BRAKE SYSTEM

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PRECAUTIONS

1. **Care must be taken to replace each part properly as it could affect the performance of the brake system and result in a driving hazard. Replace the parts with parts of the same part number or equivalent.**
2. **It is very important to keep parts and area clean when repairing the brake system.**

TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Low or spongy pedal	Linings worn	Replace brake shoes or pads	BR-14, 20
	Leak in brake system	Repair leak	
	Master cylinder faulty	Repair or replace master cylinder	BR-9
	Air in brake system	Bleed brake system	BR-7
	Wheel cylinder faulty	Repair wheel cylinder	BR-20
	Piston seals worn or damaged	Repair brake calipers	BR-16
	Rear brake automatic adjuster faulty	Repair or replace adjuster	BR-20
Brakes drag	Parking brake out of adjustment	Adjust parking brake	BR-8
	Binding parking brake wire	Repair as necessary	
	Booster push rod out of adjustment	Adjust push rod	BR-12
	Tension spring faulty	Replace spring	BR-20
	Brake line restricted	Repair as necessary	
	Lining cracked or distorted	Replace brake shoe	BR-20
	Wheel cylinder or caliper piston sticking	Repair as necessary	BR-16, 20
	Automatic adjuster broken	Replace adjuster	BR-20
	Parking brake adjuster broken	Replace adjuster	
	Master cylinder faulty	Repair or replace master cylinder	BR-9
Brakes pull	Tires improperly inflated	Inflate tires to proper pressure	
	Oil or grease on linings	Check for cause/replace lining	BR-14, 20
	Brake shoes distorted, linings worn or glazed	Replace brake shoes	BR-20
	Drum or disc out of round	Replace drum or disc	BR-14, 20
	Tension spring faulty	Replace spring	BR-20
	Wheel cylinder faulty	Repair wheel cylinder	BR-20
	Piston frozen in caliper	Repair caliper	BR-16
	Disc brake pad sticking	Replace pads	BR-14

TROUBLESHOOTING (Cont'd)

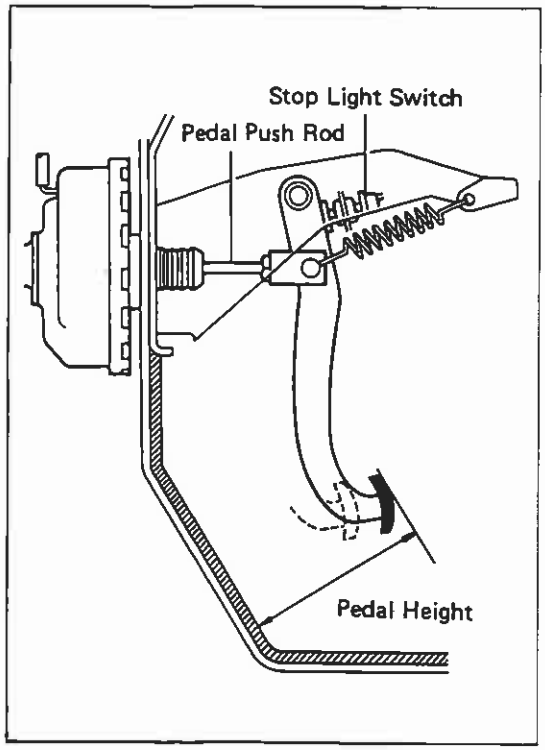
Problem	Possible cause	Remedy	Page
Hard pedal but brakes inefficient	Oil or grease on linings	Check for cause/replace lining	BR-14, 20
	Brake shoes distorted, linings worn or glazed, drums worn	Replace brake shoes	BR-20
	Disc brake pads worn	Replace pads	BR-14
	Piston frozen in caliper	Repair caliper	BR-16
	Brake booster faulty	Repair booster	BR-12
	Brake line restricted	Repair as necessary	
Snapping or clicking noise when brakes are applied	Drum brakes in 3 places—brake shoes binding at backing plate ledges	Lubricate	BR-23
	Drum brakes in 3 places—backing plate ledges worn	Replace and lubricate ledges	BR-23
	Drum brakes—loose or missing hold-down spring	Replace	BR-20
	Drum brakes—loose set bolt at backing plate	Tighten	BR-20
	Disc brakes—rust on front edge of inboard shoes	Inspect, lubricate, replace if necessary	
	Disc brakes—loose or missing pad support plate	Replace	BR-14
	Disc brakes—loose installation bolt	Tighten	BR-14
	Disc brakes—wear on slide bushing	Replace	BR-14
Scraping or grinding noise when brakes are applied	Worn brake linings	Replace, refinish drums or rotors if heavily scored	BR-14, 20
	Caliper to wheel or rotor interference	Replace as required	BR-14, 20
	Dust cover to rotor or drum interference	Correct or replace	BR-14, 20
	Other brake system components: Warped or bent brake backing plate or splash shield, cracked drums or rotors	Inspect or service	BR-14, 20
	Tires rubbing against chassis and body	Inspect or service	

TROUBLESHOOTING (Cont'd)

Problem	Possible cause	Remedy	Page
Squealing, groaning or chattering noise when brakes are applied Note: Brake friction materials inherently generate noise and heat in order to dissipate energy. As a result, occasional squeal is normal and is aggravated by severe environmental conditions such as cold, heat, wetness, snow, salt, mud, etc. This occasional squeal is not a functional problem and does not indicate any loss of brake effectiveness	Brake drums and linings rotors and pads worn or scored	Inspect service or replace	BR-14, 20
	Disc brakes—missing or damaged brake pad anti-squeal shim	Replace	BR-14
	Disc brakes—burred or rusted calipers	Clean or deburr	BR-14
	Dirty, greased, contaminated or glazed linings	Clean or replace	BR-20
	Improper lining parts	Inspect for correct usage replace	BR-20
	Mal-adjustment of brake pedal or booster push-rod	Inspect and adjust	BR-6,12
	Drum brakes—weak damaged or incorrect shoe hold-down springs, loose or damaged shoe hold-down spring pins and springs and grooved backing plate ledges	Inspect, service or replace	BR-20
	Pad wear and pad wear indicator making contact with the rotor	Replace	BR-14
Squealing noise when brakes are not applied	Bent or warped backing plate causing interference with drum	Service or replace	BR-20
	Improper machining of drum causing interference with backing plate or shoe	Replace drum	BR-20
	Mal-adjustment of brake pedal or booster push-rod	Inspect and adjust	BR-6,12
	Poor return of brake booster or master cylinder or wheel cylinder	Inspect, service or replace	BR-9, 12, 20
	Disc brakes—rusted, stuck	Inspect, lubricate as necessary	BR-14
	Other brake system components: Loose or extra parts in brakes Rear drum adjustment too tight causing lining to glaze Worn, damaged or insufficiently lubricated wheel bearings	Inspect, service, replace as required	BR-20
	Drum brakes—weak, damaged or incorrect shoe hold-down springs		BR-20
	Drum brakes—grooved backing plate ledges		BR-20
	Improper positioning of pad in caliper		
	Outside diameter of rotor rubbing caliper housing		
	Housing installation of disc brake pad support plate		BR-14
	Pad wear and pad wear indicator making contact with the rotor	Replace	BR-14

TROUBLESHOOTING (Cont'd)

Problem	Possible cause	Remedy	Page
Groaning, clicking or rattling noise when brakes are not applied	Stones or foreign material trapped inside wheel covers	Remove stones, etc.	
	Loose wheel nuts	Tighten to correct torque Replace if stud holes are elongated	
	Disc brakes—loose or missing anti-rattle spring or pad support plate or crimping on outer pad	Inspect, service or replace	BR-14
	Disc brakes—failure of shim	Inspect, replace if necessary	BR-14
	Disc brakes—wear on slide bushing	Inspect, replace if necessary	BR-14
	Disc brakes—loose installation bolt	Inspect, tighten if necessary	BR-14
	Mal-adjustment of brake pedal or booster push-rod	Inspect and adjust	BR-6,12
	Disc brakes—poor return of piston	Inspect, service or replace	BR-16
	Drum brakes—loose or extra parts	Inspect, remove or service	BR-20
	Worn, damaged or dry wheel bearings	Inspect, lubricate or replace	



CHECKS AND ADJUSTMENTS

CHECK AND ADJUSTMENT OF BRAKE PEDAL

1. CHECK THAT PEDAL HEIGHT IS CORRECT, AS SHOWN

Pedal height from asphalt sheet: 154 — 164 mm (6.06 — 6.46 in.)

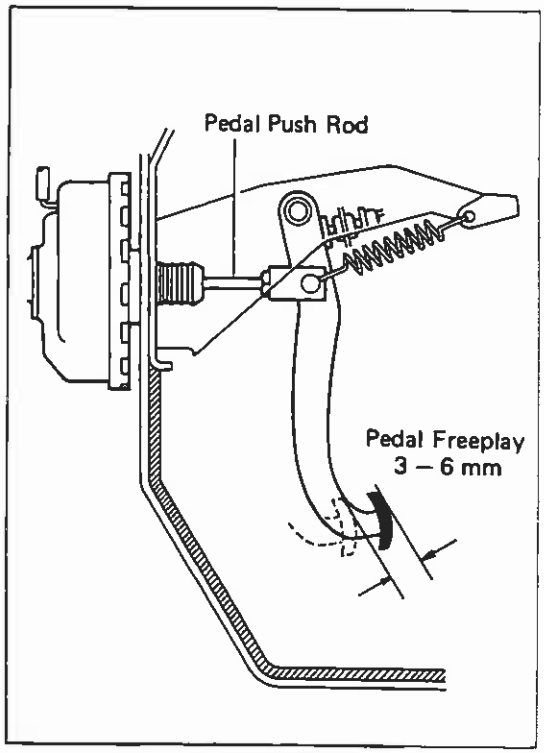
2. IF NECESSARY, ADJUST PEDAL HEIGHT

(a) Sufficiently loosen the stop light switch.

(b) Adjust the pedal height by turning the pedal push rod.

(c) Return the stop light switch until it lightly contacts the pedal stopper.

(d) After adjusting the pedal height, check and adjust the pedal freeplay.



3. CHECK THAT PEDAL FREEPLAY IS CORRECT, AS SHOWN

(a) Stop the engine and depress the brake pedal several times until there is no more vacuum left in the booster.

(b) Push in the pedal until the beginning of resistance is felt. Measure the distance, as shown.

Pedal freeplay: 3 — 6 mm (0.12 — 0.24 in.)

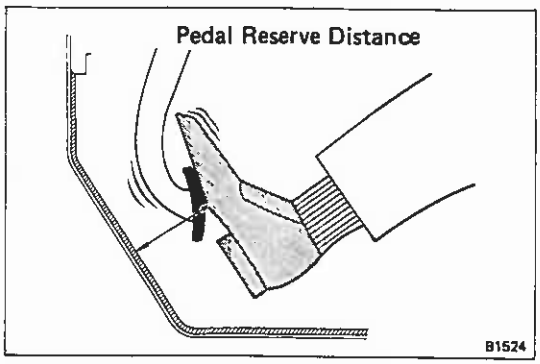
NOTE: The pedal freeplay is the amount of the stroke until the booster air valve is moved by the pedal push rod.

4. IF NECESSARY, ADJUST PEDAL FREEPLAY

(a) If incorrect, adjust the pedal freeplay by turning the pedal push rod.

(b) Start the engine and confirm that pedal freeplay exists.

(c) After adjusting the pedal freeplay, check the pedal height.

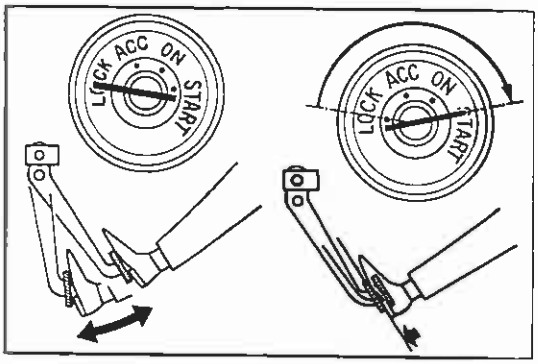


5. CHECK THAT PEDAL RESERVE DISTANCE IS CORRECT, AS SHOWN

Release the parking brake.
With engine running, depress the pedal and measure the pedal reserve distance, as shown.

Pedal reserve distance from asphalt sheet at 50 kg (110.2 lb, 490 N): More than 75 mm (2.95 in.)

If incorrect, troubleshoot the brake system.



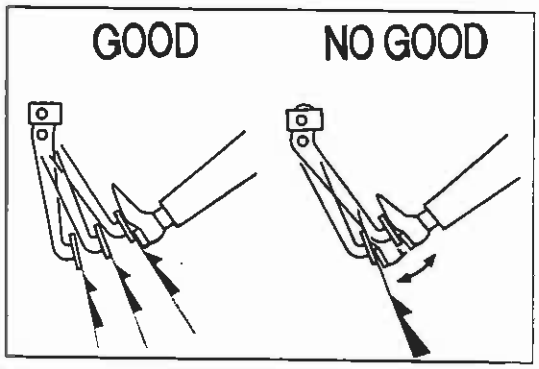
OPERATIONAL TEST OF BRAKE BOOSTER

NOTE: If available, use a brake booster tester to check the booster operating condition.

1. OPERATING CHECK

(a) Depress the brake pedal several times with the engine off, and check that there is no change in the pedal reserve distance.

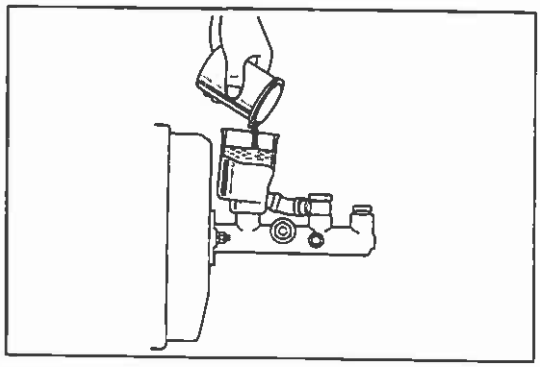
(b) Depress the brake pedal and start the engine. If the pedal goes down slightly, operation is normal.



2. AIR TIGHTNESS

(a) Start the engine and stop it after one or two minutes. Depress the brake pedal several times slowly. If the pedal goes down furtherest the first time, but gradually rises after the second or third time, the booster is air tight.

(b) Depress the brake pedal while the engine is running, and stop it with the pedal depressed. If there is no change in pedal reserve travel after holding the pedal for thirty seconds, the booster is air tight.



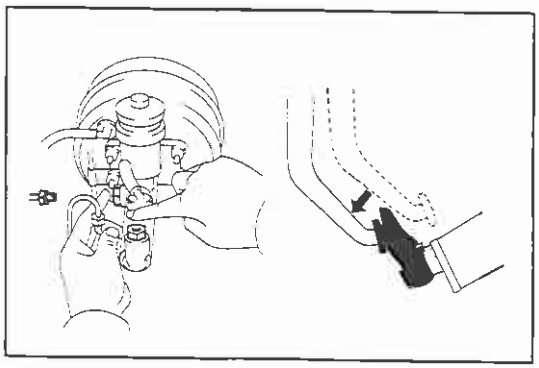
BLEEDING OF BRAKE SYSTEM

NOTE: If any work is done on the brake system or if air is suspected in the brake lines, bleed the system of air.

CAUTION: Do not let brake fluid remain on a painted surface. Wash it off immediately.

1. FILL BRAKE RESERVOIRS WITH BRAKE FLUID

Check the reservoir after bleeding each wheel. Add fluid, if necessary.

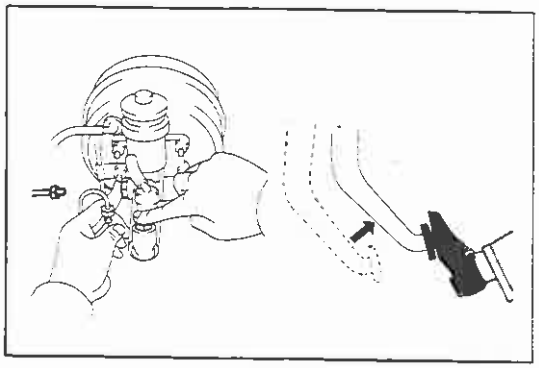


2. BLEED MASTER CYLINDER

NOTE: If the master cylinder was disassembled or if the reservoir tank becomes empty, bleed the air from the master cylinder.

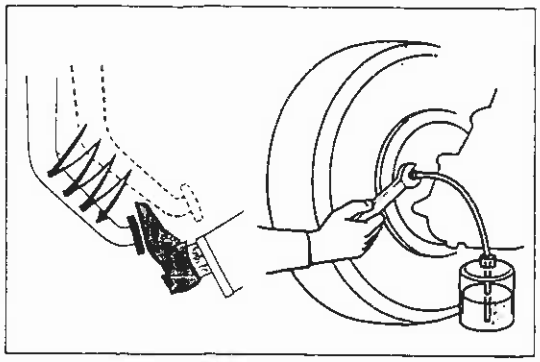
(a) Disconnect the brake tubes from the master cylinder.

(b) Depress the brake pedal and hold it.



(c) Block off the outlet plug with your finger, and release the brake pedal.

(d) Repeat (b) and (c) three or four times.



3. **BEGIN BLEEDING AIR FROM WHEEL CYLINDER WITH LONGEST HYDRAULIC LINE**

4. **CONNECT VINYL TUBE TO WHEEL CYLINDER BLEEDER PLUG**

   Insert other end of the tube in a half-full container of brake fluid.

5. **BLEED BRAKE LINE**

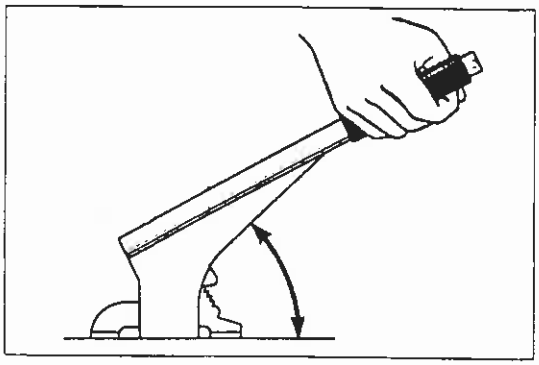
   (a) Slowly pump the brake pedal several times.

   (b) While having an assistant press on the pedal, loosen the bleeder plug until fluid starts to runout. Then close the bleeder plug.

   (c) Repeat this procedure until there are no more air bubbles in the fluid.

   Bleeder plug tightening torque:
   85 kg-cm (74 in.-lb, 8.3 N·m)

6. **REPEAT PROCEDURE FOR EACH WHEEL**



CHECK AND ADJUSTMENT OF PARKING BRAKE

1. **CHECK THAT PARKING BRAKE LEVER TRAVEL IS CORRECT**

   Pull the parking brake lever all the way up, and count the notches of lever travel.

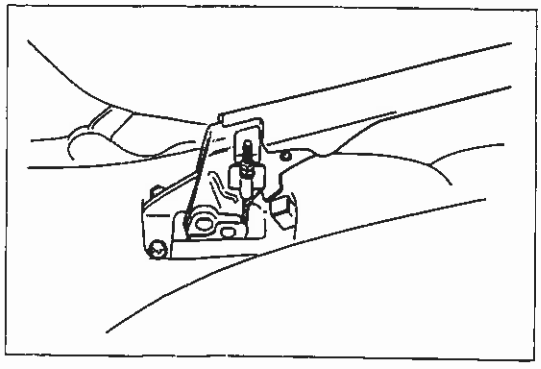
   Parking brake lever travel at 20 kg (44.1 lb, 196 N):
   Rear drum 4 – 7 clicks
   Rear disc 5 – 8 clicks

   If incorrect, adjust the parking brake.

2. **IF NECESSARY, ADJUST PARKING BRAKE**

   NOTE: Before adjusting the parking brake, make sure that the rear brake shoe clearance has been adjusted.

   For shoe clearance adjustment, see step 9 on page BR-25 and step 10 on page BR-36.



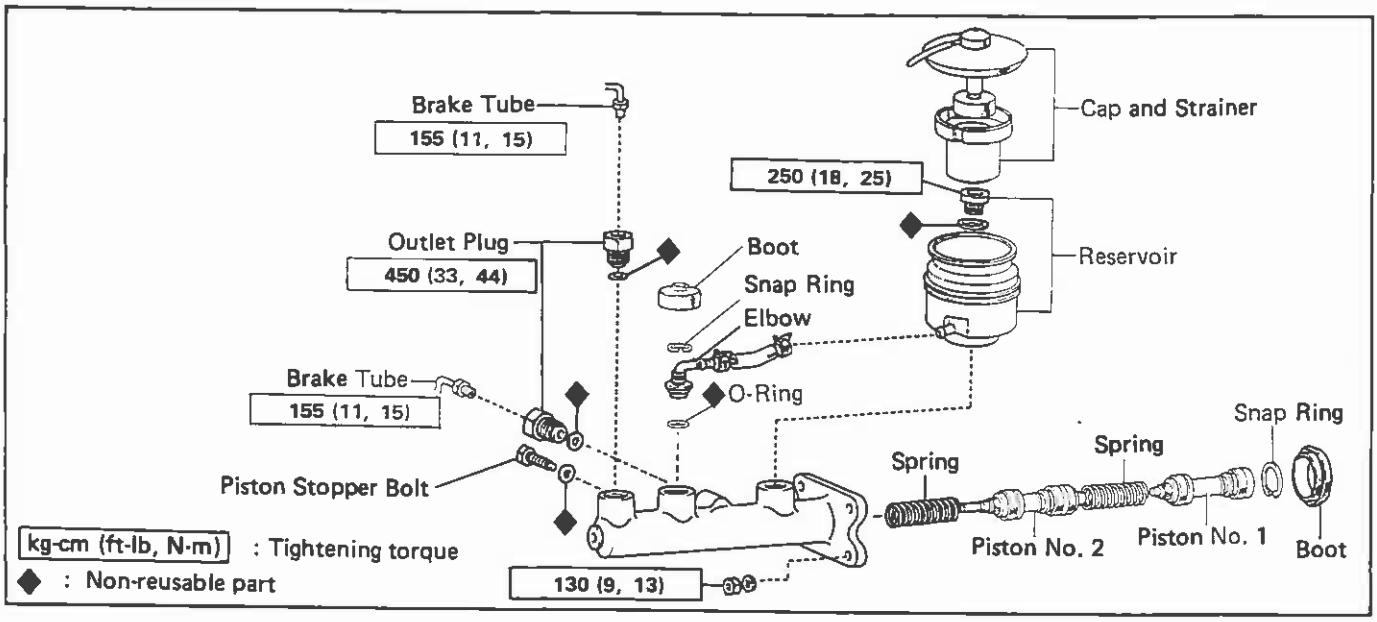
(a) Remove the rear console box.

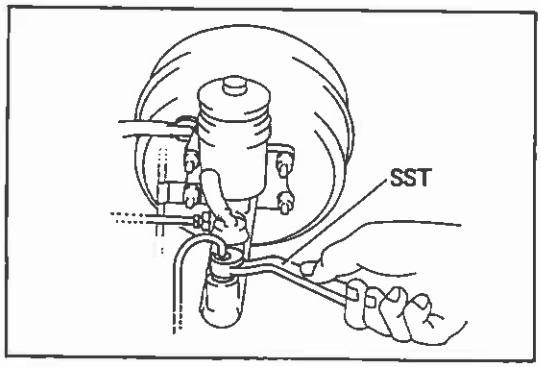
(b) Loosen the lock nut and turn the adjusting screw until the travel is correct.

(c) Tighten the lock nut and install the console box.

MASTER CYLINDER

COMPONENTS





REMOVAL OF MASTER CYLINDER

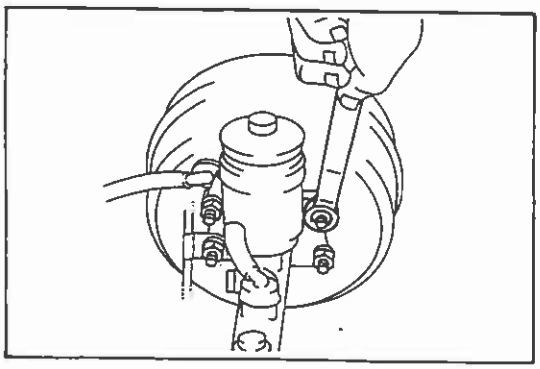
CAUTION: Do not let brake fluid remain on a painted surface. Wash it off immediately.

1. **DISCONNECT LEVEL WARNING SWITCH CONNECTOR**

2. **DISCONNECT TWO BRAKE TUBES**

   Using SST, disconnect two brake tubes from the master cylinder.

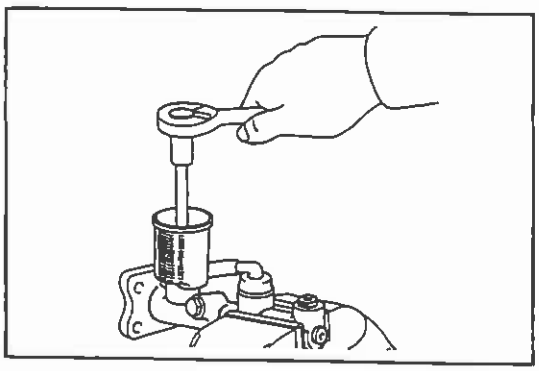
   SST 09751-36011



3. **REMOVE MASTER CYLINDER**

   (a) Remove the four nuts.

   (b) Remove the master cylinder and gasket from the brake booster.



DISASSEMBLY OF MASTER CYLINDER

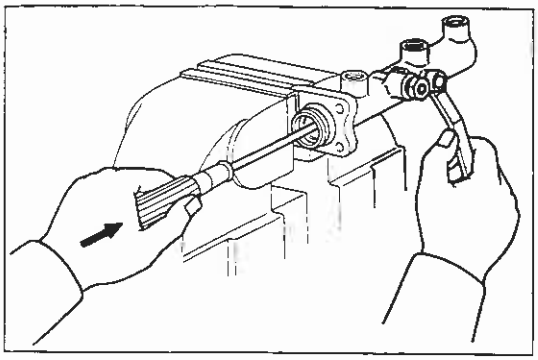
1. **PLACE CYLINDER IN VISE**

2. **DISCONNECT RESERVOIR AND HOSE**

   Remove the cap, strainer, bolt and hose.

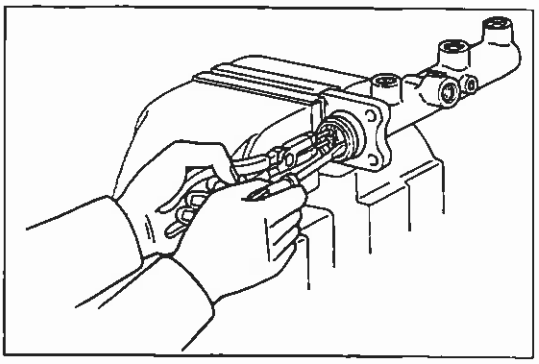
3. **REMOVE SNAP RING AND ELBOW**

4. **REMOVE TWO OUTLET PLUGS**



5. REMOVE PISTON STOPPER BOLT

Using a screwdriver, push the pistons in all the way and remove the piston stopper bolt.

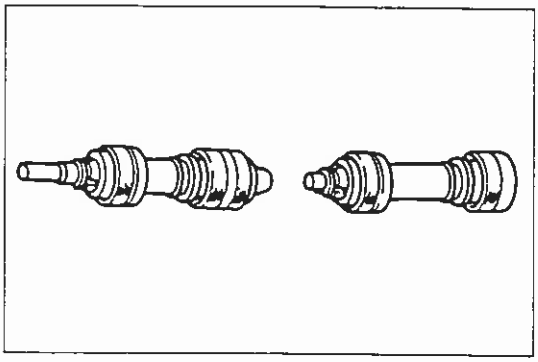


6. REMOVE TWO PISTONS AND SPRINGS

(a) Using snap ring pliers, remove the snap ring.

(b) Remove two pistons and springs from the master cylinder.

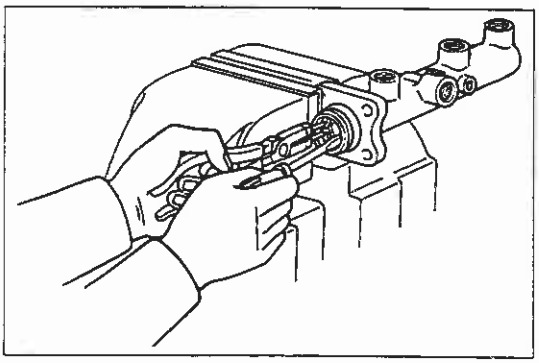
NOTE: It may be necessary to inject compressed air in the check valve hole to force out the No. 2 piston.



ASSEMBLY OF MASTER CYLINDER

(See page BR-9)

1. APPLY LITHIUM SOAP BASE GLYCOL GREASE TO RUBBER PARTS OF PISTON

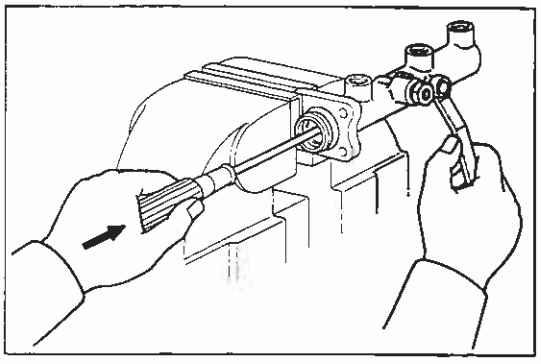


2. INSTALL TWO SPRINGS AND PISTONS

CAUTION: Be careful not to damage the rubber lips on the pistons.

(a) Insert two springs and pistons in the master cylinder housing as shown.

(b) Using snap ring pliers, install the snap ring.



3. INSTALL PISTON STOPPER BOLT

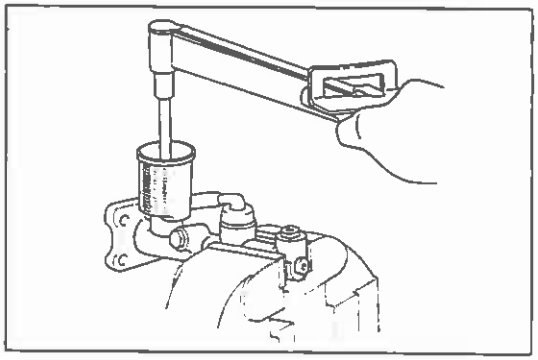
Using screwdriver, push the pistons in all the way and install the piston stopper bolt. Torque the bolt.

Torque: 100 kg-cm (7 ft-lb, 10 N·m)

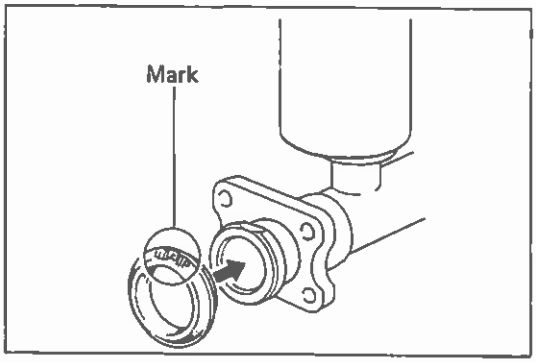
4. INSTALL TWO OUTLET PLUGS

Torque the plugs.

Torque: 450 kg-cm (33 ft-lb, 44 N·m)



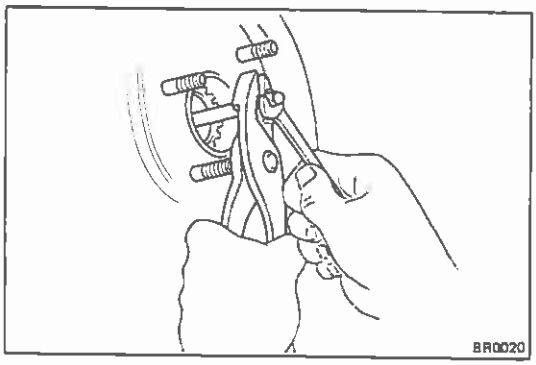
5. INSTALL RESERVOIR
   (a) Install the reservoir on the master cylinder. Torque the bolt.
   Torque: 250 kg-cm (18 ft-lb, 25 N·m)
   (b) Install the strainer and cap.
6. INSTALL ELBOW AND SNAP RING
7. CONNECT RESERVOIR HOSE



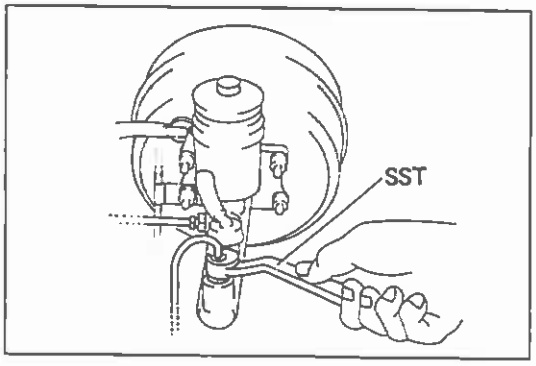
INSTALLATION OF MASTER CYLINDER

(See page BR-9)

1. CLEAN OUT GROOVE ON LOWER INSTALLATION SURFACE OF MASTER CYLINDER
2. CONFIRM THAT "UP" MARK OF MASTER CYLINDER BOOT IS IN CORRECT POSITION



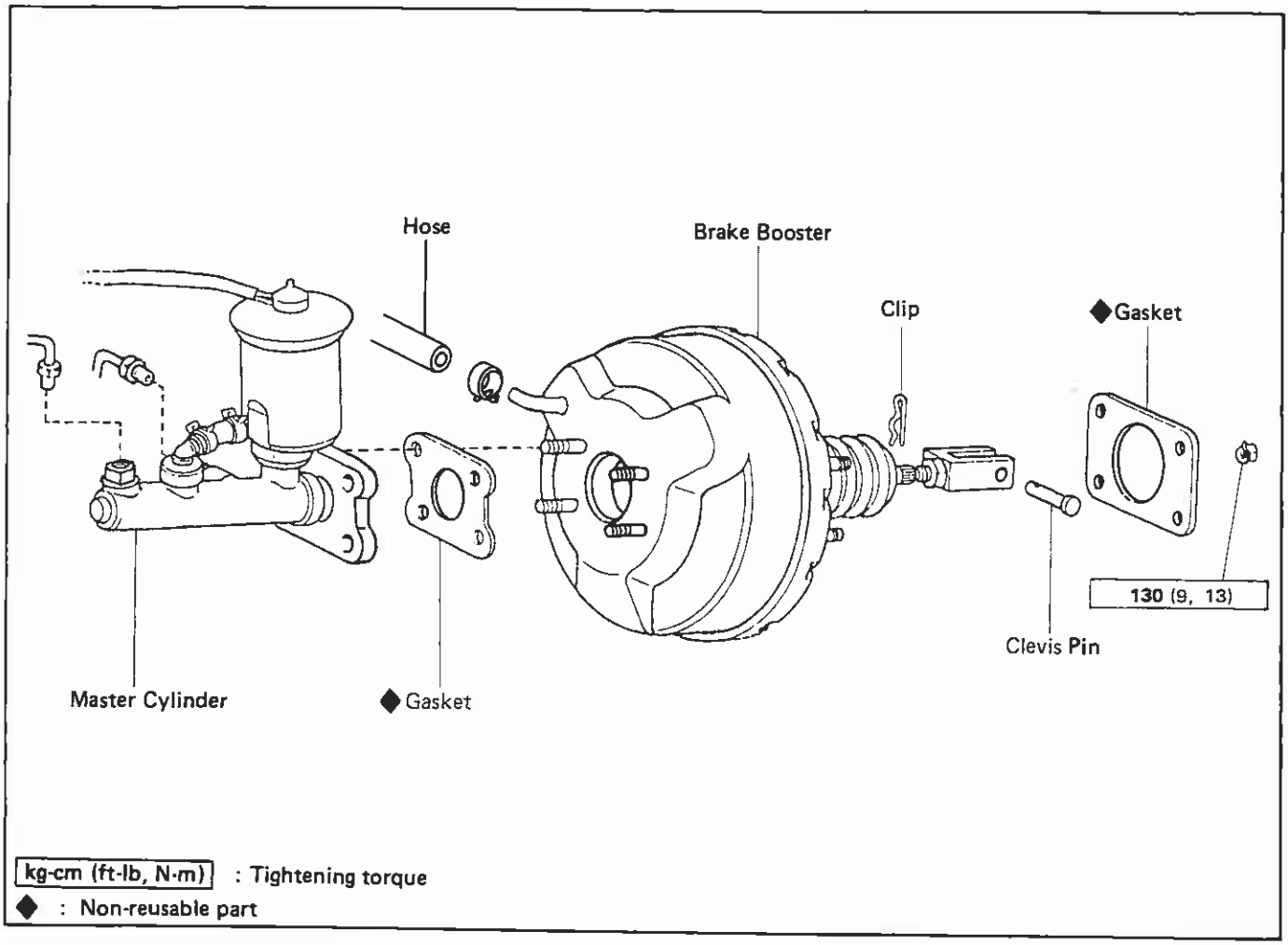
3. ADJUST LENGTH OF BRAKE BOOSTER PUSH ROD BEFORE INSTALLING MASTER CYLINDER
   (See page BR-12)
4. INSTALL MASTER CYLINDER
   Install the master cylinder and gasket on the brake booster with four nuts.
   Torque: 130 kg-cm (9 ft-lb, 13 N·m)

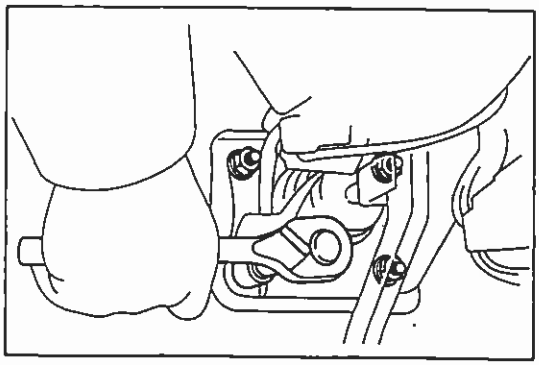


5. CONNECT TWO BRAKE TUBES
   Using SST, connect two brake tubes to the outlet plugs. Torque the nuts.
   SST 09751-36011
   Torque: 155 kg-cm (11 ft-lb, 15 N·m)
6. CONNECT LEVEL WARNING SWITCH CONNECTOR
7. ADJUST BRAKE PEDAL (See page BR-6)
8. FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM (See page BR-7)

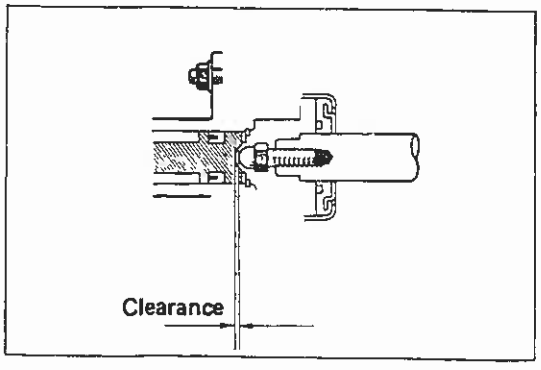
BRAKE BOOSTER

REMOVAL OF BRAKE BOOSTER





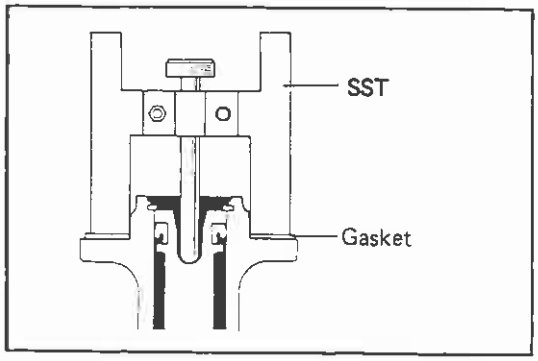
1. **REMOVE MASTER CYLINDER (See page BR-9)**
2. **REMOVE CLEVIS PIN FROM BRAKE PEDAL**
   Remove clip and clevis pin.
3. **DISCONNECT HOSE FROM BRAKE BOOSTER**
4. **REMOVE BRAKE BOOSTER**
   Remove the four nuts, and pull out the brake booster.



INSTALLATION OF BRAKE BOOSTER

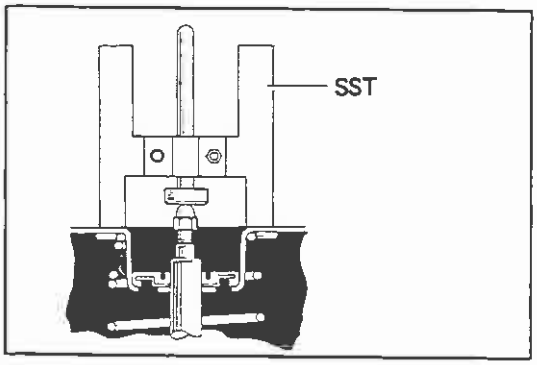
1. **ADJUST LENGTH OF BOOSTER PUSH ROD**
   Adjust the length of the booster push rod to provide the specified clearance between the push rod and the master cylinder piston.

   Standard clearance: 0.1 – 0.5 mm (0.004 – 0.020 in.)



(a) Set SST on the master cylinder with the gasket, and lower the pin until its tip slightly touches the piston.

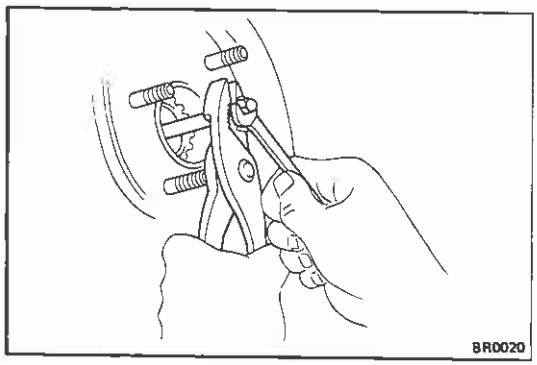
SST 09737-00010



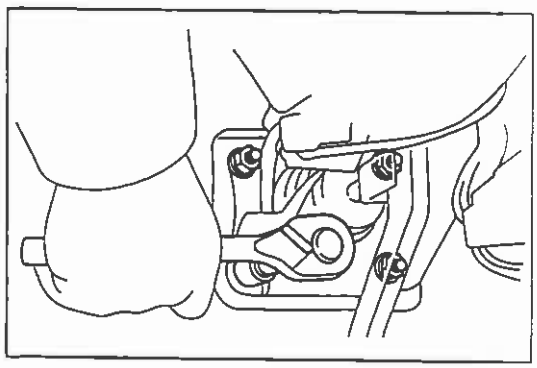
(b) Turn SST upside down, and set it on the booster.

SST 09737-00010

(c) Check that push rod lightly touches the pin head.



(d) Adjust the booster push rod length until the push rod lightly touches the pin head.



2. INSTALL BRAKE BOOSTER

(a) Install the brake booster over the gasket.

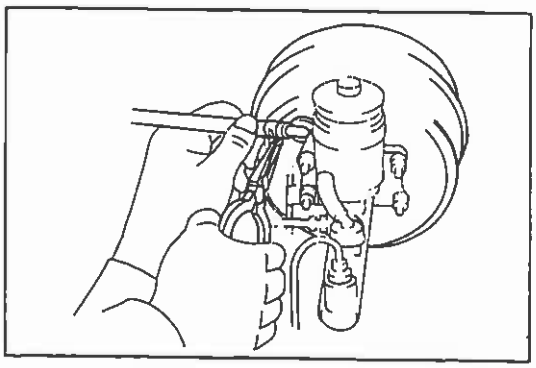
(b) Tighten the four nuts.

Torque: 130 kg-cm (9 ft-lb, 13 N·m)

3. CONNECT CLEVIS TO BRAKE PEDAL

Install the clevis pin and clip.

4. INSTALL MASTER CYLINDER
(See steps 1, 2 and 4 on page BR-11)



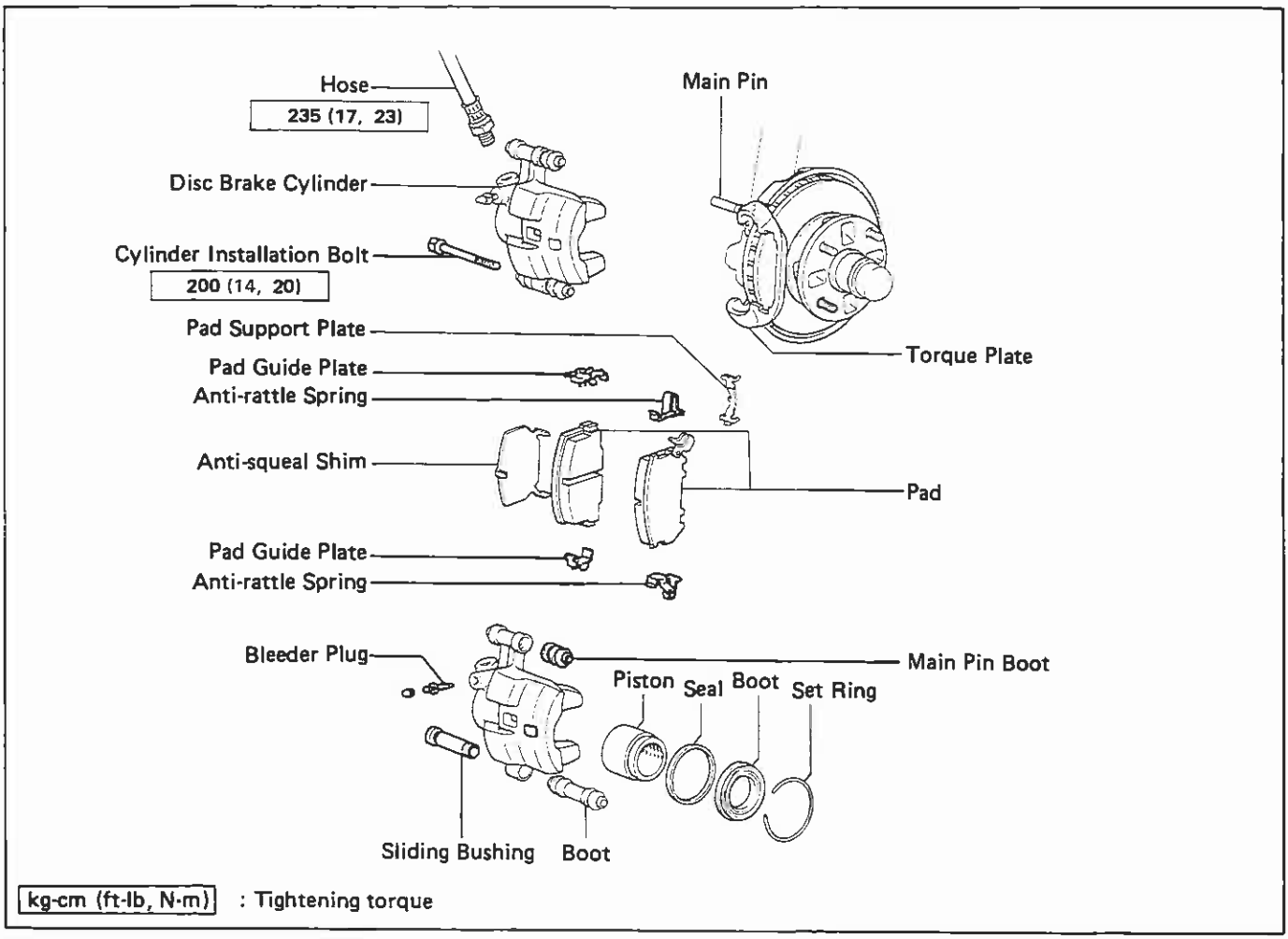
5. CONNECT HOSE TO BRAKE BOOSTER

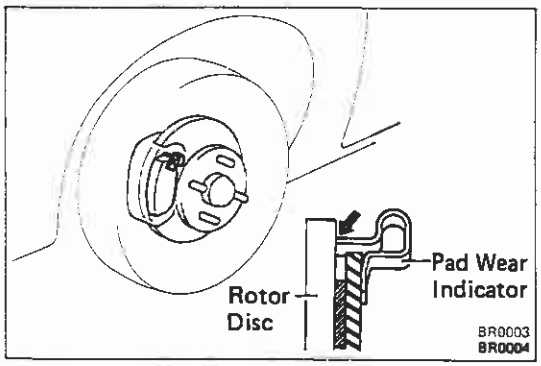
6. ADJUST BRAKE PEDAL (See page BR-6)

7. PERFORM OPERATIONAL CHECK
(See page BR-7)

FRONT BRAKE

COMPONENTS

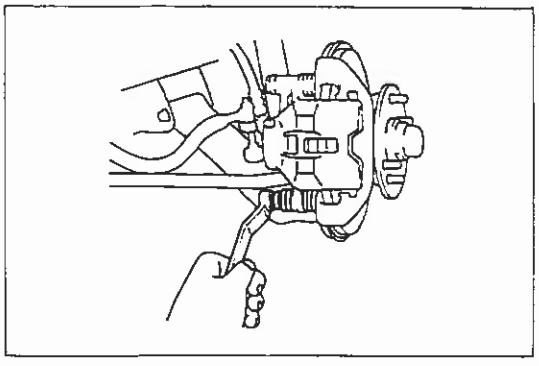




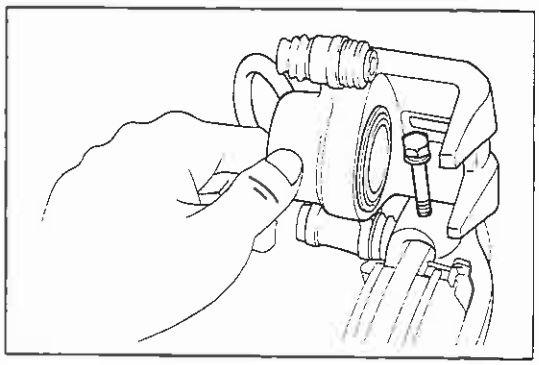
REPLACEMENT OF BRAKE PADS

NOTE: If a squealing noise occurs from the front brakes while driving, check the pad wear indicator. If there are traces of the indicator contacting the rotor disc, the disc pad should be replaced.

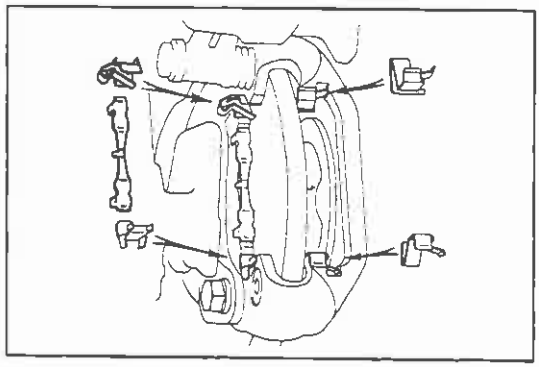
Standard thickness: 10.5 mm (0.413 in.)
Minimum thickness: 3.0 mm (0.118 in.)



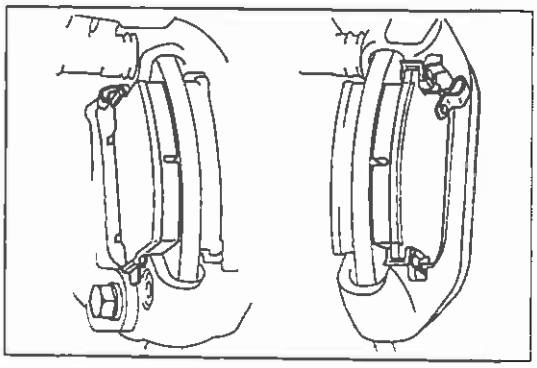
1. DRAW OUT A SMALL AMOUNT OF BRAKE FLUID
2. REMOVE CYLINDER INSTALLATION BOLT



3. LIFT UP CYLINDER
   (a) Lift up the cylinder.
   (b) Insert a bolt into the torque plate hole to secure the cylinder.
4. REMOVE PADS AND ANTI-SQUEAL SHIM
5. REMOVE ANTI-RATTLE SPRINGS, PAD GUIDE PLATES AND SUPPORT PLATE



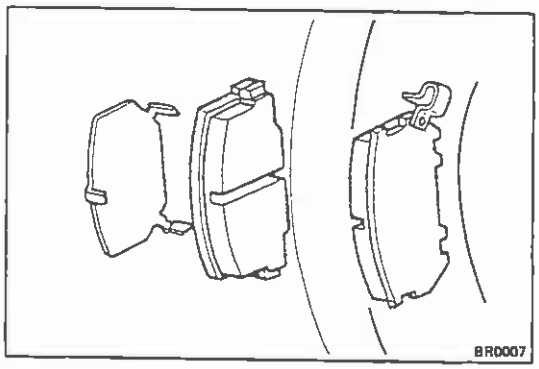
6. INSTALL NEW PAD SUPPORT PLATE, NEW PAD GUIDE PLATES AND NEW ANTI-RATTLE SPRINGS
7. PUSH PISTON INTO CYLINDER



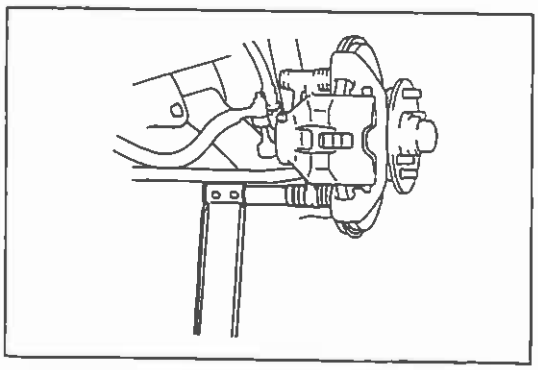
8. INSTALL NEW PADS AND NEW ANTI-SQUEAL SHIM
   (a) Install the pads onto each spring.

   NOTE: Install the outside pad so the wear indicator is at the top side.

   CAUTION: Do not allow oil or grease to touch the rubbing face.



   (b) Install the anti-squeal shim toward the inside of the pad.



9. LOWER CYLINDER

   Remove the bolt from the torque plate and lower the cylinder.

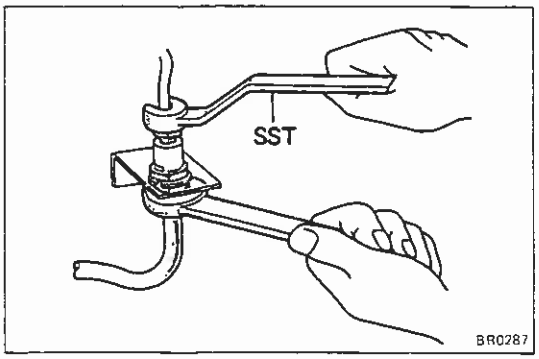
   NOTE: Insert the cylinder carefully so the boot is not wedged.

10. INSTALL CYLINDER INSTALLATION BOLT

    Install and torque the cylinder installation bolt.

    Torque: 200 kg-cm (14 ft-lb, 20 N·m)

11. FILL BRAKE FLUID



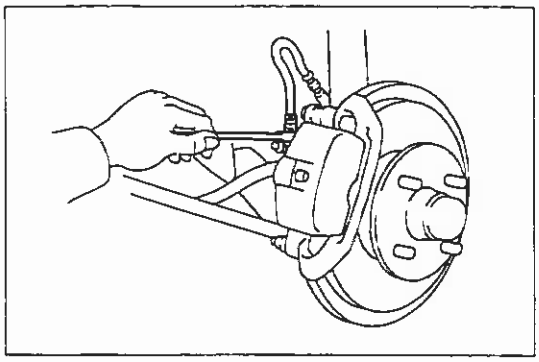
REMOVAL OF CYLINDER

(See page BR-14)

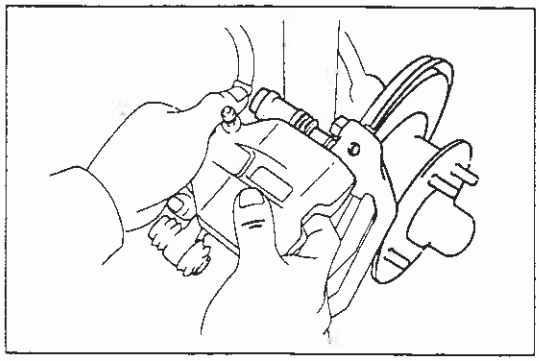
1. DISCONNECT BRAKE HOSE FROM BRAKE TUBE AND CYLINDER
   (a) Using SST and a spanner, disconnect the brake tube from the hose.

   SST 09751-36011

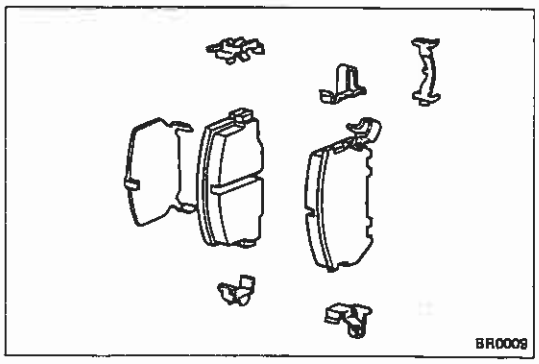
   (b) Use a container to catch the brake fluid.



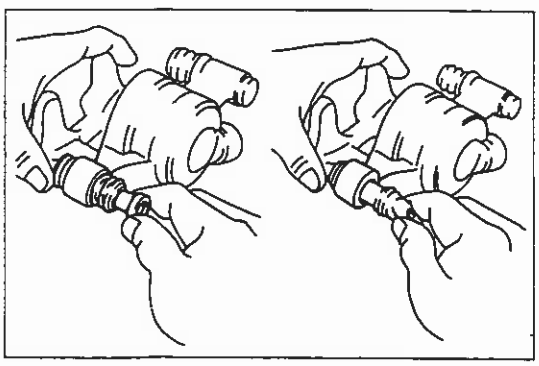
   (c) Remove the clip from brake hose.
   (d) Disconnect the brake hose from the cylinder.



2. REMOVE CYLINDER
   (a) Hold the sliding bushing and remove the cylinder installation bolt.
   (b) Lift up and push out the cylinder from the torque plate pin.



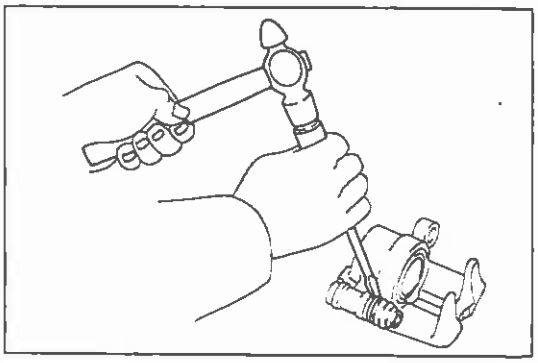
3. REMOVE FOLLOWING PARTS:
   (a) Anti-squeal shim
   (b) Brake pads
   (c) Anti-rattle springs
   (d) Pad guide plates
   (e) Pad support plate



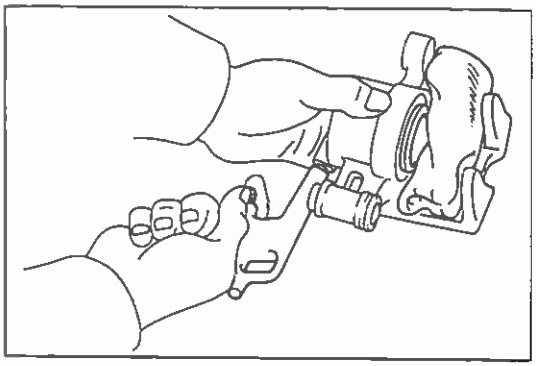
DISASSEMBLY OF CYLINDER

(See page BR-14)

1. REMOVE SLIDING BUSHING AND BOOT



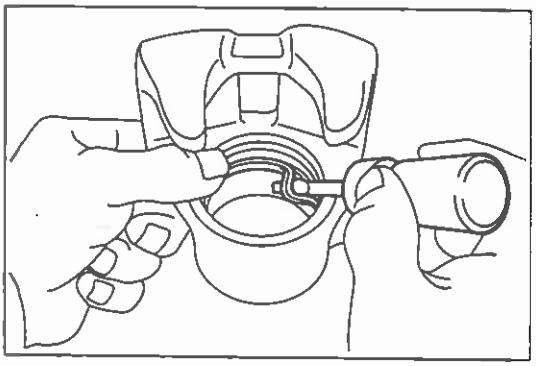
2. REMOVE MAIN PIN BOOT WITH A CHISEL



3. REMOVE PISTON FROM CYLINDER

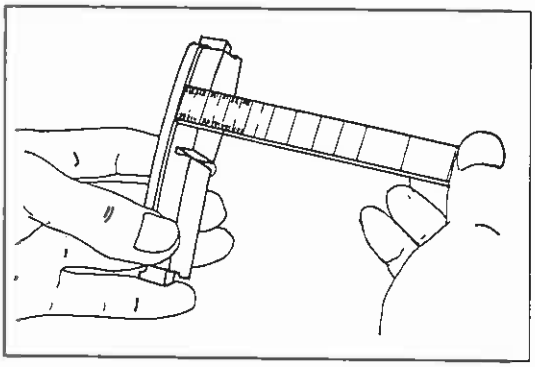
Use compressed air to remove the piston from the cylinder.

WARNING: Do not place your fingers in front of the piston when using compressed air.



4. REMOVE CYLINDER BOOT AND SET RING FROM CYLINDER

5. REMOVE PISTON SEAL FROM CYLINDER

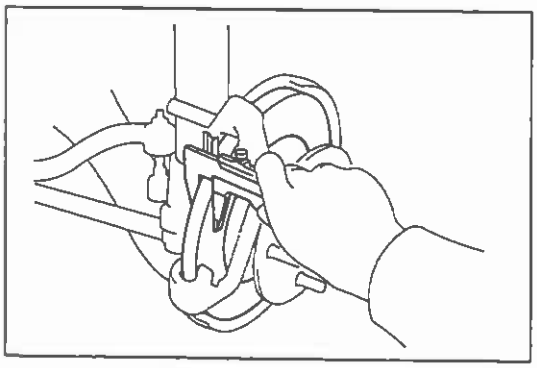


INSPECTION OF FRONT BRAKE COMPONENTS

1. MEASURE PAD LINING THICKNESS

Standard thickness: 10.5 mm (0.413 in.)
Minimum thickness: 3.0 mm (0.118 in.)

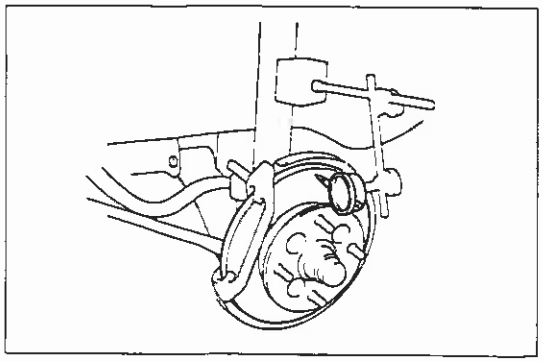
Replace the pad if the thickness is less than the minimum (the 1.0 mm slit is no longer visible) or if it shows sign of uneven wear.



2. MEASURE ROTOR DISC THICKNESS

Standard thickness: 20.0 mm (0.787 in.)
Minimum thickness: 19.0 mm (0.748 in.)

If the disc thickness is less than minimum, replace the disc.



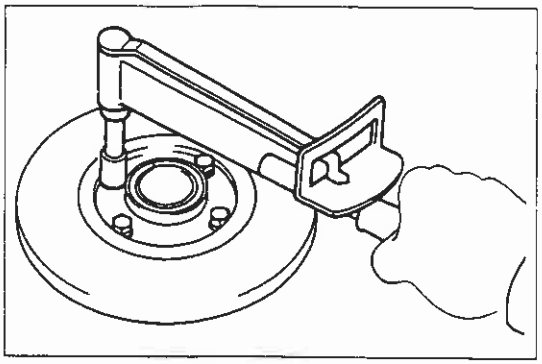
3. MEASURE ROTOR DISC RUNOUT

Measure the rotor disc runout at 10 mm (0.39 in.) from the outer edge of rotor disc.

Maximum disc runout: 0.15 mm (0.0059 in.)

If the runout is greater than the maximum, replace the disc.

NOTE: Make sure the front bearing is adjusted correctly.



4. IF NECESSARY, REPLACE ROTOR DISC

(a) Remove the torque plate from the knuckle.

(b) Remove the axle hub. (See page FA-6)

(c) Remove the disc from the axle hub.

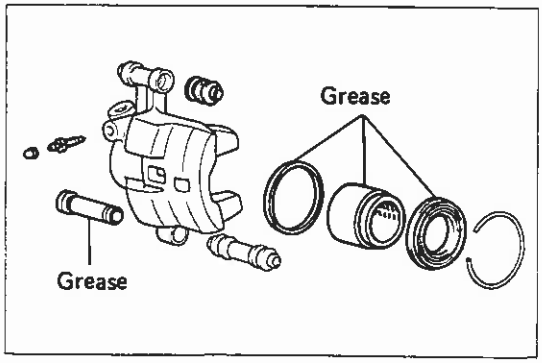
(d) Install a new rotor disc. Torque the four bolts.

Torque: 650 kg-cm (47 ft-lb, 64 N·m)

(e) Install the axle hub and adjust the front bearing preload. (See page FA-8)

(f) Install the torque plate onto the knuckle.

Torque: 925 kg-cm (67 ft-lb, 91 N·m)



ASSEMBLY OF CYLINDER

(See page BR-14)

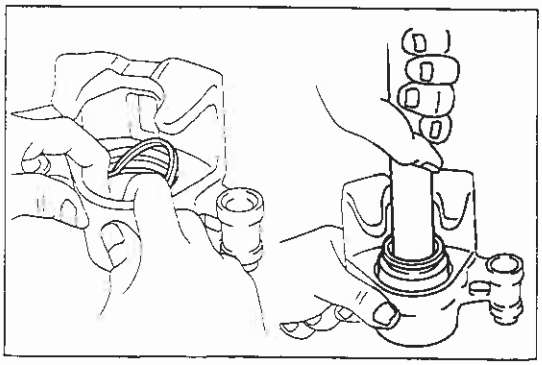
1. APPLY LITHIUM SOAP BASE GLYCOL GREASE TO FOLLOWING PARTS:

(a) Main pin boot

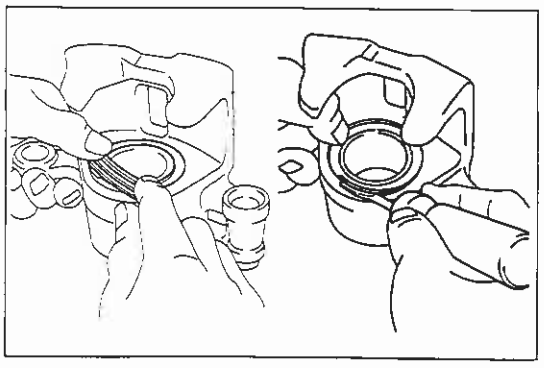
(b) Sliding pin and boot

(c) Piston seal and piston

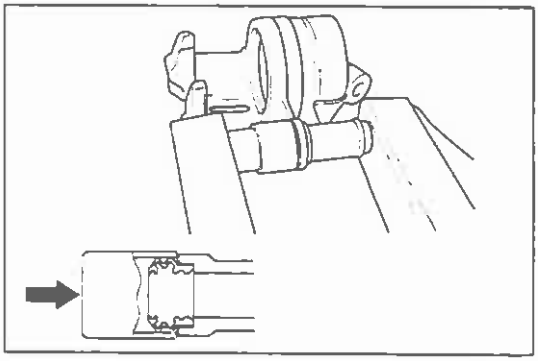
(d) Dust boot



2. INSTALL PISTON SEAL AND PISTON IN CYLINDER

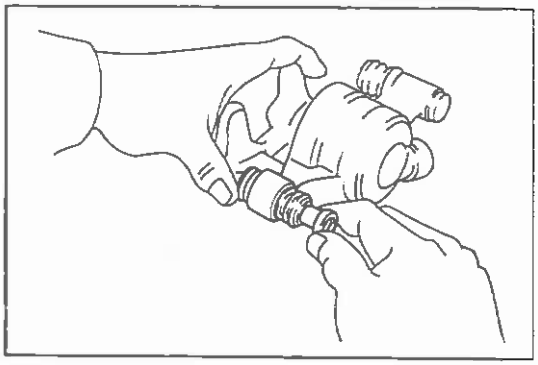


3. INSTALL CYLINDER BOOT AND SET RING IN CYLINDER



4. INSTALL NEW MAIN PIN BOOT

Using a 21-mm socket wrench, press in a new boot.



5. INSTALL DUST BOOT AND SLIDING BUSHING

(a) Install the dust boot.

NOTE: Be careful that the seal does not fold under.

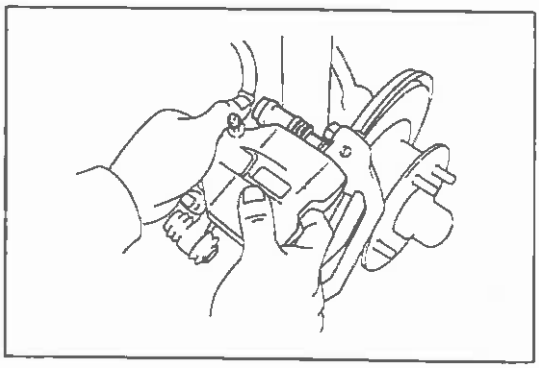
(b) Install the bushing into the boot facing the flange toward the inside.

INSTALLATION OF CYLINDER

(See page BR-14)

1. INSTALL FOLLOWING PARTS:
   (a) Pad support plate
   (b) Pad guide plates
   (c) Anti-rattle springs
   (d) Brake pads
   (e) Anti-squeal shim

SEE
FRONT BRAKE
REPLACEMENT OF BRAKE PADS
BR-14



2. INSTALL CYLINDER
   (a) Install the cylinder onto the main pin.

NOTE: Make sure that the boot end is installed into the groove of the main pin.

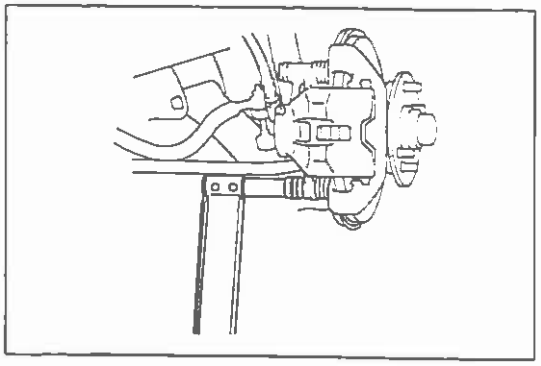
(b) Install the cylinder over the brake pads.

3. INSTALL CYLINDER INSTALLATION BOLTS

Install the cylinder installation bolts, torque one bolt.

Torque: 200 kg-cm (14 ft-lb, 20 N·m)

NOTE: Insert the installation bolt into the cylinder carefully so as not to wedge the boot.



4. CONNECT BRAKE LINE
   (a) Connect the brake hose to the cylinder.

Torque: 235 kg-cm (17 ft-lb, 23 N·m)

(b) Using SST, connect brake hose to the brake tube.

SST 09751-36011

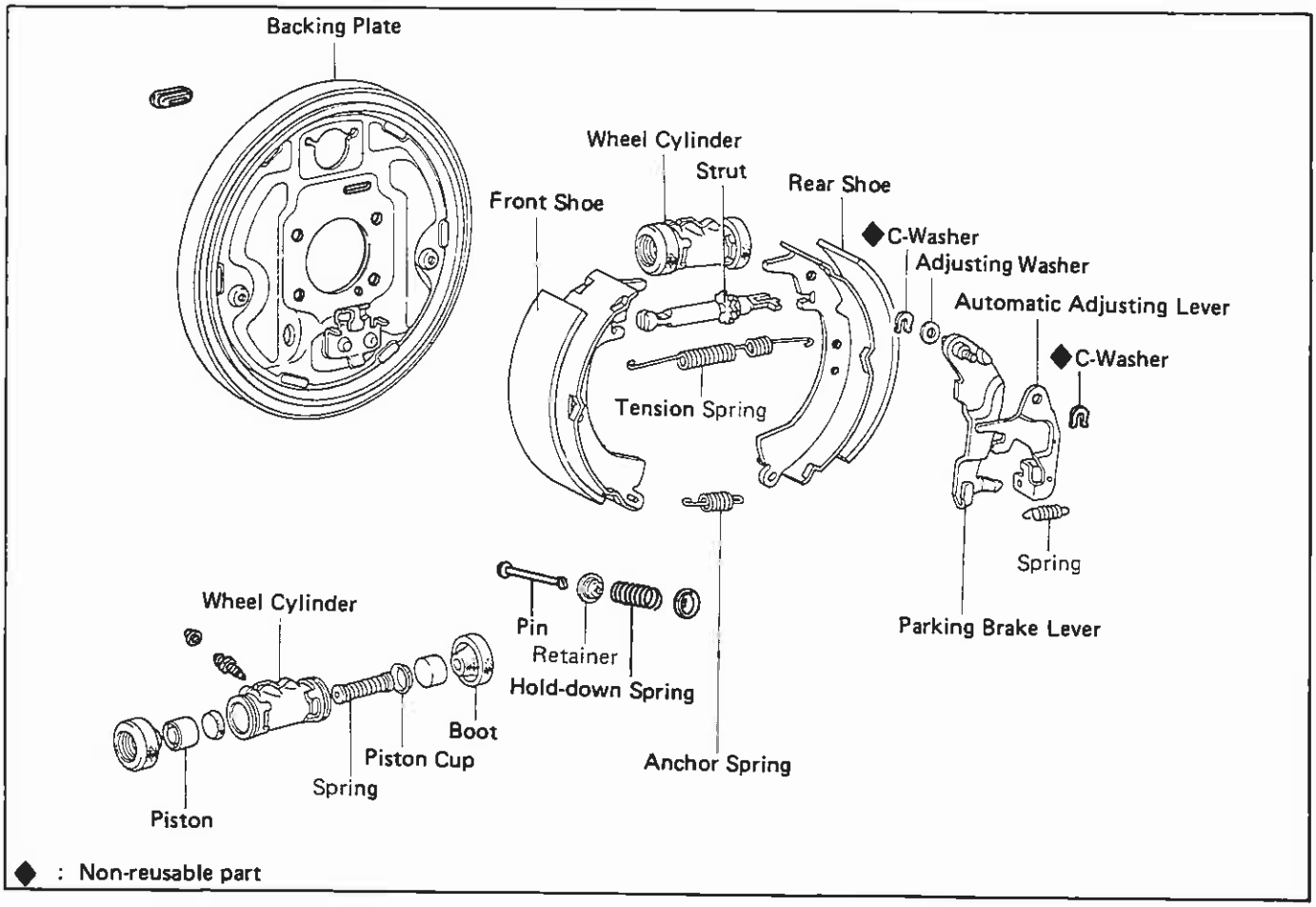
Torque: 155 kg-cm (11 ft-lb, 15 N·m)

5. FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM (See page BR-7)

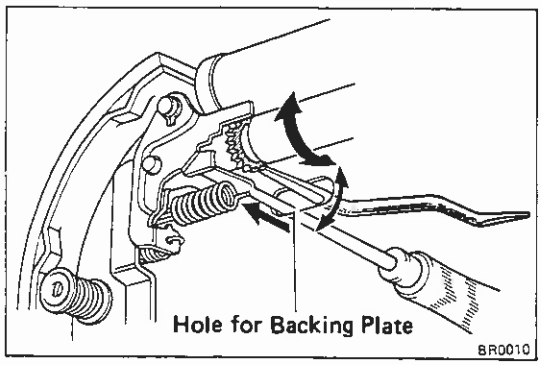
REAR BRAKE

Rear Drum Brake

COMPONENTS



◆ : Non-reusable part



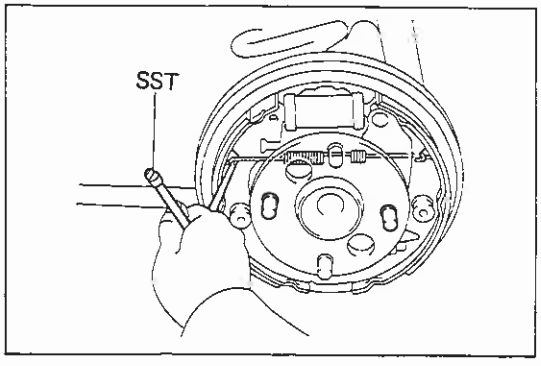
REMOVAL OF REAR DRUM BRAKE

1. REMOVE REAR WHEEL AND BRAKE DRUM

NOTE: If the brake drum cannot be removed easily, perform the following.

(a) Insert a screwdriver through the hole in the backing plate, and hold the automatic adjusting lever away from the adjusting bolt.

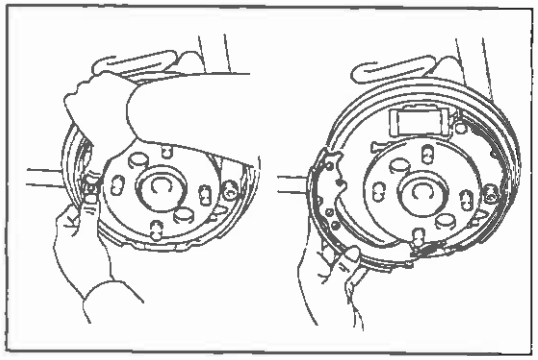
(b) Using another screwdriver, reduce the brake shoe adjustment by turning the adjusting bolt clockwise.



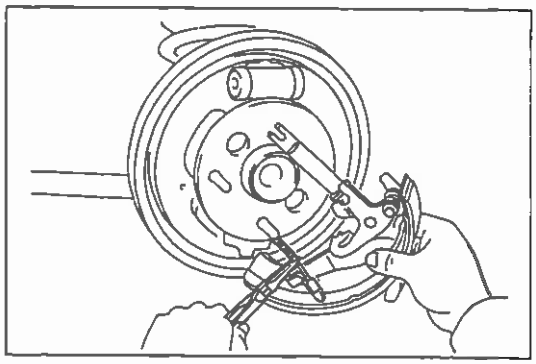
2. REMOVE FRONT SHOE

(a) Using SST, remove the tension spring.

SST 09703-30010

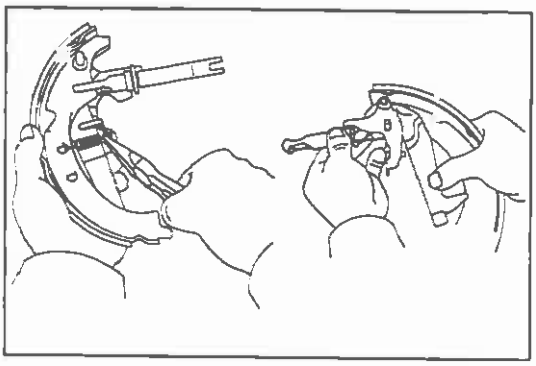


(b) Remove the hold-down spring.
(c) Remove the front shoe and the anchor spring.



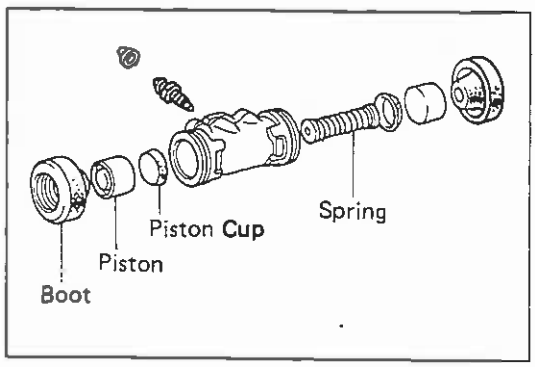
3. REMOVE REAR SHOE

(a) Remove the hold-down spring and pin.
(b) Remove the rear shoe with strut.
(c) Disconnect the parking brake cable from the lever.



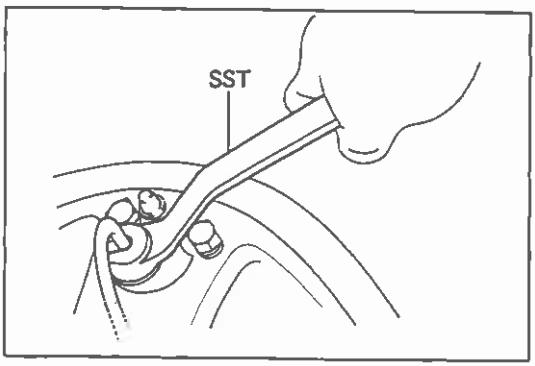
4. REMOVE STRUT FROM REAR SHOE

(a) Remove the adjusting lever spring.
(b) Remove the strut.



5. DISASSEMBLE WHEEL CYLINDER

(a) Use a container to catch the fluid.
(b) Remove the following parts from the wheel cylinder:
- Two boots
- Two pistons
- Two piston cups
- Spring

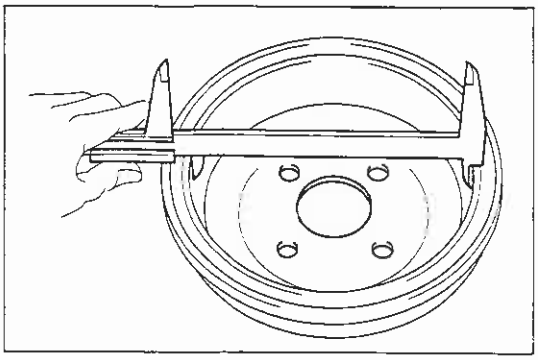


6. IF NECESSARY, REMOVE AND DISASSEMBLE WHEEL CYLINDER

(a) Using SST, disconnect the brake tube.

SST 09751-36011

(b) Remove two bolts and the wheel cylinder.

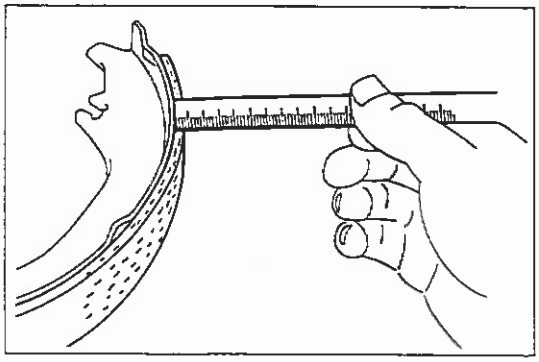


INSPECTION OF DRUM BRAKE COMPONENTS

1. MEASURE BRAKE DRUM INSIDE DIAMETER

Standard inside diameter : 228.6 mm (9.000 in.)
Maximum inside diameter : 230.6 mm (9.079 in.)

If the drum is scored or worn, the brake drum may be lathed to the maximum inside diameter.

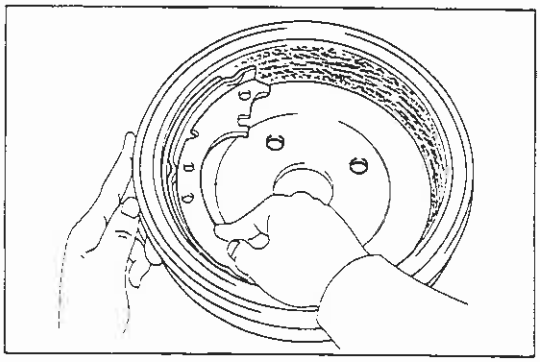


2. MEASURE BRAKE SHOE LINING THICKNESS

Standard thickness : 5.0 mm (0.197 in.)
Minimum thickness: 1.0 mm (0.039 in.)

If the shoe lining is less than minimum or shows signs of uneven wear, replace the brake shoes.

NOTE: If any of the brake shoes has to be replaced, replace all the rear brake shoes in order to maintain effective brakes.

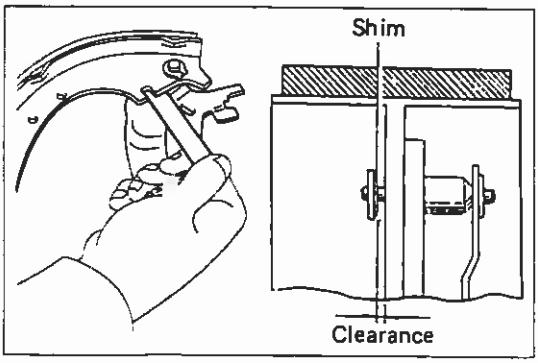


3. INSPECT BRAKE LINING AND DRUM FOR PROPER CONTACT

Replace the brake shoe or lathe the brake drum as necessary.

4. INSPECT WHEEL CYLINDER FOR CORROSION OR DAMAGE

5. INSPECT BACKING PLATE FOR WEAR OR DAMAGE



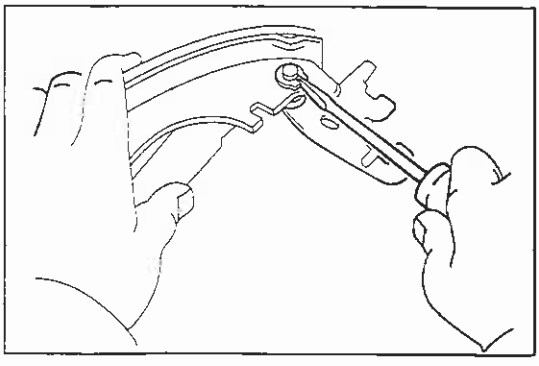
6. MEASURE CLEARANCE BETWEEN BRAKE SHOE AND LEVER

Using a feeler gauge, measure the clearance.

Standard clearance: 0 – 0.35 mm (0 – 0.0138 in.)

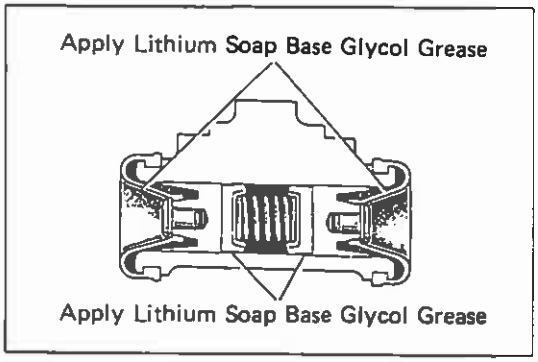
If the clearance is not within specification, replace the shim with one of the correct size.

Thickness	mm (in.)	Thickness	mm (in.)
0.2	(0.008)	0.6	(0.024)
0.3	(0.012)	0.9	(0.035)



7. IF NECESSARY, CHANGE SHIM

(a) Remove the C-washer from the rear shoe.
(b) Install the correct size shim.
(c) Install the parking brake lever with a new C-washer.



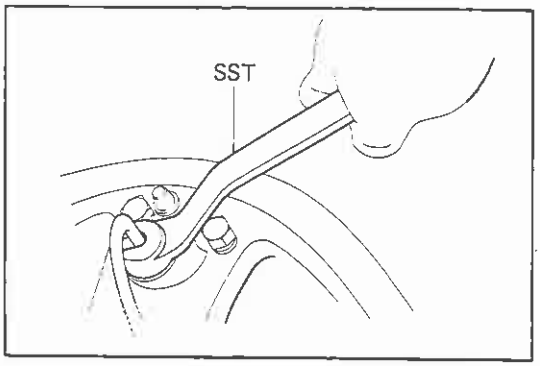
ASSEMBLY OF REAR DRUM BRAKE

(See page BR-20)

1. ASSEMBLE WHEEL CYLINDER
   (a) Apply lithium soap base glycol grease to the piston cups.
   (b) Install the spring and two piston cups in the wheel cylinder.

   CAUTION: Make sure flanges of the cups are pointed inward.

   (c) Apply lithium soap base glycol grease to the inside of the boots.
   (d) Install the two boots to the pistons and install them into the cylinder.

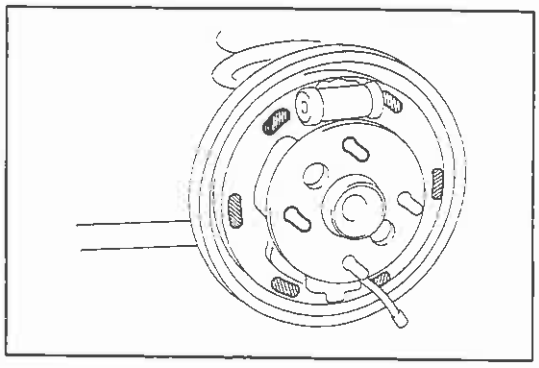


2. INSTALL WHEEL CYLINDER ON BACKING PLATE
   (a) Install the wheel cylinder on the backing plate with two bolts.

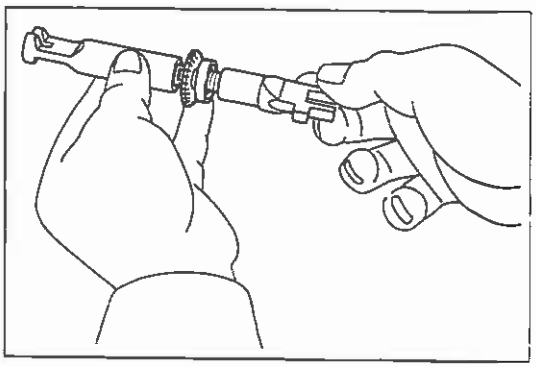
   Torque: 100 kg-cm (7 ft-lb, 10 N·m)

   (b) Using SST, connect the brake tube.

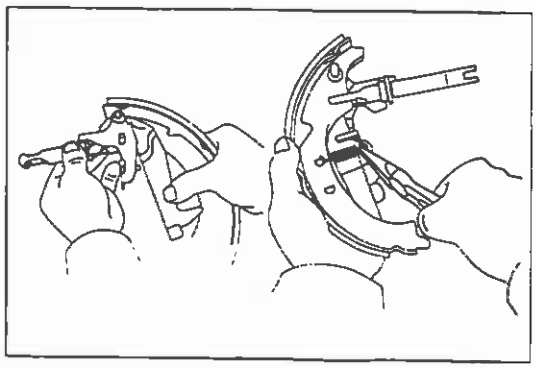
   SST 09751-36011



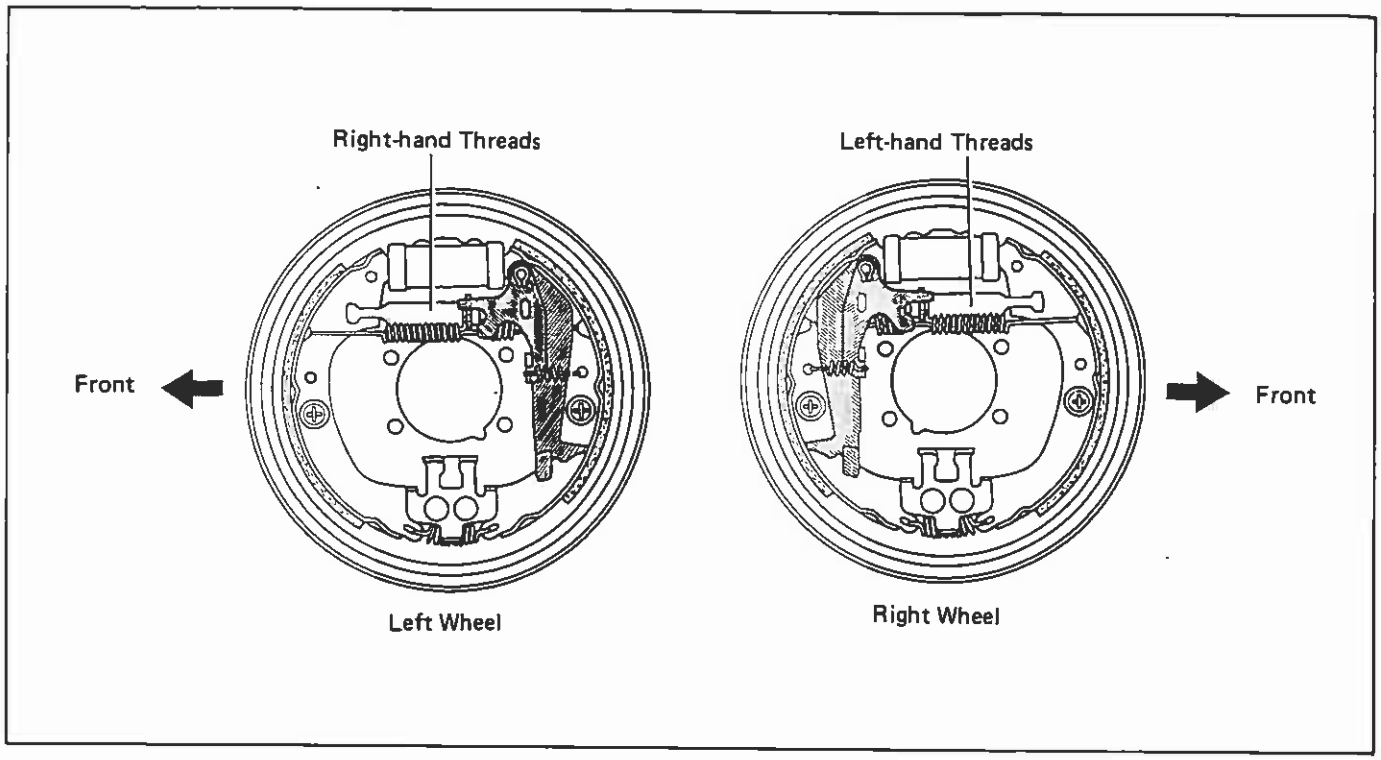
3. APPLY NON-MELTING TYPE GREASE ON BACKING PLATE, AS SHOWN

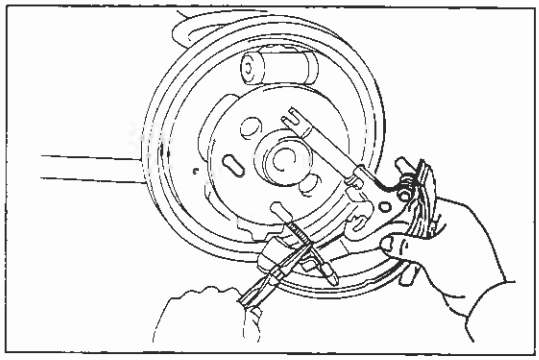


4. APPLY NON-MELTING TYPE GREASE TO ADJUSTER BOLT THREADS AND END



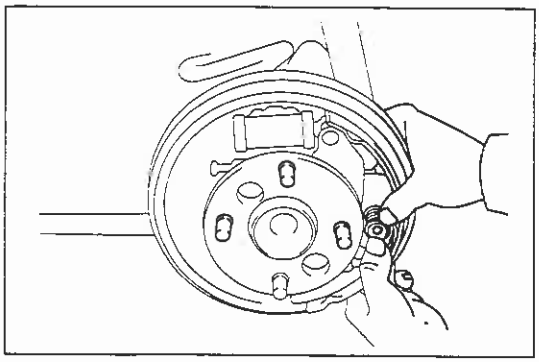
5. INSTALL STRUT ONTO REAR SHOE
   (a) Install the strut.
   (b) Install the adjusting lever spring.





6. **INSTALL REAR SHOE**

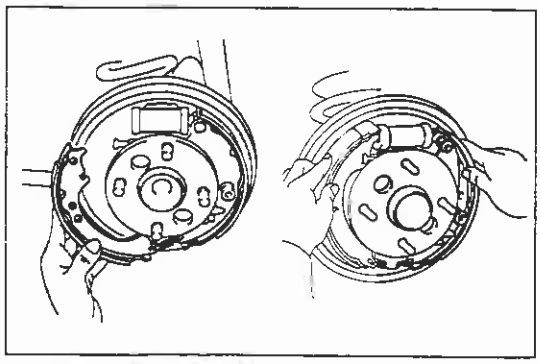
(a) Connect the parking brake cable to the lever.



(b) Set the rear shoe in place with the end of the shoe inserted in a wheel cylinder and the other end in the anchor plate.

(c) Install the pin and the shoe hold-down spring.

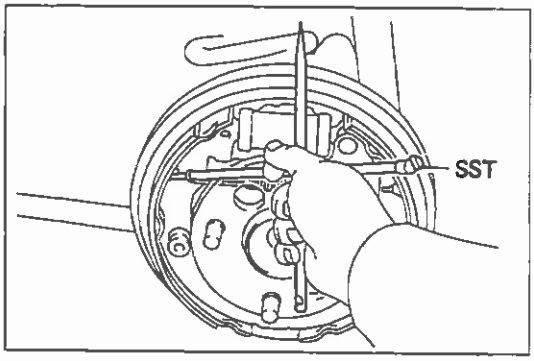
CAUTION: Do not allow oil or grease to touch the rubbing face.



7. **INSTALL FRONT SHOE**

(a) Install the anchor spring between the front and rear shoes.

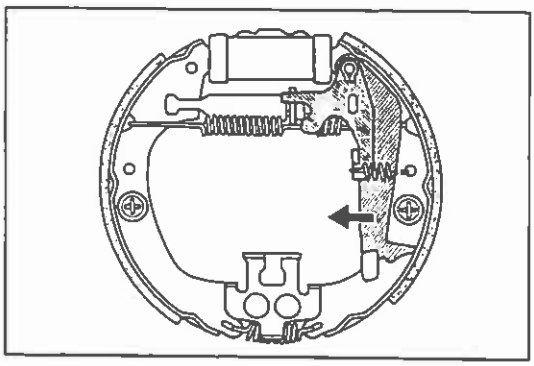
(b) Set the front shoe in place with the end of the shoe inserted in the wheel cylinder and the strut in place.



(c) Install the shoe hold-down spring and pin.

(d) Using SST, install the tension spring.

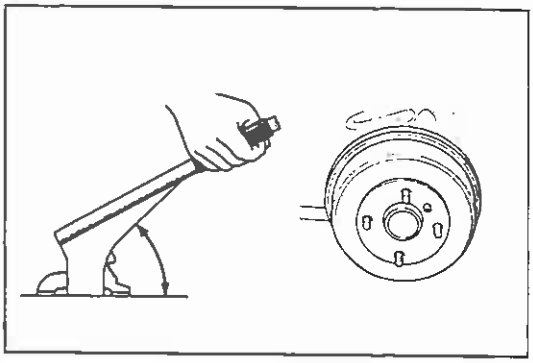
SST 09703-30010



8. CHECK OPERATION OF AUTOMATIC ADJUSTER MECHANISM

(a) Check that the adjusting bolt turns while pulling the parking brake lever up.

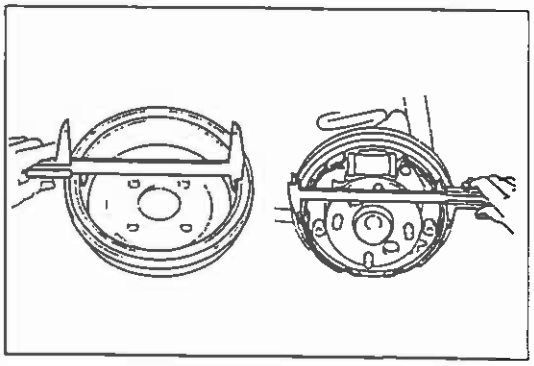
If the bolt does not turn, check for incorrect installation of the rear brakes.



(b) Adjust the strut length to where it is the shortest possible.

(c) Install the drum.

(d) Pull the parking brake lever all the way up several times.



9. CHECK CLEARANCE BETWEEN BRAKE SHOES AND DRUM

(a) Remove the drum.

(b) Measure the brake drum inside diameter and diameter of the brake shoes. Check that the difference between the diameters is the correct shoe clearance.

Shoe clearance: 0.6 mm (0.024 in.)

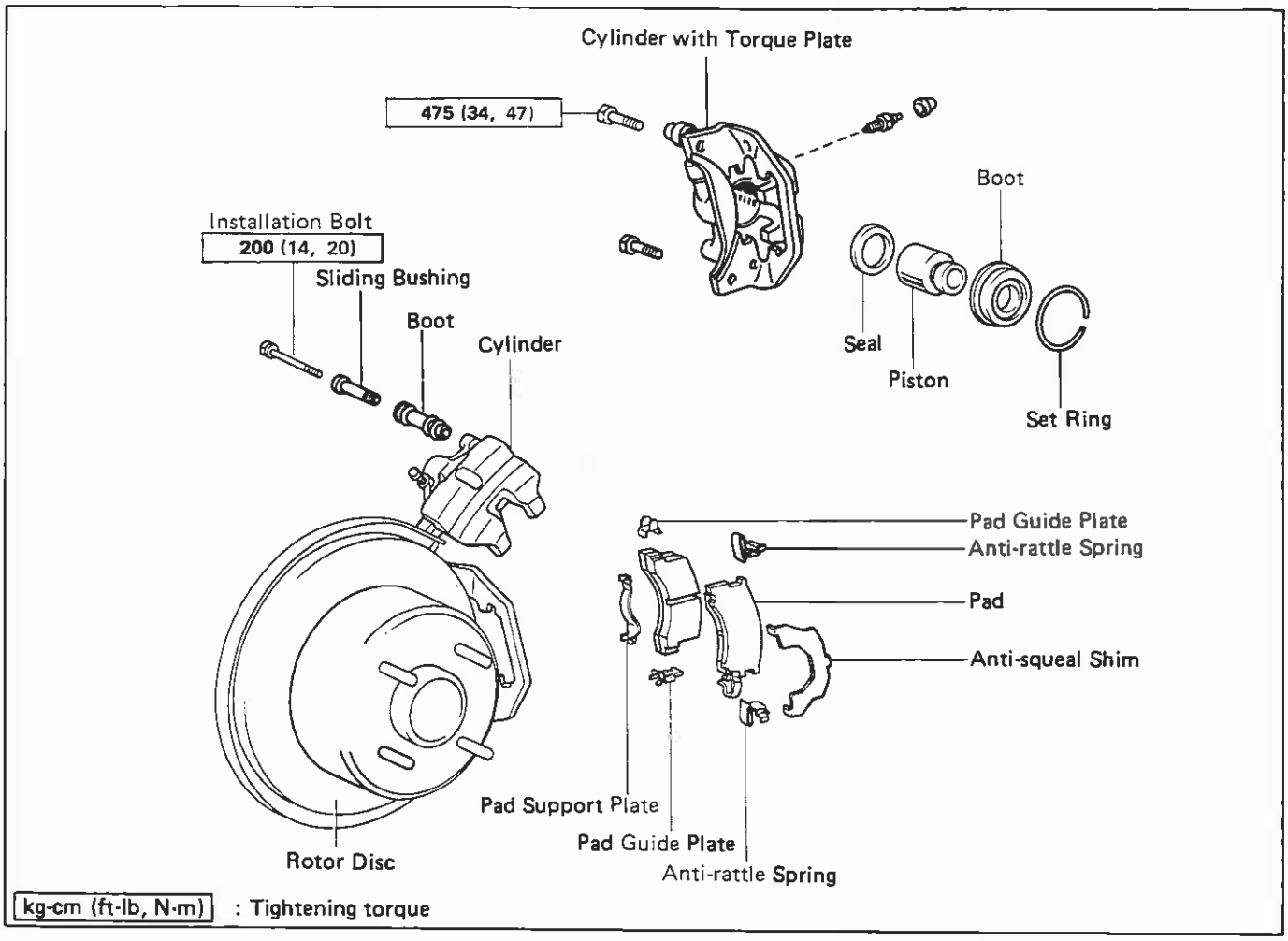
If incorrect, check the parking brake system.

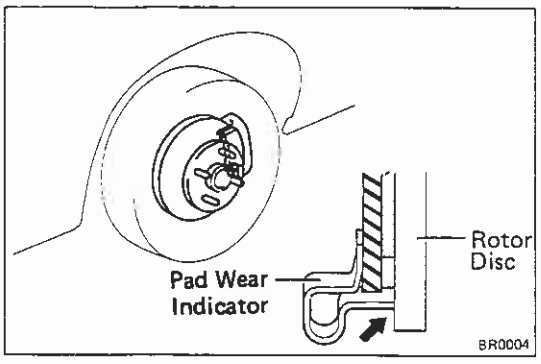
10. INSTALL BRAKE DRUM AND REAR WHEEL

11. FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM **(See page BR-7)**

Rear Disc Brake

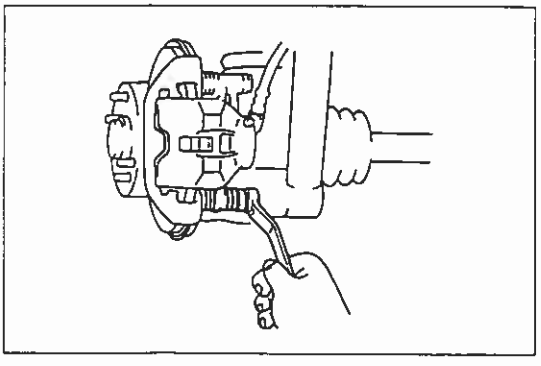
COMPONENTS



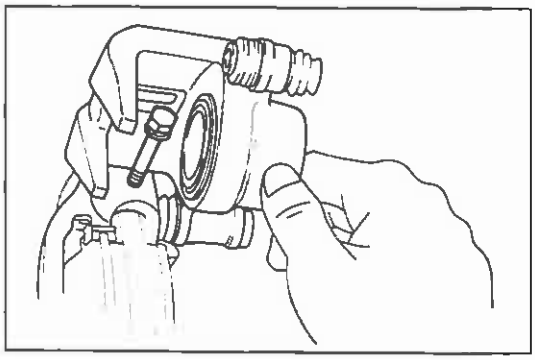


REPLACEMENT OF BRAKE PADS

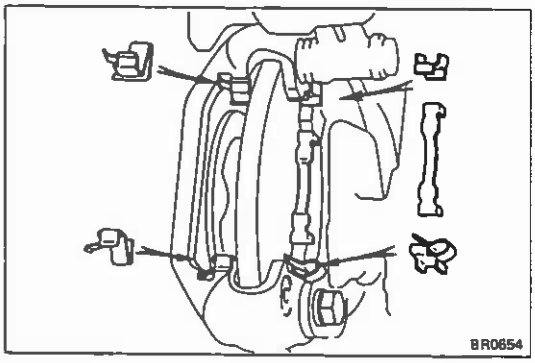
NOTE: If a squealing noise occurs from the brakes while driving, check the pad wear indicator. If there are traces of the indicator contacting the rotor disc, the disc pad should be replaced.



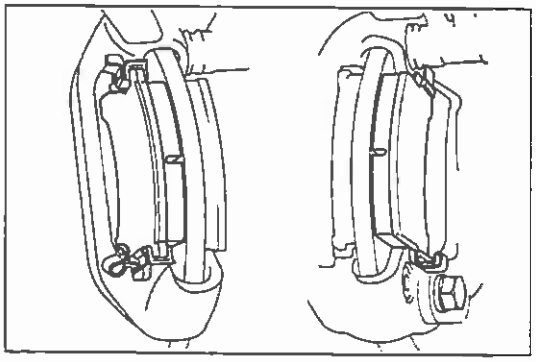
1. DRAW OUT A SMALL AMOUNT OF BRAKE FLUID
2. UNSCREW CYLINDER INSTALLATION BOLT



3. LIFT UP CYLINDER
   (a) Lift up the cylinder.
   (b) Insert a bolt into the torque plate hole to secure the cylinder.
4. REMOVE PADS AND ANTI-SQUEAL SHIM
5. REMOVE ANTI-RATTLE SPRINGS, PAD GUIDE PLATES AND SUPPORT PLATE



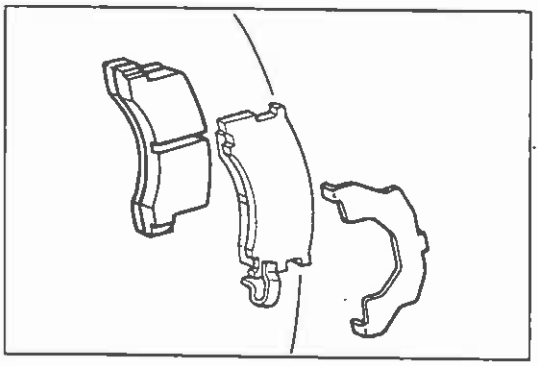
6. INSTALL NEW PAD SUPPORT PLATE, NEW PAD GUIDE PLATES AND NEW ANTI-RATTLE SPRINGS
7. PUSH PISTON INTO CYLINDER



8. INSTALL NEW PADS AND NEW ANTI-SQUEAL SHIM
   (a) Install the pads onto each spring.

   NOTE: Install the outside pad so the wear indicator is at the bottom side.

   CAUTION: Do not allow oil or grease to touch the rubbing face.

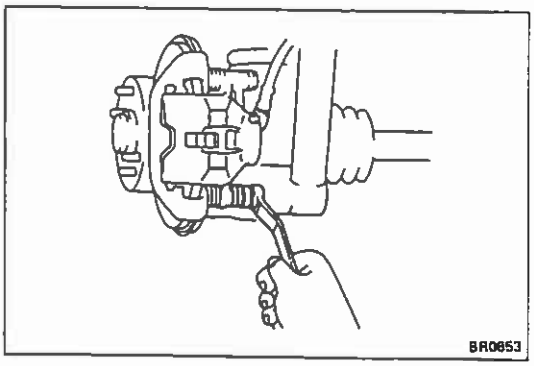


   (b) Install the anti-squeal shim toward the outside of the pad.

9. LOWER CYLINDER

   Remove the bolt from the torque plate and lower the cylinder.

   NOTE: Insert the cylinder carefully so the boot is not wedged.

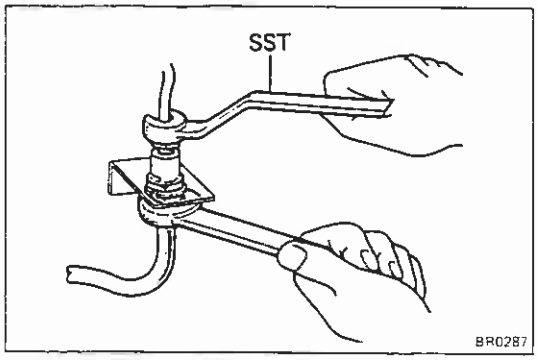


10. INSTALL CYLINDER INSTALLATION BOLT

    Torque the cylinder installation bolt.

    Torque: 200 kg-cm (14 ft-lb, 20 N-m)

11. FILL BRAKE FLUID



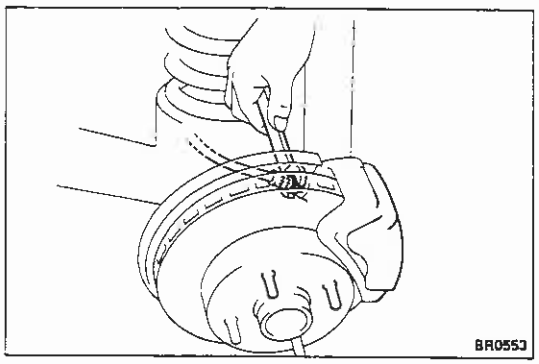
REMOVAL OF CYLINDER

(See page BR-26)

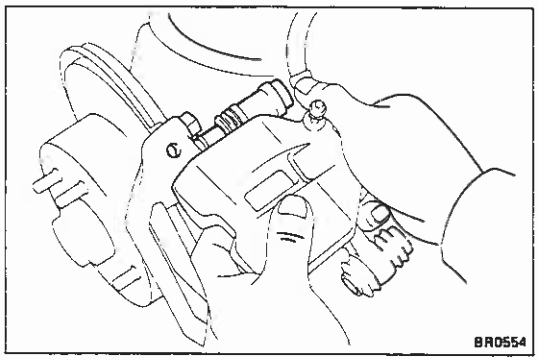
1. DISCONNECT BRAKE HOSE FROM BRAKE TUBE AND CYLINDER
   (a) Using SST and a spanner, disconnect the brake tube from the hose.

   SST 09751-36011

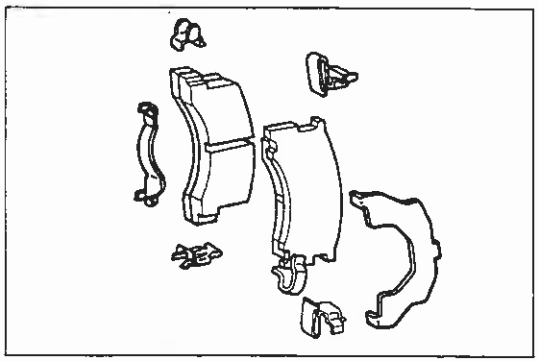
   (b) Use a container to catch the brake fluid.



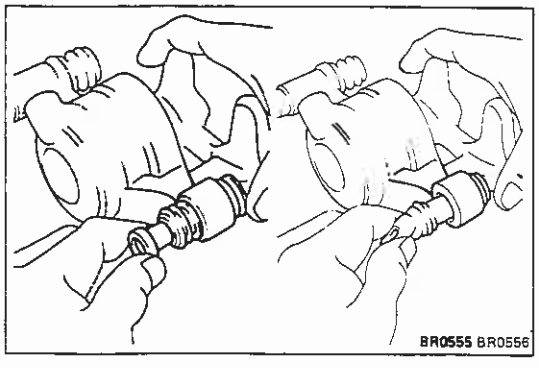
   (c) Remove the clip from brake hose.
   (d) Disconnect the brake hose from the cylinder.



2. REMOVE CYLINDER
   (a) Remove the cylinder installation bolt.
   (b) Lift up and push out the cylinder from the torque plate pin.



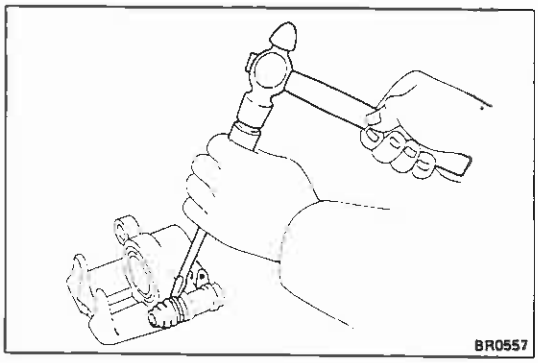
3. REMOVE FOLLOWING PARTS:
   (a) Anti-squeal shim
   (b) Brake pads
   (c) Anti-rattle springs
   (d) Pad guide plates
   (e) Pad support plate



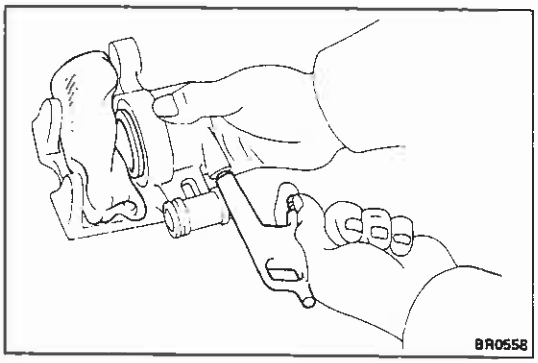
DISASSEMBLY OF CYLINDER

(See page BR-26)

1. REMOVE SLIDING BUSHING AND BOOT



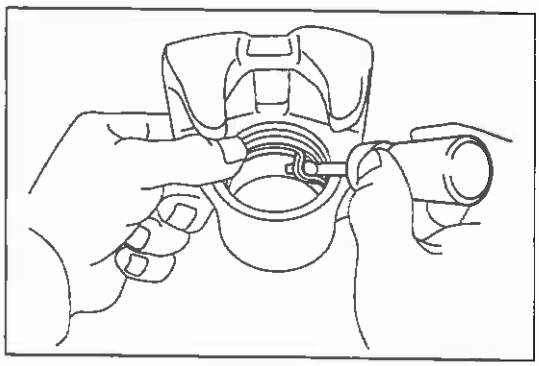
2. REMOVE MAIN PIN BOOT WITH A CHISEL



3. REMOVE PISTON FROM CYLINDER

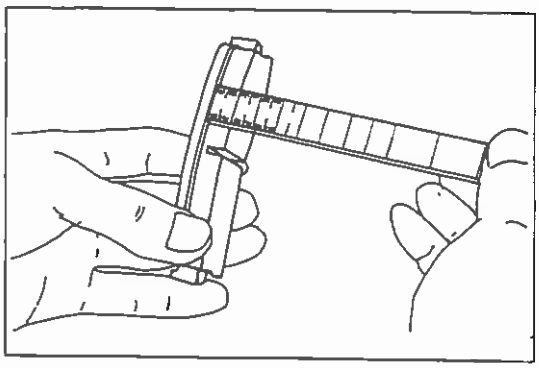
Use compressed air to remove the piston from the cylinder.

WARNING: Do not place your fingers in front of the piston when using compressed air.



4. REMOVE CYLINDER BOOT AND SET RING FROM CYLINDER

5. REMOVE PISTON SEAL FROM CYLINDER

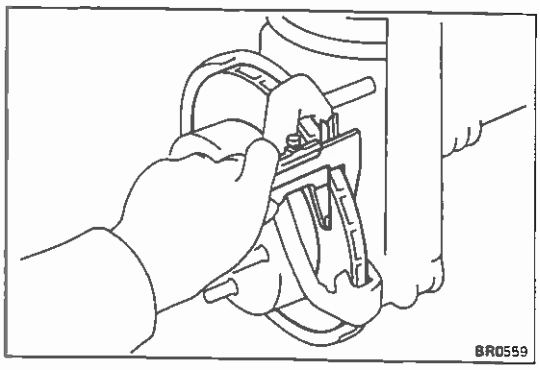


INSPECTION OF REAR DISC BRAKE COMPONENTS

1. MEASURE PAD LINING THICKNESS

Standard thickness : 10.5 mm (0.413 in.)
Minimum thickness : 3.0 mm (0.118 in.)

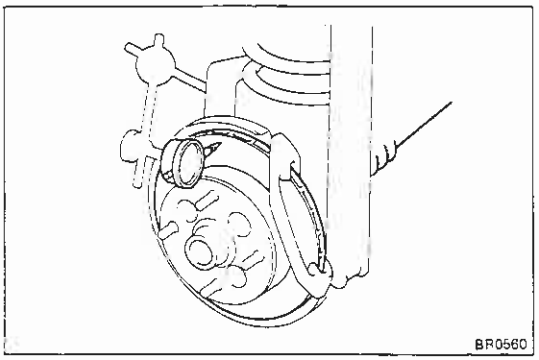
Replace the pad if the thickness is less than the minimum (the 1.0 mm slit is no longer visible) or if it shows sign of uneven wear.



2. MEASURE ROTOR DISC THICKNESS

Standard thickness : 18.0 mm (0.709 in.)
Minimum thickness : 17.0 mm (0.669 in.)

If the disc thickness is less than minimum, replace the disc.



3. MEASURE ROTOR DISC RUNOUT

(a) Temporarily install the hub nuts in reverse.

(b) Measure the rotor disc runout at 10 mm (0.39 in.) from the outer edge of rotor disc.

Maximum runout: 0.15 mm (0.0059 in.)

If the runout is greater than the maximum, replace the disc.

4. IF NECESSARY, REPLACE ROTOR DISC

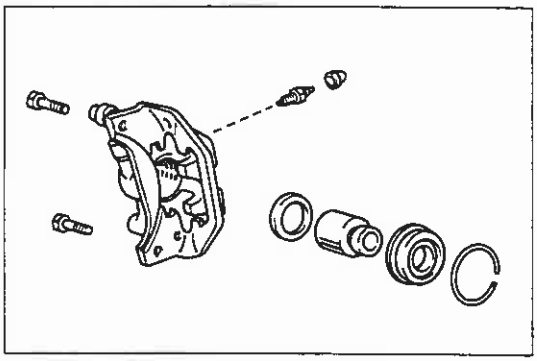
(a) Remove the torque plate from the rear axle housing.

(b) Remove the rotor disc and hub nuts.

(c) Install the rotor disc, and adjust the shoe clearance.

(d) Install the torque plate onto the rear axle housing.

Torque: 475 kg-cm (34 ft-lb, 47 N·m)



ASSEMBLY OF CYLINDER

(See page BR-26)

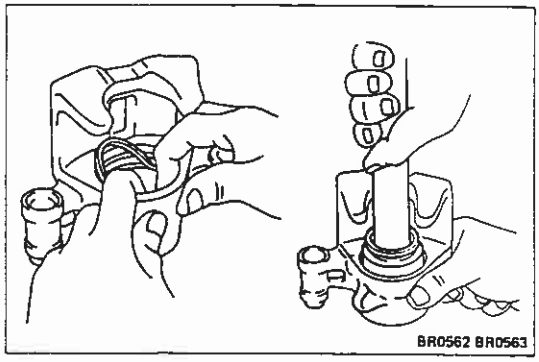
1. APPLY LITHIUM SOAP BASE GLYCOL GREASE TO FOLLOWING PARTS:

(a) Main pin boot

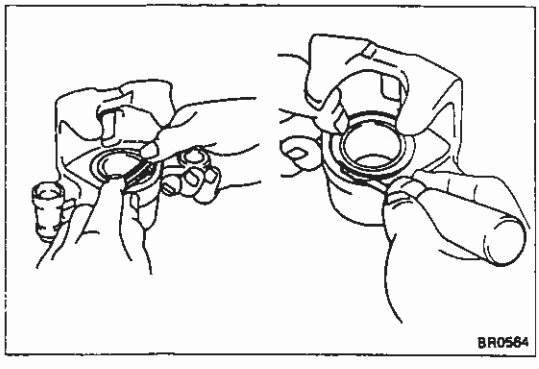
(b) Sliding pin and boot

(c) Piston seal and piston

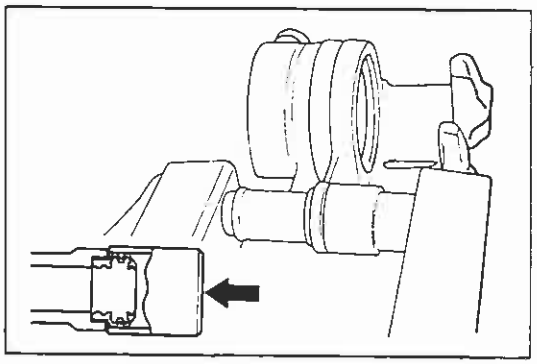
(d) Dust boot



2. INSTALL PISTON SEAL AND PISTON IN CYLINDER

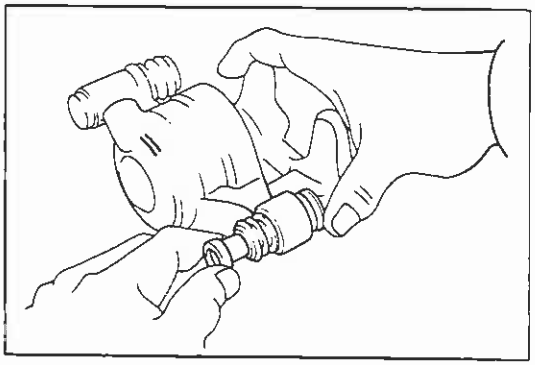


3. INSTALL CYLINDER BOOT AND SET RING IN CYLINDER



4. INSTALL MAIN PIN BOOT

Using a 21-mm socket wrench, press in the boot.



5. INSTALL DUST BOOT AND SLIDING BUSHING

(a) Install the dust boot.

NOTE: Be careful that the seal does not fold under.

(b) Install the bushing into the boot facing the flange toward the inside.

SEE
REAR BRAKE
REPLACEMENT OF BRAKE PADS
BR-26

INSTALLATION OF CYLINDER

(See page BR-26)

1. INSTALL FOLLOWING PARTS:

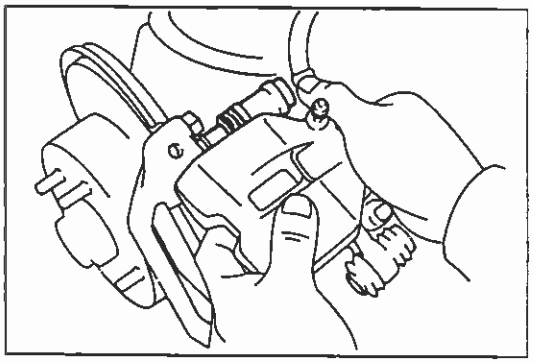
(a) Pad support plate

(b) Pad guide plates

(c) Anti-rattle springs

(d) Brake pads

(e) Anti-squeal shim



2. INSTALL CYLINDER

(a) Install the cylinder onto the main pin.

NOTE: Make sure that the boot end is installed into the groove of the main pin.

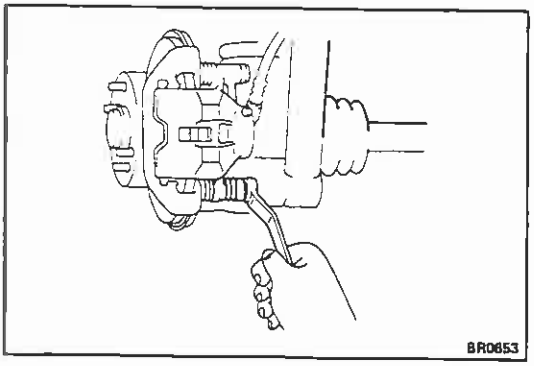
(b) Insert the cylinder installation bolt into the cylinder body.

(c) Install the cylinder over the brake pads.

3. TORQUE CYLINDER INSTALLATION BOLT

Install the cylinder installation bolt and torque the bolt.

Torque: 200 kg-cm (14 ft-lb, 20 N·m)



4. CONNECT BRAKE LINE

(a) Connect the brake hose to the cylinder.

Torque: 235 kg-cm (17 ft-lb, 23 N·m)

(b) Using SST, connect brake hose to the brake tube.

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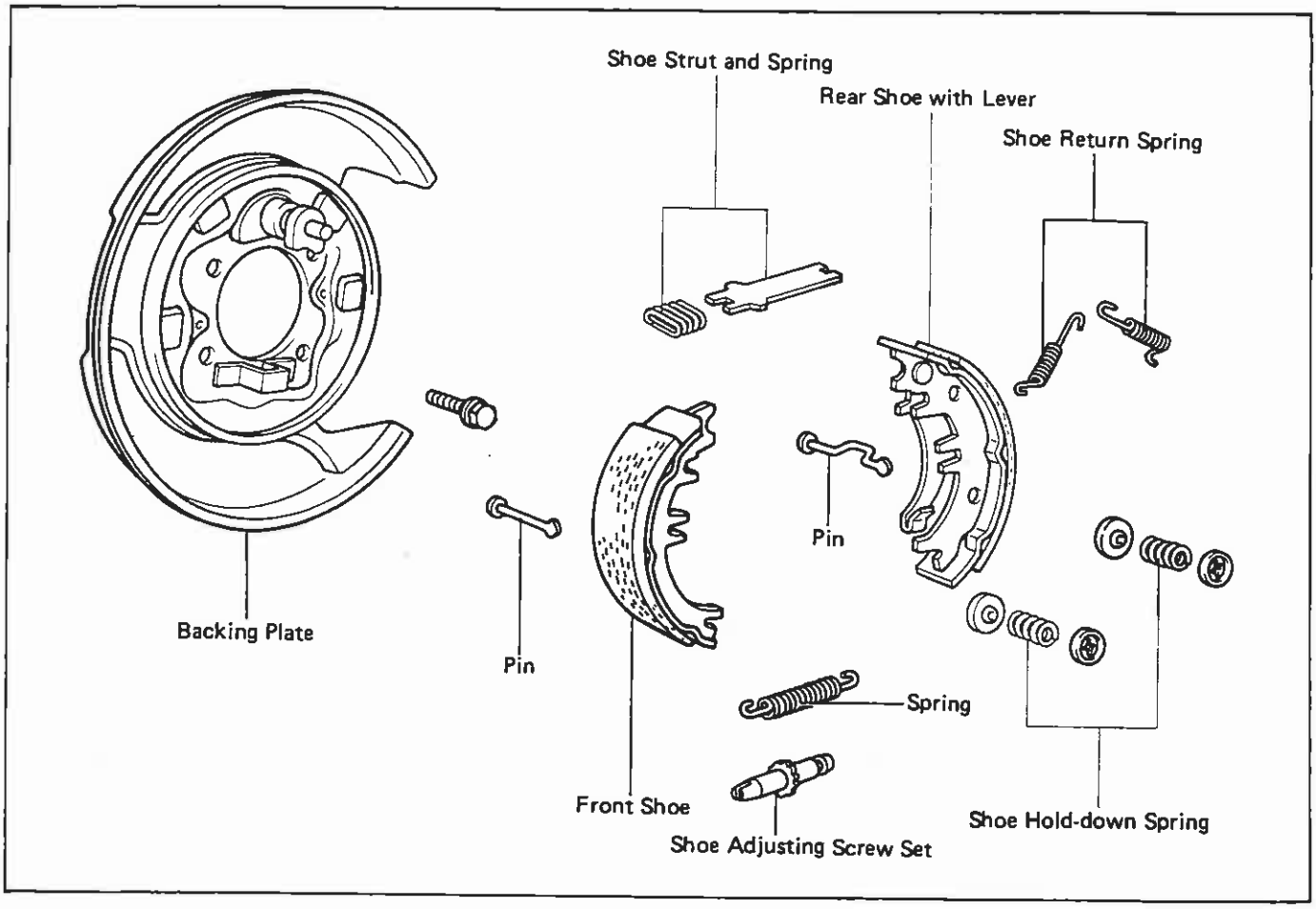
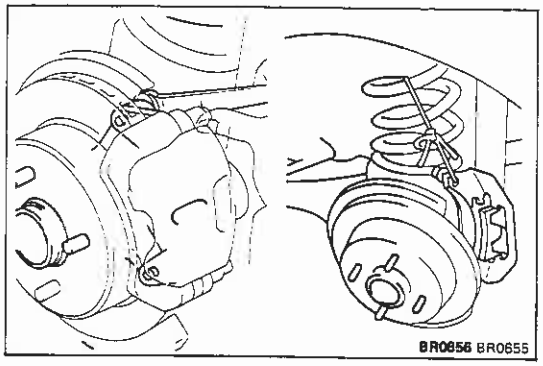
Torque: 155 kg-cm (11 ft-lb, 15 N·m)

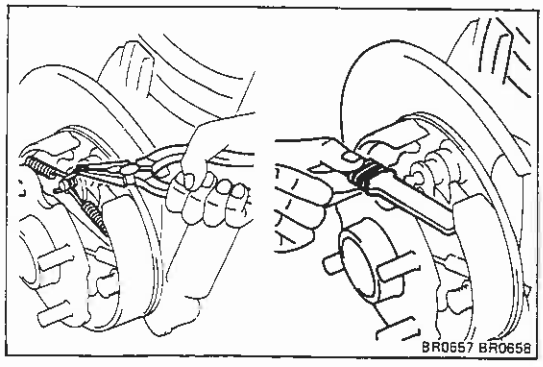
5. FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM (See page BR-7)

Rear Parking Brake (For Rear Disc Brake)

COMPONENTS

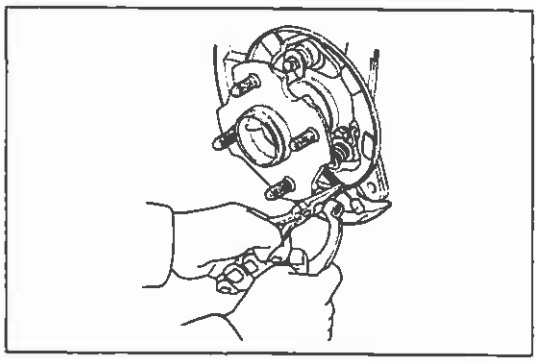






DISASSEMBLY OF PARKING BRAKE

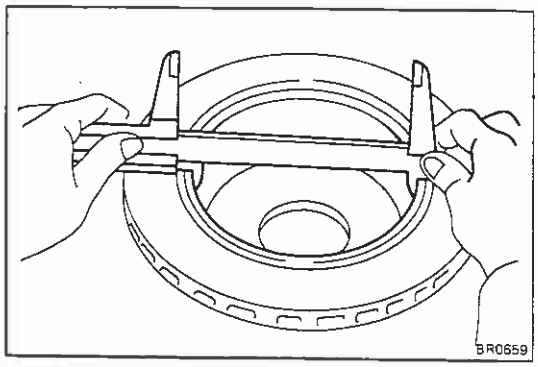
1. REMOVE REAR DISC BRAKE ASSEMBLY
   (a) Remove two torque plate mount bolts and remove the disc brake.
   (b) Suspend the disc brake so the hose is not stretched.
2. REMOVE ROTOR DISC
3. MEASURE BRAKE SHOE LINING THICKNESS
   (See page BR-33)
4. REMOVE SHOE RETURN SPRINGS
5. REMOVE SHOE STRUT WITH SPRING
6. REMOVE FRONT SHOE, SHOE ADJUSTING SCREW SET AND TENSION SPRING
   (a) Slide out the front shoe and remove the shoe adjusting screw set.
   (b) Remove the tension spring and front shoe.



7. REMOVE REAR SHOE

(a) Slide out the rear shoe.

(b) Disconnect the parking brake cable from the parking brake shoe lever.

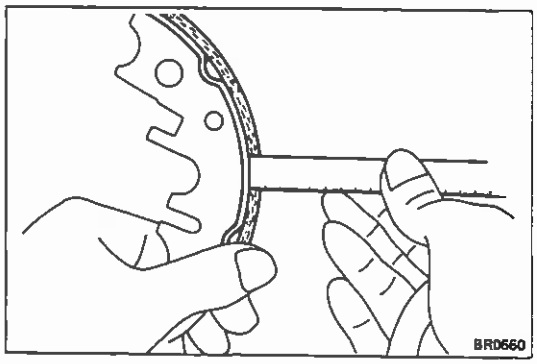


INSPECTION AND ADJUSTMENT OF PARKING BRAKE COMPONENTS

1. MEASURE BRAKE DISC INSIDE DIAMETER

Standard inside diameter: 167 mm (6.57 in.)
Maximum inside diameter: 168 mm (6.61 in.)

If the disc is scored or worn, the brake disc may be lathed to the maximum inside diameter.

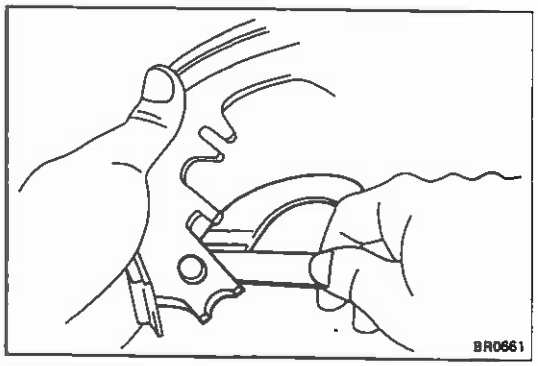


2. MEASURE BRAKE SHOE LINING THICKNESS

Standard thickness : 2.0 mm (0.079 in.)
Minimum thickness : 1.0 mm (0.039 in.)

If the shoe lining is less than minimum, replace the parking brake shoes.

NOTE: In order to maintain effective brakes, replace all of the shoes if the thickness of any one is not within specification.



3. INSPECT REAR PARKING BRAKE LINING AND DISC FOR PROPER CONTACT

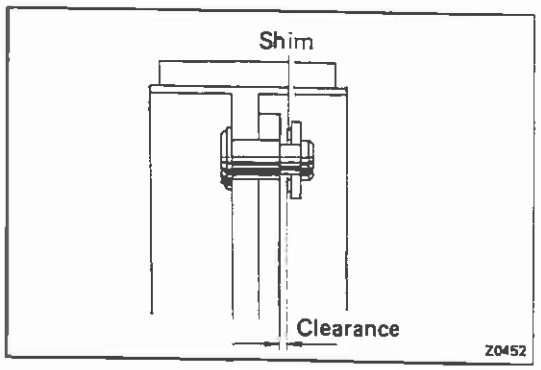
Replace the brake or lathe the brake disc as necessary.

4. MEASURE CLEARANCE BETWEEN PARKING BRAKE SHOE AND LEVER

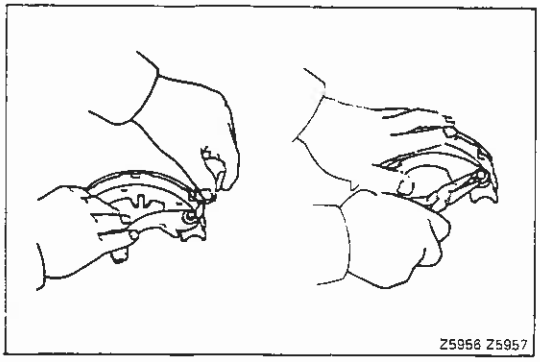
Using a feeler gauge, measure the clearance.

Standard clearance: 0 – 0.35 mm (0 – 0.0138 in.)

If the clearance is not within specification, replace the shim with one of the correct size.



Thickness	mm (in.)	Thickness	mm (in.)
0.3	(0.012)	0.9	(0.035)
0.6	(0.024)		

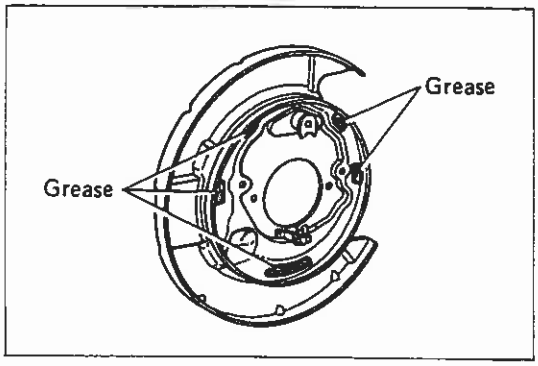


5. IF NECESSARY, REPLACE SHIM

(a) Remove the parking brake lever, and install the correct size shim.

(b) Install the parking brake lever with a new C-washer.

(c) Remeasure the clearance.

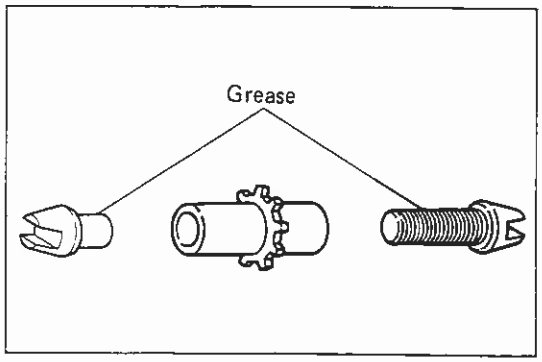


ASSEMBLY OF PARKING BRAKE

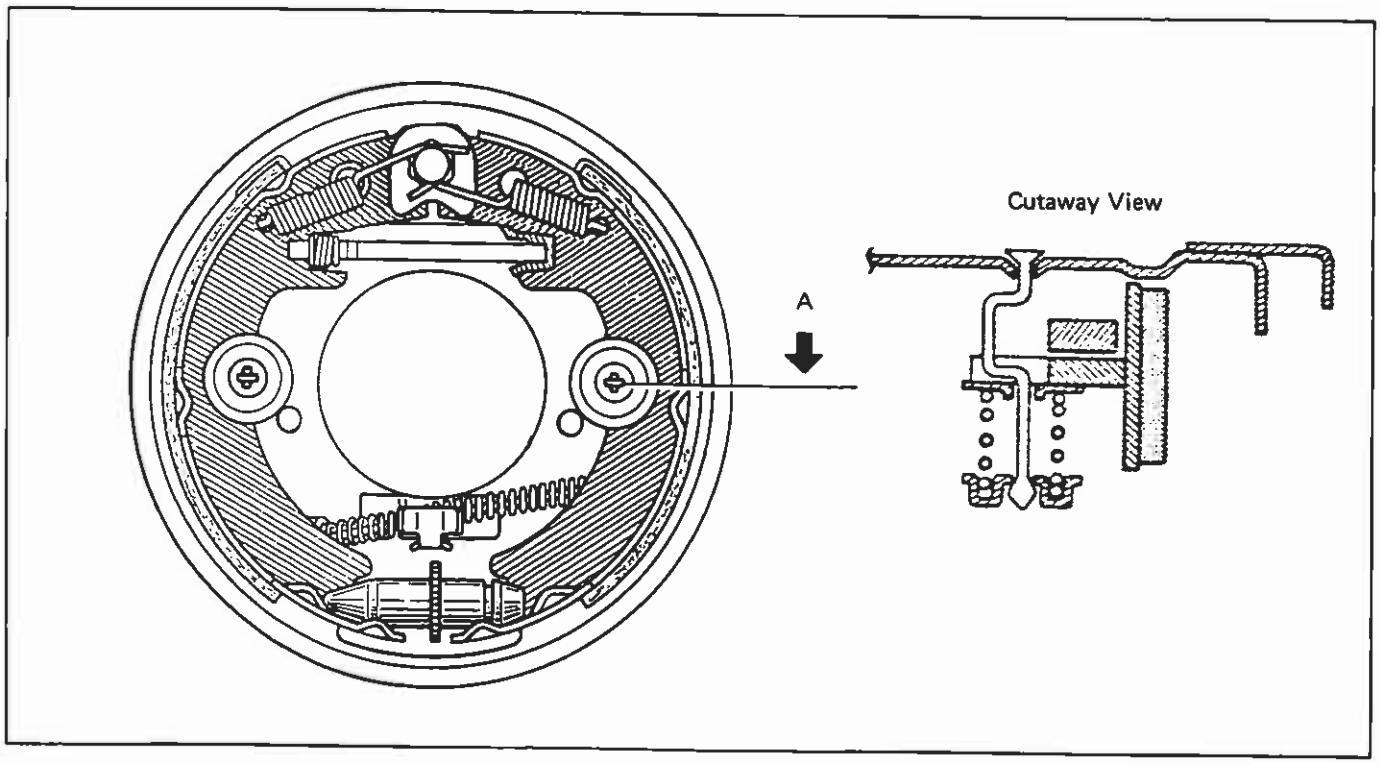
(See page BR-32)

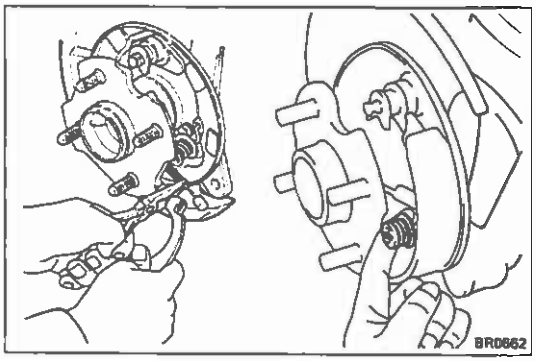
1. APPLY NON-MELTING TYPE GREASE ON BACKING PLATE AS SHOWN

Apply non-melting type grease to the sliding surfaces of the shoe.



2. APPLY NON-MELTING TYPE GREASE TO SHOE ADJUSTING SCREW SET





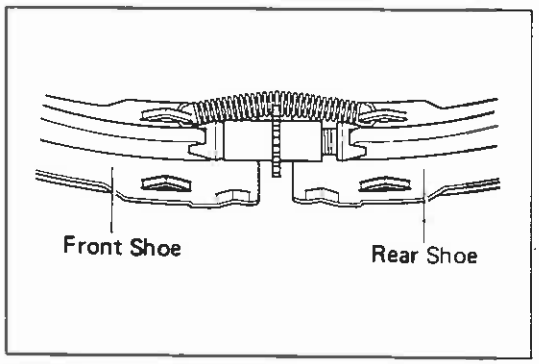
3. CONNECT PARKING BRAKE LEVER TO CABLE

Compress the cable spring and connect the lever.

4. INSTALL REAR SHOE

Slide in the rear shoe between the shoe hold-down spring seat and the backing plate.

CAUTION: Do not allow oil or grease to touch the rubbing face.

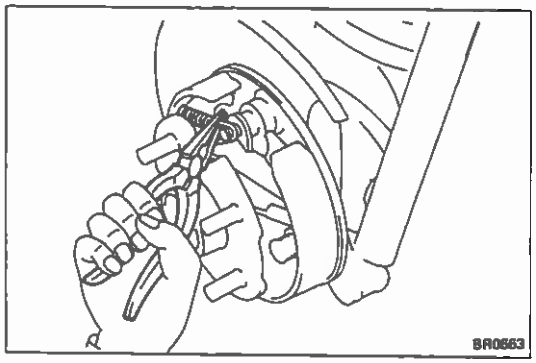


5. INSTALL TENSION SPRING, FRONT SHOE AND SHOE ADJUSTING SCREW SET

(a) Install the tension spring to the rear shoe.

(b) Install the front shoe to the tension spring.

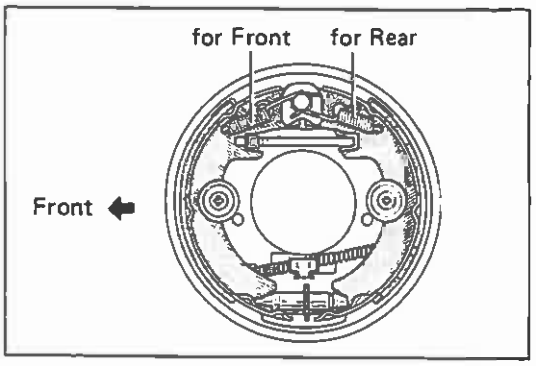
(c) Install the shoe adjusting screw set between the front and rear shoes.



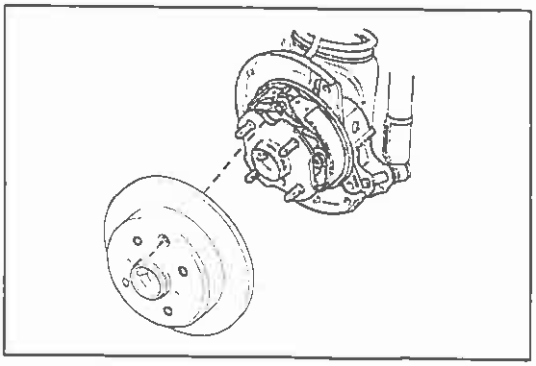
(d) Slide in the front shoe between the shoe hold-down spring seat and the backing plate.

6. INSTALL FRONT SHOE RETURN SPRING

7. INSTALL STRUT WITH SPRING



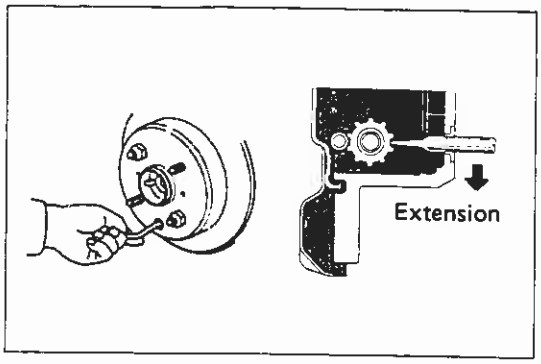
8. INSTALL REAR SHOE RETURN SPRING



9. INSTALL ROTOR DISC

(a) Before installing, polish the disc and shoe surfaces with sandpaper.

(b) Align the groove on the rear axle shaft flange and service hole on the disc.

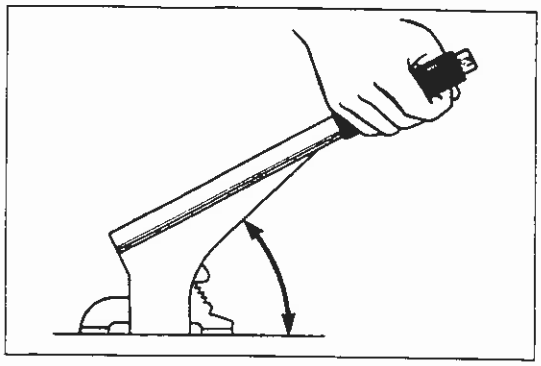


10. ADJUST PARKING BRAKE SHOE CLEARANCE

(a) Temporarily install hub nuts.

(b) Turn the adjuster and expand the shoes until the rotor disc locks.

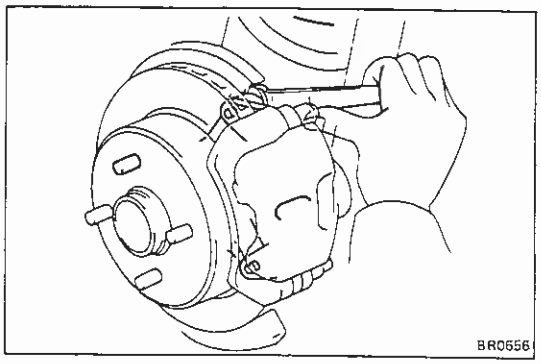
(c) Return the adjuster 8 notches.



11. INSPECT AND ADJUST PARKING BRAKE LEVER TRAVEL

Check that parking brake lever travel is correct.
Pull the parking brake lever all the way up, and count the notches of lever travel.

Parking brake lever travel at 20 kg (44.1 lb, 196 N):
5 – 8 clicks



12. INSTALL REAR DISC BRAKE ASSEMBLY

Install the disc brake and torque two torque plate mount bolts.

Torque: 475 kg-cm (34 ft-lb, 47 N·m)

13. BED DOWN PARKING BRAKE SHOES AND DRUM

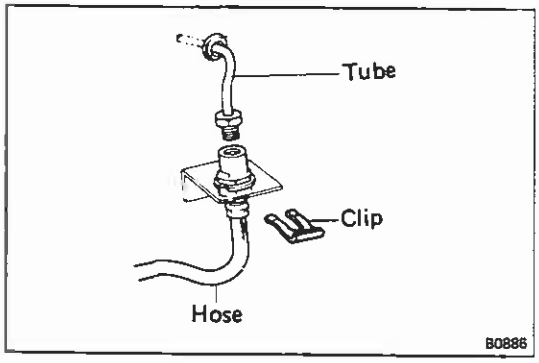
(a) Drive the vehicle at about 50 km/h (31 mph) on a safe, level and dry road.

(b) With the parking brake release button pushed in, pull on the lever with 9 kg (19.8 lb or 88 N) of force.

(c) Drive the vehicle for about 400 meters (1/4 mile) in this condition.

(d) Repeat this procedure two or three times.

14. RECHECK PARKING BRAKE LEVER TRAVEL



BRAKE HOSES AND TUBES

DISCONNECT AND CONNECT HOSE AND TUBE

1. DISCONNECT HOSE AND TUBE

(a) Disconnect the clip.

(b) Using a wrench to hold the hose and SST to hold the tube, disconnect the tube and hose.

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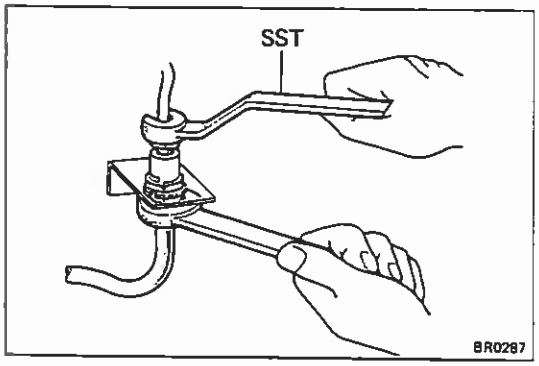

2. CONNECT HOSE AND TUBE

(a) Connect the hose and tube by hand.

(b) Using a wrench to hold the hose and SST to hold the tube, torque the connection.

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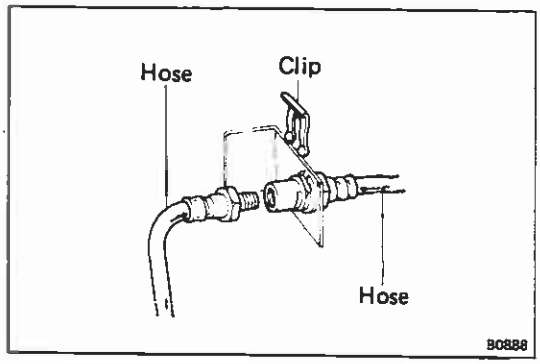
Torque: 155 kg-cm (11 ft-lb, 15 N·m)

(c) Install a new hose clip.

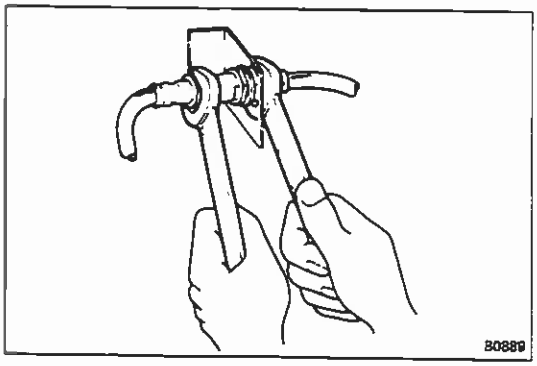


DISCONNECT AND CONNECT TWO HOSES

1. DISCONNECT TWO HOSES

(a) Remove the clip.

(b) Using two wrenches, disconnect the two hoses.



2. CONNECT TWO HOSES

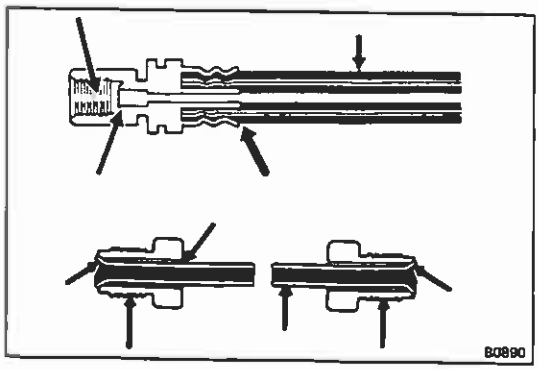
(a) Connect the two hoses by hand.

(b) Using two wrenches, torque the connection.

Torque: 235 kg-cm (17 ft-lb, 23 N·m)

NOTE: All hoses must be free from excessive bending, twisting and pulling.

(c) Install a new hose clip.



INSPECTION OF BRAKE HOSES AND TUBES

1. INSPECT BRAKE HOSES

(a) Inspect the hose for damage, cracks or swelling.

(b) Inspect the threads for damage.

2. INSPECT BRAKE TUBES

(a) Inspect the tube for damage, cracks, dents or corrosion.

(b) Inspect the threads for damage.