

Classic Instruments

1963 – 1967

Corvette

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 seven (7) 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 seven (7) 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 to 826 Moll Drive, 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

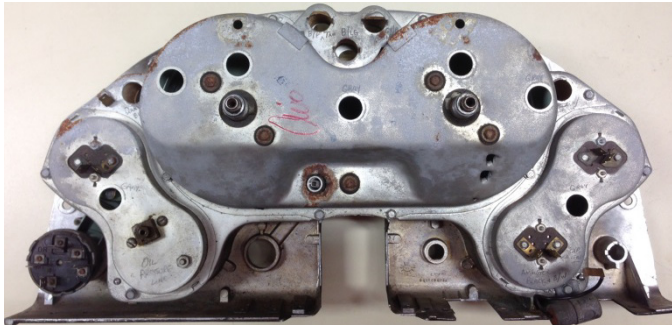
OR

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

www.classicinstruments.com

Mounting the Gauges

- 1) Remove the original gauge cluster from the instrument panel.
- 2) Remove the 10 screws located around the perimeter of the gauge housing and remove the old gauges from the housing. *Retain these screws to use when installing the new gauges.*



OEM Gauge Cluster



OEM Gauges Removed

- 3) Remove the lens holder and OEM lenses from the gauge housing. You will need to remove the 9 nuts securing the lens holder in the gauge housing.



OEM Housing with Lenses & Holder



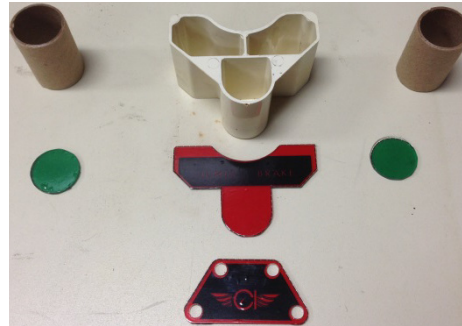
OEM Lenses and Holder Removed

- 4) Remove the OEM turn indicator cardboard tubes and green lenses. Also remove the center indicator (high beam, brake and lights) red lens. You will need to keep the center indicator plastic separator to use with the new gauge cluster.



OEM Parts to Remove from the Gauge Housing

- 5) Install the new center indicator lens (high beam, brake and lights) and plastic separator from the original gauge cluster. Also install the new green turn indicator lenses and cardboard tubes in the gauge housing.



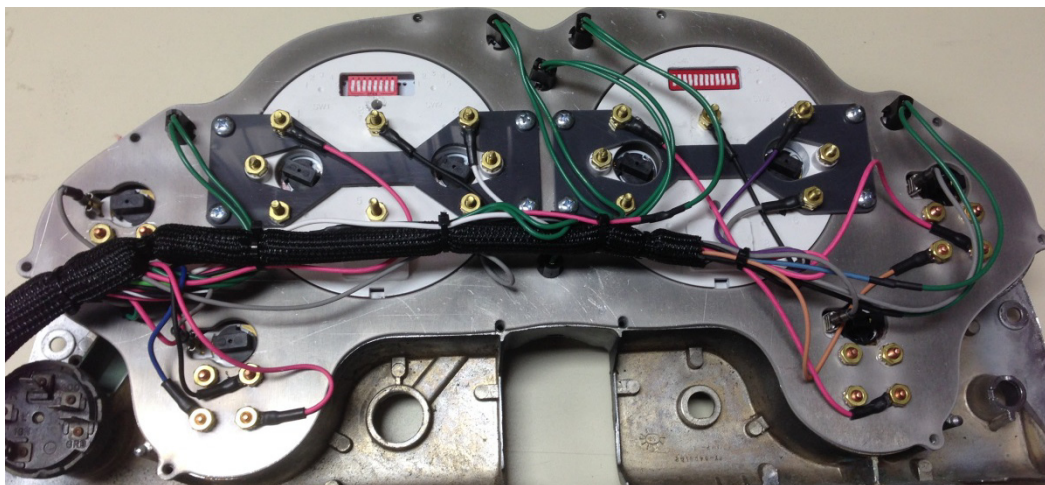
New Lenses / Tubes

- 6) Install the optional indicator lens in the gauge housing opening that originally housed the odometer. Use silicone to secure the lens in the housing.



Lenses / Tubes Installed

- 7) Insert the new gauge cluster into the housing and secure using the 10 screws (saved from step 2) around the perimeter.



Final Installation

Gauge Cluster Wiring

- 1) Always disconnect the vehicle battery before wiring any gauge.
- 2) Connect a good chassis ground to the **Black** [Position 1] wire of the gauge cluster harness. *We recommend using a dedicated chassis ground (not stacked with other ground wires) to avoid possible problems caused by a bad ground.*
- 3) Connect dash light power to the **Grey** [Position 2] wire of the gauge cluster harness.
- 4) Connect a switched +12VDC power source to the **Pink** [Position 3] wire of the gauge cluster harness. *We recommend using a dedicated power source for the speedometer to avoid possible problems caused by bad “noisy” power.*
- 5) Connect right turn indicator power to the **Blue / White** [Position 4] wire of the gauge cluster harness.
- 6) Connect high beam indicator power to the **Lt. Green** [Position 5] wire of the gauge cluster harness.
- 7) Connect left turn indicator power to the **Lt. Blue** [Position 6] wire of the gauge cluster harness.
- 8) Connect the fuel sender (0-90Ω) to the **Tan** [Position 7] wire of the gauge cluster harness.
- 9) Connect the Classic Instruments oil pressure sender to the **Blue** [Position 8] wire of the gauge cluster harness.
- 10) Connect the Classic Instruments temperature sender to the **Dk. Green** [Position 9] wire of the gauge cluster harness.
- 11) Connect a tachometer signal to the **White** [Position 10] wire of the gauge cluster harness.

STANDARD POINTS & CONDENSER SYSTEM

Connect the negative side of the coil (usually marked as “-”) to the tachometer signal wire.

GMC – HEI (High Energy Ignition System)

Connect the “TACH” terminal on coil side of distributor cap to the tachometer signal wire.

MSD (Multiple Spark Discharge System)

Connect the Tach signal on the MSD box to the tachometer signal wire. If the tachometer does not respond, your MSD system may require a MSD Tach adapter. Part No. 8910 or 8920.

VERTEX MAGNETO SYSTEM

Connect the “KILL” terminal on the side of a Vertex magneto body to the tachometer signal wire. An external adapter such as an MSD “Pro Mag Tach Converter” #8132 may be required.

ACCEL IGNITION COILS

Connect the negative side of the coil to the tachometer signal wire. CAUTION! Some Accel ignition coils require the tach signal wire to be connected to the “+” terminal on the coil! PLEASE carefully read Accel’s instructions before connecting ignition coil.

MALLORY IGNITION

Connect the negative terminal side of coil (usually marked as “-”) to the tachometer signal wire.

IMPORTANT! Some Mallory ignition systems may require you to adjust the tachometer at the 4-cylinder setting (rather than the 8-cylinder setting).

ECM TACHOMETER SIGNAL

Signal comes from the computer. When using this type of signal, you may need to set the tachometer to a 4-cylinder setting regardless of the actual cylinders on the engine. Signals below 8V amplitude require the use of either the SN76 tach adapter or a 1K .25W pull-up resistor installed between the signal and power posts of the tachometer.

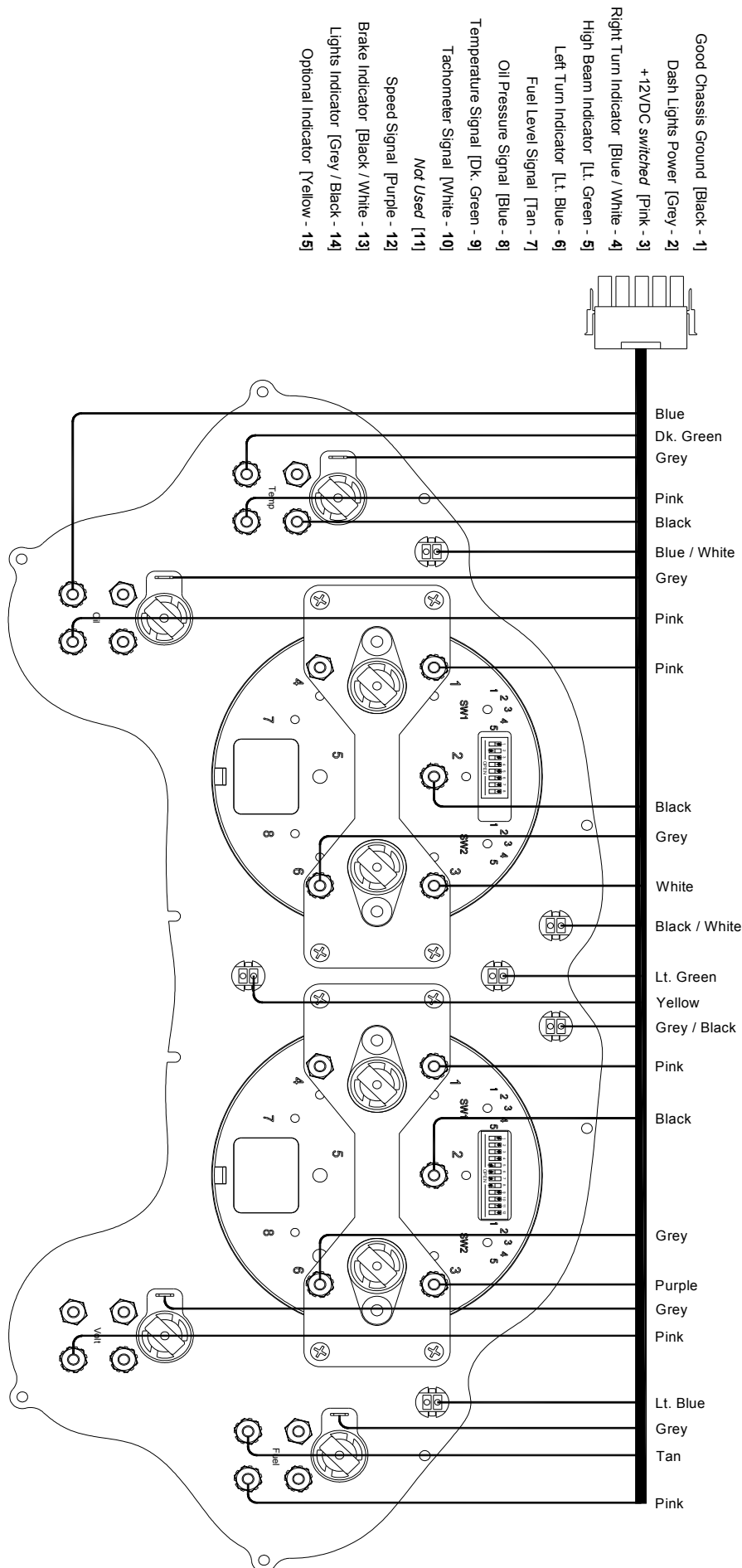
MULTIPLE COIL IGNITION SYSTEMS

A tach adapter is required for these ignition systems. A tach signal driver such as the MSD #8913, which produces a 12V square wave signal, is recommended. Please check with manufacturer for your specific application.

NOTICE! For all other ignition systems please look at the owner’s manual for that system.

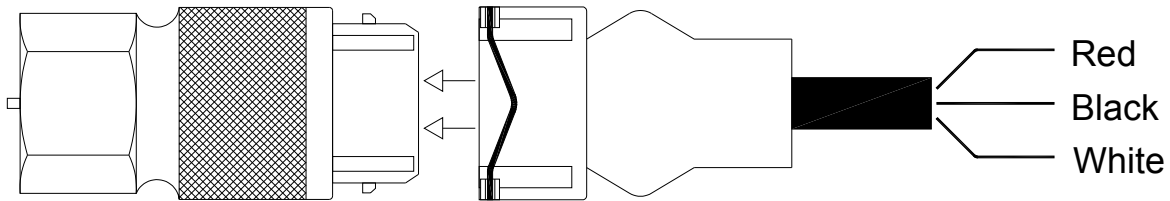
- 12) Connect a speed signal to the **Purple** [Position 12] wire of the gauge cluster harness:
 - a. White signal wire from a pulse signal generator [SN16]
 - i. See “*Pulse Signal Generator Wiring*” section for complete SN16 wiring instructions.
 - [OR]
 - b. Output from a [SN74] speedometer signal interface module.
 - i. See “*Speedometer Signal Interface Wiring*” section for complete SN74 wiring instructions.
- 13) Connect the brake indicator signal (*the signal provides a ground to trigger the indicator*) to the **Black / White** [Position 13] wire of the gauge cluster harness.
- 14) Connect the “lights” indicator signal (*the signal provides a ground to trigger the indicator*) to the **Grey / Black** [Position 14] wire of the gauge cluster harness.
- 15) Optional: Connect optional indicator power to the **Yellow** [Position 15] wire of the gauge cluster harness. *This can be any signal that provides +12V to trigger the indicator.*

Gauge Cluster Wiring Diagram



Pulse Signal Generator [SN16] Wiring

Attach the signal generator to the transmission speedometer gear housing (where the speedometer cable originally connected). Do not use excessive force to tighten. These signal generators produce approximately 16,000 pulses per mile (PPM).

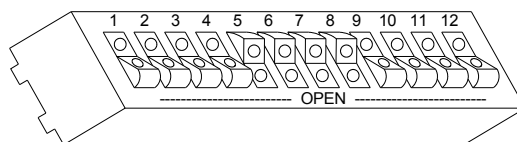


Red: ----- +12VDC
Black: ----- Ground
White: ----- Signal

Speedometer Calibration Using a SN16 Signal

- 1) Set the 12 dip switches on the back of the speedometer to their default position of (5, 6, 7, 8 OPEN). **Power to the speedometer must be OFF when making adjustments to the dip switches.**
- 2) Check the current speedometer calibration at a known 60mph by pacing a vehicle with a calibrated speedometer or by using a GPS.
- 3) Note the speedometer reading at a known 60mph.
- 4) Stop the vehicle and turn power OFF to the speedometer.
- 5) Look up the speedometer reading on the 16,000 PPM calibration chart and set the speedometer dip switches according to the chart. The dip switches shown on the chart should be the ONLY switches set to OPEN. All other dip switches should be set to CLOSED.
- 6) The speedometer is now calibrated. The dip switches must be set back to the default position in order to use the calibration chart on future calibrations.

Speedometer Calibration Chart – SN16 Signal



(Default Dip Switch Setting)

(Switch 5 6 7 8 OPEN)

Set speedometer switches **5 6 7 8 OPEN**, all others closed (*code for 16,000 PPM*). Drive vehicle at 60mph. If the speedometer reads other than 60, turn off power & set switches per chart below.

Speedometer Reading	OPEN SWITCH	Speedometer Reading	OPEN SWITCH
40 MPH	8 9 11 12	80 MPH	4 5 6 10 12
41 MPH	7 10 12	81 MPH	4 5 6 8
42 MPH	7 8	82 MPH	4 5 6 8 9 11 12
43 MPH	7 8 9 11 12	83 MPH	4 5 6 7 10
44 MPH	6 10	84 MPH	4 5 6 7 8
45 MPH	6 8	85 MPH	4 5 6 7 8 9 11 12
46 MPH	6 8 9 11 12	86 MPH	3 10 12
47 MPH	6 7 10 12	87 MPH	3 8
48 MPH	6 7 8	88 MPH	3 8 9 11 12
49 MPH	6 7 8 9 11 12	89 MPH	3 7 10 12
50 MPH	5 10	90 MPH	3 7 8
51 MPH	5 8	91 MPH	3 7 8 9 11 12
52 MPH	5 8 9 11 12	92 MPH	3 6 11 12
53 MPH	5 7 10 12	93 MPH	3 6 8
54 MPH	5 7 8	94 MPH	3 6 8 9 11 12
55 MPH	5 7 8 9 11 12	95 MPH	3 6 7 10 12
56 MPH	5 6 10 12	96 MPH	3 6 7 8
57 MPH	5 6 8	97 MPH	3 6 7 8 9 11 12
58 MPH	5 6 8 9 11 12	98 MPH	3 5 10 12
59 MPH	5 6 7 10 12	99 MPH	3 5 8
60 MPH	5 6 7 8	100 MPH	3 5 8 9 11 12
61 MPH	5 6 7 8 9 11 12	101 MPH	3 5 7 10 12
62 MPH	4 10 12	102 MPH	3 5 7 8
63 MPH	4 8	103 MPH	3 5 7 8 9 11 12
64 MPH	4 8 9 11 12	104 MPH	3 5 6 10 12
65 MPH	4 7 10	105 MPH	3 5 6 8
66 MPH	4 7 8	106 MPH	3 5 6 8 9 11 12
67 MPH	4 7 8 9 11 12	107 MPH	3 5 6 7 10 12
68 MPH	4 6 10 12	108 MPH	3 5 6 7 8
69 MPH	4 6 8	109 MPH	3 5 6 7 8 9 11 12
70 MPH	4 6 8 9 11 12	110 MPH	3 4 10 12
71 MPH	4 6 7 10 12	111 MPH	3 4 8
72 MPH	4 6 7 8	112 MPH	3 4 8 9 11 12
73 MPH	4 6 7 8 9 11 12	113 MPH	3 4 7 10 12
74 MPH	4 5 10 12	114 MPH	3 4 7 8
75 MPH	4 5 8	115 MPH	3 4 7 8 9 11 12
76 MPH	4 5 8 9 11 12	116 MPH	3 4 6 10 12
77 MPH	4 5 7 10 12	117 MPH	3 4 6 8
78 MPH	4 5 7 8	118 MPH	3 4 6 8 9 11 12
79 MPH	4 5 7 8 9 11 12	119 MPH	3 4 6 7 10 12

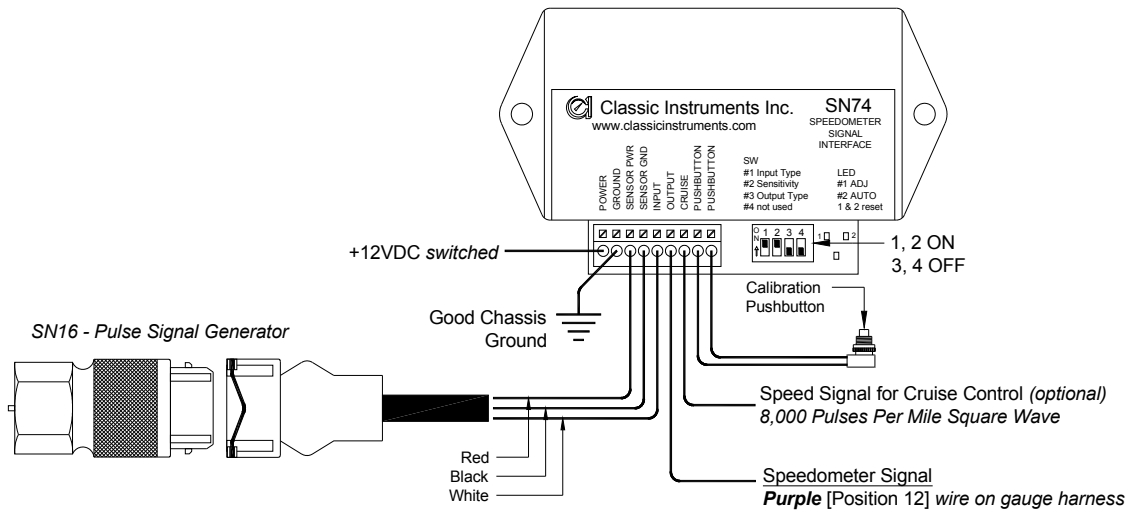
Speedometer Signal Interface [SN74] Wiring

- 1) Connect switched +12VDC to "POWER"
- 2) Connect chassis ground to "GROUND"
- 3) Connect the red wire from a SN16 pulse signal generator to "SENSOR PWR". *(if not using the SN16, do not use this connection)*
- 4) Connect the black wire from a SN16 pulse signal generator OR one wire from the built-in transmission VSS (2-wire) to "SENSOR GND". *(if using an ECM speed signal, do not use this connection)*
- 5) Connect the white wire from a SN16 pulse signal generator OR one wire from the built-in transmission VSS (2-wire) OR the ECM speed signal to "INPUT"
- 6) Connect "OUTPUT" to the **Purple** wire of the gauge cluster harness.
- 7) Connect "CRUISE" to the signal input for a cruise control module *(if needed)*. The cruise control signal is 8,000 pulses per mile (PPM).
- 8) Connect each wire of the momentary pushbutton to the two "PUSHBUTTON" connections.
- 9) If speedometer dip switches are not in the default position, set them at this time (5 6 7 8 OPEN)
- 10) Set switches on the module according to the chart below based on the speed signal you will be using.

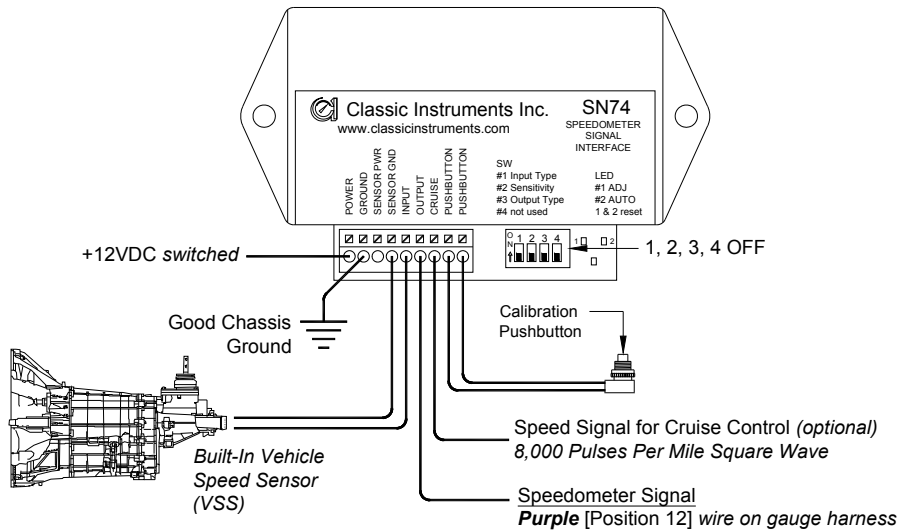
Signal Source	Switch Setting
SN16 Pulse Signal Generator [3-wire]	1 2 ON – 3 4 OFF
VSS [2-wire]	1 2 3 4 OFF
ECM [1-wire]	1 2 ON – 3 4 OFF

- Switch 1 – OFF = Vehicle Speed Sensor signal, ON = Computer or SN16 signal
 Switch 2 – OFF = high sensitivity, ON = low sensitivity
 Switch 3 – OFF = 16,000ppm signal output, ON = 8,000ppm signal output
 Switch 4 – *Not Used*

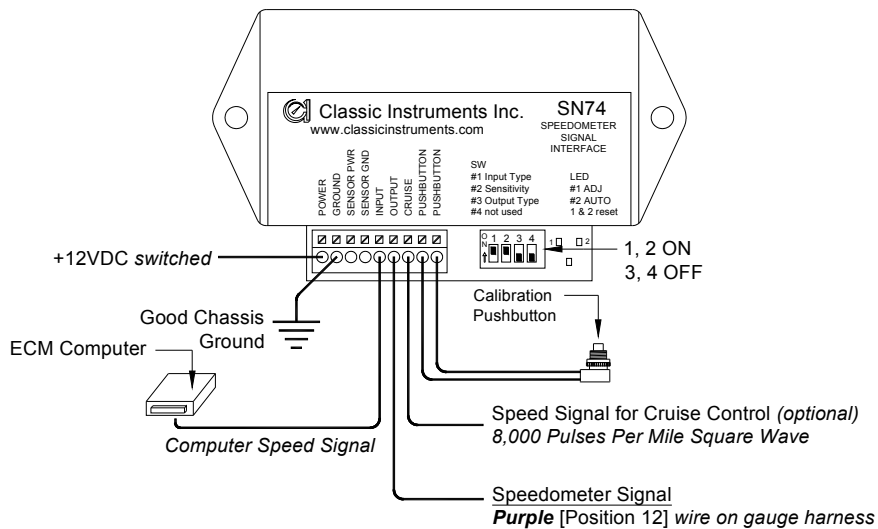
Speedometer Signal Interface [SN74] Wiring Diagrams



SN74 Connected to a SN16 Pulse Signal Generator



SN74 Connected to Vehicle Speed Sensor (VSS)



SN74 Connected to ECM Speed Signal

Speedometer Calibration Using SN74

Marked Mile Calibration Mode (Use When Calibrating for the First Time)

- 1) Start with the vehicle power / engine off. Push and hold the pushbutton while starting the engine.
- 2) When the engine is running, release the pushbutton.
- 3) The red LED labeled “1” on the module will be lit (indicating real-time calibration mode).
- 4) Tap the pushbutton. The red LED labeled “1” will turn off and the red LED labeled “2” will turn on (indicating marked mile calibration mode).
- 5) Push and hold the pushbutton with red LED “2” lit until LED “2” starts blinking (*approximately 5 seconds*)
- 6) Begin driving a known mile. (*The green LED between the red LEDs should blink once you start moving indicating that the module is getting a signal.*)
- 7) When driving the known mile, the speedometer will not indicate any speed. This is normal.
- 8) At the end of the known mile, press and hold the pushbutton until the red LED “2” turns off. (*approximately 5 seconds*)

Real-Time Calibration Mode (For Fine Tuning the Speedometer Calibration)

- 1) Start with the vehicle power / engine off. Push and hold the pushbutton while starting the engine.
- 2) When the engine is running, release the pushbutton.
- 3) The red LED labeled “1” on the module will be lit (indicating real-time calibration mode).
- 4) Push and hold the pushbutton with red LED “1” lit until LED “1” starts blinking. (*approximately 5 seconds*)
- 5) Drive a known speed using a GPS or by pacing another car. (*The green LED between the red LEDs should blink once you start moving indicating that the module is getting a signal.*)
- 6) Press and hold the pushbutton to change the speed show on the speedometer. The first time the pushbutton is pressed and held, the speed shown on the speedometer will increase. The second time the pushbutton is pressed and held, the speed shown on the speedometer will decrease. *Note: Changes in speed will happen slowly. The button will need to be held longer if a large change of speed is required.*
- 7) The pushbutton will alternate between increasing or decreasing the speed shown on the speedometer each time it is pressed. Press and hold the pushbutton to fine tune the speed shown on the speedometer.
- 8) Once the correct speed on the speedometer has been achieved, wait *at least 8 seconds* without pushing the pushbutton, then turn power to the module off in order to save the calibration.

Oil Pressure Sender Installation

(Part No. SN52)

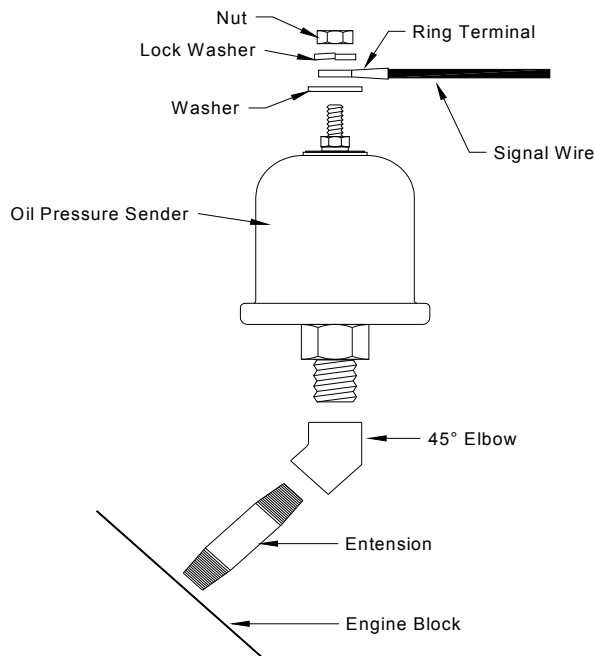
- 1) Disconnect battery before installation.
- 2) Only install Classic Instruments sending units when the engine is COLD.
- 3) DO NOT use Teflon tape on the threads. These threads are slightly tapered and designed to be self-sealing. The sender uses the threads for its ground connection and sealant may cause a poor ground causing inaccurate readings
- 4) Connect a wire from the top terminal of the oil pressure sender to the **Blue** wire of the gauge cluster harness.
- 5) Tighten until snug. DO NOT OVER TIGHTEN!

GM Installation: The correct location on most GM V8-engines to install the oil pressure sender is under the distributor housing at the rear of the block.

Use the 2 piece bushing kit provided to allow the sender to be mounted at a 45-degree angle pointing towards the driver's knees. This allows the sender to clear the back of the intake manifold, the underside of the distributor housing and also the firewall.

GM Installation – Big Block Engines: We do NOT recommend installing Classic Instrument's oil pressure sender in the opening located just above the oil filter on some big block GM engines. This location may not be a full-pressure passage but instead a "by-pass" oil passageway. Installing our pressure sender at this location may result in some strange low-pressure readings under certain driving conditions. This does not indicate a defective instrument or sender! It simply means you need to move the sender to the correct location.

GM Installation – LS Engines: Install the sender in the oil bypass housing located just above the oil filter. The housing will need to be drilled and tapped to 1/8"NPT.

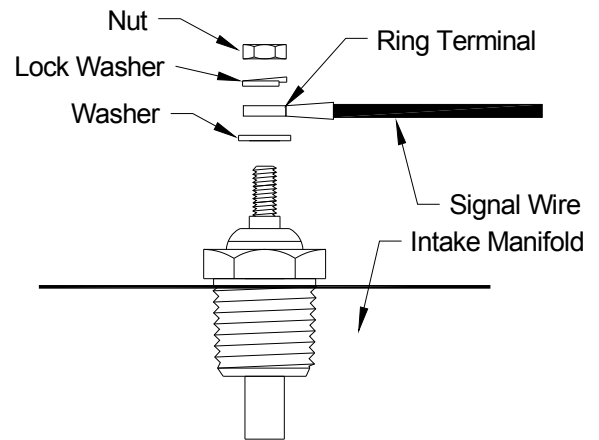


LS1 Oil Bypass Housing

Temperature Sender Installation

(Part No. SN22, SN23, SN24, SN25 & SN12mm)

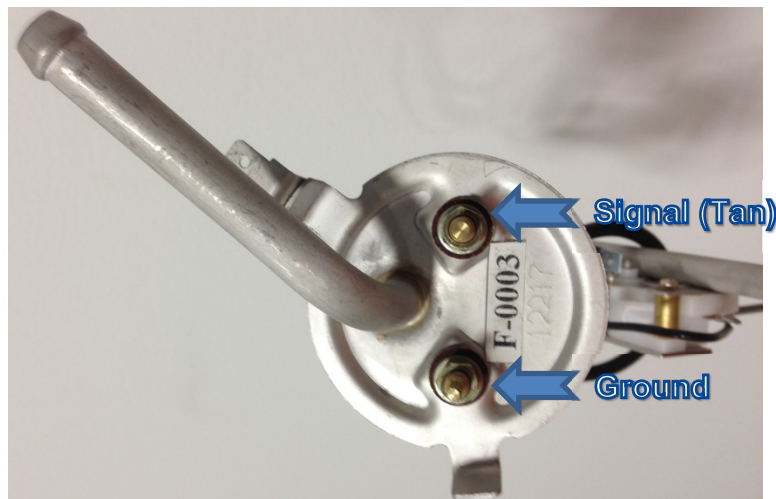
- 1) Disconnect battery before making any connections.
- 2) Install the Classic Instrument's temperature sending unit only when the engine is COLD!
- 3) DO NOT use Teflon tape on the threads. These threads are slightly tapered and designed to be self-sealing. The sender uses the threads for its ground connection and sealant may cause a poor ground causing inaccurate readings
- 4) Install the temperature sender into the intake manifold of your engine as possible. Installing the sender in the engine cylinder head may cause inaccurate temperature readings.
 - a. On GM "LS" engines, the temperature sender mounts on the passenger side of the engine under the rear cylinder. A 12mm thread sender [SN12mm] is available to fit this location.
- 5) Connect a wire from the top terminal of the temperature sender to the **Dk. Green** wire of the gauge cluster harness.
- 6) Tighten until snug. DO NOT OVER TIGHTEN!



Notice: Avoid installing the temperature sender into the head of a late-model GMC engine. Even though the stock GMC sender may have been installed there, this opening is too close to the exhaust header and will most likely cause an improper reading.

OEM Fuel Sender Wiring

- 1) Connect a signal wire to either terminal of the fuel sender. This wire should be connected to the **Tan** wire of the gauge cluster harness.
- 2) Connect a good ground wire to the remaining terminal of the fuel sender.



OEM Fuel Level Sender

Universal Fuel Level Sender Installation

Part #: 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			

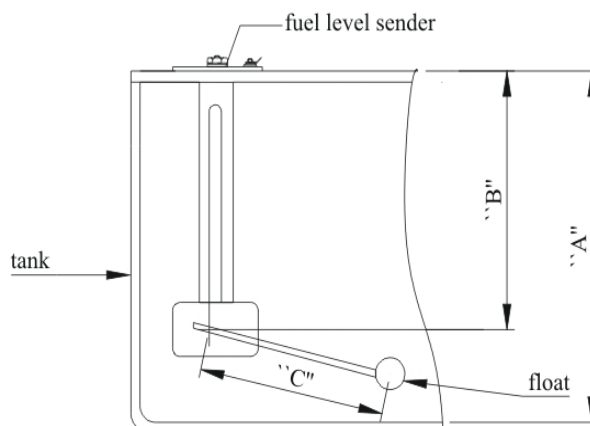


TABLE 1

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. (6” tanks require cutting top portion of housing and use of only lower screw to fit)
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.

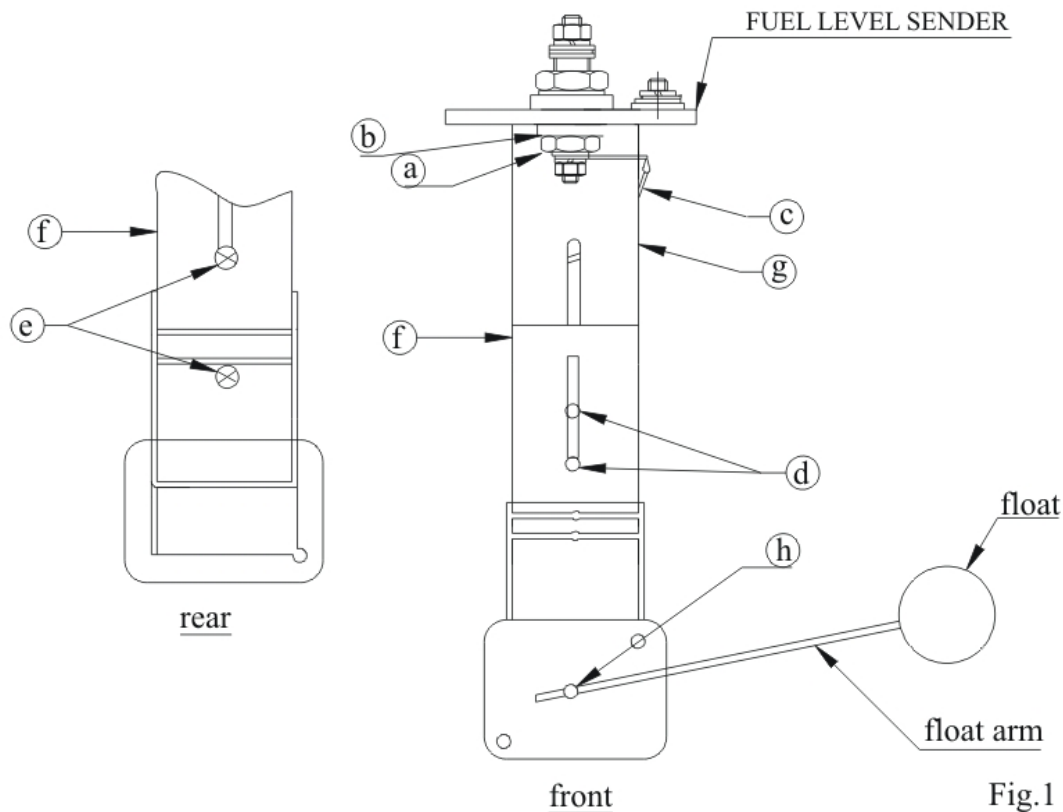


Fig.1

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. Cut the bracket (*g* or *f*) so it doesn’t extend lower than the black rheostat assembly. The rheostat should be the lowest point of the fuel sender.
2. 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.
3. Insert fuel sender assembly into tank, align holes and thread in mounting screws. Check that all screws are secure to complete assembly.
4. Connect the center terminal of the sender to your fuel gauge’s signal terminal. Connect the off-center terminal to a good chassis ground.

AVOID OVERTIGHTENING.

ASSEMBLY

