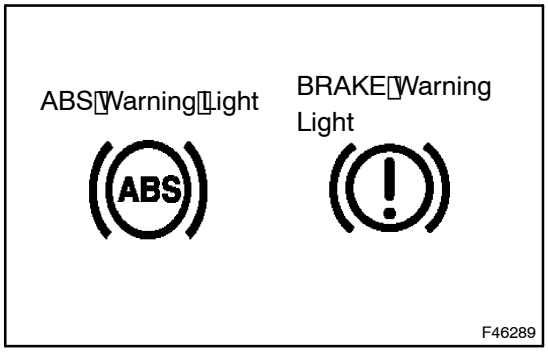
050X8–04

PRE–CHECK



1. DIAGNOSIS SYSTEM

(a) Release the parking brake pedal.

NOTICE:

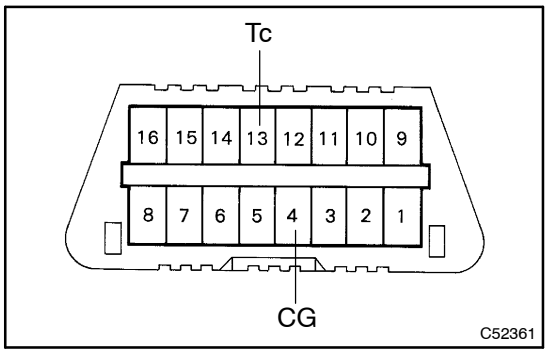
When releasing the parking brake, set the chocks to hold the vehicle for safety.

(b) Check the warning lights.

When the ignition switch is turned ON, check that the ABS warning light and brake warning light come on for 3 sec.

HINT:

- When the parking brake is applied or the level of the brake fluid is low, the brake warning light comes on.
- If the indicator check result is not normal, proceed to troubleshooting for the ABS warning light circuit (See page 05–218 or 05–222) or brake warning light circuit (See page 05–223).



2. DTC CHECK (USING SST CHECK WIRE)

(a) Checking DTCs using a SST.

SST 09843–18040

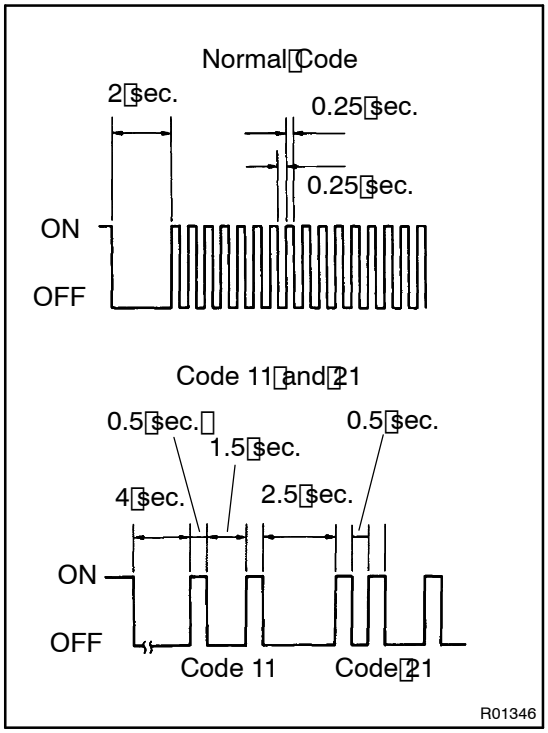
(1) Using SST, connect terminal Tc and CG of the DLC3.

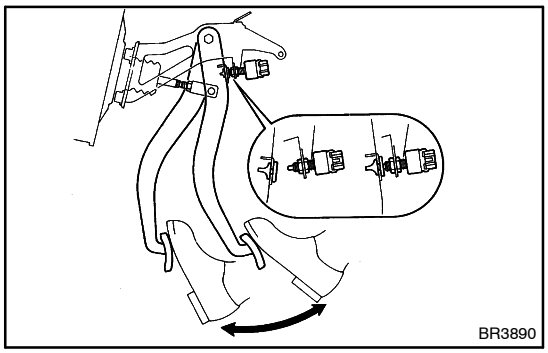
(2) Turn the ignition switch ON.

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

HINT:

- If not code appears, inspect the diagnostic circuit or ABS warning light circuit (See page 05–228 or 05–222).





- As an example, the blinking patterns for normal code and codes 11 and 21 are shown on the left.

(4) Codes are explained in the code table on page 05–174.

If 2 or more DTCs are detected at the same time, the lowest numbered DTC is displayed 1st.

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

(b) Clearing the DTCs using the SST.

SST 09843–18040

(1) Using SST, connect the terminal Tc and CG of the DLC3.

(2) Turn the ignition switch ON.

(3) Clear DTC stored in ECU by depressing the brake pedal 8 or more times within 5 sec.

(4) Check that the ABS warning light shows the normal code.

(5) Remove the SST from the DLC3.

HINT:

Disconnect the battery cable during repairs will not erase the DTC in the ECU.

3. DTC CHECK (USING HAND–HELD TESTER)

(a) Checking DTCs using the Hand–held tester.

(1) Read the DTC by following the prompts on the tester screen.

HINT:

Please refer to the hand–held tester operator's manual for further details.

(b) Clearing the DTCs using the hand–held tester.

(1) Turn the ignition switch to ON.

(2) Operate the hand–held tester to erase the codes.

HINT:

Please refer to the hand–held tester operator's manual for further details.

4. DATA LIST

HINT:

According to the DATA LIST displayed on the hand–held tester, you can read the value and status of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as the first step of trouble-shooting is one of the methods to shorten labor time.

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

(b) Turn the ignition switch ON.

(c) From the display on the tester, read the ”DATA LIST”.

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
ABS MOT RELAY	ABS motor relay / ON or OFF	ON : Motor relay ON	–
SOL RELAY	Solenoid relay / ON or OFF	ON : Solenoid relay ON	–
STOP LIGHT SW	Stop light 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	–
STEP FORCE SW	Brake load sensing switch / ON or OFF	ON : Depressed brake pedal OFF : Released brake pedal	–
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.: 326 km/h (202 MPH)	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD FL	Wheel speed sensor (FL) reading / min.: 0 km/h (0 MPH, max.: 326 km/h (202 MPH)	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD RR	Wheel speed sensor (RR) reading / min.: 0 km/h (0 MPH, max.: 326 km/h (202 MPH)	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD RL	Wheel speed sensor (RL) reading / min.: 0 km/h (0 MPH, max.: 326 km/h (202 MPH)	Actual wheel speed	Speed indicated on speedometer

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
IG VOLTAGE	ECU power supply voltage / NORMAL or TOO LOW	NORMAL : 9.5 V or over TOO LOW : Below 9.5 V	–
SFRR	ABS solenoid (SFRR) ON / OFF	ON : Operate	–
SFRH	ABS solenoid (SFRH) ON / OFF	ON : Operate	–
SFLR	ABS solenoid (SFLR) ON / OFF	ON : Operate	–
SFLH	ABS solenoid (SFLH) ON / OFF	ON : Operate	–
SRRR	ABS solenoid (SRRR) ON / OFF	ON : Operate	–
SRRH	ABS solenoid (SRRH) ON / OFF	ON : Operate	–
SRLR	ABS solenoid (SRLR) ON / OFF	ON : Operate	–
SRLH	ABS solenoid (SRLH) ON / OFF	ON : Operate	–
VEHICLE SPD	Maximum wheel speed sensor reading / min.: 0 km/h (0 MPH), max.: 326 km/h (202 MPH)	Actual vehicle speed	Speed indicated on speedometer
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.: 19	–

5. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using the hand–held tester allows the relay, actuator and so on to operate without parts removal. Performing the ACTIVE TEST as the first step of troubleshooting is one of the methods to shorten labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

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

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

(c) From the display on the tester, select the ”ACTIVE TEST”.

Item	Vehicle Condition / Test Details	Diagnostic Note
SFRR	Turns ABS solenoid (SFRR) ON / OFF	Operation of solenoid (clicking sound) can be heard
SFRH	Turns ABS solenoid (SFRH) ON / OFF	Operation of solenoid (clicking sound) can be heard
SFLR	Turns ABS solenoid (SFLR) ON / OFF	Operation of solenoid (clicking sound) can be heard
SFLH	Turns ABS solenoid (SFLH) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRRR	Turns ABS solenoid (SRRR) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRRH	Turns ABS solenoid (SRRH) ON / OFF	Operation of solenoid (clicking sound) can be heard

Item	Vehicle Condition / Test Details	Diagnostic Note
SRLR	Turns ABS solenoid (SRLR) ON / OFF	Operation of solenoid (clicking sound) can be heard
SRLH	Turns ABS solenoid (SRLH) ON / OFF	Operation of solenoid (clicking sound) can be heard
SOL RELAY	Turns ABS solenoid relay 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
ABS WARN LIGHT	Turns ABS warning light ON / OFF	Observe combination meter
BRAKE WRN LIGHT	Turns BRAKE warning light ON / OFF	Observe combination meter

6. FREEZE FRAME DATA

HINT:

- Whenever a DTC is detected or the ABS operates, the skid control ECU stores the current vehicle (sensor) state as freeze frame data.
- The skid control ECU stores the number of times (maximum: 31) the ignition switch has been turned from off to the On position since the last time ABS was activated. However, if the vehicle was stopped or at low speed (4.3 mph (7 km/h) or less), or if a DTC is detected, the skid control ECU will not count the number since then.
- Freeze frame data at the time the ABS operates:
  The skid control ECU stores and updates data whenever the ABS system operates.
  When the ECU stores data at the time a DTC is detected, the data stored when the ABS operated is erased.
- Freeze frame data at the time a DTC is detected:
  When the skid control ECU stores data at the time a DTC is detected, no updates will be performed until the data is cleared.

(a) Connect the Hand–held tester to the DLC3.
(b) Turn the ignition switch to the ON position.
(c) From the display on the tester, select the ”FREEZE FRAME DATA”.

Hand–held tester display	Measurement Item	Reference Value*
VEHICLE SPD	Vehicle speed	Speed indication of a meter
STOP LIGHT SW	Stop light switch signal	Stop light switch ON: ON, OFF: OFF
# IG ON	Numbers of operations of ignition switch ON after memorizing freeze frame data	0 to 31
SYSTEM	Operate system	ABS operate: ABS

7. SPEED SENSOR SIGNAL CHECK (USING CHECK WIRE)

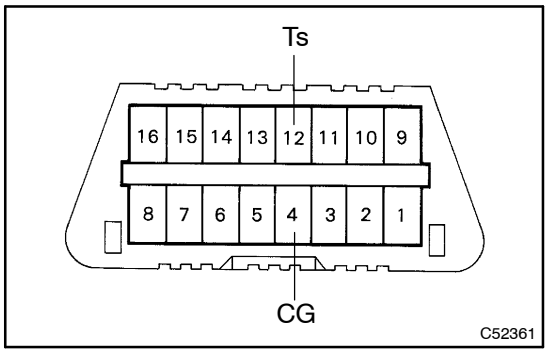
HINT:

If the ignition switch is turned from ON to ACC or LOCK during test mode, the DTCs will be erased.

(a) Procedure for speed sensor signal check using a SST check wire.

SST 09843–18040

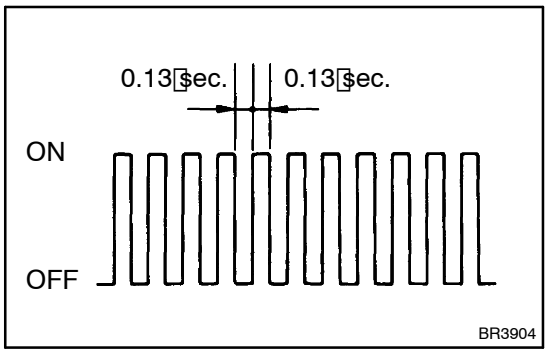
(1) Turn the ignition switch to off.



(2) Using SST, it connects the terminal Ts and CG of DLC3.

SST 09843–18040

(3) Start the engine.



(4) Check that the ABS warning light blinks.

HINT:

If the ABS warning light does not blink, inspect the ABS warning light circuit and Ts circuit (See page 05–222 and 05–226).

(5) Drive the vehicle straight forward at the speed of 28 mph (45 km/h) or over for several seconds and check that the ABS warning light goes off.

HINT:

The sensor check may not be completed if the wheels spin or the steering wheel steered during the check.

(6) Stop the vehicle.

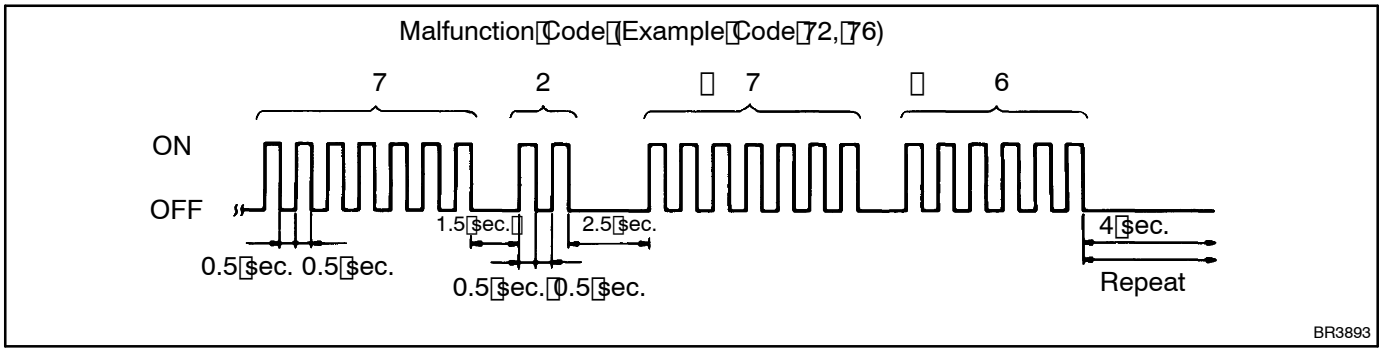
(7) Using SST, it connects the terminal Tc and CG of the DLC3.

SST 09843–18040

(8) Read the number of blinks of the ABS warning light.

HINT:

- See the list of DTC shown on the 05–174.
- If every sensor is normal, a normal code is output (A cycle of 0.25 sec. ON and 0.25 sec. OFF is repeated).
- If 2 or more DTCs are detected at the same time, the lowest numbered code will be displayed.



(9) After performing the check, turn the ignition switch OFF, and remove the SST from the DLC3.
SST 09843–18040

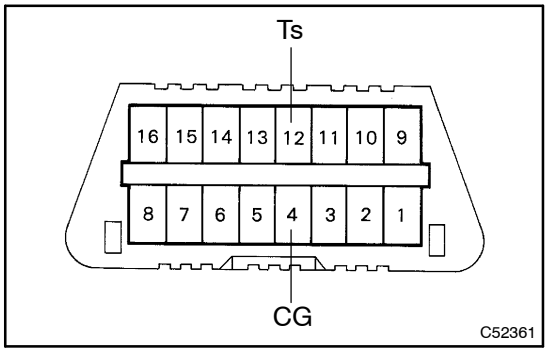
8. SPEED SENSOR SIGNAL CHECK (USING HAND–HELD TESTER)

(a) Procedure for speed sensor signal check using the hand–held tester.
(1) Connect the hand–held tester.
(2) Turn the ignition switch ON.
(3) Perform the step (3) to (6) on the previous page.
(4) Read the DTC by following the prompts on the tester screen.
(5) After completing the check disconnect the tester and turn the ignition switch off.

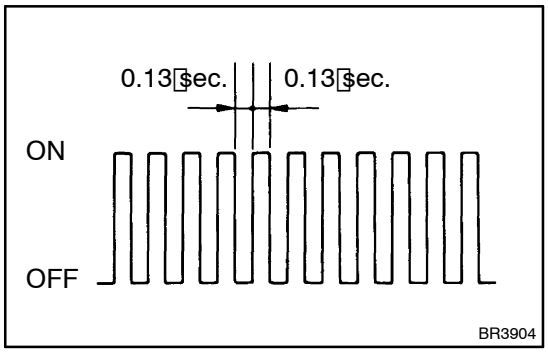
HINT:
Please refer to the hand–held tester operator's manual for further details.

9. BRAKE ASSIST OPERATE CHECK (USING CHECK WIRE)

HINT:
If the ignition switch is turned from ON to ACC or LOCK during test mode, DTC will be erased.



(a) In case of not using hand–held tester:
Check the brake assist operate.
(1) Using SST, connect terminals Ts and CG of DLC3.
SST 09843–18040
(2) Start the engine.



(3) Check that the ABS warning light blinks.

HINT:
If the ABS warning light does not blink, inspect the ABS warning light circuit and Ts circuit (See page 05–222 and 05–226).

(4) While the vehicle is stationary, release the brake pedal for 1 sec. Then depress the brake pedal with a force of at least 98 N (10 kgf) for more than 1 sec.
(5) While the vehicle is stationary, quickly depress the brake pedal. At this time, confirm that the ABS warning light remains lit for approximately 3 sec.

10. BRAKE ASSIST OPERATE CHECK (USING HAND–HELD TESTER)

(a) Procedures for test mode:
  (1) Turn the ignition switch off.
  (2) Check that the shift lever position is in the P position.
  (3) Connect the hand–held tester to the DLC3.
  (4) Put the hand–held tester in test mode.

(b) Check the sensor signal.
  Do step (2) to (5) of step 9. on the previous page.

HINT:

Please refer to the hand–held tester operator's manual for further details.