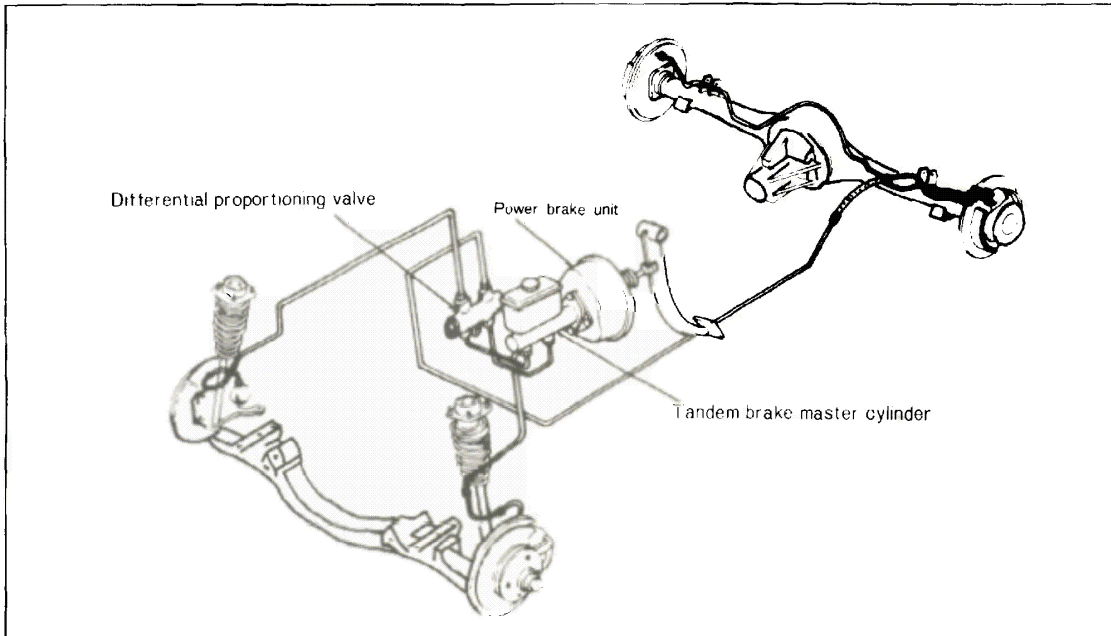


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OUTLINE

STRUCTURAL VIEW



5/U11X-068

SPECIFICATIONS

Item		Specifications
Brake pedal	Type	Suspended
	Free play	7 ~ 9 mm (0.28 ~ 0.35 in)
Master cylinder	Height	190 $\begin{smallmatrix} +5 \\ -0 \end{smallmatrix}$ mm (7.48 $\begin{smallmatrix} +20 \\ -0 \end{smallmatrix}$ in)
	Type	Tandem (with level sensor)
Front disc brake	Cylinder inner diameter	20.64 mm (0.81 in)
	Type	Disc
Rear disc brake (if equipped)	Cylinder inner diameter	50.80 mm (2.0 in)
	Disc plate dimensions (effective diameter x thickness)	202 x 18 mm (7.95 x 0.55 in)
Rear drum brake (if equipped)	Type	Disc
	Wheel cylinder inner diameter	34.93 (1.3752)
Power brake unit	Lining	Drum (leading/trailing)
	Drum inner diameter	19.05 mm (0.75 in)
	Shoe clearance adjustment	200 mm (7.874 in)
		Self adjuster
Parking brake	Type	Vacuum multiplier
	Operation method	8 in
Brake fluid		FMVSS 116, DOT-3 or DOT-4, or SAEJ1703a

TROUBLESHOOTING GUIDE

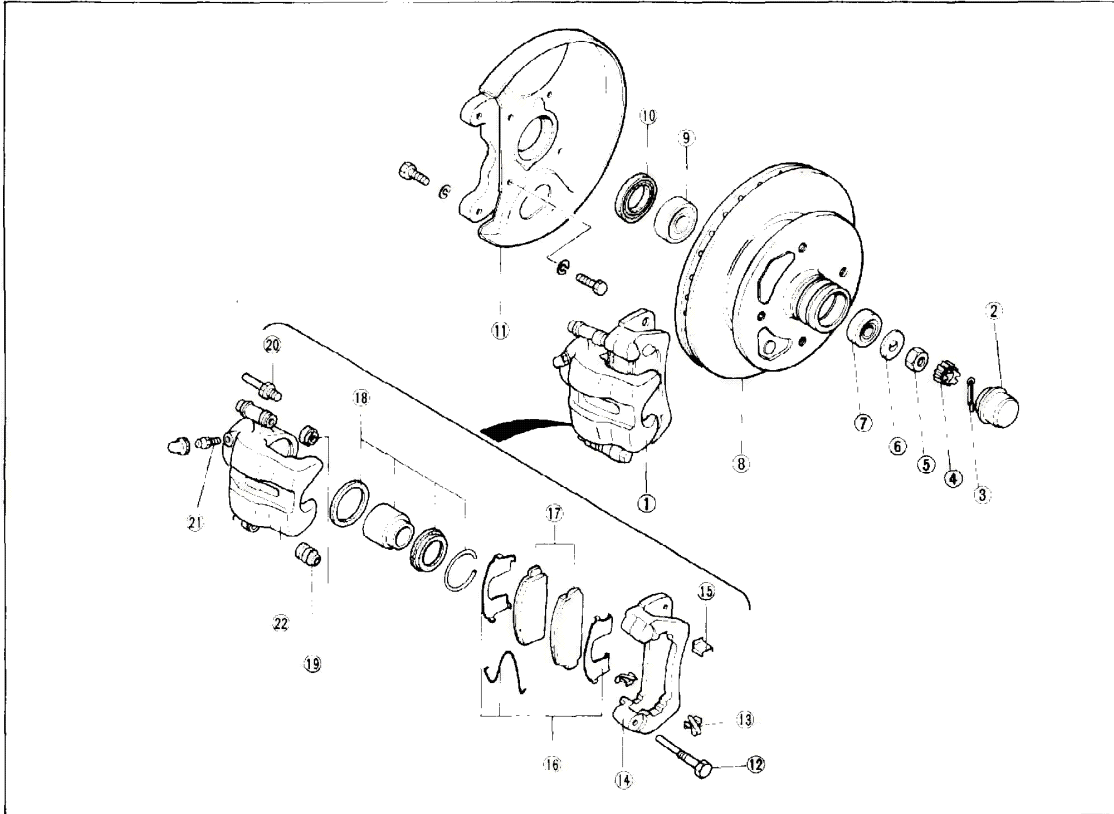
47U11X-069

Problem	Possible Cause	Remedy	Page
Poor braking effect	Leakage of brake fluid Air in brake lines, piping, etc. Worn pads or linings Brake fluid, grease, oil, or moisture on pads	Repair Air bleeding Replace Determine cause, clean or replace	11–24
	Hardening or poor contact of pads or linings Piston operation malfunction (disc brakes) Sliding malfunction of master cylinder or wheel cylinder Operation malfunction of power—brake unit Operation malfunction of check valve (vacuum hose) Damaged vacuum hose Deterioration of flexible hose caused by aging	Repair (by grinding) or replace Disassemble calipers, replace Repair or replace Repair or replace Repair or replace Replace Replace	11 19
Uneven (one-sided) braking	Worn pads or linings Brake fluid, grease, oil, or moisture on pads	Replace Determine cause; clean or replace Repair (by grinding) or replace	11–10
	Hardening or poor contact of pads or linings Uneven wear, deformation, or eccentricity of discs or linings Malfunction of auto adjuster Loose or deformed back-plate installation bolt Operation malfunction of wheel cylinder Sliding malfunction of shoe(s) Improper wheel bearing preload adjustment, or wear Improper adjustment of wheel alignment Uneven air pressure in tires Operation malfunction of master cylinder	Repair or replace Repair or replace Tighten or replace Repair or replace Adjust Adjust or replace Adjust Adjust Repair or replace	
Brakes do not release	No brake pedal play Improper adjustment of operating rod or push rod Clogged master cylinder return port Operation malfunction of check valve Shoe doesn't return properly Wheel cylinder doesn't return properly Disc brake doesn't return properly (piston seal malfunction) Large deflection of disc plate Parking-brake cable doesn't return properly, or improperly adjusted Improper adjustment of wheel bearing preload	Adjust Adjust Clean Repair or replace Adjust Clean or replace Replace Replace Repair or adjust Adjust	11–25
	Reduced pedal-to-floor clearance	Air in system (caused by insufficient brake fluid) Improperly adjusted play of pedal Worn shoe lining Air in brake line, piping, etc. Uneven wear of pads	Add fluid and bleed air Adjust Adjust Replace Bleed air Replace
Abnormal noise or vibration when brakes applied	Worn pads or linings Surface deterioration of pads or linings	Replace Repair (by grinding) or replace Repair Clean	
	Brakes not released Foreign material or scratches on disc plate or drum sliding surfaces Loose back plate or caliper installation bolt Damage or deflection of disc or drum sliding surfaces Poor contact of pad or lining Insufficient grease on sliding parts	Tighten Replace Repair or replace Apply grease	
Poor braking effect of parking brake	Excessive lever stroke Brake cable stuck Brake fluid or oil on lining Hardened lining surface, or poor contact	Adjust Repair or replace Clean or replace Repair (by grinding) or replace	11–25

11 FRONT BRAKES

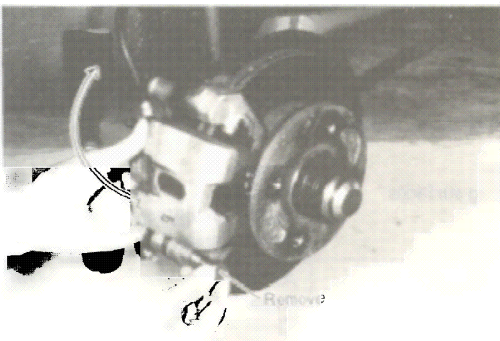
FRONT BRAKES

STRUCTURAL VIEW



47U11X-070

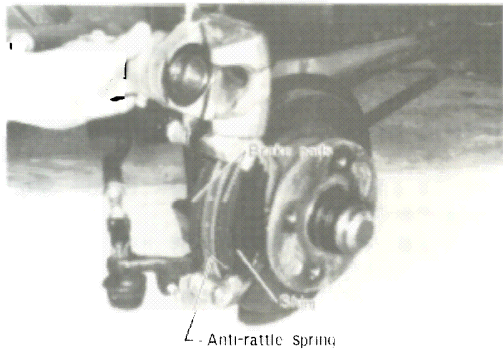
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|-----------------------|-----------------------|----------------|
| 1 Disk brake assembly | 9 Front wheel bearing | 17 Pad |
| 2 Hub cap | 10 Oil seal | 18 Seal kit |
| 3 Split pin | 11 Mounting adapter | 19 Boot kit |
| 4 Set cover | 12 Lock pin | 20 Guide pin |
| 5 Nut | 13 Pad clip | 21 Bleed screw |
| 6 Washer | 14 Support | 22 Caliper |
| 7 Front wheel bearing | 15 Clip | |
| 8 Disk plate | 16 Pad-attachment | |



REMOVING DISC BRAKE PADS

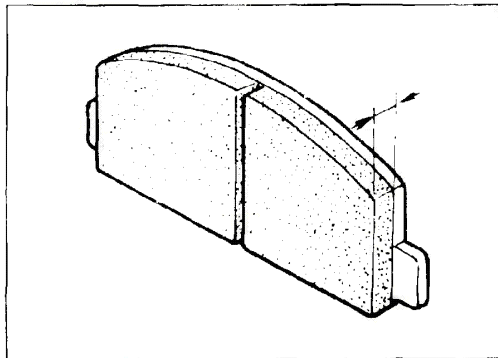
1. Raise the front end of the vehicle and support it with stands.
2. Remove the front wheel.
3. Remove the caliper attaching bolt (lower side).
4. Lift up the lower side of the caliper.

47U11X-001



47U11X-002

5. Remove the anti-rattle spring.
6. Remove the disc brake pads and the shims.



47U11X-003

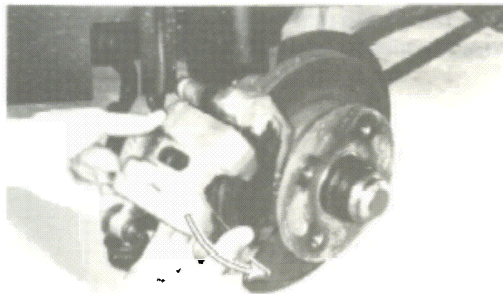
CHECKING DISC BRAKE PADS

Measure the thickness of the lining. If it exceeds limit, replace the disc brake pad with a new one.

Thickness limit: 1 mm (0.039 in)

Cautions

- a) **When the disc brake pads are replaced, replace all pads on both wheels at the same time.**
- b) **Do not mix different types of pads when replacing.**



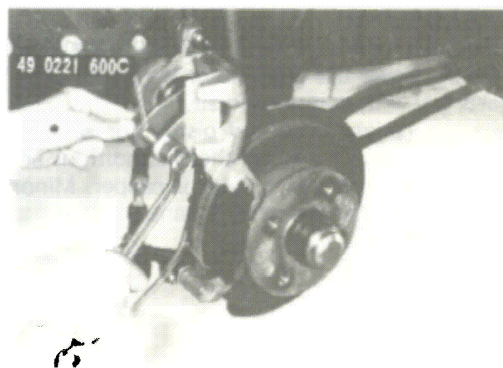
47U11X-004

INSTALLING DISC BRAKE PADS

Install the disc brake pads in the reverse order of removing.

Caution

When installing the caliper, coat the grease that contained in a brake pad kit onto the caliper mounting pin and attaching bolt.

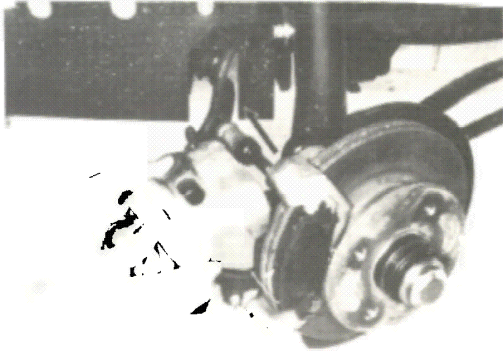


47U11X-005

If it is difficult to install the caliper, perform the following.

1. Remove the rubber cap from the bleeder screw and attach a vinyl tube to the bleeder screw. Submerge the other end of the vinyl tube into a suitable container.
2. Loosen the bleeder screw and press the piston into the cylinder with the **expand tool** (49 0221 600C).
3. Tighten the bleeder screw and remove the vinyl tube and expand tool.
4. Install the caliper.

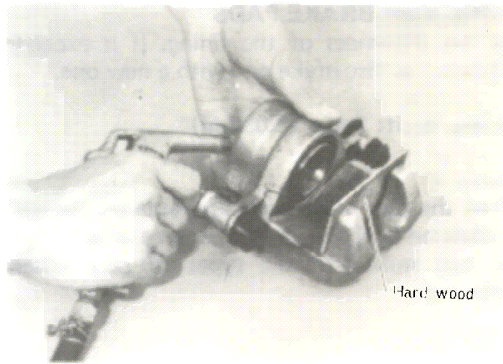
11 FRONT BRAKES



47U11X-006

REMOVING CALIPER

1. Raise the front end of the vehicle and support it with stands.
2. Remove the front wheel.
3. Temporarily loosen the brake flexible hose at the caliper.
4. Remove the caliper attaching bolt (lower side) and lift up the caliper.
5. Slide out the caliper toward the inside of the vehicle and remove the caliper.
6. Disconnect the flexible hose from the caliper and plug the end.



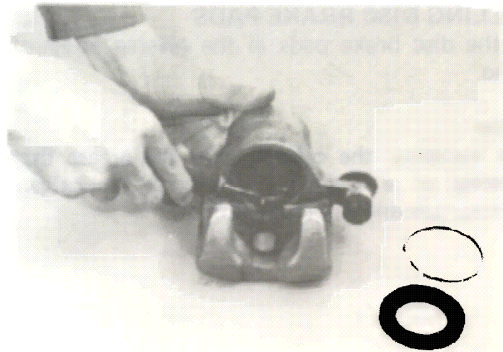
47U11X-007

DISASSEMBLING CALIPER

1. Clean the outside of the caliper.
2. Remove the dust boot retainer and dust boot.
3. Remove the piston.
Place a hard wood plate in the caliper pit and gradually blow compressed air from the fluid hole.

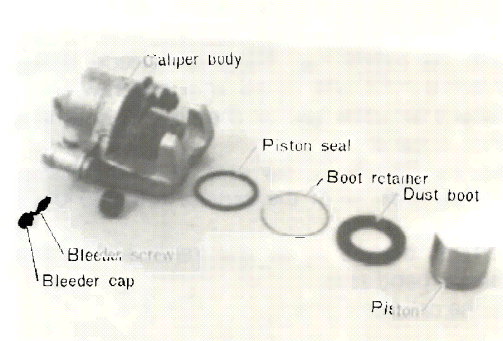
Caution

If it is difficult to remove the piston, lightly tap around the piston while applying air pressure.



47U11X-008

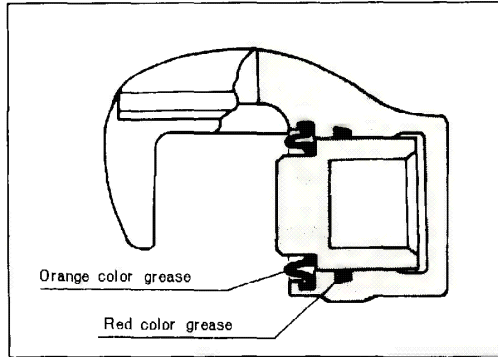
4. Remove the piston seal by using the suitable tool.
5. Remove the bleeder cap and screw.



47U11X-009

CHECKING CALIPER

1. Clean the disassembled parts in clean brake fluid or alcohol. **Never use gasoline or kerosene.** Blow the parts dry with compressed air.
2. Inspect the caliper bore and piston for scoring, scratches or rust. If any of these conditions are found, replace with new piston or caliper. Minor damage can be eliminated by means of polishing with crocus cloth.



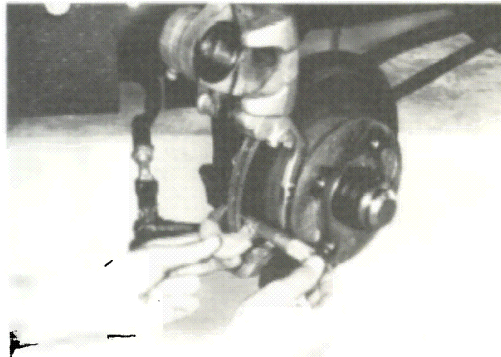
47U11X-010

ASSEMBLING CALIPER

Assemble the caliper in the reverse order of disassembly.

Cautions

- a) Discard the old piston seal and the dust seal, and use new ones.
- b) Be sure that the piston seal does not become twisted and it is seated fully in the groove.
- c) Two kinds of grease contained in a seal kit must be used as shown in figure.
- d) Lubricate the piston and caliper bore with brake fluid.



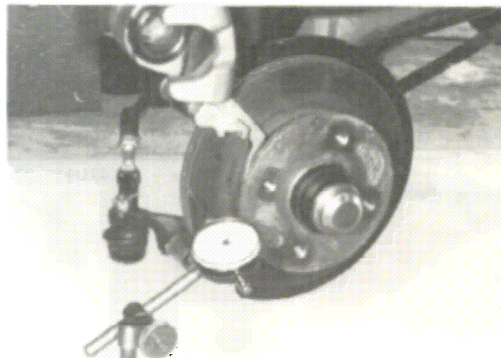
47U11X-011

CHECKING BRAKE DISC

- 1. Remove the disc brake pads and caliper as described in Page 11-4.
- 2. Inspect the surface of the disc for scoring, scratches, rust and excessive wear. Reface the disc as necessary.

Standard thickness: 18 mm (0.7087 in)

Thickness limit thickness: 17 mm (0.6693 in)



47U11X-012

- 3. Check the lateral run-out of the disc with a dial indicator.

Run-out limit: 0.1 mm (0.0039 in)

Caution

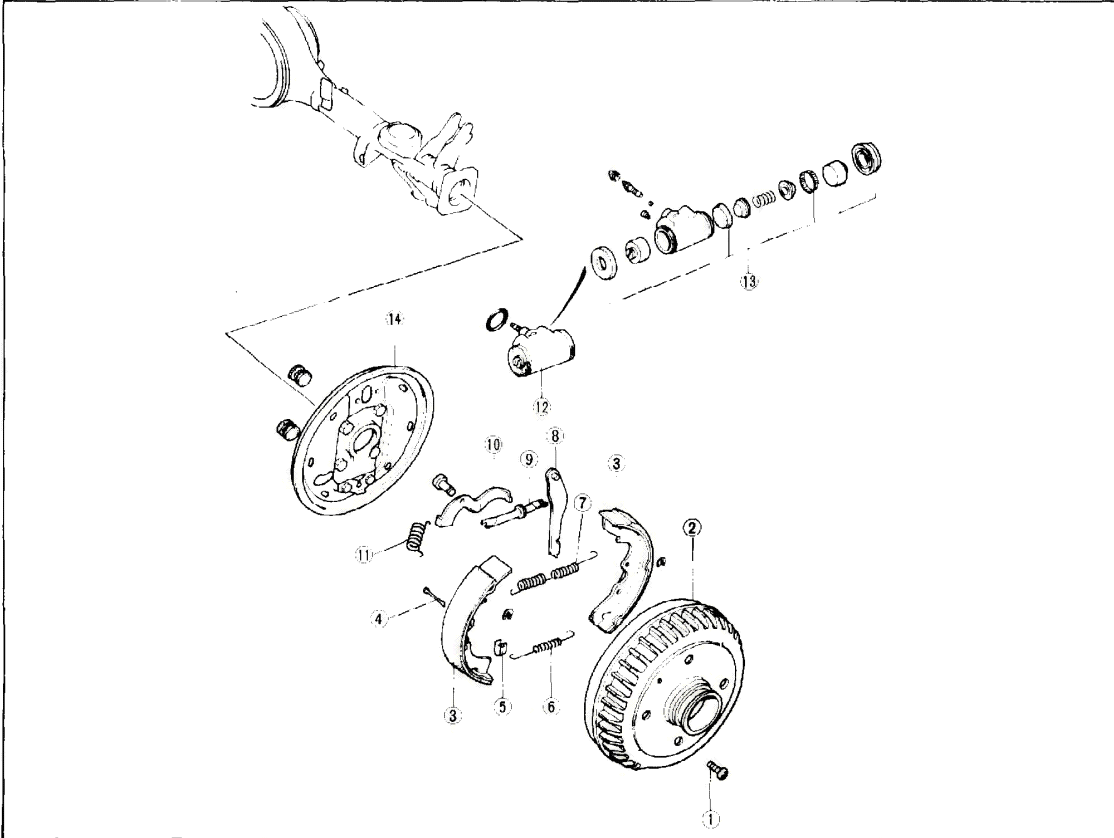
Make certain that the wheel bearing preload is correctly adjusted, before checking the run-out of the disc.

REPLACING BRAKE DISC

To remove or replace the brake disc and wheel hub assembly, refer to Page 12-4.

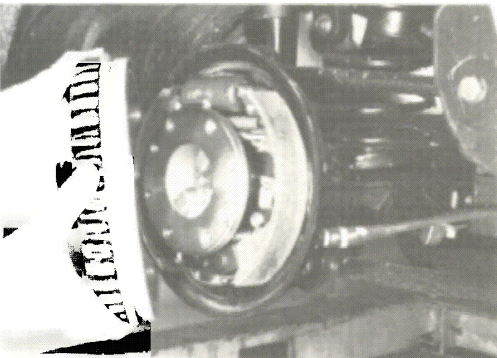
REAR DRUM BRAKES

STRUCTURAL VIEW



47U11X-071

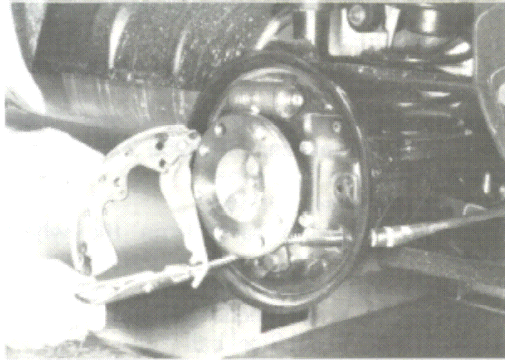
- | | |
|-----------------------|-------------------|
| 1 Screw | 8 Operating lever |
| 2 Brake drum | 9 Adjuster |
| 3 Brake shoe | 10 Lever |
| 4 Pin | 11 Spring |
| 5 Spring | 12 Wheel cylinder |
| 6 Lower return spring | 13 Cup & Boot set |
| 7 Upper return spring | 14 Back plate |



47U11X-013

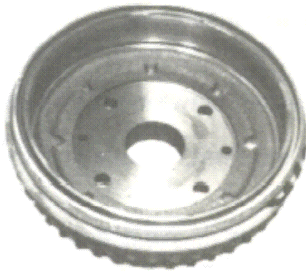
REMOVING REAR BRAKE SHOES

1. Raise the rear end of the vehicle and support the rear axle housing with stands.
2. Remove the rear wheel.
3. Remove the brake drum attaching screws.
4. Fully release the parking brake and remove the brake drum.



47U11X-014

5. Remove the return springs.
6. Remove the brake shoe retaining springs and guide pins.
7. Remove the brake shoes and strut adjuster rod.
8. Remove the parking brake cable from the operating lever on the brake shoe.



47U11X-015

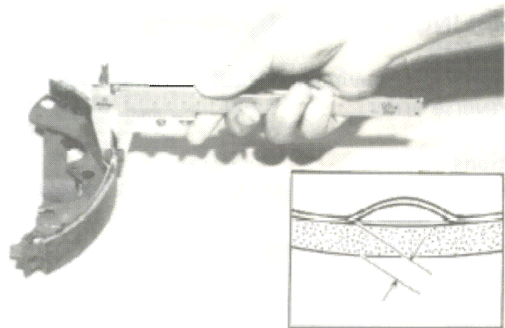
INSPECTING REAR BRAKES

Check the following parts and repair or replace any part if found defective.

a. Brake drums

Inspect the brake drum for damage, wear and scores.

- Roughness limit: 0.15 mm (0.006 in)**
- Drum inner diameter limit: 201 mm (7.9135 in)**
- Standard diameter: 200 mm (7.8741 in)**



47U11X-016

b. Brake linings

Inspect the brake lining for wear, damaged and deformation.

- Limit thickness: 1.0 mm (0.039 in)**
- Standard thickness: 4.0 mm (0.01575 in)**

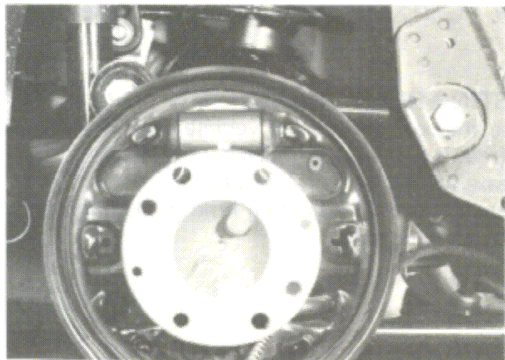
c. Wheel cylinders

Check whether the wheel cylinder boot is wet with brake fluid.

If the wheel cylinder boot is wet, the wheel cylinder must be overhauled.

d. Brake lines

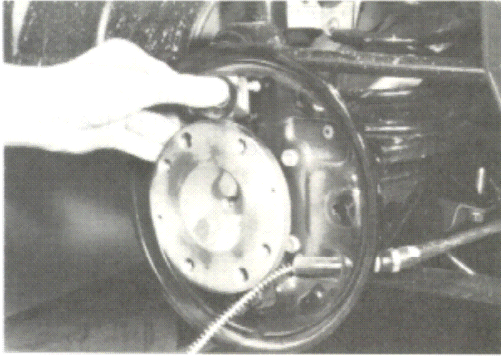
1. Inspect all brake lines for leakage.
2. Check all brake pipes, hoses and connections for signs of chafing, deterioration or other damage.



47U01X-017

INSTALLING REAR BRAKE SHOES

Install the rear brake shoes in the reverse order of removing. After installing them, adjust the rear brake as described in Page 11–10.

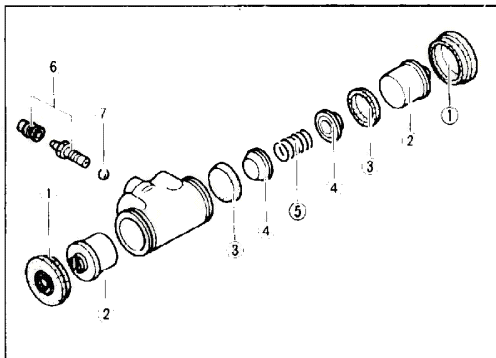


47U01X-018

REMOVING AND DISASSEMBLING REAR WHEEL CYLINDERS

1. Remove the rear brake shoes, as described in Page 11-8.
2. Disconnect the brake fluid pipe at the wheel cylinder using the **spanner** (49 0259 770A). Plug the end of the brake fluid pipe.
3. Remove the rear wheel cylinder.
4. Remove the following parts from the wheel cylinder.

1) Dust boots	5) Spring
2) Pistons	6) Bleeder cap and screw
3) Piston cups	7) Steel ball
4) Filling blocks	



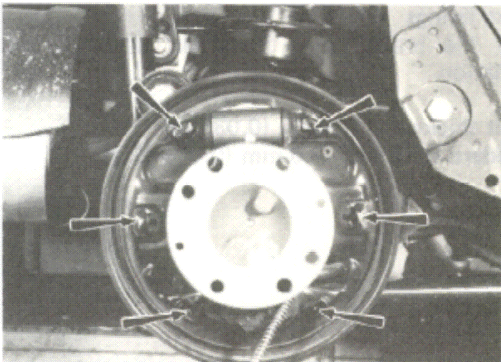
47U11X-019

CHECKING REAR WHEEL CYLINDERS

1. Wash all parts in clean alcohol or brake fluid. **Never use gasoline or kerosene.**
2. Examine the cylinder bore and piston for wear, roughness or scoring.
3. Check the clearance between the cylinder and the piston. If it exceeds the limit, replace the cylinder or piston.

Clearance limit: 0.15 mm (0.006 in)

4. Inspect the piston cups for wear, softening, swelling or any damage. If any of these conditions exists, replace the cups.



47U11X-020

ASSEMBLING AND INSTALLING REAR WHEEL CYLINDERS

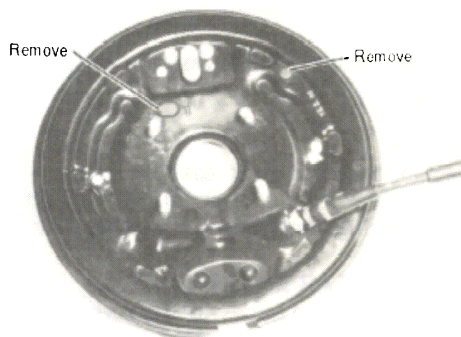
Carry out the removing and disassembling operation in the reverse order.

Cautions

Apply multi-purpose grease on the following contacting surfaces.

- a) Brake shoe and backing plate
- b) Brake shoe and wheel cylinder piston
- c) Brake shoe and anchor pin

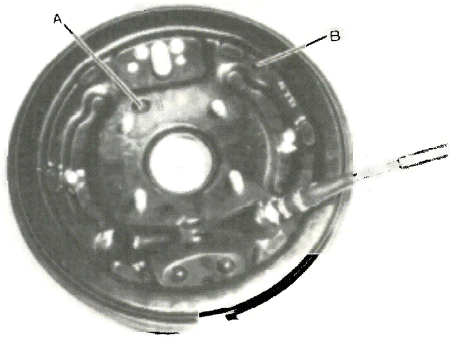
After installing, bleed the brake system as described in Page 11-21, and check for proper brake operation.



47U11X-021

ADJUSTING REAR BRAKES

1. Raise the rear end of the vehicle until the wheels are free to turn and support it with stands.
2. Release the parking brake fully.
3. Remove the shoe adjusting hole plugs from back of the backing plate.

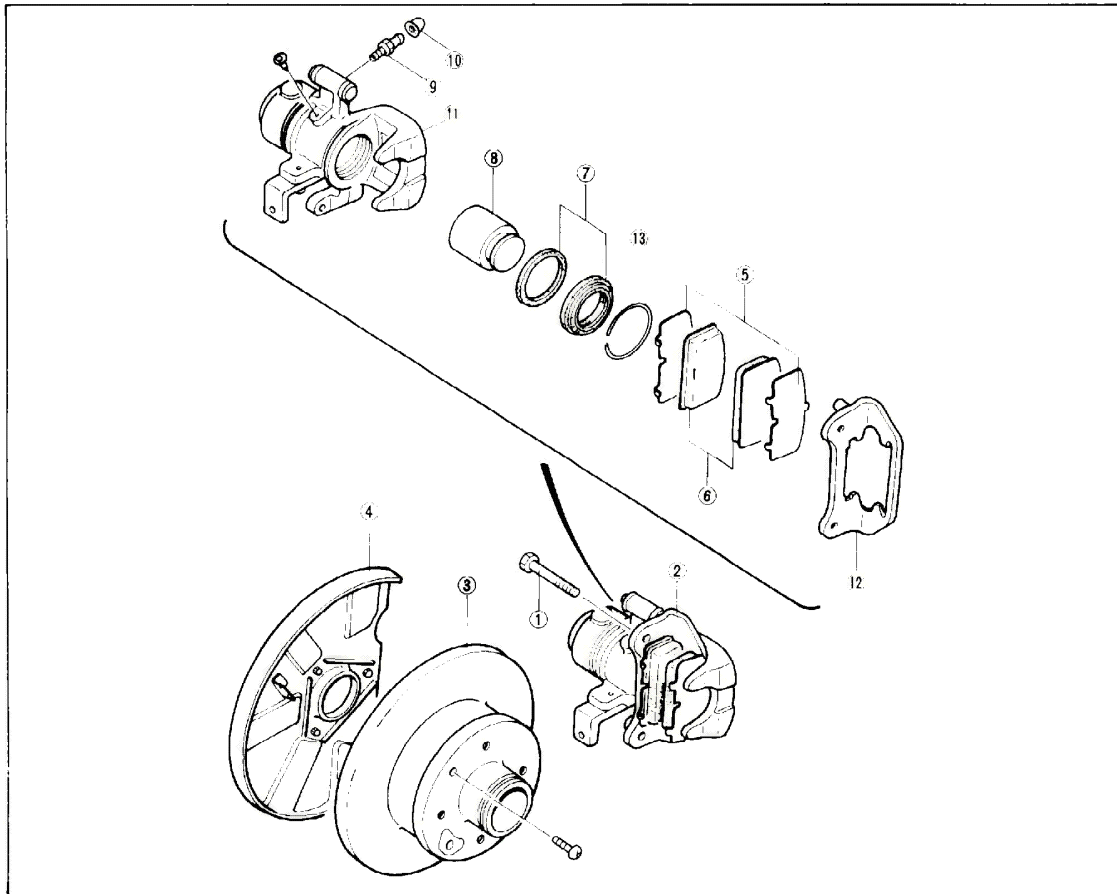


47U11X 022

4. Install a screwdriver into hole (A) and turn the star wheel toward the arrow direction (→) marked on the backing plate until the wheel is locked.
5. Push the adjuster lever by inserting the screw driver into the hole (B). Then, back off the star wheel **3 ~ 4 notches** so that the wheel rotates freely without drag.
6. Install the adjusting hole plug onto the backing plate.
7. Repeat the above adjustment on the other side of the rear wheel.

REAR DISC BRAKES

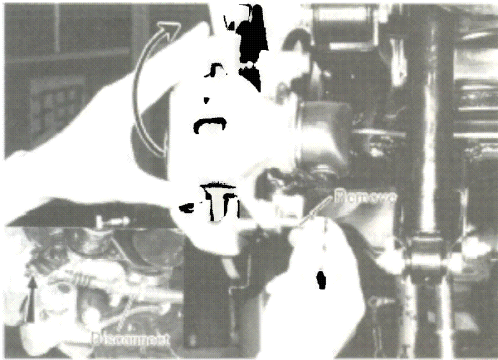
STRUCTURAL VIEW



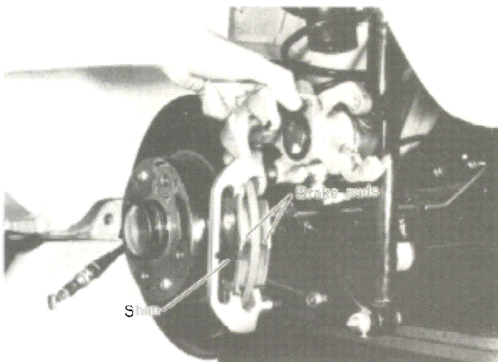
57U11X 072

- | | | |
|-----------------------|------------------|--------------------|
| 1 Bolts | 6 Pad attachment | 11 Caliper body |
| 2 Disc brake assembly | 7 Boot kit | 12 Caliper bracket |
| 3 Disc plate | 8 Piston | 13 Boot retainer |
| 4 Dust cover | 9 Bleeder screw | |
| 5 Pad attachment | 10 Bleeder cap | |

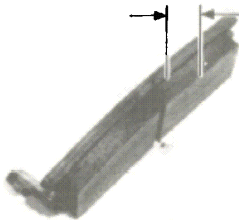
11 REAR DISC BRAKES



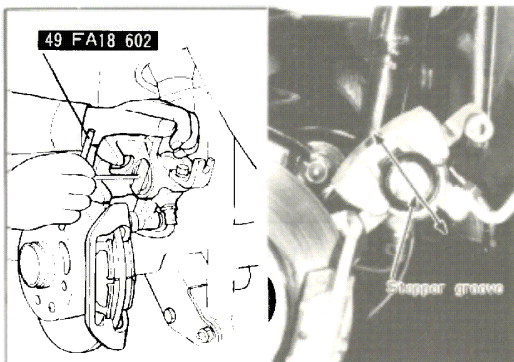
47U11X-023



47U11X-024



47U11X-025



47U11X-026

REMOVING DISC BRAKE PADS

1. Raise the rear end of the vehicle and support it with stands.
2. Remove the rear wheel.
3. Disconnect the parking brake cable from the caliper.
4. Remove the caliper attaching bolt (lower side).
5. Lift up the lower side of the caliper.

6. Remove the anti-rattle spring.
7. Remove the disc brake pads and the shims.

CHECKING DISC BRAKE PADS

Measure the thickness of the lining. If it exceeds limit, replace the disc brake pad with a new one.

Thickness limit: 1 mm (0.039 in)

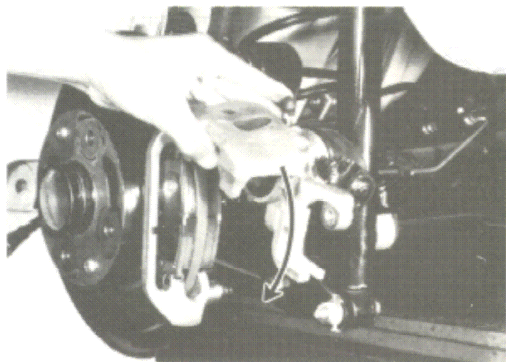
Cautions

- a) When the disc brake pads are replaced, replace all pads on both wheels at the same time.
- b) Do not mix different types of pads when replacing.

INSTALLING DISC BRAKE PADS

Install the disc brake pads in the reverse order of removing, **noting** the following points.

1. Using the **disc brake piston wrench** (49 FA18 602), turn the piston clockwise until the piston is inserted into the caliper fully and position the piston so that the stopper groove on the piston is positioned as shown in figure. Make sure the dowel on the shoe is seated in the piston stopper groove properly.

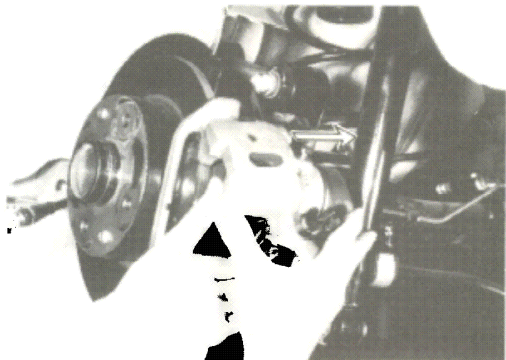


47U11X-027

- When installing the caliper, coat the grease that contained in a brake pad kit onto the caliper mounting pin and attaching bolt.

Caliper tightening torque:

30 ~ 42 N·m (22 ~ 30 ft-lb)



47U11X-028

REMOVING CALIPER

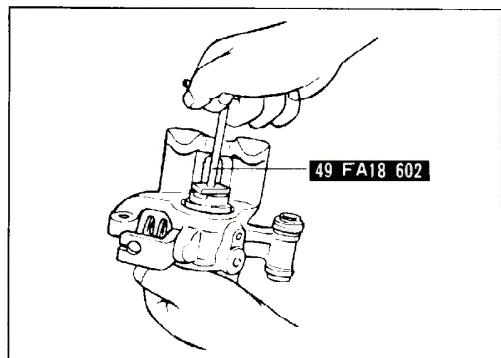
- Raise the rear end of the vehicle and support it with stands.
- Remove the rear wheel.
- Disconnect the parking brake cable from the caliper.
- Temporarily loosen the brake flexible hose at the caliper.
- Remove the caliper attaching bolt (lower side) and lift up the caliper.
- Slide out the caliper toward the inside of the vehicle and remove the caliper.
- Disconnect the flexible hose from the caliper and plug the end of the flexible hose.



47U11X-029

DISASSEMBLING CALIPER

- Clean the outside of the caliper.
- Remove the dust boot retainer and dust boot.

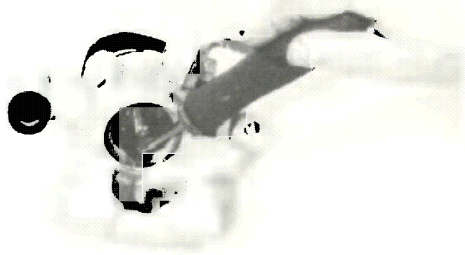


47U11X-030

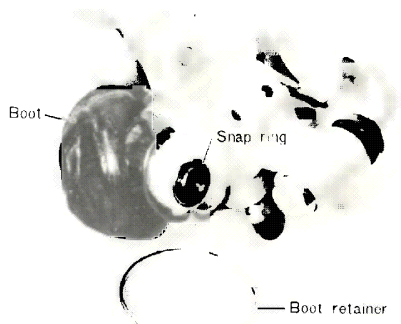
- Turn the piston counter-clockwise with **disc brake piston wrench** (49 FA18 602) and screw out the piston.

11 REAR DISC BRAKES

4. Remove the piston seal by using a suitable tool.

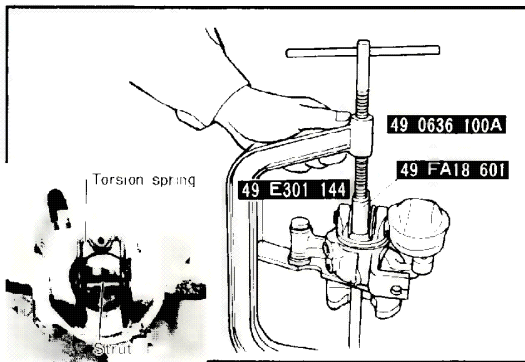


47U11X-031



47U11X-032

5. Remove the boot retainer.
6. Slip off the boot.
7. Remove the snap ring.



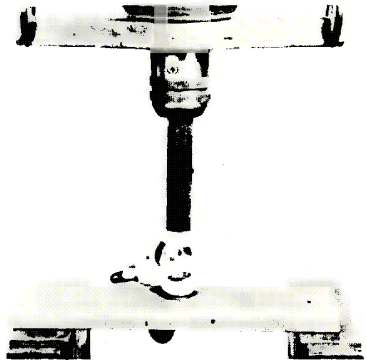
47U11X-033

8. Compress the conical spring in the caliper with **valve spring lifter arm** (49 0636 100A), **spring compressor** (49 FA18 601) and **removing plate** (49 E301 144).
Remove the parking brake crank, torsion spring and strut.



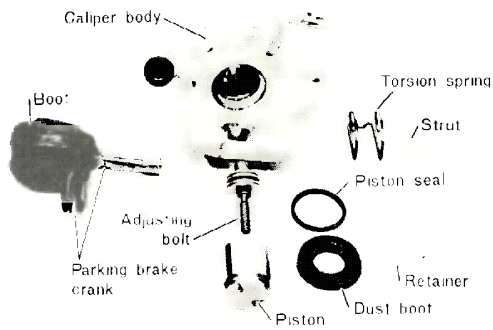
47U11X-034

9. Remove the adjusting bolt and conical spring assembly.



47U11X-035

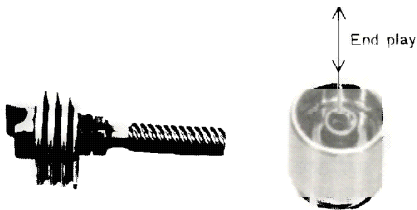
10. Press out the needle roller bearings.
Do not remove the needle roller bearing unless it is necessary to replace.



47U11X-036

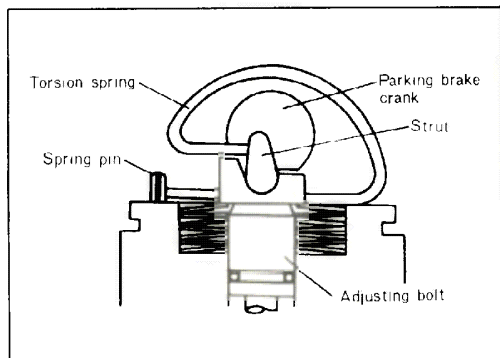
CHECKING CALIPER

1. Clean the disassembled parts in clean brake fluid or alcohol. **Never use gasoline or kerosene.** Blow the parts dry with compressed air.
2. Inspect the caliper bore and piston for scoring, scratches or rust. If any of these conditions are found, replace with a new piston or caliper. Minor damage can be eliminated by means of polishing with crocus cloth.
3. Inspect the needle roller bearing, strut, adjusting bolt and parking brake crank for corrosion, wear or any damage.



47U11X-037

4. Check the torsion spring and conical spring for corrosion, weakness or any damage.
5. Check the piston and sleeve nut for excessive play. It should be **within 0.3 ~ 0.5 mm (0.012 ~ 0.020 in).**



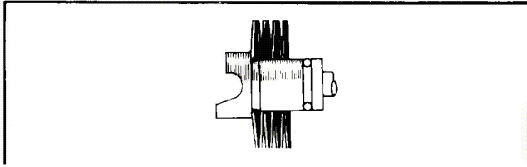
47U11X-075

ASSEMBLING CALIPER

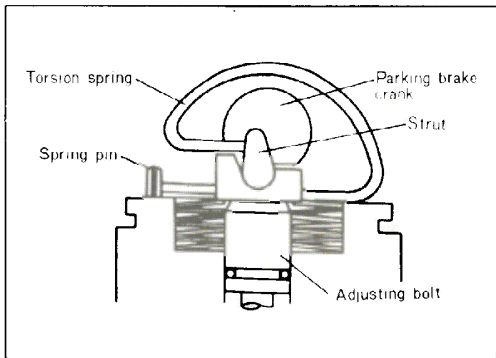
Assemble the caliper in the reverse order of disassembly, **noting** the following points.

1. Discard the old piston seal and the dust boot, and use new ones.
2. Be sure that the piston seal does not become twisted and it is seated fully in the groove.
3. The three kinds of grease contained in the seal kit must be used in the following manner.
 - 1) White color Caliper mounting pin and attaching bolt
 - 2) Orange color Bearings, adjusting bolt, strut and piston boot
 - 3) Pink color Piston seal

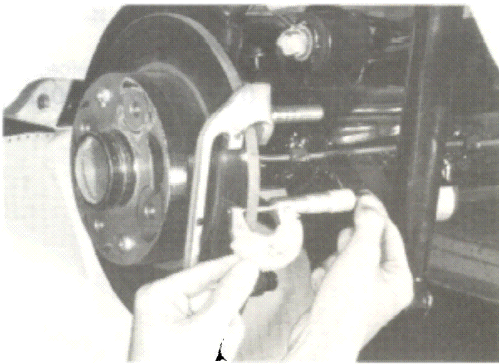
11 REAR DISC BRAKES



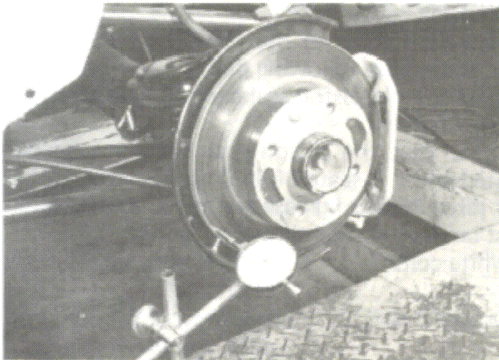
47U11X-038



47U11X-039



47U11X-040



47U11X-041

4. Lubricate the piston and caliper bore with brake fluid.
5. Press in the needle roller bearing so that the arrow mark on the bearing facing outward.
6. Assemble the conical spring and adjusting bolt as shown in figure.
7. Install the adjusting bolt assembly, strut and torsion spring in to the caliper as shown in figure.
8. Install the piston using the **disc brake piston wrench** (49 FA18 602) as described in Step 1 of Page 11–12.

INSTALLING CALIPER

Install the caliper in the reverse order of removing and bleed the hydraulic system referring to Page 11–24.

CHECKING BRAKE DISC

1. Remove the disc brake pads and caliper as described on Page 11–12.
2. Inspect the surface of the disc for scoring, scratches, rust and excessive wear.
Reface the disc as necessary.

Standard thickness: 10 mm (0.3937 in)

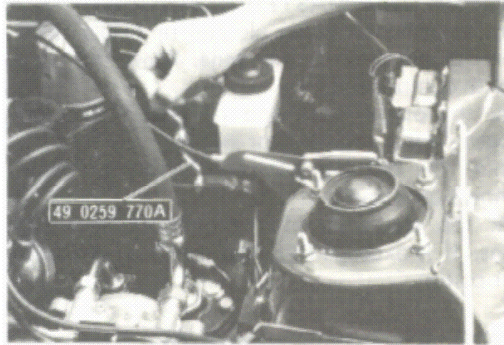
Thickness limit thickness: 9 mm (0.3543 in)

3. Check the lateral run-out of the disc with a dial indicator.

Run-out limit: 0.1 mm (0.0039 in)

Caution

Make certain that the brake disc attaching screws are tightened correctly, before checking the run-out of the disc.



47U11X-042

BRAKE MASTER CYLINDER

REMOVING BRAKE MASTER CYLINDER

1. Disconnect the oil level sensor coupler.
2. Disconnect the fluid pipes at the master cylinder outlets using the **spanner** (49 0259 770A).
3. Remove the proportioning by-pass valve attaching bolt.
4. Remove the brake master cylinder assembly.

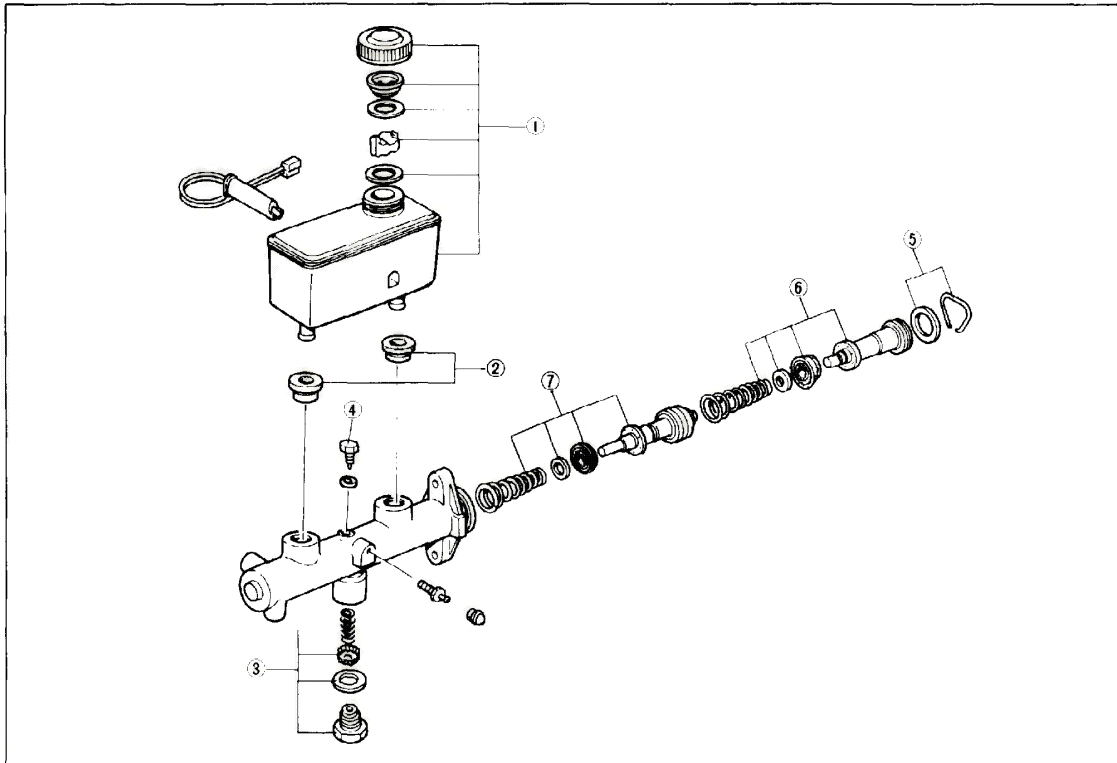
Caution

Never allow the brake fluid to drop on any painted surface.

DISASSEMBLING BRAKE MASTER CYLINDER

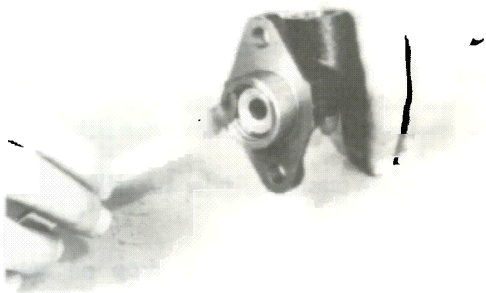
After draining the brake fluid, remove the following parts.

- 1) Reservoir tank set
- 2) Bushes
- 3) Joint bolt, check valve and spring
- 4) Secondary piston stop bolt and "O" ring
- 5) Stop ring
- 6) Primary piston assembly
- 7) Secondary piston assembly and spring

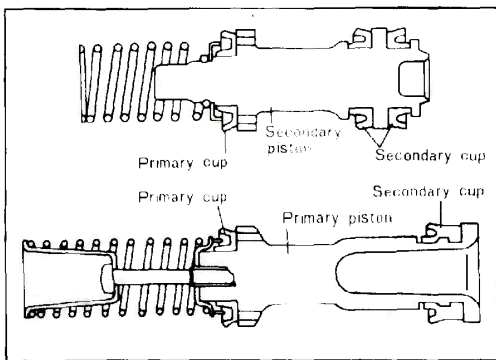


47U11X-043

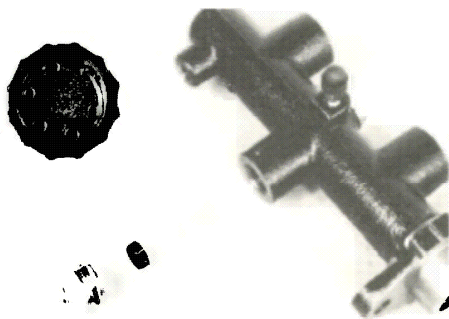
11 BRAKE MASTER CYLINDER



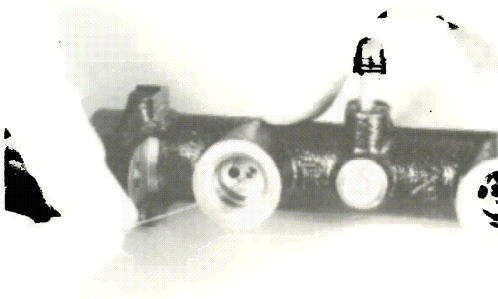
47U11X-044



47U11X-045



47U11X-046



47U11X-047

CHECKING BRAKE MASTER CYLINDER

1. Wash the parts in clean alcohol or brake fluid. **Never use gasoline or kerosene.** Blow the parts dry with compressed air.
2. Check the piston cups and replace if they are damaged, worn, softened, or swelled.
3. Examine the cylinder bore and pistons for wear, roughness or scoring.
4. Check the clearance of the cylinder bore and pistons. If it exceeds the limit, replace the cylinder or piston.

Clearance limit: 0.15 mm (0.006 in)

5. Ensure that the compensating ports on the cylinder are open.

ASSEMBLING BRAKE MASTER CYLINDER

Assemble the brake master cylinder in the reverse order of disassembly, **noting** the following points.

1. Dip the pistons and cups in clean brake fluid.
2. Fit the secondary cup and primary cup onto the pistons as shown in figure.
3. On the vehicle equipped with rear drum brake, install the check valve so that the valve face (the side with the six holes) is directed toward the cylinder body, as shown in the figure, and tighten the joint bolt.

Tightening torque: 6.0 ~ 7.0 m·kg (43 ~ 51 ft·lb)

4. Before installing the reservoir, make sure that the piston cups do not cover the compensating ports.

INSTALLING BRAKE MASTER CYLINDER

To install the brake master cylinder, carry out the removal operations in the reverse order.

After installing, bleed the brake system, as described in Page 11-24, and check for proper brake operation.

POWER-BRAKE UNIT

47U11X-073

ON-VEHICLE CHECK

Note

The following simple tests can be used to check the overall function of the power-brake unit.

Checking without using a tester

Check by following these 3 tests in order. If the problem is still not evident, check more closely with a tester.

[1]

- (1) With the engine stopped, depress the brake pedal several times.
- (2) Start the engine while the pedal is depressed.
- (3) The unit is good if the pedal moves down very slightly immediately after the engine starts.

[2]

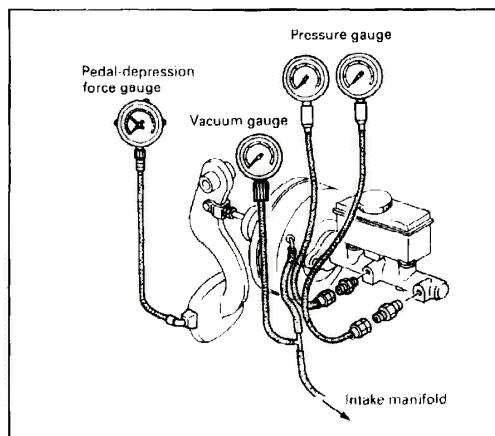
- (1) Start the engine.
- (2) Stop the engine after it has run for 1 or 2 minutes.
- (3) Depress the brake pedal by applying normal force.
- (4) The unit is good if the stroke is long the first time the pedal is depressed and becomes shorter as the pedal is depressed repeatedly.

Note

If the results of this test are unsatisfactory, check for damage or improper installation of the check valve or the vacuum hoses. When the problem is found, make the necessary repairs, and then repeat the test.

[3]

- (1) Start the engine.
- (2) Depress the brake pedal by applying normal force.
- (3) With the pedal still depressed, stop the engine.
- (4) Keep the pedal depressed for about 30 seconds.
- (5) The unit is good if there is no change in the pedal height.



Checking with a tester

Connect a pressure gauge, vacuum gauge, and pedal-depression-force gauge as shown in the figure. After bleeding the air from the pressure gauge, check by performing the following 2 tests in order.

Note

The required gauges are available on the market.

Checking for vacuum loss under no-load condition

- (1) Start the engine
- (2) When the vacuum gauge reading reaches 500 mm Hg (19.7 in Hg), stop the engine.
- (3) After stopping the engine, measure the amount that the vacuum drops in 15 seconds.
- (4) The unit is good if the amount of decrease is 25 mmHg (1.0 in Hg) or less.

11 POWER-BRAKE UNIT

47U11X-074

Checking for vacuum loss with brake pedal depressed

- (1) Start the engine.
- (2) Depress the brake pedal by applying a depression force of 20 kg (44.1 lb).
- (3) With the pedal still depressed, stop the engine when the vacuum gauge reading reaches 500 mmHg (19.7 in Hg).
- (4) After stopping the engine, measure the amount that the vacuum drops in 15 seconds.
- (5) The unit is good if the amount of decrease is 25 mmHg (1.0 in Hg) or less.

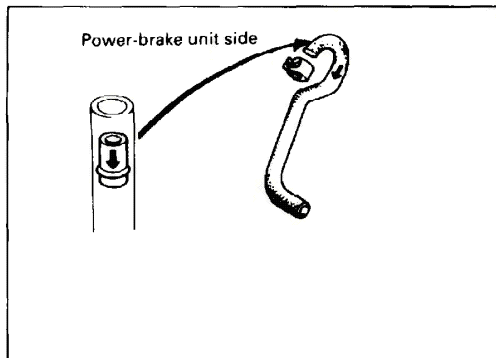
Checking non-booster function

- (1) With the engine stopped (the vacuum is zero), the unit is good if the relationship of the pedal depression force and the fluid pressure agrees with the standard value.

Pedal depression force	Fluid pressure
20 kg (44 lb)	1800 kPa or more (256 psi) or more

- (2) Start the engine. When the vacuum pressure reading reaches 500 mmHg (19.7 in Hg), depress the brake pedal. The unit is good if the relationship of the pedal depression force and fluid pressure is within the standard value.

Pedal depression force	Fluid pressure
20 kg (44 lb)	7100 kPa or more (1010 psi)



FUNCTION OF CHECK VALVE

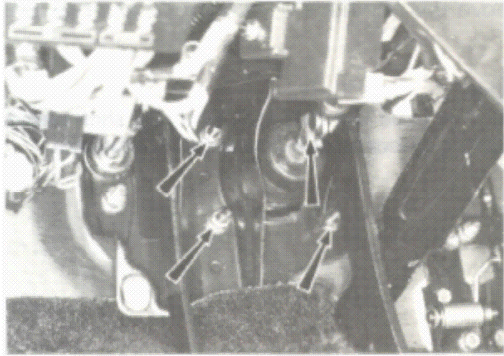
Note

The check valve is press-fit into the vacuum hose. There is an arrow on the surface of the hose which indicates the direction of installation.

1. Remove the vacuum hose (with the check valve).
2. When air is blown in from the power-brake unit end of the vacuum hose, check to be sure that the air passes through to the engine end of the hose; when air is blown in from the engine end of the vacuum hose, check to be sure that it does not pass through to the power-brake unit end of the hose.

Note

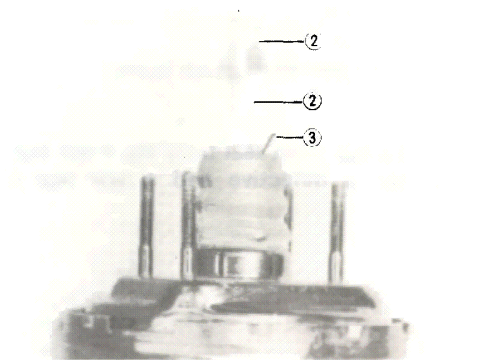
If there is a malfunction in the check valve, replace it together with the hose.



47U11X-048

REMOVING POWER BRAKE UNIT

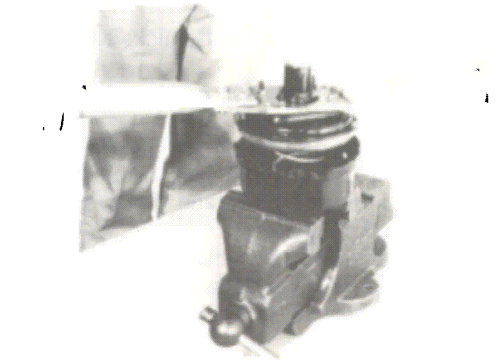
1. Remove the brake master cylinder, as described on Page 11–17.
2. Disconnect the vacuum hose at the power brake unit.
3. Disconnect the push rod fork from the brake pedal.
4. Remove the power brake unit.



47U11X-049

DISASSEMBLING POWER BRAKE UNIT

1. Apply mating marks on the rear shell and front shell to facilitate reassembly.
2. Remove the fork end and lock nut.
3. Remove the dust boot.



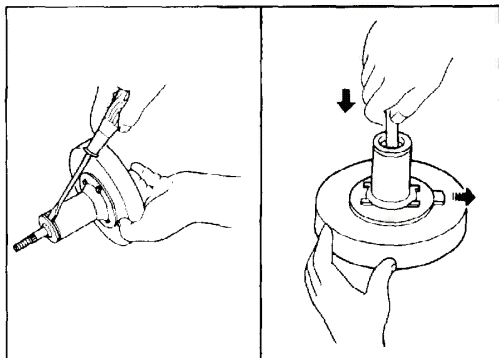
47U11X-050

4. Remove the rear shell assembly. Attach the suitable wrench to the studs of the rear shell. Press down the rear shell and rotate the rear shell clockwise to the unlocked position.

Caution

Loosen the rear shell carefully as it is spring-loaded.

5. Remove the spring.



47U11X-051

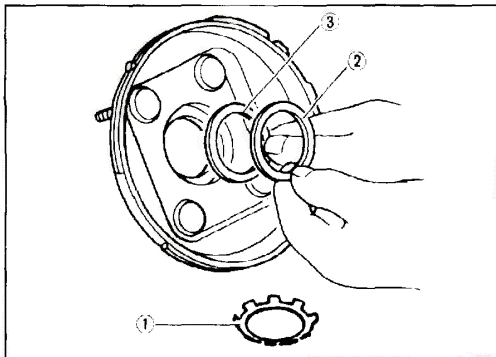
6. Remove the air silencer retainer.
7. Remove the power piston, valve rod and plunger assembly from the rear shell.
8. Remove the diaphragm.
9. Press in the valve rod and remove the valve retainer key.
10. Remove the valve rod and plunger assembly.
11. Remove the air silencer and filter.

Caution

The valve rod and plunger are serviced as an assembly only.

12. Remove the reaction disc.

11 POWER-BRAKE UNIT

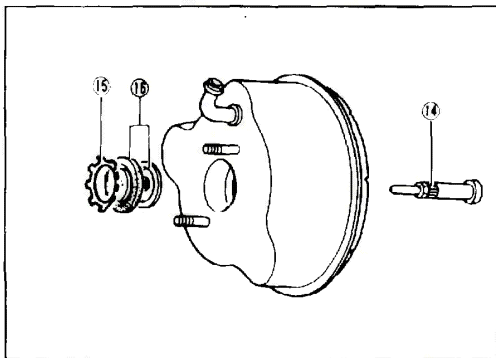


47U11X-052

13. Remove the retainer (1), bearing (2) and rear seal (3).

Caution

Do not remove the rear seal from the shell unless the seal is defective and a new seal is available.

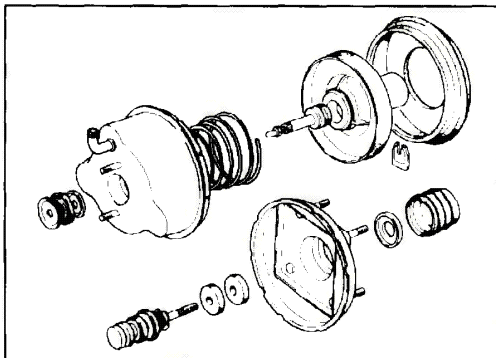


47U11X-053

14. Remove the push rod.
15. Remove the retainer.
16. Remove the front seal and support plate.

Caution

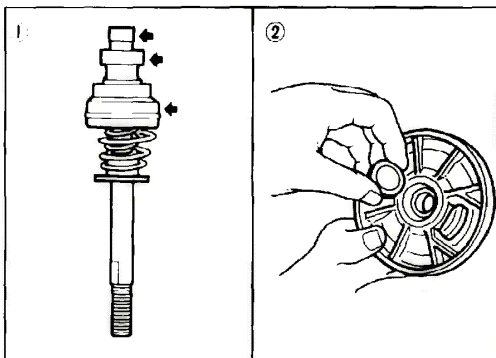
Do not remove the front seal from the front shell unless the seal is defective and a new seal is available.



47U11X-054

CHECKING POWER BRAKE UNIT

1. Inspect all rubber parts for cuts, nicks and other damage.
2. Check the power piston for cracks, distortion, chipping and damaged seats.
3. Inspect the reaction disc for deterioration.
4. Check the valve rod and plunger for all seats to be smooth and free of nicks and dents. Replace with a new one if defective.
5. Inspect the front and rear shells for scratches, scores, pits, dents or other damage.
6. Check the diaphragm for cuts, or other damage.

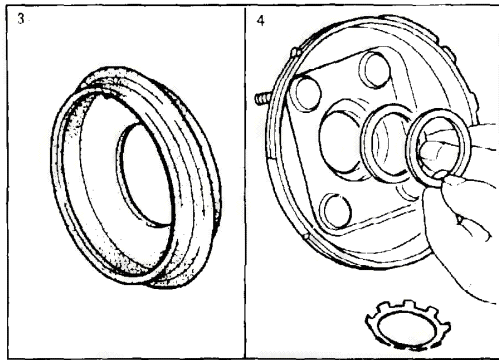


57U11X-055

ASSEMBLING POWER BRAKE UNIT

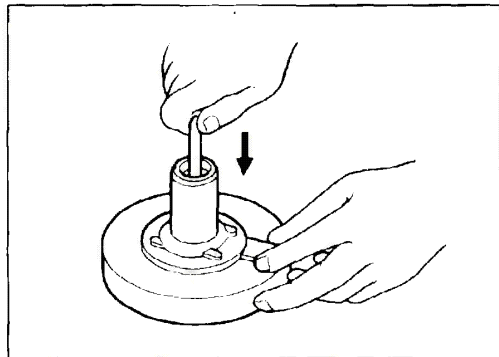
Assemble the power brake unit in the reverse order of removal, **noting** the following points.

1. Apply the silicone grease, which is furnished in the repair kit, to the following parts.
 - 1) Surfaces of the valve rod and plunger assembly
 - 2) Whole surface of the reaction disc



47U11X-056

- 3) Outer bead of the diaphragm
- 4) Front and rear seal lips



47U11X-057

- 2. To install the valve retainer key, press down the valve rod and align the groove on the valve rod with the slot of the power piston.

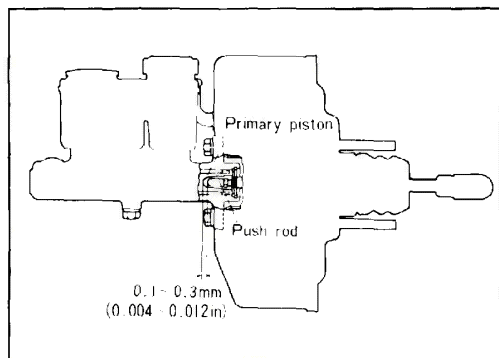


47U11X-058

- 3. Install the rear shell assembly onto the front shell by using the wrench to rotate the rear shell counterclockwise until mating marks are aligned.

Caution

Press the rear shell down firmly, maintaining pressure until the shell flanges are fully locked.



47U11X-059

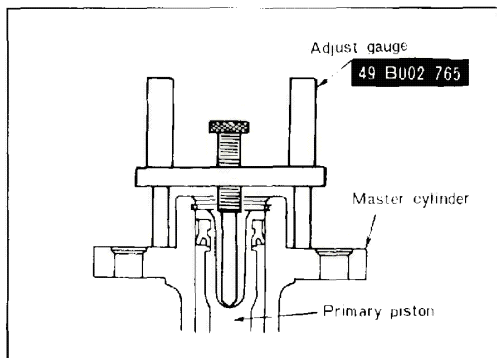
INSTALLING POWER BRAKE UNIT

Install the power brake unit in the reverse order of removal.

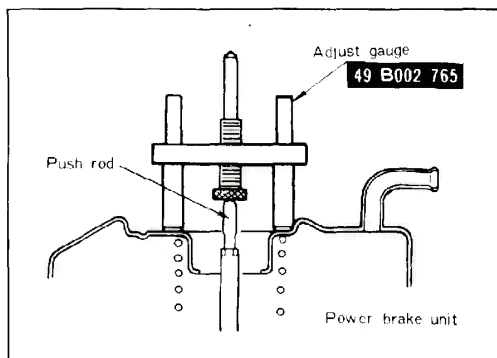
Caution

Before installing the power brake unit, adjust the push rod length so that the proper clearance between the primary piston and the push rod is obtained according to the following procedure.

11 AIR BLEEDING



47U11X-060



47U11X-061

1. Set the **gauge** (49 B002 /65) on the master cylinder and drive the screw in until it will come in contact with the piston of the cylinder.

2. Reverse the gauge used in step 1, and adjust the clearance between the screw head of the gauge and the push rod by turning the push rod so that the clearance will become 0.

When the adjustment is made as mentioned above, the clearance between the push rod and piston is designed to become 0.1 ~ 0.3 mm.

Standard clearance:

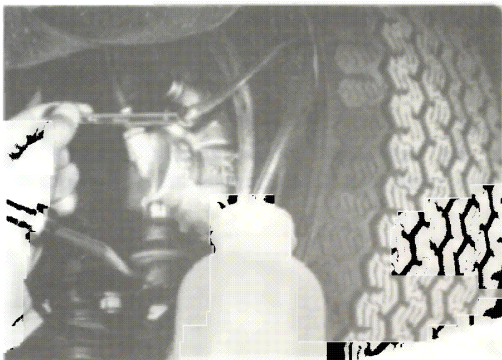
0.1 ~ 0.3 mm (0.004 ~ 0.012 in)

AIR BLEEDING

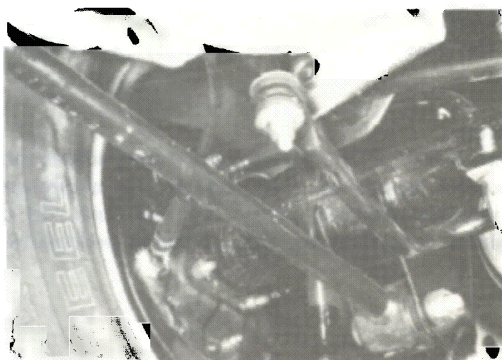
1. Raise the vehicle and support it with stands.
2. Remove the rubber cap from the bleeder screw and attach a vinyl tube to the bleeder screw.
3. Place the end of the vinyl tube in the glass jar and submerge in brake fluid.
4. Loosen the bleeder screw. Depress the brake pedal full stroke and allow it to return slowly. Continue this pumping action until air bubbles cease to appear in the jar.
5. When bleeding operation is completed, tighten the bleeder screw, remove the vinyl tube and fit the cap to the bleeder screw.
6. Fill the fluid reservoir and fit the filler cap.

Cautions

- a) The air bleeding should be performed on the front and rear hydraulic brake systems separately.
- b) During bleeding operation, the reservoir of the master cylinder must be kept at least 3/4 full of the brake fluid.
- c) Never re-use brake fluid which has been drained from the hydraulic system.



47U11X-062



47U11X-063

BRAKE PEDAL

ADJUSTING BRAKE PEDAL HEIGHT

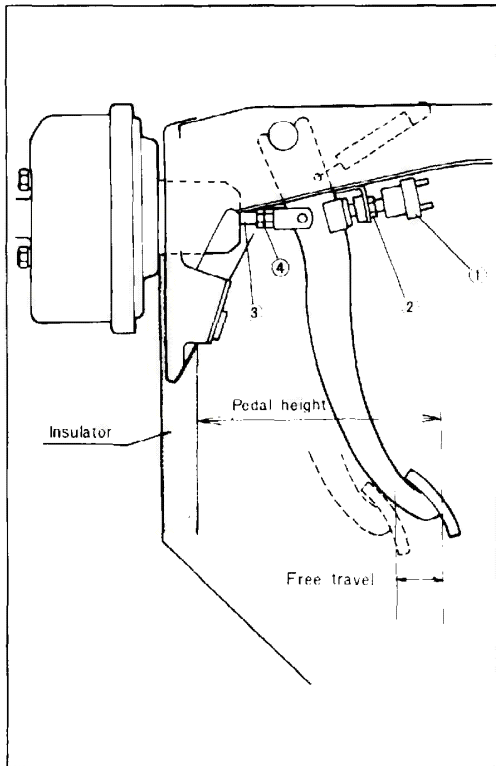
1. Disconnect the wires from the stop light switch (1).
2. Loosen the lock nut (2) and turn the stop light switch until the specified pedal height is obtained.
3. Tighten the lock nut and reconnect the stop light switch wires.

Pedal height: $190 \begin{smallmatrix} +5 \\ -0 \end{smallmatrix}$ mm ($7.5 \begin{smallmatrix} +0.2 \\ -0 \end{smallmatrix}$ in)

ADJUSTING BRAKE PEDAL FREE TRAVEL

1. Loosen the lock nut (4) and turn the push rod (3) connected to the brake pedal until the specified free travel is obtained.
2. Tighten the lock nut.

Free travel: $7 \sim 9$ mm ($0.28 \sim 0.35$ in)
(before the piston in the power brake unit operates)



47U11X-064



47U11X-065

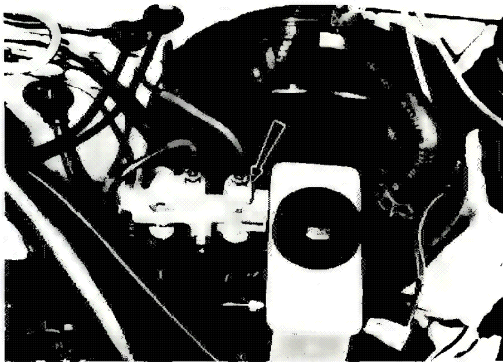
PARKING BRAKE

ADJUSTMENT

When the parking brake requires adjustment, proceed as follows.

1. Make sure that the parking brake is fully released.
2. Jack up the rear end of the vehicle until the wheels are free to turn. Then, support it with stands.
3. Adjust the parking brake lever adjusting screw so that the rear brakes are locked at **6 ~ 8 notches** when the parking brake lever is pulled by approx. **10 kg (22 lb)** of force.
4. After adjustment is completed, apply the parking brake several times, then, release and make sure that the rear wheels rotate freely without dragging.
5. Lower the vehicle.
6. Adjust the parking brake warning light switch so that the light comes on with the parking brake lever pulled out 1 notch and turns off when the lever is fully released.

11 PROPORTIONING BYPASS VALVE, HYDRAULIC LINES INSPECTION



47U11X-067

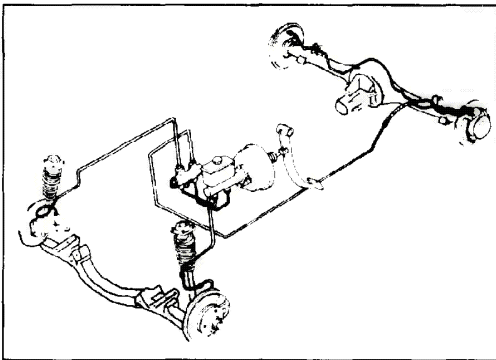
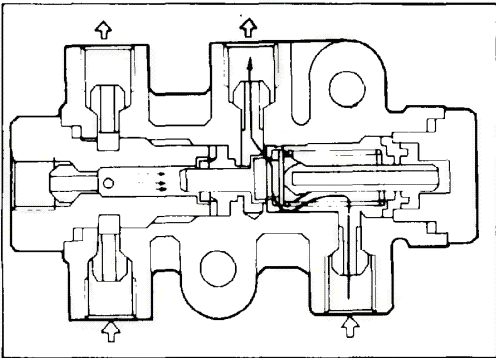
PROPORTIONING BYPASS VALVE

To replace the proportioning bypass valve, proceed as follows.

1. Disconnect the fluid pipes at the proportioning bypass valve.
2. Remove the proportioning bypass valve.
3. Install the new proportioning bypass valve.
4. Connect the fluid pipes to the proportioning bypass valve, noting the identification mark on the valve body.
5. Bleed the brake system, as described in Page 11-24.

Caution

Never allow the brake fluid to drop on any painted surface.



HYDRAULIC LINES INSPECTION

Inspect all brake lines for any leakage with the foot brakes applied.

Check all brake pipes, hoses and connections for signs of chafing, deterioration or any other damage.