

Control Pack for Ford 7.3 V8

‘Godzilla’ Crate Engine

The Installation Guide to Plug & Play Engine Electronics and Accessories



Control Systems

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Introduction

Thank you for purchasing our control pack for use with your Ford 7.3 V8 'Godzilla' crate engine. Our aim is to provide you with a trouble-free installation of the kit. With our kit you do not have to modify or replace any sensors or actuators. It works with the original coils, controls the cam timing and the oil pressure and reads data from the digital drive-by-wire throttle body.

Please note that these parts are legal for sale and use on uncontrolled (Non-Emissions Controlled) vehicles and on off-road racing vehicles ONLY.

WARNING: It is against the law to install these parts on an emissions-controlled vehicle

All OBR products are exclusively manufactured for racing purposes. Installing these products on any vehicle eliminates the legal use, in any capacity, on public roads/highways and may be subject to fines and/or criminal liability as per the Clean Air Act.

What is in the box?

Our kit contains these parts:

- OBR ECU with our speed density calibration for the standard crate engine.
- New OBR engine wiring harness made using light weight aircraft type wires and fitted with standard Ford connectors for all sensors, coils, injectors, and other actuators. You do not need to replace any standard components on the engine.
- Adapter fitted with a Bosch pressure and temperature combined sensor, called a TMAP sensor.
- Power supply harness with relay and fuse.

Optionally, the package may also include the following recommended parts:

- Two coolant plugs with seals and fasteners, used to close two coolant connections in the cylinder block.
- Two wide band NTK lambda sensors, one for each cylinder bank.
- Pedal kit with standard Ford throttle pedal and our wiring to connect it to our engine harness.

Step 1 – Remove the Original Engine Wiring Harness

All connectors on the original engine harness have a locking feature.

Pull the lock on each connector backwards towards the wire, now press down on the tap and carefully pull the connector off the sensor or actuator.

The tap on the connector on the throttle body is located under the tape securing the wire loop to the connector housing.

The harness is secured to the engine using so called fir tree zip ties. These have a base which is pressed into a hole in the block, cover or intake manifold. Use a dedicated tool to pull them out of the locating hole.

You may use other tools, be careful not to damage neither yourself nor the wiring harness.

Step 2 – Install the OBR Engine Wiring Harness

Our harness is intended to come onto the engine from the back. It splits in a 'Y' for connections to cylinder bank 1 – the bank on the passenger side – and to cylinder bank 2 – the bank on the driver side. It is easy to identify either leg:

Bank 1 carries all injectors and coils marked '1' to '4', oil pressure, lambda 'PASS', the ETB and connections to the camshaft sensor, VCT and the cylinder head temperature sensor.

Bank 2 carries all injectors and coils marked '5' to '8' and the connectors for crankshaft sensor, lambda 'DRVR' and the alternator connector.

As mentioned, our harness is fitted with fir tree zip ties to ensure a safe and reliable installation on the engine. Start by securing the harness to the rear of the engine, push the zip ties into the 2 holes as shown:



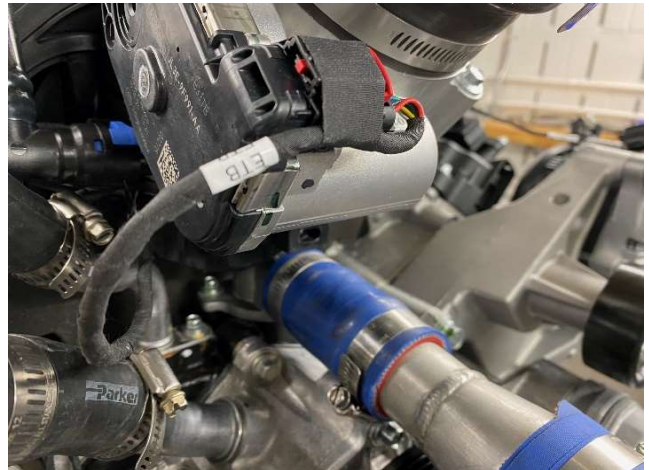
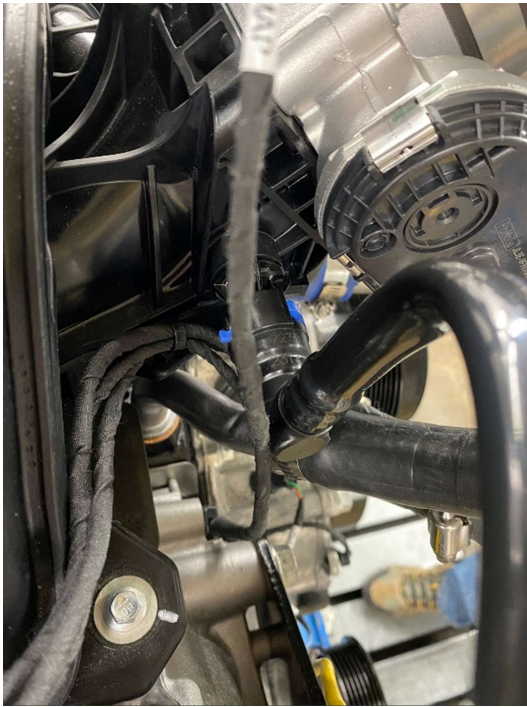
Start on bank 1 and lay the harness along the fuel rail, on the side towards the intake manifold. Run each pair of coil and injector connectors over the fuel rail and plug the connectors into the injectors and coils. Push the lock on each connector forward to secure its location.

Cylinder '1' is at the front of the engine.

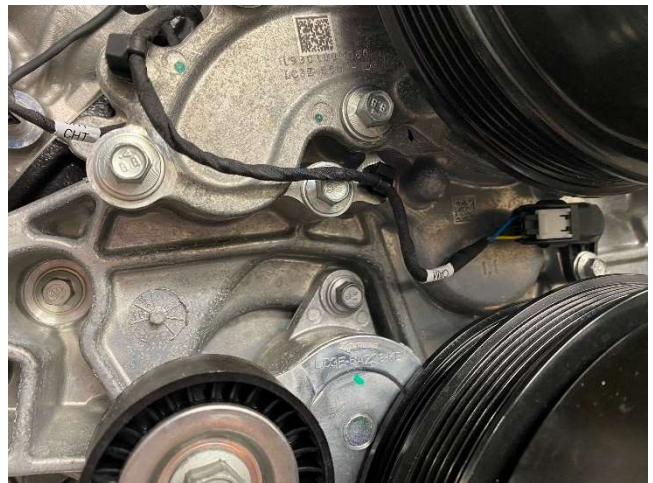
Press the zip ties into the 4 holes on the intake manifold:



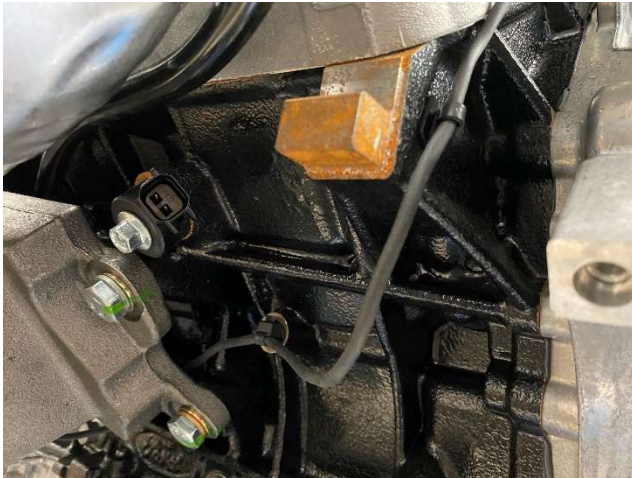
Secure the leg with the oil pump control, CHT, VCT, ETB and the cam sensor connectors to the intake manifold and run the 'ETB' cable to the throttle body:



Secure the connections to CHT, VCT and the cam sensor on the front cover:



Run and secure the wire to the oil pump control as shown:



Our harness does not include connections to the knock sensors.

Switch to the wiring leg on bank 2 and lay the harness along the fuel rail, on the side towards the intake manifold.

Run each pair of coil and injector connectors over the fuel rail and plug the connectors into the injectors and coils. Push the lock on each connector forward to secure its location.

Cylinder '5' is at the front of the engine.

Press the zip ties into the 4 holes on the intake manifold:



Run and secure the wire for the crank shaft speed sensor as shown:



Connect the wire to the oil pressure sensor and fix the ground terminal to the cylinder head with the supplied fastener.



Warning: Make sure you have connected your battery's negative terminal to chassis ground AND that your engine also has a wired connection to the car chassis. You can seriously damage both the control pack electronics and engine components if you attempt to start the engine with insufficient or missing ground wiring.

Please observe that our control package will only work in closed loop fuel control if you use the NTK wide band sensors supplied by OBR.

Connect the lambda sensor on bank 1 to the 6-way connector marked 'Lambda PASS', passenger side, bank 1.

Connect the lambda sensor on bank 2 to the 6-way connector marked 'Lambda DRVR', driver side, bank 2.

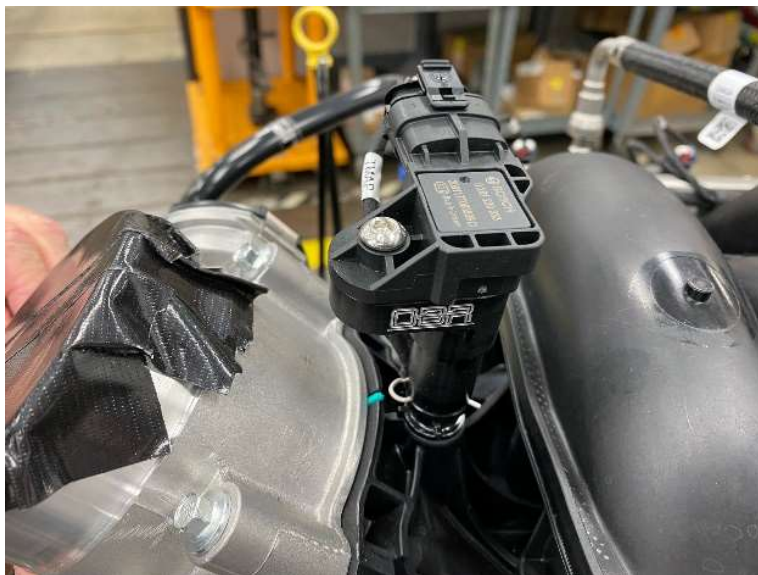
Make sure these connections do clear the coils on cylinders 4 and 8 and that they are not exposed to the heat radiation from the headers.

Connect the 3-way connector marked ALT to your alternator.

Step 3 – Install the Bosch Pressure and Temperature Sensor



Carefully push back the white lock in the hose connector, the hose can now be removed from the nipple on the intake manifold. Slide the Bosch TMAP adapter and sensor onto this nipple, push it all the way down and fit the lock spring to lock it in place. Plug the 4-way connector with the orange seal into the sensor.



Step 4 – Coolant Plugs

You will need one coolant plug to close a coolant connection in the engine block, driver side by the flywheel. Ensure the sealant O-ring is fitted correctly on the plug and use the supplied fastener:



The two water pipes on the front of the engine is for the car heater. If you do not use these connections for the heater, one of the two heater pipes on the front of the block can easily be blocked off as well:

**Step 5 – Throttle Pedal and wiring**

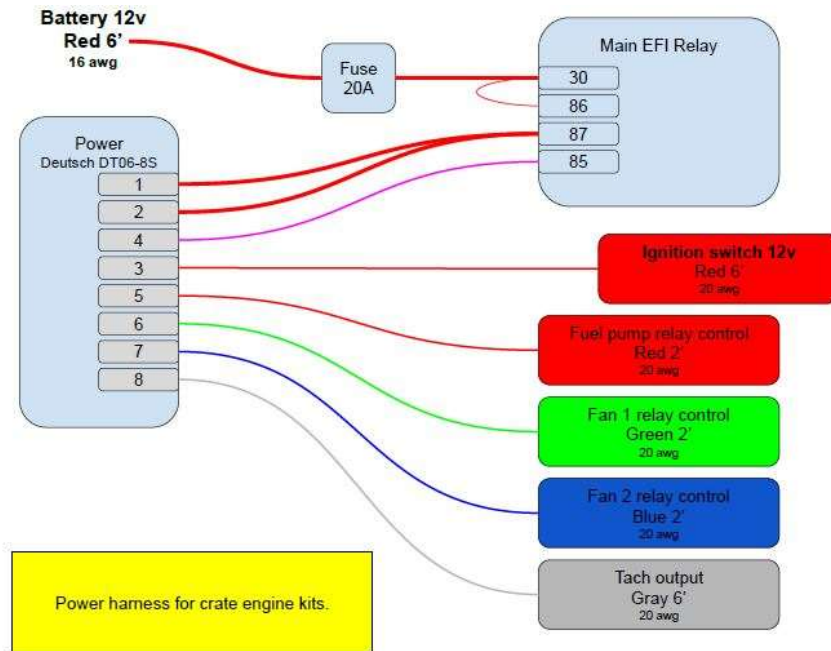
Our throttle pedal is a standard Ford pedal from a late model Mustang.

It is supplied with a cable which plugs into the 6-way connector in the pedal and into the 4-way connector marked 'Pedal' in our engine wiring harness.

The ECU is calibrated for use with this pedal and no adjustments to the calibration is required.

Step 6 – Power Supply Harness

Included with the base controller pack is a power supply harness. This plugs into the large 8-way gray connector on the engine harness.



Ignition Switch and ECU Power Supply

Connect the thick 16-gauge red wire from the main fuse block to battery constant power supply. If you are wiring a race car, this connection must be after the battery isolator switch.

Wire the thin red 20-gauge wire from position 3 in the 8-way power connector to the switched side of your ignition switch.

Step 7 - Fuel Pump Power Supply

It is strongly recommended to let the ECU control your fuel pump relay.

The short red 20-gauge wire in position 5 in the 8-way power connector is the control signal from the ECU to the fuel pump relay. Connect this wire to position 85 in the fuel pump relay. The battery power for the relay activation must be a switched supply, controlled by the ignition switch, and it connects to position 86 in the fuel pump relay.

The main power for the fuel pump must come from the main relay box and connects via a (recommended) 20A fuse to position 30 in the fuel pump relay.

Position 87 in the fuel pump relay is the power supply for the fuel pump.

The main power supply and the fuel pump power supply wires and the fuel pump relay is not included with our kit.

Step 8 - Coolant Fan Power Supply

The short green 20-gauge wire in position 5 in the 8-way power connector is the control signal from the ECU to the coolant fan relay. Connect this wire to position 85 in the fan relay. The battery power for the relay activation must be a switched supply, controlled by the ignition switch, and it connects to position 86 in the fan relay.

Position 87 in the fan relay is the power supply for the coolant fan.

The main power supply and the fan power supply wires and the fan relay is not included with our kit.

The fan relay is programmed to activate at a cylinder head temperature exceeding 220 F with a minimum engine speed of 700 RPM and to switch off when the temperature drops below 215 F.

Step 9 – Connect a Tachometer

The gray wire in the power connector in position 8 is a trigger signal for use with a tachometer. Connect this wire to your instrument's trigger input, the correct RPM should be displayed once the engine runs.

Some tach's will need a 10 kOhm ½ Watt pull-up resistor between the tach signal input and its +12V power supply. Contact OBR Control Systems if you have questions about this installation.

Step 10 – Connect a display via CAN

The ECU exports many engine data channels via CAN.

The CAN is setup with a baud rate of 1 Mbit/s, exporting data as words in a Motorola format.

We shall be pleased to assist with any questions about this communication.

Step 11 – Fuel Supply and Fuel Pressure

The fuel system on the 7.3 V8 'Godzilla' engine is a non-return system.

Be careful when you work with the fuel system and when checking the connections for leaks and when adjusting the fuel pressure.

Please make sure you do NOT have any sort of open flame present – this could cause an explosion!

Only use the right type of connector for the special connection on the fuel rail. Your fuel delivery connects to the fuel rail on engine bank 2, then connects to bank 1.

When your installation is complete and safe, check for fuel leaks.

Fix any leaks before proceeding.

Adjust the fuel pressure to 58-60 psi, this is the pressure we used when calibrating the engine.

A connection hose from the intake manifold to the fuel pressure regulator is not required.

Our calibration has been created using premium gasoline only. Please avoid using lower fuel grades and do NOT use E85 with this calibration.

The control pack is pre-configured for use with our fuel pressure sensor kit OB255. Connect the fuel pressure sensor into for example your fuel pressure regulator, connect the cable to the sensor and to the AUX connector. Fuel pressure will now be included in your data display windows, available if you have purchased the OB252 communication kit

Step 12 – Start the Engine

When you have installed all parts, checked your fuel line installation, and adjusted the fuel pressure, you are ready to start the engine. Check the oil level before starting the engine.

Warning: Make sure you have connected your battery's negative terminal to chassis ground AND that your engine also has a wired connection to the car chassis.

You can seriously damage both the control pack electronics and engine components if you attempt to start the engine with insufficient or missing ground wiring.

Turn the key, let the engine crank for a few seconds. It should fire once fuel is distributed to all 8 cylinders.

When cold it will initially idle just below 1,200 RPM, then dropping to 900 RPM when the normal operating temperature has been reached.

Step 13 – Communication Kit

If you have purchased our ECU communication kit OB252, you will be able to access all sections of the software controlling the engine tune.

To establish communication, you will have to install 4 programs on your PC.

Please go to our website – www.obrcontrolsistemas.com – and click on the ‘Download’ tab.

Now download and install these 4 programs:

- ECT USB Drivers
- ECT PseudoProgrammer
- ECT Communication Server
- ECT Tool

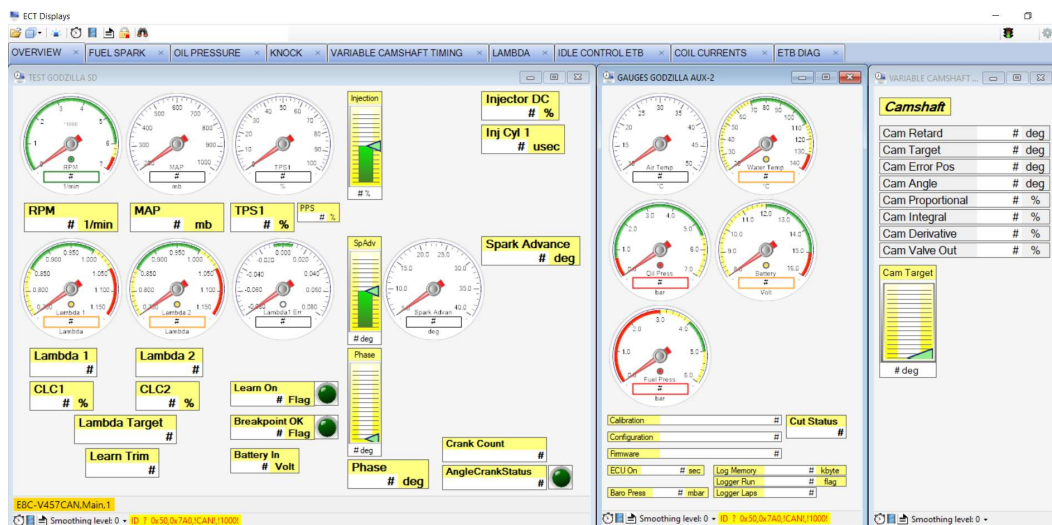
When the installation of the ECT Tool program finishes, it will ask for a XIP data installation file.

This file is sent to you by email when ordering the kit, if you have not received it, please contact OBR. Follow the on-screen instructions for installation if the data files.

When completed, open the ECT Tool, scroll to the end, tick the box you have read and agree to the license agreement and then click OK to proceed.

When the tool opens, click on ‘Workspace’, select ‘Euro-8 Godzilla SD’ and click on ‘Open’.

The display screens open:



By selecting the various tabs, you can view and edit settings for fuel and spark, oil pressure control, variable camshaft timing, lambda fuel control, idle speed, monitor ignition coil currents and diagnose the drive-by-wire throttle body.

For further information about opening the calibration software, please refer to the ‘ECT Quick Guide’, also available for download on our website.

Please do not hesitate to contact OBR in case you have any questions about the kit, its installation, or the functionality of the control pack.

October 10, 2021.