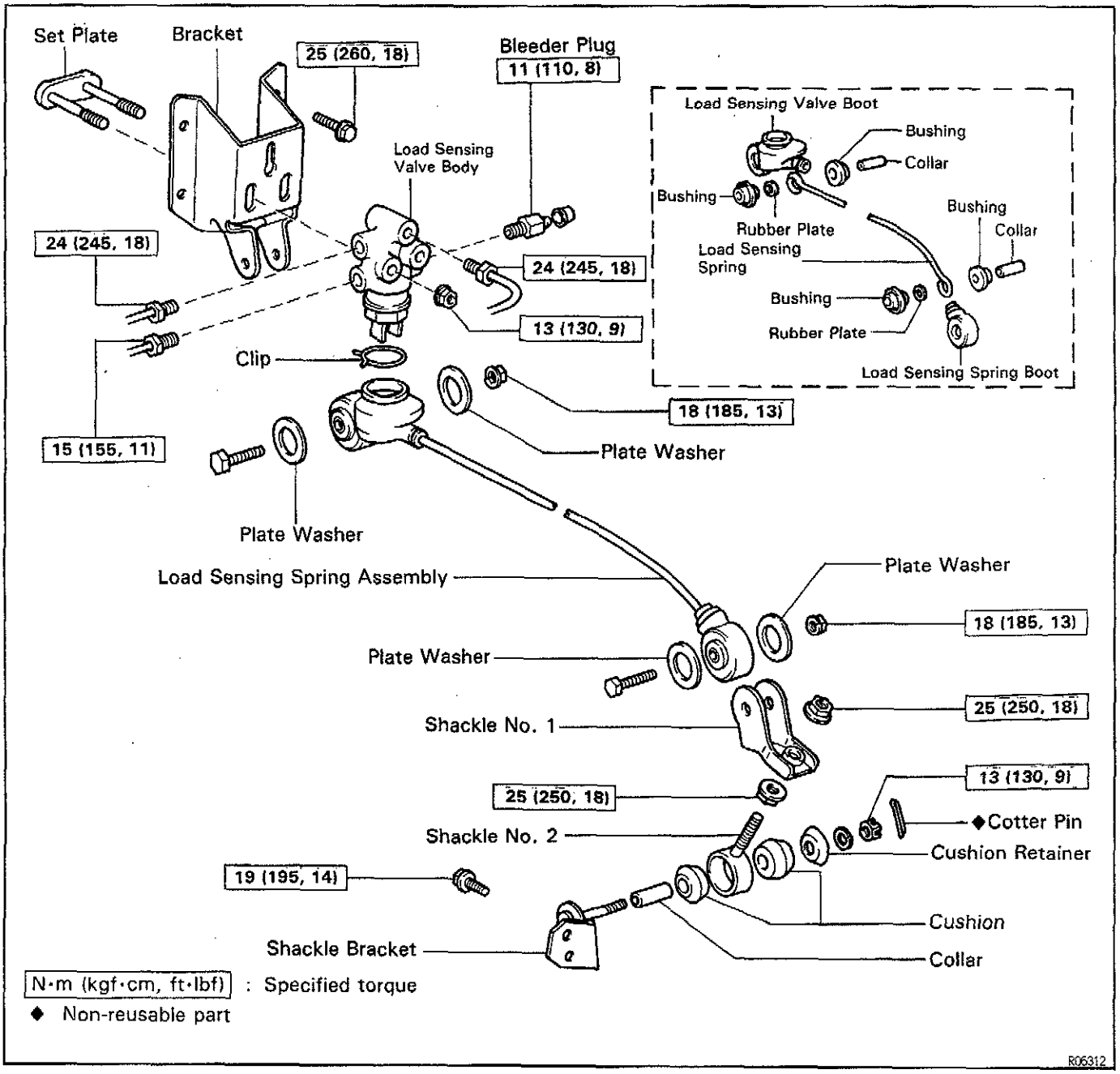
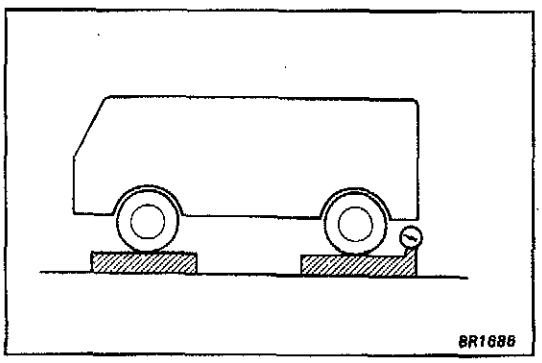
LOAD SENSING PROPORTIONING AND BY–PASS VALVE (LSP & BV)

BRGLP–01

COMPONENTS





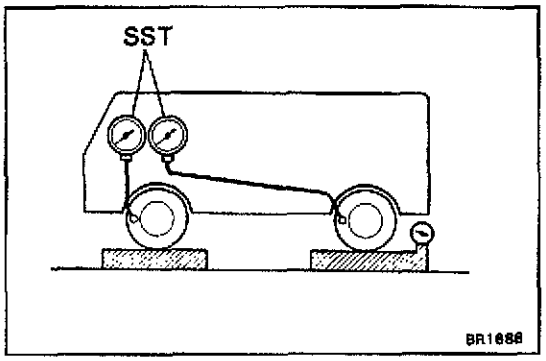
BRGLQ–01

FLUID PRESSURE CHECK AND ADJUSTMENT

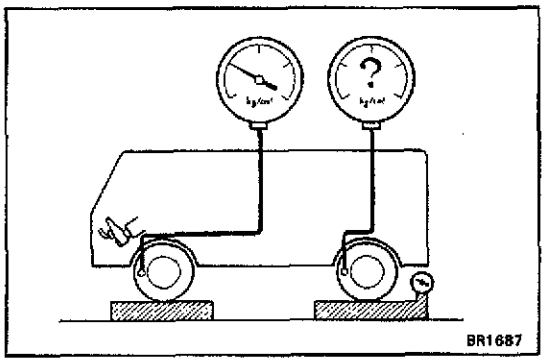
1. SET REAR AXLE LOAD

Rear axle load:

1,700 kg (3,748 lb)



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

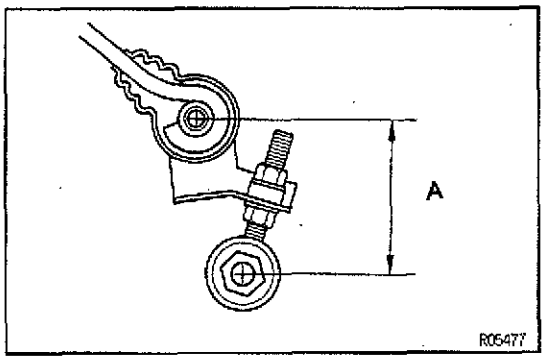


3. RAISE FRONT BRAKE PRESSURE TO 7,845 kPa (80 kgf / cm², 1,138 psi) AND CHECK REAR BRAKE PRESSURE

Rear brake pressure:

5,855±490 kPa (59.7±5 kgf/cm², 849±71 psi)

HINT: Gradually press on the brake pedal until the specified pressure is reached. Do not overshoot specified pressure. Read the value of rear pressure two seconds after adjusting to the specified fluid pressure.



4. IF NECESSARY, ADJUST FLUID PRESSURE

(a) Adjust the length of No.2 shackle.
Low pressure Lengthen A
High pressure Shorten A

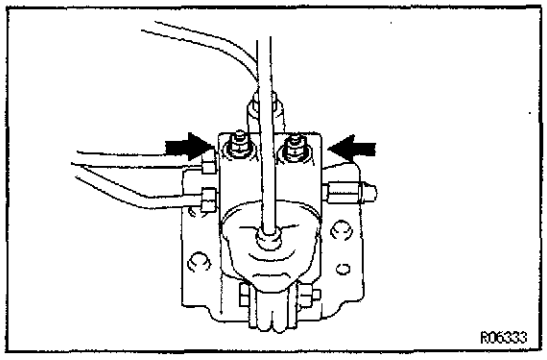
Initial set:

90 mm (3.54 in.)

Adjusting range:

84–96 mm (3.31–3.78 in.)

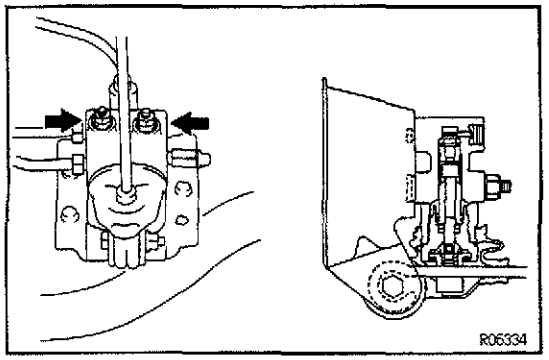
HINT: One turn of the No.2 shackle changes the fluid pressure following specification.
127.5 kPa (1.3 kgf/cm², 18.5 psi)



(b) In event the pressure cannot be adjusted by No.1 shackle, raise or lower the valve body.
Low pressure – Lower
High pressure – Raise

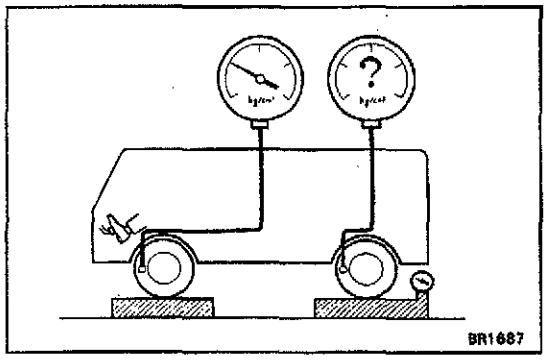
(c) Torque the nuts.
Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

(d) Adjust the length of the No.2 shackle again.
If it cannot be adjusted, inspect the valve body.



5. 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 (0.039 in.). Even at this time, the piston should not make contact with or move the load sensing spring.

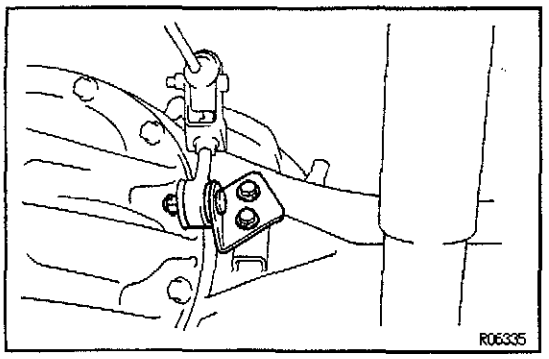


(b) In this position, check the rear brake pressure.

Front brake pressure kpa (kgf/cm², psi)	Rear brake pressure kpa (kgf/cm², psi)
490 (5, 71)	490 (5, 71)
3,432 (35, 498)	2,187 – 2,579 (22.3 – 26.3, 317 – 374)
6,865 (70, 996)	3,305 – 3,991 (33.7 – 40.7, 479 – 579)

If the measured value is within standard, replace valve body.

BR

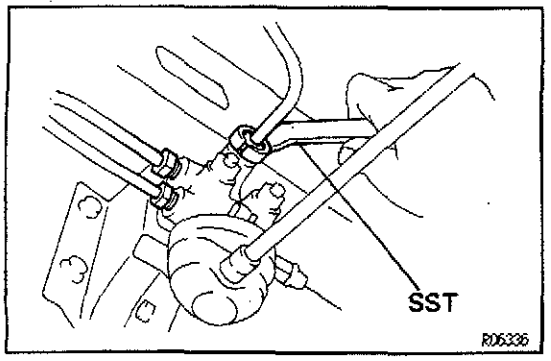


LSP & BV REMOVAL

BR0LR–01

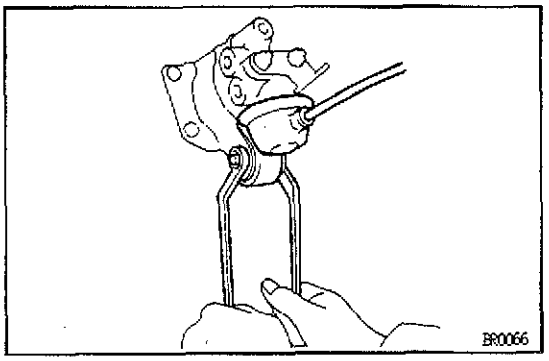
1. DISCONNECT SHACKLE NO.2 FROM BRACKET

(a) Remove the cotter pin.
(b) Remove the nut, washer, retainer and shackle No.2 from the bracket.
(c) Remove the 2 cushions and collar.



2. REMOVE LSP & BV ASSEMBLY

(a) Using SST, disconnect the brake lines from the valve body.
SST 09751–36011
(b) Remove the valve bracket mounting bolts and remove the LSP & BV assembly.



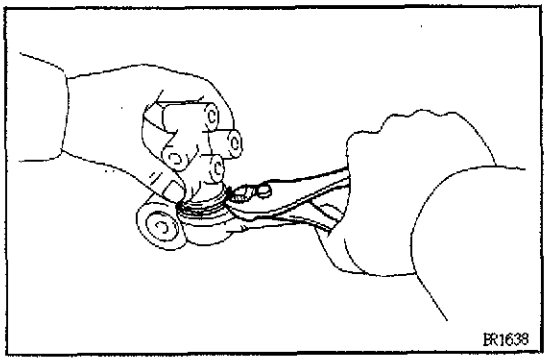
LSP & BV ASSEMBLY DISASSEMBLY

BROL8-01

1. REMOVE VALVE BRACKET

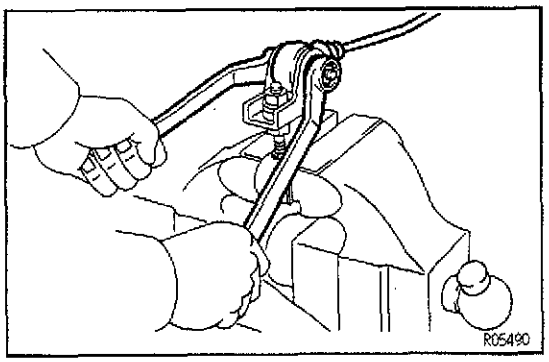
(a) Remove the nut and bolt, as shown.

(b) Remove the 2 nuts, and remove the bracket and set plate from the valve body.



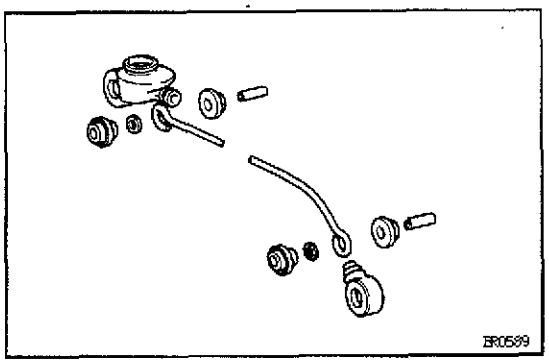
2. DISCONNECT SPRING FROM VALVE

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 No.1 and No.2 shackle, and 2 plate washers.



4. DISASSEMBLY LOAD SENSING SPRING

Disassembly the following parts:

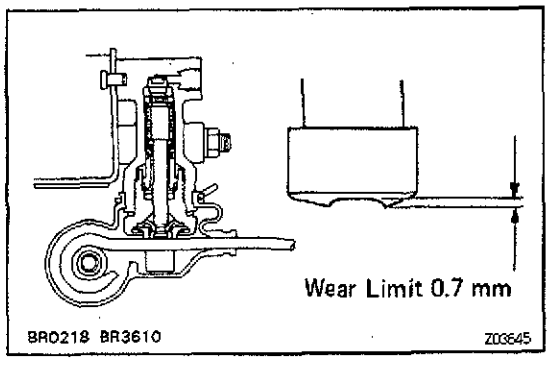
(a) Bushings

(b) Collars

(c) Rubber plates

(d) Load sensing valve boot

(e) Load sensing spring boot



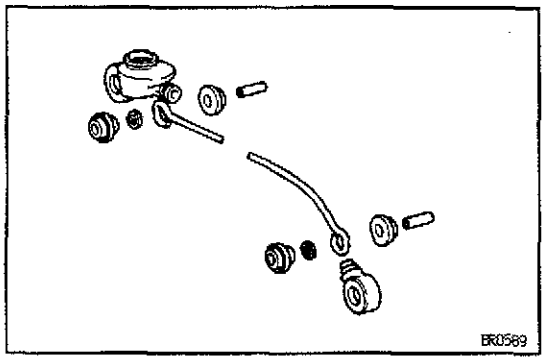
LSP & BV INSPECTION

BROLT-01

INSPECT VALVE PISTON PIN AND LOAD SENSING SPRING CONTACT SURFACE FOR WEAR

Wear limit:

0.7 mm (0.028 in.)



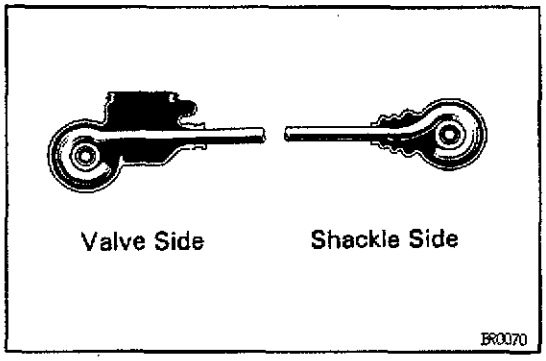
LSP & BV ASSEMBLY

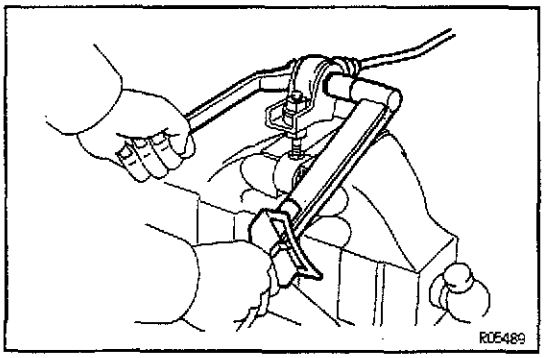
1. ASSEMBLE FOLLOWING PARTS TO LOAD SENSING SPRING:

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

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.

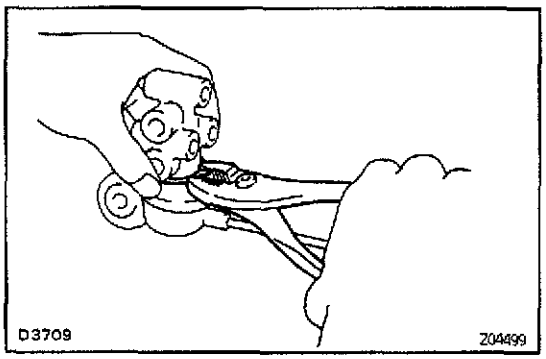




2. INSTALL SHACKLE NO. 1 AND NO. 2 TO LOAD SENSING SPRING

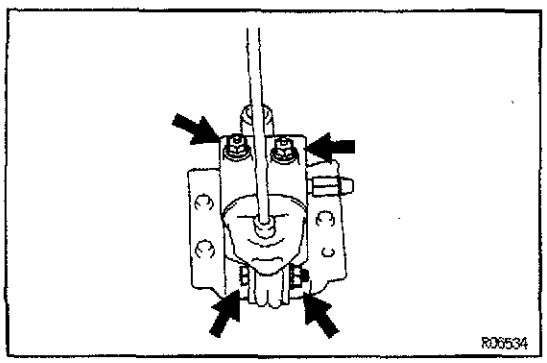
(a) Install the lock nut and shackle No.1 to the shackle No.2.
(b) Install and torque the bolt and nut, as shown in illustration.

Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)



3. INSTALL LOAD SENSING SPRING TO VALVE

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



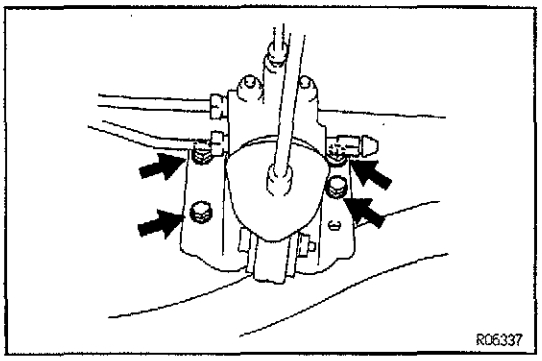
4. INSTALL VALVE BRACKET AND HEAT INSULATOR

(a) Install the set plate to the valve assembly and temporarily tighten the 2 valve body mounting nuts.
(b) Torque the bolt and nut through the 2 plate washers.

Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

BR0LV–01

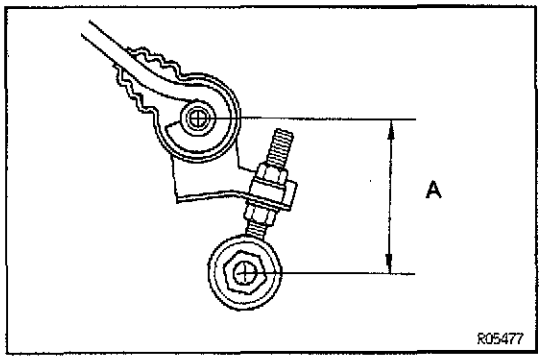
LSP & BV INSTALLATION



1. INSTALL LSP & BV ASSEMBLY

Install the LSP & BV assembly to the frame with 4 bolts.

Torque: 25 N·m (260 kgf·cm, 18 ft·lbf)



2. CONNECT SHACKLE NO.2 TO BRACKET

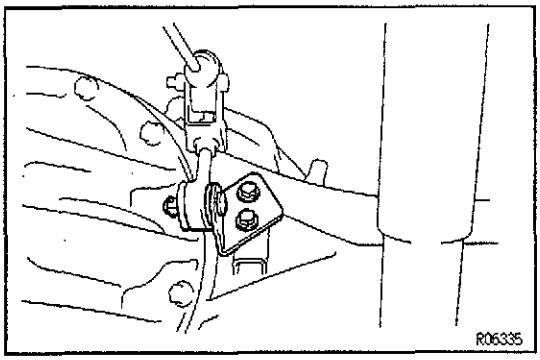
(a) Set the dimension A by turning shackle No.2.

Initial set:

90 mm (3.54 in.)

(b) Tighten the lock nut.

Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

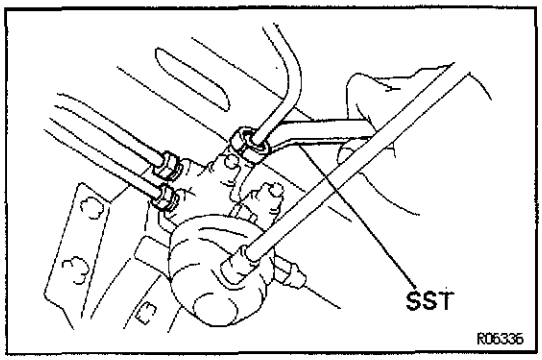


(c) Install the 2 cushions and collar to the No.2 shackle.

(d) Install the No.2 shackle to the shackle bracket with the retainer, washer and a nut.

Torque: 13 N·m (130 kgf·cm, 9 ft·lbf)

(e) Install a new cotter pin.



3. CONNECT BRAKE LINES

Using SST, connect the brake lines.

SST 09751–36011

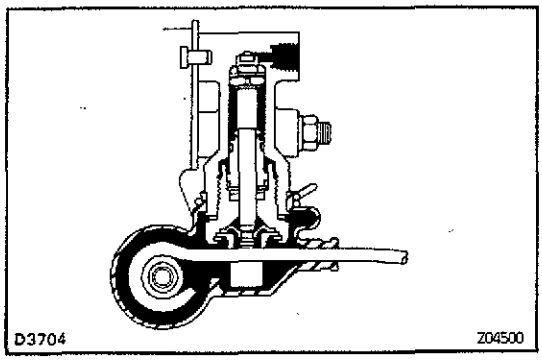
Torque:

M10 15 N·m (155 kgf·cm, 11 ft·lbf)

M12 24 N·m (245 kgf·cm, 18 ft·lbf)

4. SET REAR AXLE LOAD

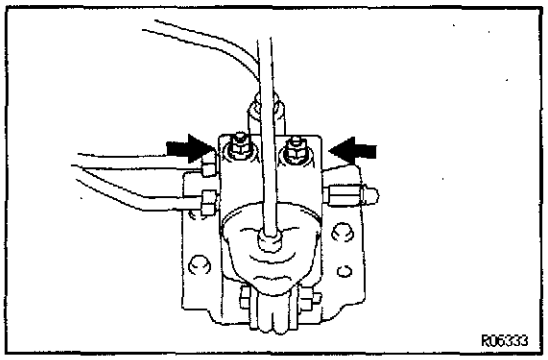
(See page BR–73)



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: 13 N·m (130 kgf·cm, 9 ft·lbf)

6. **BLEED BRAKE SYSTEM**
(See page BR–9)
7. **CHECK FLUID LEAKAGE**
8. **CHECK AND ADJUST LSP & BV FLUID PRESSURE**
(See page BR–73)