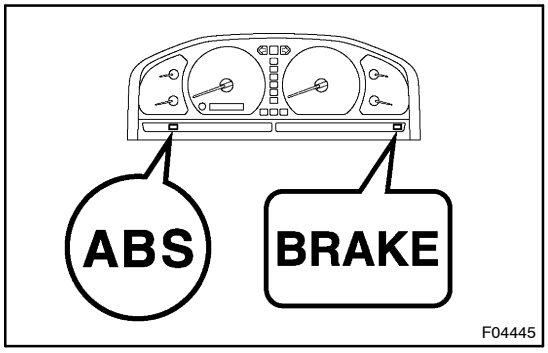
DI28T–11



PRE–CHECK

1. DIAGNOSIS SYSTEM

(a) Check the warning lights and buzzer.

(1) Release parking brake lever.

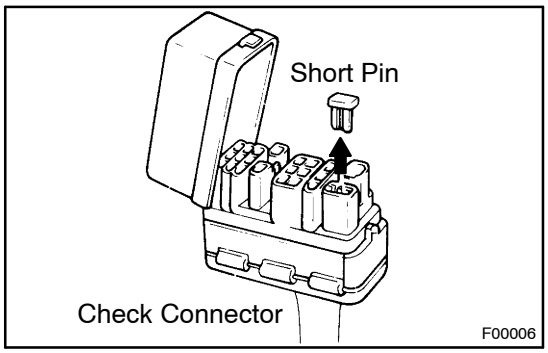
(2) When the ignition switch is turned ON, check that the ABS warning lights go on for 3 seconds.

(3) Check the BRAKE warning light lights up when the ignition switch is turned ON and the light goes off when the engine starts.

(4) When 120 seconds have elapsed after the ignition switch was turned ON, depressing and releasing the brake pedal continuously with full stroke 15 – 20 times within 10 secs., warning light lights up and buzzer sounds.

HINT:

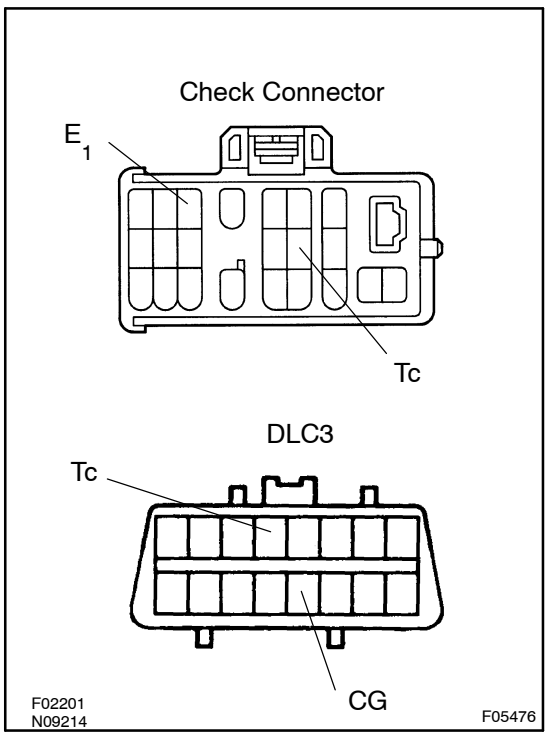
If the indicator check result is not normal, proceed to trouble-shooting for the ABS warning light circuit (See Pub. No. RM616E on page DI –395).



(b) In case of not using hand –held tester:

Check the DTC.

(1) Disconnect the short pin from check connector.



(2) Using SST, connect terminals Tc and E_1 of check connector or Tc and CG of DLC3.

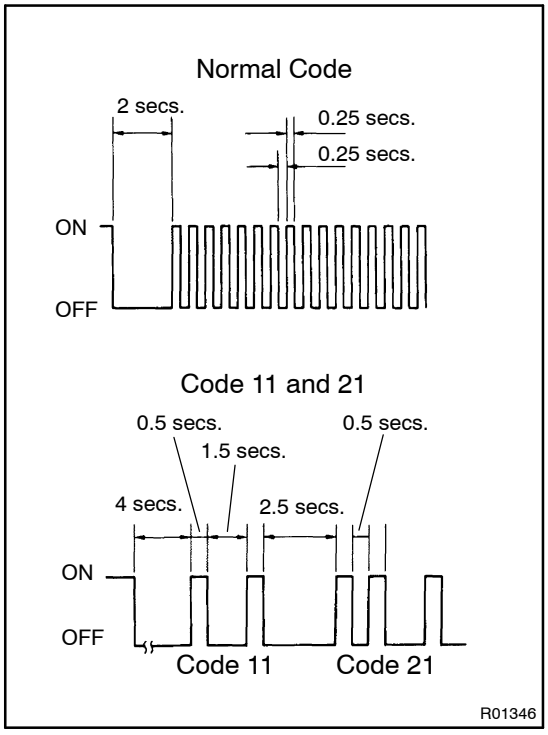
SST 09843 –18020 or 09843 –18040

(3) Turn the ignition switch ON.

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

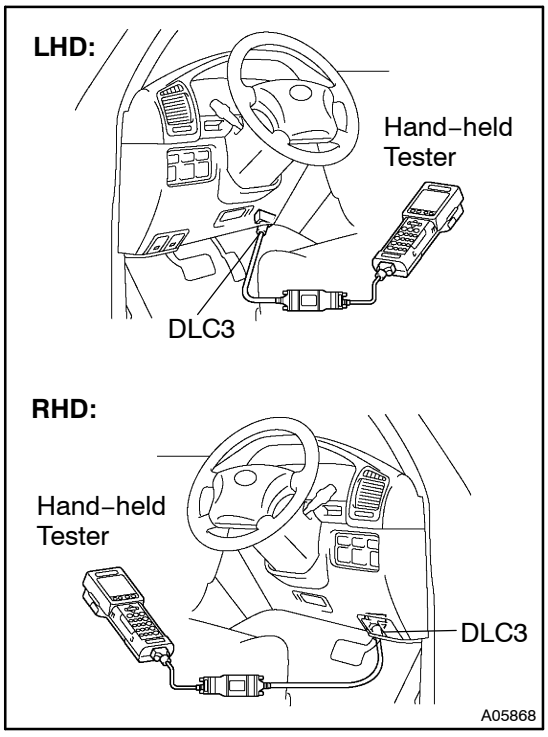
HINT:

- If no code appears, inspect the diagnostic circuit or ABS warning light circuit (See Pub. No. RM6 16E on page DI–395 or DI –28).



- As an example, the blinking patterns for normal code and codes 11 and 21 are shown on the left.
  (5) Codes are explained in the code table on page DI–24.
  (6) After completing the check, disconnect terminals Tc and E_1, and turn off the display.

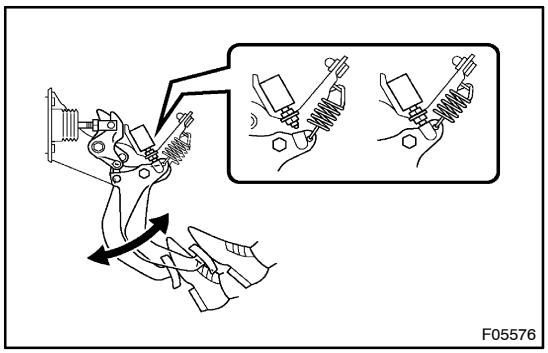
If 2 or more malfunctions are indicated at the same time the lowest numbered DTC will be displayed 1st.



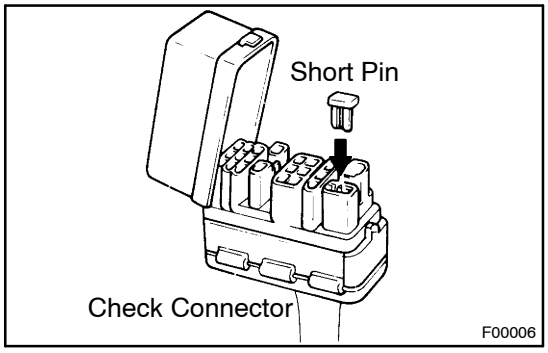
(c) In case of using hand–held tester:
Check the DTC.
(1) Hook up the hand–held tester to the DLC3.
(2) Read the DTC by following the prompts on the tester screen.

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

(d) In case of not using hand–held tester:
Clear the DTC.
(1) Using SST, connect terminals Tc and E_1 of check connector or Tc and CG of DLC3 and remove the short pin from check connector.
SST 09843–18020 or 09843–18040
(2) Turn the ignition switch ON.

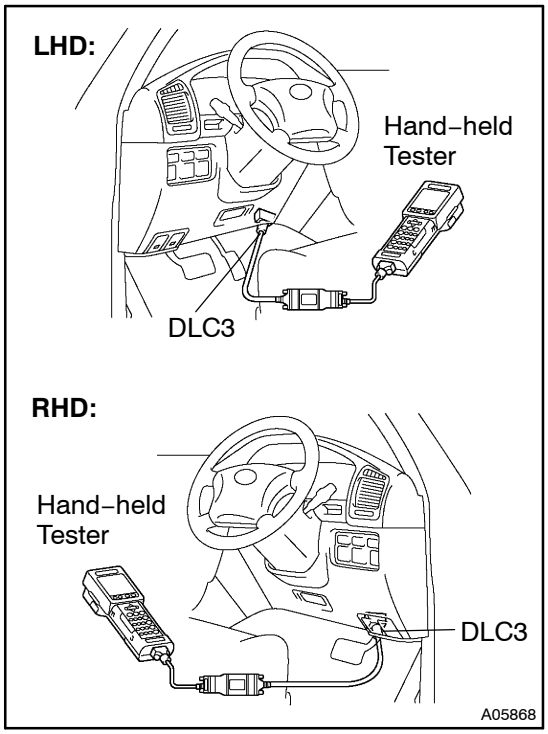


(3) Clear the DTC stored in ECU by depressing the brake pedal 8 or more times within 5 seconds.
(4) Check that the warning light shows the normal code.
(5) Remove the SST from the terminals of check connector or DLC3.
SST 09843 –18020 or 09843 –18040

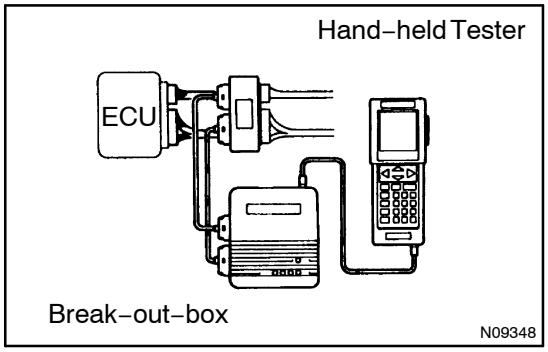


(6) Connect the short pin to check connector.

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

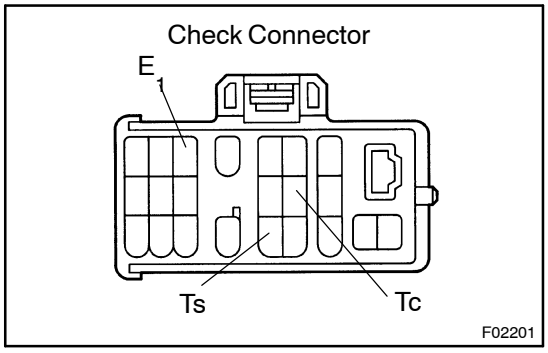


(e) In case of using hand –held tester:
Clear the DTC.
(1) Hook up the hand –held tester to the DLC3.
(2) Turn the ignition switch ON.
(3) Operate the hand –held tester to erase the codes.
(See hand –held tester operator's manual.)



(f) Reference:
Using break –out–box and hand –held tester, measure the ECU terminal values.
(1) Turn the ignition switch OFF.
(2) Hook up the break –out–box and hand –held tester to the vehicle.
(3) Turn the ignition switch ON.
(4) Read the ECU input/output values by following the prompts on the tester screen.

HINT:
- hand–held tester has a "Snapshot" function. This records the measured values and is effective in the diagnosis of intermittent problems.
- Please refer to the hand –held tester/break –out–box operator's manual for further details.



2. SENSOR SIGNAL CHECK (TEST MODE)

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:

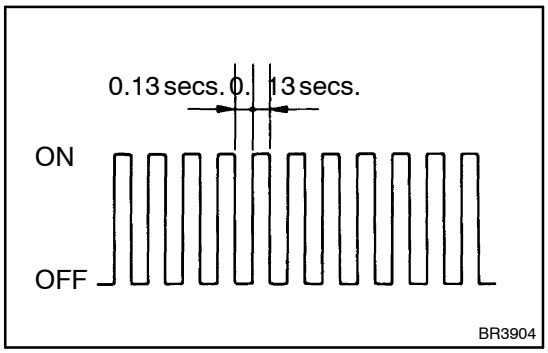
Check the sensor signal.

(1) Turn the ignition switch OFF.

(2) Using SST, connect terminals Ts and E_1 of check connector.

SST 09843 –18020

(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 Pub. No. RM6 16E on page DI–395, DI –406).

(5) Keep the vehicle in the stationary condition on the flat place for 6 sec. or more.

(6) Shift the transfer lever in L4 position and turn the Center diff. lock switch ON.

(7) Shift the transfer lever back.

(8) Drive vehicle straight forward.

When driving the vehicle with the speed faster than 45 km/h (28 mph) for several seconds, check that the ABS warning light comes off.

HINT:

There is a case that the sensor check is not completed if the vehicle has its rear wheels spun or its steering wheel steered during this check.

(9) Stop the vehicle.

(10) Check ABS warning light goes off when the rear diff. lock indicator light lights up or flashes.

HINT:

While the rear diff. is being locked, ECU records DTC 48.

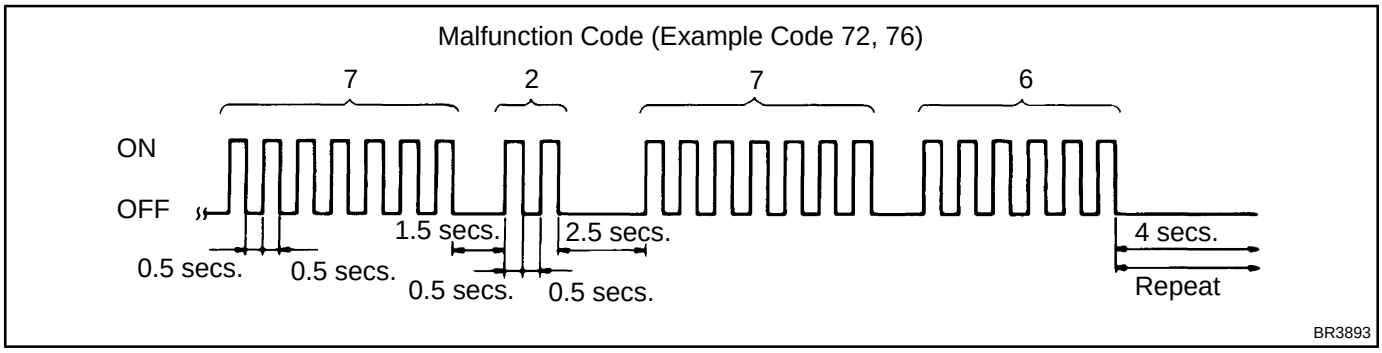
(11) Using SST, connect terminals Tc and E_1 of check connector or Tc and CG of DLC3.

SST 09843 –18020 or 09843 –18040

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

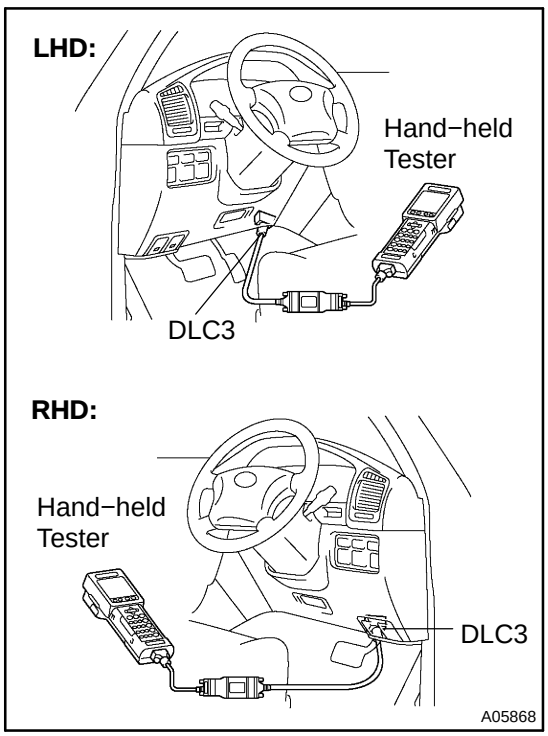
HINT:

- See the list of DTC on the next page.
- If every sensor is normal, a normal code is output (A cycle of 0.25 secs. ON and 0.25 secs. OFF is repeated).
- If 2 or more malfunctions are indicated at the same time, the lowest numbered code will be displayed 1st.



(13) After doing the check, disconnect the SST from terminals of check connector or terminals of check connector and DLC3, and turn the ignition switch OFF.

SST 09843−18020 or 09843−18040



(b) In case of using hand−held tester:
Check the sensor signal.

(1) Hook up the hand−held tester to the DLC3.
(2) Do step (3) to (9) on the previous and this page.
(3) 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.

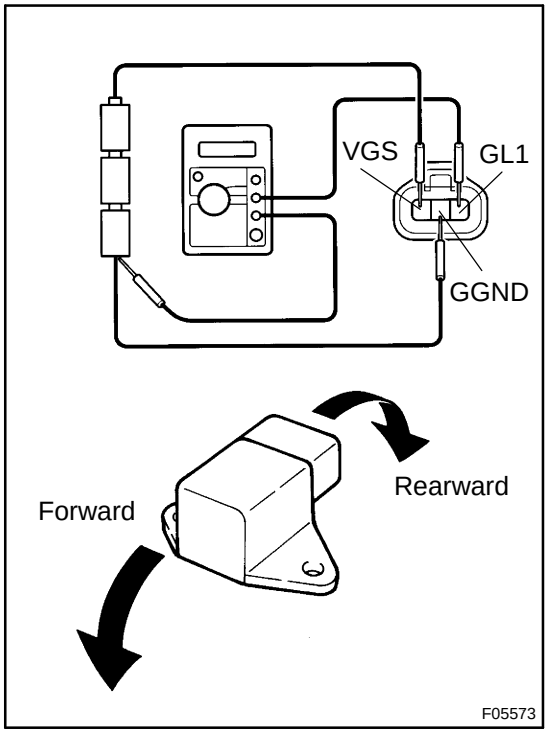
DTC of the sensor check function:

Code No.	Diagnosis	Trouble Area
C1271 / 71	Low output voltage of right front speed sensor	$ Right front speed sensor $ Sensor installation $ Sensor rotor
C1272 / 72	Low output voltage of left front speed sensor	$ Left front speed sensor $ Sensor installation $ Sensor rotor
C1273 / 73	Low output voltage of right rear speed sensor	$ Right rear speed sensor $ Sensor installation $ Sensor rotor
C1274 / 74	Low output voltage of left rear speed sensor	$ Left rear speed sensor $ Sensor installation $ Sensor rotor
C1275 / 75	Abnormal change in output voltage of right front speed sensor	Right front speed sensor rotor
C1276 / 76	Abnormal change in output voltage of left front speed sensor	Left front speed sensor rotor
C1277 / 77	Abnormal change in output voltage of right rear speed sensor	Right rear speed sensor rotor
C1278 / 78	Abnormal change in output voltage of left rear speed sensor	Left rear speed sensor rotor
C1279 / 79	Deceleration sensor is faulty	$ Deceleration sensor $ Sensor installation
C1282 / 82	Center differential lock position switch malfunction	Center differential lock position switch
C1282 / 83	L4 position switch malfunction	L4 position switch

3. DECELERATION SENSOR OPERATION DIAGNOSIS SYSTEM

CAUTION:

While checking the deceleration sensor operating diagnosis system, ABS does not work and brake system works as a conventional brake system.



4. DECELERATION SENSOR CHECK

(a) Connect 3 dry batteries of 1.5 V in series.

(b) Connect VGS terminal to the batteries' positive (+) terminal, and GGND terminal to the batteries' negative (−) terminal, apply about 4.5 V between VGS and GGND terminals.

NOTICE:

Do not apply voltage of 6 V or more to terminals VGS and GGND.

(c) Check the output voltage of GL1 terminals.

Symbols	Condition	Standard Value
GL1	Horizontal	About 2.3 V
GL1	Lean forward	0.4 V − about 2.3 V
GL1	Lean rearward	About 2.3 V − 4.1 V

HINT:

- If the sensor is tilted too much it may show the wrong value.
- If dropped, the sensor should be replaced with a new one.
- The sensor removed from the vehicle should not be placed upside down.