

MAGNETO

Conversion

Bob Brassington shows how to convert a single cylinder magneto to run a coil ignition system

The magneto is the heart of any good single cylinder motor cycle, which should fire up at the first prod and be crisp at low revs. Magnetos are designed so that maximum efficiency occurs at full advance and at high engine revs. Any loss of magneto efficiency will badly affect the energy of the spark at low engine revs or when the ignition is retarded, making starting difficult.

With coil ignition, maximum spark is available at low revs and is completely unaffected by advance or retard or engine speed. Now we are talking.

My HS Ariel scrambler is in a high state of tune. This means that combustion chamber filling is instant and copious. Starting the 500cc single became difficult. My theory was that the spark provided by the old magneto was so weak that it was literally being blown out by the fuel. Balderdash, said my friends, but I was determined to prove my point by converting to coil ignition.

Now the Ariel starts first kick, runs smoother, and picks up more cleanly. The smile of smug satisfaction has never left my face. All I pray is that the dynamo keeps doing its stuff as I am now totally dependent upon a good battery and the charging system.

Parts list

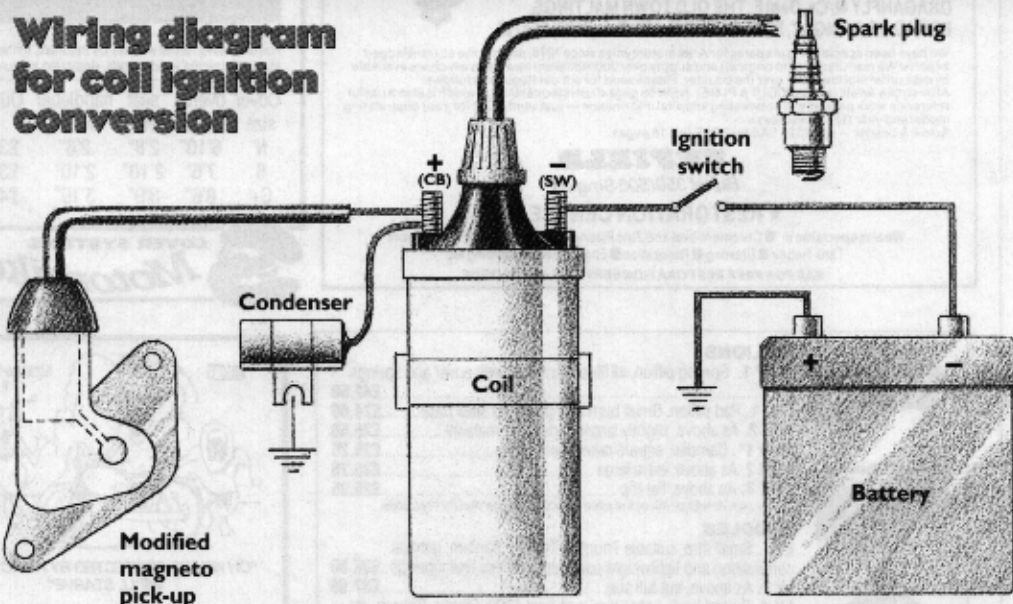
The cost of parts for the conversion is less than £20 if you fit all new items, available from your local auto parts shop. Scrapyard prices would be a lot less. My Ariel has been converted to 12v, so I used:

- One standard ignition coil (Intermotor part number 1100, screw in HT, non ballast type) or order a sports coil (Intermotor part number 11030, push in HT, non ballast type)
- A condenser (part number 34570)
- A set of alternator brushes (part number 61210)
- An ignition switch. A simple on/off toggle switch will do, but I used an Ariel Square Four ignition switch.

Dismantling the magneto

Remove the emergency spark-gap screw if fitted — hidden under the body on magnetos for singles — and the earth brush which is under a large brass screw. Take off the contact breaker assembly, HT pick-up, and magneto end plate. There may be a number of shims; put

Wiring diagram for coil ignition conversion



them to one side. Draw the armature out of the magneto housing. Pull off the bearing race and carefully remove the slip ring by gently prising at two opposite points.

Modifying the armature

Partially dismantle the armature so that you can strip off the copper wire windings. Undo the two long screws — they may be extremely tight — that secure the brass end pieces of the armature. Leave the contact breaker end firmly assembled to the soft iron core. Before going any further, mark the position of the brass end piece carrying the contact breaker shaft so that it can be replaced in exactly the same position should it come loose.

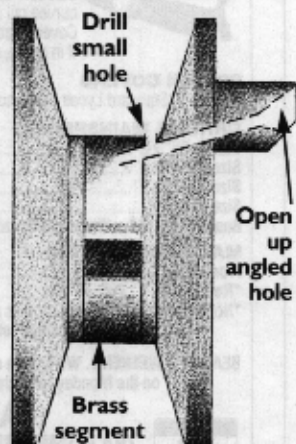
Now strip down the condenser by removing the two small screws

and peeling off the mica laminations, but retain the base plate. The centre screw holding the points assembly to the armature is insulated from the armature shaft and screws into the base plate of the condenser. This screw will be used to connect the points to the slip ring.

Cut through the fine outer copper wire secondary windings and peel them off the heavy primary windings which can then be unwound. Clean up the soft iron core.

Carefully open out the angled hole in the Bakelite insulator boss on the slip ring which leads to the brass segment with a small drill bit. Take a short length of PVC covered high tension (HT) cable, use solder to tin about 1/4in of the wire, and push it into the brass segment of the slip ring. The tinned wire must

be a snug fit in the hole. Open up the Bakelite boss on the slip ring to accommodate the insulation sleeve of the HT cable.



Slip ring changes