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INSTALLATION GUIDE

Multi-Gauge Set with sending units

Part Number: M 9999

*** Always disconnect the battery *before* attempting any electrical work on your vehicle.***

Parts included in this package -

- ◇ Fuel Level Gauge
- ◇ Oil Pressure Gauge and sending unit
- ◇ Speedometer and sending unit
- ◇ Tachometer
- ◇ Voltmeter
- ◇ Water Temperature Gauge and sending unit

GENERAL WIRING INSTRUCTIONS

Note: Automotive circuit connectors are the preferred method of connecting wires. However, you may solder if you prefer.

For ALL Instruments in this set:

(Each gauge has the three basic wires: black, red and purple. Additional wiring for each gauge is with the individual gauge instructions: yellow connects to the fuel sending unit in the tank; orange to the oil pressure sender; white to speedometer; green to tachometer and blue to water temperature.)

Ground - Black Connect directly to an engine ground such as the engine block. For the most accurate readings, connect to the same ground as the sending unit.

Power - Red Connect to a switched +12V source such as the ignition switch.

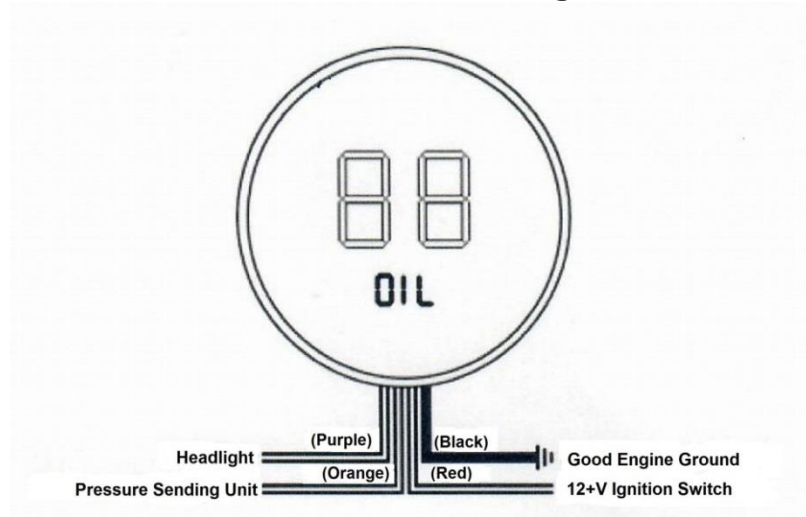
Note: The device will NOT function properly without a steady +12V source. For best results use a multimeter to test the power source.

Dimmer - Purple Connect to the parking lights to dim the LEDs 50% when the headlights are on. However, **do not** connect to the headlight rheostat control wire; as the dimming feature will not work properly. Otherwise, connect to ground for permanent 100% brightness.

Fuel Level Gauge

Model	Resistance	Wire(s) to cut
Ford/Chrysler	73 to 10 OHM	NONE
GM	0 to 90 OHM	Blue
VDO	10 to 180 OHM	Blue & Orange
Universal	240 to 33 OHM	Orange

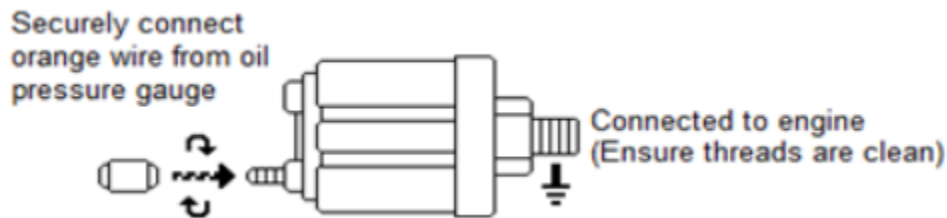
Oil Pressure Gauge



OIL PRESSURE SENDING UNIT

Pressure – **Orange** Connect to the output of the pressure sending unit.

Be sure that the connection between the oil pressure sensor and the engine is clean and **does not** have Teflon tape or any other sealants on the threads. This provides a stable ground for the sensor which will not



Make sure to test all fittings and connections for leaks. If any leaks are detected, determine the cause and repair immediately.

Warning: *Do not operate the vehicle if any leaks are detected!*

Note: *The gauge mounts into a 3-1/16" hole. Use the supplied brackets and nuts to secure gauge to the dash. The sender features a 1/8" NPT male fitting and should be automatically grounded when connected to the engine block.*

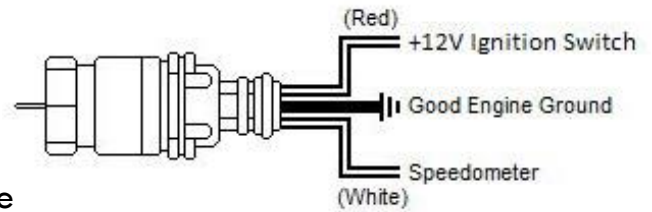
Speedometer

This speedometer requires a pulse generating electronic speed sensor or a transmission with an electronic output. If a cable drives the current speedometer in your vehicle, please order our electronic sensor (**\$9013**) for GM and universal applications or (**\$9024**) for Ford transmissions.

Sending Unit Installation

Locate your current sender, which will be located on the rear of the transmission or on either side. It will resemble a small plug emerging from the transmission with an electrical cord or cable connected to it. Connect the wires as above, plus the white wire to the LED Speedometer wire.

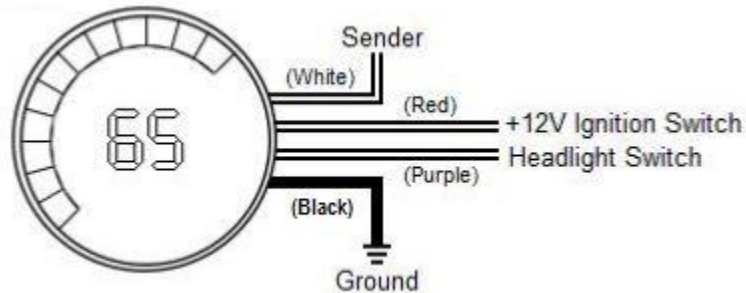
If replacing a cable: screw the provided sender onto the 7/8" male fitting you located previously for the existing electronic sender. If a two-wire sender, you should hook one of the two wires to the speedometer signal wire on the speedometer and the other wire to the ground.



If you have a three-wire sender, you will need to contact your vehicle manufacturer to ask exactly which wire is the signal wire, as the wire colors can vary between manufacturers.

Speedometer

In order to isolate the signal wire from electrical noise, we recommend that you use a shielded cable to connect the speedometer to the sender. Be sure to run the cable as far away as possible from the ignition system and any power wires to electric fuel pumps, motors, blowers, etc., particularly spark plug wires. For best results, we also recommend the use of resistor-type spark plugs and spark plug wires that are in good condition.



CALIBRATION

Note: If using the Intellitronix GPS Sending Unit (not included), the speedometer does not need to be calibrated.

The speedometer leaves the factory with a pre-set industry standard setting of 8,000 pulses per mile. Chances are that you may not need to recalibrate your speedometer, unless you have changed the original tire size or the rear end gear ratio.

Note: Do not attempt to recalibrate your speedometer until after it is working properly and you have determined that the speed is incorrect. The calibration procedure will NOT correct a faulty installation or improper wiring. If you attempt to recalibrate your speedometer without making sure the speedometer is receiving pulses from the sending unit, the speedometer will display 'Err' and default back to the factory settings.

To calibrate:

1. **Locate a measured mile where you can safely start and stop your vehicle.** By running the vehicle over this measured distance, the speedometer will learn the number of pulses outputted by the speedometer sensor during a specific measured distance. It will then use this acquired data to calibrate itself for accurate reading. There is a small recall push-button in the center of the panel used to calibrate and read all of the data stored in the speedometer. After installing your speedometer according to the wiring instructions, when the ignition is on it should immediately display the default screen of 0 MPH, if the vehicle is not moving.

NOTE: You will then need to drive your vehicle to the predetermined measured mile. During this trip, the speedometer should read something other than 0 MPH. If it does not change, return and locate the problem before continuing. Otherwise, proceed with the calibration.

2. Stop at the beginning of the measured mile with your vehicle running and in odometer mode (NOT trip mode), press and hold the push-button until the odometer displays 'HI-SP'. On its own, the gauge will then cycle through the recorded performance in the following order: '0 – 60', '1/4', 'ODO', and 'CAL'.
3. While 'CAL' is displayed, quickly *tap* the push-button once. This will put the speedometer in Program Mode. If you did not tap while 'CAL' is displayed, the pulses per mile will be displayed on the odometer and the display will go back to MPH mode. Otherwise, you will now see 'CAL' displayed along with the number '0'. This indicates that the microprocessor is now ready for calibration.
4. When you are ready, begin driving on the metered mile. You will notice that the reading will start counting up. The odometer will begin to display the incoming pulse count. Drive the vehicle through the measured mile (speed is not important, only the distance traveled).
5. At the end of the mile, stop and press the push-button again. The odometer will now display the new number of speedometer pulses that were registered over the distance. The odometer will continue to display the pulse reading for a few seconds. Once it reverts to the default mode, you have successfully calibrated your speedometer.

Warning: *If, while in 'CAL' mode, you do not move the vehicle and press the button again, the microprocessor will NOT have received any data and the unit will display 'Err' and will revert to the factory settings. At a minimum, drive some distance and return to the start if necessary. If you miss stopping the display at 'CAL', simply repeat the steps.*

Trip Distance

A single *tap* of the recall button will activate the trip meter in the odometer display. A decimal point will appear which will indicate that you are in trip meter mode. *Holding* the recall button will clear out the trip distance. To return to the default odometer display, *tap* the recall button again. The decimal point will disappear, indicating that you are back in the default odometer display.

Setting the Odometer

While scrolling through 'CAL' mode you will see 'ODO' appear. This will allow you to enter the vehicle's actual mileage. Press the trip button again at this point and you will enter the odometer set up mode. Press quickly to change the number of the digit on the right. Press and hold to advance to the next digit. Do this for all 5 digits. **For Example:** To enter the mileage reading 23456 into the odometer, at the 'ODO' prompt, tap the small black button (quickly) two times, until the number **2** is displayed. Then press and hold the button until the numbers **20** are displayed. Tap the button 3 times until **23** is displayed. Press and hold the button until **230** is

displayed, and continue in this manner until **23456** is displayed. The speedometer will advance to the home screen, five seconds after the last number is entered.

Recording and Viewing Performance Data

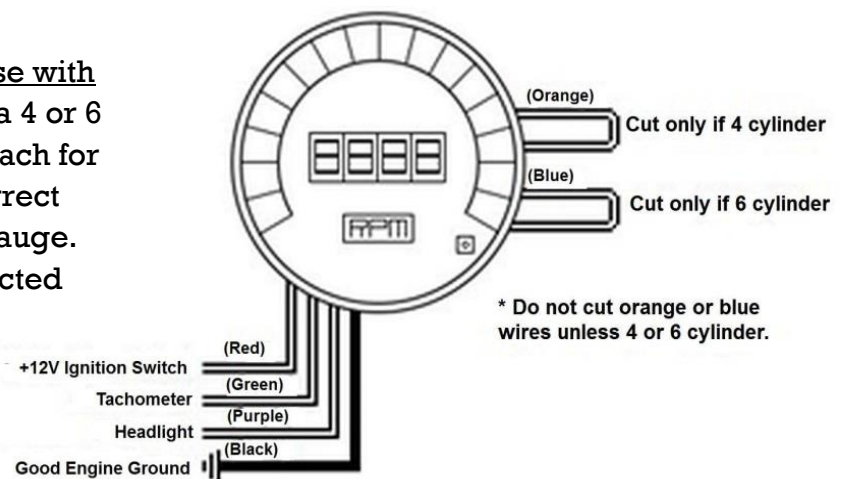
Follow these steps to record and recall Performance Data (high speed, ¼ mile ET, and 0-60 time):

1. Before each run, your car must be at a complete stop at the starting position. *Press and hold* the push-button as it cycles through the performance data. At the end, the odometer will reset and all performance data will be cleared. This will not affect your stored calibration value or the odometer reading.
2. Press the push-button until 'HI-SP' is displayed. The gauge will automatically cycle through the performance data.
3. Start the run, pass, session, etc., as mentioned above.
4. When finished, repeat *Step 2* to view the data gathered from the run. While stopped, you can view this data as often as you wish. However, once it finishes scrolling one time, the memory is ready to record new data and will begin recording again once the vehicle starts to move. The highest speed measured over multiple runs will be retained in memory.

Digital Bar Graph Tachometer

Our Digital Tachometer requires a signal from your ignition system, from either the negative terminal of your coil or a direct tach output lead from the distributor or electronic control module. In order to isolate the signal wire from electrical noise interference, we recommend all tachometer wires be routed as far away from any other voltage or signal carrying wires as possible, especially spark plug wires.

This tachometer is initially calibrated for use with 8 cylinder engines. If you are using it with a 4 or 6 cylinder engine, you must recalibrate the tach for your specific application by cutting the correct loop of wire coming from the back of the gauge. Do **NOT** cut both wires and leave disconnected or the tachometer will **NOT** function.



The default setting for the tachometer is for an 8-cylinder engine.

For 4 cylinder operation, cut the **ORANGE** wire loop.

For 6 cylinder operation, cut the **BLUE** wire loop.

Do **NOT** cut both wires and leave disconnected or the tachometer will not function.

Also, do **NOT** connect either the orange or the blue wire to the coil!

WIRING INSTRUCTIONS

Tachometer (memory capable) – Green

If your vehicle has a **separate ignition coil**, connect the green wire to the **negative (-)** side of the coil – the wire that goes to the points or electronic ignition module.

If your vehicle has a **GM HEI ignition**, connect to the terminal marked 'TACH', or, on some systems, a single white wire with a spade terminal.

If your vehicle has an **after-market ignition** – some systems will connect to the TACH output terminal.

If your vehicle has a **computer controlled ignition** system, consult the service manual for the wire color and location.

If your vehicle has a **magneto** system, connect the tach signal wire to the negative side of the coil. **Do not** connect the tach terminal to the positive (+ or high voltage) side of the ignition coil.

The default setting for the tachometer is for an 8-cylinder engine.

For 4-cylinder engines, cut the *orange* wire loop.

For 6-cylinder engines, cut the *blue* wire loop.

Do not cut both wires and leave disconnected or the tachometer will not function.

Note: If doing an LS engine swap, pick up the tach signal wire from the ECM/ECU and then set the tach switch to 4-cylinders.

To ensure that the ignition system does not interfere with any other dashboard functions, do not run the tachometer wire alongside any other sender or input wires. **Do not** use solid core spark plug wires with this dashboard system. Solid core ignition wires cause a large amount of electromagnetic and radio frequency interference which can disrupt the system's operation.

HIGH RPM RECALL

This tachometer has the ability to recall the highest RPM that your vehicle has obtained since it was last reset. Press the button on the lower right corner of the gauge to display the recall value. Press and hold for several seconds to clear memory and reset the recall to '0'.

Voltmeter

The Intellitronix LED voltmeter is compatible with any vehicle. The microprocessor provides accurate readings from 7.0V to 25.5V.

Water Temperature Gauge

Temperature - **Blue** Connect to the output of the temperature sending unit.