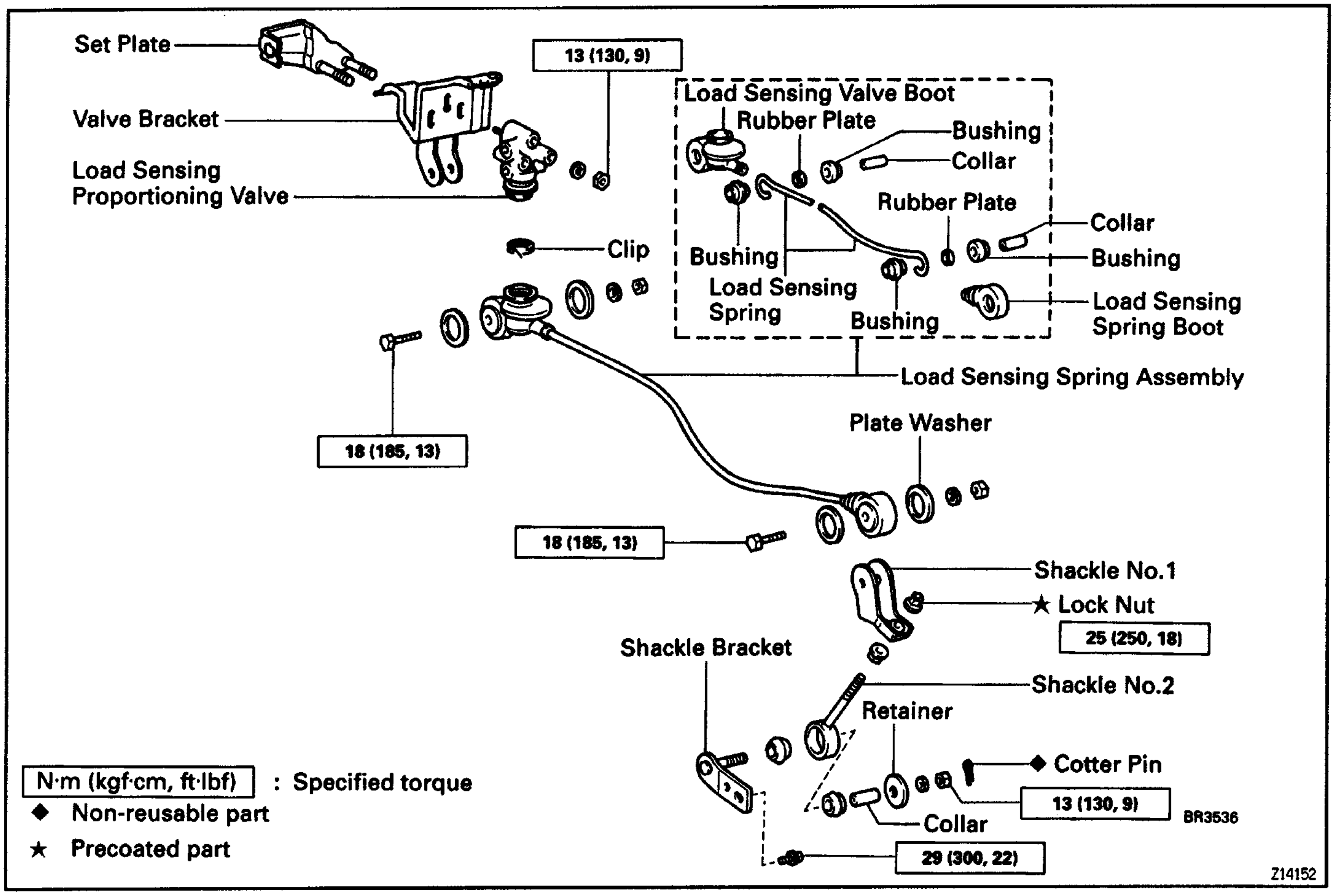
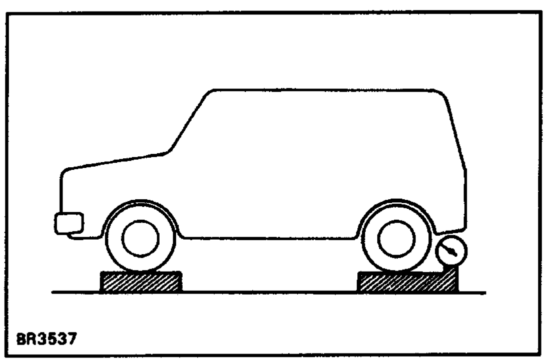
LOAD SENSING PROPORTIONING AND BY–PASS VALVE (LSP & BV)

COMPONENTS



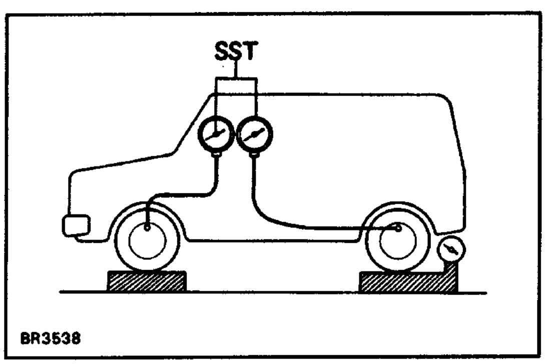


FLUID PRESSURE INSPECTION

1. SET REAR AXLE LOAD

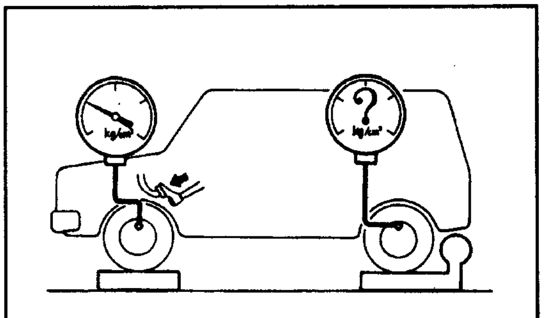
Rear axle load (includes vehicle weight):

1,050 kg (2,310 lb)



2. INSTALL LSPV GAUGE (SST) AND BLEED AIR

SST 09709–29017



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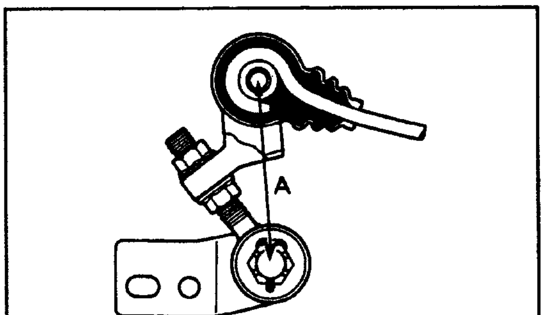
3. RAISE FRONT BRAKE PRESSURE TO 7,845 kPa (80 kgf/cm^2, 1,138 psi) AND CHECK REAR BRAKE PRESSURE

Rear brake pressure:

4,727 – 5,707 kPa

(48.2–58.2 kgf/cm^2, 688–828 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 2 seconds after adjusting the specified fluid pressure.
If the brake pressure is incorrect, adjust the fluid pressure.



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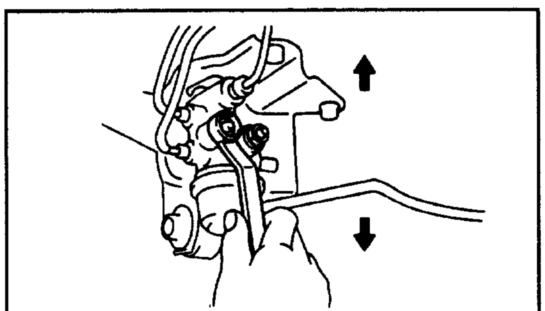

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4. IF NECESSARY, ADJUST FLUID PRESSURE

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

Initial set:

78 mm (3.07 in.)

Adjustment range:

68–88 mm (2.68–3.46 in.)

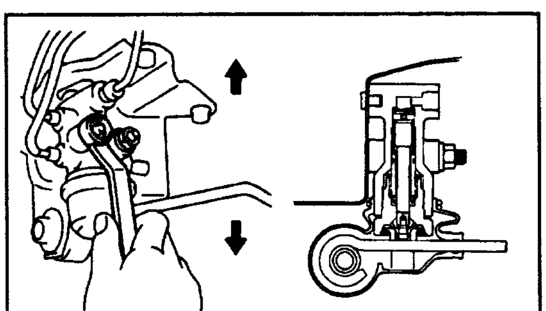
HINT: One turn of the nut changes the fluid pressure about 137 kPa (1.4 kgf/cm^2, 20 psi).

(b) In event the pressure cannot be adjusted by the shackle, raise or lower the valve body.
Low pressure –Lower body
High pressure–Raise body

(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 housing.



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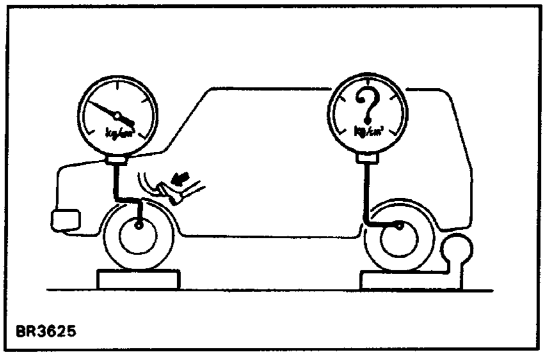
5. IF NECESSARY, CHECK VALVE BODY

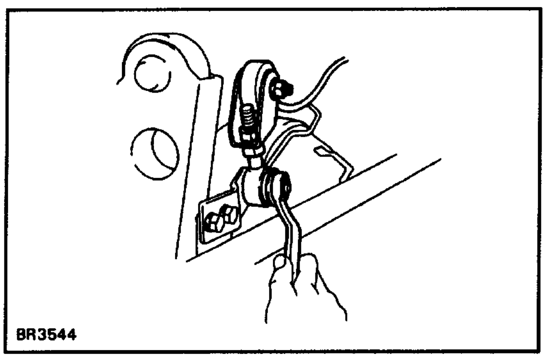
(a) Assemble the valve body in the uppermost position.
HINT: When the brakes are applied, the piston will move down about 1 mm (0.04 in.). Even at this time, the piston should not make contact with or move the load sensing spring.



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

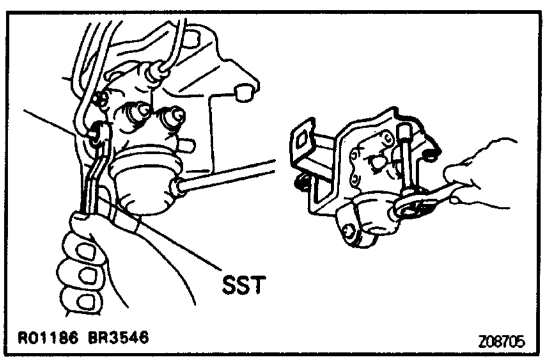
Front brake pressure kPa (kgf/cm^2, psi)	Rear brake pressure kPa (kgf/cm^2, psi)
1,961 (20, 284)	1,961 (20, 284)
3,923 (40, 567)	2,157 – 2,157 (22 – 26, 313 – 370)
6,865 (70, 996)	2,599 – 3,285 (26.5 – 33.5, 377 – 476)

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



LSP & BV REMOVAL

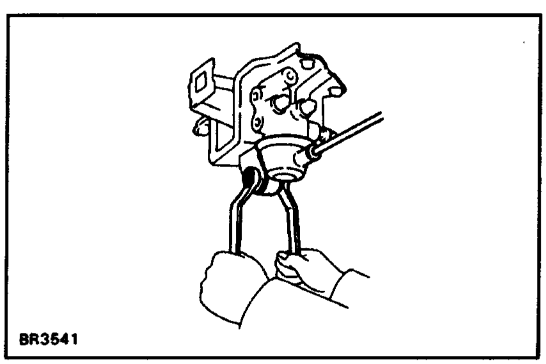
1. DISCONNECT SHACKLE NO.2 FROM BRACKET



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.

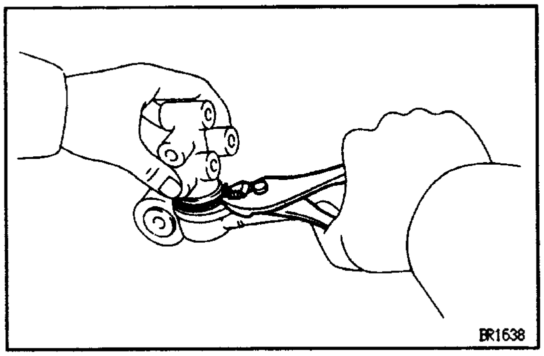


LSP & BV LSPV DISASSEMBLY

1. REMOVE VALVE BRACKET

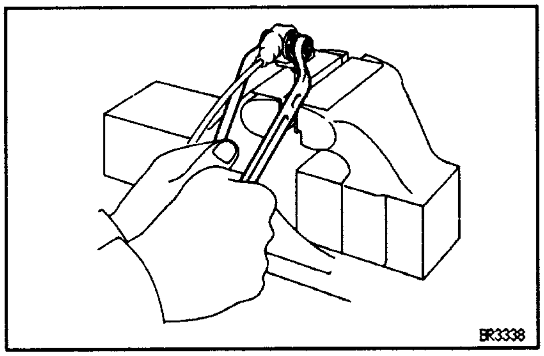
(a) Remove the nut and bolt.

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



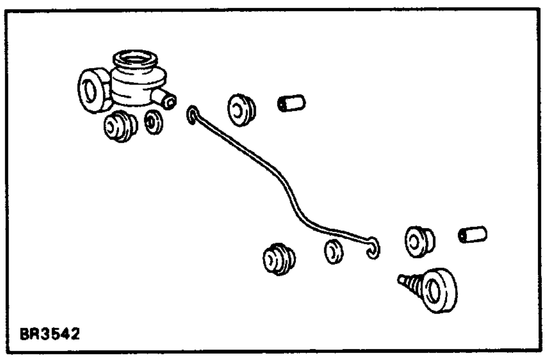
2. DISCONNECT SPRING FROM VALVE

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



3. REMOVE SHACKLES No.1 AND No.2

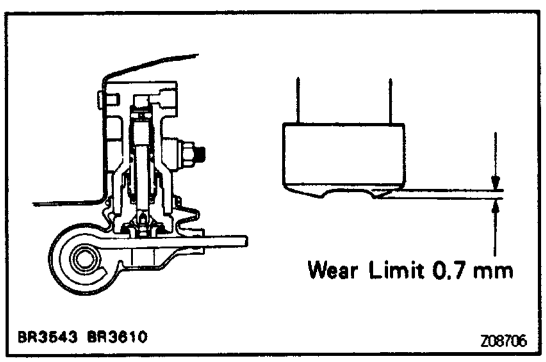
Remove the nuts and bolts, and then remove the No. 1 and No.2 shackle, and 2 plate washers from the load sensing spring assembly.



4. DISASSEMBLE LOAD SENSING SPRING

Disassemble the these parts:

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

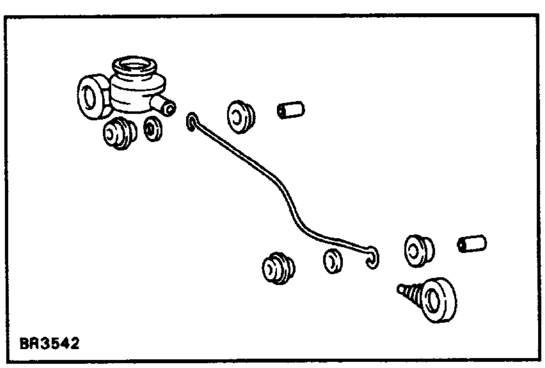


LSP & BV LSPV INSPECTION

INSPECT VALVE PISTON PIN AND LOAD SENSING CONTACT SURFACE FOR WEAR

Wear limit:

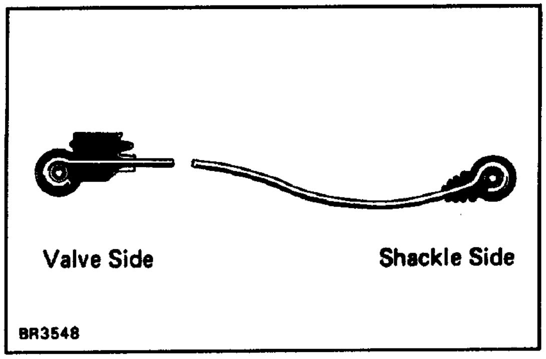
0.7 mm (0.028 in.)



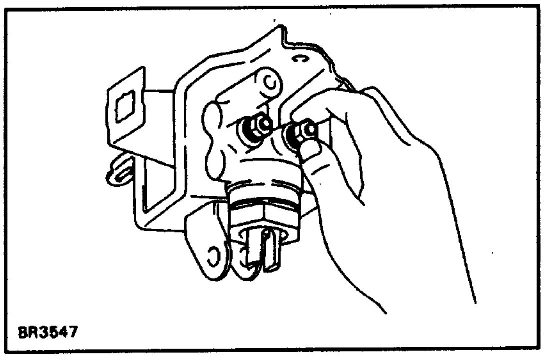
LSP & BV ASSEMBLY

1. ASSEMBLE THESE PARTS TO LOAD SENSING SPRING:

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

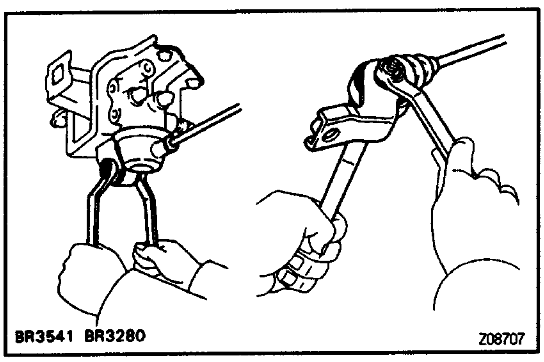


HINT: Apply lithium soap–base glycol grease to all rubbing areas.
Do not mistake the valve side for the shackle side of the load sensing spring.



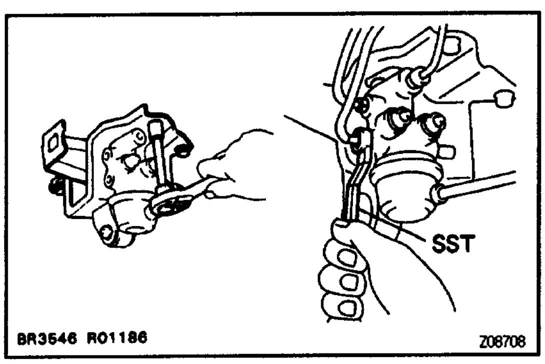
2. ASSEMBLE VALVE BODY TO BRACKET

Assemble the valve body to the valve body bracket.
HINT: Finger tighten the valve body mounting nuts.



3. CONNECT VALVE BODY AND ND.1 SHACKLE TO LOAD SENSING SPRING

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



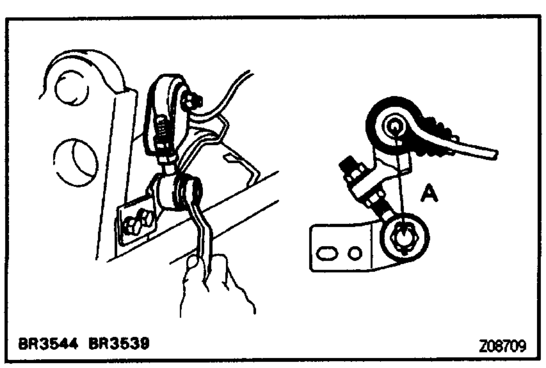
LSP & BV INSTALLATION

1. INSTALL LSP & BV ASSEMBLY TO FRAME

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

2. CONNECT BRAKE LINE

Using SST, connect the brake lines.
Torque: 15 N–m (155 kgf–cm, 11 ft–lbf)
SST 08751–36011

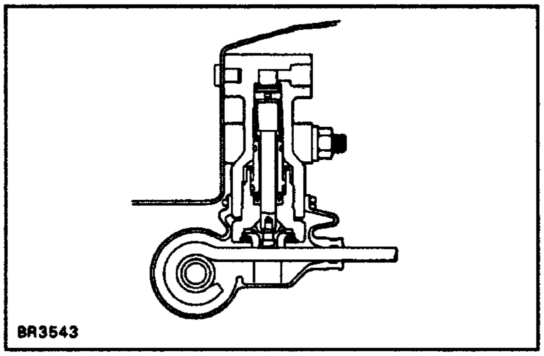


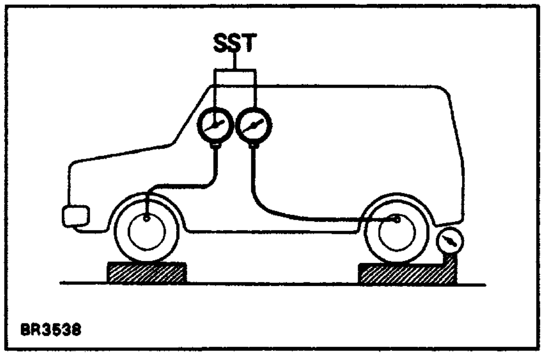
3. CONNECT SHACKLE NO.2 BRACKET

(a) Install shackle No.2 to the load sensing spring.
(b) Connect the shackle No.2 to the shackle bracket.
(c) Set dimension A.

Initial set:

78 mm (3.07 in.)





4. SET REAR AXLE LOAD

(See page BR–33)

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.

6. BLEED BRAKE LINE

(See page BR–8)

7. CHECK AND ADJUST LSP & BV FLUID PRESSURE

(See page BR–33)

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