

Background Information

Please read this entire installation guide before starting.

Your Yellow Box package includes;

- Yellow Box Speedo Recalibrator
- YB Splice wiring Harness
- Jumper plug (returns YB wiring to original speed)
- Instruction sheet

What is needed for the installation?

Installation is fairly straight forward. Most people do the installation themselves, usually takes 30 to 60 minutes. Soldering forms a better electrical connection and is recommended method to join all wiring connections.

You will need basic electrical & other tools;

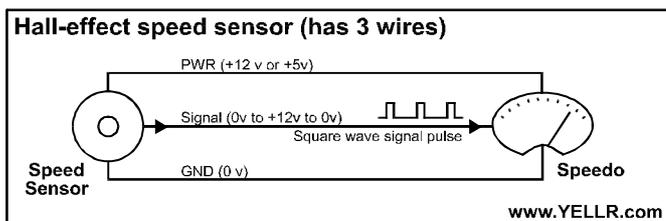
- Screwdrivers, allen keys, etc.
- Wire cutters, wire stripper, sharp knife, or pliers.
- Soldering iron and fine solder.
- Electrical tape or heatshrink, some cable ties.
- Voltmeter or multimeter.
- Vehicle service manual or electrical wiring diagram is also helpful for locating the speed sensor.

Where does the Yellow Box Connect?

The Yellow Box connects after your vehicle speed sensor and enables you to correct the speed signal before the speedometer and/or other vehicle systems.

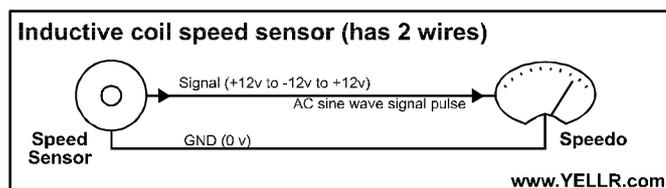
Hall-effect speed sensor (has three wires)

Diagram showing before the Yellow Box is connected. Hall-effect sensors are standard for most vehicles.



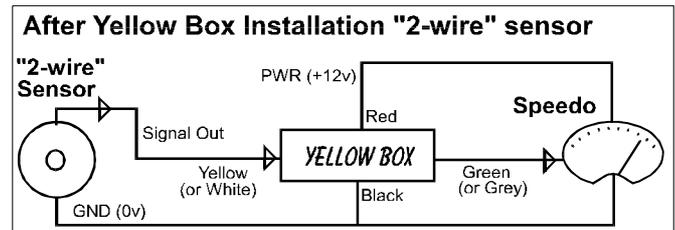
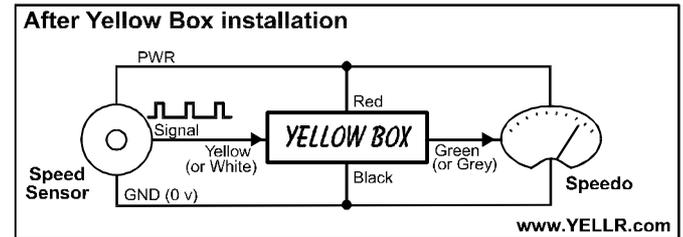
Inductive coil type speed sensor (has two wires)

Inductive coil or magnetic pick-up sensors are used in some vehicles, mainly older models. Sensor has only 2-wires; Ground wire, and the signal pulse wire. Refer to vehicle service manual for the "2-wire" sensor location.



After the Yellow Box is connected

Speed sensor signal now passes through the Yellow Box, enabling the Yellow Box to correct the signal in real time.



Installation of the Yellow Box (Steps 1-5)

Step 1: Locate the vehicle speed sensor

In many motorcycles the speed sensor is located on the top or side of the transmission (gearbox/crankcase). The speed signal pulse is generated from the revolution of the crankshaft/gears.

In other motorcycles the speed sensor is located near the front sprocket. As the front sprocket rotates the sensor detects this and sends an electrical pulse to the speedo.

Many sportscars, pickups, utes, 4WDs, 2WDs and cars also use a 3-wire hall-effect type speed sensor. In these vehicles the speed sensor is usually located on or near the transmission or transfer case, toward the rear of the engine. There should be a 3-pole connector plug visible.

For "2-wire" sensor vehicles, sensor may be located on the transmission, or ABS sensor. Refer service manual.

Some vehicles will connect the Yellow Box at a location not near the speed sensor. Such as before or after the ECM/ECU (engine control module) or PCM (powertrain control module) or other connection point. Refer to vehicle specific installation guides.

Note! The Plug-n-play Harness connects to the 3-pin coupler plugs at or just after the Output Speed Sensor, which is usually located on the transaxle area of the transmission. Email us for photo guides. Refer to Step 5 below for securing your Yellow Box and for safely routing the YB Plug-n-play wiring Harness.

Step 2: Prepare the vehicle wiring

To gain access to the speed sensor on **motorcycles** you may need to remove the left side fairings, the seat, and lift or remove the fuel tank. **Other vehicles** refer to the vehicle specific install guides, or follow the steps below if connecting at the speed sensor.

a. Use voltmeter to check each speed sensor wire

Power up your vehicle and measure the voltage on each of the 3 speed sensor wires. Push voltmeter probe into the speed sensor coupling 3-pole connector pins.

Voltage measure the 3 wires of hall-effect speed sensor;

- **Wire 1 = power (constant +12 volt or +5 volt)**
- **Wire 2 = ground (main vehicle earth)**
- **Wire 3 = speed signal wire (voltage changes, measures 0 volts then 12 volts (or 5 volts) then zero volts as the wheel is rotated) square wave signal.**

Write down or mark with tape/texta or draw a schematic indicating what each wire does (as above).

b. Remove the speed sensor from the vehicle

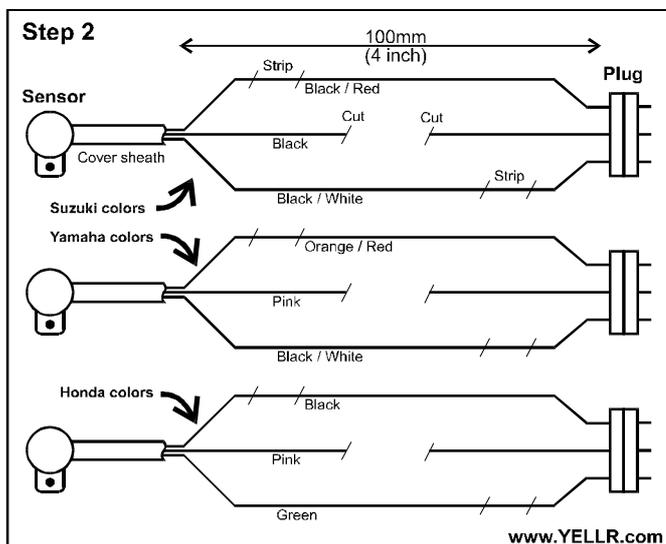
Remove/unplug the entire speed sensor coupling. Release the plastic catch/locking mechanism of the sensor connector. Unscrew the sensor pickup. Removal makes it easier to produce good electrical connections.

c. Splicing the speed sensor wires

Closely examine the diagrams below showing how to prepare the speed sensor wires.

With your removed speed sensor coupling on your workbench carefully strip back the outer cover sheath to gain access to the 3 sensor wires. You need about 100mm (4 inches) to make it easier.

Note! STRIP and CUT EXACTLY as shown below.



Splice the 3 wires of the hall-effect speed sensor;

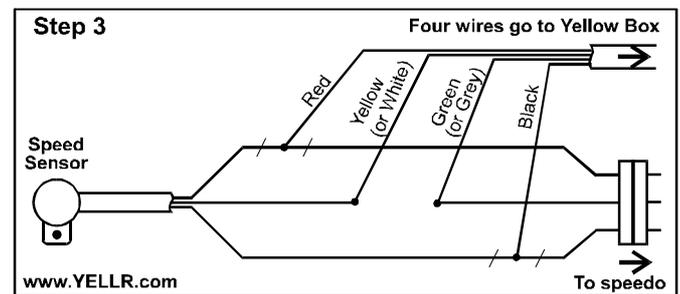
- **Wire 1 = power = score this wire (don't cut)**
- **Wire 2 = ground = score this wire (don't cut)**
- **Wire 3 = speed signal wire = cut twice, as shown in diagram above, leaving a 20mm (3/4 inch) gap.**

The wiring colors indicated above are for some Suzuki, Yamaha and Honda motorcycles. Your wiring colours may be different. Please check the **electrical diagram** in your vehicle service manual and confirm with **voltmeter**.

Step 3: Connect the Yellow Box

Yellow Box v5 Splice Harness has four wires;

- **YB RED = Power = speed sensor power (+5 or 12 V)**
- **YB BLACK = Ground = speed sensor ground**
- **YB YELLOW (or white) = speed signal IN (from sensor)**
- **YB GREEN (or grey) = speed signal OUT (to speedo)**

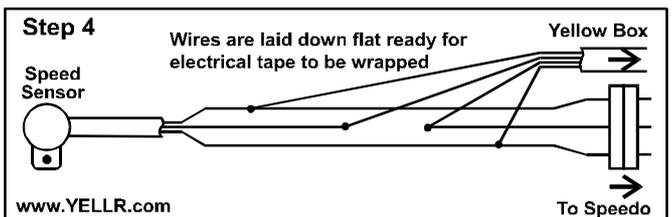


You must connect the Yellow Box wires exactly as shown above, or your speedo may not work properly. Carefully **compare your work** to the Step 2 and Step 3 pictures, and with the before and after diagrams on page 1.

Pre-solder all wire ends and the wire score sections before joining. You may also like to add thin heatshrink over the wires before solder joining. Then shrink to safely insulate each solder joint. Ensure that no solder spikes pierce the heatshrink or cause electrical shorts.

Step 4: Protect your wiring connections

Now you will cover each solder joint area with electrical insulating tape or heatshrink.



The diagram above shows the wires layed down flat - this is why we put 20mm (3/4 inch) between each connection, so now we can wrap electrical insulating tape around this entire "bare" section to make it neat and safe again. Overlap the tape as you wrap it, check the other wiring in your vehicle and do it like that.

Be sure there are no bare wires sticking out from the tape (that might touch metal parts of the vehicle) and that no wires touch each other where they are not supposed to. Feel free to wrap tape around any wire that will make the installation neater and safer.

Step 5: Secure Yellow Box and route wires

a. Secure the Yellow Box

We recommend that you mount/secure your Yellow Box in a reasonably dust free, dry area. Secured to prevent the buttons from being accidentally pressed down.

Mount it **away from** high heat sources like the exhaust or engine, away from electrical spike generating sources like the ignition system, the battery and battery charging system, regulator/rectifier, spark plugs, etc.

Most users like to secure their Yellow Box within easy access. Some like to set-n-forget, leaving it tucked away.

Motorcycles - under the passenger seat, or fairings.

Other vehicles - run the YB Harness through existing grommet holes in the firewall above the transmission and secure Yellow Box inside the cab. Under drivers seat, in glove compartment, centre console, behind dash, etc. Or high in engine bay away from electrical spikes and heat.

b. Route the Yellow Box Harness wires

Route the wires away from high heat sources, anything that moves and any potential electro-magnetic generating sources (electrical noise/interference sources), and as described for the Yellow Box above.

Note! Speed sensors with a +5 volt power supply are more susceptible to electrical interference. Take extra care where you secure your Yellow Box and harness wiring with a +5 volt system.

c. Power Supply quality to the Yellow Box

Power supply quality is important. It must be a clean, filtered source that is not subject to voltage fluctuations or electrical spikes.

Speed sensor power is the best source of clean, filtered power for the Yellow Box.

Problems?

All Yellow Boxes are tested during and after manufacture. Most problems are due to incorrect installation.

Yellow Box never lights up, with ignition on... This means no power to the Yellow Box. Check that you have the YB power (Red wire) and YB ground (Black wire) connected properly and the right way around. Check for bad connections on these wires. The Yellow Box will not be damaged by reverse connection for a few minutes.

Buttons or LEDs not working... On power-up BOTH LEDs will flicker quickly for a few seconds. Then the RED LED will flash the correction setting whenever the vehicle is stationary. GREEN LED will flash when wheel is turned or when vehicle moves forward very slowly, as input test.

Press/Hold the (-) Button, the GREEN LED will flash/glow. Press/Hold the (+) Button, the RED LED will flash/glow.

The Yellow Box has high quality switches, but dirt or moisture (over a long time) may still cause malfunction. You may **clean the switches** with high-quality lube (car oil, sewing machine oil). Add few drops of lube, then work the buttons up and down quickly about 20 times, repeat. Switches are covered under the 10 year warranty.

It lights up ok, but the speedo doesn't work... Make sure it is not in a special test mode. Check that you have connected the YB harness IN (yellow wire) and OUT wire (green wire) the correct way around. Check for bad connections on these wires. Incorrect connection will not damage the Yellow Box or damage the speedo.

Speedo drops out, reads zero sometimes... Check all your connections, solder all connections. Power supply quality may also be a factor. Bad connection issue (or intermittent bad connection). Ensure that the YB Harness plug is fully secured/pushed into the Yellow Box plug.

Check Plug-n-play Harness 3-pin plugs are secure and 'clicked' into position with all plug catches secured.

The speedo reads way high, or way low... Check your correction setting. RED LED flashes correction setting.

The speedo jumps/fluctuates sometimes... Check where you have secured your Yellow Box and routed the YB harness wires. Refer **Step 5** above. Check for bad connections on all YB harness wires, solder connections.

Need to filter the power source... If unsure about your power source quality you may like to add a filter capacitor (25 volt, 470 uF) across the red and black YB wires, into the connector pins at the Yellow Box unit itself. This should help to filter a low quality 12v power source.