YELLOW BOX

Electronic Speedo Recalibrator

Congratulations!

Thank you for purchasing a 5th generation YellowBox speedo recalibrator. Your YellowBox was entirely made and tested in Australia by craftsmen, and was manufactured to a very high quality standard.

Since 1999 and the birth of the YellowBox v1 we have been the world leader in computerised speedometer recalibration technology, proud to be making your speedo more accurate and making our roads a safer place worldwide.

Different YellowBox models.

The **YellowBox Mini** is a reduced-cost version that has two lights but no buttons. Its correction ratio is set once at our factory to suit your requirements.

The **YellowBox** has two lights and two buttons that allow you to adjust the speed correction ratio up and down. The YellowBox also has more sophisticated testing and recording features.

Both the YellowBox and YellowBox Mini come in two basic types; One suits the **3-wire** (hall effect) type electronic speed sensors, the other suits the **2-wire** reluctance type sensors commonly found on older vehicles. More information can be found on our web page **www.Yellr.com** as to which YellowBox is most suitable for which vehicle.

Features for all YellowBox models.

1. Power-up light Test.
When power is applied the YellowBox boots up and both GREEN and RED lights will flicker for a short time.

All 3-wire products; The GREEN and RED lights flicker in this sequence; **G R G R G R G R G R G R.**

All 2-wire products; The GREEN and RED lights flicker in this sequence; **G G G G G G R R R R R R.**

2. Input Test.
When the vehicle moves slowly or as it's wheels are rotated the GREEN light will flash. Flashing the speed sensor signal that is entering the YellowBox Input. This feature is always enabled and is useful after installation to show that the pulsing signal from the vehicle speed sensor is being correctly detected by the YellowBox. Also checks the Input wiring connections.

At higher speeds the GREEN light starts to flash too fast for the eye to see, so this feature is disabled at speed.

3. Displaying the Correction Ratio.
When the vehicle is stopped, the YellowBox and YellowBox Mini will display the speed correction ratio on the RED light. This is displayed as **5 decimal digits** and will be in the range 01000 to 99999. Digits **1 to 9** are shown as **ONE to NINE quick flashes**. A zero is indicated by a LONG flash. With a pause between digits.

Example - displaying the Correction Ratio;
a)   If your YellowBox was supplied with no pre-programmed correction it will default to no correction, which is 100 percent.
Correction Ratio; 10000 (100.00%) = no correction.
Displayed as RED flashes; ONE LONG LONG LONG LONG

b)   If your speedo error was originally reading 14.5% too fast, your YellowBox is set to a correction of 11450 percent or 114.50 percent (as it can be adjusted to 0.01 percent resolution there are two extra decimal places).
Correction Ratio; 11450 (114.50%) =corrects for 14.50% too fast
Displayed as RED flashes; ONE ONE FOUR FIVE LONG

4. Correction mathematics.
All YellowBox v5 models feature our proprietary 64bit math routines that offer 0.01 percent correction resolution. This math system measures the incoming speed signal very accurately, then mathematically computes the corrected output signal and outputs that corrected signal in real time with no lag and no jitter.

In 1999 the YellowBox was the first computerised speedometer correction product and over the years we have constantly improved the resolution and accuracy of our product. The YellowBox offers a finer adjustment resolution and higher accuracy than any of the copy-cat speedometer recalibrators available today.

5. 10 year warranty.
Since our very first product, all YBs have been covered with a 10 year replacement warranty. If the YellowBox fails for any reason within 10 years simply return it and we will replace it with a new YellowBox.

## Features for the YellowBox Mini.
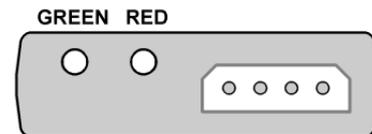
1. Free factory ratio re-programming.
The YellowBox Mini is a reduced cost product that has no buttons, so there is no user adjustment. The correction ratio is set at the factory to suit your requirements as stated on your order. We offer a free ratio re-programming service for the life of the product, simply return the YellowBox Mini to us for re-programming, details are on our web page.

2. Automatic 100Hz Output Test.
On the YellowBox Mini the 100Hz output test occurs automatically for three seconds each time the YellowBox Mini is powered up (when the vehicle ignition is turned on). The 100Hz output test sends a calibrated signal to the vehicle speedometer. The GREEN light is lit while the 100Hz signal is output. This test is used to show that the communication between the YellowBox Mini output and the speedometer is working, and tests the Output wire.

Features for the YellowBox (full version).
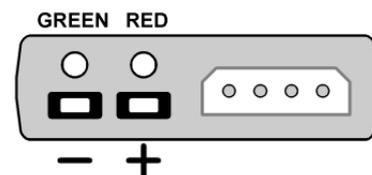
1. 100Hz Output Test.
This test is selected by holding the **(-)** button for five seconds, when the vehicle is stopped. Then the GREEN light will flicker briefly and after that the YellowBox will output a calibrated 100Hz output signal to the speedo for 30 seconds. The GREEN light is lit while the 100Hz signal is output. This test is used to show that the communication signal between the YellowBox Output and the speedometer is working, and also tests the Output wiring.

2. Calibrated output steps.
During the 30 seconds of the 100Hz output test (see above) the buttons can be pressed **(+)** or **(-)** to select one of 16 different output signals; 100, 200, 400, 600, 800 , 1000, 1200, 1400, 1600, 1800, 2000, 2200, 2400, 2600, 2800, 3000 (all Hz). These tests can be used to check the linearity of the vehicle speedometer scale, or to move the speedometer needle through the full range to check for needle sticking etc. After a new signal is selected it will be output for 30 seconds, or until powered down.

3. Top speed record and playback.

The YellowBox always records the top speed the vehicle has reached. This can be played back and displayed on the speedometer after the vehicle has stopped, which is useful for racetrack situations. To playback the top speed hold the **(+)** button for five seconds. Then the RED light will flicker and the top speed will be displayed on the speedo for eight seconds. The RED light is lit while the top speed is being played back.

4. Erasing the top speed memory.

The top speed recording is permanently stored in the YellowBox memory and can be replayed anytime, even weeks later. The top speed can be erased to allow recording a new top speed, this is useful between race sessions. To erase the top speed, first playback the top speed (as shown above) then while it is replaying press the **(-)** button until the GREEN light flickers.

5. Adjustment Mode - Adjusting the correction ratio.

While the vehicle is stopped, hold **(BOTH)** buttons down for five seconds until both GREEN and RED lights flicker. The YellowBox is now in adjustment mode, and will stay in this mode until its power is turned off (until vehicle ignition is turned off).

With the vehicle stationary and the YellowBox in adjustment mode the **(+) (-)** buttons adjust the ratio up or down. Holding a button adjusts the ratio by 1% per second. Each 1% is indicated with a slow light flash . **Note!** If a button is held down for more than a few seconds the rate of adjustment speeds up. For easier setting of large correction ratios count to 10 slow flashes and release button, then hold button again and count 10 slow flashes, etc.

Short presses, or taps, of each button adjusts the ratio up or down by 0.1%. This is shown by a quick light flash for each 0.1% tap.

Five seconds after any adjustment is done, the YellowBox saves the correction ratio setting into memory. This is indicated by both lights doing a flicker. You can continue to adjust the ratio at any time, until the YellowBox is turned off. Only powering down will exit the adjustment mode. **Note!** Be sure to save the ratio setting i.e.. wait until both lights flicker before turning off the ignition.

Example - Setting/Adjusting the Correction Ratio;

a) Adjusting ratio from 14.00% too fast (11400) to 16.30% too fast (11630). This means adding 2.3% more correction (+2.3%).
1. Hold down **(BOTH)** buttons for five seconds until both lights flicker. The YellowBox is now in adjustment mode.
2. Hold the **(+)** button for two seconds to add 2.0%. Each second holding **(+)** button the RED light will flash slowly, 2 slow flashes.
3. Tap the **(+)** button 3 times to add 0.3%. Each tap is quick light flash, for 3 **(+)** button taps you will see 3 quick RED light flashes.
4. Wait for a few seconds until the new ratio settings are saved to memory (when both lights flicker).
5. Resetting power to the YellowBox exits adjustment mode.

b) Fine adjustment of the correction ratio.

First put the YellowBox in Adjustment Mode (as above) then when the vehicle is moving tap the **(+)** or **(-)** button to adjust the ratio in very fine 0.01% steps. A quick flash is shown for each button tap. The vehicle speedo may be finely calibrated in this manner. Please be safe and have a passenger perform this fine ratio setting. After the vehicle comes to a stop the new fine adjustment settings will be saved to memory (when both lights flicker).

Reading the correction ratio back.

Once the ratio is adjusted, adjustment mode is turned off by resetting the power to the YellowBox. After this, the correction ratio will display as RED flashes, whenever the vehicle is stopped.

Calculating the correction ratio you need.

With one simple calculation (or download the free YB_Calculator);

Correction Ratio = Speedo_speed / Actual_speed x 10000

The answer is the Correction Ratio that you set the YellowBox to.

Example - Calculating the Correction Ratio;

a) Your speedo reads 57 MPH, but your actual speed is 50 MPH;
Correction Ratio = 57 / 50 = 1.14 **x 10000** = 11400
Ratio = 11400 (114.00%) = your speedo reads 14.00% too fast

b) Your speedo reads 34 MPH, but your actual speed is 55 MPH;
Ratio = 34 / 55 = 0.6182 (to 4 decimal points) **x 10000** = 06182
Ratio = 06182 (61.82%) (or 68.12% - 100.00% = -38.18%)
= your speedo reads 38.18% too slow. Correction Ratio is 06182.

Note! A ratio setting of 1:1 or no correction is 10000 (100.00%). Tech support is also available online for help with correction ratio questions, or email us. **Download the free YB_Calculator which calculates everything for you!** Visit **www.YELLR.com**

Installation.

Splice Harness.
Every YellowBox comes with a 4 wire harness, that you can splice into the vehicle wiring. Splice Instructions are available online.
RED wire; Power +12v (+5v to +16v)
BLACK wire; Ground (-ve)
YELLOW wire; Input (signal in from sensor)
GREEN wire; Output (signal out to speedometer)

Plug-n-play Harness.
Plug-n-Play Harnesses are available to suit most popular cars, motorcycles and 4WDs, for a small extra cost. Simply unplug the appropriate speed sensor connector and plug in the YellowBox. Leaves vehicle wiring as stock. Photo guides also available.

Mounting location.
Like all electronic devices the YellowBox should be mounted away from extreme heat like exhaust systems and cylinder heads.

Specifications;
Operating voltage; 5v DC to 16v DC (12v automotive)
Current consumed; 20mA typical
Frequency range; 1Hz to 12kHz (depends on ratio and device)
Weatherproof; Yes (not pressurewash with solvent)
Heatproof; Yes, to 70'C
Vibrationproof; Yes
Warranty; 10 Year unconditional warranty

YELLOW BOX v5

Electronic Speedo Recalibrator

Corrects speed errors caused by gearing changes and tyre size changes.

Installs permanently in the vehicle and provides real-time correction of the vehicle speedometer and odometer.

Also suitable for tachometer correction.

Adjusts from 1:10 to 10:1 correction!
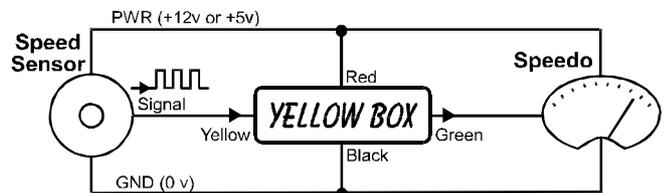
Plug-n-play wiring harnesses available for most popular vehicles, see our web page.

10 YEAR Warranty!

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WWW.YELLR.COM