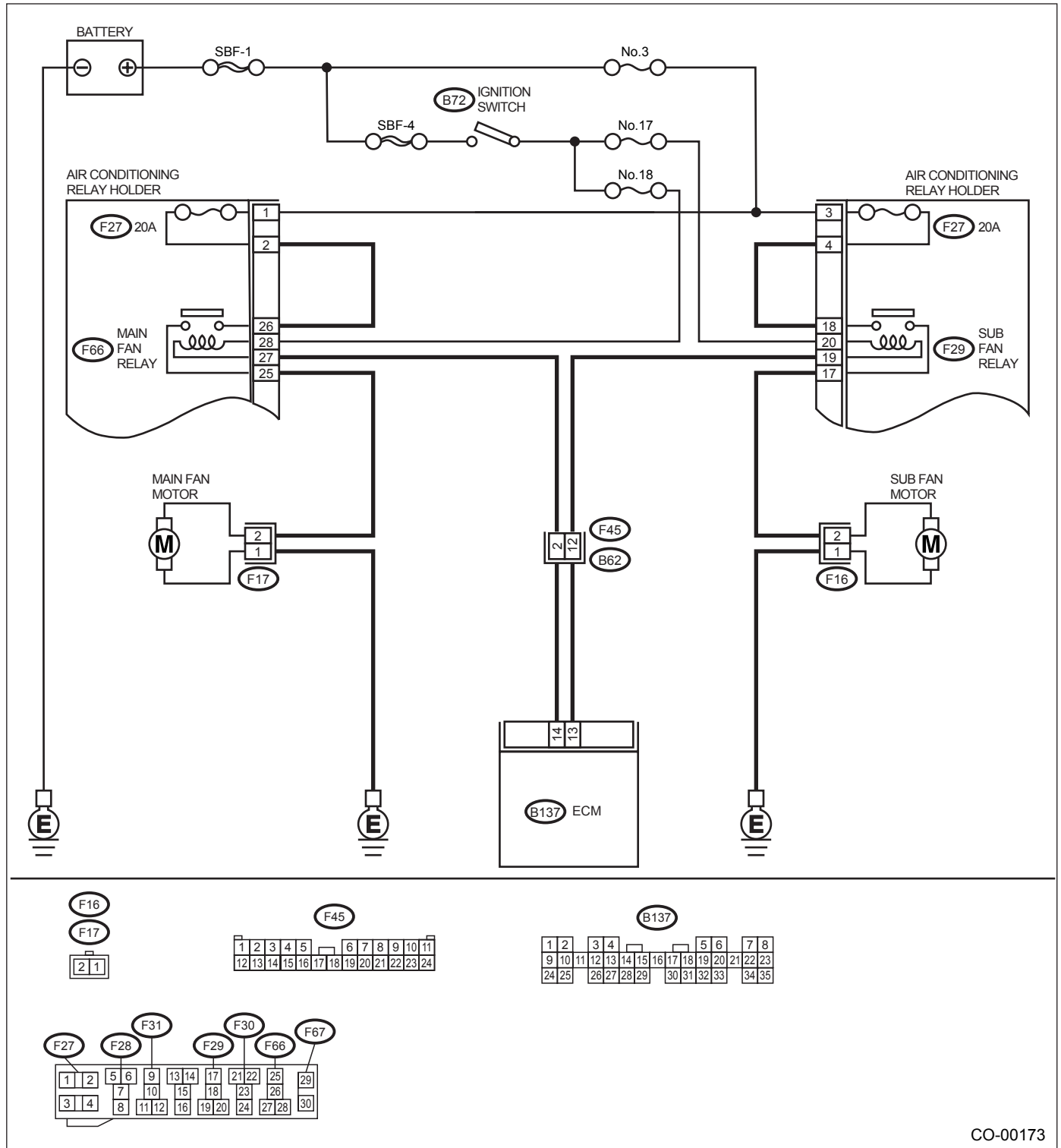


2. Radiator Main Fan System

A: SCHEMATIC

1. NON-TURBO MODEL



CO-00173

2. TURBO MODEL

B: INSPECTION

1. NON-TURBO MODEL

DETECTING CONDITION:

Condition:

- Engine coolant temperature is above 95°C (203°F).
- Vehicle speed is below 19 km/h (12 MPH).

TROUBLE SYMPTOM:

- Radiator main fan does not rotate under the above conditions.

Step	Check	Yes	No
1 CHECK POWER SUPPLY TO MAIN FAN MOTOR. CAUTION: Be careful not to overheat engine during repair. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the main fan motor. 3) Start the engine, and warm it up until engine coolant temperature increases over 95°C (203°F). 4) Stop the engine and turn the ignition switch to ON. 5) Measure the voltage between main fan motor connector and chassis ground. Connector & terminal (F17) No. 2 (+) — Chassis ground (–): Is the measured value more than the specified value?	10 V	Go to step 2.	Go to step 5.
2 CHECK GROUND CIRCUIT OF MAIN FAN MOTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between main fan motor connector and chassis ground. Connector & terminal (F17) No. 1 — Chassis ground: Is the measured value less than the specified value?	5 Ω	Go to step 3.	Repair the open circuit in harness between main fan motor connector and chassis ground.
3 CHECK POOR CONTACT. Check poor contact in main fan motor connector. Is there poor contact in main fan motor connector?	There is a poor contact.	Repair the poor contact in main fan motor connector.	Go to step 4.
4 CHECK MAIN FAN MOTOR. Connect the battery positive (+) terminal to terminal No. 2, and the negative (–) terminal to terminal No. 1 of main fan motor connector. Does the main fan rotate?	The main fan rotates.	Repair the poor contact in main fan motor connector.	Replace the main fan motor with a new one.

RADIATOR MAIN FAN SYSTEM

COOLING

Step	Check	Yes	No
5 CHECK POWER SUPPLY TO MAIN FAN RELAY. 1) Turn the ignition switch to OFF. 2) Remove the main fan relay from A/C relay holder. 3) Measure the voltage between main fan relay terminal and chassis ground. Connector & terminal (F66) No. 26 (+) — Chassis ground (-): Is the measured value more than the specified value?	10 V	Go to step 6.	Go to step 7.
6 CHECK POWER SUPPLY TO MAIN FAN RELAY. 1) Turn the ignition switch to ON. 2) Measure the voltage between main fan relay terminal and chassis ground. Connector & terminal (F66) No. 28 (+) — Chassis ground (-): Is the measured value more than the specified value?	10 V	Go to step 10.	Go to step 9.
7 CHECK 20 A FUSE. 1) Remove 20 A fuse from A/C relay holder. 2) Check condition of fuse. Is the fuse blown-out?	The fuse is blown out.	Replace the fuse.	Go to step 8.
8 CHECK POWER SUPPLY TO A/C RELAY HOLDER 20 A FUSE TERMINAL. Measure the voltage of harness between A/C relay holder 20 A fuse terminal and chassis ground. Connector & terminal (F27) No. 1 (+) — Chassis ground (-): Is the measured value more than the specified value?	10 V	Repair the open circuit in harness between 20 A fuse and main fan relay terminal.	Repair the open circuit in harness between main fuse box connector and 20 A fuse terminal.
9 CHECK FUSE. 1) Turn the ignition switch to OFF. 2) Remove the fuse No. 18 from joint box. 3) Check condition of fuse. Is the fuse blown-out?	The fuse is blown out.	Replace the fuse.	Repair the open circuit in harness between main fan relay and ignition switch.
10 CHECK MAIN FAN RELAY. 1) Turn the ignition switch to OFF. 2) Remove the main fan relay. 3) Measure the resistance of main fan relay. Terminal No. 26 — No. 25: Is the measured value more than the specified value?	1 MΩ	Go to step 11.	Replace the main fan relay.
11 CHECK MAIN FAN RELAY. 1) Connect the battery to terminals No. 27 and No. 28 of main fan relay. 2) Measure the resistance of main fan relay. Terminal No. 26 — No. 25: Is the measured value less than the specified value?	1 Ω	Go to step 12.	Replace the main fan relay.

RADIATOR MAIN FAN SYSTEM

COOLING

Step	Check	Yes	No
12 CHECK HARNESS BETWEEN MAIN FAN RELAY TERMINAL AND MAIN FAN MOTOR CONNECTOR. Measure the resistance of harness between main fan motor connector and main fan relay terminal. Connector & terminal (F17) No. 2 — (F66) No. 25: Is the measured value less than the specified value?	1 Ω	Go to step 13.	Repair the open circuit in harness between main fan motor connector and main fan relay terminal.
13 CHECK HARNESS BETWEEN MAIN FAN RELAY AND ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between main fan relay connector and ECM connector. Connector & terminal (F66) No. 27 — (B137) No. 14: Is the measured value less than the specified value?	1 Ω	Go to step 14.	Repair the open circuit in harness between main fan relay and ECM.
14 CHECK POOR CONTACT. Check poor contact in connector between main fan and ECM. Is there poor contact in connector between main fan motor and ECM?	There is a poor contact.	Repair the poor contact connector.	Contact with SOA (distributor) service.

NOTE:

Inspection by SOA (distributor) service
 SOA (distributor) service is required, because probable cause is deterioration of multiple parts.

RADIATOR MAIN FAN SYSTEM

COOLING

2. TURBO MODEL

DETECTING CONDITION:

Condition:

- Engine coolant temperature is above 96°C (205°F).
- A/C compressor is rotated.
- Vehicle speed is below 19 km/h (12 MPH).

TROUBLE SYMPTOM:

- Radiator main fan does not rotate under the above conditions.
- Radiator main fan does not rotate at high speed when the following conditions are both met:
 - (1) Engine coolant temperature is above 90°C (194°F)
 - (2) A/C is ON

	Step	Check	Yes	No
1	CHECK OPERATION OF RADIATOR. 1)Run the engine at idle. (Vehicle stationary) 2)Turn the A/C switch to OFF. 3)Warm the engine coolant temperature over 96°C (205°F). Does the main radiator fan rotate?	The fan rotates.	Go to step 2.	Go to step 3.
2	CHECK OPERATION OF RADIATOR. 1)Turn the A/C switch ON at condition of step 1. Does the main radiator fan rotate at high speed when A/C compressor is operated?	The fan rotates at high speed.	Radiator main fan system is okay.	Go to step 17.
3	CHECK POWER SUPPLY TO MAIN FAN MOTOR. CAUTION: Be careful not to overheat engine during repair. 1)Turn the ignition switch to OFF. 2)Disconnect the connector from main fan motor. 3)Start the engine, and warm it up until engine coolant temperature increases over 96°C (205°F). 4)Stop the engine and turn ignition switch to ON. 5)Measure the voltage between main fan motor connector and chassis ground. Connector & terminal (F17) No. 3 (+) — Chassis ground (-): Is the measured value more than the specified value?	10 V	Go to step 4.	Go to step 7.
4	CHECK GROUND CIRCUIT OF MAIN FAN MOTOR. 1)Turn the ignition switch to OFF. 2)Measure the resistance between main fan motor connector and chassis ground. Connector & terminal (F17) No. 1 — Chassis ground: Is the measured value less than the specified value?	5 Ω	Go to step 5.	Repair the open circuit in harness between main fan motor connector and chassis ground.
5	CHECK POOR CONTACT. Check poor contact in main fan motor connector. Is there poor contact in main fan motor connector?	There is a poor contact.	Repair the poor contact in main fan motor connector.	Go to step 6.

RADIATOR MAIN FAN SYSTEM

COOLING

Step	Check	Yes	No
6 CHECK MAIN FAN MOTOR. Connect the battery positive (+) terminal to terminal No. 3, and the negative (-) terminal to terminal No. 1 of main fan motor connector. Does the main fan rotate?	The main fan rotates.	Repair the poor contact in main fan motor connector.	Replace the main fan motor with a new one.
7 CHECK POWER SUPPLY TO MAIN FAN RELAY1. 1) Turn the ignition switch to OFF. 2) Remove the main fan relay1 from A/C relay holder. 3) Measure the voltage between main fan relay1 terminal and chassis ground. Connector & terminal (F66) No. 26 (+) — Chassis ground (-): Is the measured value more than the specified value?	10 V	Go to step 8.	Go to step 9.
8 CHECK POWER SUPPLY TO MAIN FAN RELAY1. 1) Turn the ignition switch to ON. 2) Measure the voltage between main fan relay1 terminal and chassis ground. Connector & terminal (F66) No. 28 (+) — Chassis ground (-): Is the measured value more than the specified value?	10 V	Go to step 12.	Go to step 11.
9 CHECK 20 A FUSE. 1) Remove the 20 A fuse from A/C relay holder. 2) Check the condition of fuse. Is the fuse blown-out?	The fuse is blown out.	Replace fuse.	Go to step 10.
10 CHECK POWER SUPPLY TO A/C RELAY HOLDER 20 A FUSE TERMINAL. Measure the voltage of harness between A/C relay holder 20 A fuse terminal and chassis ground. Connector & terminal (F27) No. 1 (+) — Chassis ground (-): Is the measured value more than the specified value?	10 V	Repair the open circuit in harness between 20 A fuse and main fan relay terminal.	Repair the open circuit in harness between main fuse box connector and 20 A fuse terminal.
11 CHECK FUSE. 1) Turn the ignition switch to OFF. 2) Remove the fuse No. 18 from joint box. 3) Check the condition of fuse. Is the fuse blown-out?	The fuse is blown out.	Replace the fuse.	Repair the open circuit in harness between main fan relay and ignition switch.
12 CHECK MAIN FAN RELAY1. 1) Turn the ignition switch to OFF. 2) Remove the main fan relay1. 3) Measure the resistance of main fan relay1. Terminal No. 26 — No. 25: Is the measured value more than the specified value?	1 M Ω	Go to step 13.	Replace the main fan relay1.
13 CHECK MAIN FAN RELAY. 1) Connect the battery to terminals No. 27 and No. 28 of main fan relay1. 2) Measure the resistance of main fan relay1. Terminal No. 26 — No. 25: Is the measured value less than the specified value?	1 Ω	Go to step 14.	Replace the main fan relay1.

RADIATOR MAIN FAN SYSTEM

COOLING

Step	Check	Yes	No
14 CHECK HARNESS BETWEEN MAIN FAN RELAY1 TERMINAL AND MAIN FAN MOTOR CONNECTOR. Measure the resistance of harness between main fan motor connector and main fan relay1 terminal. Connector & terminal (F17) No. 3 — (F66) No. 25: Is the measured value less than the specified value?	1 Ω	Go to step 15.	Repair the open circuit in harness between main fan motor connector and main fan relay1 terminal.
15 CHECK HARNESS BETWEEN MAIN FAN RELAY1 AND ECM. 1)Turn the ignition switch to OFF. 2)Disconnect the connector from ECM. 3)Measure the resistance of harness between main fan relay1 connector and ECM connector. Connector & terminal (F66) No. 27 — (B137) No. 17: Is the measured value less than the specified value?	1 Ω	Go to step 16.	Repair the open circuit in harness between main fan relay1 and ECM.
16 CHECK POOR CONTACT. Check poor contact in connector between main fan and ECM. Is there poor contact in connector between main fan motor and ECM?	There is a poor contact.	Repair the poor contact connector.	Contact with SOA (distributor) service.
17 CHECK POWER SUPPLY TO MAIN FAN MOTOR. CAUTION: Be careful not to overheat engine during repair. 1)Turn the ignition switch to OFF. 2)Disconnect the connector from main fan motor. 3)Start the engine, and warm it up until engine coolant temperature increases over 96°C (205°F). 4)Turn the A/C switch ON. 5)Measure the voltage while A/C compressor is rotating. 6)Measure the voltage between main fan motor connector and chassis ground. Connector & terminal (F17) No. 2 (+) — Chassis ground (-): Is the measured value more than the specified value?	10 V	Go to step 18.	Go to step 20.
18 CHECK POOR CONTACT. Check poor contact in main fan motor connector. Is there poor contact in main fan motor connector?	There is a poor contact.	Repair the poor contact in main fan motor connector.	Go to step 19.
19 CHECK MAIN FAN MOTOR. Connect the battery positive (+) terminal to terminal No. 2, and negative (-) terminal to terminal No. 1 of main fan motor connector. Does the main fan rotate?	The main fan rotates.	Repair the poor contact in main fan motor connector.	Replace the main fan motor with a new one.

RADIATOR MAIN FAN SYSTEM

COOLING

Step	Check	Yes	No
20 CHECK POWER SUPPLY TO MAIN FAN RELAY2. 1)Turn the ignition switch to OFF. 2)Remove the main fan relay2 from A/C relay holder. 3)Measure the voltage between main fan relay2 terminal and chassis ground. Connector & terminal (F30) No. 23 (+) — Chassis ground (-): Is the measured value more than the specified value?	10 V	Go to step 21.	Go to step 22.
21 CHECK POWER SUPPLY TO MAIN FAN RELAY2. 1)Turn the ignition switch to ON. 2)Measure the voltage between main fan relay2 terminal and chassis ground. Connector & terminal (F30) No. 21 (+) — Chassis ground (-): Is the measured value more than the specified value?	10 V	Go to step 25.	Go to step 24.
22 CHECK 20 A FUSE. 1)Remove the 20 A fuse from A/C relay holder. 2)Check condition of fuse. Is the fuse blown-out?	The fuse is blown out.	Replace the fuse.	Go to step 23.
23 CHECK POWER SUPPLY TO A/C RELAY HOLDER 20 A FUSE TERMINAL. Measure the voltage of harness between A/C relay holder 20 A fuse terminal and chassis ground. Connector & terminal (F27) No. 1 (+) — Chassis ground (-): Is the measured value more than the specified value?	10 V	Repair the open circuit in harness between 20 A fuse and main fan relay terminal.	Repair the open circuit in harness between main fuse box connector and 20 A fuse terminal.
24 CHECK FUSE. 1)Turn the ignition switch to OFF. 2)Remove the fuse No. 18 from joint box. 3)Check the condition of fuse. Is the fuse blown-out?	The fuse is blown out.	Replace the fuse.	Repair the open circuit in harness between main fan relay and ignition switch.
25 CHECK MAIN FAN RELAY2. 1)Turn the ignition switch to OFF. 2)Remove the main fan relay2. 3)Measure the resistance of main fan relay2. Terminal No. 23 — No. 24: Is the measured value more than the specified value?	1 MΩ	Go to step 26.	Replace the main fan relay2.
26 CHECK MAIN FAN RELAY2. 1)Connect the battery to terminals No. 21 and No. 22 of main fan relay1. 2)Measure the resistance of main fan relay2. Terminal No. 23 — No. 24: Is the measured value less than the specified value?	1 Ω	Go to step 27.	Replace the main fan relay2.

RADIATOR MAIN FAN SYSTEM

COOLING

Step	Check	Yes	No
27 CHECK HARNESS BETWEEN MAIN FAN RELAY2 TERMINAL AND MAIN FAN MOTOR CONNECTOR. Measure the resistance of harness between main fan motor connector and main fan relay2 terminal. Connector & terminal (F17) No. 2 — (F30) No. 24: Is the measured value less than the specified value?	1 Ω	Go to step 28.	Repair the open circuit in harness between main fan motor connector and main fan relay2 terminal.
28 CHECK HARNESS BETWEEN MAIN FAN RELAY2 AND ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between main fan relay2 connector and ECM connector. Connector & terminal (F30) No. 22 — (B134) No. 28: Is the measured value less than the specified value?	1 Ω	Go to step 29.	Repair the open circuit in harness between main fan relay2 and ECM.
29 CHECK POOR CONTACT. Check poor contact in connector between main fan and ECM. Is there poor contact in connector between main fan motor and ECM?	There is a poor contact.	Repair poor contact connector.	Contact with SOA (distributor) service.

NOTE:

Inspection by SOA (distributor) service is required, because probable cause is deterioration of multiple parts.