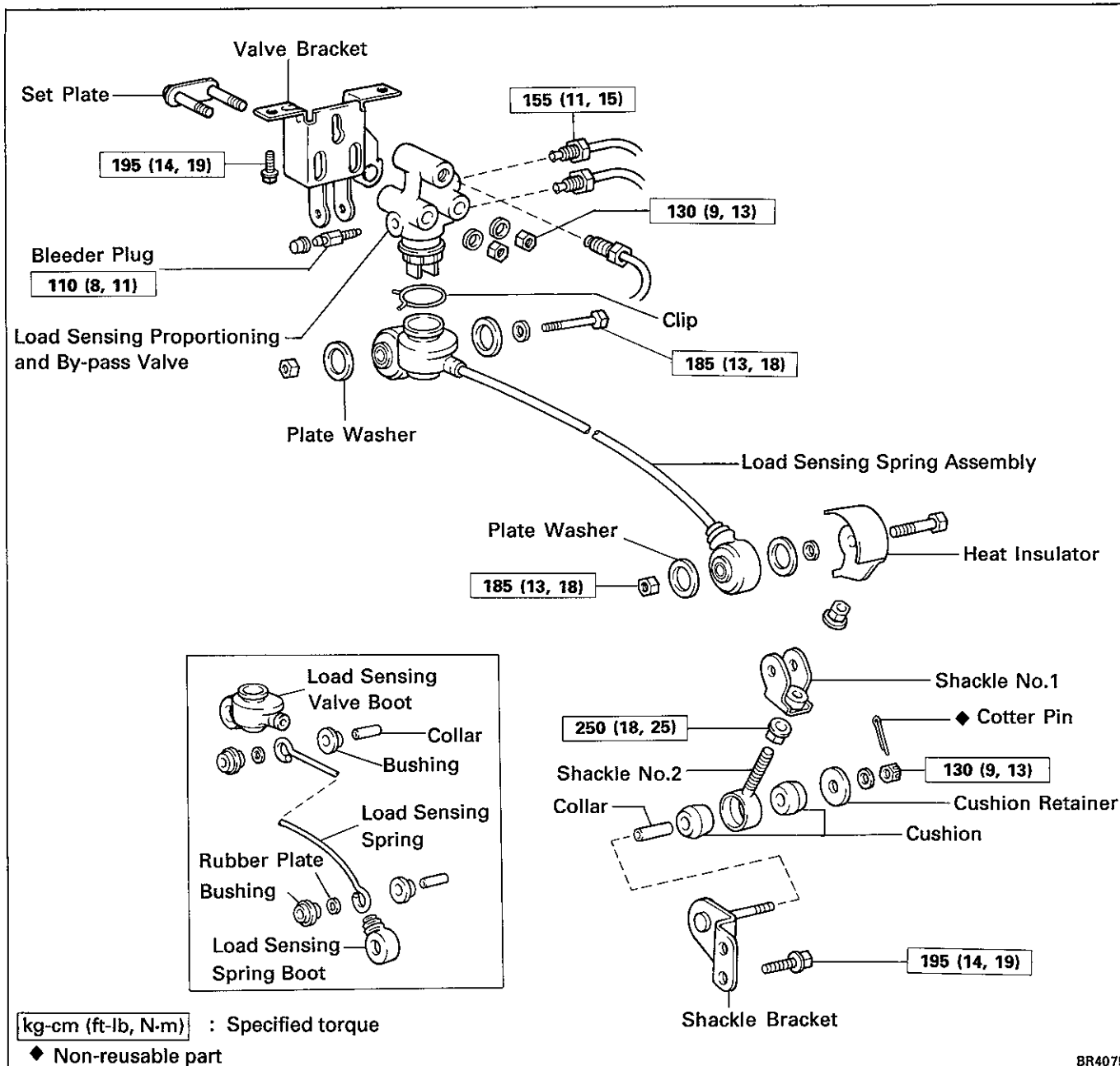


LOAD SENSING PROPORTIONING AND BY-PASS VALVE (LSP & BV) COMPONENTS



BR4075

CHECK AND ADJUSTMENT OF FLUID PRESSURE

1. SET REAR AXLE LOAD

Rear axle load (include vehicle weight):

(2WD)

Europe 1,250 kg (2,755 lb)

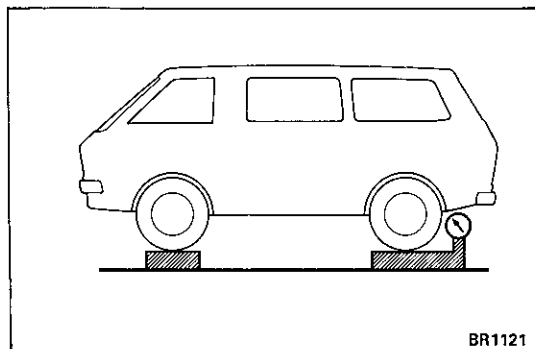
Australia 1,150 kg (2,535 lb)

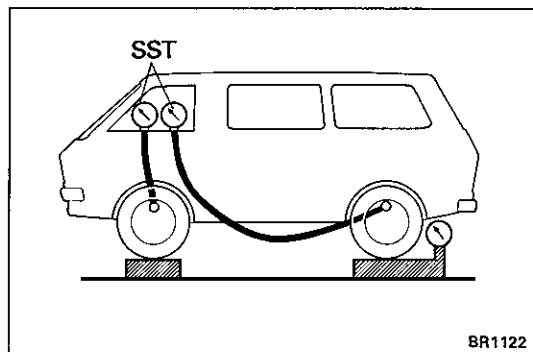
Except Europe and Australia 1,000 kg (2,205 lb)

(4WD)

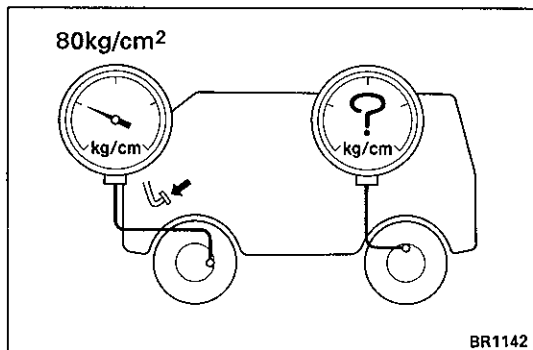
Europe 3 seater model 1,250 kg (2,755 lb)

6/9 seater model 1,350 kg (2,976 lb)





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



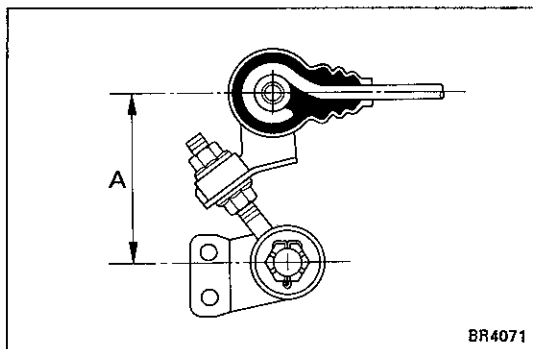
3. **RAISE FRONT BRAKE PRESSURE TO 80 kg/cm² (1,138 psi, 7,845 kPa) AND CHECK REAR BRAKE PRESSURE**

Rear brake pressure:

2WD $44.6 \pm 6 \text{ kg/cm}^2$
(634 $\pm$ 85 psi, 4,374 $\pm$ 588 kPa)

4WD $58.6 \pm 6 \text{ kg/cm}^2$
(833 $\pm$ 85 psi, 5,747 $\pm$ 588 kPa)

HINT: The brake pedal should not be depressed twice and/or returned while setting to the specified pressure. Read the value of rear pressure two seconds after adjusting the specified fluid pressure.



4. **IF NECESSARY, ADJUST FLUID PRESSURE**

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

Low pressure – Lengthen A

High pressure – Shorten A

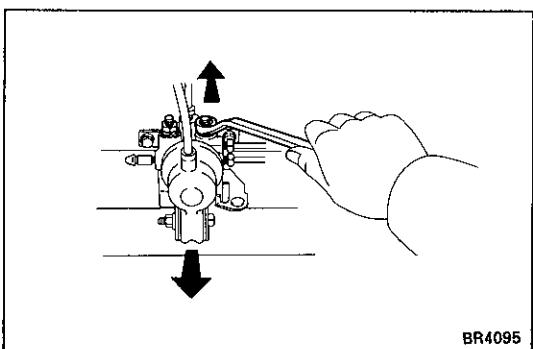
Initial set: 78 mm (3.07 in.)

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

HINT: One turn of the nut changes the fluid pressure about following specification.

2WD 1.7 kg/cm² (24 psi, 167 kPa)

4WD 2.9 kg/cm² (41 psi, 284 kPa)



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

Low pressure – Lower

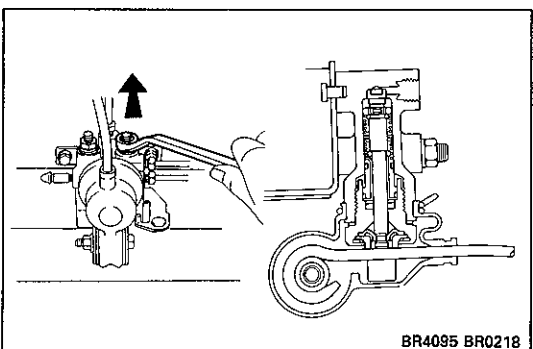
High pressure – Raise

(c) Torque the nuts.

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

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

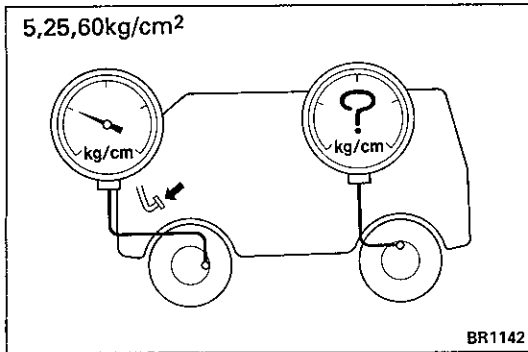
If it cannot be adjusted, inspect the valve housing.



5. **IF NECESSARY, CHECK VALVE BODY**

(a) Assemble the valve body in the upper most position.

HINT: When the brakes are applied, the piston will move down about 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)	6.0 – 10.0 (85 – 142, 588 – 981)
60 (853, 5,884)	9.8 – 16.8 (139 – 239, 961 – 1,648)

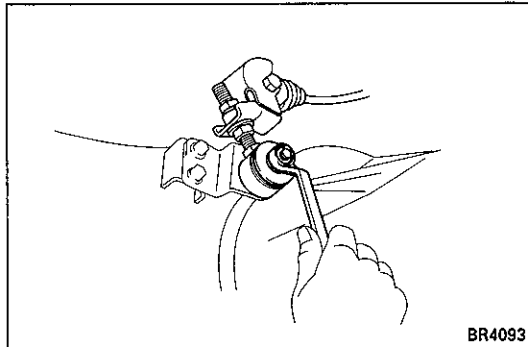
If the measured value is not within standard, replace the valve body.

REMOVAL OF LSP & BV

(See page BR-95)

1. DISCONNECT SHACKLE NO.2 FROM BRACKET

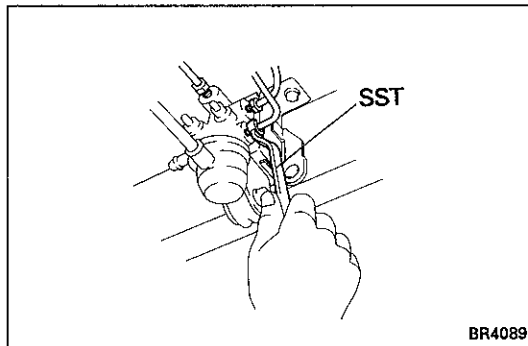
- Remove the cotter pin.
- Remove the nut and disconnect the shackle No.2 from the bracket.
- Remove the retainer, two bushings and collar.



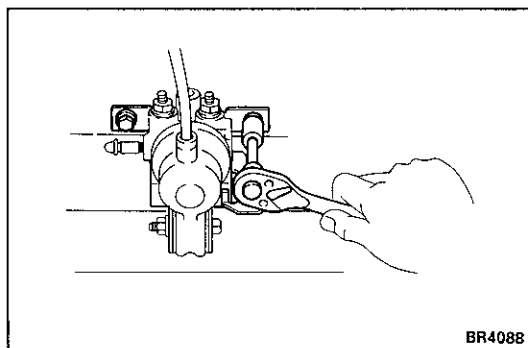
2. REMOVE LSP & BV ASSEMBLY

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

SST 09751-36011

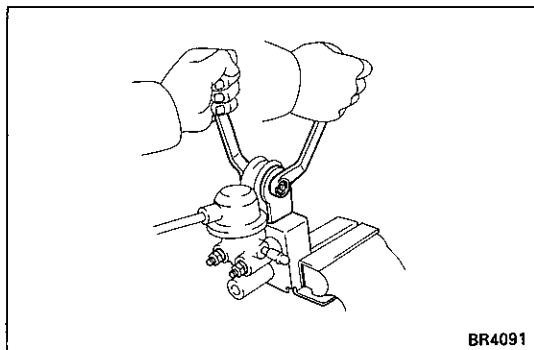


- Remove the valve bracket mounting bolts and nut, then remove the LSP & BV assembly.

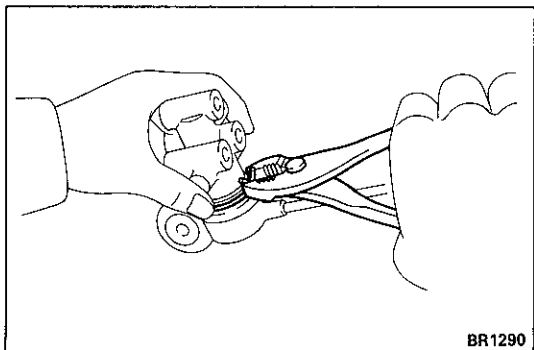


DISASSEMBLY OF LSP & BV ASSEMBLY**1. REMOVE VALVE BRACKET**

- (a) Remove the nut and bolt as shown.
- (b) Remove the two nuts, and remove the bracket and set plate from the valve body.

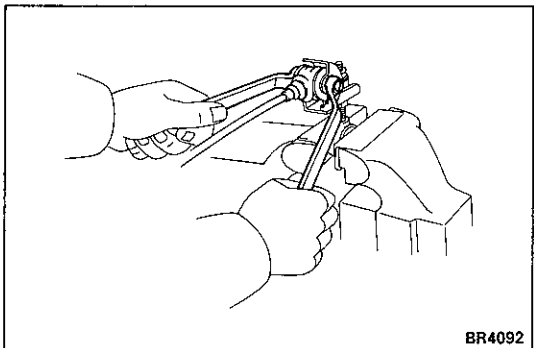
**2. DISCONNECT SPRING FROM VALVE**

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

**3. REMOVE SHACKLE NO.1 AND NO.2**

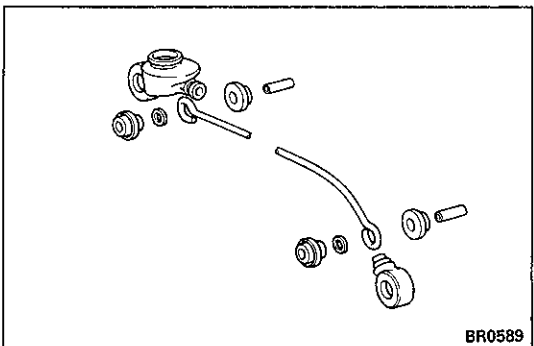
Remove the bolt and nut, then remove the following parts.

- Heat insulator
- Shackle No.1 and No.2
- Two plate washers

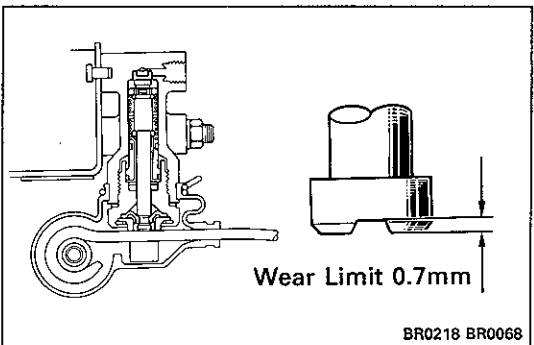
**4. DISASSEMBLE LOAD SENSING SPRING**

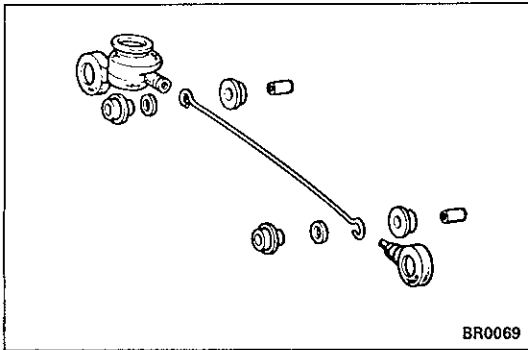
Disassemble the following parts.

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

**INSPECTION OF LSP & BV****INSPECT VALVE PISTON PIN AND LOAD SENSING SPRING CONTACT SURFACE FOR WEAR**

Wear limit: 0.7 mm (0.028 in.)





ASSEMBLY OF LSP & BV ASSEMBLY

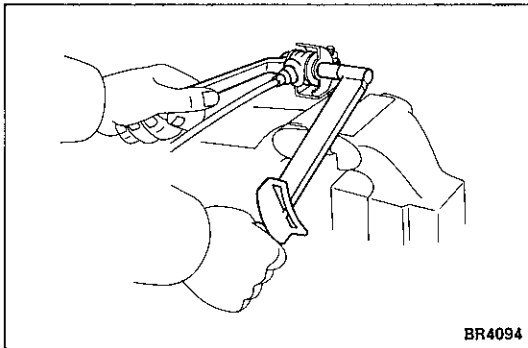
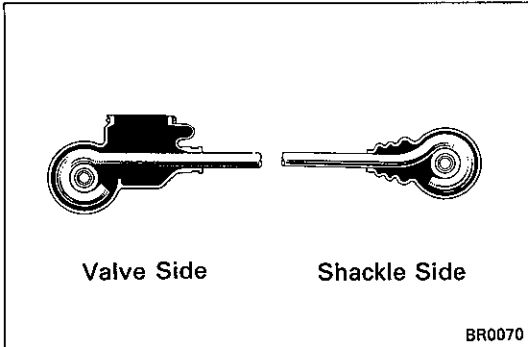
(See page BR-95)

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 rubbing areas.

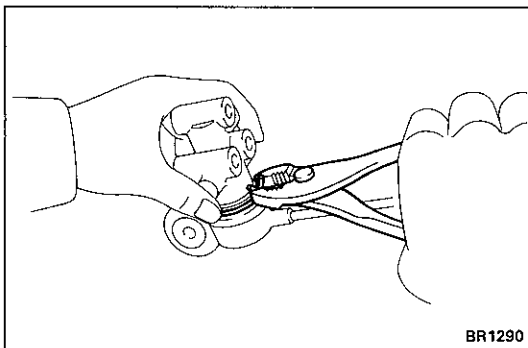
Do not mistake the valve side for the shackle side of the load sensing spring.



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

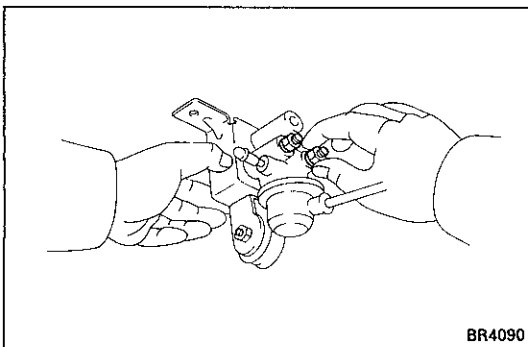
Install the shackle to the load sensing spring through the two plate washers and heat insulator.

Torque: 185 kg-cm (13 ft-lb, 18 N·m)



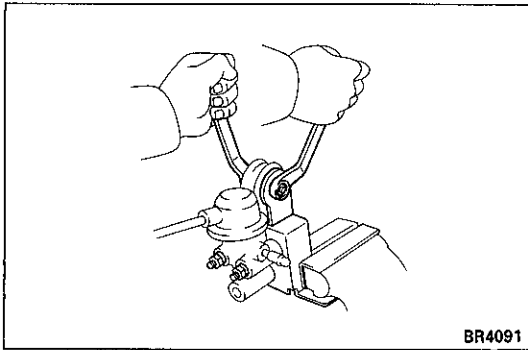
3. INSTALL LOAD SENSING SPRING TO VALVE BODY

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



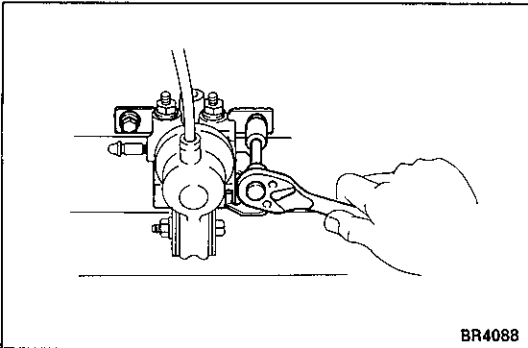
4. INSTALL VALVE BRACKET

- (a) Install the set plate to the valve assembly and temporarily tighten the two valve body mounting nuts.



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

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

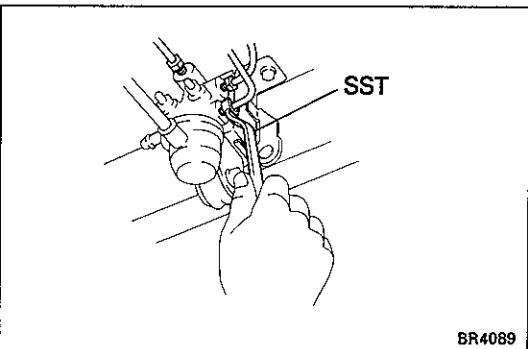


INSTALLATION OF LSP & BV

1. INSTALL LSP & BV ASSEMBLY

Install the LSP & BV assembly to the frame with four bolts.

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

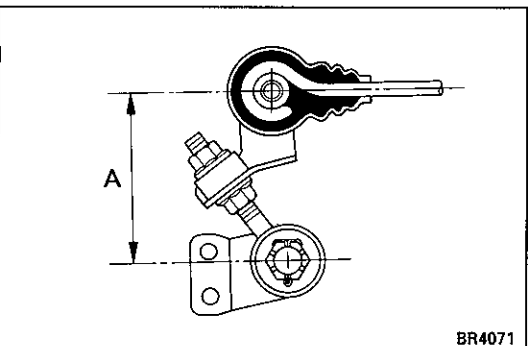


2. CONNECT BRAKE TUBES

Using SST, connect the brake tubes.

SST 09751-36011

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



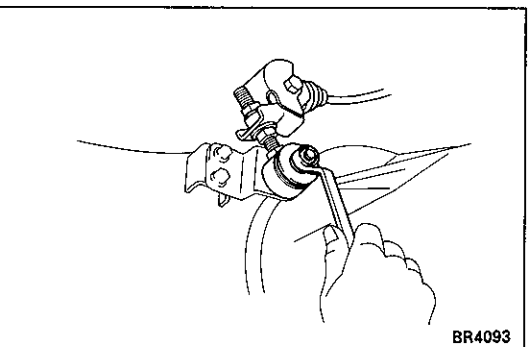
3. CONNECT SHACKLE NO.2 TO BRACKET

- (a) Set the dimension A by turning the nut.

Initial set: 78 mm (3.07 in.)

- (b) Tighten the lock nut.

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



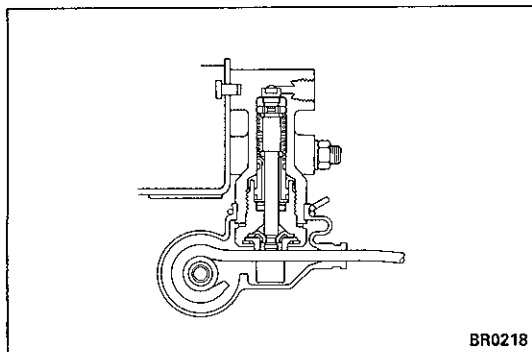
- (c) Install the two bushings and a collar to the load sensing spring shackle.

- (d) Install the load sensing spring to the shackle bracket with a retainer and a nut.

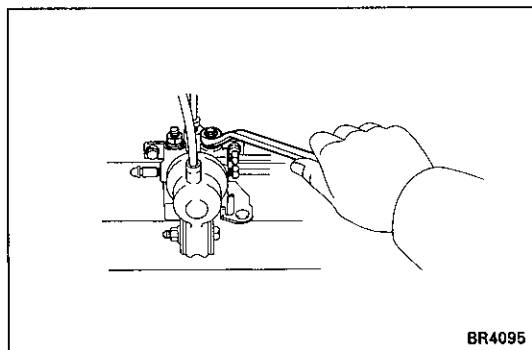
Torque: 130 kg-cm (9 ft-lb, 13 N-m)

- (e) Install the new cotter pin.

4. SET REAR AXLE LOAD (See page BR-95)

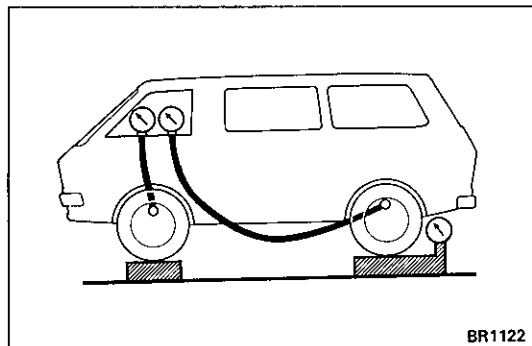
**5. SET VALVE BODY**

- (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) Tighten the valve body mounting nuts.

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

**6. BLEED BRAKE SYSTEM**

(See page BR-7)

7. CHECK FOR FLUID LEAKAGE**8. CHECK AND ADJUST LSP & BV FLUID PRESSURE**

(See page BR-96)

