2. Combination Meter System

A: WIRING DIAGRAM

Refer to “Combination Meter System” in WI section. <Ref. to WI-132, WIRING DIAGRAM, Combination Meter System.>

B: INSPECTION

1. SELF-DIAGNOSIS

The self-diagnosis (checking of each meter, warning light, indicator light, illumination, LCD) of combination meter can be performed in the following procedure.

CAUTION:
Perform the steps described in 2) through 4) within 10 seconds.

1) Within 3 seconds after turning the ignition switch to ON, set the lighting switch to tail light or headlight position.
2) Press the odo/trip meter knob three times.
3) Turn the lighting switch to OFF, and press the odo/trip meter knob three times.
4) Set the lighting switch to tail light or headlight position again, and press the odo/trip meter knob three times.

NOTE:
• When pressing the odo/trip meter knob four times, the display changes to DTC display mode. <Ref. to IDI-11, DTC DISPLAY MODE, INSPECTION, Combination Meter System.>
• Warning light, indicator light, and LCD display checks are performed when self-diagnosis is performed. After this, every time the odo/trip meter knob is pressed, the buzzer will sound for 0.5 seconds, and operation checks for meter operation, meter readings, and the LCD are performed in this order. Turn the ignition switch to OFF to cancel the self-diagnosis function.
• The self-diagnosis function is not cancelled if the engine is started during diagnosis. However, the self-diagnosis function is cancelled automatically for safety when you start to drive the vehicle.

5) Go to “Check meter indicator operation”.
Check meter operation, warning light, indicator light, and LCD.

Meter indicator	LCD display, illumination	Warning light, indicator light
MIN indication ↓ MAX indication	ILL1 (Min. brightness) ↓(Displayed for one second for each level) ILL6 (Max. brightness)	Light ON Engine coolant temperature warning light color is red. (Non-turbo model)
MAX indication ↓ MIN indication	ILL6 (Max. brightness) ↓(Displayed for one second for each level) ILL1 (Min. brightness)	

6) Press the odo/trip meter knob once.

7) Go to “Check meter indication”.
Check meter operation, warning light, indicator light, and LCD.

NOTE:
• The meter indicator needle will switch every 1.5 seconds.
• ILL indication illuminates at the same brightness as when entering “Meter Indicator Needle Indication Check”.

Speedometer (km/h)	Tachometer (rpm)	Fuel gauge	Engine coolant temperature gauge	Fuel level warning light	Warning light, indicator light
0	0	Lowest point	Lowest point	Light ON	Light OFF Engine coolant temperature indicator light color is blue. (Non-turbo model)
0	0	E	C	Light ON	
40	1000	1/2	1/2	Light OFF	
100	4000	F	H	Light OFF	
40	1000	1/2	1/2	Light OFF	
0	0	E	C	Light ON	

8) Press the odo/trip meter knob once.
9) Go to “Check LCD display”.
Check the LCD.

NOTE:
• All warning and indicator lights go off.
• The meter indication remains at the same level as “Meter Indicator Needle Indication Check”.
• ILL indication illuminates at ILL6 level (max. brightness).

Illuminating order	1	2	3	4	5	6	7	8	9	10	11	12	13	
ODO, TRIP A/B	All lights ON	All lights OFF	ODO	All lights OFF	TRIP A	All lights OFF	TRIP B	All lights OFF	All lights OFF	All lights OFF	TRIP A	All lights OFF	TRIP B	Go back to 1 and repeat.
Odo/trip meter	88888.8	111111	22222.2	333333	44444.4	555555	66666.6	777777	88888.8	999999	00000.0	888888	88888.8	
AT shift indicator	All lights ON	1	2	3	4	5	6	7	P	R	N	D	E	
▲ ▼	▲ ▼	All lights OFF	▲	All lights OFF	▼	All lights OFF	▲	All lights OFF	▼	All lights OFF	▲	All lights OFF	▼	

2. SYMPTOM CHART

CAUTION:
When measuring the voltage and resistance of each control module or sensor, use a tapered pin with a diameter of less than 0.64 mm (0.025 in) in order to avoid poor contact. Do not insert the pin more than 2 mm (0.08 in).

Symptom	Repair order	Index
Combination meter assembly does not operate.	1. Power supply 2. Ground circuit 3. Combination meter	<Ref. to IDI-6, CHECK POWER SUPPLY AND GROUND CIRCUIT, INSPECTION, Combination Meter System.>
Speedometer does not operate.	1. VDC C/M 2. Harness 3. Combination meter	<Ref. to IDI-7, CHECK ABS CONTROL MODULE OR VDC CONTROL MODULE, INSPECTION, Combination Meter System.>
Tachometer does not operate.	1. ECM 2. Harness 3. Combination meter	<Ref. to IDI-7, CHECK ENGINE CONTROL MODULE (ECM), INSPECTION, Combination Meter System.>
Fuel gauge does not operate.	1. Communication circuit 2. Fuel level sensor 3. Harness 4. Combination meter	<Ref. to IDI-8, CHECK FUEL LEVEL SENSOR, INSPECTION, Combination Meter System.>
Engine coolant temperature gauge does not operate. (Turbo model)	1. Communication circuit 2. Engine coolant temperature sensor 3. Harness 4. Combination meter	<Ref. to IDI-9, CHECK ENGINE COOLANT TEMPERATURE SENSOR, INSPECTION, Combination Meter System.>

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

	Step	Check	Yes	No
1	**CHECK POWER SUPPLY FOR COMBINATION METER.** 1) Remove the combination meter. <Ref. to IDI-15, REMOVAL, Combination Meter.> 2) Disconnect the combination meter connector. 3) Turn the ignition switch to ON. 4) Measure the voltage between combination meter connector and chassis ground. ***Connector & terminal*** ***(i10) No. 2 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **2**.	Check the harness for open or short between the ignition switch and combination meter.
2	**CHECK POWER SUPPLY FOR COMBINATION METER.** Measure the voltage between combination meter connector and chassis ground. ***Connector & terminal*** ***(i10) No. 1 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **3**.	Check the harness for open or short between the fuse and combination meter.
3	**CHECK GROUND CIRCUIT OF COMBINATION METER.** 1) Turn the ignition switch to OFF. 2) Measure the resistance between combination meter connector and chassis ground. ***Connector & terminal*** ***(i10) No. 21 — Chassis ground:*** ***(i10) No. 22 — Chassis ground:***	Is the resistance less than 10 Ω?	Replace the meter case assembly.	Repair the wiring harness.

4. CHECK VDC CONTROL MODULE

	Step	Check	Yes	No
1	**CHECK VEHICLE SPEED SIGNAL.** 1) Lift up the vehicle and support it with rigid racks. 2) Drive the vehicle faster than 10 km/h (6 MPH). **WARNING:** **Be careful not to get caught in the running wheels.** 3) Measure the voltage between combination meter connector and chassis ground. ***Connector & terminal*** ***(i10) No. 31 (+) — Chassis ground (–):***	Is the voltage less than 1 V ←→ 5 V or more?	Replace the meter case assembly.	Go to step **2**.
2	**CHECK HARNESS BETWEEN VDCCM AND COMBINATION METER.** 1) Turn the ignition switch to OFF. 2) Disconnect the VDCCM connector and combination meter connector. 3) Measure the resistance between VDCCM and combination meter. ***Connector & terminal*** ***(B310) No. 33 — (i10) No. 31:***	Is the resistance less than 10 Ω?	Check the VDC control module. <Ref. to VDC(diag)-2, Basic Diagnostic Procedure.>	Repair the wiring harness.

5. CHECK ENGINE CONTROL MODULE (ECM)

	Step	Check	Yes	No
1	**CHECK ECM SIGNAL.** 1) Start the engine. 2) Measure the voltage between ECM connector and chassis ground. ***Connector & terminal*** ***(B136) No. 22 (+) — Chassis ground (–):***	Is the voltage 0 ←→ 14 V or more?	Go to step **2**.	Inspect the ECM. <Ref. to EN(H4SO)(diag)-2, Basic Diagnostic Procedure.> <Ref. to EN(H4DOTC)(diag)-2, Basic Diagnostic Procedure.>
2	**CHECK HARNESS BETWEEN COMBINATION METER AND ECM.** 1) Turn the ignition switch to OFF. 2) Disconnect the ECM connector and combination meter connector. 3) Measure the resistance between the ECM connector and combination meter connector. ***Connector & terminal*** ***(B136) No. 22 — (i10) No. 32:***	Is the resistance less than 10 Ω?	Replace the meter case assembly.	Repair the wiring harness.

6. CHECK FUEL LEVEL SENSOR

	Step	Check	Yes	No
1	**CHECK COMBINATION METER.** 1) Drain fuel. 2) Check the indication status of the fuel gauge in the combination meter.	Does the fuel gauge needle indicate EMPTY and is the low fuel warning light blinking?	Go to step **4**.	Go to step **2**.
2	**CHECK COMBINATION METER.** Perform the self-diagnosis of combination meter. <Ref. to IDI-4, SELF-DIAGNOSIS, INSPECTION, Combination Meter System.>	Is it operating normally?	Go to step **3**.	Replace the meter case assembly.
3	**CHECK COMMUNICATION STATUS.** 1) Prepare the Subaru Select Monitor kit. 2) Turn the ignition switch to ON (engine OFF) and run the “PC application for Subaru Select Monitor”. 3) On «System Selection Menu» display, select {Integ. unit mode}. 4) Select the {Diagnostic Code(s) Display}.	Is DTC being displayed?	Perform the diagnosis according to DTC. <Ref. to LAN(diag)-34, LIST, List of Diagnostic Trouble Code (DTC).>	Go to step **4**.
4	**CHECK HARNESS.** 1) Disconnect the body integrated unit connector. 2) Measure the resistance between the body integrated unit and chassis ground. ***Connector & terminal*** ***(B281) No. 7 — Chassis ground:***	Is the resistance 2 — 96 Ω?	Go to step **5**. If the step 1 is “Yes”, Go to step **9**.	Repair the wiring harness.
5	**CHECK COMMUNICATION BETWEEN BODY INTEGRATED UNIT AND METERS.** 1) Remove the fuel sub level sensor. <Ref. to FU(H4SO)-67, REMOVAL, Fuel Sub Level Sensor.> <Ref. to FU(H4DOTC)-74, REMOVAL, Fuel Sub Level Sensor.> 2) Short the fuel sub level sensor connector terminal to the chassis ground with approx. 100 Ω resistance. 3) Turn the ignition switch to ON. ***Connector & terminal*** ***(R59) No. 1 — Chassis ground:***	Does the meter needle indicate EMPTY?	Go to step **7**.	Go to step **6**.
6	**CHECK BODY INTEGRATED UNIT.** 1) Retain the condition in step 5. 2) On {Integ. unit mode}, select {Fuel level resistance} using the Subaru Select Monitor.	Is approx. 100 Ω displayed in the data?	Go to step **11**.	Replace the body integrated unit. <Ref. to SL-49, REMOVAL, Body Integrated Unit.>
7	**CHECK COMMUNICATION BETWEEN BODY INTEGRATED UNIT AND METERS.** 1) Remove the fuel sub level sensor. <Ref. to FU(H4SO)-67, REMOVAL, Fuel Sub Level Sensor.> <Ref. to FU(H4DOTC)-74, REMOVAL, Fuel Sub Level Sensor.> 2) Short the fuel sub level sensor connector terminal to the chassis ground with approx. 2 Ω to 6 Ω resistance. 3) Turn the ignition switch to ON. ***Connector & terminal*** ***(R59) No. 1 — Chassis ground:***	Does the meter needle indicate FULL?	Go to step **9**.	Go to step **8**.
8	**CHECK BODY INTEGRATED UNIT.** 1) Retain the condition in step 7. 2) On {Integ. unit mode}, select {Fuel level resistance} using the Subaru Select Monitor.	Is the resistance approximately 2 to 6 Ω?	Go to step **11**.	Replace the body integrated unit. <Ref. to SL-49, REMOVAL, Body Integrated Unit.>

	Step	Check	Yes	No
9	**CHECK FUEL SUB LEVEL SENSOR.** 1) Remove the fuel sub level sensor. <Ref. to FU(H4SO)-67, REMOVAL, Fuel Sub Level Sensor.> <Ref. to FU(H4DOTC)-74, REMOVAL, Fuel Sub Level Sensor.> 2) Measure the resistance between the fuel sub level sensor connector terminals when the float is in FULL and EMPTY position. ***Connector & terminal*** ***(R59) No. 1 — No. 2:***	Is the resistance 1.0 to 3.0 Ω (FULL) and 61 to 63 Ω (EMPTY)?	Go to step **10**.	Replace the fuel sub level sensor.
10	**CHECK FUEL LEVEL SENSOR.** 1) Remove the fuel level sensor. <Ref. to FU(H4SO)-66, REMOVAL, Fuel Level Sensor.> <Ref. to FU(H4DOTC)-73, REMOVAL, Fuel Level Sensor.> 2) Measure the resistance between the fuel level sensor connectors when the float is in FULL and EMPTY position. ***Connector & terminal*** ***(R58) No. 1 — No. 4:***	Is the resistance 1.0 to 3.0 Ω (FULL) and 31 to 33 Ω (EMPTY)?	Check the connection status of the harness and connector that may have a temporary poor contact.	Replace the fuel level sensor.
11	**CHECK COMBINATION METER OPERATION.** 1) Remove the combination meter. 2) Attach the combination meter to another vehicle on which the fuel gauge operates normally to check its operation.	Is the fuel gauge normal?	Replace the body integrated unit. <Ref. to SL-49, REMOVAL, Body Integrated Unit.>	Replace the meter case assembly.

7. CHECK ENGINE COOLANT TEMPERATURE SENSOR

	Step	Check	Yes	No
1	**CHECK COMMUNICATION STATUS.** 1) Prepare the Subaru Select Monitor kit. 2) Turn the ignition switch to ON (engine OFF) and run the “PC application for Subaru Select Monitor”. 3) On «System Selection Menu» display, select {Integ. unit mode}. 4) Select the {Diagnostic Code(s) Display}.	Is DTC being displayed?	Perform the diagnosis according to DTC. <Ref. to LAN(diag)-34, LIST, List of Diagnostic Trouble Code (DTC).>	Go to step **2**.
2	**CHECK ENGINE COOLANT TEMPERATURE SENSOR.** Check the engine coolant temperature sensor. <Ref. to EN(H4SO)(diag)-2, Basic Diagnostic Procedure.> <Ref. to EN(H4DOTC)(diag)-2, Basic Diagnostic Procedure.>	Is the engine coolant temperature sensor OK?	Replace the meter case assembly.	Replace the engine coolant temperature sensor.

8. CHECK KEY WARNING SWITCH ALARM

	Step	Check	Yes	No
1	**CHECK KEY WARNING SWITCH ALARM.** 1) Insert the key to the ignition key lock. 2) Open the driver's side door.	Does the buzzer sound from the meter?	Normal	Go to step **2**.
2	**CHECK COMMUNICATION STATUS.** 1) Prepare the Subaru Select Monitor. 2) On «System Selection Menu» display, select {Integ. unit mode}. 3) On {Current Data Display & Save}, select {Key-lock warning SW}. 4) Remove and insert the key.	Does the display change between ON ⇔ OFF?	Go to step **3**.	Check the ignition switch circuit. <Ref. to SL-43, INSPECTION, Ignition Key Lock.>
3	**CHECK COMMUNICATION STATUS.** 1) On {Current Data Display & Save}, select {Driver's door SW input}. 2) Open and close the door.	Does the display change between ON ⇔ OFF?	Go to step **4**.	Check the door switch circuit. <Ref. to SL-9, CHECK DOOR LOCK SWITCH, INSPECTION, Door Lock Control System.>
4	**CHECK COMMUNICATION STATUS.** 1) Turn the ignition switch to ON (engine OFF) and run the "PC application for Subaru Select Monitor". 2) On «System Selection Menu» display, select {Integ. unit mode}. 3) Select the {Diagnostic Code(s) Display}.	Is DTC being displayed?	Perform the diagnosis according to DTC. <Ref. to LAN(diag)-34, LIST, List of Diagnostic Trouble Code (DTC).>	Go to step **5**.
5	**CHECK COMBINATION METER.** Perform the self-diagnosis of combination meter. <Ref. to IDI-4, SELF-DIAGNOSIS, INSPECTION, Combination Meter System.>	Did the buzzer sound?	Go to step **6**.	Replace the meter case assembly.
6	**CHECK COMBINATION METER.** 1) Remove the combination meter. 2) Attach the buzzer to another vehicle on which the buzzer operates normally to check its operation.	Did the buzzer sound?	Replace the body integrated unit. <Ref. to SL-49, REMOVAL, Body Integrated Unit.>	Replace the meter case assembly.

9. DTC DISPLAY MODE

The combination meter DTC can be displayed according to the following procedure.

CAUTION:
Perform the steps described in 2) through 4) within 10 seconds.
1) Within 3 seconds after turning the ignition switch to ON, set the lighting switch to tail light or headlight position.
2) Press the odo/trip meter knob four times.
3) Turn the lighting switch to OFF, and press the odo/trip meter knob four times.
4) Set the lighting switch to tail light or headlight position again, and press the odo/trip meter knob four times.
5) Go to “DTC display mode”.
When the DTC display mode operates, the display is changed every 3 seconds or {ECM}, {TCM}, {ABS/VDC} is displayed cyclically in this order for every press of the trip knob. DTC is displayed in the following table according to type of control module, receiving DTC, DTC detected or No DTC.

Control module	Condition	Display
ECM	Receiving DTC	Trip “A” + “P (Blink)”
	DTC detected	Trip “A” + “P xxxx”
	No DTC	Trip “A” + “P ----”
TCM	Receiving DTC	Trip “B” + “P (Blink)”
	DTC detected	Trip “B” + “P xxxx”
	No DTC	Trip “B” + “P ----”
ABS/VDCCM	Receiving DTC	Trip “A” + “C (Blink)”
	DTC detected	Trip “A” + “C xxxx”
	No DTC	Trip “A” + “C ----”
When CAN communication error is occurred	—	“ ----- ”

NOTE:
• When the engine starts during diagnosis, the self-diagnosis function is not cancelled, however, once ignition switch is turned OFF or the vehicle is driven, the DTC display mode is cancelled automatically for safety.
• When the DTC of individual control modules changes in status from current trouble to past trouble, and the trouble is fixed, the DTC will no longer appear in the combination meter if the engine is started three times or more. In this case, read the DTC using the Subaru Select Monitor.
• Because the MT model is not equipped with a TCM, only “Receiving DTC” is displayed.

C: NOTE

For procedure of each component in the combination meter system, refer to the respective section.
• Combination meter <Ref. to IDI-15, Combination Meter.>
• Speedometer <Ref. to IDI-16, Speedometer.>
• Tachometer <Ref. to IDI-17, Tachometer.>
• Fuel gauge <Ref. to IDI-18, Fuel Gauge.>
• Engine coolant temperature gauge (turbo model) <Ref. to IDI-19, Engine Coolant Temperature Gauge.>