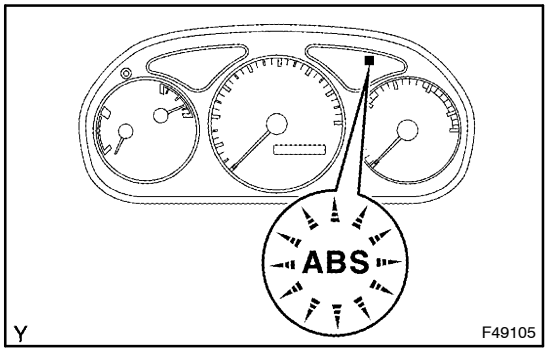
05L2P–01

PRE–CHECK

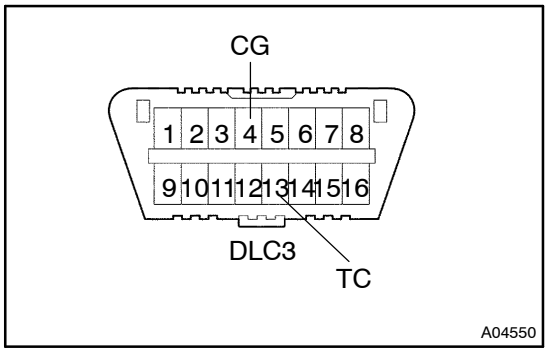
1. DIAGNOSIS SYSTEM

(a) Check the ABS warning lamp.
When the ignition switch is turned ON, check that the ABS warning lamp illuminates for 3 seconds.

HINT:
If the indicator check result is abnormal, proceed to the trouble-shooting for the ABS warning lamp circuit (see page 05–247 or 05–250).



(b) When not using the hand–held tester:
Check the DTC.
(1) Using SST, connect terminals TC and CG of the DLC3.
SST 09843–18040
(2) Turn the ignition switch ON.



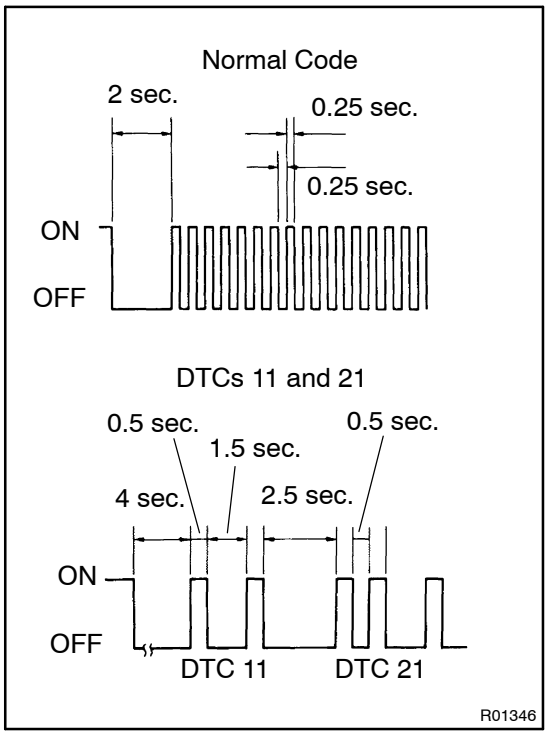
(3) Read the DTC from the ABS warning lamp on the combination meter.

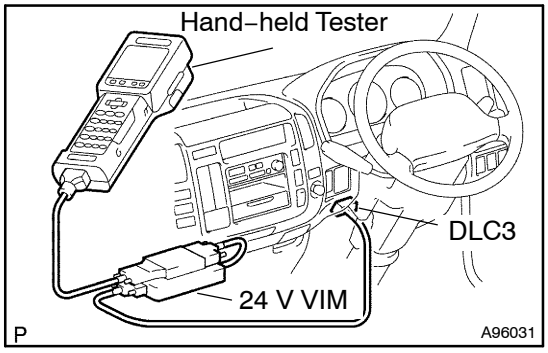
HINT:
- If no code appears, inspect the diagnostic circuit or the ABS warning lamp circuit (see page 05–247 or 05–250).
- As an example, the blinking patterns for the normal code and DTCs 11 and 21 are shown in the illustration.

(4) Check the details of the code using the code table on page 05–191.

If 2 or more DTCS are indicated at the same time, the lowest numbered DTC will be displayed first.

(5) After completing the check, remove the SST from the DLC3.
SST 09843–18040



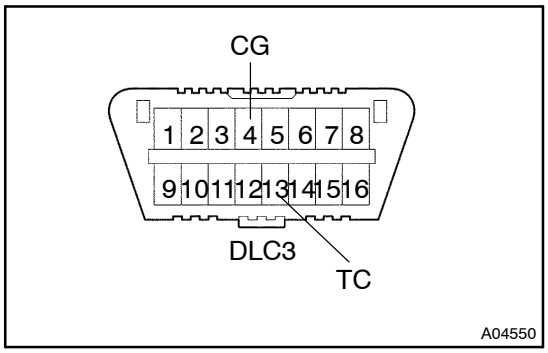


(c) When using the hand–held tester:
Check the DTC.
(1) Connect the hand–held tester (with 24 V VIM) to the DLC3.

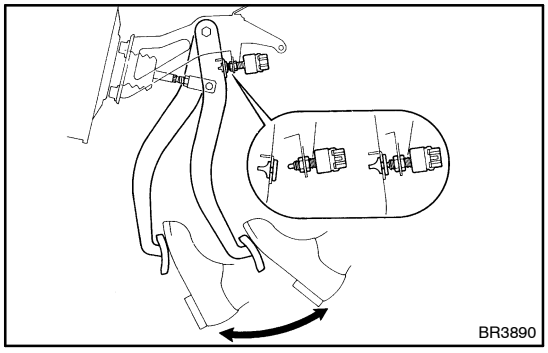
NOTICE:
Be sure to use the 24 V VIM, because the hand–held tester will be damaged if you do not use the 24 V VIM.

(2) Turn the ignition switch ON.
(3) Read the DTC by following the prompts on the tester screen.

HINT:
Refer to the hand–held tester operator's manual for further details.



(d) When not using the hand–held tester:
Clear the DTC.
(1) Using SST, connect terminals TC and CG of the DLC3.
SST 09843–18040
(2) Turn the ignition switch ON.

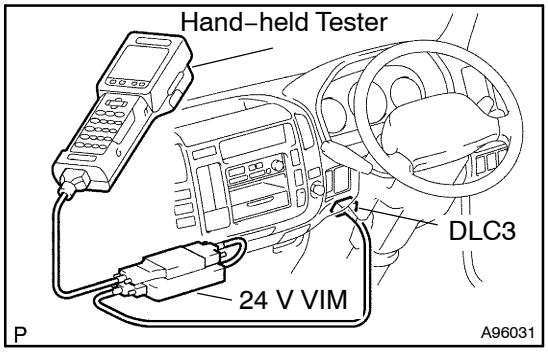


(3) Clear the DTC stored in the ECU by depressing the brake pedal 8 times or more within 5 seconds.
(4) Check that the ABS warning lamp indicates the normal code.
(5) Remove the SST from the DLC3.

HINT:
Disconnection of the battery cable during repairs will not erase the DTC in the ECU.

(e) When using the hand–held tester:
Clear the DTC.
(1) Connect the hand–held tester to the DLC3.
(2) Turn the ignition switch ON.
(3) Use the hand–held tester to erase the codes.

HINT:
Refer to the hand–held tester operator's manual for further details.



2. When using hand–held tester:
CHECK SENSOR SIGNAL (TEST MODE)

(a) Check sensor signal.

(1) Connect the hand–held tester (with 24 V VIM) to the DLC3.

NOTICE:
Be sure to use the 24 V VIM, because the hand–held tester will be damaged if you do not use the 24 V VIM.

(2) Check that the steering wheel is in the neutral position and move the shift lever to the P position.

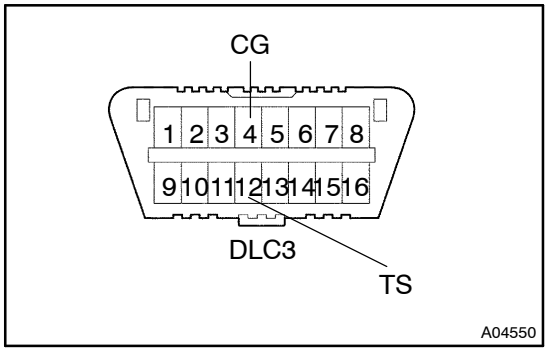
(3) Turn the ignition switch ON.

(4) Change the ECU to signal check with the hand–held tester. Enter the following menus: DIAGNOSIS / (OBD / MOBD) / DYNA / ABS / SIGNAL CHECK. Make sure the ABS warning lamp flashes as shown in the illustration.

(5) Perform step (3–a–(4)) to (3–d–(3)) on the next 2 pages.

(6) Read the DTC by following the prompts on the tester screen (see page 05–191).

HINT:
Refer to the hand–held tester operator's manual for further details.



3. When not using hand–held tester:
CHECK SENSOR SIGNAL (TEST MODE)

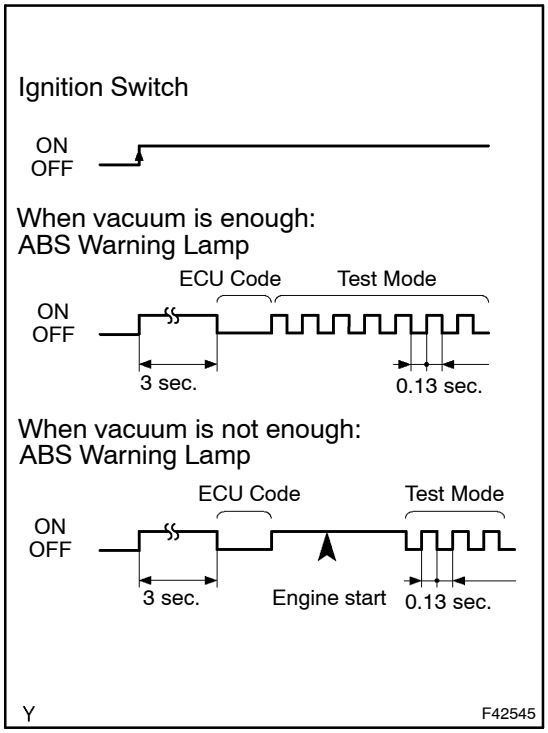
(a) Procedures for the test mode:

(1) Turn the ignition switch OFF.

(2) Using SST, connect terminals TS and CG of the DLC3.

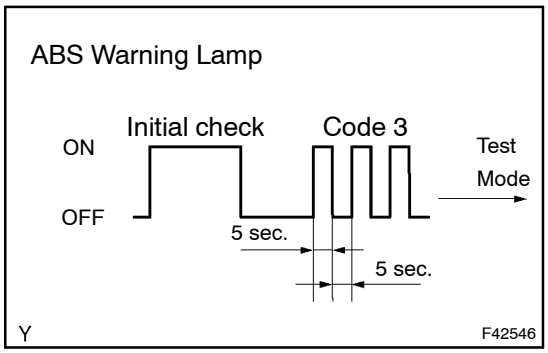
SST 09843–18040

(3) Turn the ignition switch ON.



(4) Check that test mode is entered after the ABS warning lamp is on for 3 seconds (initial value check) and the ECU code is output. Do not depress the brake pedal until test mode is entered.

(5) If the ABS warning lamp remains on even after the ECU code is output, start the engine. Then, check that in several seconds, test mode is entered. Do not depress the brake pedal until the entry of the test mode is confirmed. The way of the lamp indication after the ECU code is output depends on vacuum of the vacuum booster.
When the vacuum is high enough, test mode is entered. When the vacuum is not high enough, the indication lamp remains on.



HINT:

- To prevent a installation of a wrong skid control ECU, output an ECU code when starting test mode. The code varies with the vehicle type to which the ECU is installed, and therefore it is necessary to confirm whether it fits the vehicle type.
- Perform the steps 1 to 4 from the previous page to output ECU code.
- The ABS warning lamp illuminates in the applicable code pattern. The illuminating pattern shown in the illustration on the left is an example of code 3.
  ECU code table:

Vehicle Type	Code
Short body w/o ES start system	1
Long body w/o ES start system	2
Short body w/ ES start system	3
Long body w/ ES start system	4

- If the ABS warning lamp does not flash, inspect the ABS warning lamp circuit (see page 05–250).

(b) Check master cylinder pressure sensor.

(1) Turn the ignition switch OFF and then ON again.

HINT:

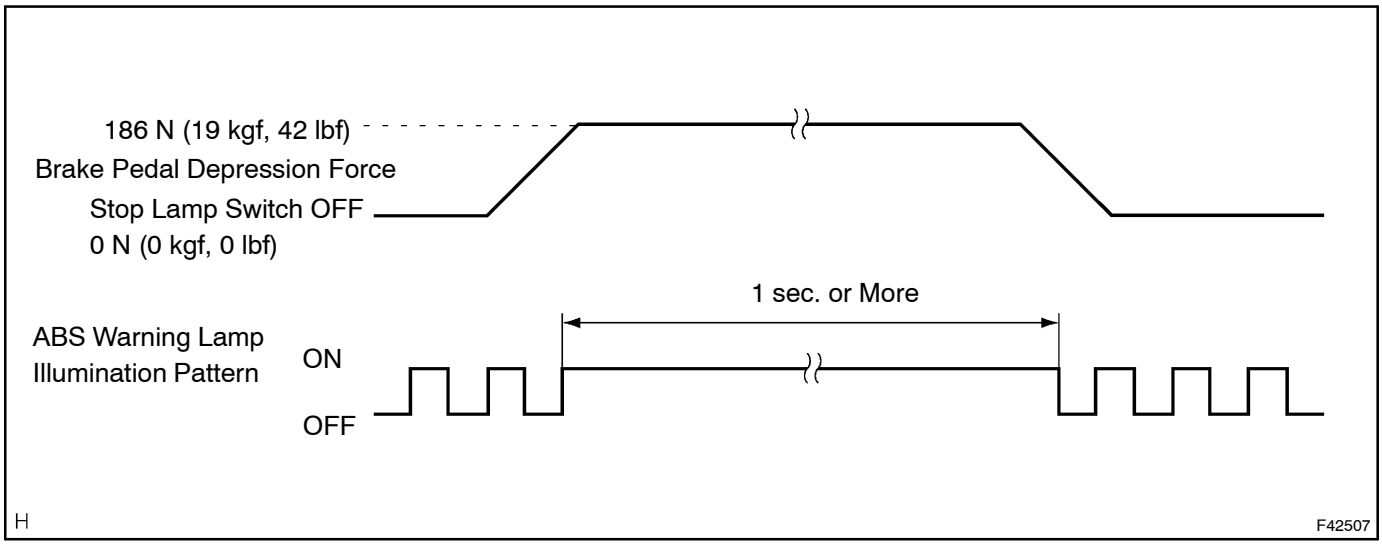
Do not start the engine.

(2) After releasing the brake pedal for 1 second or more, depress it again with a force of 186 N (19 kgf, 42 lbf) or more.

(3) Check that the ABS warning lamp illuminates.

(4) Depress the brake pedal for 1 second with the ABS warning lamp illuminated and release it.

(5) Check that the blinking pattern of the ABS warning lamp returns to the pattern shown in test mode.



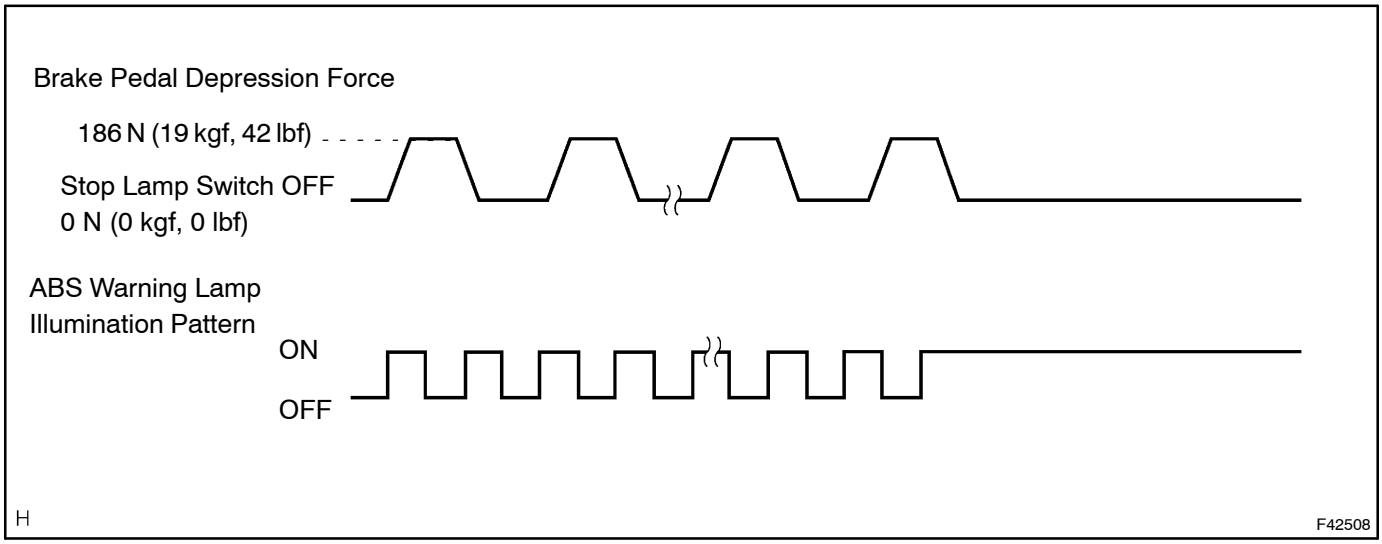
HINT:

- Do not depress the brake pedal several times.
- If the ABS warning lamp does not illuminate even though the brake pedal is depressed, the master cylinder pressure sensor may be defective.

(c) Check vacuum sensor.

(1) Depress the brake pedal several times.

(2) Check that the ABS warning lamp illuminates.



HINT:

- If the ABS warning lamp does not illuminate after depressing the brake pedal continuously, the vacuum sensor may be defective.
- When the parking brake is released, the vacuum warning buzzer may sound.
- After the warning lamp changes from blinking to illuminated, stop depressing the brake pedal.

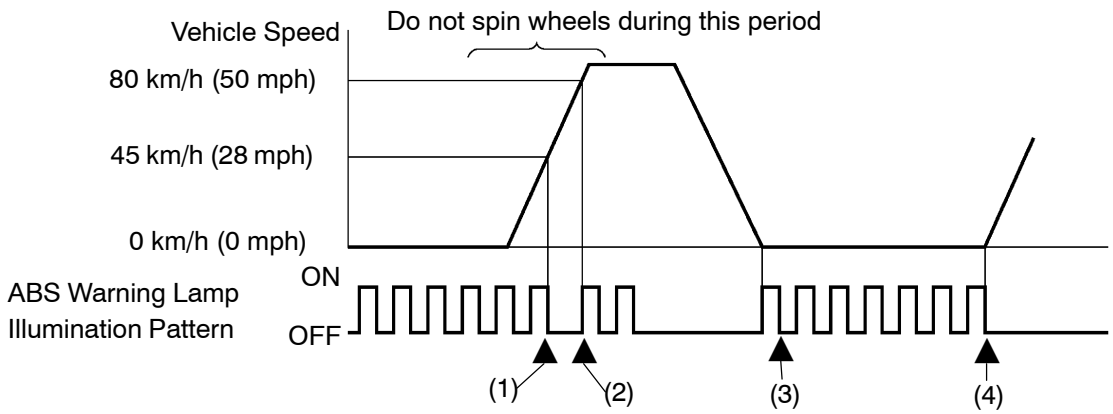
(d) Check speed sensor.

(1) Start the engine.

(2) Check that the ABS warning lamp is flashing.

(3) Drive the vehicle in a straight line.
When driving the vehicle at 90 km/h (56 mph) for several seconds, check that the ABS warning lamp turns off.

Lighting Condition during Speed Sensor Check (Normal)



(1): OFF after middle speed check over 45 km/h (28 mph)

(2): Blinking for approx.1 sec. in high speed check over 80 km/h (50 mph), and then OFF after the check

(3): Blinking when vehicle is stopped (lamp condition when the speed sensor check is finished normally)

(4): OFF when vehicle is running (lamp condition when the speed sensor check is finished normally)

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(4) Stop the vehicle.

HINT:

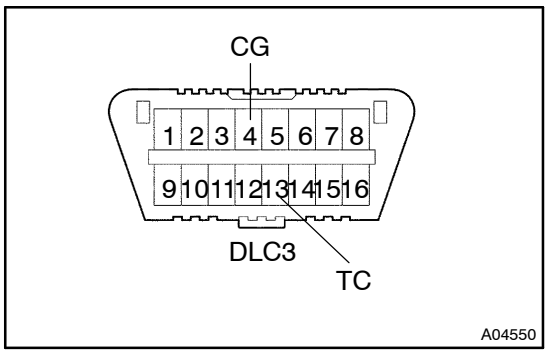
- The sensor check may not complete if the rear wheels are spinning.
- If the sensor check is started while the vehicle is being steered, the warning lamp may not turn off after the check.
- If the sensor is malfunctioning, the illumination pattern of the warning lamp will be different trom the illumination pattern shown in the illustration above.

(e) Check the ABS warning lamp condition after the check is completed.
Lighting condition when the speed sensor check is finished normally:

Vehicle Condition	Lighting Condition of ABS Warning Lamp
Vehicle stopped	Flashing (ON) (It flashes even if test mode is not finished normally)
Vehicle running	Not flashing (OFF)

HINT:
When the sensor check is not finished and the sensor is abnormal:

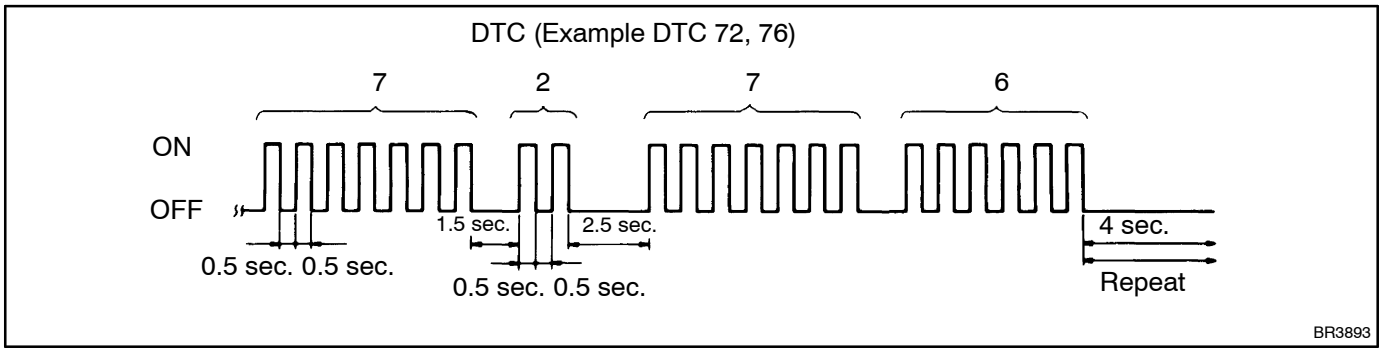
- The warming lamp flashes even while the vehicle is running.
- The ABS will not operate.



(f) Read the DTC.
(1) Using SST, connect terminals TC and CG of the DLC3.
SST 09483–18040
(2) Turn the ignition switch ON.
(3) Read the number of flashes of the ABS warning lamp (see page 05–191).

HINT:

- Check the DTC chart (see page 05–191).
- If all the sensors are normal, a normal code is output (a cycle of 0.25 seconds ON and 0.25 seconds OFF is repeated).
- If 2 or more DTCS are indicated at the same time, the lowest numbered code will be displayed first.



(4) After performing the check, turn the ignition switch OFF and disconnect the SST from the DLC3.

4. DATA LIST

Using the hand–held tester's DATA LIST allows switch, sensor, actuator and other item values to be read witchout removing any parts. Reading the DATA LIST early in troubleshooting is one way to save time.

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch ON.
(c) Read the DATA LIST.

Skid control ECU assy:

Item	Measurement Item/ Range (Display)	Normal Condition	Diagnostic Note
ABS MOT RELAY	ABS motor relay / ON or OFF	–	–
SOL RELAY	Solenoid relay / ON or OFF	–	–
STOP LIGHT SW	Stop lamp switch / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	–
PKB SW	Parking brake switch / ON or OFF	ON: Parking brake applied OFF: Parking brake released	–
ABS OPERT FR	ABS operation (FR) / BEFORE or OPERATE	BEFORE: No ABS operation (FR) OPERATE: During ABS operation (FR)	–
ABS OPERT FL	ABS operation (FL) / BEFORE or OPERATE	BEFORE: No ABS operation (FL) OPERATE: During ABS operation (FL)	–
ABS OPERT RR	ABS operation (RR) / BEFORE or OPERATE	BEFORE: No ABS operation (RR) OPERATE: During ABS operation (RR)	–
ABS OPERT RL	ABS operation (RL) / BEFORE or OPERATE	BEFORE: No ABS operation (RL) OPERATE: During ABS operation (RL)	–
WHEEL SPD FR	Wheel speed sensor (FR) reading / Min.: 0 km/h (0 mph) Max.: 255 km/h (158 mph)	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD FL	Wheel speed sensor (FL) reading / Min.: 0 km/h (0 mph) Max.: 255 km/h (158 mph)	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD RR	Wheel speed sensor (RR) reading / Min.: 0 km/h (0 mph) Max.: 255 km/h (158 mph)	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD RL	Wheel speed sensor (RL) reading / Min.: 0 km/h (0 mph) Max.: 255 km/h (158 mph)	Actual wheel speed	Speed indicated on speedometer
IG VOLTAGE	ECU power supply voltage / UNDER / NORMAL / OVER	OVER: 32 V NORMAL: 20 to 32 V UNDER: Below 19 V	–
SFRR	ABS solenoid (SFRR) ON / OFF	–	–
SFRH	ABS solenoid (SFRH) ON / OFF	–	–
SMR	ABS solenoid (SMR) ON / OFF	–	–
SMF (BA–SOL)	ABS solenoid (SMF(BASOL)) ON / OFF	–	–
SRMR (SMCR, STR)	ABS solenoid (SRMR (SMCR, STR)) ON / OFF	–	–
SRMF (SMCF, SA3)	ABS solenoid (SRMF (SMCF, SA3)) ON / OFF	–	–
SRCR (SA2)	ABS solenoid (SRCR (SA2)) ON / OFF	–	–
ENGINE SPD	Engine speed reading/Min.: 255 km/h (158 mph)	Engine speed	Speed indicated on tachometer

Item	Measurement Item/ Range (Display)	Normal Condition	Diagnostic Note
DECELERAT SEN	G sensor (GLT) open detection	Open: Momentary interruption	–
DECELERAY SEN2	G sensor (GL2) open detection	Open: Momentary interruption	–
BSVUUM SENS 1	Vacuum sensor 1 detection	NORMAL: Min. 0 V Max.: 5 V	–
VACUUM SENS 2	Vacuum sensor 2 detection	NORMAL: Min. 0 V Max.: 5 V	–
SFLR	ABS solenoid (SFLR) ON / OFF	–	–
SFLH	ABS solenoid (SFLH) ON / OFF	–	–
SRRR (SRR)	ABS solenoid (SRRR (SRR)) ON / OFF	–	–
SRRH (SRH)	ABS solenoid (SRRH (SRH)) ON / OFF	–	–
SRLR	ABS solenoid (SRLR) ON / OFF	–	–
SRLH	ABS solenoid (SRLH) ON / OFF	–	–
MAS CYL PRESS 1	Master cylinder pressure sensor 1 reading / Min.: 0 V, Max.: 5 V	When brake pedal is released : 0.3 to 0.7 V	Reading increases when brake pedal is depressed
TEST MODE	Test mode / NORMAL or TEST	NORMAL: Normal mode TEST: During test mode	–
#CODES	Number of DTC recorded / Min.: 0, Max.: 255	Min.: 0, Max.: 24	–

5. ACTIVE TEST

HINT:

Performing the hand–held tester's ACTIVE TEST allows relay, VSV actuator and other items to be operated without removing any parts. Preforming the ACTIVE TEST early in troubleshooting is one way to save time. The DATA LIST can be displayed during the ACTIVE TEST.

(a) Connect the hand–held tester to the DLC3.

(b) Turn the ignition switch ON.

(c) Perform the ACTIVE TEST.

Skid control ECU assy:

Item	Vehicle Condition / Test Details	Diagnostic Note
SFRR	ABS solenoid (SFRR) ON/OFF	Operation of solenoid (clicking sound) can be heard
SFRH	ABS solenoid (SFRH) ON/OFF	Operation of solenoid (clicking sound) can be heard
SFLR	ABS solenoid (SFLR) ON/OFF	Operation of solenoid (clicking sound) can be heard
SFLH	ABS solenoid (SFLH) ON/OFF	Operation of solenoid (clicking sound) can be heard
SRRR	ABS solenoid (SRRR) ON/OFF	Operation of solenoid (clicking sound) can be heard
SRRH	ABS solenoid (SRRH) ON/OFF	Operation of solenoid (clicking sound) can be heard
SRLR	ABS solenoid (SRLR) ON/OFF	Operation of solenoid (clicking sound) can be heard
SRLH	ABS solenoid (SRLH) ON/OFF	Operation of solenoid (clicking sound) can be heard
SMF (BA – SOL)	TRC solenoid (SMF (BA – SOL)) ON/OFF	Operation of solenoid (clicking sound) can be heard
SRMR (SMCR, STR)	TRC solenoid (SRMR (SMCR, STR)) ON/OFF	Operation of solenoid (clicking sound) can be heard
SRMF (SMCF, SA3)	TRC solenoid STMF (SRCF (SMCF, SA3)) ON/OFF	Operation of solenoid (clicking sound) can be heard
SRCR (SR2)	TRC solenoid (SRCR (SR2)) ON/OFF	Operation of solenoid (clicking sound) can be heard
SMR	TRC solenoid (SMR) ON/OFF	Operation of solenoid (clicking sound) can be heard
ABS MOT RELAY	Turns ABS motor relay ON / OFF	Operation of motor can be heard
SOL RELAY	Solenoid relay ON/OFF	Operation of solenoid (clicking sound) can be heard
EXHAUST CUT	Exhaust cut relay ON/OFF	Observe combination meter
SLIP INDI LIGHT	SLIP indicator lamp ON/OFF	Observe combination meter
ABS WARN LIGHT	Turns ABS warning lamp ON/OFF	Observe combination meter
BRAKE WRN LIGHT	Turns BRAKE warning lamp ON/OFF	Observe combination meter