10.Diagnostic Procedure with Diagnostic Trouble Code (DTC)

A: DTC P1571 REFERENCE CODE INCOMPATIBILITY

DTC DETECTING CONDITION:

Reference code incompatibility between IMM ECM and ECM

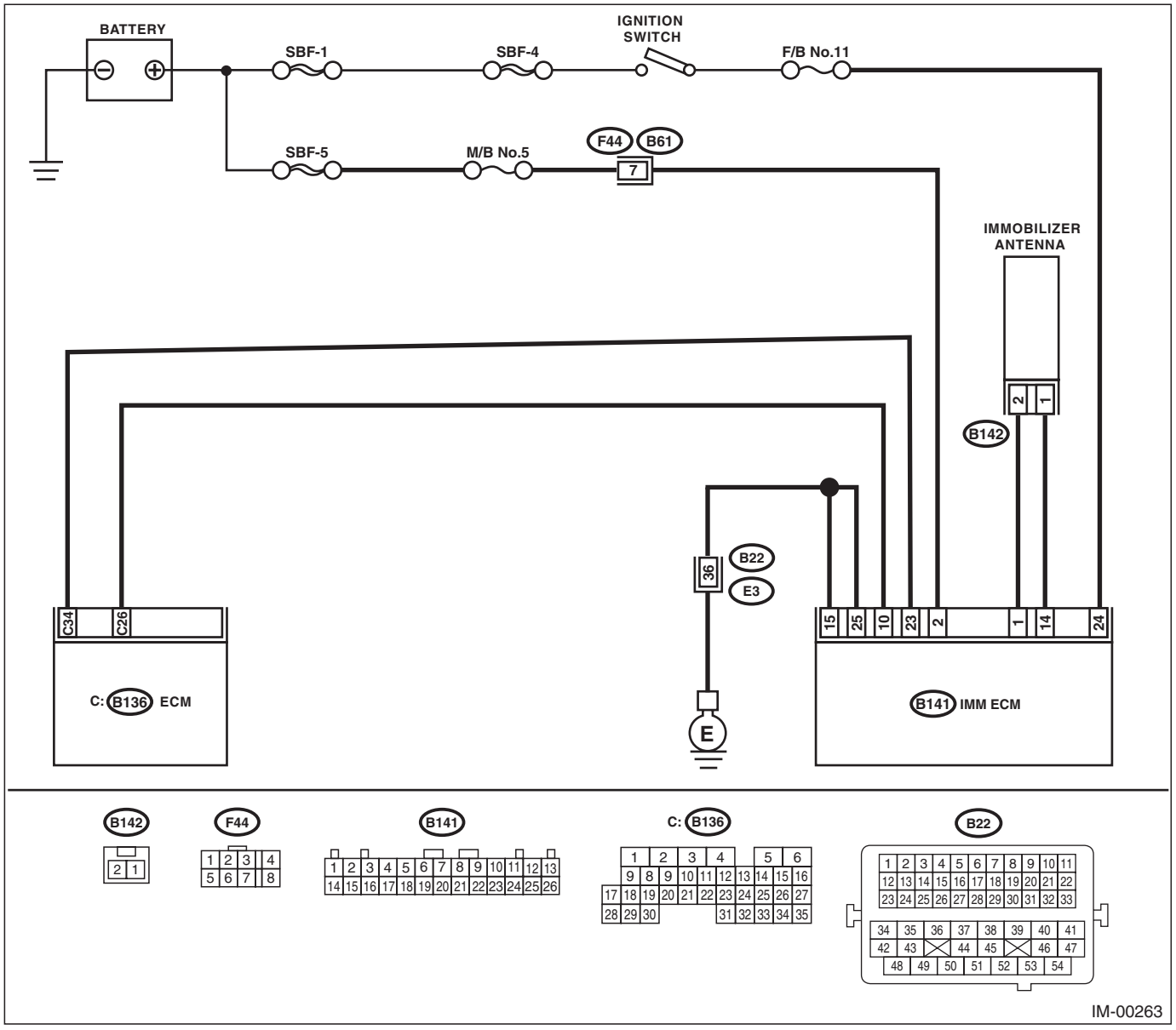
	Step	Check	Yes	No
1	**PERFORM TEACHING OPERATION ON IGNITION KEY.** Perform teaching operation on all keys of the vehicle. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.	Is teaching operation for all keys completed?	END	Go to step **2**.
2	**CHECK DTC.**	Is there any DTC related to immobilizer except DTC P1571?	Eliminate the cause of DTC other than DTC P1571, and perform the teaching operation again.	Replace the ECM and IMM ECM <Ref. to FU(H4DOTC)-46, Engine Control Module (ECM).> <Ref. to SL-50, Immobilizer Control Module.>, and then replace all ignition keys (including the transponder). Then perform teaching operation. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.

B: DTC P1572 IMM CIRCUIT FAILURE (EXCEPT ANTENNA CIRCUIT)

DTC DETECTING CONDITION:

Communication failure between IMM ECM and ECM

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK IMM ECM POWER SUPPLY CIRCUIT.** 1) Turn the ignition switch to OFF. 2) Disconnect the harness connector from IMM ECM. 3) Measure the voltage between IMM ECM harness connector terminal and chassis ground. ***Connector & terminal*** ***(B141) No. 2 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **2**.	Check the harness for open or short between IMM ECM and fuse.
2	**CHECK IGNITION SWITCH CIRCUIT.** 1) Turn the ignition switch to ON. (Engine OFF) 2) Measure the voltage between IMM ECM harness connector terminal and chassis ground. ***Connector & terminal*** ***(B141) No. 24 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **3**.	Check the harness for open or short between IMM ECM and ignition switch.
3	**CHECK IMM ECM GROUND CIRCUIT.** 1) Turn the ignition switch to OFF. 2) Measure the resistance between IMM ECM harness connector terminal and chassis ground. ***Connector & terminal*** ***(B141) No. 15 — Chassis ground:*** ***(B141) No. 25 — Chassis ground:***	Is the resistance less than 10 Ω?	Go to step **4**.	Repair the open circuit of IMM ECM ground circuit.
4	**CHECK HARNESS BETWEEN IMM ECM AND ECM.** 1) Disconnect the harness connector from the ECM and IMM ECM. 2) Measure the resistance between IMM ECM harness connector terminal and ECM harness connector terminal. ***Connector & terminal*** ***(B141) No. 10 — (B136) No. 26:***	Is the resistance less than 10 Ω?	Go to step **5**.	Repair the open circuit of harness between IMM ECM and ECM.
5	**CHECK HARNESS BETWEEN IMM ECM AND ECM.** Measure the resistance between IMM ECM harness connector terminal and ECM harness connector terminal. ***Connector & terminal*** ***(B141) No. 23 — (B136) No. 34:***	Is the resistance less than 10 Ω?	Go to step **6**.	Repair the open circuit of harness between IMM ECM and ECM.
6	**CHECK HARNESS OF COMMUNICATION LINE.** 1) Turn the ignition switch to ON. (Engine OFF) 2) Measure the voltage between IMM ECM harness connector terminal and chassis ground. ***Connector & terminal*** ***(B141) No. 10 (+) — Chassis ground (–):*** ***(B141) No. 23 (+) — Chassis ground (–):***	Is the voltage 0 V?	Go to step **7**.	There is a short circuit in the battery voltage circuit or ignition switch "ON" circuit. Repair the harness between IMM ECM and ECM.
7	**CHECK HARNESS OF COMMUNICATION LINE.** Measure the voltage between ECM harness connector terminal and engine ground. ***Connector & terminal*** ***(B136) No. 26 (+) — Engine ground (–):*** ***(B136) No. 34 (+) — Engine ground (–):***	Is the voltage 0 V?	Go to step **8**.	There is a short circuit in the battery voltage circuit or ignition switch "ON" circuit. Repair the harness between IMM ECM and ECM.

	Step	Check	Yes	No
8	**CHECK ECM BY COMMUNICATION LINE CHECK.** 1) Connect the harness connector to ECM. 2) Disconnect the harness connector from IMM ECM. 3) Perform communication line check. <Ref. to IM(diag)-7, COMMUNICATION LINE CHECK, OPERATION, Subaru Select Monitor.>	Does “Communication Line not Shorted” appear on the screen?	Replace the IMM ECM <Ref. to SL-50, Immobilizer Control Module.> and then replace all ignition keys (including the transponder). Then perform teaching operation. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.	Replace the ECM. <Ref. to FU(H4DOTC)-46, Engine Control Module (ECM).>Then perform teaching operation. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.

C: DTC P1574 KEY COMMUNICATION FAILURE

DTC DETECTING CONDITION:

Failure of IMM ECM to verify key (transponder) ID code or transponder key failure

	Step	Check	Yes	No
1	**CHECK IMM ECM FUNCTION.** Insert the key to ignition switch (LOCK position), then measure changes in voltage between antenna connector. ***Connector & terminal*** ***(B142) No. 1 (+) — Chassis ground (–):***	Is the voltage –30 — 30 V (Approximately 0.1 seconds after key was inserted)? Is the voltage 0 V (Approximately 1 seconds after key was inserted)?	Go to step **2**.	Replace the IMM ECM <Ref. to SL-50, Immobilizer Control Module.> and then replace all ignition keys (including the transponder). Then perform teaching operation. Refer to the "REGISTRATION MANUAL FOR IMMOBILIZER".
2	**CHECK IGNITION KEY (TRANSPONDER).** 1) Remove the key from ignition switch. 2) Start the engine using other keys that have undergone the teaching operation.	Does the engine start?	Replace the ignition key (including the transponder). Then perform teaching operation. Refer to the "REGISTRATION MANUAL FOR IMMOBILIZER".	Replace the IMM ECM <Ref. to SL-50, Immobilizer Control Module.> and then replace all ignition keys (including the transponder). Then perform teaching operation. Refer to the "REGISTRATION MANUAL FOR IMMOBILIZER".

D: DTC P0513 INCORRECT IMMOBILIZER KEY

DTC DETECTING CONDITION:

Incorrect immobilizer key (Use of unregistered key in IMM ECM)

	Step	Check	Yes	No
1	**PERFORM TEACHING OPERATION ON IGNITION KEY.** Perform teaching operation on all keys of the vehicle. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.	Is teaching operation for all keys completed?	END	Replace all ignition keys (including the transponder). Go to step **2**.
2	**PERFORM TEACHING OPERATION ON IGNITION KEY.** Perform teaching operation on all keys of the vehicle. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.	Is teaching operation for all keys completed?	END	Replace the IMM ECM <Ref. to SL-50, Immobilizer Control Module.> and then replace all ignition keys (including the transponder). Then perform teaching operation. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.

E: DTC P1576 EGI CONTROL MODULE EEPROM

DTC DETECTING CONDITION:

- ECM malfunctioning
- Inaccessible ROM in ECM during key registration

	Step	Check	Yes	No
1	**PERFORM REGISTRATION ON IGNITION KEY.** Perform registration on all keys of the vehicle. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.	Is registration for all keys completed?	Verify that the engine starts with all registered keys and finish the diagnosis.	Go to step **2**.
2	**PERFORM REGISTRATION ON IGNITION KEY.** Perform registration on all keys of the vehicle. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.	Is registration for all keys completed?	Verify that the engine starts with all registered keys and finish the diagnosis.	Go to step **3**.
3	**PERFORM REGISTRATION ON IGNITION KEY.** Perform registration on all keys of the vehicle. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.	Is registration for all keys completed?	Verify that the engine starts with all registered keys and finish the diagnosis.	Replace the ECM. <Ref. to FU(H4DOTC)-46, Engine Control Module (ECM).>

F: DTC P1577 IMM CONTROL MODULE EEPROM

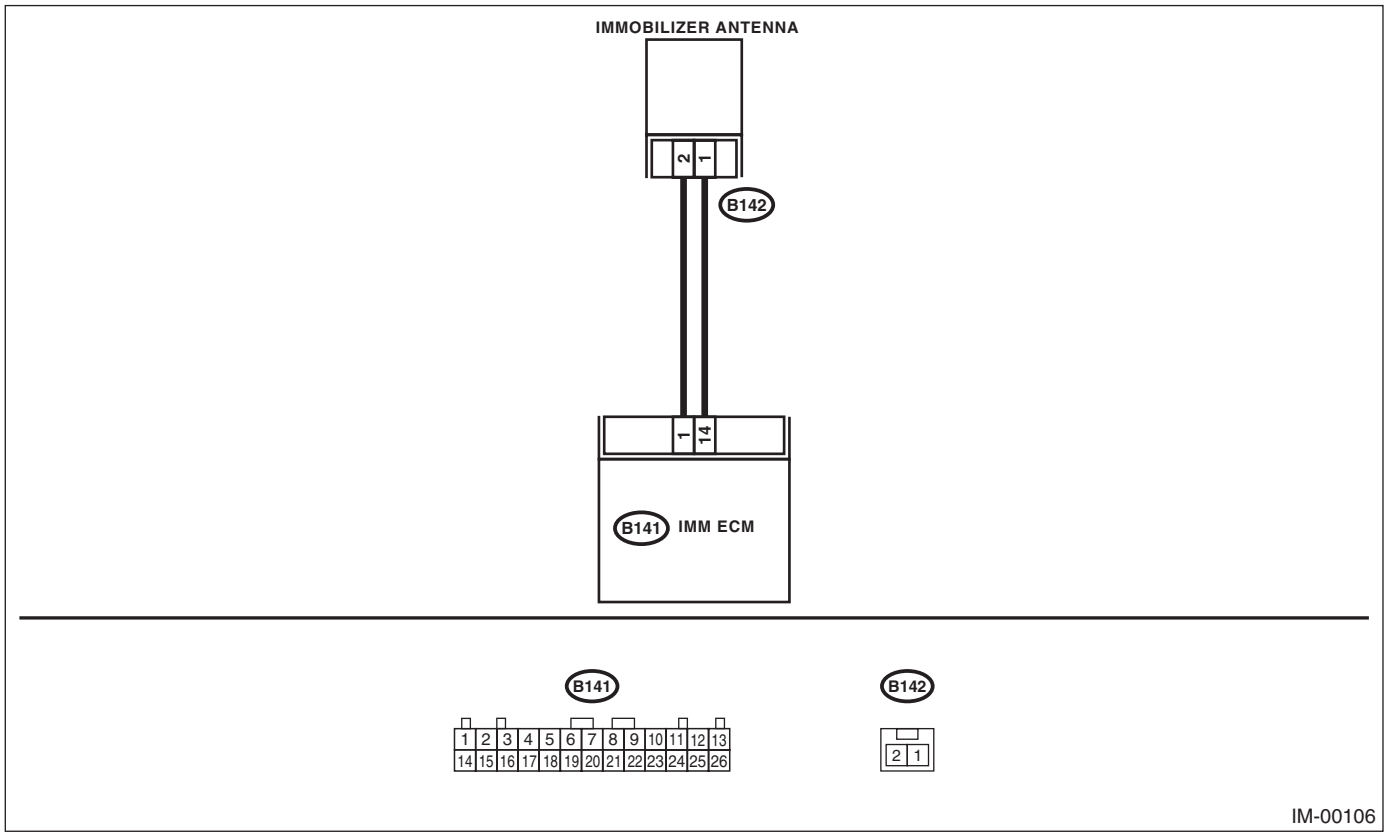
DTC DETECTING CONDITION:

- IMM ECM malfunctioning
- Inaccessible ROM in IMM ECM.

	Step	Check	Yes	No
1	**PERFORM REGISTRATION ON IGNITION KEY.** Perform registration on all keys of the vehicle. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.	Is registration for all keys completed?	Verify that the engine starts with all registered keys and finish the diagnosis.	Go to step **2**.
2	**PERFORM REGISTRATION ON IGNITION KEY.** Perform registration on all keys of the vehicle. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.	Is registration for all keys completed?	Verify that the engine starts with all registered keys and finish the diagnosis.	Go to step **3**.
3	**PERFORM REGISTRATION ON IGNITION KEY.** Perform registration on all keys of the vehicle. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.	Is registration for all keys completed?	Verify that the engine starts with all registered keys and finish the diagnosis.	Replace the IMM ECM. <Ref. to SL-50, REMOVAL, Immobilizer Control Module.>Replace all ignition keys (including the transponder). Then perform teaching operation. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.

G: DTC P1570 ANTENNA

DTC DETECTING CONDITION:
Faulty antenna
WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK ANTENNA CIRCUIT.** 1) Turn the ignition switch to OFF. 2) Disconnect the harness antenna connector from the IMM ECM. <Ref. to SL-51, Immobilizer Antenna.> 3) Measure the resistance of the antenna circuit. ***Connector & terminal*** ***(B141) No. 1 — No. 14:***	Is the resistance less than 10 Ω?	Go to step **2**.	Replace the antenna. <Ref. to SL-51, Immobilizer Antenna.>
2	**CHECK ANTENNA CIRCUIT.** Measure the resistance between antenna harness connector and chassis ground. ***Connector & terminal*** ***(B141) No. 1 — Chassis ground:***	Is the resistance less than 10 Ω?	Replace the antenna. <Ref. to SL-51, Immobilizer Antenna.>	Go to step **3**.
3	**CHECK ANTENNA CIRCUIT.** Measure the resistance between antenna harness connector and chassis ground. ***Connector & terminal*** ***(B141) No. 14 — Chassis ground:***	Is the resistance less than 10 Ω?	Replace the antenna. <Ref. to SL-51, Immobilizer Antenna.>	Go to step **4**.
4	**CHECK ANTENNA CIRCUIT.** 1) Turn the ignition switch to ON. (Engine OFF) 2) Measure the voltage between antenna harness connector and chassis ground. ***Connector & terminal*** ***(B141) No. 1 (+) — Chassis ground (–):***	Is the voltage 0 V?	Go to step **5**.	Replace the antenna. <Ref. to SL-51, Immobilizer Antenna.>

	Step	Check	Yes	No
5	**CHECK ANTENNA CIRCUIT.** Measure the voltage between antenna harness connector and chassis ground. ***Connector & terminal*** ***(B141) No. 14 (+) — Chassis ground (–):***	Is the voltage 0 V?	Go to step **6**.	Replace the antenna. <Ref. to SL-51, Immobilizer Antenna.>
6	**CHECK IMM ECM FUNCTION.** 1) Turn the ignition switch to OFF. 2) Connect the antenna harness connector to IMM ECM. 3) Insert the key to ignition switch, then measure changes in voltage between antenna harness connector. ***Connector & terminal*** ***(B141) No. 1 (+) — Chassis ground (–):***	Is the voltage –30 — 30 V (Approximately 0.1 seconds after key was inserted)? Is the voltage 0 V (Approximately 1 seconds after key was inserted)?	Go to step **7**.	Replace the IMM ECM <Ref. to SL-50, Immobilizer Control Module.> and then replace all ignition keys (including the transponder). Then perform teaching operation. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.
7	**CHECK IGNITION KEY (TRANSPONDER).** 1) Remove the key from ignition switch. 2) Start the engine using other keys that have undergone the teaching operation.	Does the engine start?	Replace the ignition key (including the transponder). Then perform teaching operation. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER ”.	Replace the IMM ECM <Ref. to SL-50, Immobilizer Control Module.> and then replace all ignition keys (including the transponder). Then perform teaching operation. Refer to the “REGISTRATION MANUAL FOR IMMOBILIZER”.