

## ON-VEHICLE INSPECTION

### 1. INSPECT BRAKE MASTER CYLINDER FLUID PRESSURE CHANGE

- (a) Inspect the battery positive voltage.

**Battery positive voltage:**

**10 to 14 V**

- (b) Turn the ignition switch to OFF, and depress the brake pedal more than 20 times.

HINT:

When pressure in the accumulator is released, the reaction force becomes lighter and the stroke becomes longer.

- (c) Install a LSPV gauge (SST) and brake pedal effort gauge, and bleed the air.

**SST 09709-29018**

- (d) When the booster does not operate:

- (1) Depress the brake pedal and check the fluid pressure.

**At 245 N (25 kgf, 55 lbf)**

Front brake pressure	Rear brake pressure
1,840 kPa (18.8 kgf/cm <sup>2</sup> , 267 psi) or more	0 kPa (0 kgf/cm <sup>2</sup> , 0 psi)

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

Front brake pressure	Rear brake pressure
2,710 kPa (27.6 kgf/cm <sup>2</sup> , 393 psi) or more	0 kPa (0 kgf/cm <sup>2</sup> , 0 psi)

- (e) When the booster operates:

- (1) Turn the ignition switch to ON, and wait until the pump motor has stopped (step A).

HINT:

Pump operating sound can be heard.

- (2) Turn the ignition switch to OFF, and depress the brake pedal more than 20 times (step B).

HINT:

When pressure in the accumulator is released, the reaction force becomes lighter and the stroke becomes longer.

- (3) Repeat step A and B 5 times (step C).

- (4) Turn the ignition switch to ON, and check that the pump stops after approximately 8 to 14 seconds.

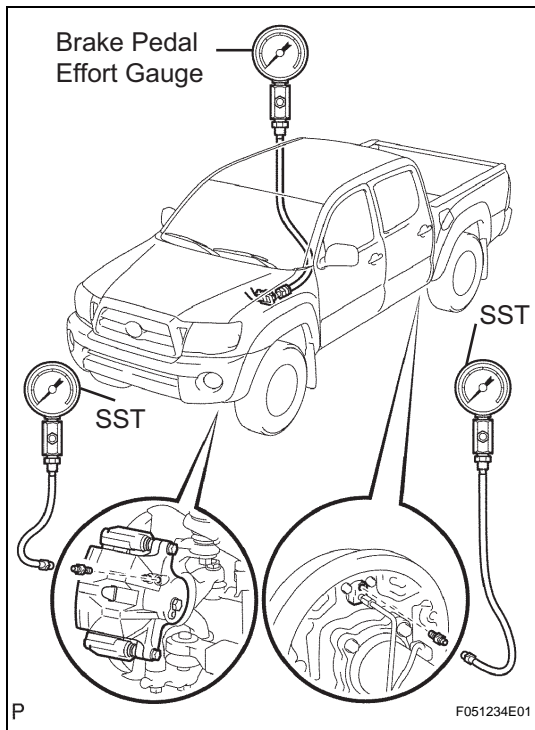
**NOTICE:**

**If the pump does not stop, repeat step C again.**

- (5) Depress the brake pedal and check the fluid pressure.

**At 49 N (5 kgf, 11 lbf)**

Front brake pressure	Rear brake pressure
770 to 1,280 kPa (7.9 to 13.1 kgf/cm <sup>2</sup> , 112 to 186 psi)	800 to 1,330 kPa (8.2 to 13.6 kgf/cm <sup>2</sup> , 116 to 193 psi)



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

Front brake pressure	Rear brake pressure
2,650 to 3,590 kPa (27.0 to 36.6 kgf/cm <sup>2</sup> , 384 to 521 psi)	2,680 to 3,630 kPa (27.3 to 37.0 kgf/cm <sup>2</sup> , 389 to 526 psi)

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

Front brake pressure	Rear brake pressure
4,680 to 5,720 kPa (47.7 to 58.3 kgf/cm <sup>2</sup> , 679 to 830 psi)	4,710 to 5,760 kPa (48.0 to 58.7 kgf/cm <sup>2</sup> , 683 to 835 psi)

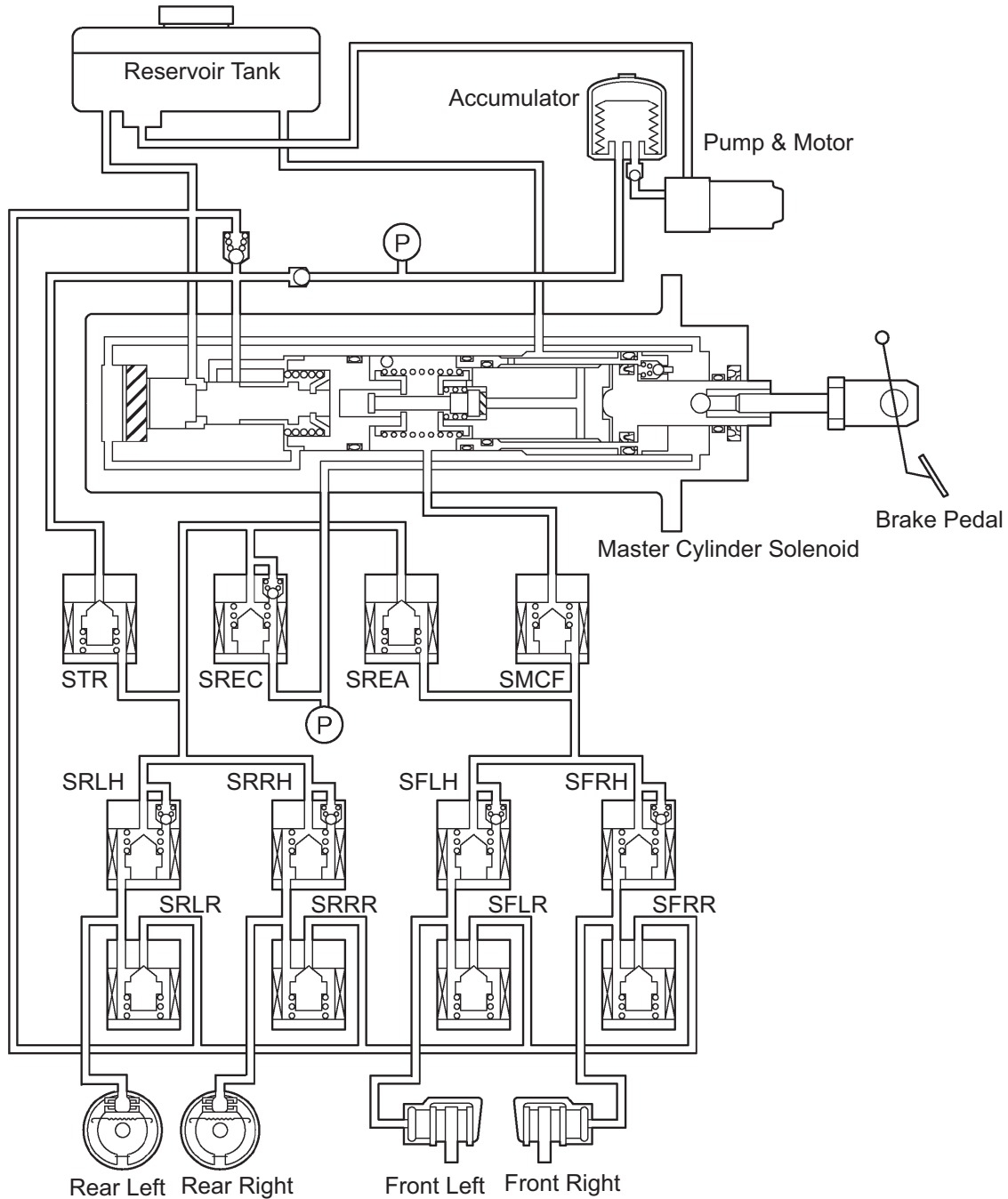
**At 196 N (20 kgf, 44 lbf)**

Front brake pressure	Rear brake pressure
6,610 to 7,680 kPa (67.4 to 78.3 kgf/cm <sup>2</sup> , 959 to 1,114 psi)	6,640 to 7,720 kPa (67.7 to 78.7 kgf/cm <sup>2</sup> , 963 to 1,120 psi)

**2. INSPECT BRAKE MASTER CYLINDER OPERATION**

- (a) Inspect the battery positive voltage.  
**Battery positive voltage:**  
**10 to 14 V**
- (b) Turn the ignition switch to OFF, and depress the brake pedal more than 20 times.  
HINT:  
When pressure in the accumulator is released, the reaction force becomes lighter and the stroke becomes longer.
- (c) Check that the brake pedal becomes easy to depress.  
If the pedal does not become easy to depress, check and replace the brake line and hydraulic brake booster.
- (d) Turn the ignition switch to ON 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 [BR-48](#)).
- (e) Connect the intelligent tester.
  - (1) Connect the intelligent tester to the DLC3.
  - (2) Turn the ignition switch to ON.
  - (3) Select "ACTIVE TEST" mode on the intelligent tester.  
HINT:
    - Refer to the intelligent tester operator manual for further details.
    - To protect the solenoids, intelligent tester turns off automatically 2 seconds after every solenoid has been turned on.

(f) Check the master cylinder solenoid operation.



BR

Y

F052425E01

Inspection Order (Step)	SOL Selected By Active Test	SOL To Be Activated
D	SRCF (SA1)	SMCF
E	SRCF (SA1) and SRCR (SA2)	SREA and SMCF

Inspection Order (Step)	SOL Selected By Active Test	SOL To Be Activated
F	SFRH	SFRH
G	SFLH	SFLH
H	SFRR & SFRH	SFRR and SFRH
I	SFLR & SFLH	SFLR and SFLH
J	SRMF (SMCF, SA3)	SREC
K	SRMF (SMCF, SA3) and SRMR (SMCR, STR)	STR and SREC
L	SRRH	SRRH
M	SRLH	SRLH
N	SRH & SRR	SRRR and SRRH
O	SRLR & SRLH	SRLR and SRLH

- (g) Inspect front VSC solenoid (SMCF) operation (step D).

HINT:

- ON: Activate SMCF and check that the brake pedal cannot be depressed (the pedal feels tight).
- OFF: Deactivate SMCF and check that the brake pedal can be depressed.

- (1) Select "SRCF (SA1)" on the intelligent tester.

- (2) Turn the "SRCF (SA1)" on by the intelligent tester, then depress the brake pedal with stable force and check that the pedal cannot be depressed.

If the pedal can be depressed, replace the hydraulic brake booster.

HINT:

To protect the solenoid, intelligent tester turns off automatically 2 seconds after every solenoid has been turned on.

**NOTICE:**

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

- (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 can be depressed, replace the hydraulic brake booster.

- (h) Prepare the vehicle.

- (1) Jack up and support the vehicle.
- (2) Release the parking brake pedal (lever).
- (3) Shift the shift lever to the "N" position and check the rear wheels by rotating them by hand.

- (i) Inspect front VSC solenoid (SREA) operation (step E).

HINT:

- ON: Activate SREA and SMCF, depress the brake pedal, and then check that the front wheels do not rotate.

- OFF: Deactivate SREA and SMCF. Reactivate SMCF, depress the brake pedal, and then check that the front wheels rotate.
- (1) Select "SRCR (SA2)" and "SRCF (SMCF)" on the intelligent tester.
- (2) Turn the "SRCR (SA2)" and "SRCF (SMCF)" on simultaneously by the intelligent tester, 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.

**HINT:**

- To protect the solenoids, intelligent tester turns off automatically 2 seconds after every solenoid has been turned on.
- When rotating the wheels fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheels as slowly as possible.

**NOTICE:**

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

- (4) When the solenoids are off, turn the "SRCF (SMCF)" on again, then depress the brake pedal and check the front wheels by rotating them by hand.  
If front wheels stop, replace the hydraulic brake booster.
- (5) When the "SRCF (SMCF)" is off, depress the brake pedal again and check that the brake pedal can be depressed.  
If the pedal can be depressed, replace the hydraulic brake booster.
- (j) Inspect front ABS solenoid (SFRH) operation (step F).  
**HINT:**
  - ON: Activate SFRH, depress the brake pedal, and then check that the right front wheel rotates.
  - OFF: Deactivate SFRH, depress the brake pedal, and then check that the front right wheel does not rotate.
- (1) Select "SFRH" on the intelligent tester.
- (2) Turn the "SFRH" on by the intelligent tester, 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 hydraulic brake booster.

**HINT:**

- To protect the solenoid, intelligent tester turns off automatically 2 seconds after every solenoid has been turned on.

- When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.

**NOTICE:**

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

- (4) When the solenoid is off, depress the brake pedal again and check that the right front wheel does not rotate by hand.  
If the right front wheel rotates, replace the hydraulic brake booster.
- (k) Inspect front ABS solenoid (SFLH) operation (step G).
- HINT:
- ON: Activate SFLH, depress the brake pedal, and then check that the left front wheel rotates.
  - OFF: Deactivate SFLH, depress the brake pedal, and then check that the front left wheel does not rotate.
- (1) Select "SFLH" on the intelligent tester.
  - (2) Turn the "SFLH" on by the intelligent tester, 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 hydraulic brake booster.
- HINT:
- To protect the solenoid, intelligent tester turns off automatically 2 seconds after every solenoid has been turned on.
  - When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.
- NOTICE:**
- When operating it continuously, set the interval of more than 20 seconds.**
- (4) When the solenoid is off, depress the brake pedal again and check that the left front wheel does not rotate by hand.  
If the left front wheel rotates, replace the hydraulic brake booster.
- (l) Inspect front ABS solenoid (SFRR) operation (step H).
- HINT:
- ON: Depress the brake pedal, activate SFRR and SFRH, and then check that the right front wheel rotates.
  - OFF: Deactivate SFRR and SFRH, depress the brake pedal, and then check that the right front wheel does not rotate.
- (1) Select "SFRR & SFRH" on the intelligent tester.

(2) Depress the brake pedal with stable force, then turn the "SFRR & SFRH" on simultaneously by the intelligent tester.

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

If the right front wheel stops, replace the hydraulic brake booster.

HINT:

- To protect the solenoids, intelligent tester turns off automatically 2 seconds after every solenoid has been turned on.
- When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.

**NOTICE:**

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

(4) When the solenoids are off, depress the brake pedal again and check that the right front wheel does not rotate by hand.

If the right front wheel rotates, replace the hydraulic brake booster.

(m) Inspect front ABS solenoid (SFLR) operation (step l).

HINT:

- ON: Depress the brake pedal, activate SFLR and SFLH, and then check that the left front wheel rotates.
- OFF: Deactivate SFLR and SFLH, depress the brake pedal, and then check that the left front wheel does not rotate.

(1) Select "SFLR & SFLH" on the intelligent tester.

(2) Depress the brake pedal with stable force, then turn the "SFLR & SFLH" on simultaneously by the intelligent tester.

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

If the left front wheel stops, replace the hydraulic brake booster.

HINT:

- To protect the solenoids, intelligent tester turns off automatically 2 seconds after every solenoid has been turned on.
- When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.

**NOTICE:**

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

- (4) When the solenoids are off, depress the brake pedal again and check that the left front wheel does not rotate by hand.  
If the left front wheel rotates, replace the hydraulic brake booster.
- (n) Inspect rear VSC solenoid (SREC) operation (step J).  
HINT:
- ON: Depress the brake pedal, activate SREC. Release the brake pedal and check that the rear wheels do not rotate.
  - OFF: Deactivate SREC and check that the rear wheels rotate.
- (1) Select "SRMF (SMCF, SA3)" on the intelligent tester.
- (2) Depress the brake pedal with stable force, then turn the "SRMF (SMCF, SA3)" on by the intelligent tester.
- (3) Release the brake pedal when the solenoid is on, and check that the rear wheels do not rotate by hand.  
If the rear wheels rotate, replace the hydraulic brake booster.  
HINT:
- To protect the solenoids, intelligent tester turns off automatically 2 seconds after every solenoid has been turned on.
  - When rotating the wheels fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheels as slowly as possible.
- NOTICE:**  
**When operating it continuously, set the interval of more than 20 seconds.**
- (4) When the solenoid is off, check the rear wheels by rotating them by hand.  
If the rear wheels stop, replace the hydraulic brake booster.
- (o) Inspect rear VSC solenoid (STR) operation (step K).  
HINT:
- ON: Activate STR and SREC, then check that the rear wheels do not rotate.
  - OFF: Deactivate STR and SREC. Reactivate SREC and check that the rear wheels rotate.
- (1) Select "SRMR (SMCR, STR)" on the intelligent tester.
- (2) Turn the "SRMR (SMCR, STR)" on simultaneously by the intelligent tester.
- (3) When the solenoids are on, check that the rear wheels do not rotate by hand.  
If the rear wheels rotate, replace the hydraulic brake booster.



**HINT:**

- To protect the solenoids, intelligent tester turns off automatically 2 seconds after every solenoid has been turned on.
- When rotating the wheels fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheels as slowly as possible.

**NOTICE:**

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

- (4) When the solenoids are off, check the rear wheels by rotating them by hand.  
If the rear wheels stop, replace the hydraulic brake booster.
  - (5) When the "SRMF (SREC)" is off, depress the brake pedal again and check that the rear wheels do not rotate by hand.  
If the rear wheels rotate, replace the hydraulic brake booster.
- (p) Inspect rear ABS solenoid (SRRH) operation (step L).

**HINT:**

- ON: Activate SRRH, depress the brake pedal, and then check that the right rear wheel rotates.
  - OFF: Deactivate SRRH, depress the brake pedal, and then check that the right rear wheel does not rotate.
- (1) Select "SRRH" on the intelligent tester.
  - (2) Turn the "SRRH" on by the intelligent tester, then 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 hydraulic brake booster.

**HINT:**

- To protect the solenoids, intelligent tester turns off automatically 2 seconds after every solenoid has been turned on.
- When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.

**NOTICE:**

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

- (4) When the solenoid is off, depress the brake pedal again and check that the right rear wheel does not rotate by hand.  
If the right rear wheel rotates, replace the hydraulic brake booster.

- (q) Inspect front ABS solenoid (SRLH) operation (step M).
- HINT:
- ON: Activate SRLH, depress the brake pedal, and then check that the left rear wheel rotates.
  - OFF: Deactivate SRLH, depress the brake pedal, and then check that the left rear wheel does not rotate.
- (1) Select "SRLH" on the intelligent tester.
  - (2) Turn the "SRLH" on by the intelligent tester, 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 hydraulic brake booster.
- HINT:
- To protect the solenoid, intelligent tester turns off automatically 2 seconds after every solenoid has been turned on.
  - When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.
- NOTICE:**  
**When operating it continuously, set the interval of more than 20 seconds.**
- (4) When the solenoid is 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 hydraulic brake booster.
- (r) Inspect rear ABS solenoid (SRRR) operation (step N).
- HINT:
- ON: Depress the brake pedal, activate SRRR and SRRH, and then check that the right rear wheel rotates.
  - OFF: Deactivate SRRR and SRRH, depress the brake pedal, and then check that the right rear wheel does not rotate.
- (1) Select "SRH & SRR" on the intelligent tester.
  - (2) Depress the brake pedal with stable force, then turn the "SRH & SRR" on simultaneously by the intelligent tester.
  - (3) When the solenoids are on, check the right rear wheel by rotating it by hand.  
If the right rear wheel stops, replace the hydraulic brake booster.
- HINT:
- To protect the solenoids, intelligent tester turns off automatically 2 seconds after every solenoid has been turned on.

- When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.

**NOTICE:**

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

- (4) When the solenoids are off, depress the brake pedal again and check that the right rear wheel does not rotate by hand.  
If the right rear wheel rotates, replace the hydraulic brake booster.

- (s) Inspect rear ABS solenoid (SRLR) operation (step O).

**HINT:**

- ON: Depress the brake pedal, activate SRLR and SRLH, and then check that the left rear wheel rotates.
- OFF: Deactivate SRLR and SRLH, depress the brake pedal, and then check that the left rear wheel does not rotate.

- (1) Select "SRLR & SRLH" on the intelligent tester.

- (2) Depress the brake pedal with stable force, then turn the "SRLR & SRLH" on simultaneously by the intelligent tester.

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

If the left rear wheel stops, replace the hydraulic brake booster.

**HINT:**

- To protect the solenoids, intelligent tester turns off automatically 2 seconds after every solenoid has been turned on.
- When rotating the wheel fast, the fail-safe function is activated and judgement cannot be made properly. So rotate the wheel as slowly as possible.

**NOTICE:**

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

- (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 hydraulic brake booster.

- (t) Lower the vehicle.

- (u) Disconnect the intelligent tester.