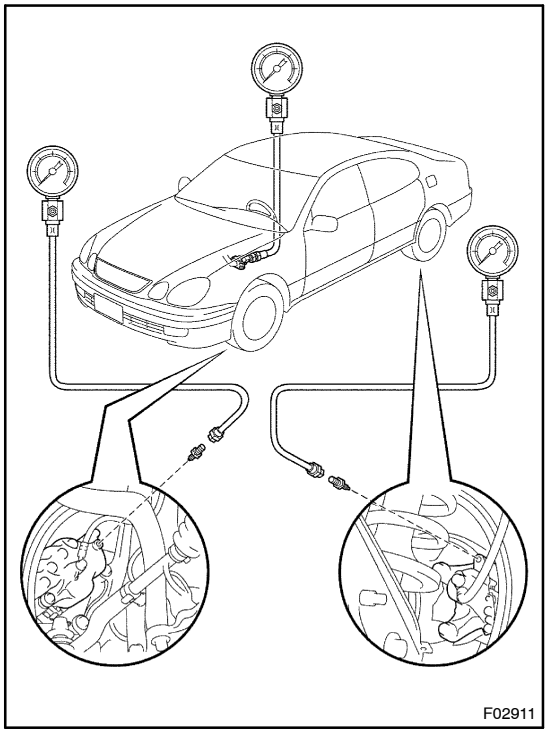


HYDRAULIC BRAKE BOOSTER

BR0K7–02

ON–VEHICLE INSPECTION

1. HYDRAULIC BRAKE BOOSTER OPERATION INSPECTION

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

(b) Turn the ignition switch OFF, depress the brake pedal more than 40 times.

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

(d) When 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
1,470 kPa (15 kgf/cm^2, 213 psi) or more	0 kPa (0 kgf/cm^2, 0 psi)

At 343 N (35 kgf, 77 lbf):

Front brake pressure	Rear brake pressure
2,059 kPa (21 kgf/cm^2, 299 psi) or more	0 kPa (0 kgf/cm^2, 0 psi)

(e) When booster operate.
(1) Turn the ignition switch ON 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
1,255 – 1,814 kPa (12.8 – 18.5 kgf/cm^2, 182 – 263 psi)	1,285 – 2,148 kPa (13.1 – 21.9 kgf/cm^2, 186 – 311 psi)

At 98 N (10 kgf, 22 lbf):

Front brake pressure	Rear brake pressure
2,765 – 4,021 kPa (28.2 – 41.0 kgf/cm^2, 401 – 583 psi)	3,128 – 4,482 kPa (31.9 – 45.7 kgf/cm^2, 454 – 650 psi)

At 147 N (15 kgf, 33 lbf):

Front brake pressure	Rear brake pressure
4,266 – 6,139 kPa (43.5 – 62.6 kgf/cm^2, 619 – 890 psi)	4,599 – 6,541 kPa (46.9 – 66.7 kgf/cm^2, 667 – 949 psi)

At 196 N (20 kgf, 44 lbf):

Front brake pressure	Rear brake pressure
5,982 – 8,100 kPa (61.0 – 82.6 kgf/cm^2, 868 – 1,175 psi)	6,296 – 8,414 kPa (64.2 – 85.8 kgf/cm^2, 913 – 1,220 psi)

2. IN CASE OF USING HAND–HELD TESTER

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

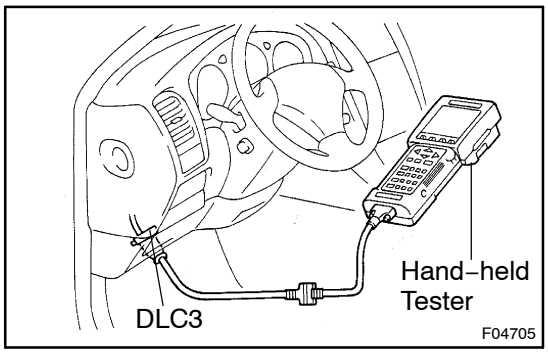
(b) Turn the ignition switch OFF, depress the brake pedal more than 40 times.

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

If the pedal does not become to be heavy to depress, check and replace the brake line and hydraulic brake booster.

(d) Turn the ignition switch ON, check the pump motor operation noise.

If the pump motor does not operate, check and replace the wire harness and pump motor.



(e) Connect the hand–held tester.
(1) Connect the hand–held tester to the DLC3.
(2) Turn the ignition switch ON.
(3) Select the ”ACTIVE TEST” mode on the hand–held tester.

HINT:

- Please refer to the hand–held tester operator’s manual for further details.
- To protect the solenoids, hand–held tester turns OFF automaticaly 2 secs. after every solenoid has been turned ON.

(f) Inspect the front TRC & VSC solenoid operation.
(1) Select ”SA1” and ”SA2” on the hand–held tester.
(2) With ”SA1” and ”SA2” turned ON simultaneously with the hand–held tester, depress the brake pedal with stable force and check that the pedal cannot be depressed.

HINT:

To protect the solenoids, hand–held tester turns OFF automatically 2 secs. after has been turned ON.

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

NOTICE:

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

(3) Once, release the brake pedal.

(4) When the solenoids are OFF, after depressing the pedal again and check that the pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(g) Inspect the front ABS solenoid operation.

(1) Select "SFRH" and "SFLH" on the hand–held tester.

(2) With "SFRH" and "SFLH" turned ON simultaneously with the hand–held tester, depress the brake pedal with stable force and check that the pedal cannot be depressed.

HINT:

To protect the solenoids, hand–held tester turns OFF automatically 2 secs. after has been turned ON.

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

(3) When the solenoids are OFF, check that the pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(4) Once, release the brake pedal. After depressing and holding the pedal with stable force, turn the SFRH and SFRR solenoids ON simultaneously.

HINT:

To protect the solenoids, hand–held tester turns OFF automaticaly 2 secs. after has been turned ON.

(5) When the solenoids are OFF, check that the pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(6) Once, release the brake pedal. After depressing the pedal with stable force, turn the SFLH and SFLR solenoids ON simultaneously.

HINT:

To protect the solenoids, hand–held tester turns OFF automaticaly 2 secs. after has been turned ON.

(7) When the solenoids are OFF, check that the pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(h) Jack up and support the vehicle.

(i) Release the parking brake pedal.

(j) Inspect the rear TRC & VSC solenoid operation.

(1) Select the "SA3" and "STR" on the hand–held tester.

(2) Turn the "SA3" and "STR" ON simultaneously with the hand–held tester, and check that the rear wheels by stopping them by hand.

HINT:

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.

If the rear wheels rotate, replace the hydraulic brake booster.

(3) Turn the "SA3" and "STR" OFF simultaneously, and check that the rear wheels by rotating them by hand.

HINT:

- To protect the solenoids, hand–held tester turns OFF automaticaly 2 secs. after 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 secs.

If the rear wheels stop, replace the hydraulic brake booster.

(k) Inspect the right rear ABS solenoid.

(1) Select the "SA3", "STR" and "SRRH", on the hand–held tester.

(2) Turn the "SA3", "STR" and "SRRH" ON simultaneously with the hand–held tester, and check that the right rear wheel by rotating them by hand.

HINT:

- To protect the solenoids, hand–held tester turns OFF automaticaly 2 secs. after 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.
- When solenoid is OFF, the wheel might stop temporarily. However if the wheel rotates again, the function works normally.

If the rear wheels stop, replace the hydraulic brake booster.

(3) Turn the "SA3", "STR" and "SRRH" OFF, and check that the rear wheel by stopping them by hand.

HINT:

- To protect the solenoids, hand–held tester turns OFF automaticaly 2 secs. after 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.

If the rear wheels rotate, replace the hydraulic brake booster.

(4) Depress the pedal with stable force, then turn the "SRRH" and "SRRR" ON simultaneously.

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

(l) Inspect the left rear ABS solenoid operation.
  (1) Select the ”SA3”, ”STR” and ”SRLH” on the hand–held tester.
  (2) Turn the ”SA3”, ”STR” and ”SRLH” ON with hand–held tester, and check that the left rear wheel by rotating them by hand.

HINT:
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.
If the rear wheels stop, replace the hydraulic brake booster.

  (3) Turn the ”SA3”, ”STR” and ”SRLH” OFF and check that the rear wheels by rotating them by hand.

HINT:
- To protect the solenoids, hand–held tester turns OFF automaticaly 2 secs. after 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.
- When solenoid is OFF, the wheel might stop temporarily. However if the wheel rotates again, the function works normally.

If the rear wheels rotate, replace the hydraulic brake booster.

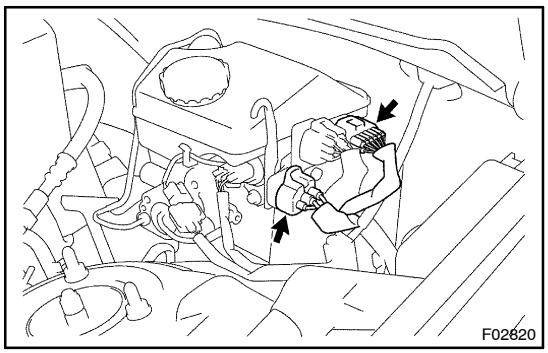
  (4) Depress the pedal with stable force, then turn the ”SRLH” and ”SRLR” ON simultaneously.

HINT:
To protect the solenoids, hand–held tester turns OFF automaticaly 2 secs. after has been turned ON.

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

HINT:
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.

(m) Lower the vehicle.
(n) Disconnect the hand–held tester.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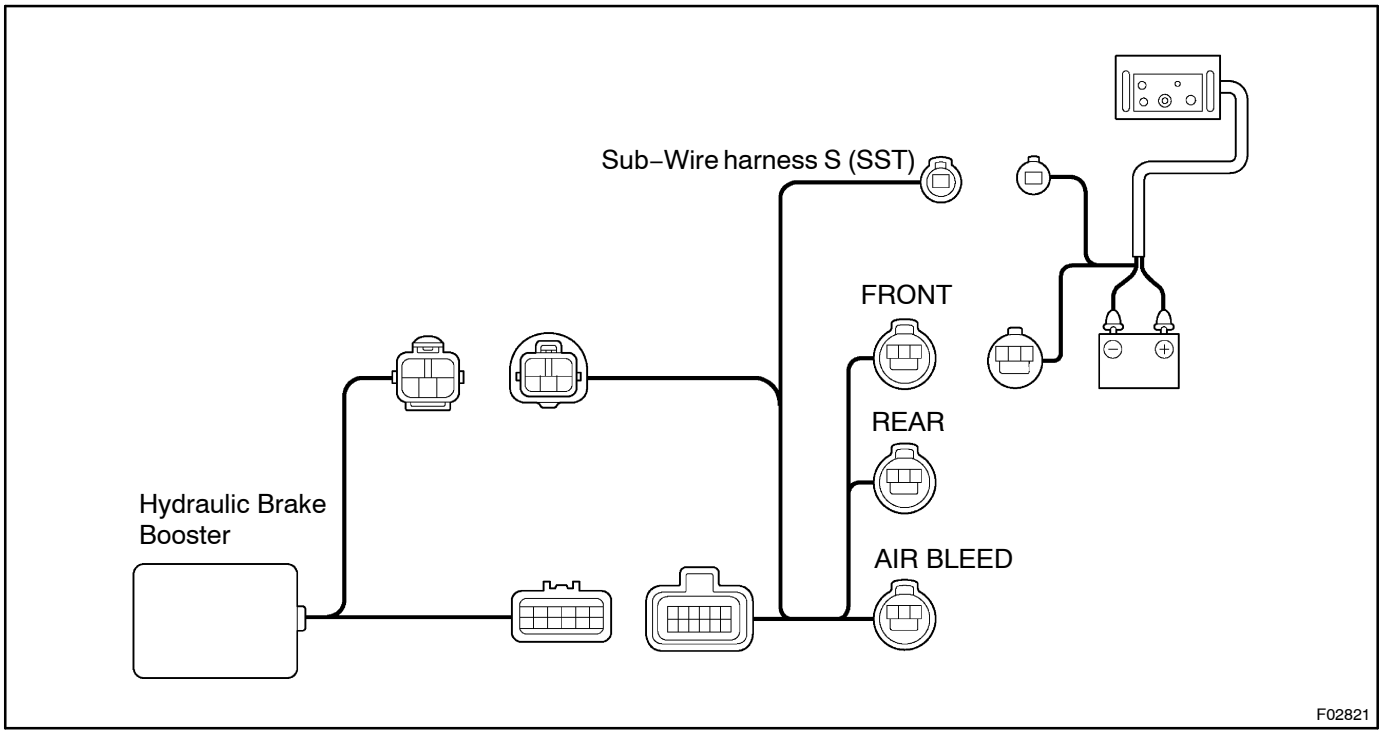
3. IN CASE OF USING ABS ACTUATOR CHECKER

(a) Inspect the battery voltage.
Battery voltage: 10 – 14 V
(b) Disconnect the 2 connectors from hydraulic brake booster.

(c) Connect the actuator checker (SST) to the hydraulic brake booster side wire harness via the sub–wire harness (SST), as shown in the chart below.
SST 09990–00150, 09990–00480

HINT:
Connect the connector with the label of "FRONT" attached to the connector of actuator checker.

(d) Connect the red cable of the checker to the battery positive (+) terminal and the black cable to the negative (–) terminal.



(e) Place "SHEET G" (SST) of "FRONT" on actuator checker.
SST 09990–00240

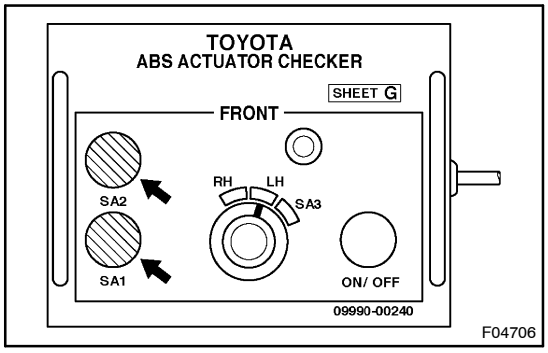
(f) Turn the ignition switch OFF, depress the brake pedal more than 40 times.

(g) Check that the brake pedal becomes heavy to depress.

If the pedal does not become to be heavy to depress, check and replace the brake line and hydraulic brake booster.

(h) Turn the ignition switch ON, check the pump motor operation noise.

If the pump motor does not operate, check and replace the wire harness and pump motor.



(i) Inspect the front TRC & VSC solenoid operation.

(1) Push in and hold the "SA1" and "SA2" switches simultaneously, depress strongly and hold the brake pedal with stable force.

NOTICE:

Do not keep the "SA1" and "SA2" pushed down for more than 10 seconds. When operating it continuously, set the interval of more than 20 seconds.

(2) Check that the brake pedal cannot be depressed.

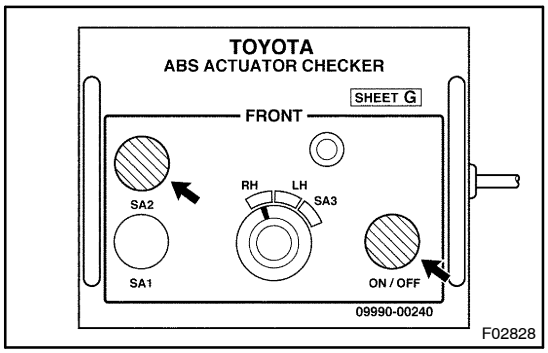
If the pedal can be depressed, replace the hydraulic brake booster.

(3) Release the "SA1" switch and check that the pedal can be depressed.

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

(4) Release the "SA2" switch and check that the pedal can be depressed.

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



(j) Inspect the right front ABS solenoid operation.

(1) Turn the selector switch to "RH" position.

(2) Push and hold in the MAIN push switch and "SA2" switch simultaneously depress and hold the brake pedal with stable force.

NOTICE:

Do not keep the MAIN push switch and "SA2" switch pushed down for more than 10 seconds. When operating it continuously, set the interval of more than 20 seconds.

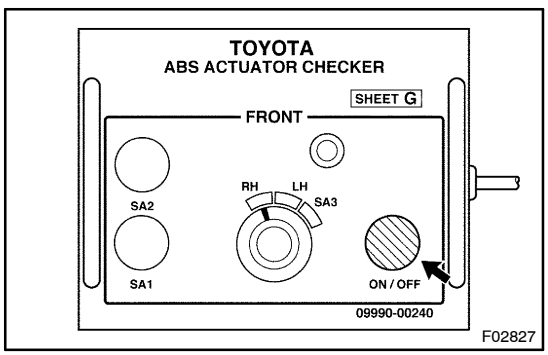
(3) Check that the brake pedal cannot be depressed.

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

(4) Release the MAIN push switch and "SA2" switch simultaneously and check that the pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(5) Release the brake pedal.



(6) Depress and hold the brake pedal with stable force, push and hold in MAIN push switch.

NOTICE:

Do not keep the MAIN push switch pushed down for more than 10 seconds. When operating it continuously, set the interval of more than 20 seconds.

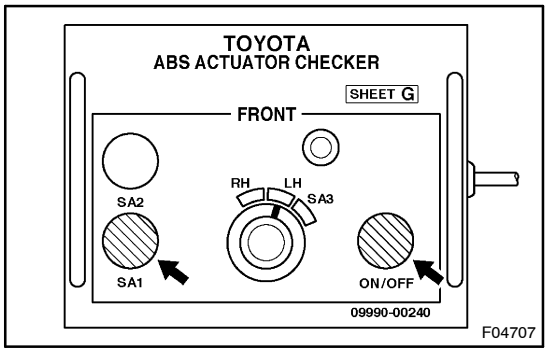
(7) Check that the brake pedal cannot be depressed.

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

(8) Release the MAIN push switch and check that the pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(9) Release the brake pedal.



(k) Inspect the left front ABS solenoid operation.

(1) Turn the selector switch to "LH" position.

(2) Push and hold in the MAIN push switch and "SA1" switch simultaneously, depress and hold the brake pedal with stable force.

NOTICE:

Do not keep the MAIN push switch and "SA1" switch pushed down for more than 10 seconds. When operating it continuously, set the interval of more than 20 seconds.

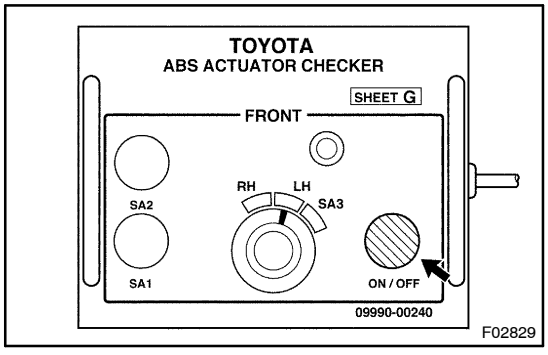
(3) Check that the brake pedal cannot be depressed.

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

(4) Release the MAIN push switch and "SA1" switch simultaneously, and check that the pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

(5) Release the brake pedal.



(6) Depress and hold the brake pedal with stable force, push and hold in MAIN push switch.

NOTICE:

Do not keep the MAIN push switch pushed down for more than 10 seconds. When operating it continuously, set the interval of more than 20 seconds.

(7) Check that the brake pedal cannot be depressed.

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

(8) Release the MAIN push switch and check that the pedal can be depressed.

If the pedal cannot be depressed, replace the hydraulic brake booster.

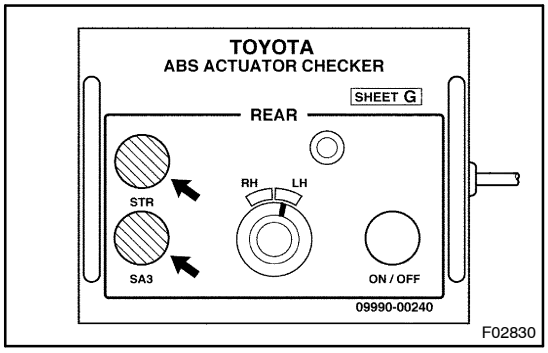
(9) Release the brake pedal.

(l) Turn the ignition switch OFF, then reconnect the connector of sub–wire harness from the one with label of "FRONT" to "REAR".

(m) Place "SHEET G" of "REAR" on the actuator checker.

(n) Jack up and support the vehicle.

(o) Start the engine and run it at idle.



(p) Inspect the rear TRC & VSC solenoid.
(1) Release the parking brake pedal and shift the shift lever to ”L” position.
(2) Push and hold the ”SA3” switch and ”STR” switch simultaneously.

NOTICE:

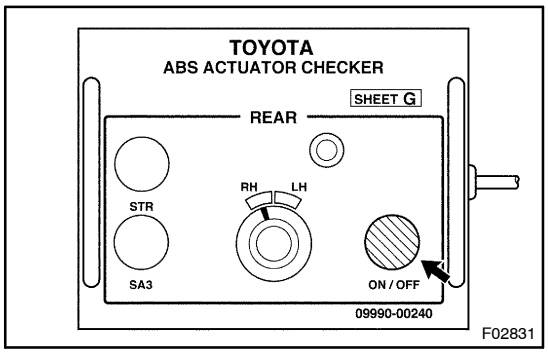
- **Do not keep the ”STR” switch pushed down for more than 10 seconds.**
- **Do not keep the ”SA3” switch pushed down for more than 5 seconds.**
- **When operating it continuously, set the interval of more than 20 seconds.**

(3) Check that the rear wheels stop.

If the rear wheels rotate, replace the hydraulic brake booster.

(4) Release the ”SA3” switch and ”STR” switch simultaneously.
(5) Check that the rear wheels rotate.

If the rear wheels stop, replace the hydraulic brake booster.



(q) Inspect the right rear ABS solenoid.
(1) Turn the selector switch to ”RH” position.
(2) Depress the brake pedal several times the release the pedal after the pump has begun to operate, and wait until the pump stops.
(3) Turn the ignition switch OFF.
(4) With push and hold in the MAIN push switch, depress the pedal with force of 196 N (20 kgf, 44 lbf) and hold it 6 times for 10 secs.

NOTICE:

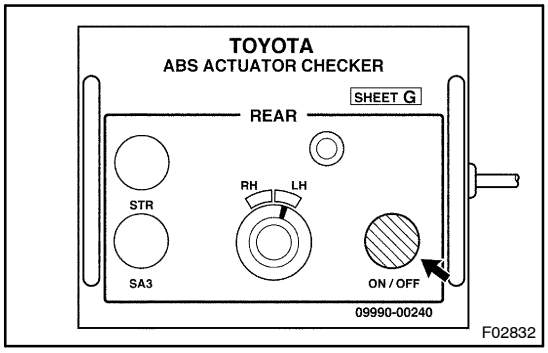
When operating it continuously, set the interval of more than 20 seconds.

(5) Check that pedal is not hard to depress.

If pedal is hard to depress, replace the hydraulic brake booster.

(6) Start the engine and run it at idle.
(7) Depress the brake pedal.
(8) Release the parking brake pedal and shift the shift lever to ”L” position.
(9) Once, release the brake pedal. After depressing the brake pedal with stable force, then push and hold MAIN push switch.
(10) Check that the right rear wheel rotate.

If the right rear wheels stop, replace the hydraulic brake booster.



(r) Inspect the left rear ABS solenoid.
(1) Turn the selector switch to "LH" position.
(2) Depress the brake pedal several times then release the pedal after the pump has begun to operate, and wait until the pump stops.
(3) Turn the ignition switch OFF.
(4) With push and hold in the MAIN push switch, depress the pedal with force of 196 N (20 kgf, 44 lbf) and hold it 6 times for 10 secs.

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

(5) Check that pedal is not hard to depress.

If pedal is hard to depress, replace the hydraulic brake booster.

(6) Start the engine and run it at idle.
(7) Depress the brake pedal.
(8) Release the parking brake pedal and shift the shift lever to "L" position.
(9) Once, release the brake pedal. After depressing the brake pedal with stable force, then push and hold MAIN push switch.
(10) Check that the left rear wheel rotate.

If the left rear wheels stop, replace the hydraulic brake booster.

(s) Stop the engine and lower the vehicle.
(t) Remove the "SHEET G" (SST) and disconnect the actuator checker (SST) and sub–wire harness (SST) from the hydraulic brake booster.
SST 09990–00150, 09990–00240, 09990–00480
(u) Connect the 2 connectors to the actuator.
(v) Clear the DTC (See page DI–210).