

### **8. Diagnostic Procedure with DTC**

#### **A: DTC 21, 24, 25 AND 2A CRUISE CONTROL MODULE BUILT-IN RELAY, CPU RAM**

##### **DIAGNOSIS:**

- Poor welding of built-in relay of cruise control module.
- Failure of built-in CPU RAM of cruise control module.

##### **TROUBLE SYMPTOM:**

- Cruise control is canceled and memorized cruise speed is also canceled.
- Once cruise control is canceled, cruise control cannot be set until the ignition switch and cruise control main switch turns OFF, and then turns ON again.

##### **NOTE:**

Check input/output signal and vehicle speed signal with select monitor. When signals are in good condition, failure is in cruise control module. (Check the power supply and ground conditions of cruise control module.)

# DIAGNOSTIC PROCEDURE WITH DTC

## CRUISE CONTROL SYSTEM (DIAGNOSTICS)

### B: DTC 22 VEHICLE SPEED SENSOR

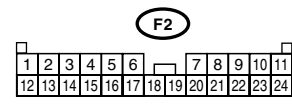
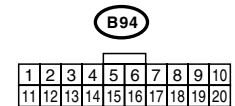
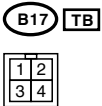
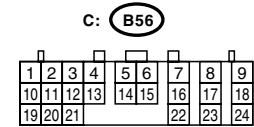
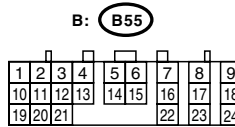
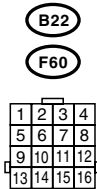
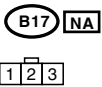
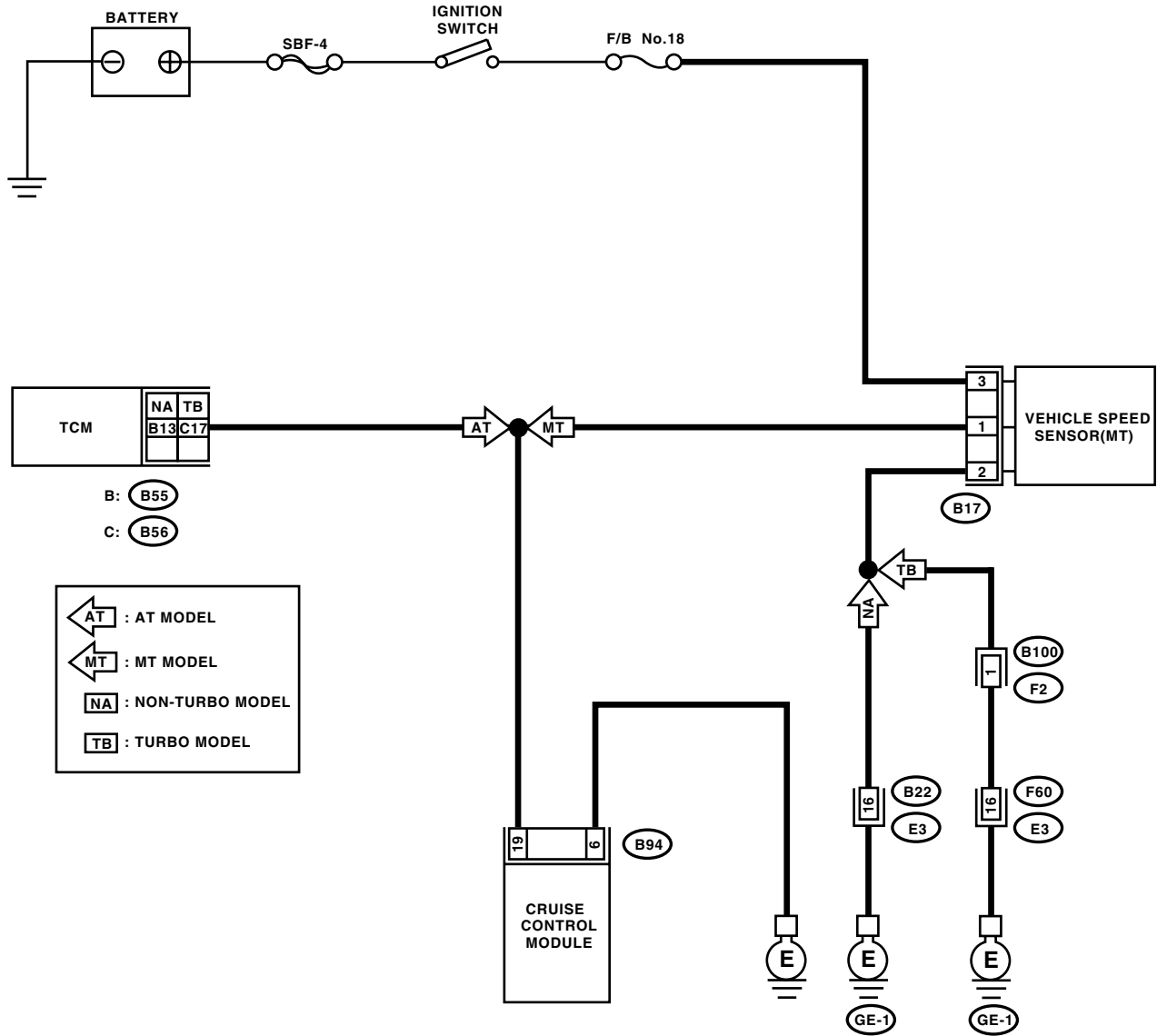
#### DIAGNOSIS:

Disconnection or short circuit of vehicle speed sensor system.

#### TROUBLE SYMPTOM:

Cruise control cannot be set. (Cancelled immediately.)

#### WIRING DIAGRAM:



CC-00190

# DIAGNOSTIC PROCEDURE WITH DTC

## CRUISE CONTROL SYSTEM (DIAGNOSTICS)

Step	Check	Yes	No	
<b>1</b>	<b>CHECK TRANSMISSION TYPE.</b>	Is the transmission type MT?	Go to step 2.	Go to step 6.
<b>2</b>	<b>CHECK HARNESS BETWEEN BATTERY AND VEHICLE SPEED SENSOR.</b> 1)Turn the ignition switch to OFF. 2)Disconnect the harness connector from vehicle speed sensor. 3)Turn the ignition switch to ON. 4)Measure the voltage between vehicle speed sensor harness connector terminal and chassis ground. <b>Connector &amp; terminal</b> <b>(B17) No. 3 (+) — Chassis ground (-):</b>	Is the voltage more than 10 V?	Go to step 3.	Check the harness for open or short between fuse and vehicle speed sensor.
<b>3</b>	<b>CHECK HARNESS BETWEEN CRUISE CONTROL MODULE AND VEHICLE SPEED SENSOR.</b> 1)Turn the ignition switch to OFF. 2)Disconnect the harness connector from cruise control module. 3)Measure the resistance between vehicle speed sensor harness connector terminal and cruise control module harness connector terminal. <b>Connector &amp; terminal</b> <b>(B17) No. 1 — (B94) No. 19:</b>	Is the resistance less than 10 $\Omega$ ?	Go to step 4.	Repair the harness.
<b>4</b>	<b>CHECK HARNESS BETWEEN VEHICLE SPEED SENSOR AND ENGINE GROUND.</b> 1)Turn the ignition switch to OFF. 2)Measure the resistance between vehicle speed sensor harness connector terminal and engine ground. <b>Connector &amp; terminal</b> <b>(B17) No. 2 — Engine ground:</b>	Is the resistance less than 10 $\Omega$ ?	Go to step 5.	Repair the harness.
<b>5</b>	<b>CHECK VEHICLE SPEED SENSOR.</b> 1)Connect the harness connector to vehicle speed sensor. 2)Lift-up the vehicle and support with safety stands. 3)Drive the vehicle at speed greater than 20 km/h (12 MPH). <b>Warning:</b> <b>Be careful not to be caught up by the running wheels.</b> 4)Measure the voltage between cruise control module harness connector terminal and chassis ground. <b>Connector &amp; terminal</b> <b>(B94) No. 19 (+) — Chassis ground (-):</b>	Is the voltage less than 1 V ←→ more than 5 V?	Replace the cruise control module. <Ref. to CC-5, Cruise Control Module.>	Replace the vehicle speed sensor.

# DIAGNOSTIC PROCEDURE WITH DTC

## CRUISE CONTROL SYSTEM (DIAGNOSTICS)

Step	Check	Yes	No
<b>6 CHECK HARNESS BETWEEN CRUISE CONTROL MODULE AND TRANSMISSION CONTROL MODULE.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the harness connector from transmission control module and cruise control module. 3) Measure the resistance between cruise control module harness connector terminal and transmission control module harness connector terminal.  <i><b>Connector &amp; terminal</b></i> <i><b>NON-TURBO MODEL</b></i> <i><b>(B94) No. 19 — (B55) No. 13:</b></i> <i><b>TURBO MODEL</b></i> <i><b>(B94) No. 19 — (B56) No. 17:</b></i>	Is the resistance less than 10 Ω?	Go to step 7.	Repair the harness.
<b>7 CHECK TRANSMISSION CONTROL MODULE.</b> 1) Connect the harness connector to transmission control module. 2) Lift-up the vehicle and support with safety stands. 3) Drive the vehicle faster than 10 km/h (6 MPH).  <b>Warning:</b> <b>Be careful not to be caught by the running wheels.</b>  4) Measure the voltage between transmission control module harness connector terminal and chassis ground.  <i><b>Connector &amp; terminal</b></i> <i><b>NON-TURBO MODEL</b></i> <i><b>(B55) No. 13 (+) — Chassis ground (-):</b></i> <i><b>TURBO MODEL</b></i> <i><b>(B56) No. 17 (+) — Chassis ground (-):</b></i>	Is the voltage less than 1 V ←→ more than 5 V?	Replace the cruise control module. <Ref. to CC-5, Cruise Control Module.>	Replace the transmission control module. <Ref. to 4AT-67, Transmission Control Module (TCM).>

### C: DTC 28 WIRING HARNESS OPENED

Step	Check	Yes	No
<b>1 CHECK BATTERY.</b> Measure the battery specific gravity of electrolyte.	Is the battery specific gravity more than 1.260?	Go to step 2.	Charge or replace the battery. Go to step 2.
<b>2 CHECK FUSES, CONNECTORS AND HARNESSES.</b> Check the condition of the main and other fuses, and harnesses and connectors. Also check for proper grounding.	Is there anything unusual about the appearance of main fuse, fuse, harness, connector and grounding?	Repair or replace the faulty parts.	End of inspection.

# DIAGNOSTIC PROCEDURE WITH DTC

CRUISE CONTROL SYSTEM (DIAGNOSTICS)

## D: DTC 35 AND 36 ACTUATOR MOTOR

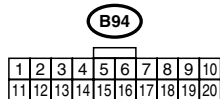
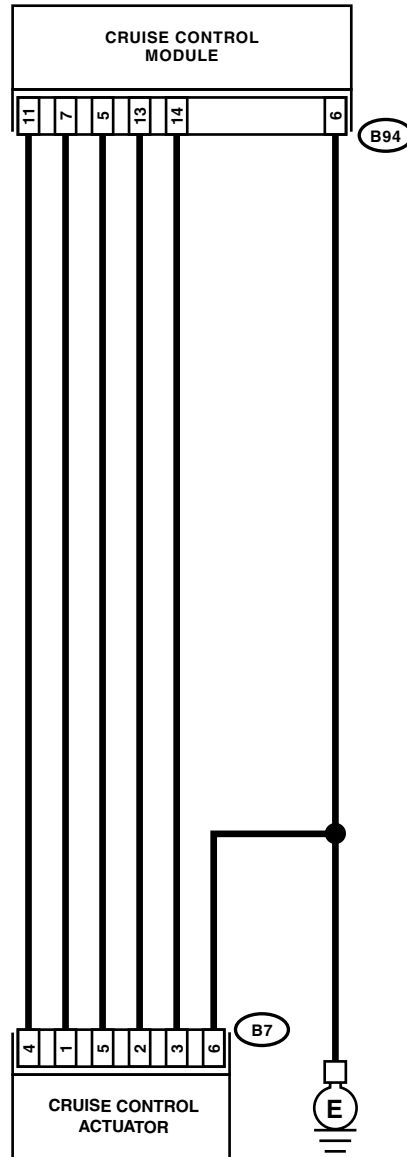
### DIAGNOSIS:

Open or poor contact of cruise control actuator motor.

### TROUBLE SYMPTOM:

Cruise control cannot be set. (Cancelled immediately.)

### WIRING DIAGRAM:



CC-00177

# DIAGNOSTIC PROCEDURE WITH DTC

## CRUISE CONTROL SYSTEM (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK POWER SUPPLY.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the harness connector from cruise control actuator. 3) Turn the ignition switch to ON. 4) Turn the cruise control main switch to ON. 5) Measure the voltage between cruise control actuator harness connector terminal and chassis ground. <i><b>Connector &amp; Terminal</b></i> <i><b>(B7) No. 4 (+) — Chassis ground (-):</b></i>	Is the voltage more than 10 V?	Go to step 2.	Check the harness for open or short between cruise control module and cruise control actuator.
<b>2 CHECK GROUND CIRCUIT OF ACTUATOR.</b> 1) Turn the ignition switch and cruise control main switch to OFF. 2) Measure the resistance between cruise control actuator harness connector terminal and chassis ground. <i><b>Connector &amp; Terminal</b></i> <i><b>(B7) No. 6 — Chassis ground:</b></i>	Is the resistance less than 10 $\Omega$ ?	Go to step 3.	Repair the harness.
<b>3 MEASURE RESISTANCE OF ACTUATOR.</b> Measure the resistance of cruise control actuator motor. <i><b>Terminals</b></i> <i><b>No. 4 — No. 1:</b></i> <i><b>No. 4 — No. 2:</b></i> <i><b>No. 4 — No. 5:</b></i>	Is the resistance approx. 5 $\Omega$ ?	Go to step 4.	Replace the cruise control actuator. <Ref. to CC-4, Actuator.>
<b>4 CHECK HARNESS BETWEEN ACTUATOR AND CRUISE CONTROL MODULE.</b> 1) Disconnect the harness connector from cruise control module. 2) Measure the resistance between cruise control module harness connector terminal and cruise control actuator harness connector terminal. <i><b>Connector &amp; terminal</b></i> <i><b>(B7) No. 1 — (B94) No. 7:</b></i>	Is the resistance less than 10 $\Omega$ ?	Go to step 5.	Repair the harness.
<b>5 CHECK HARNESS BETWEEN ACTUATOR AND CRUISE CONTROL MODULE.</b> Measure the resistance between cruise control module harness connector terminal and cruise control actuator harness connector terminal. <i><b>Connector &amp; terminal</b></i> <i><b>(B7) No. 5 — (B94) No. 5:</b></i>	Is the resistance less than 10 $\Omega$ ?	Replace the cruise control module. <Ref. to CC-5, Cruise Control Module.>	Repair the harness.

# DIAGNOSTIC PROCEDURE WITH DTC

CRUISE CONTROL SYSTEM (DIAGNOSTICS)

## E: DTC 37 ACTUATOR MOTOR CLUTCH

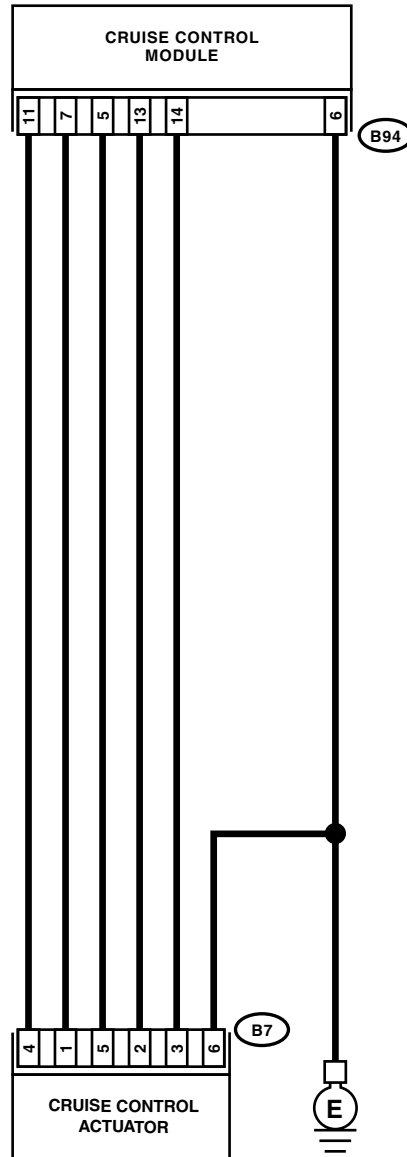
### DIAGNOSIS:

Open or poor contact of cruise control actuator motor clutch.

### TROUBLE SYMPTOM:

Cruise control cannot be set. (Cancelled immediately.)

### WIRING DIAGRAM:



B7

1	2	3
4	5	6

B94

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

CC-00177

# DIAGNOSTIC PROCEDURE WITH DTC

## CRUISE CONTROL SYSTEM (DIAGNOSTICS)

Step	Check	Yes	No
<b>1 CHECK POWER SUPPLY.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the harness connector from cruise control actuator. 3) Turn the ignition switch to ON. 4) Turn the cruise control main switch to ON. 5) Measure the voltage between cruise control actuator harness connector terminal and chassis ground. <i><b>Connector &amp; Terminal</b></i> <i><b>(B7) No. 4 (+) — Chassis ground (-):</b></i>	Is the voltage more than 10 V?	Go to step 2.	Check the harness for open or short between cruise control module and cruise control actuator.
<b>2 CHECK GROUND CIRCUIT OF ACTUATOR.</b> 1) Turn the ignition switch and cruise control main switch to OFF. 2) Measure the resistance between cruise control actuator harness connector terminal and chassis ground. <i><b>Connector &amp; Terminal</b></i> <i><b>(B7) No. 6 — Chassis ground:</b></i>	Is the resistance less than 10 $\Omega$ ?	Go to step 3.	Repair the harness.
<b>3 MEASURE RESISTANCE OF ACTUATOR CLUTCH.</b> Measure the resistance of cruise control actuator clutch. <i><b>Terminals</b></i> <i><b>No. 3 — No. 6:</b></i>	Is the resistance approximately 39 $\Omega$ ?	Go to step 4.	Replace the cruise control actuator. <Ref. to CC-4, Actuator.>
<b>4 CHECK HARNESS BETWEEN ACTUATOR AND CRUISE CONTROL MODULE.</b> 1) Disconnect the harness connector from cruise control module. 2) Measure the resistance between cruise control module harness connector terminal and cruise control actuator harness connector terminal. <i><b>Connector &amp; terminal</b></i> <i><b>(B7) No. 2 — (B94) No. 13:</b></i>	Is the resistance less than 10 $\Omega$ ?	Go to step 5.	Repair the harness.
<b>5 CHECK HARNESS BETWEEN ACTUATOR AND CRUISE CONTROL MODULE.</b> Measure the resistance between cruise control module harness connector terminal and cruise control actuator harness connector terminal. <i><b>Connector &amp; terminal</b></i> <i><b>(B7) No. 3 — (B94) No. 14:</b></i>	Is the resistance less than 10 $\Omega$ ?	Replace the cruise control module. <Ref. to CC-5, Cruise Control Module.>	Repair the harness.



# DIAGNOSTIC PROCEDURE WITH DTC

CRUISE CONTROL SYSTEM (DIAGNOSTICS)

## F: DTC 38 MOTOR DRIVE SHAFT DOES NOT ENGAGE PROPERLY

Step	Check	Yes	No
<b>1 CHECK ACTUATOR MOTOR.</b> 1) Turn the ignition switch to OFF. 2) Disconnect the harness connector from cruise control actuator. 3) Remove the cruise control actuator from mounting bracket. 4) Pull the cable by hand to check for looseness or status of inner gear engagement.	Are foreign particles caught in the inner gear or does inner gear engage and disengage improperly?	Replace the cruise control actuator. <Ref. to CC-4, Actuator.>	Check the cruise control cable adjustment.<Ref. to CC-4, CABLE FREE PLAY, General Description.>

## G: DTC 39 MOTOR IS OVERLOADED

Step	Check	Yes	No
<b>1 CHECK THE OPERATING CURRENT TO ACTUATOR MOTOR.</b> 1) Connect the Subaru Select Monitor to data link connector. 2) Try to drive the vehicle while operating the cruise control system. 3) Measure the operation current to the cruise control actuator motor. <b>Connector &amp; terminal</b> <b>(B7) No. 4 (+) — Chassis ground (-):</b>	Is the current more than 10 A?	Replace the cruise control module. <Ref. to CC-5, Cruise Control Module.>	Check the power supply circuit. <Ref. to CC-12, CHECK POWER SUPPLY, Diagnostic Procedure with Symptom.>

# DIAGNOSTIC PROCEDURE WITH DTC

CRUISE CONTROL SYSTEM (DIAGNOSTICS)

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