2. Combination Meter System

A: WIRING DIAGRAM

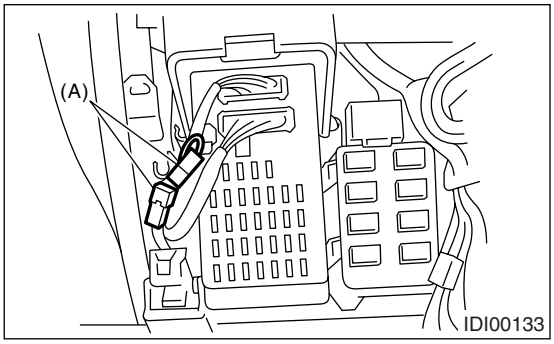
1. COMBINATION METER

<Ref. to WI-171, WIRING DIAGRAM, Combination Meter System.>

B: INSPECTION

1. SELF-DIAGNOSIS

The self-diagnosis (checking of each meter, warning light, indicator, illumination, LCD, buzzer sound) of combination meter can be performed in the following procedure.
1) Connect the diagnostic connector (A) near the fuse & relay box.



2) Turn the ignition switch to ON.
3) While meter indicator needle deflecting, press the odo/trip meter knob twice.

NOTE:
When odo/trip meter knob is pressed only once, display mode is shifted to DTC display mode. <Ref. to IDI-11, DTC DISPLAY MODE, INSPECTION, Combination Meter System.>

When the self-diagnosis function is operated, the checking of warning light, indicator, and LCD display is performed, hereafter, every pressing the odo/trip meter knob, the operation check is performed in the order of meter, illumination and buzzer. <Ref. to IDI-4, LIST OF SELF-DIAGNOSIS MODE OPERATION, INSPECTION, Combination Meter System.> To cancel the self-diagnosis mode, set the ignition switch to OFF or disconnect the diagnosis connector.

NOTE:
When the engine starts during diagnosis, the self-diagnosis mode is not cancelled, however, once the vehicle starts driving, the self-diagnosis mode is cancelled automatically for safety.

2. LIST OF SELF-DIAGNOSIS MODE OPERATION

Speedometer, tachometer, fuel gauge, water temperature gauge	Microcomputer running type warning light, indicator light	AT select lever position indicator light	Odo/Trip indicator	SPORT shift indicator	Illumination (indicator needle, plate, ring, LCD)	Buzzer (SPORT shift buzzer)
Step 0. Processing to self-diagnosis mode						
Operating initial operation	Initial illuminating	Normal	Normal	Initial illuminating	Initial illuminating	Not beep.
Step 1-1. Check each indication after initial operation						
Repeat the sweep operation (After holding on lowest position for one second, reaches to highest position within 5 seconds, and after holding on highest position for one second, reaches to lowest position within 5 seconds).	Light ON	With the highest brightness, illuminate the position sequentially at a cycle of 1.5 seconds.	Perform the segment check. For the illumination order, refer to the illumination order table.	Perform the segment check. For the illumination order, refer to the illumination order table.	Light at the highest brightness.	Not beep.
Step 1-2. Press the trip knob (trip knob input is not accepted till the meter indicator needle reaches the highest position): sweep complete, AT select lever position indicator display is set						
After completing sweep in step 1-1, back to lowest position.	Light ON	Keep the position indicated when the trip knob is pressed.	Underbar " _ " is displayed.	"1" is displayed.	Light at the highest brightness.	Not beep.
Step 2-1. Press the trip knob, and hold it: Check each meter						
All meters are moved simultaneously in every 0.5 sec. from the lowest position to highest position. Speedometer/ Tachometer: Approx. 5 degrees at every movement. Water temperature gauge/Fuel gauge: Approx. 2 degrees at every movement.	Light OFF	Keep the position indicated that set in step 1-2.	Display the current meter directing angle on odometer. Ex.) Display "135054" when Speedometer/ Tachometer: 135 degree, Water temperature gauge/Fuel gauge: 54 degree.	"▼2" is displayed.	Light at the highest brightness.	Not beep.
Step 2-2. Release the trip knob: Specifying the meter directing position						
Stop at directing position when the trip knob is released.	Light OFF	Keep the position indicated that specified at step 1-2.	Display the current meter directing angle on odometer.	"2" is displayed.	Light at the highest brightness.	Not beep.
Step 3-1. Press the trip knob, and hold it: Check illumination						

Speedometer, tachometer, fuel gauge, water temperature gauge	Microcomputer running type warning light, indicator light	AT select lever position indicator light	Odo/Trip indicator	SPORT shift indicator	Illumination (indicator needle, plate, ring, LCD)	Buzzer (SPORT shift buzzer)
Keep the position that specified at step 2-2.	Light OFF	Varying from the highest brightness (ILL6) to the lowest luminescence (ILL1) every second. After reaching at ILL1, repeat it from ILL6.	Illumination brightness is displayed. (From ILL6 to ILL1)	"▼3" is displayed.	Varying from the highest brightness (ILL6) to the lowest luminescence (ILL1) every second. After reaching at ILL1, repeat it from ILL6.	Not beep.
Step 3-2. Release the trip knob: Specifying the illumination brightness						
Keep the position that specified at step 2-2.	Light OFF	Keep the brightness at the time when the trip knob is released.	Display the brightness at the time when the trip knob is released.	"3" is displayed.	Keep the brightness at the time when the trip knob is released.	Not beep.
Step 4-1. Press the trip knob: Check the beeping of SPORT shift buzzer (AT model)						
All meter indicator needle returns to lowest position.	Light OFF	Light at the highest brightness. Keep the position indicated that set in step 1-2.	Illumination brightness is displayed.	"▲▼8" is displayed. Blinks with buzzer.	Light at the highest brightness.	SPORT shift buzzer beeps.
Step 4-2. Press the trip knob: Check the VDC indicator light (Model with VDC)						
All meter indicator needle returns to lowest position.	VDC warning light and VDC operation indicator light blink.	Light at the highest brightness. Keep the position indicated that set in step 1-2.	Illumination brightness is displayed.	"4" is displayed.	Light at the highest brightness.	Not beep.
Step 5. Press the trip knob: Complete the self-diagnosis 1 cycle						
All meter indicator needle returns to lowest position, and go back to step 1 after completion.						

- Illuminating order table

Illuminating order	1	2	3	4	5	6	7	8	9	10	11	
Trip meter A/B	AB	A	B	A	B	A	B	A	B	A	B	
Odo/trip meter	8888.8 88888 8	00000 00000 0	1111.1 11111 1	22222 22222 2	3333.3 33333 3	44444 44444 4	5555.5 55555 5	66666 66666 6	7777.7 77777 7	88888 88888 8	9999.9 99999 9	
SPORT shift indicator	8	1	2	3	4	5	1	2	3	4	5	Go back to 1 and repeat
▲ ▼	▲ ▼	▲	▼	▲	▼	▲	▼	▲	▼	▲	▼	
AT select lever position indicator	P	P	R	R	R	N	N	N	D	D	D	
Display time (sec.)	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	

3. SYMPTOM CHART

Symptom	Repair order	Reference
Combination meter assembly does not operate.	(1) Power supply (2) Ground circuit (3) Combination meter	<Ref. to IDI-7, CHECK POWER SUPPLY AND GROUND CIRCUIT, INSPECTION, Combination Meter System.>
Speedometer does not operate.	(1) ABSCM or VDCCM (2) Harness (3) Combination meter	<Ref. to IDI-7, CHECK ABSCM OR VDCCM, INSPECTION, Combination Meter System.>
Tachometer does not operate.	(1) ECM (2) Harness (3) Combination meter	<Ref. to IDI-8, CHECK ENGINE CONTROL MODULE, INSPECTION, Combination Meter System.>
Fuel gauge does not operate.	(1) Communication circuit (2) Fuel level sensor (3) Harness (4) Combination meter	<Ref. to IDI-9, CHECK FUEL LEVEL SENSOR., INSPECTION, Combination Meter System.>
Water temperature gauge does not operate.	(1) Communication circuit (2) Engine coolant temperature sensor (3) Harness (4) Combination meter	<Ref. to IDI-10, CHECK ENGINE COOLANT TEMPERATURE SENSOR., INSPECTION, Combination Meter System.>
Error display is shown on the odo/trip meter.	Communication circuit	<Ref. to IDI-11, COMMUNICATION ERROR DISPLAY, INSPECTION, Combination Meter System.>

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 of more than 2 mm (0.08 in) in diameter.

4. 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 harness connector. 3) Turn the ignition switch to ON. 4) Measure the voltage between combination meter connector and chassis ground. ***Connector & terminal*** ***(i10) No. 3, No. 4 (+) — Chassis ground (−):***	Is the voltage more than 10 V?	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, No. 2 (+) — Chassis ground (−):***	Is the voltage more than 10 V?	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 of harness between combination meter connector and chassis ground. ***Connector & terminal*** ***(i10) No. 11, No. 12 — Chassis ground:***	Is the resistance less than 10 Ω?	Replace the meter case assembly.	Repair the wiring harness.

5. CHECK ABSCM OR VDCCM

	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. 19 (+) — 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 ABSCM OR VDCCM AND COMBINATION METER.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ABSCM or VDCCM and combination meter. 3) Measure the resistance between ABSCM or VDCCM harness connector and combination meter harness connector. ***Connector & terminal*** ***Model without VDC*** ***(B301) No. 23 — (i10) No. 19:*** ***Model with VDC*** ***(B310) No. 36 — (i10) No. 19:***	Is the resistance less than 10 Ω?	Model without VDC: Check the ABSCM. <Ref. to ABS(diag)-2, Basic Diagnostic Procedure.> Model with VDC: Check the VDCCM. <Ref. to VDC(diag)-2, Basic Diagnostic Procedure.>	Repair the wiring harness.

6. CHECK ENGINE CONTROL MODULE

	Step	Check	Yes	No
1	**CHECK ECM SIGNAL.** 1) Start the engine. 2) Measure the voltage between ECM connector and engine ground. ***Connector & terminal*** ***(B134) No. 23 (+) — Chassis ground (−):***	Is the voltage more than 0 ←→ 14 V?	Go to step **2.**	Check the ECM. <Ref. to EN(H4SO)(diag)-2, Basic Diagnostic Procedure.> <Ref. to EN(H4SOU5)(diag)-2, Basic Diagnostic Procedure.> <Ref. to EN(H4DOTC)(diag)-2, Basic Diagnostic Procedure.> <Ref. to EN(H6DO)(diag)-2, Basic Diagnostic Procedure.>
2	**CHECK HARNESS BETWEEN COMBINATION METER AND ECM.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM and combination meter. 3) Measure the resistance between ECM harness connector and combination meter harness connector. ***Connector & terminal*** ***(B134) No. 23 — (i10) No. 20:***	Is the resistance less than 10 Ω?	Replace the meter case assembly.	Repair the wiring harness.

7. CHECK FUEL LEVEL SENSOR.

	Step	Check	Yes	No
1	**CHECK COMMUNICATION ERROR DISPLAY.** 1) Set the ignition switch to ON. 2) Check that the error code is displayed in odo/trip meter.	Is the error code “Er xx” displayed in odo/trip meter?	Check the communication circuit. <Ref. to IDI-11, COMMUNICATION ERROR DISPLAY, INSPECTION, Combination Meter System.>	Go to step **2.**
2	**CHECK FUEL LEVEL SENSOR.** 1) Remove the fuel level sensor. <Ref. to FU(H4SO)-51, REMOVAL, Fuel Level Sensor.> <Ref. to FU(H4SO U5)-60, REMOVAL, Fuel Level Sensor.> <Ref. to FU(H4DOTC)-56, REMOVAL, Fuel Level Sensor.> <Ref. to FU(H6DO)-51, REMOVAL, Fuel Level Sensor.> 2) Measure the resistance between fuel level sensor terminals when the float is in FULL or EMPTY position. ***Terminals*** ***No. 1 — No. 4:***	Is the resistance 1.0 — 3.0 Ω (FULL) or 31 — 33 Ω (EMPTY)?	Go to step **3.**	Replace the fuel level sensor.
3	**CHECK FUEL SUB LEVEL SENSOR.** 1) Remove the fuel sub level sensor. <Ref. to FU(H4SO)-52, REMOVAL, Fuel Sub Level Sensor.> <Ref. to FU(H4SO U5)-61, REMOVAL, Fuel Sub Level Sensor.> <Ref. to FU(H4DOTC)-57, REMOVAL, Fuel Sub Level Sensor.> <Ref. to FU(H6DO)-52, REMOVAL, Fuel Sub Level Sensor.> 2) Measure the resistance between fuel sub level sensor terminals when the float is in FULL or EMPTY position. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance 1.0 — 3.0 Ω (FULL) or 61 — 63 Ω (EMPTY)?	Go to step **4.**	Replace the fuel sub level sensor.
4	**CHECK HARNESS BETWEEN FUEL SUB-LEVEL SENSOR AND BODY INTEGRATED UNIT.** 1) Disconnect the connector from body integrated unit. 2) Measure the resistance between fuel sub level sensor harness connector terminal and body integrated unit harness connector terminal. ***Connector & terminal*** ***(R59) No. 1 — (B281) No. 19:***	Is the resistance less than 10 Ω?	Go to step **5.**	Repair the wiring harness.
5	**CHECK HARNESS BETWEEN FUEL LEVEL SENSOR AND FUEL SUB LEVEL SENSOR.** Measure the resistance between fuel level sensor harness connector terminal and fuel sub level sensor harness connector terminal. ***Connector & terminal*** ***(R58) No. 1 — (R59) No. 2:***	Is the resistance less than 10 Ω?	Go to step **6.**	Repair the wiring harness.

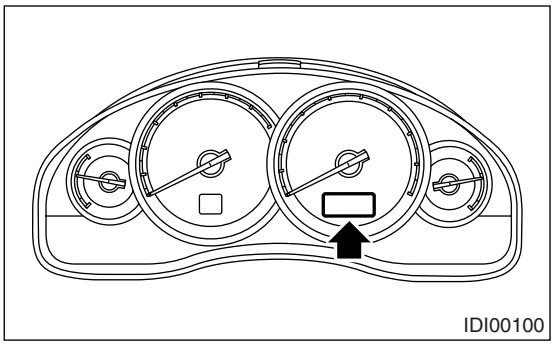
	Step	Check	Yes	No
6	**CHECK FUEL LEVEL SENSOR GROUND CIRCUIT.** Measure the resistance between fuel level sensor harness connector terminal and chassis ground. ***Connector & terminal*** ***(R58) No. 4 — Chassis ground:***	Is the resistance less than 10 Ω?	Replace the meter case assembly.	Repair the wiring harness.

8. CHECK ENGINE COOLANT TEMPERATURE SENSOR.

	Step	Check	Yes	No
1	**CHECK COMMUNICATION ERROR DISPLAY.** 1) Set the ignition switch to ON. 2) Check that the error code is displayed in odo/trip meter.	Is the error code “Er xx” displayed in odo/trip meter?	Check the communication circuit. <Ref. to IDI-11, COMMUNICATION ERROR DISPLAY, INSPECTION, Combination Meter System.>	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(H4SO U5)(diag)-2, Basic Diagnostic Procedure.> <Ref. to EN(H4DOTC)(diag)-2, Basic Diagnostic Procedure.> <Ref. to EN(H6DO)(diag)-2, Basic Diagnostic Procedure.>	Is the engine coolant temperature sensor OK?	Replace the meter case assembly.	Replace the engine coolant temperature sensor.

9. COMMUNICATION ERROR DISPLAY

When the following error code is displayed in the odo/trip meter, inspect the communication circuit since the communication malfunction is generated between each control module. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>



Error code	Remarks
Er IU	Malfunction in integrated unit
Er —	Simultaneous malfunction of high/low speed CAN communication
Er HC	Malfunction of high-speed CAN communication
Er LC	Malfunction of low-speed CAN communication
Er EG	EGI Communication malfunction
Er TC	TCM Communication malfunction
Er Ab	ABSCM/VDCCM Communication malfunction
Er SP	ABSCM/VDCCM DTC information, vehicle speed pulse malfunction
Er SS	Wheel speed data malfunction

10.DTC DISPLAY MODE

When DTC display mode is operated, {ECM}, {TCM}, {ABSCM/VDCCM} is displayed repeatedly in this order by pressing the odo/trip meter button. DTC is displayed in the following table according to type of control module, receiving DTC, DTC detected, No DTC. If CAN communication is broken down, "-----" is displayed.

Control module	Condition	Display
ECM	Receiving DTC	Trip "A" + "P (blinking)"
	DTC detected	Trip "A" + "Pxxxx"
	No DTC	Trip "A" + "P----"
TCM	Receiving DTC	Trip "B" + "P (blinking)"
	DTC detected	Trip "B" + "Pxxxx"
	No DTC	Trip "B" + "P----"
ABSCM/VDCCM	Receiving DTC	Trip "A" + "C (blinking)"
	DTC detected	Trip "A" + "Cxxxx"
	No DTC	Trip "A" + "C----"
When CAN communication is broken down.	—	"-----"