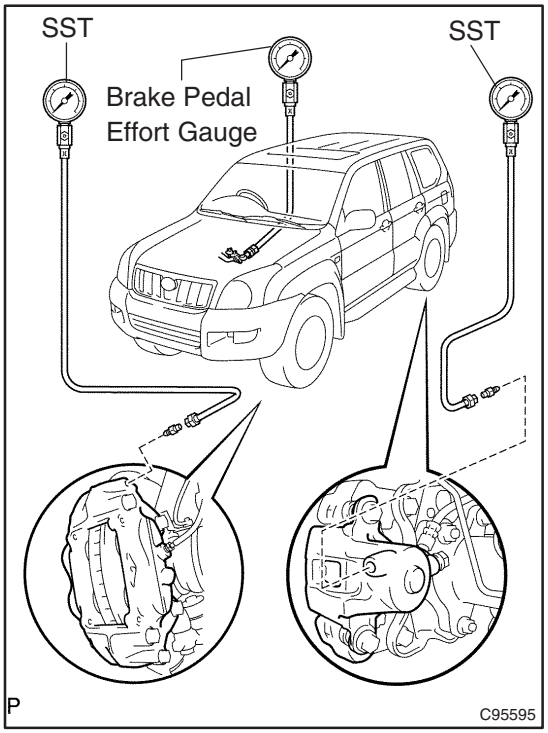
# W/MASTER CYLINDER BRAKE BOOSTER ASSY (W/VSC (1GR–FE/1KD–FTV))(From August, 2004)

321D9–01

## ON–VEHICLE INSPECTION




**1. CHECK BRAKE MASTER CYLINDER FLUID PRESSURE CHANGE**

(a) Inspect the battery voltage.
**Battery voltage: 10 to 14 V**

(b) Turn the ignition switch off and depress the brake pedal more than 40 times.

HINT:
When pressure in the power supply system is released, reaction force becomes light and stroke becomes longer.

(c) Install the LSPV gauge (SST) and brake pedal effort gauge, and bleed air.
SST 09709–29018

(d) When the booster does not operate:
Depress the brake pedal and check fluid pressure.
**At 245 N (25 kgf, 55 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 3,060 kPa (31.2 kgf/cm$^2$, 444 psi) or more | 0 kPa (0 kgf/cm$^2$, 0 psi) |

**At 343 N (35 kgf, 77 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 4,400 kPa (44.9 kgf/cm$^2$, 638 psi) or more | 0 kPa (0 kgf/cm$^2$, 0 psi) |

(e) When the booster operates:
Depress the brake pedal and check fluid pressure.
(1) Turn the ignition switch to the ON position and wait until the pump motor has stopped.
(2) Depress the brake pedal and check fluid pressure.
**At 49 N (5 kgf, 11 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 930 to 2,130 kPa (9.5 to 21.7 kgf/cm$^2$, 135 to 309 psi) | 990 to 2,190 kPa (10.1 to 22.3 kgf/cm$^2$, 144 to 318 psi) |

**At 98 N (10 kgf, 22 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 3,810 to 5,010 kPa (38.9 to 51.1 kgf/cm$^2$, 553 to 727 psi) | 4,450 to 5,650 kPa (45.4 to 57.6 kgf/cm$^2$, 645 to 819 psi) |

**At 147 N (15 kgf, 33 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 6,760 to 7,960 kPa (68.9 to 81.2 kgf/cm$^2$, 980 to 1,155 psi) | 7,950 to 9,150 kPa (81.1 to 93.3 kgf/cm$^2$, 1,153 to 1,327 psi) |

**At 196 N (20 kgf, 44 lbf):**

| Front brake pressure | Rear brake pressure |
|---|---|
| 8,720 to 9,920 kPa (88.9 to 101.2 kgf/cm$^2$, 1,265 to 1,439 psi) | 11,330 to 12,530 kPa (115.5 to 127.8 kgf/cm$^2$, 1,644 to 1,818 psi) |

**2. INSPECT BRAKE MASTER CYLINDER OPERATION**

(a) Inspect the battery voltage.

**Battery voltage: 10 to 14 V**

(b) Turn the ignition switch off and depress the brake pedal more than 20 times.

HINT:

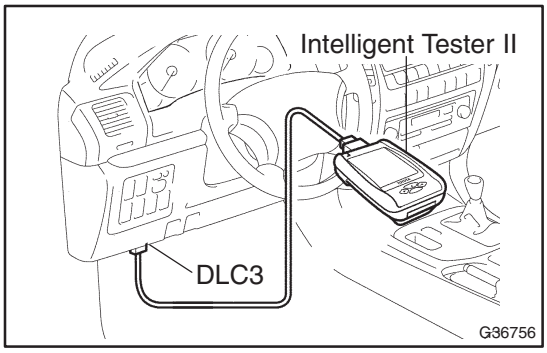
When pressure in the power supply system is released, reaction force becomes light and stroke becomes longer.

(c) Check that the brake pedal becomes light to depress.

If the pedal does not become light to depress, check and replace the brake line and brake master cylinder.

(d) Turn the ignition switch to the ON position and check the pump motor operation noise.

If the pump motor does not operate, check and replace the wire harness and pump motor (see page 32–12).




(e) Connect the Intelligent Tester II to the DLC3.

(f) Turn the ignition switch to the ON position.

(g) Select ”ACTIVE TEST” mode on the Intelligent Tester II.

HINT:

Please refer to the Intelligent Tester II operator’s manual for further details.

(h) Jack up and support the vehicle.

(i) Release the parking brake lever.

(j) Shift the transfer shift lever to ”N” position and check the rear wheels rotating by hand.

(k) Inspect front VSC solenoid (SMCF) operation.

(1) Select ”SRCF (SMCF)” on the Intelligent Tester II.

(2) Turn the ”SRCF (SMCF)” ON with the Intelligent Tester II, depress the brake pedal with stable force and check that the pedal cannot be depressed.

If the pedal can be depressed, replace the brake master cylinder.

**NOTICE:**

**When operating it continuously, set the interval of more than 20 seconds.**

HINT:

To protect the solenoids, the Intelligent Tester II turns OFF automatically 2 sec. after every solenoid has been turned ON.

(3) Release the brake pedal.

(4) When the solenoid is OFF, depress the brake pedal again and check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the brake master cylinder.

(l) Inspect front VSC solenoid (SREA) operation.
(1) Select ”SRCR (SREA)” and ”SRCF (SMCF)” on the Intelligent Tester II.
(2) Turn the ”SRCR (SREA)” and ”SRCF (SMCF)” ON simultaneously with the Intelligent Tester II, then depress the brake pedal with stable force.
(3) When the solenoids are ON, check that the front wheels do not rotate by hand.

If the front wheels rotate, replace the brake master cylinder.

**NOTICE:**

**When operating it continuously, set the interval of more than 20 seconds.**

HINT:

- To protect the solenoids, the Intelligent Tester II turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheel too fast, the fail–safe function is activated and judgement cannot be made properly. Rotate the wheel as slowly as possible.

(4) When the solenoids are OFF, turn the ”SRCF (SMCF)” ON again, and then depress the brake pedal. Then check the front wheels by rotating them by hand.

If the front wheels stop, replace the brake master cylinder.

(5) When the ”SRCF (SMCF)” is OFF, after depressing the brake pedal again check that the brake pedal can be depressed.

If the pedal cannot be depressed, replace the brake master cylinder.

(m) Inspect front ABS solenoid (SFRH) operation.
(1) Select ”SFRH” on the Intelligent Tester II.
(2) Turn the ”SFRH” ON with the Intelligent Tester II, then depress the brake pedal with stable force.
(3) When the solenoid is ON, check the right front wheel by rotating it by hand.

If the right front wheel stops, replace the brake master cylinder.

**NOTICE:**

**When operating it continuously, set the interval of more than 20 seconds.**

HINT:

- To protect the solenoids, the Intelligent Tester II turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheels fast, the fail–safe function is activated and judgement cannot be made properly. Rotate the wheels as slowly as possible.

(4) When the solenoid is OFF, after depressing the brake pedal again check that the right front wheel does not rotate by hand.

If the right front wheel rotates, replace the brake master cylinder.

HINT:

- When rotating the wheels fast, the fail–safe function is activated and judgement cannot be made properly. Rotate the wheels as slowly as possible.

(n) Inspect front ABS solenoid (SFLH) operation.
(1) Select ”SFLH” on the Intelligent Tester II.
(2) Turn the ”SFLH” ON with the Intelligent Tester II, then depress the brake pedal with stable force.
(3) When the solenoid is ON, check the left front wheel by rotating it by hand.

If the left front wheel stops, replace the brake master cylinder.

**NOTICE:**

**When operating it continuously, set the interval of more than 20 seconds.**

HINT:

- To protect the solenoids, the Intelligent Tester II turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheel too fast, the fail–safe function is activated and judgement cannot be made properly. Rotate the wheel as slowly as possible.

(4) When the solenoid is OFF, after depressing the brake pedal again check that the left front wheel does not rotate by hand.

If the left front wheel rotates, replace the brake master cylinder.

(o) Inspect front ABS solenoid (SFRR) operation.

(1) Select ”SFRR” and ”SFRH” on the Intelligent Tester II.

(2) Depress the brake pedal with stable force, then turn the ”SFRR” and ”SFRH” ON simultaneously with the Intelligent Tester II.

(3) When the solenoids are ON, check that the right front wheel by rotating it by hand.

If the right front wheel stops, replace the brake master cylinder.

**NOTICE:**

**When operating it continuously, set the interval of more than 20 seconds.**

HINT:

- To protect the solenoids, the Intelligent Tester II turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheel too fast, the fail–safe function is activated and judgement cannot be made properly. Rotate the wheel as slowly as possible.

(4) When the solenoids are OFF, after depressing the brake pedal again check that the right front wheel does not rotate by hand.

If the right front wheel rotates, replace the brake master cylinder.

(p) Inspect front ABS solenoid (SFLR) operation.

(1) Select ”SFLR” and ”SFLH” on the Intelligent Tester II.

(2) Depress the brake pedal with stable force, then turn the ”SFLR” and ”SFLH” ON simultaneously using the Intelligent Tester II.

(3) When the solenoids are ON, check the left front wheel by rotating it by hand.

If the left front wheel stops, replace the brake master cylinder.

**NOTICE:**

**When operating it continuously, set the interval of more than 20 seconds.**

HINT:

- To protect the solenoids, the Intelligent Tester II turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheel too fast, the fail–safe function is activated and judgement cannot be made properly. Rotate the wheel as slowly as possible.

(4) When the solenoids are OFF, after depressing the brake pedal again check that the left front wheel does not rotate by hand.

If the left front wheel rotates, replace the brake master cylinder.

(q) Inspect rear VSC solenoid (SREC) operation.

(1) Select ”SRMF (SREC)” on the Intelligent Tester II.

(2) Depress the brake pedal with stable force, then turn the ”SRMF (SREC)” ON with the Intelligent Tester II.

(3) Release the brake pedal when the solenoid is on, check that the rear wheels do not rotate by hand.

If the rear wheels rotate, replace the brake master cylinder.

**NOTICE:**

**When operating it continuously, set the interval of more than 20 seconds.**

HINT:

- To protect the solenoids, the Intelligent Tester II turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheel too fast, the fail–safe function is activated and judgement cannot be made properly. Rotate the wheel as slowly as possible.

(4) When the solenoid is OFF, check the rear wheels by rotating by hand.

If the rear wheels stop, replace the brake master cylinder.

(r) Inspect rear VSC solenoid (STR) operation.

(1) Select ”SRMR (STR)” and ”SRMF (SREC)” on the Intelligent Tester II.

(2) Turn the ”SRMR (STR)” and ”SRMF (SREC)” ON simultaneously with the Intelligent Tester II.

(3) When the solenoids are ON, check that the rear wheels do not rotate by hand.

If the rear wheels rotate, replace the brake master cylinder.

**NOTICE:**

**When operating it continuously, set the interval of more than 20 seconds.**

HINT:

- To protect the solenoids, the Intelligent Tester II turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheel too fast, the fail–safe function is activated and judgement cannot be made properly. Rotate the wheel as slowly as possible.

(4) When the solenoids are OFF, turn the ”SRMF (SREC)” ON again, and check the rear wheels by rotating them by hand.

If the rear wheels stop, replace the brake master cylinder.

(5) When the ”SRMF (SREC)” is OFF, depress the brake pedal again check that the rear wheels do not rotate by hand.

If the rear wheels rotate, replace the brake master cylinder.

(s) Inspect rear ABS solenoid (SRRH) operation.

(1) Select ”SRRH” on the Intelligent Tester II.

(2) Turn the ”SRRH” ON with the Intelligent Tester II, depress the brake pedal with stable force.

(3) When the solenoid is ON, check the right rear wheel by rotating it by hand.

If the right rear wheel stops, replace the brake master cylinder.

**NOTICE:**

**When operating it continuously, set the interval of more than 20 seconds.**

HINT:

- To protect the solenoids, the Intelligent Tester II turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheels fast, the fail–safe function is activated and judgement cannot be made properly. Rotate the wheels as slowly as possible.

(4) When the solenoid is OFF, depress the brake pedal again check that the right rear wheel does not rotates by hand.

If the right rear wheel rotates, replace the brake master cylinder.

HINT:

- When rotating the wheels fast, the fail–safe function is activated and judgement cannot be made properly. Rotate the wheels as slowly as possible.

(t) Inspect rear ABS solenoid (SRLH) operation.

(1) Select ”SRLH” on the Intelligent Tester II.

(2) Turn the ”SRLH” ON with the Intelligent Tester II, then depress the brake pedal with stable force.

(3) When the solenoid is ON, check the left rear wheel by rotating it by hand.

If the left rear wheel stops, replace the brake master cylinder.

**NOTICE:**

**When operating it continuously, set the interval of more than 20 seconds.**

HINT:

- To protect the solenoids, the Intelligent Tester II turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheel too fast, the fail–safe function is activated and judgement cannot be made properly. Rotate the wheel as slowly as possible.

(4) When the solenoid is OFF, depress the brake pedal again check that the left rear wheel does not rotates by hand.

If the left rear wheel rotates, replace the brake master cylinder.

(u) Inspect rear ABS solenoid (SRRR) operation.

(1) Select ”SRRR” and ”SRRH” on the Intelligent Tester II.

(2) Depress the brake pedal with stable force, then turn the ”SRRR” and ”SRRH” ON simultaneously with the Intelligent Tester II.

(3) When the solenoids are ON, check that the right rear wheel by rotating it by hand.

If the right rear wheel stops, replace the brake master cylinder.

**NOTICE:**

**When operating it continuously, set the interval of more than 20 seconds.**

HINT:

- To protect the solenoids, the Intelligent Tester II turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheel too fast, the fail–safe function is activated and judgement cannot be made properly. Rotate the wheel as slowly as possible.

(4) When the solenoids are OFF, depress the brake pedal again and check that the right rear wheel does not rotates by hand.

If the right rear wheel rotates, replace the brake master cylinder.

(v) Inspect rear ABS solenoid (SRLR) operation.

(1) Select ”SRLR” and ”SRLH” on the Intelligent Tester II.

(2) Depress the brake pedal with stable force, then turn the ”SRLR” and ”SRLH” ON simultaneously with the Intelligent Tester II.

(3) When the solenoids are ON, check that the left rear wheel by rotating it by hand.

If the left rear wheel stops, replace the brake master cylinder.

**NOTICE:**

**When operating it continuously, set the interval of more than 20 seconds.**

HINT:

- To protect the solenoids, the Intelligent Tester II turns OFF automatically 2 sec. after every solenoid has been turned ON.
- When rotating the wheel too fast, the fail–safe function is activated and judgement cannot be made properly. Rotate the wheel as slowly as possible.

(4) When the solenoids are OFF, depress the brake pedal again and check that the left rear wheel does not rotate by hand.

If the left rear wheel rotates, replace the brake master cylinder.

(w) Lower the vehicle.

(x) Disconnect the Intelligent Tester II.

**3. CHECK BRAKE FLUID LEVEL**

(a) Turn the ignition switch off, depress the brake pedal 20 times or more (until the pedal reaction feels light and pedal stroke becomes longer), and adjust to the MAX level.

(b) When the ignition switch is turned to the ON position, brake fluid is sent to the accumulator and the fluid level decreases by approximately 5 mm from the level when the ignition switch is off (normal).