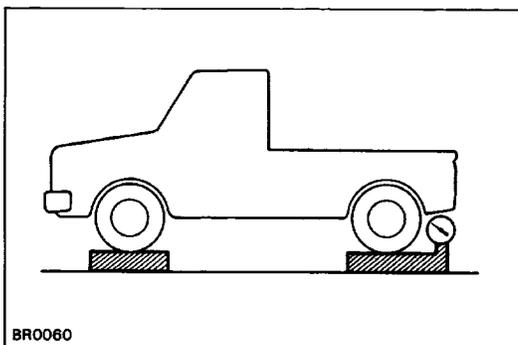
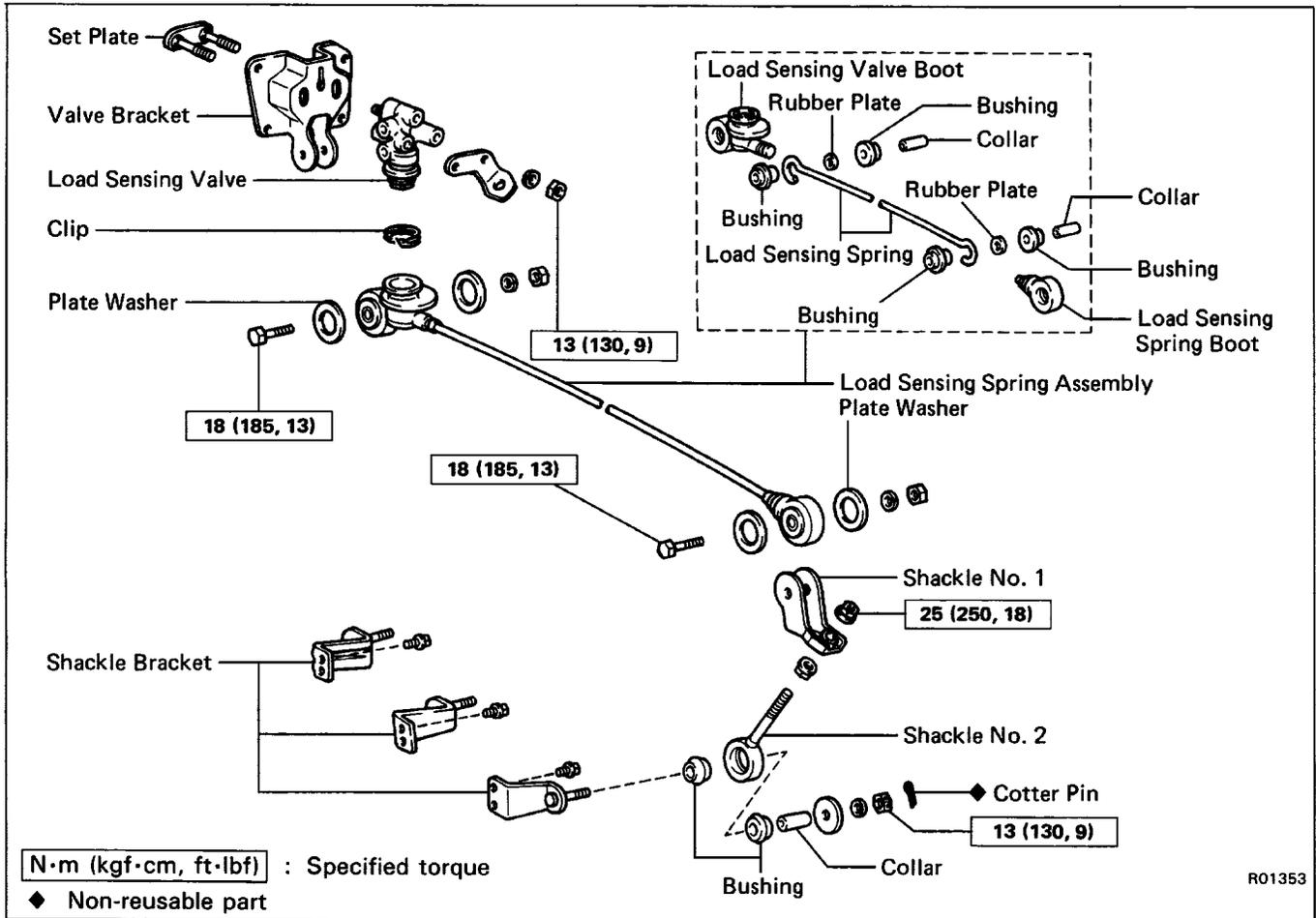


LOAD SENSING PROPORTIONING AND BY-PASS VALVE (LSP & BV) COMPONENTS



CHECK AND ADJUSTMENT OF FLUID PRESSURE

1. SET REAR AXLE LOAD

Rear axle load (includes vehicle weight):

2WD 1 ton, C & C (SRW)	900 kg (1,984 lb)
1/2 ton	700 kg (1,543 lb)
C & C (DRW)	1,150 kg (2,535 lb)
4WD	800 kg (1,764 lb)

HINT: (For C & C)

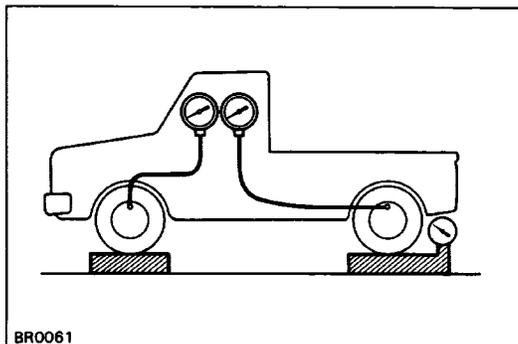
If the vehicle unladen weight exceeds the specification above, set the rear axle load to the specification shown below. (See step 4 on page [BR-65](#))

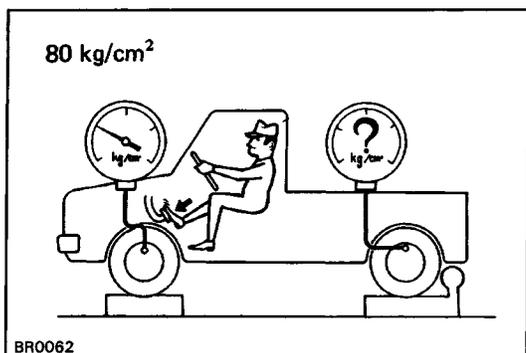
Rear axle load (includes vehicle weight):

SRW	1,678 kg (3,699 lb)
DRW	1,996 kg (4,400 lb)

2. INSTALL LSPV GAUGE (SST) AND BLEED AIR

SST 09709-29017



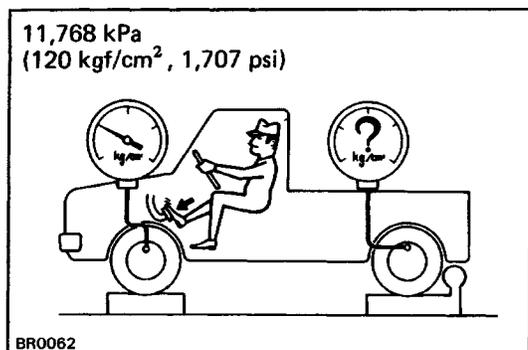


3. RAISE FRONT BRAKE PRESSURE TO 7,845 kPa (80 kgf/cm², 1,138 psi) AND CHECK REAR BRAKE PRESSURE

Rear brake pressure:

2WD 1 ton, C & C (SRW)	4,413±490 kPa (45±5kgf/cm ² , 640±71 psi)
1/2 ton	4,315 ± 490 kPa (44±5 kgf/cm ² , 626 ± 71 psi)
C & C (DRS)	4,707 ± 490 kPa (48±5 kgf/cm ² , 683 ± 71 psi)
4WD Regular cab	3,923±490 kPa (40±5 kgf/cm ² , 569±71 psi)
Extra cab	4,315±490 kPa (43±5 kgf/cm ² , 626±71 psi)

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

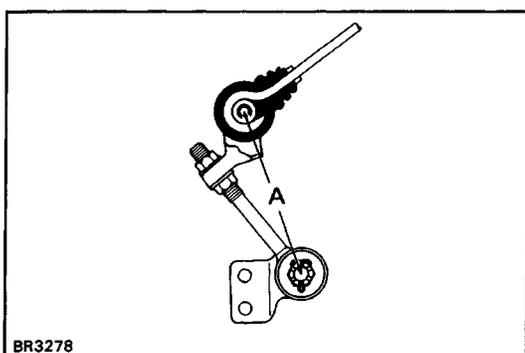


4. (C&C)

RAISE FRONT BRAKE PRESSURE TO 11,768 kPa (120 kgf/cm², 1,707 psi) AND CHECK REAR BRAKE PRESSURE

Rear brake pressure:

SRW	9,709 ± 588 kPa (99 ± 6 kgf/cm ² , 1,408 ± 85 psi)
DRW	8,336 ± 588 kPa (85 ± 6 kgf/cm ² , 1,209 ± 85 psi)



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:

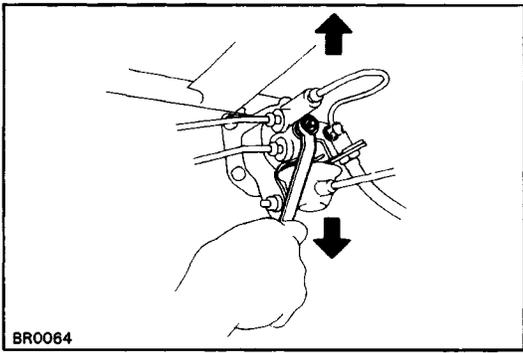
2WD	78 mm (3.07 in.)
4WD	120 mm (4.72 in.)

Adjusting range:

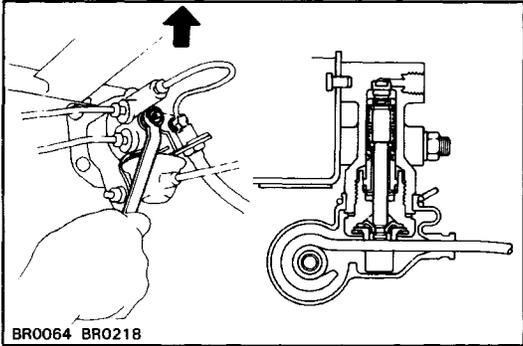
2WD	72 – 84 mm (2.83 – 3.31 in.)
4WD	114 – 126 mm (4.49 – 4.96 in.)

HINT: One turn of the nut changes the fluid pressure as shown in the table below.

		Rear brake pressure
2WD	1/2 ton, C & C (SRW)	74 kPa (0.75 kgf/cm ² , 11 psi)
	1 ton, C & C (DRW)	98 kPa (1.0 kgf/cm ² , 14 psi)
4WD		59 kPa (0.6 kgf/cm ² , 8.5 psi)

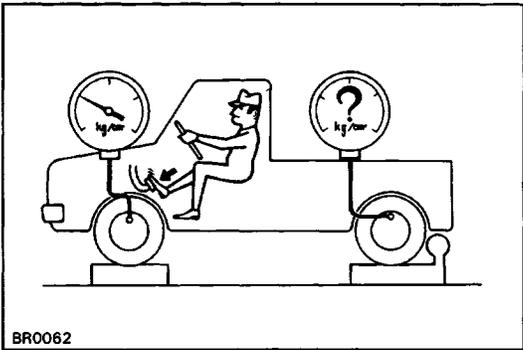


- (b) In event the pressure cannot be adjusted by the No. 1 shackle, raise or lower the valve body.
 Low pressure - Lower
 High pressure - Raise
- (c) Torque the nuts.
Torque: 13 N-m (130 kgf-cm, 9 ft-lbf)
- (d) Adjust the length of the No. 1 shackle again.
 If it cannot be adjusted, inspect the valve 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 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.

2WD (SRW)

kPa (kgf/cm², psi)

Front brake pressure	Rear brake pressure
490 (5, 71)	490 (5, 71)
2,452 (25, 356)	883 - 1,275 (9 - 13, 128 - 185)
5,884 (60, 853)	1,765 - 2,452 (18 - 25, 256 - 356)

4WD (DRW)

kPa (kgf/cm², psi)

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

4WD (Regular cab)

kPa (kgf/cm², psi)

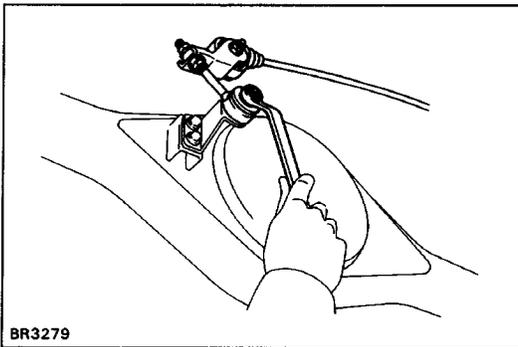
Front brake pressure	Rear brake pressure
981 (10, 142)	981 (10, 142)
2,452 (25, 356)	1,079 - 1,471 (11 - 15, 156 - 213)
5,884 (60, 853)	1,618 - 2,305 (16.5 - 23.5, 235 - 334)

4WD (Extra cab)

kPa (kgf/cm², psi)

Front brake pressure	Rear brake pressure
981 (10, 142)	981 (10, 142)
2,452 (25, 356)	1,157 - 1,549 (11.8 - 15.8, 168 - 225)
5,884 (60, 853)	1,863 - 2,550 (19 - 26, 270 - 370)

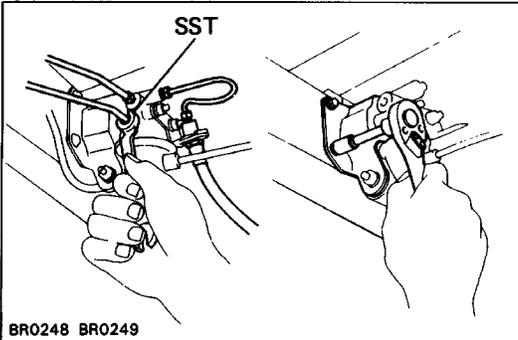
If the measured value is not within standard, replace the valve body.



REMOVAL OF LSP & BV OR LSPV

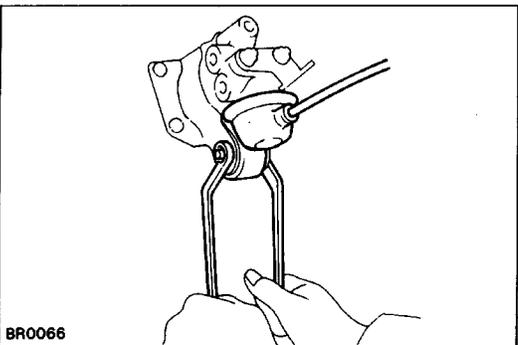
(See page BR-64)

1. DISCONNECT SHACKLE NO.2 FROM BRACKET



2. REMOVE LSP & BV (LSPV) ASSEMBLY

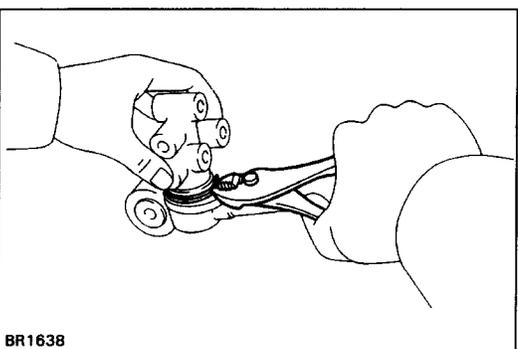
- Using SST, disconnect the brake tube from the valve body.
SST 09751-36011
- Remove the valve bracket mounting bolts and remove the LSP & BV (LSPV) assembly.



DISASSEMBLY OF LSP & BV OR LSPV ASSEMBLY

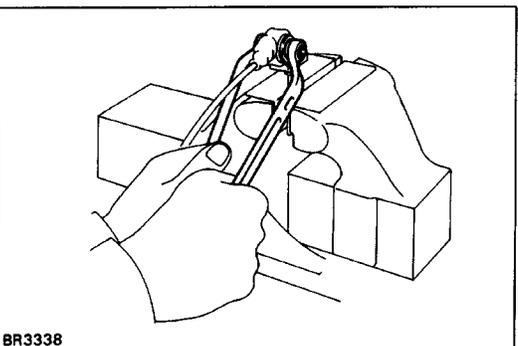
1. REMOVE VALVE BRACKET

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



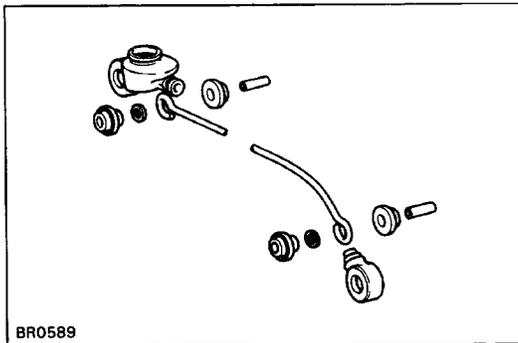
2. DISCONNECT SPRING FROM VALVE

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



3. REMOVE SHACKLE NO. 1 AND NO.2

Remove the nut and bolt, and then remove the shackle No.1 and No.2, and two plate washers from the load sensing spring assembly.

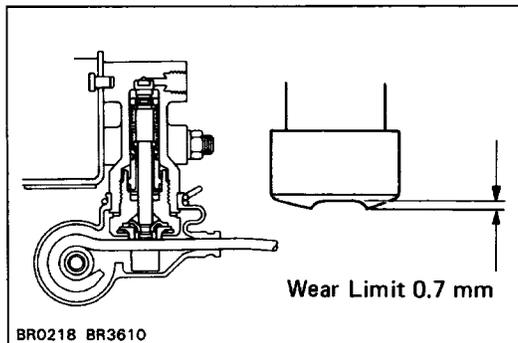


BR0589

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

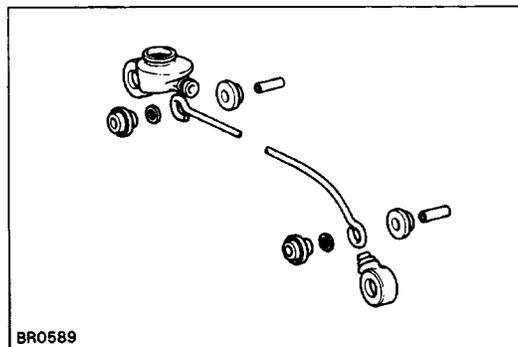


BR0218 BR3610

INSPECTION OF LSP & BV OR LSPV

INSPECT VALVE PISTON PIN AND LOAD SENSING CONTACT SURFACE FOR WEAR

Wear limit: 0.7 mm (0.028 in.)



BR0589

ASSEMBLY OF LSP & BV OR LSPV

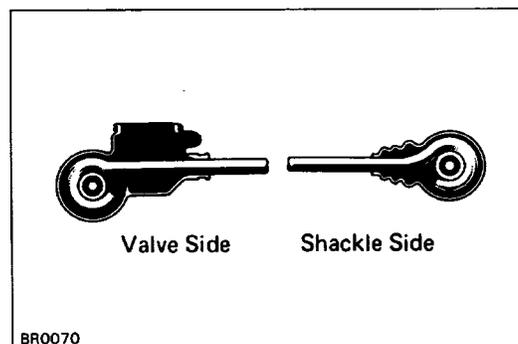
(See page [BR-64](#))

1. ASSEMBLE FOLLOWING PARTS TO LOAD SENSING SPRING:

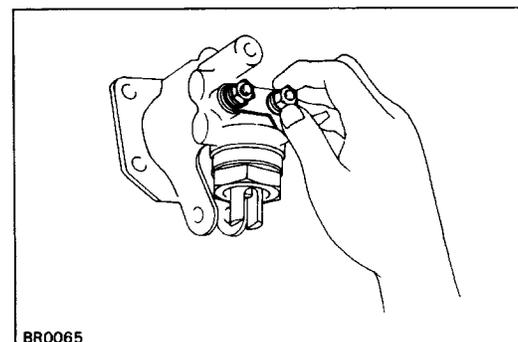
- (a) Load sensing valve boot
- (b) Load sensing spring boot
- (c) Bushings
- (d) Rubber plates
- (e) Collars

HINT: Apply lithium soap glycol grease to all rubbing areas.

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



BR0070

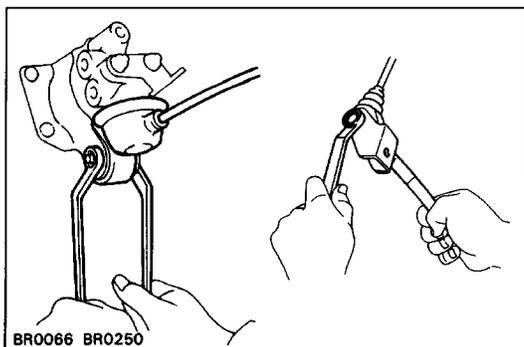


BR0065

2. ASSEMBLE VALVE BODY TO BRACKET

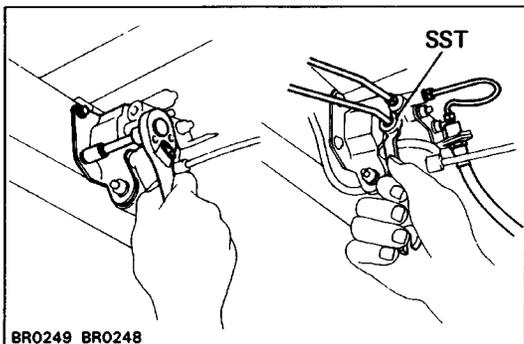
Assemble the valve body to the valve body bracket.

HINT: Finger tighten the valve body mounting nuts.



3. CONNECT VALVE BODY AND NO. 1 SHACKLE TO LOAD SENSING SPRING

CAUTION: When connecting the shackle to the load sensing spring with a bolt and nut, insert the bolt from the front side of vehicle.



INSTALLATION OF LSPV & BV OR LSPV

1. INSTALL LSP & BV (LSPV) ASSEMBLY TO FRAME

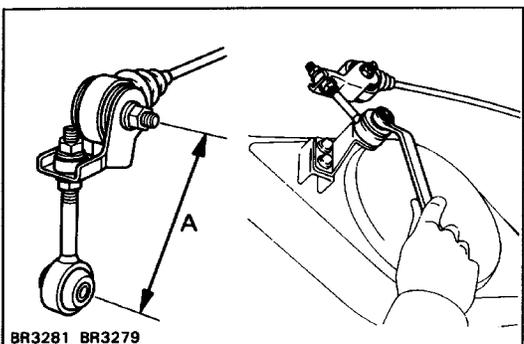
Torque: 19 N-m (195 kgf-cm, 14 ft-lbf)

2. CONNECT BRAKE TUBE

Using SST, connect the brake tubes.

Torque: 15 N-m (155 kgf-cm, 11 ft-lbf)

SST 09751-36011



3. CONNECT SHACKLE NO.2 BRACKET

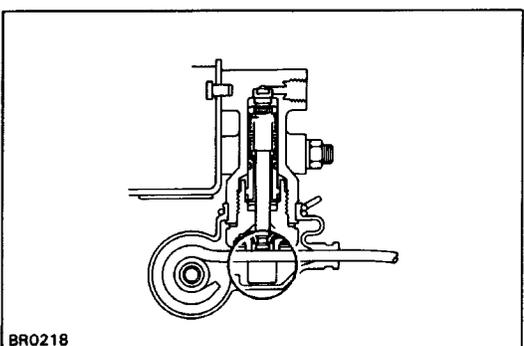
(a) Install the shackle No.2 to the load sensing spring.

(b) Set dimension A.

Initial set: 2WD 78 mm (3.07 in.)

4WD 120 mm (4.72 in.)

(c) Connect the shackle No.2 to the shackle bracket.



4. SET REAR AXLE LOAD (See page BR-64)

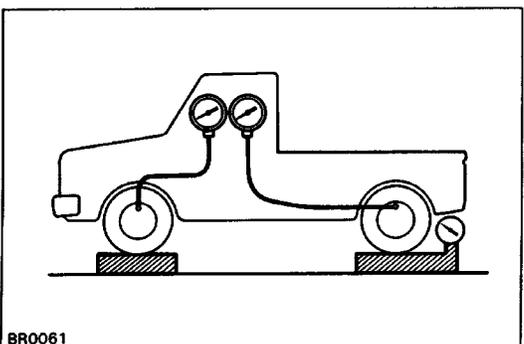
5. SET VALVE BODY

(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 load sensing spring.

(c) Tighten the valve body mounting nuts.

6. BLEED BRAKE LINE (See page BR-8)



7. CHECK AND ADJUST LSP & BV OR (LSPV) FLUID PRESSURE

(See page BR-64)

8. APPLY SEALANT TO SHACKLE NO.2

Apply sealant to the top portion of the shackle No.2 bolt threads not to lose the upper lock nut.

Sealant: Part No. 08833-00070, THREE BOND 1324 or equivalent