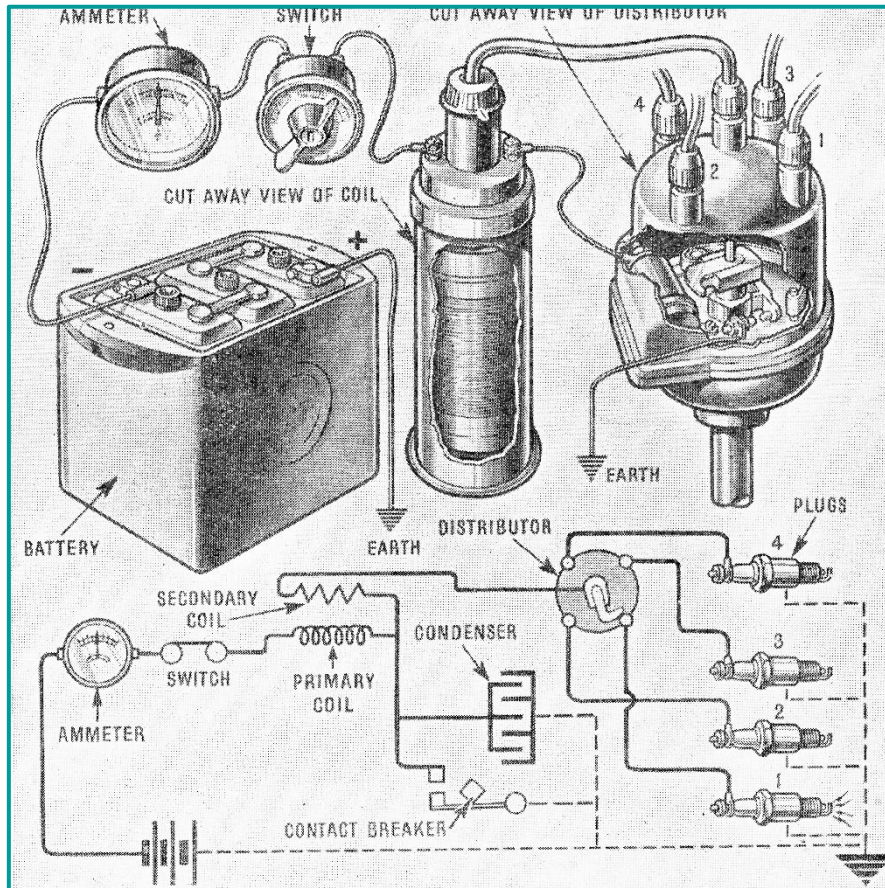


TECHNICAL NOTES SERIES

JOWETT JAVELIN – PA, PB, PC, PD & PE JOWETT JUPITER – SA & SC



A typical period ignition system – with ignition coil at centre.

PART XXXVII – IGNITION COIL & DISTRIBUTOR

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*Written by Mike Allfrey.
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Introduction

The Lucas ignition coil has, traditionally, been a reliable part of a Jowett's ignition system. However, there have been instances where a coil has been seen as a cause of problems related to the engine's ability to run evenly.

Essentially, there are two basic types of ignition coil:

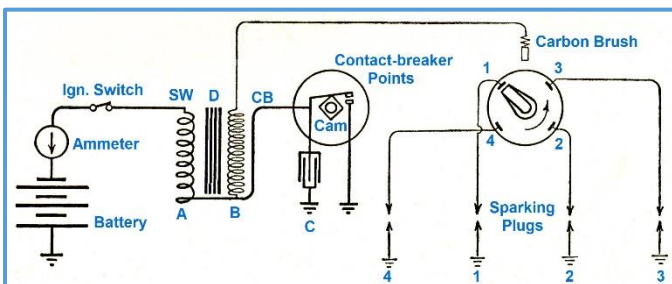
1. The original bitumen filled coil assembly.
2. The more common today oil filled coil.

Both bitumen and oil perform the function of keeping the coils inside the canister cool. This ability to keep the coil cool is vitally important.

The original equipment in Jowett vehicles was the bitumen filled Lucas coil. On offer, as accessories were the Lucas Sports Coils, that provided 'fatter' sparks and they also looked more sports oriented. They were also bitumen filled, unless marked prominently 'Oil Filled'. In addition, there were numerous specialist ignition coils, the best probably being the Runbaken oil filled coil. The benefit of these coils was that they featured glass casings, so that the oil level could be observed. They also had the great reputation of being the best in the industry.

Battery-coil Ignition System

The primary or low-tension circuit comprises the battery, ignition switch, coil primary winding, contact-breaker points and condenser. When the ignition switch and contact-breaker points are closed, a low-tension current from the battery flows through the primary winding of the coil, creating a magnetic field which is strengthened by the soft-iron core of the coil.



Basic ignition circuit diagram where A is primary winding; B is secondary winding; C is condenser; D is soft iron core; SW is switch terminal on coil; CB is coil terminal to contact-breaker. Firing order is for Jowett Javelin and Jupiter, as the rotor arm rotates in direction of arrow.

The distributor cam rotates opening the points, the primary circuit is broken and the collapsing magnetic field cuts the secondary windings, which are also surrounding the soft-iron core of the coil. A high-tension current is induced in the secondary windings because of the great number of turns of wire employed.

The high tension current passes to the rotor arm, distributor segment and sparking plug, across the points to 'earth' and completes the circuit via the chassis, battery, ignition switch and primary winding of the coil – to which the other end of the secondary winding is attached.

Mounting The Ignition Coil

The Javelin has its coil mounted vertically, on the inside of the passenger side of the engine compartment. The cable connectors were at the top, with the high tension lead having a rubber boot to keep water out. the two low tension terminals were left to fend for themselves.

The Jupiter has its coil mounted horizontally on a bracket welded to the upper cross member tube in front of the radiator, towards the right hand side. With Lucas bitumen filled coils this positioning was all well and good.

In both cases, it is most important that the coil mounting clamp makes a sound contact with the coil's canister and the body/chassis structure of the car. A Lucas coil clamp features a small pointed projection for this purpose.

Relatively Modern Ignition Coils

This is based on practical experience. When electronic ignition was set up for my Jupiter, Performance Ignition Services provided me with one of their 'Scorcher' coils. This worked well for a fair amount of time.

Then the engine started to show symptoms of carburettor flat spots when the throttles were opened. This was after approximately 30 kilometres had been driven, hot or cold weather conditions. All manner of carburettor tuning made no difference, even having the Solex carburettors then fitted, overhauled (again), did not resolve the flat spot concern. Also, very gently squeezing the throttle pedal with a merest touch of my big toe did not vary the flat spot condition.

Finally, the engine was re-equipped with Javelin Zenith carburettors, at enormous cost, but the flat spot concern was becoming worse. The reasonable driving range was down to just 15 kilometres and then the car staggered along the road. Not at all good.

For some reason, the distributor cap was removed and a badly burnt arm on the rotor was found. The distributor was taken to the folk at Performance Ignition Services for an examination. On arrival home, there was a telephone call, 'could I bring in the ignition coil?' That did not take long, and the reason for all of my troubles was quickly discovered. Cooling oil had leaked out of the coil canister and caused some of the internal windings to be damaged.

Cause Of The Concern

The coil was made in China. Being mounted in the Jupiter meant that it was in a horizontal position. The Scorcher coil came with a tight fitting rubber boot, of rather copious size, sealing the high tension lead. Being horizontal, oil from the coil had filled the rubber boot, but was contained therein, no sign of any external leakage at all.

However, as the service technician explained, the leakage was enough to expose the coil windings to a void in the canister and overheat to the extent that the wires' shellac insulation broke down and the ignition system worked intermittently.

I was given another coil and tried it, again in a horizontal position, mostly because I was told it was better sealed against leakage. It was made in Malaysia, it leaked!

A Bosch ignition coil that, to casual observance was made in Germany, a fair bit more expensive, but this time, made in Brazil! I was tempted to buy a Lucas look-alike from Holden Vintage & Classic (UK) but had learnt that most of their 'Lucas' components are sourced from China. Not for me!

I finally mounted the Bosch coil on two quick temporary brackets in a vertical position. It continues to work well and proper brackets will need to be fabricated.

Comment On Distributor

Earlier Javelins and Jupiters featured Lucas DKY-4 type distributors. Later models were equipped with Lucas DM2 type with built in Vernier fine timing adjustment. The DKY type did have vacuum operated advance/retard feature that operated on the distributor body externally. That means that the vacuum unit physically rotates the body itself to achieve changes in ignition timing.

A DKY type distributor relies on its mounting shank to make earth contact with the front timing cover, which should be earthed to chassis *via* the earth strap at the starter motor flange. Over many years of use and engine breathing, the contact area at the shank can become interrupted due to oil residue and other matter that may have built up in the mounting area.

Since the body and shank rotate, within the timing cover during the advance/retard activity, continuity of the earth can be interrupted and cause ignition related problems. A solution to this concern is to install an earth wire from the distributor body to a convenient 1/4" bolt on the engine. It is a simple matter to use a piece of electrical wire, with black insulation, as per Lucas wiring protocol, solder on suitable eye terminals so that a small self-tapping screw can pass through into a hole in the distributor body. the other end should have an eye terminal to fit a 1/4" bolt on the crankcase. The drilling in the distributor body should be located in a position where the screw cannot interfere with the internal mechanism. The earthing wire should be sufficiently long to allow free movement of the distributor body as it is moved through its arc of operation.

The Lucas DM2 version is clamped in position on the timing cover and there should be no need for a separate earth wire. The vacuum unit and its motion is built into the distributor body, which remains in the one position.
