

8. Diagnostics Chart with Diagnostic Trouble Code

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 the cruise control is canceled, the cruise control cannot be set until the ignition switch and cruise control main switch turns OFF, and then turns ON again.

NOTE:

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

DIAGNOSTICS CHART WITH DIAGNOSTIC TROUBLE CODE
CRUISE CONTROL SYSTEM (DIAGNOSTICS)

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CRUISE CONTROL SYSTEM (DIAGNOSTICS)

B: DTC 22 VEHICLE SPEED SENSOR

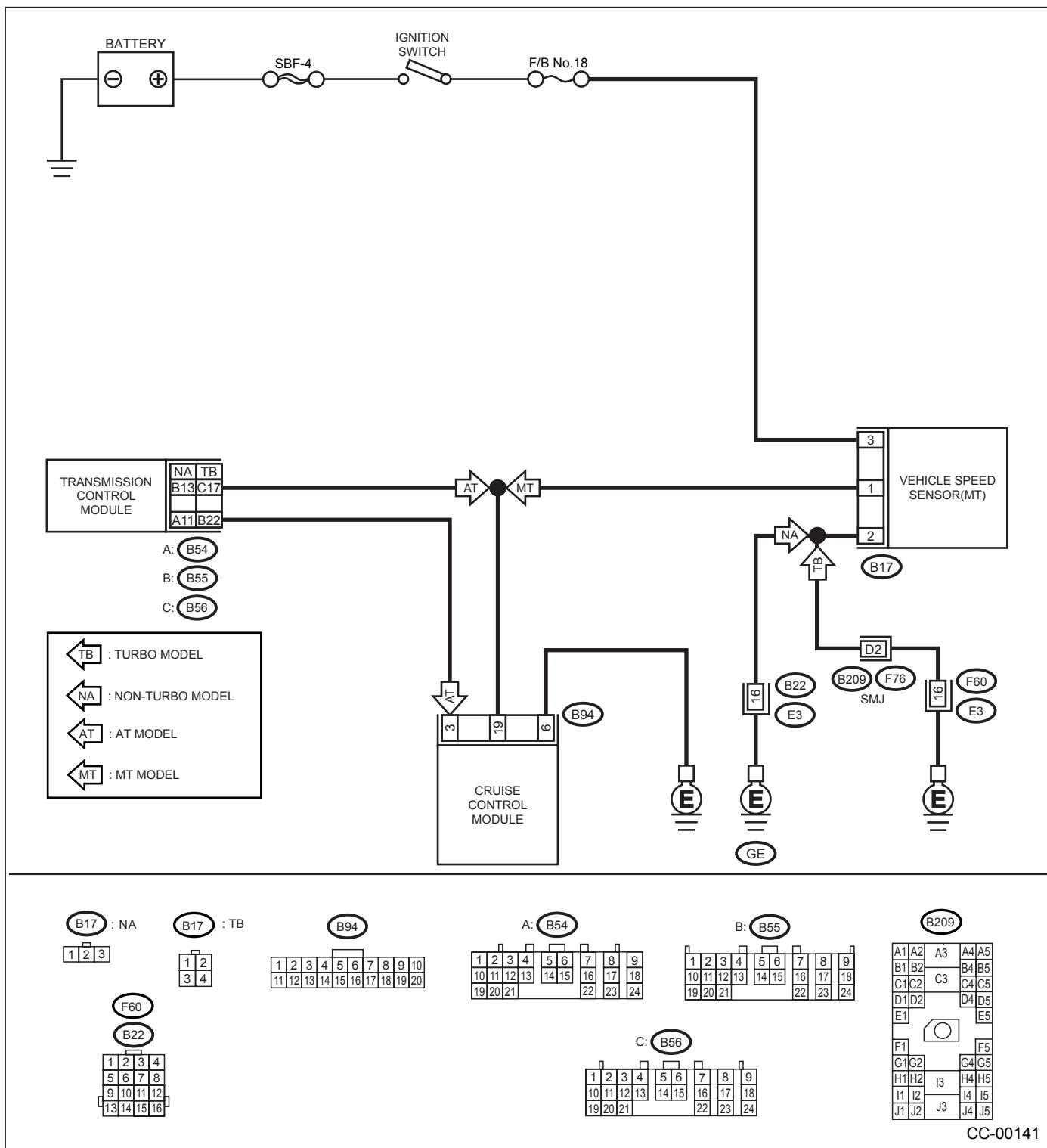
DIAGNOSIS:

Disconnection or short circuit of vehicle speed sensor system.

TROUBLE SYMPTOM:

Cruise control cannot be set. (Cancelled immediately.)

WIRING DIAGRAM:



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Step	Check	Yes	No
1 CHECK TRANSMISSION TYPE. Is the transmission type MT?	The transmission is MT.	Go to step 2.	Go to step 6.
2 CHECK HARNESS BETWEEN BATTERY AND VEHICLE SPEED SENSOR. 1)Turn ignition switch OFF. 2)Disconnect harness connector from vehicle speed sensor. 3)Turn ignition switch to ON. 4)Measure voltage between vehicle speed sensor harness connector terminal and chassis ground. <i>Connector & terminal</i> <i>(B17) No. 3 (+) — Chassis ground (-):</i> Is the measured value more than the specified value?	10 V	Go to step 3.	Check harness for open or short between ignition switch and vehicle speed sensor.
3 CHECK HARNESS BETWEEN CRUISE CONTROL MODULE AND VEHICLE SPEED SENSOR. 1)Turn ignition switch to OFF. 2)Disconnect harness connector from cruise control module. 3)Measure resistance between vehicle speed sensor harness connector terminal and cruise control module harness connector terminal. <i>Connector & terminal</i> <i>(B17) No. 1 — (B94) No. 19:</i> Is the measured value less than the specified value?	10 Ω	Go to step 4.	Repair harness.
4 CHECK HARNESS BETWEEN VEHICLE SPEED SENSOR AND ENGINE GROUND. 1)Turn ignition switch OFF. 2)Measure resistance between vehicle speed sensor harness connector terminal and engine ground. <i>Connector & terminal</i> <i>(B17) No. 2 — Engine ground:</i> Is the measured value less than the specified value?	10 Ω	Go to step 5.	Repair harness.
5 CHECK VEHICLE SPEED SENSOR. 1)Connect harness connector to vehicle speed sensor. 2)Set the vehicle on free roller, or lift-up the vehicle and support with safety stands. Warning: Be careful not to be caught up by the running wheels. 3)Drive the vehicle at speed greater than 20 km/h (12 MPH). 4)Measure voltage between cruise control module harness connector terminal and chassis ground. <i>Connector & terminal</i> <i>(B94) No. 19 (+) — Chassis ground (-):</i> Is the measured value same as the specified value?	0 ↔ 5 V	Replace cruise control module. <Ref. to CC-5, Cruise Control Module.>	Replace vehicle speed sensor.

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Step	Check	Yes	No
6 CHECK HARNESS BETWEEN CRUISE CONTROL MODULE AND TRANSMISSION CONTROL MODULE. 1)Turn ignition switch OFF. 2)Disconnect harness connector from transmission control module and cruise control module. 3)Measure resistance between cruise control module harness connector terminal and transmission control module harness connector terminal. CAUTION: To measure the voltage and/or resistance, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in). <i>Connector & terminal</i> <i>Turbo model:</i> <i>(B94) No. 19 — (B56) No. 17:</i> <i>Non-turbo model:</i> <i>(B94) No. 19 — (B55) No. 13:</i> Is the measured value less than the specified value?	10 Ω	Go to step 7.	Repair harness connector between cruise control module and transmission control module.
7 CHECK TRANSMISSION CONTROL MODULE. 1)Connect harness connector to transmission control module. 2)Set the vehicle on free roller, or lift-up the vehicle and support with safety stands. Warning: Be careful not to be caught by the running wheels. 3)Drive the vehicle faster than 10 km/h (6 MPH). 4)Measure voltage between transmission control module harness connector terminal and chassis ground. CAUTION: To measure the voltage and/or resistance, use a tapered pin with a diameter of less than 0.64 mm (0.025 in). Do not insert the pin more than 5 mm (0.20 in). <i>Connector & terminal</i> <i>Turbo model:</i> <i>(B56) No. 17 (+) — Chassis ground (-):</i> <i>Non-turbo model:</i> <i>(B55) No. 13 (+) — Chassis ground (-):</i> Is the measured value same as the specified value?	0 → 5 V	Replace cruise control module. <Ref. to CC-5, Cruise Control Module.>	Replace transmission control module. <Ref. to AT-71, Transmission Control Module (TCM).>

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C: DTC 28 WIRING HARNESS OPENED.

Step	Check	Yes	No
1 CHECK BATTERY. Measure battery specific gravity of electrolyte. Is the measured value more than the specified value?	1.250	Go to step 2.	Charge or replace battery. Go to step 2.
2 CHECK FUSES, CONNECTORS AND HAR- NESSES. Check the condition of the main and other fuses, and harnesses and connectors. Also check for proper grounding. Are the appearance of main fuse, fuse, harness, connectors and grounding intact?	The cruise control main switch turns ON.	End of inspection.	Repair or replace faulty parts.

DIAGNOSTICS CHART WITH DIAGNOSTIC TROUBLE CODE

CRUISE CONTROL SYSTEM (DIAGNOSTICS)

D: DTC 35 AND 36 ACTUATOR MOTOR

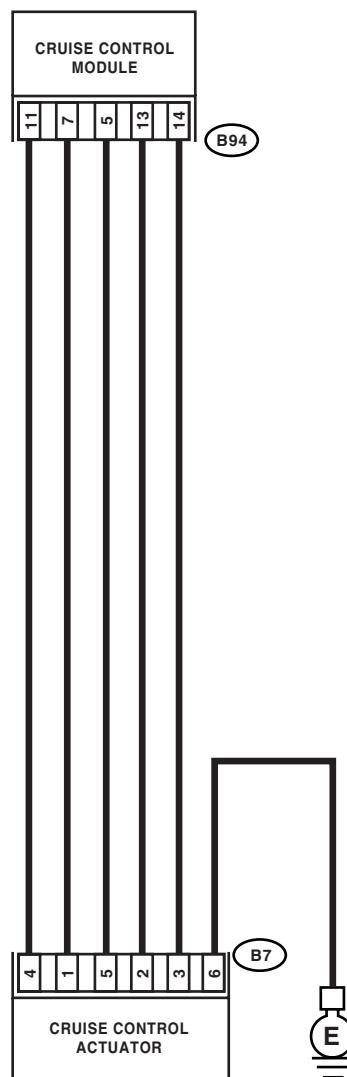
DIAGNOSIS:

Open or poor contact of cruise control actuator motor.

TROUBLE SYMPTOM:

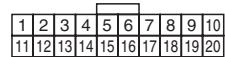
Cruise control cannot be set. (Cancelled immediately.)

WIRING DIAGRAM:



B7

B94



CC-00036

DIAGNOSTICS CHART WITH DIAGNOSTIC TROUBLE CODE
CRUISE CONTROL SYSTEM (DIAGNOSTICS)

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

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E: DTC 37 ACTUATOR MOTOR CLUTCH

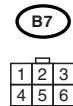
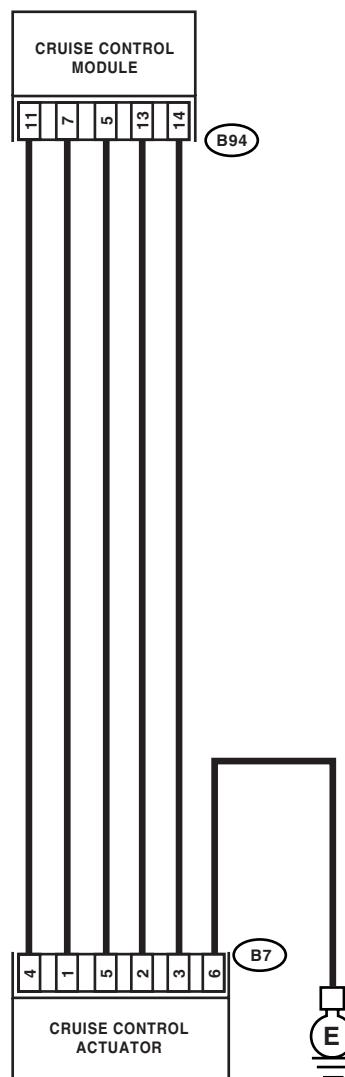
DIAGNOSIS:

Open or poor contact of cruise control actuator motor clutch.

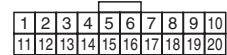
TROUBLE SYMPTOM:

Cruise control cannot be set. (Cancelled immediately.)

WIRING DIAGRAM:



B94



CC-00036

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

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

	Step	Check	Yes	No
1	CHECK ACTUATOR MOTOR. 1)Turn ignition switch OFF. 2)Disconnect harness connector from cruise control actuator. 3)Remove cruise control actuator from mounting bracket. 4)Pull cable by hand to check for looseness or status of inner gear engagement. Are the inner gears free of foreign particles and do they engage/disengage properly?	The cable and inner gears are OK.	Replace cruise control actuator. <Ref. to CC-4, Actuator.>	Check the cruise control cable adjustment.<Ref. to CC-5, CABLE FREE PLAY, General Description.>

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G: DTC 39 MOTOR IS OVERLOADED.

Step	Check	Yes	No
1 CHECK THE OPERATING CURRENT TO AC-TUATOR MOTOR. 1)Connect Subaru Select Monitor to data link connector. 2)Try to drive the vehicle while operating the cruise control system. 3)Check the operation current to the cruise control actuator motor. Between connector terminal (B7) No. 4 and chassis ground: Is the measured value more than the specified value?	10A	Replace cruise control module. <Ref. to CC-5, Cruise Control Module.>	Check the power supply circuit. <Ref. to CC-14, CHECK POWER SUPPLY, Diagnostics Chart with Symptom.>

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