



**POWERCHIPS**  
UNLOCK THE POTENTIAL

## Installation/Operating Instructions

# Ford Cosworth Engine Monitor

Ford Cosworth's running Magneti Marelli L6, L8 or P8 ECU



## MAIN FEATURES

### Displays real time engine data

Standard Version

Engine RPM, Coolant Temperature, Charge Air Temperature, Boost Pressure  
Battery Voltage, Throttle Position, Ignition Timing, Fuel Injector Opening Time  
Sensor Fault Detection

Professional Version – Additional to above

Current Ignition Map Address, Current Fuel Map Address  
Blanket Fuel Adjustment, Blanket Ignition Adjustment

**Easy to install** – plugs into ECU diagnostic connector

# OVERVIEW

The Collins Performance engine monitor has been developed to work with all 'Ford Cosworths' running the Magneti Marelli L6,L8 or P8 ECU's with a correct Collins/Powerchip Board/Chip upgrades installed (available separately) or ECU's running Pectal board/chip upgrades. - **Note will not work with Small Turbo Escort Cosworths**

The monitor is available as a standard version and also as a professional version.

The monitor displays real-time engine management parameters.

These include;

- Engine RPM (rpm)
- Coolant Temperature (°C)
- Charge Air Temperature (°C)
- Boost Pressure (absolute) (bar)
- Battery Voltage (V)
- Throttle Position (°)
- Ignition Timing (° BTDC)
- Fuel Injector Opening Time (mS)
- Sensor Fault Detection
- 4 channels of analogue data (optional)
  
- Current Ignition Map Address (Professional Version)
- Current Fuel Map Address (Professional Version)
- Blanket Fuel Adjustment (Professional Version)
- Blanket Ignition Adjustment (Professional Version)



# CONNECTING THE MONITOR

The monitor is connected to the Engine management diagnostic connector.

The monitor also needs a +12V supply that can be taken from an ignition feed or from the cigarette lighter socket (if the monitor is used as a general portable diagnostic device).

The YELLOW, GREEN & BLUE wires from the monitor are connected to the diagnostic connector as shown below and the RED wire is the +12V ignition supply (This should be fused with a 1A automotive fuse or equivalent).

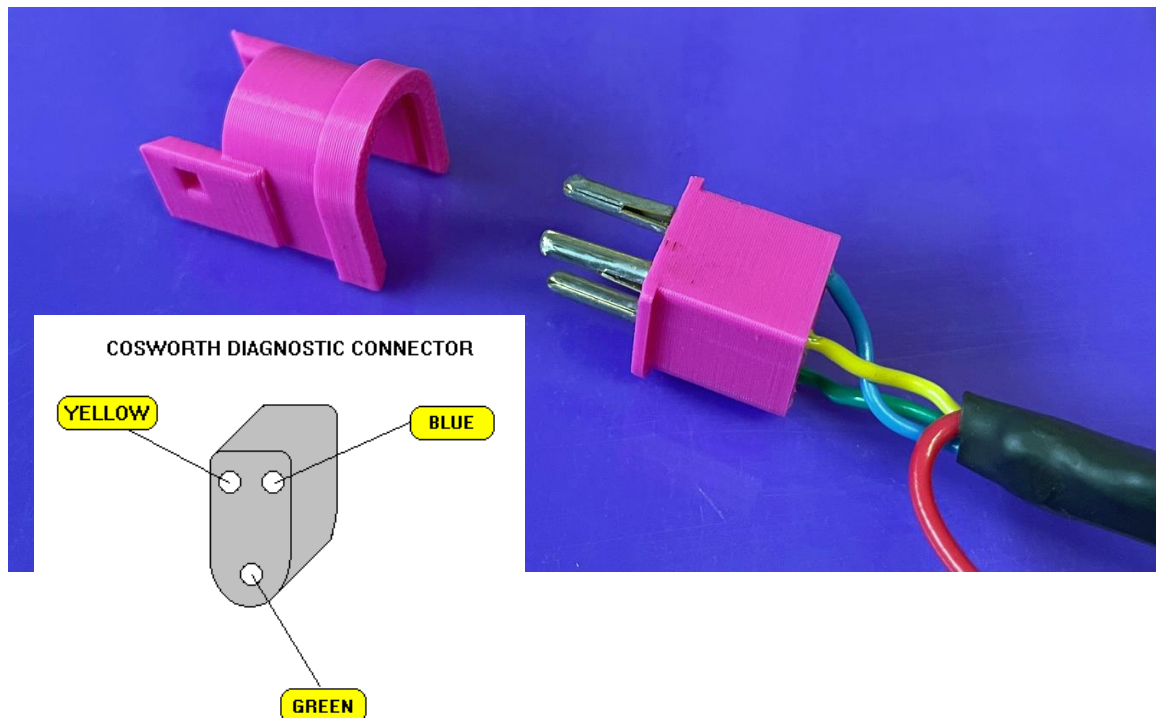
The YELLOW wire should eventually connect to ECU pin **8**,

The GREEN wire should eventually connect to ECU pin **27**

The BLUE wire should eventually connect to ECU pin **11** (This information is given as a reference to check the vehicle wiring)

The end of the cable is terminated by a plug that should push into the ECU diagnostic connector. There is a removable shroud that can be used to lock the connector in place if the monitor is to be permanently connected to the vehicle. If the monitor is to be used as an occasional diagnostic tool, then it might be more convenient not to use the locking shroud. If you suffer from intermittent updating of data see the troubleshooting section.

The monitor can be fixed to a surface by M4 cap head screws. To uncover these on the front panel, use a 3mm drill bit to gently, by hand, drill into the 4mm holes on the back of the monitor, the plastic covering the front screw holes should pop out towards the front. This happens quite easily so there is no need to press too hard.



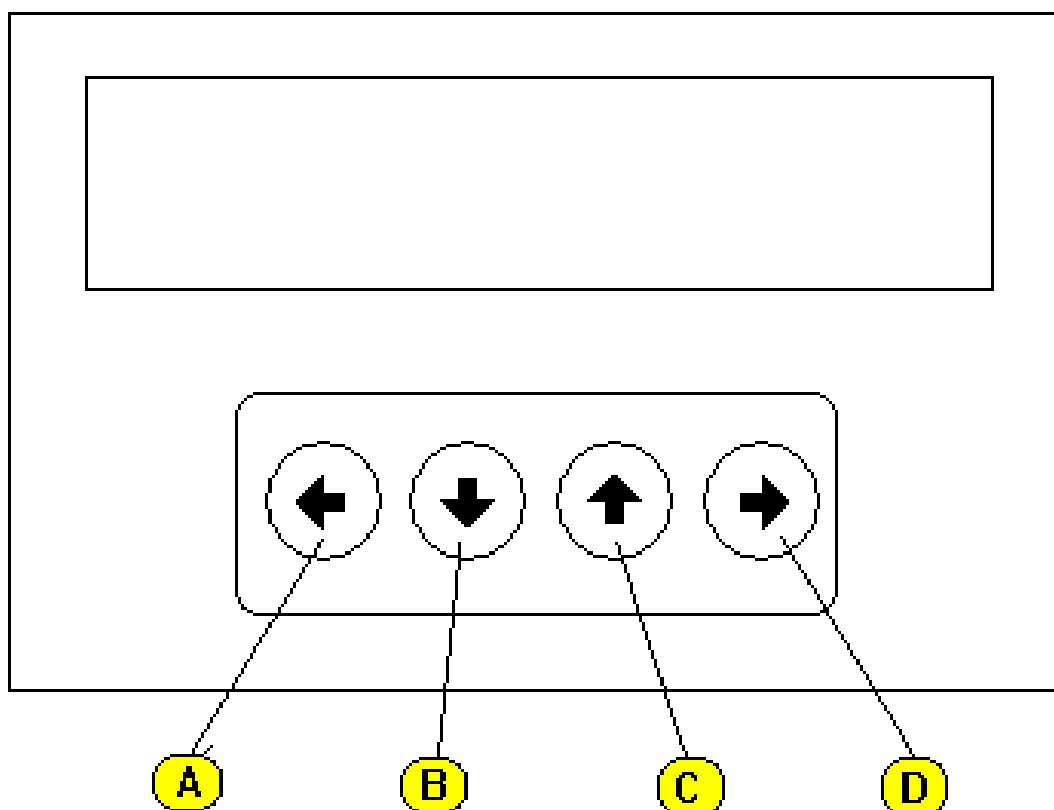
# CHANGING SCREENS

The Collins Performance monitor has several screens that display information to the user. You can move through the screens by pressing 'Button D' right arrow on the monitor keypad and then back again by pressing 'Button A'.left arrow (see the diagram below)

'Button B' down arrow and 'Button C' up arrow are used on the Ignition/Fuel adjustment feature (professional version only)

The various screens are listed below;

- Screen 0 Welcome screen and then Eprom Name after power up or reset
- Screen 1 RPM, Air Temp, Water Temp & Boost
- Screen 2 Throttle position, Boost, Injector opening time & Ignition timing
- Screen 3 Battery voltage and CO pot
- Screen 4 Sensor Faults
- Screen 5 Optional Analogue Inputs
- Screen 6 Blanket Ignition Adjustment (Professional Version)
- Screen 7 Blanket Fuel Adjustment (Professional Version)



### SCREEN 1

**RPM 06500 AIR 025°C  
BST 1.34b H2O 089°C**

This screen shows

RPM - Engine RPM  
AIR - Charge Air Temperature (°C)  
BST - Absolute Manifold Pressure (bar)  
H2O - Coolant Temperature (°C)

**NB By pressing 'Button B' down arrow when viewing screen 1, the monitor will reset and display the welcome screens.**

### SCREEN 2

**TPS 90° BST 1.34b  
INJ 08.25mS IGN 09.75°**

This screen shows

TPS - Throttle Position Sensor Angle (°)  
BST - Absolute Manifold Pressure  
INJ - Fuel Injector Opening Time (mS)  
IGN - Ignition Timing Before Top Dead Centre (°BTDC)

### SCREEN 3

**BAT 12.8V COPOT +002**

This screen shows

BAT - Battery Voltage (V)  
COPOT- CO Adjustment Pot Setting (P8 always reads 000)

#### **SCREEN 4**

**NO FAULTS DETECTED**

**KNOCK TPS CRANK CAM  
WATER AIR MAP LAMBDA**

This screen shows sensor faults (Remove 12V supply to monitor to reset the display)

KNOCK	- Possible Knock Sensor Fault
TPS	- Possible Throttle Position Sensor Fault
CRANK	- Possible Crank Position Sensor Fault
CAM	- Possible Cam Position Sensor Fault
WATER	- Possible Coolant Temperature Sensor Fault
AIR	- Possible Charge Air Temperature Sensor Fault
MAP	- Possible Manifold Pressure Sensor Fault
LAMBDA	- Possible Lambda Sensor Fault

#### **SCREEN 5**

This screen shows the optional analogue inputs.

#### **SCREEN 6** (Professional Version)

**IGN ADJ                    +003  
14.75<sup>°</sup>            ADDR 8BC2**

This screen allows a blanket ignition adjustment to Ignition Map.  
The ignition can be adjusted by pressing 'key B' down arrow and 'key C' up arrow.

The current map address is also shown.

#### **SCREEN 7** (Professional Version)

**FUEL ADJ                    +005  
09.72mS            ADDR 88AC**

This screen allows a blanket fuel adjustment to Fuel Map.  
The Fuel can be adjusted by pressing 'key B' down arrow and 'key C' up arrow  
The current map address is also shown.

# TROUBLE SHOOTING

If the screen does not show anything then the monitor has probably not got any power. Power is supplied via the RED (+12V) and the BLUE (0V GND). Check that these are okay.

If the message NO COMMUNICATION appears, this could be because the wires are not connected to the diagnostic connector properly (see above diagram) or the ECU does not have the correct POWERCHIPS upgrade fitted.

If you seem to be displaying intermittent data or seeing question marks appearing where the data should be, then the problem could be the connection to the diagnostic connector.

The vehicles diagnostic connector may have been abused by previously having pins inserted that are too large. Check for a smooth fit using one of the supplied spare connector pins.

Try a pin in each of the 3 holes in the diagnostic connector in turn to find any bad fit. To tighten up a connector you can insert a very small flat screw driver down the outside of the metal female connector, then, gently push the edge of the connector towards the centre to make it smaller.

Re try inserting a spare pin until you have a smooth fitting connection it should not need much force to insert the pin.

If the FUEL or IGNITION adjustment does not seem to work, The POWERCHIPS upgrade in the ECU may need to have a setting changed (please contact Collins Performance/Powerchips)

If you experience any problems, please call our customer service line at **01260 279604** for assistance.



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