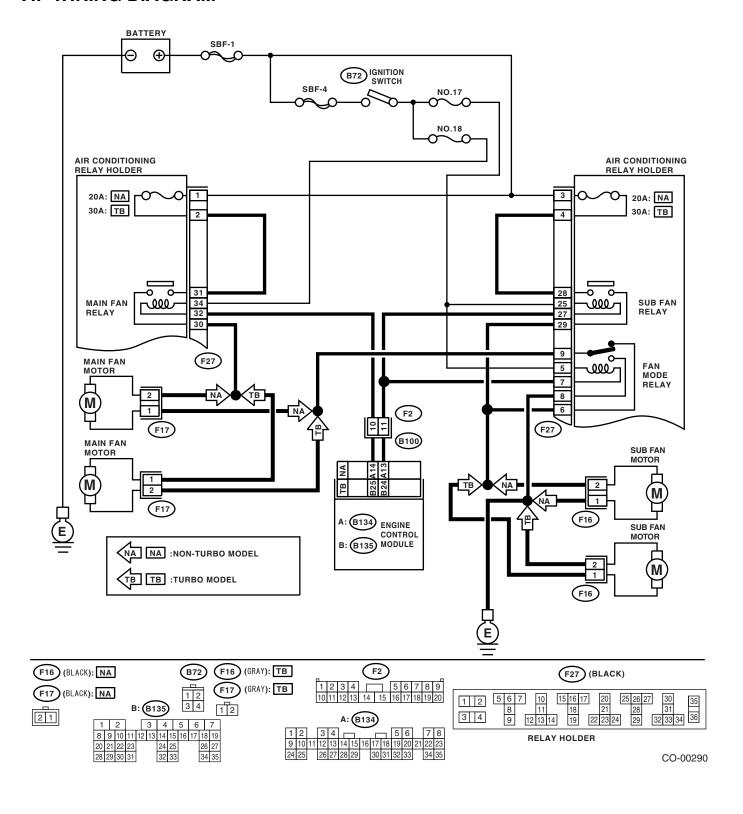
# 2. Radiator Fan System

# **A: WIRING DIAGRAM**



# **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	<ul> <li>CHECK OPERATION OF RADIATOR FAN.</li> <li>1) Connect the test mode connector.</li> <li>2) Turn the ignition switch to ON.</li> <li>3) Using SUBARU Select Monitor, check the compulsory operation of radiator fan.</li> <li>NOTE: <ul> <li>With SUBARU Select Monitor</li> <li>When checking the compulsory operation of radiator fan, the radiator main and sub fan repeat the rotation in order of following: low speed rotation → high speed rotation → off.</li> <li>SUBARU Select Monitor</li> <li>Refer to Compulsory Valve Operation Check Mode for detail procedures. <ref. check="" compulsory="" en(h4so)-50,="" mode.="" operation="" to="" valve=""></ref.></li> </ul> </li> </ul>	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:  • With SUBARU Select Monitor  When checking the compulsory operation of radiator fan, the radiator main and sub fan repeat the rotation in order of following: low speed rotation → high speed rotation → off.  • SUBARU Select Monitor  Refer to Compulsory Valve Operation Check Mode for detail procedures. <ref. check="" compulsory="" en(h4so)-50,="" mode.="" operation="" to="" valve=""></ref.>	Do the radiator main and sub fans rotate at high speed?	Radiator main fan system is okay.	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 (-):			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 20 A fuse (Non-turbo model) or 30 A fuse (Turbo model) 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 FAN RELAY 1 TERMI-	Is the resistance less than 1 $\Omega$ ?	Repair the power	Repair the open
	NAL AND THE 20A FUSE TERMINAL (NON-		supply line.	harness.
	TURBO MODEL) OR 30A FUSE TERMINAL			
	(TURBO MODEĹ).			
	<ol> <li>Turn the ignition switch to OFF.</li> </ol>			
	2) Measure the resistance between 20 A fuse			
	terminal (Non-turbo model) or 30 A fuse termi-			
	nal (Turbo model) and fan relay 1 terminal.			
	Terminal			
	No. 2 — No. 31:			
7	CHECK FUSE.	Is the fuse blown out?	Replace the fuse.	Repair the power
	Turn the ignition switch to OFF			supply line.
	2) Remove the fuse No. 18.			
	<ol><li>Check the condition of fuse.</li></ol>			
8	CHECK FAN RELAY 1.	Is the resistance more than 1	Go to step 9.	Replace the fan
	<ol> <li>Turn the ignition switch to OFF.</li> </ol>	ΜΩ?		relay 1.
	2) Measure the resistance between fan relay 1			
	terminals.			
	Terminal			
	No. 30 — No. 31:			
9	CHECK FAN RELAY 1.	Is the resistance less than 1 $\Omega$ ?	Go to step 10.	Replace the fan
	1) Connect the battery to fan relay 1 terminals			relay 1.
	No. 32 and No. 34.			
	2) Measure the resistance between fan relay 1			
	terminals. <i>Terminal</i>			
	No. 30 — No. 31:			
10		la the registance less than 1 02	Co to stop 11	Danair the anan
10	CHECK HARNESS BETWEEN FAN RELAY 1 TERMINAL AND MAIN FAN MOTOR CON-	is the resistance less than 1 \(\Omega?\)	Go to step 11.	Repair the open harness between
	NECTOR.			fan relay 1 terminal
	Disconnect the connector from main fan			and main fan
	motor.			motor connector.
	Measure the resistance of harness			
	between fan relay 1 terminal and main fan			
	motor connector.			
	Connector & terminal			
	Non-turbo model			
	(F17) No. 2 — (F27) No. 30:			
	Turbo model			
	(F17) No. 1 — (F27) No. 30:			
11	CHECK HARNESS BETWEEN MAIN FAN	Is the resistance less than 1 $\Omega$ ?	Go to step 12.	Repair the open
	MOTOR CONNECTOR AND FAN MODE RE-			harness between
	LAY CONNECTOR.			main fan motor
	Remove the fan mode relay from A/C relay			connector and fan
	holder.			mode relay con-
	Measure the resistance of harness     between main fan motor connector and fan			nector.
	mode relay connector.			
	Connector & terminal			
	Non-turbo model			
	(F17) No. 1 — (F27) No. 9:			
	Turbo model			
	(F17) No. 2 — (F27) No. 9:			
12	CHECK POOR CONTACT.	Is there poor contact in main	Repair poor con-	Go to step 13.
- <b>-</b>	Check poor contact in main fan motor connec-	fan motor connector?	tact in main fan	5.5 to 5top 101
	tor.		motor connector.	
		<u> </u>	= = = '	İ.

	Step	Check	Yes	No
13	CHECK MAIN FAN MOTOR.	Does the main fan rotate?	Go to step 14.	Replace the main
	Connect the battery positive (+) terminal to ter-			fan motor with new
	minal No.2 (Non-turbo model) or No.1 (Turbo			one.
	model), and ground (-) terminal to terminal			
	No.1 (Non-turbo model) or No.2 (Turbo model)			
	of main fan motor.			
14	CHECK FAN MODE RELAY.	Is the resistance less than 1 $\Omega$ ?	Go to step 15.	Replace the fan
	Measure the resistance of fan mode relay.			mode relay.
	Terminal			
	No. 6 — No. 9:			
15	CHECK HARNESS BETWEEN FAN MODE	Is the resistance less than 1 $\Omega$ ?	Go to step 16.	Repair the open
	RELAY TERMINAL AND SUB FAN MOTOR			harness between
	CONNECTOR.			fan mode relay ter-
	Disconnect the connector from sub fan			minal and sub fan
	motor.			motor connector.
	Measure the resistance of harness     hetwoon fan mode relay terminal and sub fan			
	between fan mode relay terminal and sub fan motor connector.			
	Connector & terminal			
	Non-turbo model			
	(F16) No. 2 — (F27) No. 6:			
	Turbo model			
	(F16) No. 1 — (F27) No. 6:			
16	CHECK SUB FAN MOTOR AND GROUND	Is the resistance less than 5 $\Omega$ ?	Go to step 17.	Repair the open
	CIRCUIT.		,	harness between
	Measure the resistance between sub fan motor			sub fan motor con-
	connector and chassis ground.			nector and chassis
	Connector & terminal			ground.
	Non-turbo model			
	(F16) No. 1 — Chassis ground:			
	Turbo model			
	(F16) No. 2 — Chassis ground:			0 1 10
17	CHECK POOR CONTACT.	-	Repair poor con-	Go to step 18.
	Check poor contact in sub fan motor connec-	motor connector?	tact in sub fan	
10	tor.	Door the out for retate?	motor connector.	Danlage the suit
18	CHECK SUB FAN MOTOR.	Does the sub fan rotate?	Go to step 19.	Replace the sub
	Connect the battery positive (+) terminal to terminal No.2 (Non-turbo model) or No.1 (Turbo			fan motor with new
	minal No.2 (Non-turbo model) or No.1 (Turbo model), and ground (–) terminal to terminal			one.
	No.1 (Non-turbo model) or No.2 (Turbo model)			
	of sub fan motor.			
19	CHECK HARNESS BETWEEN FAN RELAY 1	Is the resistance less than 1 O?	Go to sten 20	Repair the open
-	AND ECM.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		harness between
	Disconnect the connector from ECM.			fan relay 1 terminal
	2) Measure the resistance between fan relay 1			and ECM.
	terminal and ECM connector.			
	Connector & terminal			
	Non-turbo model:			
	(B134) No. 14 — (F27) No. 32:			
	Turbo model:			
	(B135) No. 25 — (F27) No. 32:			
20	CHECK POOR CONTACT.	Is there poor contact in ECM	Repair poor con-	Contact with SOA
	Check poor contact in ECM connector.	connector?	tact in ECM con-	Service Center.
			nector.	

	Step	Check	Yes	No
21	CHECK POWER SUPPLY TO FAN RELAY 2.	Is the voltage more than 10 V?	Go to step 22.	Go to step 23.
	Turn the ignition switch to OFF.	l and remage mere manner or	он не онер ==:	
	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 (–):			
22	CHECK POWER SUPPLY TO FAN RELAY 2.	Is the voltage more than 10 V?	Go to step 26.	Go to step 25.
	<ol> <li>Turn the ignition switch to ON.</li> </ol>			
	2) Measure the voltage between fan relay 2			
	terminal and chassis ground.			
	Connector & terminal			
	(F27) No. 25 (+) — Chassis ground (–):			
23	CHECK FUSE.	Is the fuse blown out?	Replace the fuse.	Go to step 24.
	1) Remove the 20 A fuse (Non-turbo model)			
	or 30 A fuse (Turbo model) from A/C relay			
	holder.			
	<ol><li>Check the condition of fuse.</li></ol>			
24	CHECK HARNESS OF FAN RELAY 2 TERMI-	Is the resistance less than 1 $\Omega$ ?	Repair the power	Repair the open
	NAL AND THE 20A FUSE TERMINAL (NON-		supply line.	harness.
	TURBO MODEL) OR 30A FUSE TERMINAL			
	(TURBO MODEL).			
	<ol> <li>Turn the ignition switch to OFF.</li> </ol>			
	2) Measure the resistance between 20 A fuse			
	terminal (Non-turbo model) or 30 A fuse termi-			
	nal (Turbo model) and fan relay 2 terminal.			
	Terminal			
	No. 4 — No. 28:			
25	CHECK FUSE.	Is the fuse blown out?	Replace the fuse.	Repair the power
	1) Turn the ignition switch to OFF.			supply line.
	2) Remove the fuse No. 17.			
	3) Check the condition of fuse.		<u> </u>	
26	CHECK FAN RELAY 2.	Is the resistance more than 1	Go to step 27.	Replace the fan
	1) Turn the ignition switch to OFF.	ΜΩ?		relay 2.
	Remove the fan relay 2 from A/C relay  bolder			
	holder. 3) Measure the resistance of fan relay 2.			
	Terminal			
	No. 28 — No. 29:			
27	CHECK FAN RELAY 2.	Is the resistance less than 1 $\Omega$ ?	Go to stan 28	Replace the fan
-'	Connect the battery to terminals No. 25 and	lo the resistance less than 1 22:	30 to stop <b>20.</b>	relay 2.
	No. 27 of fan relay 2.			. Jiay 2.
	2) Measure the resistance between fan relay 2			
	terminals.			
	Terminal			
	No. 28 — No. 29:			
28	CHECK HARNESS BETWEEN FAN RELAY 2	Is the resistance less than 1 $\Omega$ ?	Go to step 30.	Repair the open
	TERMINAL AND SUB FAN MOTOR CON-			harness between
	NECTOR.			fan relay 2 terminal
	1) Disconnect the connector from sub fan			and sub fan motor
	motor.			connector.
	2) Measure the resistance of harness			
	between fan relay 2 terminal and sub fan motor			
	connector.			
	Connector & terminal			
	Non-turbo model			
	(F16) No. 2 — (F27) No. 29:			
	Turbo model			
1	(F16) No. 1 — (F27) No. 29:	1		

	Step	Check	Yes	No
29	CHECK HARNESS BETWEEN FAN RELAY 2 AND ECM.  1) Disconnect the connector from ECM.  2) Measure the resistance between fan relay 2 terminal and ECM connector.  Connector & terminal Non-turbo model:  (B134) No. 13 — (F27) No. 27: Turbo model:  (B135) No. 24 — (F27) No. 27:	Is the resistance less than 1 $\Omega$ ?	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 Non-turbo model:  (B134) No. 13 — (F27) No. 27: Turbo model:  (B135) No. 24 — (F27) No. 27:	Is the resistance less than 1 $\Omega$ ?	Go to step 31.	Repair the open harness between fan mode relay ter- minal and ECM.
31	CHECK POOR CONTACT. Check poor contact in ECM connector.	Is there poor contact in ECM connector?	Repair the poor contact in ECM connector.	Contact with your SOA Service Center.
32	CHECK OPERATION OF RADIATOR FAN.	Does the radiator main fan rotate when the radiator main and sub fan do not rotate at high speed?	Go to step 21.	Go to step 33.
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 $\Omega$ ?	Go to step 34.	Repair the open 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 M $\Omega$ ?	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 $\Omega$ ?	Go to step 29.	Replace the fan mode relay.

## NOTE:

Inspection by your SOA Service Center is required, because probable cause is deterioration of multiple parts.