



# **Alpha Performance Ignition Management Kit Fitting Instructions**

## **Kit K97018**

### **Vauxhall/Opel XE 2,000cc 16 Valve With Distributor**

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This kit is designed specifically for the application as detailed, and should therefore not require further modification unless stated. Any modifications made to components will invalidate the warranty on the kit. Should any problems be encountered during installation, please contact Webcon UK Limited or your authorised Alpha dealer.

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## **Introduction**

These fitting instructions are written in order that a competent auto technician shall be able to install an ignition management system for any particular engine. These instructions should be read through and fully understood before attempting to install the system to prevent mistakes being made.

## **Performance Ignition Kit Contents**

### **Kit K97018 - Vauxhall/Opel XE 2,000cc 16 Valve with distributor.**

<b>Ref. Item</b>	<b>Component</b>	<b>Qty.</b>	<b>Part Number</b>
1	Alpha Performance Ignition Management ECU	1	PI150
2	Wiring Harness	1	9990272600
3	Ignition Coil	1	WIC003
4	Inlet Air Temperature Sensor	1	WAS008
5	Cable Ties	10	9990137400
6	Alpha Performance Sticker	1	9990249600
7	Feed Harness	1	9990180500

## **General Kit Information**

With the addition of a throttle position sensor or a manifold air pressure sensor a full 3D map can be composed for the engine which will incorporate the load on the engine. Both of these sensors are available from Webcon UK Ltd.

### **Throttle Position Sensors Available**

- TPS Mounting Kit 40/45 DCOE. Webcon Part Number: 9990266000
- TPS Mounting Kit 48 DCO SP. Webcon Part Number: 9990266800
- TPS Mounting Kit 40/45 DHLA (Dellorto) Webcon Part Number: 9990290200

**N.B.** Where the Alpha Performance Ignition Management Kit is used without a throttle position sensor/manifold pressure sensor a 2D map only will function. The programme data contained within the 2D map will give RPM/full throttle ignition timing only.

### **Air Pressure Sensors Available**

- PRT 03/02 Pressure Sensor. 0-1 bar range. Webcon Part Number: WMS015
- APS05/03 Pressure Sensor. 0-2 bar range. Webcon Part Number: WMS013
- APS05/01 Pressure Sensor. 0-3 bar range. Webcon Part Number: WMS014

## **Miscellaneous Additions**

- Gear shift lamp kit.  
Single water clear/red ultra bright LED with mounting kit. Webcon Part Number: 9990241500
- Gear shift lamp kit.  
Single water clear/green ultra bright LED with mounting kit. Webcon Part Number: 9990274500

## Installation Guide

When fitting the components of the system it is important to ensure that they have been fitted in accordance with their individual requirements.

### ECU (1)

It is essential that the management system is supplied with a good source of electrical power at all times. A minimum working voltage should be no less than 10 Volts, this is especially so during cold start cranking.

This unit must always be located away from any direct heat source of the engine. It is not waterproof and for this reason it must be located inside the passenger compartment of the vehicle.

The unit is supplied with a basic ignition map that will allow the engine to run but is not fully optimised for the engine. To get the full benefit of an ignition management system, it should be calibrated by an ALPHA dealer.

**N.B.** This ECU does not have the fuelling components fitted and cannot be used to control a full Alpha engine management system.

### Wiring Harness (2)

The wiring harness must not run near any direct heat sources. Ensure no cables run closely to any ignition high tension leads, in particular, the engine speed sensor lead. If these wires do run too close, the high tension leads can induce a signal in the harness that the ECU can misinterpret causing uneven running, bad starting, and even failure to start.

The **Cable Ties (5)** have been developed to assist in fitting wiring harnesses. The circular hole allows the cable tie to be screwed to a suitable point on the vehicle.

The bulkhead grommet on the harness is designed for a 1.75 inch (44 mm) hole. Make any holes in the bulkhead as high up as is practical to avoid any water leaks. Also, ensure the grommet is fitted correctly and securely, as the hole will very quickly cut into the harness if not adequately protected.

The **35-Way connector (A)** will fit through the grommet hole.

### Harness Connections - Refer to Appendix A For Layout Of Wiring Harness

Label	Connection Description
A	Connect to <b>ECU (1)</b> 35-way socket.
S	Throttle position sensor.
W	<b>Ignition Coil (3)</b> - Negative.
X	<b>Ignition Coil (3)</b> - Positive.
JJJ	<b>Air Temperature Sensor (4)</b> .
JJJJ	Connect to Original Equipment engine speed sensor (JJJJ is an example of the Vauxhall (Bosch) original equipment connector)
NNNN	Locate in a place that will enable an ALPHA system dealer easy access to the connector for calibration and diagnostics purposes.
QQQQ	Sureseal connector for the <b>Feed Harness (7)</b> .

## Ignition Coil (3)

1. Locate the **Ignition Coil (3)** within the engine compartment. It should be bolted directly to the chassis.
  2. Connect the positive coil connector (White wire **X**) to the positive side of the **Ignition Coil (3)**.
  3. Connect the negative coil connector (Black & White wire **W**) to the negative side of the **Ignition Coil (3)**.
- If the vehicle is of composite construction then an additional ground wire, minimum cross section of 1.5mm<sup>2</sup> if the length of wire is less than 1 metre, 2.5mm if longer, must be added between the coil mounting casting and the vehicle system ground.
  - If any buzzing resonance can be heard generated by the coil, or if the vehicle chassis generates vibration frequencies likely to damage the module, the assembly can be mounted on 'silentbloc' type mounts. Again, it will be necessary to add an additional ground link to the chassis.

**IMPORTANT: Resistive ignition leads should always be used (7.5KΩ (Ohms)).**

**If any misfire or cutting out of the engine occurs, firstly check the resistance of the H.T. leads.**

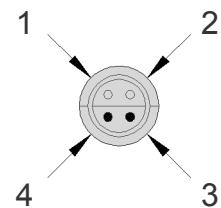
## Inlet Air Temperature Sensor (4)

The **Inlet Air Temperature Sensor (4)** should be securely mounted within the air filter unit or suitably close to the air intakes to allow accurate measurement of inlet air temperature.

## Feed Harness (7)

This plugs into connector **QQQQ**, and supplies the **Wiring Harness (2)** with power, ground, and takes the tacho and gear shift lamp outputs from the harness. The table below shows how the wires should be connected.

Pin Nos.	Wire Colour	Connection
1	White	Power +12V Ignition Switched
2	Yellow	Tacho Signal
3	Black	Power Ground
4	Blue/White	Gear Shift Lamp



## **Troubleshooting**

After ensuring that all the correct precautions have been taken and all connections have been made the engine can be run for the first time. The following list is some checks that can be run if problems are encountered.

The following diagnostic routines serve as useful indications in the event of a system failure and help to advise corrective action.

### ***If the engine fails to start:-***

- Check that you have fuel and a charged battery.

### ***If not, check the following:-***

- Check the **35-way ECU Connector (A)** and terminals, re-fitted correctly, i.e. secured and latched into the ECU connector and socket.

Do not disconnect the ECU with the ignition switched on as this may cause damage the ECU electronics.

**WARNING NOTE: During the following tests, it is most important to remove the ignition leads as stated, this is to stop the engine from kicking over and injuring hands or person near belts and pulleys. if you are unsure in any way, please contact the Alpha group.**

To check that the coil is functioning correctly.

### ***Distributor type systems:-***

- Disconnect from the distributor the high tension coil lead, leave a small gap between the coil lead contact and a suitable ground point. With the ignition on, trigger the RPM speed sensor by brushing the magnetic pick-up with a ferrous object, this will cause sparks to occur across the gap

### ***If not, check:-***

- The RPM speed sensor connector on the **Wiring Harness (2)** and its terminals (**JJJJ** or **E**).
- The ignition feed to the **Ignition Coil (3)**.

## **Other Causes Of Poor Performance**

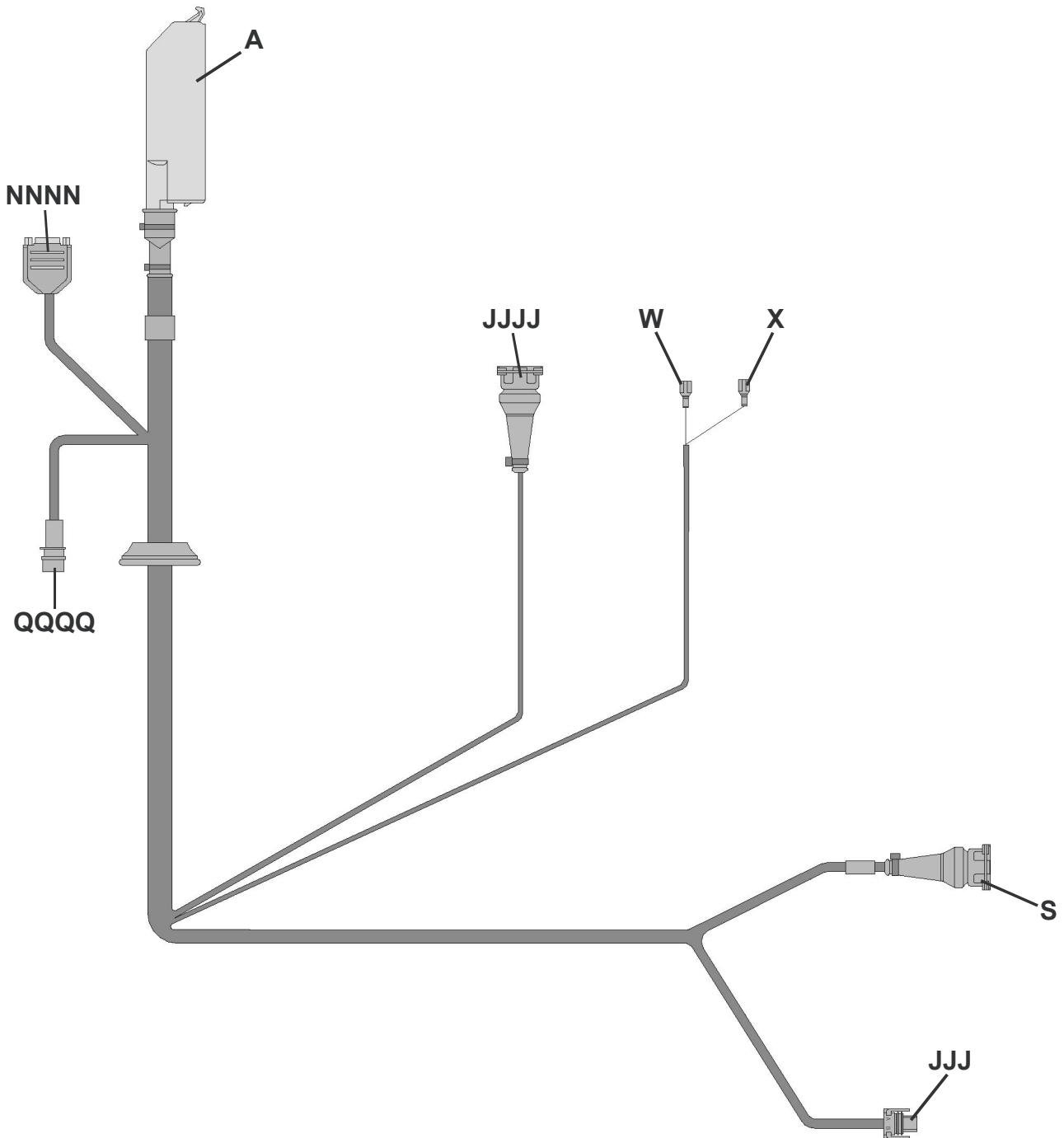
### **Connectors and Terminals**

Inspect all connectors for pins that may have been pushed out into the back of the connector. Also check that the wires have not become separated from the pins. Ensure that all connectors and terminals are securely fitted to their appropriate devices.

### **Wiring Harness (2)**

Examine the wiring harness along its route for signs of chaffing, especially where the harness passes through bulkheads and where it makes contact with components, at corners and other possible sharp edges.

**Appendix A : Wiring Harness**



**Appendix B : Wiring Harness Connections**

Label	Connector Type	Pins	Connector Colour	Wire Colour	Use
A	AMP Minitimer	35	Black	-	ECU
JJJ	Packard	2	Black	-	Air Temperature Sensor
S	AMP Minitimer	3	Black	-	Throttle Position Sensor
W	Spade	-	-	Black/White	Coil 1 (Negative)
X	Spade	-	-	White	Coil 1 (Positive)
JJJJ	AMP Minitimer	3	Black	Grey Sleeve	RPM Sensor
NNNN	Serial Plug	9	White	WhiteSleeve	Communications
QQQQ	Sureseal	4	Black	-	Power Harness

**Appendix C : Pin Outs From ECU**

Pin	Description	Connector
1	Power Ground	QQQQ
2	-	-
3	Engine Speed Sensor Ground	JJJJ
4	Engine Speed Sensor Input	JJJJ
5	-	-
6	-	-
7	Tacho / Rev Counter Signal	QQQQ
8	Serial Line	NNNN
9	-	-
10	-	-
11	-	-
12	Gearshift Lamp Output	QQQQ
13	-	-
14	-	-
15	-	-
16	-	-
17	Throttle Position Input	S
18	-	-
19	Power Ground	QQQQ
20	Voltage Supply (Nominal +12V)	QQQQ
21	-	-
22	-	-
23	-	-
24	-	-
25	Ignition Signal Output 1	W
26	-	-
27	Serial Line	NNNN
28	-	-
29-	-	-
30	Reference Voltage	S
31	Air Temperature Sensor Input	JJJ
32	-	-
33	-	-
34	-	-
35	-	-

**Appendix D : Harness Spares**

<b>Component</b>	<b>Webcon Part No.</b>	
35-way Connector	9990098600	
4-way Connector	9990181700	
3-way Connector	9990166900	
3-way Connector Rubber Boot	9990175700	
2-way Connector	Brown	9990166700
2-way Connector Rubber Boot		9990175600
2-way Connector Rubber Boot	90°	9990157900
Terminal Pins (Standard Spec.)	For Above Connector (0.5-1.5 Wire)	9990098900
Terminal Pins (High Spec.)	For Above Connector (0.5-1.0 Wire)	9990204700
Terminal Pins (High Spec.)	For Above Connector (1.0-2.5 Wire)	9990204800
Ignition Coil Connector	Moulding	9990241600
	Terminal Pin (Small) 1 & 3	9990241700
	Terminal Pin (Large) 2	9990241800
	Wire Seal	9990241900
Relay Holder		9990179400
Fuse Holder		9990206900
Packard 2-way Connector	Kit (Air Temperature Sensor)	9990224500
Augat 4-way Connector	Lambda Sensor	9990206600
	Terminal Pin	9990206500
	Wire Seal	9990206700
AMP Econoseal Connector	Kit (Inertia Switch)	9990208300

**Appendix E : Standard Vauxhall/Opel Spares**

<b>Component</b>	<b>Webcon Part No.</b>
Distributor Cap (1988-90)	WDC044
Distributor Cap (1990-91)	WDC049
Rotor Arm	WRA250
Ignition Lead Set (1989-92)	WIL014
Crank Sensor	WSS051
Oil Pressure Switch (0.5 bar/7psi)	WOW061
Water Temperature Sensor	WTS005

**Appendix F : Fuel System Spares**

<b>Component</b>	<b>Webcon Part No.</b>	
Fuel Pump	100 Litres/Hour @ 3 Bar	5249970000
Fuel Pump	170 Litres/Hour @ 3 Bar	5249950300
Fuel Pump	100 Litres/Hour @ 5 Bar	5240001502
Fuel Pump	5 - 9 psi	5249950100
Fuel Pump	2.5 - 4.5 psi	5249950200
In-Tank Filter	40 Microns	9990154700
In-Tank Filter/Union	40 Microns - 12mm Pipe Fitting	9990130400
Tank Union	M16 x 28mm Long - 12mm Pipe Fitting	9990130300
In-Tank Pipe	PTFE - 12mm I/D	9990160300
Fuel Line Hose	7.4mm I/D x 10m	9990268800
Fuel Line Hose	9.5mm I/D x 10m	9990268900
Fuel Line Hose	10mm I/D (180° U-Bend)	9990146100
Fuel Line Clip	Cobra (Grip)	9990273700
Cobra Clip Pliers		9990274100
Fuel Pressure Regulator	1 - 5 psi	CR9411
Fuel Filter In-Line	3/8"	CR9417
Filter King Regulator & Filter		9990141900
Filter King Filter		A9001E