



GENUINE PARTS

FORESTER

Performance Gauge Pack

Operation Manual
Installation Manual

Genuine part number: H5010SA000

For customers

Thank you for purchasing the Subaru Performance Gauge Pack. Before using this product, please read this installation and operation manual thoroughly. Store it in a handy location for your reference to help you use the product in the proper way. To insure proper installation, have the installation done by a designated Subaru dealer.

Important

Read this manual before you use this product. Store it in a location where you can refer to it at any time.



Precaution:

1. When you are looking at the gauges, be careful not to cause an accident. (See "How to read the gauges".)
2. Do not hit or drop the gauge. It may cause an incorrect needle indication, needle lock, glass breakage, or other failure.
3. To clean, first use a soft cloth dampened with a neutral detergent, and then wipe completely with another clean cloth. Do not use organic solvents such as thinner as it may damage the surface.
4. When removing the sensor at the oil pan drain for replacing engine oil, disconnect the white connector first and then the sensor with a boxend wrench. If you remove the sensor with the connector connected, lead wires may be damaged.
5. When removing the sensor, keep the white connector internals clean. Do not contaminate it with any foreign particles such as oil. When it is contaminated and reinstalled, malfunctions may occur.
6. Tighten the sensor to the specified torque.
Tightening torque: 29.4 to 39.2N·m, 21.7 to 28.9 ft-lb
7. Depending on the ambient environment where the gauge is installed, inner side of the gauge glass may become fogged. If this happens, leave it in a normal temperature until the fog disappears.

For installation personnel

This manual explains how to install and handle the Performance Gauge Pack. Make sure to read this manual carefully for correct installation before starting installation. If the product is installed in a location or method other than that described in this manual, the person who installed it is responsible for any damage or malfunction.

After installation, make sure to deliver this manual to the customer.

1 Safety precautions

In this Installation Manual, items to which you need to pay special attention to are indicated by

⚠ CAUTION and ⓘ ADVICE. The meanings of these indications are as follows:

⚠ CAUTION:	If you handle the product incorrectly or do not follow the instructions, you may be injured or property damage may occur.
ⓘ ADVICE:	This indicates the instructions that you should observe or that is convenient to know.



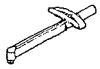
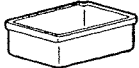
Precaution on installation

1. For installation, obtain instrument panel cover "H0010SA950ML" it is not included in this kit.
2. Do not hit or drop the gauge. It may cause an incorrect needle indication, needle lock, glass breakage, or other failure.
3. Use proper tools to install/remove bolts, screws, and nuts, and do not torque more than necessary.
4. Connect all wires securely to the correct locations. Wiring should be routed properly (no excess tension and no pinching).
5. Do not wipe the gauge panel with organic solvent such as thinner. The surface may be damaged.
6. During installation, take care not to damage the vehicle body or interior trim.
7. When the engine or other parts of the vehicle are still hot, do not carry out the work. This may result in physical injury.

2 Component parts

Illust No.	Part name	Q.T.Y
(1)	Oil temperature gauge	1
(2)	Voltmeter	1
(3)	Vacuum gauge	1
(4)	Panel	1
(5)	Panel bracket	2
(6)	Oil temperature sensor	1
(7)	Gasket	1
(8)	Oil temperature harness	1
(9)	Harness clip	4
(10)	Jumper harness	1
(11)	Screw (5x8)	8
(12)	Butyl rubber	1
(13)	Tie wrap	8
(14)	Rubber hose	1
(15)	3-way joint	1

3 Tools in use

Screwdriver (+) 	Screwdriver (-) 	Closed wrench (10x12; 17x19, 25x27 mm) 	Adjustable wrench 	Ratchet and socket (10, 12 mm) 	Torque wrench 
Pliers 	Engine oil 	Oil pan 	Cutter knife 	Electrical tape 	Cloth 

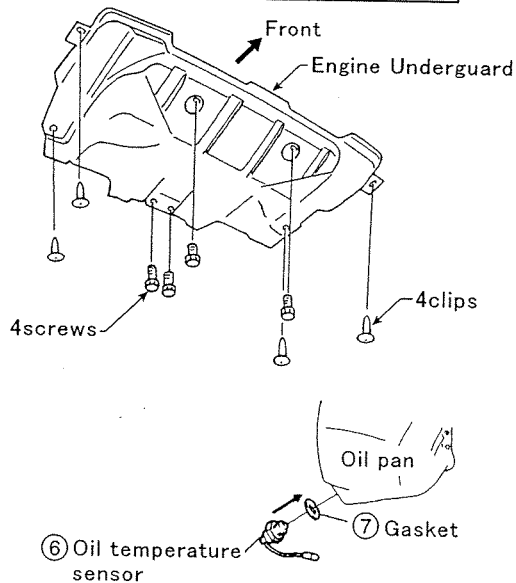
4 Preparing for installation

1. Park the vehicle in a safe place and apply the parking brake securely by pulling up on the parking brake lever.
2. Make sure that the gear is in a neutral position (P-range for AT), turn off the engine, and take out the ignition key from the ignition cylinder.
3. Open the front hood and hold it securely with the front hood prop rod.
4. Disconnect the negative battery (-) terminal.
5. Open the package and check the component parts and the quantity as shown in the component parts section of the manual and check for any defective parts.

5 Installation procedure

1

Installation of the oil temperature sensor



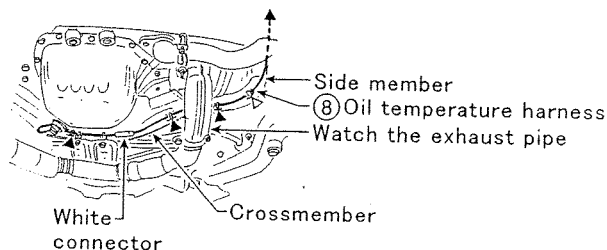
1. Lift up the vehicle.
2. Remove Engine Underguard. (Remove 4 clips and 4 screws)
3. Remove the engine oil pan drain plug and empty the engine oil tank.
4. With the gasket ⑦, screw in the oil temperature sensor ⑥ to the oil pan drain hole.
5. Connect the white connector of the oil temperature harness ⑧ to the white connector of the oil temperature sensor ⑥.

Tightening torque: 29.4 to 39.2 N·m (21.7 to 28.9 ft-lb)

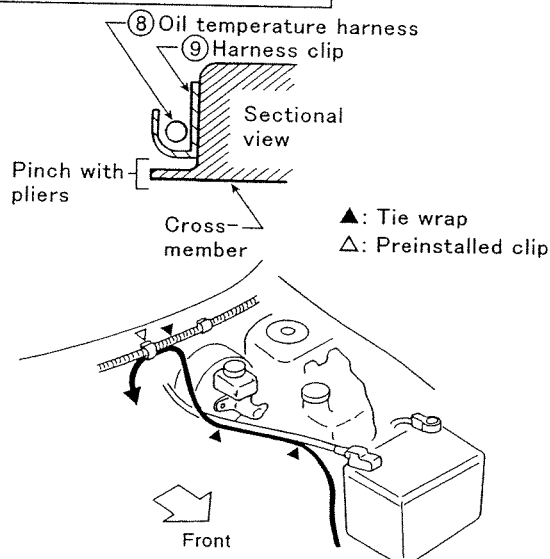
ADVICE

Keep any foreign particles such as engine oil away from the connector. If you connect it in a soiled condition, malfunction may occur.

Harness wiring



▲·△: (9) Harness clip locations



▲: (13) Tie wrap and preinstalled clip locations

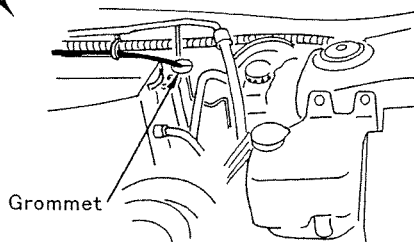
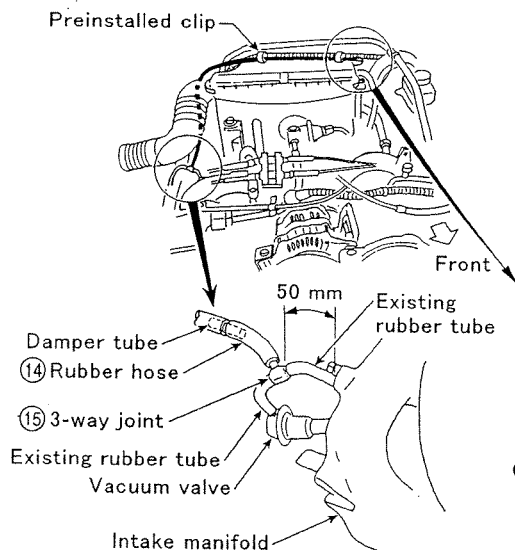
5. Attach the harness clip (9) to the crossmember at 3 spots (▲ marks) and side member at 1 spot (△ mark) as shown in the figure to fix the oil temperature harness (8). At this time, maintain enough tension in the oil temperature harness (8) to prevent it from interfering with other equipment.

⚠ CAUTION

1. Completely remove any oil and contamination on the surface where the harness clip is attached.
2. After the harness clip is attached, do not apply any force to it or wet it for about 6 hours.
6. Route the oil temperature harness (8) in the upper rear area of the engine room along the harness inside the engine compartment.
7. Fill the specified amount of engine oil first and check for any leakage.
8. Re-install Engine Underguard.
9. Lower the vehicle.
10. Route the oil temperature harness (8) along battery harness inside the engine compartment.
11. Attach the oil temperature harness (8) to the harness inside the engine compartment with 3 tie wraps (13) and preinstalled clip.

2

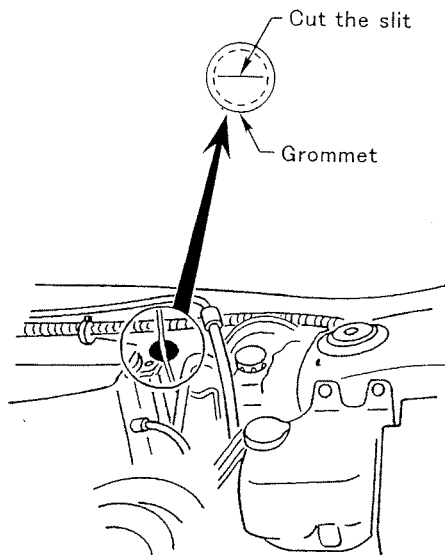
Installation of Vacuum line



1. Cut the existing rubber tube for the vacuum valve located as shown in the figure approximately 50 mm (along the length of the tube) from the connection with the manifold. Connect it securely to the 3-way joint (15) and rubber hose (14).
2. Route the rubber hose (14) along firewall harness.
3. Secure the rubber hose (14) with the preinstalled clips along the preinstalled harness.

3

Routing of the oil temperature harness and rubber hose



1. Remove the grommet located as shown in the figure.
2. Cut the slit as shown.
3. Route the rubber hose ⑭ through grommet and partially inside vehicle.
4. Route oil temperature harness ⑧ through grommet and tape to the rubber hose ⑭ temporarily for ease of feeding through.
5. Pull the rubber hose from inside vehicle and remove tape.
6. Reinstall the grommet to its original position and seal the slit with the butyl rubber ⑫.

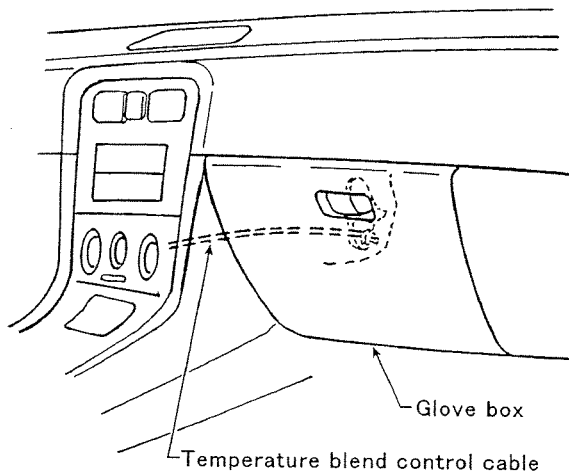
ADVICE

Use upper grommet.

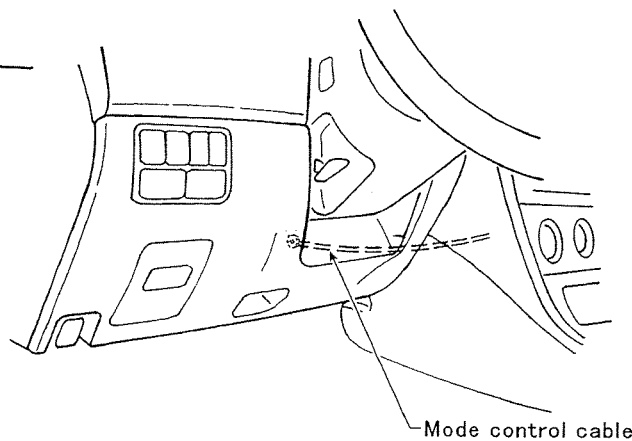
4

Disengagement of heater/AC control cable

Note: This step for vehicles not equipped with automatic climate control.

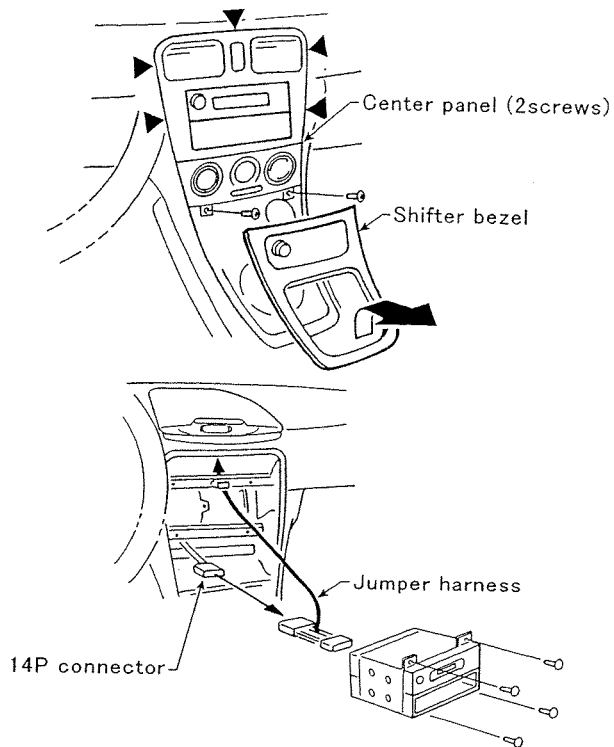


1. Turn knob to cold position.
2. Turn knob to defrost position.
3. Remove the control cable for temperature blend adjustment located on the glove box side of vehicle from the heater unit.
4. Remove the control cable for the mode switch located on the drivers lower dash side of vehicle from the heater unit.



5

Installation of the Jumper harness (for power source)



1. Remove the shifter bezel, verify all clips removed. Disconnect lighter.
For Manual transmission unscrew shift knob.
2. Remove the center panel. (2 screws)

ADVICE

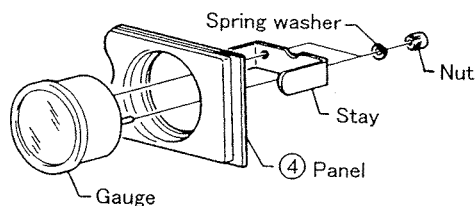
1. Apply electrical tape to cover the instrument panel and center panel to protect them from damage. Insert a thin flat-bladed non-marring tool into the gap in the center panel to unlock the latches (shown by "▲" in the figure) on the both sides of the discharge air outlets for air conditioning. Then remove the panel.
2. Disconnect hazard switch connector and remove center panel.

Note: For automatic climate control vehicles.
Disconnect harnesses to climate control panel.

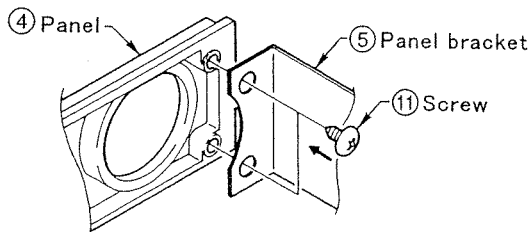
3. Remove the audio assembly. (4 screws)
4. Remove the 14P connector and antenna cable from the radio, remove the ground cable from the bracket.
5. Connect jumper harness ⑩ between the audio body and 14P connector for the radio.
6. Route the lead wire (from the jumper harness ⑩) towards the top of dash.
7. Route rubber hose ⑭ up to vacuum gauge ③. Be sure to secure tube in a manner that does not interfere with movement.
8. Reconnect 14P connector and ground cable, to radio and antenna cable to bracket.
9. Re-install audio assembly. (4 screws)

6

Installation of meters



Panel assembly



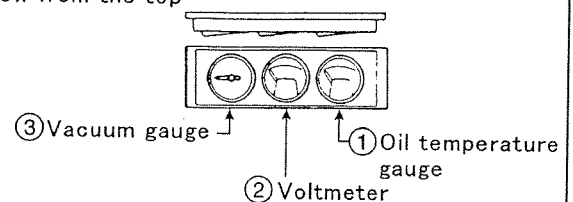
Same for the other side

1. Install gauges ①, ②, and ③ to panel ④.

ADVICE

1. Tighten the nut by hand. Do not use any tool such as pliers.
2. Verify gauges are angled towards driver.

View from the top

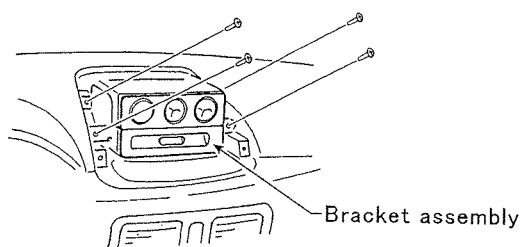
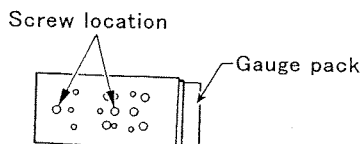
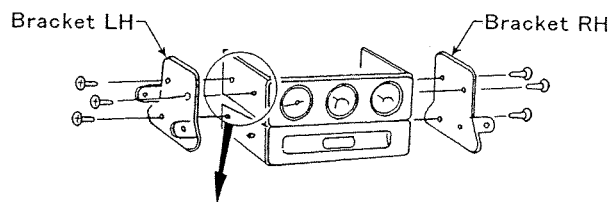
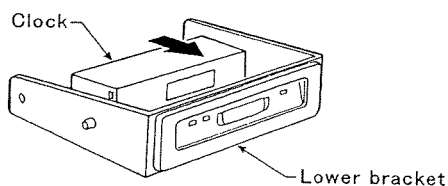
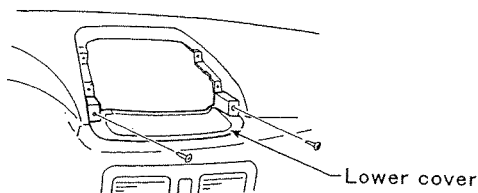
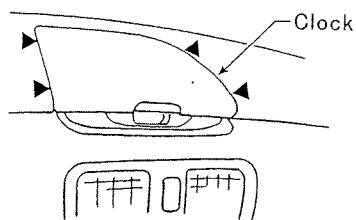


2. Install the panel bracket ⑤ to the panel ④ with four screws ⑪.

**Tightening torque: 0.8 to 1.1 N·m,
0.58 to 0.87 ft·lb**

7

Setting of the meters



1. Remove the clock and upper pocket.

ADVICE

Insert a thin flat-bladed non-marring screwdriver into the gap on the panel clock to unlock the latches. (shown by "▲" in the figure) Then remove the center panel.

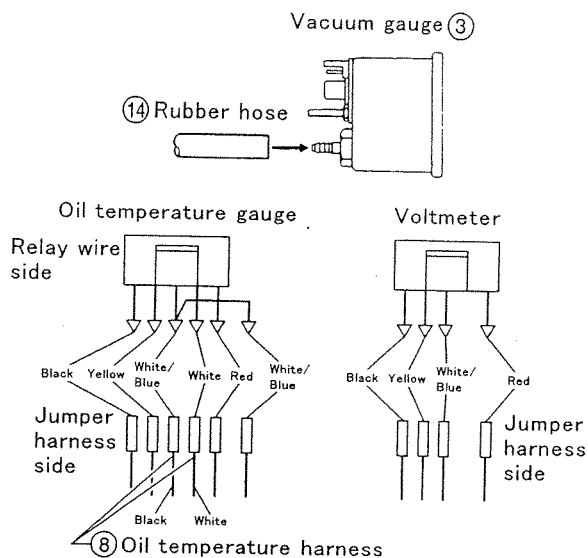
2. Pull the jumper harness ⑩ oil temperature, harness, vacuum line and clock harness up toward dash.

3. Install the lower cover. (2 screws)

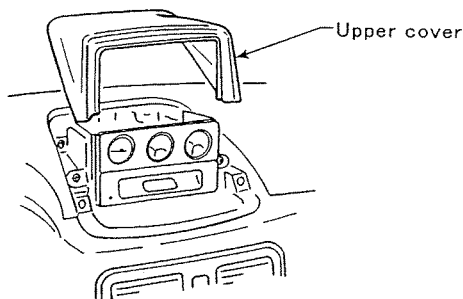
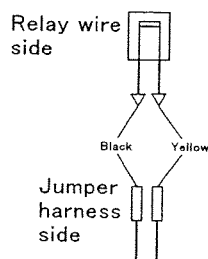
4. Remove the clock from upper pocket and install into lower bracket.

5. Using 6 screws, install the pre-assembled panel as shown in the figure to the bracket RH + LH supplied with the Cover kit and Clock Panel also included in the Cover kit.

6. Install the bracket assembly. (4 screws)



Vacuum gauge



7. Remove tape that was placed on vacuum hose and oil temperature harness and insert the rubber tube ⑭ to the end of the nipple on the back of the vacuum gauge ③.

8. Securely connect the lead wires (red, yellow, black) from the jumper harness ⑩ to the lead wire of the same color as relay wires connected to the gauge.

Red → Red, Yellow → Yellow, Black → Black, White/Blue → White/Blue

9. Connect the lead wire (white and black) of the oil temperature harness ⑧ to the lead wire (white and white/blue) of the relay wire connected to the oil temperature gauge ①.

White → White, Black → White/Blue

Also connect the white wire of the oil temperature harness ⑧ to the white relay wire connector to the oil temperature gauge ①.

ADVICE

The red, yellow and black terminals on the jumper harness are W terminals.

10. Connect clock harness from jumper harness to clock. Tape vehicle clock harness to jumper harness, to eliminate rattle.

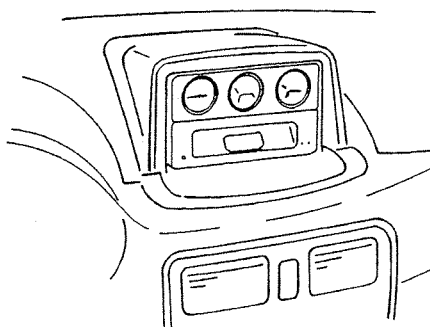
11. Install the upper cover.

12. Re-Install center panel (re-connect heater cables and harness, as required), connect hazard harness, re-install using 2 screw.

13. Re-Install shifter bezel, connect lighter harness. For manual transmission screw shift knob on.

14. Check the operation. (Refer to "Operation check procedure")

Final configuration



6 Operation check procedure

Operation	Check items	Actions
1. Check the installation and wiring again.	—	—
2. Connect the negative battery terminal.	—	ADVICE - Reset the memory of audio components and other devices.
3. Ignition key → "OFF" (when engine is cold)	1) Vacuum gauge → Indicates "0". 2) Oil temperature gauge → Indicates 50°C or less (when cooling off). 3) Voltmeter → Indicates 0V or less.	[Indication other than the left] - The gauge is damaged. Bring vehicle to Dealer for service.
4. Ignition key → "ACC"	1) Voltmeter → Indicates approx. 12V 2) Oil temperature gauge → Indicates the same as 3. 3) Vacuum gauge → Indicates the same as 3.	[No indication] - Check the connection between the jumper harness ⑩ and the relay wire of the voltmeter.
5. Ignition key → "ON"	1) Meter indicates the same as 4.	—
6. Engine start (when engine is cold)	1) Vacuum gauge → Indicates approx. -0.07 to 0.09 MPa 2) Voltmeter → Indicates approx. 14V. 3) Oil temperature → Indicates 50°C.	[No indication] - Check the connection between the jumper harness ⑩ and the relay wire of the voltmeter. - Check for collapse of the rubber hose ⑭ and check that vacuum connections are secure.
7. Completion of warming-up	1) Vacuum gauge → Indicates the same as 3. 2) Oil temperature gauge → Indication increases. 3) Voltmeter → Indicates slightly lower volt from 6.	[If the indication of the oil temperature gauge does not increase.] - Check the connection between the oil temperature sensor ⑥ and the oil temperature harness ⑧. - Check the connection between the jumper harness ⑩ and the relay wire of the oil temp. gauge. [The vacuum gauge pointer fluctuates.] Check connecting directions of the 3-way joint ⑮.
8. Ignition key (engine stop) → "ACC" first, then "ON"	1) Vacuum gauge → Indicates "0". 2) Oil temperature gauge → Indicates the oil temperature. 3) Voltmeter → indicate approx. 12V.	—
9. Lighting switch → lights are "ON"	1) Lamps of all gauges are on.	[Lamp does not come on.] - Check the connection of the yellow wire between the jumper harness ⑩ and each relay wire. - Check if lamps are burnt out, replace as needed.
10. Turn off all switches to end the operation check	—	—

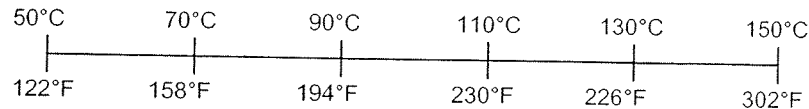
7 How to read the gauges

ADVICE

1. Figures to be displayed on the gauge vary depending on the environment and conditions where the gauge is used.

1. Oil temperature gauge

- 1) The gauge indicates the temperature of the engine oil inside the engine oil pan.
- 2) The gauge indicates 50°C or less because the engine oil cools when the engine cools.
- 3) When the engine and engine oil are warmed up, the indication increases.
- 4) When you drive slowly (with a light load) for a long time on a highway or when you drive slowly, the indication may decrease because the oil pan is temporarily cooled.

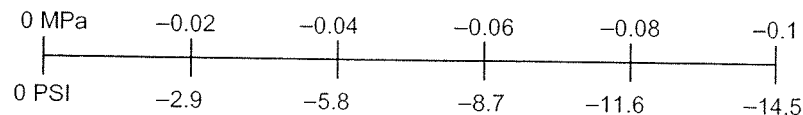


2. Voltmeter

- 1) This meter indicates the voltage (detected from the accessory circuit for audio equipment) of the electric system of the vehicle.
- 2) When the ignition key is set to "ACC", the meter indicates approximately 12V.
- 3) When the ignition key is set to "START" (the starter activated), the indication decreases to 10V or less temporarily. When the engine is started and the ignition key is set to "ON", the indication shows approximately 14V.
- 4) The indication changes depending on status of the electrical equipment when the vehicle is running. For example, if you use various kinds of electrical equipment at night or in rain, the pointer may keep showing 12V or less. In such a case, too much voltage is being consumed. Please turn off the electrical devices which are not essential to driving.

3. Vacuum gauge

- 1) The gauge indicates the negative pressure inside the engine intake manifold.
- 2) During idling (after warming-up is completed), the gauge indicates approximately -0.06 to -0.08 MPa.
- 3) When the acceleration pedal is depressed during idling, the indication moves close to "0" (atmospheric pressure). When the acceleration pedal is released, it moves closed to "-0.1 MPa" (vacuum) once and returns to the idle status.
- 4) The indicator changes between 0 to -0.1 MPa (vacuum) according to the accelerator opening (or engine load) while the vehicle is running. Generally, when the acceleration pedal is depressed, the pointer moves close to "0" (negative pressure is small). When the pedal is released, the pointer moves close to "-0.1" (negative pressure is large).



8 Circuit layout

