

BOYER BRANDSEN ELECTRONICS LTD



BRITISH CYCLE SUPPLY

Call (902)542-7478

Fax (902)542-7479

info@britcycle.com

INSTRUCTIONS FOR INSTALLING IGNITION KIT NO: 13E ON UNIT CONSTRUCTION
BSA C15 & B40 MODELS EQUIPPED WITH DISTRIBUTOR TYPE IGNITION & CONVERTED
TO 12 VOLT OPERATION. (BATTERY OR CAPACITOR) POSITIVE EARTH ONLY

1. CONTENTS

- a. Black transistor box (5 lead) with foam adhesive backing strips.
- b. Plastic stator plate to replace the standard points assembly in the distributor, with twin outlet lead and grommet attached; this replaces the existing lead from the C.B. (+) terminal of the coil.
- c. Magnetic rotor which replaces the cam in the distributor. Fixing screw included.
- d. Red tap connector.
- e. 2 no. plastic straps.

f. *Twin lead 1 metre long (stator plate in distributor to transistor box)*

2. FITTING THE COMPONENTS

- a. Remove the petrol tank and seat to gain access to the existing ignition coil and associated wiring, first disconnecting the battery if fitted. Remove the spark-plug and rocker box side cover, then turn the engine slowly by means of the kickstart, (or by rotating the rear wheel with top gear engaged) until the piston is at roughly top dead centre with both valves shut. Remove the distributor cap (screw or clip fixing) and the contact breaker points should be seen to be slightly open or about to open - if not then the engine is probably one revolution away from the ignition position. The distributor shaft rotates in an anti-clockwise direction.

Disconnect and tape up the wire from the side terminal, loosen the distributor clamp screw in the outer timing cover and pull/twist the distributor unit out of the crank case and transfer it to the workbench. Remove the contact breaker points, condenser and related fixings, undo the central screw retaining the cam on the distributor shaft and pull it off the spindle: remove the remaining loose advance/retard parts. At this stage it is useful to examine the distributor shaft and the bore in which it runs, particularly if there is a lot of side play. The shaft can

be removed from the distributor by tapping out the cross-pin just above the detachable driving tongue at the bottom of the distributor, after which the spindle can be withdrawn upwards. This will release a nylon thrust washer. No bushes are fitted in this distributor but new shafts are obtainable. Lightly grease the shaft before reassembly. The rotor can now be fitted to the distributor spindle, rotating magnet uppermost, the two spring posts fitting in the holes provided (either way round). Tighten the new fixing screw with flat and spring washers securely. Handling the stator plate carefully, fix it to the old condenser and fixed contact point mountings with the screws provided, with the "ghost" picture of the magnet on it uppermost.

- b. Decide on a suitable location for the transistor box, as near to the ignition coil as convenient, such as on the flat cross-brace on the top of the rear subframe. It can be fixed by means of a soft lined clip, or by using the adhesive backing strips, (peel off the protective layer) or by using the plastic straps provided. Do not totally enclose the unit in material such as foam rubber which could cause over-heating.



3. WIRING (See Circuit Diagram)

If it is necessary to alter wiring lengths and connections to suit any particular installation, all connections must be of the highest quality - wires twisted together will not do (use crimped or soldered connections) - and coiling up of surplus lead lengths should be avoided. The wiring work is basically very simple:-

- a. Disconnect the lead(s) from the negative terminal of the ignition coil, marked (-) or (S.W.) and reconnect these lead(s) to the white lead from the transistor box, if necessary using the four way tap connector provided. Now disconnect the black/white lead to the distributor and the black/white lead to ignition switch terminal 15 if fitted, from the positive terminal of the ignition coil marked (+) or (C.B), tape up and remove any condenser connected to this terminal. Then connect the black lead from the transistor box to the positive (+) terminal of the coil.
- b. Connect the positive (C.B.) terminal of the coil to the red wire from the transistor box, and also to a good earth point on the frame by means of the sleeved red lead with the circular flat terminal.
- c. Connect the twin stator lead to the two remaining wires coming from the transistor box (black/yellow to black/yellow and black/white to black/white), and run this lead down to the distributor, taping the lead away from the main harness wires where possible to avoid interaction. Now connect the twin lead to the two wires coming out of the distributor, which can only be connected

- d. Check that all redundant leads have been removed or taped up, and check all connections for tightness and proper contact at earthpoints, since the electronic ignition system requires the full 12V supply to be maintained.

4. IGNITION TIMING



The timing on C15/B40 engines is as follow:-

$33\frac{1}{2}^{\circ}$
 $9/32''$
 7mm

before T.D.C., fully advanced, all models.

The timing is not as critical as on later models and should be set by measurement down the plug hole as follows:- Locate T.D.C. by means of a rod down the plug hole, and mark the rod to line up with a convenient reference point such as the top edge of the plug hole. Piston is at T.D.C. Remove the rod, make a second mark on the rod $9/32''$ (7mm) above the first mark and put it back in the hole again. Rotate the engine backwards until the upper mark disappears from view and then turn the engine forwards until this mark coincides with the reference point. This sets the engine at the full advance position, with any backlash in the drive from the crankshaft to the distributor correctly taken up.

The ignition is correctly timed when the leading edge of the magnet on the rotor is directly underneath the leading edge in the picture on the stator plate above it, as indicated by the large arrowhead on the stator plate. Therefore, rotate the distributor body until the magnet and the printed outline are in their relative positions. If there is any backlash in the drive to the rotor allow for this when setting the ignition timing by temporarily taking up the play by turning the rotor clockwise i.e. against the direction of the drive whilst setting the timing. If the cable outlet comes at an inconvenient position, lift the distributor up and rotate the rotor a $\frac{1}{2}$ turn, and then push the distributor down again to re-engage the driving tongue and re-time.

Lock the distributor in place by tightening the clamp screw checking the body does not rotate during tightening, make the final check that the timing has been made on the right stroke, and then replace the sparking plug and petrol tank, re-connect the battery.

Final adjustment to the timing can be made on the road. Stroboscopic timing is not necessary and no attempt should be made to do this by running the engine with the chain case removed, since the moving parts could cause serious injury. The advance range provided is approx. 10% camshaft (20% crankshaft).

5. SYSTEM CONDITION

It is essential that the existing electrical system is kept in good order. i.e. battery, ignition switch, ignition coil, H.T. cable, plug, plug cap, suppressor and associated wiring and also capacitor where used instead of a battery.

Apart from this, no maintenance is required and timing cannot vary, unless disturbed. Do not disturb the stator plate unnecessarily.

The most common symptom of low voltage is apparent over-advance and kicking back.

The electronic system is made by Boyer-Brandsen for O.T.J. The transistor box is guaranteed for 5 years and the other components for 12 months. Please keep your receipt as proof of date of purchase.

BRITISH CYCLE SUPPLY

Call (902)542-7478

Fax (902)542-7479

O.T.J.

info@britcycle.com

NOTE:

If the stator plate does not seat correctly and/or the rotor magnet touches the stator plate when pushed upwards to take up any end-float, adjust the height of the stator plate by placing one or more of the spare flat washers provided between the old mounting post and the stator plate.

The clearance between the stationary pole projecting from the stator plate and the magnet on the rotor should be 1 mm. (.040") or less.



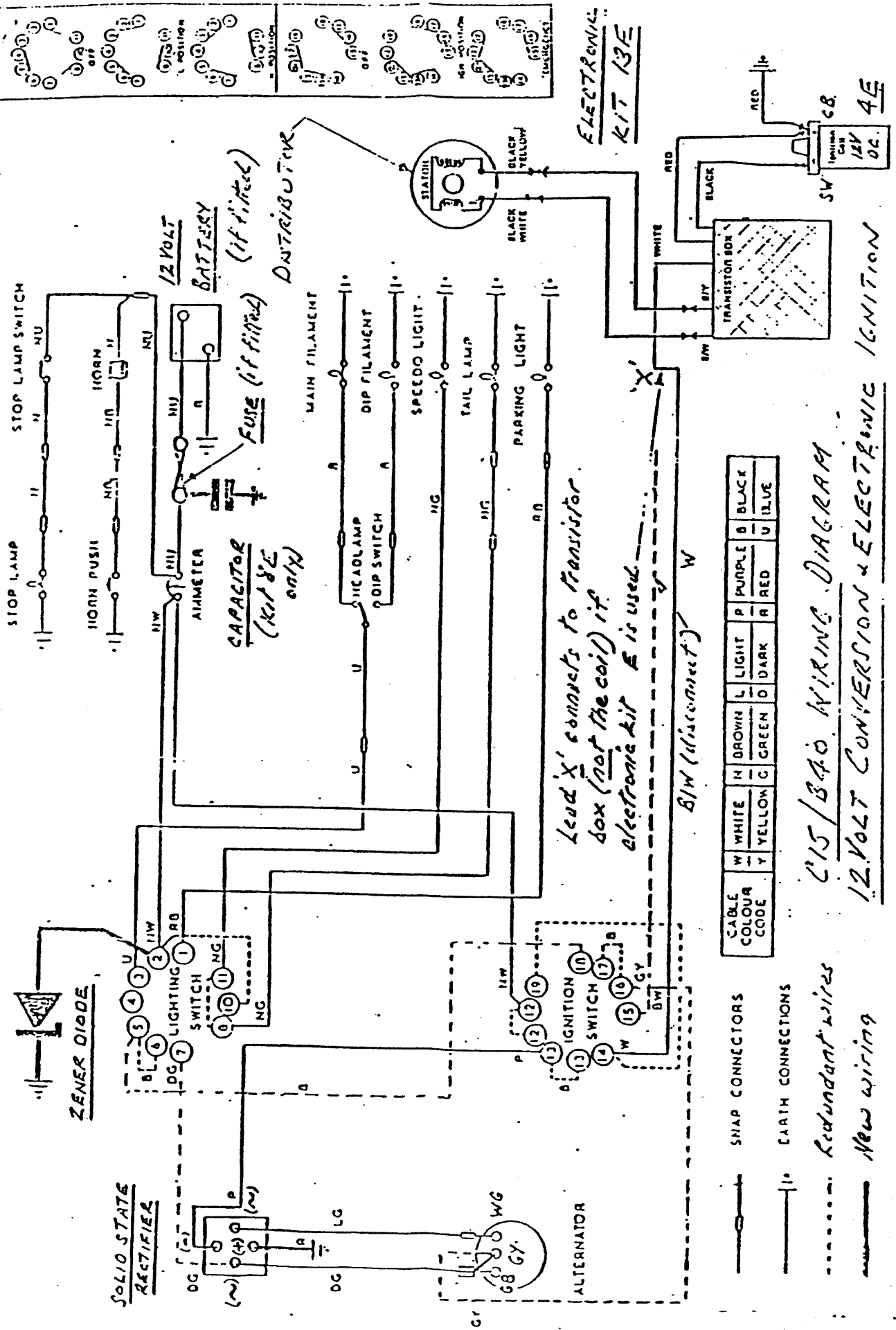
BRITISH CYCLE SUPPLY

Call (902)542-7478

Fax (902)542-7479

info@britcycle.com

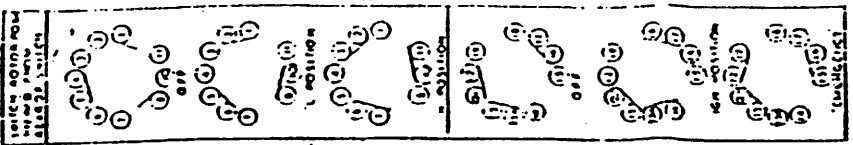
6V SYSTEM CONVERTED TO 12VOLT (KIT 8E OR 80G)



CABLE COLOUR CODE	W	WHITE	M	BROWN	L	LIGHT	P	PURPLE	B	BLACK
	Y	YELLOW	G	GREEN	D	DARK	R	RED	U	BLUE

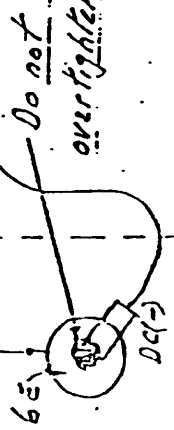
C15/B40 WIRING DIAGRAM
12VOLT CONVERSION & ELECTRONIC IGNITION

ELECTRONIC KIT 13E

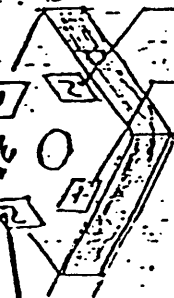


WIRING for lights etc.

(Positive Earth)



DC(-) Supply



RECTIFIER (SOLID STATE TYPE)

USE THIS SKETCH FOR ASSEMBLING KITS BE & 12E/13E TO MACHINES NOT FITTED WITH ROAD EQUIPMENT

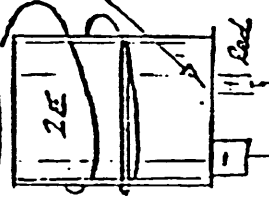
Alternator connections

Various colours have been used for the 3 output leads: find the method of connection to the 2 AC lead wires by trial & error for the best spark on cranking kickstart. The 5/15/8/10 stator is used: 1. Green/brown, 2. Green/yellow, 3. White/green, connect as shown.

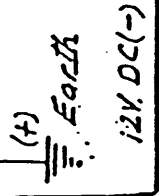
ALTERNATOR (Groid E.T. starters)

MOUNTING SPRING

Connectors should always face downwards



CAPACITOR UNIT (BLUE)



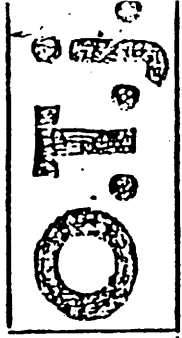
Heat sink To be not less than 6" x 4" x 16 SWG. aluminium sheet (such as front number plate)

No timing of rotor required
No earth required

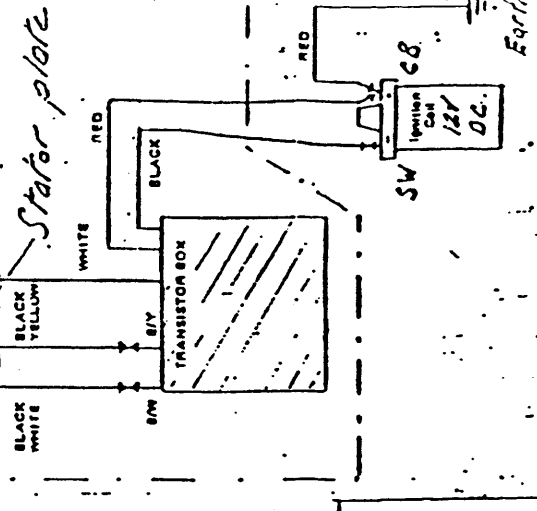
KIT 8E PROVIDES A 12VOLT D.C. SUPPLY TO POWER THE IGNITION SYSTEM. IN THIS CASE ELECTRONIC KIT 12E OR 13E, VIA THE 12V D.C.(-) LEAD X.

COMPETITION TYPE

12VOLT CAPACITOR/ELECTRONIC IGNITION



DC(-) supply to box.
ELECTRONIC KIT
12E Sidepoints
13E Distributor
Stator plate



ALTERNATOR (Groid E.T. starters)