylinder push rod
- ㉒ Booster operating rod adjusting nut
- ㉓ Element
- ㉔ Booster piston stop ring
- ㉕ Poppet valve complete

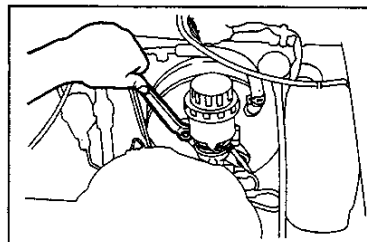
REMOVAL

NOTE:

- If any brake fluid gets on the painting surface, immediately wipe off the brake fluid and wash the painting surface with water.

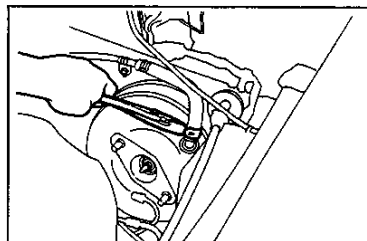
WFE90-BR232

1. Remove the master cylinder.
(See page BR-61.)



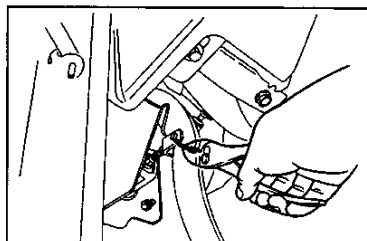
WFE90-BR233

2. Disconnect the brake booster hose from the brake booster.



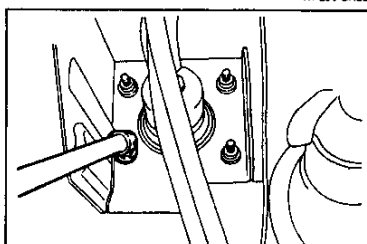
WFE90-BR234

3. Remove the cotter pin. Remove the clevis pin.



WFE90-BR235

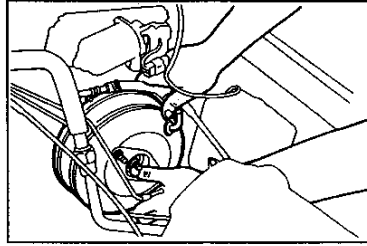
4. Remove the brake booster attaching nuts.



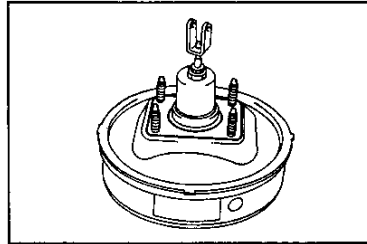
WFE90-BR236

BRAKE

5. Remove the brake booster from the dash panel.
CAUTION:
 - Be very careful not to damage the brake tubes.

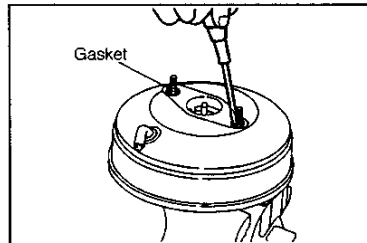


6. Remove the gasket from the brake booster.

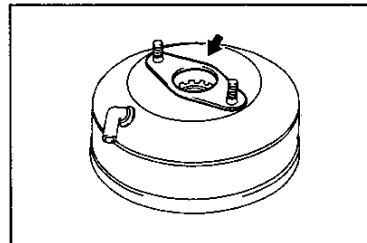


DISASSEMBLY

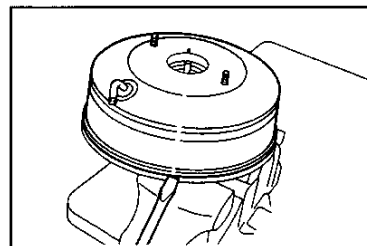
1. Remove the "E" ring.
NOTE:
 - Never reuse the "E" ring.



2. Remove the gasket.
NOTE:
 - Never reuse the gasket.



3. Remove the booster body from the booster housing, using a standard screwdriver or the like.
NOTE:
 - Be very careful not to deform the booster body and booster housing.



4. Remove the booster piston rod.

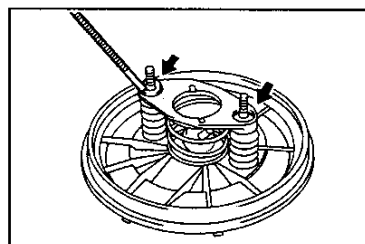
BRAKE

5. Remove the tie rod seal, using a minor screwdriver or the like.

NOTE:

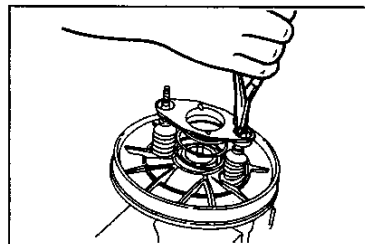
- Never reuse the tie rod seal.

6. Remove the tie rod seal plate, using a magnet finger or the like.



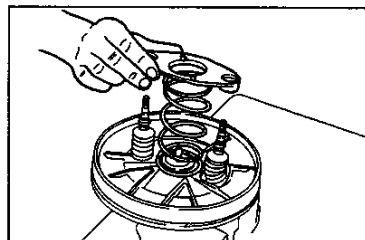
WFE90-BR242

7. While holding the spring retainer, remove the snap rings.



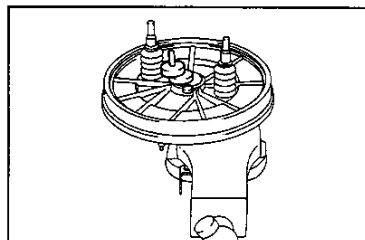
WFE90-BR243

8. Remove the spring retainer and booster spring from the booster piston.



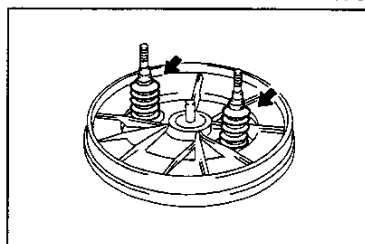
WFE90-BR244

9. Remove the reaction ring, rubber and reaction plate.



WFE90-BR245

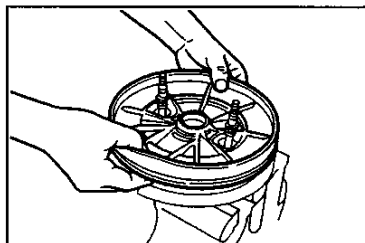
10. Remove the tie rod boot from the tie rod and piston.



WFE90-BR246

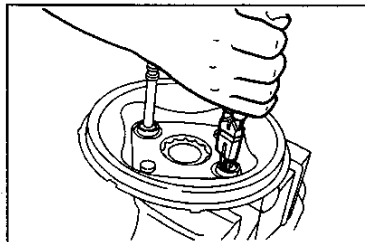
BRAKE

11. Remove the booster piston from the booster housing.



WFE90-BR247

12. Remove the snap rings. Remove the tie rod from the booster housing.

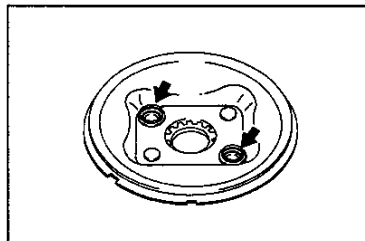


WFE90-BR248

13. Remove the "O" ring from the booster housing.

NOTE:

- Never reuse the "O" ring.

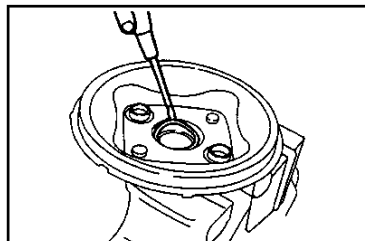


WFE90-BR249

14. Remove the bush retainer.

NOTE:

- Never reuse the bush retainer.

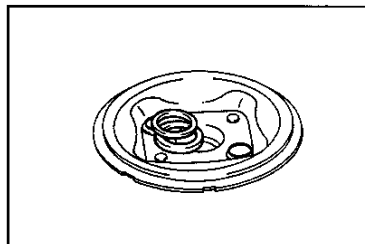


WFE90-BR250

15. Remove the bush and piston seal from the booster housing.

NOTE:

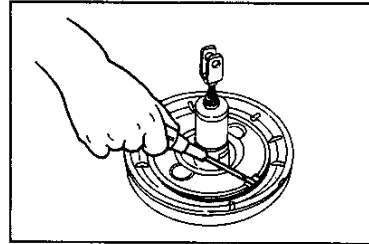
- Never reuse the piston seal.



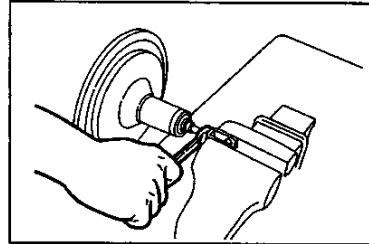
WFE90-BR251

BRAKE

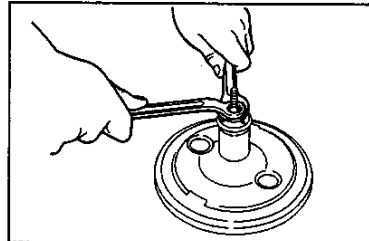
16. Remove the diaphragm band. Remove the diaphragm.



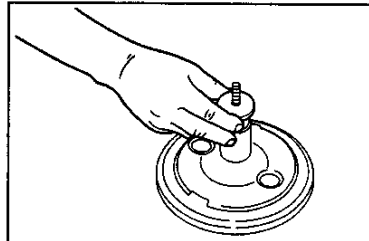
17. Loosen the lock nut. Remove the clevis and lock nut.



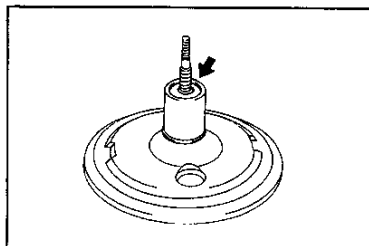
18. Loosen the lock nut. Remove the lock nut and adjusting nut.



19. Remove the element from the booster piston.

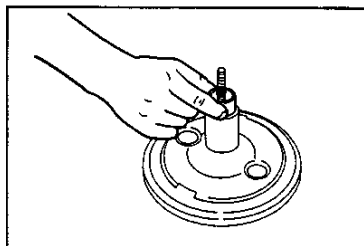


20. Remove the booster piston stop ring.



BRAKE

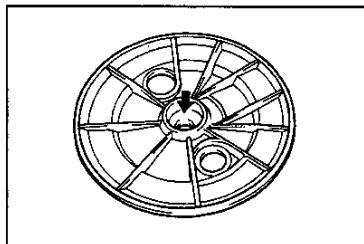
21. Remove the poppet valve assembly from the booster piston.



WFE90-BR257

NOTE:

- If any difficulty is encountered in drawing out the poppet valve, lightly tap the poppet valve from the back side of the piston with a suitable rod interposed.

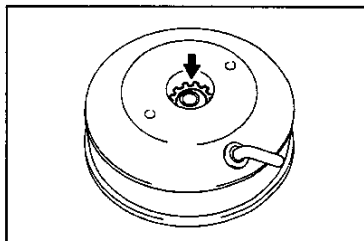


WFE90-BR258

22. Remove the circular internal ring from the booster body.

NOTE:

- Never reuse the circular internal ring.

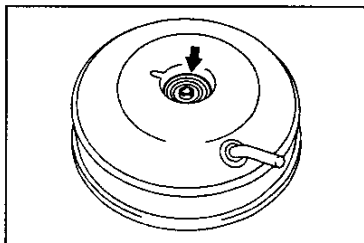


WFE90-BR259

23. Remove the booster plate and seal from the booster body.

NOTE:

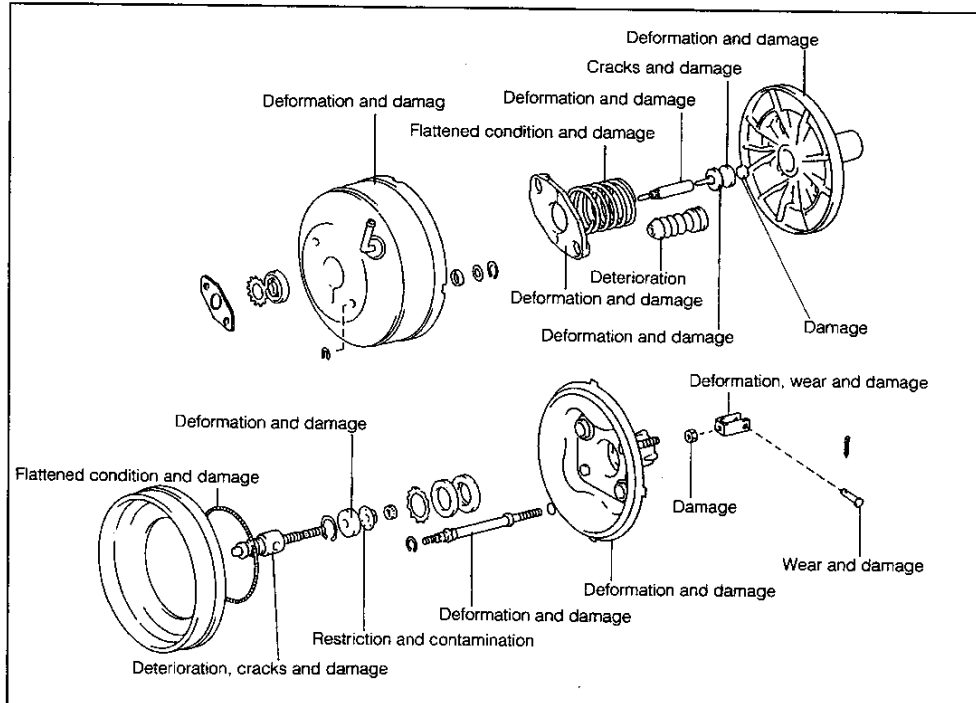
- Never reuse the booster plate and seal.



WFE90-BR260

INSPECTION

Check the following parts. Replace any defective parts.



WFE90-BR261

ASSEMBLY**NOTE:**

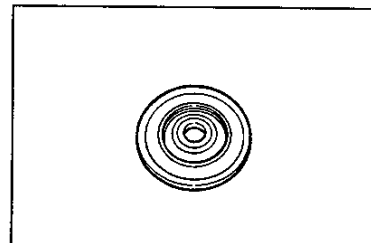
- Be sure to use the silicone grease furnished in the gasket kit.

1. Thinly apply silicone grease to the inner surfaces of the booster plate and seal.

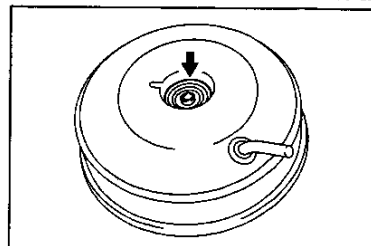
NOTE:

- Be sure to use a new booster plate and seal.
- If silicone grease has been already applied to those new parts, it is unnecessary to perform this step.

2. Install the booster plate and seal to the booster body.



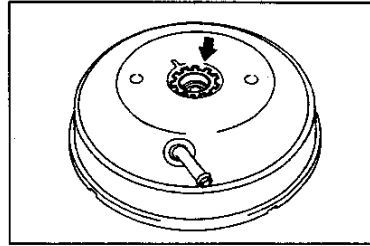
WFE90-BR262



WFE90-BR263

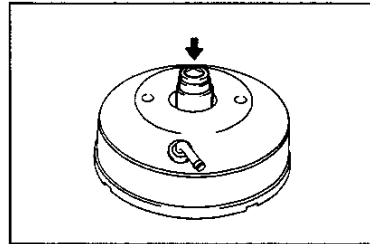
BRAKE

3. Place the circular internal ring on the booster body.



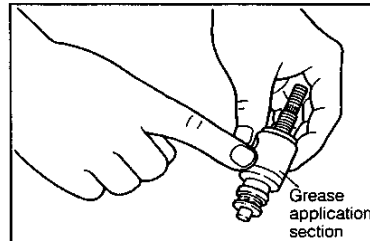
WFE90-BR254

4. While applying a box wrench having a suitable outer diameter on the circular internal ring, press the circular internal ring into the booster body.



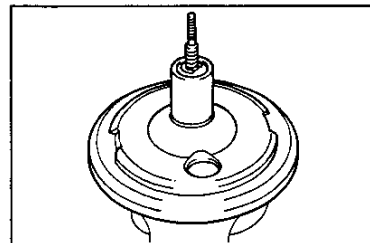
WFE90-BR255

5. Thinly apply silicone grease to the poppet valve at the section indicated in the right figure.



WFE90-BR256

6. Insert the poppet valve into the piston.

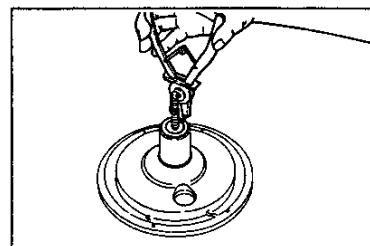


WFE90-BR257

7. While pushing the booster piston stop ring toward the poppet valve, install the booster piston stop ring to the piston.

NOTE:

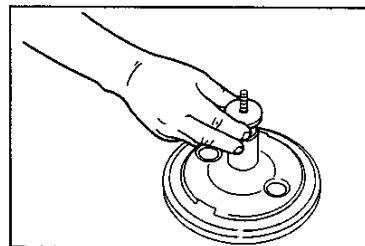
- Make sure that the stop ring is securely fitted into the groove of the piston inner surface.



WFE90-BR258

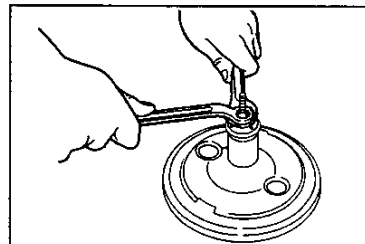
BRAKE

8. Install the element to the booster piston.



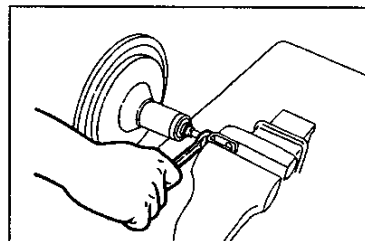
WFE90-BR269

9. Install and temporarily tighten the lock nut and adjusting nut.



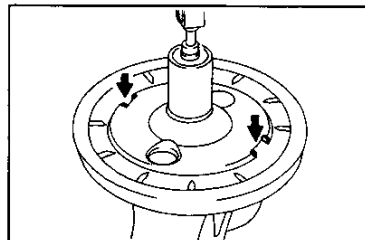
WFE90-BR270

10. Install and temporarily tighten the lock nut and clevis.



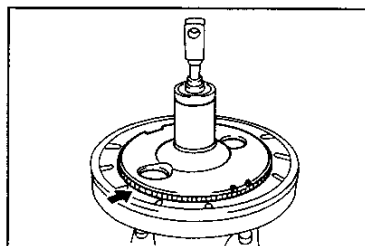
WFE90-BR271

11. Install the diaphragm to the piston while aligning the diaphragm with the cut-out section.



WFE90-BR272

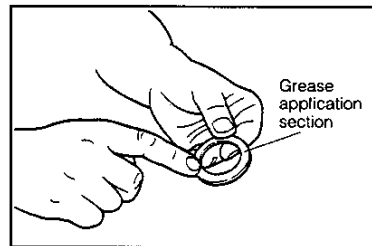
12. Install the diaphragm stopper to the diaphragm in such a way that its connection may not be aligned with the cut-out section.



WFE90-BR273

BRAKE

13. Thinly apply silicone grease to the piston seal.

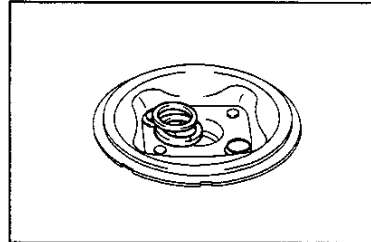


WFE90-BR274

14. Install the piston seal to the booster housing.

NOTE:

- Be sure to use a new piston seal.

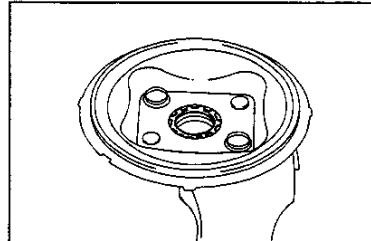


15. Install the bush to the booster housing.

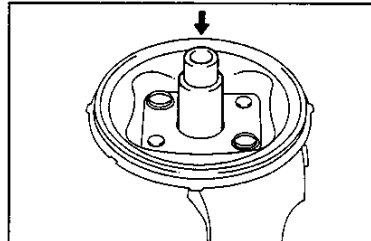
16. Lightly fit the bush retainer to the booster housing.

NOTE:

- Be sure to use the new bush retainer.



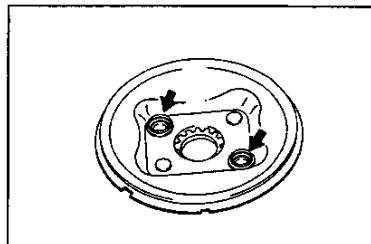
17. Press the retainer into the booster housing, using a box wrench having a suitable outer diameter or the like.



18. Install the "O" ring to the booster housing.

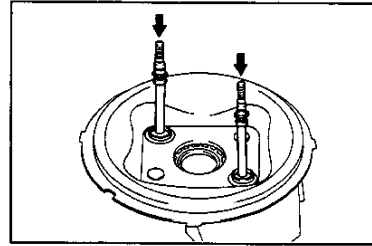
NOTE:

- Be sure to use the new "O" ring.



BRAKE

19. Install the tie rod to the booster housing.

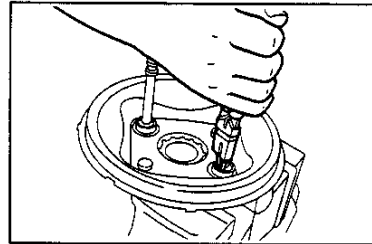


WFE90-BR279

20. Secure the tie rod to the booster housing with a snap ring.

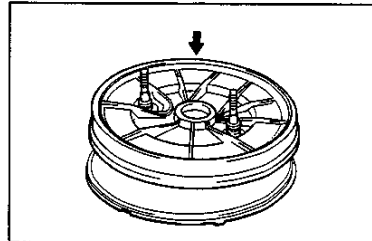
NOTE:

- Be sure to use a new snap ring.
- Make sure that the snap ring is securely fitted into the groove section of the booster housing.



WFE90-BR280

21. Install the booster piston to the booster housing while aligning the protruding section of the diaphragm with the cut-out section of the booster housing.

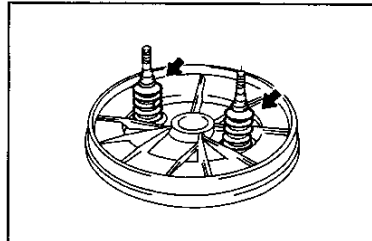


WFE90-BR281

22. Assemble the tie rod boot to the tie rod and piston.

NOTE:

- Be sure to use a new tie rod boots.
- Be very careful not to damage the rod boot by the threaded portion of tie rod.

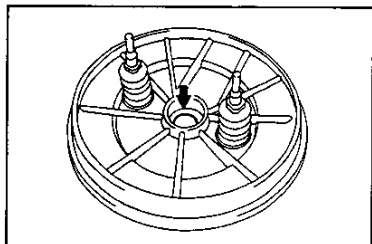


WFE90-BR282

23. Install the reaction plate to the booster piston.

NOTE:

- The reaction plate should be assembled in such a way that the recessed side may come at the piston side.



WFE90-BR283

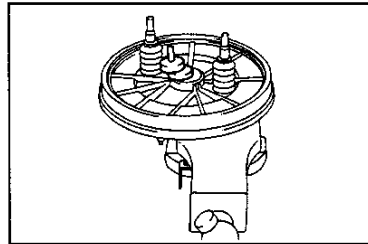
BRAKE

24. Thinly apply silicone grease to the rubber surface.

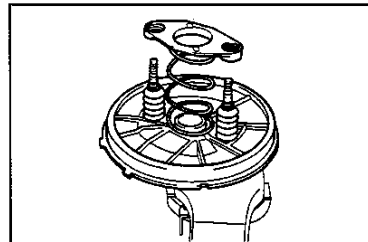
NOTE:

- Never reuse the rubber.

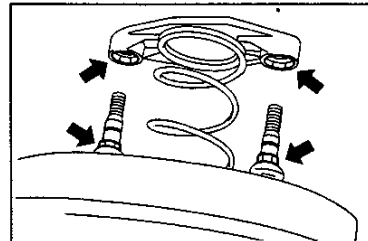
25. Install the rubber and reaction ring to the booster piston.



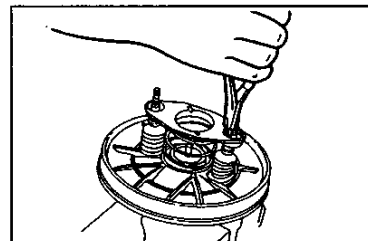
26. Place the booster spring and retainer on the piston.



27. Align the recessed section of the retainer with the direction of the tie rod connecting section.



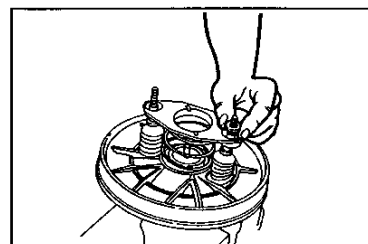
28. While holding the retainer, install the snap ring.



29. Install the tie rod seal plate to the tie rod section.
30. Thinly apply silicone grease to the tie rod seal. Install the tie rod seal to the tie rod section.

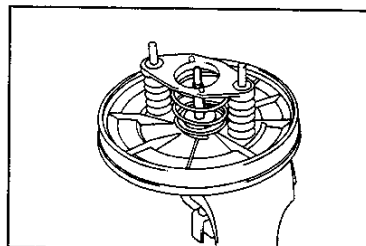
NOTE:

- Make sure that the lip surface of the oil seal faces upward.



BRAKE

31. Apply a small amount of silicone grease to the forward end of the reaction ring shaft.
32. Install the booster piston rod. Apply a small amount of silicone grease to the forward end of the booster piston rod.

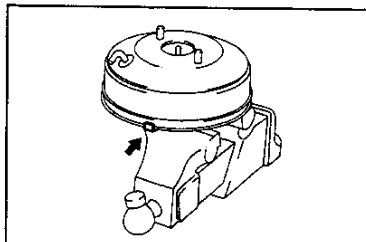


WFE90-BR289

33. Install the booster body to the booster housing while aligning the cut-out section.

NOTE:

- Slowly and completely fit the booster body with the housing.



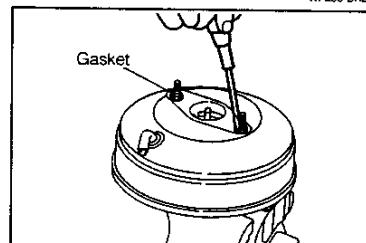
WFE90-BR290

34. Install the gasket to the booster body.

35. Install the new "E" rings.

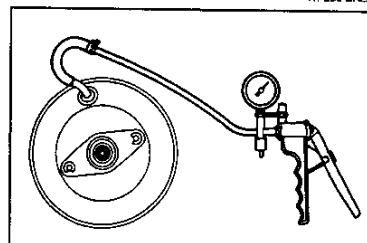
NOTE:

- Do not reuse the "E" rings.



WFE90-BR291

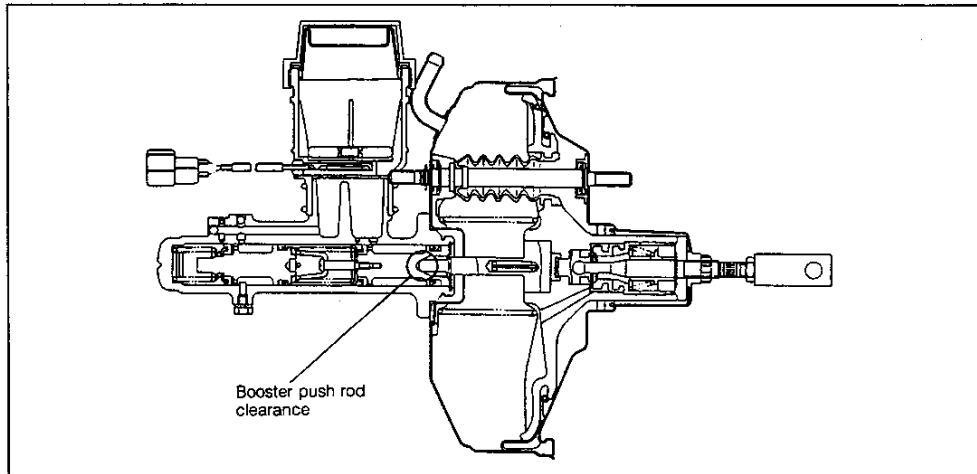
36. Apply negative pressure to the brake booster, using a Mity-Vac. At this time, ensure that no air leakage is present.



WFE90-BR292

BRAKE

ADJUSTMENT OF PUSH ROD CLEARANCE

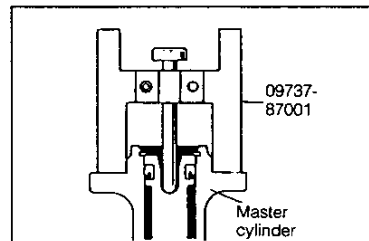


WFE90-BR293

1. Place the following SST on the master cylinder. Adjust the central rod of the SST so that it may contact with the bottom of the piston.
SST: 09737-87001-000

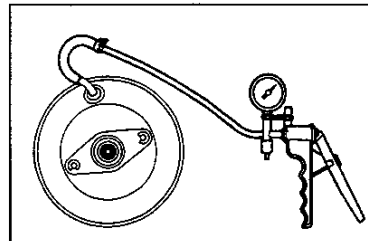
CAUTION:

- Be very careful not to allow the SST or rod to tilt. Failure to observe this caution may lead to brake malfunctioning.



WFE90-BR294

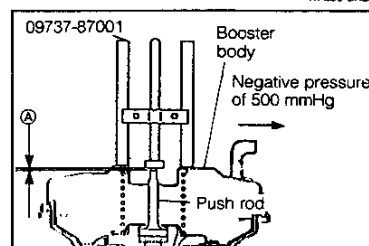
2. Apply a negative pressure of 500 mmHg to the brake booster, using a MityVac or the like.



3. Place the SST which was adjusted at the step 1 on the brake booster in a turned-over state, as shown in the right figure. Ensure that the clearance between the push rod and the SST is zero. If not, adjust the push rod height.

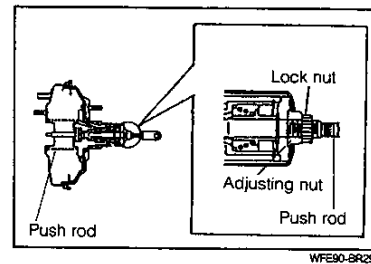
NOTE:

- This operation should be performed with the gasket installed.



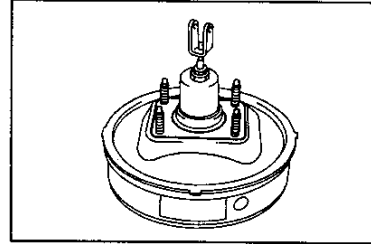
WFE90-BR296

4. Adjustment of push rod height
Loosen the lock nut. While preventing the push rod from turning, turn the adjusting nut, until the push rod height becomes the same height as at the step 3.
5. Tighten the lock nut, while preventing the adjusting nut from turning.
Tightening Torque: 20.4 - 30.6 N-m
(2.08 - 3.12 kgf-m, 15.1 - 22.5 ft-lb)



INSTALLATION

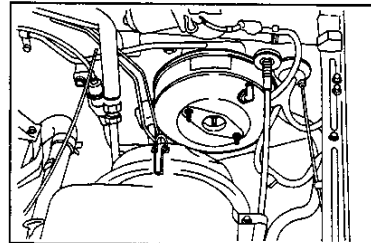
1. Install a new gasket to the dash panel installation surface of the brake booster.



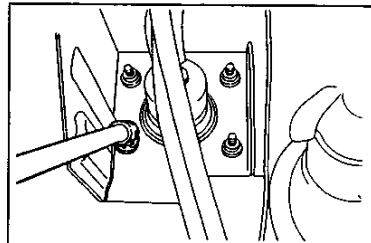
2. Install the brake booster to the dash panel in such a way that the brake booster hose connection may be positioned as indicated in the right figure and that the clevis may be incorporated into the brake pedal.

NOTE:

- Be very careful not to deform the brake pipe.



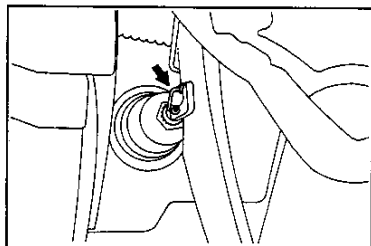
3. Tighten the brake booster attaching nuts.
Tightening Torque: 9.8 - 15.7 N-m
(1.0 - 1.6 kgf-m, 7.2 - 11.6 ft-lb)



4. Connect the clevis to the brake pedal by means of the pin. Install the cotter pin to prevent the pin from dropping.

NOTE:

- Be sure to bend the cotter pin beyond 90 degrees.
- Be sure to apply chassis grease to the pin.

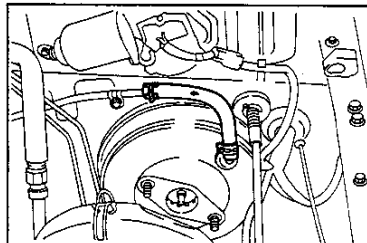


BRAKE

5. Connect the brake booster hose to the brake booster as indicated in the right figure. Install a new hose band.

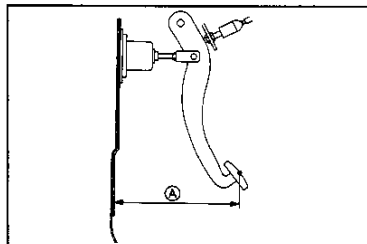
CAUTION:

- The hose should be connected in such a way that the arrowheaded direction may face toward the engine side. Failure to observe this caution may lead to booster malfunctioning.
- Be sure to insert the hose up to the bottom of the spool at the inner side.
- Be sure to install the hose band between the spools.



WFE90-BR302

6. Adjust the brake pedal height.
(See page BR-26.)

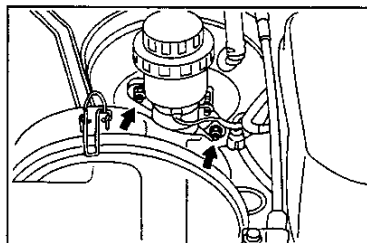


WFE90-BR303

7. Install the master cylinder.
(See page BR-66.)

CAUTION:

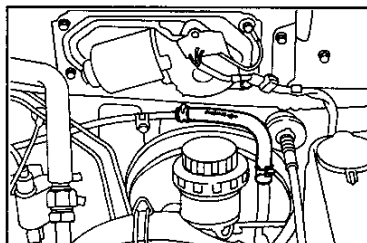
- Prior to the installation of the master cylinder, be sure to adjust the brake booster push rod clearance.



WFE90-BR304

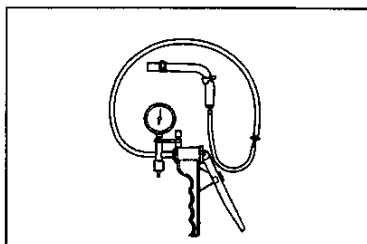
CHECK OF CHECK VALVE

1. Remove the booster vacuum hose bands. Remove the booster vacuum hose.



WFE90-BR305

2. Connect a MityVac to the booster vacuum hose as indicated in the right figure. Apply negative pressure. Ensure that negative pressure is applied and the applied pressure is maintained.
If not, replace the booster vacuum hose.



WFE90-BR306

BRAKE

3. Blow air into the booster vacuum hose from the booster side. Ensure that air continuity exists. If not, replace the booster vacuum hose.

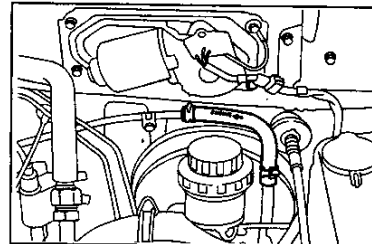


WF90-BR307

4. Connect the brake booster hose as indicated in the right figure. Install new hose bands.

CAUTION:

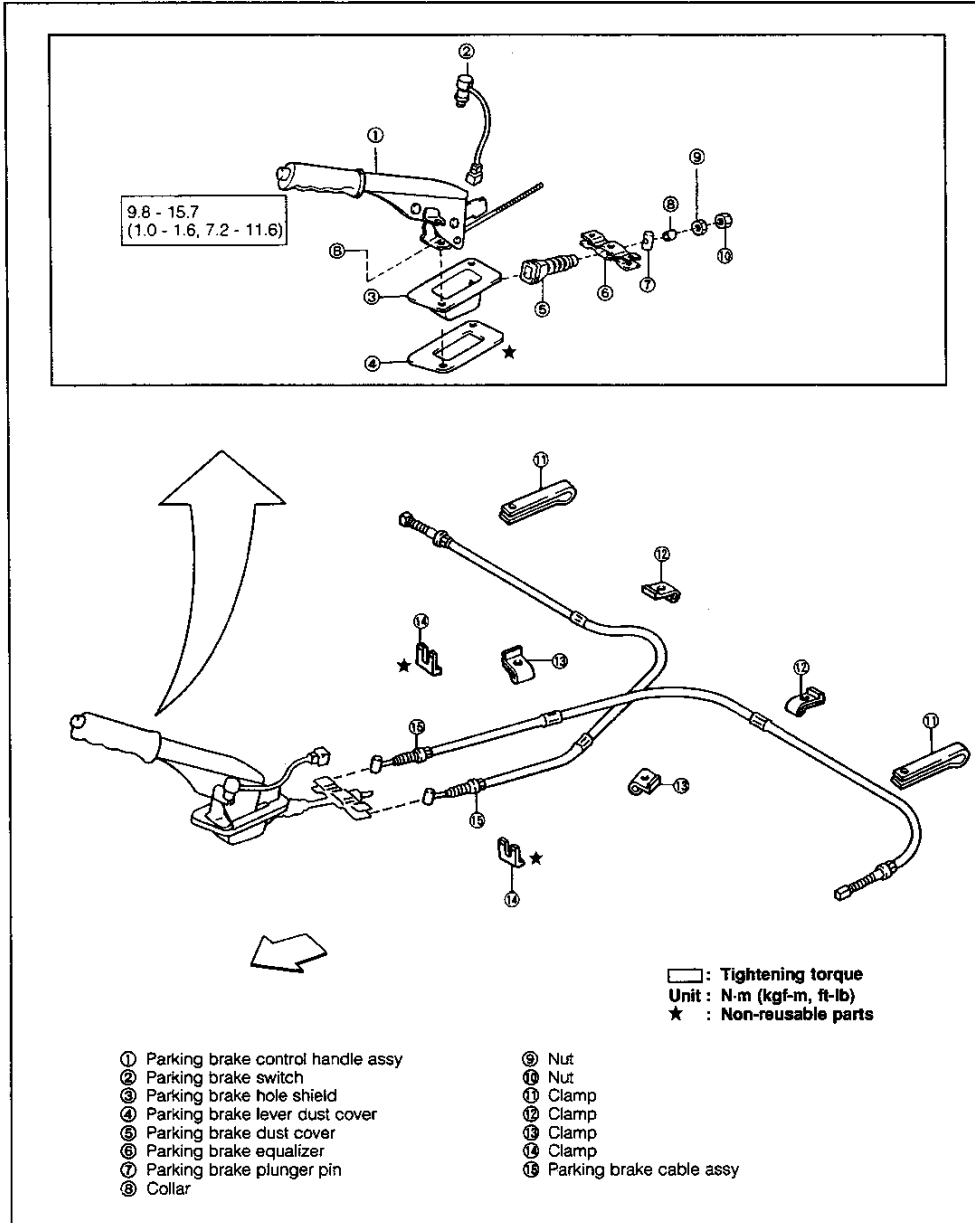
- The hose should be connected in such a way that the arrowheaded direction may face toward the engine side. Failure to observe this caution may lead to booster malfunctioning.
- Be sure to insert the hose up to the bottom of the spool at the inner side.
- Be sure to install the hose band between the spools.



WF90-BR308

BRAKE

PARKING BRAKE COMPONENTS



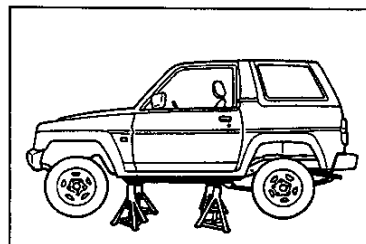
WFE90-BR309

REMOVAL

CAUTION:

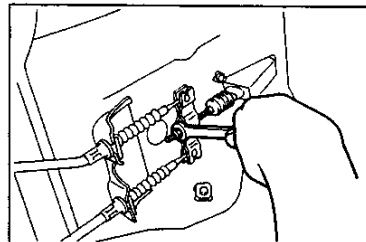
- Be very careful not to damage the cable.
- Be sure not to deform the cable by applying undue force to it.

1. Jack up the vehicle and support it with safety stands. (See GI section.)



WFE90-BR310

2. Loosen the lock nut of the parking brake lever adjusting nut.

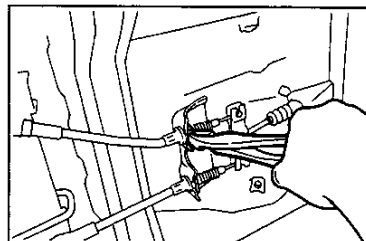


WFE90-BR311

3. Remove the lock nut and adjusting nut.
4. Remove the collar.
5. Detach the cable clamp clip.

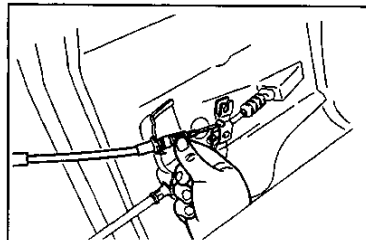
NOTE:

- Do not reuse the clip.



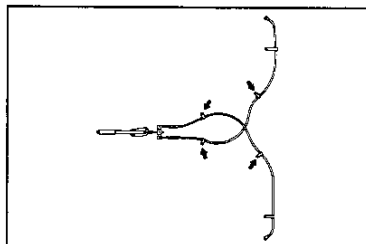
WFE90-BR312

6. Disconnect the parking brake cable from the bracket and remove it from the equalizer.
7. Pull out the parking brake plunger from the equalizer. Remove the parking brake plunger pin.



WFE90-BR313

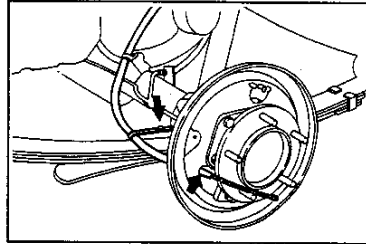
8. Remove the parking brake cable clamps and bolts.



WFE90-BR314

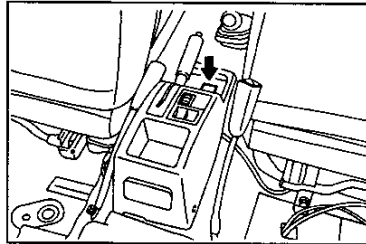
BRAKE

9. Disconnect the parking cable from the brake backing plate.
(See the Rear Brake section.)



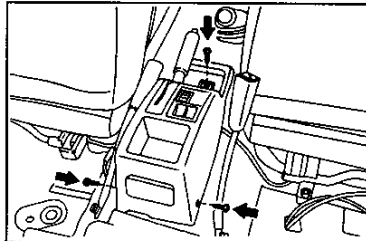
WFE90-BR31g5

10. Removal of console box
(For details, see the Body section.)
(1) Remove the box hole cover, using a small-sized standard screwdriver or the like.



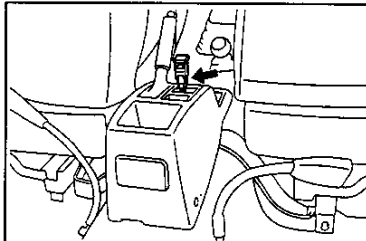
WFE90-BR316

- (2) Remove the console box attaching screws.



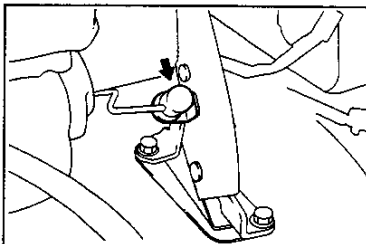
WFE90-BR317

- (3) Lift the console box and disconnect the connectors of the door lock control switch and/or the power window.
(On vehicles so equipped)
(4) Remove the console box.



WFE90-BR318

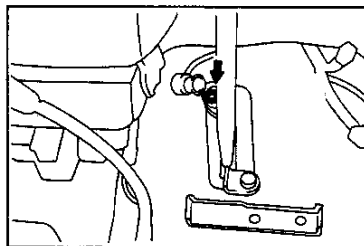
11. Remove the rubber cap of the parking brake lever switch from the switch.



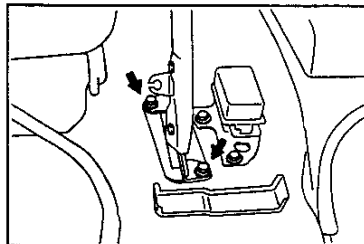
WFE90-BR319

BRAKE

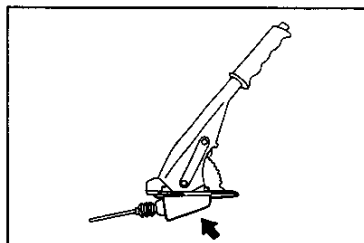
12. Push the parking brake lever switch to release the lock section. Then, remove the parking brake lever switch from the parking brake lever.



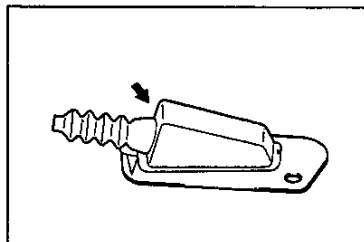
13. Remove the attaching bolts of the parking brake control handle. Then, remove the parking brake control handle from the vehicle.



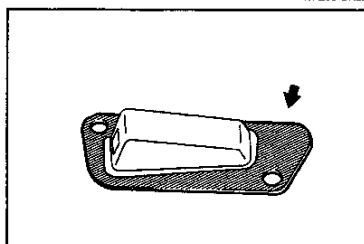
14. Remove the parking brake lever dust cover from the parking brake control handle.



15. Remove the parking brake dust cover from the parking brake lever dust cover.



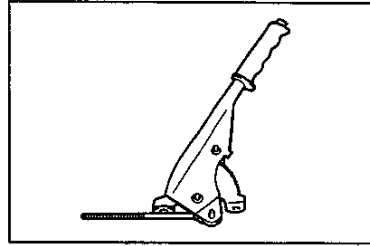
16. Remove the parking brake hole shield from the parking brake lever dust cover.



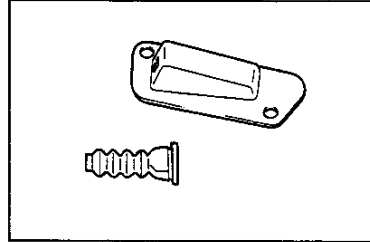
BRAKE

INSPECTION

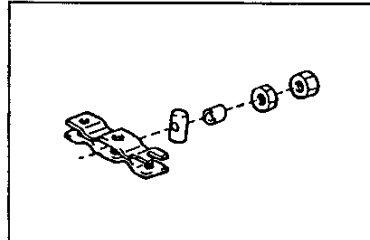
1. Check of parking brake control lever
 - (1) Ensure that the rack and pawl sections exhibit no wear or deformation.
 - (2) Ensure that the pawl for the rack operates smoothly, interlocking with the release button.
 - (3) Ensure that the screw section exhibits no damage.
 - (4) Ensure that each staking section exhibits no excessive play.
 - (5) Ensure that the lever section exhibits no damage, such as deformation.
2. Inspection of parking brake lever dust cover
Ensure that the parking brake lever dust cover exhibits no damage, such as cracks.
3. Inspection of parking brake dust cover
Ensure that the parking brake dust cover exhibits no damage, such as wear and cracks.
4. Ensure that no damage, such as wear, is present at the parking brake equalizer, parking brake plunger pin, collar, adjusting nut and lock nut.
Replace any defective part.
5. Check of parking brake cable
Ensure that the parking brake cable and rubber boot exhibits no damage, such as wear, cut and deformation. Also, ensure that the inner cable operates smoothly.



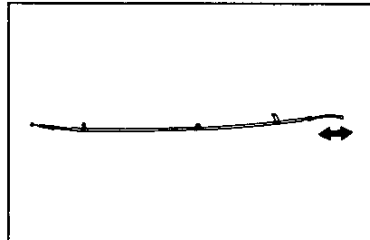
WFE90-BR325



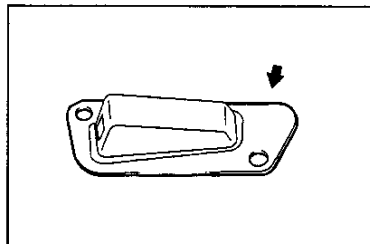
WFE90-BR326



WFE90-BR327



WFE90-BR328



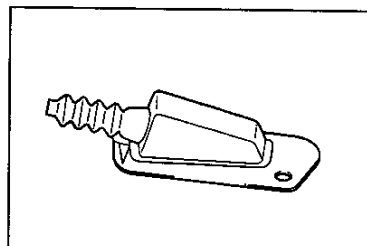
WFE90-BR329

INSTALLATION

1. Install the parking brake hole shield to the parking brake lever dust cover.

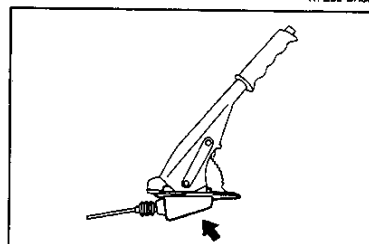
BRAKE

2. Assemble the parking brake lever dust cover to the parking brake lever dust cover.



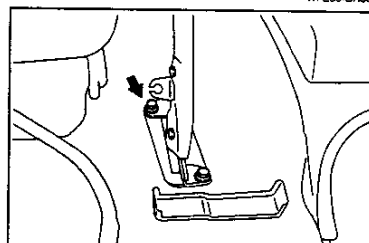
WFE90-BR330

3. Insert the parking brake lever dust cover through the parking brake control handle.



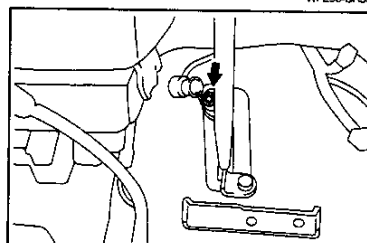
WFE90-BR331

4. Install the parking brake control handle to the floor panel. Tighten the attaching bolts to the specified torque.
Tightening Torque: 9.8 - 15.7 N·m
(1.0 - 1.6 kgf·m, 7.2 - 11.6 ft·lb)



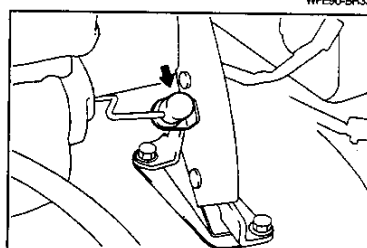
WFE90-BR332

5. Insert the parking brake switch into the parking brake lever.



WFE90-BR333

6. Put the rubber cap of the parking brake lever switch over the switch.



WFE90-BR334

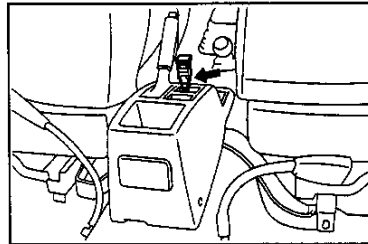
BRAKE

7. Installation of console box (See the Body section.)

- (1) Install the console box through the parking brake lever.

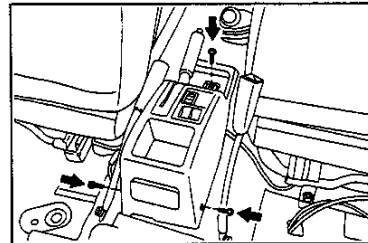
WFE90-BR335

- (2) Reconnect the connectors of the door lock control switch and/or power window control switch.
(On vehicles so equipped only)



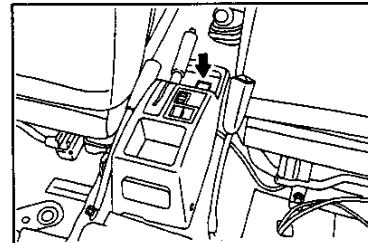
WFE90-BR336

- (3) Install the console box and tighten the attaching screws.



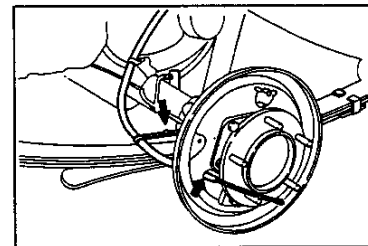
WFE90-BR337

- (4) Install the console box hole cover.



WFE90-BR338

8. Install the parking brake to the brake backing plate. (See the Rear Brake section.)



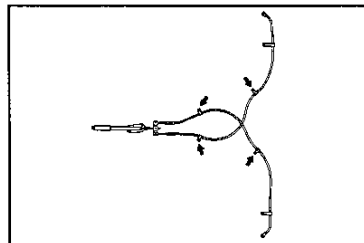
WFE90-BR339

BRAKE

9. Secure the parking brake cable clamps by installing the attaching bolt.

NOTE:

- The cable clamp should be installed in such a way that the gap between the parking brake cable and the fuel tank protector becomes at least 20 mm.

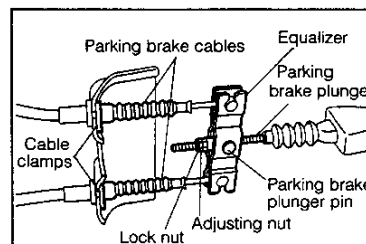


WFE90-BR340

10. Connect the parking brake cable to the equalizer.
12. Install the parking brake plunger pin to the equalizer. Pass the parking brake plunger in place.
13. Install the adjusting nut and lock nut to the plunger.
14. Insert the parking brake cable to the bracket. Clamp the parking brake cable with new cable clamp clips.

NOTE:

- Never reuse the cable clamp clips.



WFE90-BR341

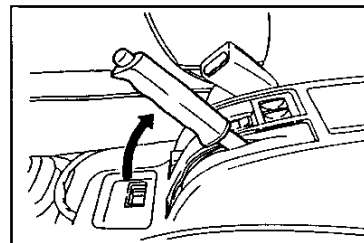
15. Remove the slack of the parking brake cable by pulling the parking brake lever with a force of around 30 - 40 kgf.

16. Adjust the adjusting nut so that the working travel of the parking brake lever may become the specified value when the lever is pulled with a force of 25 kgf.

Specified Working Travel of Parking Lever:

4 - 6 notches

(with an operating force of 25 kgf applied)



WFE90-BR342

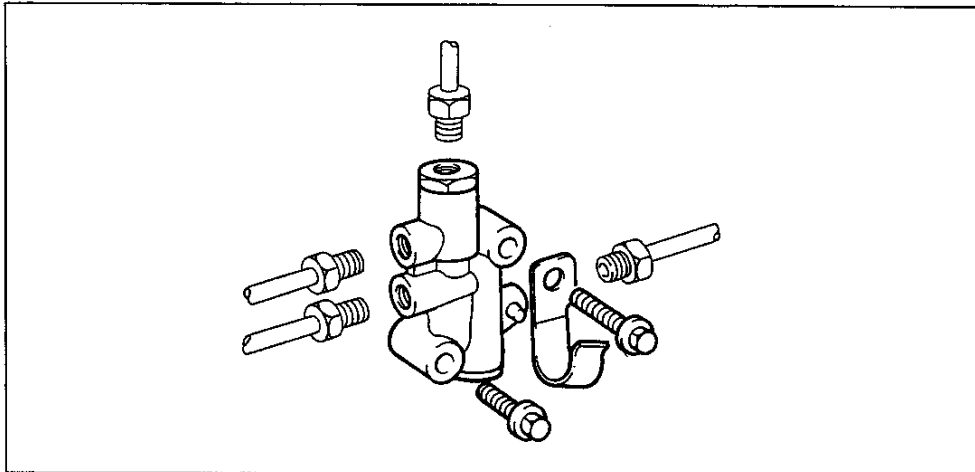
17. While preventing the adjusting nut from turning, tighten the lock nut to the specified torque.

Tightening Torque: 3.9 - 6.9 N·m

(0.4 - 0.7 kgf-m, 2.9 - 5.1 ft-lb)

BRAKE

P & B VALVE (PROPORTIONING AND BY-PASS VALVE)



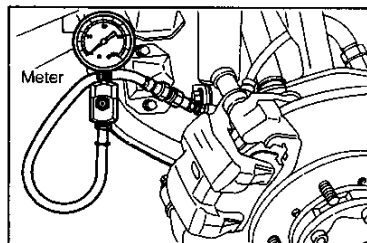
WFE90-BR343

INSPECTION

1. Connect a suitable brake hydraulic pressure gauge to the front wheel brake. Perform air bleeding.

NOTE:

- Be sure to follow the manufacturer's instructions of the brake hydraulic pressure gauge during the connection.

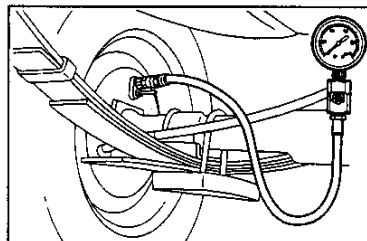


WFE90-BR344

2. Connect a suitable brake hydraulic pressure gauge to the rear wheel brake. Perform air bleeding.

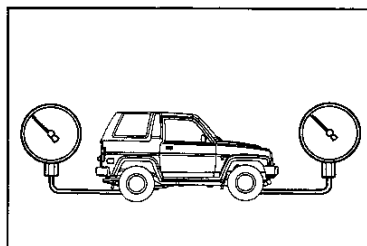
NOTE:

- Be sure to follow the manufacturer's instructions of the brake hydraulic pressure gauge during the connection.



WFE90-BR345

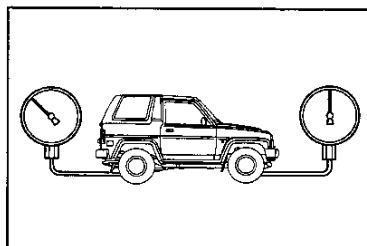
3. With the brake pedal depressed, set the reading of the hydraulic pressure gauge installed to the front wheel brake to 10 kgf/cm². Ensure that the hydraulic pressure gauge installed to the rear wheel brake registers almost the same hydraulic pressure as that applied to the front wheel. If not, replace the P & B valve.



WFE90-BR346

BRAKE

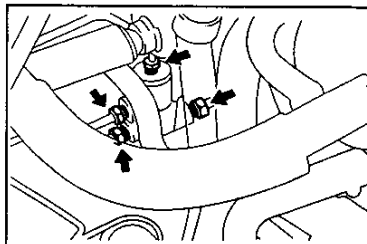
4. Apply a hydraulic pressure of 30 kg/cm² or more to the front wheel brake by depressing the brake pedal. Ensure that the hydraulic pressure applied to the rear wheel brake is lower than that applied to the front wheel. If not, replace the P & B valve.
5. Remove the brake hydraulic pressure gauge. Perform air bleeding.
(See page BR-24.)



WFE90-BR347

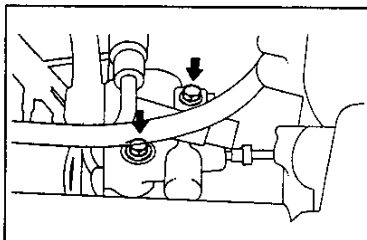
REMOVAL

1. Drain the brake fluid from the front and rear brake bleeder plugs.
2. Remove the brake pipe from the P & B valve.



WFE90-BR348

3. Remove the P & B valve by removing the P & B valve attaching bolts.



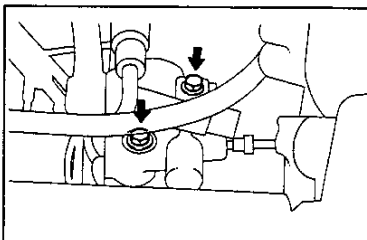
WFE90-BR349

INSTALLATION

1. Install the P & B valve and tighten the attaching bolts.
Tightening Torque: 5.9 - 9.8 N·m
(0.6 - 1.0 kgf-m, 4.3 - 7.2 ft-lb)

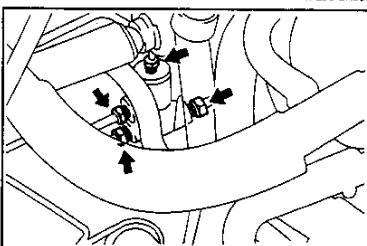
NOTE:

- On air conditioner-equipped vehicles, be sure to tighten the drain hose clamp together with the valve.



WFE90-BR350

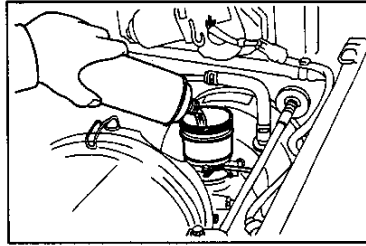
2. Connect the brake pipes to the P & B valve.
Tightening Torque: 12.7 - 17.7 N·m
(1.3 - 1.8 kgf-m, 9.4 - 13.0 ft-lb)



WFE90-BR351

BRAKE

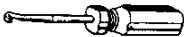
3. Fill brake fluid to the master cylinder. Perform air bleeding.
(See page BR-24.)
4. Perform the brake fluid leakage test.
5. Perform the in-vehicle inspection.
6. Perform the brake test on a brake tester.



WPE90-BR352

BRAKE

SSTs (Special Service Tool)

Shape	Parts No. and Name	Purpose	Remarks
	09373-87001-000 Brake booster push rod gauge	Height adjustment of brake booster push rod	
	09921-0010-000 Spring tension tool	Removal/installation of tension spring	

WFE90-BR353

SERVICE SPECIFICATIONS

Brake pedal height		216 ± 5 mm (0.83 ± 0.2 inch)
Brake pedal free travel		1 - 3 mm (0.039 - 0.12 inch)
Brake pedal reserve travel		80 mm (3.15 inches) or more
Brake pad thickness	New Minimum limit	9 mm (0.35 inch) 1.5 mm (0.06 inch)
Brake disc thickness	Solid New Minimum limit Ventilation New Minimum limit	12.5 mm (0.49 inch) 11.5 mm (0.45 inch) 18.0 mm (0.71 inch) 17.00 mm (0.006 inch)
Brake disc runout limit		0.15 mm (0.006 inch)
Brake drum inner diameter	New Minimum limit	254 mm (10 inches) 256 mm (10.08 inches)
Brake shoe thickness	New Minimum limit	5 mm (0.2 inch) 1 mm (0.04 inch)
Compression spring free length		57 ± 1.5 mm (2.24 ± 0.06 inches)
Clearance between master cylinder and brake booster		0.3 ± 0.2 mm (0.012 ± 0.008 inch)

WFE90-BR354

BRAKE

TIGHTENING TORQUE

Tightening component	N·m	kgf·m	ft·lb
Brake tube (Flare nut)	12.7 - 17.7	1.3 - 1.8	9.4 - 13.0
Air bleader plug	8.8 - 12.7	0.9 - 1.3	6.5 - 9.4
Brake pedal × Brake pedal bracket	14.7 - 21.6	1.5 - 2.2	10.8 - 15.9
Stop lamp switch lock nut	17.7 - 29.4	1.8 - 3.0	13.0 - 21.7
Brake booster push rod × Clevis	12.7 ± 2.6	1.3 ± 0.2	9.4 ± 1.9
Brake mounting support × Steering knuckle	68.6 - 88.3	7.0 - 9.0	50.6 - 65.1
Brake mounting support × Stud bolt	39.2 - 49.0	4.0 - 5.0	28.9 - 36.2
Brake mounting support × Caliper body	31.4 - 41.2	3.2 - 4.2	23.1 - 30.4
Brake hose × Caliper body	20.6 - 26.5	2.1 - 2.7	15.2 - 19.5
Wheel cylinder × Brake tube	12.7 - 17.7	1.3 - 1.8	9.4 - 13.0
Backing plate × Wheel cylinder	7.8 - 11.8	0.8 - 1.2	5.8 - 8.7
Shoe × Automatic adjusting lever pin	2.55 - 4.9	0.26 - 0.5	1.88 - 3.62
Parking brake shoe strut (screw)	2.6 - 3.9	0.26 - 0.4	1.88 - 2.9
Wheel hub nut	88.3 - 11.8	9.0 - 12.0	65.1 - 87.0
Master cylinder piston set bolt	6.9 - 10.8	0.7 - 1.1	5.1 - 8.0
Master cylinder reservoir hose band	5.4 - 6.9	0.55 - 0.70	4.5 - 5.1
Master cylinder × Brake booster	10.2 - 15.3	1.04 - 1.56	7.52 - 11.3
Master cylinder × Brake tube	12.7 - 17.7	1.3 - 1.8	9.4 - 13.0
Brake booster lock nut × Adjust nut	20.4 - 30.6	2.08 - 3.12	15.1 - 22.5
Brake booster × Dash panel	9.8 - 15.7	1.0 - 1.6	7.2 - 11.6
Parking brake control handle × Floor panel	9.8 - 15.7	1.0 - 1.6	7.2 - 11.6
Parking brake control handle × Lock nut	3.9 - 6.9	0.4 - 0.7	2.9 - 5.1
P&B valve × Floor panel	5.9 - 9.8	0.6 - 1.0	4.3 - 7.2
P&B valve × Brake tube	12.7 - 17.7	1.3 - 1.8	9.4 - 13.0

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