

2002 ACCESSORIES & EQUIPMENT

Cruise Control System - Diagnostics - RAV4

HOW TO PROCEED WITH TROUBLESHOOTING

Troubleshoot in accordance with the procedure in **CUSTOMER PROBLEM ANALYSIS CHECK** .

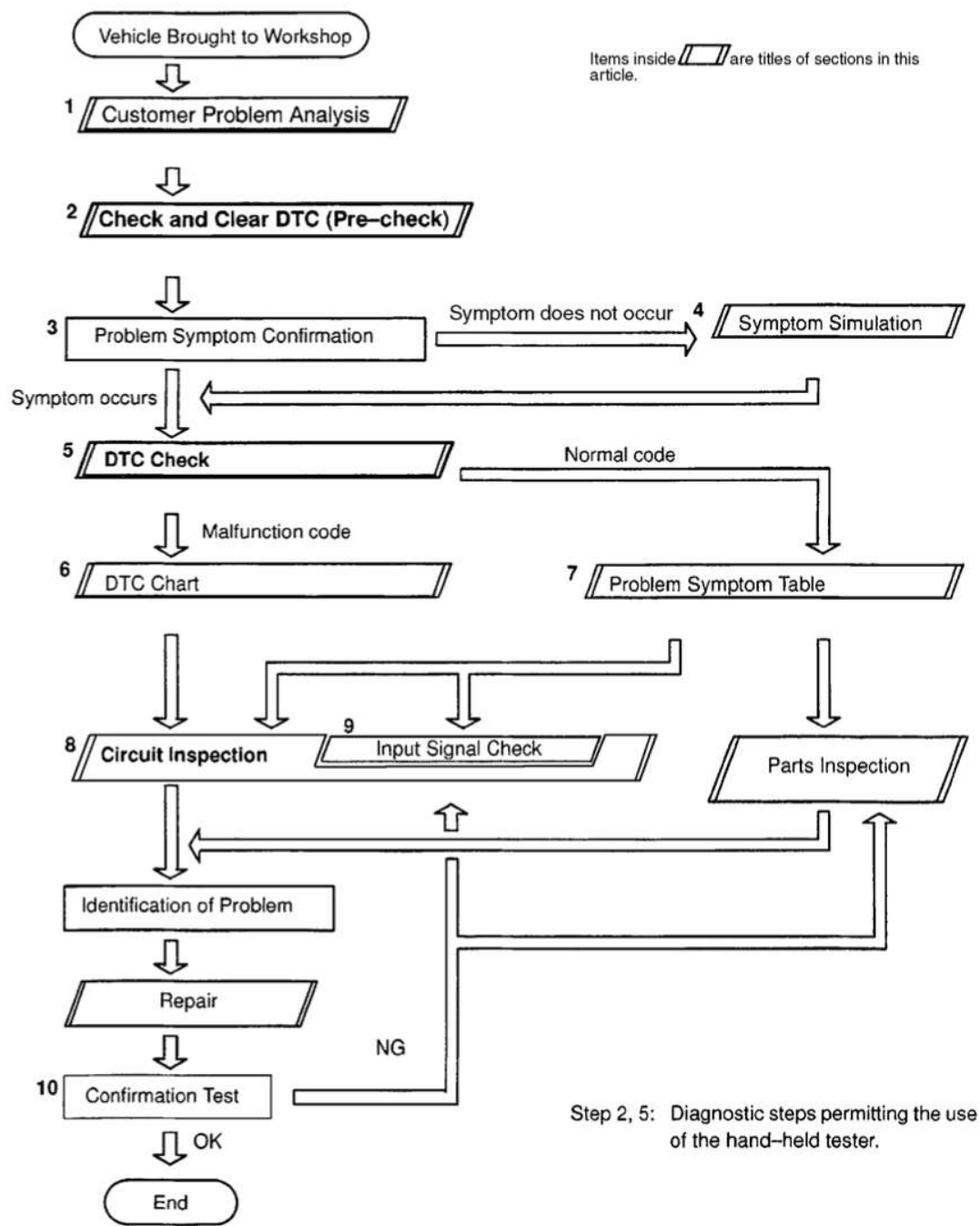


Fig. 1: Displaying Cruise Control System Flow Chart
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

CUSTOMER PROBLEM ANALYSIS CHECK

CRUISE CONTROL SYSTEM Check Sheet		Inspector's name: _____	
Customer's Name		Registration No.	
		Registration Year	
		Frame No.	
Date Vehicle Brought in	/ /	Odometer Reading	km Mile
Condition of Problem Occurrence	Date of Problem Occurrence	/ /	
	How Often does Problem Occurs	☐ Continuous ☐ Intermittent (Times a day)	
	Vehicle Speed when Problem Occurred	km Mile	
Symptoms	☐ Auto cancel occurs	• Driving condition ☐ City driving ☐ Freeway ☐ Up hill ☐ Down hill • After cancel occurred, did the driver activate cruise control again? ☐ Yes ☐ No	
	☐ Cancel does not occur	☐ With brake ON ☐ Except D position shift ☐ At 40 km/h (25 mph) or less ☐ When control SW turns to CANCEL position	
	☐ Cruise control malfunction	☐ Slip to acceleration side ☐ Slip to deceleration side ☐ Hunting occurs ☐ O/D cut off does not occur ☐ O/D does not return	
	☐ Switch malfunction	☐ SET ☐ ACCEL ☐ COAST ☐ RESUME ☐ CANCEL	
	☐ Cruise MAIN indicator light	☐ Remains ON ☐ Does not light up ☐ Blinking	
DTC Check	1st Time	☐ Normal Code ☐ Malfunction Code (Code)	
	2nd Time	☐ Normal Code ☐ Malfunction Code (Code)	

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Fig. 2: Displaying Cruise Control System Check Sheet
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PRE-CHECK

1. Diagnosis System

a. 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 that the indicator light goes OFF when the main switch is turned OFF.

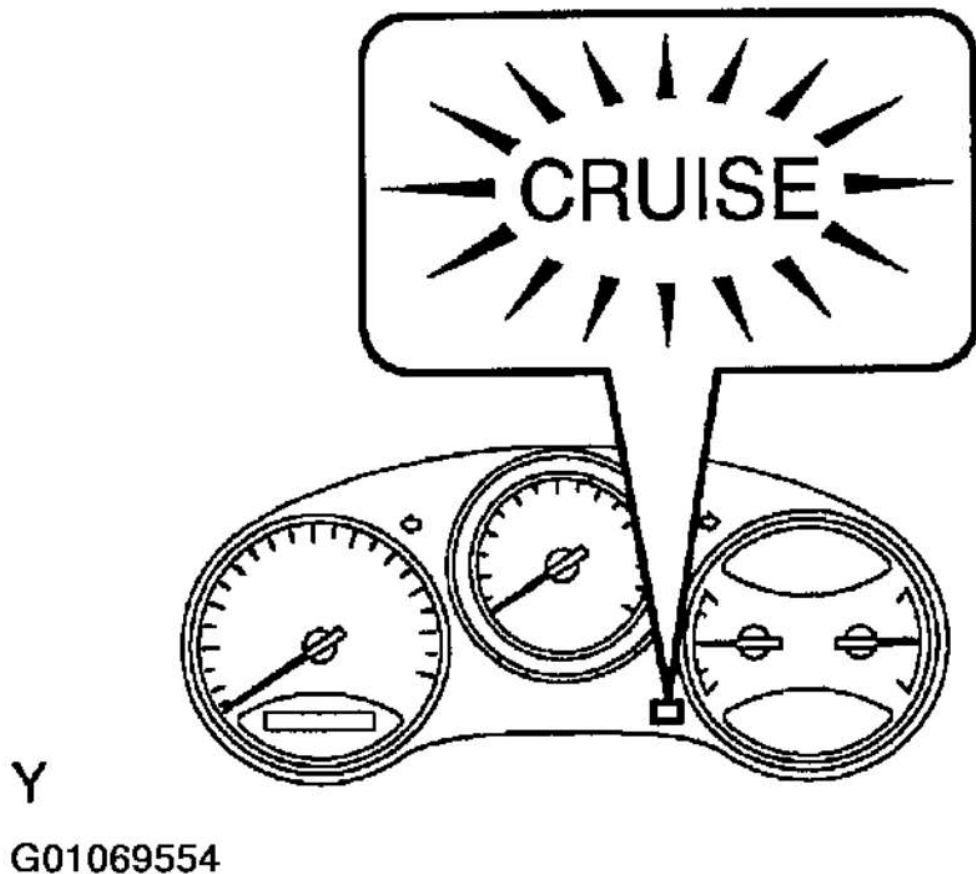


Fig. 3: Displaying Cruise Control Indicator Light
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: If the indicator check result is not normal, proceed to the troubleshooting of the combination meter section. See CIRCUIT .

- b. Check the DTC.

NOTE: If a malfunction occurs in the No. 1 vehicle 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.

Indicator Light

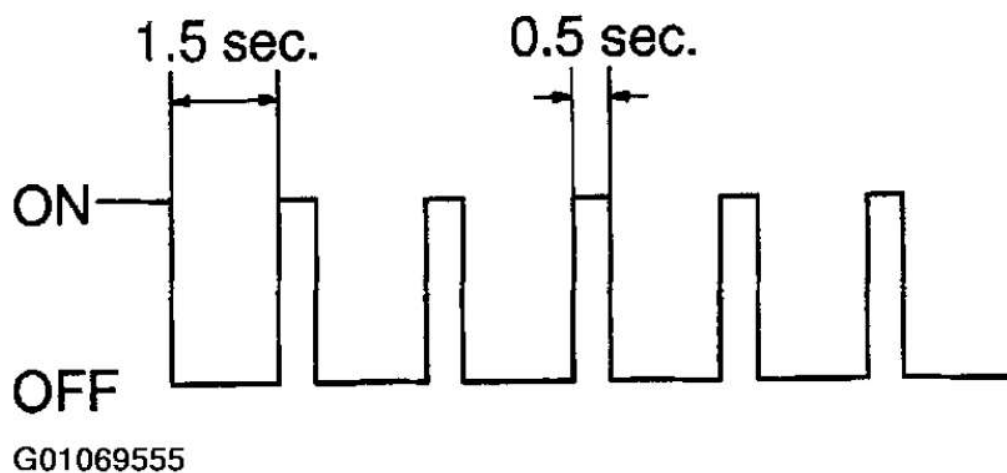


Fig. 4: Displaying Indicator Light Pulses

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Output a DTC by using diagnosis check wire.
 - 1. Turn the ignition switch ON.
 - 2. Using SST, connect terminals Tc and CG of DLC3.

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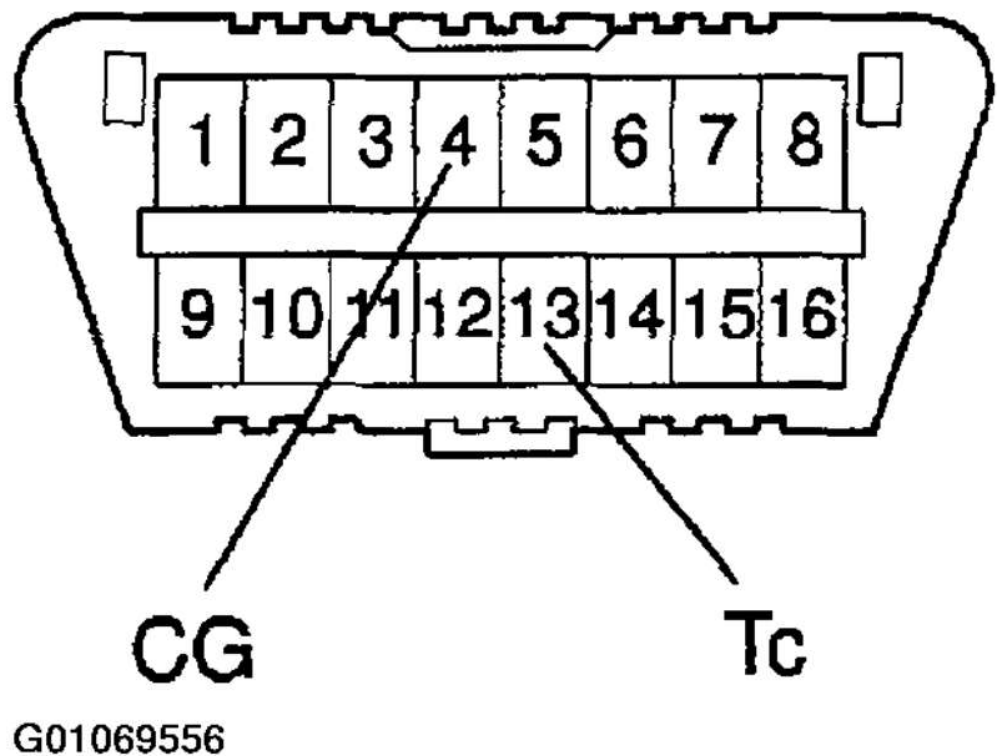


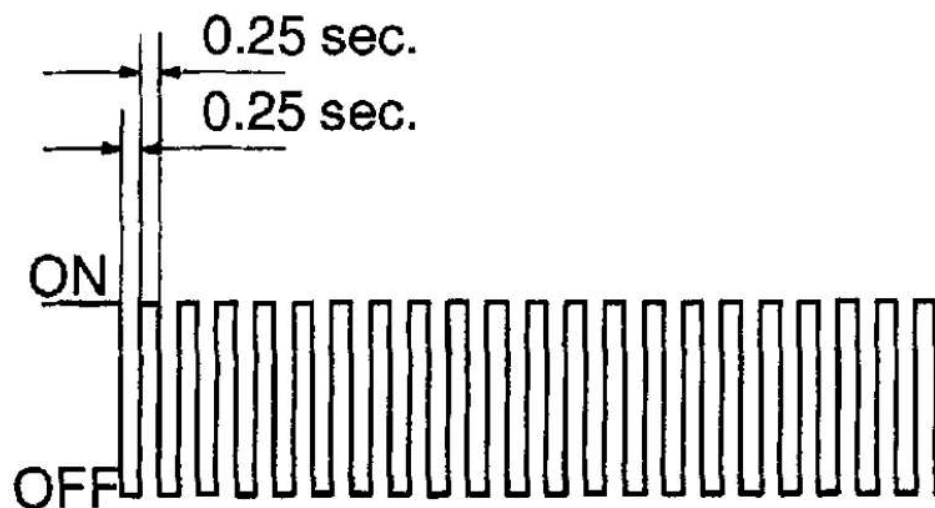
Fig. 5: Connecting Terminals Tc & CG
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. Read the DTC on the CRUISE MAIN indicator light.

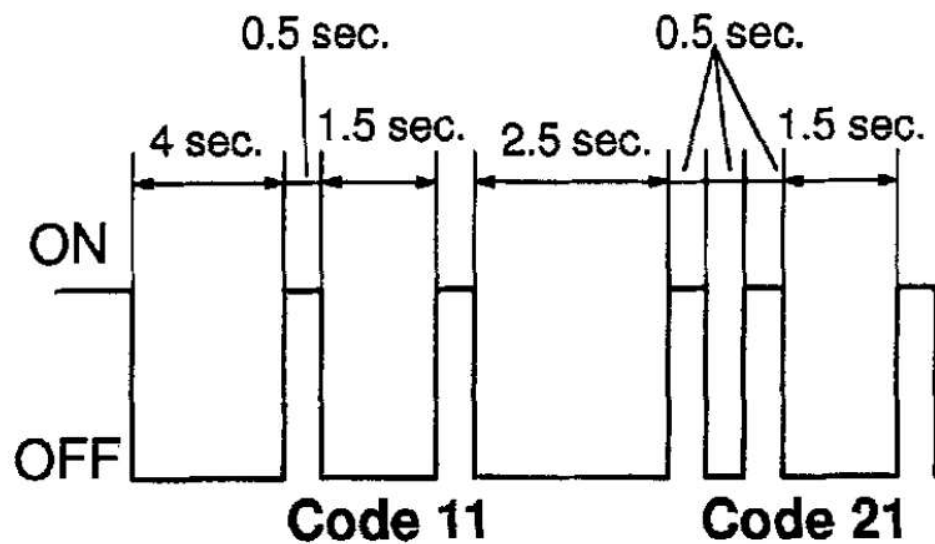
NOTE:

- If the DTC is not output, inspect the diagnosis circuit. See INSPEC PROCEDURE .
- As an example, the blinking patterns for codes; normal, 11 and 21 shown in Fig. 6 .

Normal Code



Malfunction codes 11 and 21



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Fig. 6: Displaying Blinking Pattern Codes

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Using hand-held tester .

- a. Hook up the hand-held tester to the DLC3.

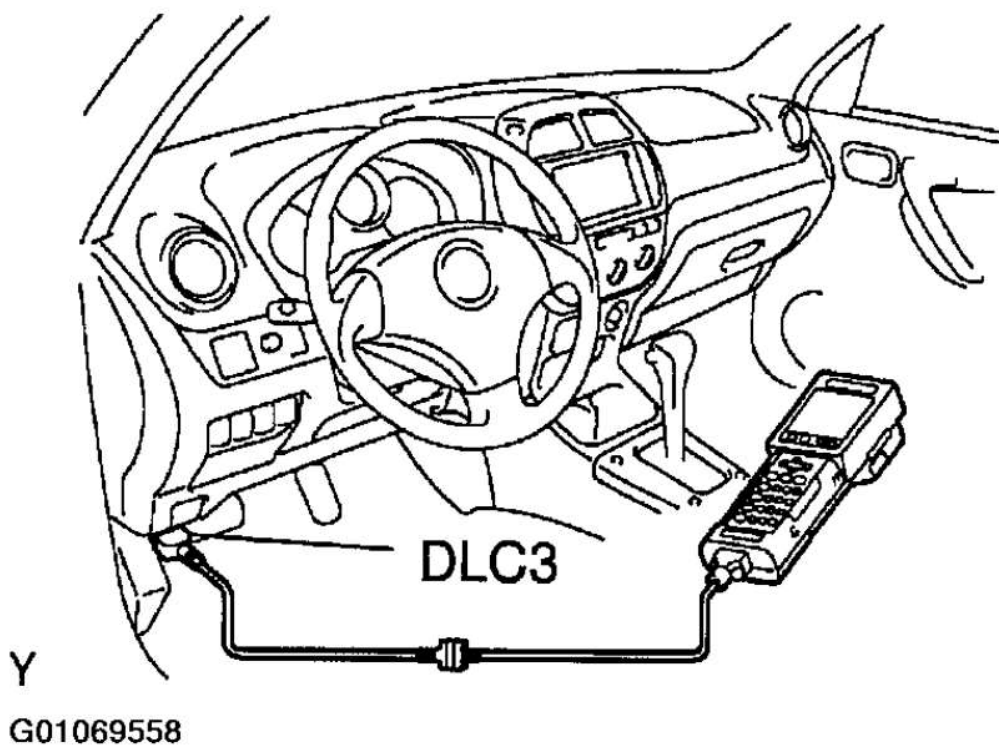


Fig. 7: Connecting Hand-Held Tester To DLC3
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Monitor the ECU data by following the prompts on the tester screen.

NOTE: 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. DTC clearance (erase mode) .

NOTE: During in the erase mode, diagnostic detection does not work.

- a. Drive at about 15 km/h or below.
- b. Using SST, connect terminals Tc and CG of DLC3.

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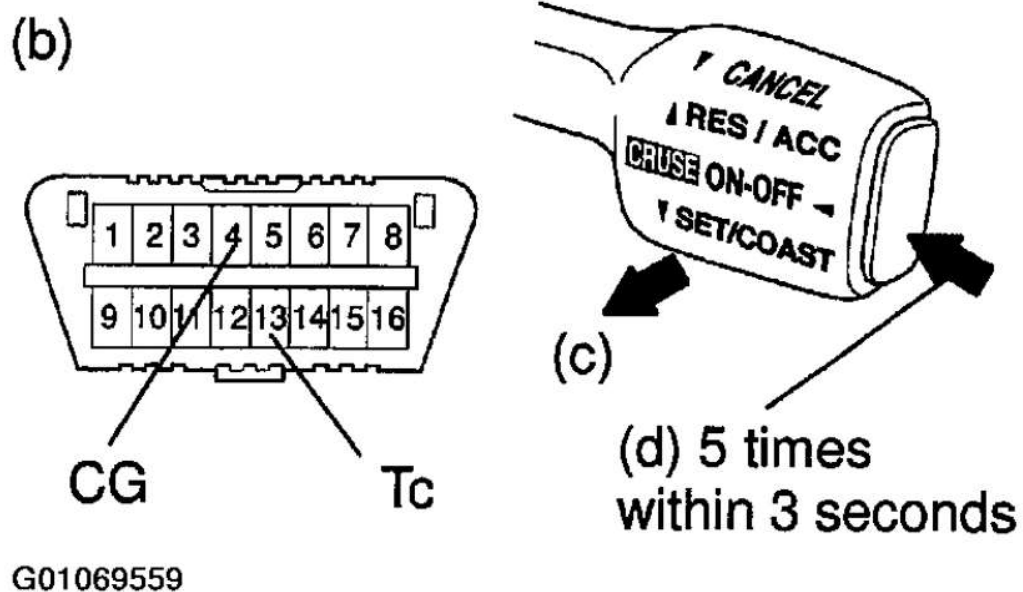


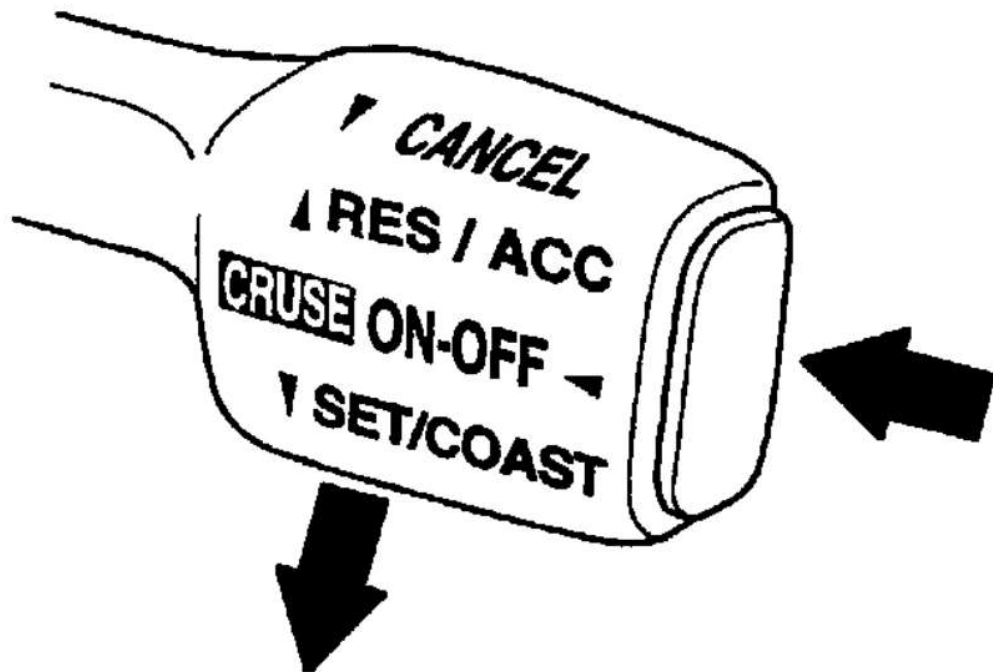
Fig. 8: Identifying DLC3 Terminals

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Pull the cruise control switch for CANCEL.
- d. Under the above mentioned condition, press on the cruise control main switch 5 times within 3 seconds.

4. Problem Symptom Check (Road Test)

- a. Inspect the SET switch.
 1. Turn the main switch ON.
 2. Drive at a desired speed (40 km/h (25 mph) or higher).
 3. Press the control switch for the SET/COAST.

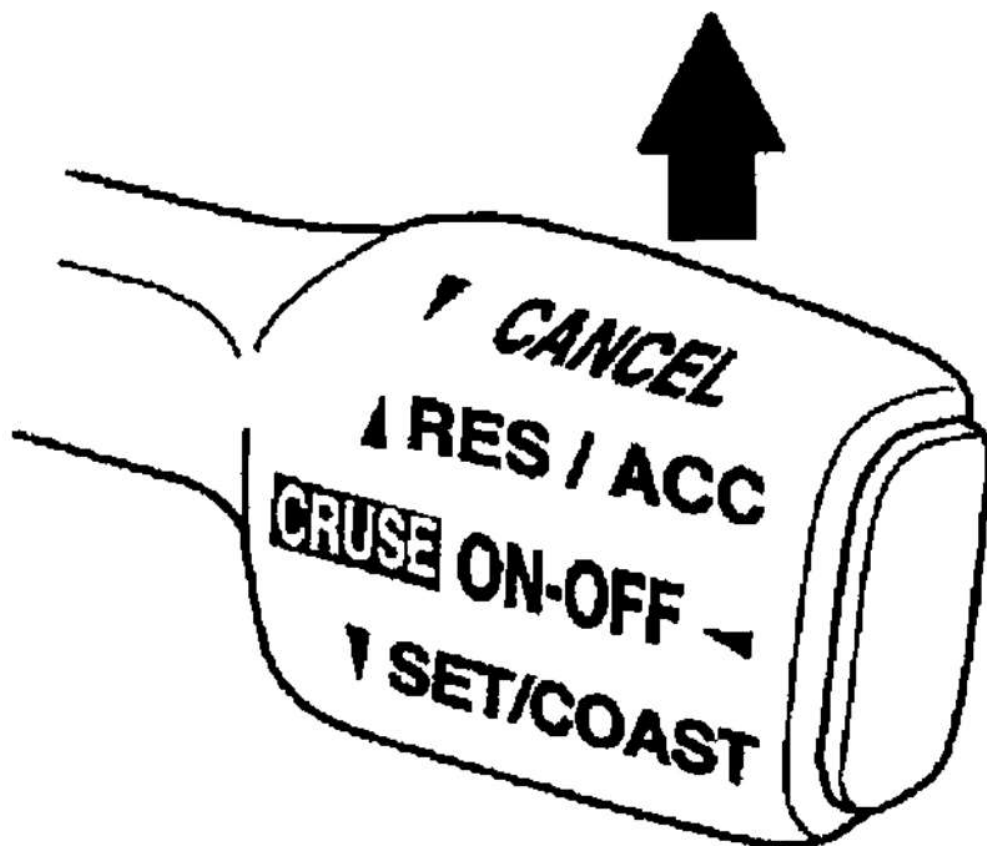


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Fig. 9: Checking SET/COAST Function

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. After releasing the switch, check that the vehicle cruises at the desired speed.
- b. Inspect the ACCEL switch.
 1. Turn the main switch 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 turned to RES/ACC, and that the vehicle cruises at the set speed when the switch is released.

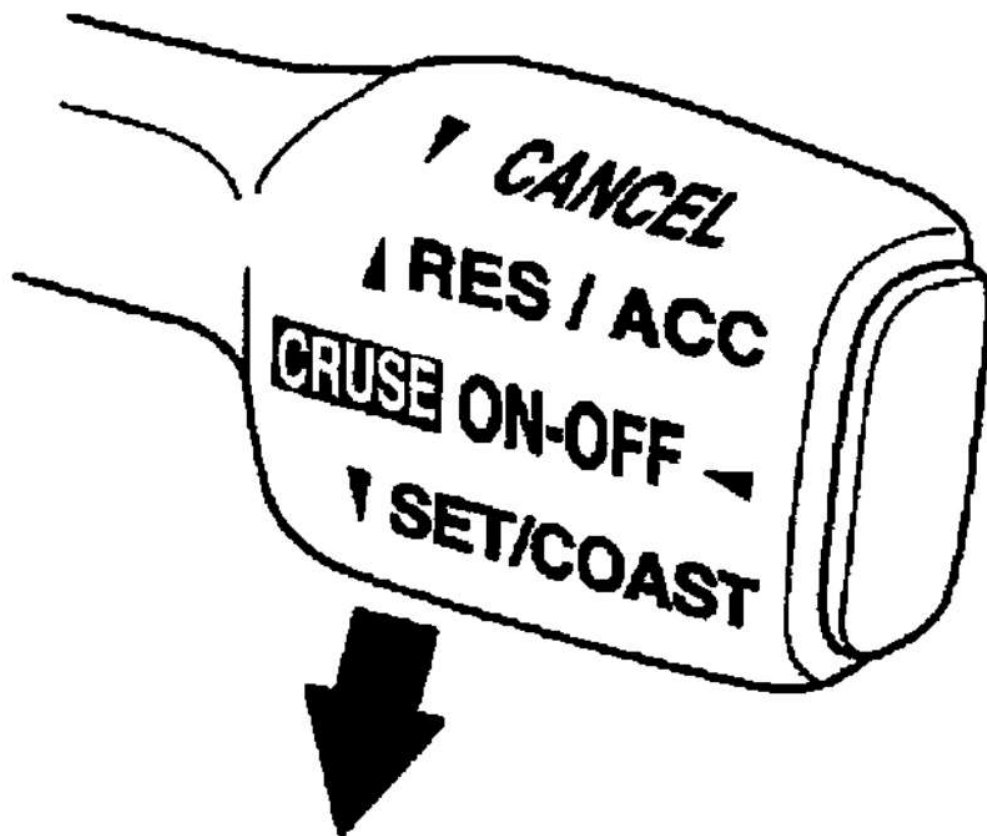


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Fig. 10: Checking ACCEL Function

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. Momentarily raise the control switch upward to the RES/ACC position and then immediately release it. Check that the vehicle speed increases by approximately 1.5 km/h (Tap-up function).
- c. Inspect the COAST switch.
 1. Turn the main switch 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 turned to SET/COAST, and the vehicle cruises at the set speed when the switch is released.



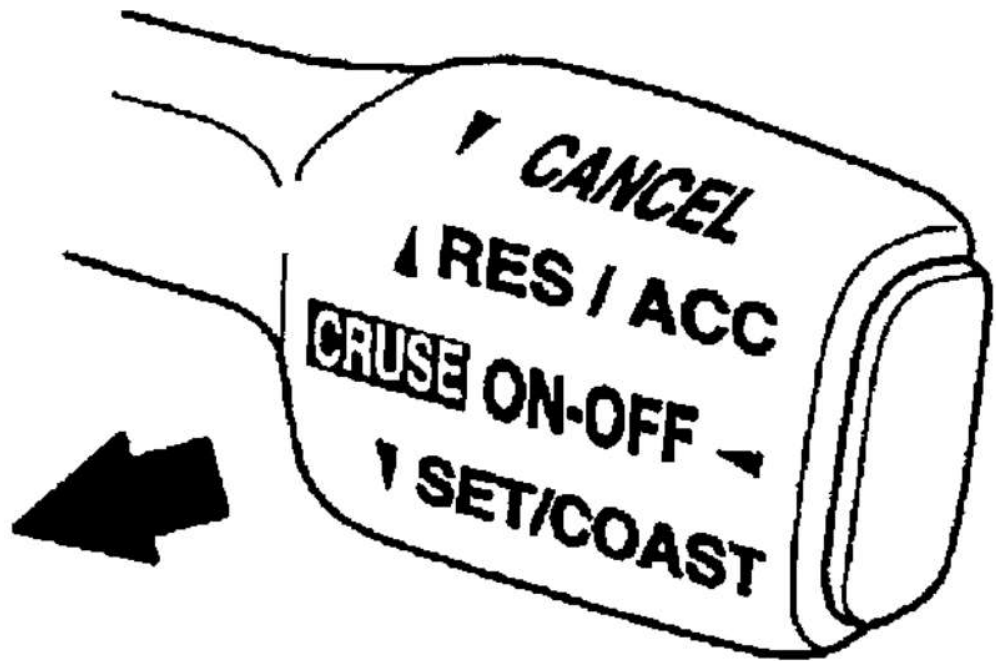
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Fig. 11: Checking COAST Function

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. Momentarily push the control switch downward for SET/COAST, and then immediately release it. Check that the vehicle speed decreases by approximately 1.5 km/h (Tap-down function).
- d. Inspect the CANCEL switch.
 1. Turn the main switch ON.
 2. Drive at a desired speed (40 km/h (25 mph) or higher).
 3. When doing one of the following operations, 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 position (A/T)
- Turn the main switch OFF
- Pull the cruise control switch for CANCEL



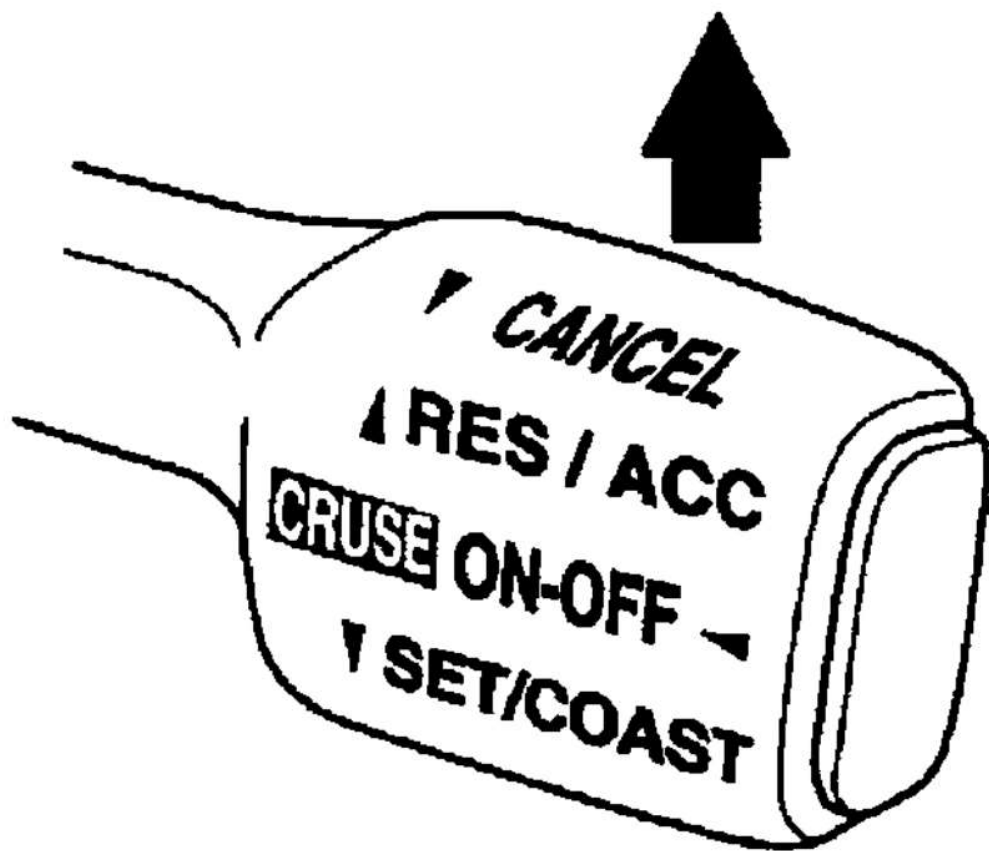
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Fig. 12: Checking CANCEL Function

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Inspect the RESUME switch.
1. Turn the main switch ON.
 2. Drive at a desired speed (40 km/h (25 mph) or higher).
 3. When doing one of the following operations, 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 position (A/T)

- Turn the main switch OFF
 - Pull the cruise control switch for CANCEL
4. After the control switch is turned to RES/ACC at the driving speed of more than 40 km/h (25 mph), check that the vehicle restores the speed before to the cancellation.



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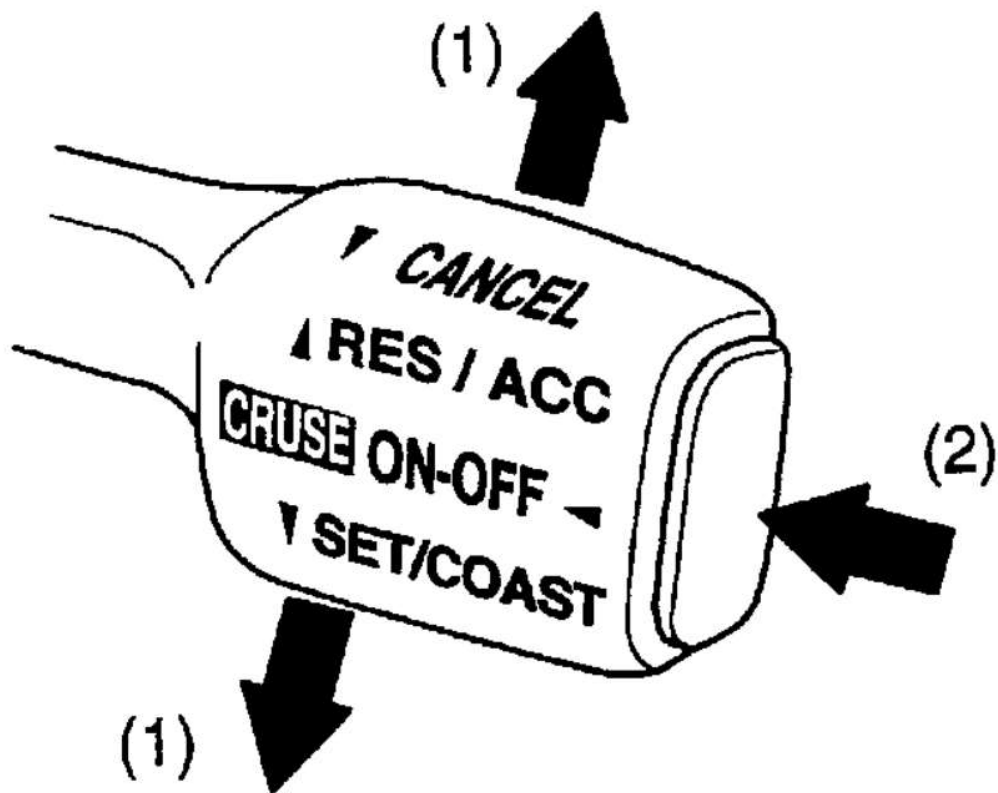
Fig. 13: Checking RESUME Function
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. Input signal check .

1. For checking No. 1 - No. 3:
Turn the ignition switch ON.

2. For checking No. 4:

- Jack up the vehicle.
- Start the engine.
- Shift to D position.
- a. Turn the control switch to SET/COAST or RES/ACC position and hold it down or up (1).



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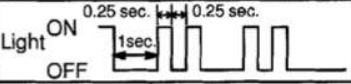
Fig. 14: Checking Input Signal

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Push the main switch ON (2).
- c. Check that the CRUISE MAIN indicator light blinks twice or 3 times repeatedly after 3 seconds.
- d. Turn the SET/COAST or RES/ACC switch OFF.
- e. Operate each switch as listed in the table below.

- f. Read the blinking pattern of the CRUISE MAIN indicator light.
- g. After performing the check, turn the main switch OFF.

NOTE: When 2 or more signals are input to the ECU, the lowest numbered code will be displayed 1st.

No.	Operation Method	CRUISE MAIN Indicator Light Blinking Pattern	Diagnosis
1	Turn SET/COAST switch ON		SET/COAST switch circuit is normal
2	Turn RES/ACC switch ON		RES/ACC switch circuit is normal
3	Turn CANCEL switch ON		CANCEL switch circuit is normal
	Turn stop light switch ON Depress brake pedal		Stop light switch circuit is normal
	Turn PNP switch OFF (Shift to except D position)		PNP switch circuit is normal
	Turn clutch switch OFF (Depress clutch pedal)		Clutch switch circuit is normal
4	Drive at about 40 km/h (25 mph) or higher		Vehicle Speed Sensor is normal
	Drive at about 40 km/h (25 mph) or below		

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Fig. 15: Displaying Input Signal Diagnosis
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DIAGNOSTIC TROUBLE CODES

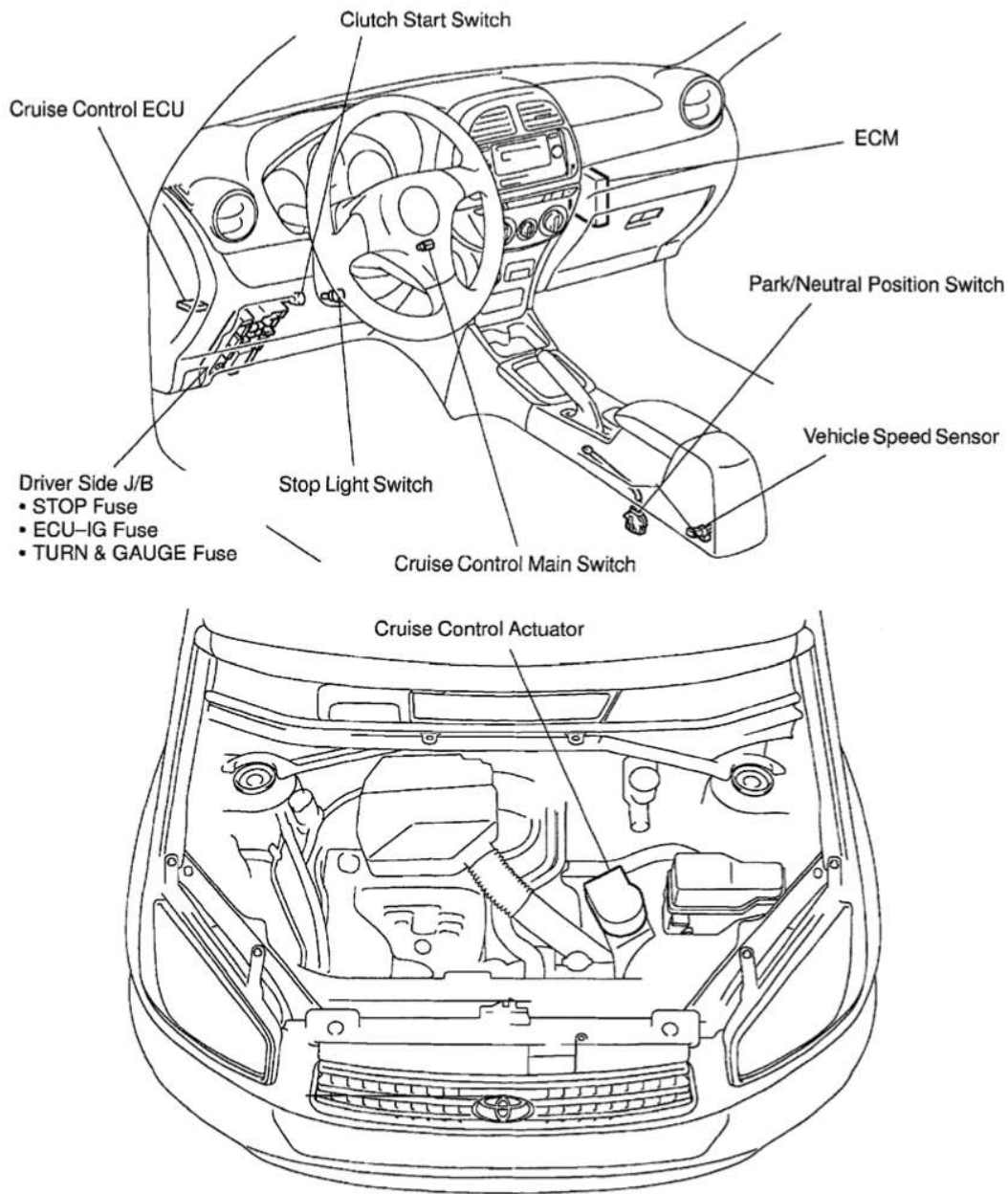
If a malfunction code is displayed during the DTC check, check the circuit listed in code in **DIAGNOSTIC TROUBLE CODES** and proceed to the appropriate section.

DIAGNOSTIC TROUBLE CODE

DTC/Detection Item	Trouble Area
11	
Actuator Motor Circuit	
....	Actuator Motor
....	Harness/Connector Between Cruise Control ECU And Actuator Motor
....	Cruise Control ECU

12	
Actuator Magnetic Clutch Circuit	
.....	STOP Fuse
.....	Stop Light Switch
.....	Actuator Magnetic Clutch
.....	Harness Or Connector From Cruise Control ECU To Magnetic Clutch Or Magnetic Clutch To Ground
.....	Cruise Control ECU
14	
Actuator Mechanical Malfunction	
.....	Actuator Motor (Actuator Lock: Motor, Arm
.....	Cruise Control ECU
21	
Open In Vehicle Speed Sensor Circuit	
.....	Combination Meter
.....	Harness Or Connector From Cruise Control ECU To Combination Meter Or Combination Meter To Vehicle Speed Sensor
.....	Vehicle Speed Sensor
.....	Cruise Control ECU
23	
Vehicle Speed Signal Abnormal	
....	Vehicle Speed Sensor
.....	Cruise Control ECU
41	
Cruise Control ECU	
.....	Cruise Control ECU
42	
Source Voltage Drop	
.....	Power Source
51	
Idle Signal Circuit	
.....	Throttle Position Sensor
.....	Harness Or Connector From ECM To Throttle Position Sensor
.....	Harness Or Connector From Cruise Control ECU To ECM
.....	Cruise Control ECU

PARTS LOCATION

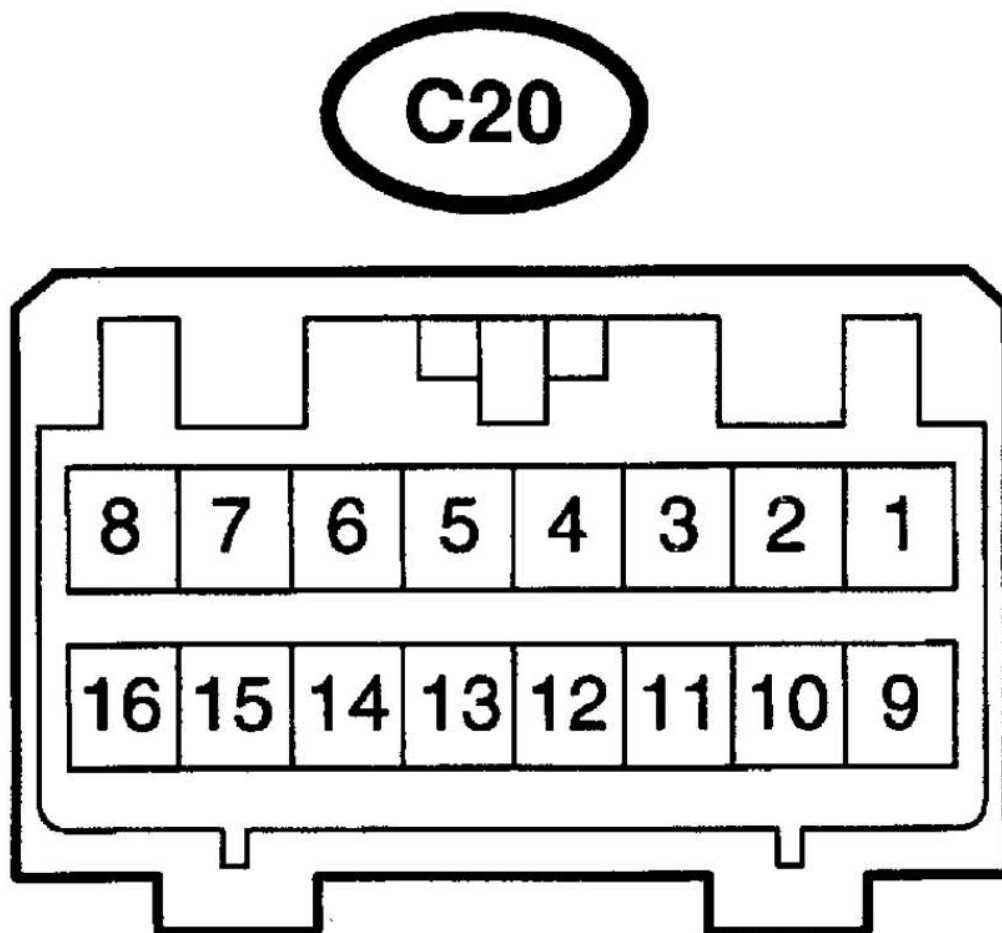


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Fig. 16: Identifying Cruise Control System Component Locations
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TERMINALS OF ECU



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Fig. 17: Identifying ECU Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Symbols (Terminal No.)	Wiring Color	Condition	STD Voltage (V)
STP (C20-3) – GND (C20-16)	G-W – W-B	Depress brake pedal	10 – 16
		Release brake pedal	Below 1
D (C20-4) – GND (C20-16)	L-B – W-B	Shift to positions except D	Below 1
		Shift to D position	10 – 16
PI (C20-5) – GND (C20-16)	G-R – W-B	Ignition switch ON Cruise control main switch ON	Below 1.2
		Ignition switch ON Cruise control main switch OFF	10 – 16
TC (C20-10) – GND (C20-16)	P-B – W-B	Ignition switch ON	10 – 16
		Ignition switch ON Connect terminals Tc and E1 of DLC3	Below 1
ECT (C20-6) – GND (C20-16)	Y – W-B	During driving Gear position 3rd	10 – 16
		During driving Gear position O/D	Below 1
MC (C20-7) – GND (C20-16)	R – W-B	During cruise control driving COAST switch held ON	9 – 15
		During cruise control driving ACC switch held ON	Below 1
L (C20-8) – GND (C20-16)	G-B – W-B	During cruise control driving	9 – 15
		Except during cruise control driving	Below 1
+B (C20-2) – GND (C20-16)	R-L – W-B	Ignition switch ON	10 – 16
CCS (C20-11) – GND (C20-16)	G-Y – W-B	Ignition switch ON	10 – 16
		Ignition switch ON CANCEL switch held ON	6.0 – 11
		Ignition switch ON SET/COAST switch held ON	4.0 – 7.9
		Ignition switch ON RES/ACC switch held ON	2.0 – 4.6
		Ignition switch ON MAIN switch held ON	Below 0.5
SPD (C20-12) – GND (C20-16)	V-W – W-B	Engine start Car stoppage	Below 1.5 or 4.7 – 16
		During driving (Pulse generated)	3 – 7
IDL (C20-13) – GND (C20-16)	L – W-B	Ignition switch ON Throttle valve fully opened	10 – 16
		Ignition switch ON Throttle valve fully closed	Below 1.5
OD (C20-14) – GND (C20-16)	Y-B – W-B	During cruise control driving OD switch ON	10 – 16
		During cruise control driving OD switch OFF (3rd driving)	Below 1
MO (C20-15) – GND (C20-16)	R-G – W-B	During cruise control driving ACC switch held ON	9 – 15
		During cruise control driving COAST switch held ON	Below 1
GND (C20-16) – Body ground	W-B – Body ground	Constant	Below 1

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Fig. 18: Identifying ECU Connector Terminal Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PROBLEM SYMPTOMS

PROBLEM SYMPTOMS

Symptom/Suspect Area	See
SET Not Occurring Or CANCEL Occurring (DTC Is Normal)	
Main Switch Circuit (Cruise Control Switch)	CONTROL SWITCH CIRCUIT (CRUISE CONTROL SWITCH)
Vehicle Speed Sensor	DTC 21 OPEN IN VEHICLE SPEED SENSOR CIRCUIT
Control Switch Circuit (Cruise Control Switch)	CONTROL SWITCH CIRCUIT (CRUISE CONTROL SWITCH)
Stop Light Switch Circuit	STOP LIGHT SWITCH CIRCUIT

Park/Neutral Position Switch Circuit	<u>PARK/NEUTRAL POSITION SWITCH CIRCUIT</u> <u>(ONLY FOR A/T)</u>
Clutch Switch	<u>CLUTCH SWITCH CIRCUIT (ONLY FOR M/T)</u>
Actuator Motor Circuit	<u>DTC 11 ACTUATOR MOTOR CIRCUIT</u>
Cruise Control Cable	<u>ACTUATOR CONTROL CABLE</u>
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND</u> <u>INSPECTION PROCEDURE</u>
SET Not Occurring Or CANCEL Occurring (DTC Does Not Output)	
ECU Power Source Circuit	<u>ECU POWER SOURCE CIRCUIT</u>
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND</u> <u>INSPECTION PROCEDURE</u>
Actual Vehicle Speed Deviates Above Or Below The Set Speed	
Cruise Control Cable	<u>ACTUATOR CONTROL CABLE</u>
Vehicle Speed Signal Abnormal	<u>DTC 23 VEHICLE SPEED SIGNAL ABNORMAL</u>
Electronically Controlled Transmission Communication Circuit	<u>ELECTRONICALLY CONTROLLED</u> <u>TRANSMISSION COMMUNICATION CIRCUIT</u>
Actuator Motor Circuit	<u>DTC 11 ACTUATOR MOTOR CIRCUIT</u>
Idle Signal Circuit (Main Throttle Position Sensor)	<u>DTC 51 IDLE SIGNAL CIRCUIT</u>
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND</u> <u>INSPECTION PROCEDURE</u>
Gear Shifting Frequent Between 3rd O/D When Driving On Uphill Road (Hurting)	
Electronically Controlled Transmission Communication Circuit	<u>ELECTRONICALLY CONTROLLED</u> <u>TRANSMISSION COMMUNICATION CIRCUIT</u>
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND</u> <u>INSPECTION PROCEDURE</u>
Cruise Control Not Cancelled, Even When Brake Pedal Is Depressed	
Cruise Control Cable	<u>ACTUATOR CONTROL CABLE</u>
Stop Light Switch Circuit	<u>STOP LIGHT SWITCH CIRCUIT</u>
Actuator Motor Circuit	<u>DTC 11 ACTUATOR MOTOR CIRCUIT</u>
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND</u> <u>INSPECTION PROCEDURE</u>
Cruise Control Not Cancelled, Even When Transmission Is Shifted To "N" Position	
Cruise Control Cable	<u>ACTUATOR CONTROL CABLE</u>
Park/Neutral Position Switch Circuit	<u>PARK/NEUTRAL POSITION SWITCH CIRCUIT</u> <u>(ONLY FOR A/T)</u>
Actuator Motor Circuit	<u>DTC 11 ACTUATOR MOTOR CIRCUIT</u>
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND</u> <u>INSPECTION PROCEDURE</u>
Cruise Control Not Cancelled, Even When Clutch Pedal Is Depressed	
Cruise Control Cable	<u>ACTUATOR CONTROL CABLE</u>
Clutch Switch Circuit	<u>CLUTCH SWITCH CIRCUIT (ONLY FOR M/T)</u>

Actuator Motor Circuit	DTC 11 ACTUATOR MOTOR CIRCUIT
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE</u>
Control Switch Does Not Operate (SET/COAST, ACC/RES, CANCEL Not Possible)	
Cruise Control Cable	ACTUATOR CONTROL CABLE
Control Switch Circuit	CLUTCH SWITCH CIRCUIT (ONLY FOR M/T)
Actuator Motor Circuit	DTC 11 ACTUATOR MOTOR CIRCUIT
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE</u>
SET Possible At 40 km/h (25 mph) Or Less, Or CANCEL Does Not Operate At 40 km/h (25 mph) Or Less	
Cruise Control Cable	ACTUATOR CONTROL CABLE
Vehicle Speed Signal Abnormal	DTC 23 VEHICLE SPEED SIGNAL ABNORMAL
Actuator Motor Circuit	DTC 11 ACTUATOR MOTOR CIRCUIT
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE</u>
Poor Response Is In ACCEL And RESUME Modes	
Cruise Control Cable	ACTUATOR CONTROL CABLE
Electronically Controlled Transmission Communication Circuit	ELECTRONICALLY CONTROLLED TRANSMISSION COMMUNICATION CIRCUIT
Actuator Motor Circuit	DTC 11 ACTUATOR MOTOR CIRCUIT
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE</u>
O/D Does Not Resume, Even Though The Road Is Not Uphill	
Electronically Controlled Transmission Communication Circuit	ELECTRONICALLY CONTROLLED TRANSMISSION COMMUNICATION CIRCUIT
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE</u>
DTC Memory Is Erased	
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE</u>
DTC Is Not Output, Or Is Output When Should Not Be	
Diagnosis Circuit	DIAGNOSIS CIRCUIT
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE</u>
Cruise MAIN Indicator Light Remains ON Or Fails To Light Up	
Cruise MAIN Indicator light switch circuit	CRUISE MAIN INDICATOR LIGHT CIRCUIT
Cruise Control ECU	<u>HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE</u>

CIRCUIT INSPECTION

DTC 11 ACTUATOR MOTOR CIRCUIT

Circuit Description

The actuator motor is operated by signals from the ECU. Acceleration and deceleration signals are transmitted according to changes in the Duty Ratio (See below).

Duty Ratio

The duty ratio is the ratio of the period of continuity in one cycle. For example, if A is the period of continuity in one cycle, and B is the period of non-continuity.

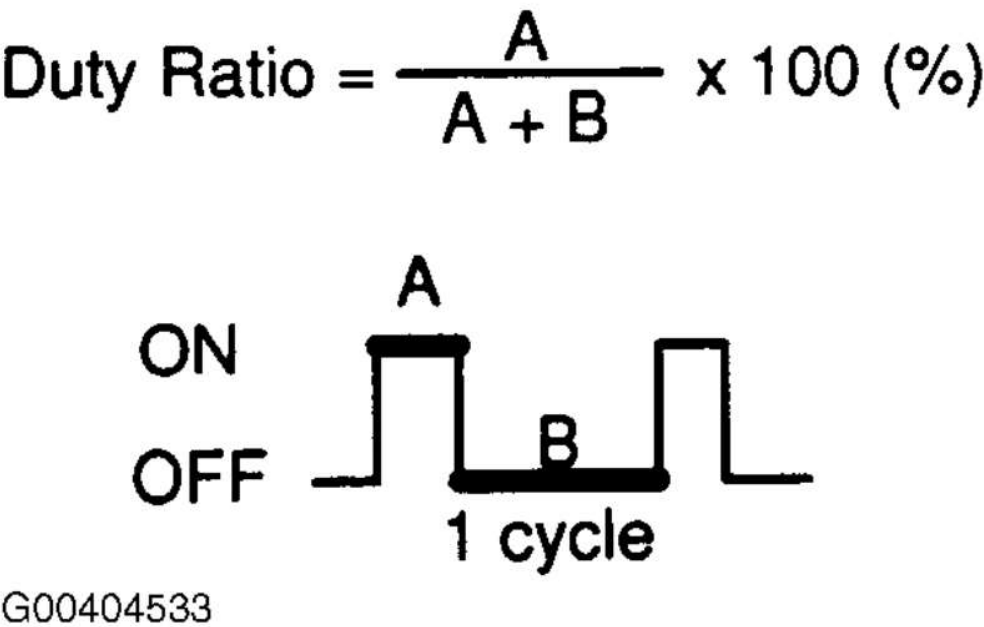


Fig. 19: Displaying Duty Ratio Equation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

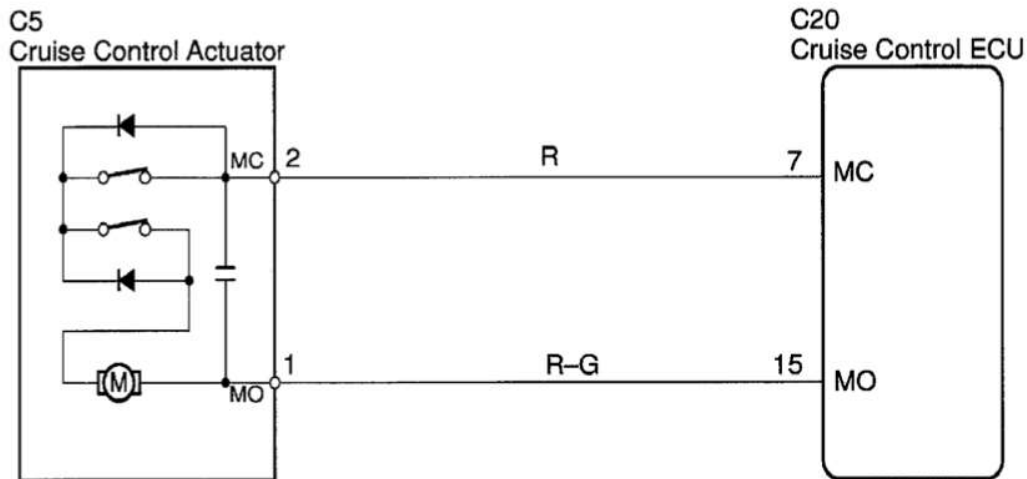
DTC No.	DTC Detection Condition	Trouble Area
11	Short in actuator motor circuit	• Actuator motor • Harness or connector between cruise control ECU and actuator motor • Cruise control ECU

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Fig. 20: Identifying DTC 11 Trouble Areas

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Wiring Diagram



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Fig. 21: Displaying Actuator Motor Circuit

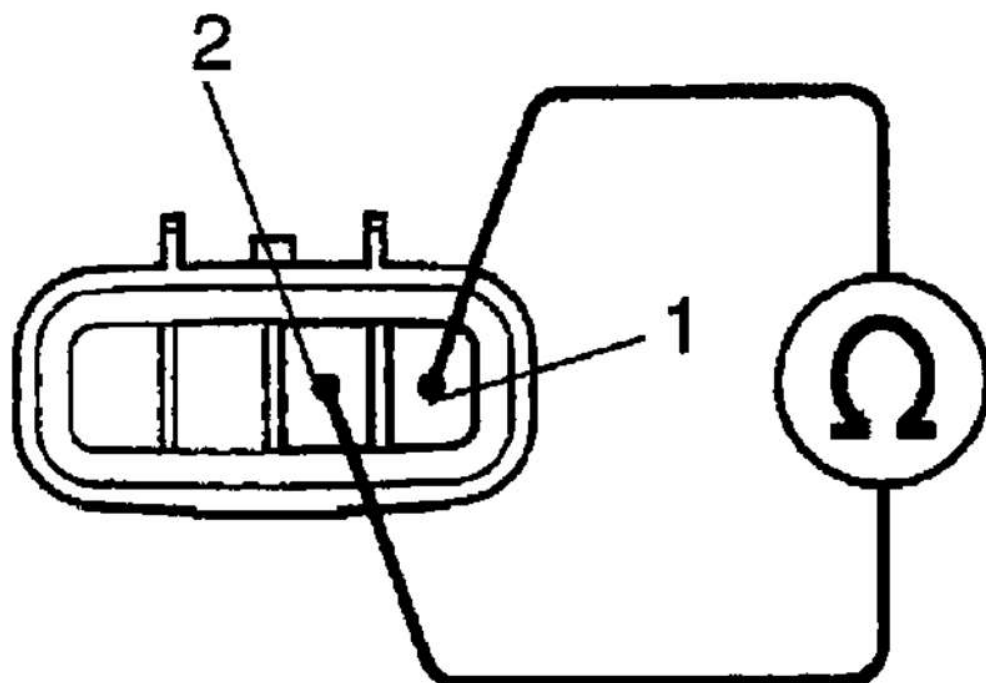
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

For complete cruise control system wiring diagram, see **CRUISE CONTROL** .

Inspection Procedure

1. **Check resistance between terminals MO and MC of actuator motor .**
 - a. Turn the ignition switch OFF.
 - b. Disconnect the actuator connector.

Measure the resistance between terminals 1 and 2.



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Fig. 22: Measuring Resistance Between Actuator Terminals
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: If the control plate is in the fully opened or fully closed position, the resistance can not be measured.

OK: Resistance - More than 4.2 Ohms

OK: Go to next step.

NG: Replace cruise control actuator.

2. Check for open and short in harness and connector between cruise control ECU and actuator motor. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .

OK: Check and replace cruise control ECU. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .

NG: Repair or replace harness or connector.

DTC 12 ACTUATOR MAGNETIC CLUTCH CIRCUIT

Circuit Description

This circuit turns on the magnetic clutch inside the actuator during the cruise control operation according to the signals from the ECU. If a malfunction occurs in the actuator or speed sensor, etc. during the cruise control operation, the rotor shaft between the motor and control plate is released.

When the brake pedal is depressed, the stop light switch turns on electrical power that is supplied to the stop light. Power supply to the magnetic clutch is mechanically cut and the magnetic clutch is turned OFF.

When driving downhill, if the vehicle speed exceeds the set speed by 8 km/h (5 mph), the ECU turns the safety magnet clutch OFF. If the vehicle speed drops within 5 km/h (3 mph) later on, the cruise control at the set speed is resumed.

DTC No.	DTC Detection Condition	Trouble Area
12	Short in actuator magnetic clutch circuit Open (0.8 sec.) in actuator magnetic clutch circuit	• STOP Fuse • Stop light switch • Actuator magnetic clutch • Harness or connector between cruise control ECU and actuator magnetic clutch, and actuator magnetic clutch and body ground • Cruise control ECU

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Fig. 23: Identifying DTC 12 Trouble Areas
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Wiring Diagram

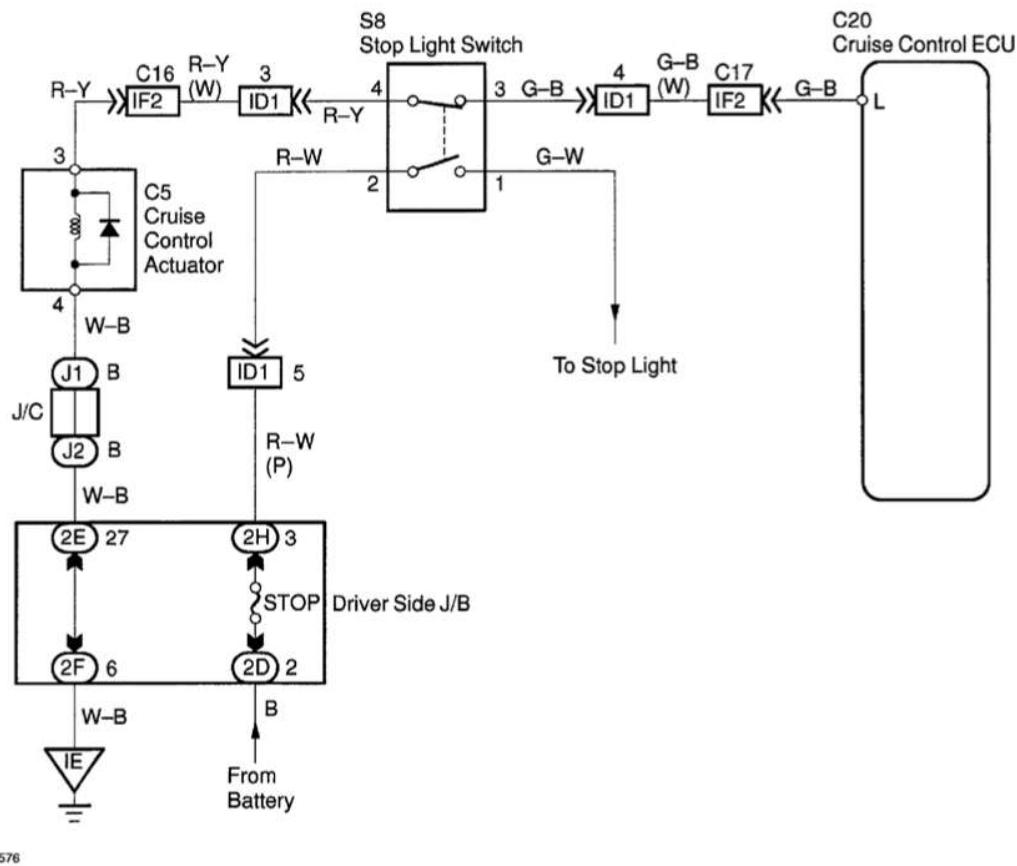


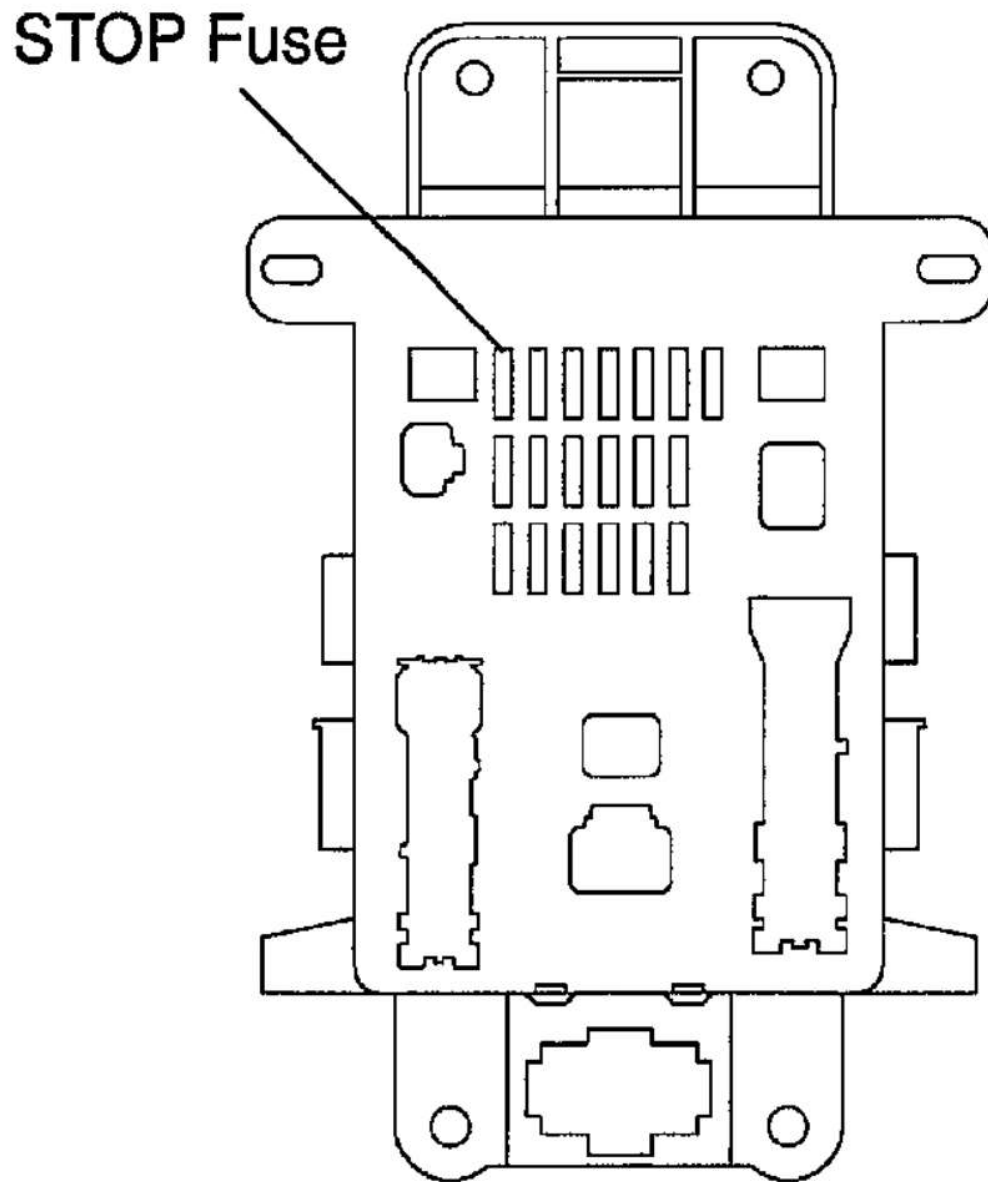
Fig. 24: Actuator Magnetic Clutch Circuit

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

For complete cruise control system wiring diagram, see CRUISE CONTROL .

Inspection Procedure

1. **Check STOP fuse .**
 - a. Turn the ignition switch OFF.
 - b. Remove the STOP fuse from the driver side J/B.



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Fig. 25: Removing STOP Fuse From Driver Side J/B
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Check the fuse continuity.

OK: There is continuity .

OK: Go to next step.

NG: Replace STOP fuse.

2. Check stop light switch .

Disconnect the stop light switch connector.

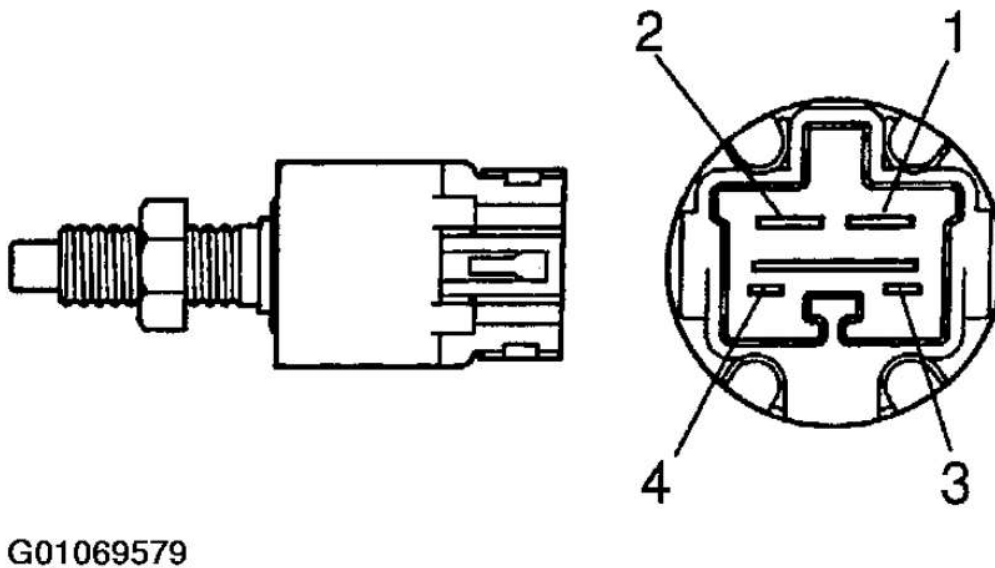


Fig. 26: Identifying Stop Light Switch Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Check the continuity between the terminals.

Switch position	Continuity
Switch pin free (Brake pedal depressed)	1 – 2
Switch pin pushed in (Brake pedal released)	3 – 4

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Fig. 27: Checking Continuity Based On Switch Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

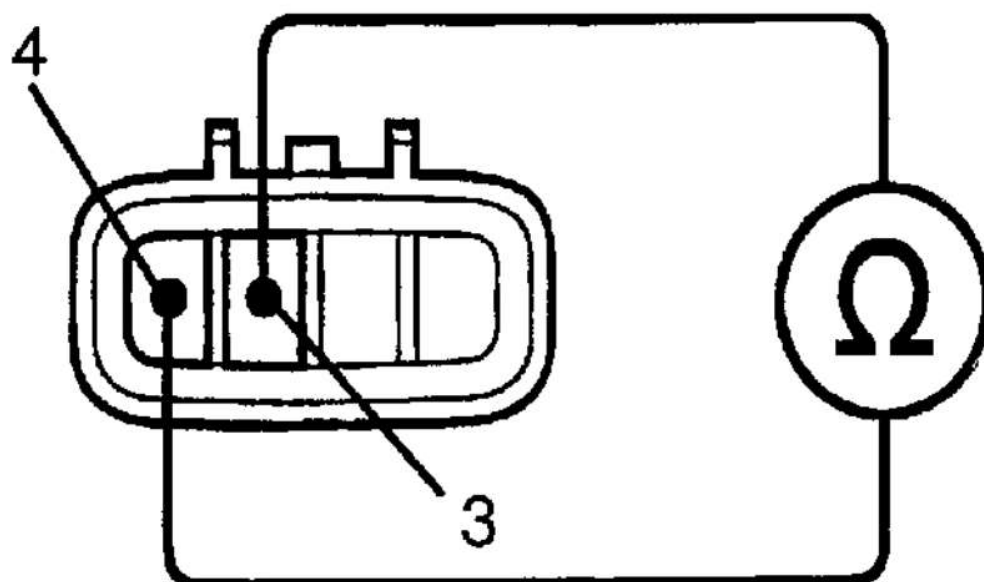
NG: Replace stop light switch.

OK: Go to next step.

3. Check resistance between terminals L and GND of actuator magnetic clutch .

- a. Turn the ignition switch OFF.
- b. Disconnect the actuator connector.

Measure the resistance between terminals 3 and 4.



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Fig. 28: Measuring Resistance Between Magnetic Clutch Terminals
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Resistance: 34.65-42.35 Ohms

NG: Replace cruise control actuator.

OK: Go to next step.

4. **Check for open and short in harness and connector between cruise control ECU and actuator magnetic clutch, and actuator magnetic clutch and body ground. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .**

OK: Check and replace cruise control ECU. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .

NG: Repair or replace harness or connector.

DTC 14 ACTUATOR MECHANICAL MALFUNCTION

Circuit Description

The circuit detects the rotation position of the actuator control plate and sends a signal to the ECU.

DTC No.	DTC Detection Cndition	Trouble Area
14	Cruise control actuator mechanical malfunction	• Actuator lock: (motor, arm) • Actuator motor • Cruise control ECU

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Fig. 29: Identifying DTC 14 Trouble Areas
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

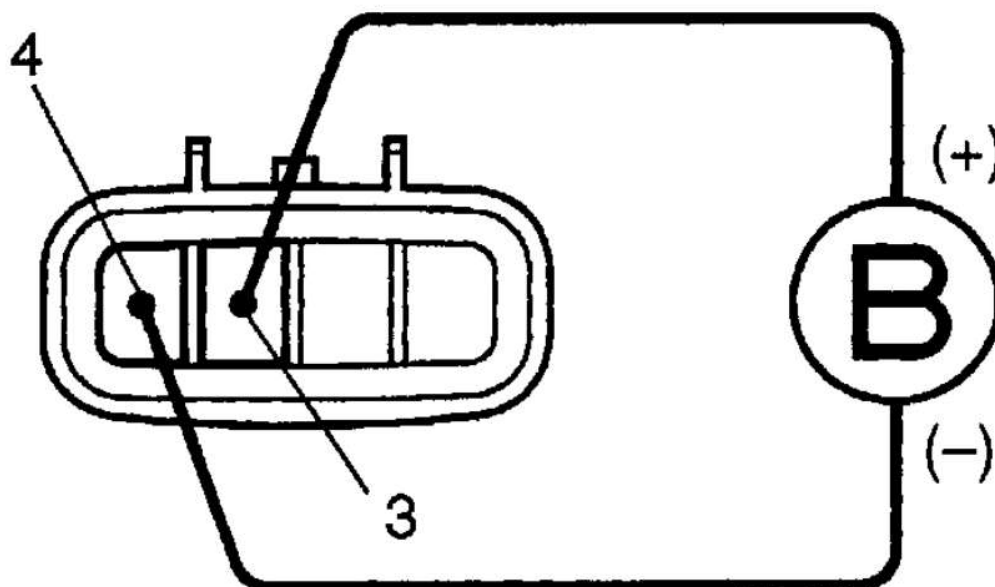
Wiring Diagram

See **Fig. 24** .

For complete cruise control system wiring diagram, see **CRUISE CONTROL** .

Inspection Procedure

1. **Check cruise control actuator arm locking operation** .
 - a. Turn the ignition switch OFF.
 - b. Disconnect the actuator connector.
 - c. Connect the positive (+) lead from the battery to the terminal 3 of the actuator and the negative (-) lead to terminal 4.



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Fig. 30: Testing Cruise Control Actuator Arm Locking Operation
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

CAUTION: Do not connect the high tension cables to the wrong battery terminal. The cruise control actuator will be damaged.

- d. Move the control plate by hand.

OK: Control plate doesn't move .

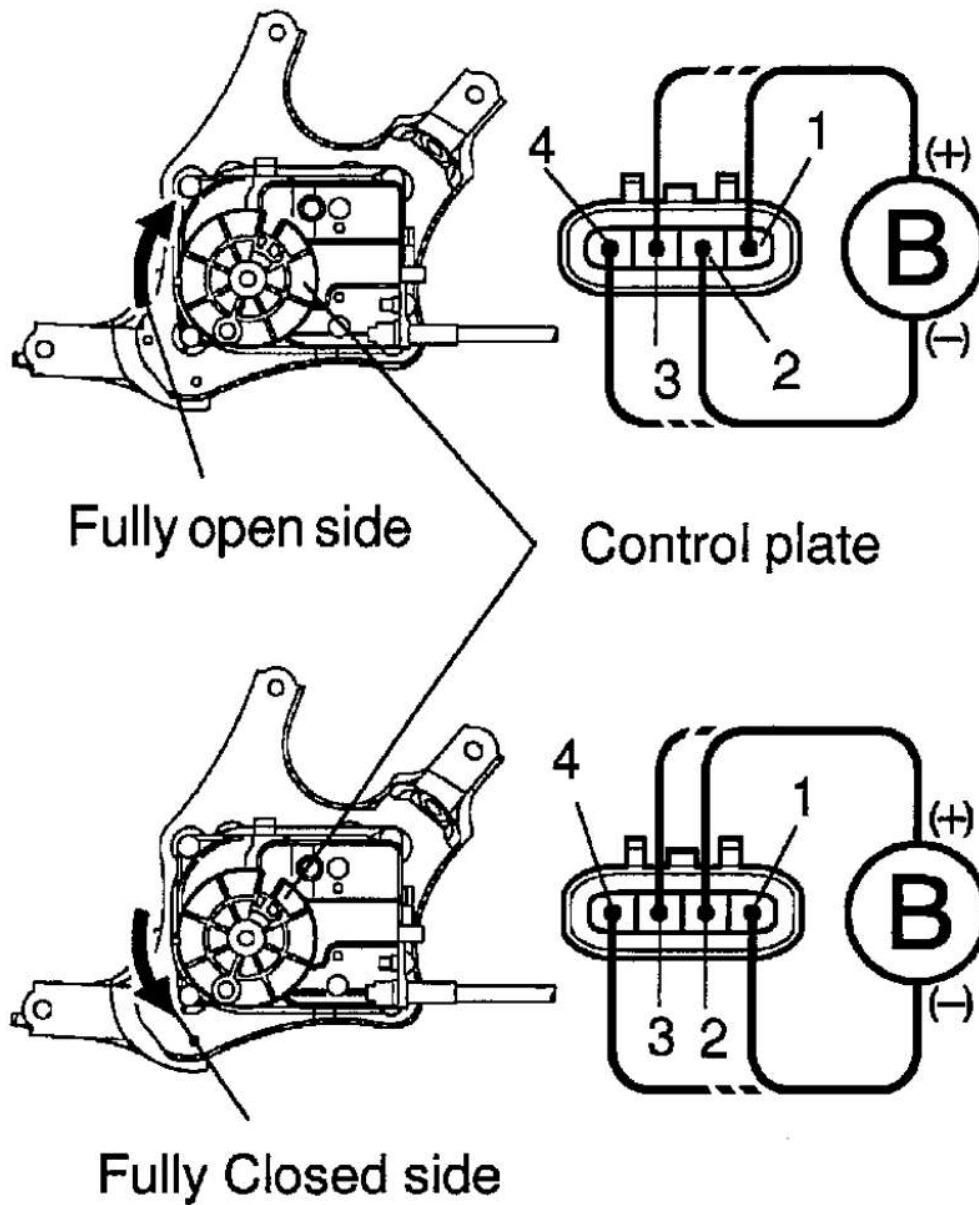
OK: Go to next step.

NG: Replace cruise control actuator.

2. Check cruise control actuator operation .

- a. Turn the ignition switch OFF.
- b. Disconnect the actuator connector.

Connect the positive (+) lead from the battery to terminals 1 and 3 of the actuator, connect the negative (-) lead to terminals 2 and 4 of the actuator.



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Fig. 31: Testing Cruise Control Actuator Operation
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Control arm moves to fully open side .

Connect the positive (+) lead from the battery to terminals 2 and 3 of the actuator, connect the negative (-) lead to terminals 1 and 4 of the actuator.

OK: Control arm moves to fully closed side .

OK: Go to next step.

NG: Replace cruise control actuator.

3. **Check harness and connector between cruise control ECU and cruise control actuator. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .**

NG: Repair or replace harness or connector.

OK: Check and replace cruise control ECU. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .

DTC 21 OPEN IN VEHICLE SPEED SENSOR CIRCUIT

Circuit Description

The signal from the vehicle speed sensor circuit is sent to the cruise control ECU as a vehicle speed signal. The rotor shaft is driven by the gear of the transmission.

For each rotation of the shaft, the vehicle speed sensor sends a 4-pulse signal through the combination meter to the cruise control ECU (See the following installation).

This signal is converted inside the combination meter and sent as a 4-pulse signal to the cruise control ECU. The ECU calculates the vehicle speed from this pulse frequency.

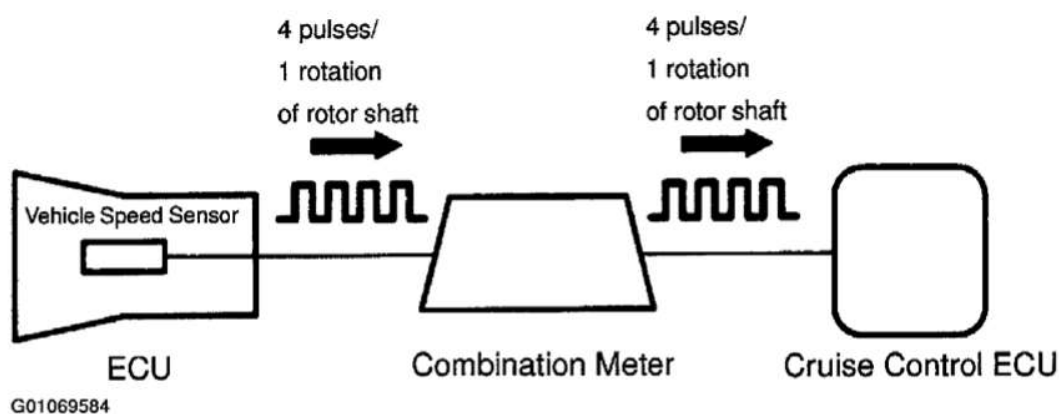


Fig. 32: Displaying Vehicle Speed Sensor Signal Path
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DTC No.	DTC Detection Condition	Trouble Area
21	Speed signal is not input to the cruise control ECU while cruise control is set	• Combination meter • Harness or connector between cruise control ECU and combination meter, and combination meter and vehicle speed sensor • Vehicle speed sensor • Cruise control ECU

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Fig. 33: Identifying DTC 21 Trouble Areas
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Wiring Diagram

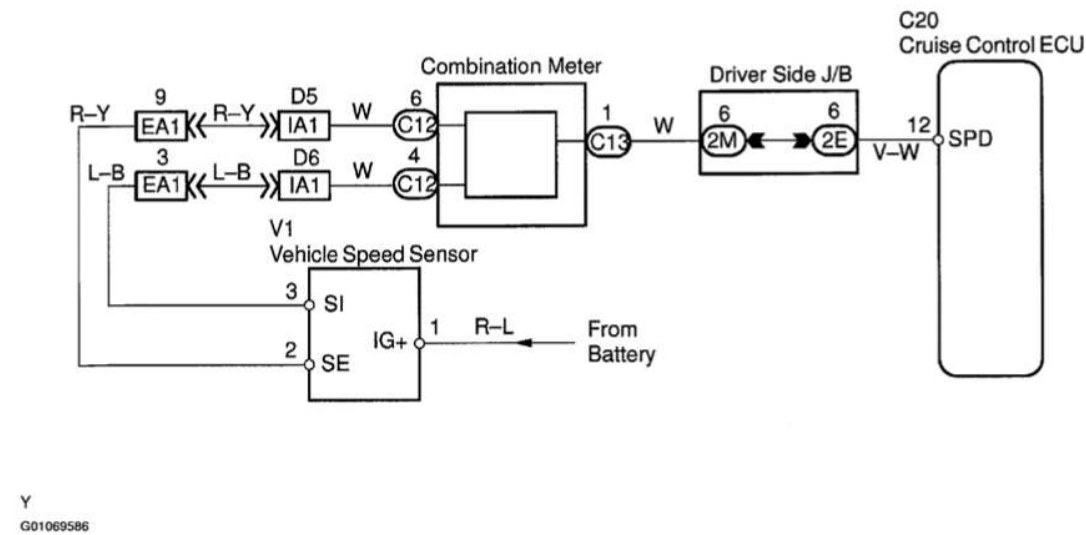


Fig. 34: Vehicle Speed Sensor Circuit
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

For complete cruise control system wiring diagram, see **CRUISE CONTROL** .

Inspection Procedure

1. **Input signal check** .
 - a. See step) INPUT SIGNAL CHECK .
 - b. Check the indicator light operation when driving with vehicle speed above 40 km/h (25 mph) and below 40 km/h (25 mph).

Input Signal	Indicator Light Blinking Pattern
Drive at about 40 km/h (25 mph) or below	Light ON  OFF 
Drive at about 40 km/h (25 mph) or higher	Light ON  OFF

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Fig. 35: Displaying Indicator Light Operation Based On Vehicle Speed
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK:

Vehicle speed above 40 km/h (25 mph): indicator light blinks

Vehicle speed below 40 km/h (25 mph): indicator light stays on

OK: Check and replace cruise control ECU. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE.

NG: Go to next step.

2. Check speedometer circuit. See CIRCUIT .

OK: Go to next step.

NG: Repair or replace harness, connector or combination meter assembly.

3. Check harness and connector between cruise control ECU and combination meter, and combination meter and vehicle speed sensor. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .

OK: Go to next step.

NG: Repair or replace harness or connector.

4. Check vehicle speed sensor. See INSPECTION .

OK: Check and replace cruise control ECU. See **HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE** .

NG: Replace vehicle speed sensor.

DTC 23 VEHICLE SPEED SIGNAL ABNORMAL

Circuit Description

See **CIRCUIT DESCRIPTION** .

DTC No.	DTC Detection Condition	Trouble Area
23	Vehicle speed sensor pulse is abnormal	• Vehicle speed sensor • Cruise control ECU

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Fig. 36: Identifying DTC 23 Trouble Areas
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Wiring Diagram

See **Fig. 34** . For complete cruise control system wiring diagram, see **CRUISE CONTROL** .

Inspection Procedure

1. **Check vehicle speed sensor.** See **INSPECTION** .

OK: Check and replace cruise control ECU. See **HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE** .

NG: Replace vehicle speed sensor.

DTC 51 IDLE SIGNAL CIRCUIT

Circuit Description

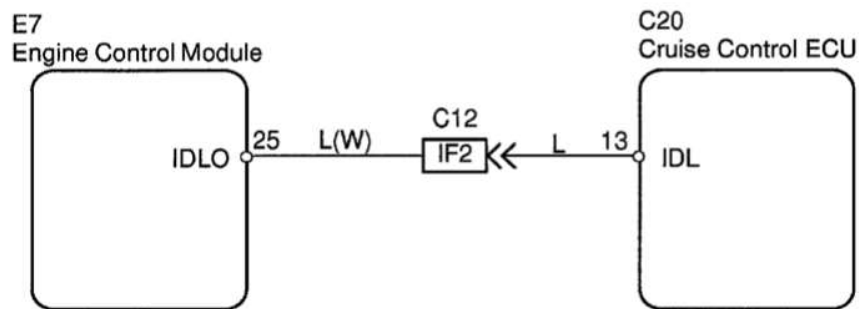
When the idle switch is turned ON, a signal is sent to the ECU. The ECU uses this signal to correct the discrepancy between the throttle valve position and the actuator position sensor value in order to enable the accurate cruise control at the set speed. If the idle switch malfunctions, problem symptoms also occur in the engine, so inspect the engine, too.

DTC No.	Detection Item	Trouble Area
51	Short in idle signal circuit	• Harness or connector between ECM and throttle position sensor • Throttle position sensor • Harness or connector between cruise control ECU and ECM • Cruise control ECU

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Fig. 37: Identifying DTC 51 Trouble Areas
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Wiring Diagram



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Fig. 38: Displaying Idle Signal Circuit
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

For complete cruise control system wiring diagram, see **CRUISE CONTROL** .

Inspection Procedure

1. **Check voltage between terminal IDL of cruise control ECU connector and body ground .**
 - a. Remove the ECU with the connector.
 - b. Disconnect the ECM connector.
 - c. Turn the ignition switch ON.

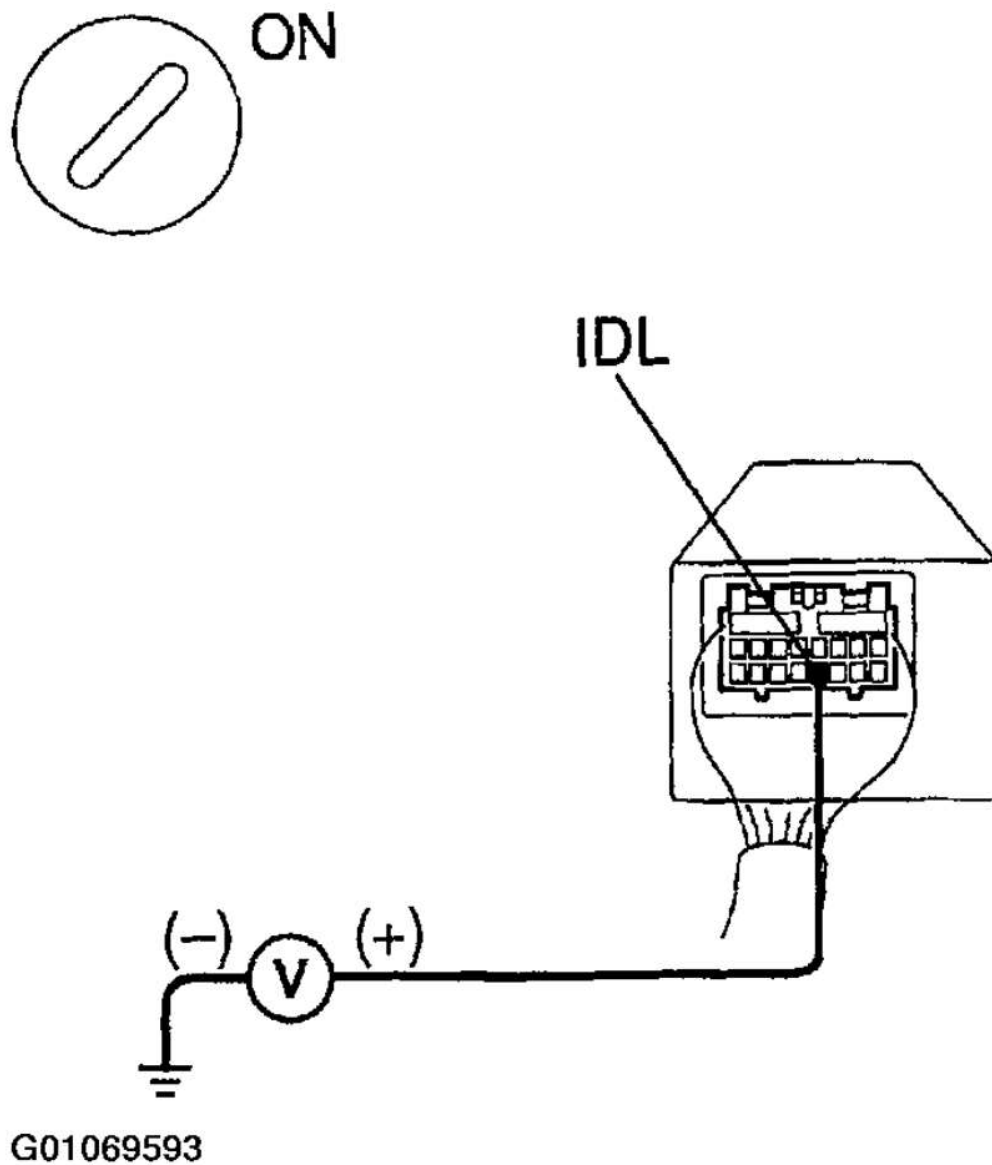


Fig. 39: Checking Voltage At IDL Terminal Of ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Measure the voltage between terminal IDL of the ECU connector and the body ground when the throttle valve is fully closed and fully opened.

OK: See Fig. 40 .

Throttle valve position	Voltage
Fully opened	10 – 16 V
Fully closed	Below 1.5 V

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Fig. 40: Displaying Voltage Based On Throttle Valve Position

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Proceed to next circuit inspection shown in **PROBLEM SYMPTOMS** .

NG: Go to next step.

2. **Check harness and connector between ECM and throttle position sensor. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .**

OK: Go to next step.

NG: Repair or replace harness or connector.

3. **Check throttle position sensor circuit. DTC P0120: THROTTLE POSITION SENSOR CIRCUIT .**

NG: Replace throttle position sensor.

OK: Go to next step.

4. **Check throttle position sensor .**

OK: Go to next step.

NG: Replace throttle position sensor.

5. **Check for open and short in harness and connector between cruise control ECU and ECM. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .**

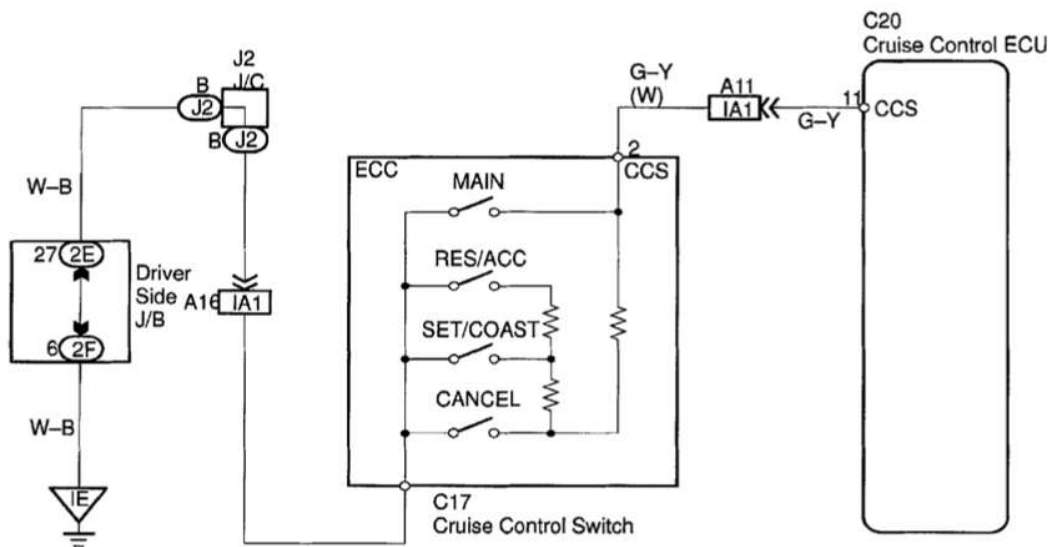
OK: Check and replace cruise control ECU. See **HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE** .

NG: Repair or replace harness or connector.

CONTROL SWITCH CIRCUIT (CRUISE CONTROL SWITCH)**Circuit Description**

This circuit sends the SET/COAST, RESUME/ACCEL and CANCEL signals (each voltage) to the ECU.

Wiring Diagram



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Fig. 41: Displaying Cruise Control Switch Circuit
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

For complete cruise control system wiring diagram, see CRUISE CONTROL .

Inspection Procedure

1. Input Signal Check

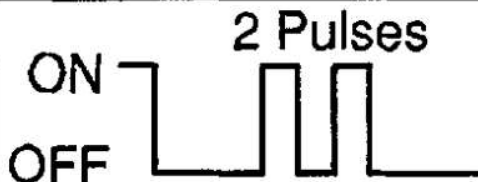
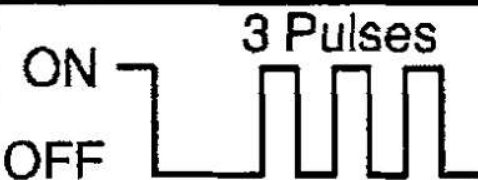
See step) INPUT SIGNAL CHECK .

Check the indicator light operation when each of the SET/COAST, RESUME/ACCEL and CANCEL switches is turned on.

OK:

SET/COAST, RESUME/ACCEL switch

The signals shown in Fig. 42 should be output when each switch is ON. The signal should disappear when the switch is turned OFF .

Input Signal	Indicator Light Blinking Pattern
SET/COAST switch	 2 Pulses
RESUME/ACCEL switch	 3 Pulses
CANCEL switch	 SW OFF SW ON

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Fig. 42: Identifying Indicator Light Blinking Pattern Based On Input Signal
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

CANCEL switch

The indicator light goes off when the cancel switch is turned ON .

OK: Wait and see.

NG: Go to next step.

2. Check voltage between terminals CCS of cruise control ECU connector and body ground .
 - a. Remove the ECU with the connector being.
 - b. Turn the ignition switch ON.

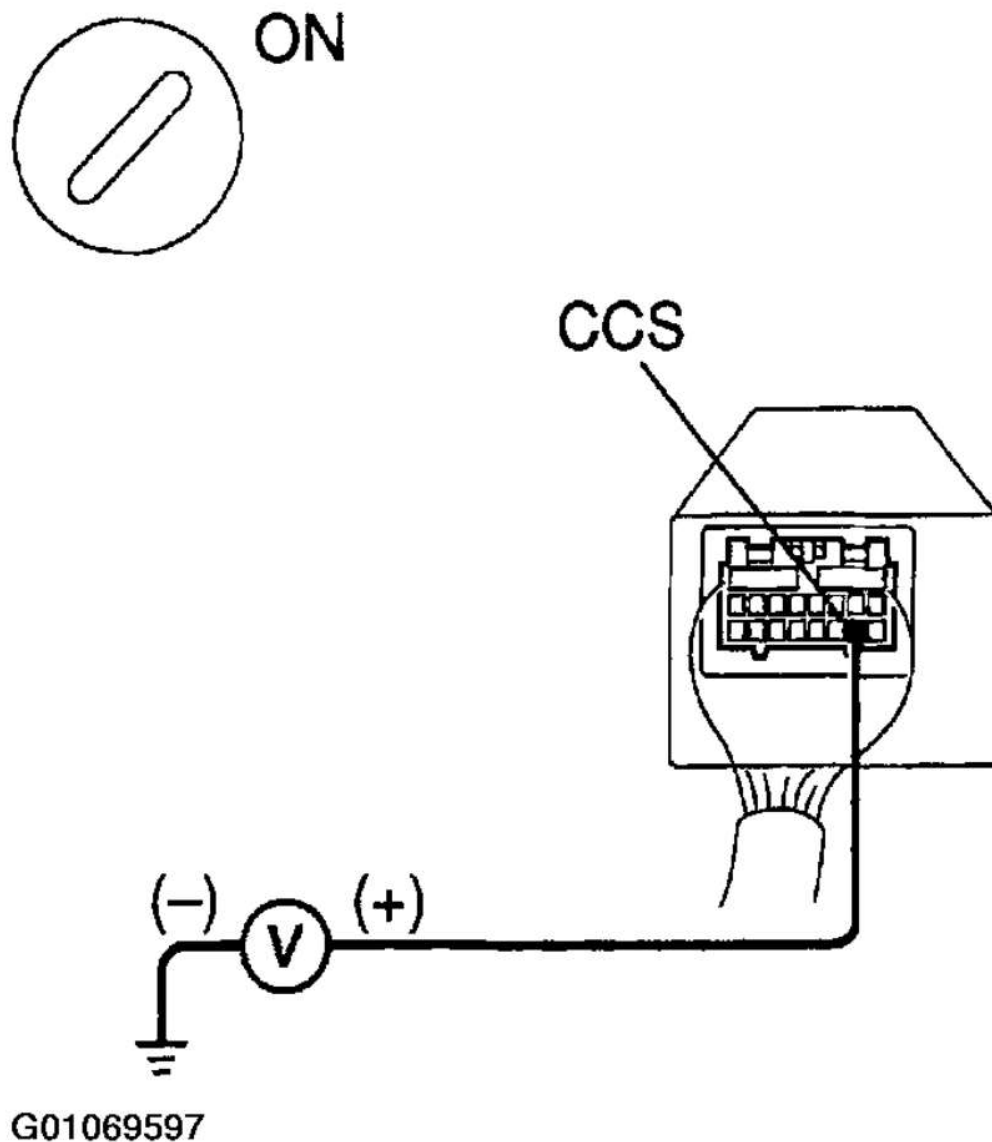


Fig. 43: Checking Voltage At CCS Terminal

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Measure the voltage between terminals 18 of the ECU connector and body ground when each of the SET/COAST, RESUME/ACCEL and CANCEL is turned ON.

Switch position	Resistance (V)
Neutral	10 – 16 V
MAIN	Below 0.5 V
RES/ACC	2.0 – 4.6 V
SET/COAST	4.0 – 7.9 V
CANCEL	6.0 – 11.0 V

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Fig. 44: Identifying Resistance Based On Switch Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

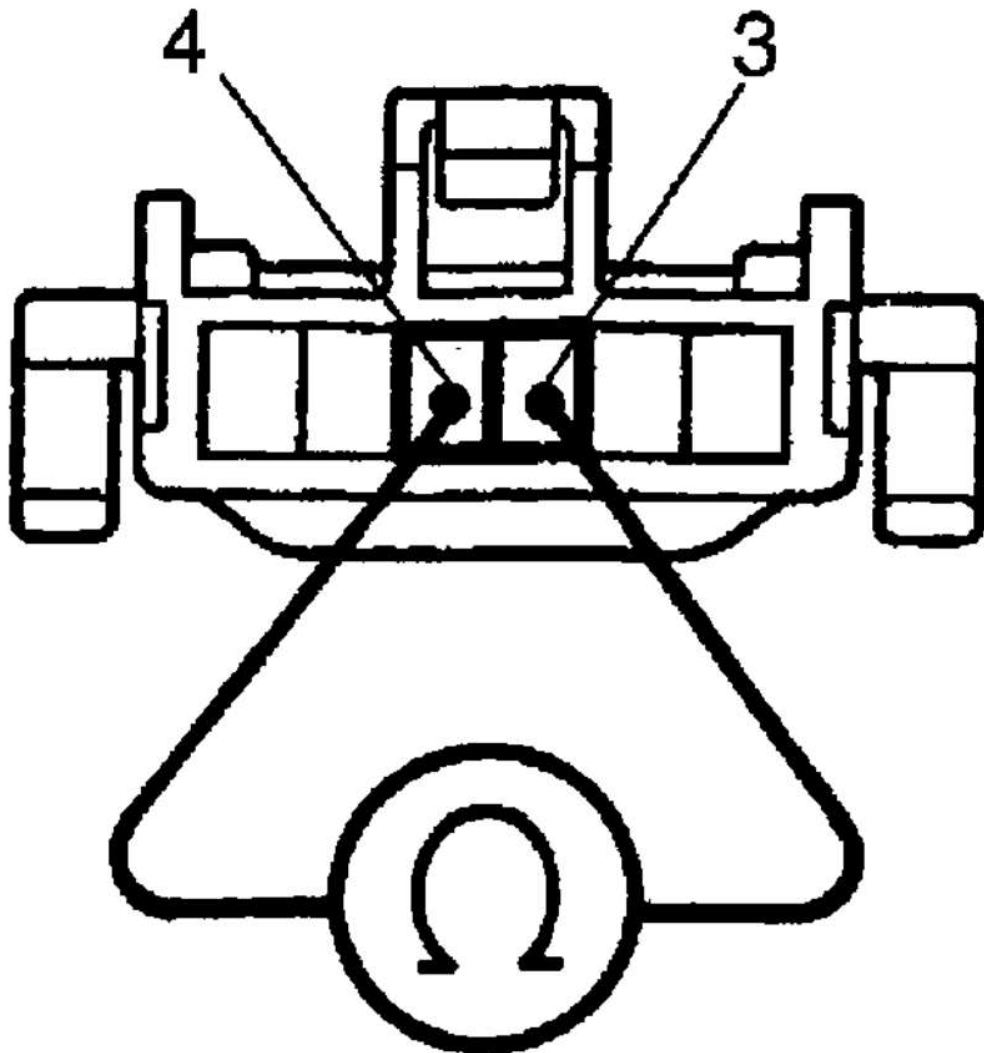
OK: Go to next step.

NG: Proceed to next circuit inspection shown in problem symptoms table. See **PROBLEM SYMPTOMS**.

3. Check control switch .

- a. Remove the steering wheel center pad.
- b. Disconnect the control switch connector.

Measure the resistance between terminals 3 and 4 of the control switch connector when the control switch is operated.



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Fig. 45: Measuring Control Switch Resistance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Switch position	Resistance (Ω)
Neutral	∞ (No continuity)
RES/ACC	220 – 260
SET/COAST	610 – 650
CANCEL	1520 – 1560

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Fig. 46: Identifying Resistance Based On Switch Position
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step.

NG: Replace control switch.

4. **Check harness and connector between cruise control ECU and cruise control switch, and cruise control switch and body ground. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .**

OK: Go to next step.

NG: Repair or replace harness or connector.

5. **Input Signal Check. See step INPUT SIGNAL CHECK .**

OK: Wait and see.

NG: Check and replace cruise control ECU. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .

STOP LIGHT SWITCH CIRCUIT

Circuit Description

When the brake pedal is depressed, the stop light switch sends a signal to the ECU. When the ECU receives this signal, it cancels the cruise control.

A fail-safe function is provided so that the cancel functions normally, even if there is a malfunction in the stop light signal circuit.

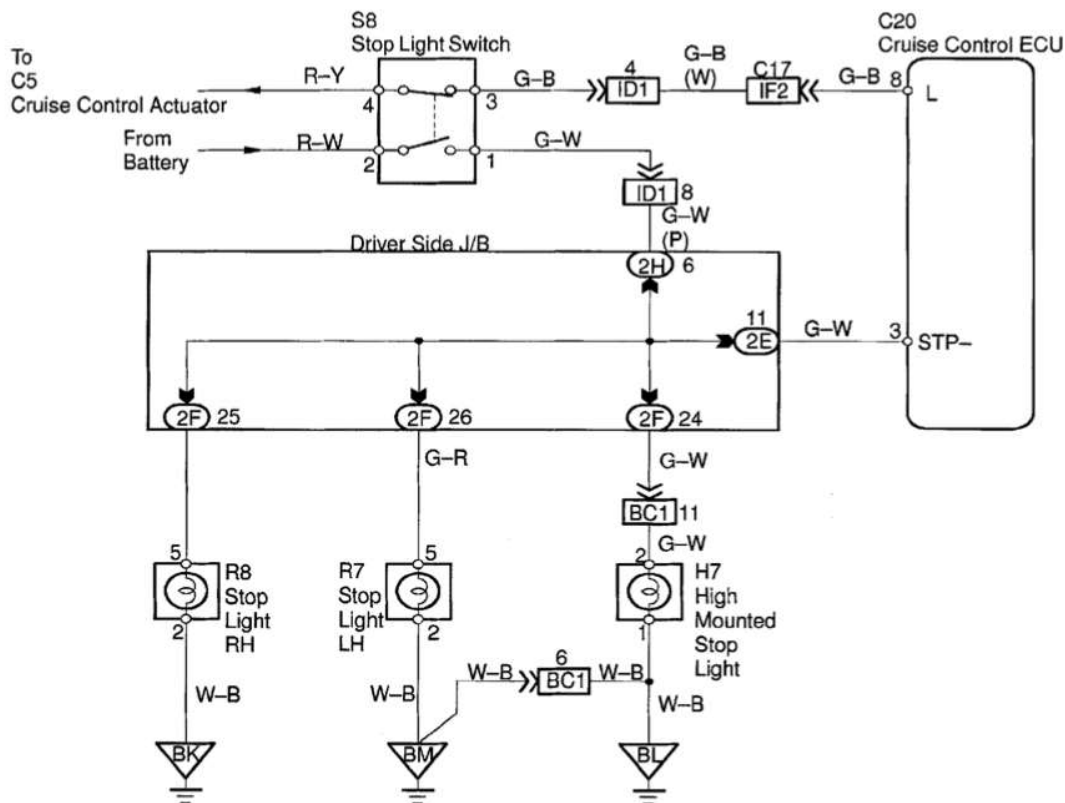
The cancel conditions: Battery positive voltage at terminal STP-

When the brake is ON, battery positive voltage is normally applied through the STOP fuse and stop light switch to terminal STP- of the ECU, and the ECU turns the cruise control OFF.

If the harness connected to terminal STP- has an open circuit, terminal STP- will have battery positive voltage and the cruise control will be turned OFF.

Also, when the brake is ON, the magnetic clutch circuit is cut mechanically by the stop light switch, turning the cruise control OFF. See **DTC 12 ACTUATOR MAGNETIC CLUTCH CIRCUIT** .

Wiring Diagram



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Fig. 47: Identifying Stop Light Switch Circuit
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

For complete cruise control system wiring diagram, see **CRUISE CONTROL** .

Inspection Procedure

1. Check operation of stop light .

Check that the stop light turns ON when the brake pedal is depressed, and turns OFF when the brake pedal is released.

OK: Go to next step.

NG: Check stop light system.

2. Input signal check .

- See step) INPUT SIGNAL CHECK .

- b. Check the indicator light when the brake pedal is depressed.

Input Signal	Indicator Light Blinking Pattern
Stop Light switch ON	The diagram shows a horizontal timeline. A solid line at the top is labeled 'SW OFF' and a solid line at the bottom is labeled 'SW ON'. A vertical line marks the transition from SW OFF to SW ON. To the left of this transition, the word 'Light' is written, with 'OFF' above it and 'ON' below it. A dashed horizontal line extends from the transition point to the left, indicating a delay in the light turning ON when the switch turns ON.

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Fig. 48: Displaying Indicator Light Blinking Pattern Based On Stop Light Switch Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: The indicator light goes OFF when the brake pedal is depressed .

OK: Proceed to next circuit inspection shown in **PROBLEM SYMPTOMS** .

NG: Go to next step.

3. **Check voltage between terminal STP- of cruise control ECU connector and body ground .**
- a. Remove the ECU with the connector being.
 - b. Turn the ignition switch ON.

Measure the voltage between terminal STP- of the ECU connector and the body ground when the brake pedal is depressed and released.

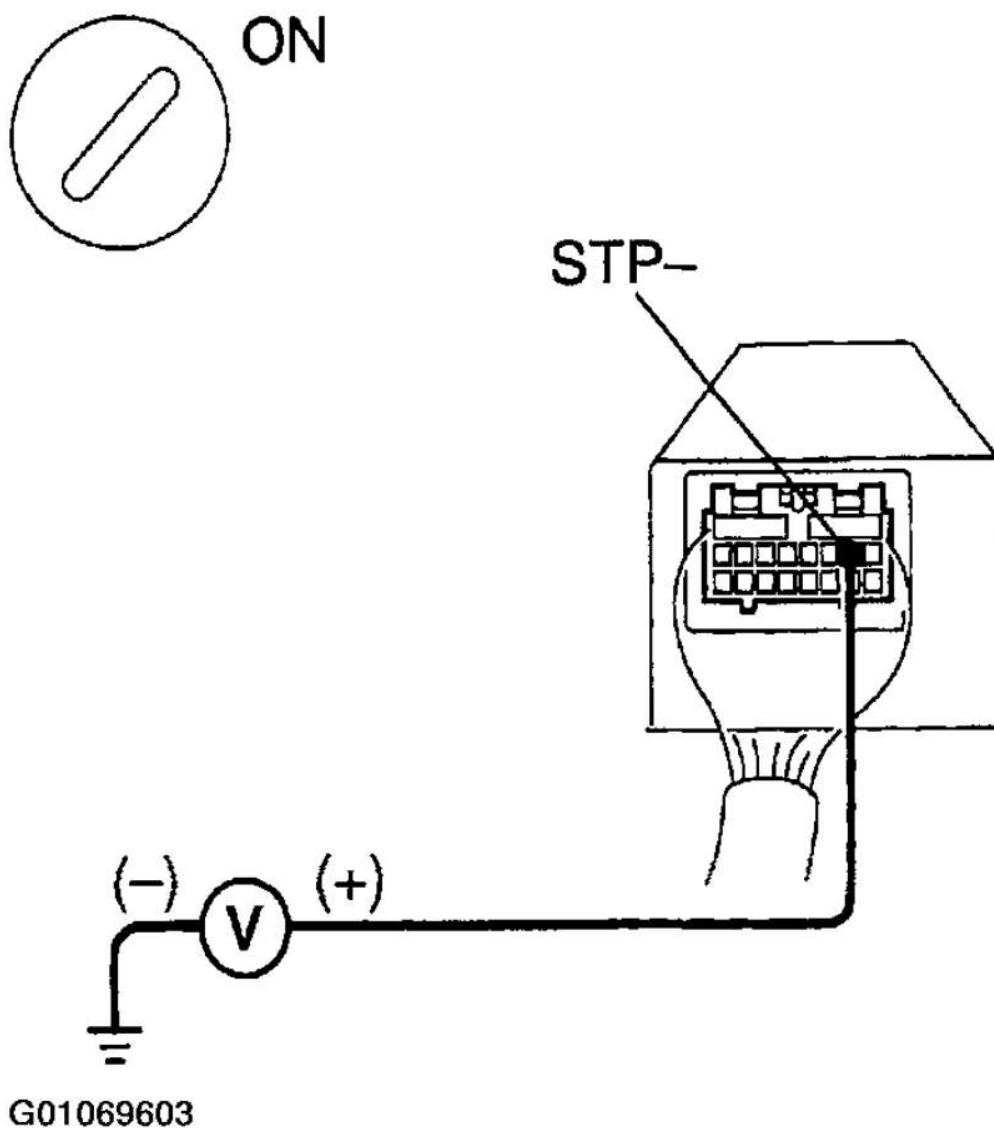


Fig. 49: Measuring Voltage At STP Terminal Of ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: See Fig. 50 .

Brake pedal	Voltage
Depressed	10 – 16 V
Released	Below 1 V

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Fig. 50: Identifying Voltage Based On Brake Pedal Condition
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Proceed to next circuit inspection shown in **PROBLEM SYMPTOMS** .

NG: Go to next step.

4. Check for open in harness and connector between terminal STP- of cruise control ECU and stop light switch. See **HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE** .

OK: Check and replace cruise control ECU. See **HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE** .

NG: Repair or replace harness or connector.

ELECTRONICALLY CONTROLLED TRANSMISSION COMMUNICATION CIRCUIT

Circuit Description

When driving uphill under the cruise control, in order to reduce shifting due to ON-OFF overdrive operation and to provide smooth driving, when down shifting in the electronically controlled transmission occurs, a signal to prevent upshift until the end of the uphill slope is sent from the cruise control ECU to the electronically controlled transmission.

Terminal ECT of the cruise control ECU detects the shift change signal (output to electronically controlled transmission No. 2 solenoid) from the ECM.

When the vehicle speeds down and also when terminal ECT of the cruise control ECU receives down shifting signal, it sends a signal from terminal OD to ECM to cut overdrive until the end of the uphill slope, and the gear shifts are reduced and gear shift points in the electronically controlled transmission are changed.

Wiring Diagram

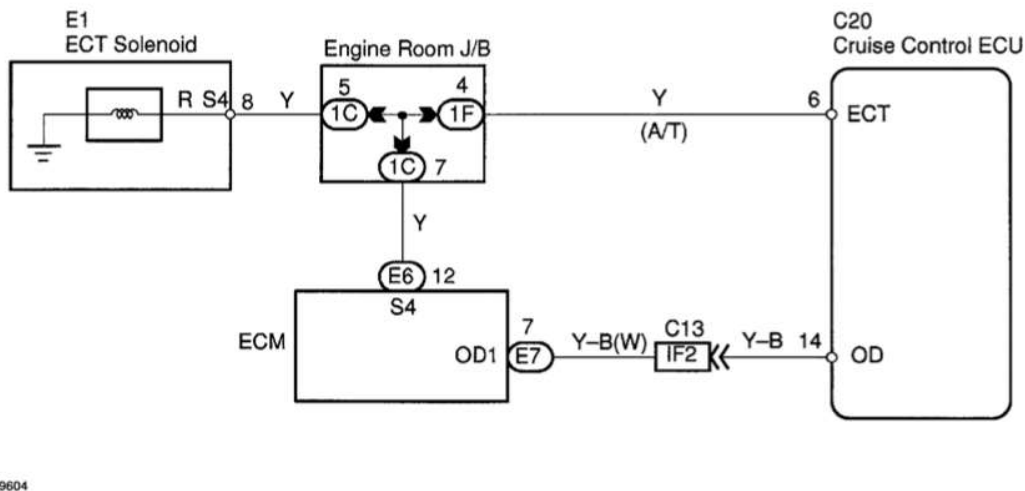


Fig. 51: Identifying ECT Communication Circuit
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Inspection Procedure

1. Check operation of overdrive .

Test drive after engine warmed up.

Check that overdrive ON/OFF occurs by operation of OD switch ON-OFF.

OK: Go to next step.

NG: Check and repair electronically controlled transmission. See **PRELIMINARY INSPECTION** .

2. Check voltage between terminal OD of cruise control ECU and body ground .

- Remove the ECU with the connector.
- Turn the ignition switch ON.
- Disconnect the ECU connector.

Measure the voltage between terminal OD of the ECU connector and the body ground.

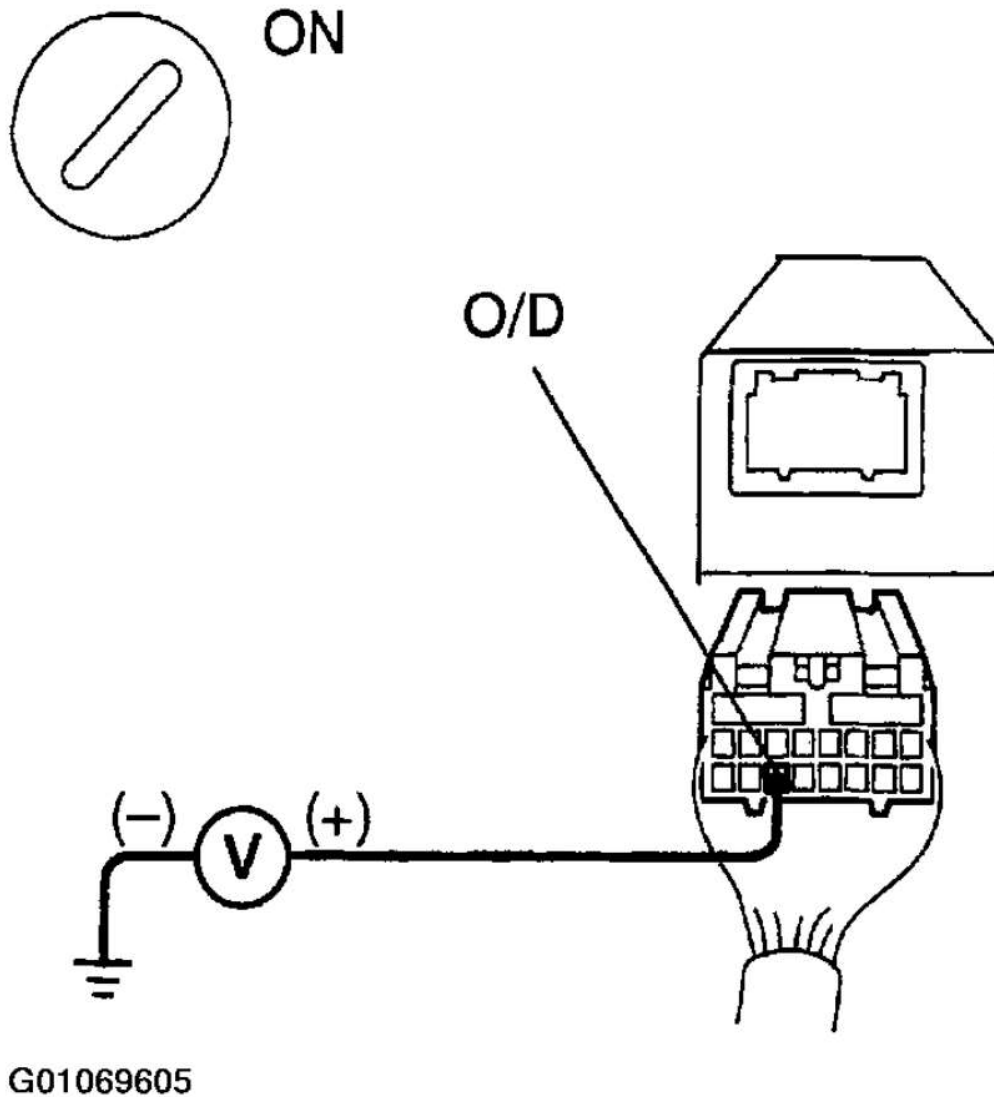


Fig. 52: Measuring Voltage Between Terminal OD Of ECU & Ground
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Voltage: 10 - 16 V

OK: Go to next step.

NG: Go to step 5 .

3. Check voltage between terminal ECT of cruise control ECU connector and body ground (On test drive) .

- a. Connect the ECU connector.
- b. Test drive after engine warmed up.

Check the voltage between terminal ECT of the ECU connector and the body ground when the OD switch is ON and OFF.

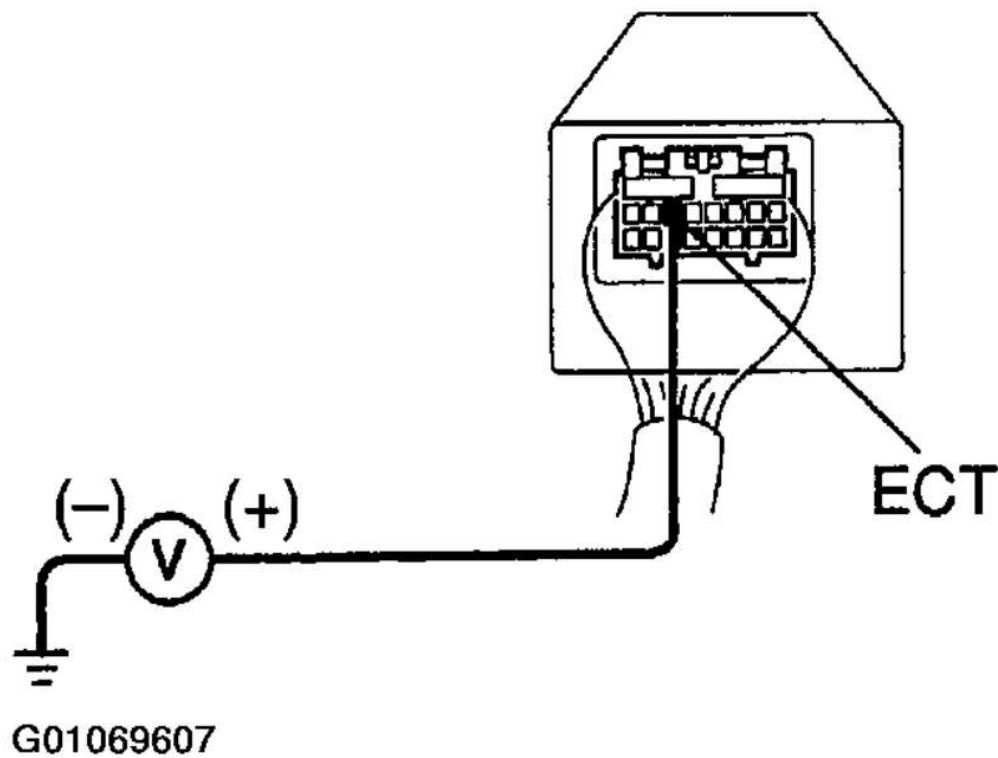


Fig. 53: Checking Voltage At Terminal ECT Of ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: See Fig. 54 .

OD switch position	Voltage
ON	8 – 16 V
OFF	Below 0.5 V

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Fig. 54: Displaying Voltage Based On Switch Position
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Proceed to next circuit inspection shown in **PROBLEM SYMPTOMS** .

NG: Go to next step.

4. **Check harness and connector between terminal ECT of cruise control ECU and electronically controlled transmission solenoid. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .**

OK: Check and replace cruise control ECU.

NG: Repair or replace harness or connector.

5. **Check harness and connector between terminal OD of cruise control ECU and terminal OD1 of ECM. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .**

OK: Check and replace cruise control ECU. See **HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE** .

NG: Repair or replace harness or connector.

PARK/NEUTRAL POSITION SWITCH CIRCUIT (A/T)

Circuit Description

When the shift position is in any gear except D, a signal is sent from the park/neutral position switch to the ECU. When this signal is input during the cruise control driving, the ECU cancels the cruise control.

Wiring Diagram

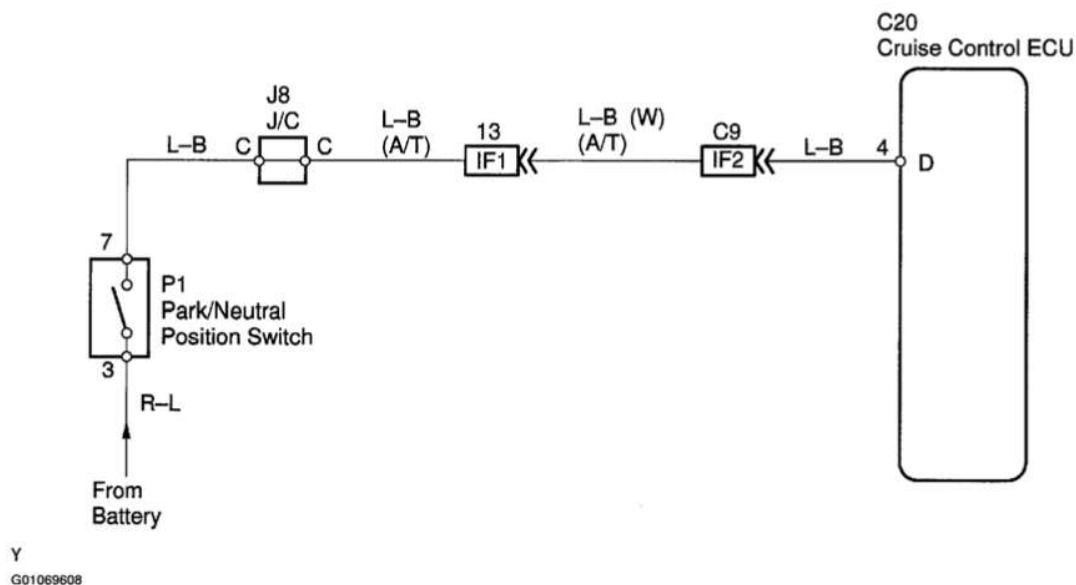


Fig. 55: Identifying Park/Neutral Position Switch Circuit
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

For complete cruise control system wiring diagram, see **CRUISE CONTROL** .

Inspection Procedure

1. Check starter operation .

Check that the starter operates normally and that the engine starts.

OK: Go to next step.

NG: Proceed to engine troubleshooting. See **HOW TO PROCEED WITH TROUBLESHOOTING** .

2. Input signal check .

See step) INPUT SIGNAL CHECK .

Check the indicator light when shifting into positions except D.

Input Signal	Indicator Light Blinking Pattern
Turn PNP switch OFF (Shift to positions except D)	Light ON SW ON OFF- - - SW OFF

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Fig. 56: Checking Indicator Light When Shifting Into Positions Except D
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: The indicator light goes off when shifting into positions except D .

OK: Proceed to next circuit inspection shown in **PROBLEM SYMPTOMS** .

NG: Go to next step.

3. Check voltage between terminal D of cruise control ECU connector and body ground .

Turn the ignition switch ON.

Measure the voltage between terminal D of the ECU connector and the body ground when shifting into D position and other positions.

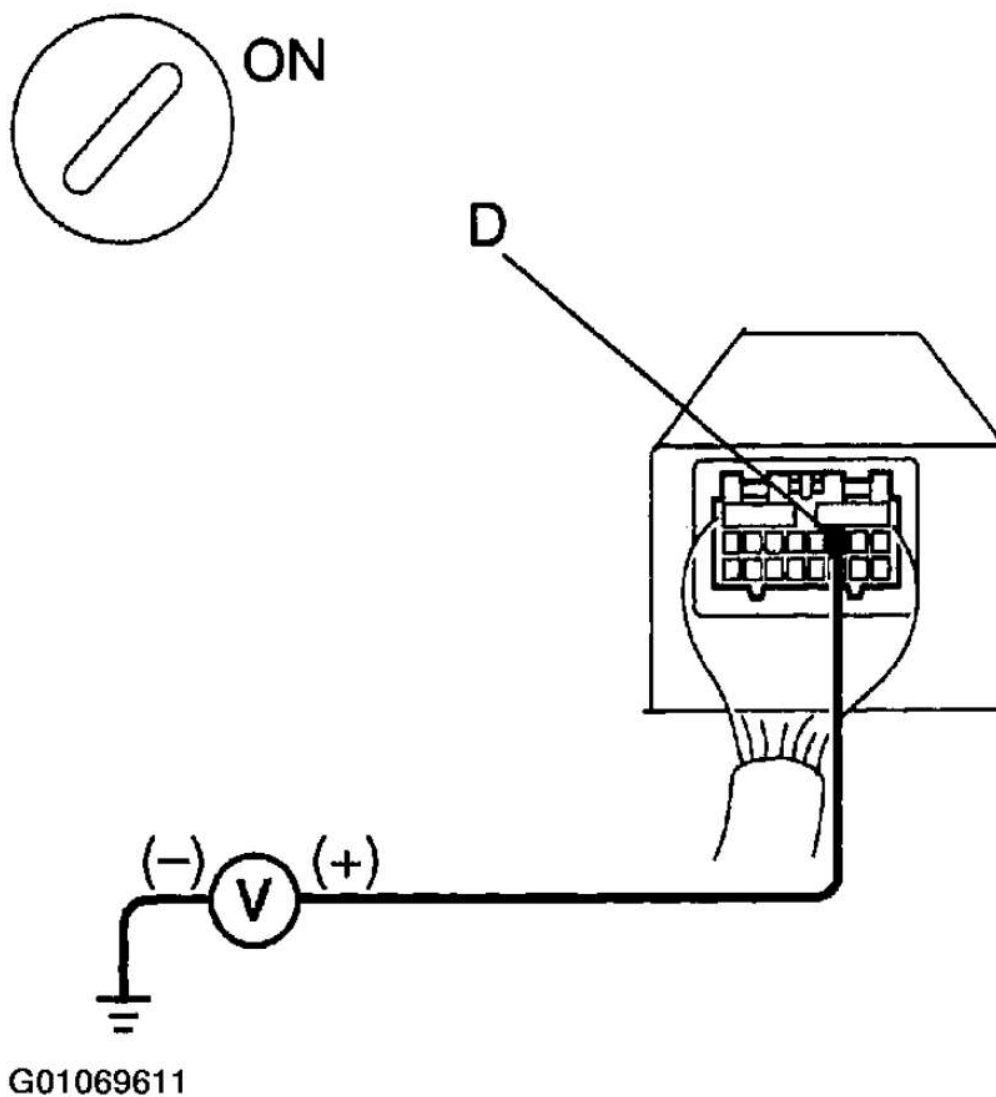


Fig. 57: Measuring Voltage At Terminal D Of ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: See Fig. 58 .

Shift Position	Voltage
D position	10 – 16 V
Other positions	Below 1 V

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Fig. 58: Displaying Voltage Based On Shift Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Proceed to next circuit inspection shown in **PROBLEM SYMPTOMS** .

NG: Go to next step.

4. **Check harness and connector between cruise control ECU and park/neutral position switch. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .**

OK: Check and replace cruise control ECU. See **HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE** .

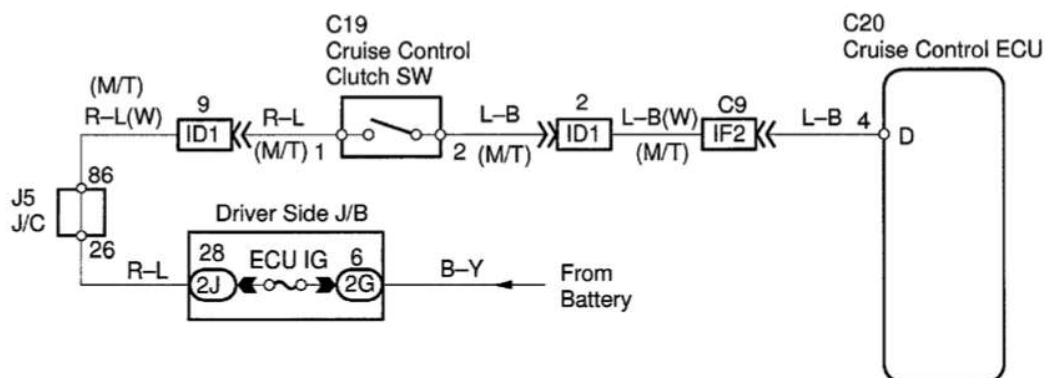
NG: Repair or replace harness or connector.

CLUTCH SWITCH CIRCUIT (ONLY FOR M/T)

Circuit Description

When the clutch pedal is depressed, the clutch switch sends a signal to the cruise control ECU. When the signal is input to the cruise control ECU during the cruise control driving, the cruise control ECU cancels the cruise control.

Wiring Diagram



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Fig. 59: Identifying Clutch Switch Circuit
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

For complete cruise control system wiring diagram, see **CRUISE CONTROL** .

Inspection Procedure

1. Check starter operation .

Check that the starter operates normally and that the engine starts.

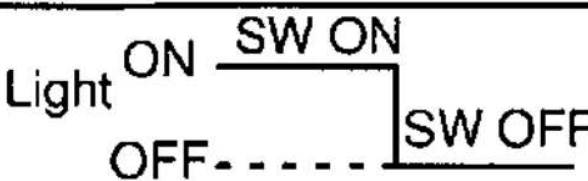
OK: Go to next step.

NG: Proceed to engine troubleshooting.

2. Input signal check .

See step) INPUT SIGNAL CHECK .

Check that the indicator lights up when the clutch pedal is depressed.

Input Signal	Indicator Light Blinking Pattern
Clutch switch OFF (Depress clutch pedal)	 Light ON SW ON OFF - - - - SW OFF

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Fig. 60: Displaying Indicator Light Blinking Pattern Based On Input Signal
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: The indicator light goes off when the clutch pedal is depressed .

OK: Proceed to next circuit inspection shown in **PROBLEM SYMPTOMS** .

NG: Go to next step.

3. Check voltage between terminal D of cruise control ECU connector and body ground .

Turn the ignition switch ON.

Measure the voltage between terminal D of the ECU connector and the body ground when the clutch pedal is depressed and released.

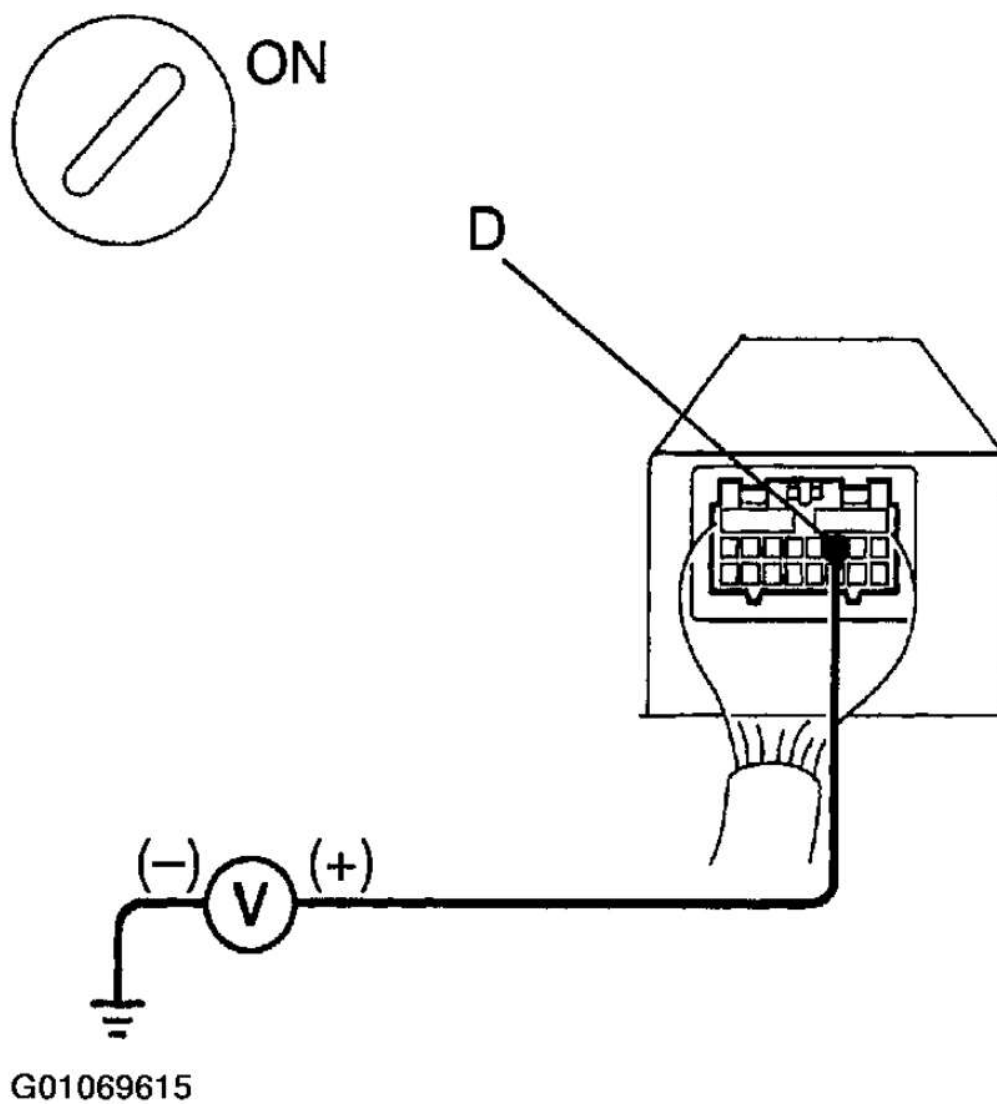


Fig. 61: Measuring Voltage At Terminal D Of ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: See Fig. 62 .

Clutch pedal	Voltage
Depressed	10 – 16 V
released	Below 1 V

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Fig. 62: Identifying Voltage Based On Clutch Pedal Position

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Proceed to next circuit inspection shown in **PROBLEM SYMPTOMS** .

NG: Go to next step.

4. **Check for open in harness and connector between cruise control ECU and GAUGE fuse. See HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE .**

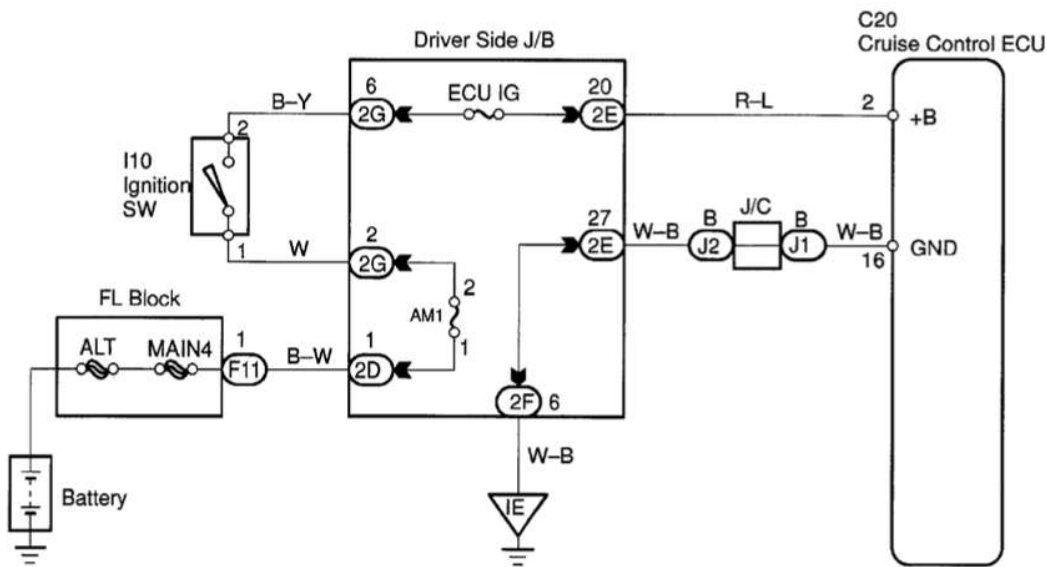
OK: Check and replace cruise control ECU. See **HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE** .

NG: Repair or replace harness or connector.

ECU POWER SOURCE CIRCUIT**Circuit Description**

The ECU power source supplies power to the actuator and sensors, etc., when terminal GND and the cruise control ECU case are grounded.

Wiring Diagram



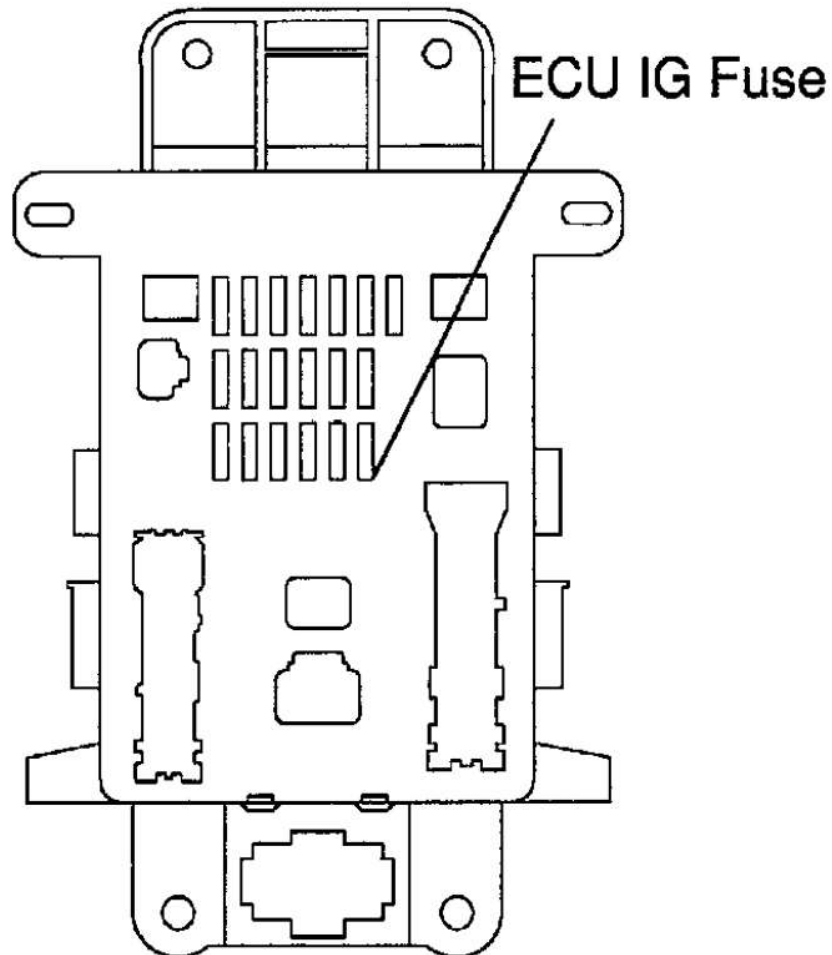
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Fig. 63: Identifying ECU Power Source Circuit
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

For complete cruise control system wiring diagram, see **CRUISE CONTROL**.

Inspection Procedure

1. **Check ECU IG fuse .**
Remove the ECU IG fuse from the driver side J/B.



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Fig. 64: Identifying ECU IG Fuse

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Check the continuity of the ECU IG fuse.

OK: Continuity

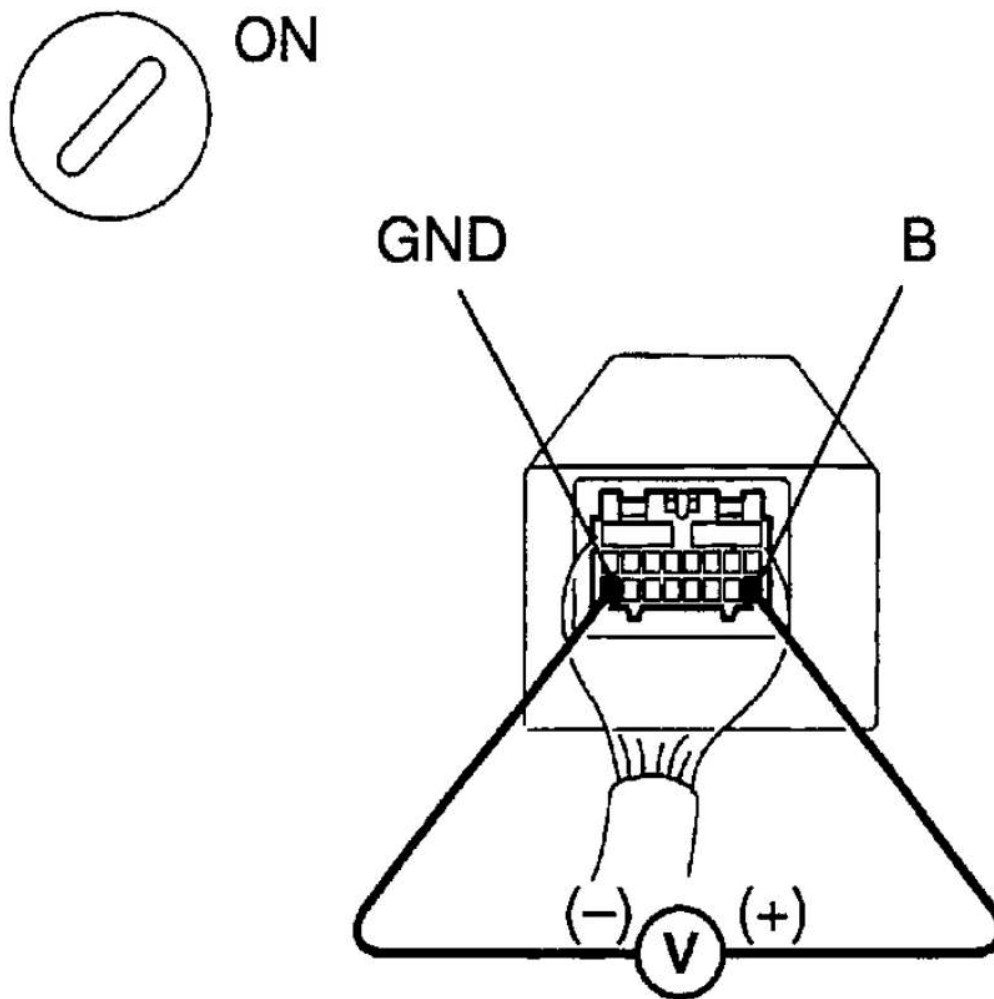
OK: Go to next step.

NG: Replace ECU IG fuse.

2. Check voltage between terminals B and GND of cruise control ECU connector .

- a. Remove the ECU with the connector being.
- b. Turn the ignition switch ON.

Measure the voltage between terminals B and GND of the ECU connector.



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Fig. 65: Measuring Voltage Between Terminals B & GND
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Voltage: 10 - 16 V

OK: Proceed to next circuit inspection shown in **PROBLEM SYMPTOMS** .

NG: Go to next step.

3. **Check resistance between terminal GND of cruise control ECU connector and body ground .**

Measure the resistance between terminal GND of the ECU connector and the body ground.

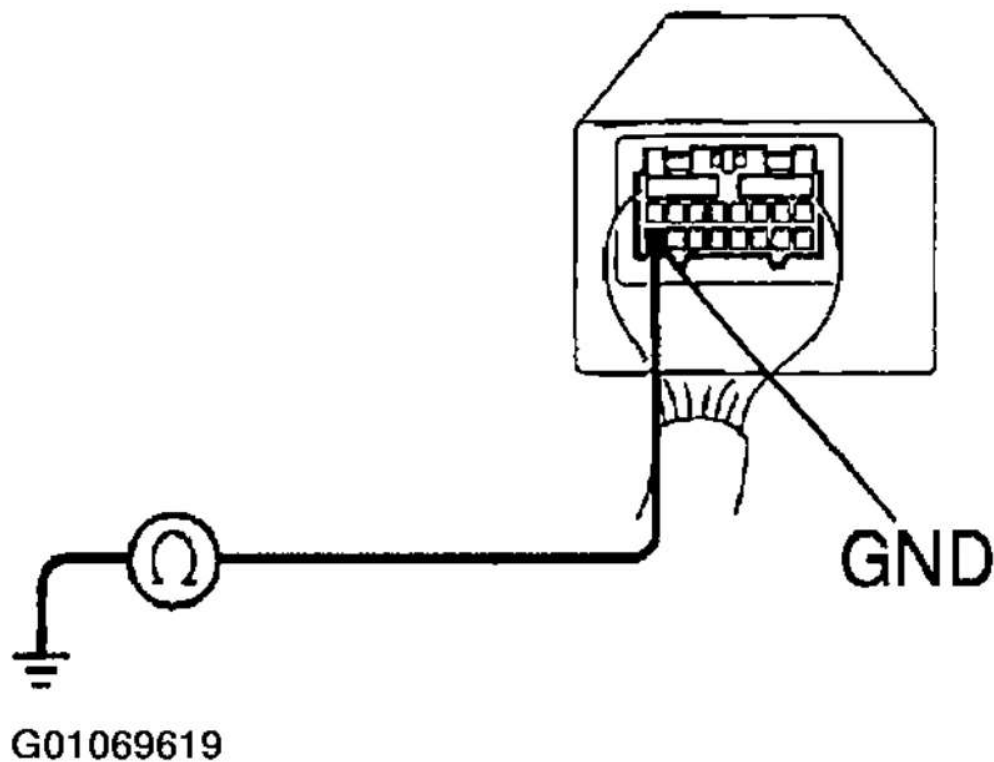


Fig. 66: Measuring Resistance Between GND Terminal & Body Ground

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Resistance - Below 1 Ohm

OK: Check and repair harness and connector between cruise control ECU and battery. See **HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE** .

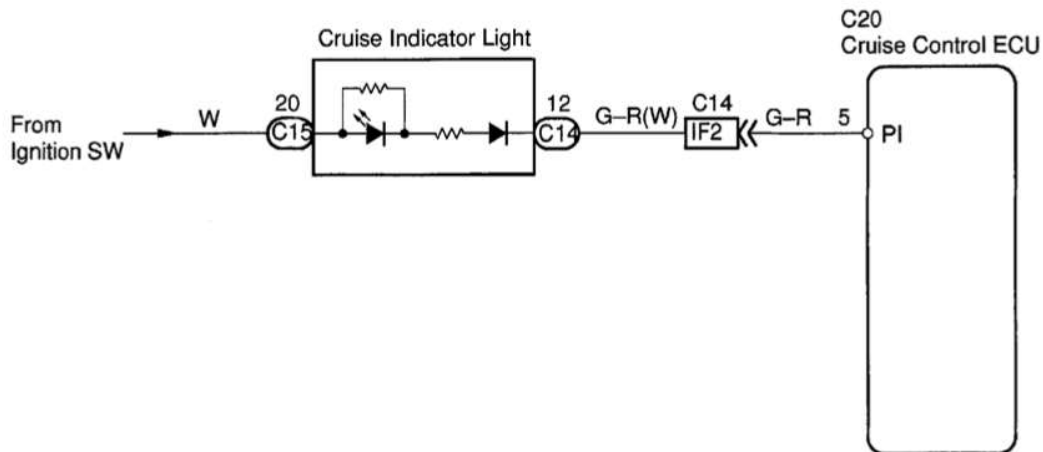
NG: Repair or replace harness or connector.

CRUISE MAIN INDICATOR LIGHT CIRCUIT

Circuit Description

When the cruise control main switch is turned ON, CRUISE MAIN indicator light lights up.

Wiring Diagram



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Fig. 67: Identifying Cruise Main Indicator Light Circuit
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Inspection Procedure

1. **Check voltage between terminals PI and GND of cruise control ECU connector .**

Turn the ignition switch ON.

Measure the voltage between terminals PI and GND of the cruise control ECU connector when the main switch is ON and OFF.

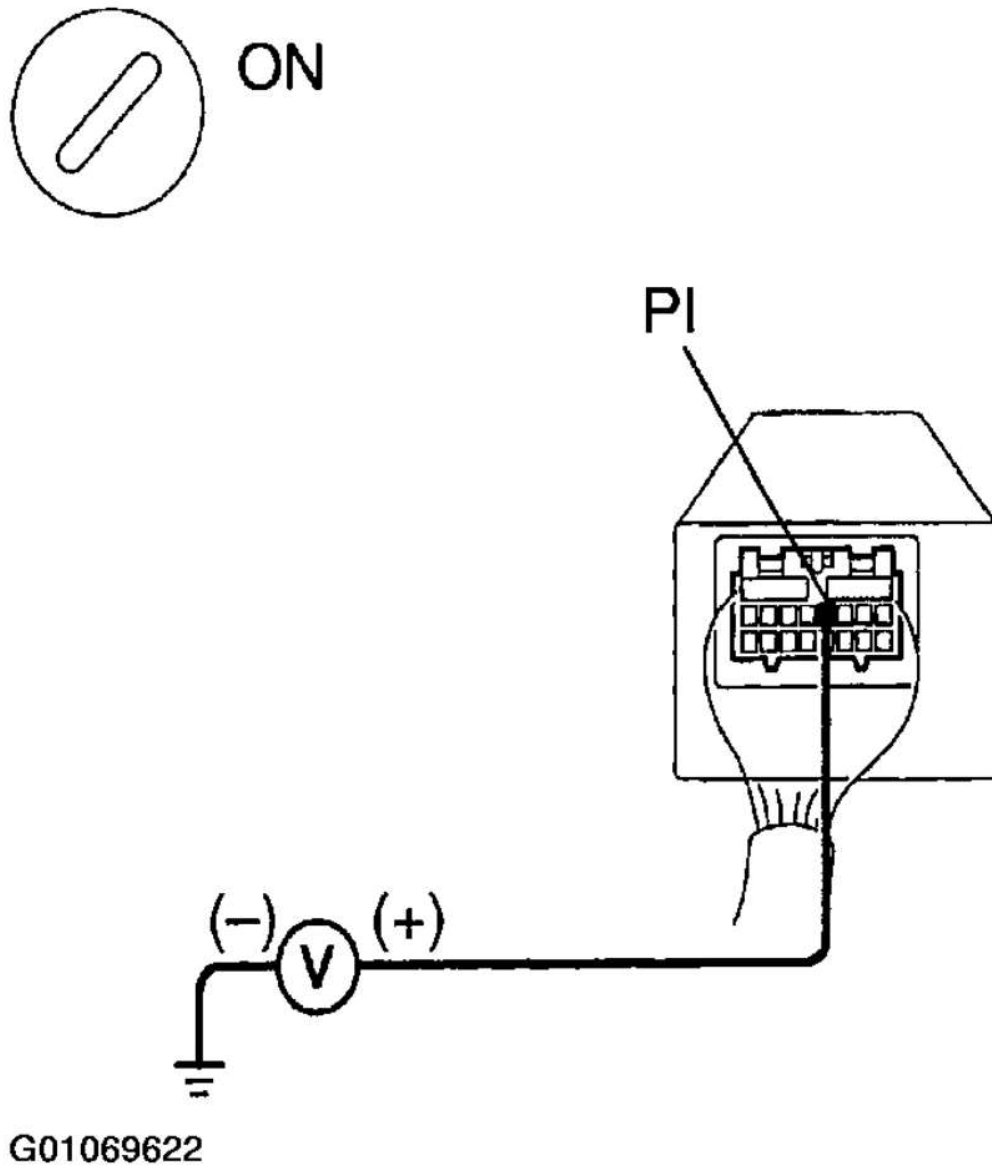


Fig. 68: Measuring Voltage Between Terminals PI & GND
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK:

Switch position	Voltage
OFF	10 – 16 V
ON	Below 1.2 V

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Fig. 69: Identifying Voltage Based On Switch Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- OK: Proceed to next circuit inspection shown in **PROBLEM SYMPTOMS** .
- NG: Go to next step.

2. Check combination meter. See **INSPECTION** .

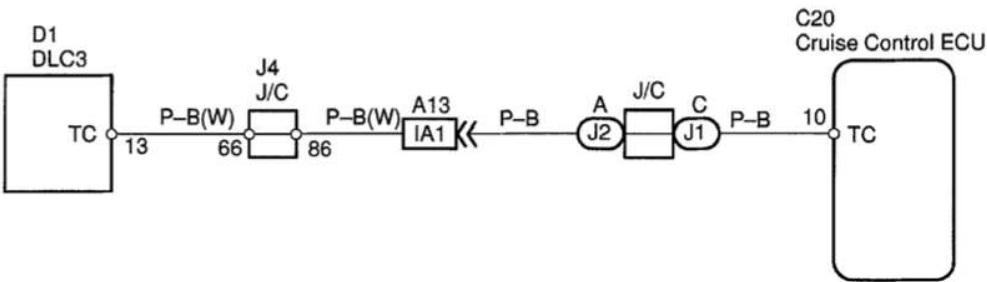
- OK: Check and replace cruise control ECU. See **HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE** .
- NG: Replace combination meter.

DIAGNOSIS CIRCUIT

Circuit Description

This circuit sends a signal to the ECU that outputs DTCs.

Wiring Diagram



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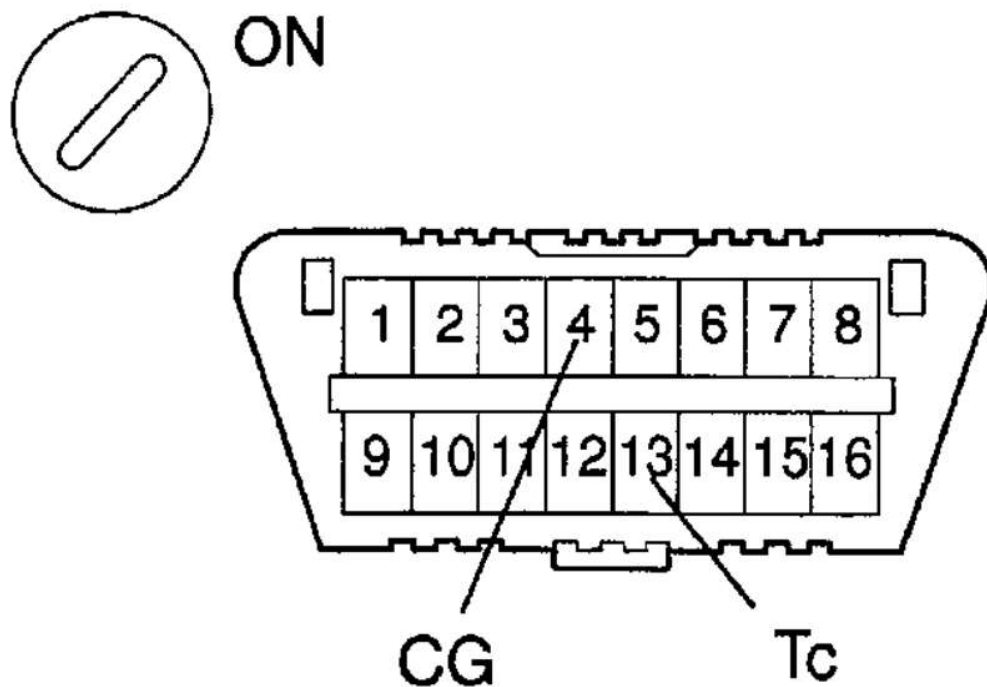
Fig. 70: Identifying Diagnosis Circuit
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Inspection Procedure

1. **Check voltage between terminals Tc and CG of DLC3 .**

Turn the ignition switch ON.

Measure the voltage between terminals Tc and CG of the DLC3.



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Fig. 71: Measuring Voltage Between Terminals Tc & CG
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Voltage: 10 - 14 V

OK: Proceed to next circuit inspection shown in **PROBLEM SYMPTOMS** .

NG: Go to next step.

2. **Check harness and connector between cruise control ECU and DLC3, and DLC3 and body ground.**
 See **HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE** .

OK: Check and replace cruise control ECU. See **HOW TO USE THE DIAGNOSTIC CHART AND INSPECTION PROCEDURE** .

NG: Repair or replace harness or connector.

ACTUATOR CONTROL CABLE

Inspection Procedure

1. Inspect actuator control cable .

- a. Check that the actuator and control cable throttle link are properly installed and that the cable and link are connected correctly.
- b. Check that the actuator and bell crank operate smoothly.
- c. Check that the cable is not loose or too tight.

OK: Free play: Less than 10 mm (0.39 in.)

NOTE:

- If the control cable is very loose, the vehicle's loss of speed when going uphill will be large.
- If the control cable is too tight, the idle RPM will become high.