1970-1972

Chevelle

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
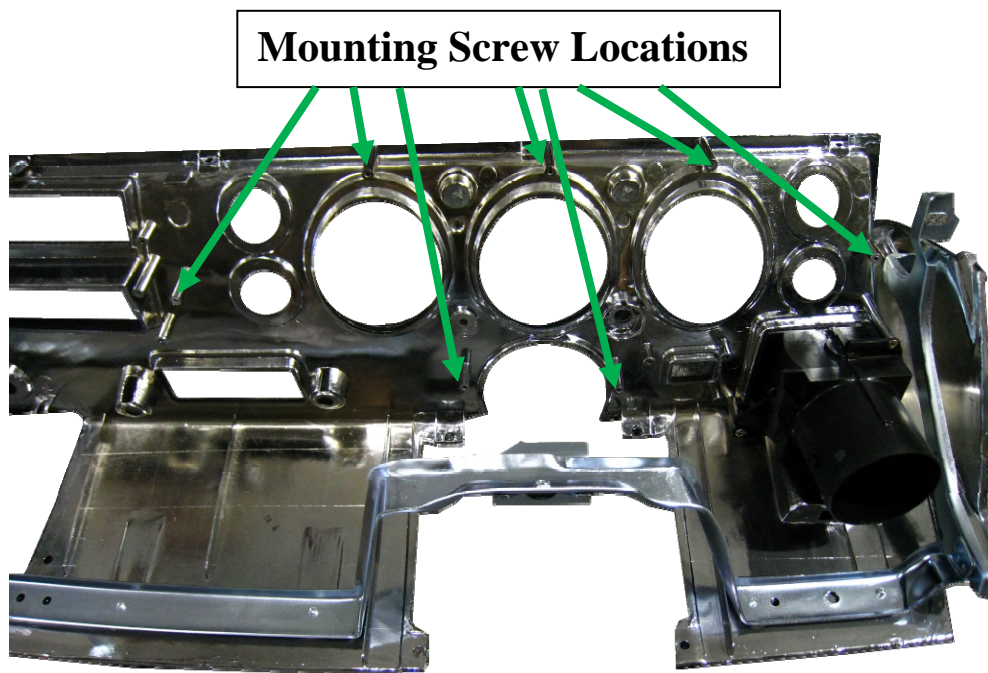
www.classicinstruments.com

Remove the Original Instrument Cluster from the Dash

1) Remove the dash pad.
2) Remove the four screws fastening the lower steering column trim piece with a Phillips screwdriver.
3) Remove the two nuts that hold the steering column in place.
4) Lower the steering column. Take note if any shims are on the column mount.
   a. NOTE: If the car is column shift the shift indicator cable will need to be removed from the right hand side of the column. Care must be taken not to break it.
5) Remove the four heater control panel screws and move the heater control panel out of the way.
6) Remove any speaker brackets that prevent the dash from being removed.
7) Remove the seven bolts/screws that hold the dash panel assembly in the car with a 7/16" wrench/socket/swivel-socket. Save the bolts/screws and take note of their locations.

Fastener Locations
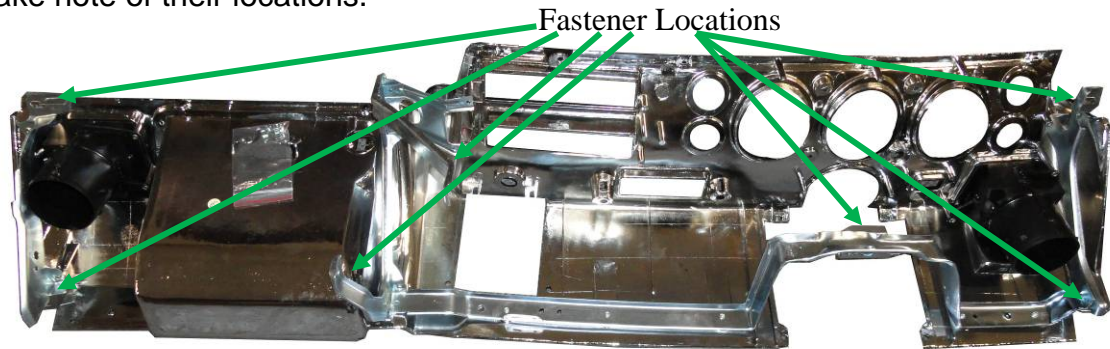
8) Pull the dash panel forward and remove the speedometer cable from the speedometer assembly.

9) Carefully disconnect any wire connections from the dash panel and components mounted in the dash panel or that are preventing the dash panel from being removed. See the below list as a guideline for connections to be removed:
   a. Cigarette lighter
   b. Blower motor
   c. Stereo
   d. Dash lights
   e. Glove box light
   f. Radio antenna
   g. Headlight switch
10) Remove the dash panel from the vehicle.
11) Remove the headlight switch.
12) Remove the original dash carrier with the seven mounting screws.

Mounting Screw Locations

13) Remove the instrument panel lens. Take care not to scratch the lens if you are reusing it.
14) Remove the speedometer cable from the vehicle.

Installing your Classic Instruments gauge package

1) Clean your original lens with a soft rag and cleaner if it is being reused.
2) Pull the supplied rubber bumper through the front side of the clock reset hole in the lens to seal the lens. Cut the excess length off the backside of the bumper. If the original lens is being reused and the hole already has a plastic plug, the included rubber bumper is not needed.

Rubber bumper
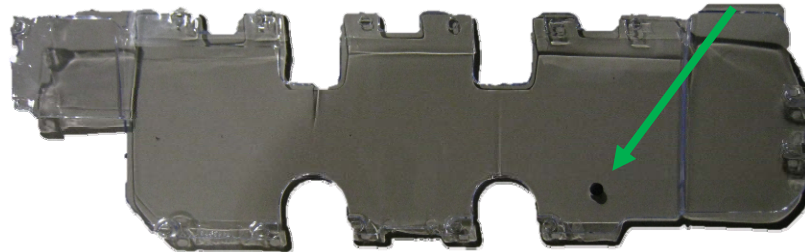
3) Carefully use compressed air to blow any dust off the gauge faces or out of the gauge carrier.
4) Place the lens on the dash carrier lining up the locating pins. Make sure the lens is completely seated on the carrier.
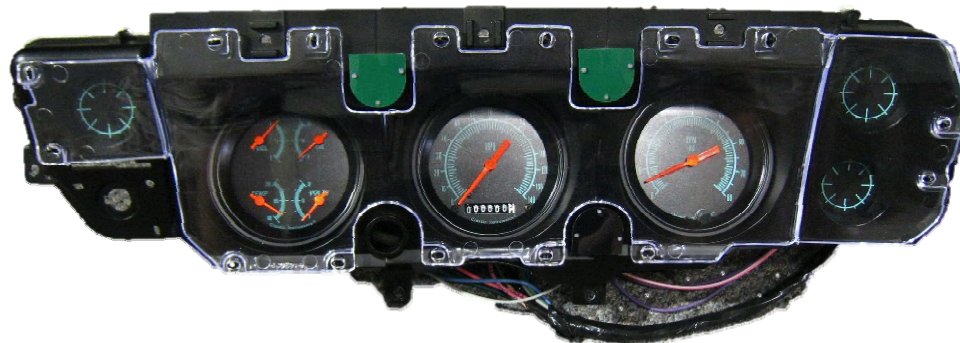
5) Place the headlight switch lens on the dash carrier using the three locating pins and slot. Two different colors of lens (white and green) are supplied; either can be used based on your personal preference.
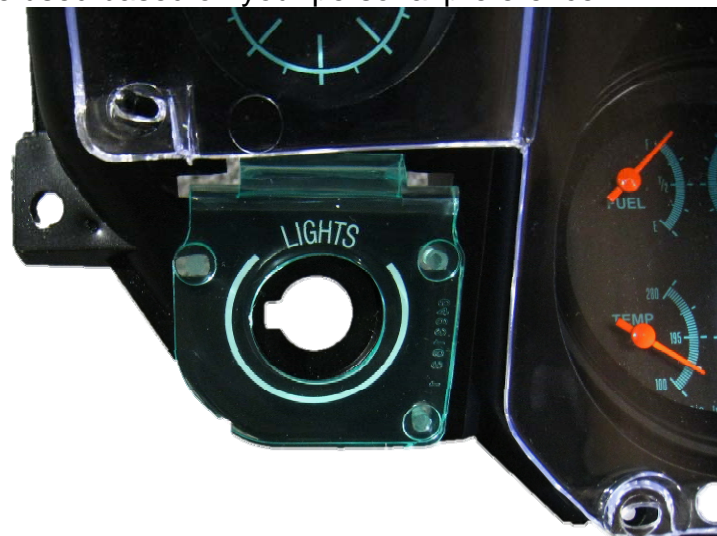
6) Install the gauge package into the dash with the supplied #8 high-low thread screws and a #2 Phillips screwdriver.

#8 High-Low Screws
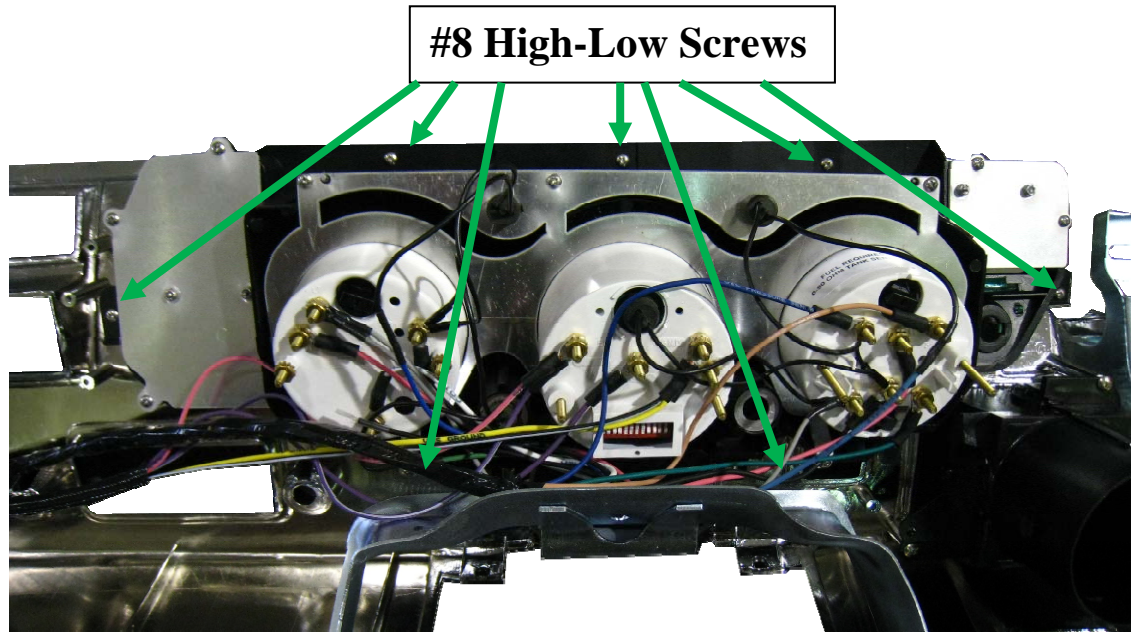
7) Reinstall the headlight switch.
8) Reinstall the dash panel into the vehicle.
9) Reconnect any wire connections that were disconnected to remove the dash from the vehicle.
10) Reinstall the speaker mounts and speakers.
11) Reinstall the heater control panel.
12) Reinstall the steering column with the original shims (if required) and two mounting nuts.
13) Reinstall the lower steering column trim piece with the Phillips-head screws.
14) Use the wiring diagram and information below to make the necessary wiring connections. Secure the wiring harness under the dash.
15) Calibrate the speedometer using the instructions starting on page 15. Classic Instruments recommends using the SkyDrive GPS speedometer sending unit (SN81) or Speedometer Signal Interface (SN74) to make the speedometer calibration easier. These parts will eliminate the need for the dip switches on the back of the speedometer housing which are difficult to access once the dash panel/instrument cluster are installed. If you choose to use the dip switch method of calibration the dash panel may need to be removed to access the back of the speedometer.
16) Reinstall the dash pad.

Wiring Diagram

Pink

Grey

+12V

White

Black

Lt. Green

Blue

Purple / White

Pink / White

Purple

B+

SIG

GND

Grey

Black / White

Yellow

Lt. Blue

Grey

Dk. Blue

Pink

Tan

Black

Dk. Green

Speedometer Harness

A B C D E F

Tachometer / Quad Harness

A B C D E F

Lighting Harness

A B C D

Speed Sensor Ground [*Yellow* - **A**]
Speed Signal [*Purple* - **B**]
Speed Sensor Power [*Purple / White* - **C**]
Spare [**D**]
Dedicated Chassis Ground [*Black / White* - **E**]
+12VDC Switched / Dedicated [*Pink / White* - **F**]

+12VDC Switched [*Pink* - **A**]
Good Chassis Ground [*Black* - **B**]
Temperature Signal [*Dk. Green* - **C**]
Tachometer Signal [*White* - **D**]
Fuel Level Signal [*Tan* - **E**]
Oil Pressure Signal [*Dk. Blue* - **F**]

Right Turn Indicator [*Blue* - **A**]
Left Turn Indicator [*Lt. Blue* - **B**]
High Beam Indicator [*Lt. Green* - **C**]
Dash Lights [*Grey* - **D**]

Wiring Your New Instrument Cluster

Speedometer Wiring with SN16 Signal

1) Always disconnect the positive lead from the vehicle battery before wiring any gauge.
2) Connect the **yellow** wire (position A) of the speedometer wire harness to the <u>black</u> wire of the SN16 pulse signal generator.
3) Connect the **purple** wire (position B) of the speedometer wire harness to the <u>white</u> wire of the SN16 pulse signal generator.
4) Connect the **purple / white** wire (position C) of the speedometer wire harness to the <u>red</u> wire of the SN16 pulse signal generator.
5) Connect the **black / white** wire (position E) of the speedometer wire harness to a dedicated chassis ground that is not contacting any other ground wires.
6) Connect the **pink / white** wire (position F) of the speedometer wire harness to a dedicated switched +12VDC power source.
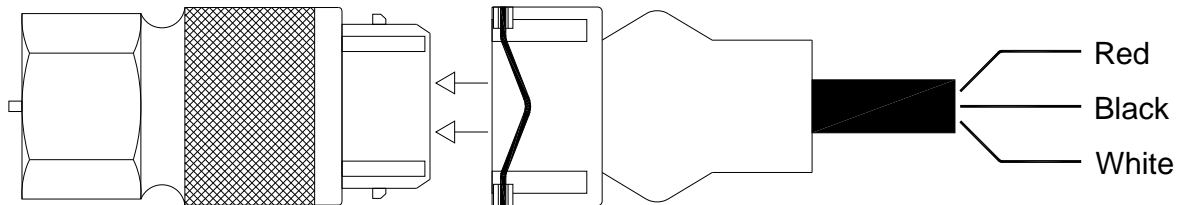
Red: +12VDC (*to purple / white wire of speedometer harness*)
Black:Ground (*to yellow wire of speedometer harness*)
White:Signal (*to purple wire of speedometer harness*)

Speedometer Wiring with SN74 Signal Interface

1) Always disconnect the positive lead from the vehicle battery before wiring any gauge.

2) Connect the **yellow** wire (position A) of the speedometer wire harness to the "GROUND" position of the SN74 speedometer signal interface box.

3) Connect the **purple** wire (position B) of the speedometer wire harness to the "OUTPUT" position of the SN74 speedometer signal interface box.

4) Connect the **purple / white** wire (position C) of the speedometer wire harness to the "POWER" position of the SN74 speedometer signal interface box.

5) Connect the **black / white** wire (position E) of the speedometer wire harness to a dedicated chassis ground that is not contacting any other ground wires.

6) Connect the **pink / white** wire (position F) of the speedometer wire harness to a dedicated switched +12VDC power source.

7) Connect one of the following wires to the SN74 "SENSOR GND" position of the SN74 speedometer signal interface box:
   a. Either wire of a VSS (two-wire) sender. (*see figure 1*)
   b. Black wire of a SN16 (if SN16 is being used). (*see figure 2*)

8) Connect one of the following wires to the SN74 "INPUT" position of the SN74 speedometer signal interface box:
   a. Either wire of a VSS (two-wire) sender which was not used in the previous step. (*see figure 1*)
   b. White wire of a SN16 (if SN16 is being used). (*see figure 2*)
   c. Computer speed signal wire. (*see figure 3*)

9) Connect the red wire of a SN16 (if SN16 is being used) to the "SENSOR PWR" position of the SN74 speedometer signal interface box. (*see figure 2*)

10) Connect each wire of the supplied pushbutton to the "PUSHBUTTON" positions of the SN74 speedometer signal interface box. (*pushbutton wires may be lengthened if desired*)

11) Set the switches on the SN74 speedometer signal interface box according to Table 1 below according to the speed signal you are using.

Speedometer Signal	SN74 Switch Setting
Computer (1-wire)	1 2 ON, 3 4 OFF
VSS (*2-wire*)	1 2 3 4 OFF
SN16 (*3-wire*)	1 2 ON, 3 4 OFF

Switch 1 **–** OFF = signal generator speed input, ON = ECM/PCM speed input
Switch 2 **–** OFF = high sensitivity, ON = low sensitivity
Switch 3 **–** OFF = 16,000ppm signal output, ON = 8,000ppm signal output
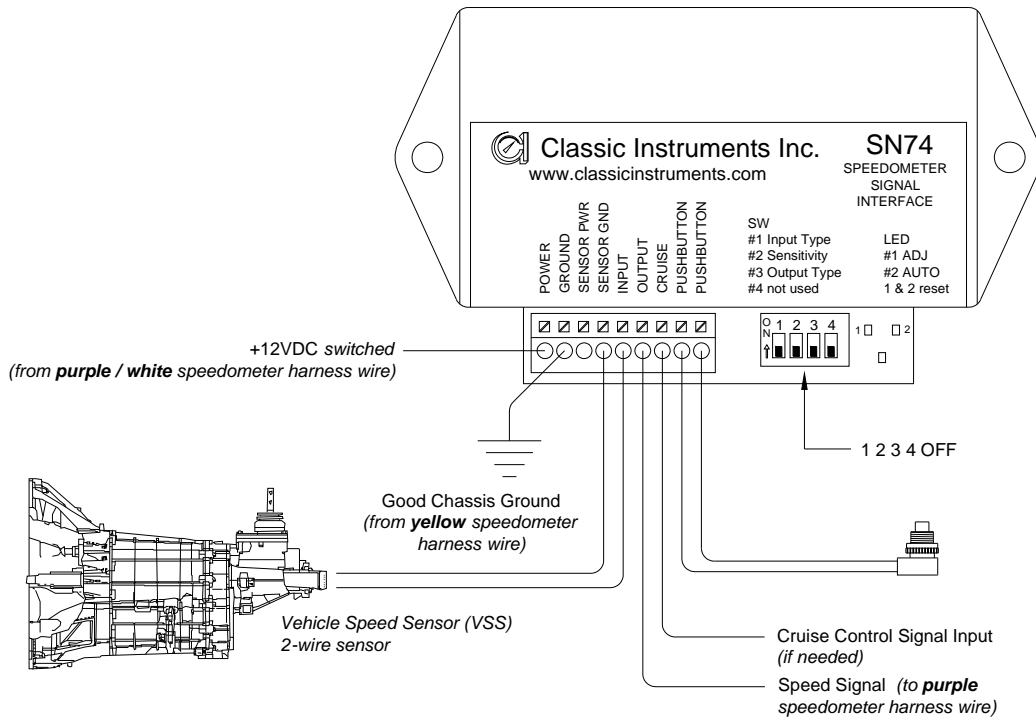Switch 4 **–** *Not Used*

Table 1

Figure 1: 2-wire VSS Speed Signal

Classic Instruments Inc.
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SN74
SPEEDOMETER
SIGNAL
INTERFACE

POWER
GROUND
SENSOR PWR
SENSOR GND
INPUT
OUTPUT
CRUISE
PUSHBUTTON
PUSHBUTTON

SW
#1 Input Type
#2 Sensitivity
#3 Output Type
#4 not used

LED
#1 ADJ
#2 AUTO
1 & 2 reset

+12VDC *switched*
*(from **purple / white** speedometer harness wire)*

ON 1 2 3 4   1 ☐   ☐ 2

1 2 ON
3 4 OFF

SN16 - Pulse Signal Generator

Good Chassis Ground
*(from **yellow** speedometer harness wire)*

Red
Black
White

Cruise Control Signal Input
(if needed)

Speed Signal *(to **purple** speedometer harness wire)*

Figure 2: SN16 Speed Signal

Classic Instruments Inc.
www.classicinstruments.com

SN74
SPEEDOMETER
SIGNAL
INTERFACE

POWER
GROUND
SENSOR PWR
SENSOR GND
INPUT
OUTPUT
CRUISE
PUSHBUTTON
PUSHBUTTON

SW
#1 Input Type
#2 Sensitivity
#3 Output Type
#4 not used

LED
#1 ADJ
#2 AUTO
1 & 2 reset

+12VDC *switched*
*(from **purple / white** speedometer harness wire)*

ON 1 2 3 4   1 ☐   ☐ 2

1 2 ON
3 4 OFF

ECM Computer

Good Chassis Ground
*(from **yellow** speedometer harness wire)*

Computer Speed Signal

Cruise Control Signal Input
(if needed)

Speed Signal *(to **purple** speedometer harness wire)*
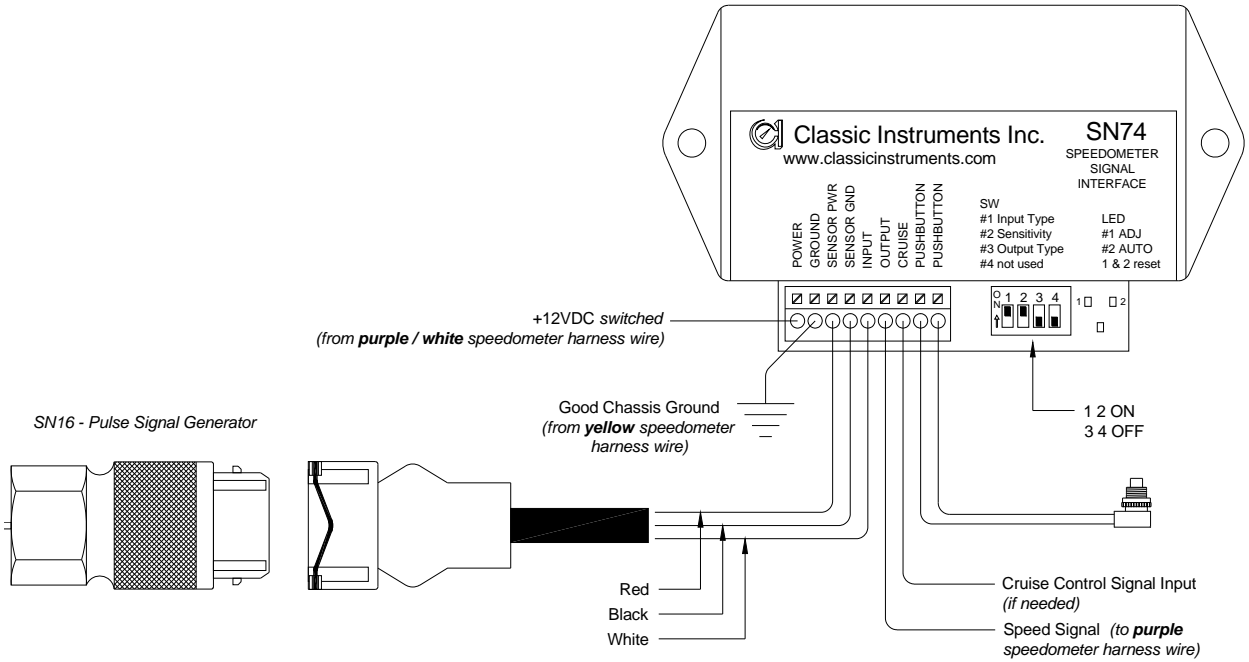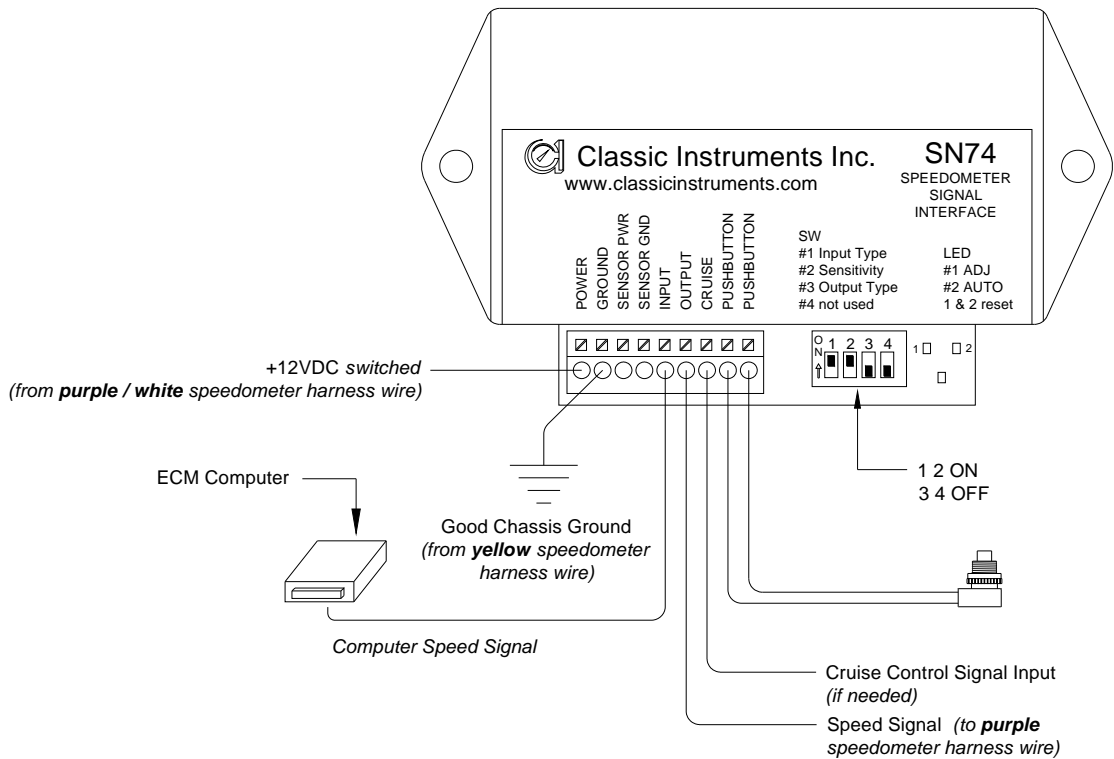
Figure 3: Computer Speed Signal

Tachometer / Quad Gauge Wiring

1) Always disconnect the positive lead from the vehicle battery before wiring any gauge.

2) Connect the **pink** wire (position A) of the gauge connector on the tachometer / quad wire harness to a +12VDC switched power source.

3) Connect the **black** wire (position B) of the gauge connector on the tachometer / quad wire harness to a good chassis ground.

4) Connect the **dark green** wire (position C) of gauge connector on the tachometer / quad wire harness to the supplied Classic Instruments temperature sender. (*see figure 4*)

5) Connect the **white** wire (position D) of the gauge connector on the tachometer / quad wire harness to the tachometer signal. (*see table 2*)

6) Connect the **tan** wire (position E) of the gauge connector on the tachometer / quad wire harness to the stock [*0-90 ohm*] fuel sender.

7) Connect the **dark blue** wire (position F) of the gauge connector on the tachometer / quad wire harness to the supplied Classic Instruments oil pressure sender. (*see figure 5*)

8) Connect the **blue** wire (position A) of the lighting connector on the tachometer / quad wire harness to the right turn indicator power wire of the vehicle's turn signal switch.

9) Connect the **light blue** wire (position B) of the lighting connector on the tachometer / quad wire harness to the left turn indicator power wire of the vehicle's turn signal switch.

10) Connect the **light green** wire (position C) of the lighting connector on the tachometer / quad wire harness to the high beam indicator power wire of the vehicle's light switch.

11) Connect the **grey** wire (position D) of the lighting connector on the tachometer / quad wire harness to the dash light power wire from the vehicle's light switch.
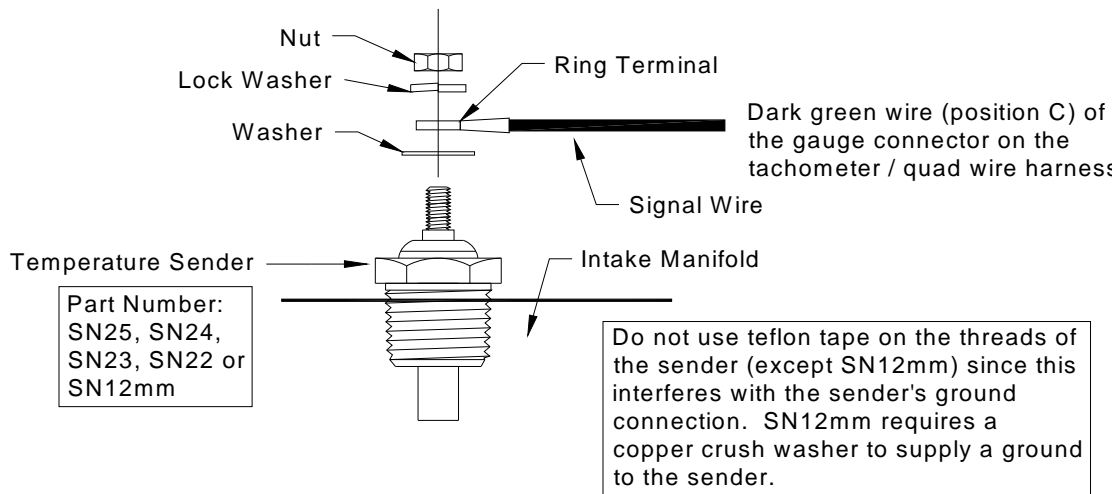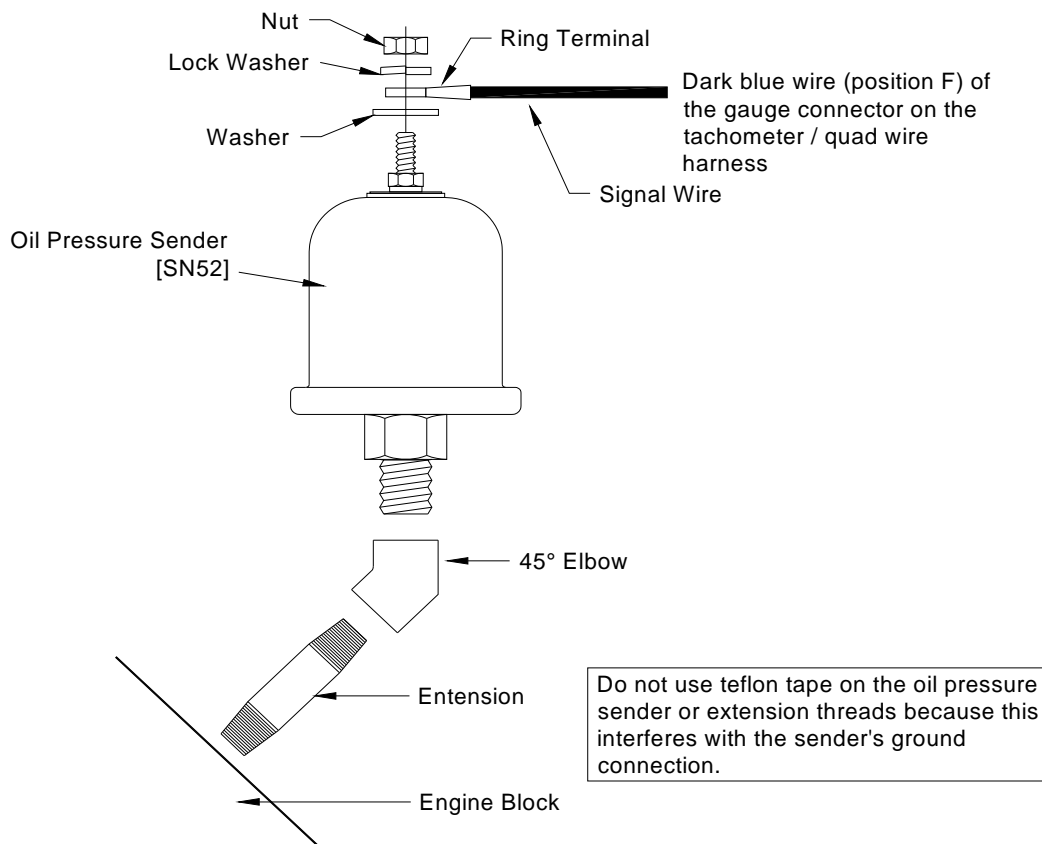
Nut

Lock Washer

Washer

Ring Terminal

Dark green wire (position C) of the gauge connector on the tachometer / quad wire harness

Signal Wire

Temperature Sender

Intake Manifold

Part Number: SN25, SN24, SN23, SN22 or SN12mm

Do not use teflon tape on the threads of the sender (except SN12mm) since this interferes with the sender's ground connection. SN12mm requires a copper crush washer to supply a ground to the sender.

Figure 4: Temperature Sender Wiring

Nut

Lock Washer

Washer

Ring Terminal

Dark blue wire (position F) of the gauge connector on the tachometer / quad wire harness

Signal Wire

Oil Pressure Sender [SN52]

45° Elbow

Entension

Do not use teflon tape on the oil pressure sender or extension threads because this interferes with the sender's ground connection.

Engine Block

Figure 5: Oil Pressure Sender Wiring

| Ignition System	Tachometer Signal Source
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 "-") **Important!** 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 at the 4-cylinder setting. Some signals require the use of either the SN76 tach adapter or a 1000 ohm .25 watt pull-up resistor installed between the signal and power of the tachometer.
All Other Ignition Systems	Please look at the owner's manual for the location of the tachometer signal.

*Table 2: Tachometer Signal Sources*

Calibrate the Speedometer

SN16 Signal Calibration

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 <u>known</u> 60mph by pacing a vehicle with a calibrated speedometer or by using a GPS.
4) Note what the speedometer is indicating at a <u>known</u> 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):
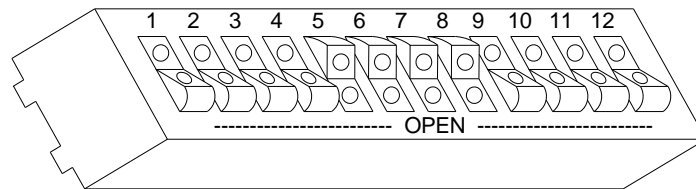
16,000 PPM Speedometer Calibration Chart
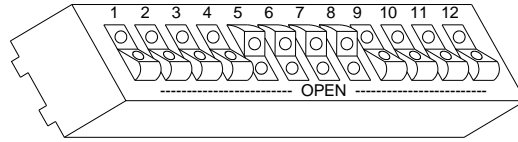
(Default Dip Switch Setting)   (Switch 5 6 7 8 OPEN)

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

SN74 Speedometer Signal Interface Calibration

<u>Marked Mile Calibration Mode</u>
(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)*

<u>Real-Time Calibration Mode</u>
(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. <u>Note:</u> *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.