

VOLTMETER — INSTRUCTIONS

A voltmeter measures the voltage (pressure of electricity) between the two points where the leads are connected. Most vehicles will show between 13 and 15 volts while being operated above idle speed. Check your owners manual or dealer for a more exact normal voltage for your vehicle. A voltmeter is useful in that it can give a warning of many electrical problems and can show many problems faster than an ammeter.

PRECAUTIONS

1. Follow the instructions carefully for the sequence of nuts and washers on the connection posts of the voltmeter Diagram 1.
2. Disconnect the battery's ground cable before working on the voltmeter connections.

INSTALLATION

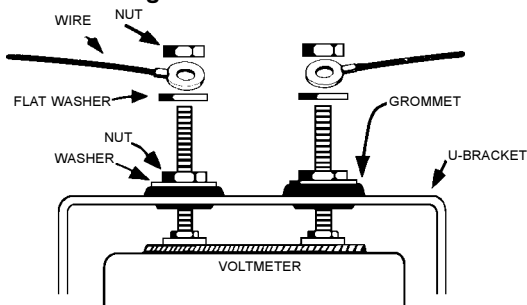
1. Disconnect the ground cable from the battery.
2. Connect a length of 18-gauge insulated copper wire to a good ground source. Be sure the grounding surface is a good ground source as not all metal surfaces inside the vehicle are well grounded. This wire should be long enough to reach the voltmeter's mounting location.
3. Connect another length of 18-gauge wire to a location on the fuse box where the wire will receive power whenever the ignition key is in the START, ON or ACCESSORY positions. This wire should also be long enough to reach the voltmeter.

4. After mounting the gauge, the wire from the ground source (Step 2) should be connected as shown in Diagram 1, to the voltmeter's connection post marked "-".
5. The wire from the fuse box (Step 3) should be connected as shown in Diagram 1, to the voltmeter's connection post marked "+".
6. Reconnect the battery ground cable. As you do, watch for sparks and check if the wiring you worked with is getting warm. If either condition is noted, IMMEDIATELY disconnect the battery ground cable and read the Troubleshooting section.

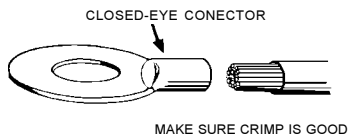
TROUBLESHOOTING

1. If, when you reconnected the battery ground cable, you noticed sparks or any of the wiring getting warm, check that all connections are properly located, and insulated from grounding.
2. If the reading on the gauge stays at the lowest marked voltage when the ignition is switched on, then try reversing the wires on the gauge's connection posts "+ and -".
3. If the gauge reads lower than you expect, check all connections, especially those to a ground source. A poor connection causes resistance which gives a false low reading.

Diagram 1



DO NOT LEAVE ANY HARDWARE
OUT OF THESE CONNECTIONS



PARA NOMBRE, DOMICILIO Y TELEFONO DE IMPORTADOR: VER EMPAQUE.

INSTALLATION INSTRUCTIONS

GENERAL MOUNTING INSTRUCTIONS

The manufacturer produces a full line of gauges with many different styles.

1-1/2" Gauges

2" Gauges

2-5/8" Gauges

(See page 2 for hole sizes.)

Gauges allow you to monitor the condition of your vehicle and tell how well it is performing. If there are any problems, you can detect them immediately before they become severe. Warning lights only tell you when the problem already requires immediate attention. You will find that the addition of these gauges will add to your peace of mind and driving comfort.

MICROPROCESSOR-CONTROLLED ENGINES

Many newer vehicles employ microprocessors that control most of the engine and electrical functions. Microprocessors are very sensitive electrical components. Before installing any aftermarket equipment consult the vehicle's manufacturer or shop manual to make certain that no damage will result.

Some of these newer vehicles use electric cooling fans or microprocessor engine controls that depend on readings from the original equipment

sending units for correct operation. If your vehicle is one of these you CANNOT replace the sender(s) with any other. You can add an additional oil pressure sender with a "Tee Adapter Kit," but the only possible way to install a non OEM water temperature sender is to install the new sender in a different location, retaining the OEM unit in its original location. Check with the vehicle's manufacturer or dealer to see if this is possible.

INSTALLATION & SAFETY PRECAUTIONS

1. Read the entire instructions for your gauge before proceeding.
2. Be sure the gauge is suitable for your vehicle:
 - Does the gauge's range cover the vehicle's operating range?
 - Will the tubing of the mechanical gauges reach from the engine connection point to the gauge (temperature gauges cannot be lengthened)?
 - Is the vehicle's electrical system 12 volt and negatively grounded?
3. It is recommended that the battery ground cable be disconnected before any electrical work is performed, especially when installing Ammeters or Voltmeters.
4. Route all wiring and gauge tubing away from linkages, high heat or moving parts.
5. Never smoke while working on your vehicle and always keep a fire extinguisher nearby. It should be rated for gas/chemical/electrical fires.
6. Never lay tools on top of the battery or wear jewelry during electrical work to avoid severe electrical shorts.

GAUGE MOUNTING

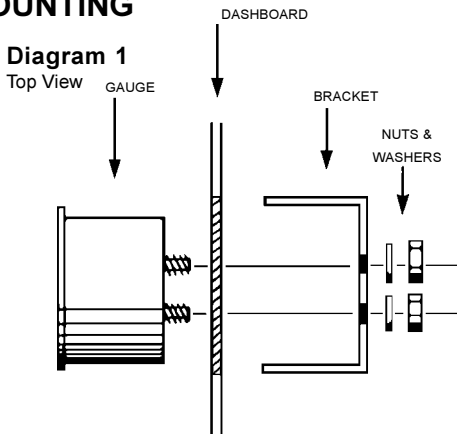
All gauges can be mounted into a surface of your choice or into a panel. Single, dual & triple gauge mounting panels are produced for all size gauges. Some panels are in black or chrome finishes. A fully chromed mounting cup is available for the 2-5/8" gauges.

1. Choose a location to mount the gauge where it will be viewable from a normal driving position (fuel pressure gauges should never be mounted within the interior of the vehicle).
2. If you are using a mounting panel, mount it at the chosen location with the screws provided.

If you are creating a hole, use the following sizes:

<u>Gauge Style</u>	<u>Hole Size</u>
1-1/2"	1-5/8" (41 mm)
2"	2-1/16" (53 mm)
2-5/8"	2-5/8" (67 mm)

PARA NOMBRE, DOMICILIO Y TELEFONO DE IMPORTADOR: VER EMPAQUE.

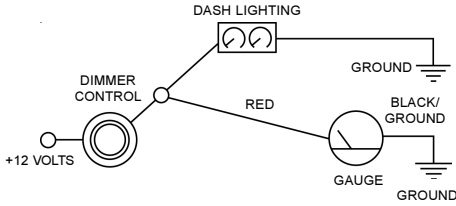


3. Dimmer Control.

For dash lighting dimmers that control the positive side (Diagram 2A) of the lighting circuit:

Diagram 2A

For Positive Dimmer Controls



- For Two-wire Bulb Holder -

Connect the red wire into the circuit between the dimmer control and the dash lights. Connect the black wire to a good electrical ground.

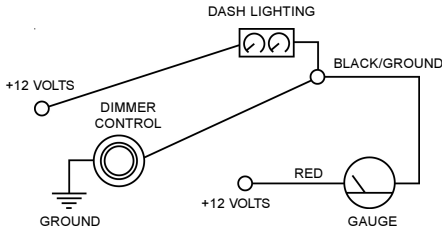
- For One-wire Bulb Holder -

Connect the one wire into the circuit between the dimmer control and the dash lights. Obtain a length of 18-gauge insulated copper wire and connect one end of the wire to a good electrical ground source and the other end to one of the mounting bracket posts.

For dash lighting dimmers that control the grounded side (Diagram 2B) of the lighting circuit:

Diagram 2B

For Ground Dimmer Controls



- For Two-wire Bulb Holder -

Connect the black wire into the circuit between the dimmer control and the dash lights. Connect the red wire to the fuse box so that the wire only receives +12-volt power when the dash lights are turned on.

- For One-wire Bulb Holder -

Connect the wire to the fuse box so it receives only +12-volt power when the dash lights are on. Obtain a length of 18-gauge insulated copper wire and connect one end to the gauge mounting bracket or panel. Connect the other end of the wire into the circuit between the dimmer control and the dash lights. **Insulate the gauge and bracket from grounded surfaces.**

4. Refer to specific instructions for the gauge you are installing. They explain other connections that should be made before mounting is completed.
5. Insert the gauge into the mounting panel or hole.
6. Insert the bulb holder into the bulb socket on the back of the gauge.
7. Install the appropriate mounting bracket (Diagram 1: insulated or non-insulated) over the mounting posts (Diagram 3), slide on washer, plus a lock washer if supplied, and tighten the nut with only light pressure. If the gauge is an electrical model, be sure you use a bracket that has grommets to insulate the posts from the mounting bracket. This does not apply to gauges using separate bracket mounting posts from the posts used for wire connections.
8. Position the gauge for best visibility and appearance, then tighten the bracket nuts with moderate pressure. Do not over-tighten these nuts when using an insulated bracket. Excess pressure can distort the grommets causing them to crack and short the wiring, even months after installation.
9. Refer to the specific instructions for the gauge you are now installing to complete any other connections.

Diagram 3

Electrical Gauges Shown

