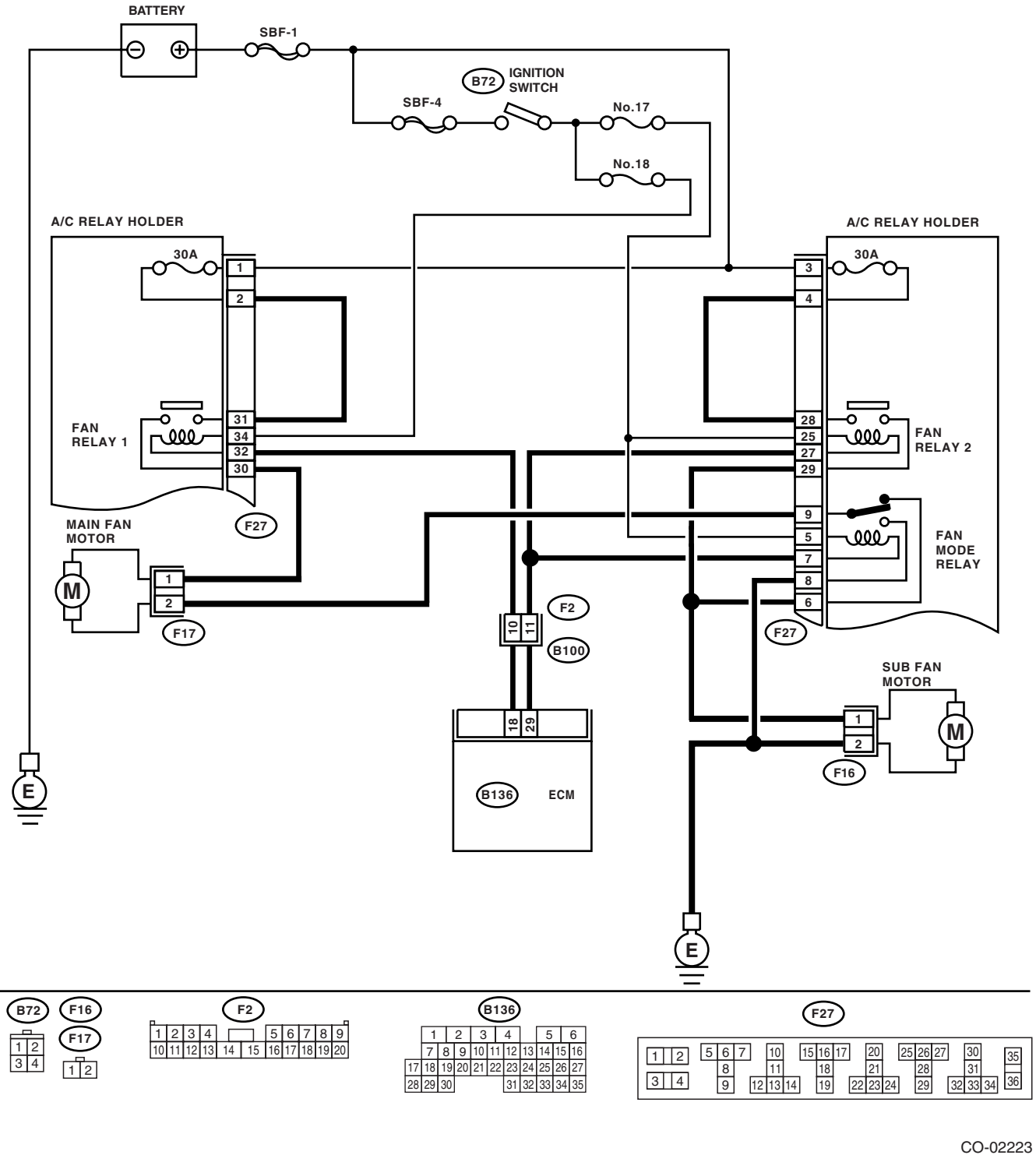
2. Radiator Fan System

A: WIRING DIAGRAM



CO-02223

B: INSPECTION

DETECTING CONDITION:

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

TROUBLE SYMPTOM:

- Radiator main and sub fans do not rotate under the above conditions.

	Step	Check	Yes	No
1	**CHECK OPERATION OF RADIATOR FAN.** 1) Connect the test mode connector. 2) Turn the ignition switch to ON. 3) Using Subaru Select Monitor, check the compulsory operation of radiator fan. NOTE: • When performing the compulsory operation check for the radiator fan using Subaru Select Monitor, the radiator main fan and sub fan will repeat such a operation as low speed revolution → high speed revolution → OFF in this order. • Subaru Select Monitor Refer to Compulsory Valve Operation Check Mode for detail procedures. <Ref. to EN(H4SO)(diag)-44, Compulsory Valve Operation Check Mode.>	Do the radiator main and sub fans rotate at low speed?	Go to step **2**.	Go to step **3**.
2	**CHECK OPERATION OF RADIATOR FAN.** 1) Connect the test mode connector. 2) Turn the ignition switch to ON. 3) Using Subaru Select Monitor, check the compulsory operation of radiator fan. NOTE: • When performing the compulsory operation check for the radiator fan using Subaru Select Monitor, the radiator main fan and sub fan will repeat such a operation as low speed revolution → high speed revolution → OFF in this order. • Subaru Select Monitor Refer to Compulsory Valve Operation Check Mode for detail procedures. <Ref. to EN(H4SO)(diag)-44, Compulsory Valve Operation Check Mode.>	Do the radiator main and sub fans rotate at high speed?	Radiator main fan system is normal.	Go to step **32**.
3	**CHECK POWER SUPPLY TO FAN RELAY 1.** 1) Turn the ignition switch to OFF. 2) Remove the fan relay 1 from A/C relay holder. 3) Measure the voltage between fan relay 1 terminal and chassis ground. ***Connector & terminal*** ***(F27) No. 31 (+) — Chassis ground (–):***	Is the voltage more than 10 V?	Go to step **4**.	Go to step **5**.
4	**CHECK POWER SUPPLY TO FAN RELAY 1.** 1) Turn the ignition switch to ON. 2) Measure the voltage between fan relay 1 terminal and chassis ground. ***Connector & terminal*** ***(F27) No. 34 (+) — Chassis ground (–):***	Is the voltage more than 10 V?	Go to step **8**.	Go to step **7**.
5	**CHECK FUSE.** 1) Remove the 30 A fuse from A/C relay holder. 2) Check the condition of fuse.	Is the fuse blown out?	Replace the fuse.	Go to step **6**.

	Step	Check	Yes	No
6	**CHECK HARNESS OF 30 A FUSE TERMINAL AND FAN RELAY 1 TERMINAL.** 1) Turn the ignition switch to OFF. 2) Measure the resistance between 30 A fuse terminal and fan relay 1 terminal. ***Terminal*** ***No. 2 — No. 31:***	Is the resistance less than 1 Ω?	Repair the power supply line.	Repair the open harness.
7	**CHECK FUSE.** 1) Turn the ignition switch to OFF. 2) Remove the fuse No. 18. 3) Check the condition of fuse.	Is the fuse blown out?	Replace the fuse.	Repair the power supply line.
8	**CHECK FAN RELAY 1.** 1) Turn the ignition switch to OFF. 2) Measure the resistance between fan relay 1 terminals. ***Terminal*** ***No. 30 — No. 31:***	Is the resistance more than 1 MΩ?	Go to step **9**.	Replace the fan relay 1.
9	**CHECK FAN RELAY 1.** 1) Connect the battery to fan relay 1 terminals No. 32 and No. 34. 2) Measure the resistance between fan relay 1 terminals. ***Terminal*** ***No. 30 — No. 31:***	Is the resistance less than 1 Ω?	Go to step **10**.	Replace the fan relay 1.
10	**CHECK HARNESS BETWEEN FAN RELAY 1 TERMINAL AND MAIN FAN MOTOR CONNECTOR.** 1) Disconnect the connectors from main fan motor. 2) Measure the resistance of the harness between fan relay 1 terminal and main fan motor connector. ***Connector & terminal*** ***(F17) No. 1 — (F27) No. 30:***	Is the resistance less than 1 Ω?	Go to step **11**.	Repair the open harness between fan relay 1 terminal and main fan motor connector.
11	**CHECK THE HARNESS BETWEEN MAIN FAN MOTOR CONNECTOR AND FAN MODE RELAY CONNECTOR.** 1) Remove the fan mode relay from A/C relay holder. 2) Measure the resistance of harness between main fan motor connector and fan mode relay connector. ***Connector & terminal*** ***(F17) No. 2 — (F27) No. 9:***	Is the resistance less than 1 Ω?	Go to step **12**.	Repair the open circuit of the harness between the main fan motor connector and fan mode relay connector.
12	**CHECK POOR CONTACT.** Check poor contact of main fan motor connector.	Is there poor contact in main fan motor connector?	Repair the poor contact of main fan motor connector.	Go to step **13**.
13	**CHECK MAIN FAN MOTOR.** Connect the battery positive (+) terminal to terminal No. 1, and the ground (–) terminal to terminal No. 2 of main fan motor.	Does the main fan rotate?	Go to step **14**.	Replace the main fan motor with new one.
14	**CHECK FAN MODE RELAY.** Measure the resistance of fan mode relay. ***Terminal*** ***No. 6 — No. 9:***	Is the resistance less than 1 Ω?	Go to step **15**.	Replace the fan mode relay.

	Step	Check	Yes	No
15	**CHECK HARNESS BETWEEN FAN MODE RELAY TERMINAL AND SUB FAN MOTOR CONNECTOR.** 1) Disconnect the connector from sub fan motor. 2) Measure the resistance of harness between fan mode relay terminal and sub fan motor connector. ***Connector & terminal*** ***(F16) No. 1 — (F27) No. 6:***	Is the resistance less than 1 Ω?	Go to step **16**.	Repair the open harness between fan mode relay terminal and sub fan motor connector.
16	**CHECK SUB FAN MOTOR AND GROUND CIRCUIT.** Measure the resistance between sub fan motor connector and chassis ground. ***Connector & terminal*** ***(F16) No. 2 — Chassis ground:***	Is the resistance less than 5 Ω?	Go to step **17**.	Repair the open circuit of harness between sub fan motor connector and chassis ground.
17	**CHECK POOR CONTACT.** Check the poor contact of sub fan motor connector.	Is there poor contact in sub fan motor connector?	Repair the poor contact of sub fan motor connector.	Go to step **18**.
18	**CHECK SUB FAN MOTOR.** Connect the battery positive (+) terminal to terminal No. 1, and the ground (–) terminal to terminal No. 2 of sub fan motor.	Does the sub fan rotate?	Go to step **19**.	Replace the sub fan motor with new one.
19	**CHECK HARNESS BETWEEN FAN RELAY 1 AND ECM.** 1) Disconnect the connectors from ECM. 2) Measure the resistance between fan relay 1 terminal and ECM connector. ***Connector & terminal*** ***(B136) No. 18 — (F27) No. 32:***	Is the resistance less than 1 Ω?	Go to step **20**.	Repair the open harness between fan relay 1 terminal and ECM.
20	**CHECK POOR CONTACT.** Check the poor contact of ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact of ECM connector.	Contact with your SOA Service Center. NOTE: Multiple parts may be deteriorated.
21	**CHECK POWER SUPPLY TO FAN RELAY 2.** 1) Turn the ignition switch to OFF. 2) Remove the fan relay 2 from A/C relay holder. 3) Measure the voltage between fan relay 2 terminal and chassis ground. ***Connector & terminal*** ***(F27) No. 28 (+) — Chassis ground (–):***	Is the voltage more than 10 V?	Go to step **22**.	Go to step **23**.
22	**CHECK POWER SUPPLY TO FAN RELAY 2.** 1) Turn the ignition switch to ON. 2) Measure the voltage between fan relay 2 terminal and chassis ground. ***Connector & terminal*** ***(F27) No. 25 (+) — Chassis ground (–):***	Is the voltage more than 10 V?	Go to step **26**.	Go to step **25**.
23	**CHECK FUSE.** 1) Remove the 30 A fuse from A/C relay holder. 2) Check the condition of fuse.	Is the fuse blown out?	Replace the fuse.	Go to step **24**.

	Step	Check	Yes	No
24	**CHECK HARNESS OF 30 A FUSE TERMINAL AND FAN RELAY 2 TERMINAL.** 1) Turn the ignition switch to OFF. 2) Measure the resistance between 30 A fuse terminal and fan relay 2 terminal. ***Terminal*** ***No. 4 — No. 28:***	Is the resistance less than 1 Ω?	Repair the power supply line.	Repair the open harness.
25	**CHECK FUSE.** 1) Turn the ignition switch to OFF. 2) Remove the fuse No. 17. 3) Check the condition of fuse.	Is the fuse blown out?	Replace the fuse.	Repair the power supply line.
26	**CHECK FAN RELAY 2.** 1) Turn the ignition switch to OFF. 2) Remove the fan relay 2 from A/C relay holder. 3) Measure the resistance of fan relay 2. ***Terminal*** ***No. 28 — No. 29:***	Is the resistance more than 1 MΩ?	Go to step **27**.	Replace the fan relay 2.
27	**CHECK FAN RELAY 2.** 1) Connect the battery to fan relay 2 terminals No. 25 and No. 27. 2) Measure the resistance between fan relay 2 terminals. ***Terminal*** ***No. 28 — No. 29:***	Is the resistance less than 1 Ω?	Go to step **28**.	Replace the fan relay 2.
28	**CHECK HARNESS BETWEEN FAN RELAY 2 TERMINAL AND SUB FAN MOTOR CONNECTOR.** 1) Disconnect the connector from sub fan motor. 2) Measure the resistance of harness between fan relay 2 terminal and sub fan motor connector. ***Connector & terminal*** ***(F16) No. 1 — (F27) No. 29:***	Is the resistance less than 1 Ω?	Go to step **29**.	Repair the open harness between fan relay 2 terminal and sub fan motor connector.
29	**CHECK HARNESS BETWEEN FAN RELAY 2 AND ECM.** 1) Disconnect the connectors from ECM. 2) Measure the resistance between fan relay 2 terminal and ECM connector. ***Connector & terminal*** ***(B136) No. 29 — (F27) No. 27:***	Is the resistance less than 1 Ω?	Go to step **30**.	Repair the open harness between fan relay 2 terminal and ECM.
30	**CHECK HARNESS BETWEEN FAN MODE RELAY AND ECM.** Measure the resistance between fan mode relay terminal and ECM connector. ***Connector & terminal*** ***(B136) No. 29 — (F27) No. 7:***	Is the resistance less than 1 Ω?	Go to step **31**.	Repair the open harness between fan mode relay terminal and ECM.
31	**CHECK POOR CONTACT.** Check the poor contact of ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact of ECM connector.	Contact with your SOA Service Center. NOTE: Multiple parts may be deteriorated.
32	**CHECK OPERATION OF RADIATOR FAN.**	Does the radiator main fan rotate when the radiator main and sub fans do not rotate at high speed?	Go to step **21**.	Go to step **33**.

	Step	Check	Yes	No
33	**CHECK GROUND CIRCUIT OF FAN MODE RELAY.** 1) Remove the fan mode relay from A/C relay holder. 2) Measure the resistance between fan mode relay terminal and chassis ground. ***Connector & terminal*** ***(F27) No. 8 — Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **34**.	Repair the open circuit of harness between fan mode relay and chassis ground.
34	**CHECK POWER SUPPLY TO FAN MODE RELAY.** 1) Turn the ignition switch to ON. 2) Measure the voltage between fan mode relay terminal and chassis ground. ***Connector & terminal*** ***(F27) No. 5 (+) — Chassis ground (–):***	Is the voltage more than 10 V?	Go to step **35**.	Repair the power supply line.
35	**CHECK FAN MODE RELAY.** 1) Turn the ignition switch to OFF. 2) Remove the fan mode relay. 3) Measure the resistance of fan mode relay. ***Terminal*** ***(F27) No. 8 — (F27) No. 9:***	Is the resistance more than 1 MΩ?	Go to step **36**.	Replace the fan mode relay.
36	**CHECK FAN MODE RELAY.** 1) Connect the battery to terminals No. 5 and No. 7 of fan mode relay. 2) Measure the resistance of fan mode relay. ***Terminal*** ***(F27) No. 8 — (F27) No. 9:***	Is the resistance less than 1 Ω?	Go to step **29**.	Replace the fan mode relay.