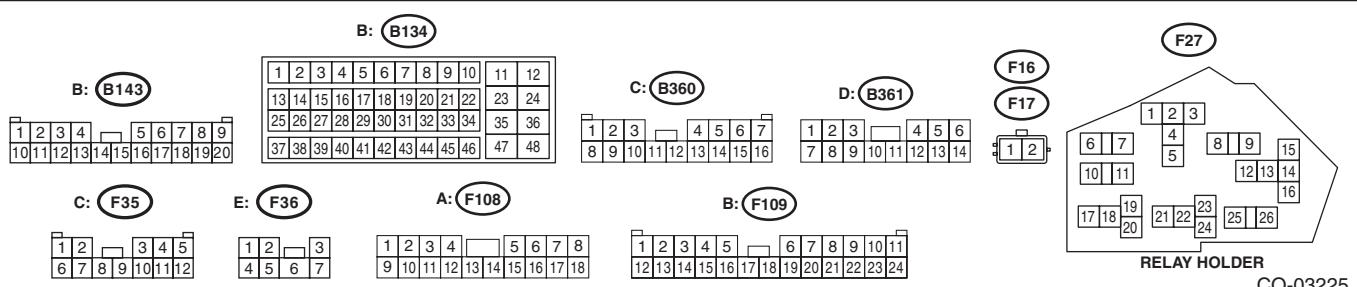
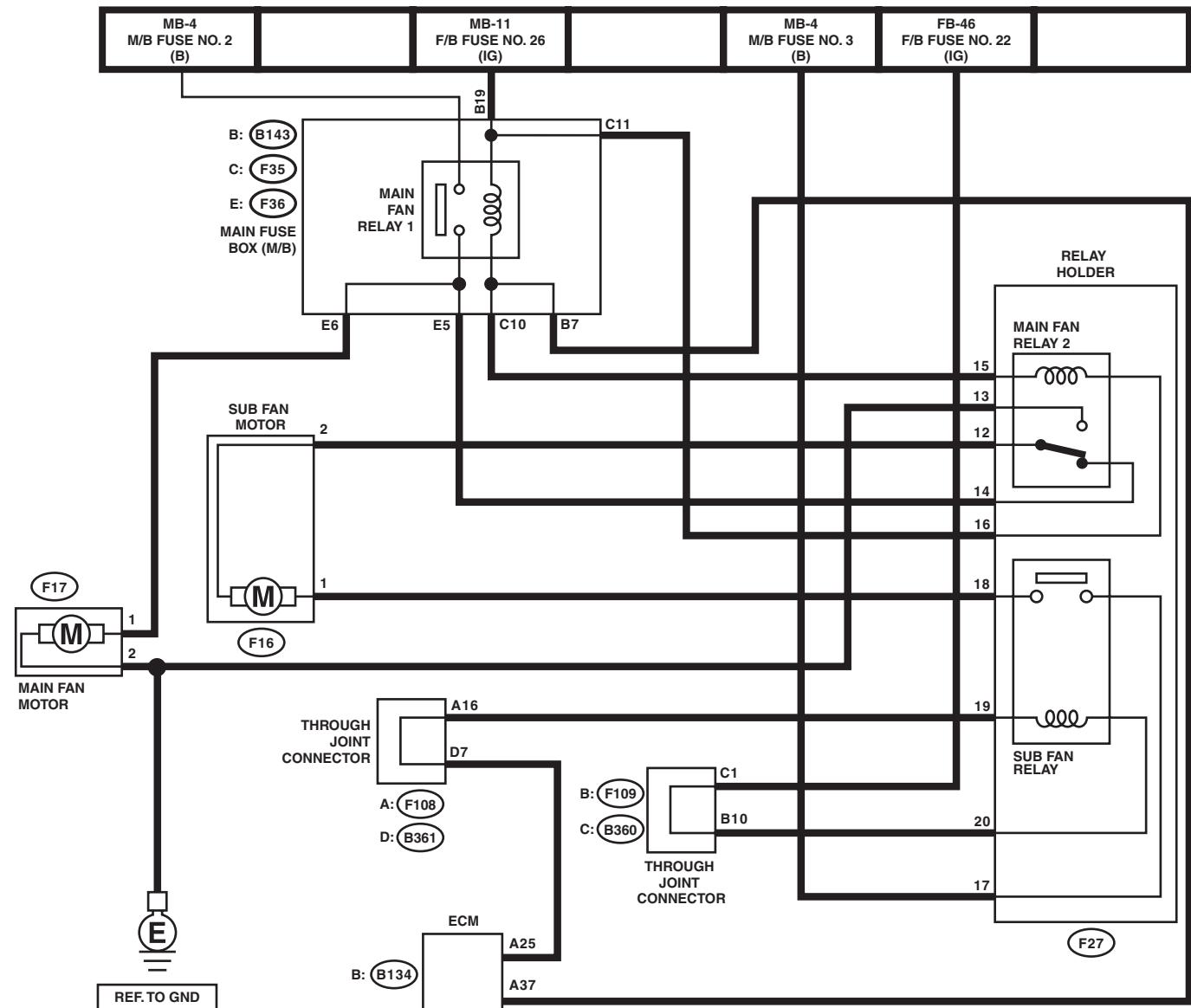


## 2. Radiator Fan System

### A: WIRING DIAGRAM

Radiator fan system <Ref. to WI-345, WIRING DIAGRAM, Radiator Fan System.>



# Radiator Fan System

## COOLING

### B: INSPECTION

#### Operating condition:

| Vehicle speed  | A/C compres-<br>sor load | Engine coolant temperature        |  |   |
|--|--------------------------|-----------------------------------|--|---|
|  |                          | Increase:<br>94°C (201°F) or less | Increase: 95 — 99°C<br>(203 — 210°F)<br>Decrease: 93 — 94°C<br>(199 — 201°F) | Increase:<br>100°C (212°F) or more<br>Decrease:<br>95°C (203°F) or more |
|  |                          | Radiator fan operation            | Radiator fan operation   | Radiator fan operation  |
| During acceleration:<br>19 km/h (12 MPH) or less   | OFF                      | OFF                               | Low-Speed  | High-Speed  |
|  | Low                      | Low-Speed                         | Low-Speed  | High-Speed  |
|  | High                     | High-Speed                        | High-Speed   | High-Speed  |
| During acceleration:<br>20 — 69 km/h (12 — 43 MPH)<br>During deceleration:<br>11 — 64 km/h (7 — 40 MPH)    | OFF                      | OFF                               | Low-Speed  | High-Speed  |
|  | Low                      | High-Speed                        | High-Speed   | High-Speed  |
|  | High                     | High-Speed                        | High-Speed   | High-Speed  |
| During acceleration:<br>70 — 134 km/h (43 — 83 MPH)<br>During deceleration:<br>65 — 129 km/h (40 — 80 MPH) | OFF                      | OFF                               | Low-Speed  | High-Speed  |
|  | Low                      | OFF*                              | Low-Speed*   | High-Speed  |
|  | High                     | Low-Speed*                        | High-Speed   | High-Speed  |
| During acceleration:<br>135 km/h (84 MPH) or more<br>During deceleration:<br>130 km/h (81 MPH) or more     | OFF                      | OFF                               | OFF  | High-Speed  |
|  | Low                      | OFF                               | Low-Speed  | High-Speed  |
|  | High                     | OFF                               | Low-Speed  | High-Speed  |

\*The fan may run at High-Speed when ambient temperature is high.

# Radiator Fan System

COOLING

## DIAGNOSIS:

Radiator main fan and radiator sub fan do not rotate under the above operating conditions.

| Step  | Check   | Yes                                 | No                            |
|---|---|-------------------------------------|-------------------------------|
| 1 <b>CHECK OPERATION OF RADIATOR FAN.</b><br>1) Install the delivery mode fuse.<br>2) Turn the ignition switch to ON.<br>3) Using the Subaru Select Monitor, perform the compulsory operation check for the radiator fan relay.<br><br>NOTE: <ul style="list-style-type: none"><li>• When performing the compulsory operation check for the radiator fan relay using the Subaru Select Monitor, the radiator main fan and radiator sub fan will repeat low speed revolution → high speed revolution → OFF in this order.</li><li>• Subaru Select Monitor<br/>For detailed operation procedures, refer to "PC application help for Subaru Select Monitor".</li></ul> | Do the radiator main fans and radiator sub fans rotate at low speed?  | Go to step 2.                       | Go to step 3.                 |
| 2 <b>CHECK OPERATION OF RADIATOR FAN.</b><br>1) Install the delivery mode fuse.<br>2) Turn the ignition switch to ON.<br>3) Using the Subaru Select Monitor, perform the compulsory operation check for the radiator fan relay.<br><br>NOTE: <ul style="list-style-type: none"><li>• When performing the compulsory operation check for the radiator fan relay using the Subaru Select Monitor, the radiator main fan and radiator sub fan will repeat low speed revolution → high speed revolution → OFF in this order.</li><li>• Subaru Select Monitor<br/>For detailed operation procedures, refer to "PC application help for Subaru Select Monitor".</li></ul> | Do the radiator main fans and radiator sub fans rotate at high speed? | Radiator main fan system is normal. | Go to step 27.                |
| 3 <b>CHECK POWER SUPPLY TO SUB FAN RELAY.</b><br>1) Turn the ignition switch to OFF.<br>2) Remove the sub fan relay from the relay holder.<br>3) Measure the voltage between the sub fan relay terminal and chassis ground.<br><br><i>Connector &amp; terminal<br/>(F27) No. 17 (+) — Chassis ground (-):</i>   | Is the voltage 10 V or more?  | Go to step 4.                       | Go to step 5.                 |
| 4 <b>CHECK POWER SUPPLY TO SUB FAN RELAY.</b><br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between the sub fan relay terminal and chassis ground.<br><br><i>Connector &amp; terminal<br/>(F27) No. 20 (+) — Chassis ground (-):</i>  | Is the voltage 10 V or more?  | Go to step 7.                       | Go to step 6.                 |
| 5 <b>CHECK FUSE.</b><br>1) Turn the ignition switch to OFF.<br>2) Remove the fuse No. 3.<br>3) Check the condition of fuse.   | Is the fuse blown out?  | Replace the fuse.                   | Repair the power supply line. |
| 6 <b>CHECK FUSE.</b><br>1) Turn the ignition switch to OFF.<br>2) Remove the fuse No. 22.<br>3) Check the condition of fuse.  | Is the fuse blown out?  | Replace the fuse.                   | Repair the power supply line. |

# Radiator Fan System

## COOLING

| Step  | Check   | Yes   | No   |
|---|---|---|--|
| 7 <b>CHECK SUB FAN RELAY.</b><br>1) Turn the ignition switch to OFF.<br>2) Measure the resistance between sub fan relay terminals.<br><br><i>Terminals</i><br><i>No. 17 — No. 18:</i>   | Is the resistance 1 MΩ or more?                       | Go to step 8.                                       | Replace the sub fan relay. <Ref. to AC-32, Relay and Fuse.>  |
| 8 <b>CHECK SUB FAN RELAY.</b><br>1) Connect the battery to terminals No. 19 and No. 20 of the sub fan relay.<br>2) Measure the resistance between sub fan relay terminals.<br><br><i>Terminals</i><br><i>No. 17 — No. 18:</i>   | Is the resistance less than 1 Ω?                      | Go to step 9.                                       | Replace the sub fan relay. <Ref. to AC-32, Relay and Fuse.>  |
| 9 <b>CHECK HARNESS BETWEEN SUB FAN RELAY TERMINAL AND SUB FAN MOTOR CONNECTOR.</b><br>1) Disconnect the connector from the sub fan motor.<br>2) Measure the resistance of harness between the sub fan relay terminal and sub fan motor connector.<br><br><i>Connector &amp; terminal</i><br><i>(F16) No. 1 — (F27) No. 18:</i>    | Is the resistance less than 1 Ω?                      | Go to step 10.                                      | Repair the open circuit of harness between sub fan relay terminal and sub fan motor connector.         |
| 10 <b>CHECK HARNESS BETWEEN SUB FAN MOTOR CONNECTOR AND MAIN FAN RELAY 2 CONNECTOR.</b><br>1) Remove main fan relay 2 from the relay holder.<br>2) Measure the resistance of harness between sub fan motor connector and main fan relay 2 connector.<br><br><i>Connector &amp; terminal</i><br><i>(F16) No. 2 — (F27) No. 12:</i> | Is the resistance less than 1 Ω?                      | Go to step 11.                                      | Repair the open circuit of the harness between sub fan motor connector and main fan relay 2 connector. |
| 11 <b>CHECK FOR POOR CONTACT.</b><br>Check poor contact of sub fan motor connector.   | Is there poor contact of the sub fan motor connector? | Repair the poor contact of sub fan motor connector. | Go to step 12.   |
| 12 <b>CHECK SUB FAN MOTOR.</b><br>Connect the battery positive (+) terminal to terminal No. 1 of the sub fan motor, and the ground (-) terminal to terminal No. 2.  | Does the radiator sub fan rotate?                     | Go to step 13.                                      | Replace the sub fan motor. <Ref. to CO(H4DOTC)-55, Radiator Sub Fan and Fan Motor.>                    |
| 13 <b>CHECK MAIN FAN RELAY 2.</b><br>Measure the resistance of main fan relay 2.<br><br><i>Terminals</i><br><i>No. 14 — No. 12:</i>   | Is the resistance less than 1 Ω?                      | Go to step 14.                                      | Replace the main fan relay 2. <Ref. to AC-32, Relay and Fuse.>   |
| 14 <b>CHECK HARNESS BETWEEN MAIN FAN RELAY 2 AND MAIN FAN MOTOR CONNECTOR.</b><br>1) Disconnect the connector from the main fan motor.<br>2) Measure the resistance of the harness between main fan relay 2 terminal and main fan motor connector.<br><br><i>Connector &amp; terminal</i><br><i>(F17) No. 1 — (F27) No. 14:</i>   | Is the resistance less than 1 Ω?                      | Go to step 15.                                      | Repair the open circuit of the harness between main fan relay 2 terminal and main fan motor connector. |

# Radiator Fan System

COOLING

| Step   | Check  | Yes  | No  |
|--|--|--|---|
| 15 <b>CHECK GROUND CIRCUIT OF MAIN FAN MOTOR.</b><br>Measure the resistance between main fan motor connector and chassis ground.<br><i>Connector &amp; terminal<br/>(F17) No. 2 — Chassis ground:</i>  | Is the resistance less than $5\ \Omega$ ?              | Go to step 16.                                       | Repair the open circuit of the harness between main fan motor connector and chassis ground.               |
| 16 <b>CHECK FOR POOR CONTACT.</b><br>Check poor contact of main fan motor connector.   | Is there poor contact of the main fan motor connector? | Repair the poor contact of main fan motor connector. | Go to step 17.  |
| 17 <b>CHECK MAIN FAN MOTOR.</b><br>Connect the battery positive (+) terminal to terminal No. 1 of the main fan motor, and the ground (-) terminal to terminal No. 2.   | Does the radiator main fan rotate?                     | Go to step 18.                                       | Replace the main fan motor. <Ref. to CO(H4DOTC)-52, Radiator Main Fan and Fan Motor.>                     |
| 18 <b>CHECK HARNESS BETWEEN SUB FAN RELAY AND ECM.</b><br>1) Disconnect the connector from ECM.<br>2) Measure the resistance between the sub fan relay terminal and ECM connector.<br><i>Connector &amp; terminal<br/>(B134) No. 25 — (F27) No. 19:</i>  | Is the resistance less than $1\ \Omega$ ?              | Go to step 19.                                       | Repair the open circuit of harness between sub fan relay terminal and ECM.                                |
| 19 <b>CHECK FOR POOR CONTACT.</b><br>Check for poor contact of ECM connector.  | Is there poor contact of ECM connector?                | Repair the poor contact of ECM connector.            | Check the DTC. Repair the trouble cause. <Ref. to EN(H4DO)(diag)-43, Read Diagnostic Trouble Code (DTC).> |
| 20 <b>CHECK MAIN FAN RELAY 1.</b><br>1) Turn the ignition switch to OFF.<br>2) Remove main fan relay 1 from the main fuse box.<br>3) Measure the resistance between terminals of main fan relay 1 switch.  | Is the resistance $1\ M\Omega$ or more?                | Go to step 21.                                       | Replace the main fan relay 1. <Ref. to AC-32, Relay and Fuse.>  |
| 21 <b>CHECK MAIN FAN RELAY 1.</b><br>1) Connect the main fan relay 1 coil side terminal to the battery.<br>2) Measure the resistance between terminals of main fan relay 1 switch.   | Is the resistance less than $1\ \Omega$ ?              | Go to step 22.                                       | Replace the main fan relay 1. <Ref. to AC-32, Relay and Fuse.>  |
| 22 <b>CHECK HARNESS BETWEEN MAIN FAN RELAY 1 AND MAIN FAN MOTOR CONNECTOR.</b><br>1) Disconnect the connector from the main fan motor.<br>2) Measure the resistance of the harness between main fan relay 1 terminal and main fan motor connector.<br><i>Connector &amp; terminal<br/>(F17) No. 1 — (F36) No. 6:</i> | Is the resistance less than $1\ \Omega$ ?              | Go to step 23.                                       | Repair the open circuit of the harness between main fan relay 1 terminal and main fan motor connector.    |
| 23 <b>CHECK HARNESS BETWEEN MAIN FAN RELAY 1 AND ECM.</b><br>1) Disconnect the connector from ECM.<br>2) Measure the resistance between main fan relay 1 terminal and ECM connector.<br><i>Connector &amp; terminal<br/>(B134) No. 37 — (B143) No. 7:</i>  | Is the resistance less than $1\ \Omega$ ?              | Go to step 24.                                       | Repair the open circuit of the harness between main fan relay 1 terminal and ECM.                         |

# Radiator Fan System

## COOLING

| Step  | Check                                   | Yes                                       | No  |
|---|---|---|---|
| <b>24 CHECK HARNESS BETWEEN MAIN FAN RELAY 2 AND ECM.</b><br>Measure the resistance between main fan relay 2 terminal and ECM connector.<br><i>Connector &amp; terminal</i><br><i>(B134) No. 37 — (F27) No. 15:</i>   | Is the resistance less than 1 Ω?        | Go to step 25.                            | Repair the open circuit of the harness between main fan relay 2 terminal and ECM. |
| <b>25 CHECK FUSE.</b><br>1) Turn the ignition switch to OFF.<br>2) Remove the fuse No. 2 and No. 26.<br>3) Check the condition of fuse.   | Is the fuse blown out?                  | Replace the fuse.                         | Go to step 26.  |
| <b>26 CHECK FOR POOR CONTACT.</b><br>Check for poor contact of ECM connector.   | Is there poor contact of ECM connector? | Repair the poor contact of ECM connector. | Repair the power supply circuit to the main fuse box.                             |
| <b>27 CHECK OPERATION OF RADIATOR FAN.</b><br>If the both fans do not rotate at high speed in the condition of step 2, check whether the radiator sub fan is rotating.  | Does the radiator sub fan rotate?       | Go to step 20.                            | Go to step 28.  |
| <b>28 CHECK GROUND CIRCUIT OF MAIN FAN RELAY 2.</b><br>1) Remove the main fan relay 2 from A/C relay holder.<br>2) Measure the resistance between main fan relay 2 terminal and chassis ground.<br><i>Connector &amp; terminal</i><br><i>(F27) No. 13 — Chassis ground:</i> | Is the resistance less than 1 Ω?        | Go to step 29.                            | Repair the open circuit of harness between main fan relay 2 and chassis ground.   |
| <b>29 CHECK POWER SUPPLY TO MAIN FAN RELAY 2.</b><br>1) Turn the ignition switch to ON.<br>2) Measure the voltage between main fan relay 2 terminal and chassis ground.<br><i>Connector &amp; terminal</i><br><i>(F27) No. 13 (+) — Chassis ground (-):</i>                 | Is the voltage 10 V or more?            | Go to step 30.                            | Repair the power supply line.   |
| <b>30 CHECK MAIN FAN RELAY 2.</b><br>1) Turn the ignition switch to OFF.<br>2) Remove the main fan relay 2.<br>3) Measure the resistance of main fan relay 2.<br><i>Terminals</i><br><i>(F27) No. 12 — (F27) No. 13:</i>  | Is the resistance 1 MΩ or more?         | Go to step 31.                            | Replace the main fan relay 2. <Ref. to AC-32, Relay and Fuse.>                    |
| <b>31 CHECK MAIN FAN RELAY 2.</b><br>1) Connect the battery to terminals No. 15 and No. 16 of the main fan relay 2.<br>2) Measure the resistance of main fan relay 2.<br><i>Terminals</i><br><i>(F27) No. 12 — (F27) No. 13:</i>  | Is the resistance less than 1 Ω?        | Go to step 23.                            | Replace the main fan relay 2. <Ref. to AC-32, Relay and Fuse.>                    |