

# **All-in-One Wiring Harness Solution**

Installation Paperwork



## **PLEASE READ BEFORE INSTALLATION**

If you have any questions, please call (618) 943-4856 or email us at [info@bowlertransmissions.com](mailto:info@bowlertransmissions.com)

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 **YouTube** Check out our YouTube channel for installation and tech videos!

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## **ALL-IN-ONE WIRING HARNESS SOLUTION**

Enclosed is an all in one solution for your Tremec 6-speed Magnum transmission that allows for a simple 4 to 5 wire hook up to give you control over every function included on the transmission. \*NOTE\* If you are using the All-In-One with factory GM speedometer connection or a Magnum XL conversion in a Mustang please read the last 2 pages before completing the installation. The All-In-One utilizes a small, epoxy sealed, control box that will control each of the 3 functions with power and grounding for each function through 1 switched +12v circuit (RED) and 1 (BLACK) wire connected to the negative battery post or engine block. Control of the reverse lockout solenoid is based on a user defined speed setting that is set up through the mobile app. This eliminates the need for a separate lock out control box. The electronic speedometer output connection on the harness is equipped with 2 speed sensor outputs (PURPLE/WHITE & PURPLE/YELLOW); the speed sensor outputs generate a square wave signal that goes from about -5 to roughly +5 volts, varying in frequency as the speed changes. If your ECM needs a positive only input, the output will automatically shift and give you 0 to +10 volts. The 2 speed sensor outputs are completely independent and can be calibrated separately with any pulse count and ratio you want. These two outputs should be able to drive any common speedometer, cruise control, or ECM. If only one output is needed you can choose either wire and cap the other that will not be used. This will give you much greater flexibility in the components you are able to use and requires less time wiring everything up. The reverse lights are powered by a pair of wires (RED/BROWN) connected to a switched +12 volt source and the positive side of your reverse lights; grounding of those lights should be local to the bulb socket.

## **WIRING INSTRUCTIONS AND PLUG CONNECTIONS**

**Red Wire:** Fused ignition switched +12 volt connection to provide power for reverse lockout and speed sensor functions.

**Black Wire:** Ground connection for reverse lockout and speed sensor functions. \*NOTE: It is extremely important to connect this to the battery negative terminal or engine block ground to avoid any electronic interference which could disrupt the speed sensor signals and give false readings.

**Purple/White (output 1) & Purple/Yellow (output 2):** These are both speed sensor outputs, and only needed when using an electronic speedometer or other module that requires a speed signal input to operate. You can utilize just one or both depending on your needs. They both are programmable based on the needs of the equipment they are sending signal to. If only one is used, cap off the other and secure it. Output one is preset at 40 pulses per revolution and option 2 is preset at 16 pulses per revolution. Contact your gauge manufacturer if you do not know what pulse input is required.

**Red/Brown (2):** Reverse light power input/output. If using reverse light feature, these 2 wires work in conjunction with each other. They both are tied together so there is no way to connect them wrong if you hook them up to the correct sources. One wire will need to connect to a switched +12 volt source and the other will need to be connected to the positive (+) side of your reverse light bulb socket. (Does not matter which one connects to which) Power will be sent to this connection only when transmission is in reverse gear. The grounding of your reverse lights will be done at the bulb socket through a chassis ground. If you are not using reverse lights you can easily remove this part from the harness altogether as it is not connected to the main harness plug.

The three terminated connectors on the harness each have one specific location and cannot be interchanged. It is a good idea to plug them all in even if you are not going to use one or more of them.

Included in the package is a zip tie with clip. This can be used to help secure the All-In-One harness to the case of the transmission.

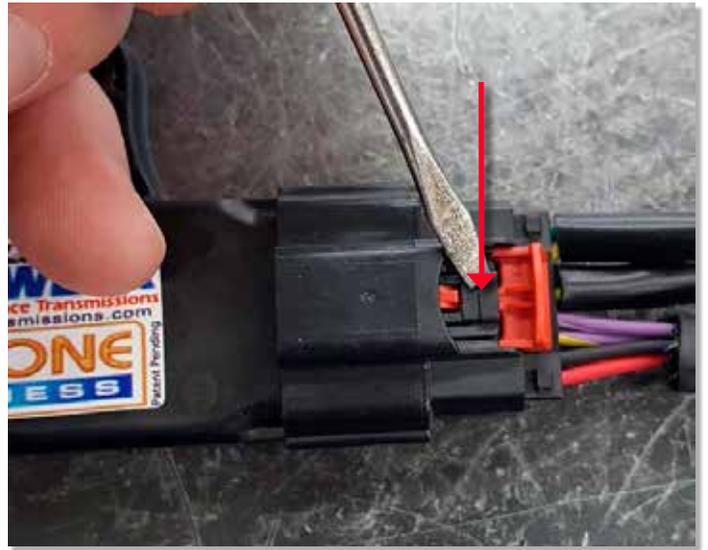


The epoxy sealed control module should be attached to the transmission using the bolt that fastens the speed sensor clamp. Do not overtighten this bolt.

Note: Some older Magnums have a rubber shipping plug in the mechanical speedometer port. Do not use the factory rubber plug. We offer a billet speedo plug to replace the factory installed rubber plug in the mechanical speedometer port.

Give us a call for details

The main controller and harness can be separated for service or installation reasons. To disconnect the harness simply slide the red tab away from the connector, then press down on the small black tab while gently pulling the connector away from the controller.

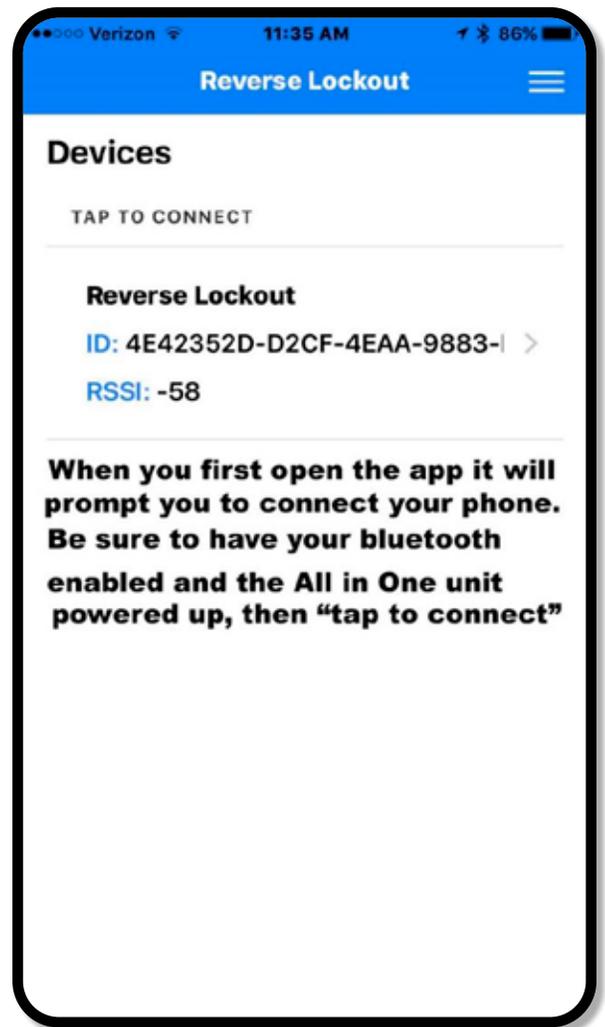
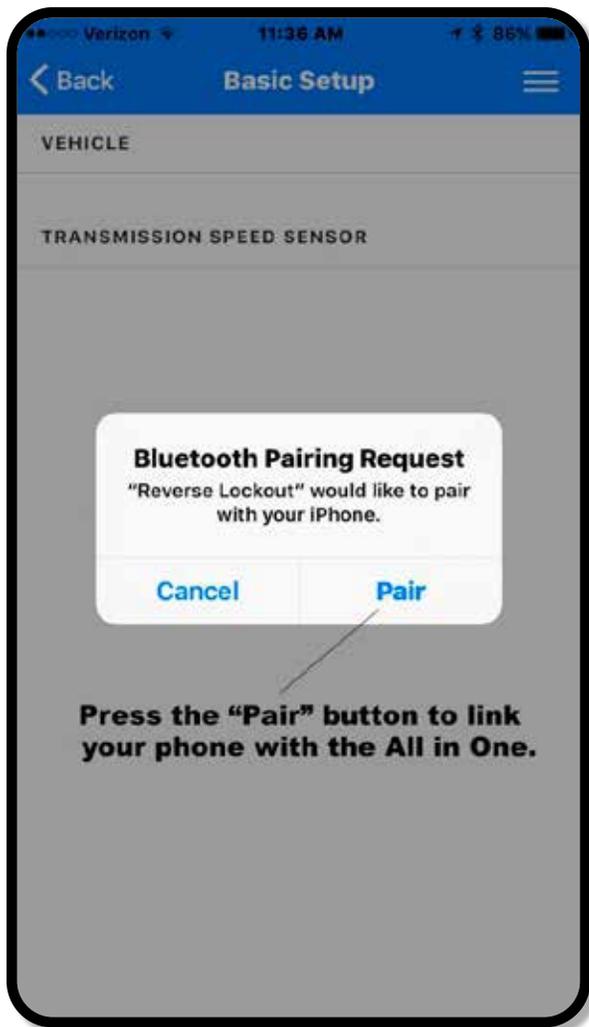


The All-In-One harness has a built-in fuse located near the reverse switch connector. This is a 3 amp fuse to protect the circuit board inside the controller. Removal of the fuse link or swapping to a larger fuse size will void any warranty. We recommend using a zip tie and attaching it to the empty case hole directly above the reverse light connector.

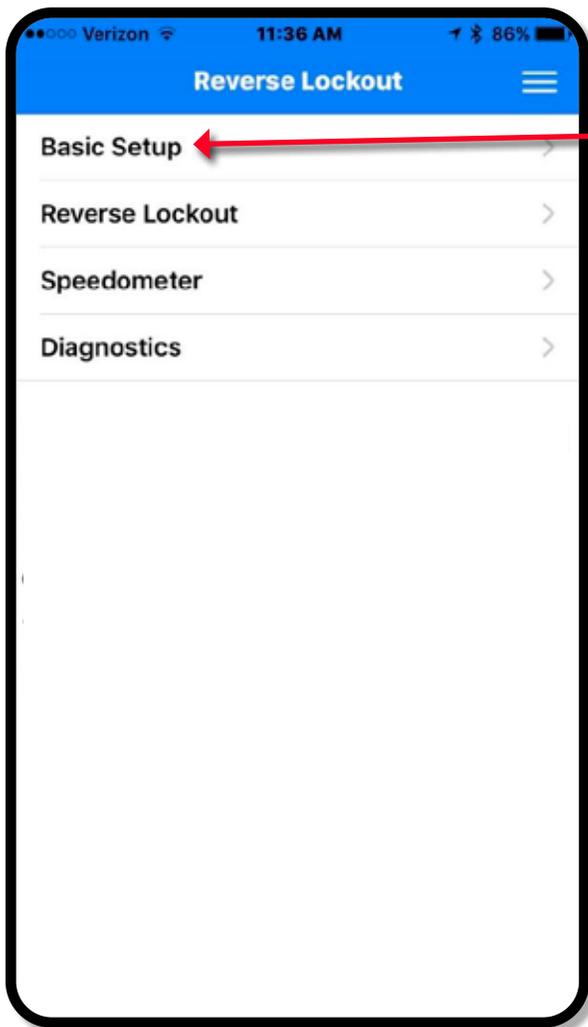


## **MOBILE BLUETOOTH APP SET UP**

Please read this section very carefully. Failure to follow the exact connection procedure may result in an error and the phone not connecting to the All-In-One. The harness is equipped with a Bluetooth radio that will connect to your smart phone along with an app we have developed for Apple or Android users. Go to the Apple App Store or Google Play Store and search for Bowler Performance Transmissions. Then download the Bowler Reverse Lockout Setup. Once you have the App loaded onto your phone you can pair it to the All-In-One. To connect your phone to the All-In-One, first be sure the 12v + and ground wiring connections are made from the harness to the vehicle. Second, ensure that your phone's location services, and Bluetooth connection are turned on. Next, switch power on in the vehicle to activate the harness, then open the app on your phone. Depending on your type of phone you may be prompted with some questions about accessing the devices Bluetooth, and/ or location services. Be sure to answer YES or OK to all questions otherwise the connection will fail.

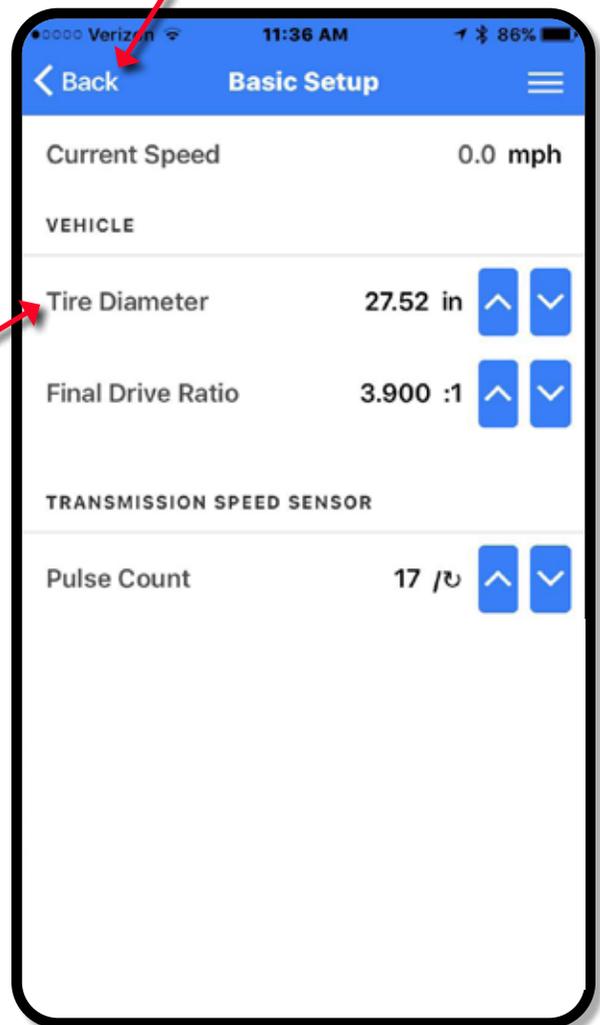


When you first open the App it will prompt you to connect your phone. Be sure your location services & Bluetooth is enabled on your device. Once you see the ID and RSSI, touch the screen to connect.



Once you have the phone connected to the All-In-One it will take you to this Main Menu screen where you can select which feature you need to adjust. Start with the Basic Setup menu first.

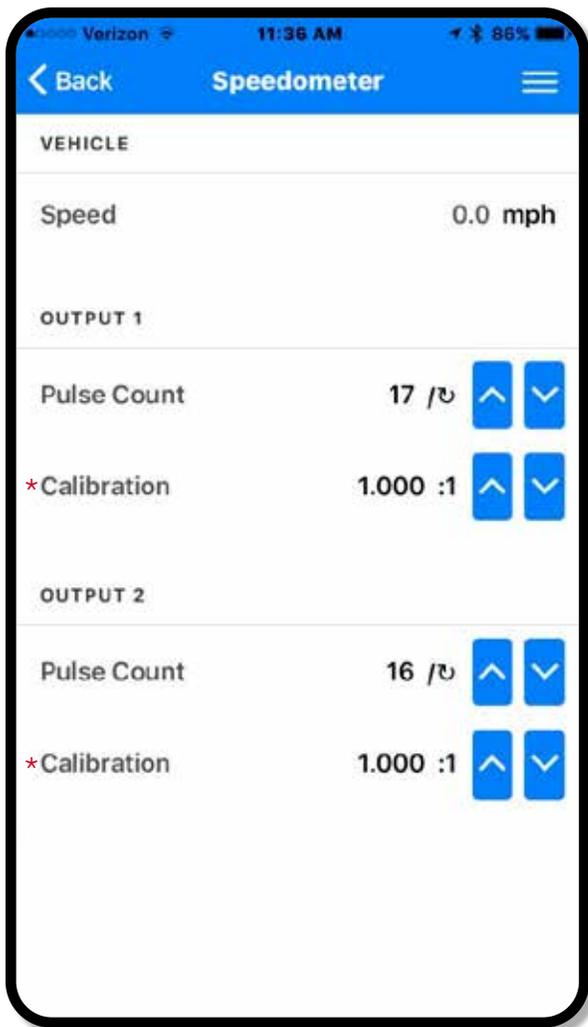
Once you are done with your basic setup, press the back tab to go back to the main menu.



The Basic Setup screen allows you to input the specifics needed for the All-In-One unit to correctly interpret the information it is sending.

Either touch the screen on the numbers to manually enter the correct information or simply press the arrows up or down to change the value setting.

You will only need to input the Tire Diameter and Final Drive Ratio. The pulse count on this screen does not need adjusting.



Next select the Speedometer menu. This will allow you to adjust the pulse signal output to match your specific requirements for your speedometer.

\* This is specified by your gauge manufacture and should confirm with them when changing this setting.

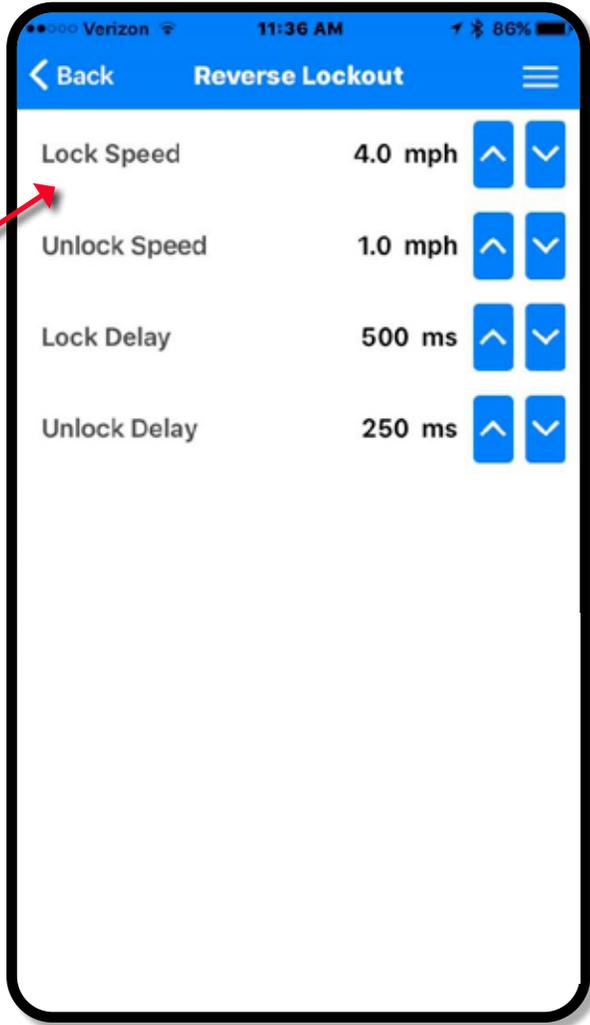
The All-In-One is shipped with the default settings for Output 1 as 40 pulses per revolution and Output 2 as 16 pulses per revolution

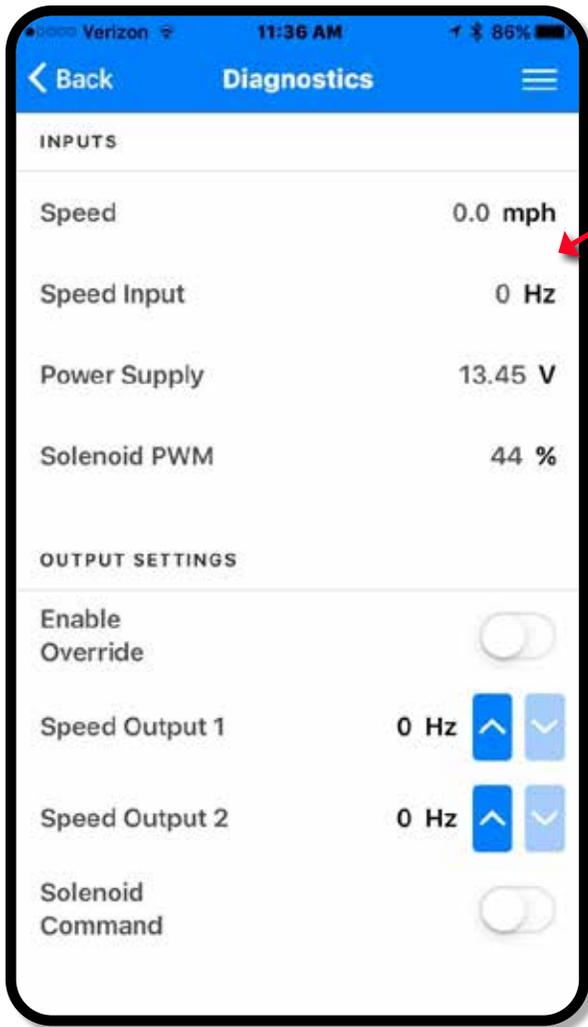
\*The Calibration ratio is a very fine adjustment and will allow you to fine tune your speedometer as needed.

There is really no reason to change any settings on the Reverse Lockout Solenoid. The default settings are recommended, which will allow the shifter to easily go into reverse from 0 – 4 mph and will have the spring detent to make going into reverse difficult above 5 mph.

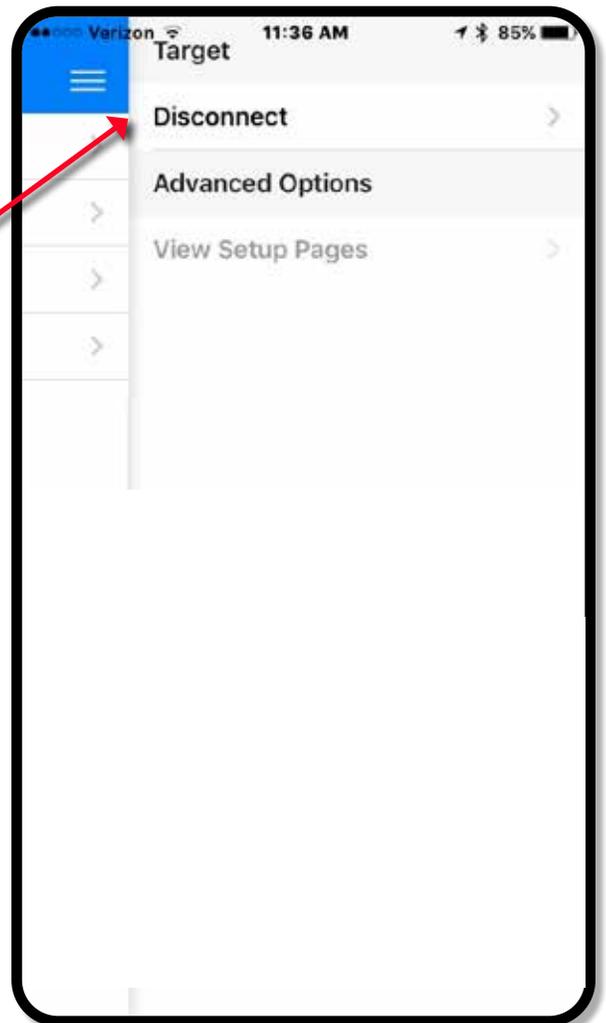
You can change the lock or unlock speed as well as the delay if desired, but not recommended.

\*We do offer a positive lock Reverse system for race vehicles. If interested, please call (618) 943-4856





The diagnostic tab is not recommended for anything more than live data from the module for testing or diagnostic purpose.



Use the disconnect option if you need or want to unpair your phone from the All-in-One Harness.

\*Advanced options are currently disabled and not needed.

## **MAGNUM XL CONVERSIONS IN S197 & S550 MUSTANGS**

If you are using the All-In-One harness to connect your Magnum XL to your OE Mustang speedometer ***please note that in order for the cruise control to work properly you must adjust your ECM/PCM settings to update the gear ratios from the MT-82 to the Magnum XL.*** The All-In-One will correctly calibrate the speedometer, but the cruise control is based off engine RPM in a specific gear, and we cannot correct a cruise control issue with the All-In-One. The original MT-82 utilizes a different gear ratio set than the Magnum XL which the All-In-One cannot compensate for. Some have found that using the GT500 tune as a base will allow you to make the corrections needed. Please contact an engine tuner to have them recalibrate your ECM for cruise control operation.

The 2011-up Mustangs equipped with the Getrag MT82 manual transmissions require a digital speedometer adapter/calibrator for two reasons. The first is to convert the two wire output of the Magnum XL to the Mustang three wire harness. The second is to increase the pulse count of the Magnum XL from 12 pulses to 36 pulses to match the MT82 output. We recommend cutting the factory connector off and soldering the wires directly to the All-in-One harness wires, then shrink wrap and loom the wires for added protection. In the chart below you will see the color codes for your specific year of Mustang. The primary concern is the connection to the digital signal into the ECM. The All-in-One contains 2 output wires (purple/yellow or purple/white) either of these can be connected and then have the signal output manipulated to 36 pulses via the smartphone app so that the speedometer will read correctly. We recommend connecting only the VSS output of the All-in-One to the Digital Signal in ECM wire. Power is best connected to a clean 12+ voltage source with the included fuse link and Ground should be a dedicated chassis ground connection. We do not recommend using the old power and ground sources on the OE connector for the MT-82. The 12v ECM and Signal Ground wires in the factory harness can be capped off and not used. \* Special note for the 2019 Mustangs: The MT-82 no longer has a reverse light switch, there is now a hall effect type sensor that signals the reverse lights. This means that you will need to create your own wiring to operate the reverse lights. We suggest running a dedicated 12 volt switched wire from the fuse panel to the reverse light sockets utilizing the red/brown wires of the All-In-One.

	<b>2011-14 MUSTANG</b>	<b>2015-17 MUSTANG</b>	<b>2018-2019 MUSTANG</b>
12v ECM	Purple/Green	Violet/Green	Blue/Brown
Digital Signal In	Tan/Green	Brown/Green	Brown/Green
Signal Ground	Tan/Blue	Blue/Gray	Blue/Gray

## **GM FACTORY SPEEDOMETER OR OE STYLE SPEED INPUT SYSTEM (CONNECT & CRUISE LS WIRING)**

In the factory GM installations where an electronic speed input is used in the factory harness you will typically find a two wire connector that carries a yellow and purple wire pair. Sometimes the colors are different, so look for the one labeled "high signal" for connection to the All-In-One. Since the All-In-One harness utilizes a single wire speed signal output you will want to connect the purple/yellow wire from the All-In-One harness to the purple(high signal) wire of the GM harness, then simply ground the GM yellow(low signal) wire. That will give you the input you need to correctly feed the GM speedometer. From there you can adjust your app settings to ensure that the speedometer is reading correctly, most all GM installations will require a 40 pulse output setting in the app.

\*If you are using a factory GM speedometer and have any issues such as low speed reading or no speed reading, please contact us. Some OE systems require a capacitor and diode to be wired in series with the VSS output wire. We can supply the components and a wiring diagram as needed.

## **TROUBLESHOOTING SOME COMMON ISSUES**

- If you are using a phone or tablet that is more than 5 or 6 years old you may experience trouble connecting to the Bluetooth radio. The change in Bluetooth technology over the years has made some older devices unable to connect. Try a newer device to correct the connection issue.
- Always be sure the device's location services and Bluetooth are on and active. We do not use any of the location data for any reason, that feature allows the Bluetooth radio to connect easier by being able to locate the device that is within range.
- Be sure the vehicle battery is fully charged and producing good voltage. A weak battery that is producing under 11.5 volts will not be able to provide enough power to activate the All-In-One processor.
- If you are still having trouble with getting your device connected to the All-In-One. Please have your device model and software version handy then give us a call at 618-943-4856.



### **RETURNS AND EXCHANGES POLICY**

Building custom cars and trucks is a fun and rewarding hobby or career for some, but sometimes along the way, the parts we order do not fit our vision or project. If this happens to you, we want to help. If you have ordered a part that you no longer want (within 90 DAYS of purchase date on your original invoice) just give us a call and we will do the best we can to accommodate the return. We will reserve the right to charge up to a 15% restocking fee for unwanted parts that are in BRAND NEW/UN-USED condition. If the part shows any signs of wear or damage, we reserve the right to refuse the return and charge return shipping to send the items back to you. If you have an item you would like to exchange for another item, the item must be in BRAND NEW/UN-USED condition in order to get full credit towards the exchange. Shipping charges are not refundable in any of these scenarios, and you will be responsible for shipping the item back, so be sure to use good packaging!

