



**NEW VINTAGE USA  
DETROIT**

**NEW VINTAGE INSTRUMENT AND GAUGE KIT INSTALLATION  
INSTRUCTIONS  
AIR CORE GAUGES WOODWARD, 1967, 1940, PERFORMANCE**



# INDEX

THE BASICS, TOOLS AND SENDERS	page 2
SPEEDOMETER QUICK SET-UP	page 3
INSTALLATION DIAGRAMS	page 4-7
PROGRAMMABLE SPEEDOMETER SUPPLEMENTAL	page 8-13
TROUBLESHOOTING	page 14

Thank you for choosing New Vintage USA products. We strive to provide the finest quality and design components available on the market. If you need technical assistance, please call 248.850.5482 or email [info@newvintageusa.com](mailto:info@newvintageusa.com)

## New Vintage USA 5-Year Warranty

New Vintage USA warrants all merchandise against defects in workmanship and materials for 60 months. After the 60 month period, a pro-rated service fee of no more than 50% production costs may be applied. This warranty applies to all instrumentation products, excluding senders. The warranty does not apply to a product used in a manner for which it was not designed, or if it has been altered in any way.; New Vintage USA LLC is not responsible for any damage or costs associated with any product that has been purchased. This is a limited warranty as identified in the Magnuson-Moss Warranty Act of 1975.

## Warranty Service

Service can be obtained during the normal warranty period by contacting New Vintage and obtaining a Return Authorization Number (RZA#). New Vintage will repair or replace any item found to be defective and return ship to no cost via ground or post office services. Other shipping/international services will be applied at additional cost. Buyer is responsible for shipping to New Vintage for warranty repair. Return shipping will be the responsibility of the customer if the product is found to be damaged or out of warranty. An RZA number must be obtained and proper return/warranty form accompanied with the product.

## Missing items>Returns

Missing items/returns must be processed within 15 days of end user receiving the product. All returned must be shipped back to the place of purchase. Any return shipping costs to New Vintage are the responsibility of the purchaser. An RZA number must be obtained and proper return/warranty form accompanied with the product. A restocking fee not to exceed 10% may be applied to items that must be repackaged. Any item returned in a non-usable condition will be returned or charged to the customer.

Missing items must be reported within 15 days of receiving the product. Items found to be missing will be shipped via ground or postal service at no charge. Expedited/international shipping options are available at an additional charge. It is the policy of New Vintage to quickly replace any items that may be missing in a timely manner but not to overnight or expedite shipping in any way at no cost.



**NEW VINTAGE USA,LLC**  
**2415 BURDETTE**  
**FERNDALE, MI 48220**  
**248.850.5482**  
[www.newvintageusa.com](http://www.newvintageusa.com)

## **BEFORE YOU BEGIN:**

Read these instructions completely.

Plan out your wiring scheme ahead of time. Use the included wiring diagrams to help guide your wire routing

Use 14 ga. wire on all connections to sending units.

Use electrical solder and heat shrink tubing or appropriate solder less connectors to make all wiring connections

Disconnect the vehicle's battery

Do not use thread sealer on the sending units, they have a tapered thread

Have a plan. Mock up parts or layout as needed. It takes a little more time, but will save time and money in the end.

## **Recommended Tools and Materials Needed for Installation**

14 and 16 ga. stranded wire  
Spade or Bullet connectors  
Momentary push-button  
Pressure sender for hour meter  
Electrical solder (optional)  
Heat shrink tubing (optional)  
Soldering iron (optional)  
Measuring tape or ruler  
Engine adaptors for senders  
4 3/8 hole saw  
Wire cutters  
Wire stripper/crimper  
Files  
Various hand tools:  
wrenches, screwdriver, etc

Installation of gauges:

1. Locate suitable positions for your gauges. The gauges fit in a 4-3/8" and/or 3-3/8" holes. Take note of the anti-rotation notches and add this feature where required.
2. Slide gauge through hole and add backing clamp over the retaining studs. Using the included washers and nuts, tighten to a snug fit

## **Wiring the gauges:**

Run the power wiring from the gauges to an appropriate positive (+) on the fuse block after the battery. This applies to the switched 12V+ and gauge lighting

Connect the ground to a good dedicated ground on the chassis

Run each wire to the appropriate sender and use the proper connector for each item (eyelet, spade, etc.) from the sender to the dash. Leave some extra slack in the wire and label it.

Ensure that wires will not chafe on holes by using grommets and that they will clear any moving objects.

Once wires are run from the appropriate sender location to the gauges location, connect to the corresponding wire on the Packard connector with solder and heat shrink tubing or a solder less connector.

NOTE: The 4-3/8" speedometer lighting is wired via tabs on the back. The bulb is a GE 194 The 3-3/8" speedometer lighting is LED lighting which is internal, no replacement is required.

## **Sender installation**

You must use senders with the proper ohm match for your gauge, using mis-matched senders will result in improper readings on your gauge.

Water temperature 450-29.5 ohm  
The water temperature sender has a 1/8 NPT end. It should be installed close to the thermostat on the intake manifold. There are usually ports for temperature on the block in the water jackets, which can be used as well.

Oil pressure. 240-33ohm  
The sender has a 1/8 NPT end on it. Check for your factory location for a pressure port and install.

Fuel level: 240-33 w/ sender, 0-90, 73-10, 0-30  
The fuel gauge range (ohms) must match sender

# PROGRAMMABLE SPEEDOMETER QUICK START SHEET EASY SET-UP IF YOU JUST WANT TO GET GOING WITHOUT READING THE BORING SPEEDOMETER SUPPLEMENTAL

## CALIBRATING THE MECHANICAL SPEEDOMETER

Your mechanical speedometer has a universal 1:1 drive ratio. If your stock speedometer was accurate before, this one has the same drive ratio.

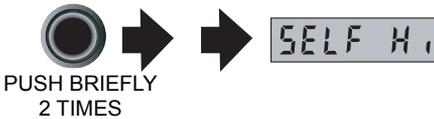
Calibration is achieved by changing the various drive gears in your transmission. Please consult your transmission shop for a selection of various gears.

## CALIBRATING THE ELECTRONIC SPEEDOMETER

With the key on, in normal operating position, press the remote pushbutton for approximately 2 seconds. The word HELLO will appear in the odometer window



When the button is released, it will read "CLR ODO" scroll through the menu by briefly pressing the button and the 3rd item will be "self HI"



Wait 4 seconds and "PENDING" will appear. The speedometer is now waiting for input to start counting pulses per mile. Push the button, drive a measured mile, do not turn off ignition, stopping and starting movement is OK. "SELF HI" will appear while driving.



At the end of the mile, push the button again, "CALCING" will appear briefly. Push the button 2 more times to "DONE" your speedometer is now calibrated, enjoy. You may repeat the process as many times as needed. The setting will be stored in the



### NOTES:

The pointer may or may not move during calibration depending on the pulse count per mile

If the speedometer hangs at calculating, this indicates one of 2 things:

1. The speedometer did not receive any pulses from the sender-check sender signal
2. The 2nd SELF HI step was missed

### SPEED SENDER TROUBLESHOOTING:

Check for power and ground if applicable

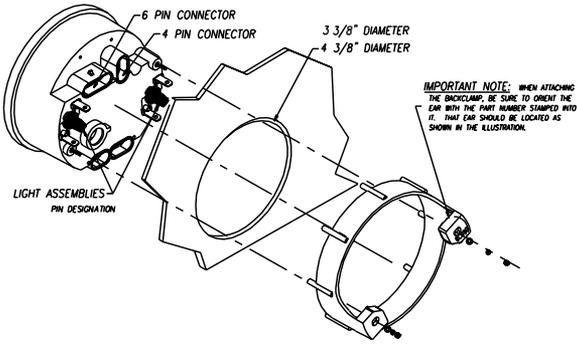
With a drill motor spin the sender with the key on and the sender removed from the transmission

Integrated speed senders /2 wire senders: should emit 8-18V AC sine wave with wheels spinning

ECU outputs: should emit 5 or 12V square wave signal, you will see 2.5 or 6v with wheels spinning

For a video tutorial on setting the speedometers check out the tech info page at:  
[www.newvintageusa.com](http://www.newvintageusa.com)

# SPEEDOMETER INSTALLATION 4-3/8", 3-3/8"

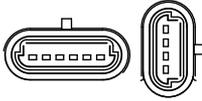


**4-3/8" GAUGE LIGHTING:**  
**USE SPADE TERMINALS ON EACH SIDE OF LAMP**  
**ONE IS GROUND THE OTHER IS POWER FROM DIMMER**

**IMPORTANT NOTE:** WHEN ATTACHING THE SHOCKCAMP, BE SURE TO ORIENT THE EAR WITH THE PART NUMBER STAMPED INTO IT. THAT EAR SHOULD BE LOCATED AS SHOWN IN THE ILLUSTRATION.

## SPEEDOMETER WIRING

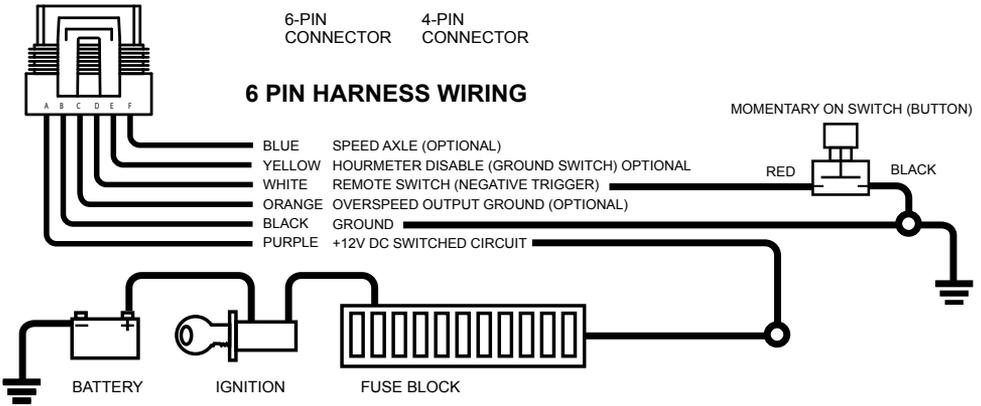
CONNECTIONS ON BACK OF SPEEDOMETER



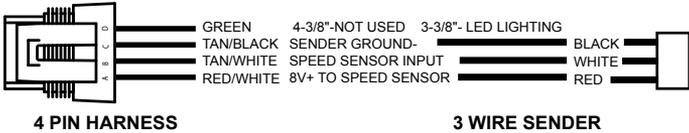
**BOTH 4 AND 6 PIN HARNESSSES ARE REQUIRED TO OPERATE UNIT**

6-PIN CONNECTOR      4-PIN CONNECTOR

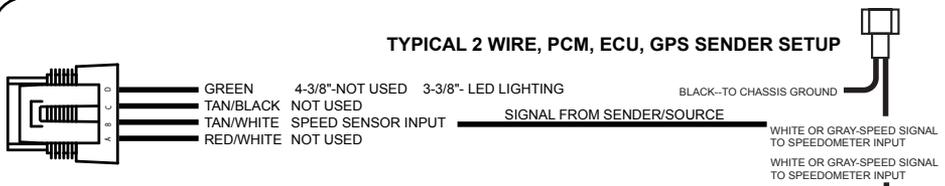
### 6 PIN HARNESS WIRING



### 4 PIN HARNESS WIRING- OPTION 1: 3 WIRE SENDER



### TYPICAL 2 WIRE, PCM, ECU, GPS SENDER SETUP

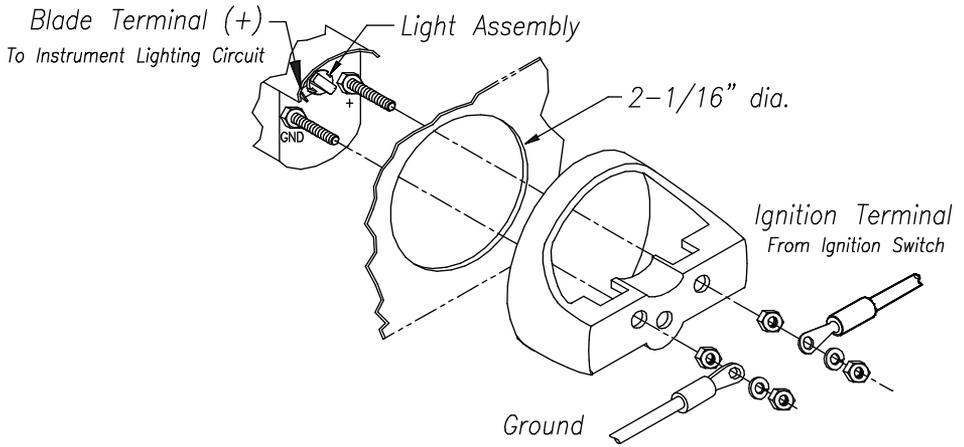


**NOTES:**

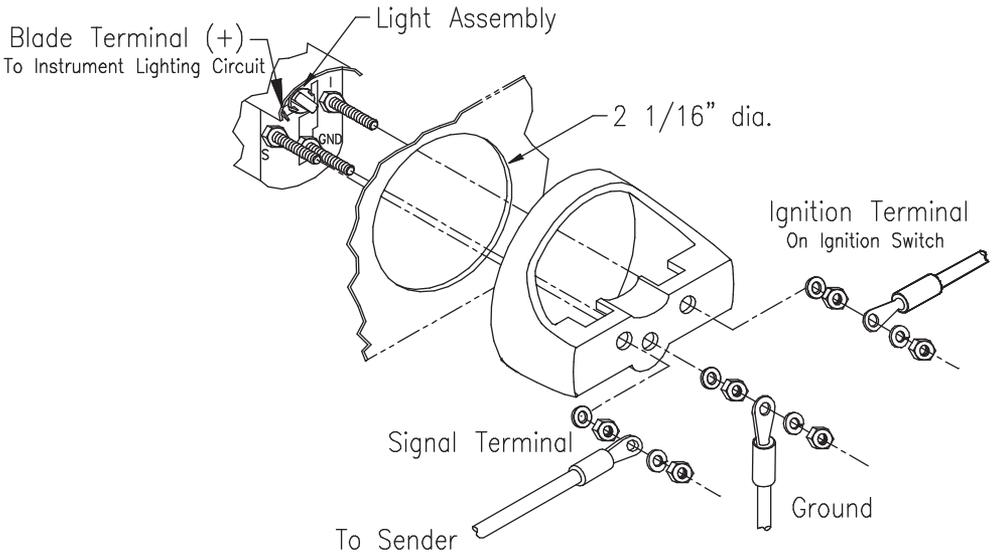
GPS SENDER INPUT: WIRE AS 2 WIRE INPUT ON TAN/WHITE PULSE COUNT MUST MATCH, SET MANUALLY IF NEEDED  
 PCM/GM COMPUTER: SIGNAL FROM PCM TO TAN/WHITE TYPICALLY 4,000 PPM, MANUALLY SET OR CALIBRATE USING DRIVE A MILE



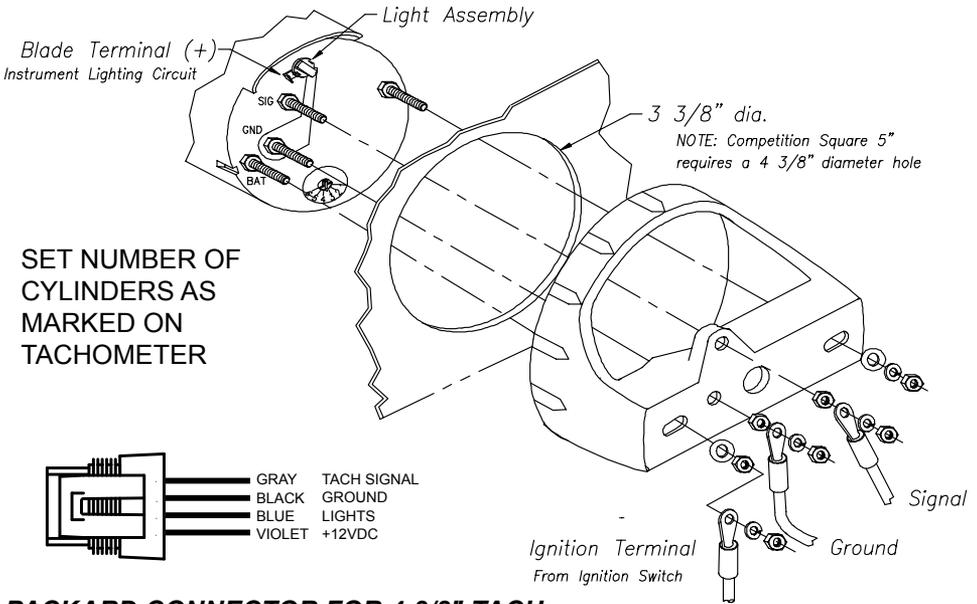
## VOLTMETER AND CLOCK INSTALLATION 2-1/16"



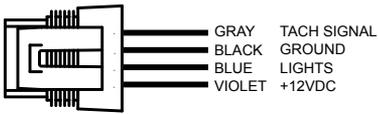
## PRESSURE, TEMPERATURE AND LEVEL GAUGE INSTALLATION 2-1/16"



# TACHOMETER INST ALLA TION

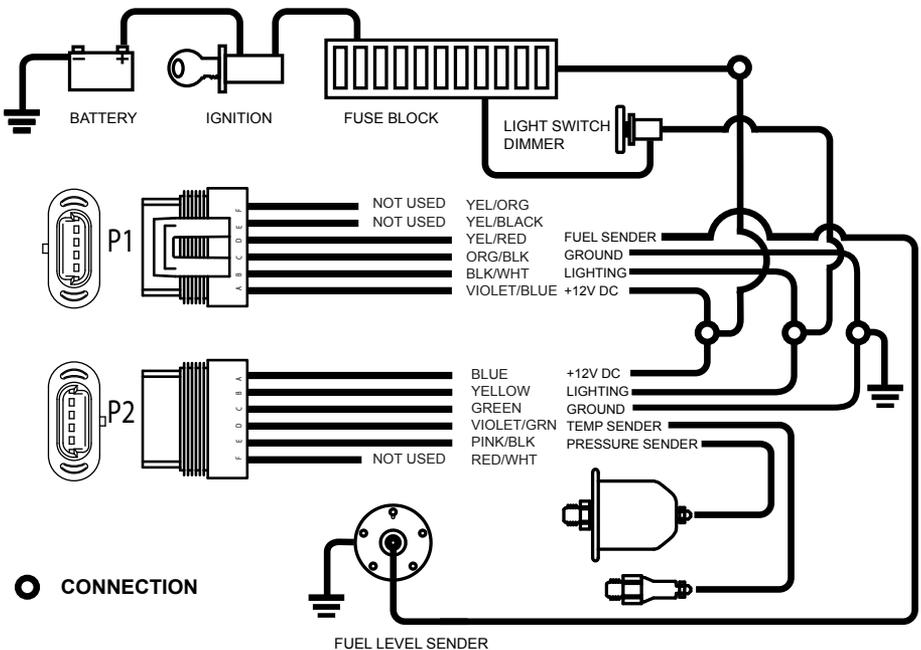


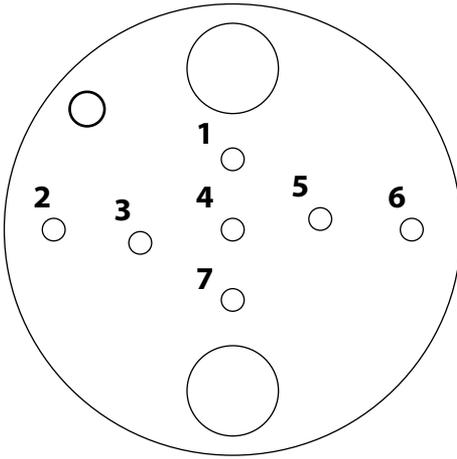
SET NUMBER OF CYLINDERS AS MARKED ON TACHOMETER



## PACKARD CONNECTOR FOR 4-3/8" TACH

### 4-3/8" QUAD GAUGE WIRING





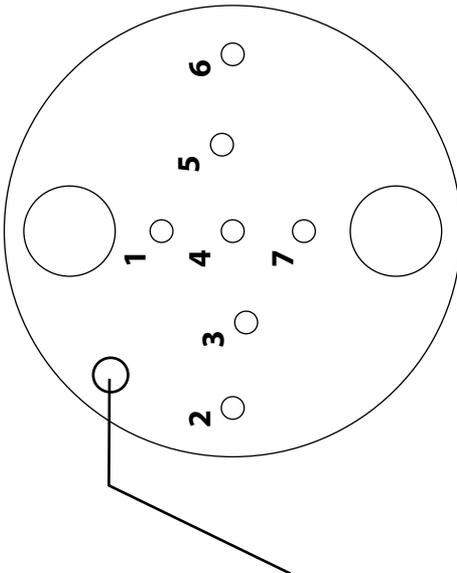
**QUAD GAUGE WIRING:**

- 1. LIGHTS
- 2. NO CONNECTION
- 3. TEMP SENDER
- 4. GROUND
- 5. OIL PRESS SEND
- 6. FUEL SENDER
- 7. 12V SWITCHED

**INCANDESCENT LIGHTING:**

194 BULB IN TWIST-OUT HOLDER

VOLTMETER SOURCE INTERNAL  
TO GAUGE NO CONNECTION



**DUAL GAUGE WIRING**

**VOLT/PRESSURE:**

- 1. 12V LIGHTS
- 2. PRESSURE SENDER
- 3. NO CONNECTION
- 4. GROUND
- 5. NO CONNECTION
- 6. PRESSURE SENDER
- 7. 12V SWITCHED

**TEMP/PRESSURE:**

- 1. 12V LIGHTS
- 2. FUEL SENDER
- 3. NO CONNECTION
- 4. GROUND
- 5. NO CONNECTION
- 6. TEMPERATURE SENDER
- 7. LIGHTS

STUD ON MODELS SO EQUIPPED: 12v+ TURN SIGNAL

# PROGRAMMABLE SPEEDOMETER SUPPLEMENTAL

Functions available:

1. Odometer display
2. Trip odometer display (resetable)
3. Hour-meter (either rpm or key-on)
4. Service interval for miles or kilometers (reset, clear and disable features)
5. Service interval for hours (reset, clear and disable features)
6. Over-speed indicator (microprocessor output level change at over-speed, resetable)
7. Two speed axle, selected by input to microprocessor.
8. Pulses per mile or kilometer input or change.
9. Display the highest speed recorded by the microprocessor (resetable).

## THE BASICS

This supplemental section will provide information on the many functions available in the programmable speedometer. While some of the functions may not be required for each application, those functions are available if needed in the future.

### Odometer

The commercial speedometer contains an odometer to maintain a record of the total mileage and trip mileage. During normal operations and after a power on the odometer display shows;



This display cannot be reset. A quick press of the push-button changes the display to the Trip odometer.



### Trip Odometer

The Trip odometer allows you to keep a record of the trip miles or kilometers independent of the Odometer



The Trip Odometer is fully user resetable. While in the Trip Odometer display press the push-button for 4 seconds and the Trip odometer is reset to zero.

### Hour-meter

The speedometer also contains an hourmeter that can run continuously when the ignition is on, or for a more accurate engine hour operation, can be turned off by using a low oil pressure switch to deactivate it. This will ground the Yellow wire on the 6-pin harness disabling the hour meter when the engine is running. The Quick press the push-button while in the Trip Odometer function displays the Hour-meter.



## USING THE MENU

There are two main menus and several sub-menus in the speedometer interface. Each area is accessed with the provided remote pushbutton.

## RUN MENU

Pressing and holding the push-button for two seconds during normal operation will activate the "run menu"



The display will show "HELLO" and wait for you to release the push-button.



When the push-button is released the first item on the menu will be shown. In four seconds the microprocessor will go to the first menu feature. If you want a different item from the menu, you must press and release the push-button before four seconds have passed. The menu items will loop continuously. If you want to get out at this point with no changes, stop at the last menu item "donE", and in four seconds the microprocessor will return to normal with nothing being changed or if you are in a menu, just do nothing for 32 seconds and the microprocessor will restart and change nothing.

The first item in the run menu is "ClrOdO" (Clear trip odometer).



If the operator stops at this display, the microprocessor will reset the trip odometer to zero and will return the microprocessor to its normal operation.

The second menu item "SET SPd" (Set Speed) is used to set the speed

at which the over-speed indicator will activate.



Stopping at this display and waiting four seconds will set the display to three digits corresponding to the last speed that the over-speed was set to.



The leftmost digit will be flashing and the change and implementation of the input numbers are the same as above. When the push-button is held for four seconds the microprocessor will set the number in the display to be the new over-speed trip point.



The option to get out with no changes is available by not making any changes for 32 seconds.

### Over Speed condition

An over-speed condition will ground the orange wire on the 6-pin speedometer connector. (maximum 40 milliamp load) on the speedometer when a pre set speed has been passed. This output can be utilized by the customer to activate a warning device such as a lamp or a buzzer.

The third menu feature "SELF HI" (Self calibrate high axle) can be activated by waiting at this display for four seconds.



This is a feature to allow automatic setting of the high axle pulses per mile or kilometer that the speedometer will use to position the pointer and record the correct mileage. This is accomplished by indicating to the speedometer microprocessor, the beginning and end of a measured mile or kilometer. The microprocessor will actually count the pulses that occurred during that mile or kilometer and compute the required parameters. When this mode is activated the speedometer will display "PEndInG".



A rectangular digital display with a black background and white characters showing the text "PEndInG".

This means that the microprocessor is waiting for the push-button to be pressed indicating the beginning of the measured mile or kilometer.



When the push-button is pressed and released the display will change to "SELF HI" indicating that the microprocessor is now counting pulses.



A rectangular digital display with a black background and white characters showing the text "SELF HI".

The speed at this point is not important. The operator may even stop and wait, as long as power is not turned off and the measured mile or kilometer is followed as straight as possible, the operator may not turn around and go in the opposite direction. Also for the maximum accuracy, the operator should not enter any off road parking as this would deviate from a straight mile or kilometer measurement. At the end of

the measured mile or kilometer the operator must press and release the push-button one more time,



the display will show "CALCInG" (Calculating)



A rectangular digital display with a black background and white characters showing the text "CALCInG".

while the microprocessor calculates the numbers it needs and will restart. The new pulses per mile or kilometer will now be in effect. This feature may be abandoned at anytime by pressing and holding the push-button for two seconds. The microprocessor will reset itself and continue normal operations. This menu item may also be stopped by turning off power to the speedometer.

The fourth menu item "SELF L" (Self calibrate low axle) is used to automatically calculate the pulses per mile or kilometer for the low ratio axle.



A rectangular digital display with a black background and white characters showing the text "SELF L".

The implementation and setting are the same as number 3 "SELF HI" above.

The last feature "donE" is used to exit from this menu. If this display is left on for 4 seconds and the push-button is not pressed, the microprocessor will return to normal operation with nothing changed.



A rectangular digital display with a black background and white characters showing the text "donE".

## BOOT MENU

The Boot menu is for accessing set-up information when programming the functions of the speedometer. While this information can be changed at any time, placing it within the boot menu prevents any accidental resetting of this information. To access the boot menu, press the pushbutton while turning on the ignition. "HELLO" will be shown on the odometer window indicating that you have entered the boot menu.



When the push-button is released the first item on the menu will be shown. In four seconds the microprocessor will activate that menu feature. If you want a different item from the menu, you must press and release the push-button before four seconds have elapsed. The menu items will scroll continuously. If you want to get out at this point with no changes, stop at the last menu item "donE", and in four seconds the microprocessor will return to normal with nothing being changed.



If you are in a menu, just do nothing for 32 seconds and the microprocessor will restart and change nothing.

The first menu item "SEr HrS" (Service Hours) is used to set the next service interval in hours.



This function is more applicable to commercial and marine applications, the next menu item, service distance is better for vehicles that spend most if the time driving rather than idling.

The second menu item "Ser diS"(Service distance) will allow you to program the mileage service interval.



When this menu feature is started, the display will show the actual miles before the next service interval that has been programmed will occur. Starting at the leftmost digit, the digits will flash on and off for four seconds.



During this time you may change the digit by pressing and releasing the push-button.



Once you have changed the digit once you may push and hold the push-button to have that digit count continuously from 0 to 9. When you have made your digit choice, don't touch the push-button for four seconds and the next digit to the right will now flash and be accessible for change.

This will continue for all the digits and will go back to the first digit and repeat. If the push-button is not pressed for 32 seconds the microprocessor will return to normal and will change nothing. This is useful if you're only here to check when the present service interval will occur. The operator may also turn power off at this point and nothing will change in the microprocessor controller. To save the changes you have made in the display, you must press and hold the pushbutton while any digit is flashing.

The third menu item "Clr HrS" (Clear Hour Service) allows you to clear the hour service flag and automatically reset the next hour service.

A digital display showing the text "Clr HrS" in a seven-segment font. The "S" is the rightmost digit and is flashing.

The fourth menu item "Clr diS" (Clear distance) allows you to reset the mileage service interval.

A digital display showing the text "Clr diS" in a seven-segment font. The "S" is the rightmost digit and is flashing.

The fifth menu item "PPgn Hi" (Program High axle) will allow the operator to enter the pulses per mile or kilometer for the high axle. This is useful when you already know the proper PPM or when some additional fine tuning is needed.

A digital display showing the text "PPgn Hi" in a seven-segment font. The "i" is the rightmost digit and is flashing.

This number will depend on how your particular sender is arranged. The maximum pulses per mile or kilometer are limited to 150,000. When you stop at the "PPn HI" display and wait four seconds the microprocessor will display six digits with the leftmost digit flashing.

A digital display showing the text "000000P" in a seven-segment font. The "P" is the rightmost digit and is flashing.

The number displayed will be the present pulses per mile or kilometer rounded off to the nearest 100 th. The rightmost digit will be a "P" to remind the operator that they are in the "Programming" mode. The digit changes and inputs are the same as number 1 (Service Hours) above. Also present is the same option to do nothing for 32 seconds and the microprocessor will reset itself and will change nothing.



Holding the push-button on for four seconds while a digit is flashing will make the microprocessor compute the observation window and will store this window and the pulses per mile or kilometer rounded off to the nearest 100 pulses in the microprocessor. The display will now show "donE" and the operator should release the push-button to resume normal operations.

A digital display showing the text "donE" in a seven-segment font. The "E" is the rightmost digit and is flashing.

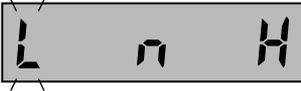
The sixth menu feature "PPgn LO" (Program Low axle) is used to program the low speed axle pulses per mile or kilometer. The implementation and activation are the same as number 5 (Program High axle) above.

A digital display showing the text "PPgn Lo" in a seven-segment font. The "o" is the rightmost digit and is flashing.

The next item in the menu is the input level control for the speed pulse input. The display will show " InPuT ".



If nothing is done for 4 seconds then the display will change to "L n H" and the L will be flashing and every 4 seconds the next letter will flash.



If the button is pressed when any selection is flashing, that input signal level will be set to that level. The choices are low, normal and High. Low is normally used for magnetic and hall effect senders and normal and high for other types. This essentially selects the sensitivity of the speedometer. The speedometer is preset at the factory at Low, if for any reason a weak signal is suspected (erratic pointer movement, etc) try normal and high.

The last menu item "donE" is used to exit from this menu. Leaving the display in "donE" for four seconds will cause the microprocessor to go back to normal



## SPEEDOMETER SENDING UNIT INFORMATION

There are three types of speedometer senders (or signal generators) in general use in all electronic speedometers. Hall effect, magnetic and optical.

Your New Vintage Kit was supplied with a hall effect speedometer sender. This type of sender generates a signal with both positive and negative pulses from the unit (square wave). All hall effect senders have 3 wires, positive, negative and a signal, generally these are red, black and white, with white being the signal. A This type of sender generally produces a cleaner signal with less variance than the other types. New Vintage speedometers will work with ANY type, but we prefer to use the hall effect style.

Magnetic and optical senders (sometimes called a pulse generator)use a negative signal that is basically a on-off-on-off pulse. Many OEM transmissions have these installed from the factory and will work fine with New Vintage speedometers. This type of sender is identified by 2 wires coming from it, usually a black, and a black/white. When using this type of sender, please wire it into the speedometer based on the provided diagram onder optical/magnetic

## GENERAL GAUGE TROUBLESHOOTING

Before you call, please check these items, they are sometimes obvious, but in the large scope of a build, sometimes can be missed.

Double check grounds! Instruments operate on resistance to grounds. The connections should be secure, soldered if possible. Remember, no Teflon or sealant on senders. Senders have a tapered pipe thread and do not require sealant.

Double check with the wiring diagrams. There are a lot of wires to hook up to a gauge set.

## GENERAL

### Gauge "sticks"

Loosen nuts that attach the back clamps. This can sometimes pull on the housing enough to distort the dial and contact the pointer.

### Gauge inoperative/reading incorrectly

Check for 12V at the gauge on the + and ground. Check for the correct resistance on the sender

With power on, temporarily ground the sender lead, this will peg the gauge to its highest reading.

## TACHOMETER TROUBLESHOOTING

### Erratic reading:

This is caused 99% of the time by a loose connection. Check spade or ring connectors. Sometimes these are connected well enough to work for a while, but do not hold up.

### Dead tach

Caused by no power, or no signal. Check for power. Turn on ignition and watch the pointer, it should "jump"

### Reads too high/low:

Usually this is caused by the incorrect # of cylinders on the back of the gauge. When using a magneto or alternator to drive the tach, an adjustment pot. Is behind the label at the 8:00 position on the rear of the gauge.

## SPEEDOMETER TROUBLESHOOTING

Speedometer problems are very similar to tachometer issues. Check the obvious first, grounds, power, correct connections. What type of sender are you using? Check for pointer "jump" These refer to all speedometer problems from dead to will not calibrate. Most speedometer problems can be traced to a problem with the signal to the gauge.

### Hall effect sender test:

With the speedometer and sender wired up (sender removed from transmission) turn on ignition and slowly rotate the sender shaft. You should get a signal of 10V+ then 10V-, etc... If this is not the case, you may have a loose connection.

Another avenue to try is changing the signal input from L to N or H. This procedure is described under the BOOT MENU section of this booklet. This is also a good way to remedy a "floating" pointer. When a pointer kind of roams but is not steady. This is usually from a weak signal to the speedometer.

Another option is to directly ground the sender and apply a switched 12V+ source to the positive input side of the sender.



NEW VINTAGE USA,LLC  
2415 BURDETTE  
FERNDAL, MI 48220  
248.850.5482  
www.newvintageusa.com

## RETURN AUTHORIZATION FORM

RZA # \_\_\_\_\_

CIRCLE ONE RETURN WARRANTY

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

PHONE(\_\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

EMAIL \_\_\_\_\_

RETURN SHIPPING CHARGE INFO

NAME ON CARD \_\_\_\_\_

ADDRESS, ZIP \_\_\_\_\_

CARD (CIRCLE ONE) VISA M/C

NUMBER \_\_\_\_\_

EXPIRATION \_\_\_\_\_

SECURITY CODE (ON BACK) \_\_\_\_\_

DESCRIPTION OF ISSUE: