056HG–02

PRE–CHECK

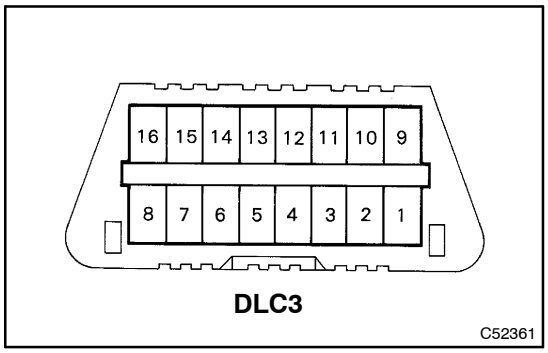
1. DIAGNOSIS SYSTEM

(a) Description

ECM controls the function of the cruise control on a vehicle.

Data on the cruise control and on the DTC can be read from the DLC3 on the vehicle. If CRUISE MAIN indicator light does not comes on after the DTC check, there is a malfunction on the cruise control.

Use the hand–held tester or SST to check and solve the problem.



DLC3

(b) Check the DLC3.

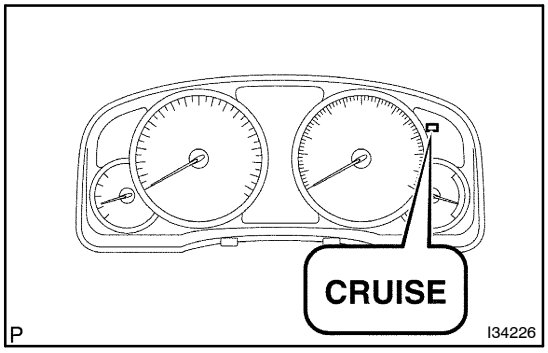
The vehicle's ECM uses ISO 14230 for communication. The terminal arrangement of DLC3 complies with ISO 15031–3 and matches the ISO 14230 format.

Terminal No.	Connection/Specified Condition	Condition
4	Chassis Ground ↔ Body Ground / 1 Ω or less	Always
7	Bus ⊕ Line / Pulse Generation	During Communication
16	Battery Positive ↔ Body Ground / 9 – 14 V	Always

HINT:

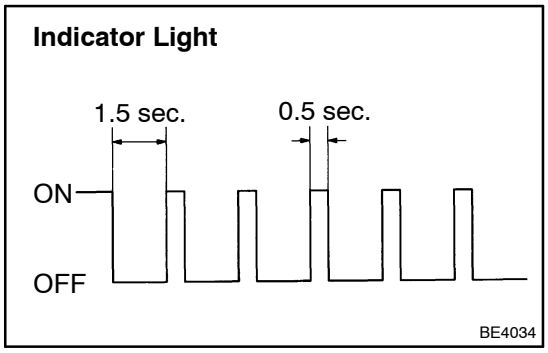
If the display shows "UNABLE TO CONNECT TO VEHICLE" as connecting the hand–held tester to the DLC3 and turn the ignition ON, there is a problem either on the vehicle or on the tool.

- If communication is normal when connecting the tool to another vehicle, inspect DLC3 on the original vehicle.
- If communication is still not possible when connecting the tool to another vehicle, the problem is probably in the tool itself. Consult the Service Department listed in the tool's instruction manual in that case.



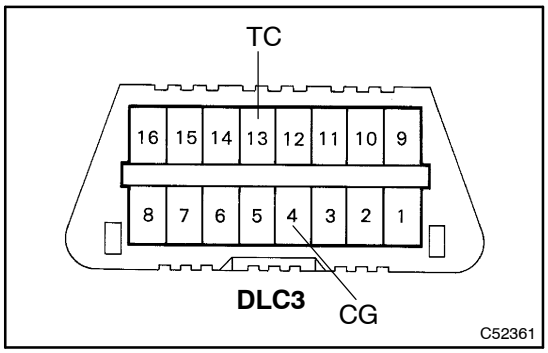
(c) Check the indicator.
(1) Turn the ignition switch to ON.
(2) Check that the CRUISE MAIN indicator light comes on when the main switch button is turned on, and that the indicator light goes off when the main switch is turned OFF.

HINT:
If the indicator check result is not normal, inspect the cruise main indicator light circuit (See page 05–1872).

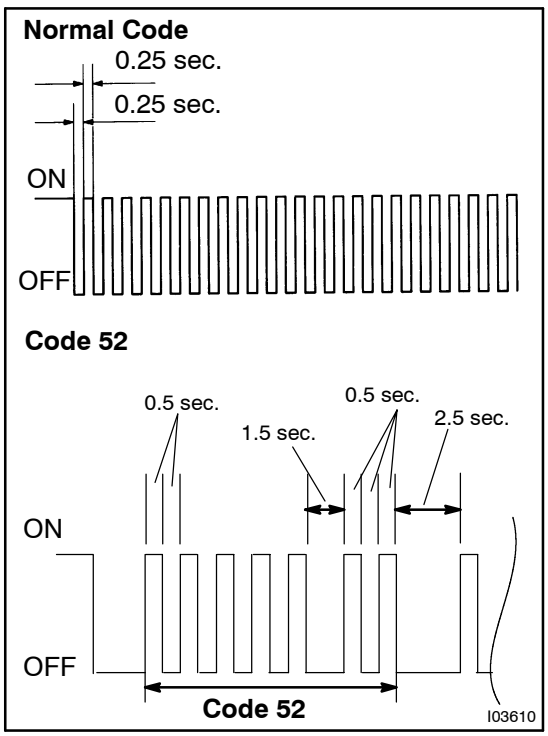


(d) Check the DTC.

HINT:
If a malfunction occurs in the vehicle speed sensors or stop lamp switch assy, etc. during cruise control driving, the ECU actuates AUTO CANCEL of the cruise control and turns on and off the CRUISE MAIN indicator light to inform the driver of a malfunction. At the same time, the malfunction is stored in memory as a diagnostic trouble code.



(e) Output of DTC using diagnosis check wire.
(1) Using SST, connect terminals TC and CG of DLC3.
SST 09843–18040
(2) Turn the ignition switch to ON.
(3) Read the DTC on the CRUISE MAIN indicator light.



HINT:
If the DTC is not output, inspect the cruise main indicator light circuit (See page 05–1872) and diagnosis circuit (See page 05–1876).
As an example, the blinking pattern of normal code and code 52 are shown in the illustration.

2. USING HAND–HELD TESTER

(a) Hook up the hand–held tester to the DLC3.
(b) Monitor the ECU data by following the prompts on the tester screen.

HINT:
Hand–held tester has a ”Snapshot” function which records the monitored data.
Please refer to the hand–held tester operator’s manual for further details.

3. DATA LIST

HINT:
According to the DATA LIST displayed by the the hand–held tester, you can read the value of the switch, the sensor and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch to ON.
(c) According to the display on tester, read the ”DATA LIST”.

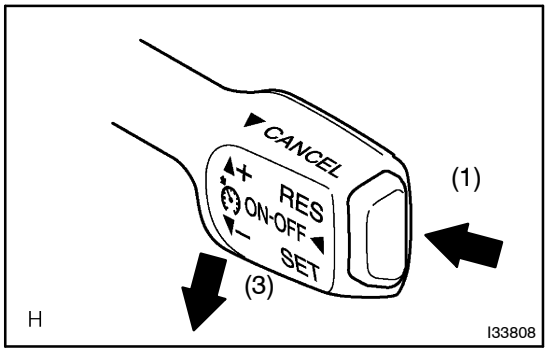
Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
VEHICLE SPD	Vehicle speed / min.: 0 km/h (0 mph), max.: 255 km/h (158 mph)	Actual vehicle speed	–
MEMORY SPD	Cruise control memorized speed / min.: 0 km/h (0 mph), max.: 255 km/h (158 mph)	Actual stored vehicle speed	–
THROTTLE	Required throttle opening angle / min.: 0°, max.: 125°	Actual required throttle opening	–
CRUISE CONTROL	Cruise control system active condition / ON or OFF	ON : Cruise control activated OFF : Cruise control inactivated	–
MAIN SW (MAIN)	Main SW signal (Main CPU) / ON or OFF	ON : Main SW ON (Pressed in) OFF: Main SW OFF (Pressed out)	”3”
MAIN SW (SUB)	Main SW signal (Sub CPU) / ON or OFF	ON : Main SW ON (Pressed in) OFF: Main SW OFF (Pressed out)	”3”
CCS READY M	Cruise control system standby condition (Main CPU) / ON or OFF	ON ⇔ OFF : Change ON/OFF each time Main SW is pushed in.	”1”
CCS READY S	Cruise control system standby condition (Sub CPU) / ON or OFF	ON ⇔ OFF : Change ON/OFF each time Main SW is pushed in.	”1”
CCS INDICATOR M	Cruise indicator signal (Main CPU) / ON or OFF	ON : ”CCS READY” ON OFF : ”CCS READY” OFF	”2”
CCS INDICATOR S	Cruise indicator signal (Sub CPU) / ON or OFF	ON : ”CCS READY” ON OFF : ”CCS READY” OFF	”2”
CANCEL SW	CANCEL SW signal / ON or OFF	ON : CANCEL SW ON OFF : CANCEL SW OFF	–
SET/COAST SW	–/SET SW signal / ON or OFF	ON : –/SET SW ON OFF : –/SET SW OFF	–
RES/ACC SW	+/RES SW signal / ON or OFF	ON : +/RES SW ON OFF : +/RES SW OFF	–
STP LIGHT SW2 M	Stop lamp SW signal (Main CPU) / ON or OFF	ON : Brake pedal depressed OFF : Brake pedal released	–
STP LIGHT SW2 S	Stop lamp SW signal (Sub CPU) / ON or OFF	ON : Brake pedal depressed OFF : Brake pedal released	–

STP LIGHT SW1 S	Stop light SW signal (Sub CPU) / ON or OFF	ON : Brake pedal depressed OFF : Brake pedal released	–
SHIFT D POS	PNP SW signal (D position) / ON or OFF	ON : Shift D position OFF : Except shift D position	–

HINT:
”3” is OK but ”1” is NG → ECM failure
”1” is OK but ”2” is NG → DTC output or ECM failure
”3” is OK but cruise indicator not turn on → CRUISE MAIN indicator or wire harness or ECM failure

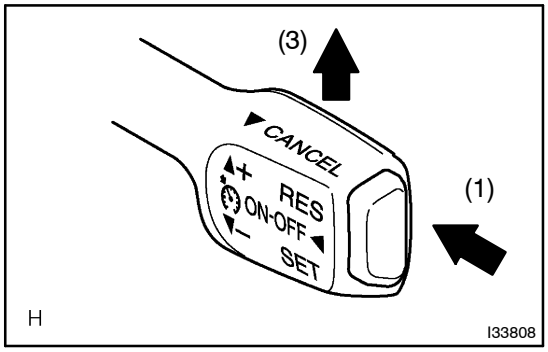
4. DTC CLEAR

(a) The following actions will erase the DTCs and freeze frame data.
  (1) Hand–Held Tester:
    Operating the hand–held tester to erase the codes.
  (2) Except Hand–Held Tester:
    Disconnecting the battery terminals or EFI fuse.
(b) After completing repairs, the DTC retained in memory can be cleared by removing the EFI fuse for 1 minutes or more with the ignition switch OFF.
(c) Check that the normal code is displayed after connecting the fuse.

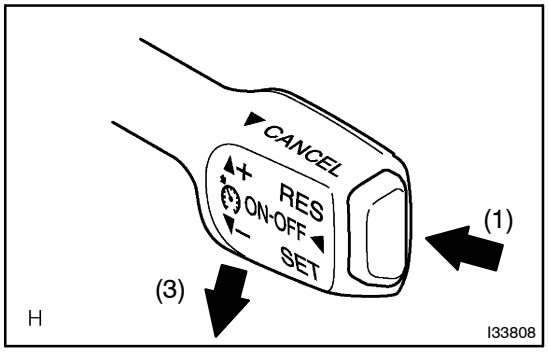


5. PROBLEM SYMPTOM CONFIRMATION (ROAD TEST)

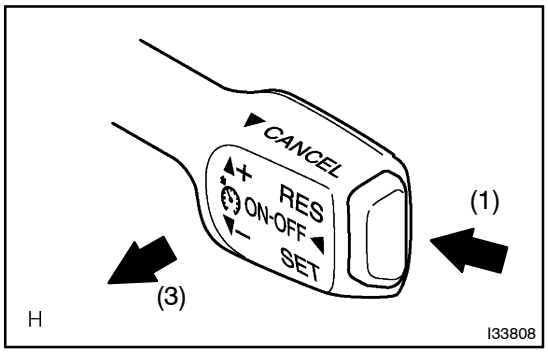
(a) Inspect the SET switch.
  (1) Push the main switch button to ON.
  (2) Drive at a desired speed (40 km/h (25 mph) or higher).
  (3) Push down the control switch to the –/SET.
  (4) After releasing the switch, check that the vehicle cruises at the desired speed.



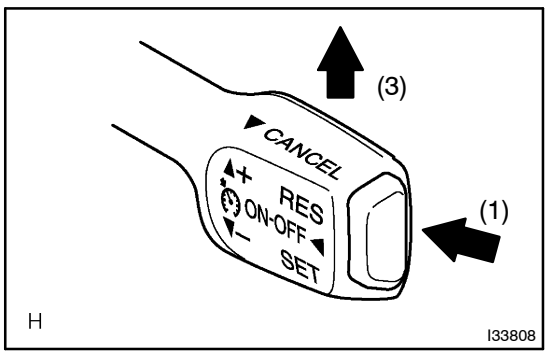
(b) Inspect the ’+’ switch.
  (1) Push the main switch button to ON.
  (2) Drive at a desired speed (40 km/h (25 mph) or higher).
  (3) Check that the vehicle speed increases while the control switch is pull up to +/RES, and that the vehicle cruises at the set speed when the switch is released.
  (4) Momentarily push the control switch upward to the +/RES, and then immediately release it. Check that the vehicle speed increases by about 1.5 km/h (Tap–up function).



(c) Inspect the '–' switch.
(1) Push the main switch button to ON.
(2) Drive at a desired speed (40 km/h (25 mph) or higher).
(3) Check that the vehicle speed decreases while the control switch is push down to –/SET, and the vehicle cruises at the set speed when the switch is released.
(4) Momentarily push the control switch downward to –/SET, and then immediately release it. Check that the vehicle speed decreases by about 1.5 km/h (Tap–down function).



(d) Inspect the CANCEL switch.
(1) Push the main switch button to ON.
(2) Drive at a desired speed (40 km/h (25 mph) or higher).
(3) When operating one of the followings, check that the cruise control system is cancelled and that the normal driving mode is reset.
- Depress the brake pedal.
- Depress the clutch pedal (M/T).
- Shift to except D range (A/T).
- Push the main switch button to OFF.
- Pull the control switch to CANCEL.



(e) Inspect the RES switch.
(1) Push the main switch button to ON.
(2) Drive at a desired speed (40 km/h (25 mph) or higher).
(3) When operating one of the followings, check that the cruise control system is cancelled and that the normal driving mode is reset.
- Depress the brake pedal.
- Depress the clutch pedal (M/T).
- Shift to except D range (A/T).
- Pull the control switch to CANCEL.

(4) After the control switch is pull up to +/RES at the driving speed of more than 40 km/h (25 mph), check that the vehicle restores the speed before the cancellation.