



IMPREZA

GENUINE PARTS

Performance Gauge Pack

Operation Manual
Installation Manual

Genuine part number: H5010FE051 "TURBO" MODEL

. For installation, prepare an instrument panel upper case "H0010FE9200E (dark gray)" separately.

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.

Safety precautions

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

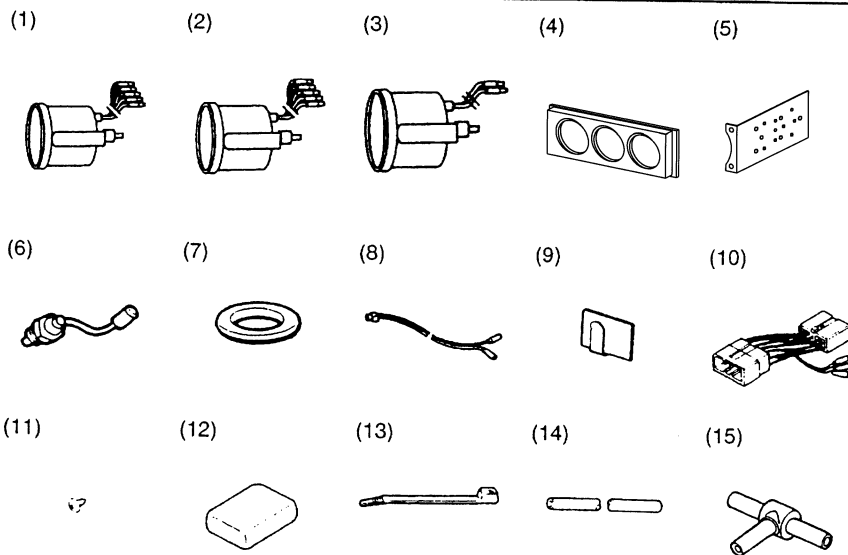
⚠ CAUTION and 📖 ADVICE. The meanings of these indications are as follows:

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

Component parts



Illust No.	Part name	Q.T.Y
①	Oil temperature gauge	1
②	Voltmeter	1
③	Turbo 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	5
⑭	Rubber hose	1
⑮	3-way joint	1

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

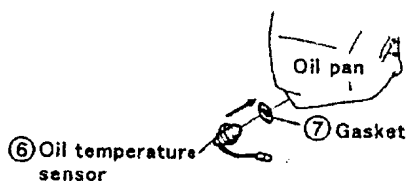
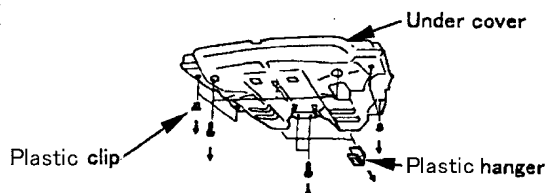
Preparing for installation

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.

Installation procedure

1

Installation of the oil temperature sensor.

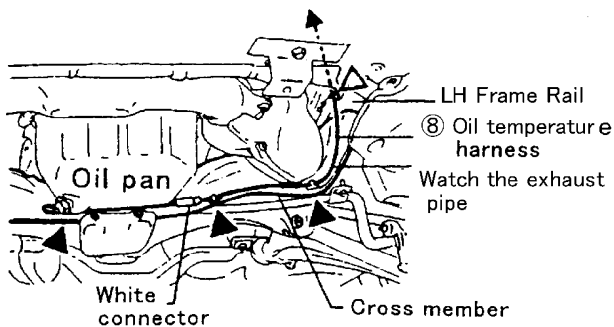


1. Lift up the vehicle.
2. Remove undercover if applicable.
3. Remove the engine oil pan drain plug and empty the engine oil tank.
4. With the gasket (7), screw in the temperature sensor (6) to the oil pan drain hole.
Tightening torque: 29.4 to 39.2 N·m (21.7 to 28.9 ft-lb)
5. Connect the white /black wiring harness cord (8) to the oil temperature sensor (6) harness.

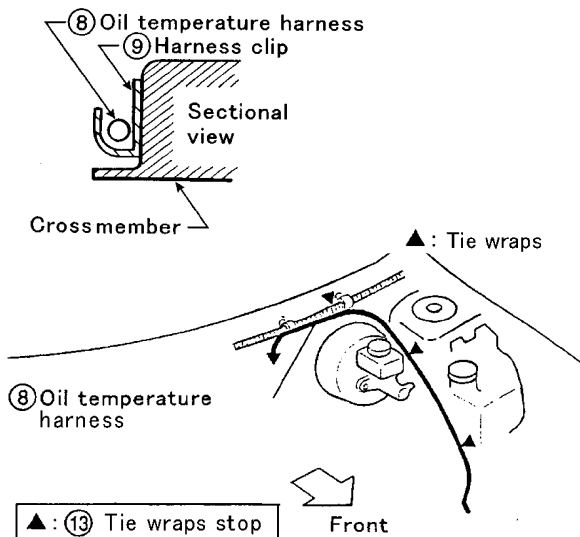
ADVICE

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

2 Harness wiring



▲·△: ⑨ Harness clip stop



▲: ⑬ Tie wraps stop

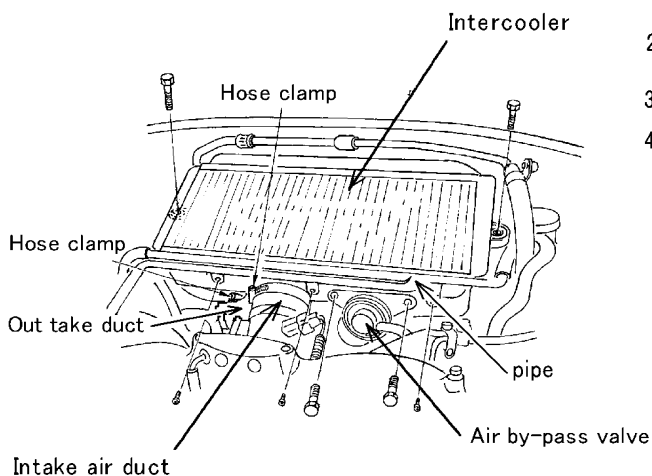
1. Attach harness clip ⑨ to the crossmember at 3 locations (▲ marks) and LH frame rail at 1 spot (△ mark) as shown in the figure to fix the oil temperature harness ⑧. Maintain enough tension in the oil temperature harness ⑧ to prevent interference with other equipment.

⚠ 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.
2. Route the oil temperature harness ⑧ in the upper rear area of the engine room along the harness inside the engine compartment.
3. Fill the specified amount of engine oil first and check for any leakage.
4. Re-install engine Under cover.
5. Lower the vehicle.
6. Route the oil temperature harness ⑧ to the brake booster along the harness inside the engine compartment.
7. Fix the oil temperature harness ⑧ to the harness inside the engine room with the 3 Tie wraps ⑬.

3

Removal of Intercooler

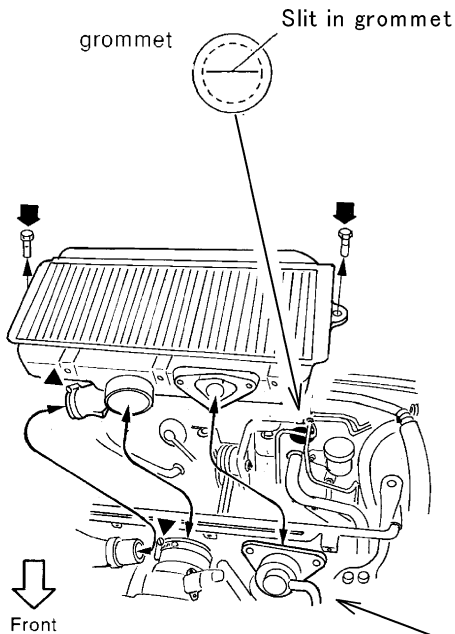


Caution: When removing the intercooler be sure to cover all open holes (e.g. hoses, inlet and outlet pipes of the intercooler and turbo charger) to prevent objects from falling inside. Also use care when handling the intercooler. Failure to do so may result in damage to the top surface (e.g. fins).

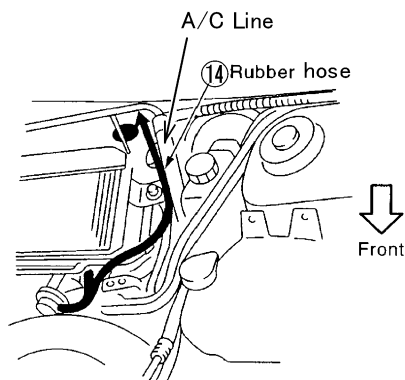
1. Remove the air by-pass valve on the intercooler. (2 bolts)
2. Remove the pipe. (3 bolts)
3. Loosen 2 hose clamps at indicated location.
4. Remove the in and out take air duct on the intercooler. (2 hose clamps)

4

Installation of Turbo Boost Hose



⬇️: Tightening torque 11.6 ft-lb
 ▼: Tightening torque 2.2 ft-lb



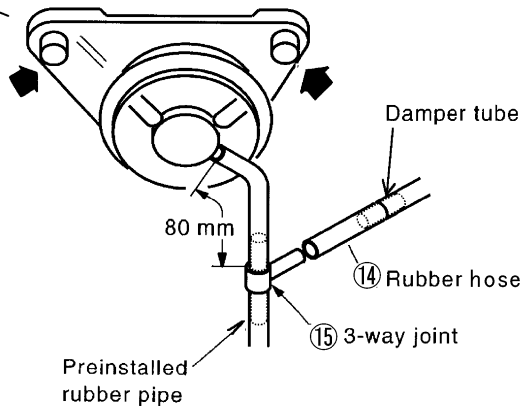
1. Remove the intercooler assembly.(2 bolts)
2. Remove the grommet located as shown in the figure.
3. Slit the grommet as shown.
4. Route the rubber hose(14) end (W/O damper tube) through the grommet and partially inside the vehicle, along with the white/black wire harness.

ADVICE

Tape the hose and harness together to ease installation.

5. Reinstall the grommet to its original position and seal the slit with the butyl rubber (12) supplied or black silicone.
6. Pull the rubber hose from inside vehicle and remove tape.

7. Cut the preinstalled air by-pass valve rubber hose as shown in the figure approximately 80 mm from the connection with the manifold. Connect it securely to the 3-way joint (15) and rubber hose(14).



8. Install the intercooler assembly. (with the new gasket)
9. Install the air bypass valve.

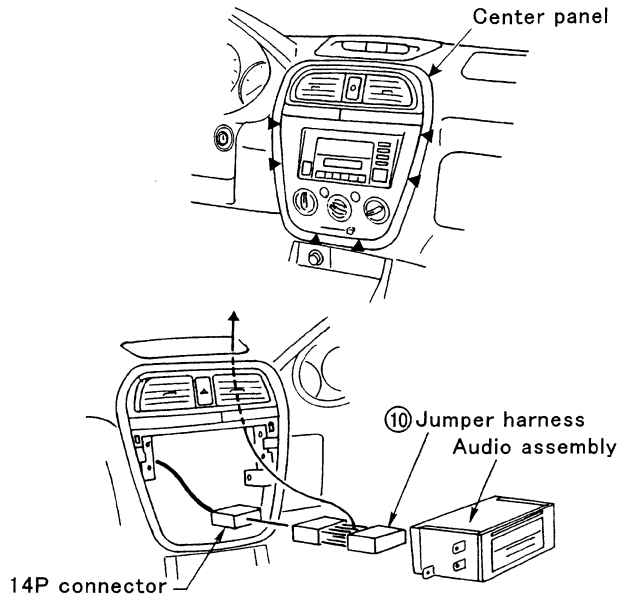
ADVICE

•Inspect the gasket for wear,cracking or tears, if damaged replace gasket with a new one.
 (P/N 21896AA072)

10. Install the pipe. (*Tightening torque 2.2ft-lb*)
11. Route the rubber hose(14) towards the back of the intercooler along the A/C line.
12. Use 3 tie wraps to secure hose/wire harness neatly along A/C line into the passenger compartment, keep away from hot or sharp items to prevent damage.

5

**Installation of the branching harness
(for power source)**



1. Remove the center panel.

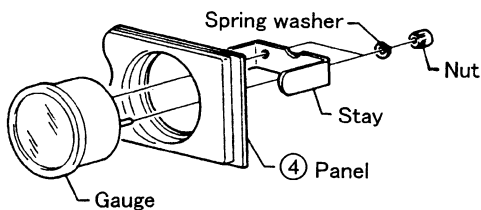
ADVICE

Insert a plastic trim tool into the gap on 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.
Apply vinyl tape to cover the instrument panel and center panel to protect them from damage.

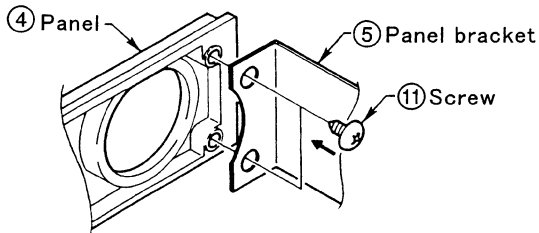
2. Remove the audio assembly. (6 screws)
3. Remove the 14P connector for audio assembly from the audio body.
4. Connect the jumper harness ⑩ between the audio body and 14P connector for audio assembly.
5. While routing the lead wire (from the jumper harness ⑩) towards the top of the dash, install the audio assembly and center panel to the original position.

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Installation the gauges



Panel assembly

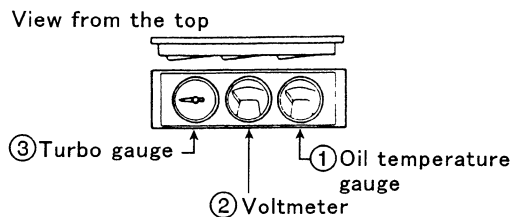


Same for the other side

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.

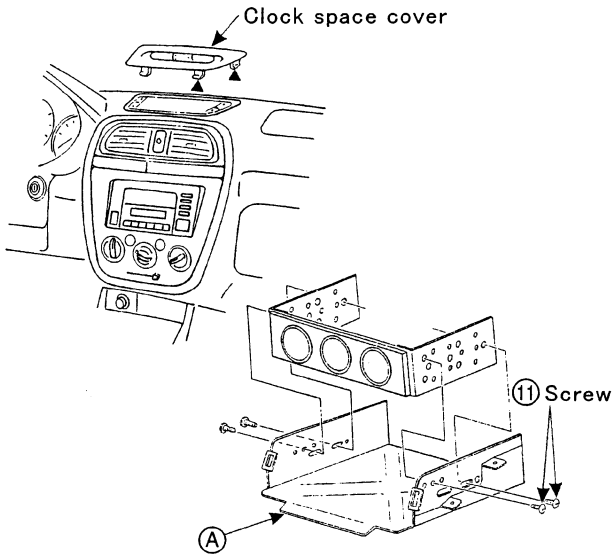


2. Install the panel bracket ⑤ to the panel ④ with four screws ⑪.

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

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Installation to the clock space

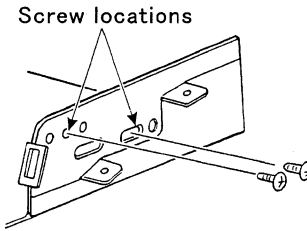


1. Remove cupholder(2screws)and heater vent.
2. Remove the clock space cover by prying at front clip location. (Access through vent opening.)

ADVICE

Insert a plastic trim tool into the gap on the clock space cover to unlock the latches (shown by "▲" in the figure). Then remove the panel.

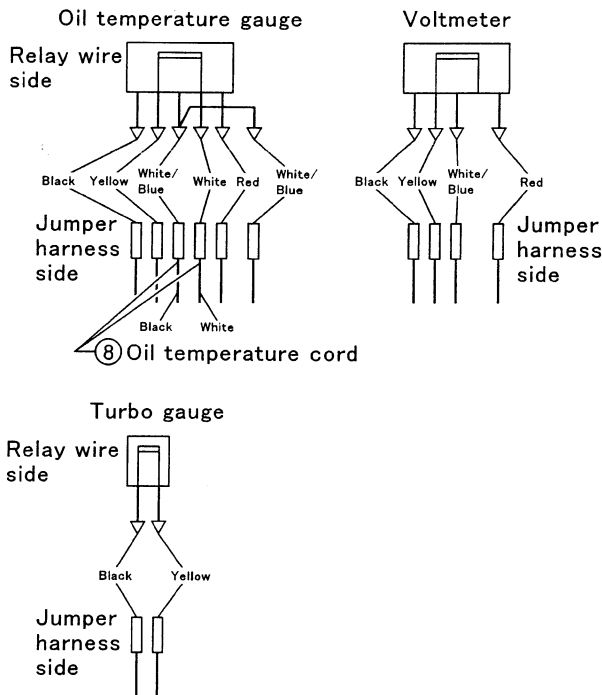
3. Using the 4 screws ⑪, install the panel pre-assembled as shown in the figure to the bracket (A) supplied with the instrument panel upper case which separately ordered.



Same for the other side

8

Connection of wiring



1. 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

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

White → White, Black → White/blue

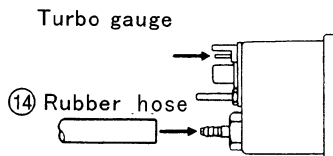
Also connect the white wire of the oil temperature cord ⑧ to the white relay wire connector to the oil temperature gauge.

ADVICE

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

3. Secure clock harness to gauge pack harness using electrical tape in order to prevent rattling.

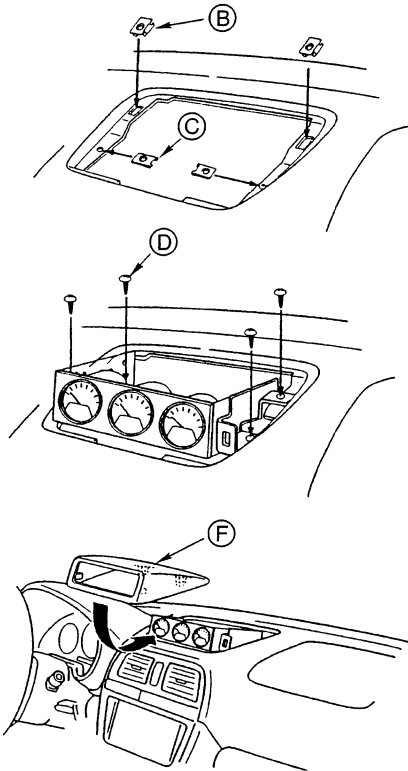
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1. Route vacuum hose up to turbo gauge. Be sure to secure pipe in a manner that does not interfere with pedal movement.
2. Insert the rubber hose ⑭ to the end of the nipple on the back of the turbo gauge.

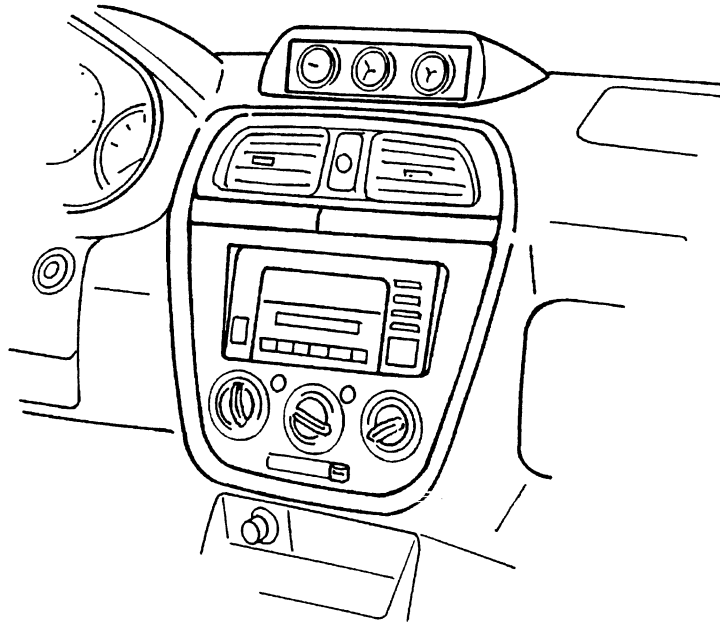
10

Installing the gauges



1. Attach the speed-nuts **B** and **C** supplied, with the instrument panel upper case, to instrument panel.
2. Using 4 screws **D** supplied with the instrument panel upper case, install the bracket with the panel to the panel mounting area.
3. Install the instrument panel upper case **F** to the bracket.
4. Install the center panel to the original position.
5. Check the operation. (Refer to "Operation check procedure".)
6. Clean the inside/outside of the vehicle.

Final configuration



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) Turbo 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) Turbo 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) Turbo 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 pipe ⑭ and check that vacuum connections are secure.
7. Completion of warming-up	1) Turbo 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 cord ⑧. - Check the connection between the jumper harness ⑩ and the relay wire of the oil temp. gauge. [The turbo gauge or vacuum gauge pointer fluctuates.] Check connecting directions of the 3-way joint ⑮.
8. Ignition key (engine stop) → "ACC" first, then "ON"	1) Turbo 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		

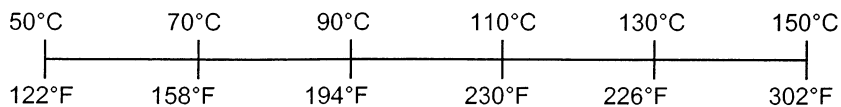
How to read the gauges

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° 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.

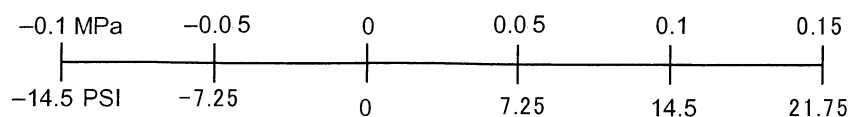


2. Voltmeter

- 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. Turbo gauge

- 1) The gauge indicates the negative pressure and surplus pressure inside the engine intake manifold. The figures below "0" toward the gauge indicate negative pressure and those above "0" indicate surplus pressure.
- 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" (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) until the turbocharging starts 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).
- 5) When the turbocharging is started while the vehicle is running, the pointer shows turbocharging pressure according to the pressure. When the turbocharging stops, the negative value is indicated even in a running status.
- 6) When the engine is stopped, the pointer returns to "0". (Due to the residual pressure inside the intake manifold, the pointer may deviate from "0".)



Circuit layout

