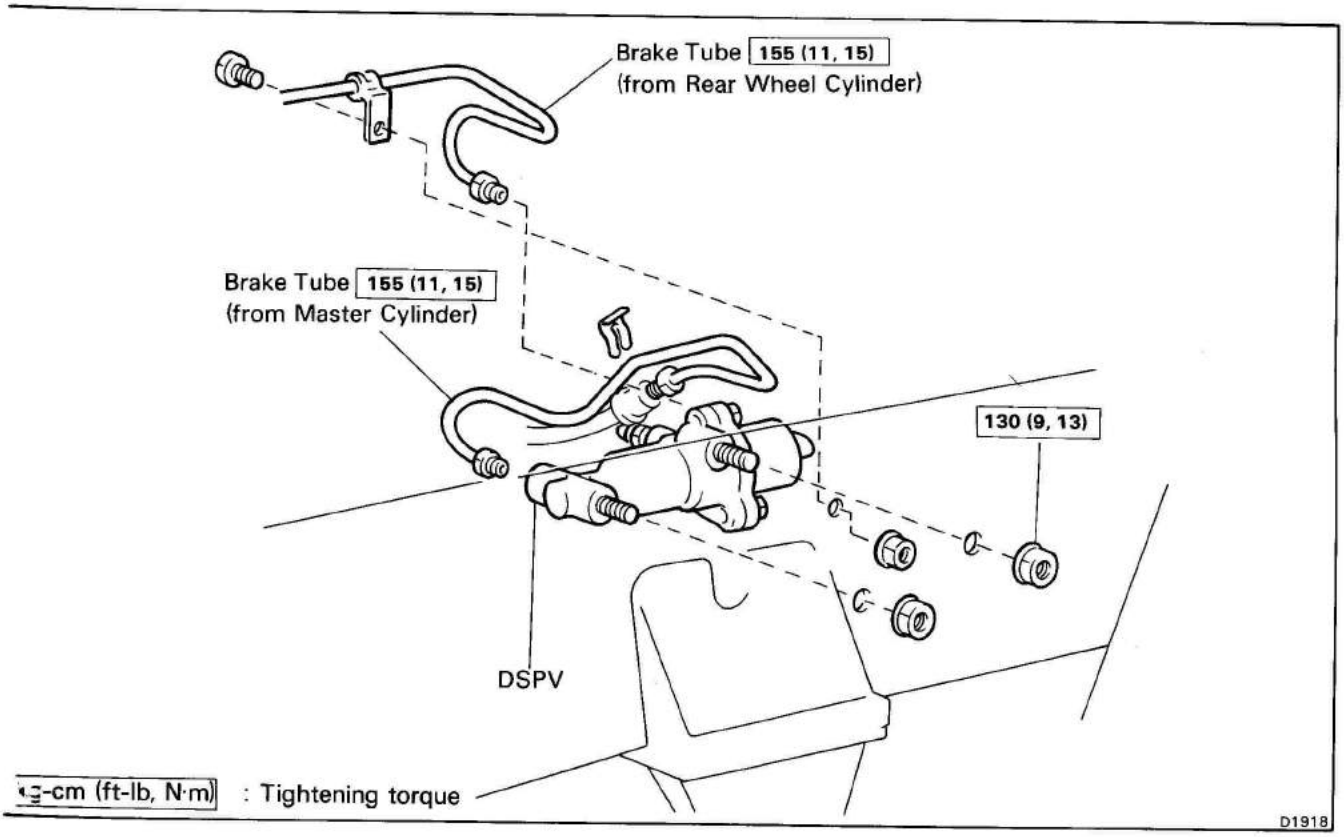
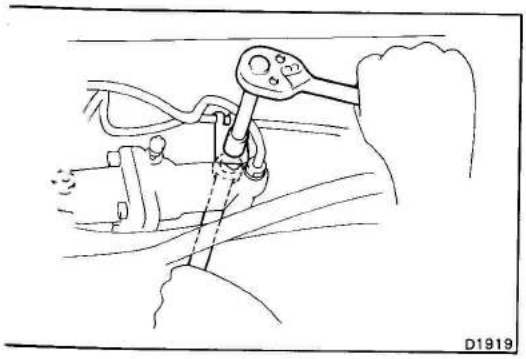
DECELERATION SENSING PROPORTING VALVE (DSPV)

NOTE: Replace the DSPV assembly when there is fluid leaked or such. Do not disassembe or adjust the DSPV.

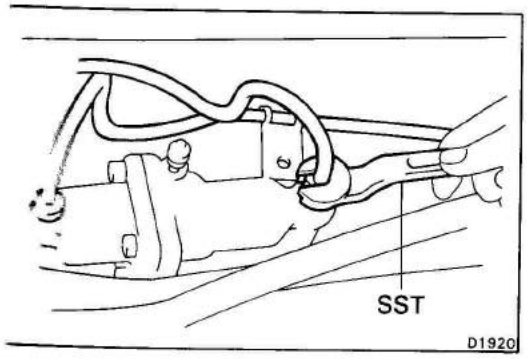
COMPONENTS



REMOVAL OF DSPV

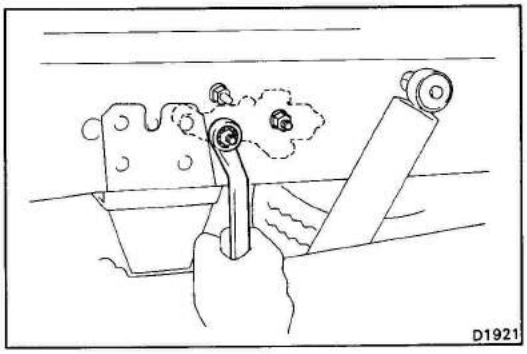


1. REMOVE BRAKE TUBE CLAMP



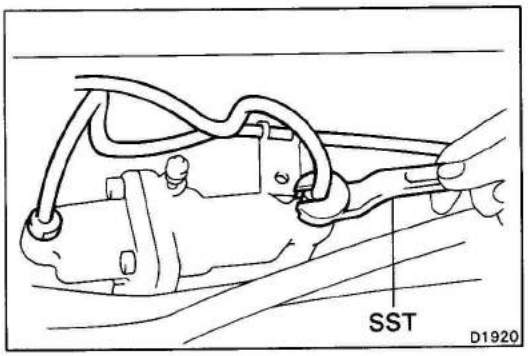
2. DISCONNECT BRAKE TUBES

Using SST, disconnect the brake tubes from the DSPV.
SST 09751-36011



3. **REMOVE DSPV**

Remove the two bolts and DSPV.



INSTALLATION OF DSPV

(See page BR-79)

1. **INSTALL DSPV**

Install the DSPV with two bolts. Torque the bolts.

Torque: 130 kg-cm (9 ft-lb, 13 N·m)

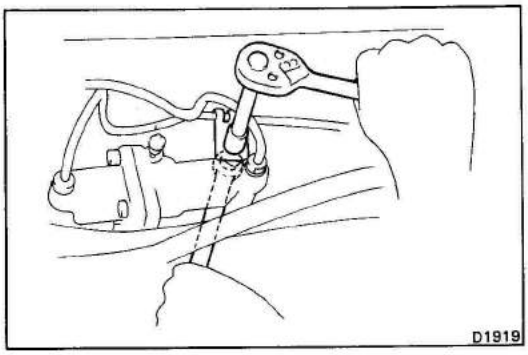
2. **CONNECT BRAKE TUBES**

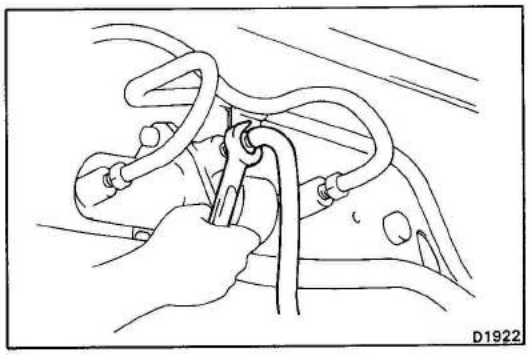
Using SST, connect the brake tubes to DSPV.

SST 09751-36011

Torque: 155 kg-cm (11 ft-lb, 15 N·m)

3. **INSTALL BRAKE TUBE CLAMP**



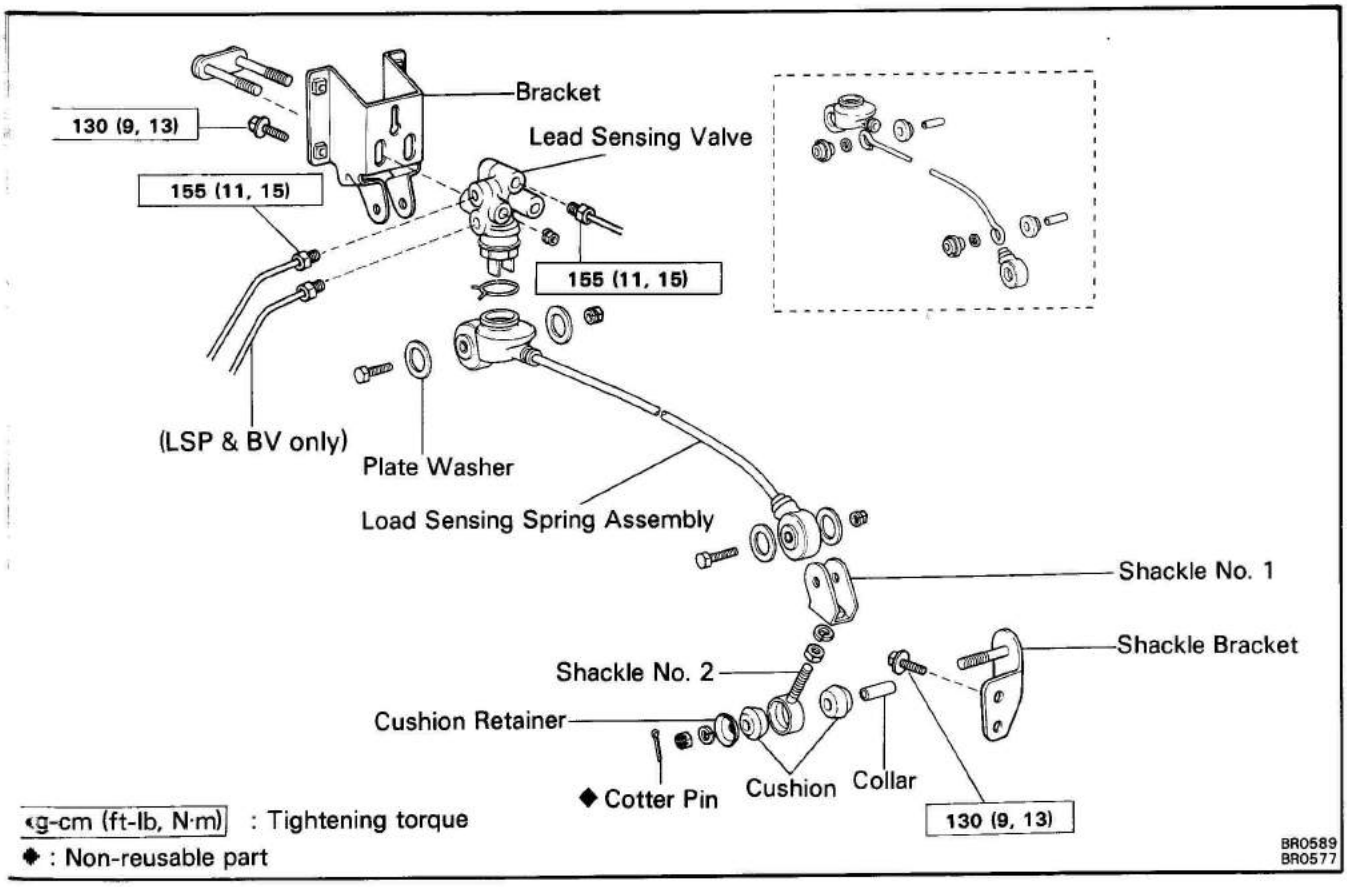


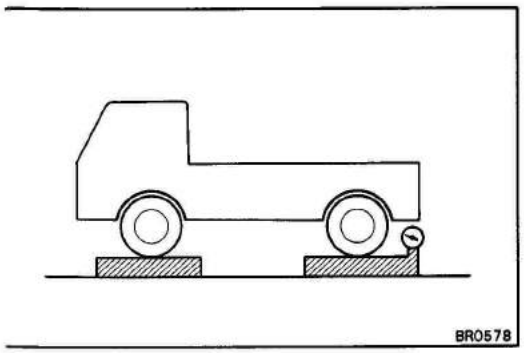
4. **FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM (See page BR-6)**

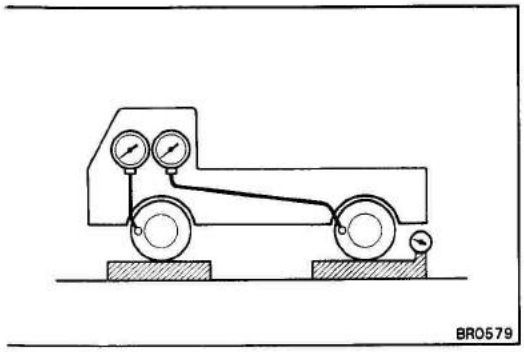
5. **CHECK FLUID LEAKAGE**

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

COMPONENTS







CHECK AND ADJUSTMENT OF FLUID PRESSURE

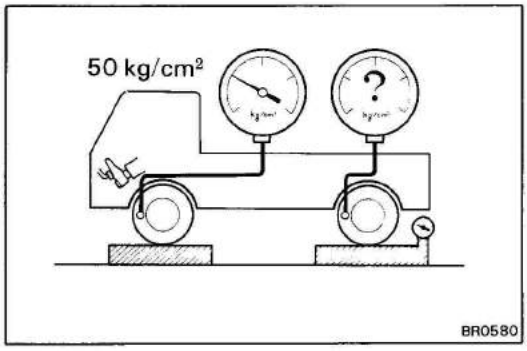
1. SET REAR AXLE LOAD

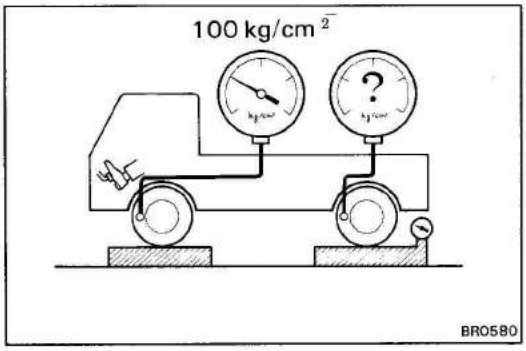
Rear axle load (includes vehicle weight):

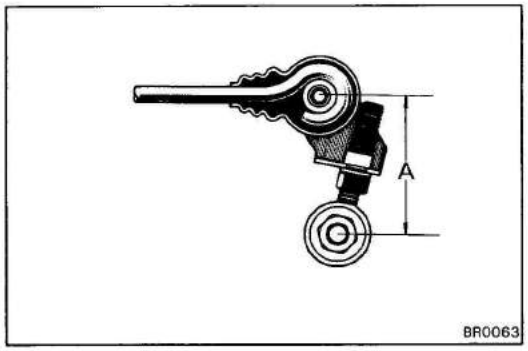
YU60 (Disc Brake)	**1,050 kg (2,315 lb)**
YU60 (Drum Brake)	**1,460 kg (3,219 lb)**
BU75	**1,650 kg (3,638 lb)**
BU85	**1,460 kg (3,219 lb)**
WU90 (Australia)	**1,550 kg (3,417 lb)**

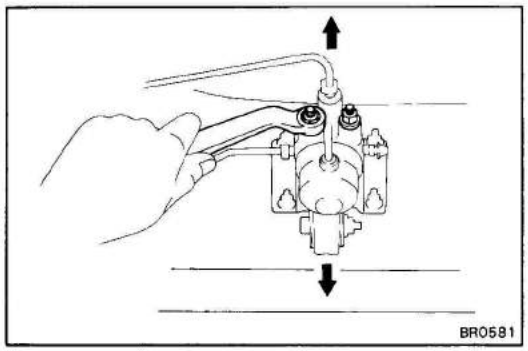
2. INSTALL LSPV GAUGE (SST) AND BLEED AIR

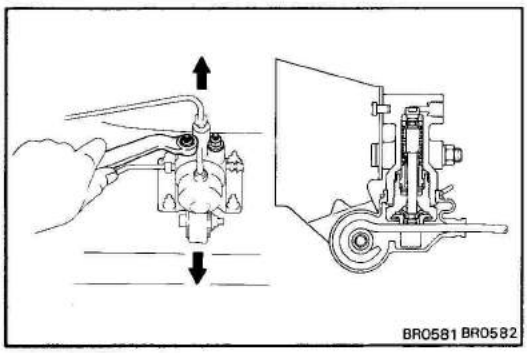
SST 09709-29017











3. RAISE FRONT BRAKE PRESSURE TO 50 kg/cm² (711psi, 4,903 kPa) AND CHECK REAR BRAKE PRESSURE

Rear brake pressure:

BU, YU series

38 – 48 kg/cm² (540 – 683 psi, 3,727 – 4,707 kPa)

WU series

37 – 47 kg/cm² (526 – 668 psi, 3,628 – 4,609 kPa)

NOTE: 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:

54 – 68 kg/cm² (768 – 967 psi, 5,296 – 6,669 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.)

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

(b) In event the 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)

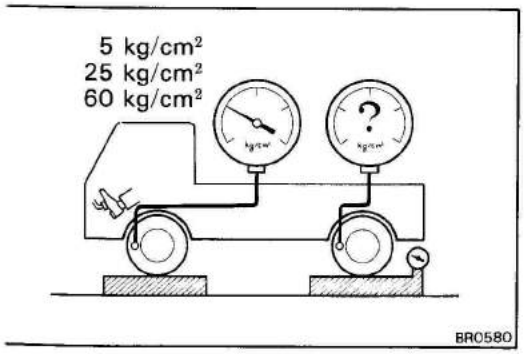
(d) Adjust the length of the No. 2 shackle again.

If it cannot be adjusted, inspect the valve housing.

6. IF NECESSARY, CHECK VALVE BODY

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

NOTE: 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.

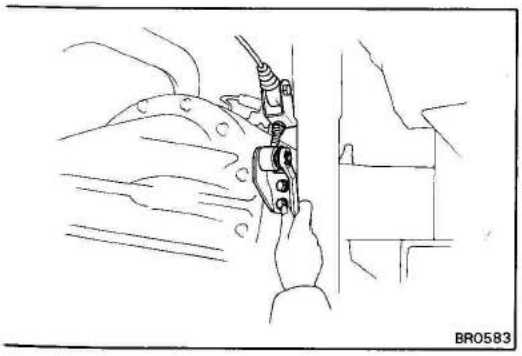


(b) In this position, check the rear brake pressure.

kg/cm² (psi, kPa)

Front brake pressure	Rear brake pressure
5 (71, 490)	5 (71, 490)
25 (356, 2,452)	12.4 ± 2 (176 ± 28, 1,216 ± 196)
60 (853, 5,884)	25.4 ± 3.5(361 ± 50, 2,491 ± 343)

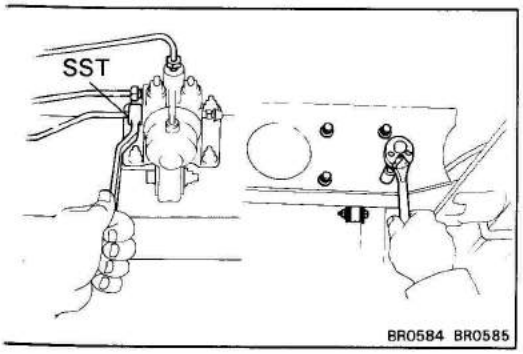
If the measured value is not within standard, replace the valve body.



REMOVAL OF LSP & BV OR LSPV

(See page BR-81)

1. DISCONNECT SHACKLE NO. 2 FROM BRACKET

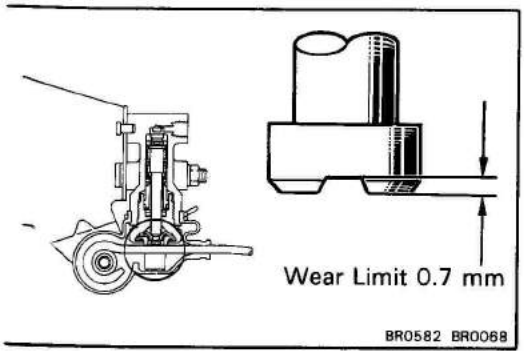


2. REMOVE LSP & BV (LSPV) ASSEMBLY

(a) Using SST, disconnect the brake tube from the valve body.

SST 09751-36011

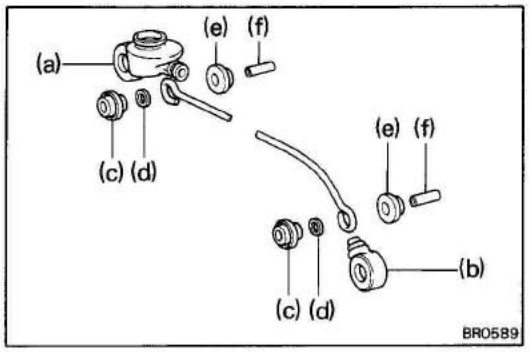
(b) Remove the valve bracket mounting bolts and remove the LSP & BV (LSPV) assembly.



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.)



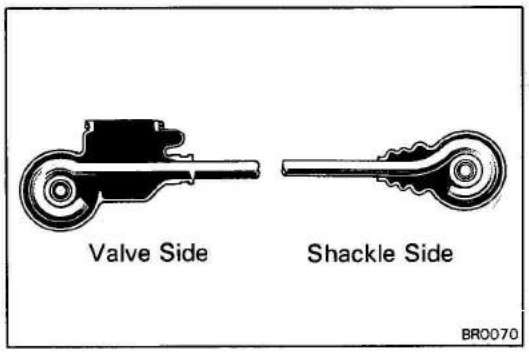
INSTALLATION OF LSP & BV OR LSPV

(See page BR-81)

1. ASSEMBLE FOLLOWING PARTS TO LOAD SENSING SPRING:

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

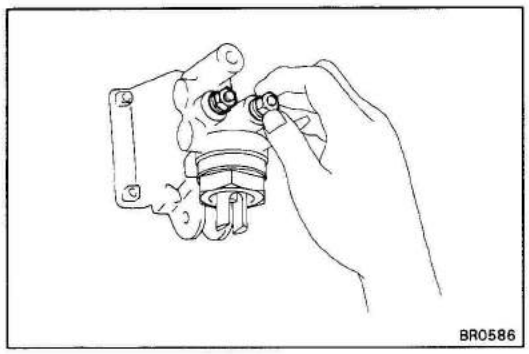
NOTE: Apply lithium soap base grycol grease to all rubbing areas.
Do not mistake the valve side for the shackle side of the load sensing spring.



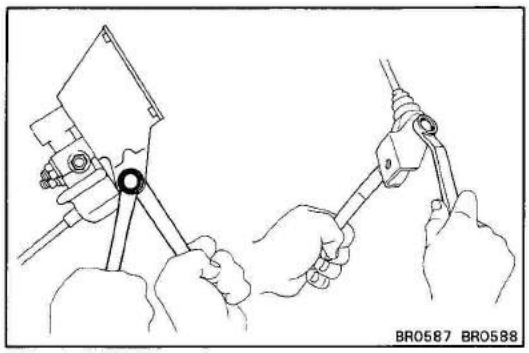
2. ASSEMBLE VALVE BODY TO BRACKET

Assemble the valve body to the valve body bracket.

NOTE: Finger tighten the valve body mounting nuts.



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



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

Torque: 130 kg-cm (9 ft-lb, 13 N·m)

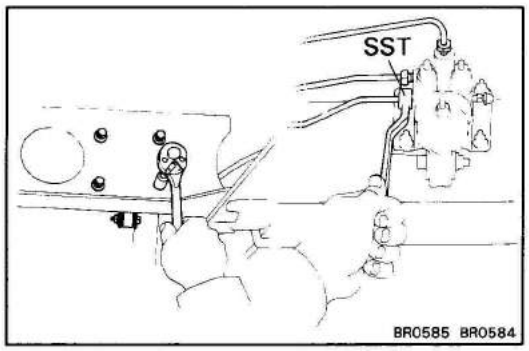
5. CONNECT BRAKE TUBE

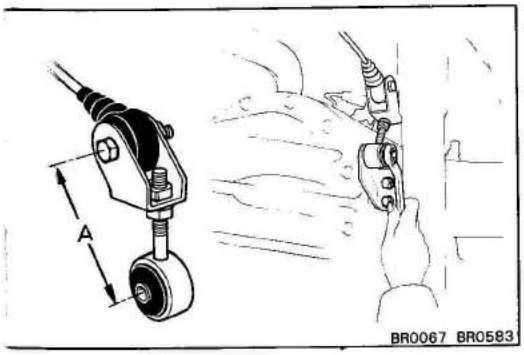
Using SST, connect the brake tubes.

Torque the nut.

Torque: 155 kg-cm (11 ft-lb, 15 N·m)

SST 09751-36011





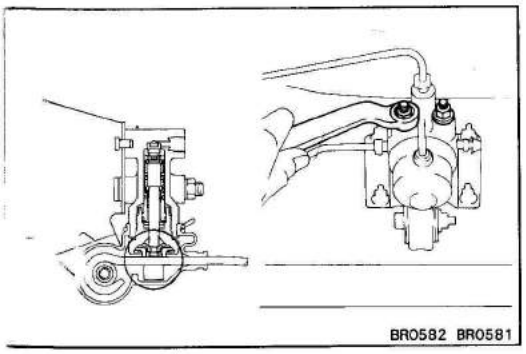
6. CONNECT SHACKLE NO. 2 TO BRACKET

(a) Install shackle No. 1 and shackle No. 2 to the load sensing spring.

(b) Set dimension A by turning shackle No. 2.

Initial set: 78 mm (3.07 in.)

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



7. SET REAR AXLE LOAD (See page BR-78)

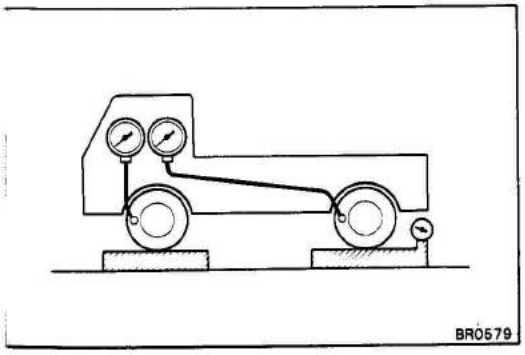
8. SET VALVE BODY

(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.

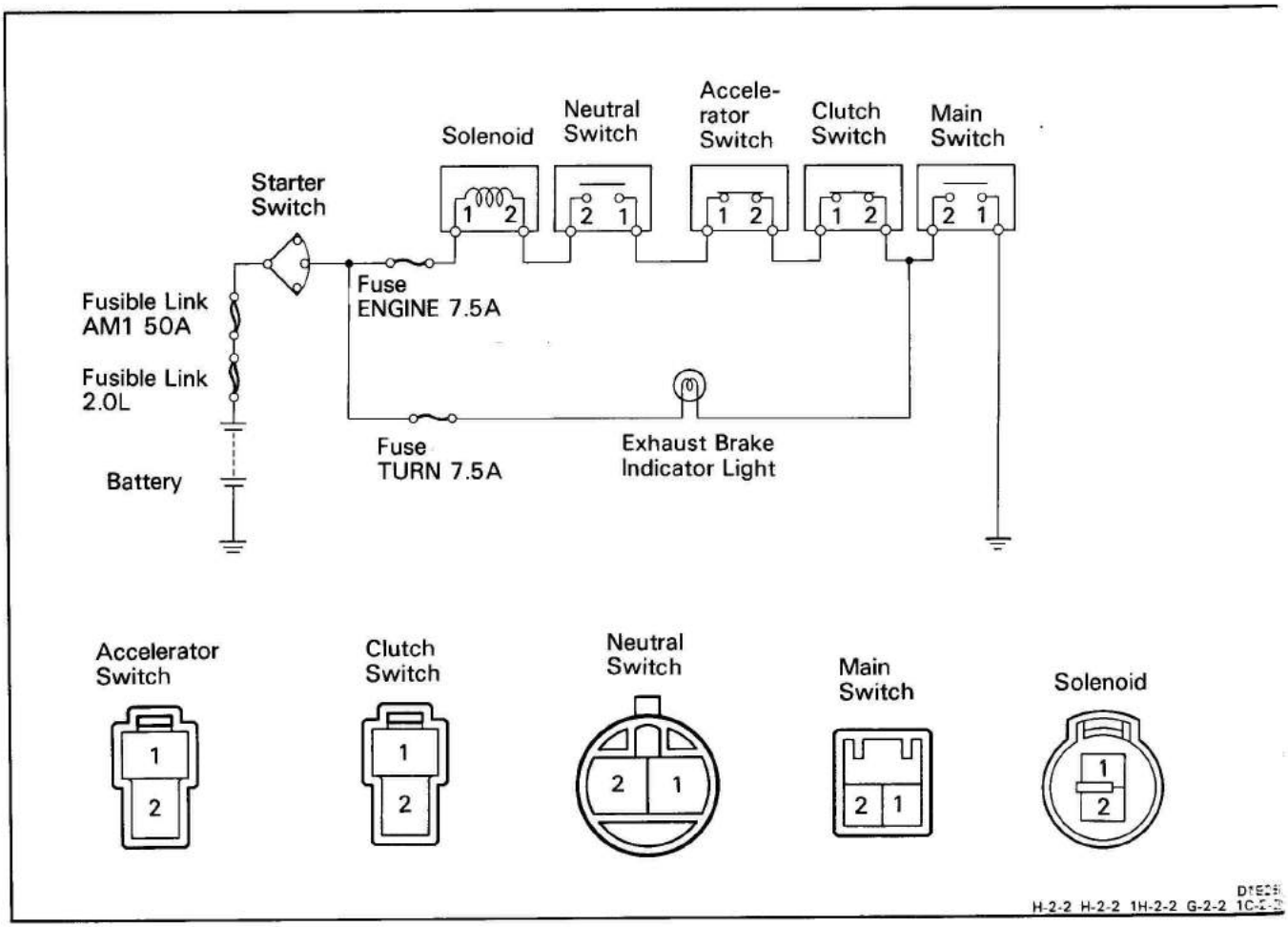
9. FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM (See page BR-6)



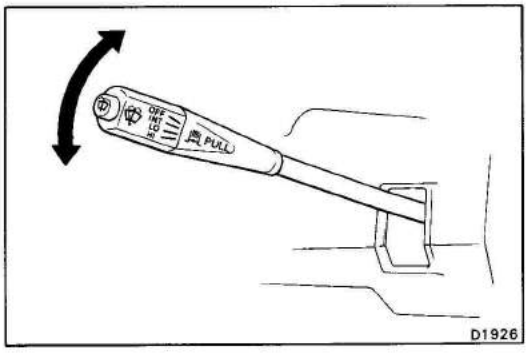
10. CHECK AND ADJUST LSP & BV FLUID PRESSURE (See page BR-78)

EXHAUST RETARDER

SYSTEM CIRCUIT



H-2-2 H-2-2 1H-2-2 G-2-2 1C-2-2



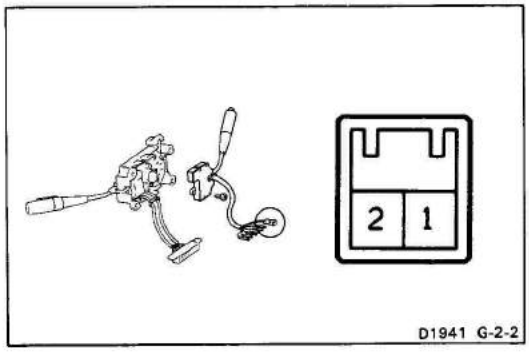
INSPECTION OF EXHAUST RETARDER CIRCUIT

Exhaust Brake Indicator Light

INSPECT INDICATOR LIGHT OPERATION

(a) Turn the starter switch on.

(b) Turn the main switch on. Check that the bulb lights

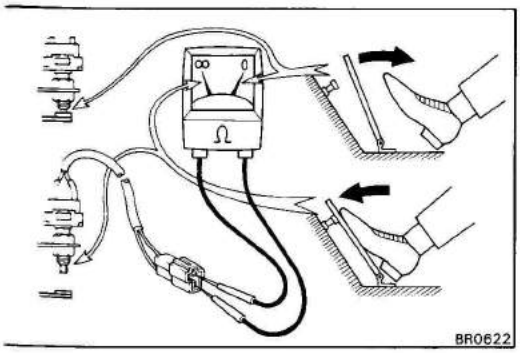


Main Switch

INSPECT SWITCH CONTINUITY

(a) With the switch "ON", check that there is continuity between the terminals.

(b) With the switch "OFF", check that there is no continuity between the terminals.

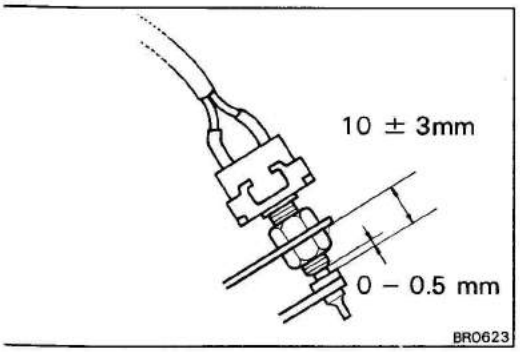


Accelerator Switch

1. INSPECT SWITCH CONTINUITY

(a) When the pedal is released, check that there is continuity between the terminals.

(b) When pedal is depressed, inspect that there is no continuity between the terminals.

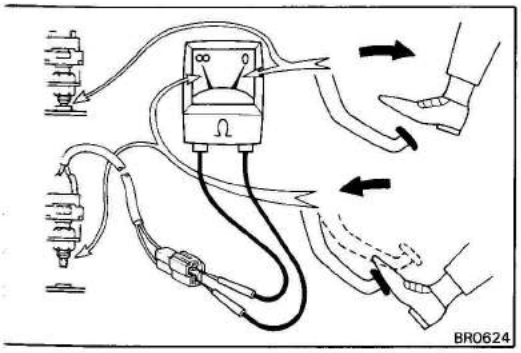


2. IF NECESSARY, ADJUST SWITCH

Adjust the clearance between the accelerator pedal and switch thread protrusion point.

Standard clearance: 0 – 0.5 mm (0 – 0.020 in.)
Standard switch adjustment range: 10 ± 3 mm (0.4 ± 0.1 in.)

NOTE:
- When adjustment cannot be made within range, adjust the accelerator wire.
- When adjusting either the accelerator cable or idle be sure to check the switch clearance.

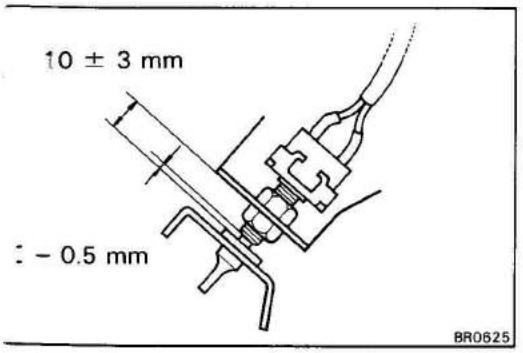


Clutch Switch

1. INSPECT SWITCH CONTINUITY

(a) When the pedal is released, check that there is continuity between the terminals.

(b) When pedal is depressed, check that there is no continuity between the terminals.

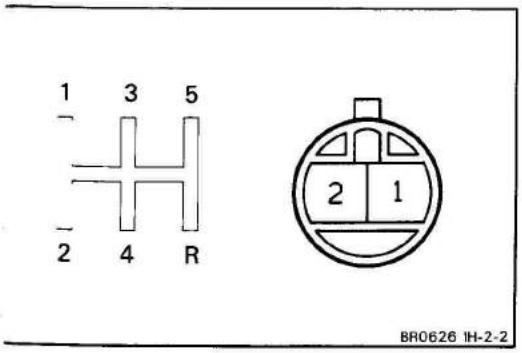


2. IF NECESSARY, ADJUST SWITCH

Adjust the clearance between the clutch pedal and switch thread protrusion point.

Standard clearance: 0 – 0.5 mm (0 – 0.020 in.)
Standard switch adjustment range: 10 ± 3 mm (0.4 ± 0.1 in.)

NOTE: When adjusting the switch, be sure to check the clutch height and pedal freeplay.

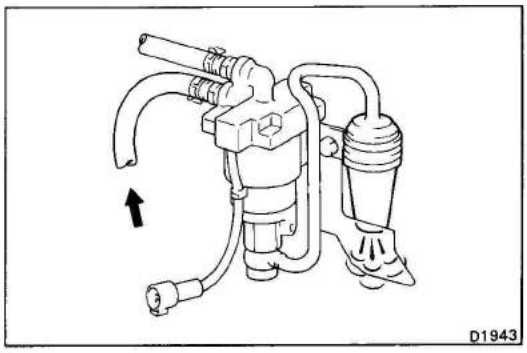


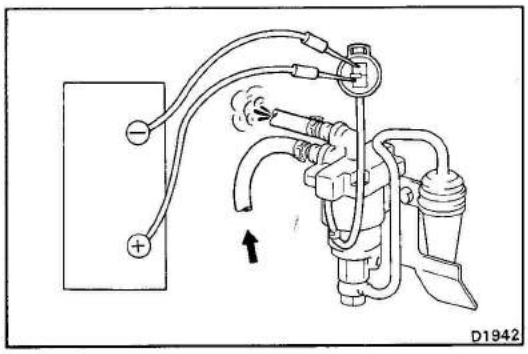
Neutral Switch

INSPECT SWITCH CONTINUITY

(a) When the shift lever is shifted, check that there is continuity between the terminals.

(b) When the shift lever is neutral position, check that there is no continuity between the terminals.





Exhaust Retarder Solenoid

INSPECT SOLENOID CONTINUITY AND OPERATION

(a) Disconnect the vacuum hoses and connector.

(b) Inspect that there is continuity between the terminals

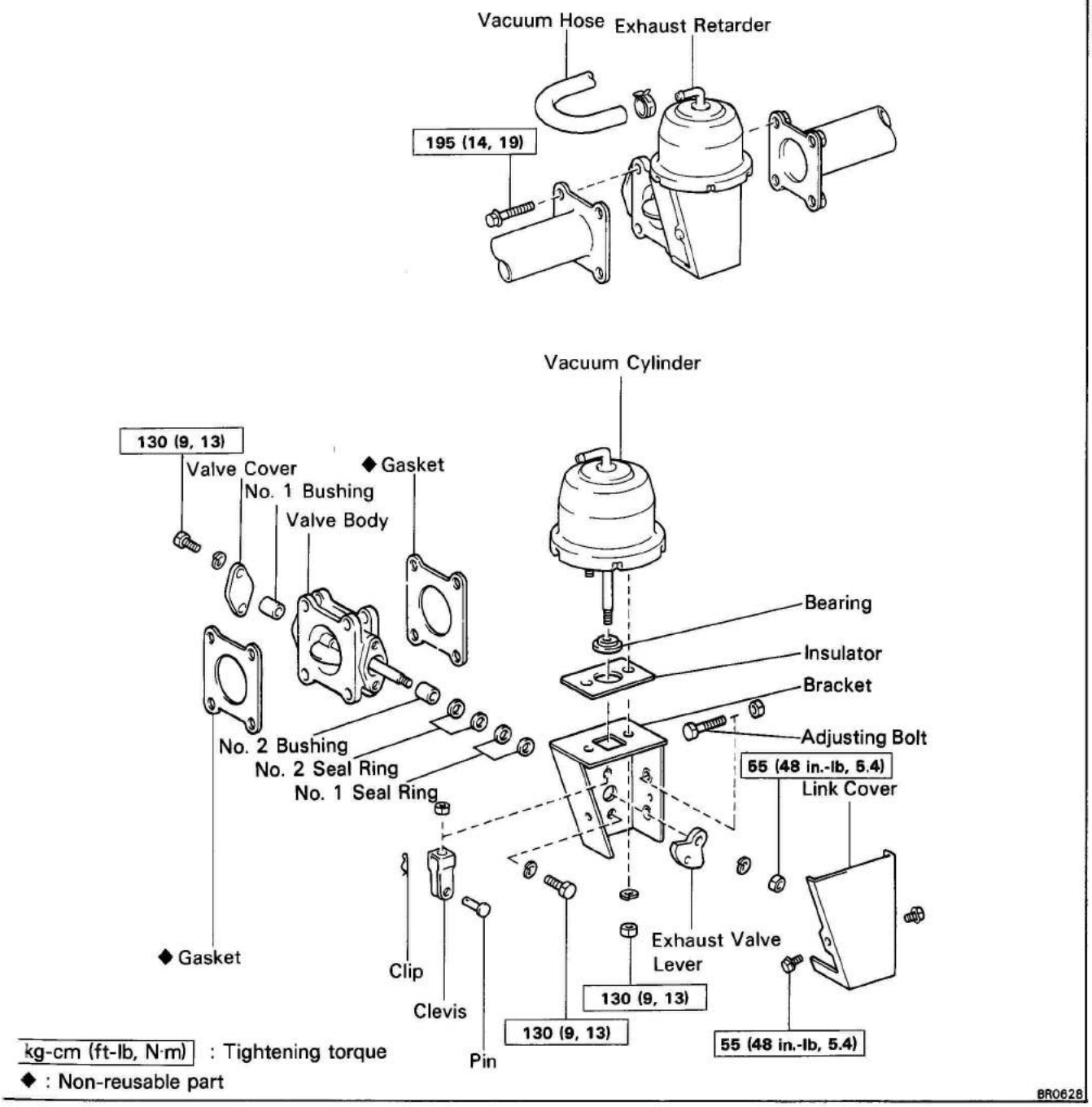
(c) When blowing into the disconnect hose, make sure that air travels to the air cleaner.

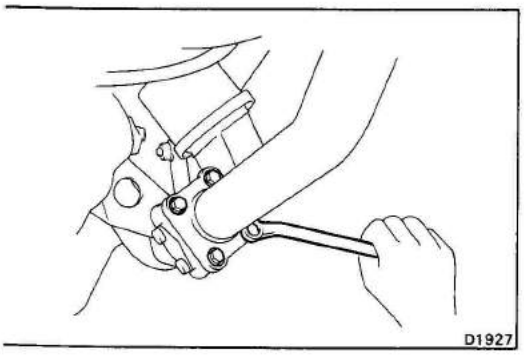
(d) Apply the battery power to the connector.

(e) When blowing into the disconnect hose, make sure that air travels to the vacuum tank.

(f) Reconnect the vacuum hoses and connector.

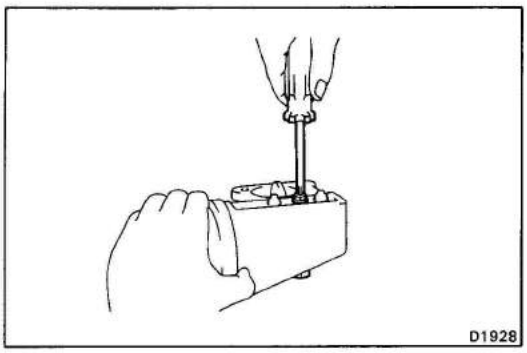
COMPONENTS





REMOVAL OF EXHAUST RETARDER

1. **DISCONNECT VACUUM HOSE**
2. **REMOVE EXHAUST RETARDER**
   (a) Remove the four bolts.
   (b) Pull the exhaust pipe rearward and then remove the exhaust retarder.

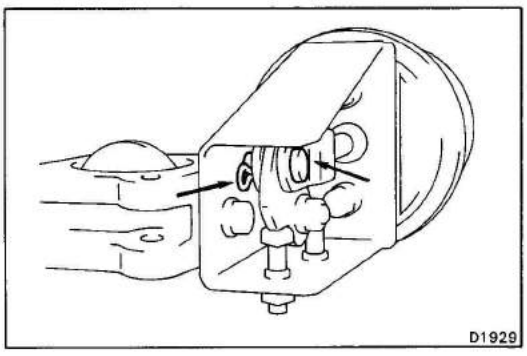


DISASSEMBLY OF EXHAUST RETARDER

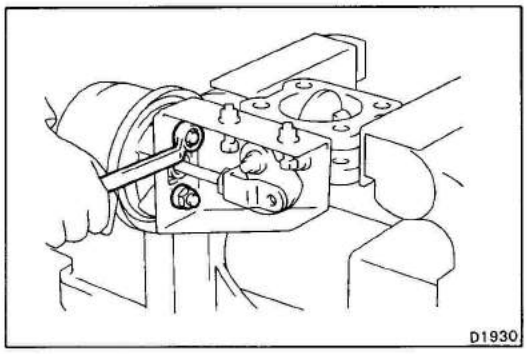
(See page BR-89)

1. **REMOVE EXHAUST VALVE LINK COVER**

   Remove the two bolts and link cover.



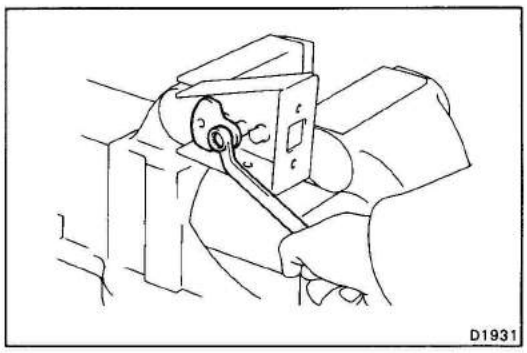
2. **REMOVE CLIP AND CLEVIS PIN**



3. **REMOVE EXHAUST BRAKE VACUUM CYLINDER ASSEMBLY**

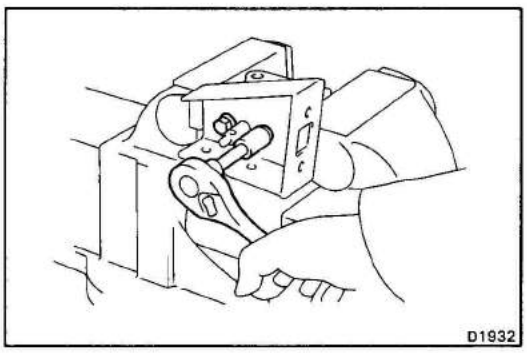
   Remove the two nuts and then remove the vacuum cylinder assembly from the bracket.

4. **REMOVE CLEVIS, LOCK NUT, INSULATOR AND BEARING**



5. **REMOVE TWO VALVE LEVER ADJUSTING BOLTS**

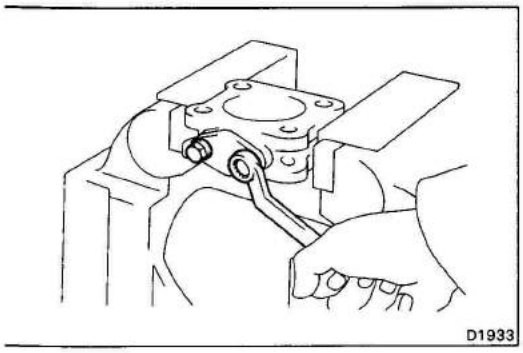
6. **REMOVE EXHAUST VALVE LEVER**



7. **DISASSEMBLE EXHAUST BRAKE VALVE ASSEMBLY**

   (a) Remove the two bolts and bracket from the valve body.

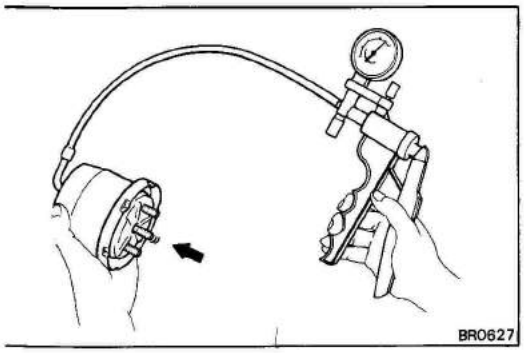
   (b) Remove the two No. 1 seal rings, two No. 2 seal rings and No. 2 bushing.



(c) Remove the two bolts and exhaust valve cover.

(d) Remove the No. 1 bushing.

8. REMOVE GASKETS



INSPECTION OF EXHAUST RETARDER COMPONENTS

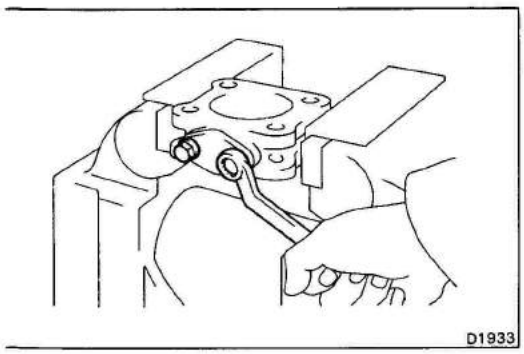
1. CHECK VACUUM CYLINDER

Apply vacuum to the cylinder and check for operation and vacuum leakage.

If problem is found, replace the cylinder.

2. CHECK DISASSEMBLED PARTS FOR WEAR OR DAMAGE

Replace, if necessary.



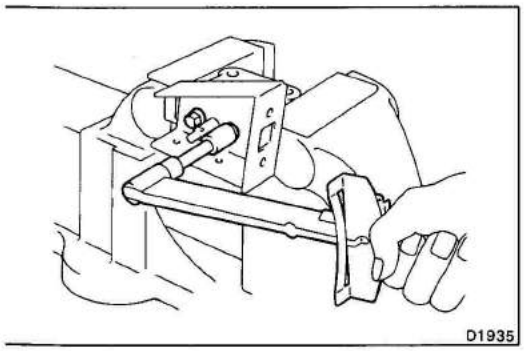
ASSEMBLY OF EXHAUST RETARDER

(See page BR-89)

1. ASSEMBLE EXHAUST BRAKE VALVE ASSEMBLY

(a) Insert the No. 1 bushing to the valve body and install the valve cover with the two bolts.
Torque the bolts.

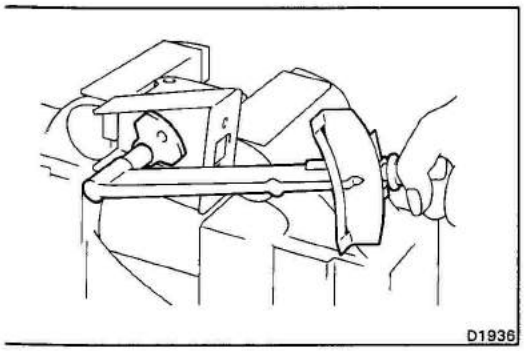
Torque: 130 kg-cm (9 ft-lb, 13 N·m)



(b) Insert the No. 2 bushing, two No. 1 seal rings and two No. 2 seal rings to the valve body.

(c) Install the bracket to the valve body with the two bolts. Torque the bolts.

Torque: 130 kg-cm (9 ft-lb, 13 N·m)

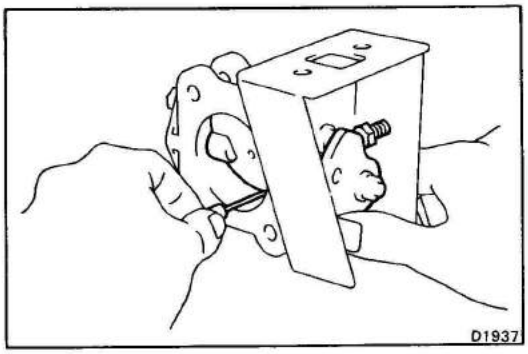


2. INSTALL EXHAUST VALVE LEVER TO VALVE SHAFT

Install the valve lever to the valve shaft with the nut. Torque the nut.

Torque: 55 kg-cm (48 in.-lb, 5.4 N·m)

3. INSTALL TWO VALVE LEVER ADJUSTING BOLTS

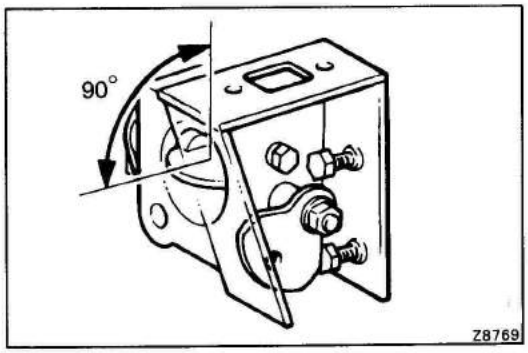


4. CHECK VALVE BODY CLEARANCE AND OPENING ANGLE

(a) Using SST, check the valve body clearance.

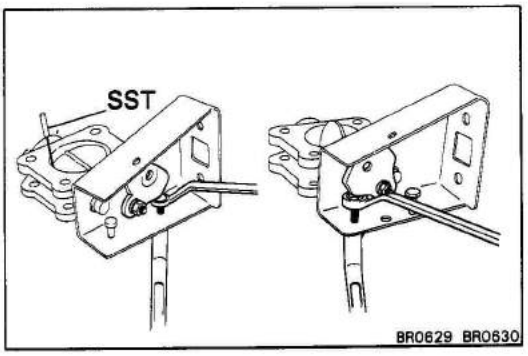
SST 09240-00020

Standard clearance: 0.1 – 0.4 mm (0.004 – 0.016 in.)



(b) With the valve fully opened, check the valve angle.

Opening angle: 90°

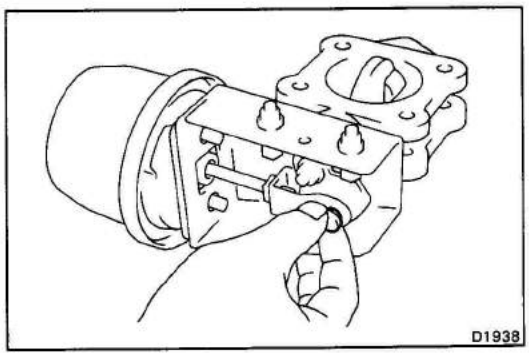


5. IF NECESSARY, ADJUST VALVE BODY CLEARANCE AND OPENING ANGLE

Adjust the adjusting bolts.

Standard clearance: 0.1 – 0.4 mm (0.004 – 0.016 in.)
Opening angle: 90°

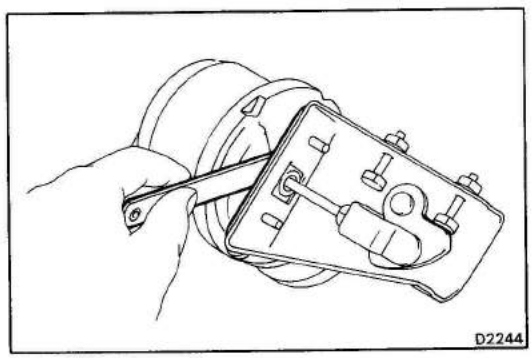
SST 09240-00020



6. ADJUST ROD LENGTH

(a) Install the cylinder assembly to the valve body.

(b) Install the clevis pin to the valve lever.



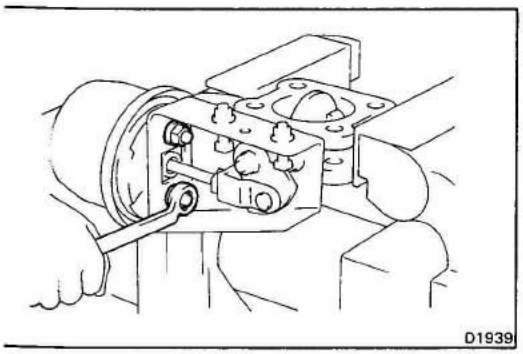
(c) Measure the clearance between the cylinder and insulator No. 1.

Standard clearance: 2 – 5 mm (0.08 – 0.20 in.)

NOTE: Check that the valve lever and adjusting bolt are making contact.

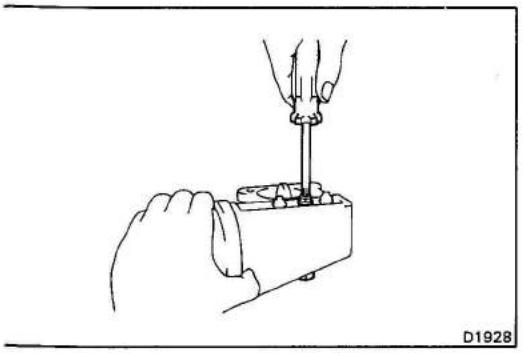
7. IF NECESSARY, ADJUST ROD LENGTH

Loosen the clevis nut and adjust turn the rod.



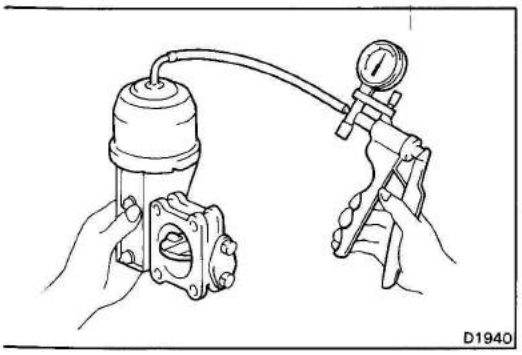
8. **INSTALL VACUUM CYLINDER ASSEMBLY TO BRACKET**

Torque: 130 kg-cm (9 ft-lb, 13 N·m)



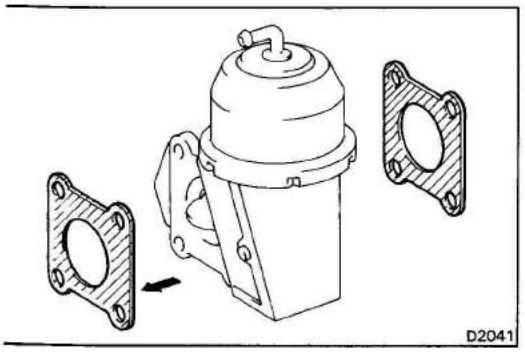
9. **INSTALL EXHAUST VALVE LINK COVER TO BRACKET**

Torque: 55 kg-cm (48 in.-lb, 5.4 N·m)



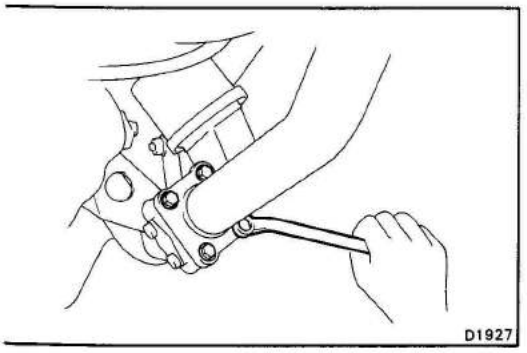
10. **CHECK EXHAUST RETARDER OPERATION**

Apply vacuum to the cylinder and check for operation and vacuum leakage.



11. **INSTALL GASKETS TO VALVE BODY**

Apply liquid sealer to the gasket and install the gasket to the valve body.



INSTALLATION OF EXHAUST RETARDER

(See page BR-89)

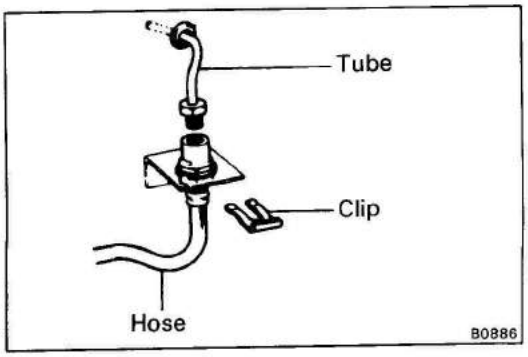
1. **INSTALL EXHAUST RETARDER**

(a) Pull the exhaust pipe rearward and then install the exhaust retarder.

(b) Install the four bolts. Torque it.

Torque: 195 kg-cm (14 ft-lb, 19 N·m)

2. **CONNECT VACUUM HOSE**



BRAKE HOSES AND TUBES

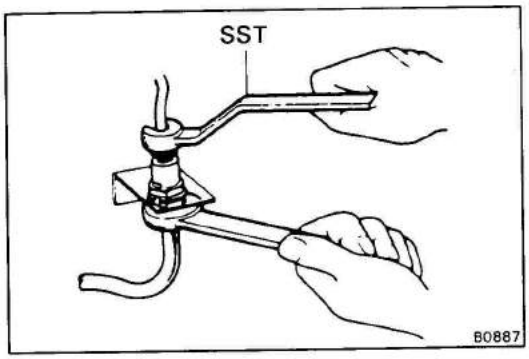
DISCONNECT AND CONNECT HOSE AND TUBE

1. DISCONNECT HOSE AND TUBE

(a) Disconnect the clip.

(b) Using a wrench to hold the hose and SST to hold the tube, disconnect the tube and hose.

SST 09751-36011



2. CONNECT HOSE AND TUBE

(a) Connect the hose and tube by hand.

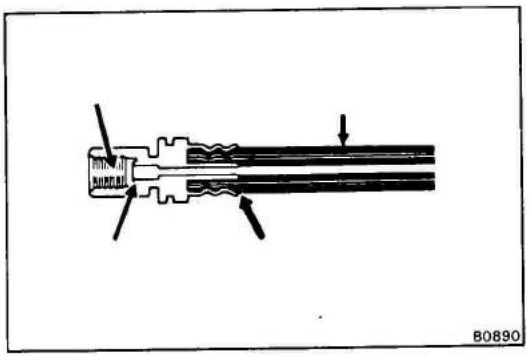
(b) Using a wrench to hold the hose and SST to hold the tube, torque the connection.

SST 09751-36011

Torque: 155 kg-cm (11 ft-lb, 15 N·m)

(c) Install a new hose clip.

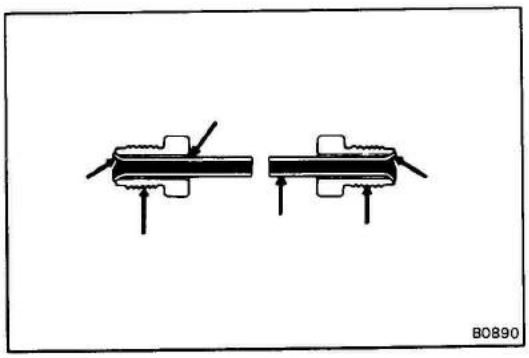
INSPECTION OF BRAKE HOSES AND TUBES



1. INSPECT BRAKE HOSES

(a) Inspect the hose for damage, cracks or swelling.

(b) Inspect the threads for damage.



2. INSPECT BRAKE TUBES

(a) Inspect the tube for damage, cracks, dents or corrosion.

(b) Inspect the threads for damage.