

# ***BDG***

***(Big 'DL Gauge)***

## **Installation Manual**

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## **Welcome from the Team at Classic Instruments!**

Our congratulations and appreciation for your purchase of one of the finest quality sets of specialty instruments ever produced! Your instrument set has been conceived, designed, and manufactured by Classic Instruments, Inc. in the U.S.A. Each instrument has been tested and certified for accuracy and quality before packaging and shipping.

For trouble-free installation and operation follow the instructions exactly as outlined. Your instruments were assembled to precise specifications and although each has a five (5) year warranty covering defective parts and workmanship – this warranty will not cover instruments or sender units which have been installed incorrectly.

Follow our recommended procedures for installation and proper hookup to maintain the value and appearance of your instrument set during many future years of accurate and dependable service!

### **LIMITED WARRANTY**

Classic Instruments, Inc. (CI) warrants to the original purchaser that any CI product manufactured or supplied by CI will be free from defects in material and workmanship under normal use and service for a period of five (5) years from date of purchase.

Improper installation, use of sending units other than CI's or attempted repair or adjustments by other than CI shall void this warranty. Disassembly of any instruments or senders for whatever reason shall specifically void this warranty.

It's always easy to look to a part for an issue with your set. Before you conclude that a part may be bad, thoroughly check your work. Today's semiconductors and passive components have reached incredibly high reliability levels, but there is still room for error in our human construction skills. However, on rare occasions a sour part can slip through. Please be aware that testing can usually determine if the part was truly defective or damaged by assembly or usage. Don't be afraid of telling us that you "blew it", we're all human and in most cases, replacement parts are very reasonably priced.

Purchaser requesting a product to be repaired or replaced under warranty must first call CI at 1-800-575-0461 before the return of defective part. Send defective part either to 826 Moll Drive, through UPS, or to P.O. Box 411 through U.S. Mail, Boyne City, MI 49712, USA. Include a written description of the failure with defective part.

Purchaser agrees and accepts that under no circumstances will a warranty replacement be furnished until CI has first received, inspected, and tested the returned part.

All other warranties expressed or implied are hereby excluded including any implied warranty of merchandise and implied warranty of fitness for a particular purpose. The sole and exclusive remedy for breach of this warranty is limited to the replacement set forth above.

It is expressly agreed that there shall be no further remedy for consequential or other type of damage, including any claim for loss of profit, engine damage or injury.

### **TECHNICAL ASSISTANCE**

**1-800-575-0461**

**OR**

**Visit our website for the latest in gauge design and updates to our installation manual**

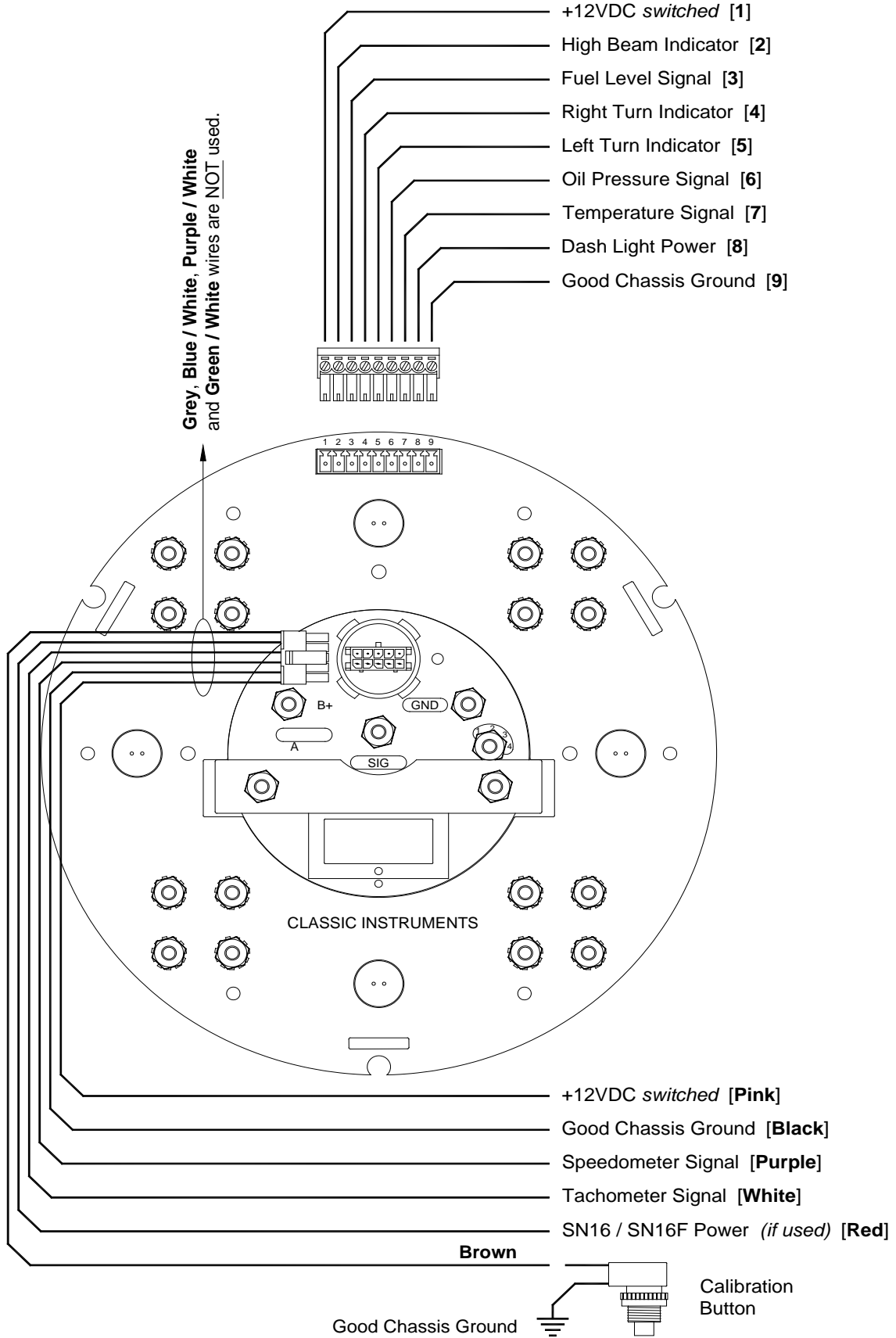
**[www.classicinstruments.com](http://www.classicinstruments.com)**

## Gauge Mounting

- 1) Insert the BOG gauge cluster through a 7 5/8" hole in the dash.
- 2) Slide the three mounting brackets over the mounting studs on the back of the gauge cluster.
- 3) Once the ends of the brackets are contacting the back of the dashboard, tighten them with a 10-32 nut. The short end of each bracket should fit into the slots in the back of the gauge cluster.



# Wiring Diagram



## Wiring the Instrument Cluster

### ***Speedometer & Tachometer Wiring***

- 1) Always disconnect the positive lead from the vehicle battery before wiring any gauge.
- 2) Connect a +12VDC switched power source to the **Pink** wire of the speedo / tach harness.
- 3) Connect a good chassis ground to the **Black** wire of the speedo / tach harness.
- 4) Connect the speed signal to the **purple** wire of the speedo / tach harness.
  - a. SN16 pulse signal generator signal
    - i. Connect the **white** wire to the speedo / tach harness purple wire.
    - ii. Connect the **black** wire to a good chassis ground
    - iii. Connect the **red** wire to speedo / tach harness red wire.
  - b. Transmission vehicle speed sensor signal (*2-wire*)
    - i. Connect one of the vehicle speed sensor wires to the speedo / tach harness purple wire.
    - ii. Connect other vehicle speed sensor wire to the same point as the speedo / tach harness black wire.
    - iii. The vehicle speed sensor wires are interchangeable, it doesn't matter which one is connected to the black or purple speedo / tach harness wires.
  - c. PCM / ECM speed signal (*computers*)
    - i. Connect the speed signal wire to the speedo / tach harness purple wire.
    - ii. A signal filter (part number SN79) is sometimes needed in cases where the signal has picked up interference.
- 5) Connect the tachometer signal to the **white** wire of the speedo / tach harness. (*see table 2: tachometer signal sources*)
- 6) Connect one wire (*either*) of the calibration button to the brown wire of the speedo / tach harness.
  - a. Connect the other wire of the calibration button to a good chassis ground.
- 7) The **grey, blue / white, purple / white** and **green / white** wires of the speedo / tach harness are not used in this application.

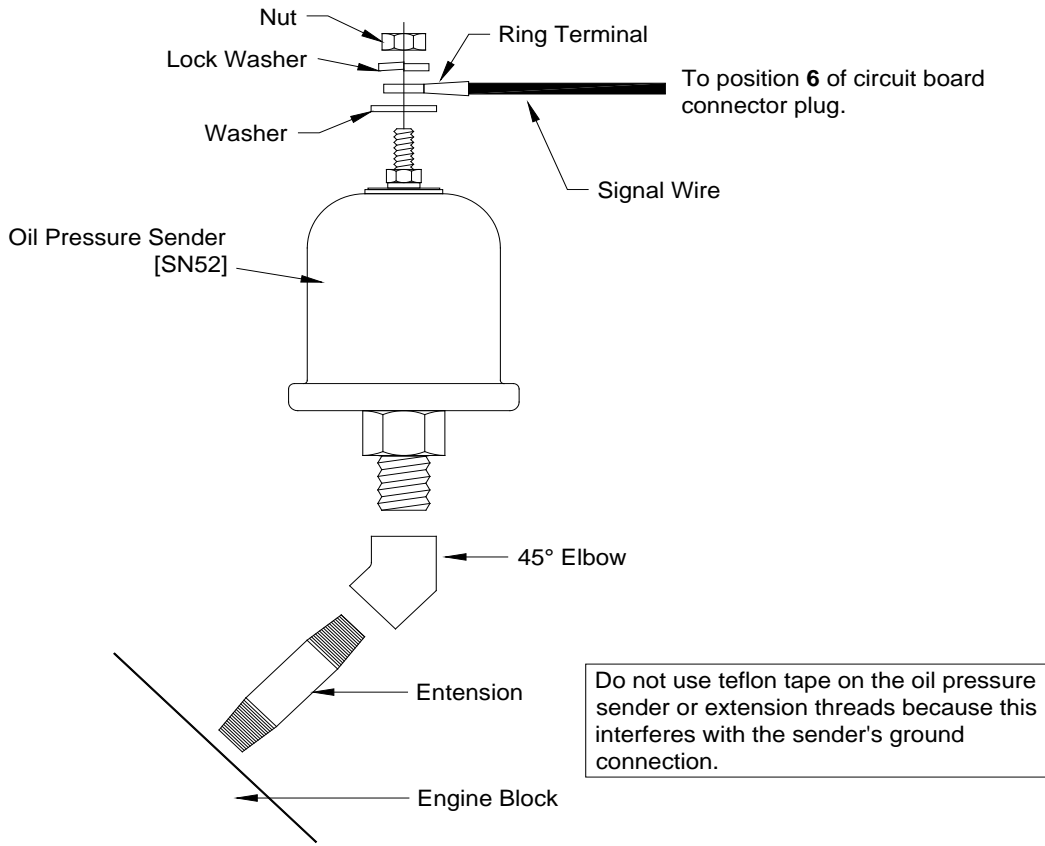
<b>Ignition System</b>	<b>Tachometer Signal Source</b>
Standard Points & Condenser System	Negative side of coil (usually marked “-“)
GM – HEI (High Energy Ignition) System	Terminal marked “TACH” on coil side of distributor cap.
MSD (Multiple Spark Discharge) System	TACH post on MSD box. If there isn’t a box, signal comes from negative side of coil. If tachometer doesn’t respond correctly, your MSD system may require a MSD TACH adapter part #8910 or #8920. Contact MSD for the correct adapter for your application.
Vertex Magneto System	“KILL” terminal on side of Vertex magneto body. An external adapter such as a MSD Pro Mag Tach Converter #8132 may be required.
Mallory Ignition System	Negative side of coil (usually marked “-“) <b>Important!</b> Some Mallory ignition systems require the tachometer to be set at the 4-cylinder setting.
ECM (computer) Tachometer Signal	Signal comes from the computer. You may need to set the tachometer to the 4-cylinder setting. The tachometer should also be set for 5V signals.
All Other Ignition Systems	Please look at the owner’s manual for the location of the tachometer signal.

*Table 2: Tachometer Signal Sources*

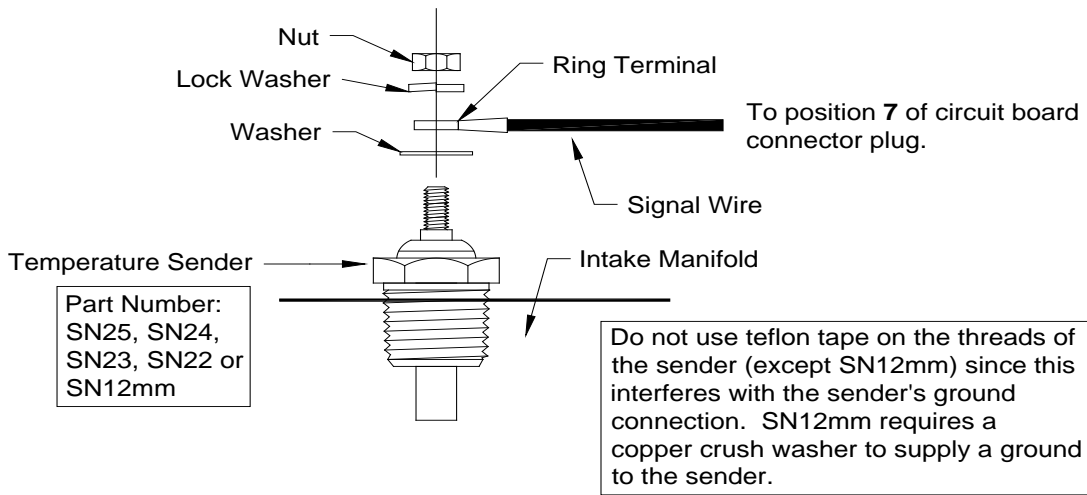
## ***Circuit Board Connector Wiring***

- 1) Always disconnect the positive lead from the vehicle battery before wiring any gauge.
- 2) Connect a +12VDC switched power source to position **1** of the circuit board connector plug.
- 3) Connect the high beam indicator power to position **2** of the circuit board connector plug.
- 4) Connect the fuel level signal wire to position **3** of the circuit board connector plug.
- 5) Connect the right turn indicator power from the vehicle's turn signal switch to position **4** of the circuit board connector plug.
- 6) Connect the left turn indicator power from the vehicle's turn signal switch to position **5** of the circuit board connector plug.
- 7) Connect the oil pressure signal wire to position **6** of the circuit board connector plug. (*see figure 1*)
- 8) Connect the water temperature signal wire to position **7** of the circuit board connector plug. (*see figure 2*)
- 9) Connect dash light power to position **8** of the circuit board connector plug.
- 10) Connect a good chassis ground to position **9** of the circuit board connector plug.





**Figure 1: Oil Pressure Sender Wiring**



**Figure 2: Temperature Sender Wiring**

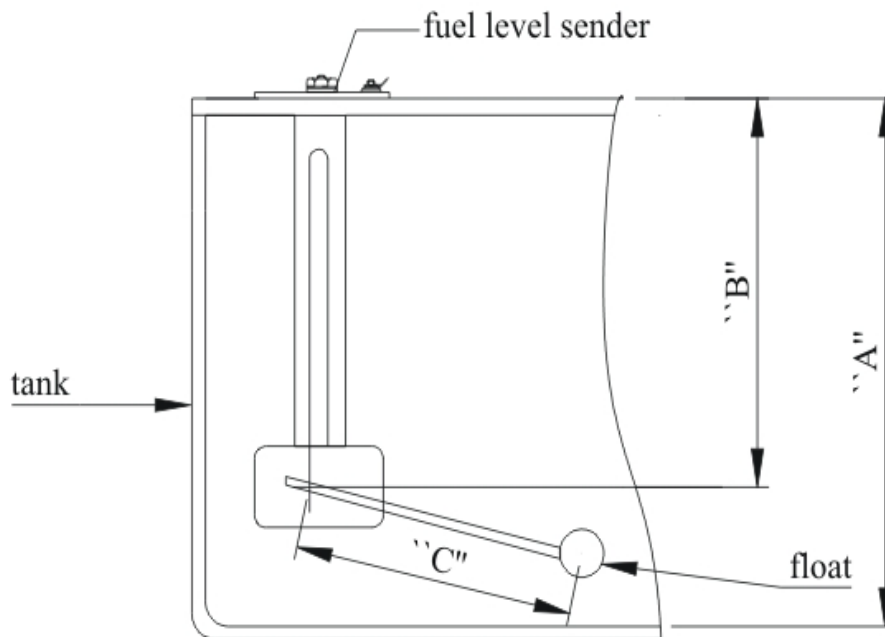
# Fuel Level Sender Installation

## ADJUSTABLE FUEL LEVEL SENDER KIT

SN35 (240Ω-33Ω), SN36 (0Ω -30Ω), SN38 (0Ω -90Ω), SN39 (75Ω -10Ω) & SN40 (10Ω -180Ω)

A = Tank Depth , B = Float Pivot Depth , C = Float Arm Length (Dimensions in Inches)								
A	B	C	A	B	C	A	B	C
6.0	3.0	3.5	12.0	6.0	7.8	18.0	9.0	12.0
6.5	3.25	3.8	12.5	6.25	8.1	18.5	9.25	12.3
7.0	3.5	4.2	13.0	6.5	8.5	19.0	9.5	12.6
7.5	3.75	4.5	13.5	6.75	8.9	19.5	9.75	12.9
8.0	4.0	4.9	14.0	7.0	9.3	20.0	10.0	13.4
8.5	4.25	5.3	14.5	7.25	9.6	20.5	10.25	13.8
9.0	4.5	5.6	15.0	7.5	10.0	21.0	10.5	14.2
9.5	4.75	6.0	15.5	7.75	10.4			
10.0	5.0	6.4	16.0	8.0	10.7			
10.5	5.25	6.7	16.5	8.25	11.0			
11.0	5.5	7.1	17.0	8.5	11.4			
11.5	5.75	7.4	17.5	8.75	11.8			

**TABLE 1**

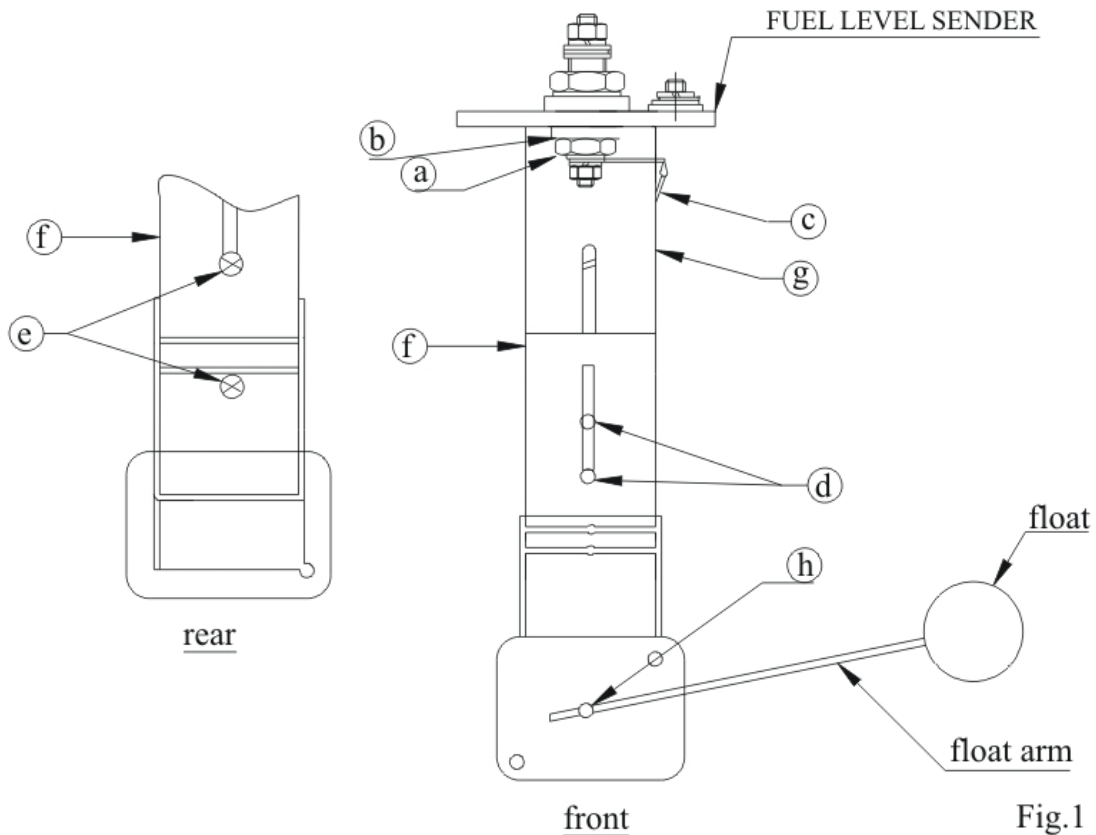


I. Measure depth of the fuel tank. Locate this dimension in Column "A" of Table 1. Column "B" shows the length from the underside of the sender flange to the center of the float pivot. Column "C" shows distance from the center of the float pivot to the center of the float. For example, a tank 12" deep would need a measurement of 6" from the flange to the pivot and 7.8" from the pivot to the float.

II. For tank depths 6" to 15-1/2", it will be necessary to eliminate a part of the assembly. (See Fig.1) proceed as follows:

1. Remove two screws "d" and discard.
2. Remove two screws "e" from the plastic housing and reserve for later use.
3. Carefully remove bracket "f" from the plastic housing and discard. Replace with bracket "g" in the housing and loosely re-install the two screws "e" into housing.
4. Slide housing up or down until the proper dimension from Table 1 is reached, then tighten screws securely.

**CAUTION:** Do not over tighten hardware to avoid damage to the threads.



III. For tank depths of 16" to 21" no disassembly of the sender bracket is necessary.

1. Loosen two screws "d" and adjust the plastic housing up or down until the proper dimension from Table 1 is obtained, then retighten screws securely.

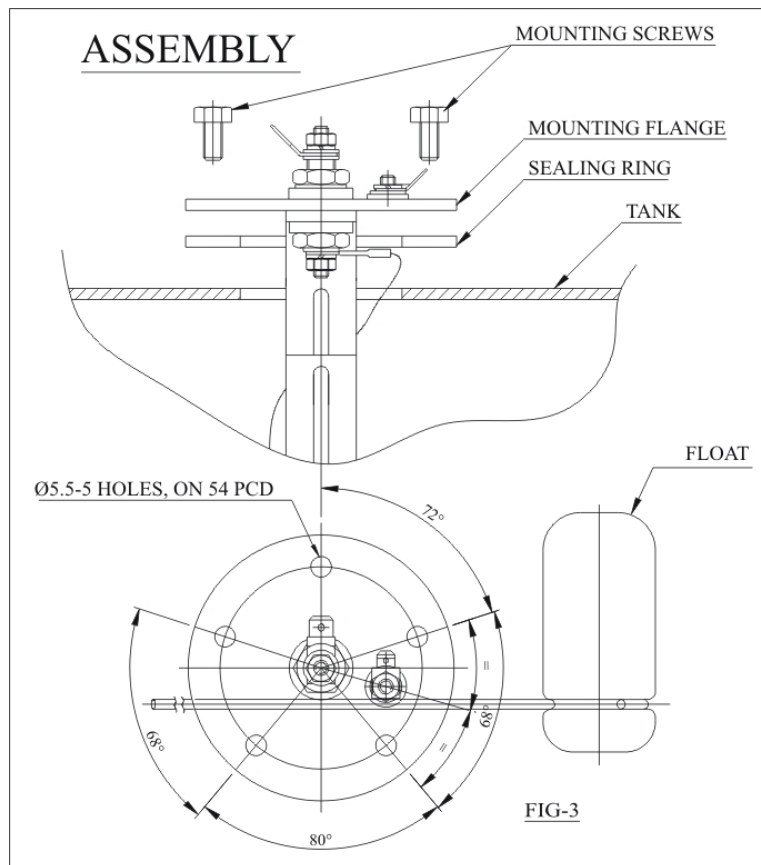
IV. To install the float assembly, loosen screw "h", remove the short piece of rod, and discard. Insert the float rod until the proper length "c" from Table 1 is met, and then tighten the screw securely. Carefully cut off any excess rod with bolt cutter or similar tool, taking care not to damage the assembly.

**NOTE:** Make sure the float is installed as shown in Fig.1. If installed backwards, the fuel gauge will indicate "full" when the tank is empty, and "empty" when the tank is full.

1. With the gasket in place below the flange, carefully feed the float arm and sender body into the 1.697" (43mm) hole in the tank. Make certain the float arm has free motion within the tank. Using the sender flange as a template, locate the position of the five mounting holes. Use the supplied screws to mount into the tank with threaded inserts in place.

2. Insert fuel sender assembly into tank, align holes and thread in mounting screws. Check that all screws are secure to complete assembly.

AVOID OVERTIGHTENING.



## Calibrate the Speedometer & Tachometer

Speedometer / Tachometer Setup Option Menu		
Tach Pointer Location	Setup Option	Description
1000 RPM	Tachometer Cylinder Setup	Sets number of cylinders.
2000 RPM	Tachometer Signal Type	Selects between 5V and 12V tachometer signal.
3000 RPM	Speed Auto Calibrate	Calibrates speed using an exact marked mile.
4000 RPM	Real-Time Speed Adjust	Manually increase or decrease speed.
8000 RPM	Exit	Exit setup

### Entering Setup Mode:

- 1) Start with the power off. While pressing the function button, start the vehicle's engine. Release the function button when the engine is running and the speedometer pointer is at 70MPH.
- 2) The tachometer will point to 1000 RPM and the speedometer will point at 70MPH once you have successfully entered the setup mode.

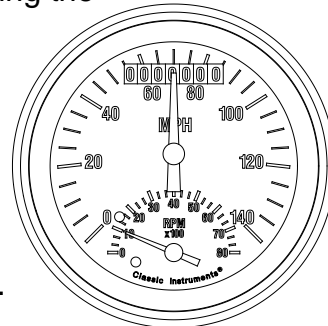


FIG. 1

- Fig. 1**
- 3) Pressing and releasing the function button will cycle through the setup options.
  - 4) Pressing and holding (approx. 4 seconds) the function button will select the current setup option that the tachometer is indicating.
  - 5) When setup is complete, select the exit option (8000 RPM) then press and hold the function button. **Fig. 2**

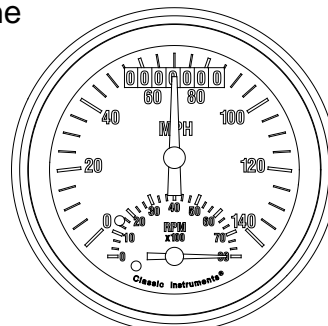
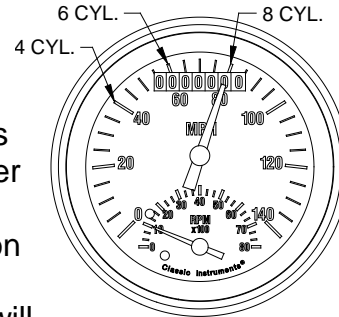


FIG. 2

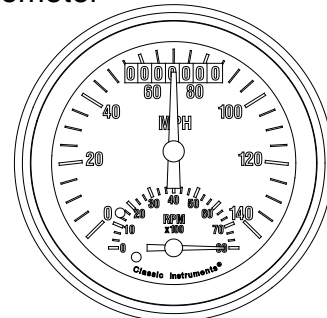
## Tachometer Setup:

### Cylinder Select:

- 1) Enter setup mode.
- 2) Press and release the function button until the tachometer points to 1000 RPM (tachometer cylinder setup option). **Fig. 3**
- 3) Press and hold the function button to enter the tachometer cylinder setup mode. The speedometer will point to the current cylinder number setting (40 MPH for 4 cylinders, 60 MPH for 6 cylinders, etc...).
- 4) Press and release the function button until the correct setting is selected.
- 5) Press and hold the function button to save the setting. The speedometer pointer will again point up and the tachometer will point to 8000 RPM (exit). Tachometer cylinder selection is now set.
- 6) If you are finished making setup changes, press and hold the function button with the tachometer pointing to 8000 RPM to exit setup mode. **Fig. 4**



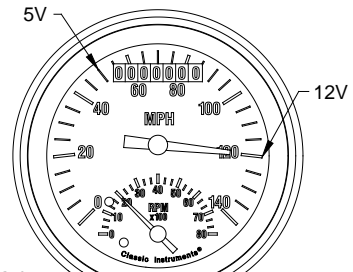
**FIG. 3**



**FIG. 4**

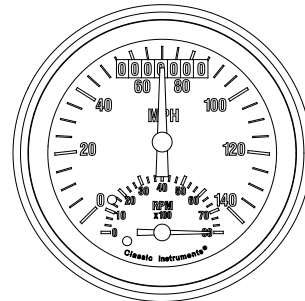
**Tachometer Signal Type:**

- 1) Enter setup mode.
- 2) Press and release the function button until the tachometer points to 2000 RPM (tachometer signal type option). **Fig. 5**



**FIG. 5**

- 3) Press and hold the function button to enter the tachometer signal type mode. The speedometer will point to the current setting (50 MPH for 5V signal or 120 MPH for 12V signal). *Note: Use 5V setting if tachometer signal comes from a computer. For any other signal use 12V.*
- 4) Press and release the function button until the correct tachometer signal type setting is selected.
- 5) Press and hold the function button to save the setting. The speedometer pointer will again point up and the tachometer will point to 8000 RPM (exit). Tachometer signal type is now set.
- 6) If you are finished making setup changes, press and hold the function button with the tachometer pointing to 8000 RPM to exit setup mode. **Fig. 6**



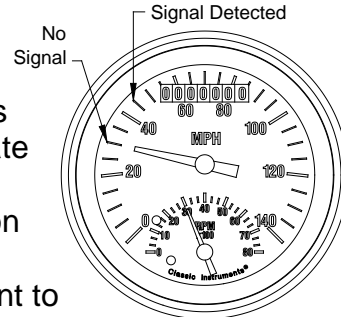
**FIG. 6**

### **Speedometer Setup:**

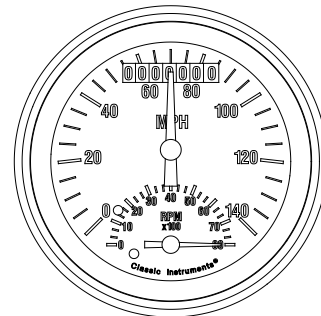
There are two ways to calibrate the speedometer. Speed auto calibrate (using an exact marked mile) and real-time speed adjust (manually adjust speed up or down). It is recommended you use the speed auto calibrate option first and then make any fine tune adjustments using the real-time speed adjust option.

#### **Speed Auto Calibrate:**

- 1) Enter setup mode.
- 2) Press and release the function button until the tachometer points to 3000 RPM (speed auto calibrate option). **Fig. 7**
- 3) Press and hold the function button to enter the speed auto calibrate mode. The speedometer will point to 30 MPH (on a 140 MPH speedometer) indicating you are in speed auto calibrate mode.
- 4) Begin driving the measured mile. The tachometer will operate as normal but the odometer will not move. When a speed signal is detected, the speedometer will point to 45 MPH. If a speed signal is NOT detected, the speedometer will continue to point at 30 MPH.
- 5) At the end of the measured mile, press and hold the function button. The speedometer will again point up and the tachometer will point to 8000 RPM (exit). The speedometer is now calibrated.
- 6) If you are finished making setup changes, press and hold the function button with the tachometer pointing to 8000 RPM to exit setup mode. **Fig. 8**



**FIG. 7**

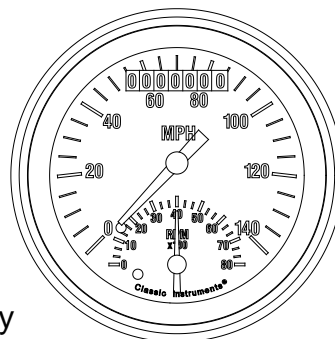


**FIG. 8**



### Real-Time Speed Adjust:

- 1) Enter setup mode.
- 2) Press and release the function button until the tachometer points to 4000 RPM (real-time speed adjust option). **Fig. 9**
- 3) Press and hold the function button to enter the real-time speed adjust mode.
- 4) Begin driving the vehicle at a steady known speed (using a GPS or pacing another vehicle). The tachometer will remain at 4000 RPM to indicate the gauge is in real-time speed adjust mode.
- 5) Pressing the function button will begin to increase the speed reading until the button is released.
- 6) The next time the function button is pressed the speed reading will decrease.
- 7) Continue adjusting the speedometer reading until the correct speed is achieved.
- 8) If no adjustments are made for 8 seconds, the current calibration setting will be saved. The speed setting may still be adjusted after this until the key is turned off and will be saved again after 8 seconds of function button inactivity. When finished adjusting the speed, bring the vehicle to a stop and turn the key off to exit the setup mode.



**FIG. 9**