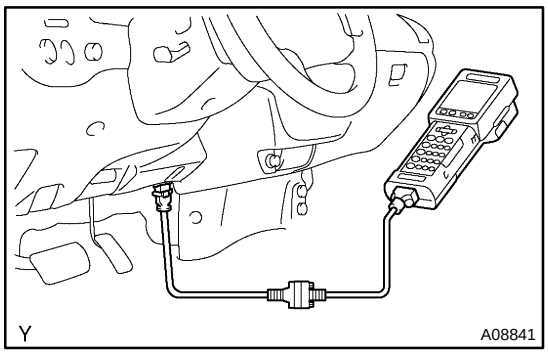
DIARC–01



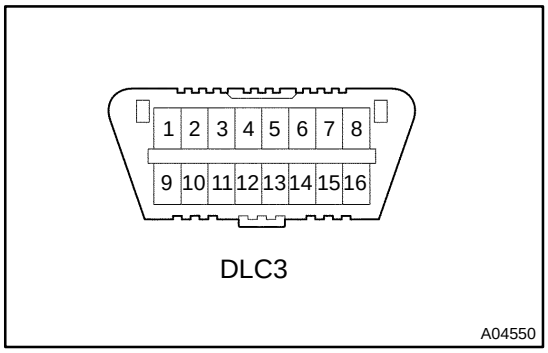
PRE–CHECK

1. DIAGNOSIS SYSTEM

(a) Description

The ECM controls the cruise control function on this vehicle. Data of the cruise control or DTC can be read from the DLC3 of the vehicle. When cruise control function has a trouble, check CRUISE MAIN indicator does not light up but DTC inspection is performed.

Therefore, when the cruise control function seems to have a trouble, use the hand–held tester or SST to check and troubleshoot it.



(b) Check the DLC3.

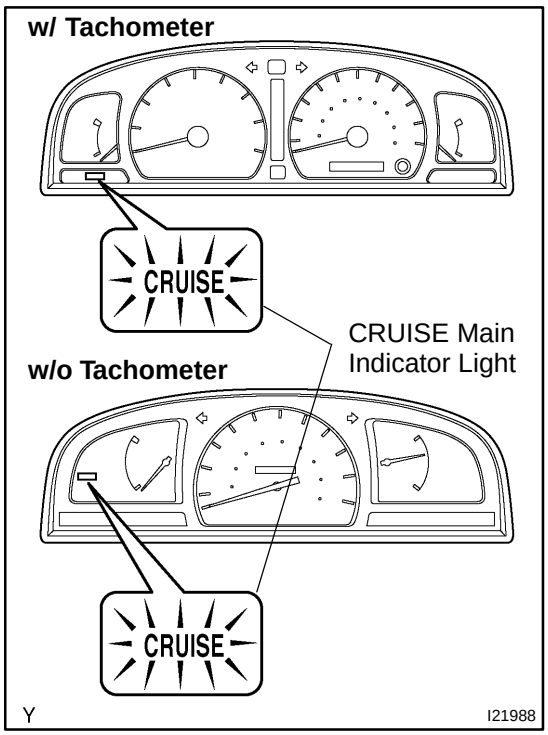
The vehicle's ECM uses the ISO 9141–2 for communication. The terminal arrangement of the DLC3 complies with the SAE J1962 and matches the ISO 9141–2 format.

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

HINT:

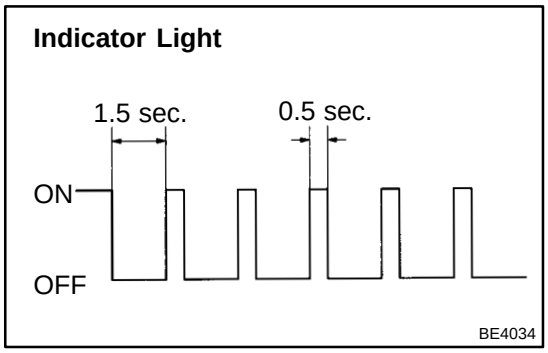
If the display shows "UNABLE TO CONNECT TO VEHICLE" when you have connected the cable of the hand–held tester to the DLC3, turned the ignition switch ON and operated the hand–held tester, there is a problem on the vehicle side or tool side.

- If the communication is normal when the tool is connected to another vehicle, inspect the DLC3 on the original vehicle.
- If the communication is still impossible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.



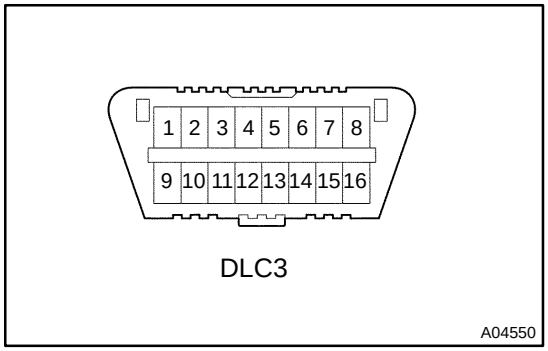
(c) Check the indicator.
(1) Turn the ignition switch ON.
(2) Check that the CRUISE MAIN indicator light comes on when the cruise control main switch is turned ON, and check that the indicator light goes off when the main switch is turned OFF.

HINT:
If the indicator check result is abnormal, proceed to troubleshooting (See page BE–2) of the combination meter section.

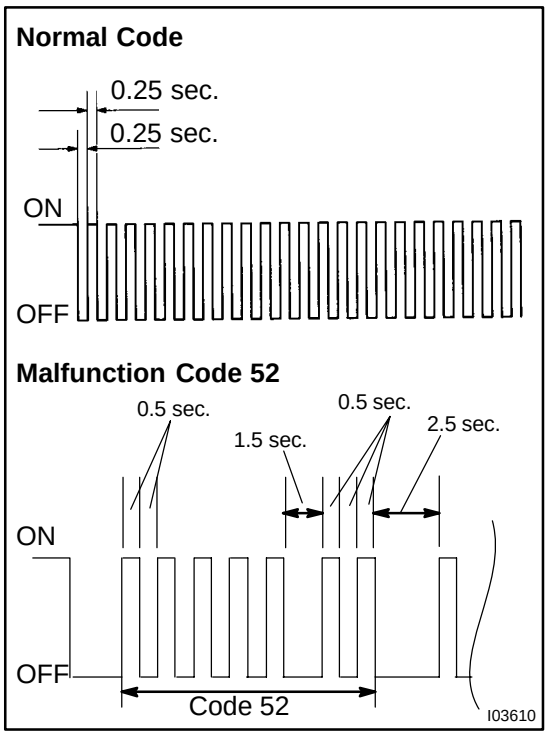


(d) Check the DTC.

HINT:
If a malfunction occurs in the speed sensor or actuator, 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 the memory as a DTC.

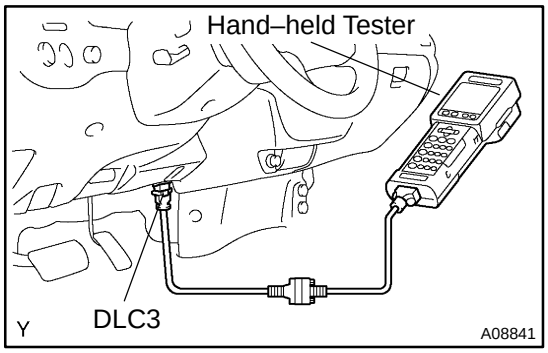


(e) Using diagnosis check wire, check the output of the DTC.
(1) Turn the ignition switch ON.
(2) Using SST, connect terminals Tc and CG of the DLC3.
SST 09843–18020
(3) Read the DTC on the CRUISE MAIN indicator light.



HINT:

- If a DTC is not output, inspect the diagnosis circuit.
- As an example, the blinking patterns of codes; normal and 52 are shown in the illustration.



2. MONITOR ECM DATA BY USING HAND–HELD TESTER

(a) Connect the hand–held tester to the DLC3.
(b) Monitor the ECM data by following the prompts on the tester screen.

HINT:

The 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 hand–held tester, you can read the value of the switch, sensor, actuator 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 to the DLC3.
(b) Turn the ignition switch ON.
(c) According to the display on the 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)	Memorized speed : Cruise control activated	–

THROTTLE	Required throttle opening angle / min.: 0˚, max.: 125˚	Required throttle opening angle (0˚ – 84˚): Cruise control activated	–
CCS READY S	Cruise control system stand by condition (Sub CPU) / ON or OFF	ON ↔ OFF: Change ON/OFF each time Main SW is pressed in.	”1”
CCS MEMORY M	Cruise control system stand by condition (Main CPU) / ON or OFF	ON ↔ OFF: Change ON/OFF each time Main SW is pressed in.	”1”
CANCEL SW	CANCEL SW signal / ON or OFF	ON: CANCEL SW ON OFF: CANCEL SW OFF	–
SET/COAST SW	SET/COAST SW signal / ON or OFF	ON: SET/COAST SW ON OFF: SET/COAST SW OFF	–
RES/ACC SW	RES/ACC SW signal / ON or OFF	ON: RES/ACC SW ON OFF: RES/ACC SW OFF	–
STP LIGHT SW2 M	Stop light SW signal (Main CPU) /ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	–
STP LIGHT SW2 S	Stop light 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: Expect shift D position	–
CRUISE CTRL	Cruise control system active condition / ON or OFF	ON: Cruise control activated OFF: Cruise control inactivated	–
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”
MAIN SW (SUB)	Main SW signal (Sub CPU) / ON or OFF	ON: Main SW ON (Pressed in) OFF: Main SW OFF (Pressed out)	”3”
MAIN SW (MAIN)	Main SW signal (Main CPU) / ON or OFF	ON: Main SW ON (Pressed in) OFF: Main SW OFF (Pressed out)	”3”

HINT:

”3” is OK but ”1” is NG → ECM failure.

”1” is OK but IS NG → DTC output or ECM failure.

”3” is OK but cruise indicator not turn on → Indicator or W/H or ECM failure.

4. DTC CLEARANCE

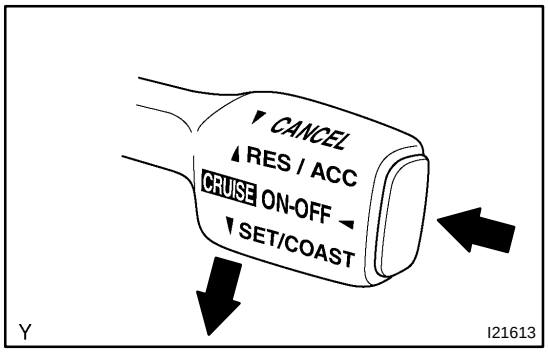
HINT:

During in the erase mode, DTC detection dose not work.

(a) The following actions will erase DTCs and freeze frame data.
  (1) Hand–Held Tester:
    Operating the hand–held tester to erase codes.
  (2) Except Hand–Held Tester:
    Disconnecting the battery terminals or the EFI fuse for 10 seconds or more.

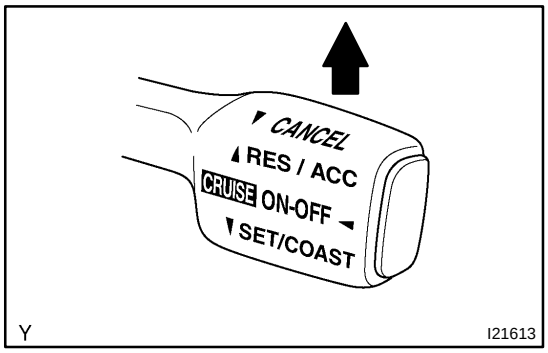
(b) After completing repairs, the DTC retained in the memory can be cleared by removing the EFI fuse for 10 seconds or more with the ignition switch OFF.

(c) Check that the normal code is displayed after connecting the fuse.

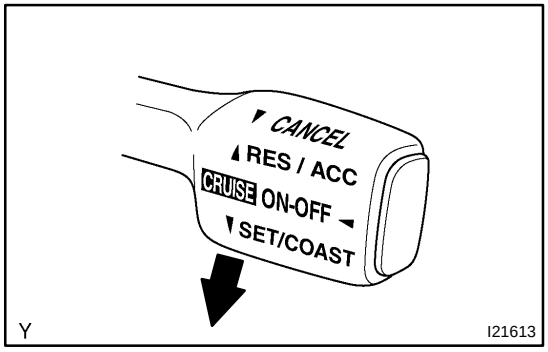


5. PROBLEM SYMPTOM CONFIRMATION (ROAD TEST)

(a) Inspect the SET switch.
(1) Push the main switch ON.
(2) Drive at the see speed (40 km/h (25 mph) or higher).
(3) Press the control switch downward for the SET/ COAST.
(4) Release the switch, and check that the vehicle cruises at the set speed.

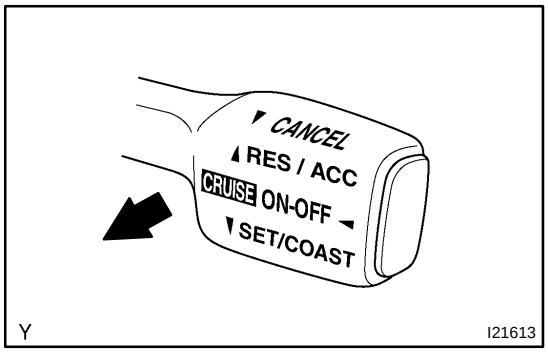


(b) Inspect the ACCEL switch.
(1) Push the main switch ON.
(2) Drive at the see speed (40 km/h (25 mph) or higher).
(3) Check that the vehicle speed increases while the control switch is turned to RES/ACC, and that the vehicle cruises at the set speed when the switch is released.
(4) Momentarily push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

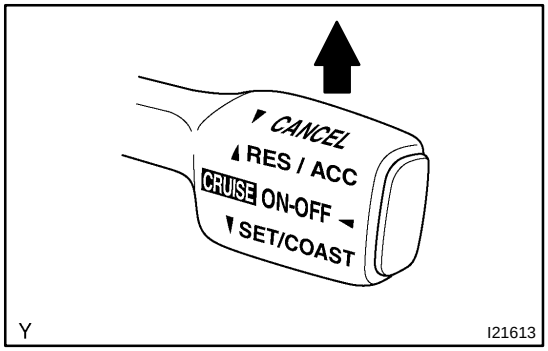


(c) Inspect the COAST switch.
(1) Push the main switch ON.
(2) Drive at the set speed (40 km/h (25 mph) or higher).
(3) Check that the vehicle speed decreases while the control switch is turned to SET/COAST, and the vehicle cruises at the set speed when the switch is released.
(4) Momentarily push the control switch downward for the SET/COAST, 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 ON.
(2) Drive at the set 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.
- M/T:
  Depress the clutch pedal.
- A/T:
  Shift into except D position.
- Push the main switch OFF.
- Pull the cruise control switch for CANCEL.



(e) Inspect the RESUME switch.
(1) Push the main switch ON.
(2) Drive at the set 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.
- M/T:
  Depress the clutch pedal.
- A/T:
  Shift into except D position.
- Pull the cruise control switch for CANCEL.

(4) Turn the control switch to RES/ACC at the driving speed of more than 40 km/h (25 mph), and check that the vehicle restores the speed before the cancellation.