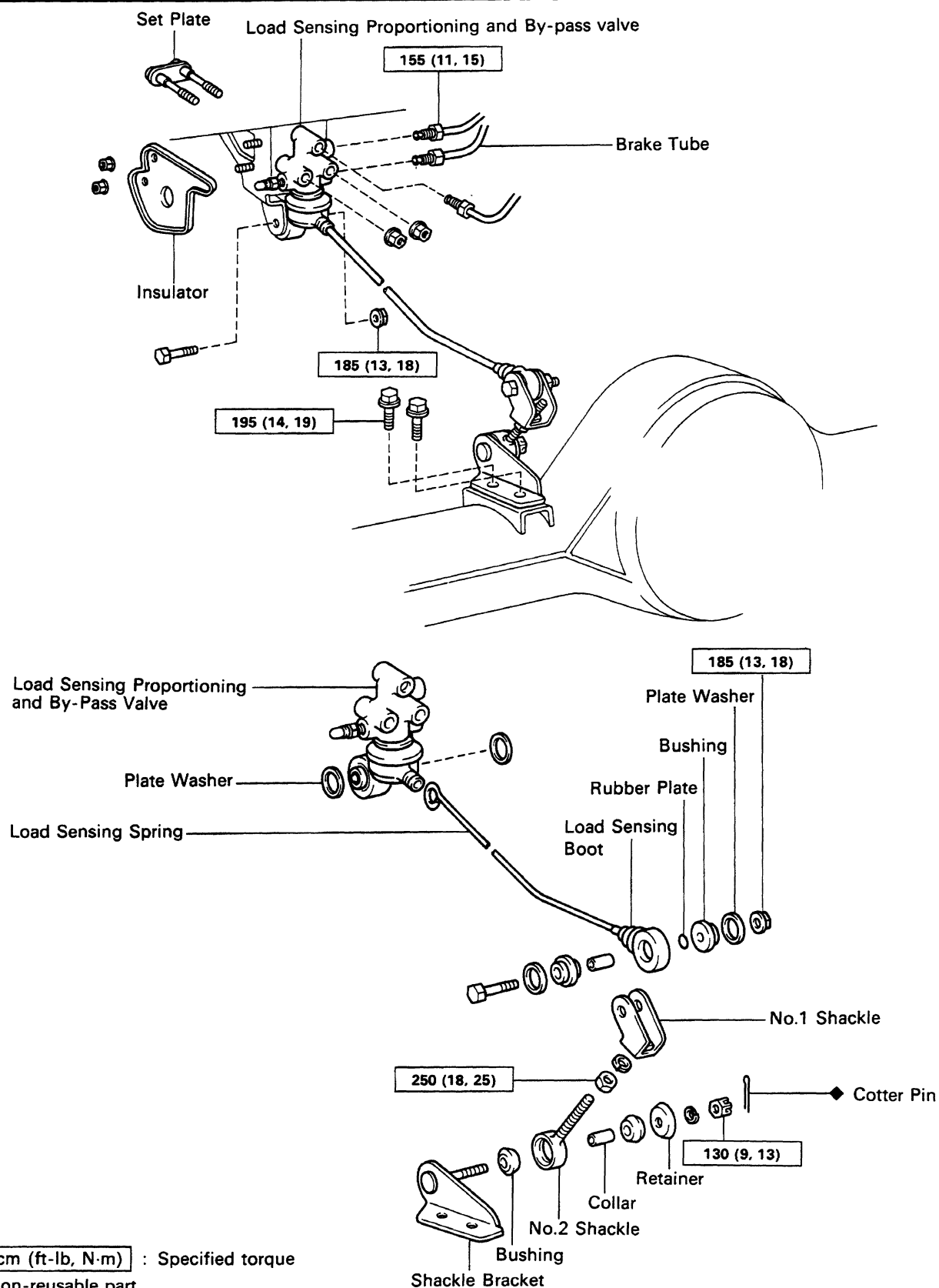
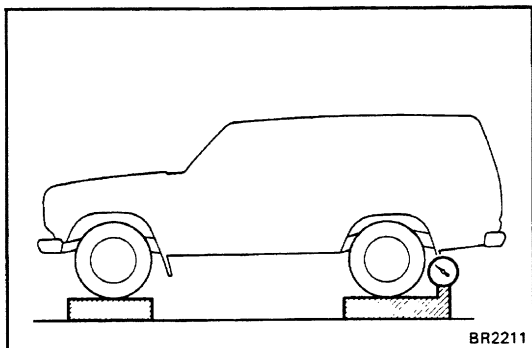


LOAD SENSING PROPORTIONING AND BY-PASS VALVE (LSP & BV)

COMPONENTS

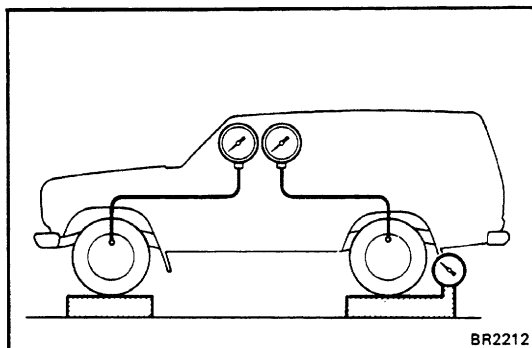




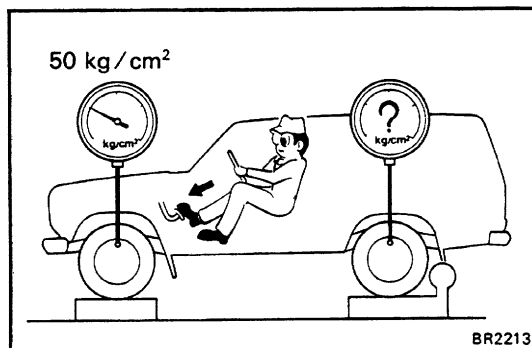
CHECK AND ADJUSTMENT OF FLUID PRESSURE

1. SET REAR AXLE LOAD

Rear axle load (include vehicle weight):
1,100 kg (2,425 lb)



2. INSTALL LSPV GAUGE (SST) AND BLEED AIR SST 09709-29017

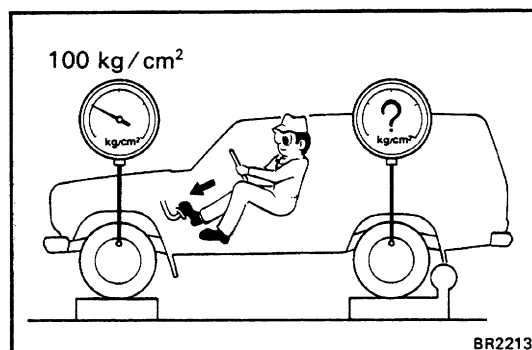


3. RAISE FRONT BRAKE PRESSURE TO 50 kg/cm² (711 psi, 4903 kPa) AND CHECK REAR BRAKE PRESSURE Rear brake pressure: 40 ± 5 kg / cm²

(569 ± 71 psi, 3,923 ± 490 kPa)

The brake pedal should not be depressed twice and/or returned while setting to the specified pressure.

Read the value of rear brake pressure two seconds after adjusting the specified fluid pressure.

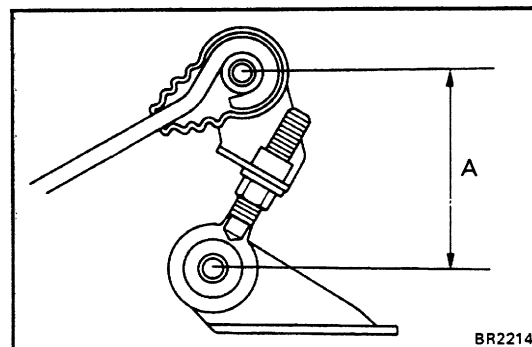


4. RAISE FRONT BRAKE PRESSURE TO 100 kg / cm² (1,422 psi, 9,807 kPa) AND CHECK REAR BRAKE PRESSURE

Rear brake pressure: 58 ± 7 kg/cm²

(825 ± 100 psi , 5,688 ± 686 kPa)

If the brake pressure is incorrect, adjust the fluid pressure.



5. IF NECESSARY, ADJUST FLUID PRESSURE

(a) Adjust the length of the No.2 shackle.

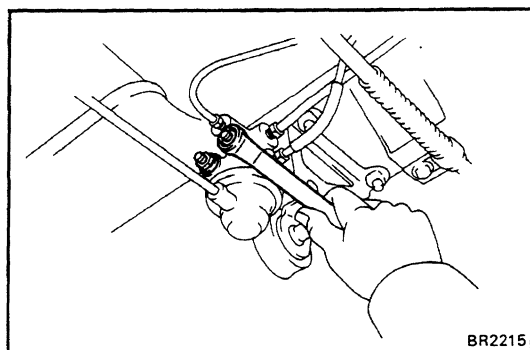
Low pressure – Lengthen A

High pressure – Shorten A

Initial set: 78 mm (3.07 in.)

Adjusting range: 72 – 84 mm (2.83 – 3.31 in.)

HINT: One turn of the No.2 shackle changes the fluid pressure approx. 0.6 kg / cm² (8.5 psi, 59 kPa).



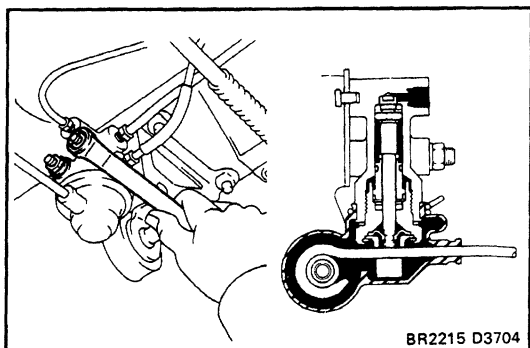
- (b) In the event the pressure cannot be adjusted by the No.2 shackle, raise or lower the valve body.
 Lower pressure – Lower
 High pressure – Raise

(c) Torque the nuts.

Torque: 130 kg-cm (9 ft-lb, 13 N-m)

(d) Adjust the length of the No.2 shackle again.

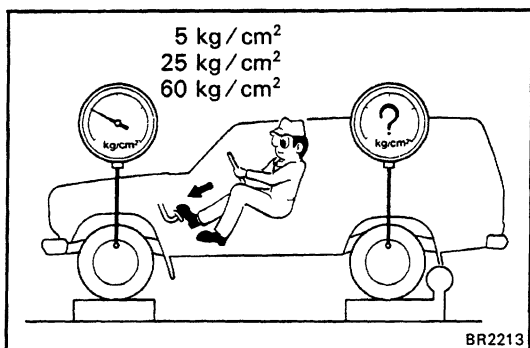
If it cannot be adjusted, inspect the valve housing.



6. IF NECESSARY, CHECK VALVE BODY

(a) Assemble the valve body in the uppermost position.

HINT: When the brakes are applied, the piston will move down approx. 1 mm (0.04 in.). Even at this time, the piston should not make contact with or move the load sensing spring.

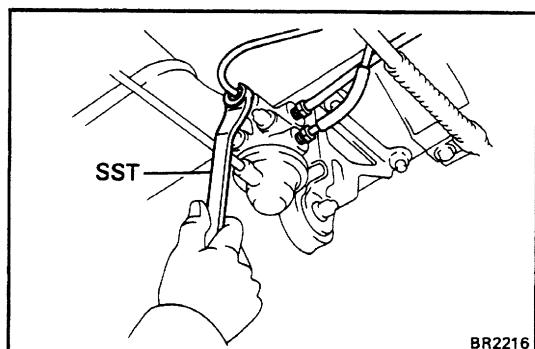


(b) In this position, check the rear brake pressure.

kg / cm2 (psi, kPa)

Front brake pressure	Rear brake pressure
5 (71, 490)	5 (71, 490)
25 (356, 2,452)	10.4 – 14.4 (148 – 205, 1,020 – 1,412)
60 (853, 5,884)	21.9 – 28.9 (311 – 411, 2,148 – 2,834)

If the measured value is not within standard, replace valve body.



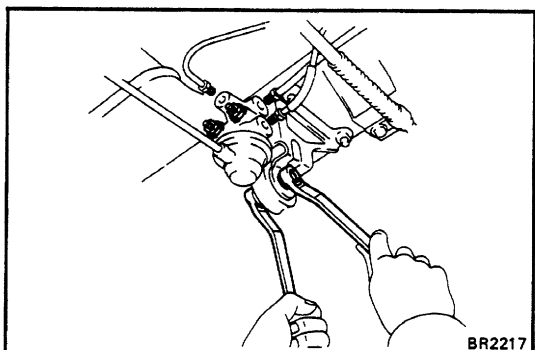
REMOVAL OF LSP & BV ASSEMBLY

(See page [BR-35](#))

1. DISCONNECT BRAKE TUBES

Using SST, disconnect the brake tubes from the valve body.

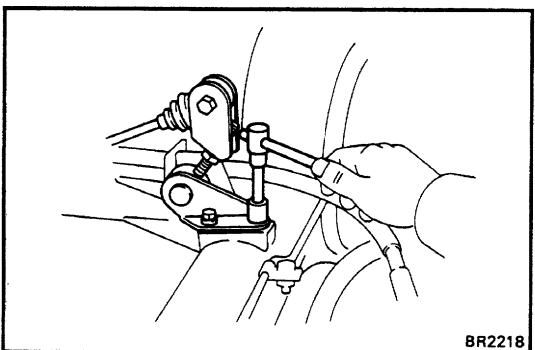
SST 09751-36011



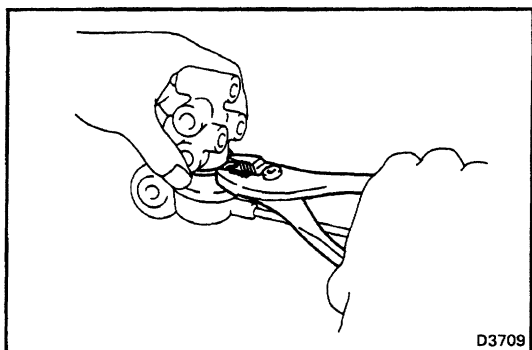
2. REMOVE LSP & BV ASSEMBLY

(a) Remove the two nuts and insulator.

(b) Remove the bolt, two nuts from the valve body.



(c) Remove the valve shackle bracket mounting bolts and remove the LSP & BV assembly.

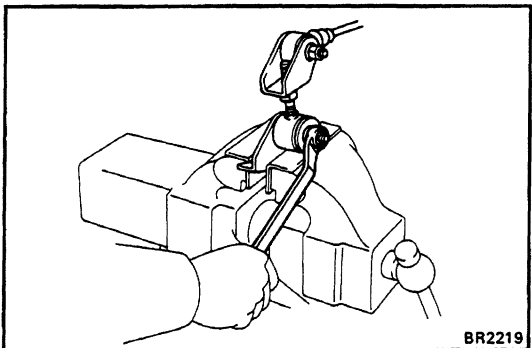


DISASSEMBLY OF LOAD SENSING SPRING

(See page BR-35)

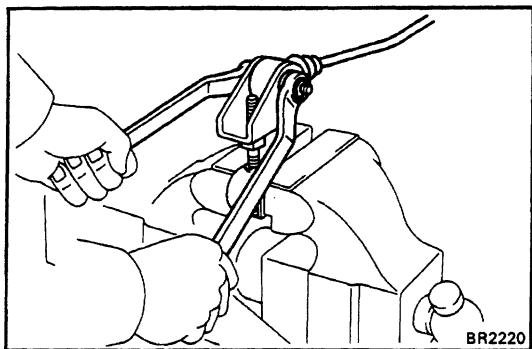
1. DISCONNECT SPRING FROM VALVE

Using pliers, remove the clip, and remove the spring from the valve.



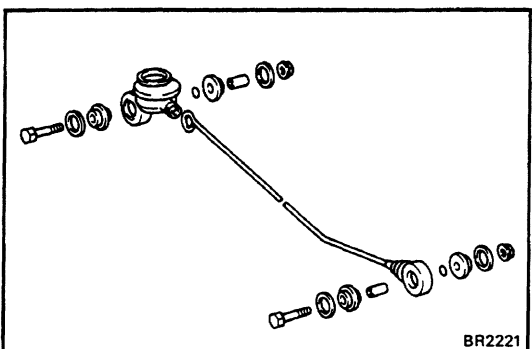
2. REMOVE SHACKLE BRACKET

- (a) Remove the cotter pin.
- (b) Remove the nut and washer, and remove the shackle bracket, two retainers, two bushings and collar.



3. REMOVE NO.1 AND NO.2 SHACKLES

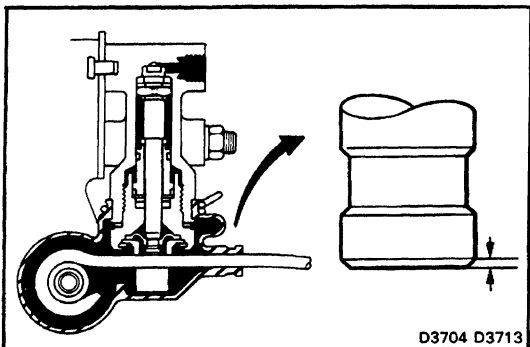
Remove the nut, and remove the No-1 and No.2 shackles, and two plate washers.



4. DISASSEMBLE LOAD SENSING SPRING

Disassemble the following parts:

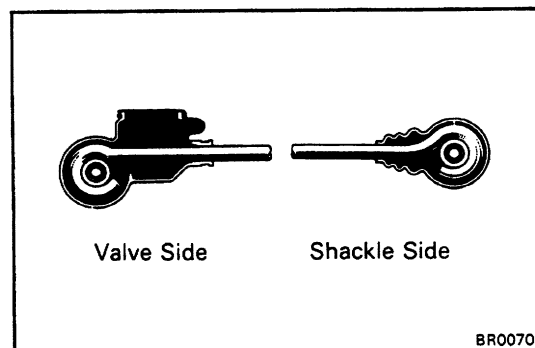
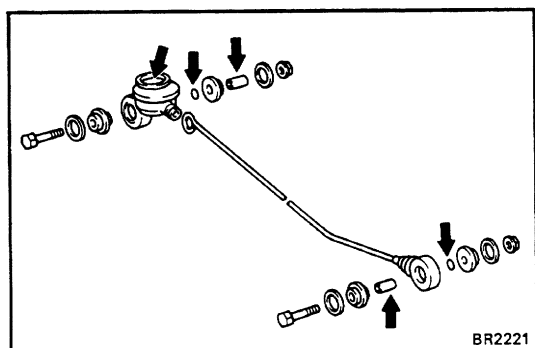
- (a) Bushings
- (b) Collars
- (c) Rubber plates
- (d) Load sensing valve boot
- (e) Load sensing spring boot



INSPECTION LSP & BV

INSPECT VALVE PISTON PIN AND LOAD SENSING CONTACT SURFACE FOR WEAR

Wear limit: 0.7 mm (0.028 in.)



ASSEMBLY OF LSP & BV ASSEMBLY

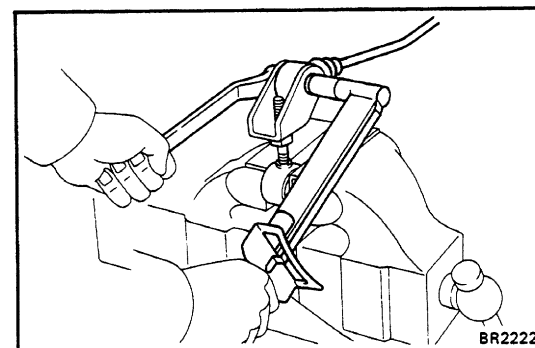
(See page [BR-35](#))

1. ASSEMBLE FOLLOWING PARTS TO LOAD SENSING SPRING

- (a) Load sensing valve boot
- (b) Load sensing spring boot
- (c) Collars
- (d) Rubber plates _
- (e) Bushings

HINT: Apply lithium soap base glycol grease to all frictional areas.

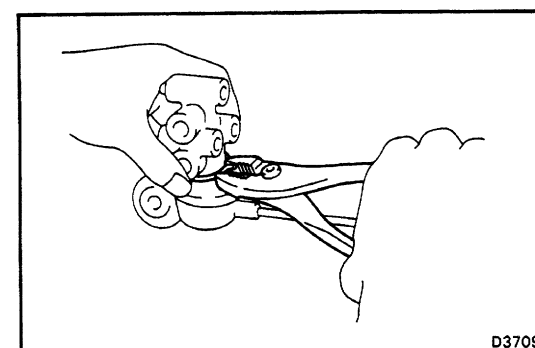
Do not mistake the valve side for the shackle side of the load sensing spring.



2. INSTALL NO.1 AND NO.2 SHACKLES TO LOAD SENSING SPRING

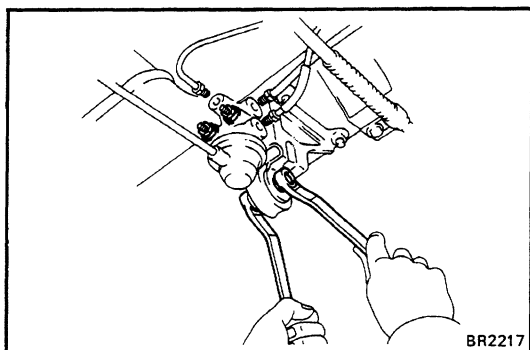
Install the shackle to the load sensing spring through the two plate washers.

Torque: 185 kg-cm (13 ft-lb, 18 N-m)



3. INSTALL LOAD SENSING SPRING TO VALVE

Install the load sensing spring assembly to the load sensing valve with a clip.



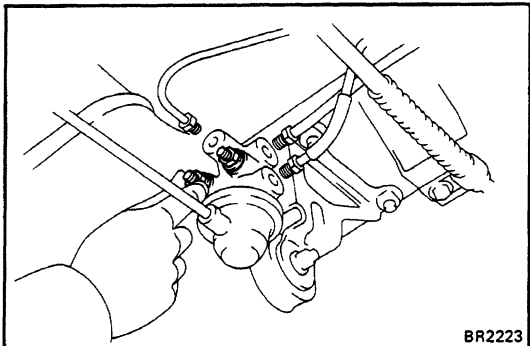
INSTALLATION OF LSP & BV

(See page BR-35)

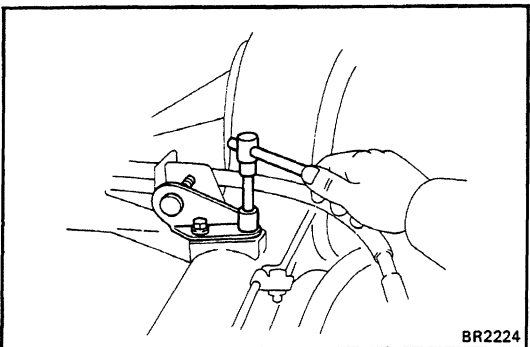
1. INSTALL LSP & BV ASSEMBLY

- (a) Install the valve assembly to the bracket, and torque the bolt and nut of load sensing boot through the two plate washers.

Torque: 185 kg-cm (13 ft-lb, 18 N-m)

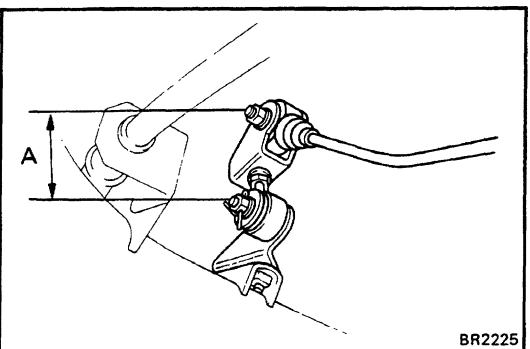


- (b) Install the set plate to the valve assembly and temporarily tighten the two valve body mounting nuts.
- (c) Install the insulator with the two nuts.



- (d) Install the shackle bracket to the rear axle housing with two bolts.

Torque: 195 kg-cm (14 ft-lb, 19 N-m)



2. CONNECT NO.2 SHACKLE TO BRACKET

- (a) Set dimension A by turning No.2 shackle.

Initial set: 78 mm (3.07 in.)

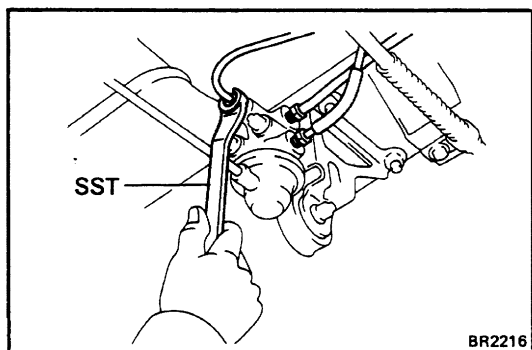
- (b) Torque the lock nut.

Torque: 250 kg-cm (18 ft-lb, 25 N-m)

- (c) Install the two bushings and collar to the load sensing spring shackle.
- (d) Install the load sensing spring to the shackle bracket with the two retainers and nut.

Torque: 130 kg-cm (9 ft-lb, 13 N-m)

- (e) Install a new cotter pin.

**3. CONNECT BRAKE TUBES**

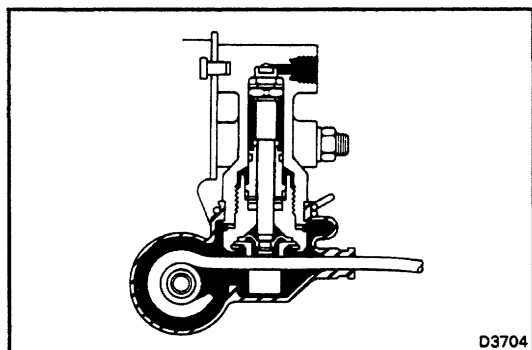
Using SST, connect the brake tubes.

SST 09751-36011

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

4. SET REAR AXLE LOAD

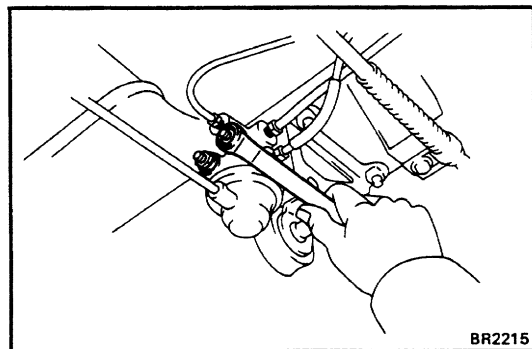
(See page [BR-36](#))

**5. SET VALVE BODY**

- (a) When pulling down the load sensing spring, confirm that the valve piston moves down smoothly.
- (b) Position the valve body so that the valve piston lightly contacts the load sensing spring.

- (c) Torque the valve body mounting nuts.

Torque: 130 kg-cm (9 ft-lb, 13 N-m)

**6. BLEED BRAKE LINE****7. CHECK FOR FLUID LEAKAGE****8. CHECK AND ADJUST LSPV PRESSURE**

(See page [BR-36](#))