RPi. ENGINEERING
International
for Specialised Rover Engines

Wayside Garage
Holt Road, Horsford
Norwich Norfolk
NR10 3EE

Tel Int. + 44 (0)1603 891209 Fax 890330
Web Site www.v8engines.com

VAT NO: 373 2330 72

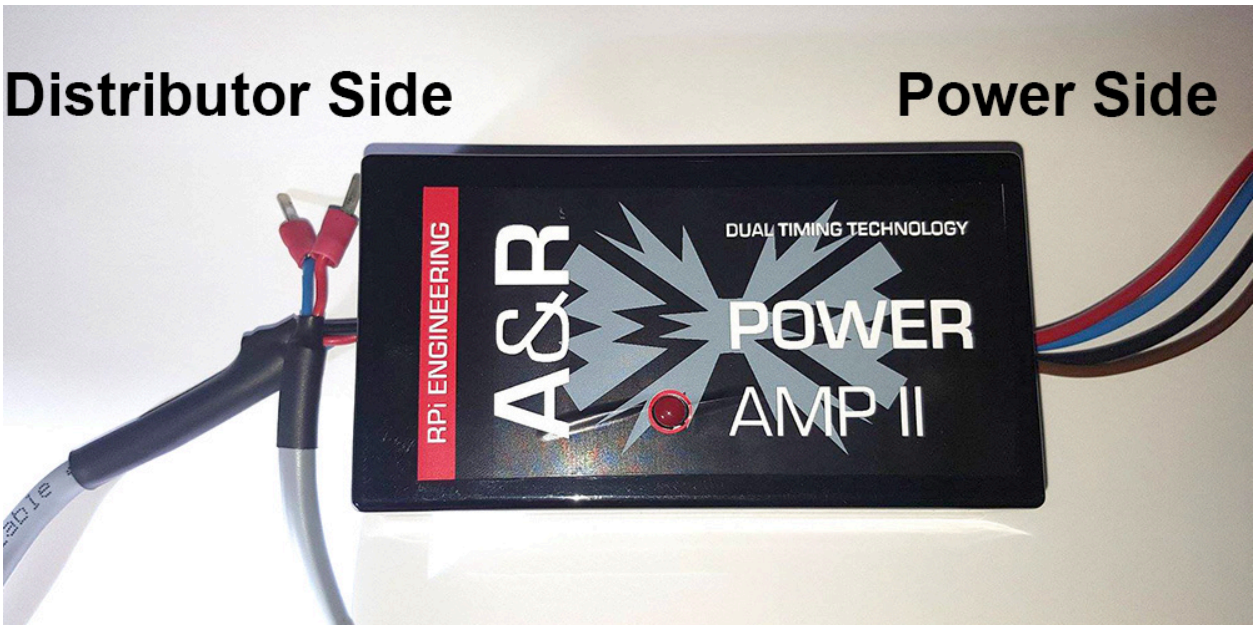
Partners C T Crane & R.P.I. International Ltd

Fitting instructions for the LPG Dual timing power amplifier

Before installing the RPi Amplifier please note that we only guarantee this item when used with the Bosch 12 volt ignition coil that we supply.

Wiring the A&R Amplifier could not be simpler however as there are a few versions of distributors we have tried to cover all options in these instructions. For this reason please read all the information provided before carrying out the installation.

There are two groups of cables to the power amplifier as shown below.



Power Side

The below connections need to be made for the power side of the amplifier.

Red --- 12 Volt ignition feed. This can normally be taken from the coil positive terminal.

Black --- Battery Negative. This MUST be a clean connection to the cars body, chassis or Battery negative

Brown --- Coil Negative.

Blue --- Connect to a LPG solenoid 12 volt feed. If you are not running LPG at present but will be in the future please connect the blue wire to the red +12 volt ignition feed.

Coil connections
It is very important to take note of what else is connected to the coil at this point. Although this will vary from car to car most will follow the guide below.

Carburettor vehicles
In addition to the A&R Amp connections that you have made above the coil should also have the following.

Coil Positive – 12 volt ignition feed from the ignition switch.

Coil negative – Potentially a rev counter connection.

If you are converting from a points style distributor you will need to remove the wire that originally came from the points to the coil.

If your original setup had an electronic distributor please follow the Fuel injected section below.

Fuel injected vehicles
The original Rover amplifier (all styles) will have a connection to both the positive and negative of the coil. These will need removing.

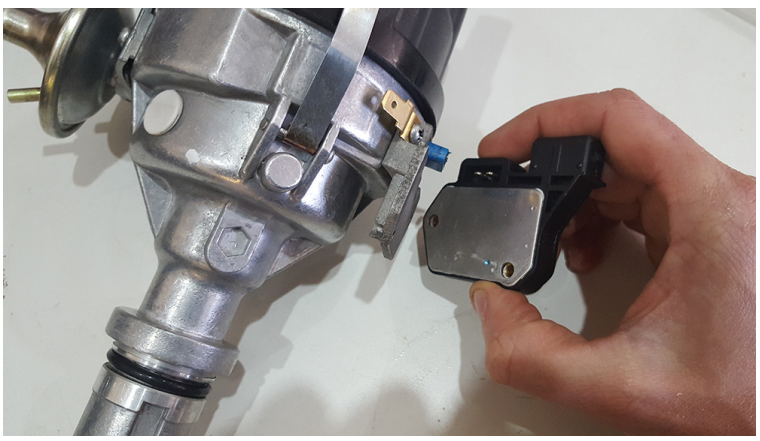
However, the fuel injection system will also have a wire that is connected to the negative side of the coil. On the Hotwire (14CUX) this is white with a black trace and must still be connected to coil negative otherwise your injection system will not work!!

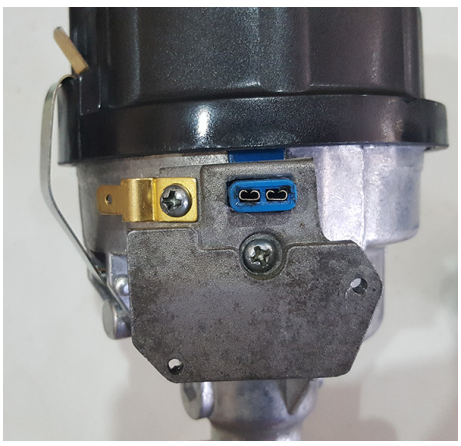
!!!!! Important Notes !!!!!
It is important to ensure that all connections to the coil are clean, a little bit of copper slip often helps protect the electrical connections and looks far better than a dollop of grease. Also please ensure that all cables are of adequate size to supply the current required by the coil and ensure that things such as electric radiator fans etc are not feed from the coil supply.

Distributor side

Amplifier on the side of the distributor
As we often supply our amplifier complete with a brand new distributor we will cover its connections first however this will also cover many of the original Rover distributors that have the original black box amplifier on its side as well.

First remove the Rover amplifier from the side of the distributor which will reveal a two pin plug as seen below.

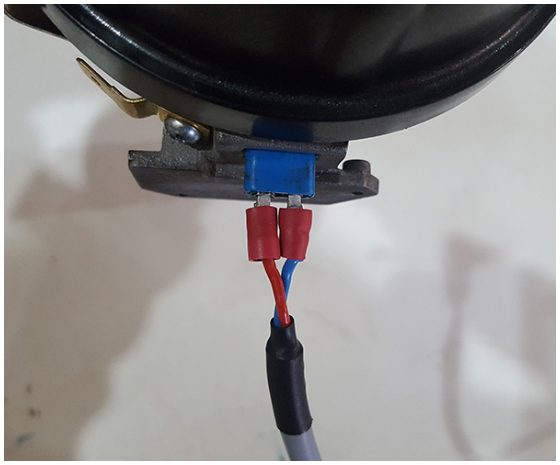




Next connect the blue and red wires that come from the grey shielded cable on the distributor side of the RPi A&R Amplifier as follows.

Blue to the right side of the plug

Red to the left side of the plug



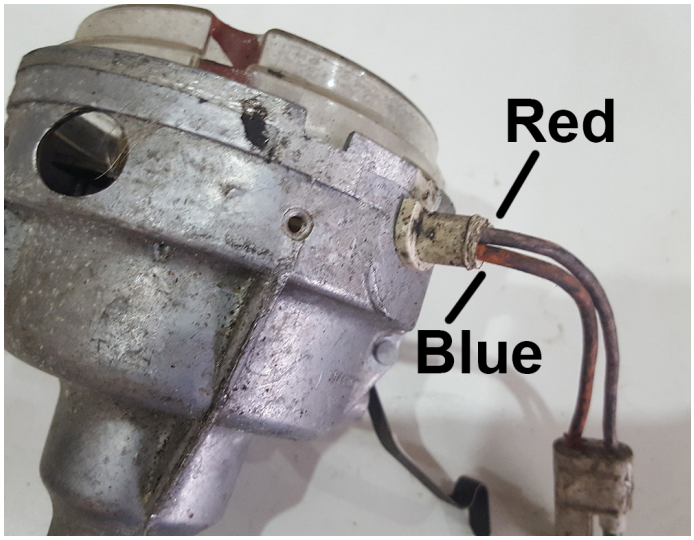
Black amplifier remotely mounted near to the coil
Normally this style of distributor has a small two pin black plug mounted on the side of the distributor on a bracket. You will of course need to unplug the wiring loom that heads off to the coil and you will have already removed the wires on the coil as per page 2 of these instructions.

Connect the distributor side wires from the RPi amplifier as per the second picture below. The first picture shows the plug that this style of distributor has.

Those amongst you that are paying attention will notice that this means our amplifier connections on this distributor plug are the other way round to the blue and red wires on the plug that you removed. Don't panic, there is no need to call us, this is correct.

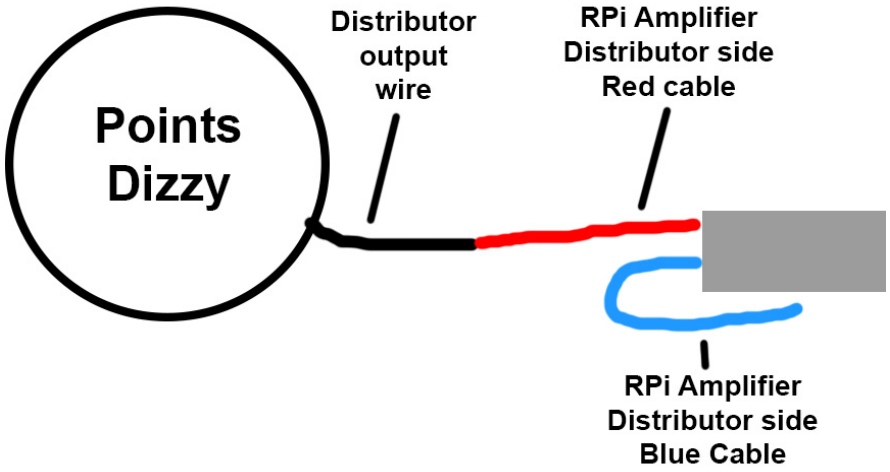
Metalic amplifier box mounted near to the coil and purple and orange wires from the dizzy
These are not so common however we do still see some out there (although by now the mechanical advance curve could probably be questioned)

Connect the distributor side wiring from the RPi Amplifier as per the picture below.



Points distributors
Although this amplifier is designed to give a bigger spark output and dual timing ability to an original Rover electronic distributor it can also be used in conjunction with a distributor fitted with mechanical points. When used with points it does not give a bigger spark however will still give the dual timing ability. It does also have the advantage that it takes all of the electrical load away from the points thus eliminating points burn.

To achieve this firstly the “P” link must be made inside of the RPi Amplifier as detailed on Page 5 of these instructions. Next the wiring to the distributor is very simple as can be seen in the diagram below. The Blue wire is simply taped and insulated out of the way, not connected to anything while the red cable gets connected to the wire that comes from the points.



Timing the engine after installation
Once the amplifier has been installed, start the engine and now set your ignition timing to 14 degrees BTDC. This will be correct for your engine running on LPG.

You can now check the functionality of the dual timing by switching to petrol and revving the engine to approx. 2000 rpm. The red LED on the RPi Amplifier will illuminate which signifies that the timing is being retarded.

For those who are more interested in the functionality of this unit and also what changes can be made inside.

Gaining access to inside the amplifier
To open up the amplifier to gain access to the internals you will need to remove the 4 most outer screws (one in each corner) Do not remove any other screws on the rear of the case.

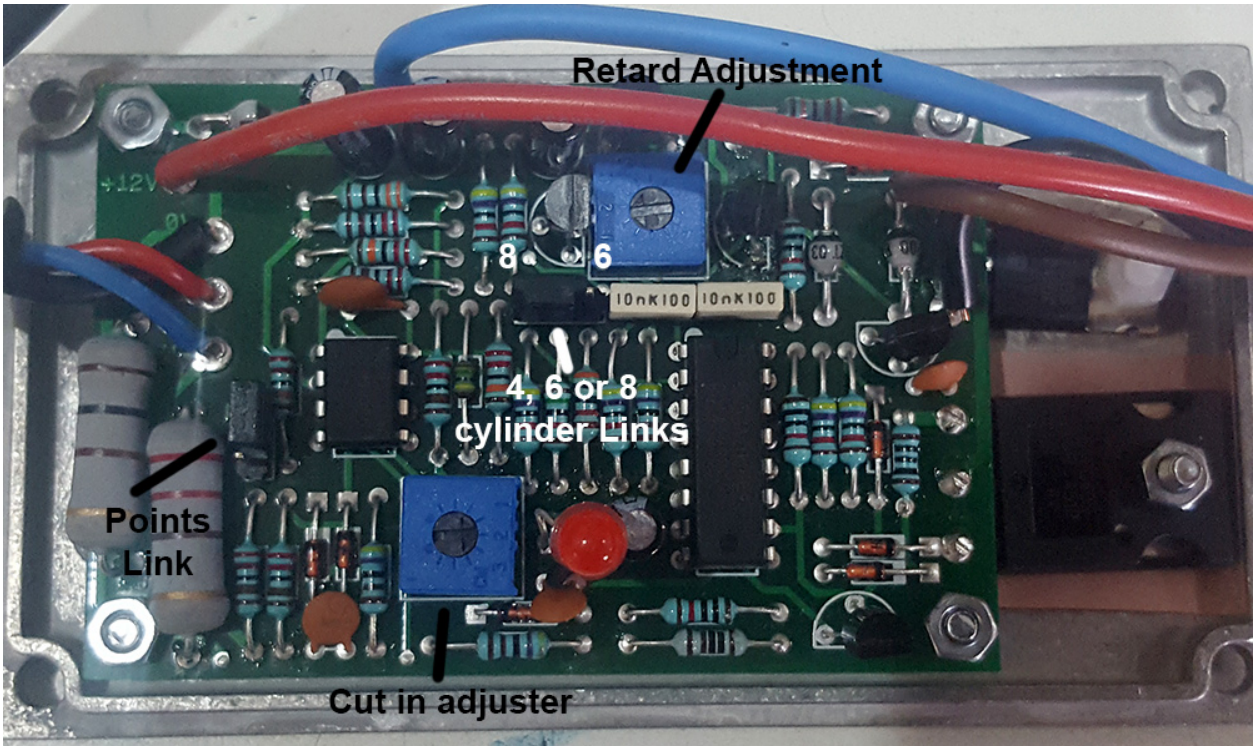
Points Link
As previously mentioned when using this amplifier with a points distributor the “P” link must be made inside. As detailed in the picture below this is a two pin link that as normal will have a small jumper connector hanging from one pin. To put the Amplifier in points mode remove this jumper and place it over both pins thus making a connection between the two.

Retardation functionality and Adjustment
We supply these amplifiers pre set to give an 8 degree ignition timing shift when running on petrol. The unit starts this ignition timing shift when the revs go up through 1500 rpm and then this feature is turned off when the revs drop back down through 1200 rpm. The red LED will be illuminated when the timing shift is being applied.

The small adjustable potentiometer (POT) labelled “Retard Adjustment” in the below picture will allow adjustment of approx. 3 to 13 degrees.

Turning this Clockwise will give a low amount of ignition retard for petrol . i.e at fully clockwise 3 degrees.

Turning this Anti-clockwise will give a larger amount of ignition retard for petrol. i.e at fully anti-clockwise 13 degrees.



4, 6 or 8 cylinders
There is a small three pin link which allows this unit to be used with 4, 6 and 8 cylinder cars. As our primary focus here is the Rover V8 engine the amplifier as it leaves us will always be set to 8 cylinder mode. However if you are installing it to another vehicle then you can make the links below to set it up correctly.

The left and centre pins linked together will place this in 8 cylinder mode.
The right hand and centre pins linked together will place this in 6 cylinder mode.
Leaving all three pins disconnected will place this in 4 cylinder mode.

Cut in adjuster
Please do not adjust this setting at all. It is pre set to the correct value.

Ignition fault diagnostics

If at any point you find you have no spark there are some very easy test that you can carry out to determine where the fault lies. We have detailed these tests below for your convenience.

Amp and Coil test together
Firstly disconnect the coil lead from the distributor and place a spark plug in it and ensure the spark plug is earthed. Please see the picture below.

Disconnect two small wires that connect directly to the distributor from our amplifier (Blue and red).

Now turn your ignition on and touch the small red cable that you just disconnected from the distributor to an earth point. You should touch it then remove it straight away and this will generate a spark at the spark plug.

If no spark is produced then the next step is to test the coil separately as detailed below.

If a spark is produced then the amplifier and coil along with your wiring to it is working. The next thing to check is the connections to the distributor and the distributor itself.

Independent Coil test
To test the coil independently leave the spark plug connected as detailed above and remove all the connections from the negative side of the coil. Next make a wire that will connect to the negative side of the coil and is long enough to reach a good earthing point.

Now turn the ignition on, watch the spark plug and touch the wire you just created on and off of an earth point quickly. If this does not generate a spark you either have bad wiring to the coil or your coil is at fault.