GENERAL INFORMATION SECTION

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This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.
This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.
Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

7. GREASE

Use grease and supplementary lubricants shown in the table below.

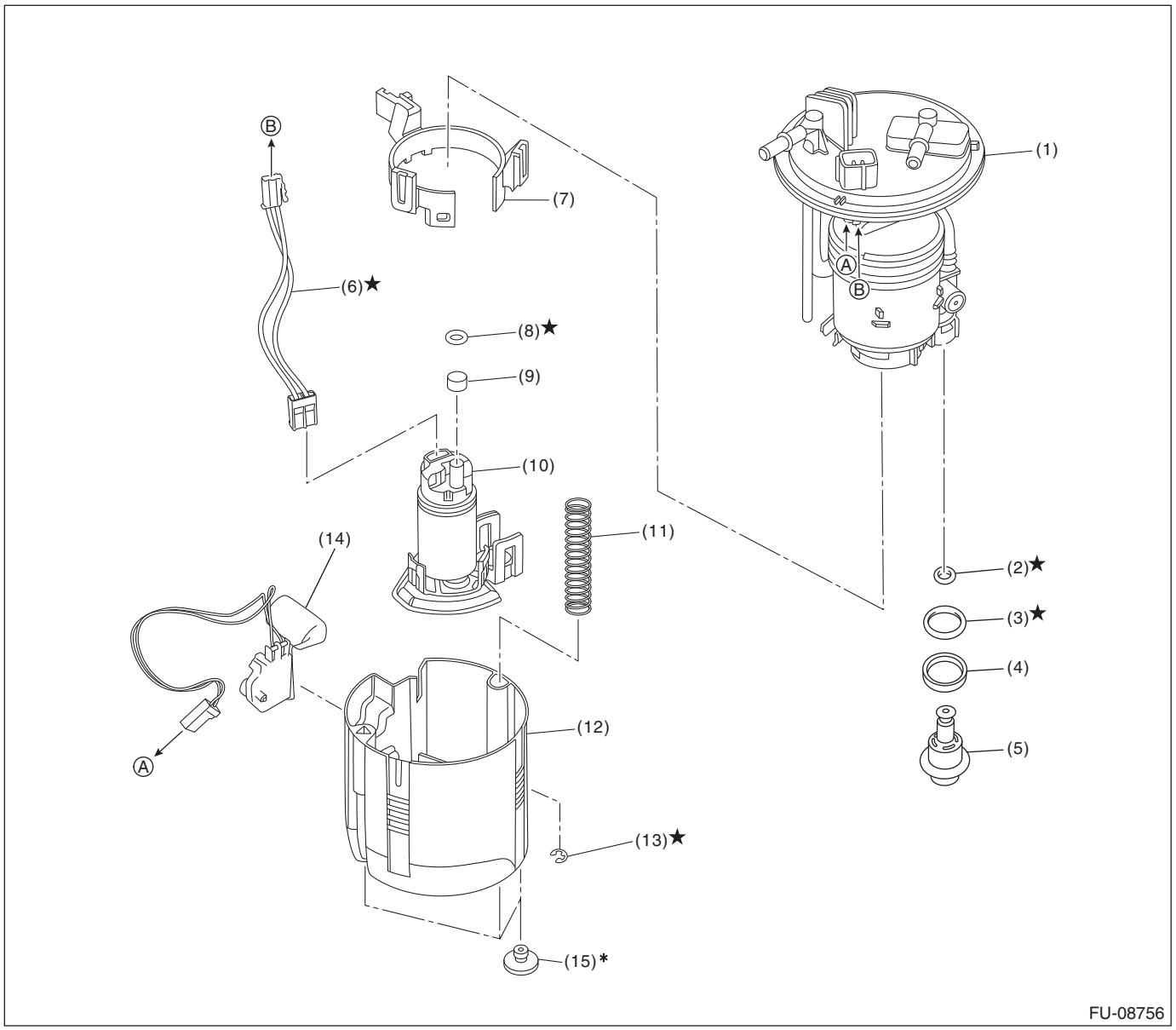
Item	Application point		Application point	Recommended materials (Item number)	Alternative
Supplementary lubricants	Exhaust		Oxygen sensor	Spray type lubricant (004301003)	—
Grease	Brake		Brake pedal	NIGTIGHT LYW No. 2 grease	—
	CVT		Select lever	Multemp D No. 2	—
	Door		Door latch	SILICONE GREASE G-30M (004404002)	—
			Door striker		
	Steering		Steering gearbox (rack and pinion)	Molywhite LS-G	—
			Steering gearbox (boot and tie-rod installation parts)	One-Luber 2128	—
	Brake	Front 16-inch	Disc brake (lock pin, guide pin)	NIGLUBE RM	—
		Front 17-inch		NIGLUBE RX-2 (000041000)	—
		Front 16-inch	Between brake pad and shim	Molykote M77	—
		Front 16-inch	Brake pad clip	Molykote G-5029	—
		Front 17-inch		Molykote M7439 (K0770YA000)	—
	Drive shaft		Front axle PTJ	NKG302	—
			Front axle EBJ	NKG814	—
			Rear axle BJ		
			Rear axle EBJ		
			Rear axle DOJ		

8. ADHESIVE

Use the adhesives shown in the table below, or an alternative.

Item	Application point	Application point	Recommended materials	Alternative
Adhesive	Glass and body	Windshield glass, rear window glass, rear quarter glass, rear gate glass and body	Dow Automotive's adhesive: ESSEX U-400HV or the equivalent	—
Glass primer	Glass	Windshield glass, rear window glass, rear quarter glass, rear gate glass	Glass primer: U-401 and U-402	—
Painted surface primer	Body	Body (glass adhesive surface)	Painted surface primer: U-413	—

8. FUEL PUMP



(1)	Fuel filter ASSY	(6)	Connector cable	(11)	Spring
(2)	O-ring	(7)	Fuel pump holder	(12)	Fuel chamber ASSY
(3)	O-ring	(8)	O-ring	(13)	Clip
(4)	Back-up ring	(9)	Spacer	(14)	Fuel level sensor
(5)	Pressure regulator	(10)	Fuel pump	(15)	Cushion

* When removing the cushion from the fuel chamber assembly, replace it with a new part.

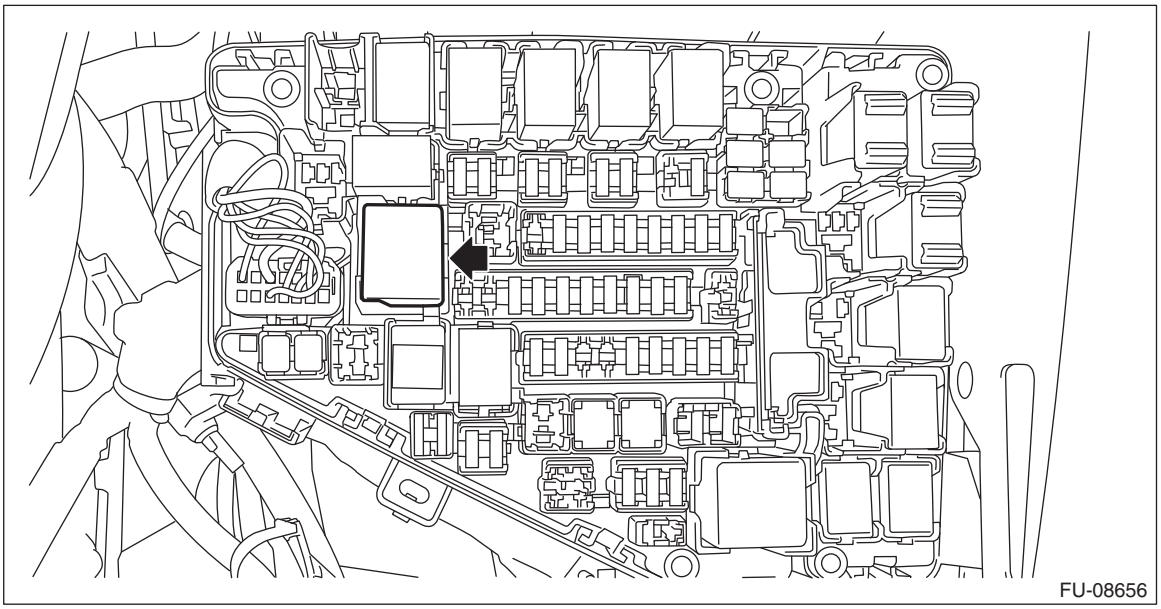
C: CAUTION

- Prior to starting work, pay special attention to the following:
  1. Always wear work clothes, a work cap, and protective shoes. Additionally, wear a helmet, protective goggles, etc. if necessary.
  2. Protect the vehicle using a seat cover, fender cover, etc.
  3. Prepare the service tools, clean cloth, containers to catch grease and oil, etc.
- Place “NO OPEN FLAMES” signs near the working area.

21.Main Relay

A: REMOVAL

1) Disconnect the ground terminal from battery sensor. <Ref. to RC-3, BATTERY, NOTE, Repair Contents.>
2) Remove the main relay from main fuse box.

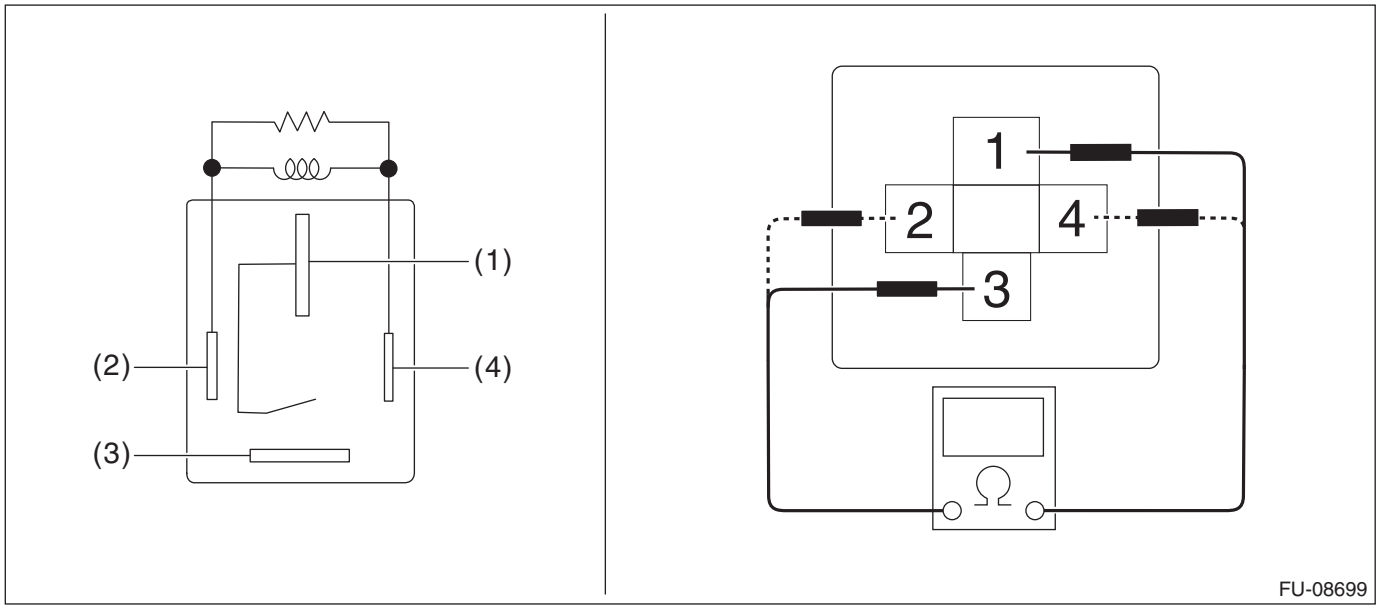


B: INSTALLATION

1) Install the main relay to the main fuse box.
2) Connect the ground terminal to battery sensor. <Ref. to RC-3, BATTERY, NOTE, Repair Contents.>

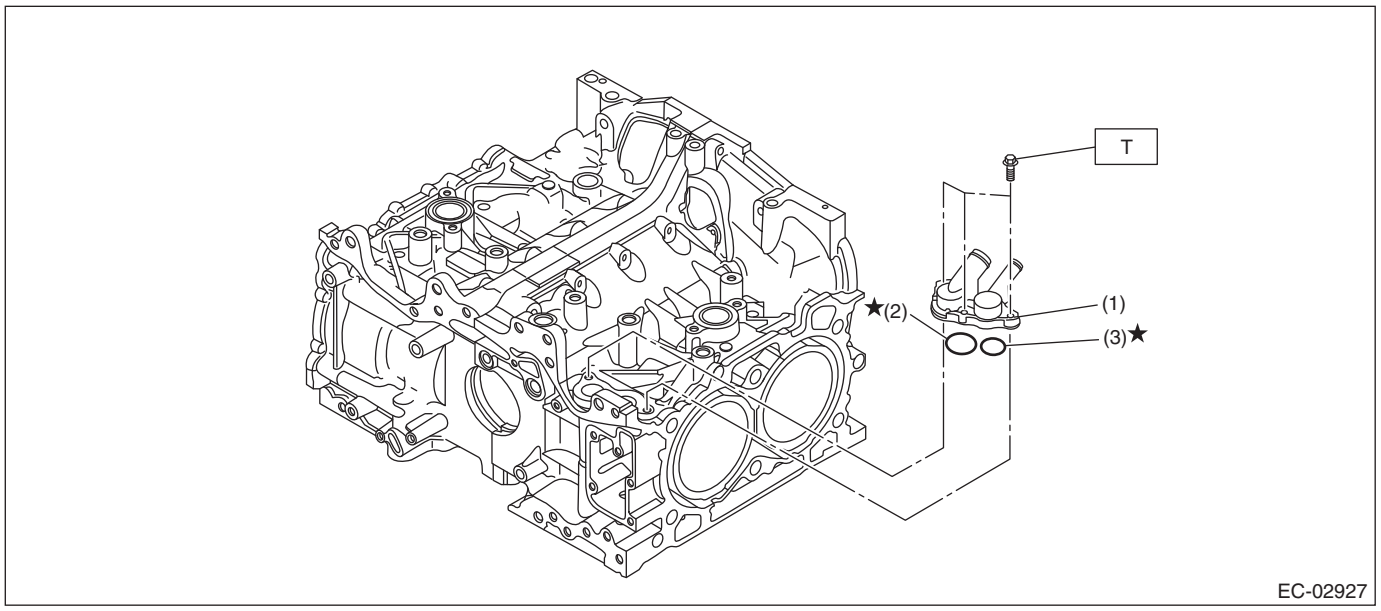
C: INSPECTION

1) Check that the main relay has no deformation, cracks or other damages.
2) Measure the resistance between main relay terminals.



Terminal No.	Standard
1 and 3	1 MΩ or more
2 and 4	80.55 — 98.45 Ω (when 20°C (68°F))

3. PCV SYSTEM 1



(1) PCV connector
(2) O-ring
(3) O-ring

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

MECHANICAL

ME(H4DO)

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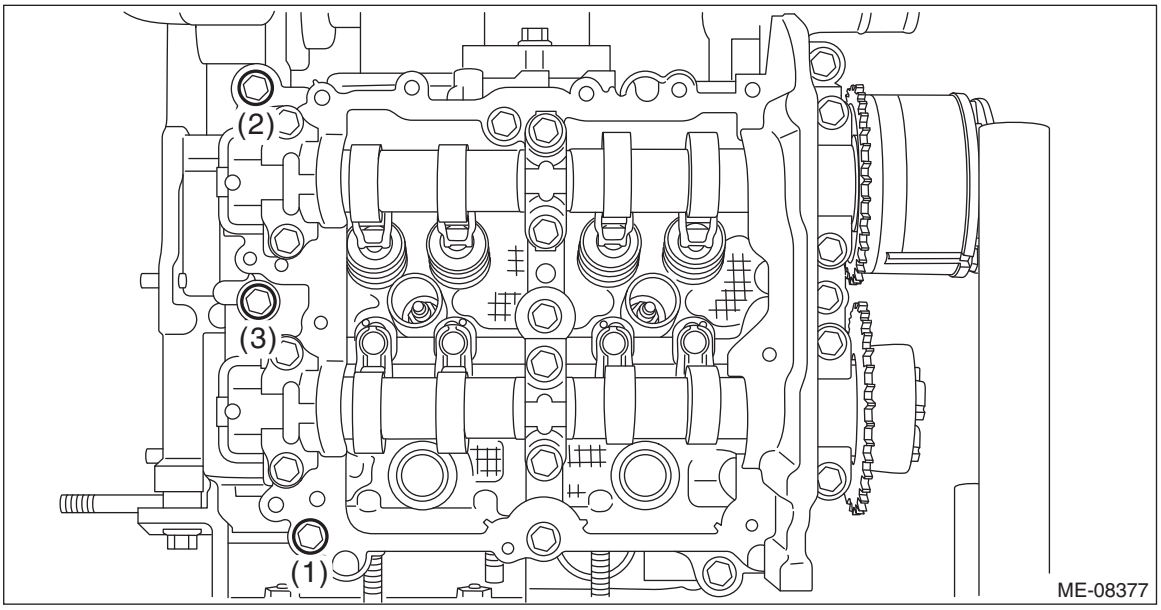
13.Crank Pulley

A: REMOVAL

NOTE:
When replacing a single part, perform the work with the engine assembly installed to body.
1) When working on the vehicle

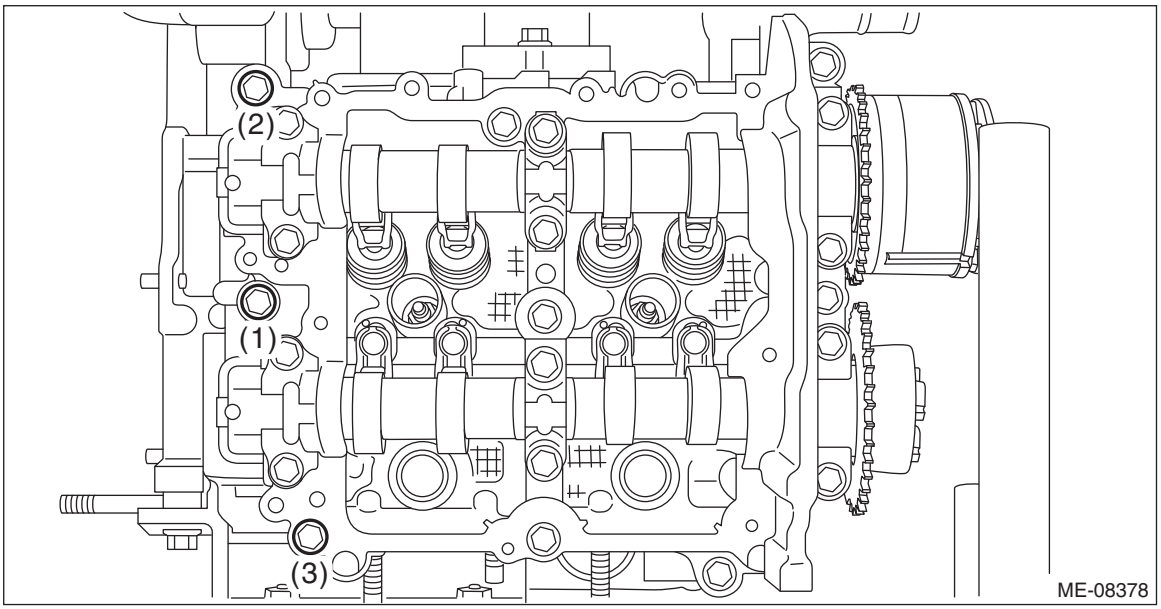
NOTE:
When working on the vehicle, perform the following steps also.
(1) Remove the air intake duct. <Ref. to IN(H4DO)-12, REMOVAL, Air Intake Duct.>
2) Remove the V-belts. <Ref. to ME(H4DO)-70, V-BELT, REMOVAL, V-belt.>
3) Use the ST to lock the crank pulley, and remove the crank pulley bolt.

(6) Loosen the bolts (3 places) by 180° in numerical order as shown in the figure.



(7) Tighten the bolts (3 places) with a torque of 18 N·m (1.8 kgf-m, 13.3 ft-lb) in numerical order as shown in the figure.

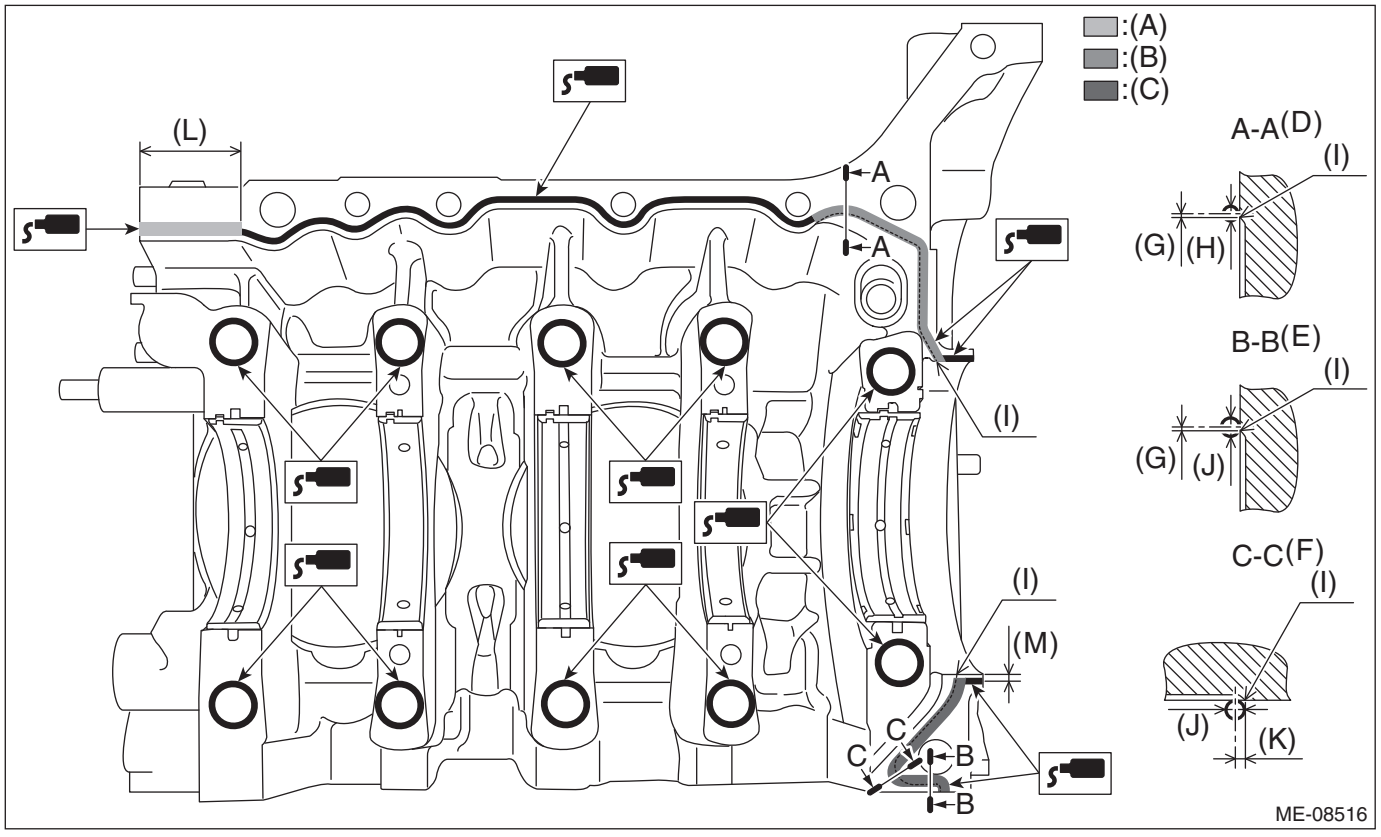
NOTE:
After tightening, if the liquid gasket is squeezed out onto the seal surface of the chain cover, completely remove any squeezed-out liquid gasket.



6) Set the part so that the intake manifold is on the upper side.
7) Install the cam sprocket RH. <Ref. to ME(H4DO)-119, CAM SPROCKET RH, INSTALLATION, Cam Sprocket.>

NOTE:
This procedure is required only when the cam carrier RH is removed for disassembly.
8) Check the cam clearance. <Ref. to ME(H4DO)-38, WHEN TIMING CHAIN ASSEMBLY IS REMOVED, INSPECTION, Cam Clearance.>

Liquid gasket applying diameter:
Mating surfaces other than ranges A, B and C
1±0.5 mm (0.0394±0.0197 in)
Mating surfaces of ranges A and C
4±0.5 mm (0.1575±0.0197 in)
Mating surfaces of range B
3.2±0.5 mm (0.1260±0.0197 in)

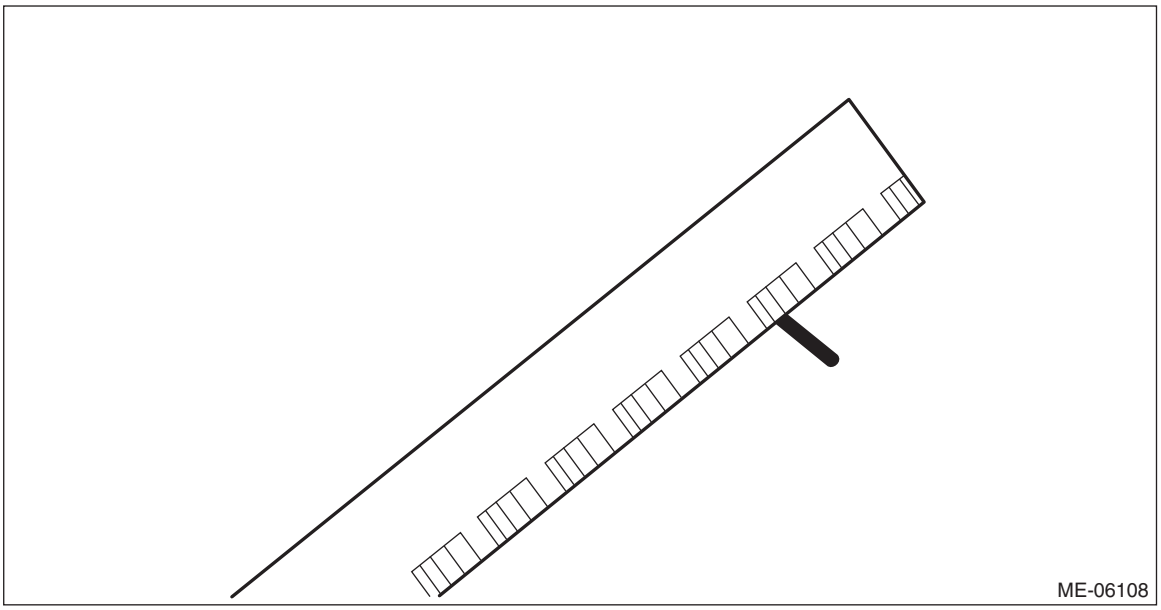


(A)	Range A	(F)	Liquid gasket applying position of mating surfaces (the edge) of range C	(K)	2 mm (0.0787 in)
(B)	Range B	(G)	1 mm (0.0394 in) or less	(L)	36 mm (1.4173 in)
(C)	Range C	(H)	ϕ3.2±0.5 mm (0.1260±0.0197 in)	(M)	2.5 mm (0.0984 in)
(D)	Liquid gasket applying position of mating surfaces of range B	(I)	Chamfer edge		
(E)	Liquid gasket applying position of mating surfaces (other than the edge) of range C	(J)	ϕ4±0.5 mm (0.1575±0.0197 in)		

5) Install the cylinder block RH to the cylinder block LH.
6) Join the cylinder blocks.
(1) Apply a coat of engine oil to the washers and cylinder block mounting bolt threads.

NOTE:
To prevent mixture of engine oil into the water jacket, do not apply a large amount.
(2) Install the cylinder head bolt at the locations shown in the figure.

Crankshaft oil clearance:
Standard
0.013 — 0.031 mm (0.0005 — 0.0012 in)



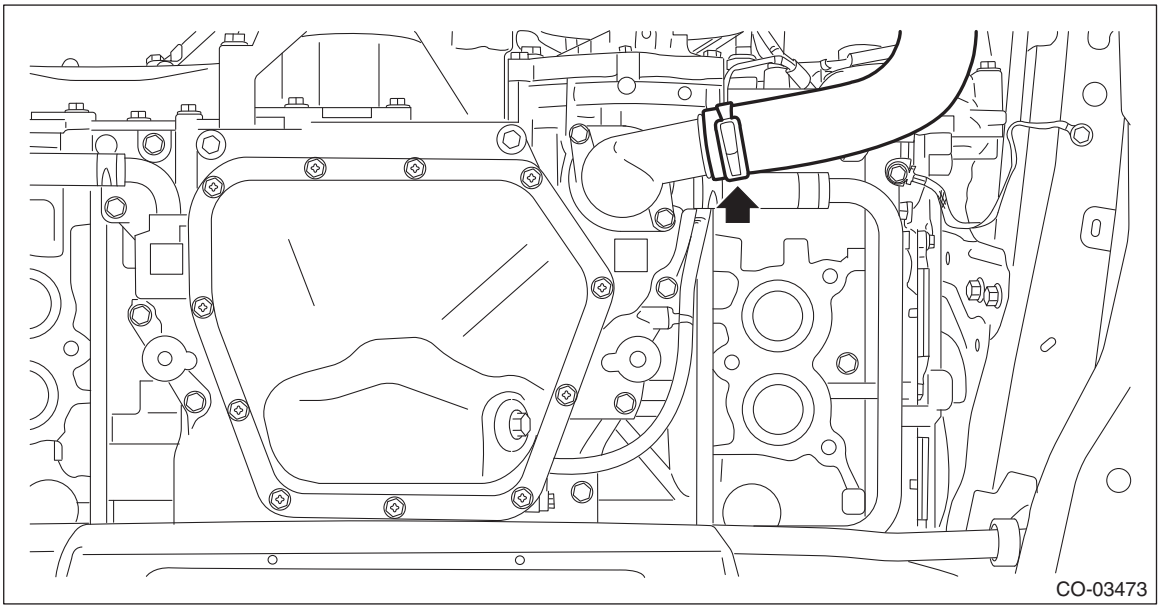
(20) Completely remove the plastigauge.

7. Radiator

A: REMOVAL

CAUTION:
The radiator is pressurized when the engine and radiator are hot. Wait until engine and radiator cool down before working on the radiator.

1) Disconnect the ground terminal from battery sensor. <Ref. to RC-3, BATTERY, NOTE, Repair Contents.>
2) Drain engine coolant. <Ref. to CO(H4DO)-15, DRAINING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>
3) Remove the front exhaust pipe. <Ref. to EX(H4DO)-6, REMOVAL, Front Exhaust Pipe.>
4) Disconnect the radiator outlet hose from thermostat cover.



5) Lower the vehicle.
6) Remove the air intake duct. <Ref. to IN(H4DO)-12, REMOVAL, Air Intake Duct.>
7) Remove the front bumper. <Ref. to EI-32, REMOVAL, Front Bumper.>
8) Remove the active grille shutter. <Ref. to CO(H4DO)-64, REMOVAL, Active Grille Shutter.>
9) Remove the grille bracket.

STARTING/CHARGING SYSTEMS

SC(H4DO)

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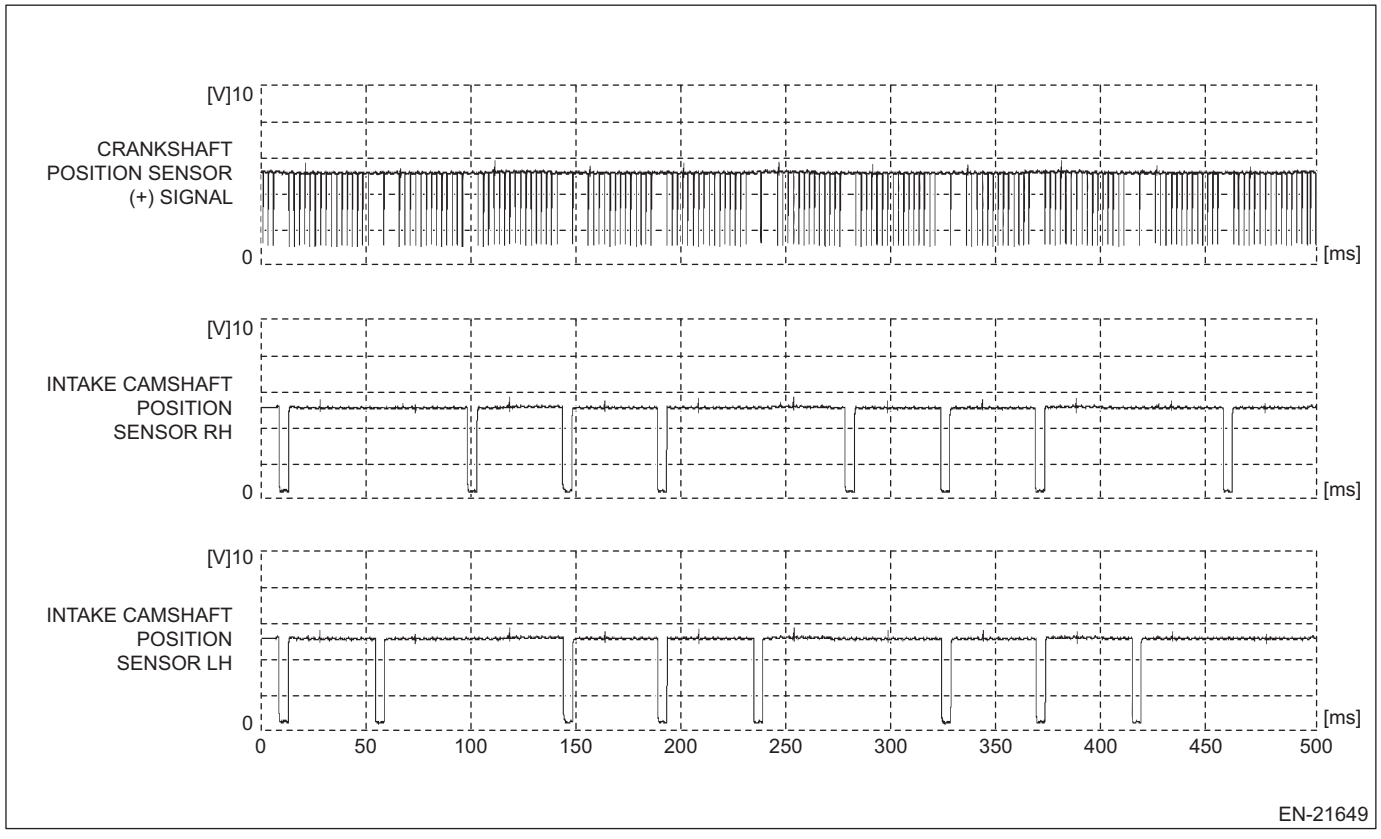
Description		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON After warm-up (at engine OFF)	Engine ON After warm-up (at idle)	
Ground	Body	B134	53	0	0	—
	Sensor	B134	32	0	0	—
		E158	34	0	0	—
	Engine 1	E158	65	0	0	—
	Engine 2	E158	64	0	0	—
	Engine 3	E158	63	0	0	—
	Engine 4	E158	62	0	0	—
	Engine 5	E158	61	0	0	—

NOTE:
- After engine is warmed up, attach the check board for measurement.
- Set the select lever in “P” range or “N” range, or the shift lever in neutral.
- Turn the A/C to OFF.
- Turn all the accessory switches to OFF.
- Waveforms vary depending on a measurement environment and vehicle condition.

1. Waveform 1



Measured terminal	Crankshaft position sensor (+) signal (E158) No. 40 (+) — Engine ground 3 (E158) No. 63 (–):
	Intake camshaft position sensor RH (E158) No. 54 (+) — Engine ground 3 (E158) No. 63 (–):
	Intake camshaft position sensor LH (E158) No. 41 (+) — Engine ground 3 (E158) No. 63 (–):
Measuring condition	While engine idling

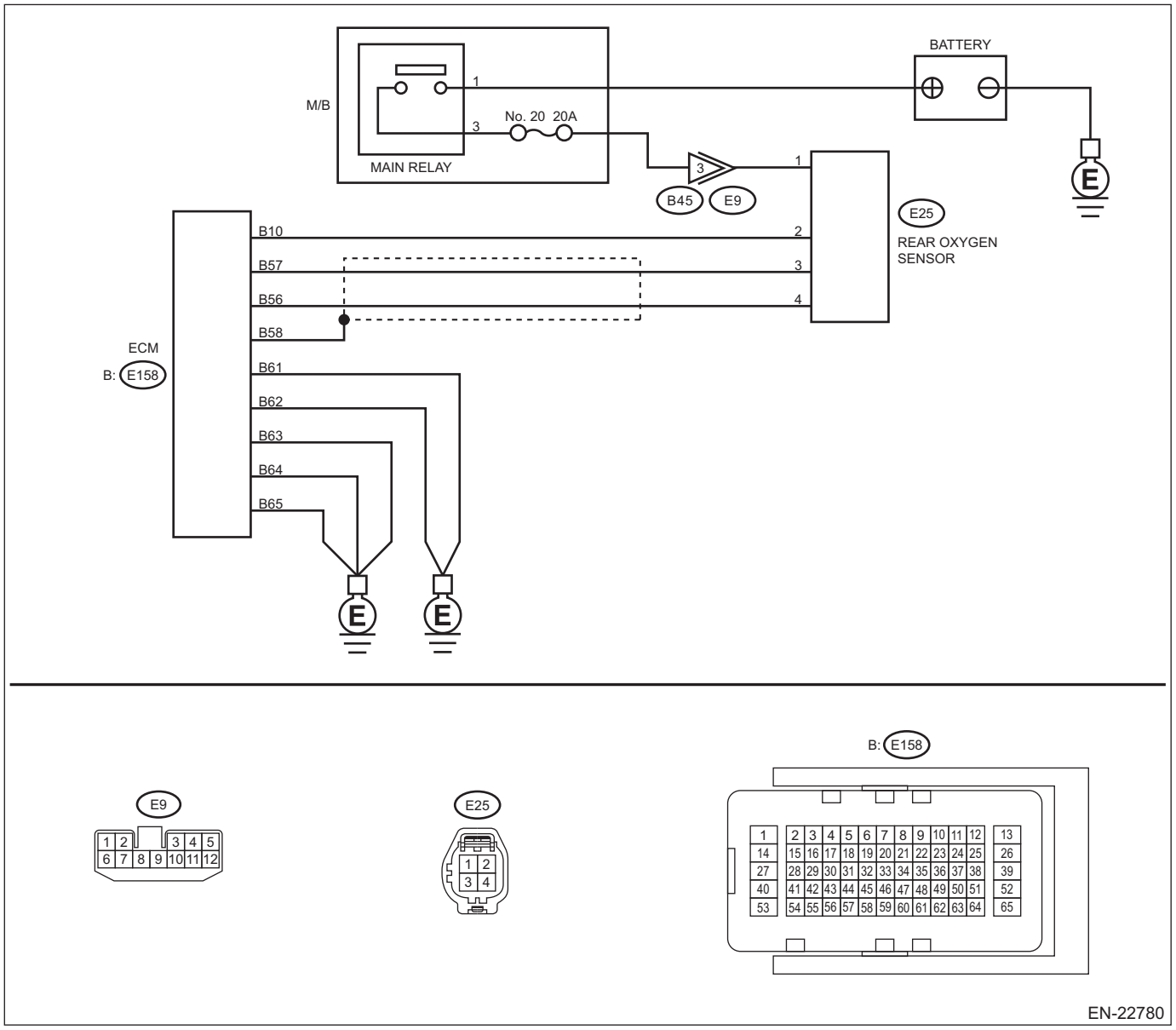
	Step	Check	Yes	No
9	**CHECK VOLTAGE OF F/B (STARTER RELAY) CONNECTOR.** 1) Turn the ignition switch to START. 2) Measure the voltage between F/B (starter relay) connector and chassis ground. ***Connector & terminal*** ***(B159) No. 4 (+) — Chassis ground (–):*** NOTE: Place the select lever in "P" range or "N" range.	Is the voltage 10 V or more?	Go to step **10**.	Replace the F/B.
10	**CHECK HARNESS BETWEEN ECM AND STARTER RELAY CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and F/B (starter relay) connector. ***Connector & terminal*** ***(B134) No. 62 — (B158) No. 2:***	Is the resistance less than 1 Ω?	Go to step **11**.	Repair the open circuit of harness between ECM connector and starter relay connector.
11	**CHECK HARNESS BETWEEN STARTER RELAY AND INHIBITOR SWITCH CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from inhibitor switch. 3) Measure the resistance of harness between F/B (starter relay) connector and inhibitor switch connector. ***Connector & terminal*** ***(B159) No. 4 — (T7) No. 6:***	Is the resistance less than 1 Ω?	Go to step **12**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between F/B (starter relay) connector and inhibitor switch connector • Poor contact of coupling connector
12	**CHECK HARNESS BETWEEN INHIBITOR SWITCH AND STARTER MOTOR.** Measure the resistance of harness between the inhibitor switch connector and starter motor. ***Connector & terminal*** ***(T7) No. 9 — (B14) No. 1:***	Is the resistance less than 1 Ω?	Go to step **13**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between inhibitor switch connector and starter motor • Poor contact of coupling connector
13	**CHECK INHIBITOR SWITCH.** 1) Place the select lever in "P" range and "N" range. 2) Measure the resistance between inhibitor switch terminals. ***Terminals*** ***No. 6 — No. 9:***	Is the resistance less than 1 Ω?	Check the engine control module (ECM) power supply and ground line. <Ref. to EN(H4DO)(diag)-106, CHECK POWER SUPPLY AND GROUND LINE OF ENGINE CONTROL MODULE (ECM), Diagnostics for Engine Starting Failure.>	Replace the inhibitor switch. <Ref. to CVT(TR580)-107, Inhibitor Switch.>

L: DTC P0037 A/F / O2 HEATER CONTROL CIRCUIT LOW BANK 1 SENSOR 2

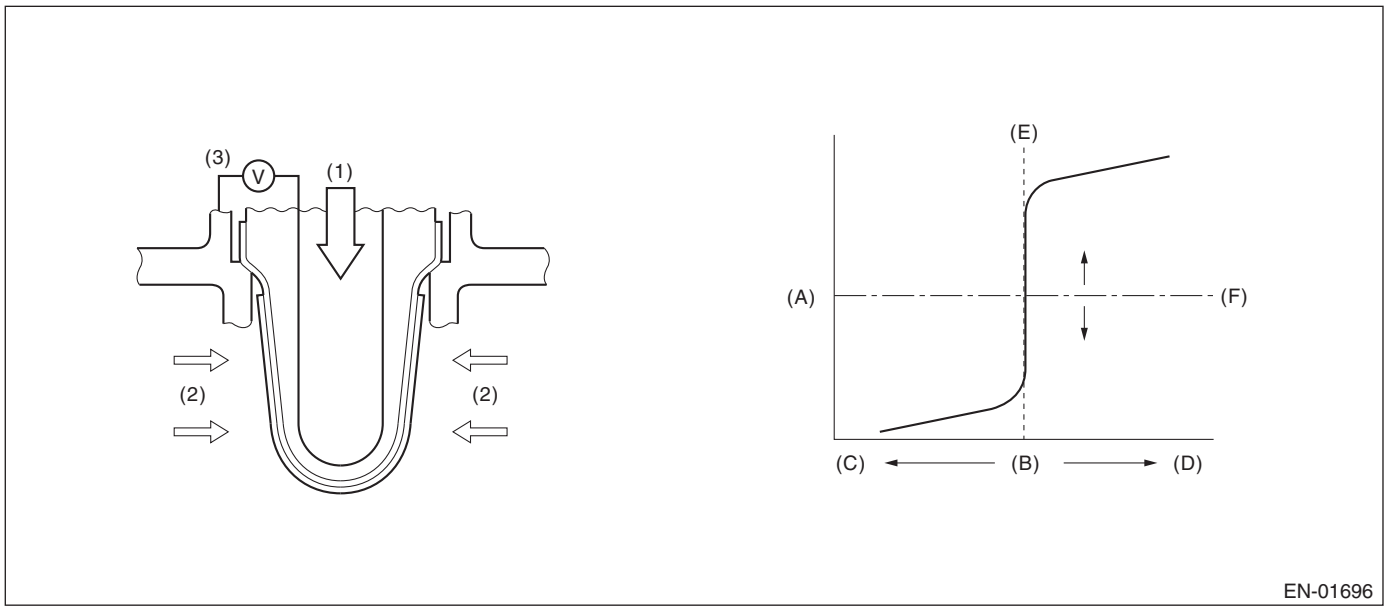
DTC detecting condition:
Detected when two consecutive driving cycles with fault occur.

CAUTION:
- **After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DO)(diag)-91, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DO)(diag)-69, PROCEDURE, Inspection Mode.>.**
- **Use the check board when measuring the ECM terminal voltage and resistance.**

Wiring diagram:
Engine Electrical System <Ref. to WI-179, WIRING DIAGRAM, Engine Electrical System.>



2. COMPONENT DESCRIPTION



(A)	Electromotive force	(B)	Air fuel ratio	(C)	Lean
(D)	Rich	(E)	Theoretical air fuel ratio	(F)	Comparative voltage
(1)	Atmosphere	(2)	Exhaust gas	(3)	Electromotive force

3. EXECUTION CONDITION

Secondary Parameters	Execution condition
Battery voltage	≥ 10.9 V

4. GENERAL DRIVING CYCLE

Always perform the diagnosis continuously.

5. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment value

Malfunction Criteria	Threshold Value
Judgment 1: Short to battery	
Secondary oxygen sensor offset signal	> 1.68 V
Judgment 2: Short to battery	
Secondary oxygen sensor signal	> 2.73 V
Judgment 3: Out of range	
Secondary oxygen sensor output voltage	> 1.2 V

Time needed for diagnosis:1000 ms

Malfunction indicator light illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

Judge as NG if there is no input signal from the camshaft position sensor for (10 time(s) +2)/2 revs.

Judgment value

Malfunction Criteria	Threshold Value
Amount of camshaft sensor signal during 0.5 revs of crankshaft	= 0

Time needed for diagnosis:
Diagnosis 1
3000 ms
Diagnosis 2
Judge as NG if there are consecutive engine revolutions of (10 time(s) +2)/2 revs.
Malfunction indicator light illumination: Illuminates as soon as a malfunction occurs.

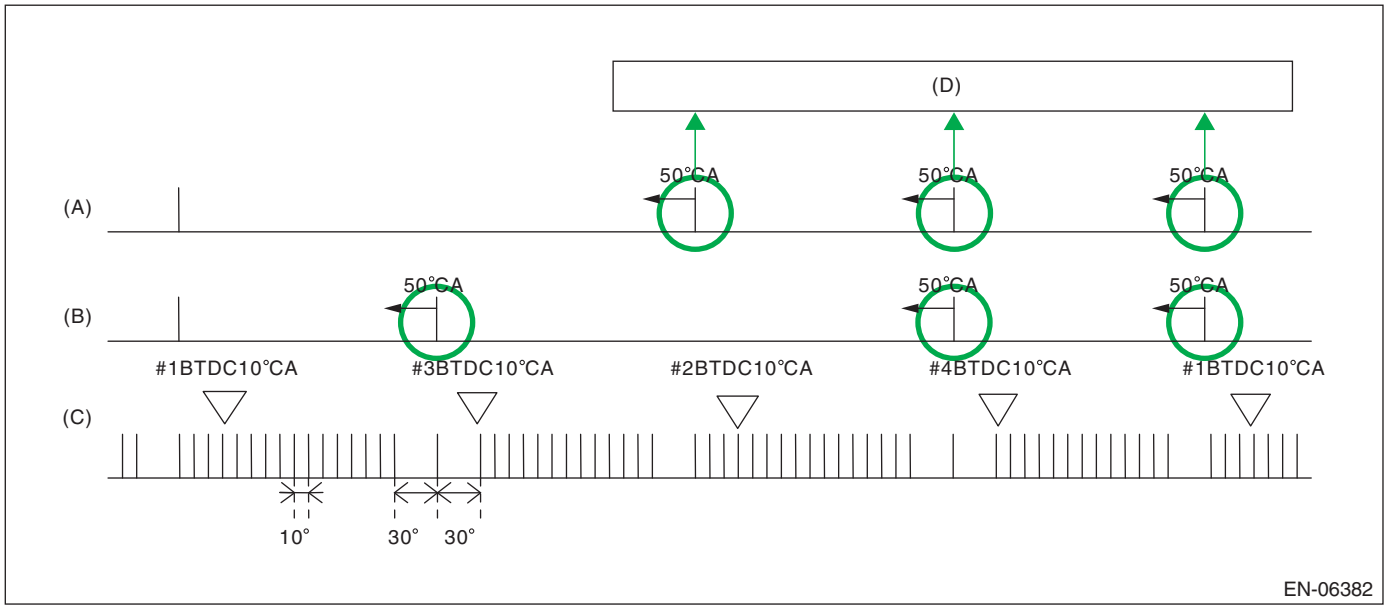
BQ:DTC P0341 CAMSHAFT POSITION SENSOR "A" CIRCUIT RANGE/PERFORMANCE BANK 1 OR SINGLE SENSOR

NOTE:
For the diagnostic procedure, refer to DTC P0340. <Ref. to EN(H4DO)(diag)-318, DTC P0340 CAMSHAFT POSITION SENSOR "A" CIRCUIT BANK 1 OR SINGLE SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

1. OUTLINE OF DIAGNOSIS

Detect the malfunction of camshaft position sensor property.
Judge as NG when the number of camshaft signals remains abnormal.

2. COMPONENT DESCRIPTION



(A) Camshaft signal (RH)
(B) Camshaft signal (LH)
(C) Crankshaft signal
(D) Camshaft position signal: When normal, there will be 3 camshaft position signals for every 2 crankshaft revolutions.

3. EXECUTION CONDITION

Secondary Parameters	Execution condition
Battery voltage	≥ 8 V
Elapsed time after starting the engine	≥ 200 ms

CT:DTC P05C0 ACTIVE GRILLE AIR SHUTTER MODULE "A" OVER TEMPERATURE

DTC detecting condition:
Immediately at fault recognition

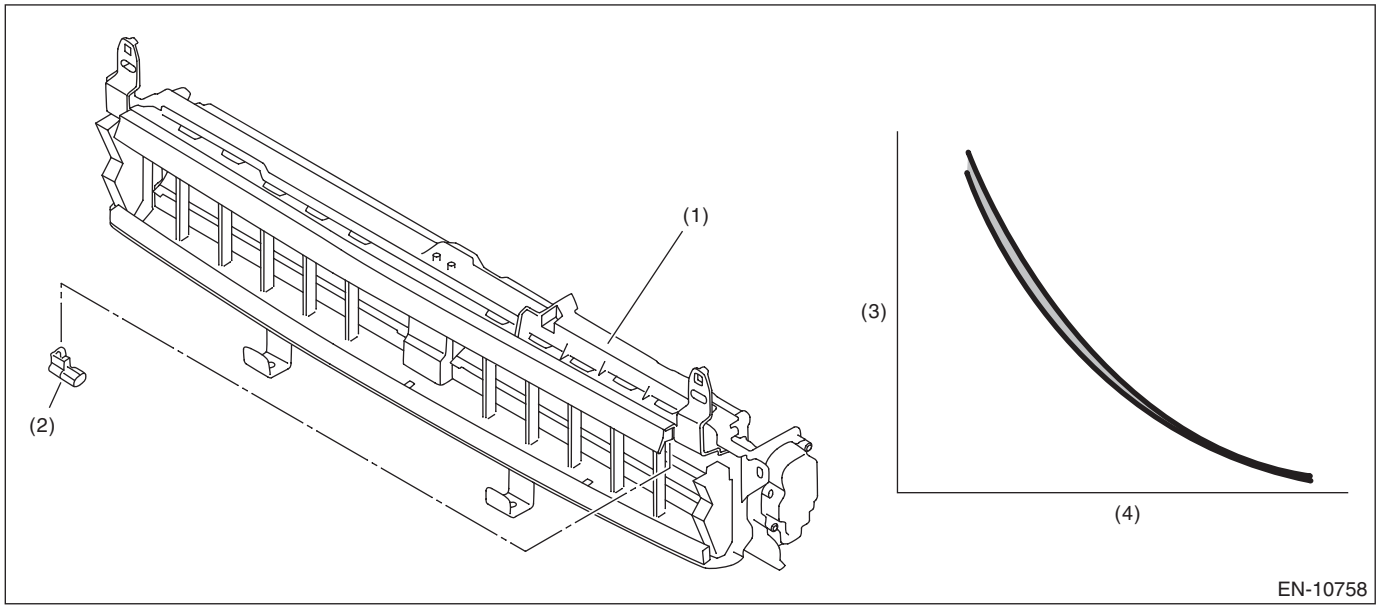
CAUTION:
After servicing or replacing faulty parts, perform Clear Memory Mode <Ref. to EN(H4DO)(diag)-91, OPERATION, Clear Memory Mode.>, and Inspection Mode <Ref. to EN(H4DO)(diag)-69, PROCEDURE, Inspection Mode.>.

Step		Check	Yes	No
1	**CHECK DTC.** 1) Turn the ignition switch to OFF, and cool down the engine enough. NOTE: Cool down the engine unit until it can be easily touched by hand. 2) Turn the ignition switch to ON. 3) Read the engine DTC using the Subaru Select Monitor or general scan tool. <Ref. to EN(H4DO)(diag)-68, Read Diagnostic Trouble Code (DTC).>	Is DTC P05C0 displayed? (Current malfunction)	Replace the active grille shutter. <Ref. to CO(H4DO)-64, Active Grille Shutter.>	Even if DTC is detected, it has returned to a normal condition at this time. NOTE: In this case, there may have been a temporary rise of the temperature in the engine compartment.

1. OUTLINE OF DIAGNOSIS

Detect the abnormal temperature inside the active grille shutter.
Judge as NG if out of specification.

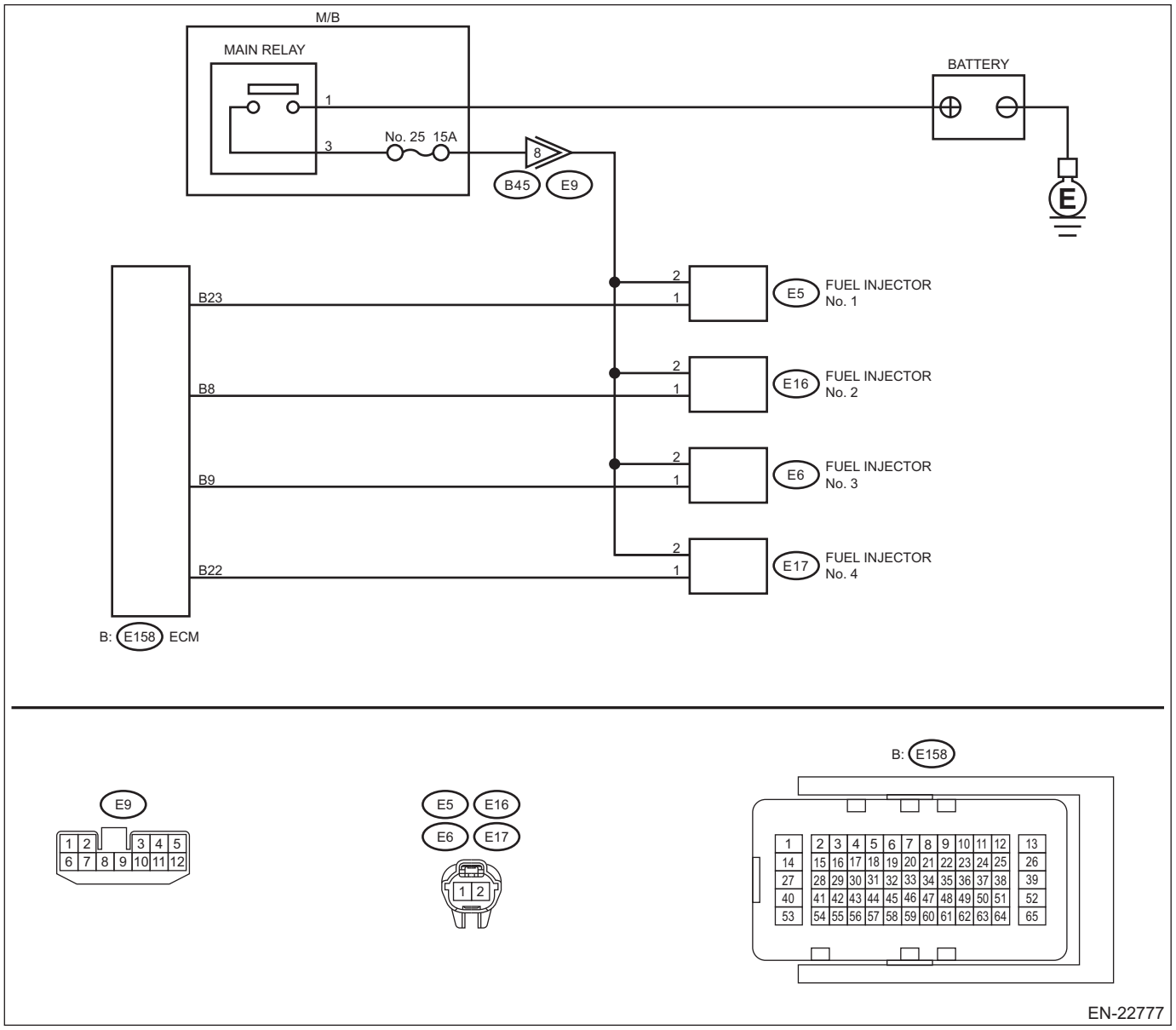
2. COMPONENT DESCRIPTION



(1) Active grille shutter
(2) Ambient sensor
(3) Resistance value (kΩ)
(4) Ambient air temperature (°C (°F))

3. EXECUTION CONDITION

Secondary Parameters	Execution condition
Battery voltage	≥ 10.9 V


M/B
MAIN RELAY
1
3
No. 25 15A
8
B45
E9
BATTERY
E
B23
B8
B9
B22
2
1
E5
FUEL INJECTOR
No. 1
E16
FUEL INJECTOR
No. 2
E6
FUEL INJECTOR
No. 3
E17
FUEL INJECTOR
No. 4
B: E158 ECM
E9
1 2 3 4 5
6 7 8 9 10 11 12
E5 E16
E6 E17
1 2
B: E158
1 2 3 4 5 6 7 8 9 10 11 12 13
14 15 16 17 18 19 20 21 22 23 24 25 26
27 28 29 30 31 32 33 34 35 36 37 38 39
40 41 42 43 44 45 46 47 48 49 50 51 52
53 54 55 56 57 58 59 60 61 62 63 64 65
EN-22777

3. EXECUTION CONDITION

Secondary Parameters	Execution condition
Battery voltage	≥ 6.2 V
Electronic throttle control relay output	ON

4. GENERAL DRIVING CYCLE

Always perform the diagnosis continuously.

5. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

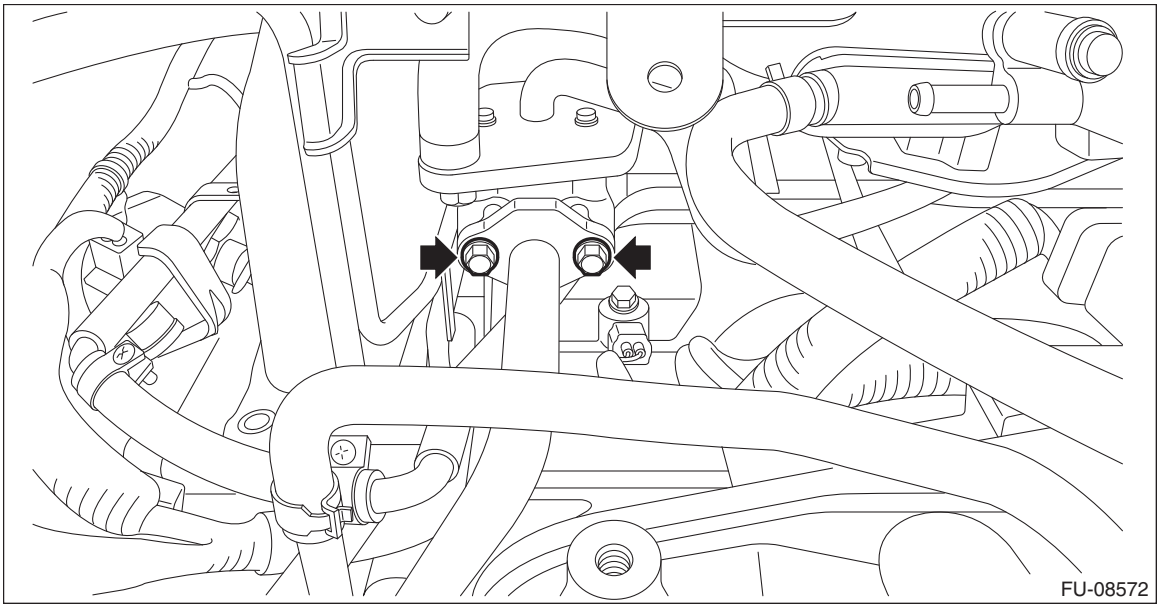
Judgment Value

Malfunction Criteria	Threshold Value
Overcurrent signal from the electronic throttle control drive IC	ON

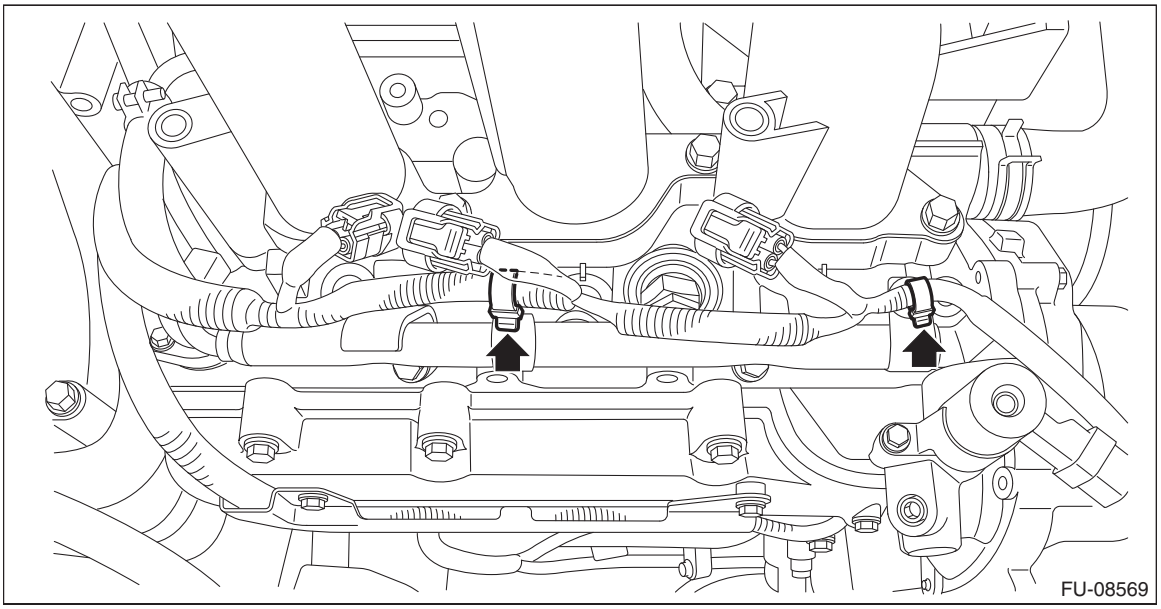
Time Needed for Diagnosis: 512 ms
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.** 1) Turn the ignition switch to ON. 2) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B134) No. 61 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **2**.	Go to step **3**.
2	**CHECK FOR POOR CONTACT.** Check for poor contact of ECM connector.	Is there poor contact of ECM connector?	Repair the poor contact of ECM connector.	Even if DTC is detected, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary open or short circuit of harness or temporary poor contact of connector may be the cause.
3	**CHECK POWER SUPPLY TO LEAK CHECK VALVE ASSEMBLY.** Measure the voltage between the leak check valve assembly connector and engine ground. ***Connector & terminal*** ***(R400) No. 5 (+) — Engine ground (–):***	Is the voltage 10 V or more?	Go to step **4**.	Repair the power supply circuit.
4	**CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from the leak check valve assembly. 4) Measure the resistance between leak check valve assembly and chassis ground. ***Connector & terminal*** ***(R400) No. 1 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Repair the short circuit to ground in harness between ECM connector and leak check valve assembly connector.
5	**CHECK HARNESS BETWEEN ECM AND LEAK CHECK VALVE ASSEMBLY CONNECTOR.** Measure the resistance of harness between ECM connector and the leak check valve assembly connector. ***Connector & terminal*** ***(B134) No. 61 — (R400) No. 1:***	Is the resistance less than 1 Ω?	Go to step **6**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and the leak check valve assembly connector • Poor contact of coupling connector

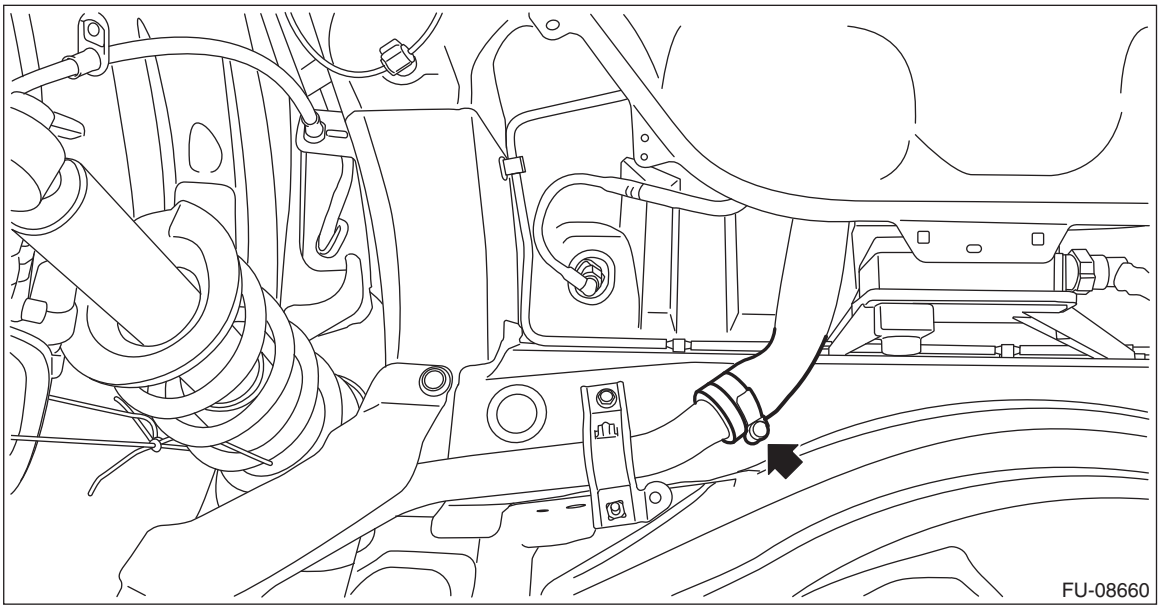
Tightening torque:
6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



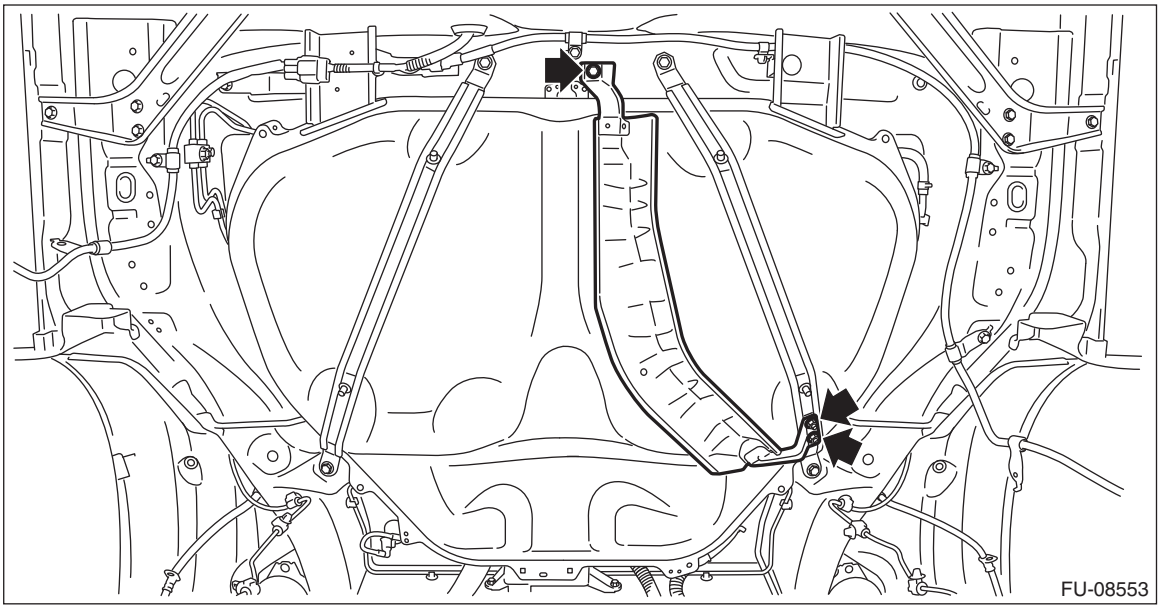
4) Install the clip securing the engine harness to the fuel injector pipe RH.



13) Disconnect the fuel filler hoses from the fuel filler pipe.



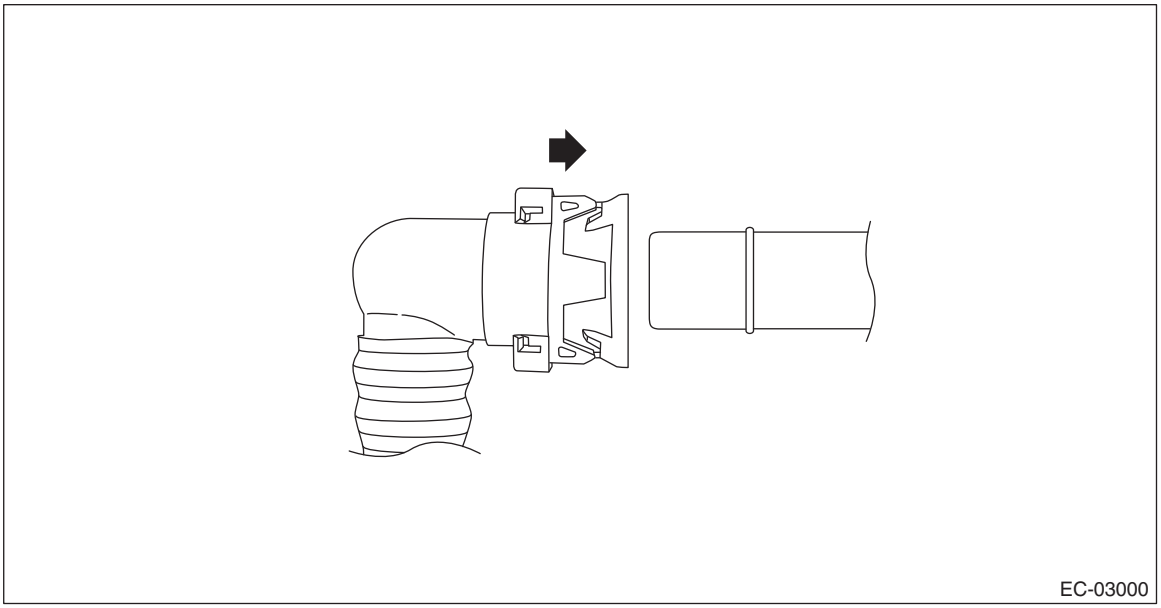
14) Remove the heat shield cover.

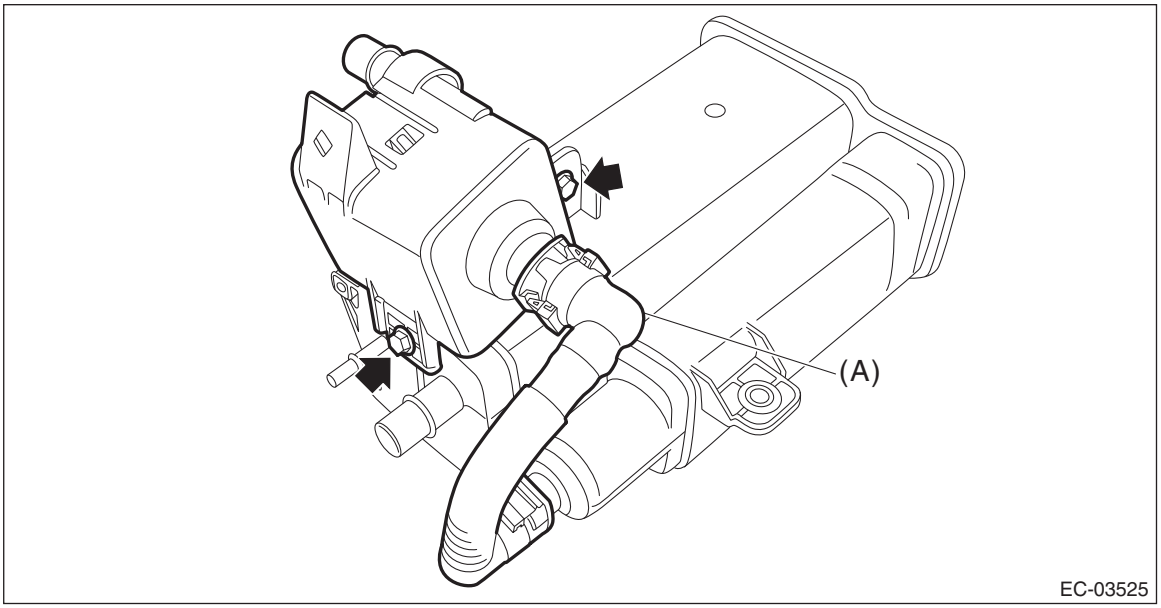


15) Support the fuel tank with a transmission jack, remove the fuel tank band, and remove the fuel tank from the vehicle.

WARNING:
- **A helper is required to perform this work.**

NOTE:
Connect the quick connector as shown in the figure.


EC-03000



EC-03525

3) Connect the vent tube (A), canister drain tube (B) and purge tube (C), and install the hose clamp (D).

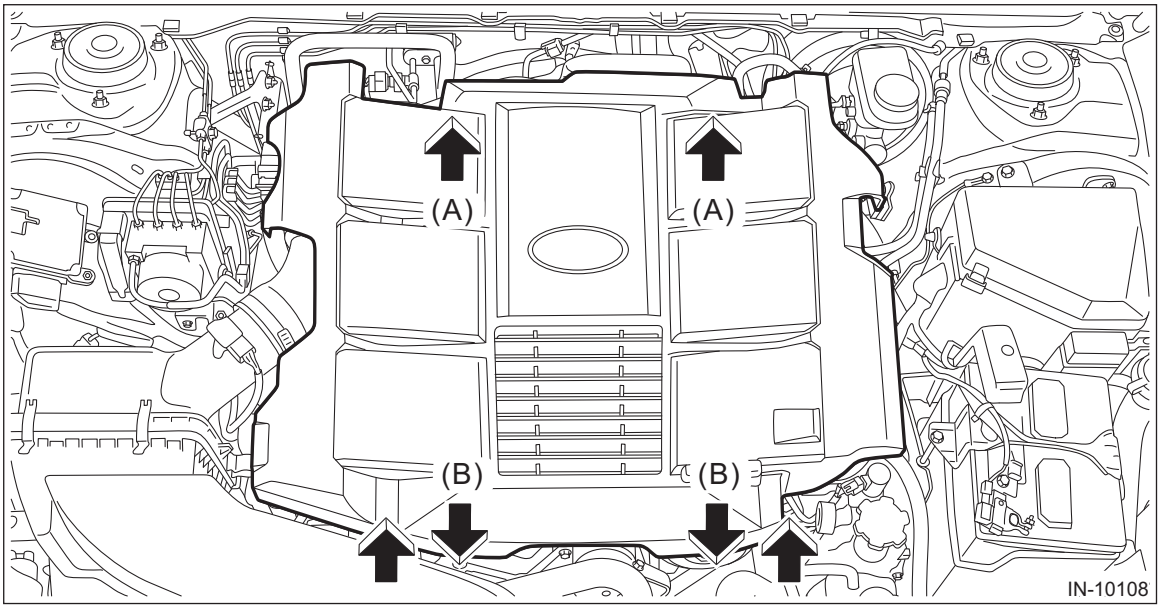
CAUTION:
- **Make sure there are no damage or dust on connections. If necessary, clean the seal surface of the pipe.**
- **Make sure that the quick connector is securely connected.**

NOTE:
Connect the quick connector as shown in the figure.

7. Fuel Pressure

A: INSPECTION

1) Remove the collector cover.
   (1) Carefully pull up the rear of collector cover at two positions (A).
   (2) Carefully pull up the front of collector cover at two positions (B) while moving it forward.

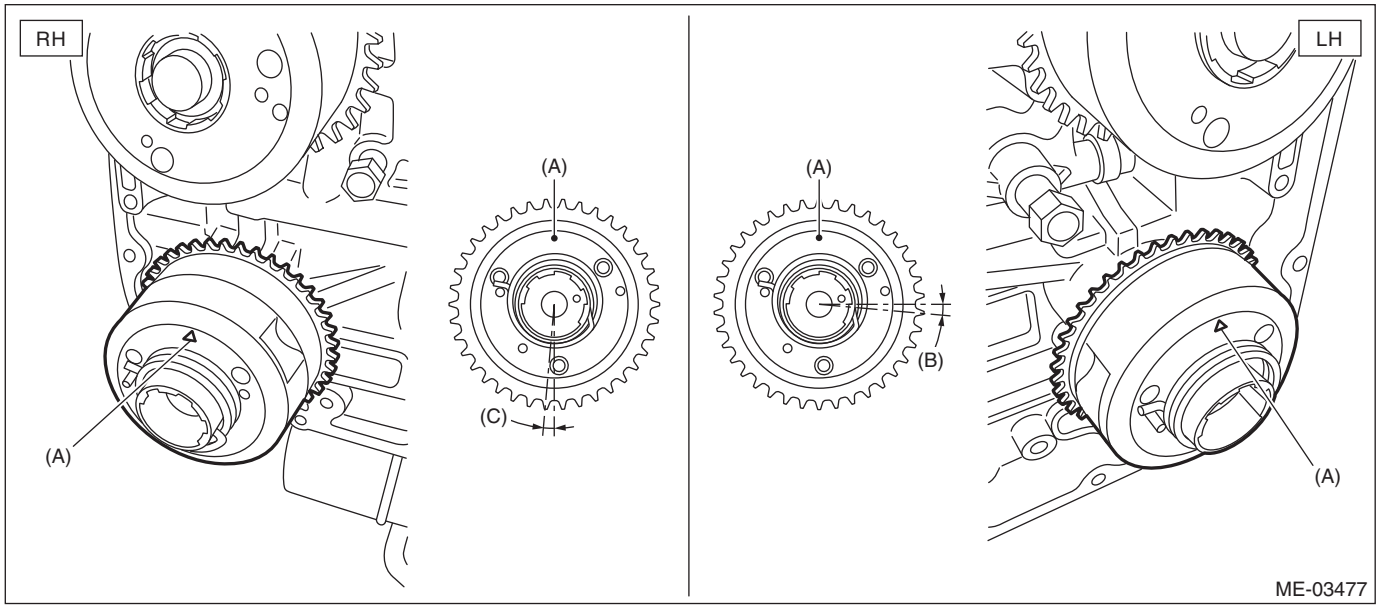


2) Release the fuel pressure. <Ref. to FU(H6DO)-94, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
3) Open the fuel filler lid and remove the fuel filler cap.

NOTE:
This operation is required to release the inner pressure of the fuel tank.
4) Disconnect the fuel delivery tube from the fuel delivery pipe, and connect the fuel pressure gauge.

CAUTION:
- **Be careful not to spill fuel.**
- **Catch the fuel from the tubes using a container or cloth.**
  (1) Remove the clip (A) securing the fuel delivery tube.

5) Align the exhaust cam sprocket to twelve o'clock position as shown in the figure.
ST 499977500 CAM SPROCKET WRENCH

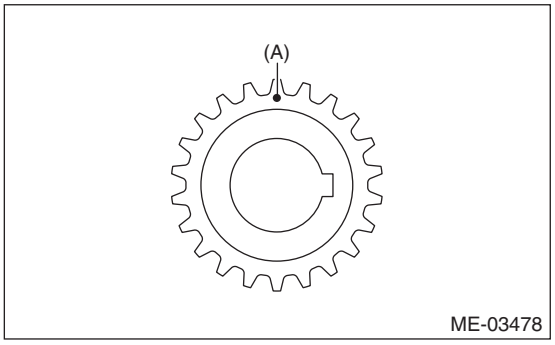


(A) Align the marking (top mark) to twelve o'clock position.
(B) 5.5°
(C) 3.5°

6) Using ST, align the "Top mark" on crank sprocket to twelve o'clock position as shown in the figure.

NOTE:
- The #1 piston is positioned at TDC.
- Do not rotate the crankshaft and cam sprocket before completing timing chain installation.
- At this time, crank sprocket key is at three o'clock position.

ST 18252AA000 CRANKSHAFT SOCKET



(A) Top mark

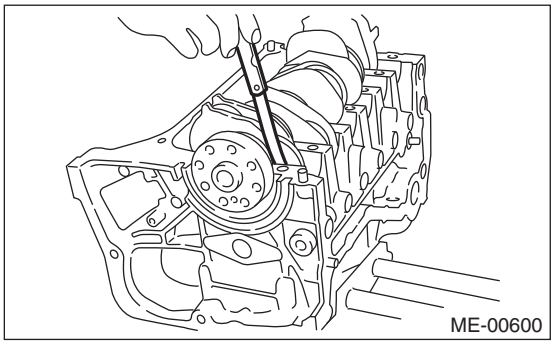
7) Install the chain guide (main).

Unit: mm (in)

		Crank journal diameter			Crank pin outer diameter
		#1, #3, #5	#7	#2, #4, #6	
0.03 (0.0012) Undersize	Journal O.D.	63.962 — 63.978 (2.5182 — 2.5188)			51.954 — 51.970 (2.0454 — 2.0461)
	Bearing size (Thickness at center)	2.011 — 2.014 (0.0792 — 0.0793)	2.011 — 2.014 (0.0792 — 0.0793)	2.015 — 2.018 (0.0793 — 0.0794)	1.515 — 1.519 (0.0596 — 0.0598)
0.05 (0.0020) Undersize	Journal O.D.	63.942 — 63.958 (2.5174 — 2.5180)			51.934 — 51.950 (2.0446 — 2.0453)
	Bearing size (Thickness at center)	2.021 — 2.024 (0.0796 — 0.0797)	2.021 — 2.024 (0.0796 — 0.0797)	2.025 — 2.028 (0.0797 — 0.0798)	1.525 — 1.529 (0.0600 — 0.0602)
0.25 (0.0098) Undersize	Journal O.D.	63.742 — 63.758 (2.5095 — 2.5102)			51.734 — 51.750 (2.0368 — 2.0374)
	Bearing size (Thickness at center)	2.121 — 2.124 (0.0835 — 0.0836)	2.121 — 2.124 (0.0835 — 0.0836)	2.125 — 2.128 (0.0837 — 0.0838)	1.625 — 1.629 (0.0640 — 0.0641)

4) Use a thickness gauge to measure the thrust clearance of crankshaft at center bearing. If clearance exceeds the standard, replace the bearing.

Crankshaft thrust clearance:
Standard
0.040 — 0.212 mm (0.0016 — 0.0083 in)

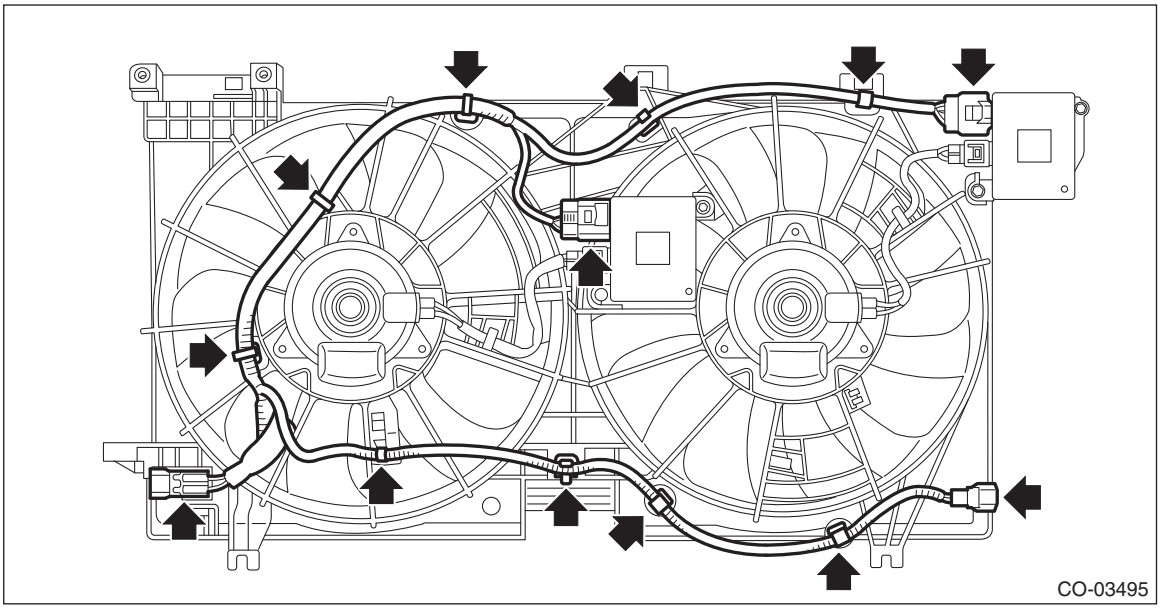


5) Inspect individual crankshaft bearings for signs of flaking, seizure, melting and wear.
6) Measure the oil clearance on each crankshaft bearing using plastigauge. If the measured value is out of standard, replace the defective bearing with an undersize one, and replace or grind to correct the crankshaft as necessary.

Crankshaft oil clearance:
Standard
0.010 — 0.030 mm (0.0004 — 0.0012 in)

3. RADIATOR FAN HARNESS

Remove the clip securing the radiator fan harness to the radiator fan shroud, and remove the radiator fan harness.



4. RADIATOR FAN SHROUD

1) Remove the radiator main fan and radiator main fan motor. <Ref. to CO(H6DO)-42, RADIATOR MAIN FAN AND RADIATOR MAIN FAN MOTOR, DISASSEMBLY, Radiator Fan and Fan Motor Assembly.>
2) Remove the radiator sub fan and radiator sub fan motor. <Ref. to CO(H6DO)-43, RADIATOR SUB FAN AND RADIATOR SUB FAN MOTOR, DISASSEMBLY, Radiator Fan and Fan Motor Assembly.>
3) Remove the radiator fan harness. <Ref. to CO(H6DO)-45, RADIATOR FAN HARNESS, DISASSEMBLY, Radiator Fan and Fan Motor Assembly.>
4) Remove the radiator fan control unit. <Ref. to CO(H6DO)-49, REMOVAL, Radiator Fan Control Unit.>

D: ASSEMBLY

1. RADIATOR MAIN FAN AND RADIATOR MAIN FAN MOTOR

1) Install the radiator main fan motor to the radiator fan shroud.

Tightening torque:
3.9 N·m (0.4 kgf-m, 2.9 ft-lb)
2) Install the radiator main fan to the radiator main fan motor.

Tightening torque:
6.4 N·m (0.7 kgf-m, 4.7 ft-lb)
3) Connect the connector to the radiator fan control module (main), and install the radiator main fan motor harness.

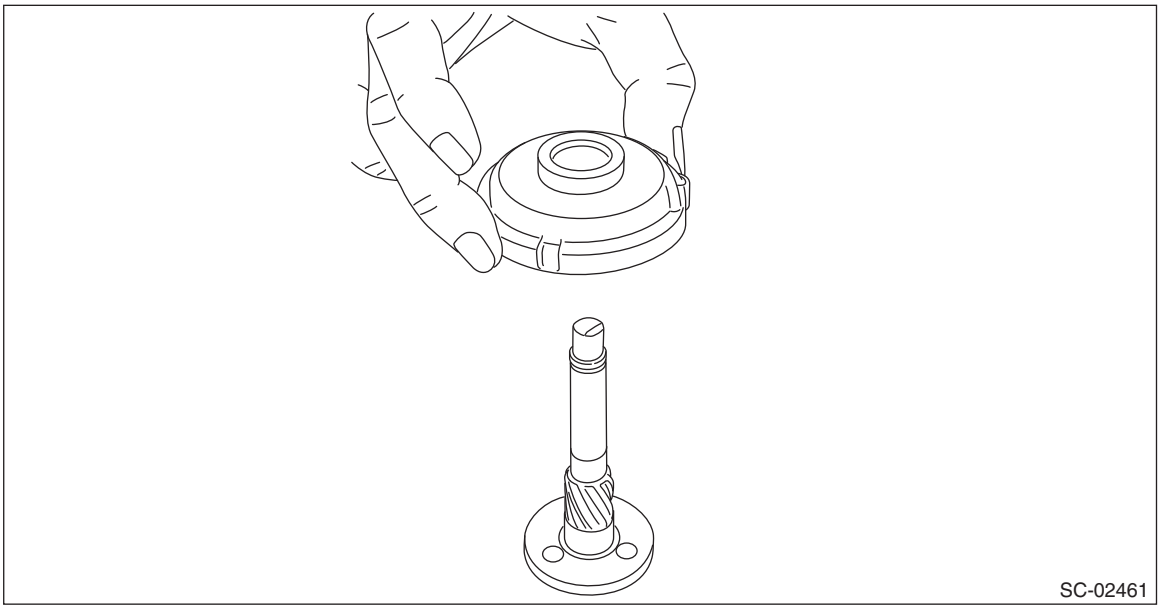
2. RADIATOR SUB FAN AND SUB FAN MOTOR

1) Install the radiator sub fan motor to the radiator fan shroud.

Tightening torque:
3.9 N·m (0.4 kgf-m, 2.9 ft-lb)
2) Install the radiator sub fan to the radiator sub fan motor.

Tightening torque:
6.4 N·m (0.7 kgf-m, 4.7 ft-lb)
3) Connect the connector to the radiator fan control module (sub), and install the radiator sub fan motor harness.

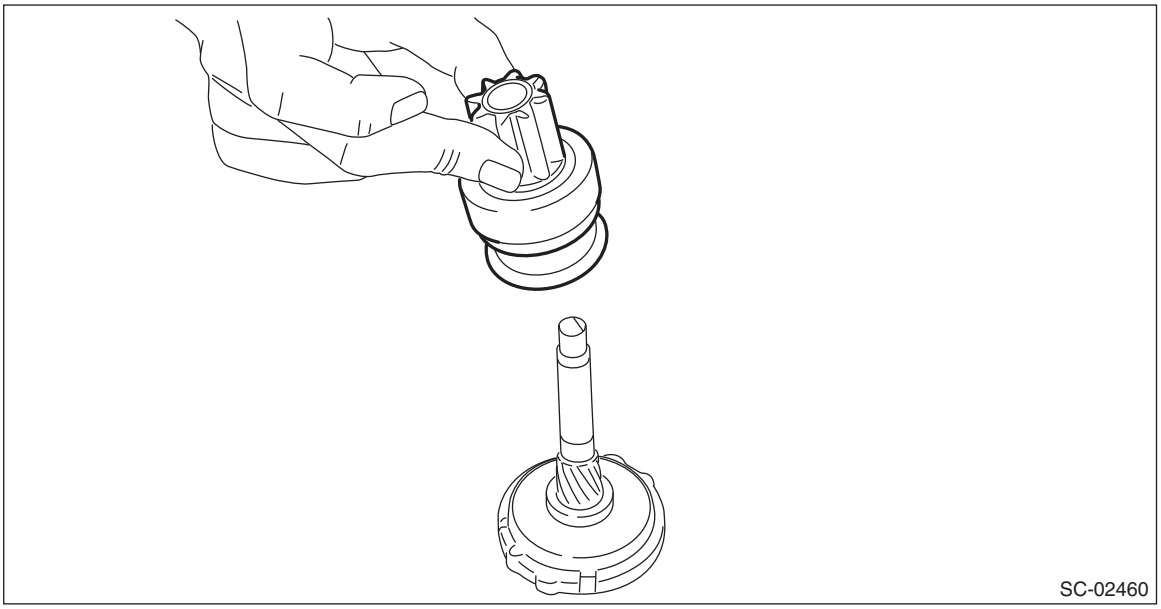
2) Assemble the shaft to the internal gear assembly.



3) Assemble the overrunning clutch as follows:
(1) Apply grease to the spline portion of the shaft.

Grease:
Multemp #6129 or equivalent

(2) Install the overrunning clutch to shaft.



(3) Pass stopper (B) through the shaft assembly, and attach snap ring (A).

Description		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON After warm-up (at engine OFF)	Engine ON After warm-up (at idle)	
Radiator fan relay control		B134	39	0	0	—
Ignition switch		B134	2	Battery voltage	Battery voltage	—
Neutral position switch		B134	5	ON: 0 OFF: Battery voltage	ON: 0 OFF: Battery voltage	—
Delivery mode switch		B134	6	Battery voltage	Battery voltage	When fuse is installed: 0
Oil level switch		E158	3	0	0	Oil level LOW: Battery voltage
Starter switch		B134	46	Waveform	Waveform	Model without push button start Waveform 17 Model with push button start Waveform 12
Starter switch 2		B134	58	Waveform	Waveform	Model with push button start Waveform 12
Accessory cut request		B134	64	Waveform	Waveform	Model with push button start Waveform 13
Engine speed output		B134	10	0	0 or battery voltage	Model with push button start Waveform 13
Brake switch 1 (Brake switch)		B134	59	When brake pedal is depressed: 0 When brake pedal is released: Battery voltage	When brake pedal is depressed: 0 When brake pedal is released: Battery voltage	—
Brake switch 2 (Stop light switch)		B134	48	When brake pedal is depressed: Battery voltage When brake pedal is released: 0	When brake pedal is depressed: Battery voltage When brake pedal is released: 0	—
Cruise control main switch		B134	44	ON: 0 OFF: 5	ON: 0 OFF: 5	Model without EyeSight
Cruise control command switch		B134	22	When operating nothing: 3.5 — 4.5 When operating RES/ACC: 2.5 — 3.5 When operating SET/COAST: 0.5 — 1.5 When operating CANCEL: 0 — 0.5	When operating nothing: 3.5 — 4.5 When operating RES/ACC: 2.5 — 3.5 When operating SET/COAST: 0.5 — 1.5 When operating CANCEL: 0 — 0.5	Model without EyeSight
Fuel pump control unit	Control signal	B134	63	0	0 or 5	Waveform 14
	Diagnostic signal	B134	8	0	Battery voltage	When malfunction occurs: 0
Radiator main fan control		B134	41	0	0	ON: 5 Waveform 15
Radiator sub fan control		B134	40	0	0	ON: 5 Waveform 15
Generator control		B134	23	0 or 6.5	0 or 6.5	Waveform 16
LIN communication		B134	55	—	—	—

13.Active Test

A: OPERATION

CAUTION:
After executing the system operation check mode, execute the Clear Memory Mode. <Ref. to EN(H6DO)(diag)-98, OPERATION, Clear Memory Mode.>

NOTE:
For detailed operation procedures, refer to “Application help”.
1) On «Start» display, select «Diagnosis».
2) On «Vehicle selection» display, input the vehicle information and select «Confirmed».
3) On «Main Menu» display, select «Each System».
4) On «Select System» display, select «Engine Control System» and then select «Enter».
5) On «Select Function» display, select «Active Test».

Active test items	Contents	Execution condition
Fuel Pump Relay	ON/OFF of the fuel pump can be set.	Ignition switch is ON (engine OFF)
CPC Solenoid Valve	ON/OFF of the purge control solenoid valve can be set.	
Radiator Fan Relay	ON/OFF of the radiator fan relay can be set.	
ELCM switching valve	ON/OFF of the leak check valve assembly switching valve can be set.	
ELCM pump	ON/OFF of the leak check valve assembly vacuum pump can be set.	
Fuel Pump Control (OFF Drive)	Fuel pump can be set to OFF.	At idling
Fixed Idle Ignition Timing	Idle ignition timing can be set and fixed to 15°.	At idling
Idle Speed Control	Idle speed can be set to 500 — 2000 rpm.	At idling
Injection Stop Mode (Injector 1) Injection Stop Mode (Injector 2) Injection Stop Mode (Injector 3) Injection Stop Mode (Injector 4) Injection Stop Mode (Injector 5) Injection Stop Mode (Injector 6)	Injector of each cylinder can be set to stop the fuel injection.	At idling
Injection Quantity Control	The amount of fuel injection can be set to –13.5 — 20%.	At idling*1
EGR Valve Control (Step)	EGR control valve can be set to 0 — 52 STEP.	At idling
Alternator control	Alternator control mode can be set to one of the followings: Low mode Middle mode High mode ExHigh mode*2	At idling
Compression monitor	Compression can be measured.	• Ignition switch is ON (engine OFF) • Accelerator pedal is fully depressed

*1: When the value of «Injection Quantity Control» under «Active Test» is changed from –12% — +12% while «Long term fuel trim B1» is –5%, the value of «A/F Sensor #1» will be changed to 0.92 or 1.17.
*2: Indicator voltage is the same as in High mode.

5. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Output voltage	> Battery voltage × 0.3

Time Needed for Diagnosis: 8 ms × 320 time(s)
Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

	Step	Check	Yes	No
1	**CHECK REAR OXYGEN SENSOR DATA.** 1) Warm up the engine until engine coolant temperature is higher than 75°C (167°F), and keep the engine speed at 3,000 rpm. (2 minutes maximum) 2) Keep the engine speed at idle. (One minute) 3) Read the value of «Oxygen sensor #12» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "Current Data Display For Engine". <Ref. to EN(H6DO)(diag)-53, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Oxygen sensor #12» 0.490 V or more?	Go to step **5**.	Go to step **2**.
2	**CHECK REAR OXYGEN SENSOR CONNECTOR AND COUPLING CONNECTOR.** Check the rear oxygen sensor connector and coupling connector.	Has water entered the connector?	Completely remove any water inside.	Go to step **3**.
3	**CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Disconnect the connector from rear oxygen sensor. 4) Measure the resistance of harness between ECM connector and rear oxygen sensor connector. ***Connector & terminal*** ***(E158) No. 57 — (E61) No. 3:*** ***(E158) No. 56 — (E61) No. 4:***	Is the resistance less than 1 Ω?	Go to step **4**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit in harness between ECM connector and rear oxygen sensor connector • Poor contact of coupling connector
4	**CHECK HARNESS BETWEEN ECM AND REAR OXYGEN SENSOR CONNECTOR.** 1) Connect the connector to ECM. 2) Turn the ignition switch to ON. 3) Measure the voltage between rear oxygen sensor connector and chassis ground. ***Connector & terminal*** ***(E61) No. 4 (+) — Chassis ground (–):***	Is the voltage 1.18 V or more?	Replace the rear oxygen sensor. <Ref. to FU(H6DO)-81, Rear Oxygen Sensor.>	Replace the ECM. <Ref. to FU(H6DO)-83, Engine Control Module (ECM).>
5	**CHECK EXHAUST SYSTEM.** Check exhaust system parts. NOTE: Check the following items. • Looseness and improper fitting of exhaust system parts • Damage (crack, hole etc.) of parts • Loose part and improper installation between front oxygen (A/F) sensor and rear oxygen sensor	Is there any fault in exhaust system?	Repair or replace faulty parts.	Replace the rear oxygen sensor. <Ref. to FU(H6DO)-81, Rear Oxygen Sensor.>

1. OUTLINE OF DIAGNOSIS

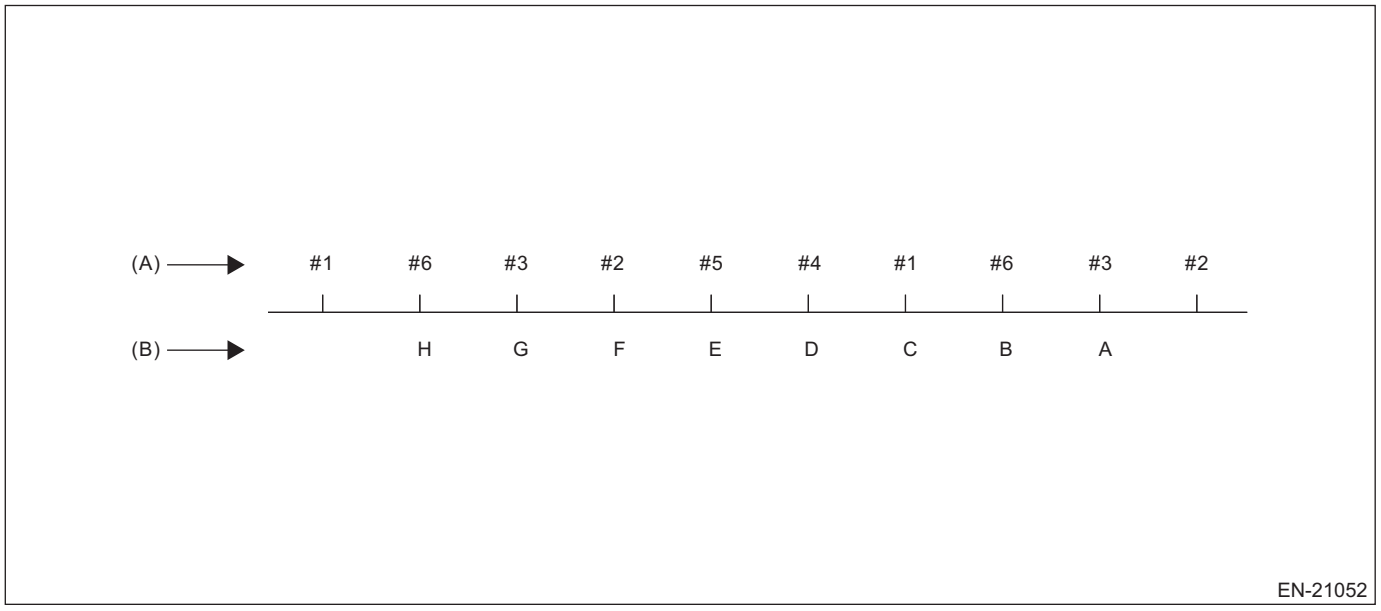
Detect for NG of the rear oxygen sensor continuity.
Judge as NG if the rear oxygen sensor voltage value is not within the range.

4. DIAGNOSTIC METHOD

When a misfire occurs, the engine speed will decrease and the crankshaft position speed will change. Calculate the interval difference value (diagnostic value) from crankshaft position speed by the following formula, and judge whether a misfire is occurring or not comparing the calculated result with judgment value. Count the number of misfires, if the misfire ratio is higher during 1000 revs. or 200 revs., judge corresponding cylinders as NG.

Diagnostic value calculation (Calculate from angle speed) →	Misfire detection in every single ignition (Compare diagnostic value with judgment value) →	NG judgment (Misfire occurrence judgment required by the law) (Compare number of misfire with judgment value)
	• 120 Degree Interval Difference Method • 360 Degree Interval Difference Method • 720 Degree Interval Difference Method	• FTP 1.5 times misfire NG judgment • NG judgment for catalyst-damaging misfire

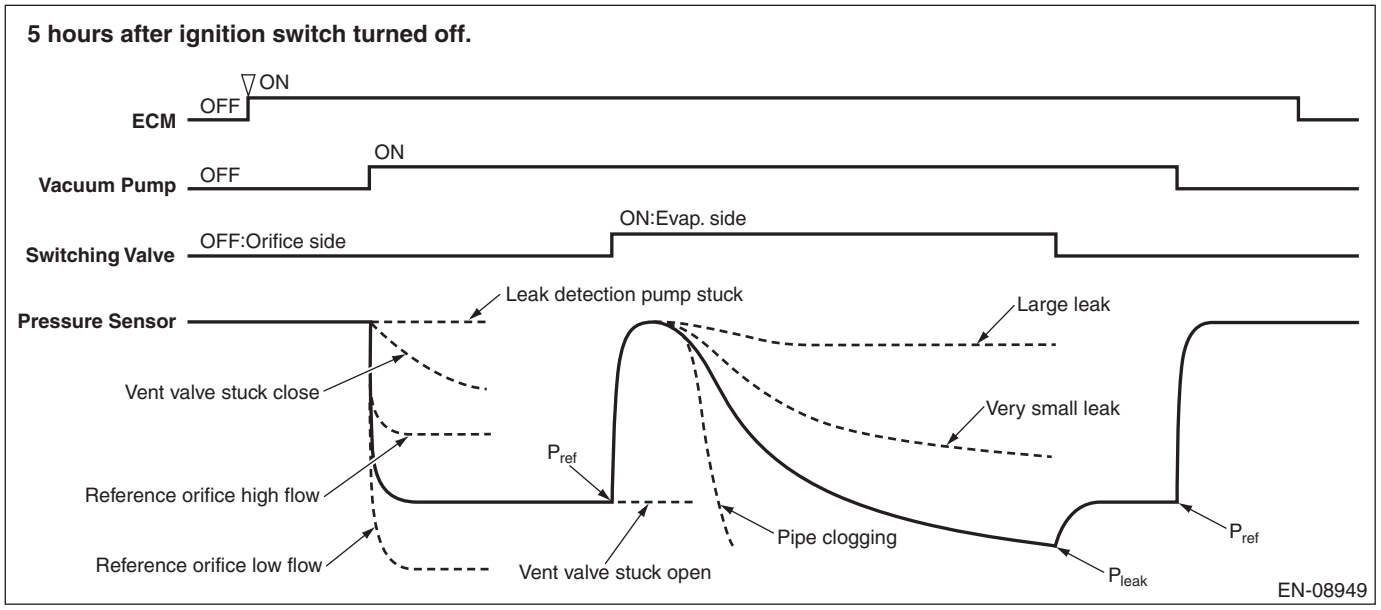
As shown in the following figure, pick a cylinder as the standard and name it A. And the former crankshaft position speed is named B, the second former crankshaft position speed is named C, the third is named D, etc.



(A) Ignition order

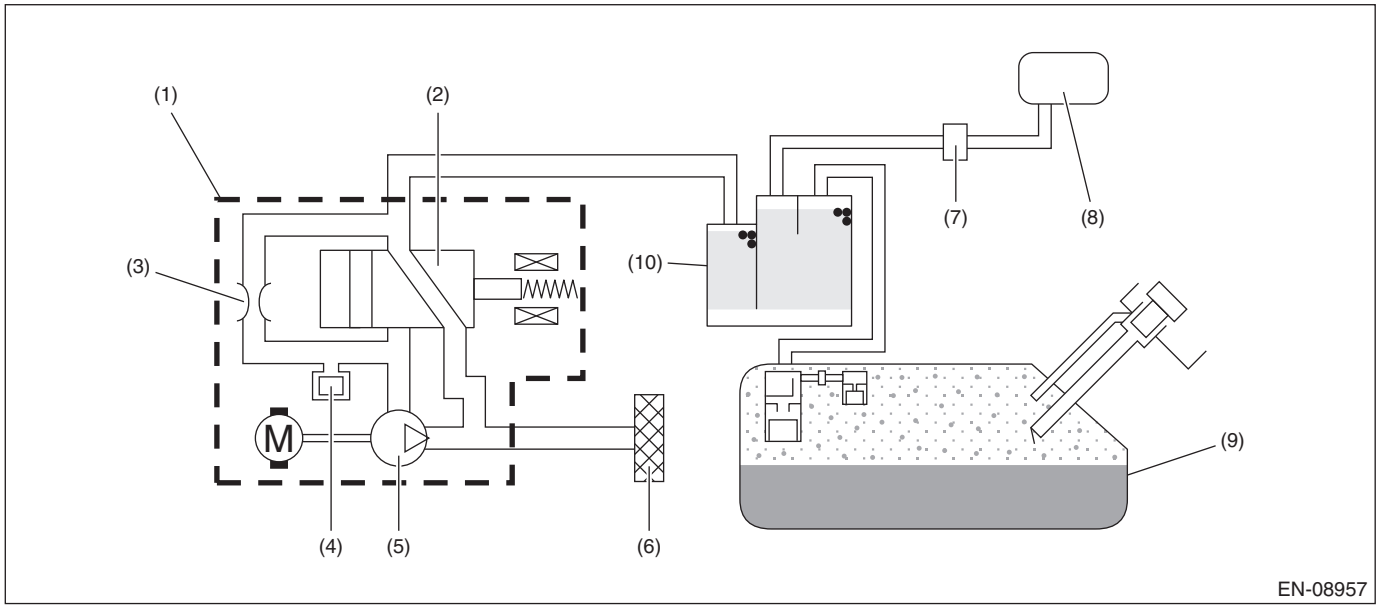
(B) Crankshaft position speed

OUTLINE OF DIAGNOSIS



2. COMPONENT DESCRIPTION

Evaporative Leak Check Module consists of the pressure sensor, the reference orifice (diameter of 0.02 inch), the vacuum pump which introduces the negative pressure into evaporative emission system, and the switching valve which switches the passage to introduce the negative pressure.



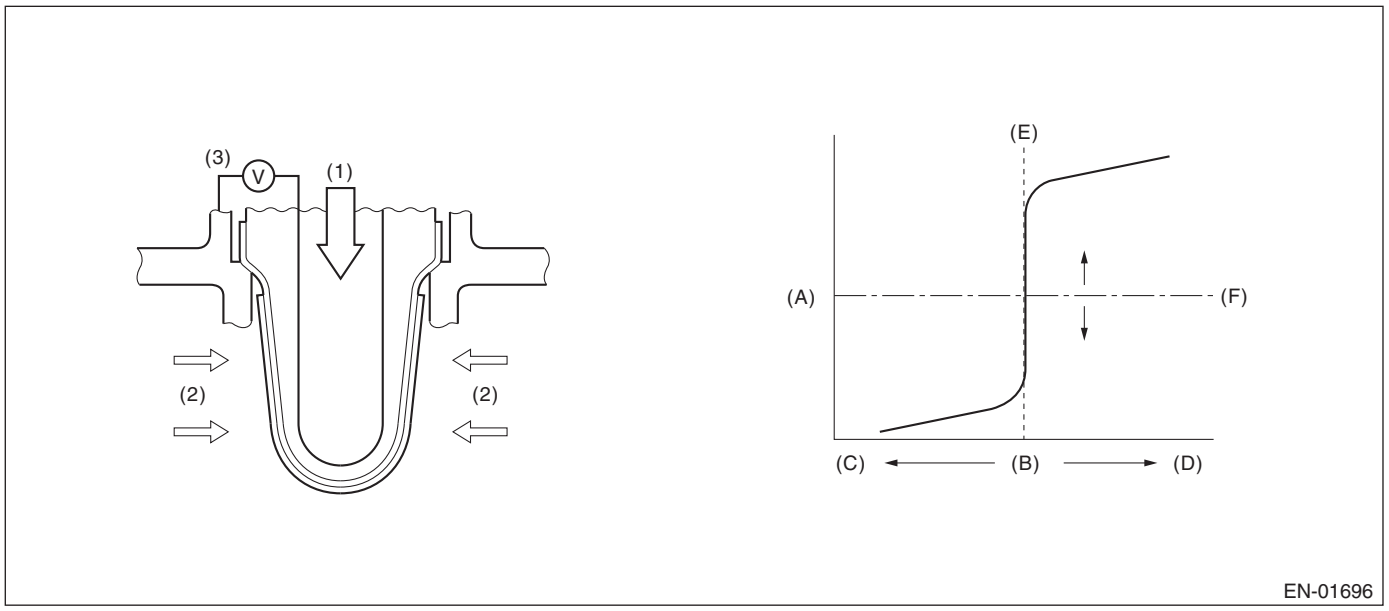
(1)	Leak check valve ASSY	(5)	Vacuum pump	(9)	Fuel tank
(2)	Switching valve	(6)	Drain filter	(10)	Canister
(3)	Reference orifice (0.02 inch orifice)	(7)	Purge control solenoid valve		
(4)	Pressure sensor	(8)	Intake manifold		

	Step	Check	Yes	No
2	**CHECK HARNESS BETWEEN ECM AND EGR CONTROL VALVE CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM connector and EGR control valve connector. ***Connector & terminal*** ***DTC P1492; (E158) No. 12 — (E18) No. 3:*** ***DTC P1494; (E158) No. 48 — (E18) No. 1:*** ***DTC P1496; (E158) No. 25 — (E18) No. 4:*** ***DTC P1498; (E158) No. 49 — (E18) No. 6:***	Is the resistance less than 1 Ω?	Go to step **3**.	Repair the harness and connector. NOTE: In this case, repair the following item: • Open circuit of harness between ECM connector and EGR control valve connector • Poor contact of coupling connector
3	**CHECK HARNESS BETWEEN ECM AND EGR CONTROL VALVE CONNECTOR.** 1) Disconnect the connector from ECM. 2) Measure the resistance between ECM connector and chassis ground. ***Connector & terminal*** ***DTC P1492; (E158) No. 12 — Chassis ground:*** ***DTC P1494; (E158) No. 48 — Chassis ground:*** ***DTC P1496; (E158) No. 25 — Chassis ground:*** ***DTC P1498; (E158) No. 49 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **4**.	Repair ground short circuit of harness between ECM connector and EGR control valve connector.
4	**CHECK FOR POOR CONTACT.** Check poor contact of ECM and EGR control valve connectors.	Is there poor contact in ECM or EGR control valve connector?	Repair the poor contact of ECM or EGR control valve connector.	Replace EGR control valve. <Ref. to EC(H6DO)-21, EGR Control Valve.>

1. OUTLINE OF DIAGNOSIS

NOTE:
For the detection standard, refer to DTC P1492. <Ref. to EN(H6DO)(diag)-464, DTC P1492 COIL 1 EGR "A" CONTROL CIRCUIT LOW, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

2. COMPONENT DESCRIPTION



(A) Electromotive force
(B) Air fuel ratio
(C) Lean
(D) Rich
(E) Theoretical air fuel ratio
(F) Comparative voltage

(1) Atmosphere
(2) Exhaust gas
(3) Electromotive force

3. EXECUTION CONDITION

Secondary parameters	Execution condition
Sub feedback	In operation
Amount of intake air	≥ 10 g/s (0.35 oz/s)
Engine load change every 0.5 engine revs.	< 0.02 g/rev (0 oz/rev)
Fuel level increase compensation	No compensation

4. GENERAL DRIVING CYCLE

Perform the diagnosis every time after the enable conditions have been established.

5. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment value

Malfunction Criteria	Threshold Value
Sub feedback learning value	≤ –0.0375

Time needed for diagnosis: 1 s
Malfunction indicator light illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

	Step	Check	Yes	No
10	**CHECK ENGINE COOLANT TEMPERATURE SENSOR.** 1) Start the engine and warm up completely. 2) Read the value of «Coolant Temp.» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "Current Data Display For Engine". <Ref. to EN(H6DO)(diag)-53, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Coolant Temp.» 75°C (167°F) or more?	Go to step **11**.	Replace the engine coolant temperature sensor. <Ref. to FU(H6DO)-39, Engine Coolant Temperature Sensor.>
11	**CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.** 1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F). 2) Place the select lever in "P" range or "N" range. 3) Turn the A/C switch to OFF. 4) Turn all the accessory switches to OFF. 5) Read the value of «Mass Air Flow» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "Current Data Display For Engine". <Ref. to EN(H6DO)(diag)-53, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Is the value of «Mass Air Flow» 2.0 — 5.0 g/s (0.26 — 0.66 lb/m)?	Go to step **12**.	Replace the mass air flow and intake air temperature sensor. <Ref. to FU(H6DO)-58, Mass Air Flow and Intake Air Temperature Sensor.>
12	**CHECK MASS AIR FLOW AND INTAKE AIR TEMPERATURE SENSOR.** 1) Start the engine and warm up engine until coolant temperature is higher than 75°C (167°F). 2) Place the select lever in "P" range or "N" range. 3) Turn the A/C switch to OFF. 4) Turn all the accessory switches to OFF. 5) Open the front hood. 6) Measure the ambient temperature. 7) Read the value of «Intake Air Temp.» using the Subaru Select Monitor or a general scan tool. NOTE: • Subaru Select Monitor For detailed operation procedures, refer to "Current Data Display For Engine". <Ref. to EN(H6DO)(diag)-53, Subaru Select Monitor.> • General scan tool For detailed operation procedures, refer to the general scan tool operation manual.	Subtract ambient temperature from «Intake Air Temp.». Is the obtained value –10 — 50°C (–18 — 90°F)?	Go to step **13**.	Check the mass air flow and intake air temperature sensor. <Ref. to FU(H6DO)-58, Mass Air Flow and Intake Air Temperature Sensor.>

GR:DTC U0155 LOST COMMUNICATION WITH INSTRUMENT PANEL CLUSTER (IPC) CONTROL MODULE

NOTE:
For the diagnostic procedure, refer to LAN section. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

1. OUTLINE OF DIAGNOSIS

NOTE:
For the detection standard, refer to DTC U0101. <Ref. to EN(H6DO)(diag)-690, DTC U0101 LOST COMMUNICATION WITH TCM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

GS:DTC U0402 INVALID DATA RECEIVED FROM TCM

NOTE:
For the diagnostic procedure, refer to LAN section. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

1. OUTLINE OF DIAGNOSIS

Detect malfunction of CAN communication.
Judge as NG when data received from TCM, VDC CM and combination meter is not normal.

2. COMPONENT DESCRIPTION

(Common Specifications)
CAN Protocol 2.0 B (Active)
Frame Format: 11 Bit ID Frame (Standard Frame)
Conforms to ISO11898
Communication Speed: 500 kbps

3. EXECUTION CONDITION

Secondary Parameters	Execution condition
Battery voltage	≥ 10.9 V

4. GENERAL DRIVING CYCLE

Always perform the diagnosis continuously.

5. DIAGNOSTIC METHOD

Judge as NG when the following conditions are established.

Judgment value

Malfunction Criteria	Threshold Value
Data from control modules connected to CAN	No change or Parity error

Time needed for diagnosis: 2 seconds
Malfunction indicator light illumination: Illuminates as soon as a malfunction occurs.

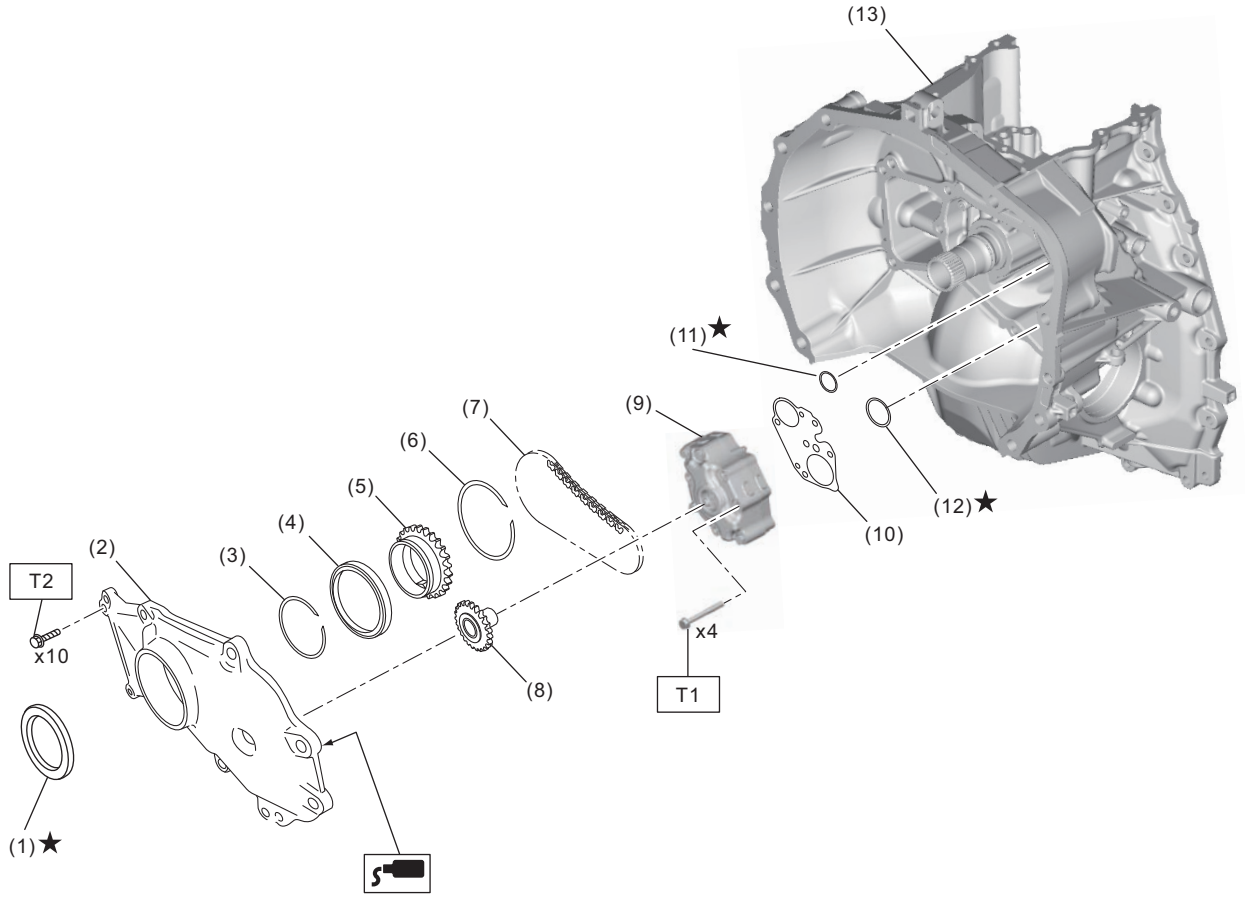
GT:DTC U0416 INVALID DATA RECEIVED FROM VEHICLE DYNAMICS CONTROL MODULE

NOTE:
For the diagnostic procedure, refer to LAN section. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

1. OUTLINE OF DIAGNOSIS

Detect malfunction of CAN communication.
Judge as NG when data received from TCM, VDC CM and combination meter is not normal.

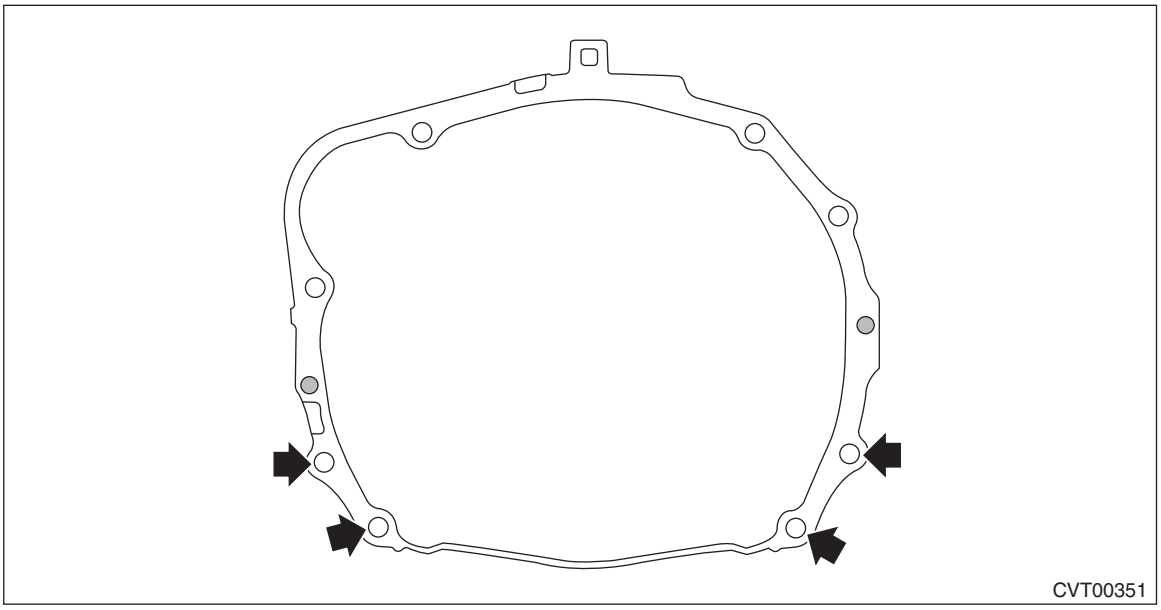
2. OIL PUMP ASSEMBLY



(1) Oil seal
(2) Oil pump chain cover
(3) Snap ring
(4) Ball bearing
(5) Drive sprocket
(6) Snap ring
(7) Oil pump chain
(8) Driven sprocket
(9) Oil pump ASSY
(10) Plate
(11) O-ring (small)
(12) O-ring (large)
(13) Converter case

Tightening torque: N·m (kgf-m, ft-lb)
T1: 8.5 (0.9, 6.3)
T2: 21 (2.1, 15.5)

56) Remove the two transmission connecting bolts and two nuts (lower side).



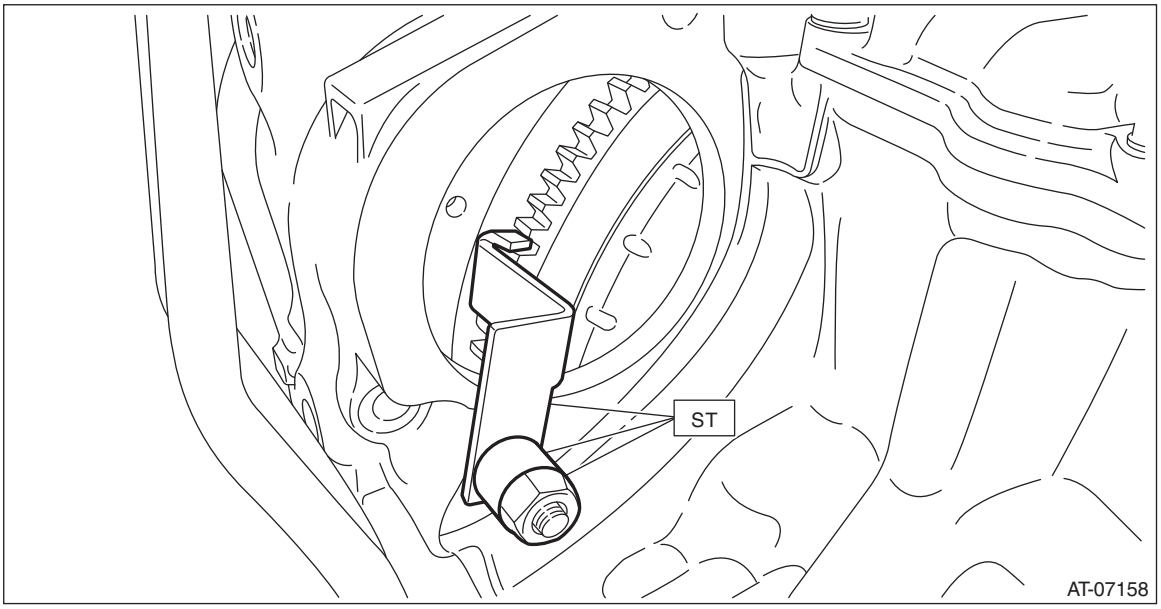
57) Remove the transmission assembly.

NOTE:
Remove it while moving the transmission jack up and down so that the engine and transmission axes are aligned straight.

58) Remove the cushion rubber. <Ref. to CVT(TR580)-99, TRANSMISSION REAR CROSSMEMBER AND REAR CUSHION RUBBER, REMOVAL, Transmission Mounting System.>

B: INSTALLATION

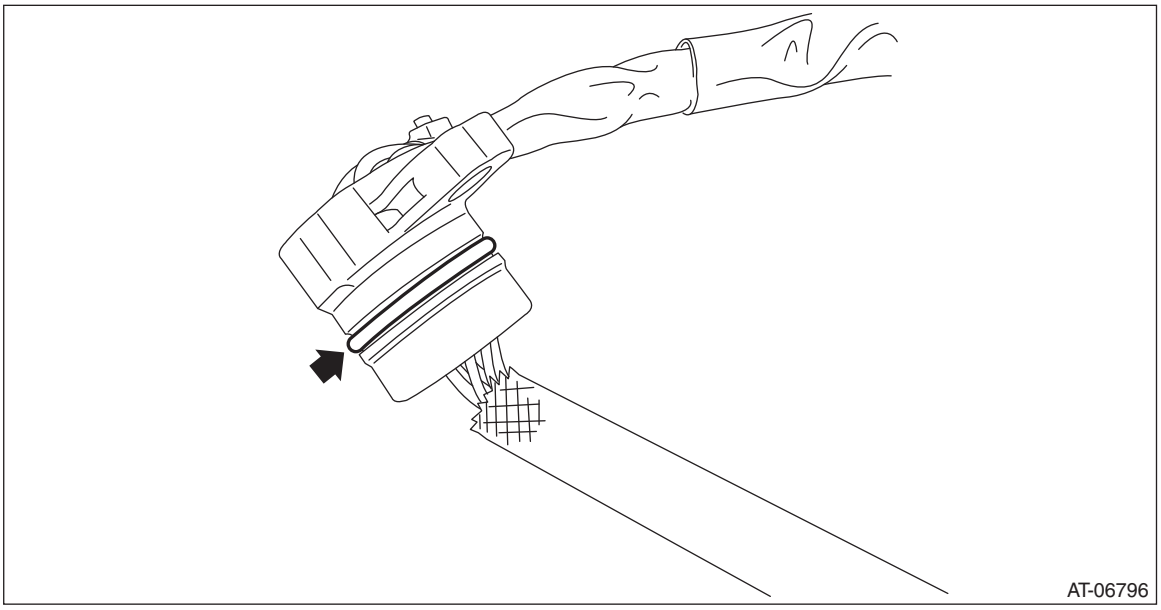
1) Attach the ST to converter case.
ST 498277200 STOPPER SET



2) Replace the front differential side retainer oil seal. <Ref. to CVT(TR580)-103, REPLACEMENT, Differential Side Retainer Oil Seal.>

NOTE:
- Be sure to replace the differential side retainer oil seal with a new part whenever the front drive shaft is removed from the transmission.
- When a new differential side retainer oil seal has been installed, replacement is not required.

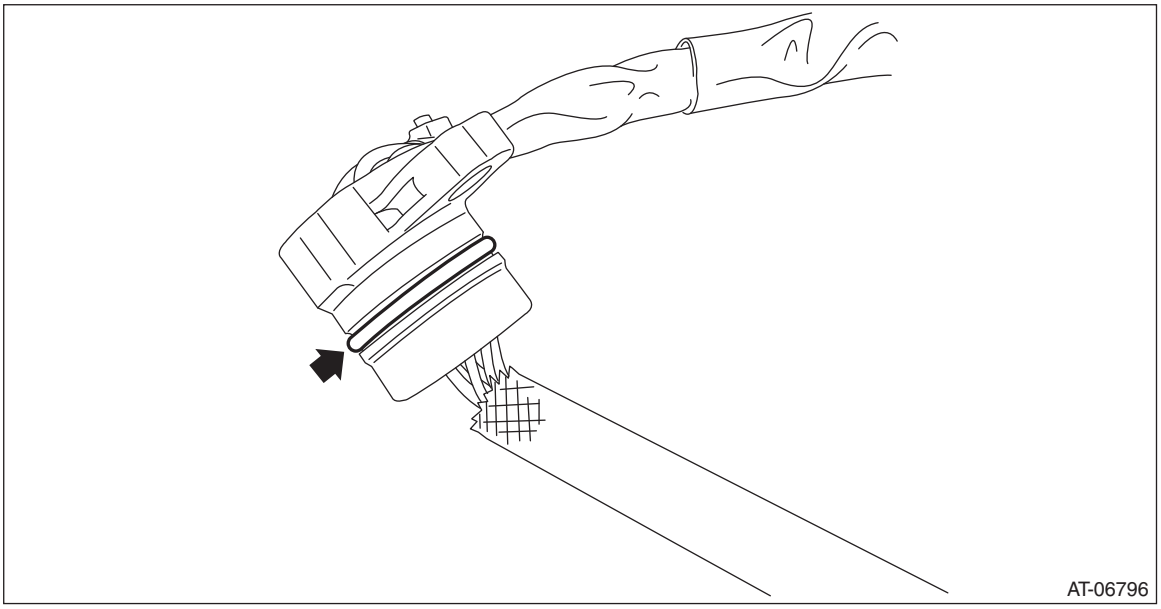
13) Remove the O-rings.



B: INSTALLATION

1) Clean the mating surface of valve cover and transmission side.
2) Check the control valve body for dust and other foreign matter.
3) Install the O-rings.

NOTE:
- Use new O-rings.
- Apply CVTF to the O-rings.

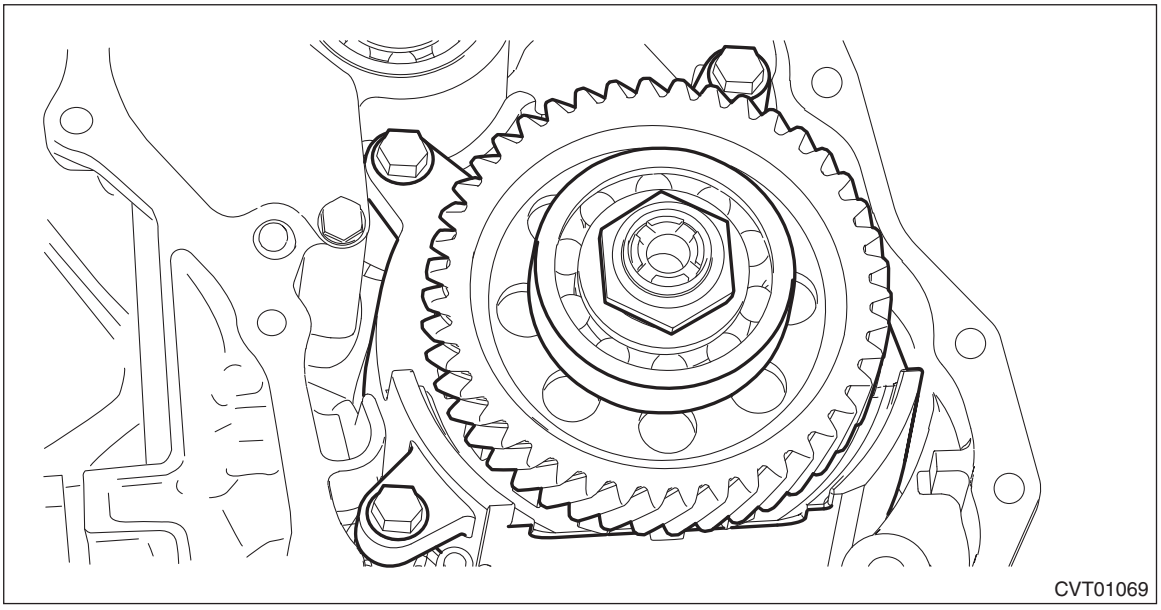


4) Install the transmission harness.

36.Reduction Driven Gear

A: REMOVAL

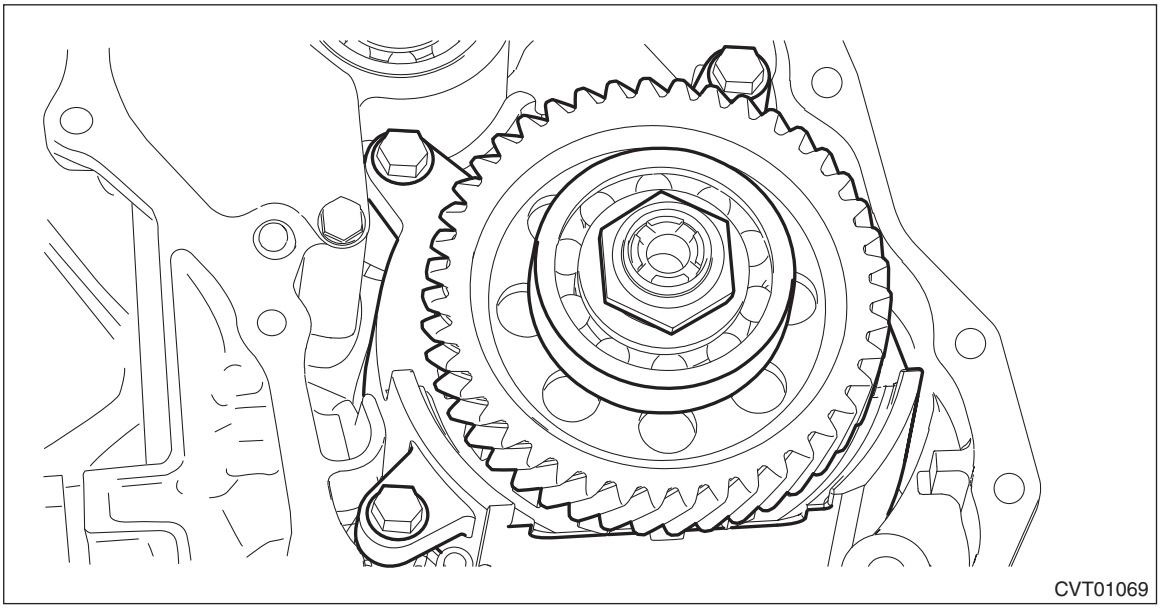
1) Remove the transmission assembly. <Ref. to CVT(TR580)-64, REMOVAL, Automatic Transmission Assembly.>
2) Remove the extension case. <Ref. to CVT(TR580)-206, REMOVAL, Extension Case.>
3) Remove the transfer clutch assembly. <Ref. to CVT(TR580)-210, REMOVAL, Transfer Clutch.>
4) Remove the transfer driven gear assembly. <Ref. to CVT(TR580)-224, REMOVAL, Transfer Driven Gear.>
5) Remove the parking pawl. <Ref. to CVT(TR580)-227, REMOVAL, Parking Pawl.>
6) Remove the reduction driven gear assembly and spacer oil.



B: INSTALLATION

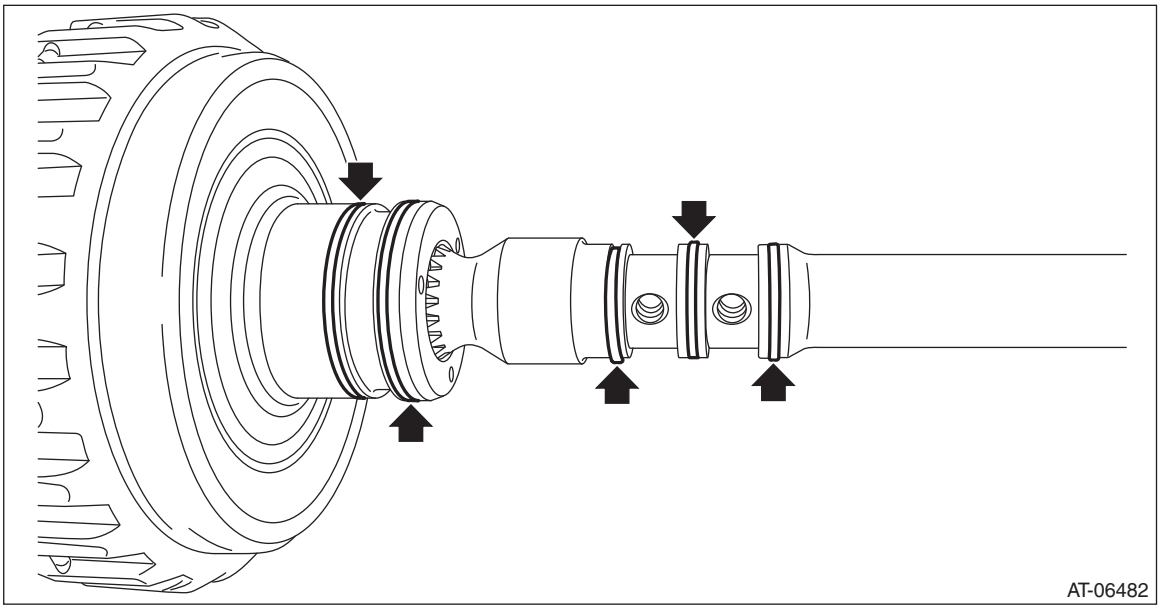
1) Install the reduction driven gear assembly and spacer oil.

Tightening torque:
17 N·m (1.7 kgf-m, 12.5 ft-lb)

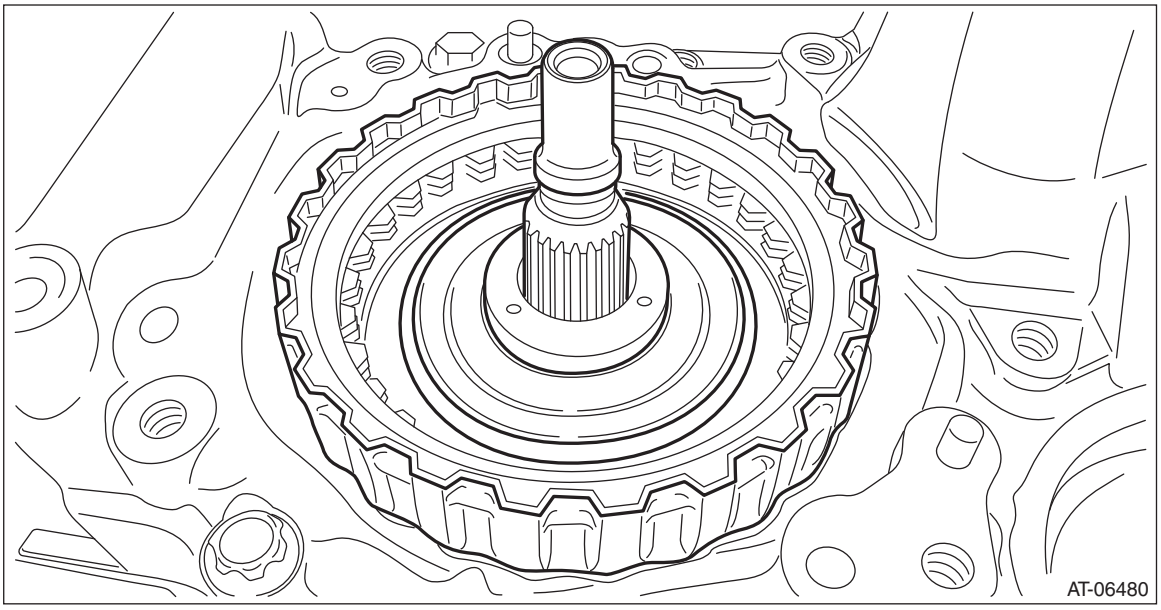


2) Select the transfer drive gear shim. <Ref. to CVT(TR580)-263, ADJUSTMENT, Reduction Drive Gear.>
3) Install the parking pawl. <Ref. to CVT(TR580)-227, INSTALLATION, Parking Pawl.>

- Apply CVTF to the seal rings.

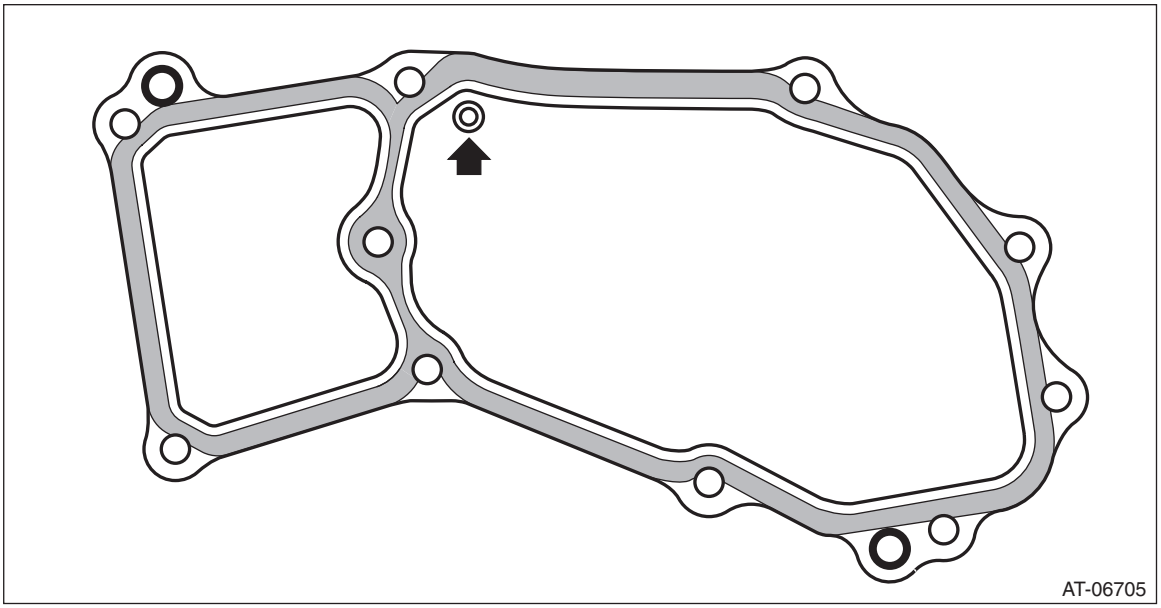


3) Install the forward clutch assembly to the converter case.



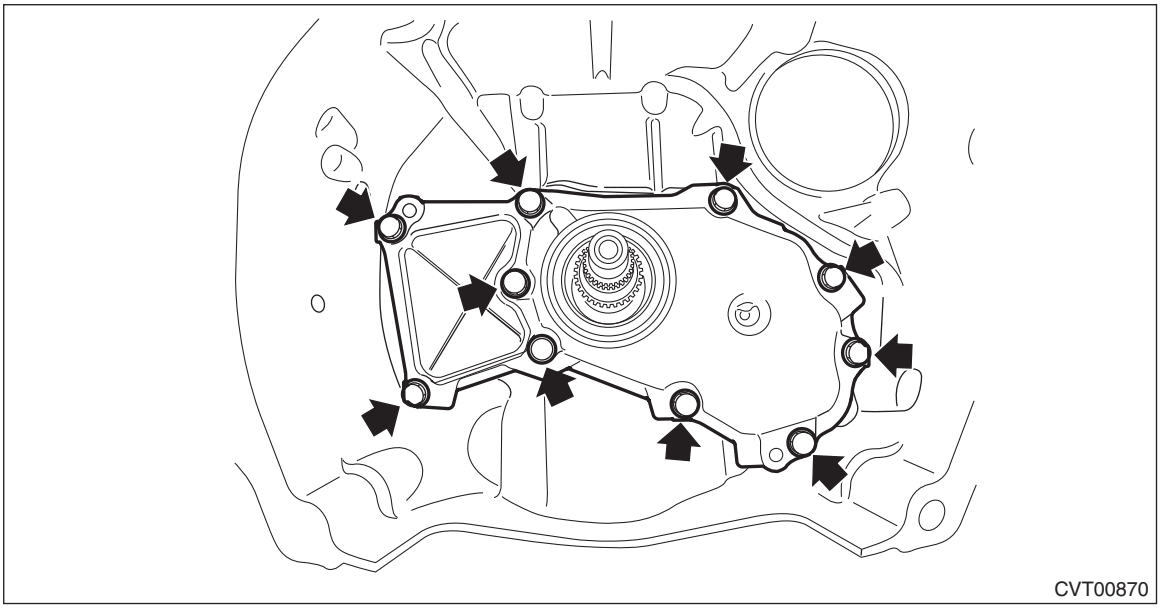
4) Install the sun gear.

Liquid gasket:
THREE BOND 1215B or equivalent



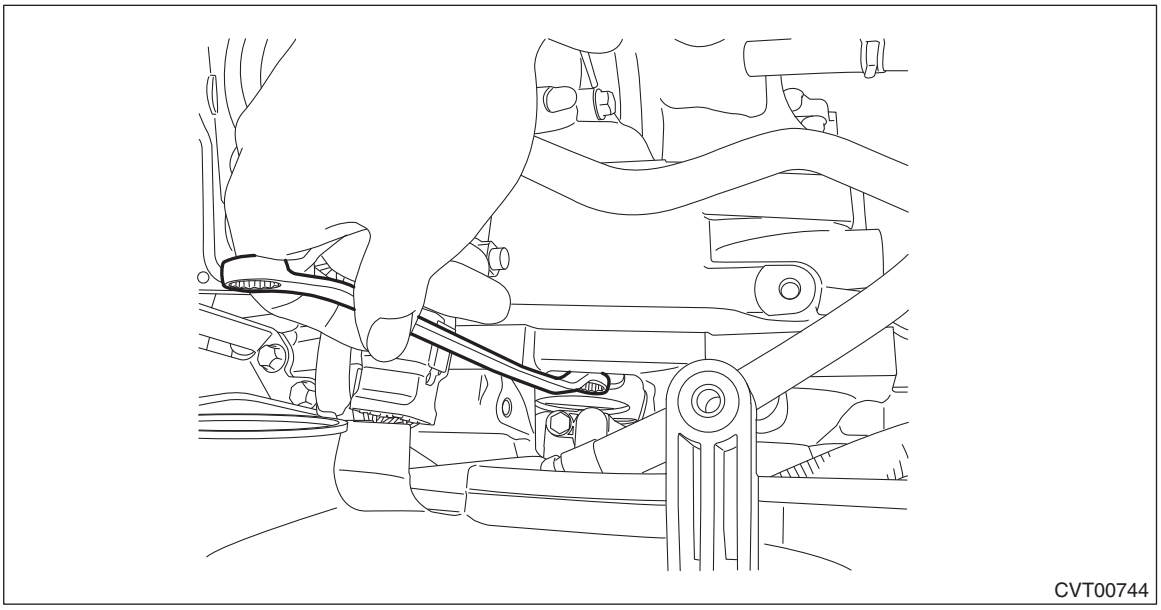
9) Install the oil pump chain cover.

Tightening torque:
21 N·m (2.1 kgf-m, 15.5 ft-lb)

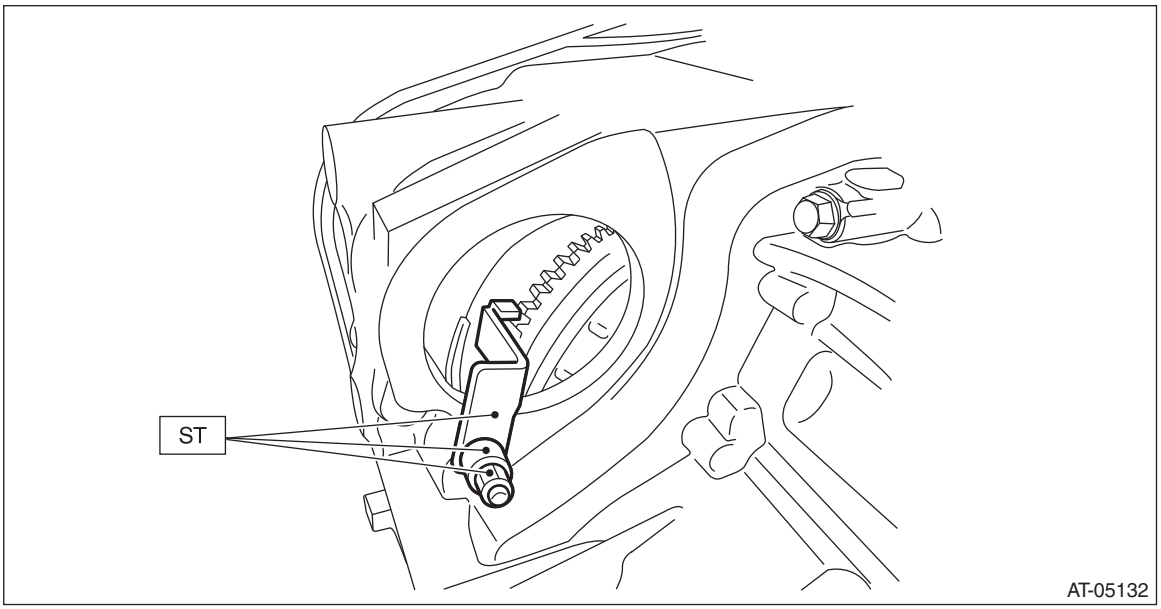


10) Install the torque converter assembly. <Ref. to CVT(TR580)-202, INSTALLATION, Torque Converter Assembly.>
11) Install the transmission assembly. <Ref. to CVT(TR580)-81, INSTALLATION, Automatic Transmission Assembly.>

- **Be careful not to damage the mounting bolts.**



20) Make sure the torque converter moves freely by rotating with finger through the starter installation hole.
21) Attach the ST to the converter case.
ST 498277200 STOPPER SET

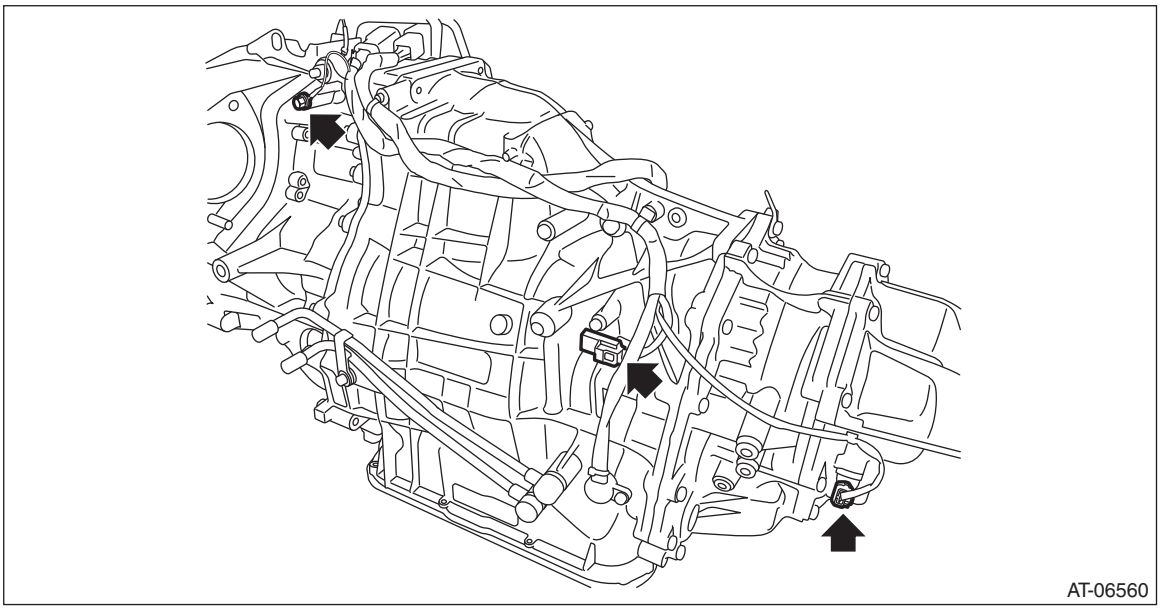


22) After pulling off the cotter pin and removing the castle nut, use a puller to remove the tie-rod end.

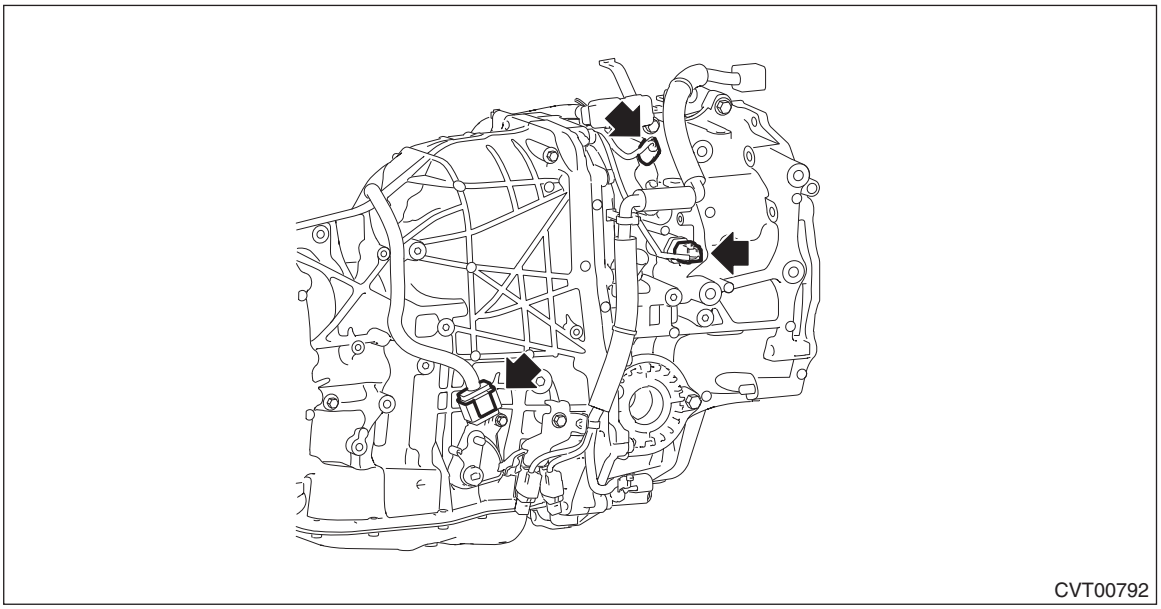
21.Transmission Harness

A: REMOVAL

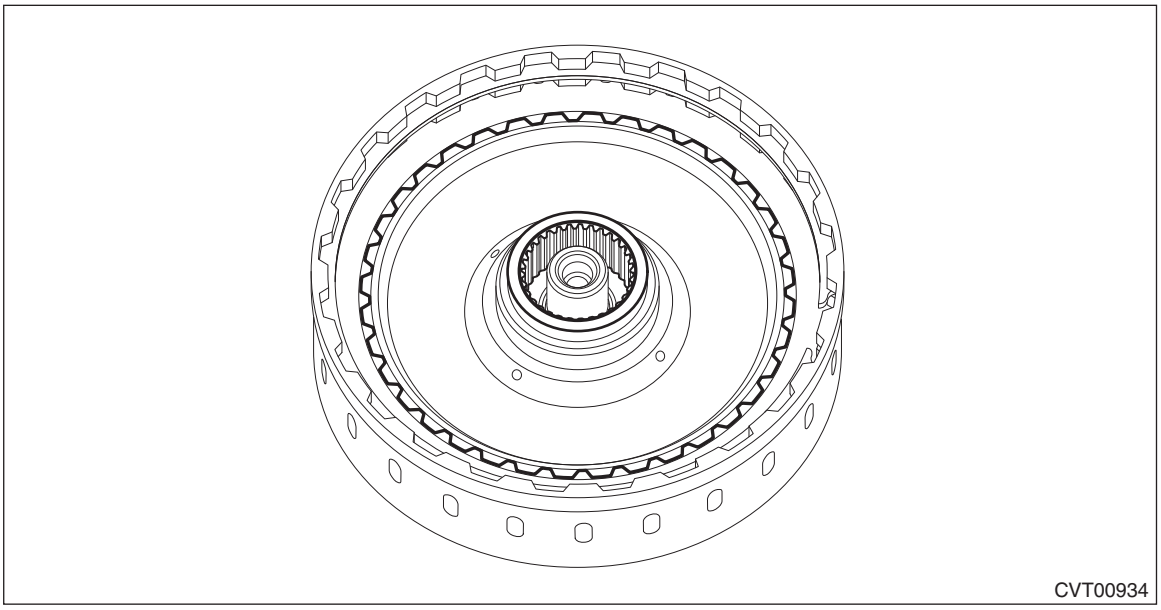
1) Remove the transmission from the vehicle. <Ref. to CVT(TR690)-59, REMOVAL, Automatic Transmission Assembly.>
2) Prepare for overhaul. <Ref. to CVT(TR690)-161, Preparation for Overhaul.>
3) Remove the transmission harness ground terminal and remove the harness connectors from front wheel speed sensor and secondary speed sensor.


AT-06560

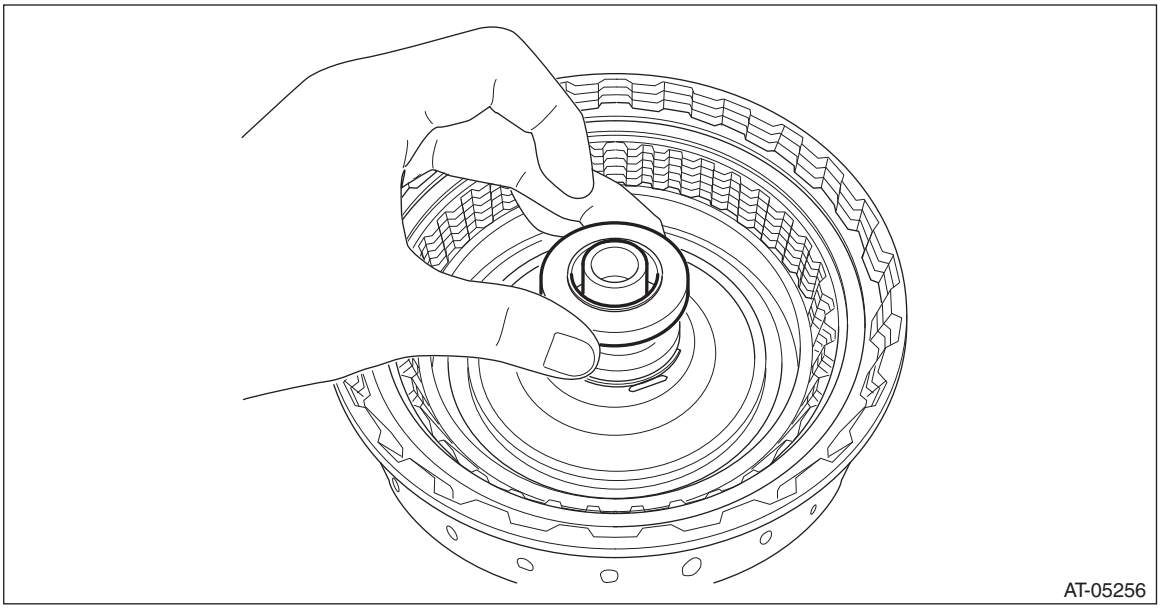
4) Remove the harness connectors from inhibitor switch, primary speed sensor and secondary pressure sensor.


CVT00792

9) Remove the forward clutch hub.



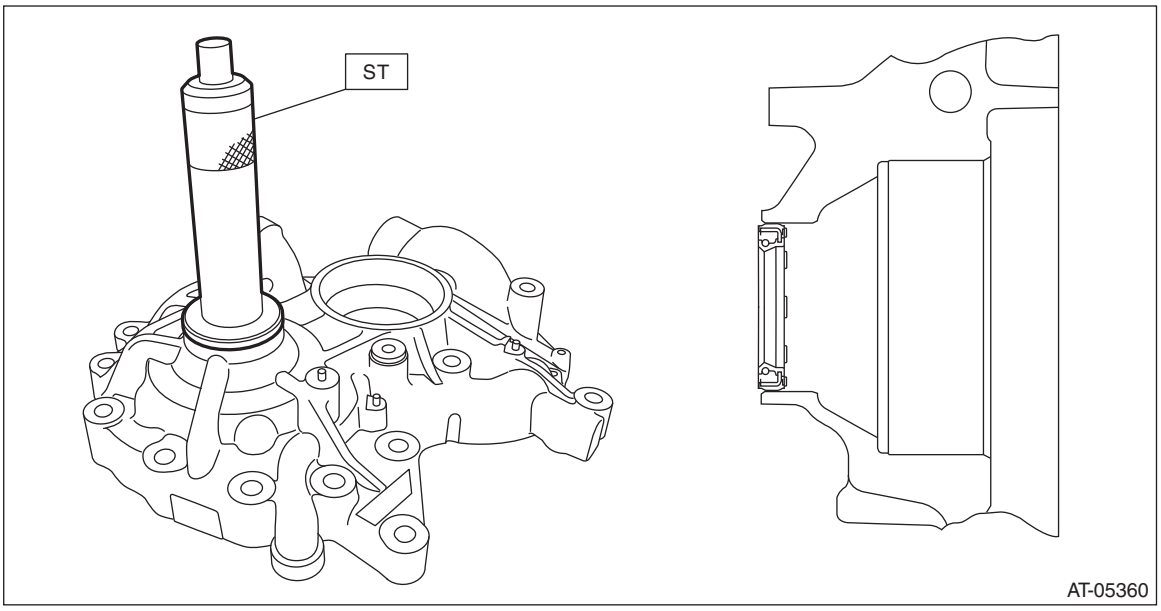
10) Remove the washer.



- Install the oil seal in the correct direction.

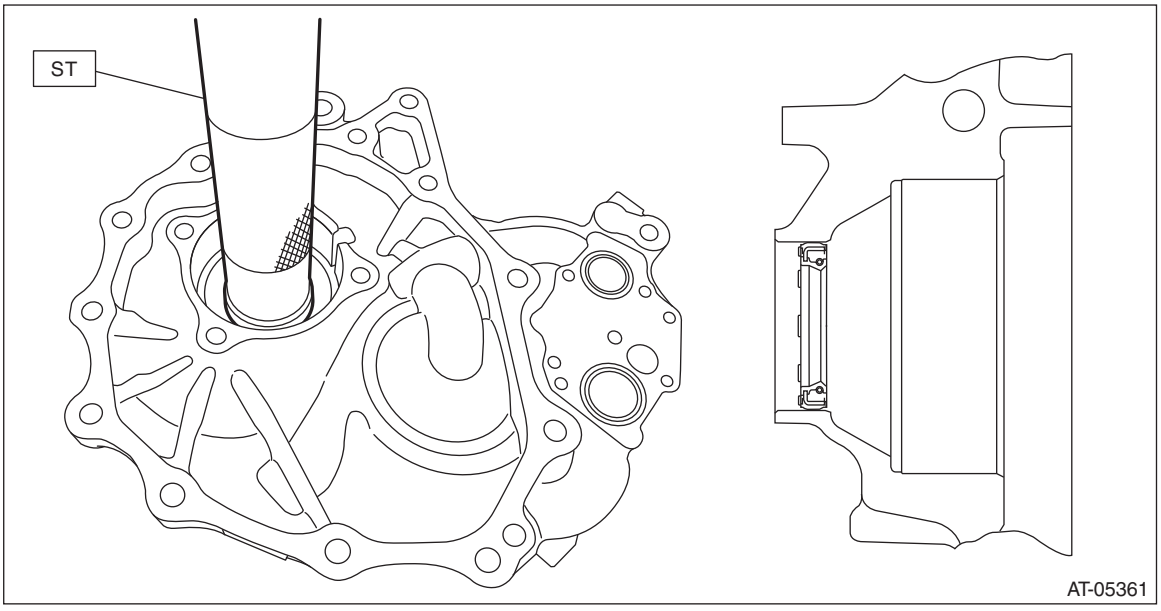
Pulley side

ST 18657AA020 OIL SEAL INSTALLER



Front differential side

ST 499277100 BUSHING 1-2 INSTALLER



3. General Description

A: CAUTION

1) The airbag system wiring harness is routed near the TCM.

CAUTION:
• All the airbag system wiring harnesses and connectors are colored yellow. Do not use an electric test equipment to check these circuits.
• Be careful not to damage the airbag system wiring harness when performing diagnostics or servicing the TCM.

2) When measuring the voltage or resistance of individual sensor or all electrical control modules, use a tapered pin with a diameter of 0.6 mm (0.024 in) or less and touch it to the tip of terminal. Never insert the tapered pin into the terminal because it deforms inside which may lead to malfunction.

CAUTION:
If a taper pin or the like has been inserted into the connector terminal, replace the connector.

3) The TCM connector is waterproof. When measuring the TCM connector terminal voltage, or the resistance between the terminals, use the ST.
ST 18460AA040 CHECK BOARD

B: INSPECTION

1. BATTERY

Check the battery. <Ref. to SC(H4DO)-42, INSPECTION, Battery.> <Ref. to SC(H6DO)-59, INSPECTION, Battery.>

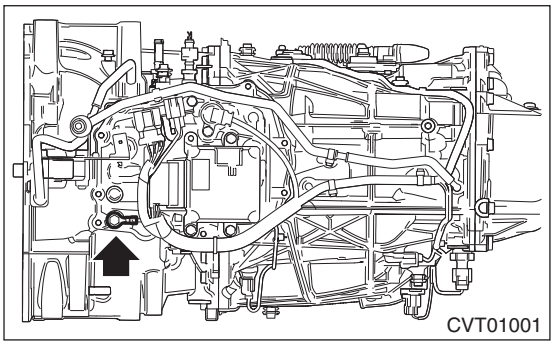
Standard voltage: 12 V or more

Specific gravity: 1.260 or more

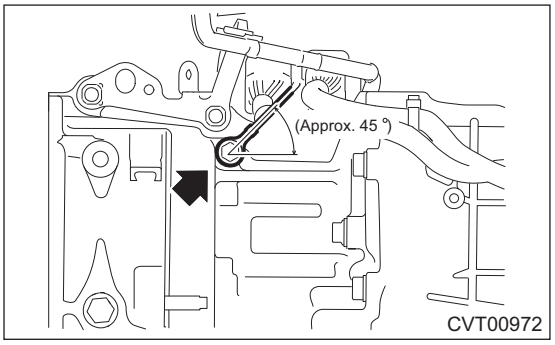
2. TRANSMISSION GROUND

Make sure that the ground terminal bolt is tightened securely.

Tightening torque:
ENGINE TYPE FB
14 N·m (1.4 kgf-m, 10.3 ft-lb)



ENGINE TYPE EZ
16 N·m (1.6 kgf-m, 11.8 ft-lb)



3. OPERATION OF SELECT LEVER

Make sure there is no noise, dragging or contact pattern in each select lever range.

WARNING:
Stop the engine while checking operation of the select lever.

C: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 STSSM4	—	SUBARU SELECT MONITOR 4	Used for setting of each function and troubleshooting for electrical system. NOTE: For detailed operation procedures of Subaru Select Monitor 4, refer to “Application help”.

N: DTC P0721 OUTPUT SHAFT SPEED SENSOR CIRCUIT RANGE/PERFORMANCE

DTC detecting condition:
Immediately at fault recognition
Trouble symptom:
- Acceleration is poor during standing start.
- No lock-up occurs.
- The engine stalls when the vehicle is stopped.
- Shift control malfunction

Step		Check	Yes	No
1	**CHECK DTC.** Read the DTC using Subaru Select Monitor.	Besides DTC P0721, is DTC P0500 displayed?	Perform the diagnosis according to DTCs other than P0721.	Perform the diagnosis according to DTC P0720. <Ref. to CVT(diag)-76, DTC P0720 OUTPUT SHAFT SPEED SENSOR CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

1. OUTLINE OF DIAGNOSIS

- Detect the malfunction of front wheel speed sensor characteristics.
- Judge as NG when the deviation between vehicle speed from VDC and front wheel speed sensor becomes equal to or larger than the predetermined value.

2. EXECUTION CONDITION

Secondary Parameters	Execution condition
12 V battery system voltage	≥ 10 V
Vehicle speed (from vehicle dynamics control module)	≥ 12 MPH

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment value

Malfunction Criteria	Threshold Value
|Vehicle speed (calculated from front output shaft speed) – Vehicle speed (from vehicle dynamics control module)|	> 10 MPH

Time needed for diagnosis: 5 seconds
Malfunction indicator light illumination: Illuminates as soon as a malfunction occurs.

	Step	Check	Yes	No
3	**CHECK SECONDARY SOLENOID.** Measure the resistance between transmission connector and transmission body. ***Connector & terminal*** ***(T4) No. 5 — Transmission body:***	Is the resistance approx. 5 — 7 Ω? (when cold)	Check for poor contact of connector, and if no fault is found, replace the TCM. <Ref. to CVT(TR690)-146, Transmission Control Module (TCM).>	Go to step **4**.
4	**CHECK HARNESS INSIDE TRANSMISSION.** **CAUTION:** **Start work after ATF cools down.** 1) Remove the transmission oil pan. 2) Check for the harness pinch, damage.	Is there any fault in the harness?	Replace the transmission harness.	Go to step **5**.
5	**CHECK HARNESS INSIDE TRANSMISSION.** 1) Disconnect the control valve body connector. 2) Measure the resistance between transmission connector and transmission body. ***Connector & terminal*** ***(T4) No. 5 — Transmission body:***	Is the resistance 1 MΩ or more?	Replace the control valve body. <Ref. to CVT(TR690)-129, Control Valve Body.>	Replace the transmission harness.

3. OUTLINE OF DIAGNOSIS

Diagnosis 1
- Detect the ground short of the transmission line pressure solenoid drive circuit.
- Judge as NG if the transmission line pressure solenoid drive current is higher than the predetermined value.

Diagnosis 2
- Detect the ground short of the transmission line pressure solenoid drive circuit.
- Judge as NG when an abnormal signal is received from the solenoid driver IC of the transmission line pressure solenoid drive circuit.

4. EXECUTION CONDITION

Secondary Parameters	Execution condition
Diagnosis 1	
12 V battery system voltage	≥ 9 V
Commanded line pressure control solenoid valve current	≥ 0.1 A
Diagnosis 2	
12 V battery system voltage	≥ 9 V

5. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Diagnosis 1	
Measured line pressure control solenoid valve current	≥ 1.1 A
Diagnosis 2	
Signal of malfunction from solenoid driver IC	ON
As defined by:	
Measured line pressure control solenoid valve current ≥ 1.2 A	

BB:DTC U0073 CONTROL MODULE COMMUNICATION BUS OFF

NOTE:
Refer to “LAN SYSTEM (DIAGNOSTICS)” for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

1. OUTLINE OF DIAGNOSIS (ENGINE TYPE FB)

- Detect malfunction of CAN communication.
- Judge as NG when CAN communication failure has occurred.

2. EXECUTION CONDITION (ENGINE TYPE FB)

Secondary Parameters	Execution condition
12 V battery system voltage	≥ 10 V
Measured turbine shaft speed	> 0 rpm
or	
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD (ENGINE TYPE FB)

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
CAN bus condition	Bus off

Time Needed for Diagnosis: 2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

4. OUTLINE OF DIAGNOSIS (ENGINE TYPE EZ)

- Detect malfunction of CAN communication.
- Judge as NG when CAN communication failure has occurred.

5. EXECUTION CONDITION (ENGINE TYPE EZ)

Secondary Parameters	Execution condition
12 V battery system voltage	≥ 10 V
Measured primary pulley shaft speed	> 0 rpm
or	
Transmission range	Drive or Reverse

6. DIAGNOSTIC METHOD (ENGINE TYPE EZ)

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
CAN bus condition	Bus off

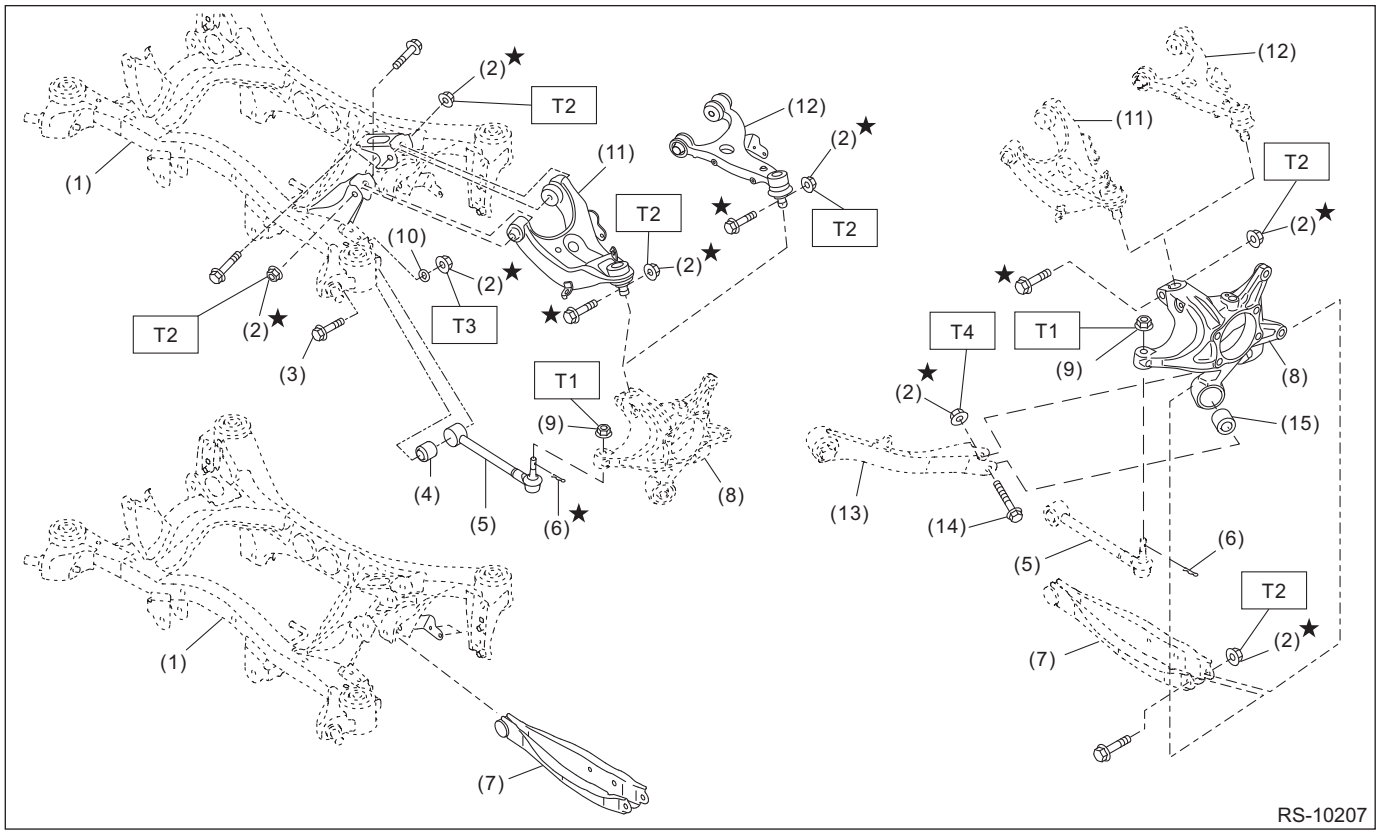
Time Needed for Diagnosis: 2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

BC:DTC U0100 LOST COMMUNICATION WITH ECM/PCM “A”

NOTE:
Refer to “LAN SYSTEM (DIAGNOSTICS)” for diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

1. OUTLINE OF DIAGNOSIS (ENGINE TYPE FB)

- Detect malfunction of CAN communication.
- Judge as NG when CAN communication failure occurs with the ECM.



(1)	Rear sub frame ASSY	(8)	Rear axle housing	(15)	Bushing D - rear axle housing
(2)	Self-locking nut	(9)	Flange nut		
(3)	Adjusting bolt	(10)	Adjusting washer	***Tightening torque: N·m (kgf-m, ft-lb)***	
(4)	Bushing B - lateral link	(11)	Rear upper arm ASSY (sedan model)	***T1:***	***60 (6.1, 44.3)***
(5)	Lateral link ASSY - front	(12)	Rear upper arm ASSY (OUTBACK model)	***T2:***	***80 (8.2, 59) 120 (12.2, 88.5)***
(6)	Snap pin	(13)	Trailing link	***T3:***	***120 (12.2, 88.5)***
(7)	Lateral link ASSY - rear	(14)	Flange bolt	***T4:***	***90 (9.2, 66)***

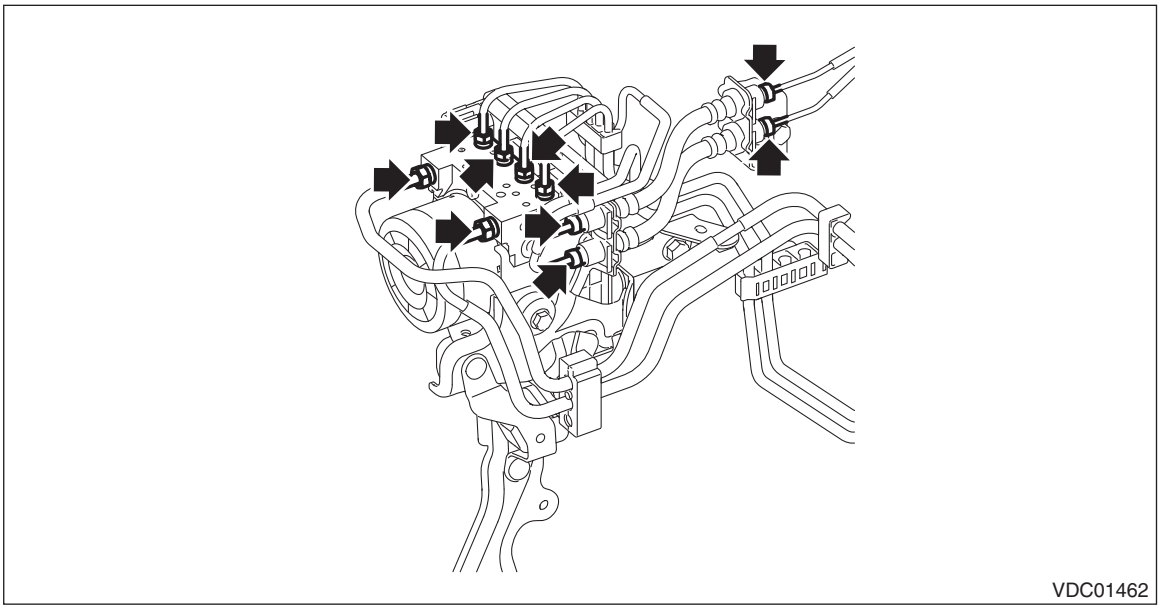
	Step	Check	Yes	No
1	**REPRODUCTION OF FAILURE.** 1) Perform the drive test. Drive the vehicle at 40 km/h (25 MPH) or faster for at least 10 minutes. 2) Read the DTC of «Tire Pressure Monitor» using the Subaru Select Monitor. <Ref. to TPM(diag)-22, Diagnostic Trouble Code (DTC).>	Is DTC displayed as current malfunction?	Go to step **2**.	When DTC is displayed as “Past faults”, the system has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, there may be temporary poor communication due to radio wave environment inside/outside the vehicle.
2	**START FRONT LEFT TRANSMITTER.** 1) Connect the Subaru Select Monitor and then turn the ignition switch to ON. 2) Using Subaru Select Monitor, display the following items in «Data monitor» of «Tire Pressure Monitor». <Ref. to TPM(diag)-13, Data Monitor.> • «Latest reception ID» 3) Use the transmitter registration tool and transmit the ID from the front left transmitter to check «Latest reception ID».	Is «Latest reception ID» updated?	Go to step **3**.	Replace the front left transmitter. <Ref. to WT-9, Tire Pressure Monitoring System.>
3	**CHECK FRONT LEFT TRANSMITTER ID.** Compare the ID on the latest ID display with «FL Registered ID».	Are the two IDs same?	Go to step **4**.	Record «Latest reception ID» as the front left. Go to step **4**.
4	**START FRONT RIGHT TRANSMITTER.** Use the transmitter registration tool and transmit the ID from the front right transmitter to check «Latest reception ID».	Is «Latest reception ID» updated?	Go to step **5**.	Replace the front right transmitter. <Ref. to WT-9, Tire Pressure Monitoring System.>
5	**CHECK FRONT RIGHT TRANSMITTER ID.** Compare the ID on the latest ID display with «FR Registered ID».	Are the two IDs same?	Go to step **6**.	Record «Latest reception ID» as the front right. Go to step **6**.
6	**START REAR RIGHT TRANSMITTER.** Use the transmitter registration tool and transmit the ID from the rear right transmitter to check «Latest reception ID».	Is «Latest reception ID» updated?	Go to step **7**.	Replace the rear right transmitter. <Ref. to WT-9, Tire Pressure Monitoring System.>
7	**CHECK REAR RIGHT TRANSMITTER ID.** Compare the ID on the latest ID display with «RR Registered ID».	Are the two IDs same?	Go to step **8**.	Record «Latest reception ID» as the rear right. Go to step **8**.
8	**START REAR LEFT TRANSMITTER.** Use the transmitter registration tool and transmit the ID from the rear left transmitter to check «Latest reception ID».	Is «Latest reception ID» updated?	Go to step **9**.	Replace the rear left transmitter. <Ref. to WT-9, Tire Pressure Monitoring System.>

2. Transfer Clutch

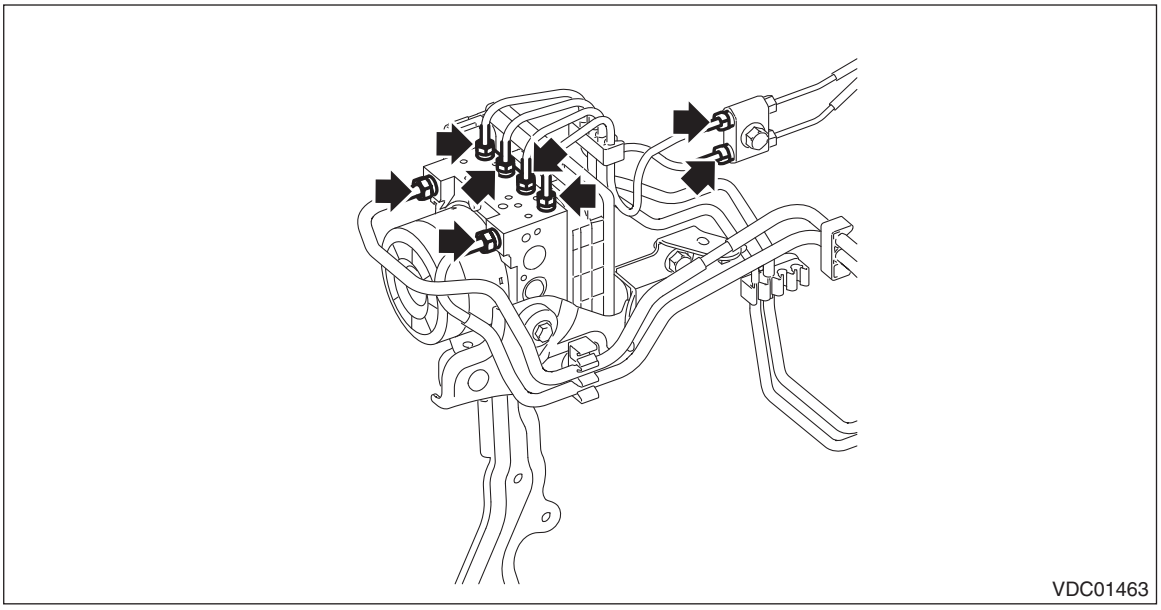
A: NOTE

For removal, installation and inspection, refer to “CVT (TR580)” or “CVT (TR690)” section.
CVT (TR580) model:
<Ref. to CVT(TR580)-210, Transfer Clutch.>
CVT (TR690) model:
<Ref. to CVT(TR690)-172, Transfer Clutch.>

- Models with EyeSight



- Models without EyeSight



DTC	Item	Content of diagnosis	Reference
C1732	LATERAL G SENSOR	Defective lateral G sensor	<Ref. to VDC(diag)-82, DTC C1732 LATERAL G SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1733	LONGITUDINAL G SENSOR	Defective longitudinal G sensor	<Ref. to VDC(diag)-84, DTC C1733 LONGITUDINAL G SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1741	PRESSURE SENSOR	Defective pressure sensor	<Ref. to VDC(diag)-85, DTC C1741 PRESSURE SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1742	WHEEL CYLINDER PRESSURE SENSOR	Defective pressure sensor	<Ref. to VDC(diag)-86, DTC C1742 WHEEL CYLINDER PRESSURE SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1811	SYSTEM	System malfunction	<Ref. to VDC(diag)-87, DTC C1811 SYSTEM, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1921	PARKING POSITION SWITCH CIRCUIT	Parking switch malfunction	<Ref. to VDC(diag)-89, DTC C1921 PARKING POSITION SWITCH CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1922	HILL HOLD SWITCH CIRCUIT	Hill hold switch malfunction	<Ref. to VDC(diag)-92, DTC C1922 HILL HOLD SWITCH CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1935	IGNITION SWITCH CIRCUIT	No match of IGN input	<Ref. to VDC(diag)-94, DTC C1935 IGNITION SWITCH CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1942	POWER SUPPLY VOLTAGE	Electronic parking brake power supply voltage is faulty	<Ref. to VDC(diag)-96, DTC C1942 POWER SUPPLY VOLTAGE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1951	ACTUATOR	Electronic parking brake actuator line is faulty	<Ref. to VDC(diag)-98, DTC C1951 ACTUATOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1954	RH ACTUATOR	Electronic parking brake RH actuator is faulty	<Ref. to VDC(diag)-100, DTC C1954 RH ACTUATOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1955	LH ACTUATOR	Electronic parking brake LH actuator is faulty	<Ref. to VDC(diag)-102, DTC C1955 LH ACTUATOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1956	RH ACTUATOR CIRCUIT	Defective RH drive circuit	<Ref. to VDC(diag)-104, DTC C1956 RH ACTUATOR CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1957	LH ACTUATOR CIRCUIT	Defective LH drive circuit	<Ref. to VDC(diag)-106, DTC C1957 LH ACTUATOR CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1983	HIGH FREQUENCY OPERATION	Electronic parking brake operation is too frequent	<Ref. to VDC(diag)-108, DTC C1983 HIGH FREQUENCY OPERATION, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1984	BRAKE MAINTENANCE MODE	Executing brake maintenance mode	<Ref. to VDC(diag)-109, DTC C1984 BRAKE MAINTENANCE MODE, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
C1985	FORBIDDEN STATE OF DYNAMIC ACTUATOR OPERATION	Electronic parking brake actuator is faulty	<Ref. to VDC(diag)-110, DTC C1985 FORBIDDEN STATE OF DYNAMIC ACTUATOR OPERATION, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
U0073	CONTROL MODULE COMMUNICATION BUS OFF	Defective CAN communication	<Ref. to VDC(diag)-110, DTC U0073 CONTROL MODULE COMMUNICATION BUS OFF, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

BRAKE

BR

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PARKING BRAKE

PB

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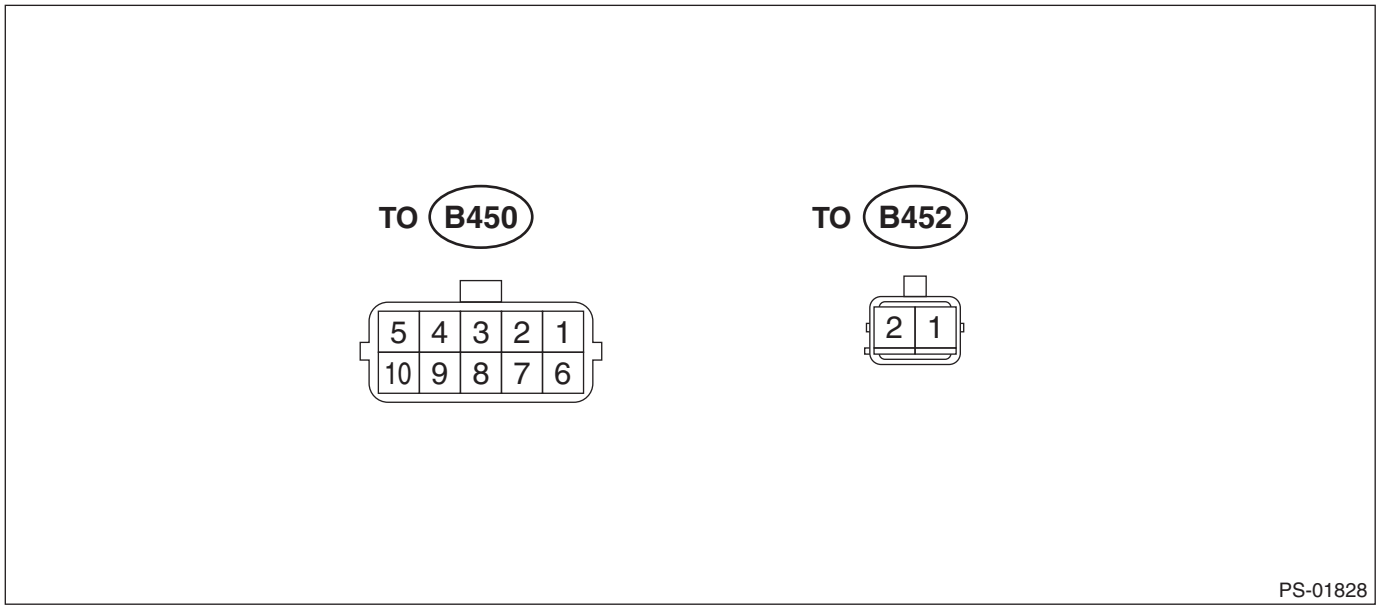
5. Control Module I/O Signal

A: ELECTRICAL SPECIFICATION



NOTE:
The terminal numbers of the power steering control module connectors are as indicated in the figure.

Content	Connector No.	Terminal No.	Input/output signal
			Measured value and measuring conditions
Power supply (IG SW)	B450	5	Battery voltage is detected with the ignition switch ON when measuring between (B450) No. 5 — (B452) No. 2.
Main torque sensor	B450	2	The voltage changes when the steering is operated to the right or left with the ignition switch ON.
Sub torque sensor	B450	1	The voltage changes when the steering is operated to the right or left with the ignition switch ON.
Torque sensor power supply	B450	6	Approximately 5 V is detected with ignition switch ON.
Torque sensor ground	B450	7	0 V is constantly detected.
CAN communication	B450	9	Digital signal; can not be measured
CAN communication	B450	10	Digital signal; can not be measured
Power supply	B452	1	Battery voltage is constantly detected when measuring between 1 — 2.
Ground	B452	2	

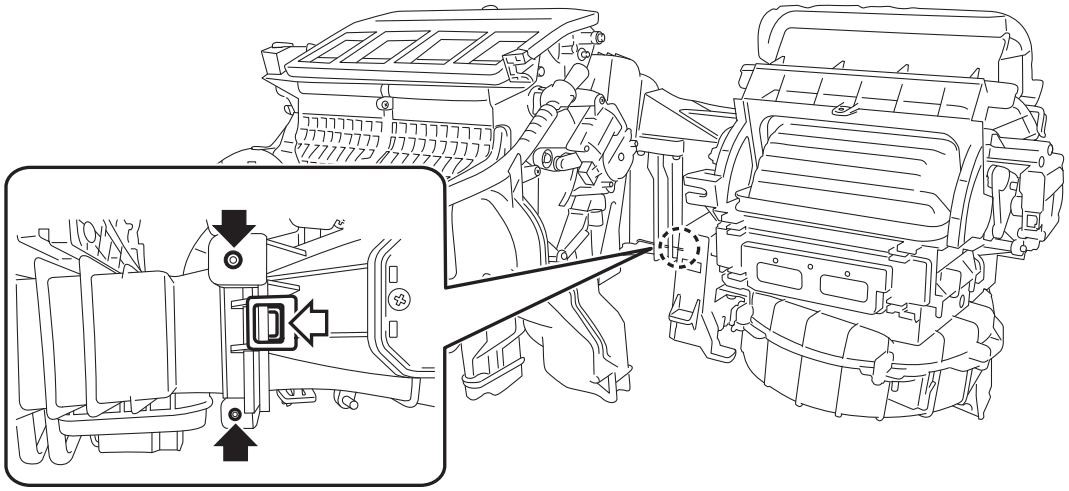
B: WIRING DIAGRAM

Refer to “Electric Power Steering System” in the wiring diagram. <Ref. to WI-178, Electric Power Steering System.>

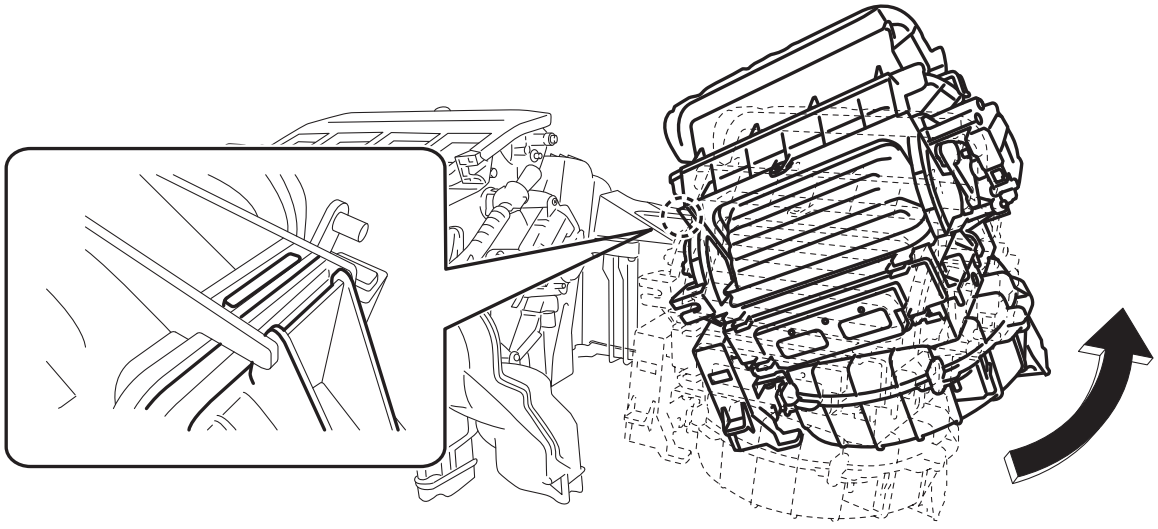
9. Blower Motor Unit Assembly

A: REMOVAL

CAUTION:
• Before handling the airbag system components, refer to "CAUTION" of "General Description" in "AIRBAG SYSTEM". <Ref. to AB-10, CAUTION, General Description.>
• Do not detach the immobilizer control module except when replacing the blower motor unit assembly.
• Replace the air duct cover LWR with a new part when the immobilizer control module is removed. If the air duct cover LWR is reused, screw tightening force is reduced and the immobilizer control module may be detached due to vibration while driving.
1) Disconnect the ground terminal from the battery sensor, and wait for at least 60 seconds before starting work. <Ref. to RC-3, BATTERY, NOTE, Repair Contents.>
2) Remove the heater and cooling unit assembly. <Ref. to AC-58, REMOVAL, Heater and Cooling Unit.>
3) Remove the blower motor unit assembly.
(1) Release the claws and remove the screws.


AC-03662

(2) Remove the blower motor unit assembly as shown in the figure.


AC-03663

HVAC SYSTEM (DIAGNOSTICS)

AC(diag)

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	Step	Check	Yes	No
3	**CHECK HARNESS (SHORTED BETWEEN LINES AND SHORTED TO GROUND).** 1) Disconnect the connector from A/C CM. 2) Using a tester, check continuity between terminals. ***Connector & terminal*** ***(i174) No. 3 — (i174) No. 5:*** ***(i174) No. 5 — Chassis ground:***	Is there continuity?	Repair or replace the short circuit of the harness.	Replace the A/C CM. <Ref. to AC-48, REMOVAL, Control Unit.>

- Harness and/or connector is cracked, deformed or open.
- Harness wire is exposed.

2) Install the side airbag module to the frame assembly - front backrest.

Tightening torque:
6 N·m (0.6 kgf-m, 4.4 ft-lb)

3) Assemble the front seat. <Ref. to SE-26, ASSEMBLY, Front Seat.>

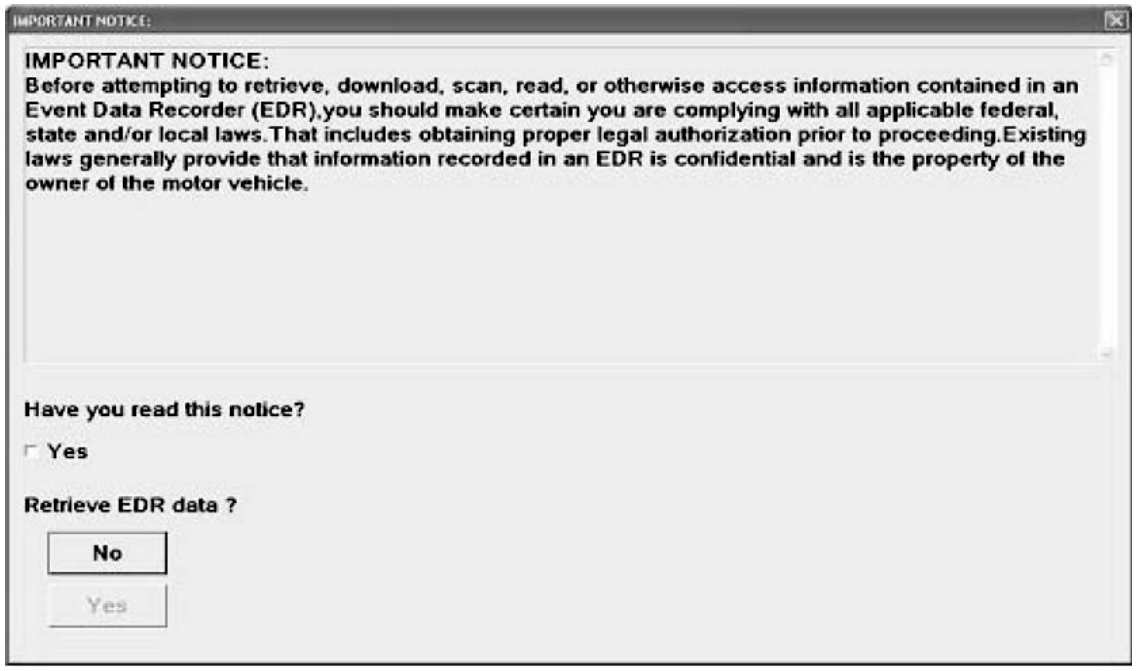
CAUTION:
After restoring the seat, operate the reclining and sliding mechanisms to check that the airbag harness is not caught.

4) Install the front seat assembly to the body. <Ref. to SE-12, INSTALLATION, Front Seat.>
5) Connect the ground terminal to battery sensor. <Ref. to RC-3, BATTERY, NOTE, Repair Contents.>

13.Batch save of Event record data

A: OPERATION

1) On «Start» display, select «Diagnosis».
2) On «Vehicle selection» display, input the target vehicle information and select «Confirmed».
3) On «Main Menu» display, select «Each System».
4) On «Select System» display, select «Airbag» and select «Enter».
5) On «Airbag» display, select «Work Support».
6) On «Work Support item» display, select «Batch save of Event record data». After selection, «IMPORTANT NOTICE» screen is displayed.
7) After checking the content of «IMPORTANT NOTICE», click the checkbox for “Yes”.
8) If the applicable law is not violated, click the «Yes» button to display the EDR data.



AB-02847

9) Specify the destination for the event record data to save the data there.
10) After saving the file, click the «OK» button to return the menu screen.

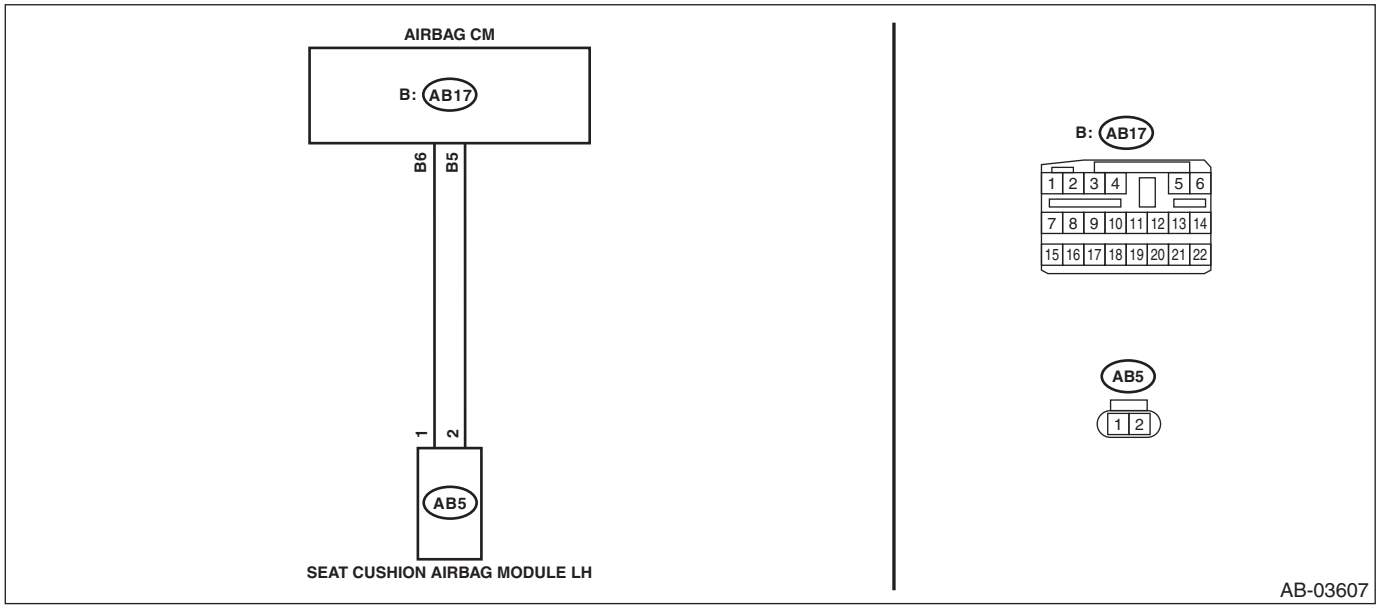
	Step	Check	Yes	No
5	**CHECK FOR ANY OTHER DTC ON DISPLAY.** Read the DTC. (Current malfunction) <Ref. to AB(diag)-32, Read Diagnostic Trouble Code (DTC).>	Is any other DTC displayed?	Check DTC using "List of Diagnostic Trouble Code". <Ref. to AB(diag)-41, LIST, List of Diagnostic Trouble Code (DTC).>	Finish the diagnosis.

	Step	Check	Yes	No
2	**CHECK AIRBAG MAIN HARNESS (PASSENGER'S AIRBAG HARNESS) (SHORTED BETWEEN LINES).** 1) Turn the ignition switch to OFF, disconnect the battery ground cable, and wait for 60 seconds or more. 2) Disconnect the connectors (AB7) and (AB2). 3) Disconnect the passenger's airbag module connector (AB9). 4) Disconnect the connectors (AB6, AB17, AB18) from airbag control module. 5) Connect the connector (1AD) in test harness AD AV to the connectors (AB6, AB17, AB18). 6) Connect the connector (2AD) in test harness AD AV and the connector (1AG) in test harness AG. 7) Using a probe, measure the resistance between the terminals of connector (AB9). <Ref. to AB(diag)-21, HOW TO USE PROBE, PREPARATION TOOL, General Description.> **CAUTION:** **When measuring the resistance, make sure that the probe is inserted from the back side (harness side) of the connector. Also, do not insert the probe forcibly.** ***Connector & terminal*** ***(AB9) No. 3 — (AB9) No. 4:***	Is the resistance 1 MΩ or more?	Go to step **3**.	Replace the airbag main harness along with body harness.
3	**CHECK AIRBAG CONTROL MODULE.** 1) Disconnect the test harness AD AV from the connectors (AB6, AB17, AB18). 2) Connect the connector other than passenger's airbag module connector (AB9). 3) Connect the battery ground terminal and turn the ignition switch to ON. 4) Clear the memory. <Ref. to AB(diag)-34, Clear Memory Mode.> 5) Perform the Inspection Mode. <Ref. to AB(diag)-33, Inspection Mode.> 6) Read the DTC. (Current malfunction) <Ref. to AB(diag)-32, Read Diagnostic Trouble Code (DTC).>	Is DTC B1815 displayed?	Replace the airbag control module. <Ref. to AB-49, REMOVAL, Airbag Control Module.>	Go to step **4**.
4	**CHECK PASSENGER'S AIRBAG MODULE.** 1) Turn the ignition switch to OFF, disconnect the battery ground cable, and wait for 60 seconds or more. 2) Connect the passenger's airbag module connector (AB9). 3) Connect the battery ground terminal and turn the ignition switch to ON. 4) Clear the memory. <Ref. to AB(diag)-34, Clear Memory Mode.> 5) Perform the Inspection Mode. <Ref. to AB(diag)-33, Inspection Mode.> 6) Read the DTC. (Current malfunction) <Ref. to AB(diag)-32, Read Diagnostic Trouble Code (DTC).>	Is DTC B1815 displayed?	Replace the passenger's airbag module. <Ref. to AB-33, REMOVAL, Passenger's Airbag Module.>	Go to step **5**.

EJ: DTC B1878 SHORT IN FRONT SEAT CUSHION AIRBAG LH (TO +B)

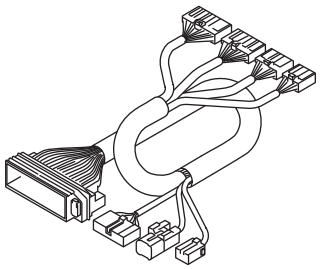
DIAGNOSIS START CONDITION:
Ignition voltage is 10 V to 16 V.
DTC DETECTING CONDITION:
Short circuit failure in power supply (shorted in main harness power supply, shorted in front seat cushion airbag LH power supply, shorted in airbag CM internal circuit power supply)

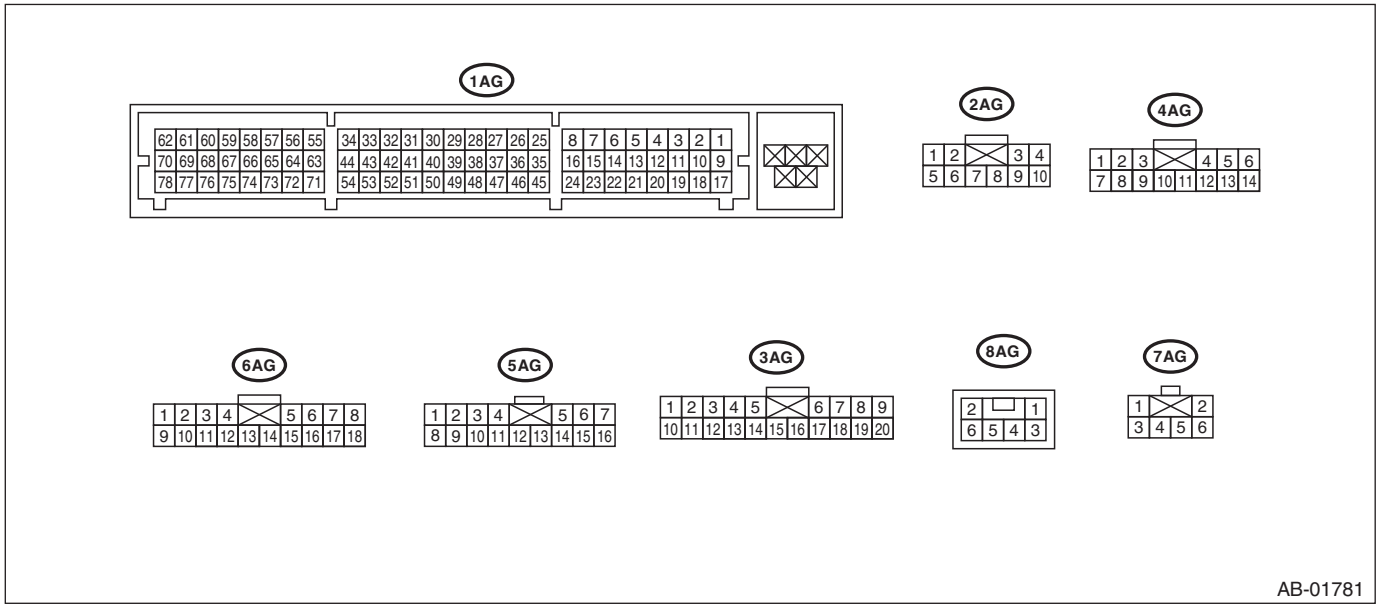
CAUTION:
Before performing diagnosis, refer to "CAUTION" in "General Description". <Ref. to AB(diag)-4, CAUTION, General Description.>
WIRING DIAGRAM:
Airbag system <Ref. to WI-93, WIRING DIAGRAM, Airbag System.>



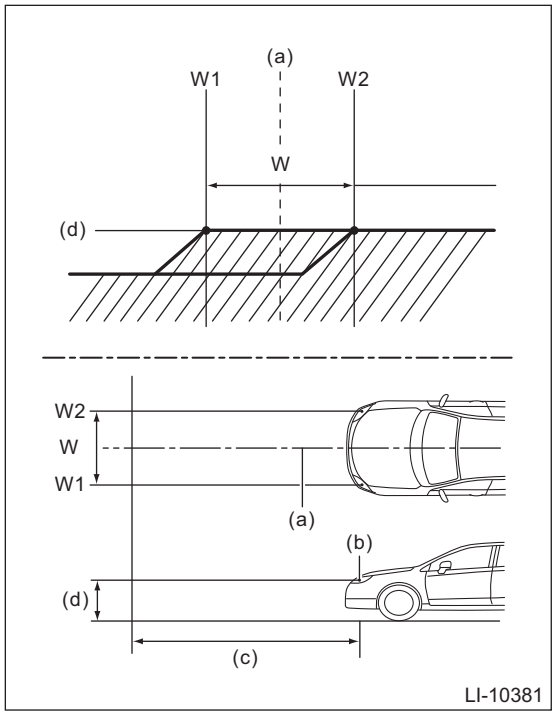
	Step	Check	Yes	No
1	**CHECK POOR CONTACT OF CONNECTORS.** Check for poor contact of the connectors between the airbag control module and the seat cushion airbag module LH.	Is there poor contact?	Replace the airbag rear harness along with body harness.	Go to step **2**.
2	**CHECK SEAT CUSHION AIRBAG MODULE.** 1) Turn the ignition switch to OFF, disconnect the battery ground cable, and wait for 60 seconds or more. 2) Disconnect the connector (AB5) from the seat cushion airbag module LH, and connect the connector (1D) in the test harness D to connector (AB5). 3) Connect the airbag resistor to connector (3D) in the test harness D. 4) Connect the battery ground terminal and turn the ignition switch to ON.	Does the airbag warning light illuminate for six seconds and go off?	Replace the seat cushion airbag module LH. <Ref. to AB-36, Seat Cushion Airbag Module.>	Go to step **3**.

- TEST HARNESS AG

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST98299AG070	98299AG070	TEST HARNESS AG	• Used when measuring voltage and resistance of airbag control module. • Used together with TEST HARNESS AD AV. (98299AL010)



(1) Place the vehicle with the front end facing to the measurement panel, open the front hood, and then illuminate the low beam.

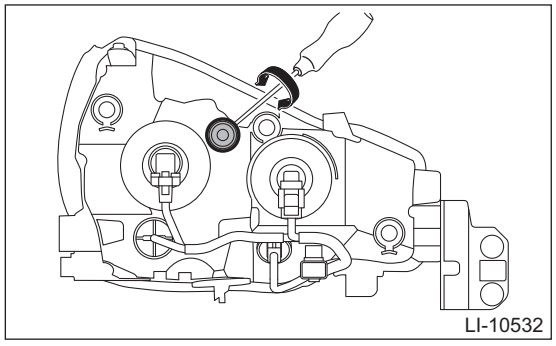


(a) Vehicle center
(b) Center of light source
(c) 3 m (10 ft)
(d) Height of light source center

W mm (in)
1,430 (56.29)

(2) Adjust the beam level by turning the aiming screw.

- Halogen type



14.Diagnostic Procedure with Diagnostic Trouble Code (DTC)

A: DTC U0074 CONTROL MODULE COMMUNICATION BUS "BODY-CAN" OFF

Detected when CAN line abnormality is detected.

NOTE:
Perform the diagnosis for LAN system. <Ref. to LAN(diag)-2, PROCEDURE, Basic Diagnostic Procedure.>

B: DTC U0101 LOST COMMUNICATION WITH TCM

Detected when CAN data (reverse switch signal) is not received from TCM.

NOTE:
Perform the diagnosis for LAN system. <Ref. to LAN(diag)-2, PROCEDURE, Basic Diagnostic Procedure.>

C: DTC U0122 LOST COMMUNICATION WITH VEHICLE DYNAMICS CONTROL MODULE

Detected when CAN data (vehicle speed signal) is not received from VDC.

NOTE:
Perform the diagnosis for LAN system. <Ref. to LAN(diag)-2, PROCEDURE, Basic Diagnostic Procedure.>

D: DTC U0140 LOST COMMUNICATION WITH BODY CONTROL MODULE

Detected when CAN data (headlights ON signal) is not received from the body integrated unit.

NOTE:
Perform the diagnosis for LAN system. <Ref. to LAN(diag)-2, PROCEDURE, Basic Diagnostic Procedure.>

E: DTC U0402 INVALID DATA RECEIVED FROM TCM

Detected when CAN data (reverse switch signal) from TCM is abnormal.

NOTE:
Perform the diagnosis for LAN system. <Ref. to LAN(diag)-2, PROCEDURE, Basic Diagnostic Procedure.>

F: DTC U0416 INVALID DATA RECEIVED FROM VEHICLE DYNAMICS CONTROL MODULE

Detected when data (vehicle speed signal) from VDC CM is abnormal.
Trouble symptom:
The auto headlight beam leveler does not operate.

NOTE:
Perform the diagnosis for VDC. <Ref. to VDC(diag)-2, PROCEDURE, Basic Diagnostic Procedure.>

G: DTC U0422 INVALID DATA RECEIVED FROM BODY CONTROL MODULE

Detected when CAN data (headlights ON signal) is invalid.

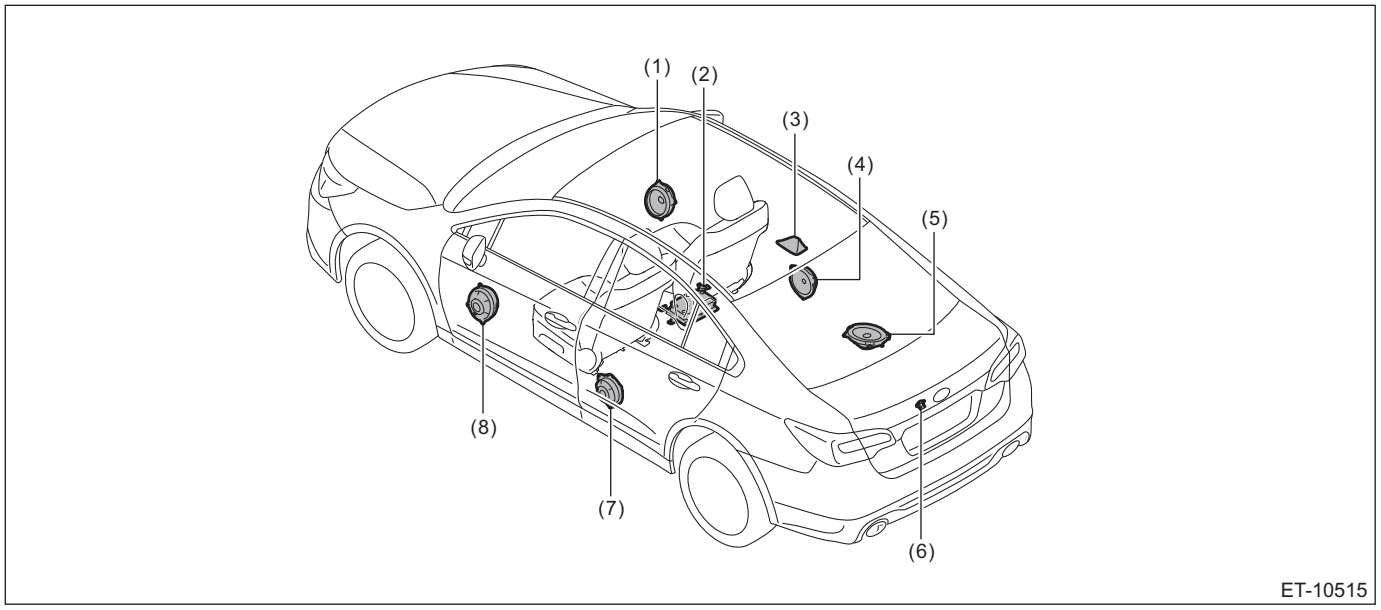
NOTE:
Perform the diagnosis for LAN system. <Ref. to LAN(diag)-2, PROCEDURE, Basic Diagnostic Procedure.>

H: DTC B2900 AHL CONTROL

Detected when internal malfunction occurs in the auto headlight beam leveler CM.
Trouble symptom:
The auto headlight beam leveler does not operate.

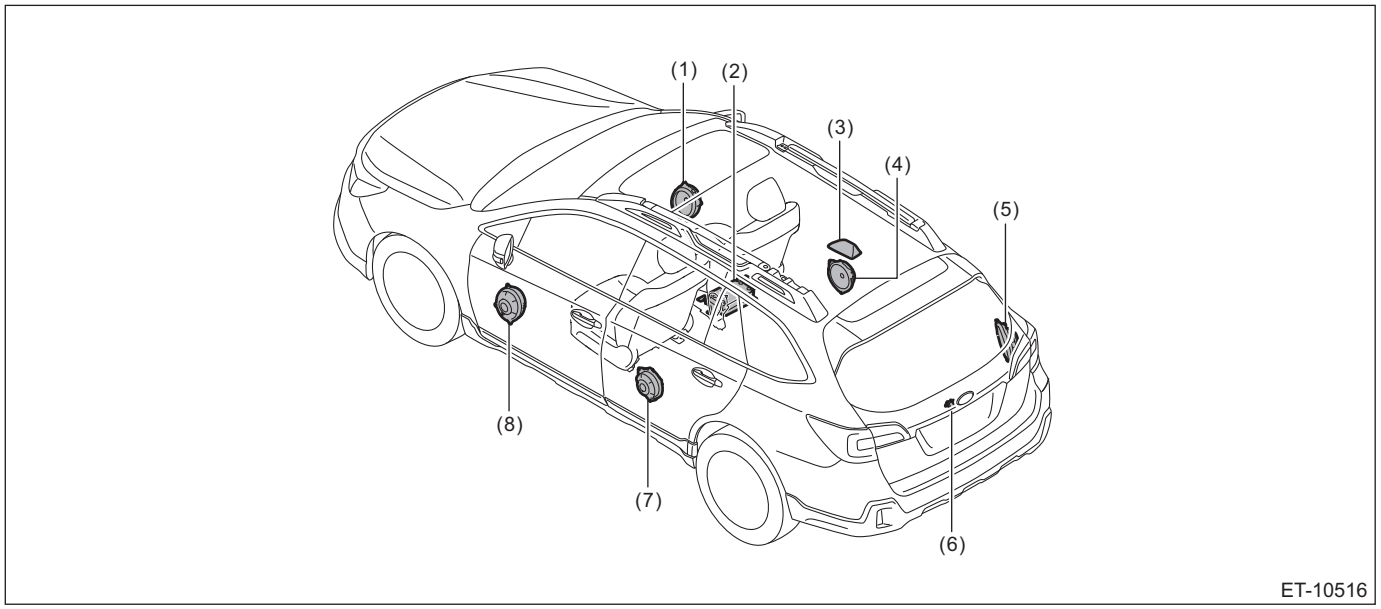
CAUTION:
Initialization is required after replacing the auto headlight beam leveler CM.

- Sedan model



(1) Speaker ASSY - front RH
(2) Power amplifier ASSY
(3) Antenna ASSY - roof
(4) Speaker ASSY - rear RH
(5) Speaker ASSY - woofer
(6) Rearview camera ASSY
(7) Speaker ASSY - rear LH
(8) Speaker ASSY - front LH

- OUTBACK model



(1) Speaker ASSY - front RH
(2) Power amplifier ASSY
(3) Antenna ASSY - roof
(4) Speaker ASSY - rear RH
(5) Speaker ASSY - woofer
(6) Rearview camera ASSY
(7) Speaker ASSY - rear LH
(8) Speaker ASSY - front LH

2. TELEMATICS SYSTEM

Refer to “LOCATION” of “TELEMATICS SYSTEM (DIAGNOSTICS)” section. <Ref. to TEL(diag)-6, LOCATION, Electrical Component Location.>

11.Customize

A: OPERATION

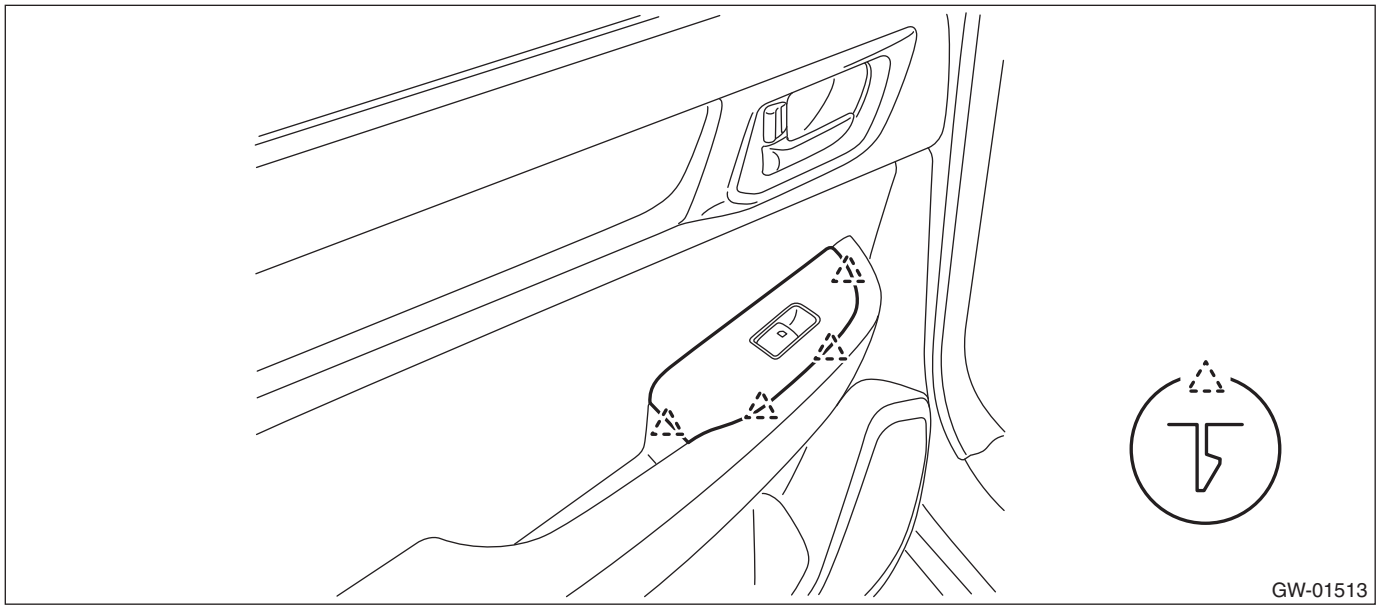
1) On «Start» display, select «Diagnosis».
2) On «Vehicle selection» display, input the target vehicle information and select «Confirmed».
3) On «Main Menu» display, select «Each System».
4) On «Select System» display, select «Infotainment» and select «Enter».
5) On «Select Function» display, select «Customize».

NOTE:
For detailed operation procedures, refer to “Application help”.

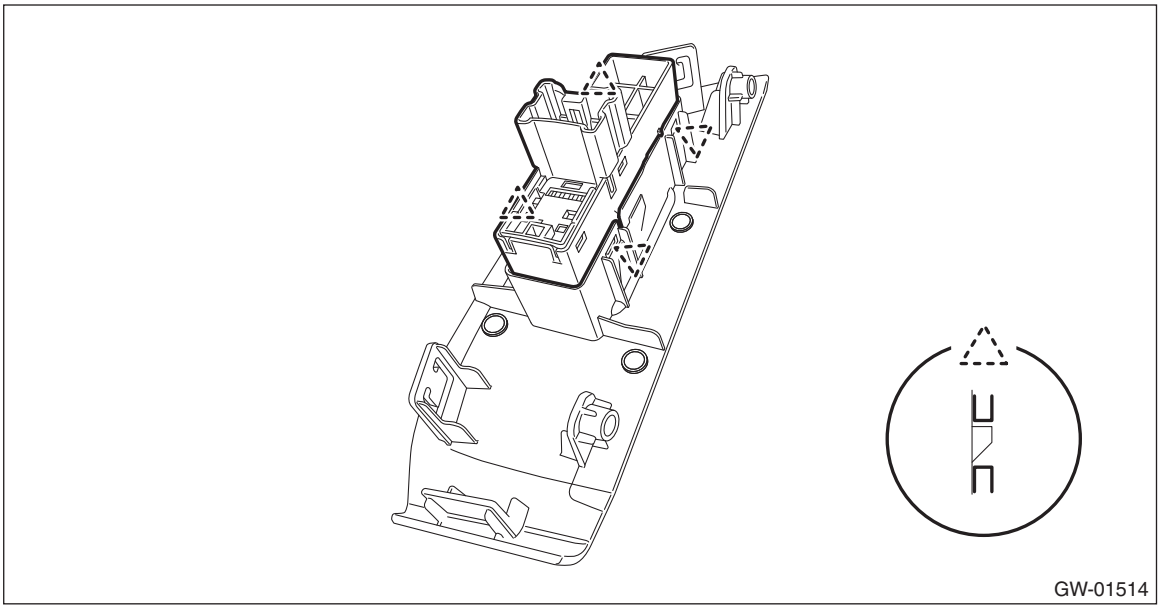
B: LIST

Item	Initial setting value	Setting value	Contents
Camera Guide Line Settings	ON	ON/OFF	Sets the fixed guide line display.
Camera Caution Display Settings	ON	ON/OFF	Sets the warning indicator display.
Diag Recorder Settings	ON	ON/OFF	Software debug analysis (for analysis by manufacturer)

(3) Release the claws, and then remove the panel - power window sub switch rear.



4) Release the claws, and then remove the switch - power window sub rear.



B: INSTALLATION

1. MAIN SWITCH

CAUTION:

- **After installing the switch - power window main, always perform the initial setting.**

Failure to do so may cause the improper activation of auto-reverse operation for pinching hazard prevention.

- **Use protective paper to avoid damage to the trim panel.**

1) Install the panel - power window main switch to the trim panel - front door.
2) Install the trim panel - front door. <Ref. to EI-73, INSTALLATION, Door Trim.>
3) Connect the ground terminal to battery sensor. <Ref. to RC-3, BATTERY, NOTE, Repair Contents.>
4) Perform initial setting operation (reset operation A). <Ref. to GW-11, RESET OPERATION A, OPERATION, Power Window System.>

9) Replace the combination meter assembly with a new part.
10) On «Main Menu» display, select «Each System».
11) On «Select System» display, select «Combination Meter» and then select «Enter».
12) On «Select Function» display, select «Work Support».
13) Select «Write ECU setting save data», and open the file stored in «Read Control module setting information».
14) When the confirmation screen indicating the vehicle information appears, check that the correct information is displayed and click the «OK» button.
15) Confirm that «Write operation was completed.» is displayed, and click the «OK» button.

Operation procedure B

1) Replace the combination meter assembly with a new part.
2) Connect the Subaru Select Monitor.
3) On «Start» display, select «Diagnosis».
4) On «Vehicle selection» display, enter vehicle information and select «Confirmed».
5) On «Main Menu» display, select «Each System».
6) On «Select System» display, select «Combination Meter» and then select «Enter».
7) On «Select Function» display, select «Work Support».
8) From the work support list, select «Write ECU setting 12 columns of models». Enter the applied model and click the «OK» button. <Ref. to ID-2, IDENTIFICATION NUMBER & LABEL LOCATIONS, IDENTIFICATION, Identification.>
9) Enter the option code and click the «OK» button. <Ref. to ID-2, IDENTIFICATION NUMBER & LABEL LOCATIONS, IDENTIFICATION, Identification.>
10) Confirm the vehicle information on «Write ECU setting 12 columns of models» display and click the «OK» button.
11) When «Write?» is shown on the screen, click the «Yes» button.
12) Confirm that «Write operation was completed.» is displayed, and click the «OK» button.

D: INSPECTION

1. COMBINATION METER

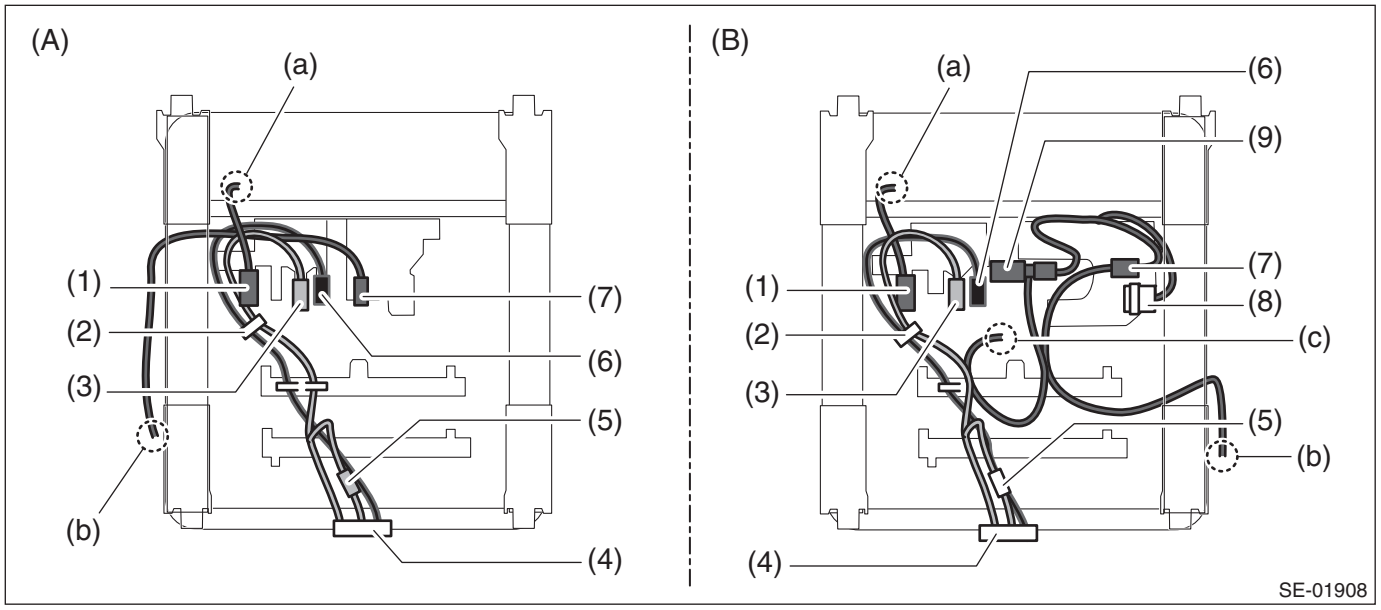
Refer to “Basic Diagnostic Procedure” of “COMBINATION METER (DIAGNOSTICS)” section. <Ref. to MET(diag)-2, Basic Diagnostic Procedure.>

2. SWITCH

Illumination intensity does not change even when the illumination control switch is operated.

	Step	Check	Yes	No
1	**CHECK CURRENT DATA.** Display the data of «Bright switch input state» and «Illumination control switch input state» using the Subaru Select Monitor. NOTE: For detailed operation procedures, refer to “Application help”.	Do the display switch between OFF ←→ ON and the value range from 0 to 100 when the bright switch and illumination control switch are operated?	Replace the combination meter.	Go to step **2**.
2	**CHECK ILLUMINATION CONTROL SWITCH UNIT.** Check the illumination control switch. <Ref. to IDI-21, ILLUMINATION CONTROL SWITCH, INSPECTION, Switches and Harness.>	Is the switch normal?	Go to step **3**.	Replace the illumination control switch.

- Manual seat



(A)	Driver's seat	(B)	Passenger's seat		
(1)	Seat cushion airbag connector & harness	(4)	Touch fastener	(7)	Seat belt INN - front connector & harness
(2)	Band A	(5)	Backrest heater connector & harness	(8)	Occupant detection connector & harness
(3)	Seat heater harness connector & seat cushion heater harness	(6)	Side airbag connector & harness	(9)	Occupant detection control module
(a)	Seat cushion airbag module	(b)	Seat belt INN - front	(c)	Occupant detection sensor

D: DTC B2603 EPB CONTROL

DTC detecting condition:
Detection of EPB abnormal signal continued for a certain period of time (2100 ms) or more.
Trouble symptom:
Seat operation is possible with manual operation, but not with memory function.
(Memory registration is possible.)

	Step	Check	Yes	No
1	**CHECK DTC.** 1) Turn the ignition switch to ON. 2) Read the DTC of the power seat control module using the Subaru Select Monitor. <Ref. to PSM(diag)-12, Read Diagnostic Trouble Code (DTC).>	Is DTC B2603 displayed? (Current malfunction)	Go to step **2**.	Even if DTC is displayed, the circuit has returned to a normal condition at this time. Reproduce the failure, and perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.
2	**CHECK DTC.** Perform the inspection for LAN system. <Ref. to LAN(diag)-2, PROCEDURE, Basic Diagnostic Procedure.>	Is the check result OK?	Go to step **3**.	Perform the inspection according to the diagnosis for LAN system.
3	**CHECK BODY INTEGRATED UNIT.** 1) Turn the ignition switch to OFF. 2) Replace with a power seat control module working properly. <Ref. to SE-54, POWER SEAT CONTROL MODULE (SEAT WITH MEMORY FUNCTION), REMOVAL, Power Seat System.> 3) Turn the ignition switch to ON. 4) Read the DTC of the power seat control module using the Subaru Select Monitor. <Ref. to PSM(diag)-12, Read Diagnostic Trouble Code (DTC).>	Is DTC B2603 displayed? (Current malfunction)	Replace the body integrated unit. <Ref. to SL-84, Body Integrated Unit.>	There was an abnormality in power seat control module.

NOTE:
Securely install the rubber portion of the saucer - COMPL to the fuel filler pipe assembly.
3) Install the fuel filler cap to the saucer - COMPL.

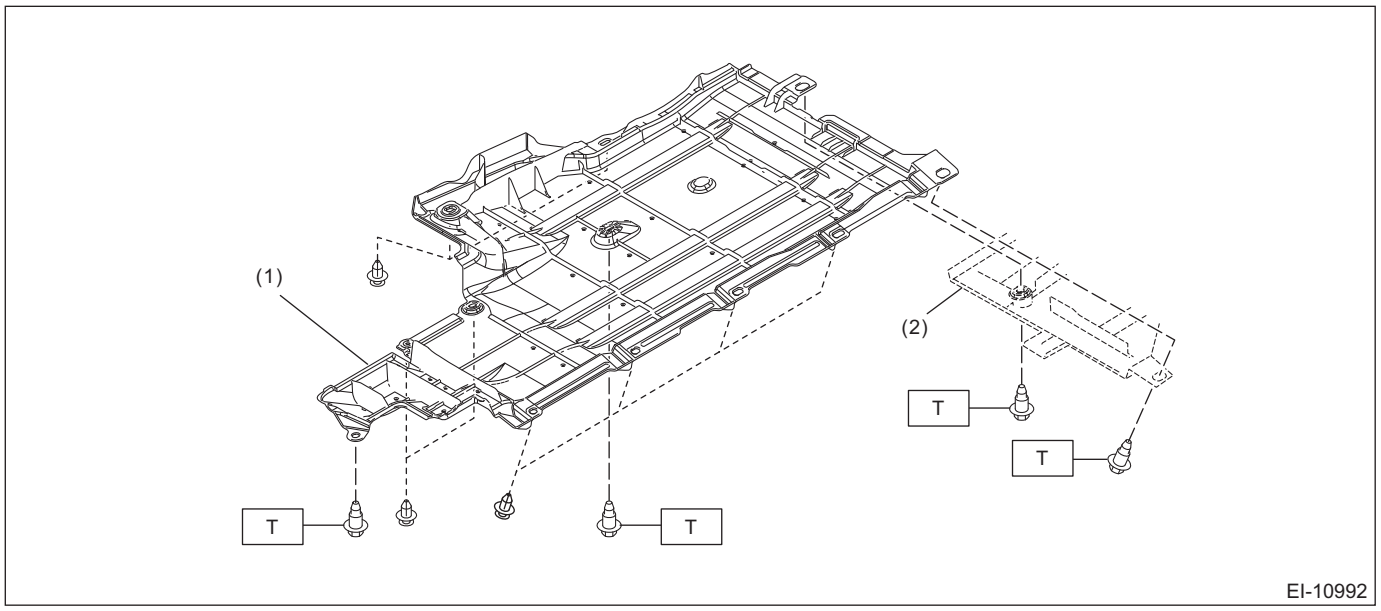
CAUTION:
Always replace with a new clip, because engagement of the claw weakens.
4) Attach the ring clips.

CAUTION:
Always replace with a new part, because engagement of the claw weakens.
5) Install the fuel filler pipe protector.
6) Install the cable assembly - fuel.
7) Install the trim panel - trunk side RH. (Sedan model)
8) Install the trim panel - rear apron RH. (OUTBACK model)

C: INSPECTION

Check if the front hood and fuel flap operate normally.

3. FLOOR UNDER PROTECTOR



(1) Floor under protector
(2) Fuel tank protector

Tightening torque: N·m (kgf-m, ft-lb)
T: 7.5 (0.8, 5.5)

4. FUEL TANK PROTECTOR

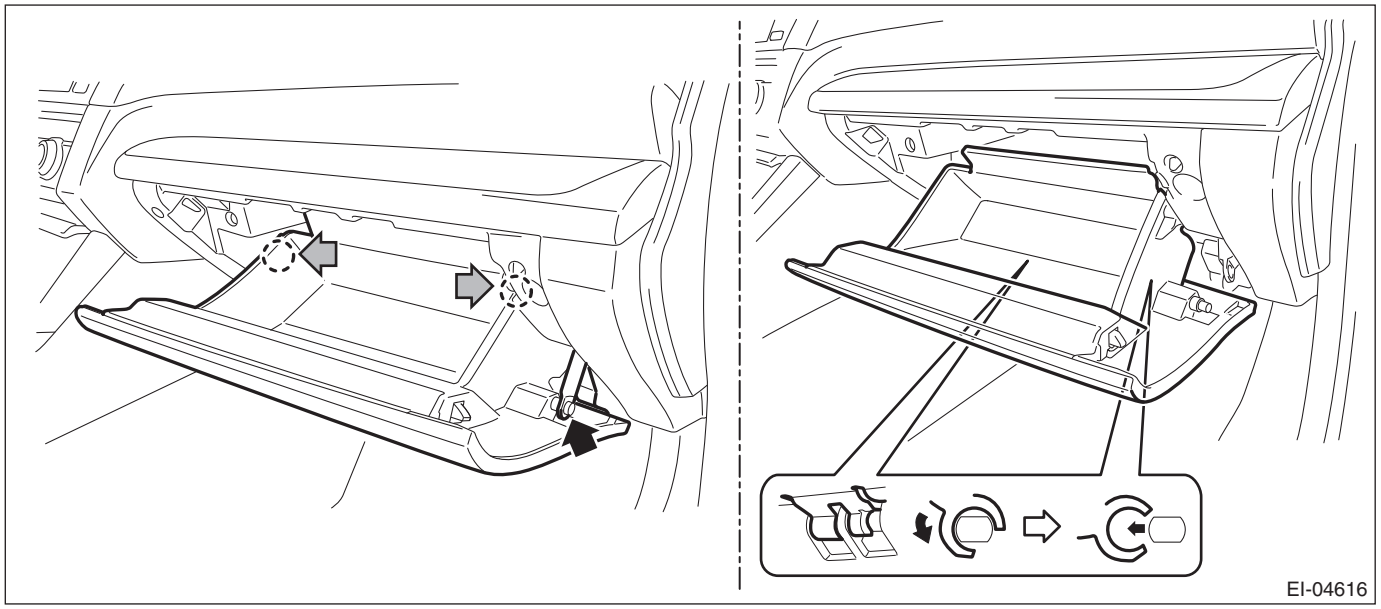
For exploded view of the fuel tank protector, refer to “Fuel Tank Protector” of “FUEL INJECTION” section.
- H4 model: <Ref. to FU(H4DO)-96, REMOVAL, Fuel Tank Protector.>
- H6 model: <Ref. to FU(H6DO)-99, REMOVAL, Fuel Tank Protector.>

20.Glove Box

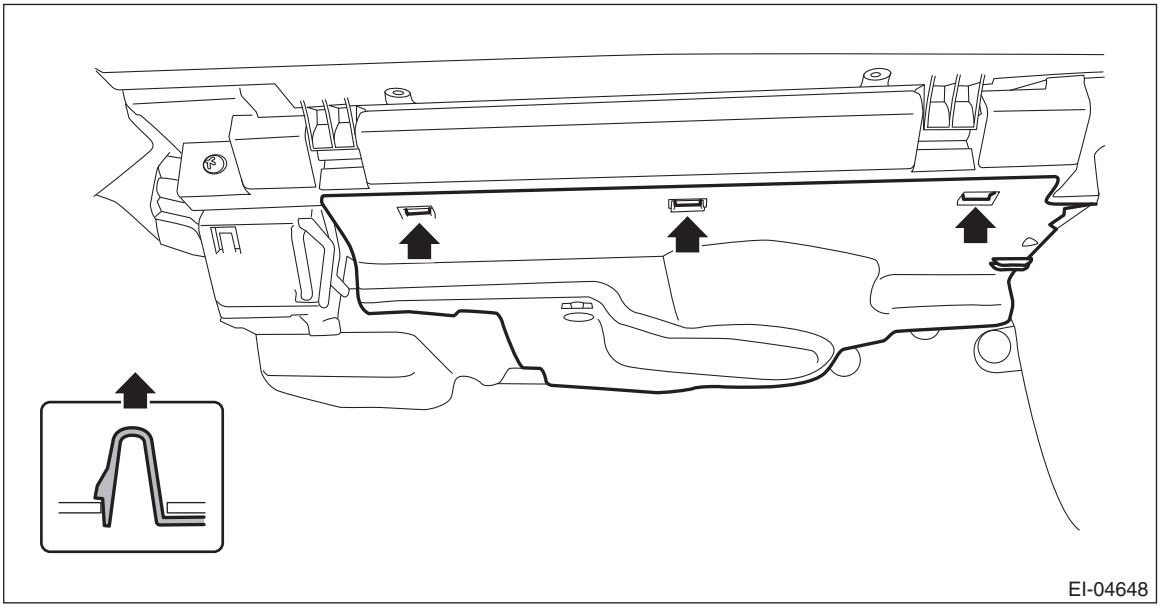
A: REMOVAL

NOTE:
Refer to “Security and Locks” section for key cylinder replacement. <Ref. to SL-76, GLOVE BOX LID, REPLACEMENT, Key Lock Cylinders.>

1) Disconnect the ground terminal from battery sensor. <Ref. to RC-3, BATTERY, NOTE, Repair Contents.>
2) Remove the pocket assembly.
   (1) Remove the damper COMPL - pocket.
   (2) Release the stoppers and remove the pocket assembly by pulling it toward you.

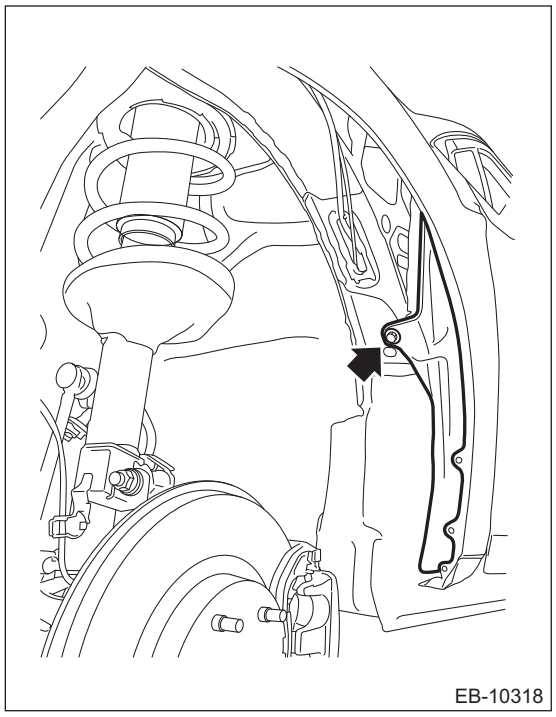


3) Remove the cover side sill - front and the front cover - side sill. <Ref. to EI-90, REMOVAL, Lower Inner Trim.>
4) Remove the back panel - pocket.
   (1) Release the hook, and remove the under cover assembly - passenger.



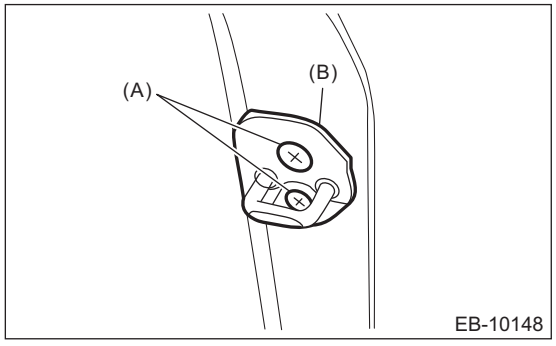
   (2) Remove the clips, and remove the cover - instrument panel side RH.

1) Adjust the vertical and horizontal positions of the panel assembly - front door.
   (1) Turn over the mud guard - front. <Ref. to EI-28, REMOVAL, Mud Guard.>
   (2) Remove the cover - fender LWR.



   (3) Adjust the vertical and horizontal clearance of the panel assembly - front door.
2) Adjust the surface level gap between the panel assembly - front door and the panel assembly - rear door.

CAUTION:
Do not use an impact wrench. Welding area on the striker nut plate is easily broken.

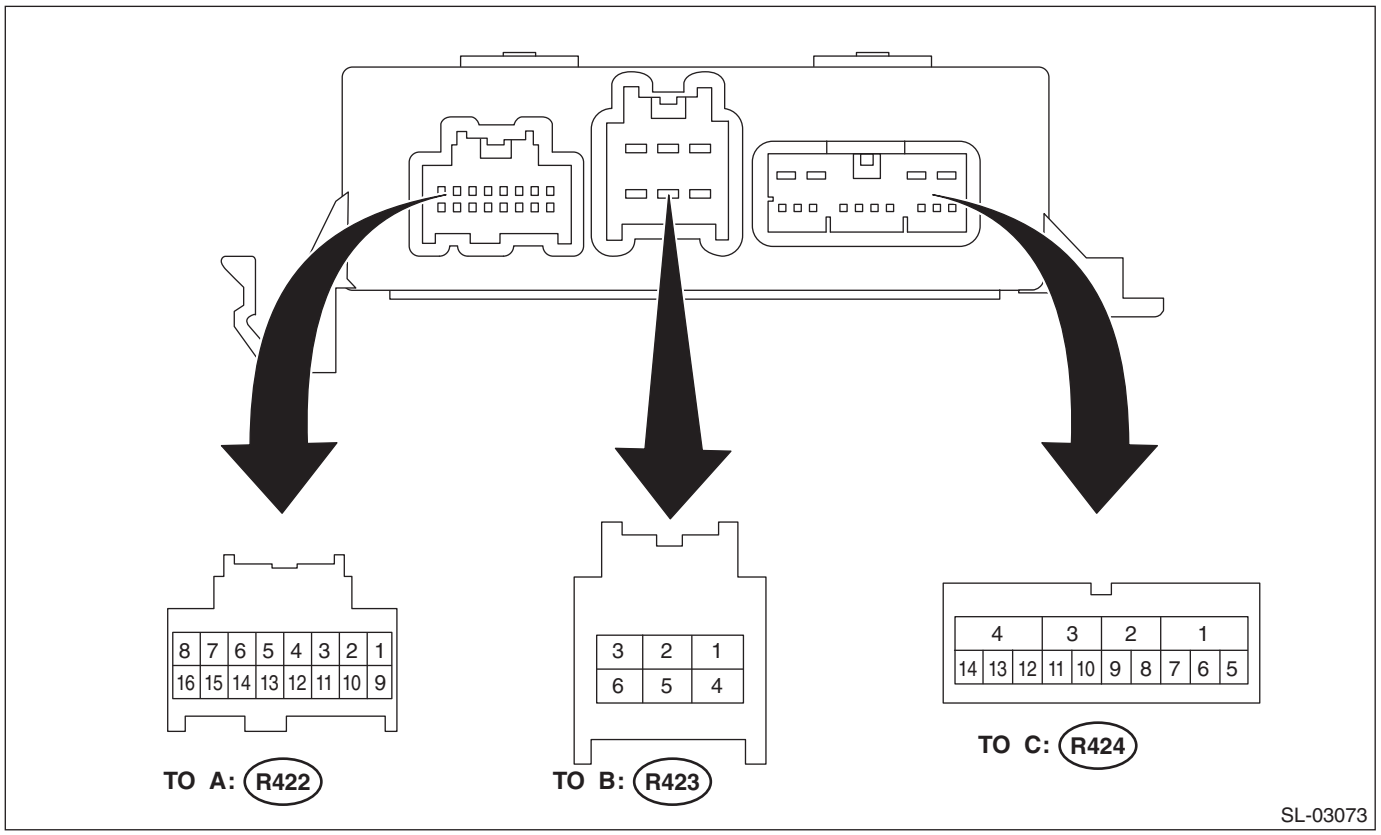


   (1) Loosen the screws (A).
   (2) Tap the striker - front door (B) using a plastic hammer to adjust the surface level gap between the rear end of the panel assembly - front door and the front end of the panel assembly - rear door.

5. Control Module I/O Signal

A: ELECTRICAL SPECIFICATION

1. POWER REAR GATE CONTROL MODULE



Terminal No.	Content	Measuring condition	Standard
(R422) No. 1 ←→ (R422) No. 9	Touch sensor	When sensor is ON	2.7 V or less
(R422) No. 2 ←→ Chassis ground	—	—	—
(R422) No. 3 ←→ (R422) No. 9	Latch switch	When rear gate is fully closed	9 — 16 V
(R422) No. 4 ←→ (R422) No. 9	Courtesy switch	When rear gate is fully closed	9 — 16 V
(R422) No. 5 ←→ (R422) No. 9	Sector switch	When rear gate is fully closed	Less than 1 V
(R422) No. 6 ←→ (R422) No. 9	PRG inner SW	When power rear gate inner switch is ON	Less than 1 V
(R422) No. 7	—	—	—
(R422) No. 8 ←→ Chassis ground	Memory height switch	When memory height switch is ON	Less than 1 V
(R422) No. 9	Switch GND	—	—
(R422) No. 10	LIN communication line	—	—
(R422) No. 11	—	—	—
(R422) No. 12 ←→ Chassis ground	Ignition SW	When ignition switch is ON	—
(R422) No. 13 ←→ Chassis ground	Power rear gate driver's switch	When driver's switch is ON	Less than 1 V
(R422) No. 14 ←→ Chassis ground	—	—	—
(R422) No. 15 ←→ Chassis ground	Hazard output	When hazard is not operating	Less than 1 V
(R422) No. 16 ←→ Chassis ground	—	—	—

List of Cancel Code

Cancel code	Item	Contents of diagnosis	Note
49	TCM Failure	Transmission control module (TCM) malfunction is detected during cruise driving or cruise setting.	<Ref. to CC(diag)-23, 49, Diagnostic Procedure with Cancel Code.>
61	Brake Switch Failure	Malfunction in the stop light & brake switch is detected.	<Ref. to CC(diag)-23, 61, Diagnostic Procedure with Cancel Code.>
62	Neutral Switch Failure	Neutral position switch malfunction is detected.	<Ref. to CC(diag)-23, 62, Diagnostic Procedure with Cancel Code.>
63	Abnormality 1 of change in vehicle speed	Malfunction of vehicle speed signal variation is detected.	<Ref. to CC(diag)-23, 63, Diagnostic Procedure with Cancel Code.>
64	Engine Sensor Failure 1	Malfunction related to engine is detected.	<Ref. to CC(diag)-23, 64, Diagnostic Procedure with Cancel Code.>
65	Abnormality 1 of switches related to cruise control	Cruise control command switch malfunction is detected. (When the switch is pressed ON for a long time (approximately two minutes), stuck ON condition is detected.)	<Ref. to CC(diag)-23, 65, Diagnostic Procedure with Cancel Code.>
66	Cruise Control Calculation Error	Malfunction of the cruise control calculation (microcomputer) is detected.	<Ref. to CC(diag)-24, 66, Diagnostic Procedure with Cancel Code.>

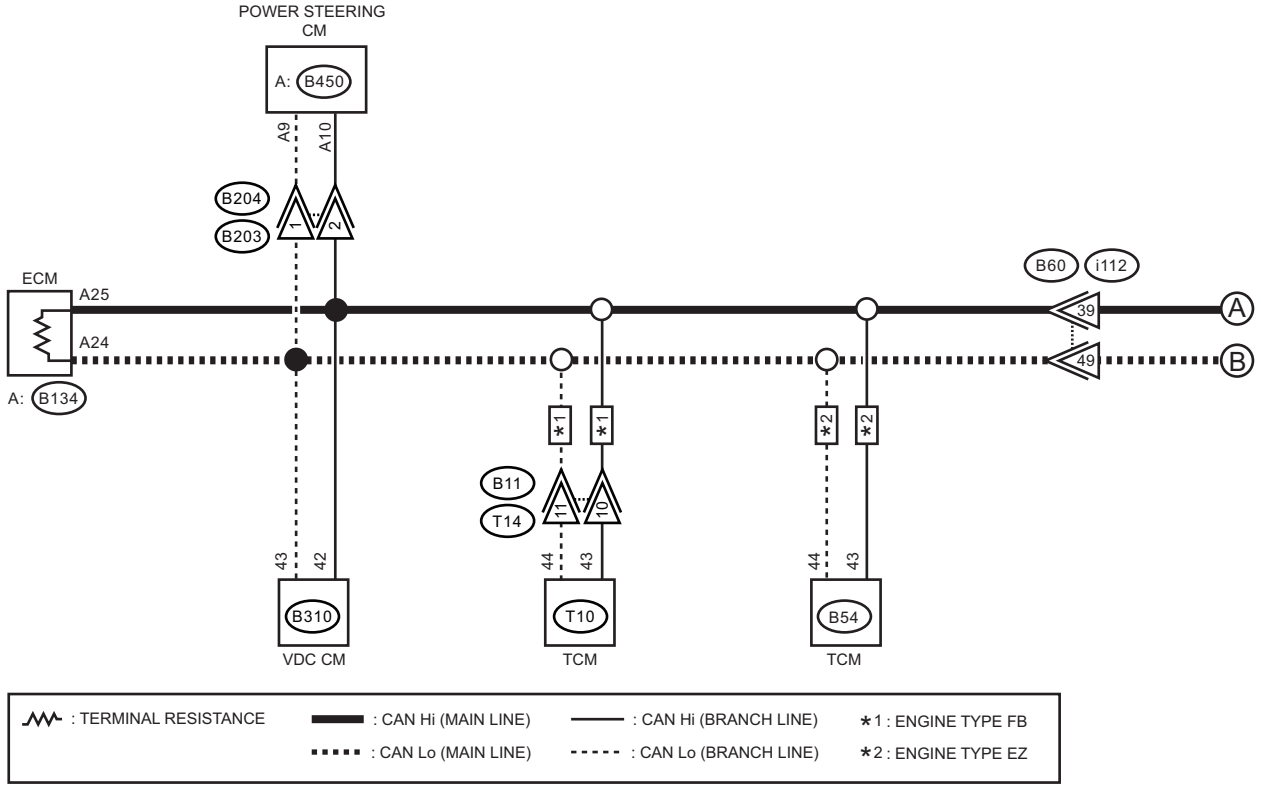
- When No. 2 is open

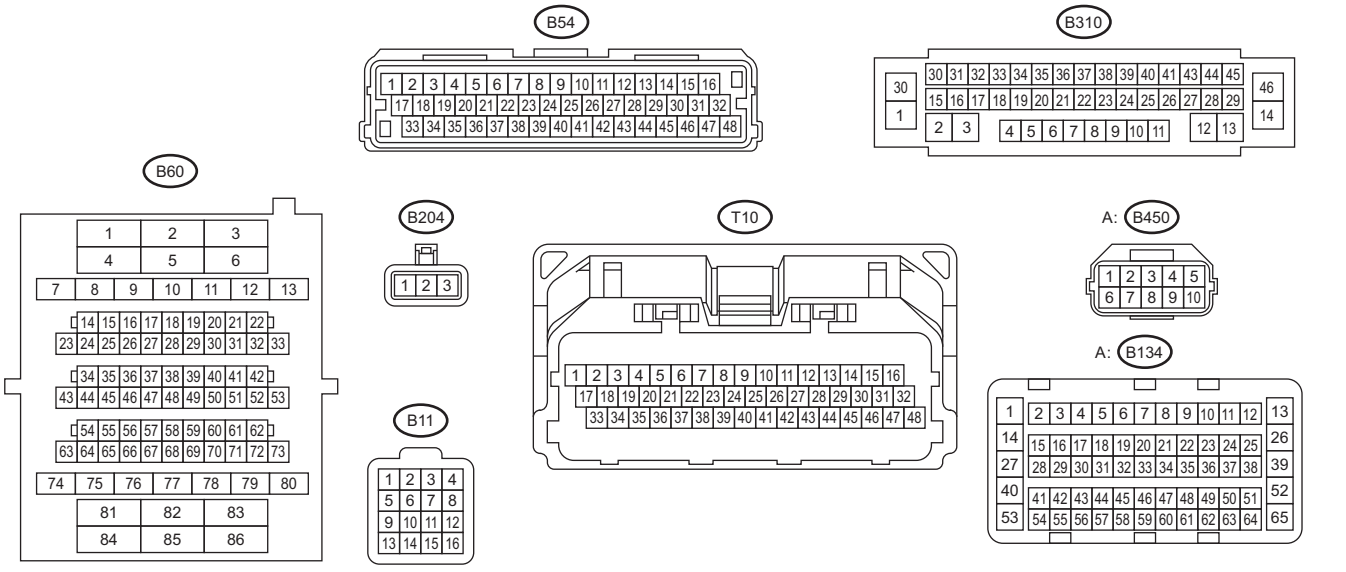
	(A)	(B)	(C)																																		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
			○					○	○	○	○	○	○	○	○	○			-					-	-	○	○	○	-	○	○	○	○	○	○	○	○
BIU	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RVH	○	×	○		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHL	○	×	○		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RES	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DCM(B)	○	×	○				-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AVN	○	×	○				-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KPS	○	×	○				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IMB	○	×	○				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
IMP	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MET	○	×	○					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
STA	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DCM(M)	○	○	○	-	-	-	-	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	-	-	-	-	-	-	-	-	-	-	-
A/C	○	○	○	-	-	-	-	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	-	-	-	-	-	-	-	-	-	-
A/B	○	○	○	-	-	-	-	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	-	-	-	-	-	-	-	-	-
HBA	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EYE	○	○	○	-	-	-	-	○	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	-	-	-	-	-	-	-
KLE/TPM	○	○	○	-	-	-	-	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	-	-	-	-	-	-
RDR	○	○	○	-	-	-	-	○	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	-	-	-	-	-
RAB	○	○	○	-	-	-	-	○	○	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	-	-	-	-
TCM(EZ)	○	○	○	-	-	-	-	○	○	○	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	-	-	-
TCM(FB)	○	○	○	-	-	-	-	○	○	○	○	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	-	-
EPS	○	○	○	-	-	-	-	○	○	○	○	○	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	-	
VDC	○	○	○	-	-	-	-	○	○	○	○	○	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	
ECM	○	○	○	-	-	-	-	○	○	○	○	○	○	○	○	○	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LAN11745

- When No. 3 is open

CAN communication system <Ref. to WI-141, WIRING DIAGRAM, CAN Communication System.>





LAN11703

AJ:DTC U115A <HBA>LOST COMMUNICATION WITH INSTRUMENT PANEL CLUSTER (IPC) CONTROL MODULE

DTC detecting condition:
No data is received from combination meter.
Trouble symptom:
HBA does not operate normally.

	Step	Check	Yes	No
1	**CHECK CAN COMMUNICATION HARNESS.** Perform the basic diagnostic procedure to check for fault in CAN communication harness. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>	Was the basic diagnostic procedure performed up to step 7?	Go to step **2**.	Perform the basic diagnostic procedure. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>
2	**CHECK DTC (OTHER THAN U-CODE).** Check the displayed DTC.	Are DTCs other than U*** displayed?	Perform the diagnosis for DTCs other than the displayed U-code.	Go to step **3**.
3	**CHECK DTC (CURRENT MALFUNCTION).** Check the displayed DTC.	Is U115A a current malfunction?	Go to step **4**.	Go to step **6**.
4	**CHECK DTC (CURRENT MALFUNCTION).** 1) Check CAN communication circuit. <Ref. to LAN(diag)-42, CAN Communication Circuit Check.> 2) Read the DTC using Subaru Select Monitor. <Ref. to LAN(diag)-39, Read Diagnostic Trouble Code (DTC).>	Is U115A a current malfunction?	Go to step **5**.	Go to step **6**.
5	**CHECK DTC.** Using the Subaru Select Monitor, read DTC of all the systems. <Ref. to LAN(diag)-39, Read Diagnostic Trouble Code (DTC).>	Is U115A detected in the body integrated unit?	Replace the combination meter. <Ref. to IDI-11, Combination Meter.>	Replace the module that the DTC has been detected.
6	**CHECK HARNESS.** 1) Shake the harness, and check for poor contact. 2) Read the DTC using Subaru Select Monitor. <Ref. to LAN(diag)-39, Read Diagnostic Trouble Code (DTC).>	Is U115A a current malfunction?	Repair the poor contact of harness, or replace the harness.	Go to step **7**.
7	**CHECK CONNECTOR.** Check the connector used for high speed CAN for poor contact.	Is there poor contact of connector?	Repair the connector that has poor contact, or replace harness.	It is possible that temporary poor communication occurs. Delete the DTC.

C: INSPECTION

1. BATTERY

Check the battery. <Ref. to SC(H4DO)-41, Battery.> <Ref. to SC(H6DO)-58, Battery.>

2. WINDSHIELD GLASS AND DASHBOARD

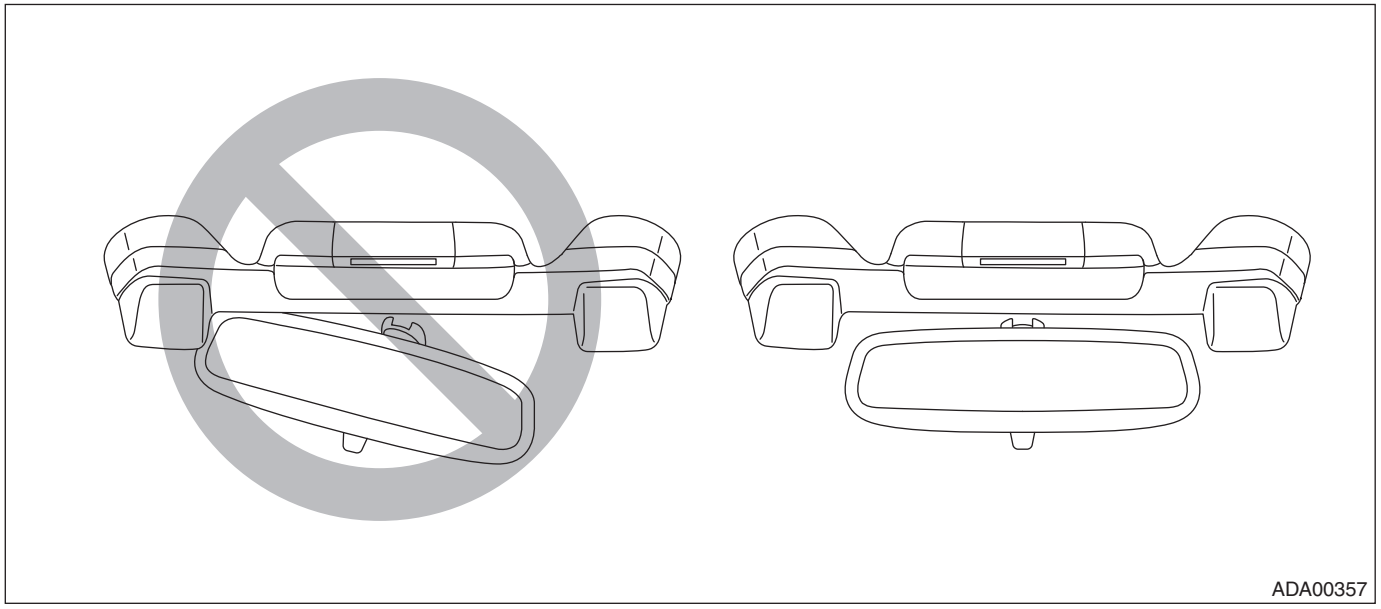
Remove the windshield glass and dashboard in front of the stereo camera. <Ref. to PC-8, CHECK WINDSHIELD GLASS INCLUDING PROHIBITED AREA FOR MODEL WITH HBA AND EyeSight, CAUTION, Precaution.>

3. REAR VIEW MIRROR

Check the rear view mirror condition.

Standard:

The rear view mirror other than genuine parts shall not be used. (Wide mirrors shall not be used)
The visibility of the stereo camera shall not be blocked.
— This will affect the visibility of the stereo camera, causing the system not to operate correctly.



4. FRONT WIPER

Check the wiping condition of windshield glass.

Standard:

Use Subaru genuine part only for wiper blade body and blade rubber.
— Using the part other than genuine part will affect the recognition of the stereo camera, which may cause the function not to operate correctly.
Do not continue using the damaged blade rubber.
— The glass may be damaged. If the wiping performance decreases, or if the distinct streak is found, replace it as soon as possible.

NOTE:
Clean the windshield glass if there is an oil film or any dirt on the surface.

5. TIRE INFLATION PRESSURE

Check the tire air pressure.

Standard:

Adjust to the specified air pressure. <Ref. to WT-2, SPECIFICATION, General Description.>
Do not install worn tire or tires with excessive wear difference.
Install tires with specified size.

1. CHECK LIST (CAMERA TEMPORARY STOP)

Even when the set status of the adaptive cruise control is canceled or when a temporary stop status occurs, the EyeSight temporary stop code will not be retained for the following conditions.

- When the VDC operation is stopped by pressing the VDC OFF switch
- When the pre-collision brake operation is stopped by pressing the pre-collision brake OFF switch
- When the lane departure warning is stopped by pressing the lane departure warning OFF switch
- Immediately after the engine start

When these cases does not apply but the EyeSight temporary stop code is displayed, perform the inspection according to the following items.

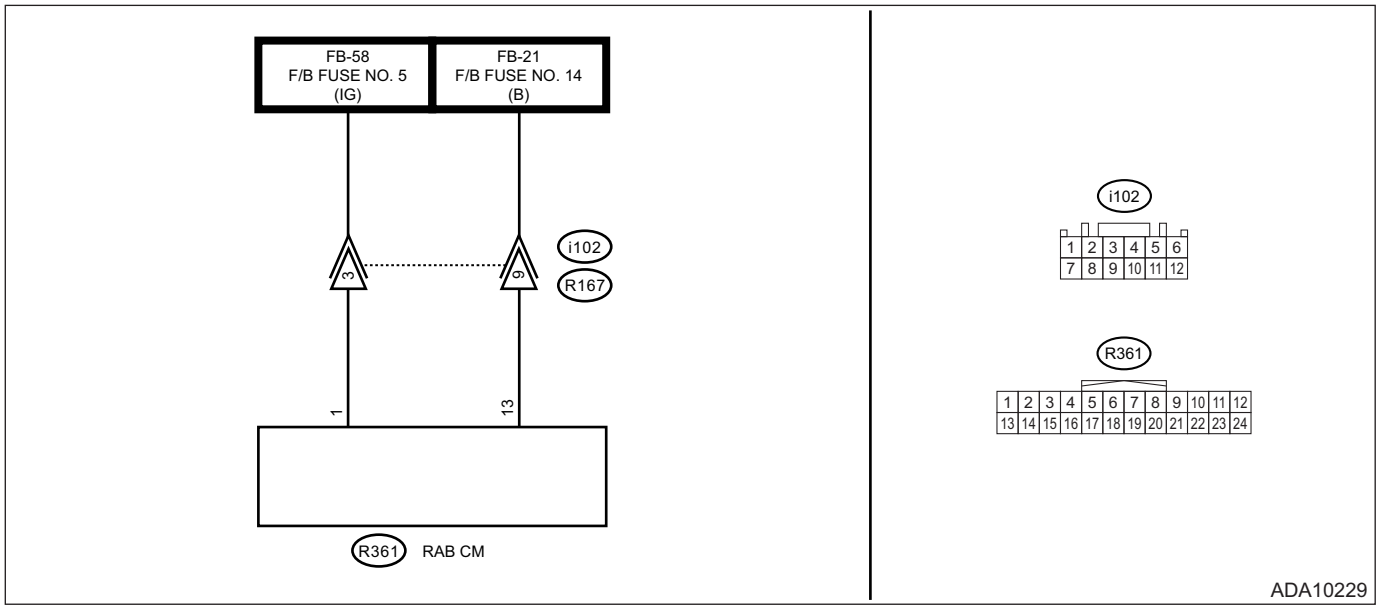
Item name			Yes/No	
[1]: EyeSight temporary stop code [CC, CD] (At this time, “EyeSight Disabled No Camera View” is displayed in the multi-information display.)				
1	Check that the current status applies to the condition that are difficult to be recognized by the stereo camera.			
	1	It was bad weather (heavy rain, snowstorm, dense fog; especially when the oil film adheres to the windshield glass, the glass coating agent is used, or when the old wiper is used).	Yes	No
	2	The vehicle was exposed to the intense light (backlight such as sunlight or headlight high-beam light) from the front of the vehicle.	Yes	No
	3	The raindrops, water drops or dirt on the windshield glass are not wiped off sufficiently.	Yes	No
	4	The windshield glass is covered with fog, snow, dirt, frost or sandy dust, and either of them blocks the visibility of the stereo camera.	Yes	No
	5	The vehicle was tilted excessively by the heavy load.	Yes	No
	6	Canoes etc. loaded on the roof blocked the visibility of the stereo camera.	Yes	No
	7	The field of view was insufficient due to water or snow raised by the preceding vehicle or oncoming vehicle, or the moisture, sand, smoke or sandy dust blown in the wind.	Yes	No
	8	The vehicle passed through the outlet or inlet of a tunnel.	Yes	No
	9	The rearmost area of preceding vehicle was small (trailer, etc.), low or uneven.	Yes	No
	10	The object was a fence or wall with even pattern (striped pattern or bricks) or unpatterned surface.	Yes	No
	11	The object was a plate of glass, mirror wall or door.	Yes	No
	12	The tail light of the preceding vehicle did not illuminate during nighttime hours or inside the tunnel.	Yes	No
	13	The vehicle passed through the banners, flags, drooping branches or grass.	Yes	No
	14	The vehicle drove on the steep uphills or steep downhills.	Yes	No
	15	Front of the camera was blocked by the hand.	Yes	No
	16	It was very dark and there was no obstacle around the vehicle.	Yes	No
	17	The surrounding ground surface was similarly colored. (There is snow as far as the eye can see.)	Yes	No
	18	Dirt such as fingerprint adhered to the lens portion of the stereo camera.	Yes	No
	19	Stable recognition was difficult because of reflection to the windshield glass.	Yes	No
	20	The stereo camera was subject to impact, and the displacement or distortion occurred.	Yes	No

14.List of Cancel Code

A: LIST

Code	Item	Contents of diagnosis
B2320	REAR RADAR LOW VOLTAGE (LESS THAN 9 V)	Temporarily stops because the voltage supplied to radar drops to or below 9 V. Returns to normal when the voltage becomes normal.
B2321	REAR RADAR HIGH VOLTAGE (MORE THAN 16 V)	Temporarily stops because the voltage supplied to radar rises to or above 16 V. Returns to normal when the voltage becomes normal.
B2328	REAR RADAR INTERNAL FAILURE (RADAR MISALIGNMENT)	Deviation of the radar axis prevents normal detection. Returns to normal when the radar axis becomes normal. When B2328 is frequently detected, perform “Diagnostic Procedure with Cancel Code”. <Ref. to RVD(diag)-43, DTC B2328 REAR RADAR INTERNAL FAILURE (RADAR MISALIGNMENT), Diagnostic Procedure with Cancel Code.>
B2340	RADAR ASSY B&S OUT OF OPERATION TEMPERATURE RANGE	Temporarily stops because the temperature is outside the operative range (–40°C (–40°F) — 85°C (185°F)). Returns to normal when the ambient temperature falls within the operative range.
B2341	RADAR ASSY B&S DEGRADATION OF DETECTING PERFORMANCE	Temporarily stops because some obstacles blocked radar waves of the back and side radar. Returns to normal when the transmission and reception of radar signals becomes normal.

Voltage supply to the ignition power supply terminal and the battery power supply terminal was 16 V or more.
Time needed for diagnosis:
200 ms
Recovery conditions:
Ignition switch OFF → ON
Wiring diagram:
Reverse Automatic Braking <Ref. to WI-345, Reverse Automatic Braking.>



Step		Check	Yes	No
1	**CHECK CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the RAB CM connector. 3) Connect the disconnected connectors. 4) Turn the ignition switch to ON. 5) Using the Subaru Select Monitor, read DTC of «Reverse Automatic Braking». <Ref. to RAB(diag)-17, Read Diagnostic Trouble Code (DTC).>	Is DTC B2C05 displayed? (Current malfunction)	Go to step **2**.	Even if DTC is displayed, the circuit has returned to a normal condition at this time. Reproduce the failure, and then perform the diagnosis again. NOTE: In this case, temporary poor contact of connector, temporary open or short circuit of harness may be the cause.
2	**CHECK RAB CM POWER SUPPLY CIRCUIT.** 1) Turn the ignition switch to OFF. 2) Disconnect the RAB CM connector. 3) Turn the ignition switch to ON. 4) Using a tester, measure the voltage between the RAB CM connector and chassis ground. ***Connector & terminal*** ***(R361) No. 1 (+) — Chassis ground (–):*** ***(R361) No. 13 (+) — Chassis ground (–):***	Is the voltage 16 V or less?	Replace the RAB CM. <Ref. to RAB-6, Reverse Automatic Braking CM.>	Check the harness between the RAB CM connector and power supply.

H: DTC B2C06 RR SONAR SENSOR CIRCUIT / NO SIGNAL

Outline of diagnosis:

8. Diagnostic Procedure for Subaru Select Monitor Communication

A: INSPECTION

Detecting condition:

- Defective harness
- Power supply circuit malfunction
- Defective keyless access CM
- Defective CAN communication circuit
- Defective Subaru Select Monitor

Trouble symptom:

Not communicable with Subaru Select Monitor.

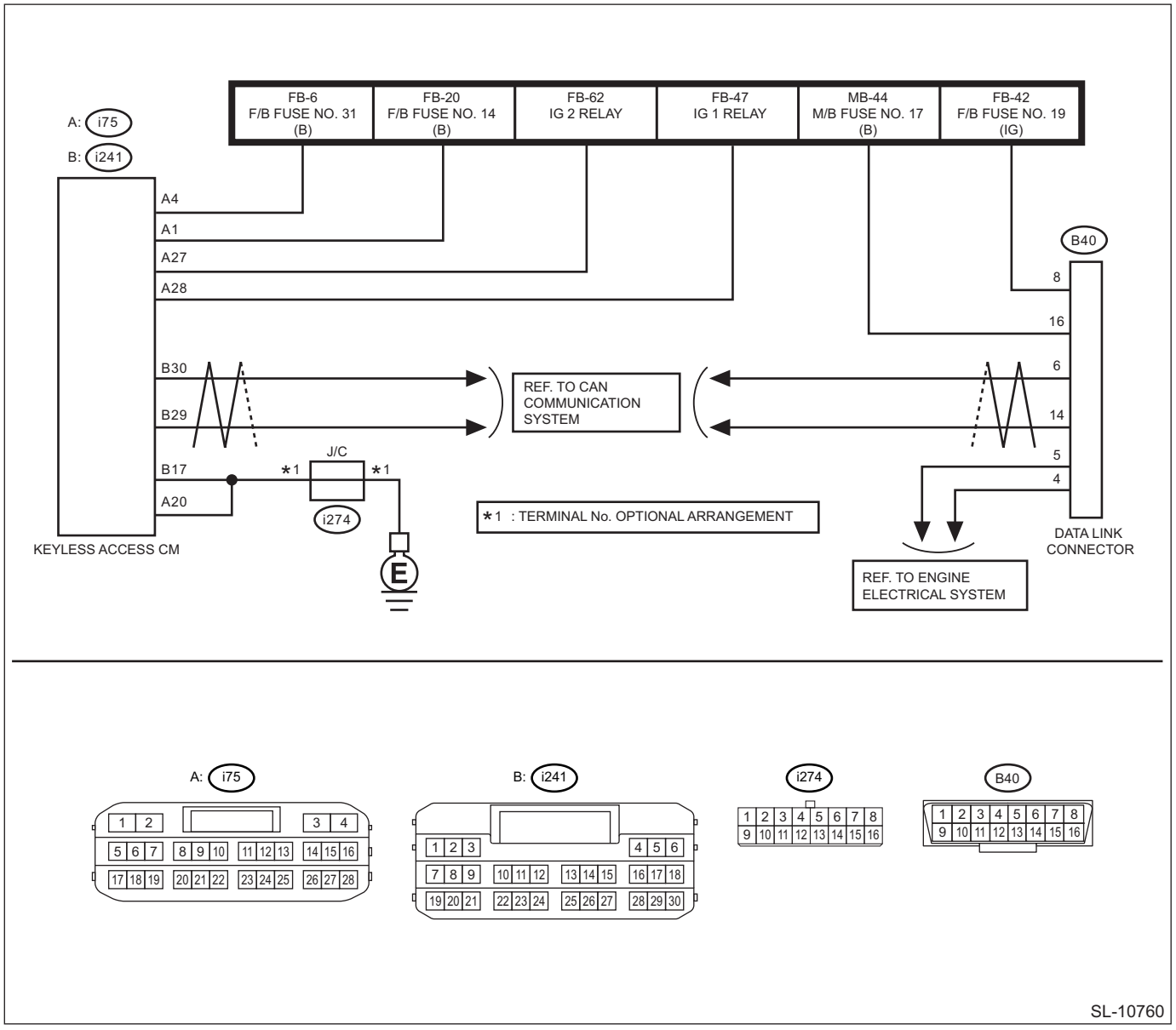
CAUTION:

Before performing diagnosis, refer to "CAUTION" in "General Description". <Ref. to KPS(diag)-4, CAUTION, General Description.>

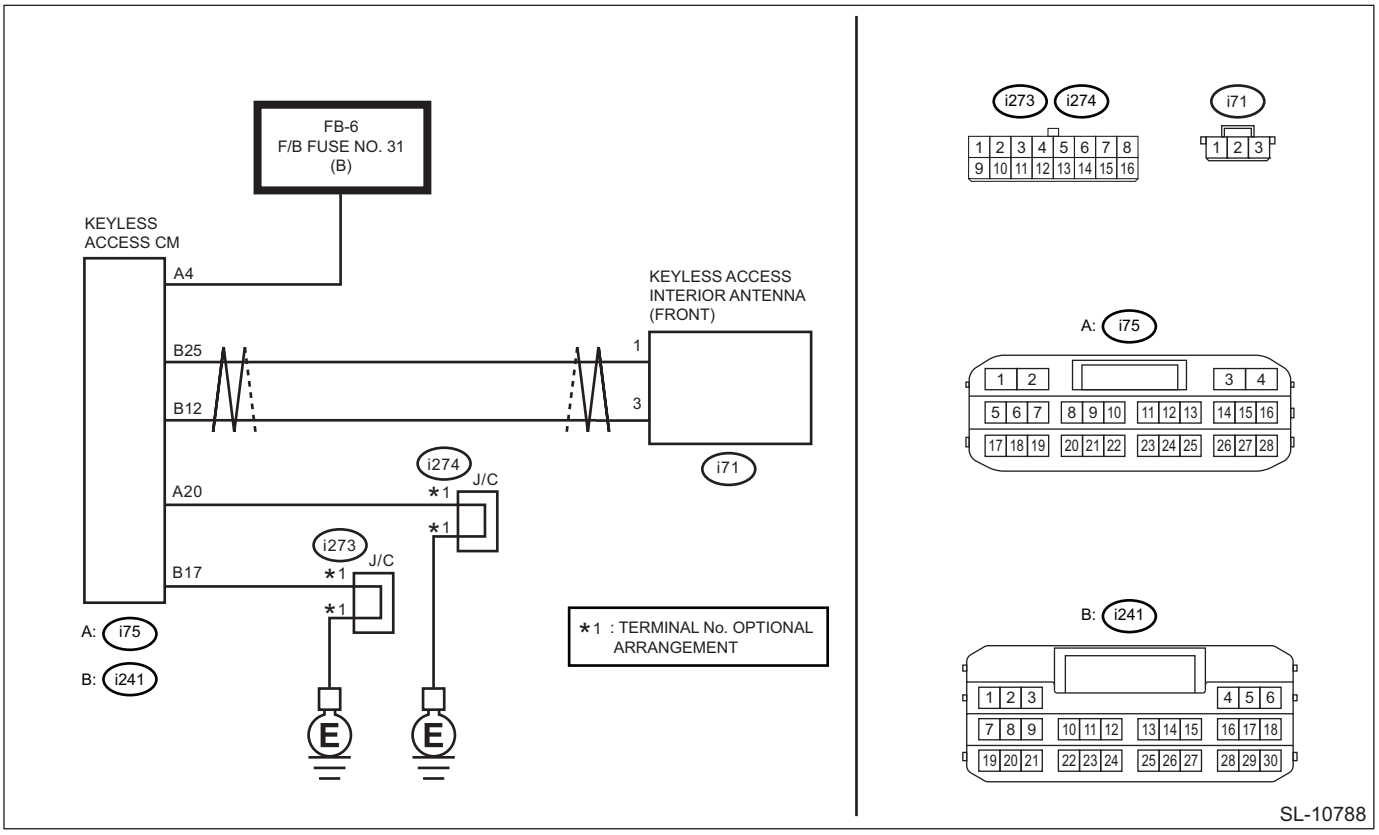
Wiring diagram:

– Keyless access with push button start system <Ref. to WI-269, WIRING DIAGRAM, Keyless Access With Push Button Start System.>

– CAN communication system <Ref. to WI-141, WIRING DIAGRAM, CAN Communication System.>



Keyless access with push button start system <Ref. to WI-269, WIRING DIAGRAM, Keyless Access With Push Button Start System.>



Step		Check	Yes	No
1	**CHECK LAN SYSTEM.** Perform the diagnosis for LAN system. <Ref. to LAN(diag)-2, PROCEDURE, Basic Diagnostic Procedure.>	Is the check result OK?	Go to step **2**.	Perform the inspection according to the diagnosis for LAN system.
2	**CHECK CONNECTOR.** 1) Disconnect the keyless access CM connector. 2) Disconnect the front interior antenna connector. 3) Check the connector.	Is the check result OK?	Go to step **3**.	Repair or replace the connector.
3	**CHECK POWER SUPPLY CIRCUIT.** Using a tester, measure the voltage between the keyless access CM connector and chassis ground. ***Connector & terminal*** ***(i75) No. 4 (+) — Chassis ground (–):***	Is the voltage 9.5 — 16 V?	Go to step **4**.	Check the power supply circuit.
4	**CHECK HARNESS (OPEN CIRCUIT).** Using a tester, measure the resistance between the keyless access CM connector and front interior antenna connector, and between keyless access CM connector and chassis ground. ***Connector & terminal*** ***(i241) No. 25 — (i71) No. 1:*** ***(i241) No. 12 — (i71) No. 3:*** ***(i241) No. 17 — Chassis ground:*** ***(i75) No. 20 — Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **5**.	Repair or replace the open circuit of harness.

Items to be displayed	Contents	Unit of measure	Note
Key lock solenoid output	Key lock solenoid output ON/OFF status. Body integrated unit output value. Solenoid is activated to set this item to ON when the key is inserted with the shift lever in other than P range.	ON/OFF	Model without keyless access with push button start system
wiper deicer output	Wiper deicer output ON/OFF status. Body integrated unit output value. Set to ON while the wiper deicer is operating.	ON/OFF	—
Keyless Buzzer Output	Keyless buzzer ON/OFF status. Body integrated unit output value. Set to ON while the keyless buzzer is sounding.	ON/OFF	—
Horn Output	Security horn output ON/OFF status. Body integrated unit output value. Set to ON while the horn is sounding due to a security breach.	ON/OFF	—
Room lamp output	Room light output ON/OFF status. Body integrated unit output value. Set to ON while the room light illuminates with the switch in DOOR position.	ON/OFF	—
key illumination lamp o/p	Key illumination light output ON/OFF status. Body integrated unit output value. Set to ON while the key illumination light illuminates.	ON/OFF	Model without keyless access with push button start system
Immobilizer lamp output	Security indicator output ON/OFF status. Body integrated unit output value. Set to ON while the security indicator in the combination meter illuminates.	ON/OFF	—
Small Light SW	Lighting 1 relay CAN output ON/OFF status. CAN data sending value. Set to ON when the position light indicator in the combination meter illuminates.	ON/OFF	—
Headlamp	Lighting Lo relay CAN output ON/OFF status. CAN data output value. Set to ON when the headlight Lo illuminates.	ON/OFF	—
High Beam	Lighting Hi relay CAN output ON/OFF status. CAN data output value. Set to ON when the headlight Hi illuminates.	ON/OFF	—
Power rear gate setting	Presence or absence of the power rear gate. Body integrated unit custom setting values.	ON/OFF	—
Lane change signal setting	Presence or absence of the one-touch blinker control. Body integrated unit custom setting values.	ON/OFF	—
Rear wiper auto setting	Presence or absence of the rear wiper control linked with reverse shift. Body integrated unit custom setting values.	ON/OFF	—
Left turn signal input	Left turn signal switch ON/OFF status. Body integrated unit input value. Set to ON while the left turn signal switch is ON.	ON/OFF	—
Right turn signal input	Right turn signal switch ON/OFF status. Body integrated unit input value. Set to ON while the right turn signal switch is ON.	ON/OFF	—
Left turn signal output	Left turn signal light output ON/OFF status. Body integrated unit output value. Set to ON while the left turn signal light illuminates.	ON/OFF	—
Right turn signal output	Right turn signal light output ON/OFF status. Body integrated unit output value. Set to ON while the right turn signal light illuminates.	ON/OFF	—

7. Read Current Data

A: OPERATION

1) On «Start» display, select «Diagnosis».
2) On «Vehicle selection» display, input the target vehicle information and select «Confirmed».
3) On «Main Menu» display, select «Each System».
4) On «Select System» display, select «Telematics» and then select «Enter».
5) On «Select Function» display, select «Data Monitor».

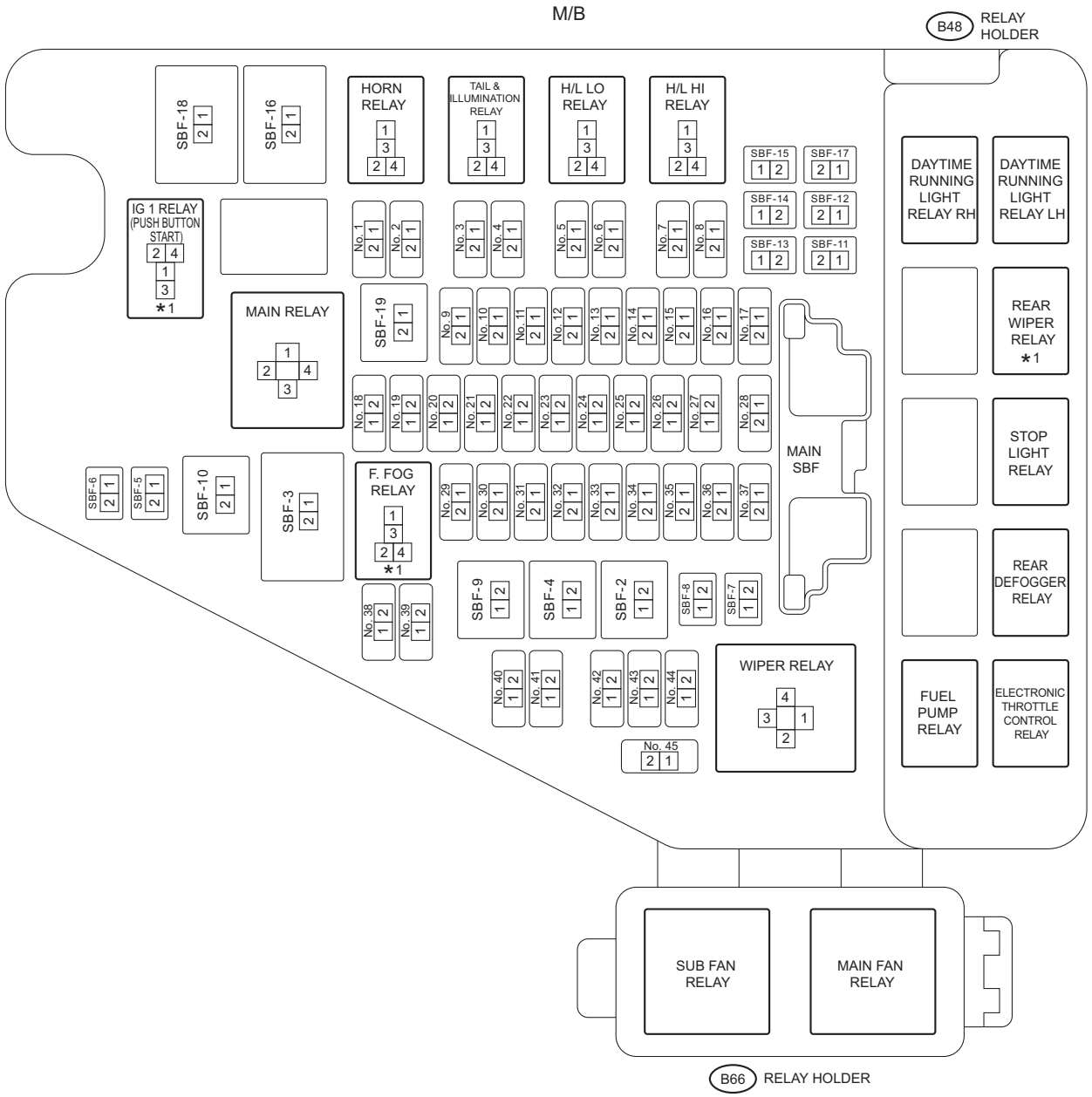
NOTE:
For detailed operation procedures, refer to “Application help”.

B: LIST

Display	Contents	Reference value	Unit
Trip Count	Refer to “LAN SYSTEM (DIAGNOSTICS)”. <Ref. to LAN(diag)-5, TIME STAMP, CAUTION, General Description.>	—	—
Count		—	—
Time Count		—	—
Signal Strength	Current signal strength	—	—
MSISDN	Phone number of DCM built-in SIM	—	—
TimeStamp at ACN Event	Time stamp information at ACN event occurrence	NOTE: The time stamp is displayed in the Coordinated Universal Time (UTC), which is different from actual time at each location. Therefore, time difference needs to be corrected for use. Example: [12/22 01:30 in UTC time] is corrected as [12/21 20:30 in New York time].	—
Call Type at ACN Event	Information of ACN event occurrence	No Attempt ACN	—
RSSI at ACN Event	Signal strength at ACN event occurrence	—	%
Call Status at ACN Event	Result of call connection at ACN event occurrence	call not started service not provisioned no network service call ended by Agero call ended by driver call ended by exhausted retry call started call connected	—
ACN Active	Subscription information on ACN function	FALSE TRUE	—
SOS Active	Subscription information on SOS function	FALSE TRUE	—
ICALL Active	Subscription information on I-CALL function	FALSE TRUE	—
Security Alarm Active	Subscription information on Security Alarm function	FALSE TRUE	—
Maintenance Alert Active	Subscription information on Maintenance Alert function	FALSE TRUE	—
MVR Active	Subscription information on MVR function	FALSE TRUE	—

2. ENGINE COMPARTMENT SIDE (ENGINE TYPE EZ)

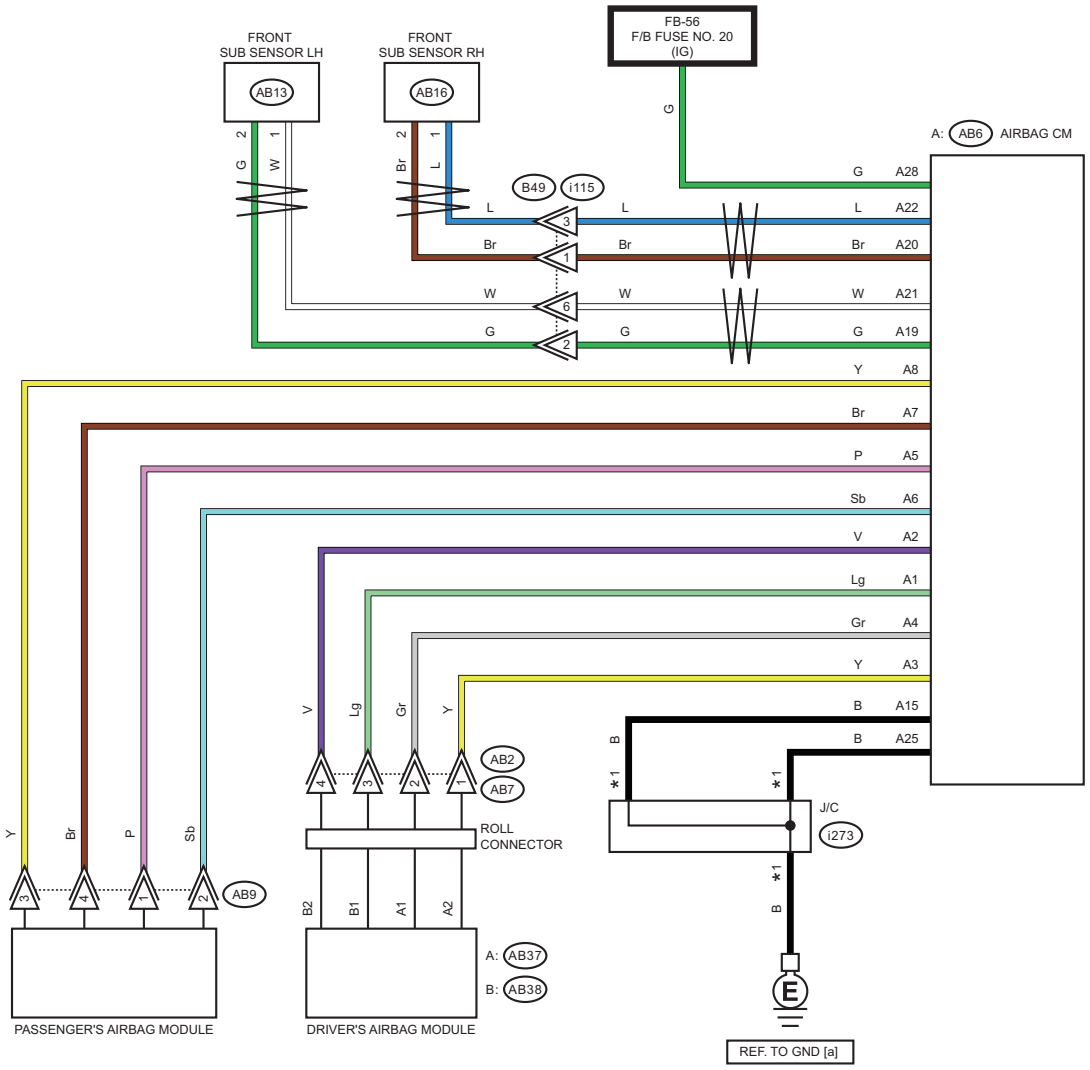
2a 2a



*1 : IF EQUIPPED

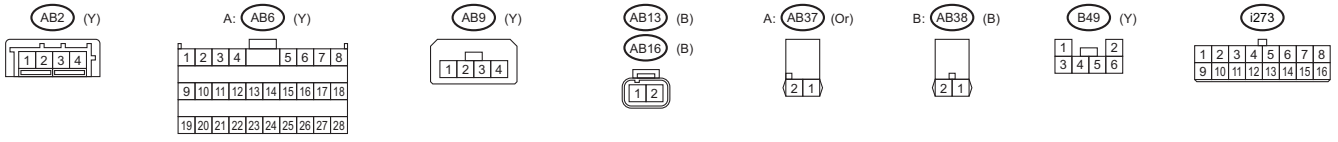
WI-74242

C

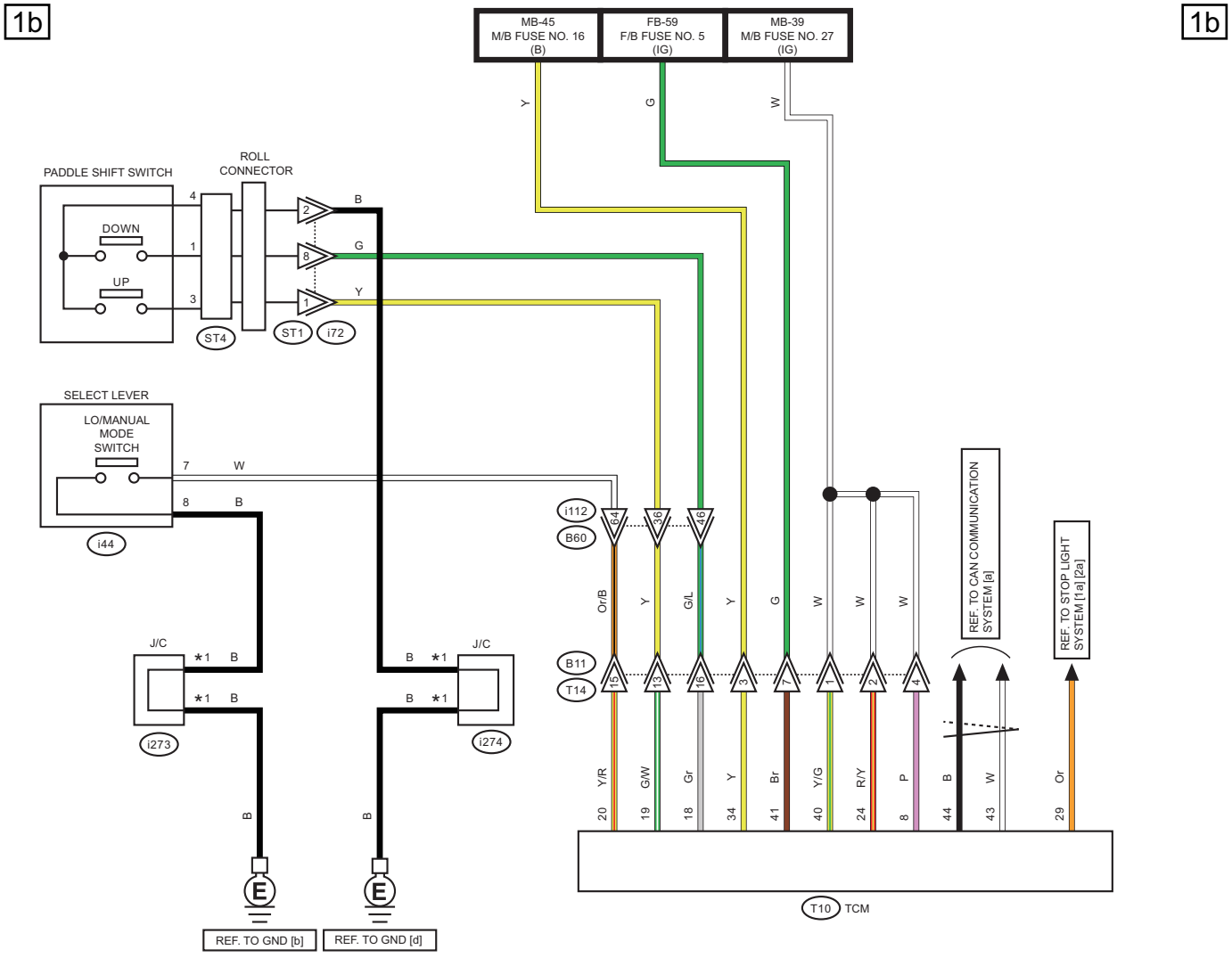


C

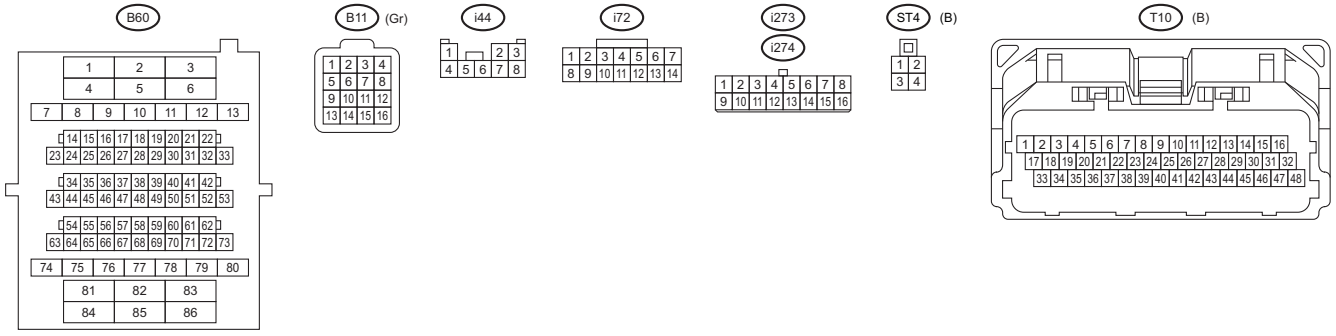
*1 : TERMINAL No. OPTIONAL ARRANGEMENT



WI-74301



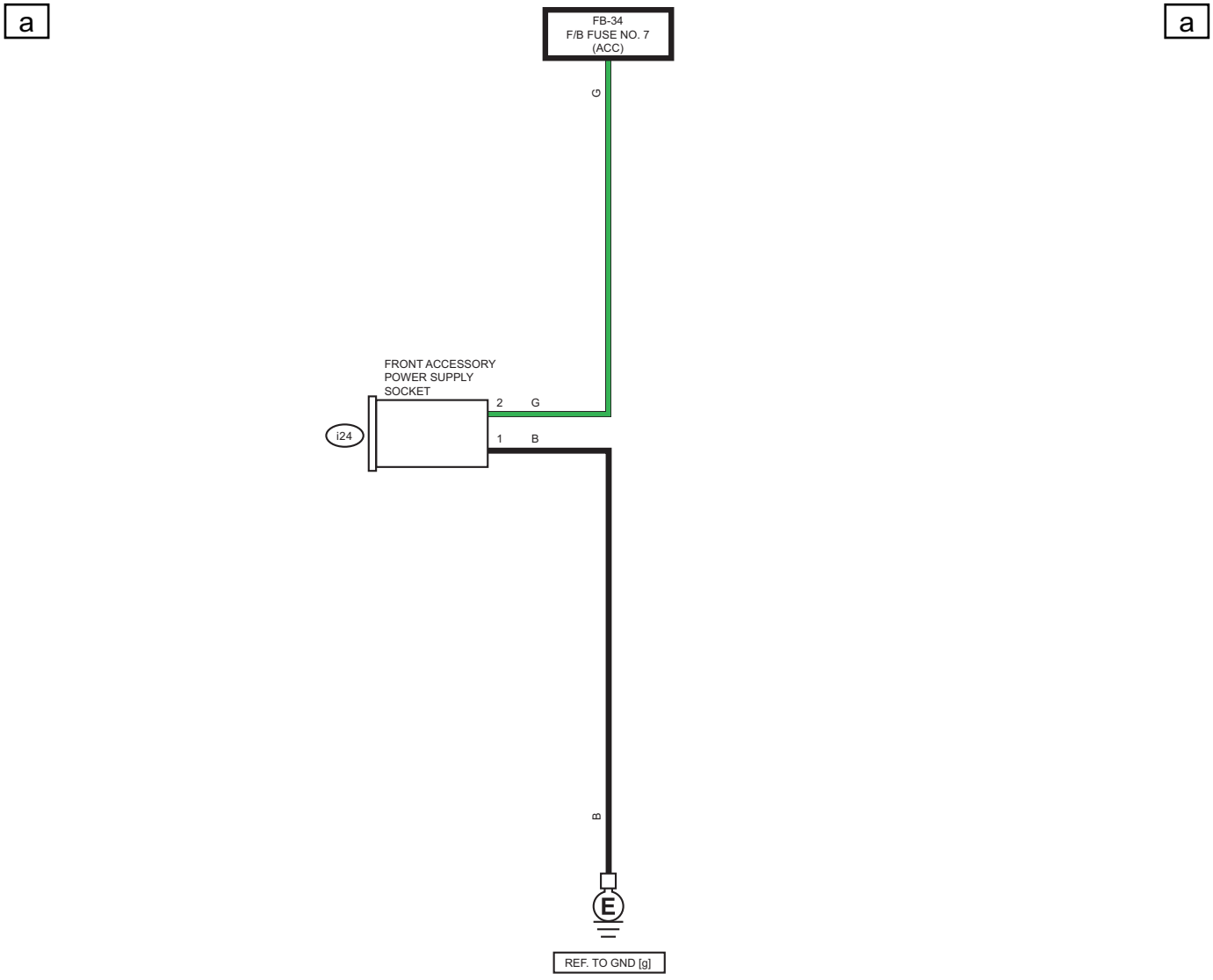
*1 : TERMINAL No. OPTIONAL ARRANGEMENT



WI-74367

22.Front Accessory Power Supply Socket System

A: WIRING DIAGRAM



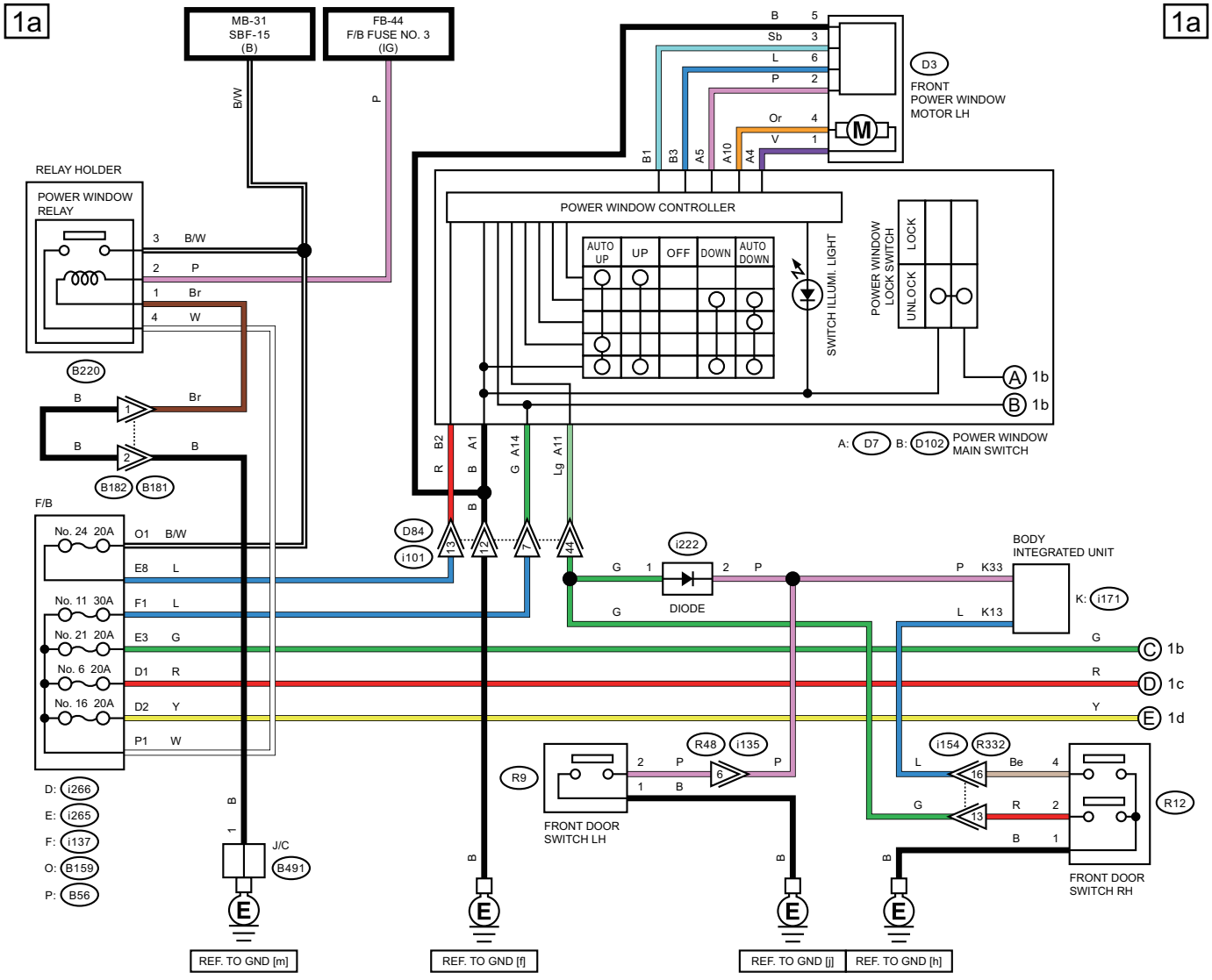
i24 (B)
1
2

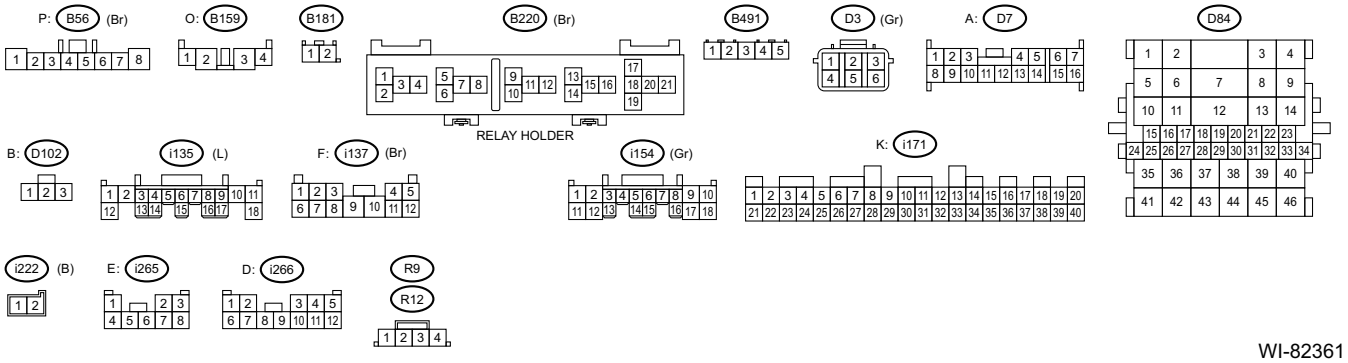
WI-60521

39.Power Window System

A: WIRING DIAGRAM

1. WITH DRIVER'S SEAT AUTO-REVERSE FUNCTION





WI-82361