

General Description

COOLING

1. General Description

A: SPECIFICATION

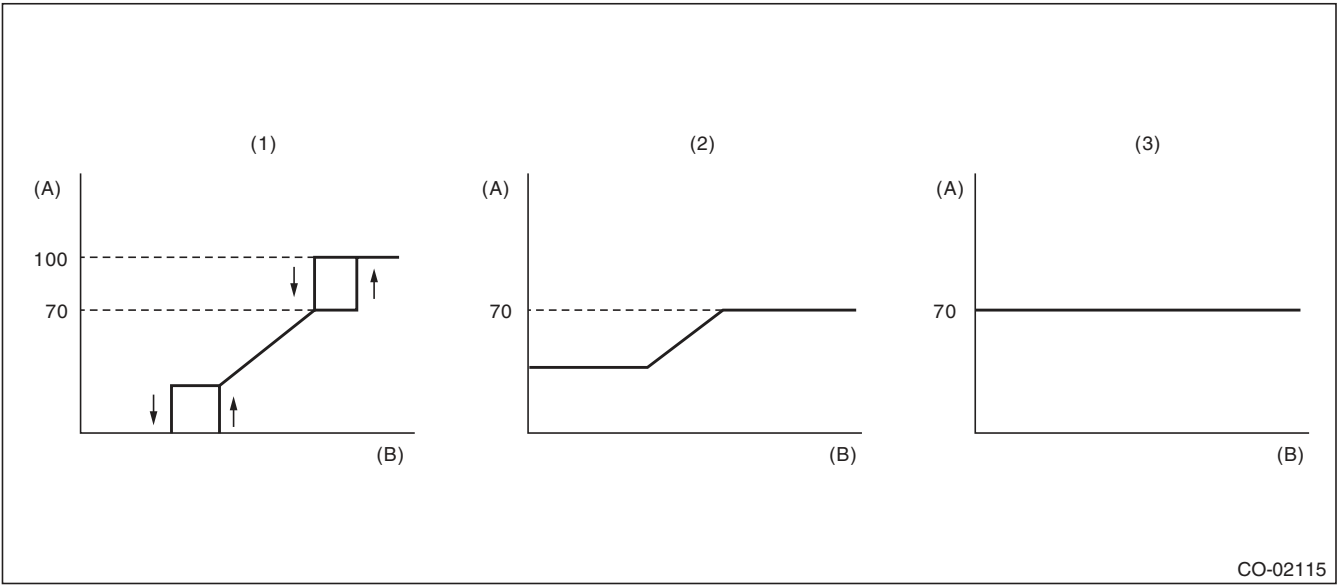
Cooling system			Electric fan + Forced engine coolant circulation system
Total engine coolant capacity			ℓ (US qt, Imp qt)
Water pump	Type		Centrifugal impeller type
	Discharge performance I	Discharge rate ℓ (US gal, Imp gal)/min.	320 (84.5, 70.4)
		Pump speed — Discharge pressure	5,500 rpm — 176.5 kPa (18 mAq)
		Engine coolant temperature	80°C (176°F)
	Impeller diameter		mm (in)
	Number of impeller vanes		6
	Number of pump sprocket teeth		22
Thermostat	Type		Wax pellet type
	Starting temperature to open		80 — 84°C (176 — 183°F)
	Fully opens		95°C (203°F)
	Valve lift	mm (in)	9.0 (0.354) or more
	Valve bore	mm (in)	35 (1.38)
Radiator fan	Motor input	Main fan	W
		Sub fan	W
	Fan diameter / Blade	Main fan	320 mm (12.6 in)/5
		Sub fan	320 mm (12.6 in)/7
Radiator	Type		Down flow, pressure type
	Core dimensions	Width × Height × Thickness	mm (in)
	Pressure range in which cap valve is open		kPa (kgf/cm ² , psi)
	Fins		Corrugated fin type
Reservoir tank	Capacity		ℓ (US qt, Imp qt)

	Recommended materials	Item number	Alternative
Coolant	SUBARU SUPER COOLANT (Concentrated type)	—	—
	SUBARU SUPER COOLANT (Diluted type)	K0670Y0000	
Water for dilution	Distilled water	—	Soft water or tap water
Cooling system protective agent	Cooling system conditioner	SOA345001	—

A/C compressor	A/C middle pressure switch	Engine coolant temperature		
		Increase: less than 95°C (203°F) Decrease: less than 93°C (199°F)	Increase: 95 — 101°C (203 — 214°F) Decrease: 93 — 99°C (199 — 210°F)	Increase: 102°C (216°F) or more Decrease: 100°C (212°F) or more
OFF		0%	Refer to fig. (1)	100%
ON	OFF	Refer to fig. (2)		100%
	ON	Refer to fig. (3)		100%

General Description

COOLING



CO-02115

(A) Fan speed (%)

(B) Water temperature

(1) A/C OFF control

(2) A/C ON control (A/C middle pressure switch OFF)

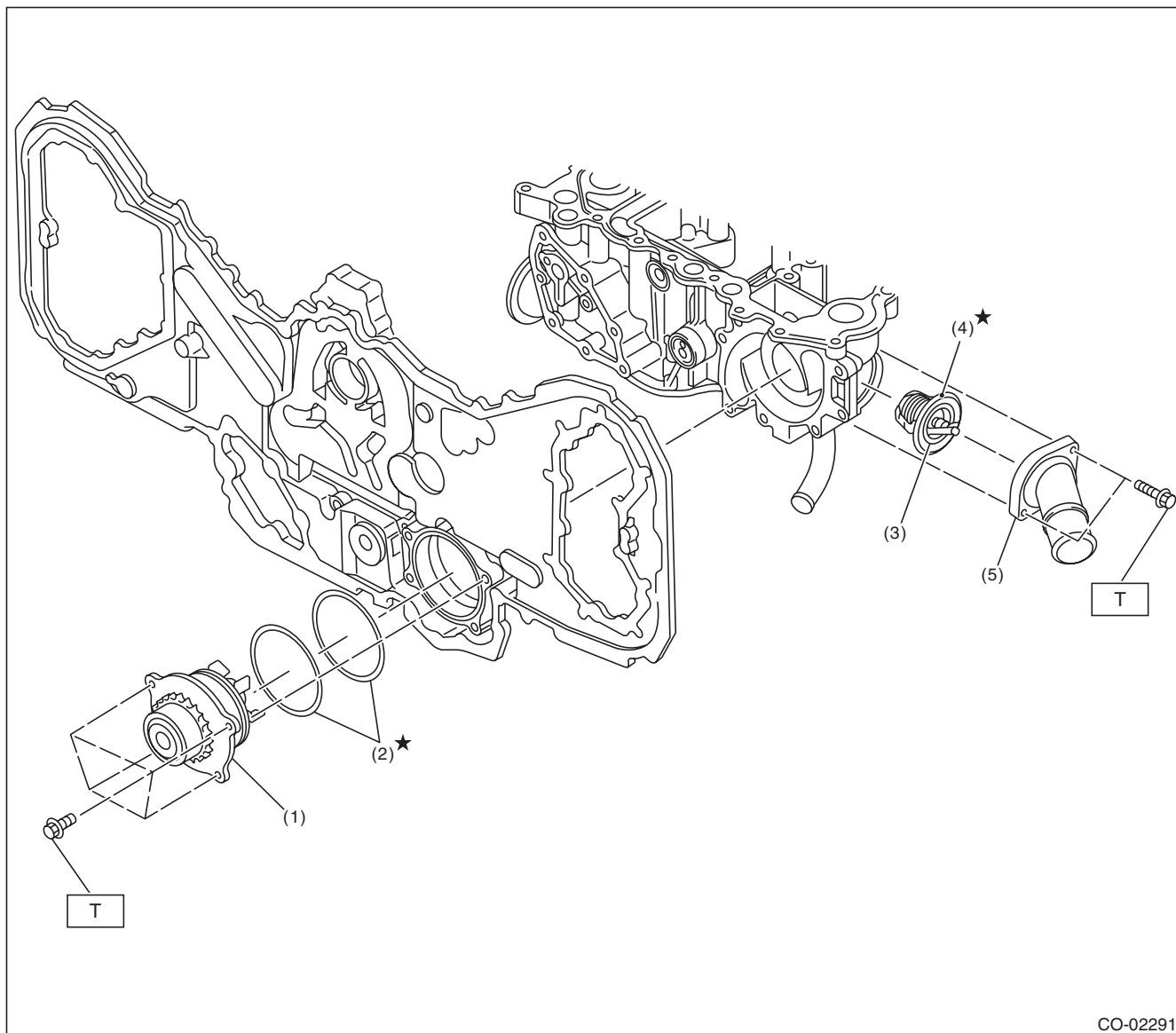
(3) A/C ON control (A/C middle pressure switch ON)

General Description

COOLING

B: COMPONENT

1. WATER PUMP



- (1) Water pump ASSY
- (2) O-ring
- (3) Thermostat

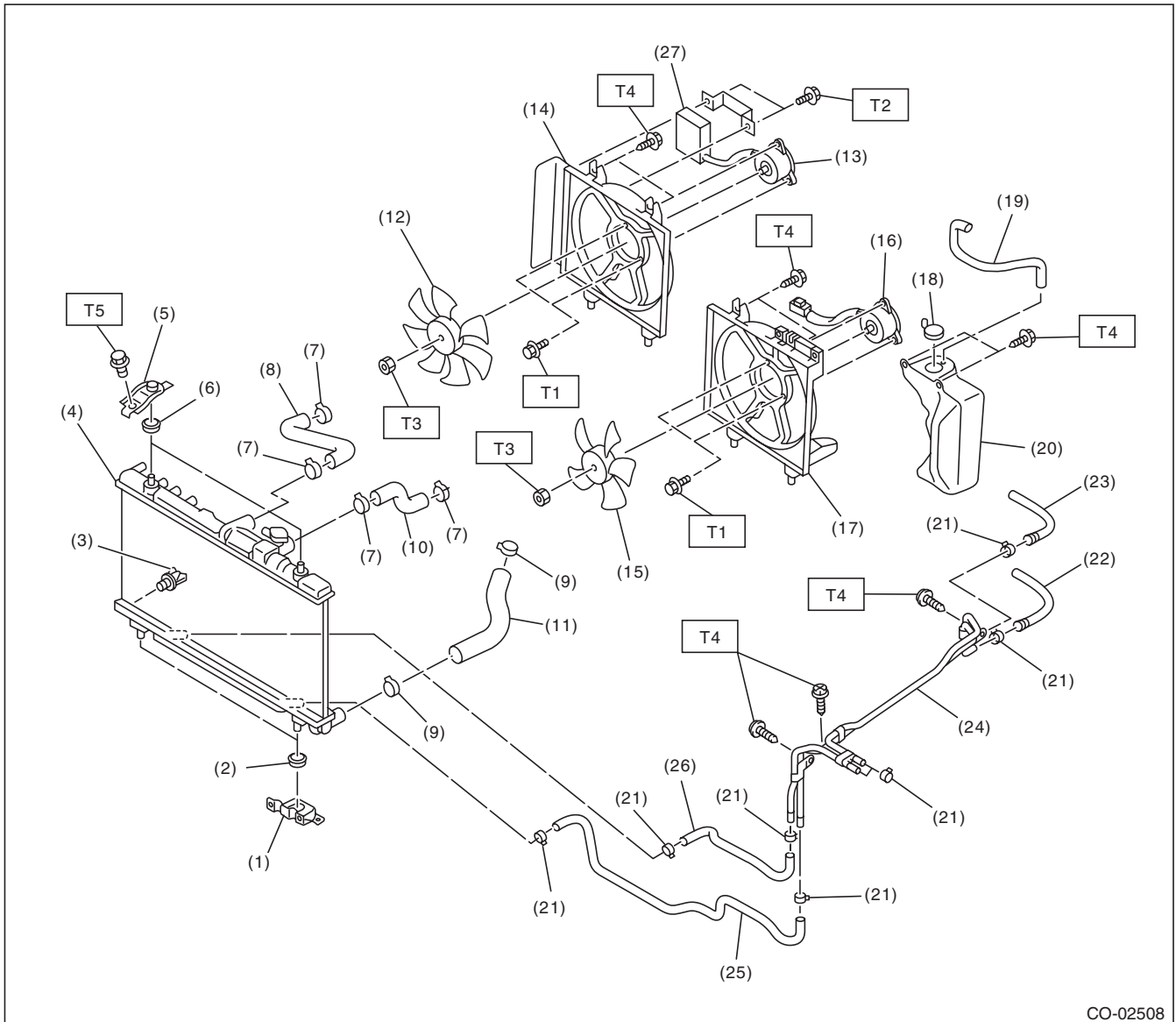
- (4) Gasket
- (5) Thermostat cover

Tightening torque: N·m (kgf-m, ft-lb)
T: 6.4 (0.7, 4.7)

General Description

COOLING

2. RADIATOR AND RADIATOR FAN



CO-02508

(1) Radiator lower bracket	(13) Radiator sub fan motor	(24) ATF pipe
(2) Radiator lower cushion	(14) Radiator sub fan shroud	(25) ATF hose C
(3) Engine coolant drain cock	(15) Radiator main fan	(26) ATF hose D
(4) Radiator	(16) Radiator main fan motor	(27) Radiator fan control unit
(5) Radiator upper bracket	(17) Radiator main fan shroud	
(6) Radiator upper cushion	(18) Engine coolant reservoir tank cap	
(7) Clip	(19) Over flow hose	
(8) Radiator inlet hose A	(20) Engine coolant reservoir tank	
(9) Clip	(21) ATF hose clamp	
(10) Radiator inlet hose B	(22) ATF hose A	
(11) Radiator outlet hose	(23) ATF hose B	
(12) Radiator sub fan		

Tightening torque:N-m (kgf-m, ft-lb)

T1: 3.8 (0.4, 2.8)

T2: 5.4 (0.6, 4.0)

T3: 6.2 (0.6, 4.6)

T4: 7.5 (0.8, 5.5)

T5: 12 (1.2, 8.9)

CO(H6DO)-5

General Description

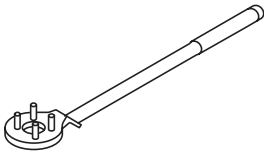
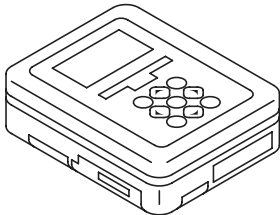
COOLING

C: CAUTION

- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly and replacement.
- Vehicle components are extremely hot after driving. Be wary of receiving burns from heated parts.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or rigid racks at the specified points.
- Before disconnecting connectors of sensors or units, be sure to disconnect the ground cable from battery.
- Prepare a container and cloth to prevent scattering of engine coolant when performing work where engine coolant can be spilled. If the fuel spills, wipe it off immediately to prevent from penetrating into floor or flowing out for environmental protection.
- Follow all government and local regulations concerning disposal of refuse when disposing engine coolant.

D: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-499977100	499977100	CRANK PULLEY WRENCH	Used for stopping rotation of crank pulley when loosening and tightening crank pulley bolts.
 ST1B022XU0	1B022XU0	SUBARU SELECT MONITOR III KIT	Used for troubleshooting the electrical system.

2. GENERAL TOOL

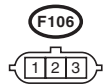
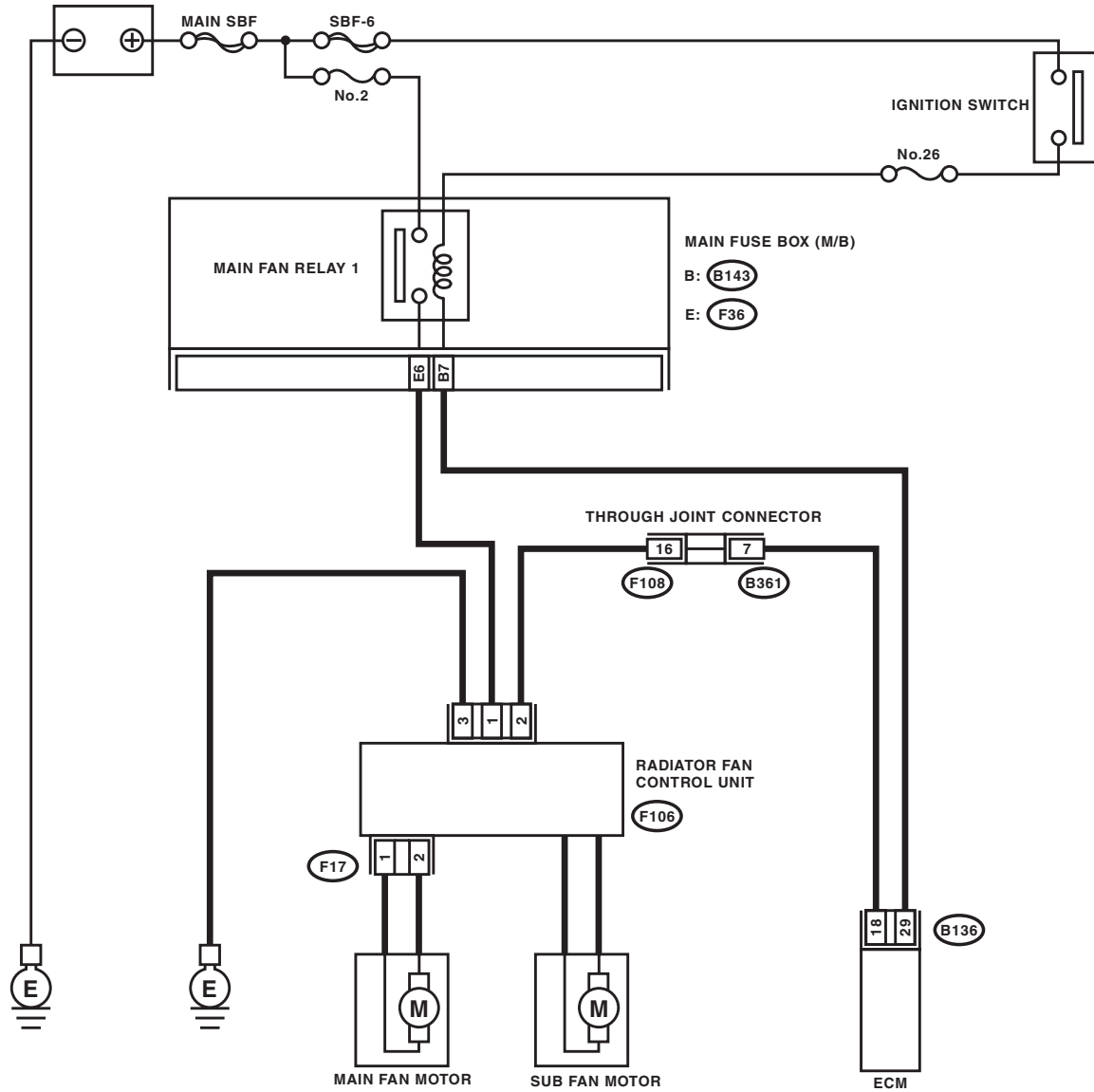
TOOL NAME	REMARKS
Radiator cap tester	Used for checking radiator and radiator cap.

Radiator Fan System

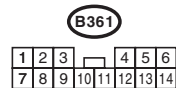
COOLING

2. Radiator Fan System

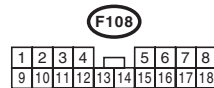
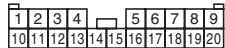
A: WIRING DIAGRAM



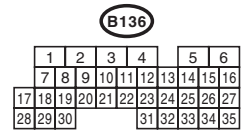
E: F36



B: B143



F17

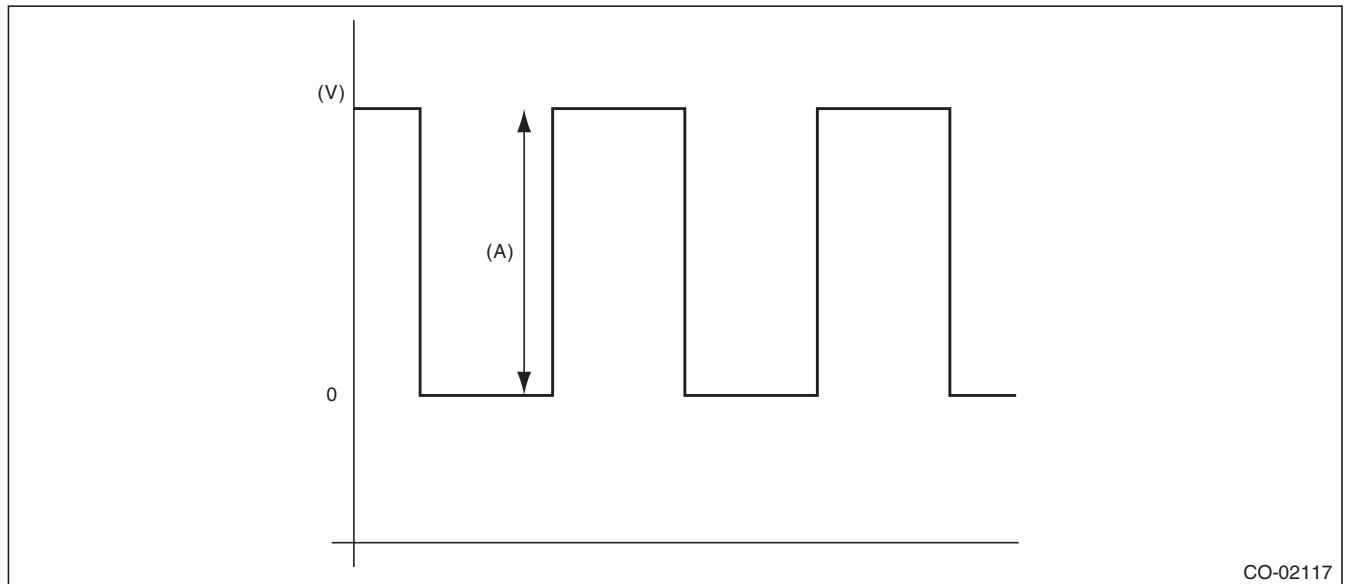


CO-02254

Radiator Fan System

COOLING

B: RADIATOR FAN CONTROL OUTPUT WAVEFORM



(A) 5 V

C: INSPECTION

DETECTING CONDITION:

- Engine coolant temperature is 93°C (199°F) or more.
- A/C switch is turned OFF.
- Vehicle speed is 19 km/h (12 MPH) or less.

TROUBLE SYMPTOMS:

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

Step	Check	Yes	No
1 CHECK MAIN FAN RELAY 1. 1) Turn the ignition switch to OFF. 2) Remove main fan relay 1 from the main fuse box. 3) Measure the resistance of terminal in main fan relay 1 switch.	Is the resistance 1 MΩ or more?	Go to step 2.	Replace the main fan relay 1.
2 CHECK MAIN FAN RELAY 1. 1) Connect the main fan relay 1 coil side terminal to the battery. 2) Measure the resistance between terminals of main fan relay 1 switch.	Is the resistance less than 1 Ω?	Go to step 3.	Replace the main fan relay 1.
3 CHECK POWER SUPPLY FOR ECM. 1) Disconnect the connectors from ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between ECM connector and chassis ground. Connector & terminal (B136) No. 29 (+) — Chassis ground (-):	Is the voltage 10 V or more?	Go to step 4.	Repair the power supply line.

Radiator Fan System

COOLING

Step	Check	Yes	No
4 CHECK POWER SUPPLY FOR RADIATOR FAN CONTROL UNIT. 1) Turn the ignition switch to OFF. 2) Connect the connector to ECM. 3) Disconnect the connector from radiator fan control unit. 4) Turn the ignition switch to ON. 5) Measure the voltage between radiator fan control unit connector and chassis ground. Connector & terminal (F106) No. 1 (+) — Chassis ground (-):	Is the voltage 10 V or more?	Go to step 5.	Repair the power supply line.
5 CHECK HARNESS BETWEEN ECM AND RADIATOR FAN CONTROL UNIT. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from ECM. 3) Measure the resistance of harness between radiator fan control unit and ECM connector. Connector & terminal (B136) No. 18 — (F106) No. 2:	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the open circuit of harness between ECM and radiator fan control unit.
6 CHECK RADIATOR FAN CONTROL UNIT AND GROUND CIRCUIT. 1) Connect the connector to ECM and radiator fan control unit. 2) Measure the resistance between radiator fan control unit connector and chassis ground. Connector & terminal (F106) No. 3 — Chassis ground:	Is the resistance less than 5 Ω ?	Go to step 7.	Repair the open circuit of harness between radiator fan control unit connector and chassis ground.
7 CHECK FAN MOTOR. 1) Disconnect the connector from radiator fan control unit. 2) Connect the battery positive (+) terminal to terminal No. 1 of the radiator fan control unit, and the ground (-) terminal to terminal No. 3.	Does the fan motor rotate?	Go to step 8.	Replace the fan motor which does not rotate.
8 CHECK OUTPUT SIGNAL FROM ECM. 1) Connect the delivery (test) mode connector. 2) Turn the ignition switch to ON. 3) Check the output waveform using oscilloscope. <Ref. to CO(H6DO)-8, RADIATOR FAN CONTROL OUTPUT WAVEFORM, Radiator Fan System.> Connector & terminal (B136) No. 18 (+) — Chassis ground (-):	Is a waveform output?	Replace the radiator fan control unit. <Ref. to CO(H6DO)-25, Radiator Fan Control Unit.>	Replace the ECM. <Ref. to FU(H6DO)-38, Engine Control Module (ECM).>

Engine Coolant

COOLING

3. Engine Coolant

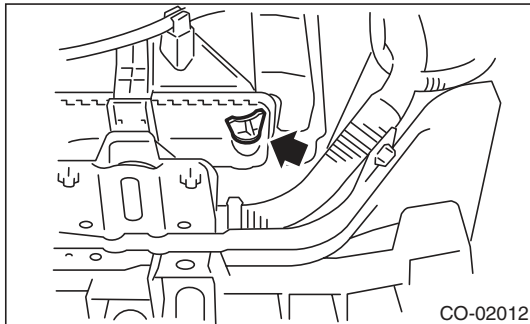
A: REPLACEMENT

1. DRAINING OF ENGINE COOLANT

- 1) Set the vehicle on a lift.
- 2) Lift up the vehicle.
- 3) Remove the under cover.
- 4) Remove the drain plug to drain engine coolant into container.

NOTE:

Remove the radiator cap so that engine coolant will drain faster.



- 5) Install the drain plug.
- 6) Install the under cover.

2. FILLING OF ENGINE COOLANT

- 1) Pour cooling system conditioner through the filler neck.

Cooling system protective agent:

Refer to "SPECIFICATION" for the cooling system protective agent. <Ref. to CO(H6DO)-2, SPECIFICATION, General Description.>

- 2) Pour engine coolant into the radiator up to the filler neck position.

Recommended engine coolant:

Refer to "SPECIFICATION" for the recommended engine coolant. <Ref. to CO(H6DO)-2, SPECIFICATION, General Description.>

Amount of engine coolant:

Refer to "SPECIFICATION" for the amount of engine coolant. <Ref. to CO(H6DO)-2, SPECIFICATION, General Description.>

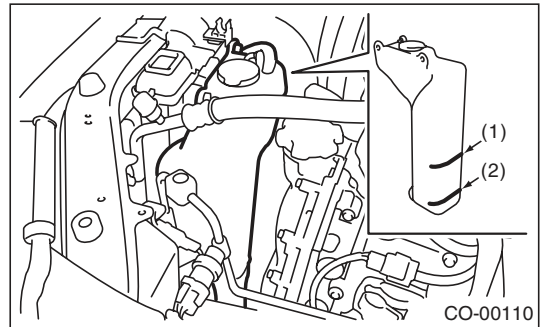
Engine coolant concentration:

Refer to "ADJUSTMENT" for the engine coolant concentration. <Ref. to CO(H6DO)-11, ADJUSTMENT, Engine Coolant.>

NOTE:

The SUBARU Super Coolant containing anti-freeze and anti-rust agents is especially made for SUBARU engine, which has an aluminum cylinder block. Always use SUBARU Super Coolant since other coolants may cause corrosion.

- 3) Fill engine coolant into the reservoir tank up to "FULL" level.



- (1) FULL
- (2) LOW

- 4) Close the radiator cap and start the engine. Race 5 to 6 times at 3,000 rpm or less, then stop the engine. (Complete this operation within 40 seconds.)
- 5) Wait for one minute after the engine stops, and open the radiator cap. If the engine coolant level drops, add engine coolant into radiator up to the filler neck position.
- 6) Perform the procedures 4) and 5) again.
- 7) Attach the radiator cap and reservoir tank cap properly.
- 8) Start the engine and operate the heater at maximum hot position and the blower speed setting to "LO".
- 9) Run the engine at 2,000 rpm or less until radiator fan starts and stops.

NOTE:

Be careful with the engine coolant temperature gauge to prevent overheating.

- 10) Stop the engine and wait until the engine coolant temperature lowers to 30°C (86°F) or less.
- 11) Open the radiator cap. If the engine coolant level drops, add engine coolant into radiator up to the filler neck position and reservoir tank to the "FULL" level.
- 12) Attach the radiator cap and reservoir tank cap properly.
- 13) Set the heater setting to maximum hot position and the blower speed setting to "LO" and start the engine. Perform racing at 3,000 rpm or less. If the flowing sound is heard from heater core, repeat the procedures from step 9).

B: ADJUSTMENT

1. PROCEDURE TO ADJUST THE SUBARU SUPER COOLANT CONCENTRATION

CAUTION:

Use the SUBARU Super Coolant with a 50 — 60% concentration in order to obtain maximum anti-freeze and anti-rust performance.

To adjust the concentration of SUBARU Super Coolant according to temperature, find the proper SUBARU Super Coolant concentration in the table, and add diluting water to the SUBARU Super Coolant (concentrated type) until it reaches the proper dilution.

Relationship of Subaru Super Coolant concentration and freezing temperature			
SUBARU Super Coolant concentration	50%	55%	60%
Freezing temperature	−36°C (−33°F)	−41°C (−42°F)	−50°C (−58°F)

Engine coolant and diluting water:

Refer to “SPECIFICATION” for the recommended engine coolant and diluting water. <Ref. to CO(H6DO)-2, SPECIFICATION, General Description.>

Water Pump

COOLING

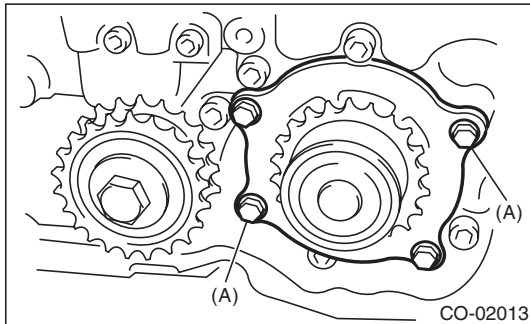
4. Water Pump

A: REMOVAL

- 1) Remove the radiator. <Ref. to CO(H6DO)-15, REMOVAL, Radiator.>
- 2) Remove the V-belts. <Ref. to ME(H6DO)-42, REMOVAL, V-belt.>
- 3) Remove the crank pulley. <Ref. to ME(H6DO)-43, REMOVAL, Crank Pulley.>
- 4) Remove the front chain cover. <Ref. to ME(H6DO)-44, REMOVAL, Front Chain Cover.>
- 5) Remove the timing chain assembly. <Ref. to ME(H6DO)-46, REMOVAL, Timing Chain Assembly.>
- 6) Remove the water pump.

NOTE:

When the water pump cannot be removed easily, screw-in the bolt (A) to the threaded end to remove water pump.



B: INSTALLATION

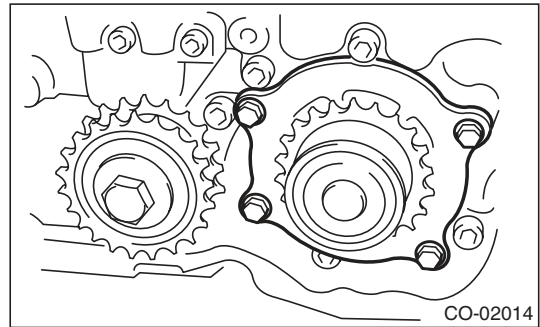
- 1) Install the water pump to rear chain cover.

NOTE:

- Use new O-rings.
- Apply engine coolant to O-ring.

Tightening torque

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



- 2) Install the timing chain assembly. <Ref. to ME(H6DO)-47, INSTALLATION, Timing Chain Assembly.>
- 3) Install the front chain cover. <Ref. to ME(H6DO)-44, INSTALLATION, Front Chain Cover.>
- 4) Install the crank pulley. <Ref. to ME(H6DO)-43, INSTALLATION, Crank Pulley.>
- 5) Install the V-belts. <Ref. to ME(H6DO)-42, INSTALLATION, V-belt.>
- 6) Install the radiator. <Ref. to CO(H6DO)-16, INSTALLATION, Radiator.>
- 7) Fill engine coolant. <Ref. to CO(H6DO)-10, FILLING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>

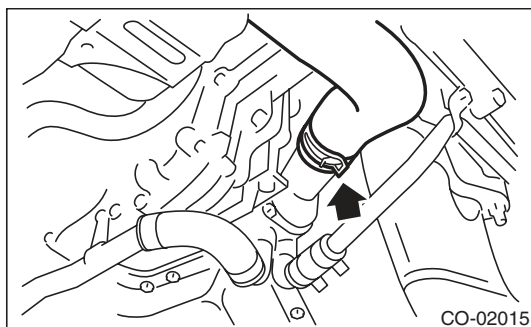
C: INSPECTION

- 1) Check the water pump bearing for smooth rotation.
- 2) Check the water pump sprocket for abnormalities.

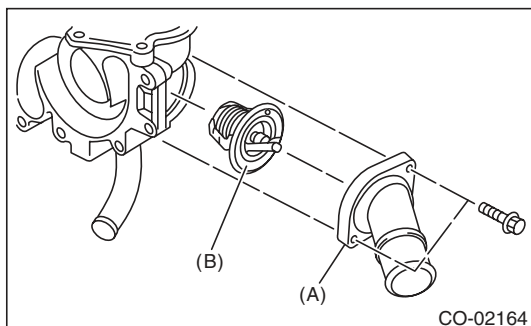
5. Thermostat

A: REMOVAL

- 1) Set the vehicle on a lift.
- 2) Lift up the vehicle.
- 3) Remove the under cover.
- 4) Drain engine coolant completely. <Ref. to CO(H6DO)-10, DRAINING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>
- 5) Disconnect the radiator outlet hose from thermostat cover.



- 6) Remove the thermostat cover, and then remove the thermostat.



- (A) Thermostat cover
(B) Thermostat

B: INSTALLATION

- 1) Install a gasket to thermostat.

NOTE:

Use a new gasket.

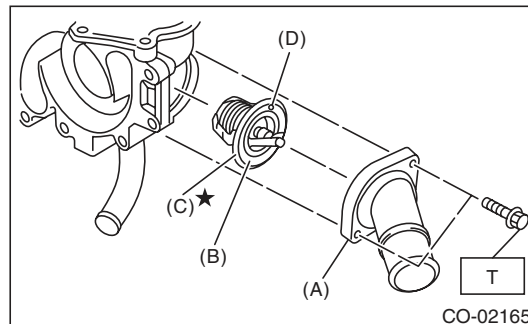
- 2) Install the thermostat and thermostat cover.

NOTE:

The jiggle pin must face upward when installing.

Tightening torque:

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



- (A) Thermostat cover
(B) Thermostat
(C) Gasket
(D) Jiggle pin

- 3) Connect the radiator outlet hose to thermostat cover.

- 4) Install the under cover.

- 5) Lower the vehicle.

- 6) Fill engine coolant. <Ref. to CO(H6DO)-10, FILLING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>

Thermostat

COOLING

C: INSPECTION

Replace the thermostat if the valve does not close completely at an ambient temperature or if the following test shows unsatisfactory results.

- Inspection method

Immerse the thermostat and a thermometer in water. Raise water temperature gradually, and measure the temperature and valve lift when the valve begins to open and when the valve is fully opened. During the test, agitate the water for even temperature distribution. The measured value should meet the specification.

NOTE:

- Leave the thermostat in the boiling water for five minutes or more before measuring the valve lift.
- Hold the thermostat with a wire or the like to avoid contacting with container bottom.

Starting temperature to open:

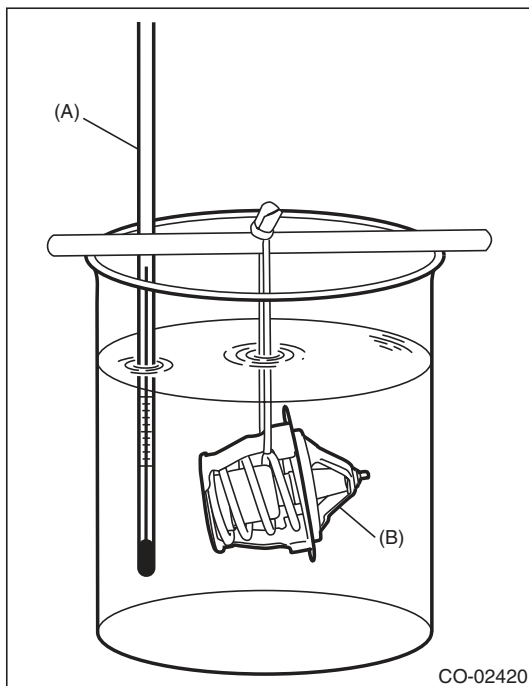
80 — 84°C (176 — 183°F)

Fully opens:

95°C (203°F)

Valve lift:

9.0 mm (0.354 in) or more



(A) Thermometer

(B) Thermostat

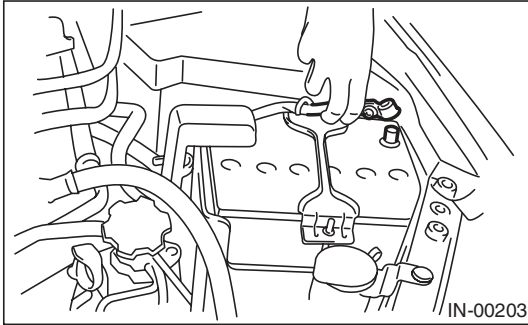
6. Radiator

A: REMOVAL

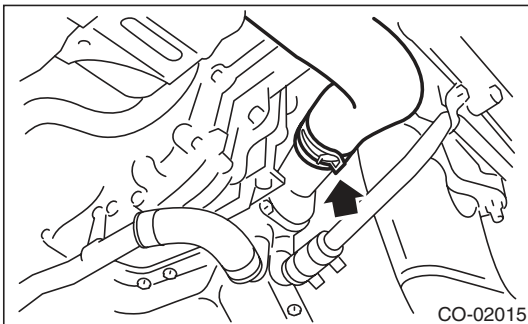
CAUTION:

The radiator is pressurized. Wait until engine cools down before working on the radiator.

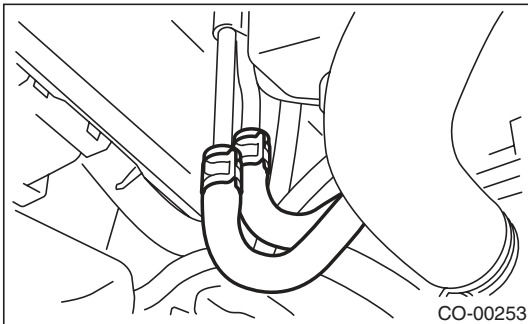
- 1) Set the vehicle on a lift.
- 2) Remove the collector cover.
- 3) Disconnect the ground cable from battery.



- 4) Lift up the vehicle.
- 5) Remove the under cover.
- 6) Drain engine coolant completely. <Ref. to CO(H6DO)-10, DRAINING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>
- 7) Disconnect the radiator outlet hose from radiator.

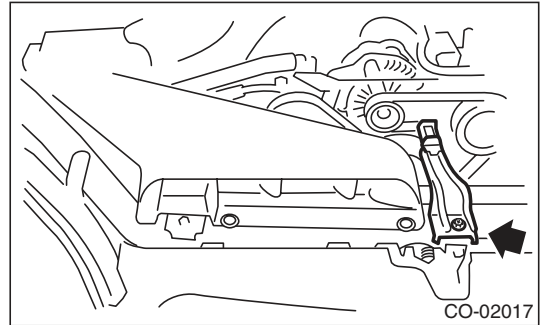


- 8) Disconnect the ATF hose from the radiator.

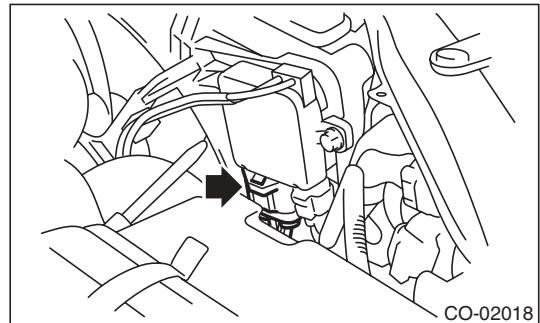


- 9) Lower the vehicle.

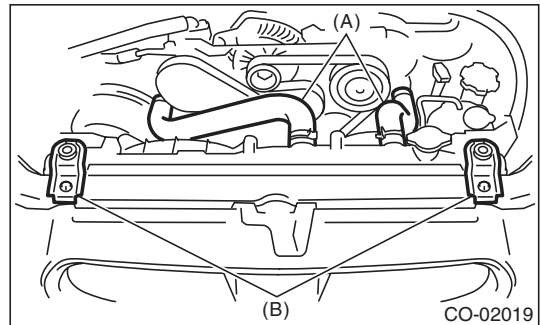
- 10) Remove the hood stay holder.



- 11) Remove the air intake duct. <Ref. to IN(H6DO)-8, REMOVAL, Air Intake Duct.>
- 12) Disconnect the connector from radiator fan control unit.



- 13) Remove the reservoir tank. <Ref. to CO(H6DO)-24, REMOVAL, Reservoir Tank.>
- 14) Disconnect the radiator inlet hose from radiator.
- 15) Remove the radiator upper brackets.



- (A) Radiator inlet hose
- (B) Radiator upper bracket

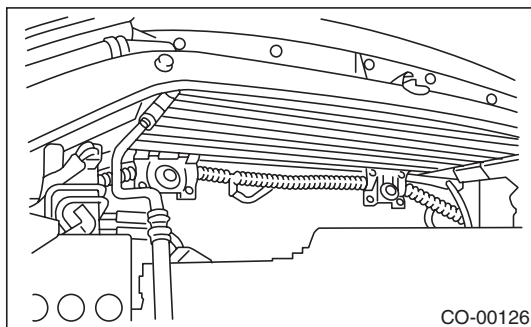
- 16) Lift the radiator up and away from vehicle.

Radiator

COOLING

B: INSTALLATION

- 1) Attach the radiator lower cushions to holes on the vehicle.



- 2) Install the radiator to vehicle.

NOTE:

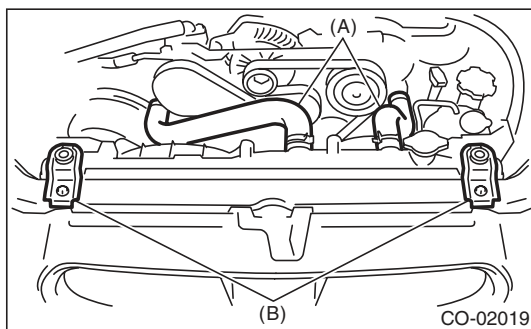
Make pins on the lower side of radiator be fitted into the radiator lower cushions on body side.

- 3) Install the radiator upper brackets and tighten the bolts.

Tightening torque:

12 N·m (1.2 kgf-m, 8.9 ft-lb)

- 4) Connect the radiator inlet hose.

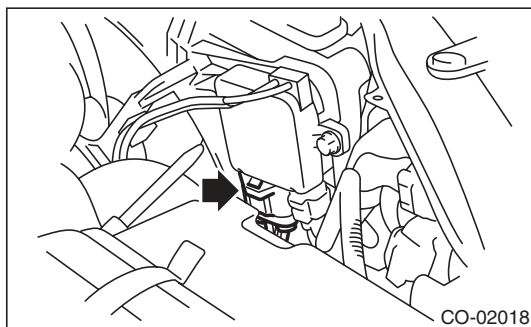


(A) Radiator inlet hose

(B) Radiator upper bracket

- 5) Install the reservoir tank. <Ref. to CO(H6DO)-24, INSTALLATION, Reservoir Tank.>

- 6) Connect the connector to the radiator fan control unit.

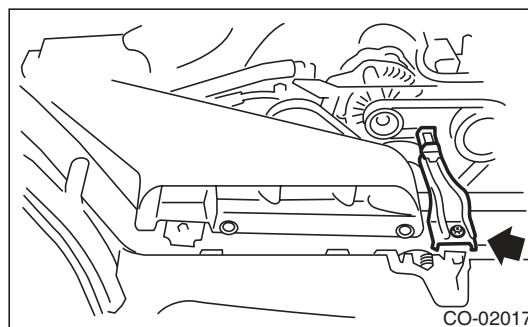


- 7) Install the air intake duct. <Ref. to IN(H6DO)-8, INSTALLATION, Air Intake Duct.>

- 8) Install the hood stay holder.

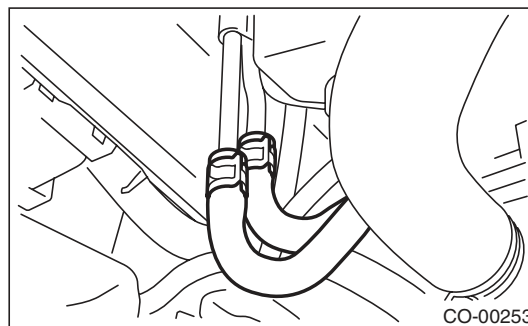
Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

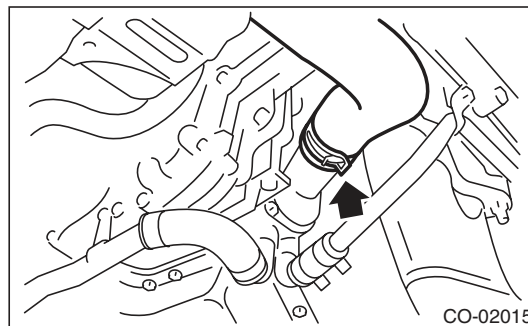


- 9) Lift up the vehicle.

- 10) Connect the ATF hoses.



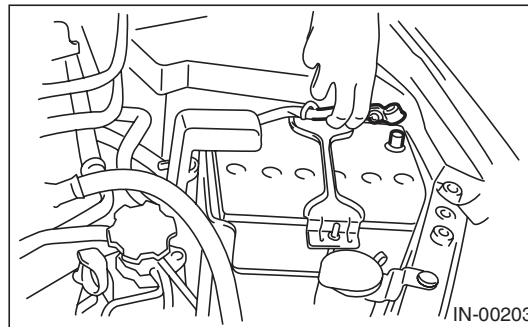
- 11) Connect the radiator outlet hose.



- 12) Install the under cover.

- 13) Lower the vehicle.

- 14) Connect the ground cable to battery.



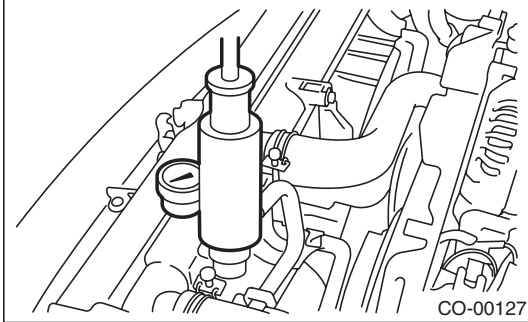
- 15) Fill engine coolant. <Ref. to CO(H6DO)-10, FILLING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>

16) Check the ATF level. <Ref. to 5AT-28, INSPECTION, Automatic Transmission Fluid.>

17) Install the collector cover.

C: INSPECTION

1) Remove the radiator cap, fill the radiator with engine coolant, and then install the tester to the installation position of cap.



2) Apply a pressure of 157 kPa (1.6 kgf/cm², 23 psi) to the radiator and check the following points:

- Leakage from the radiator or its vicinity
- Leakage from the hose or its connections

CAUTION:

- Engine should be turned off.
- Wipe engine coolant from check points in advance.
- Be careful of the spurt of engine coolant when removing the tester.
- Be careful not to deform the filler neck of radiator when installing and removing the tester.

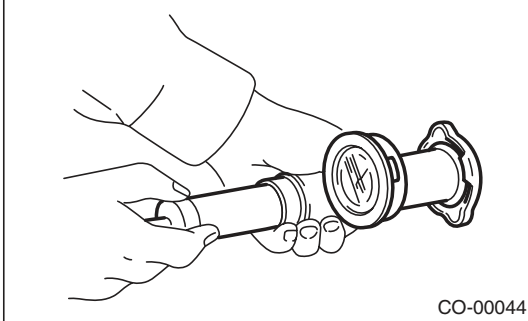
Radiator Cap

COOLING

7. Radiator Cap

A: INSPECTION

1) Attach the radiator cap to tester.



2) Increase pressure until the tester gauge pointer stops. Radiator cap is functioning properly if it holds the service limit pressure for five to six seconds. Replace the cap if it is opened under a pressure less than the service limit value.

Specification:

93 — 123 kPa

(0.95 — 1.25 kgf/cm², 14 — 18 psi)

Service limit:

83 kPa (0.85 kgf/cm², 12 psi)

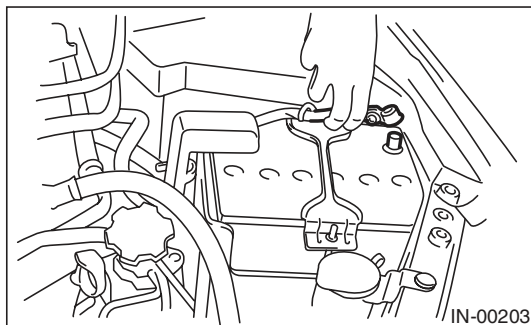
CAUTION:

Be sure to remove foreign matter and rust from the cap in advance. Otherwise, results of pressure test will be incorrect.

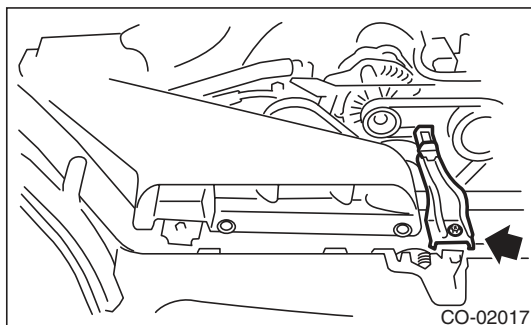
8. Radiator Main Fan and Fan Motor

A: REMOVAL

- 1) Set the vehicle on a lift.
- 2) Remove the collector cover.
- 3) Disconnect the ground cable from battery.

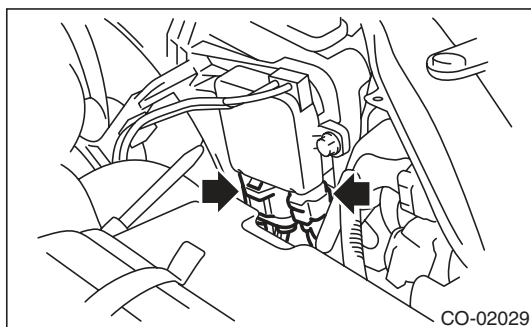


- 4) Remove the hood stay holder.



- 5) Remove the air intake duct. <Ref. to IN(H6DO)-8, REMOVAL, Air Intake Duct.>

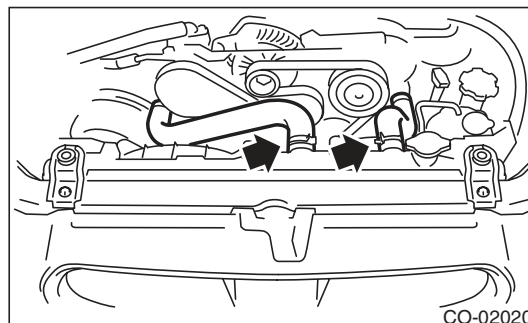
- 6) Disconnect the connector from radiator fan control unit.



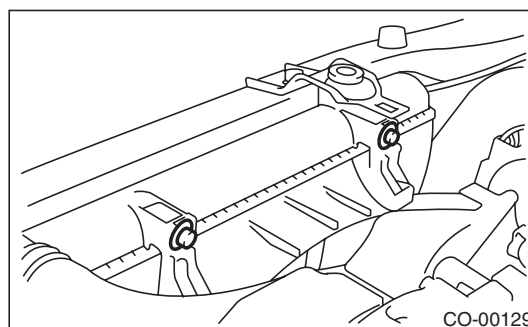
- 7) Lift up the vehicle.
- 8) Remove the under cover.
- 9) Drain engine coolant completely. <Ref. to CO(H6DO)-10, DRAINING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>
- 10) Remove the ATF hose from the clip of the radiator main fan shroud.
- 11) Remove the radiator main fan motor harness from the clip.
- 12) Lower the vehicle.

- 13) Remove the reservoir tank. <Ref. to CO(H6DO)-24, REMOVAL, Reservoir Tank.>

- 14) Disconnect the radiator inlet hose from radiator.



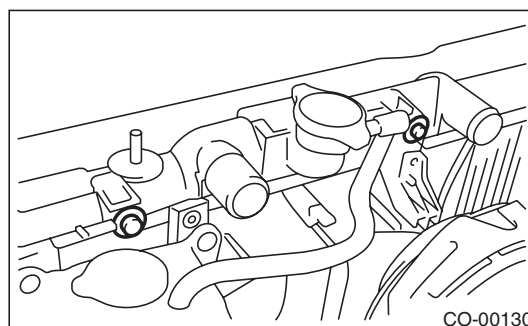
- 15) Remove the radiator sub fan motor assembly.



- 16) Remove the radiator main fan motor assembly.

NOTE:

When removing the main fan assembly with lifting it up, the main fan shroud contacts to inlet part of engine coolant. To avoid contacting it, move the main fan assembly to sub fan assembly side before removal.



Radiator Main Fan and Fan Motor

COOLING

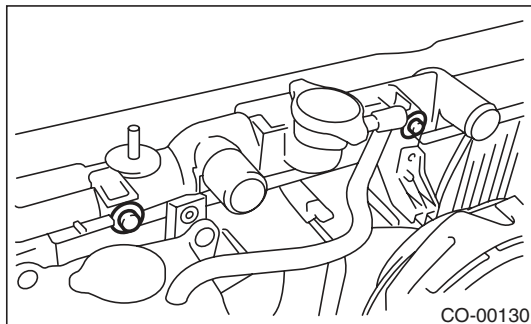
B: INSTALLATION

Install in the reverse order of removal.

- Radiator main fan assembly

Tightening torque:

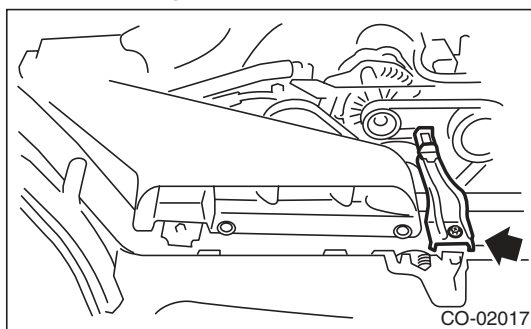
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)



- Hood stay holder

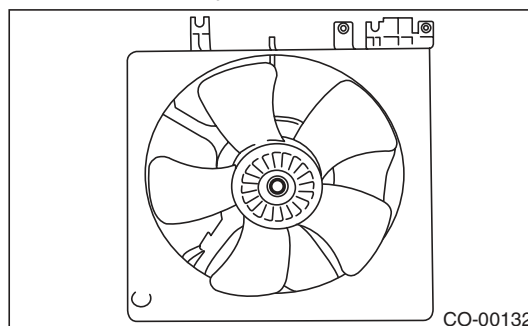
Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

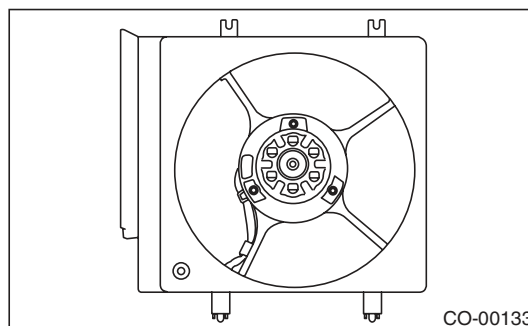


C: DISASSEMBLY

1) Remove the nut which holds fan to fan motor and shroud assembly.



2) Remove the clip which holds the fan motor onto the shroud.

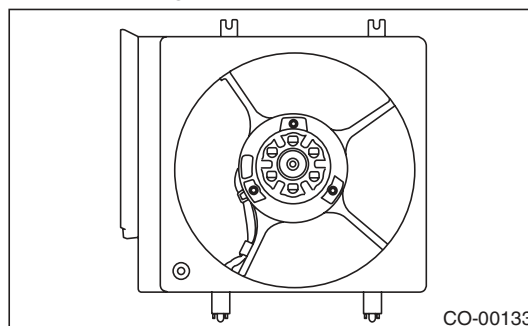


D: ASSEMBLY

Assemble in the reverse order of disassembly.

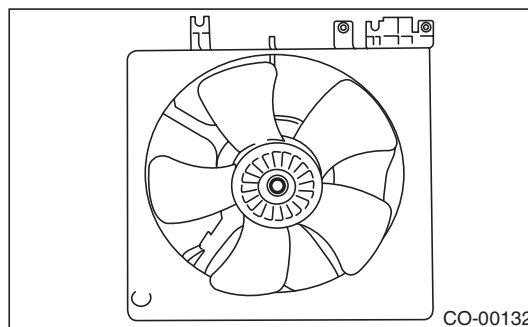
Tightening torque:

3.8 N·m (0.4 kgf-m, 2.8 ft-lb)



Tightening torque:

6.2 N·m (0.6 kgf-m, 4.6 ft-lb)

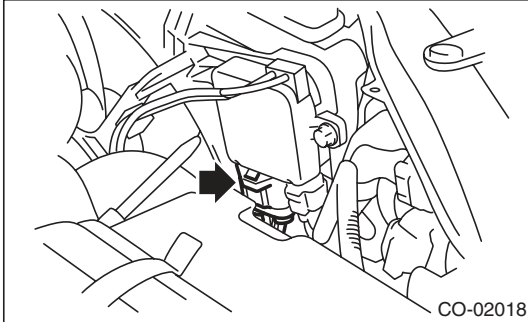


E: INSPECTION

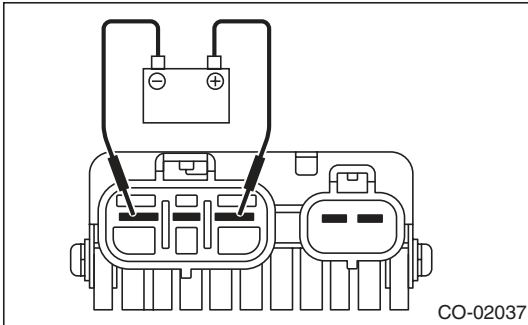
1) Disconnect the connector from radiator fan control unit.

NOTE:

Do not remove the main fan motor harness connector.



2) Connect the battery to radiator fan control unit as shown in the figure.



3) Check the fan motor for operations. If it does not operate, check the fan motor.

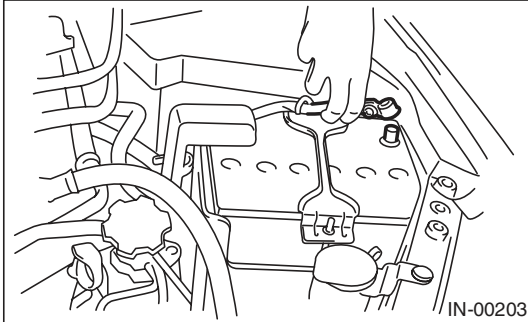
Radiator Sub Fan and Fan Motor

COOLING

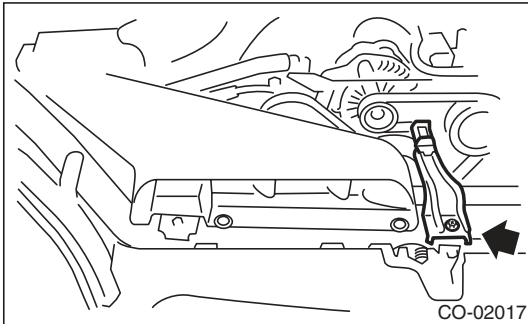
9. Radiator Sub Fan and Fan Motor

A: REMOVAL

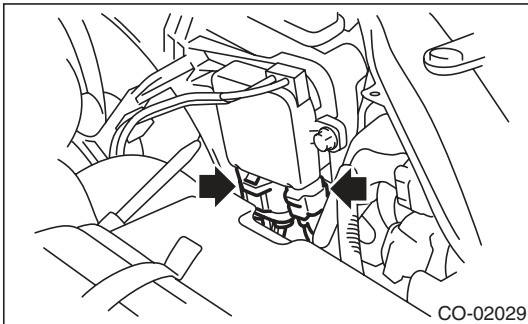
- 1) Set the vehicle on a lift.
- 2) Remove the collector cover.
- 3) Disconnect the ground cable from battery.



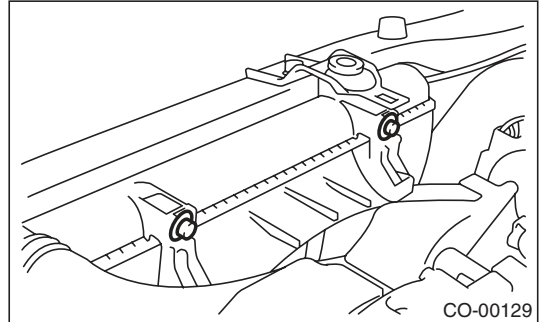
- 4) Remove the hood stay holder.



- 5) Remove the air intake duct. <Ref. to IN(H6DO)-8, REMOVAL, Air Intake Duct.>
- 6) Disconnect the connector from radiator fan control unit.



- 7) Remove the bolts which hold the sub fan shroud to the radiator.



- 8) Lift up the vehicle.
- 9) Remove the under cover.
- 10) Remove the radiator sub fan shroud through the under side of vehicle.

B: INSTALLATION

Install in the reverse order of removal.

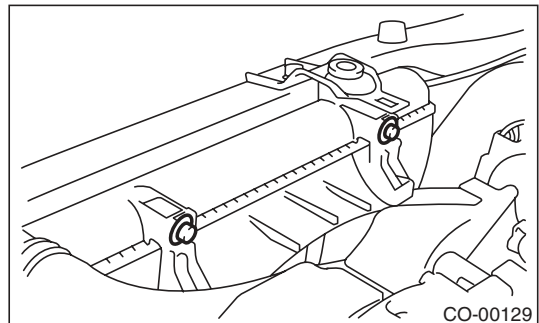
CAUTION:

Check if the radiator hose and the over flow hose are properly connected.

- Radiator sub fan shroud assembly

Tightening torque:

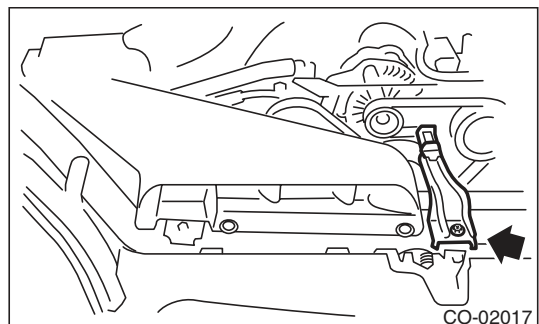
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)



- Hood stay holder

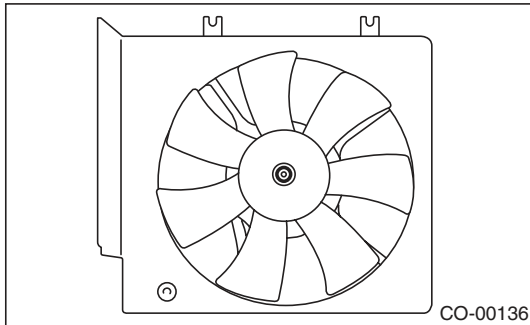
Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

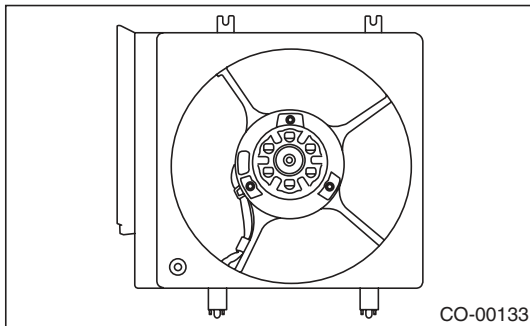


C: DISASSEMBLY

- 1) Remove the nut which holds fan to fan motor and shroud assembly.



- 2) Remove the clip which holds the fan motor onto the shroud.



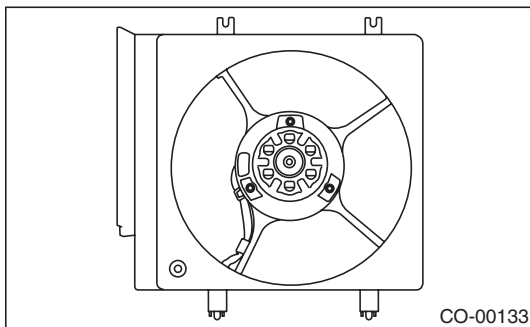
- 3) Remove the bolts which hold the radiator fan control unit to the shroud.

D: ASSEMBLY

Assemble in the reverse order of disassembly.

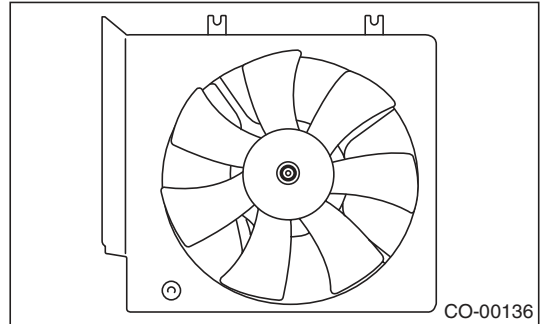
Radiator fan control unit bolt tightening torque:
5.4 N·m (0.6 kgf-m, 4.0 ft-lb)

Tightening torque:
3.8 N·m (0.4 kgf-m, 2.8 ft-lb)



Tightening torque:

6.2 N·m (0.6 kgf-m, 4.6 ft-lb)

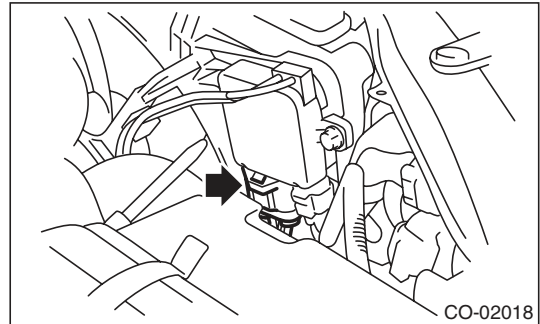


E: INSPECTION

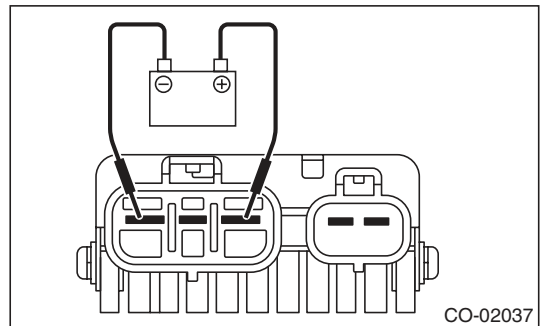
- 1) Disconnect the connector from radiator fan control unit.

NOTE:

Do not remove the main fan motor harness connector.



- 2) Connect the battery to radiator fan control unit as shown in the figure.



- 3) Check the fan motor for operations. If it does not operate, check the fan motor.

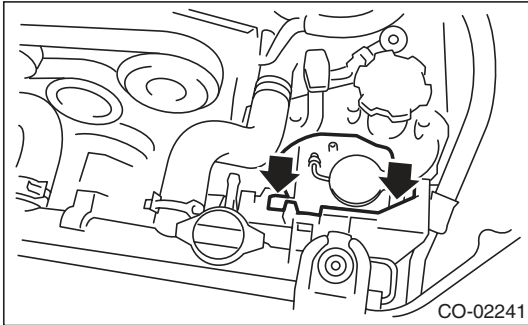
Reservoir Tank

COOLING

10. Reservoir Tank

A: REMOVAL

- 1) Disconnect the over flow hose.
- 2) Remove the bolts which hold the reservoir tank to the fan shroud, then remove the reservoir tank.



B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

C: INSPECTION

Make sure the engine coolant level is between "FULL" and "LOW".

11. Radiator Fan Control Unit

A: SPECIFICATION

Radiator fan control unit forms a unit with radiator sub fan motor. Refer to “Radiator Sub Fan and Fan Motor” for removal and installation procedures. <Ref. to CO(H6DO)-22, REMOVAL, Radiator Sub Fan and Fan Motor.> <Ref. to CO(H6DO)-22, INSTALLATION, Radiator Sub Fan and Fan Motor.> <Ref. to CO(H6DO)-23, DISASSEMBLY, Radiator Sub Fan and Fan Motor.> <Ref. to CO(H6DO)-23, ASSEMBLY, Radiator Sub Fan and Fan Motor.>

Engine Cooling System Trouble in General

COOLING

12.Engine Cooling System Trouble in General

A: INSPECTION

Trouble	Possible cause	Corrective action
Overheating	a. Insufficient engine coolant	Replenish engine coolant, inspect for leakage, and repair it if necessary.
	b. Defective thermostat	Replace.
	c. Malfunction of water pump	Replace.
	d. Clogged engine coolant passage	Clean.
	e. Improper ignition timing	Inspect and repair ignition control system. <Ref. to EN(H6DO)(diag)-2, PROCEDURE, Basic Diagnostic Procedure.>
	f. Clogged or leaking radiator	Clean, repair or replace.
	g. Improper engine oil in engine coolant	Replace engine coolant. If ineffective, check, repair or replace engine components.
	h. Air/fuel mixture ratio too lean	Inspect and repair the fuel injection system. <Ref. to EN(H6DO)(diag)-2, PROCEDURE, Basic Diagnostic Procedure.>
	i. Excessive back pressure in exhaust system	Clean or replace.
	j. Insufficient clearance between piston and cylinder	Adjust or replace.
	k. Dragging brake	Adjust.
	l. Defective radiator fan	Inspect the radiator fan relay, engine coolant temperature sensor or fan motor and replace them.
Over-cooling	a. Ambient temperature extremely low	Partly cover radiator front area.
	b. Defective thermostat	Replace.
Engine coolant leaks	a. Loosened or damaged connecting units on hoses	Repair or replace.
	b. Leakage from water pump	Replace.
	c. Leakage from water pipe	Repair or replace.
	d. Leakage around cylinder head gasket	Retighten cylinder head bolts or replace gasket.
	e. Damaged or cracked cylinder head and cylinder block	Repair or replace.
	f. Damaged or cracked thermostat cover	Repair or replace.
	g. Leakage from radiator	Repair or replace.
Noise	a. Defective radiator fan	Replace.
	b. Defective water pump bearing	Replace water pump.
	c. Mechanical water pump malfunction	Replace water pump.