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INSTRUMENTATION DRIVER INFO

General Description

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1. General Description

A: SPECIFICATION

Combination meter	Speedometer	Stepping motor type
	Tachometer	
	Engine coolant temperature gauge	
	Fuel gauge	
	Malfunction indicator light	LED
	Oil pressure indicator light	
	ABS Warning Light	
	Rear differential oil temperature warning light	
	Tire pressure warning light	
	Airbag warning light	
	Seat belt warning light	
	Door open warning light	
	Brake fluid and parking brake warning light	
	Low fuel warning light	
	Charge warning light	
	Hill start assist warning light	
	Vehicle dynamics control (VDC) warning light / VDC OFF indicator light (yellow)	
	Vehicle dynamics control (VDC) traction mode indicator light (green)	
	Vehicle dynamics control (VDC) indicator light	
	Turn signal indicator light	
	HI-beam indicator light	
	Security and immobilizer indicator light	
	[I] Indicator light	
	[S] Indicator light	
	[S#] Indicator light	
	AUTO [-] indicator light	
	AUTO [+] indicator light	
	AUTO indicator light	
	Front fog light indicator light	
	REV indicator light	
	Shift-up indicator light	
	Light illumination indicator light	
Meter illumination light		
LCD back light		
Cruise indicator light		
Cruise set indicator light		
Odo/Trip indicator	LCD	
DCCD Torque indicator		
REV indicator		
Clock	Average fuel economy, ambient air temperature, current time, malfunction warning display	VFD
	Passenger's airbag ON indicator	LED
	Passenger's airbag OFF indicator	
	Passenger's seat belt warning light	

B: CAUTION

- Be careful not to damage the meters and instrument panel.
- Be careful not to damage the meter glass.
- Make sure the electrical connector is connected securely.
- After installation, make sure that each meter operates normally.
- Use gloves to avoid damage and getting fingerprints on the glass surface and meter surfaces.
- Do not apply an excessive force on the printed circuit.
- Do not drop or otherwise apply impact.
- When the combination meter of model with immobilizer has been replaced, be sure to perform the registration of immobilizer.

C: PREPARATION TOOL

1. GENERAL TOOL

TOOL NAME	REMARKS
Circuit tester	Used for measuring resistance and voltage.

3. Clock System

A: WIRING DIAGRAM

1. CLOCK

<Ref. to WI-110, WIRING DIAGRAM, Clock System.>

B: INSPECTION

1. SYMPTOM CHART

Symptom	Repair order	Reference
No display is shown.	1. Power supply 2. Clock body	<Ref. to IDI-10, CHECK POWER SUPPLY AND GROUND CIRCUIT, INSPECTION, Clock System.>
The brightness does not change even when the night illumination control switch is operated.	1. Check combination meter DTC. 2. Check clock illumination circuit. 3. Check communication circuit between combination meter and clock.	<Ref. to IDI-11, CHECK ILLUMINATION CIRCUIT, INSPECTION, Clock System.>
Ambient air temperature/fuel economy displays do not appear.	1. Communication circuit between combination meter and clock 2. Clock body	<Ref. to IDI-11, CHECK CLOCK SYSTEM COMMUNICATION CIRCUIT, INSPECTION, Clock System.>
"Err" is displayed at the ambient air temperature display.	1. Check communication circuit between combination meter and ambient air temperature sensor. 2. Check combination meter DTC. 3. Check communication circuit between combination meter and clock.	<Ref. to IDI-12, CHECK AMBIENT TEMPERATURE METER SYSTEM COMMUNICATION CIRCUIT, INSPECTION, Clock System.>
"Err" is displayed at the average fuel economy display.	1. Check communication circuit between combination meter and each module. 2. Check communication circuit between combination meter and clock.	<Ref. to IDI-12, CHECK AVERAGE FUEL ECONOMY SYSTEM COMMUNICATION CIRCUIT, INSPECTION, Clock System.>

2. CHECK POWER SUPPLY AND GROUND CIRCUIT

Step	Check	Yes	No
1 CHECK CLOCK POWER SUPPLY. 1) Disconnect the clock harness connector. 2) Measure the voltage between the clock harness connector and chassis ground. <i>Connector & terminal</i> <i>(i59) No. 10 (+) — Chassis ground (-):</i>	Is the voltage 10 V or more?	Go to step 2.	Check the harness for a open or short between the fuse and clock.
2 CHECK CLOCK GROUND CIRCUIT. 1) Turn the ignition switch to OFF. 2) Measure the resistance between the clock harness connector and chassis ground. <i>Connector & terminal</i> <i>(i59) No. 6 — Chassis ground:</i>	Is resistance less than 10 Ω?	Replace the clock body.	Repair the wiring harness.

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3. CHECK ILLUMINATION CIRCUIT

Step	Check	Yes	No
1 CHECK AMBIENT TEMPERATURE OUTPUT DATA. Check the illumination ON/OFF data of the body integrated unit monitor, using Subaru Select Monitor.	Does it operate normally?	Go to step 2.	Perform the diagnosis according to the body integrated unit.
2 CHECK THE ILLUMINATION BRIGHTNESS OF COMBINATION METER. 1) Turn the ignition switch to ON. 2) Check the brightness of combination meter is changed, when lighting switch to ON.	Does the brightness of combination meter change?	Go to step 3.	Replace the meter case assembly.
3 CHECK CLOCK ILLUMINATION CIRCUIT POWER SUPPLY. 1) Turn the ignition switch to OFF. 2) Disconnect the clock harness connector. 3) Turn the ignition switch and lighting switch to ON. 4) Measure the voltage between the clock harness connector and the chassis ground. Connector & terminal <i>(i59) No. 1 (+) — Chassis ground (-):</i>	Is the voltage 10 V or more?	Go to step 4.	Check the harness for a open or short between the fuse and clock.
4 CHECK COMBINATION METER. 1) Turn the ignition switch to OFF. 2) Disconnect the clock from connector, and then attach the correct clock.	Does the brightness change?	Replace the clock body.	Replace the meter case assembly.

4. CHECK CLOCK SYSTEM COMMUNICATION CIRCUIT

Step	Check	Yes	No
1 CHECK THE HARNESS BETWEEN CLOCK AND COMBINATION METER. 1) Turn the ignition switch to OFF. 2) Disconnect the harness connector of the clock and the combination meter. 3) Measure the resistance between the harness connector of the clock and the combination meter. Connector & terminal <i>(i59) No. 5 — (i10) No. 29:</i>	Is resistance less than 10 Ω?	Replace the clock body.	Repair the wiring harness.

Clock System

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5. CHECK AMBIENT TEMPERATURE METER SYSTEM COMMUNICATION CIRCUIT

Step	Check	Yes	No
1 CHECK POWER SUPPLY FOR AMBIENT SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the ambient temperature sensor harness connector. 3) Turn the ignition switch to ON. 4) Measure the voltage between the ambient temperature sensor harness connector terminal and chassis ground. Connector & terminal (F78) No. 1 (+) — Chassis ground (-):	Is the voltage 4 V or more?	Go to step 2.	Check the harness for a open or short between the fuse and clock.
2 CHECK HARNESS BETWEEN AMBIENT TEMPERATURE SENSOR AND COMBINATION METER. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the combination meter. 3) Measure the resistance between the ambient temperature sensor harness connector terminal and combination meter harness connector terminal. Connector & terminal (F78) No. 1 (+) — (i10) No. 24: (F78) No. 2 (+) — (i10) No. 23:	Is the resistance less than 10 Ω?	Go to step 3.	Repair the wiring harness.
3 CHECK AMBIENT SENSOR. 1) Remove the ambient temperature sensor. 2) Check the ambient temperature sensor. <Ref. to AC(diag)-29, AMBIENT SENSOR, Diagnostic Procedure for Sensors.>	Is the ambient temperature sensor operating properly?	Go to step 4.	Replace the ambient sensor.
4 CHECK AMBIENT TEMPERATURE DISPLAY. 1) Connect the harness connector of the combination meter. 2) Connect a resistance of 3 Ω between the harness connector terminals of the ambient temperature sensor. 3) Turn the ignition switch to ON, and check the ambient air temperature display.	Is the ambient air temperature indicator showing 25°C (77°F)?	Repair the poor contact between the ambient air temperature sensor and harness connector.	Go to step 5.
5 CHECK AMBIENT AIR TEMPERATURE OUTPUT DATA. Connect the Subaru Select Monitor, and check the ambient temperature data in the data monitor of the integrated unit.	Is the ambient air temperature indicator showing 25°C (77°F)?	Go to step 6.	Replace the meter case assembly.
6 CHECK COMBINATION METER. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the clock, and install a properly operating clock.	Is the ambient air temperature indicator showing 25°C (77°F)?	Replace the clock.	Replace the meter case assembly.

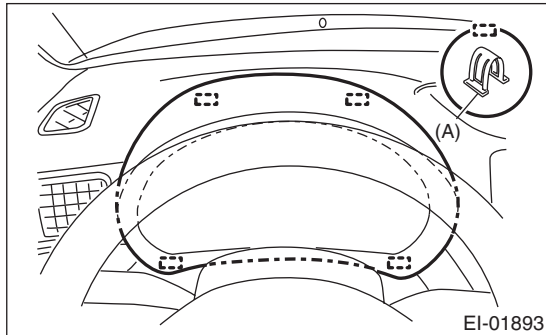
6. CHECK AVERAGE FUEL ECONOMY SYSTEM COMMUNICATION CIRCUIT

Step	Check	Yes	No
1 CHECK OUTPUT DATA OF INTEGRATED UNIT. Read the DTC of body integrated unit using Subaru Select Monitor. <Ref. to LAN(diag)-15, OPERATION, Subaru Select Monitor.>	Is DTC displayed?	Go to step 2.	Replace the meter case assembly.
2 CHECK THE COMMUNICATION STATUS. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from clock, and then attach the correct clock.	Is the fuel economy display correct?	Replace the clock body.	Replace the meter case assembly.

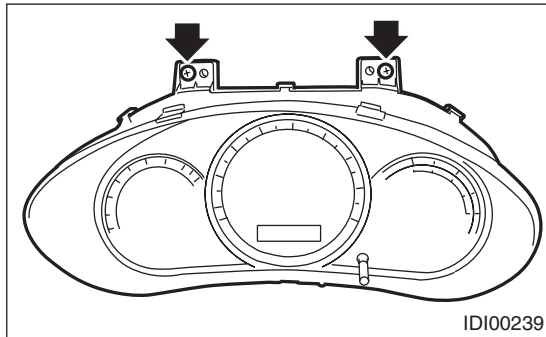
4. Combination Meter

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Set the tilt steering at the lowest position. Pull out steering wheels with telescopic functions all the way.
- 3) Remove the plastic hook (A), and detach the meter visor.



- 4) Remove the screws of the combination meter, and pull on the meter while tipping it towards yourself.



- 5) Disconnect the connector in the rear side of combination meter to remove meter.

CAUTION:

- Be careful not to damage the meter or instrument panel.
- Pay particular attention to avoid damaging the meter glass.

B: INSTALLATION

Install in the reverse order of removal.

CAUTION:

- Make sure the electrical connector is connected securely.
- Make sure that each meter operates normally.
- When the combination meter of model with immobilizer has been replaced, be sure to perform the registration of immobilizer.

Combination Meter

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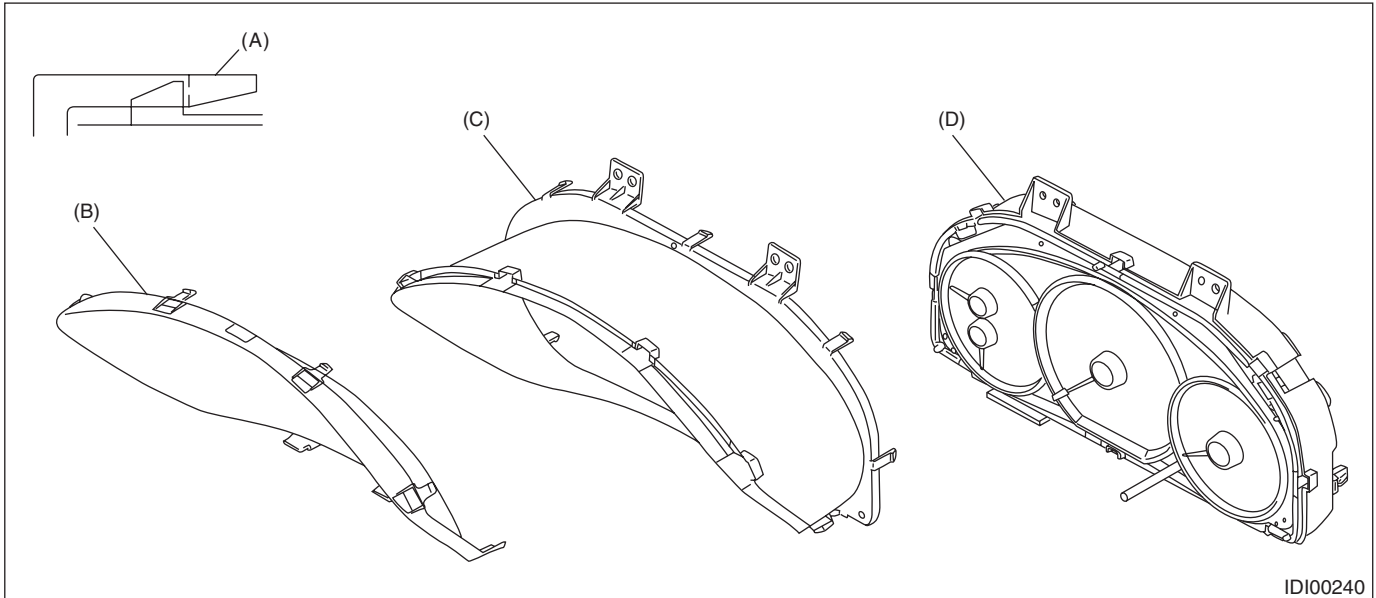
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C: DISASSEMBLY

CAUTION:

- Use gloves to avoid damage and getting fingerprints on the glass surface and meter surfaces.
- Be careful not to apply excessive force to the trip knob.
- Be sure not to touch the meter indicator needle.

Disengage claw (A), and remove the meter glass assembly (B) and meter visor (C) from meter case assembly (D).



1. BULB REPLACEMENT

LEDs are used for all of warning lights and indicator lights of combination meters, replace the meter case assembly if faulty.

D: ASSEMBLY

Assemble in the reverse order of disassembly.

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5. Speedometer

A: SPECIFICATION

Since the meter case assembly cannot be disassembled, do not remove or inspect the speedometer alone. (Do not remove the cover on the back surface.)

6. Tachometer

A: SPECIFICATION

Since the meter case assembly cannot be disassembled, do not remove or inspect the tachometer alone. (Do not remove the cover on the back surface.)

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7. Fuel Gauge

A: SPECIFICATION

Since the meter case assembly cannot be disassembled, do not remove or inspect the fuel gauge alone. (Do not remove the cover on the back surface.)

Engine Coolant Temperature Gauge

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8. Engine Coolant Temperature Gauge

A: SPECIFICATION

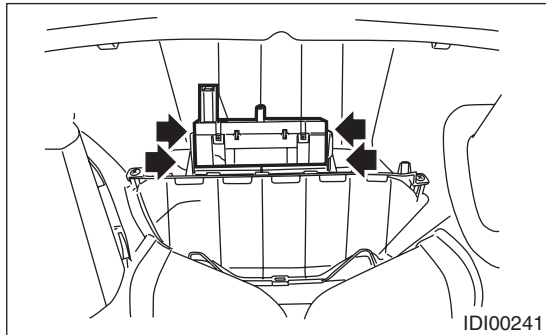
Since the meter case assembly cannot be disassembled, do not remove or inspect the engine coolant temperature gauge alone. (Do not remove the cover on the back surface.)

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9. Clock

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the audio. <Ref. to ET-6, REMOVAL, Audio.>
- 3) Insert your hands from the audio space, and disengage the four claws of the bracket at the back side of the instrument panel.



- 4) Disconnect the harness connector and remove the clock.

B: INSTALLATION

Install in the reverse order of removal.

