

1967-1968

Mustang

Installation Manual

Table of Contents

WELCOME FROM THE TEAM AT CLASSIC INSTRUMENTS!	3
REMOVE THE ORIGINAL INSTRUMENT PANEL	4
WIRING DIAGRAM	6
WIRING THE NEW INSTRUMENT CLUSTER	7
SPEEDOMETER WIRING WITH SN16F SIGNAL.....	7
SPEEDOMETER CALIBRATION USING A SN16F SIGNAL	7
<i>16,000 PPM Speedometer Calibration Chart</i>	8
SPEEDOMETER WIRING WITH SN74Z SIGNAL INTERFACE	9
SN74Z DIP SWITCH SETTINGS.....	9
SPEEDOMETER CALIBRATION USING THE SN74Z.....	10
<i>Speedometer Dip Switch Settings</i>	10
<i>SN74Z Speedometer Calibration Modes</i>	10
<i>Instant Calibration Mode</i>	11
<i>Real-Time Calibration Mode</i>	12
<i>Marked Mile Calibration Mode</i>	13
GAUGE CLUSTER WIRING.....	14
TACHOMETER SIGNAL-TYPE SETUP	15
OIL PRESSURE SENDER INSTALLATION	16
TEMPERATURE SENDER INSTALLATION	16
MOUNT NEW INSTRUMENT PANEL	17

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

Remove the Original Instrument Panel

- 1) Disconnect the battery before beginning the replacement of the new instrument panel.
- 2) Remove the 5 screws holding the instrument panel to the dash. Three screws are located at the top of the instrument panel and two screws are located at the bottom of the instrument panel. Save these screws to use when installing the new instrument panel.
- 3) Remove the nut from the stud located on the passenger side of the instrument panel. Save this nut to use when installing the new instrument panel.
- 4) Unscrew the speedometer cable from the back of the speedometer.
- 5) Unplug the wiper switch from the vehicle wire harness.
- 6) Unplug the two existing instrument panel wire harness connectors from the vehicle wire harness.
- 7) Remove the original instrument panel from the dash.
- 8) Remove the two screws attaching the wiper switch to the original instrument panel and then remove the wiper switch. Save the screws and wiper switch to use with the new instrument panel.

See Figure A and Figure B on the following page

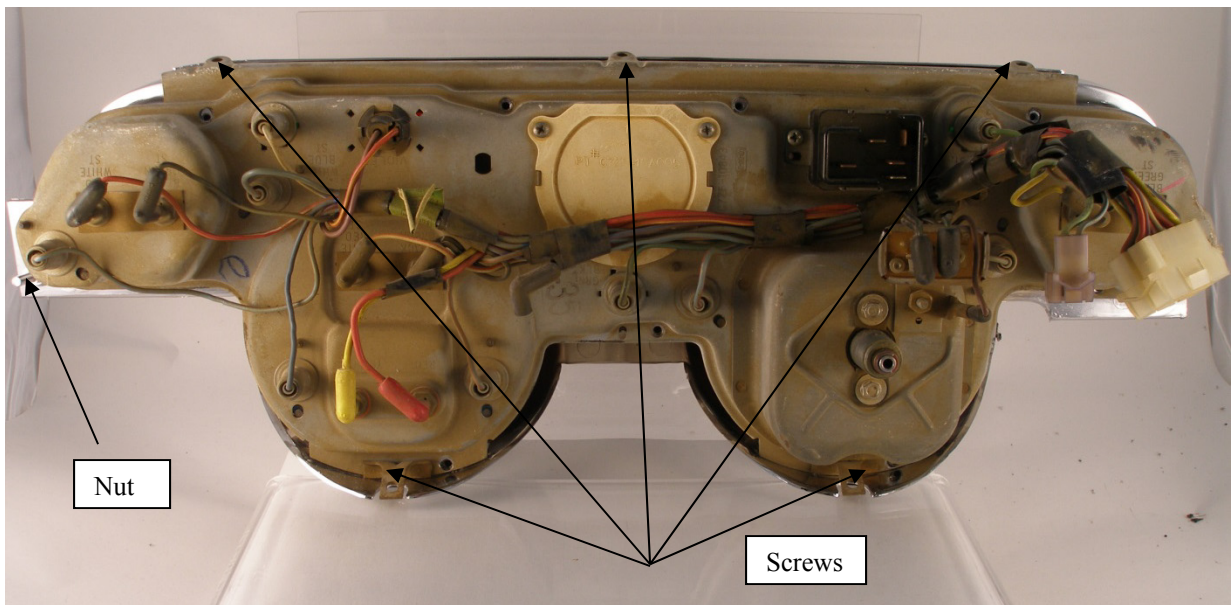


Figure A: Example of original instrument cluster removed from dash
(5 screws and 1 nut removed)

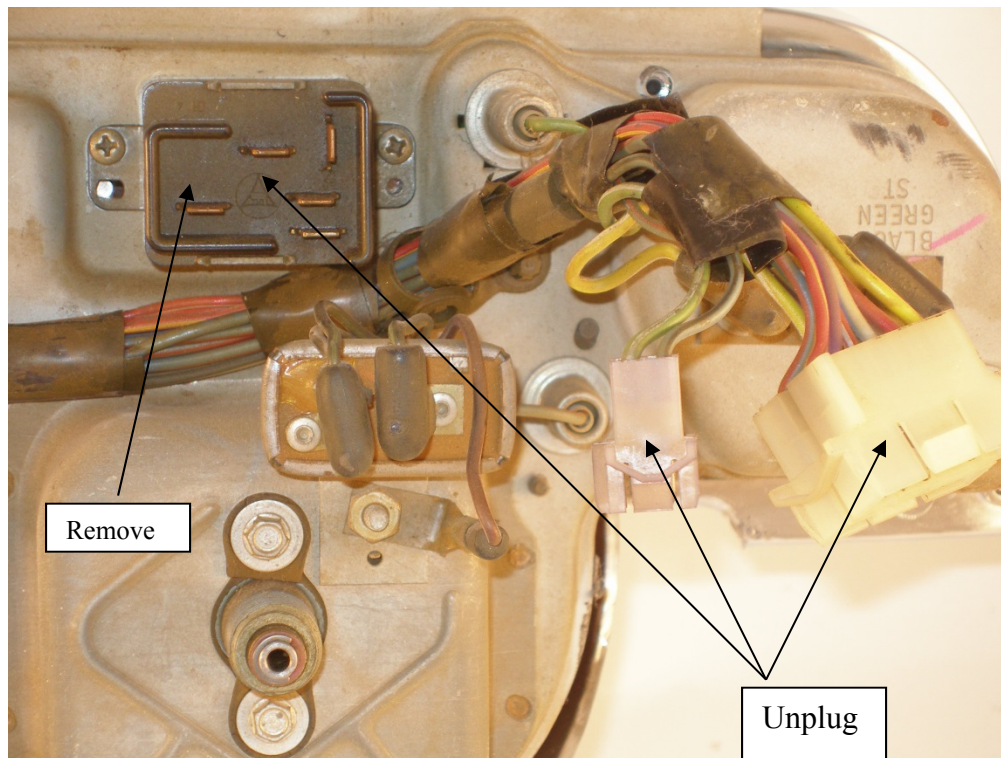
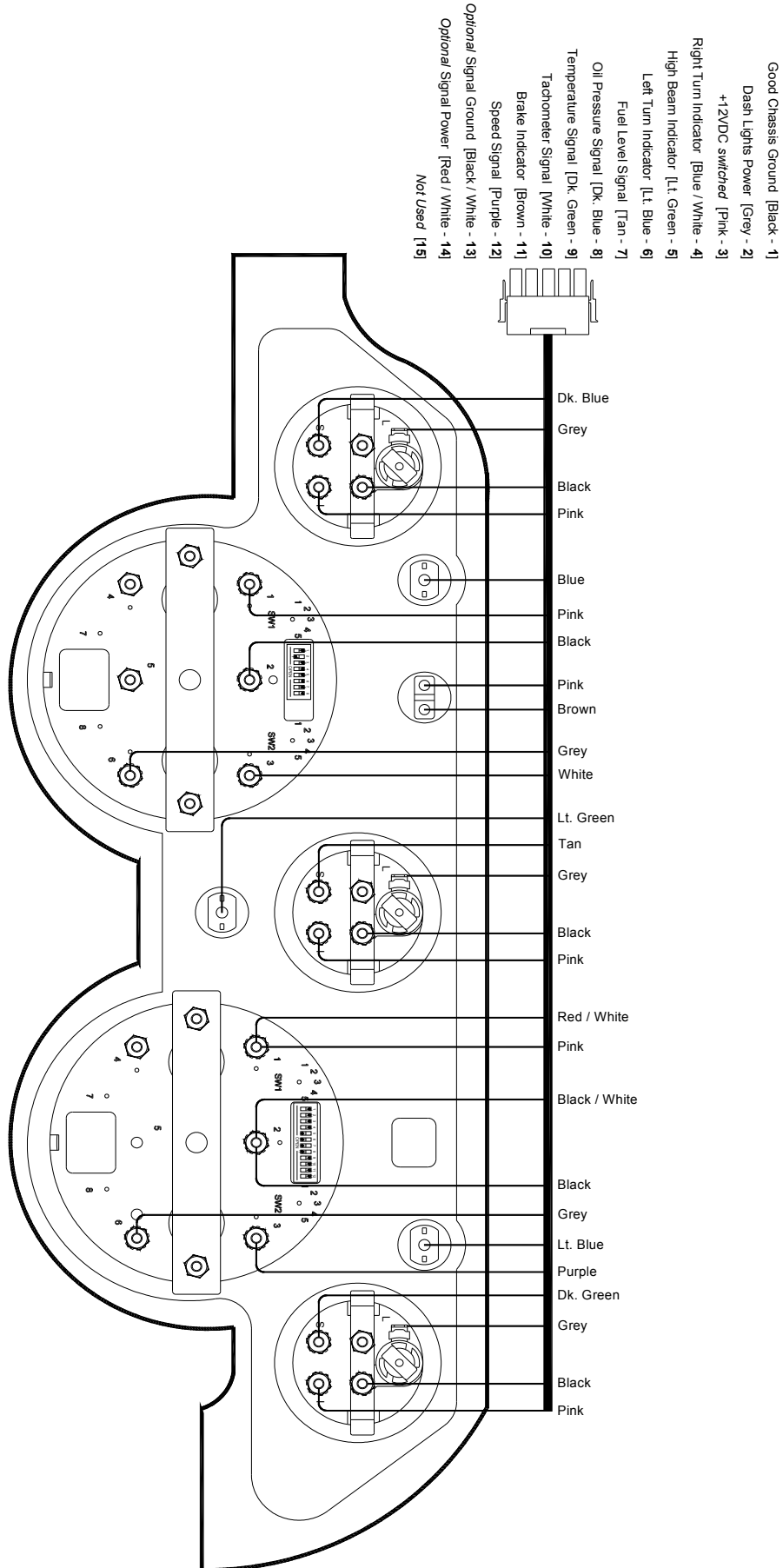


Figure B: Unplugged wiper switch and original instrument harness

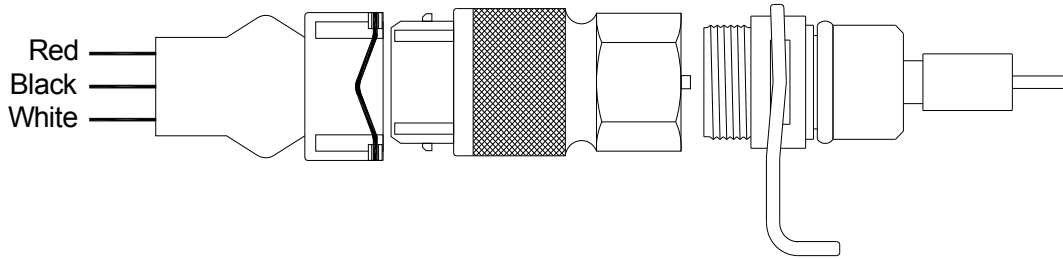
Wiring Diagram



Wiring the New Instrument Cluster

Speedometer Wiring with SN16F Signal

- 1) Always disconnect the positive lead from the vehicle battery before wiring any gauge.
- 2) Connect the **Black / White** wire of the gauge harness to the black wire of the SN16F pulse signal generator.
- 3) Connect the **Purple** wire of the gauge harness to the white wire of the SN16F pulse signal generator.
- 4) Connect the **Red / White** wire of the gauge harness to the red wire of the SN16F pulse signal generator.

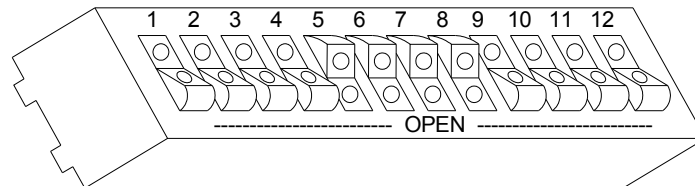


Red: +12VDC (to red / white wire of gauge harness)
Black: Ground (to black / white wire of gauge harness)
White: Signal (to purple wire of gauge harness)

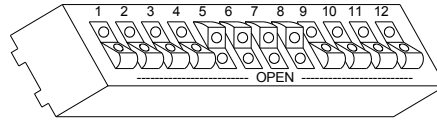
Speedometer Calibration Using a SN16F Signal

- 1) Turn off power to the speedometer.
- 2) Set the 12 dip switches on the back of the speedometer to their default position (5, 6, 7, 8 OPEN, all others CLOSED).
- 3) Check the current speedometer calibration at a known 60mph by pacing a vehicle with a calibrated speedometer or by using a GPS.
- 4) Note what the speedometer is indicating at a known 60mph.
- 5) Look up what the speedometer was indicating 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 should now be accurate. The dip switches must be set back to the default setting in order to use the calibration chart on future calibrations.

Default speedometer dip switch setting (5, 6, 7 and 8 OPEN):



16,000 PPM Speedometer Calibration Chart



(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 Wiring with SN74Z Signal Interface

- 1) Always disconnect the positive lead from the vehicle battery before wiring any gauge.
- 2) Connect the **Red / White** wire of the gauge harness to the SN74Z terminal marked +12 VOLTS.
- 3) Connect the **Black / White** wire of the gauge harness to the SN74Z terminal marked GROUND.
- 4) Connect the **red** wire of a Classic Instruments SN16F pulse signal generator to the SN74Z terminal marked SENDER +. *If you are not using a pulse signal generator, this terminal is not used.*
- 5) Connect ¹⁾ one wire of an electronic transmission's vehicle speed sensor (VSS), ²⁾ one wire of a 2-wire pulse signal generator or ³⁾ the **black** wire of a Classic Instruments SN16F pulse signal generator to the SN74Z terminal marked SENDER -.
- 6) Connect ¹⁾ one wire of an electronic transmission's vehicle speed sensor (VSS), ²⁾ one wire of a 2-wire pulse signal generator, ³⁾ the **white** wire of a Classic Instruments SN16F pulse signal generator or ⁴⁾ a computer (ECM / PCM) generated speed signal to the SN74Z terminal marked SPEEDO IN.
- 7) Connect the **Purple** wire of the gauge harness to the SN74Z terminal marked OUTPUT.
- 8) ^{Optional:} The SN74Z terminal marked CRUISE puts out an 8,000 pulse per mile 12-volt square wave signal that can be used as a signal source for a cruise control, lockup converter, etc...
- 9) Connect two wires from a momentary contact pushbutton to the two terminals on the SN74Z marked BUTTON. *A pushbutton is also mounted to the SN74Z that can be used in place of a remote button attached to the BUTTON terminals.*

Wiring Diagrams on Following Page

SN74Z Dip Switch Settings

- Dip Switch #1:
 - Set switch #1 ON to set the output to 8,000 pulses per mile (ppm). *(Classic Instruments speedometers that have 8 dip switches on the back require 8,000 ppm)*
 - Set switch #1 OFF to set the output to 16,000 pulses per mile (ppm). *(Classic Instruments speedometers that have 12 dip switches on the back require 16,000ppm)*
- Filter Switch:
 - Set the Filter Switch ON for square wave speed signals such as ECM / PCM speed signals or SN16 / SN16F pulse signal generator signals.
 - Set the Filter Switch OFF for sine wave speed signals such as OEM vehicle speed sensor (VSS) signals or SN96 / SN95 pulse signal generator signals. *(sine wave signal sensors always have 2 wires)*
- Dip Switches #2 - #5 are NOT used

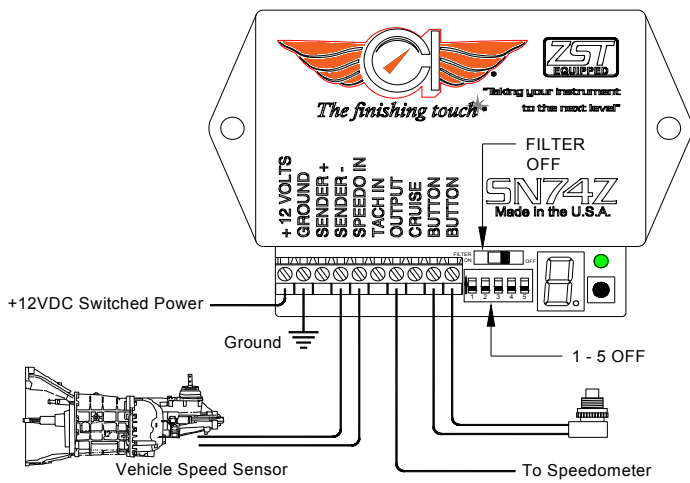


Figure 1: Vehicle Speed Sensor (VSS) Connection

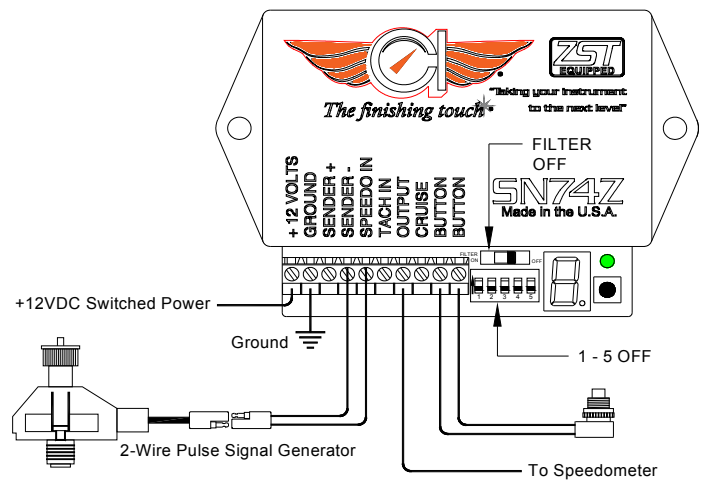


Figure 2: 2-wire Pulse Signal Generator Connection

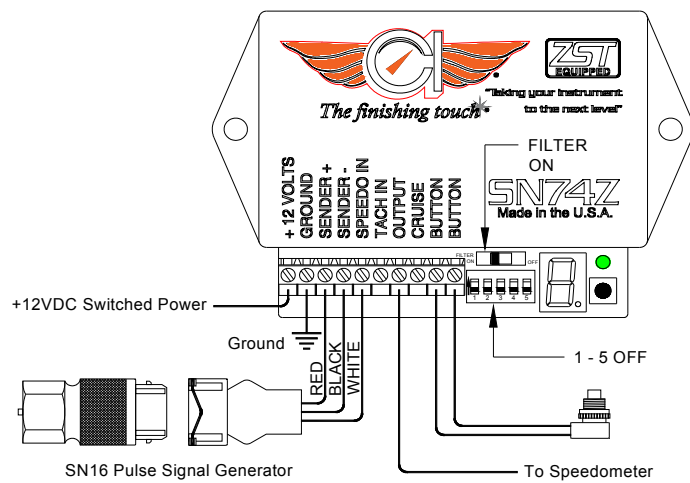


Figure 3: SN16 Pulse Signal Generator Connection

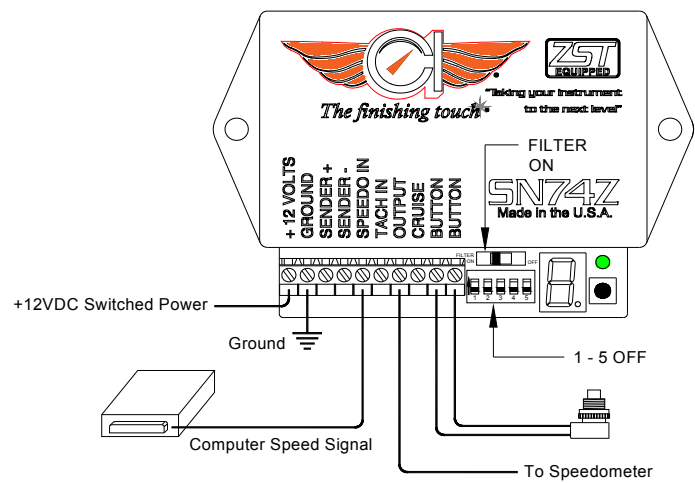


Figure 4: ECM/PCM Speed Signal Connection

Speedometer Calibration Using the SN74Z

Speedometer Dip Switch Settings

Classic Instruments speedometers have a row of rocker switches on the back that are used to calibrate the speedometer in certain applications. However, if you are using a SN74Z, the speedometer rocker switches are not used to calibrate the speedometer.

- Set the speedometer switches to the default setting **5, 6, 7, 8 OPEN** (*pushed in away from the number side of the switch*). All other switches (**1, 2, 3, 4 & 9, 10, 11, 12**) **CLOSED** (*pushed in toward the number side of the switch*).

SN74Z Speedometer Calibration Modes

There are three calibration modes you can use to calibrate the SN74Z. Use whichever mode seems easiest for your application. It is not necessary to perform all calibration modes.

Instant Calibration Mode

- Start with vehicle power off.
- Press and hold the calibration button and start the engine. *Once the engine is running, release the button.*
- The LED digit will display **C**, indicating entry into module select mode.
- After a few seconds, the LED digit will display **S**, **r** or **F**. Tap the button to cycle round robin through these setup options. Press and hold the button when the LED digit displays **S** (*indicating setup for speedometer applications*).
- Release the button when the LED digit displays **C**, indicating entry into calibration mode.
- Tap the button to change the LED digit to **1** indicating instant calibration mode. *Continuing to tap the button will cycle round robin through the calibration modes 1, 2, 3 and F.*
- Press and hold the button with the LED digit indicating **1** until the **1** starts blinking.
- Begin driving at 30 mph based on GPS or a pace car. *(The green LED on the SN74Z should blink indicating that it is getting a signal).*
- While driving steady at that speed, press and hold the button until the LED digit changes back to **C** (*to confirm that calibration is saved*).
- The speedometer should now begin reading 30 mph.
- Press and hold the button while the LED digit displays **C** to exit calibration mode. *(Tap the button to cycle round robin through the calibration modes again if you would like to perform another calibration).*

Real-Time Calibration Mode

- Start with vehicle power off.
- Press and hold the calibration button and start the engine. *Once the engine is running, release the button.*
- The LED digit will display **C**, indicating entry into module select mode.
- After a few seconds, the LED digit will display **S**, **r** or **F**. Tap the button to cycle round robin through these setup options. Press and hold the button when the LED digit displays **S** (*indicating setup for speedometer applications*).
- Release the button when the LED digit displays **C**, indicating entry into calibration mode.
- Tap the button to change the LED digit to **2** indicating real-time calibration mode. *Continuing to tap the button will cycle round robin through the calibration modes 1, 2, 3 and F.*
- Press and hold the button with the LED digit indicating **2** until the **2** starts blinking.
- Begin driving a known speed. *(The green LED on the SN74Z should blink, indicating that it is getting a signal).*
- Press and hold the button to change the speed shown on the speedometer. The first time the button is pressed and held, the speed shown on the speedometer will increase. The second time the button is pressed and held, the speed shown on the speedometer will decrease.
 - The SN74Z will alternate increasing or decreasing the speed shown on the speedometer each time the button is pressed. Press and hold the button to fine tune the speed shown on the speedometer.
- Once the speedometer is reading the correct speed, wait 8 seconds without pushing the button (*in order to save the calibration*). The LED digit will change back to **C** to confirm calibration is saved.
- Press and hold the button while the LED digit displays **C** to exit calibration mode. *(Tap the button to cycle round robin through the calibration modes again if you would like to perform another calibration).*

Marked Mile Calibration Mode

- Start with vehicle power off.
- Press and hold the calibration button and start the engine. *Once the engine is running, release the button.*
- The LED digit will display **C**, indicating entry into module select mode.
- After a few seconds, the LED digit will display **S**, **r** or **F**. Tap the button to cycle round robin through these setup options. Press and hold the button when the LED digit displays **S** (*indicating setup for speedometer applications*).
- Release the button when the LED digit displays **C**, indicating entry into calibration mode.
- Tap the button to change the LED digit to **3** indicating marked mile calibration mode. *Continuing to tap the button will cycle round robin through the calibration modes 1, 2, 3 and F.*
- Press and hold the button with the LED digit indicating **3** until the **3** starts blinking.
- Begin driving a known mile. (*The green LED on the SN74Z should blink, indicating that it is getting a signal*).
 - When driving the known mile, the speedometer will not indicate any speed. This is normal.
- At the end of the known mile, press and hold the button until the LED digit changes back to **C** to confirm calibration is saved.
- Press and hold the button while the LED digit displays **C** to exit calibration mode. (*Tap the button to cycle round robin through the calibration modes again if you would like to perform another calibration*).

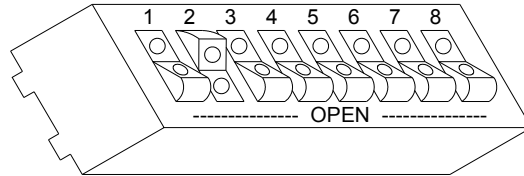
Gauge Cluster Wiring

- 1) Always disconnect the positive lead from the vehicle battery before wiring any gauge.
- 2) Connect the **Pink** wire of the wire harness to a +12VDC switched power source.
- 3) Connect the **Black** wire of the wire harness to a good chassis ground.
- 4) Connect the **Dark Green** wire of the wire harness to the supplied Classic Instruments temperature sender.
- 5) Connect the **White** wire of the wire harness to the tachometer signal.
 - a. *STANDARD POINTS & CONDENSER SYSTEM*
 - i. Connect to the negative side of the coil (usually marked as "-").
 - b. *GMC – HEI (High Energy Ignition System)*
 - i. Connect to the "TACH" terminal on coil side of distributor cap.
 - c. *MSD (Multiple Spark Discharge System)*
 - i. Connect to the TACH signal from the MSD box.
 - d. *VERTEX MAGNETO SYSTEM*
 - i. Connect to the "KILL" terminal on the side of a Vertex magneto body. An external adapter such as an MSD "Pro Mag Tach Converter" #8132 may be required.
 - e. *ACCEL IGNITION COILS*
 - i. Connect to the negative side of the coil. 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.
 - f. *MALLORY IGNITION*
 - i. Connect to the negative terminal side of coil (usually marked as "-").
 - g. *ECM TACHOMETER SIGNAL*
 - i. Connect to the signal from the computer. The tachometer typically needs to be set on 4 cylinder setting. Some signals may be too weak to trigger the tachometer on their own and require a 1K ohm pull-up resistor to be installed between the 12V and Signal post of the tachometer.
 - h. *MULTIPLE COIL IGNITION SYSTEMS*
 - i. A tach adapter may be 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.
 - i. **NOTICE!** For all other ignition systems please look at the owner's manual for that system.
- 6) Connect the **Tan** wire of the wire harness to a stock [75-10 ohm] fuel sender.
- 7) Connect the **Dark Blue** wire of the wire harness to the supplied Classic Instruments oil pressure sender.
- 8) Connect the **Blue / White** wire of the wire harness to the right turn indicator power wire of the vehicle's turn signal switch.
- 9) Connect the **Light Blue** wire of the wire harness to the left turn indicator power wire of the vehicle's turn signal switch.
- 10) Connect the **Light Green** wire of the wire harness to the high beam indicator power wire of the vehicle's light switch.
- 11) Connect the **Grey** wire of the wire harness to the dash light power wire from the vehicle's light switch.

Tachometer Signal-Type Setup

The tachometer can be set to operate with signals from 4, 6 and 8 cylinder engines. Set the dip switches located on the back of the tachometer to match your engine. (The default setting is for 8-cylinder engines)

Number of Cylinders	Tachometer Dip Switch Setting
4	1 & 2 OPEN
6	2 & 3 OPEN
8	2 OPEN

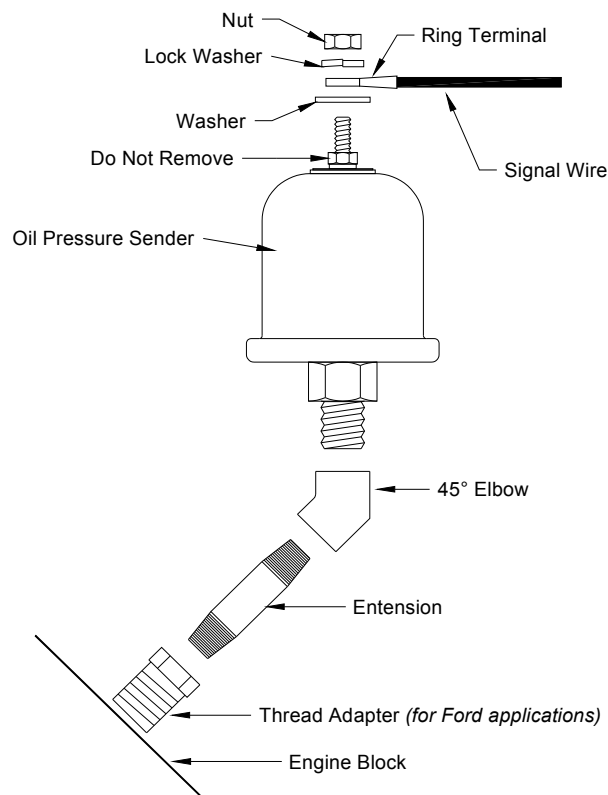


Default (8-cylinder) Dip Switch Setting

Oil Pressure Sender Installation

(Part No. SN52)

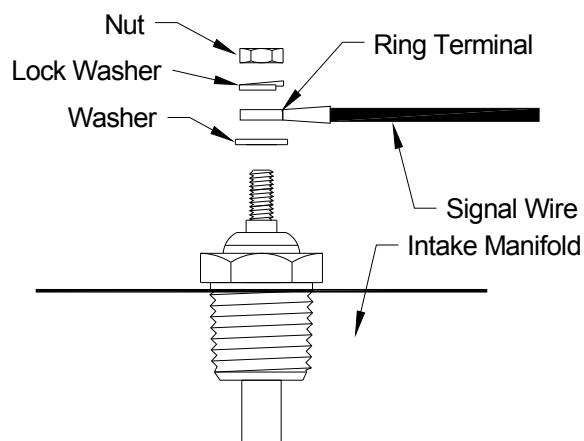
- 1) Disconnect battery before installation.
- 2) Only install Classic Instruments sending units when the engine is COLD.
- 3) DO NOT use Teflon tape on the threads. These threads are slightly tapered and designed to be self-sealing. The sender uses the threads for its ground connection and sealant may cause a poor ground causing inaccurate readings. If supplemental sealant is needed, we recommend using Loctite C5-A anti-seize. This is a copper based anti-seize which will allow a good electrical connection for the sender ground.
- 4) Connect a wire from the top terminal of the oil pressure sender to the **Blue** wire of the gauge wire harness.



Temperature Sender Installation

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

- 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. If supplemental sealant is needed, we recommend using Loctite C5-A anti-seize. This is a copper based anti-seize which will allow a good electrical connection for the sender ground.
- 4) Install the temperature sender into the intake manifold of your engine if possible. Installing the sender in the engine cylinder head may cause inaccurate temperature readings.
- 5) Connect a wire from the top terminal of the temperature sender to the **Green** wire of the gauge wire harness.
- 6) Tighten until snug. DO NOT OVER TIGHTEN!



Mount New Instrument Panel

- 1) Insert wiper switch into new instrument panel. Make sure the non-slotted mounting holes of the switch are toward the bottom of the new instrument panel. Use the original two screws saved from the original instrument panel to fasten the wiper switch to the new instrument panel.
- 2) Attach the original wiper switch plug to the back of the wiper switch.
- 3) Mount the new instrument panel to the dash using the 5 mounting screws and nut that were removed from the original instrument panel.

See mounting diagram below

