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CONTACT US

EMAIL:

service@newvintageusa.com

Phone:

248-850-5482

If requesting service on your item please contact us for an RZA number above or

[HERE](#)

Our location and other ways to reach us

[HERE](#)

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CONNECTING TO VARIOIUS ENGINES

All NVU instruments are standalone and are separate from the vehicle system. This enables installation on virtually any vehicle combination. The senders included in the kit must be used to operate properly.

EXTERNAL LINKS BELOW

[INTERFACING WITH GM PCMS](#)

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DIRECT DRIVE INFO

The NVU Direct-Drive system is basically our 3-1 Phoenix gauges with the minor gauges mounted remotely instead of on a circuit board inside the gauge itself. External links below

[**INSTRUCTION BOOKLET**](#) **DOWNLOAD**

[**DIRECT DRIVE SYSTEM AND WIRING**](#)
[**BASICS**](#)

[**PHOENIX FEATURES**](#)

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DIRECT DRIVE INFO

Every Phoenix Speedometer and tachometer with an OLED screen have 3 built-in indicators near the pointer as shown in the front page of the instruction booklet. They are Deadfronted which means they are invisible when off.

The indicator wiring is covered in all of the diagrams, use the BLUE, GREY and TAN wires to activate the indicators. 12V + is required to turn them on.

If you need a ground signal to trigger the lights a relay will be required. A video covering it is located [HERE>>>](#)

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MISSING LIGHT BULBS?

The 2-1/16" direct Drive gauges all have integrated lighting and no additional bulbs are required. Apply 12V+ to the white wire on any 2-1/16" driver gauge or harness to have the lights turn on.

The cases are the same we use on multiple applications for other customers that use separate bulbs. The Direct drive gauges do not use this feature

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TACHOMETER CONNECTIONS

Tachometers are designed to use inputs from a wide range of inputs that are high voltage to no voltage. Please see the external links below for more information

TACHOMETER CARDS:

1K Ω RESISTOR: Use this on negative side of the coil connections where it's a Pertronix or high-performance system. If in doubt use it.

10K Ω RESISTOR Use this as shown (not inline) on GM PCMS only.

[**LINK TO TACH CONNECTIONS
INFO PAGE**](#)

[**LINK TO TACH CONNECTIONS
VIDEO**](#)

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TACHOMETER INFORMATION

Tachometers are designed to use inputs from a wide range of inputs from high voltage to no voltage.

For tachometer connections to ignition systems please take a look [HERE>>>](#)

NVU had 2 types of tachometers:

TACHOMETER WITHOUT OLED SCREEN:

This type uses Phoenix internals but has a simplified interface WITHOUT an OLED screen. The settings are accomplished via DIP switches on the back. Link to the instructions are [HERE >>>](#).

PHOENIX AND PHOENIX DIRECT DRIVE TACHOMETERS:

These are exclusive to NVU products and have many features built in.

[**MORE ON THE PHOENIX AND DIRECT DRIVE
HERE>>>**](#)

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PHOENIX AND DIRECT DRIVE TACHOMETER FEATURES

The following are external links covering set-up and features.

[GENERAL PHOENIX INFO PAGE](#)

[GENERAL PHOENIX FEATURES VIDEO](#)

[GENERAL DIRECT-DRIVE SYSTEM](#)

[TACH FILTERS AND SPEEDS](#)

[DIESEL TACHOMETER INSTALLATION](#)

[TACHOMETER SIGNALS](#)

[AUXILLARY INPUTS AND ICONS](#)

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PHOENIX AND DIRECT DRIVE SPEEDOMETER FEATURES

The Phoenix and Direct drive speedometers have the exact same functions with the Direct-drive units having the ports on the back for minor gauges.

[HOW DO SPEEDOS AND SIGNALS WORK?](#)

[GENERAL PHOENIX INFO PAGE](#)

[GENERAL PHOENIX FEATURES](#)

[GENERAL DIRECT-DRIVE SYSTEM](#)

[SETTING UP THE CALIBRATION](#)

[SPEEDOMETER FILTERS](#)

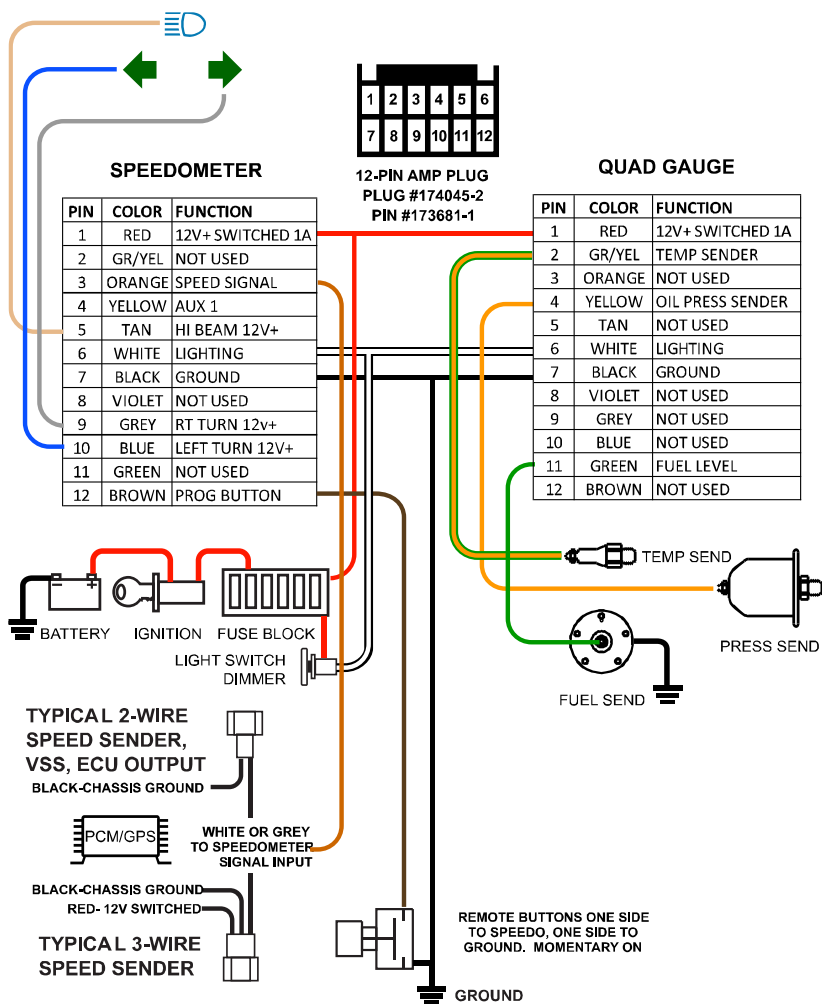
[USING TREMEC SPEED SIGNALS](#)

[SETTING ODOMETER MILAGE](#)

[PERFORMANCE TIMERS](#)

MULTIFUNCTION GAUGES

All Phoenix instruments have the same wiring diagram and plug to make things easy on the installer. Simply follow the color-coded diagrams. Each diagram features a schematic with colored wiring and a chart with purpose and color.



[MORE NEXT PAGE>>>](#)

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MULTIFUNCTION GAUGES

Some things regarding multi-function gauges:

Only write up the wires on that particular gauge. For example, if that gauge does not have a tachometer in it, do not connect the tach wire, hence the instructions saying NOT USED

Do not use any of the wires labelled NOT USED

For oil pressure and water temperature you MUST use the included temperature and pressure senders. If lost or damages NVU does have replacements

Fuel gauge: The DIP switches on the back of the gauge that has FUEL can be set to different ranges on the tank . For more information on programmable fuel gauges take a look [HERE >>>](#)

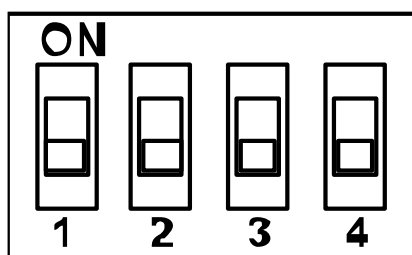
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PROGRAMMABLE FUEL GAUGES

All Phoenix, Direct drive and A90 based gauges have programmable fuel gauges. The range is selected by changing the DIP switches on the back of that gauge. Follow the chart in the instruction book for more details. The gauge must be powered off during the changing of the switches. All programmable fuel gauges are dampened to make up for fuel slosh.



SENDER TYPE MAKE/YEAR	RANGE E-F ?	1	2	3	4
EARLY GM/FORD PRE 65	0-30	OFF	OFF	ON	OFF
GM 65-89	0-90	OFF	ON	OFF	OFF
GM 90S-UP	40-250	OFF	ON	ON	OFF
FORD/AMC/MOPAR 65-86	73-10	OFF	OFF	OFF	ON
FORD 87-UP	20-145	ON	ON	OFF	OFF
UNIVERSAL/SW	240-33	ON	OFF	OFF	OFF
CUSTOM/EARLY FORD	168-15	ON	OFF	ON	OFF
CHRYSLER/DODGE 86-96	110-10	ON	ON	ON	OFF
CHRYSLER/DODGE 97-up	220-20	ON	ON	OFF	ON

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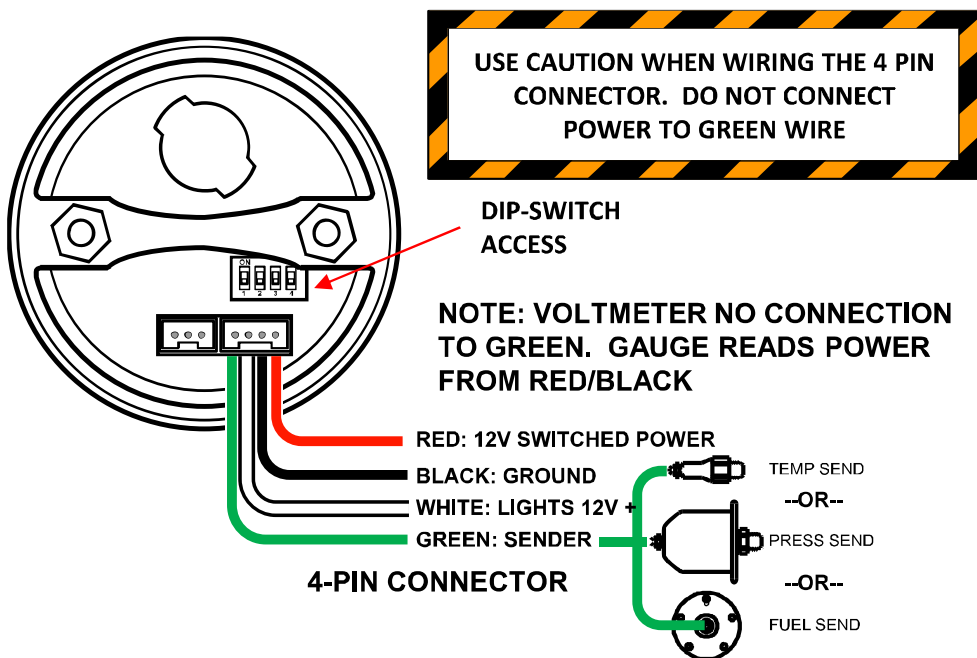
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A90 GAUGES

NVU A90 platform gauges are identified by the white plastic case with 2 harness ports and DIP switches. The gauges are able to accept various inputs based on the gauge dial. Wiring for each type is in the instruction booklet and the video link below.

[INSTRUCTION BOOKLET LINK](#)

[A90 GAUGE VIDEO](#)



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SENDER INFORMATION

NVU analog instruments operate on 3 types of signals:

PULSED INPUTS: These are used for rotating measures of speed. Vehicle and engine speed are examples.

RESISTANCE TO GROUND: The senders that measure this are Fuel, Pressure and Temperature

Voltage input: The vehicle voltage is measured internally to the gauge and no additional sender or wiring is required.

Transducers are used to measure pressure as well and output a .5-4.5V signal.

0-5V is generally output by controllers for other units such as AFR,

For a complete detail on each style please take a look at this link [HERE>>>](#)

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DIRECT FIT GENERAL INFORMATION

NVU direct fit kits generally consist of our Unique styled gauges and a mounting solution to install the gauges in the dash. Click the links for examples of each. One thing that makes this system great is the ability to place the gauges in any position you like. [Click here for TIPS AND TRICKS >>>](#)

There are 3 types of installations:

THROUGH THE HOLE: This setup installs NVU gauges through the front of a hole in the dash. The gauges are then held in place with back clamps.

BEHIND THE PANEL: This installs the gauges similar to the factory location with the gauges being shown in the factory holes behind the dash panel.

CLUSTER REPLACEMENT: A panel that holds the gauges replaces the original cluster completely in the factory location

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THROUGH THE HOLE: This setup installs NVU gauges through the front of a hole in the dash. The gauges are then held in place with back clamps.

For a full drawing with all of the dimensions:

[LINK HERE>>](#)



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BEHIND THE PANEL: This installs the gauges similar to the factory location with the gauges being shown in the factory holes behind the dash panel. Here you can see how the new kit fits in the factory location



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NVU

NEW VINTAGE USA
DETROIT

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CLUSTER REPLACEMENT: A panel that holds the gauges replaces the original cluster completely in the factory location. Shown below is how the cluster replacement panels appear in the dash.



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TIPS AND TRICKS

Gauges can be installed in any position to suit your liking

Spacer Rings can be used to move gauges around in the hole to position them exactly where you like

All holes are oversized/slotted to allow movement of the gauges and bracket to enable an exact fit

Depth of the gauges does limit some installations and many require clearing of parts on the factory dash

Some panels have LEDs integrated into the factory panel. This allows the use of the factory indicators on the dash. Black is ground, red is 12V+

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TROUBLESHOOTING

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[**SPEEDOMETER TROUBLESHOOTING**](#)

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[**DIRECT DRIVE MINOR GAUGE TROUBLESHOOTING ERRATIC OR NON-FUNCTIONING**](#)

[**MINOR GAUGE SIGNAL TROUBLESHOOTING**](#)

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SPEEDOMETER TROUBLESHOOTING

[**SPEEDOMETER DOES NOT OPERATE AT ALL**](#)

[**SPEEDOMETER POWERS UP BUT DOES NOT READ SPEED**](#)

[**SPEEDOMETER DOES NOT READ AT LOW VEHICLE SPEEDS**](#)

[**HOW TO CALIBRATE THE SPEEDOMETER DRIVE A MILE AND MANUALLY**](#)

[**SPEEDOMETER IS INACCURATE**](#)

[**WHICH FILTER TO USE**](#)

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[**WHAT IS THIS BUTTON FOR?**](#)

[**AIN'T GOT NO BILINKERS!**](#)

[**STUCK IN SETUP MODE**](#)

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CHECKING SPEED SIGNALS

The speed sender or PCM is what will be telling the speedometer how fast the vehicle is moving. Without a proper signal the speedometer will not register speed correctly or at all.

The next Page has links to our online troubleshooting for speed senders

[**NEXT PAGE>>>**](#)



[HALL EFFECT SCREW-ON SENDER \(3-WIRE\)](#)

This type can be for any make or model, it is a sender that replaces the traditional mechanical cable. It can be a screw on GM or bolt on Ford style

[2-WIRE SCREW-ON SPEED SENDER](#)

This is the same as above designed to replace the mechanical cable, It has 2 wires and generates an **AC sine wave signal**.. It can be a screw on GM or bolt on Ford style

[2-WIRE MAGNETIC PICKUP \(OE OR INTEGRATED STYLE\)](#)

Has the same function as the screw-on style but is integrated into the transmission by the manufacturer. Generates an **AC sine wave signal**

TREMEC 2-WIRE SENDER [VIDEO LINK HERE>>>](#)

The tremec sender is the same as any OE style but the signal is generally a weak low-voltage AC sine wave at low speeds (under 30 MPH) You may have to change the speedometer FILTER. An alternate option is all Tremec transmissions have a Ford style speedometer cable output. This sender will work on Tremec Transmission cable outputs (you will need a drive gear and circlip)

PCM- [GM PCM LINK HERE >>>](#) [HOLLEY TERMINATOR LINK HERE>>](#)

Generally NVU gauges have been integrated with GM PCMs (computers) The GM PCM reads the speed signal from the VSS (Vehicle Speed Sender) and then outputs a hall effect signal. Check your PCM documentation or wiring harness manufacturer for the proper connection point. The signal is tested just like a hall effect sender [HERE](#)

GPS

Generates a signal from reading position based on GPS. Call the sender manufacturer directly. **What is important is the pulse count coming out of the GPS unit and the pulse count in the speedometer is the same.** Pulse setting will vary on the gauge architecture check your manual.



WHICH SPEEDO FILTER DO I USE?

While the instruction booklet does have general guidelines for which filter to use, it may take some experimentation to use the one that is right for your build. You can change the filter at any time. The speedometer may or may not read speed until the correct filter is selected.

[SPEEDOMETER FILTER SELECTION VIDEO](#)
[HERE >>>](#)

SOURCE	TYPICAL PPM	SIGNAL TYPE	INPUT FILTER SET
GM PCM (ALL)	4,000	5-12V HALL EFFECT	5V=M, 12V=H
AFTERMARKET 3 WIRE	16,000	12V HALL EFFECT	H
AFTERMARKET 2 WIRE	8,000 OR 16,000	AC SINEWAVE	L
OE 2 WIRE (GM)	40,000	AC SINEWAVE	L
NV4500	108,000	AC SINEWAVE	L
TREMEC	16,000 OR 40,000	LOW AC SINEWAVE	L
GPS SENDER	8,000 OR 16,000	VARIES	5V=M, 12V=H



HOW DO I CALIBRATE MY SPEEDOMETER?

All NVU speedometers ship at 16,000 PPM (Pulses Per Mile). You may need to change the calibration to have the speedometer operate accurately in your application. This can be done by driving a measured mile or by setting the pulses manually.

How do I know how long a mile is? You can use another vehicle to see how long a mile is and mark it. Or you can use mile markers.

[SPEEDO CALIBRATION VIDEO>>](#)

SOURCE	TYPICAL PPM	SIGNAL TYPE	INPUT FILTER SET
GM PCM (ALL)	4,000	5-12V HALL EFFECT	5V=M, 12V=H
AFTERMARKET 3 WIRE	16,000	12V HALL EFFECT	H
AFTERMARKET 2 WIRE	8,000 OR 16,000	AC SINEWAVE	L
OE 2 WIRE (GM)	40,000	AC SINEWAVE	L
NV4500	108,000	AC SINEWAVE	L
TREMEC	16,000 OR 40,000	LOW AC SINEWAVE	L
GPS SENDER	8,000 OR 16,000	VARIES	5V=M, 12V=H

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SPEEDOMETER IS INACCURATE / POWERS UP BUT DOES NOT READ SPEED/ INACCURATE/DOES NOT READ AT LOW SPEEDS

There are several reasons for the speedometer to be inaccurate or not reading lets go through them. The speedometers have a less than .01% failure rate so its best to check these items first before assuming there is an issue.

[SPEEDOMETER NEEDS TO BE CALIBRATED](#)

[SPEEDOMETER FILTER NOT CORRECT](#)

[SPEED SENDER FAULTY](#)

[SPEED POINTER AND SCREEN OFF BY MORE THAN 2 MPH](#)

[LOW SPEED ISSUE-TREMEC TRANSMISSION VIDEO](#)

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**SPEEDO POINTER AND SCREEN OFF BY
MORE THAT 2 MPH**

While some variation in the speedometer circuitry is normal, if the screen reading is correct but the pointer is not, the pointer may have been mis calibrated or moved in some way. Please contact us and we can take care of this for you.

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GAUGE DOES NOT OPERATE AT ALL

NVU speedometers and tachometers are very robust and have a failure rate of less than .01% so its best to assume the speedometer is operational and check the following.

- There is power on the RED wire
- The BLACK wire is the ground. NOT the BROWN wire. If you ground the brown wire instead of the black the gauge will be stuck in
- Probe the pins at the plug to check for power and ground

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WHAT IS THE BUTTON FOR?

The programming button is used to set-up and use the functions in the gauge. It is required to use the gauge.

You can place the button wherever you want.

To install the button simply follow the instructions/diagrams. One side goes to the BROWN or BROWN/WHITE wire and the other to ground. Pressing the button will then operate the functions in the speedometer.

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STUCK IN SETUP MODE

99% OF THE TIME THIS IS FROM MIS-WIRING THE GAUGE GROUND. THE black WIRE IS THE GROUND. If the Brown or brown/white wire is grounded instead of the black, the button circuit will be damaged. Give us a call and we can repair it as long as you double check those connections.

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TACHOMETER TROUBLESHOOTING

[TACHOMETER POWERS UP BUT NOT READING RPM](#)

[TACHOMETER DOES NOT POWER UP](#)

[TACHOMETER IS NOT ACCURATE](#)

[TACHOMETER IS TOO SLOW](#)

[TACHOMETER FILTERS](#)

[CONNECTING TO GM PCMS](#)

[CONNECTING TO HOLLEY SYSTEMS](#)

[TACHOMETER CARDS/RESISTORS](#)

[TACHOMETER CONNECTIONS VIDEO](#)

[TACHOMETER CONNECTIONS LINK](#)

[STUCK IN SETUP MODE](#)

[WHAT IS THIS BUTTON FOR?](#)

[DIESEL TACHOMETERS](#)

[DIESEL TACHOMETER SENDER CHECK SAME AS
SPEEDOMETER](#)

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TACHOMETER NOT ACCURATE OR NOT READING RPM

If the tachometer is operating and reading engine speed there are only a few reasons for it not to be accurate

FILTERS NOT SET PROPERLY

NOT SET TO PROPER CYLINDERS: make sure you have the correct cylinder or PPR setting. The setting is not always what is obvious. Not set to proper setting for input – check you application on coil, vs GM PCM, Holley, etc. Not all settings are for the number of cylinders.

Diesel tachs: the wiring diagram is different than GAS, input is on the ORANGE wire not the violet.

DIESEL INSTRUCTIONS

DIESEL VIDEO

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2-1/16" MINOR DIRECT DRIVE GAUGE ERRATIC/NOT WORKING

There are about 80 hand soldered connections in the minor gauge system. While we do test each unit and system several times, on occasion one of these joints may fail along the way. This video is an easy way to figure out if there is an issue with the minor gauges

[DIRECT DRIVE MINOR GAUGES CHECKING](#)



MINOR GAUGE SIGNAL TROUBLESHOOTING

There are 3 parts of the system to check in this process. A failure in any one can lead to issues with the minor gauges. (Fuel, temperature, oil pressure) All 3 of these are resistance to ground.

First check that all of the senders have a good ground. If you used Teflon tape or pipe dope make sure that the sealant is at the end of the threads so the top part of the threads can get a good bite into the block. A bad sender ground is easy to fix but can cause a headache.

Before checking the signals, make sure the Direct Drive system is working properly

[HERE >>>](#)

[TEMPERATURE GAUGE TROUBLESHOOTING](#)

[OIL PRESSURE GAUGE TROUBLESHOOTING](#)

[FUEL GAUGE TROUBLESHOOTING](#)



TEMPERATURE GAUGE INPUT TROUBLESHOOTING

If the gauges all power up and do a sweep, then proceed below:

Remove the sending unit wire form the sending unit.

Power on the gauge

Ground the sending unit wire, gauge should peg HOT

Remove the wire from ground, the gauge should peg LOW

YES the gauge did this [CHECK SENDING UNIT](#)

NO THE GAUGE DID NOT DO THIS CONTINUE BELOW

Perform the same test at the gauge, disconnect the sending unit wore at the gauge.

Turn on the key, gauge should do a full sweep and return to zero

Ground the sending unit wire (GREEN/YELLOW), gauge should peg HOT.

YES this worked but the test at the sending unit did not> There is a break or a ground short in the sending unit wire, inspect.

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TEMPERATURE SENDING UNIT TESTING

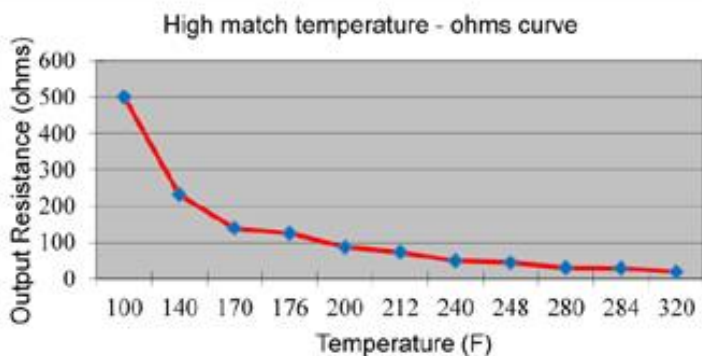
Tests for the sending unit must be made with the sender disconnected from the gauge. Leaving connected to the gauge will cause faulty readings as the inside of the gauge will also be read.

The Temperature senders are a brass housing with a thermistor inside. This thermistor creates resistance to ground with changes in temperature. The resistance **DECREASES** at temperature **INCREASES**.

To test the sender, use a multimeter and probe the sending unit stud or output wire (red) and ground the other end of the multimeter (black)

You should see the following results with 10%:

Temp (F)	Temp(C)	ohms
100	37.8	500
140	60	231
170	76.7	138
176	80	125
200	93.3	86.5
212	100	72.6
240	115.6	49.3
248	120	44.4
280	137.8	29.9
284	140	28.5
320	160	19



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OIL PRESSURE SENDING UNIT TESTING

If the gauges all power up and do a sweep, then proceed below:

Remove the sending unit wire from the sending unit.
Power on the gauge

Ground the sending unit wire, gauge should peg HIGH
Remove the wire from ground, the gauge should peg LOW

YES the gauge did this [CHECK SENDING UNIT](#)

NO THE GAUGE DID NOT DO THIS CONTINUE BELOW

Perform the same test at the gauge, disconnect the sending unit wire at the gauge.

Turn on the key, gauge should do a full sweep and return to zero

Ground the sending unit wire (YELLOW) , gauge should peg HIGH.

YES this worked but the test at the sending unit did not> There is a break or a ground short in the sending unit wire, inspect.

NO this did not help. Please contact NVU tech line at 248-850-5482

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OIL PRESSURE SENDING UNIT TESTING

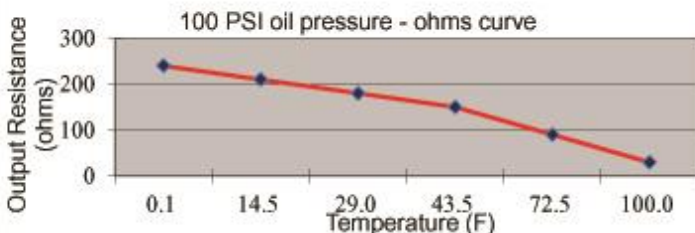
Tests for the sending unit must be made with the sender disconnected from the gauge. Leaving connected to the gauge will cause faulty readings as the inside of the gauge will also be read.

The pressure senders are a metal housing with a pressure sensitive diaphragm inside. This diaphragm creates resistance to ground with changes in temperature. The resistance **DECREASES** at pressure **INCREASES**.

To test the sender, use a multimeter and probe the sending unit stud or output wire (red) and ground the other end of the multimeter (black)

You should see the following results with 10%:

Mpa	PSI	ohms
0	0.1	240
0.1	14.5	210
0.2	29.0	180
0.3	43.5	150
0.5	72.5	90
0.7	100.0	29.8



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FUEL GAUGE AND SENDER TESTING

All NVU Phoenix, Direct Drive and A90 fuel gauges are fully electronic, programmable and dampened. They operate on a wide range of tanks and rarely have issues so its best to start with the tank and sending unit first. All direct fit kits come pre-set to the range for your vehicle operation. You can check the settings if needed below.

SETTING UP THE FUEL GAUGE RANGE WITH THE DIP SWITCHES

CHECKING THE GAUGE OPERATION

HOW DO I FIGURE OUT WHAT FUEL SENDER I HAVE?

HOW DO I SET UP AN ADJUSTABLE FUEL SENDER?



CHECKING THE FUEL GAUGE OPERATION

Once you know your fuel gauge range per the DIP switches, its easy to test.

Remove the signal wire from the sending unit. This should be connected to the GREEN wire on the gauge.

Your gauge will be set to a range that goes from LOW-to HIGH Ω , or HIGH to LOW Ω . For example, 0-90 Ω (empty-full) would be LOW-HIGH (empty-full) and 73-10 would be HIGH-LOW.

Turn on the gauge. Ground the signal wire. The gauge should move toward the LOW range (ground is zero Ω). The gauge will move slowly in a dampened fashion and speed up a little.

Remove the wire from ground. The gauge should move to the HIGH direction (infinite ohms is high). The gauge will move slowly in a dampened fashion and speed up a little.

If this works as explained the gauge is operating properly.



HOW DO I FIGURE OUT WHAT FUEL SENDER I HAVE?

All ranges are listed EMPTY-FULL

240-33 UNIVERSAL AFTERMARKET

0-90 60-LATE 80S GM

0-30 EARLY (PRE-66) GM AND SOME EARLY FORD**

73-10 FORD 60S-LATE 80S

16-158 MID/LATE 80S FORD

If you purchased a sender form somewhere like a tank manufacturer, give them a call

You can also test with a multimeter to see what you have. Make sure the sender is not connected to the gauge or you will also read what is inside the instrument as well causing a faulty reading.

Sender out of the tank: Measure the resistance on the sender output and ground (usually the base of the sender or a separate ground lead). Move the sender UP and Down (you need to know which way is up). Measure the readings at EMPTY and FULL there you go!

Sender in the tank.

Its easiest if you have a full or empty tank, measure resistance from the sender to ground. The number tells you the value.

[NEXT PAGE>>>](#)



HOW DO I FIGURE OUT WHAT FUEL SENDER I HAVE?

CHECKING SENDER RESISTANCE AGAINST GAUGE READINGS:

Once we have figured out which sender you have, let's make sure it is operating properly. THE SENDER AND GAUGE MUST MATCH OR THE SYSTEM WILL NOT OPERATE PROPERLY.

Below is a chart of common sender values and their approximate resistance outputs, these are general and may be within a few ohms during testing.

The gauge cannot be connected to the sender during the tests, or you will read the inside of the gauge and the sender at the same time creating a false reading.

Using a multimeter set on OHMS measure between the sender post and ground.

This check should also be performed at the end of the sender wire at the gauge to confirm the same reading is being seen by the gauge (gauge must be disconnected)

RANGE	EMPTY	RESISTANCE TO GROUND (OHMS)			
		1/4	1/2	3/4	FULL
240-33 UNIVERSAL	240	150	90	68	33
73-10 FORD (NON-LINEAR)	73	56	42	25	10
0-90 GM 65-87	0	24	45	70	90
0-30 GM/FORD EARLY	0	7	15	21	30
FORD LATE	16	51	87	122	158

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HOW DO I SET UP AN ADJUSTABLE FUEL SENDER?

NVU Universal fuel senders are designed to be the same size mounting holes(5-hole) and range (240Empty-33 Full) as the industry standard for aftermarket and marine.

Mounting holes:

If your tank came with pre-drilled holes, the float arm should already be in the correct position as the tank manufacturer has already figured out the best position for the float arm. If this is not the case, make sure you plan ahead before drilling. Ensure that the tank does not have any obstructions (pumps, baffles, etc) for the flat arm.)

[**NEXT PAGE >>>**](#)

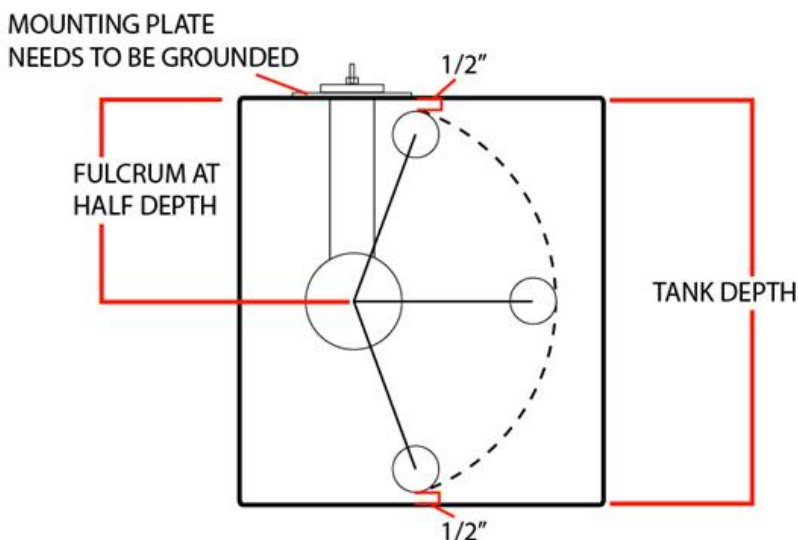
HOW DO I SET UP AN ADJUSTABLE FUEL SENDER?

Setting the depth:

1. Measure the tank depth from the top of the tank to the bottom.
2. Set the fulcrum at the center point of the tank (half). You can cut or mount the fulcrum on the upper arm if needed, as long as its in the center of the tank.
3. Slide the float arm in and out until the sender can swing all the way up and all the way down without hitting the top or bottom of the tank. (see pic below)
4. Lock down all bolts, cut off excess float arm (leave about 1" and bend 90 degrees on back side of nut to prevent falling out if nut comes loose).
5. Check for proper swing

Helpful hint:

Make a full-size drawing of your tank on a piece of cardboard like the one below. Lay your sender down on the cardboard like a template to check depth and float arm swing. That makes things much easier.



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TRADITIONAL “OLD SCHOOL” SETUPS

Its easy to install NVU gauges on just about any engine new or old. Just follow the wiring diagrams and you are all set.

Speed signal: We have GM and ford cable replacement senders as well as GPS. Also works on most OE style speed senders and PCM signals.

Tachometer: Accepts signals from coils, MDS boxes and distributors. Operates on most PCM pulse signals as well including GM LS.

Fuel level: Programmable fuel level operates on most fuel senders

Temperature: Uses our NVU temperature sender, bushings are available to adapt to standard and metric threads

Oil pressure: Uses our NVU oil pressure sender, bushings are available to adapt to standard and metric threads

Volts: Internally read

Indicators: Simply wire to a 12V+ trigger

Lighting: LED perimeter and backlit styles available

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HALL EFFECT 3-WIRE SPEED SENDER

Check for mechanical engagement.

Remove the speed sender from the cable output on the transmission. Leave plugged in.

Turn on the key, using a drill, spin the sender shaft. You should see action on the speedometer.

YES I see action on the speedometer when I spin the drill. This means if you see action with manual spinning but not when the sender is installed on the transmission that there is some sort of mechanical engagement issue. The sender is not being spun by the transmission.

- Check that the drive gear is in the transmission and spinning when tires are rotated
- Check that the drive gear square drive is not out of round. the spec is .014"x.104"
- on Ford style senders: Is the gear installed on the end of the sender? It was on the cable when it was removed.

NO I do not see action on the speedometer when spun manually



HALL EFFECT 3-WIRE SPEED SENDER

Test 1: Spin 6V test

Remove sender from vehicle

Apply 12V+ power to the red lead

Ground to the black lead.

Using a multimeter, set on DC current probe the signal wire (white) with the red probe, ground the black lead. Spin in the sender with a drill motor.

You should see 6V on the line. This is an average of the hall effect signal switching quickly from power to ground.

YES I SEE 6 V: The speed sender is operating properly. The gauge may need to be calibrated or there is a break in the signal, power or ground wire to the sender. If any one of those 3 wires have an issue then the sender will not send a signal to the speedometer.

NO I DO NOT SEE 6V proceed to TEST2:

TEST 2

Apply 12V+ power to the red lead

Ground to the black lead.

Using a test lamp, apply one side to the signal and one to ground (if an LED lamp make sure the polarity is correct) Slowly spin the sender, the lamp should blink as the sender is turned

Do the same test with one lead on the signal and the other on power. same result should occur, lamp will blink as the sender is rotated.

YES I SEE THE LAMP BLINKING: There is a break in the signal, power or ground wire leading to the sender. Check your connections and repeat the test on the 4-pin connector.

NO I DO NOT SEE THE LAMP BLINKING. Please contact NVU tech department at 248-850-5482



AC SINEWAVE 2-WIRE SPEED SENDER

2-wire speed senders (screw-on and OE integrated style) both generate an AC sine wave internally without any power being supplied.

One wire is connected to a good ground (keep the wire short) and the other to the speedometer. It does not matter which wire is which.

-You cannot split a signal from a 2-wire speed sender (have more than one item connected to it for example, one speed sender cannot operate a cruise control and a speedometer the signal strength will be degraded by 1/2).

-Check for mechanical engagement.

Remove the speed sender from the cable output on the transmission. Leave plugged in.

Turn on the key, using a drill, spin the sender shaft. You should see action on the speedometer.

YES I see action on the speedometer when I spin the drill. This means if you see action with manual spinning but not when the sender is in

stalled on the transmission that there is some sort of mechanical engagement issue. The sender is not being spun by the transmission.

- Check that the drive gear is in the transmission and spinning when tires are rotated

- Check that the drive gear square drive is not out of round. the spec is .014"x.104"

- on Ford style senders: Is the gear installed on the end of the sender? It was on the cable when it was removed.

[NO I do not see action on the speedometer when spun manually](#)



AC SINEWAVE 2-WIRE SPEED SENDER

2-wire speed sender electrical test

The testing is the same for all 2 wire senders, screw-on or OE integrated style.

1. Using a multimeter set on AC voltage
2. Probe one side of the sender wire with the red lead, the ground wire with the black lead. (senders that have been removed from the vehicle (screw on) wires are interchangeable)

Spin the sender shaft with a drill (screw-on style) or spin the tires. You should see voltage on the signal wire. Most speed senders will output between 8-18V AC. NVU speedometers will read down to 4V on most occasions even though the specification for aftermarket products is 6V.

You will see the voltage climb as speed increases. You can also see this [VIDEO](#) for screw on-types

YES I SEE VOLTAGE ABOVE 6V-speed sender is good. IF SPEEDOMETER DOES NOT OPERATE CHECK CALIBRATION AND SIGNAL AT PLUG/SPEEDOMETER CONNECTION.

I DO NOT SEE ANY VOLTAGE OR IT IS VERY LOW

Speed sender is most likely bad or going bad. You can as a last resort before contacting the speed sender manufacturer for the output signal strength specifications. You may also want to try [SEE FILTER VIDEO HERE >>>](#)

If the sender voltage falls below 2 or 1.5V the sender is bad.



SCROLLING SCREENS

Also known as EMI (Electro Magnetic Interference)

The cause of the screens scrolling with engine RPM speed is due to an issue in the electrical system. It is either arcing in the ignition system, alternator or other rotating assembly such as a motor. You may notice it when a certain motor is turned on.

This is caused by an open-air arc creating a Radio Frequency (RF) emission causing the instruments to think the button is being depressed. The radio frequency is being emitted and the wires are acting like an antenna. Other sensitive electronics may be affected. This is a know industrywide issue especially on imported HEI systems.

The engine may seem to be running fine but there is defiantly an open-air arc in the system somewhere. We do have a wire-in solution to cover up the issue, but it will still be there, it is not solving the actual problem. We suggest trying to solve the issue before using our ferrite-bead solution.

We have a full in-depth article on this on our website

[HERE >>>](#)