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1970-78 Camaro
1979-81 Camaro

Gauge Cluster Kit Installation Instructions (510023)

Important facts about this kit.

1. The dash panel used in this picture is used by permission of Covan's Classic.

2. This kit requires some modification to your original under dash wiring harness. It is not intended to be a complete plug and play interface. We strive to make the integration of this product as easy as possible. However, in many cases there are no mating connectors due to obsolescence of original factory connectors. This requires substitution of components that will require modifications on the part of the installer.

3. As mentioned throughout the documentation included here, it is important to read the instructions that come with the gauges. This is important to identify the type of gauge used and any special requirements the manufacturer may have for installation.

4. This harness is designed to be used for Autometer Series I and Series II short sweep gauges. The harness is not compatible with Autometer full sweep gauges as they include their own sender harness assemblies. This harness assembly addresses connection of the water temperature, oil pressure, fuel, voltmeter, speedometer, and tachometer gauges, as well as indicator lights for turn signals, high beam lights, and emergency brake (if originally equipped).

5. Vehicle grounding and specifically instrument panel grounding are extremely important to the operation of you gauges. Check your grounds as this is the most common problem concerning proper operation of your gauges.

STEP 1:

Install the blade terminals to the back of each of the 4 small gauges. Secure the terminal with a lock washer and nut. There are specific left, center, and right hand terminals. Install as shown in the photo.

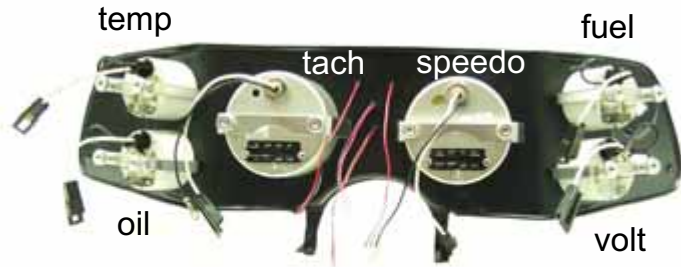NOTE: Voltmeters use the 'GND' and 'I' terminals only.

STEP 2:

Plug the appropriate lamp socket pigtails into the 4 smaller gauges. This picture shows the lamp socket on a Series I gauge. Series II gauges have an integral blade terminal for the lamp power and ground connection.

STEP 3: Insert the gauges into the housing in the locations shown.

temp

tach   speedo

fuel

oil

volt

STEP 4:

Drill 4 mounting holes for LED's, using a 5/32" drill bit, at the desired locations. Insert LED's in the hole from the front of the panel.

NOTE: The LED housings are a taper fit into the hole. Press the LED housing all the way in to tighten against the instrument panel.

STEP 5:

Connect the black ground wires from the lamp pigtails to the center ground studs of the smaller gauges as shown.

NOTE 1: This picture shows connection of individual light sockets as would appear on Series I gauges. The speedometer and tachometer have separate twist-in light sockets.

NOTE 2: This picture shows connection of lighting as would appear on Series II gauges. A separate blade terminal for power and ground exists for the internal lighting. The speedometer and tachometer have a specific lamp terminal within the 8 cavity plug.

STEP 6:

Install the mounting brackets on all the 6 gauges. The completed assembly is now ready for the connection of the wiring harness. Note that this assembly shows Series I gauges.

temp

tach   speedo

fuel

oil

volt
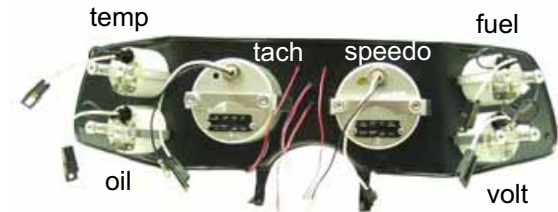
STEP 7:

Plug in gauge connections using the supplied connectors. Plug in the connectors in the order shown below. A typical plug-in is shown in this picture.

1. FUEL   pink / black / tan
2. TACH   pink / black / white
3. TEMP   pink / black / dark green
4. OIL   pink / black / dark blue
5. VOLT   pink / black
6. SPEEDO   pink / black / purple

STEP 8:

Plug each lamp power wire (white) into the mating connectors on each gray wire (DASH LIGHTS) on the new harness.

NOTE:
The supplied wiring harness comes with plug-in female terminals for the power and ground terminals of the Series II type 2 1/16 inch and 2 5/8 inch gauges. This is a direct plug into the terminals on the gauge. If you are using Series I gauges, you will have to remove these terminals and connectors and install the male and female disconnect terminals supplied in the kit to connect the individual light sockets. This picture shows this connection type. Please refer to the instruction sheet in the 500928 Gauge Side Wiring sub-kit for a more detailed explanation of the differences in the gauges.

STEP 9:

Select an LED lamp from the panel, and attach the appropriate signal lead wire from the harness, as noted below. Each signal wire will attach to the red LED lead wire from the panel. Trim the wires from the harness to the desired length before crimping.

LED color	function	power wire color
blue	high beam	light green
green	left hand turn	light blue
green	right hand turn	dark blue
red	brake	pink

STEP 10:

Install butt connectors, as shown, matching the wire functions noted above with the proper LED. Trim wires from the harness to the desired length before crimping.

Match the black wire from each LED panel lamp with a black ground wire from the harness for all LED lamps except the red brake warning LED.

If you are using the red brake warning LED lamp, remove the factory lamp socket and attach the black lead wire from this LED lamp to the factory brown wire. As noted above, the red will connect to the factory pink wire.

LED color	function	signal ground wire color
red	brake	tan

STEP 11:

A grounding kit is included for your headlight and wiper switch. Connect as shown, routing to a good chassis ground with the supplied ring terminal.
As noted in the wiring charts, this is only required for 1970 and 1971 cars.
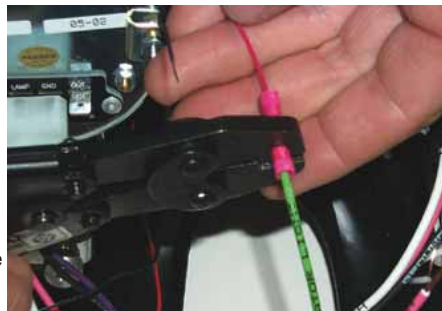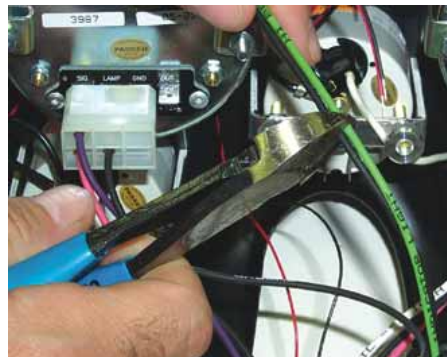
STEP 12:

The speedometer connection has a separate long yellow wire with a ring terminal on the end. This wire is twisted around the purple vehicle speed sensor lead that is plugged into the speedometer connector. The purpose of this wire is to cancel out any signal interference to the speedometer and <u>must be grounded to a good chassis ground</u> after the instrument cluster is finally installed.

STEP 13:

This kit uses an electronic programmable speedometer which requires a vehicle speed sensor that replaces the original speedometer cable at the transmission. Below are the connections for the various vehicle speed sensors that may be supplied in your kit.
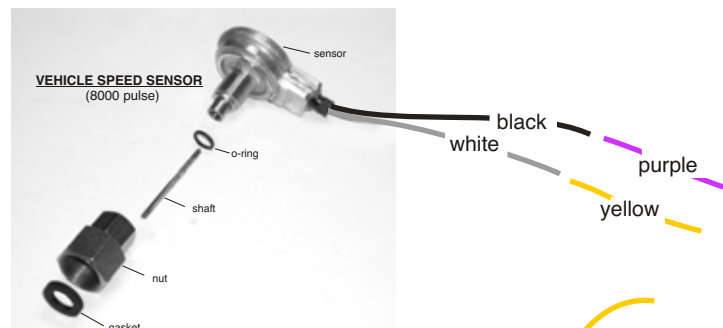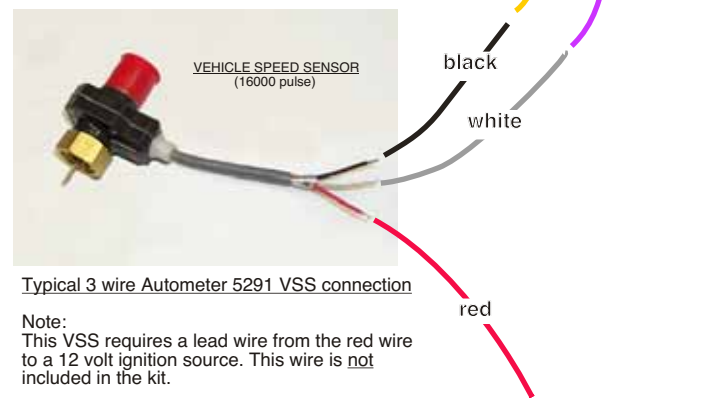
VEHICLE SPEED SENSOR (8000 pulse)

sensor
o-ring
shaft
nut
gasket

black
white
purple
yellow

Typical 2 wire VSS connection

VEHICLE SPEED SENSOR (16000 pulse)

yellow
purple
black
white
red

Typical 3 wire Autometer 5291 VSS connection

Note:
This VSS requires a lead wire from the red wire to a 12 volt ignition source. This wire is <u>not</u> included in the kit.

connect to 12 volt ignition source

STEP 14:

This completes the wiring of the gauge cluster. The next steps involve the preparation of the under dash harness to incorporate the mating plug connection for the gauge harness disconnect. There are two different instrument cluster designs for the 1969 Camaro.

The first design is the warning light dash design that was only available with warning lights for oil pressure, water temp., and generator.

The second design is the optional factory gauge design that was available with factory gauges for tachometer, oil pressure, water temp., and ammeter. Under dash connections differ for each type of dash design. The following pages will identify the connections for each dash design.

LONG BARE LEADS

lt green: connect to hi beam LED red lead
black: connect to hi beam LED black lead

lt blue: connect to LH turn LED red lead
black: connect to LH turn LED black lead

dk blue: connect to RH turn LED red lead
black: connect to RH turn LED black lead

tan: connect to the brake LED black lead
pink: connect to the brake LED red lead

gauge lamp ground (black)

oil gauge (dk blue,blk,pink)

gauge lamp ground (black)

temp gauge (dk green,blk,pink)

gauge lamp ground (black)

fuel gauge (tan,blk,pink)

gauge lamp ground (black)

volt meter (blk,pink)

gauge lamps (grey)

tachometer

speedometer

PLUG TOGETHER

to a good chassis ground (yellow)

STEP 15:
Connect your existing instrument cluster wires to the new wiring kit using the supplied connectors and terminals and pin location chart. Be sure to maintain color continuity with the gauge side wiring when plugging the wires into our connectors.
Using the enclosed PIN LOCATION chart, apply the appropriate terminal to your existing wires and plug into the supplied connector. There are empty cavities. Note: Empty cavities can be used for remaining wires from the original cluster connectors which are not used in this application. This will protect the wires.

white
empty
dk blue
lt blue
lt green

dk green
dk blue(oil)
tan
tan(fuel)

purple
yellow
empty
black
grey
pink

COIL   TACH

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DASH SIDE CONNECTIONS
Use the included PIN LOCATION CHART on the following page to identify the wires which will be used for this connection process. Be sure to maintain color continuity (and wire function) with the mating connectors from the previous page.
Using the information below, connect the necessary wires to the connectors shown.
If you are using the wires from your existing instrument cluster connector, remove the existing terminals and terminate using the new terminals supplied in the kit.
Plug these wires into the new cluster connector maintaining color continuity with the mating connectors from the previous page.
Extra wires are provided in the kit if it is necessary to complete the cluster connections.
Route the long purple & yellow wires to the transmission Vehicle Speed Sensor (VSS).
Be sure to twist the wires as shown! This is necessary to prevent signal interference.

plug into mating cluster connector on page 6

yellow

purple

purple & yellow to VSS (twisted)

black

gray

pink

to a chassis ground

connect to instrument lamp feed

connect to a fused 12V ignition source

connect to hi beam wire

lt green

dk green

dk blue (oil)

white

tan (brake)

tan (fuel)

lt blue

dk blue (rh turn)

plug into mating cluster connector on page 6

connect to temp sending unit

connect to oil sending unit

connect to coil (tach)

connect to brake wire

connect to fuel sender wire

connect to lh turn wire

connect to rh turn wire

black

white

purple

yellow

yellow

purple

black

white

red

connect to 12 volt ignition source

VEHICLE SPEED SENSOR (8000 pulse)

sensor

o-ring

shaft

nut

gasket

Typical 2 wire VSS connection

VEHICLE SPEED SENSOR (16000 pulse)

Typical 3 wire Autometer 5291 VSS connection

Note:
This VSS requires a lead wire from the red wire to a 12 volt ignition source. This wire is not included in the kit.
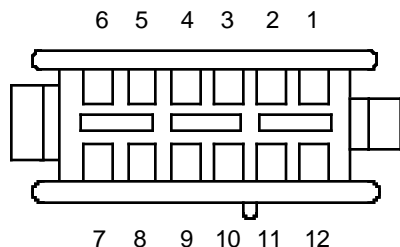
4

Printed Circuit Cluster Connector Pin Locations

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6  5  4  3  2  1
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7  8  9  10  11  12
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1970-81 CAMARO DASH PRINTED CIRCUIT CONNECTOR PIN LOCATIONS

Circuit No.	Function	Wire Color	1970- factory gauge Pin Location	1981 warning light Pin Location	
8	Instrument Lights	gray	5	5	
11	High Beam Indicator	light green	10	10	
14	Left Turn Indicator	light blue	9	9	
15	Right Turn Indicator	dark blue	11	11	
25	Alternator light	brown		4	see note 1
30	Fuel tank sender	tan, tan/blk stripe, or pink	4	2	
31	Oil pressure sender	dark blue/wht stripe, or tan	12	3	
33	Brake Warning	tan, or tan/wht stripe	7	7	
35	Coolant temp sender	dark green, or dark green/wht stripe	2	12	
39	12 Volt fused power	pink or pink/blk stripe	3, 8	1, 8	
39	voltmeter	pink			see note 3
105	ammeter	black			see note 2
106	ammeter	black/white			see note 2
121	Tachometer	brown or white	1		see note 4
150	ground	black	6	6	

Notes:

1 Factory gauges cars were not equipped with an alternator charge light

2 1970-75 factory gauge cars used an ammeter that used a separate two position connector.

3 1976-81 factory gauge cars used a voltmeter that used a separate single position connector.

4 1970-71 factory gauge cars wired the tachometer from the cluster connector thru a firewall grommet to the coil.

   1972-75 factory gauge cars wired the tachometer from the cluster connector thru the bulkhead engine harness to the coil.

   1976-81 factory gauge cars wired the tachometer from the cluster connector thru a separate tachometer wire to the coil.

5 1970-71 cars require the grounding wires for the headlight and wiper switches.

6 1972-81 cars ground both the headlight and wiper switches directly throught the switch connector.

7 1975-81 cars have a wiper switch light.

6 1972-1981 cars have a seat belt warning light mounted directly into the dash unit.

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1970-81 CAMARO DASH PRINTED CIRCUIT BOARD CONNECTOR PIN LOCATIONS FOR ORIGINAL WARNING LIGHT DASH CLUSTERS

Circuit Number	Wire color	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
8	Gray	5	5	5	5	5	5	5	5	5	5	5	5
11	Light green	10	10	10	10	10	10	10	10	10	10	10	10
14	Light blue	9	9	9	9	9	9	9	9	9	9	9	9
15	Dark blue	11	11	11	11	11	11	11	11	11	11	11	11
25	Brown	4	4	4	4	4	4	4	4	4	4	4	4
30	Pink	-	-	-	-	-	-	-	-	-	-	2	2
30	Tan	-	-	-	2	2	2	2	2	2	2	-	-
30	Tan / Black stripe	2	2	2	-	-	-	-	-	-	-	-	-
31	Dark Blue / White stripe	3	3	3	3	3	3	3	3	3	3	-	-
31	Tan	-	-	-	-	-	-	-	-	-	-	3	3
33	Tan	7	7	7	7	7	7	7	-	-	-	7	7
33	Tan / White stripe	-	-	-	-	-	-	-	7	7	7	-	-
35	Dark Green	12	12	12	12	-	-	-	-	12	12	12	12
35	Dark Green / White stripe	-	-	-	-	12	12	12	12	-	-	-	-
39	Pink	1, 8	1, 8	1, 8	1, 8	1, 8	1, 8	1, 8	1, 8	1, 8	1, 8	-	-
39	Pink / Black stripe	-	-	-	-	-	-	-	-	-	-	1, 8	1, 8
150	Black	6	6	6	6	6	6	6	6	6	6	6	6

1970-81 CAMARO DASH PRINTED CIRCUIT BOARD CONNECTOR PIN LOCATIONS FOR ORIGINAL GAUGE DASH CLUSTERS

Circuit Number	Wire color	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
8	Gray	5	5	5	5	5	5	5	5	5	5	5	5
11	Light green	10	10	10	10	10	10	10	10	10	10	10	10
14	Light blue	9	9	9	9	9	9	9	9	9	9	9	9
15	Dark blue	11	11	11	11	11	11	11	11	11	11	11	11
25	Brown	-	-	-	-	-	-	-	-	-	-	-	-
30	Pink	-	-	-	-	-	-	-	-	-	-	4	4
30	Tan	-	-	-	4	4	4	4	4	4	4	-	-
30	Tan / Black stripe	4	4	4	-	-	-	-	-	-	-	-	-
31	Dark Blue / White stripe	12	12	12	12	12	12	12	12	12	12	-	-
31	Tan	-	-	-	-	-	-	-	-	-	-	12	12
33	Tan	7	7	7	7	7	7	7	-	-	-	-	-
33	Tan / White stripe	-	-	-	-	-	-	-	7	7	7	7	7
35	Dark Green	2	-	-	-	-	-	-	-	2	2	2	2
35	Dark Green / White stripe	-	2	2	2	2	2	2	2	-	-	-	-
39	Pink	3, 8	3, 8	3, 8	3, 8	3, 8	3, 8	3, 8	3, 8	3, 8	3, 8	-	-
39	Pink / Black stripe	-	-	-	-	-	-	-	-	-	-	3, 8	3, 8
121	Brown	1	1	1	1	1	1	1	1	1	1	-	-
121	White	-	-	-	-	-	-	-	-	-	-	1	1
150	Black	6	6	6	6	6	6	6	6	6	6	6	6

6