

BOYER BRANSDEN ELECTRONICS LTD

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MICRO-MK.4 ELECTRONIC IGNITION SYSTEM **FOR NORTON COMMANDO / ATLAS MOTORCYCLES**

HIGH VOLTAGES DEVELOPED BY THIS SYSTEM CAN BE VERY DANGEROUS
ALWAYS SWITCH OFF BEFORE WORKING ON THE SYSTEM.

Comprising:-

- a) Transistor box (rectangular black box with 5 wires) (part number BOX00017)
- b) Stator plate NT1a (round circuit with two coils) (part number STA00152)
- c) Magnetic rotor (round plated steel unit with two magnets) (part number ROT00118)
- d) Plastic straps (1 x large, 1 x small)
- e) 1.25" x 0.25" BSF & UNF bolts
- f) Terminals: 4 male bullets

Fitting instructions

- 1) Remove seat.
- 2) Remove tank, disconnect fuel lines
- 3) Remove contact breaker cover.
- 4) Remove complete contact breaker assembly including the auto-advance unit.
Disconnect the two wires coloured black-white and black-yellow.
- 5) Set engine at 31 B.T.D.C. on the alternator mark (ensure correct mark is used - there are two marks on the alternator on 1972/3 models, use the mark indicating T.D.C. with the pistons in top position).
- 6) Fit magnetic rotor unit using one of the bolts (supplied), with the magnets in line with the "NORTON" name on the timing case. See Fig.1.
- 7) Fit stator plate (with the connecting wires at the bottom) using the standard studs.
- 8) The magnet on one side of the rotor should now be in the centre of the top timing hole in the stator plate; this should also set it half way along its adjustment slots. If not, move the rotor until this is achieved without turning the engine from 31deg. B.T.D.C. See Fig.2.
(THE ATLAS ENGINE HAS THE POINTS HOUSING BEHIND THE CYLINDER HEAD, IT'S SHAFT IS ROTATING IN THE REVERSE DIRECTION. SET TIMING ON THE CLOCKWISE TIMING HOLE.)
- 9) Fit two male bullet connectors (supplied) to the two wires in the timing cover and plug them into the corresponding coloured female connectors on the stator plate wires.
These connectors should be wedged in tight against the timing case or strapped to one of the stator coils, as the wire can fracture with vibration. Check the two core cable from timing cover to the front frame tube has a minimum 50mm(2inch) of free play.
- 10) The two wires in the timing cover can be traced up the frame tube to a pair of bullet type connectors. Remove these connectors.
- 11) Remove all the low tension connections from the two ignition coils.

PLEASE TURN OVER

- 12) Remove the white-blue wire from the ballast resistor between the two ignition coils. The colour of this ignition power feed wire may be different on some machines, if so check using a test lamp or meter to find the live wire when the ignition is switched on.
- 13) Remove the red wire from its earthing point on the end of the condenser pack. Reconnect this to the + marked terminal on the left-hand ignition coil.
- 14) Fit the transistor box to the frame tube with the plastic strap (supplied), with the long wires to the right-hand front side and the two short wires to the left. See Fig.3.
- 15) Connect the short black-white and black-yellow wires from the transistor box to the corresponding coloured two wires that feed down to the timing cover, using the male bullet connectors (supplied).
- 16) Connect the red wire from the transistor box as follows: first (Blue) connector to the earth tag on the end of the condenser pack, second (red) connector to the + terminal of the left-hand ignition coil with the red wire already connected to it.
- 17) Connect the - terminal of the left-hand ignition coil to the + of the right-hand coil using the short black connecting wire in the sleeve with the Red wire.
- 18) Connect the black wire from the transistor box to the - terminal of the right-hand ignition coil.
- 19) Connect the white-blue wire ('Live' removed from the ballast resistor) to the white wire from the transistor box.
- 20) All original wires that have been removed are now not in circuit and can be safely tucked out of the way.
- 21) Check all connections are good and tight, if not remove and tighten with pliers.
- 22) Refit tank, fuel lines and seat.
- 23) Start engine and time with a stroboscope to 31 B.T.D.C (28 DEG. with standard ignition) with the engine running up to 5000 r.p.m. This is done by moving the ignition stator plate. If the timing is not obtainable before the end of the adjustment, the magnetic rotor will have to be slackened off and moved a small amount until the correct timing can be obtained.
- 24) Refit timing cover. With this system two 12 volt coils can be used as long as they are in good order. The standard 6 volt coils do short out to the metal case, check for damage by the mounting clamps. A single dual output coil can be used as long as its primary resistance is more than 3 ohms. This should be mounted on the frame in a manner that will take the heat from the centre core.

General Information

- 1) This unit can run positive or negative earth as long as the ignition coils are fed from the positive supply.
- 2) The working voltage is 10 to 16 volts.
- 3) The maximum ignition coil current through the unit must not exceed 5 amps. The total ignition coil resistance should not be lower than 3.5 Ohms.
- 4) For low compression engines two 12 volt coils (4 Ohm) in series are satisfactory, for racing and high compression engines two 6 volt coils (2 Ohm) in series, or one 12 volt 3.5 ohm or more primary winding resistance dual output coil will give the best results.
Ignition coils can go short circuit to earth if the mounting clamps are too tight. If you are not sure mount them in rubber.
- 6) Shorting out the ignition coils can damage the unit.
- 7) The ignition unit turns off the coils after a few seconds if the engine is stationary. The resistance of the stator plate should be about 130 Ohms (coils 66 ohms each), The magnetic rotor should have the south poles of its magnets pointing outwards, shown with a white dot marking.
- 8) This unit can be adapted to work on many types of engine, if firing is required every 180° camshaft or 360° crankshaft driven.
- 9) The unit will drive two coils up to 10,000 sparks / minute.
- 10) Typical working advance range is 15° at 2,500 R.P.M. camshaft.
- 11) The unit and the peak primary voltage is regulated at 400 Volts.
- 12) This unit must always be operated with the frame or chassis acting as an electrical return, whether positive or negative earth. Also, if the engine is rubber mounted a good earth strap must be provided.
- 13) This unit will operate from an alternator, rectifier, zener diode and capacitor battery-less system, but kick-starting may be more difficult.
IF THE ZENER DISCONNECTS WHEN THE ENGINE IS RUNNING THE IGNITION WILL BE DAMAGED. For this reason we recommend our POWER BOX UNIT. This is volage controlled and cannot damage the system.
- 14) Wiring should be trimmed to the correct length, spare wire should never be coiled up as this can affect the correct running of the ignition system. If possible the wires from the stator plate should be run separately from the main wiring loom.
- 15) With this system both spark plugs are fired at the same time, thus if the engine only runs on one cylinder, the fault can only lie with the mechanics of that cylinder, spark plug, lead or ignition coil, not the transistor box or stator plate.
- 16) Stator plate wires should be tie strapped to a mounting pillar or braced against the engine casing. This prevents the connectors vibrating and possible fracture of the wires.
- 17) If an old Boyer Bransden ignition unit is being replaced with a new one, it is advised to re-check the timing using a strobe light.

Figure 1

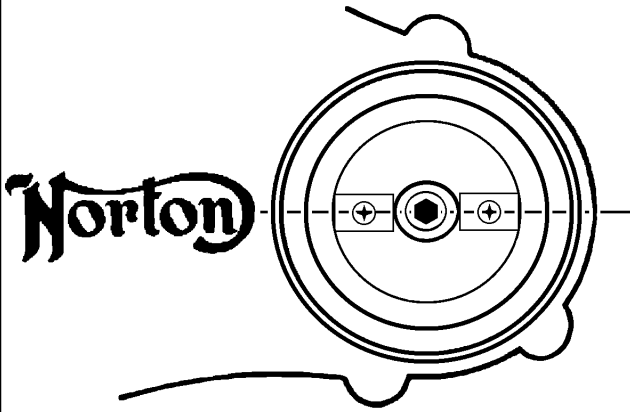


Figure 2

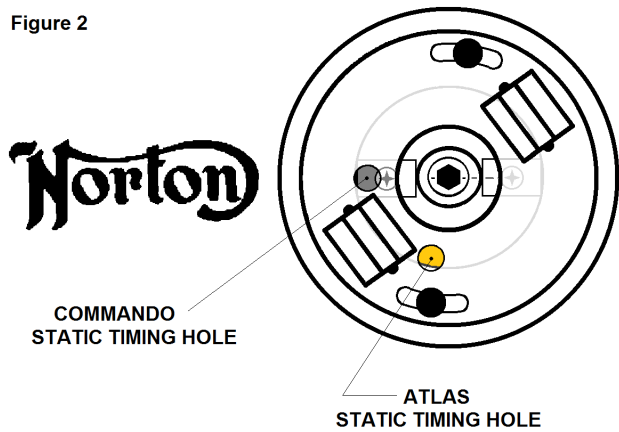


Figure 3

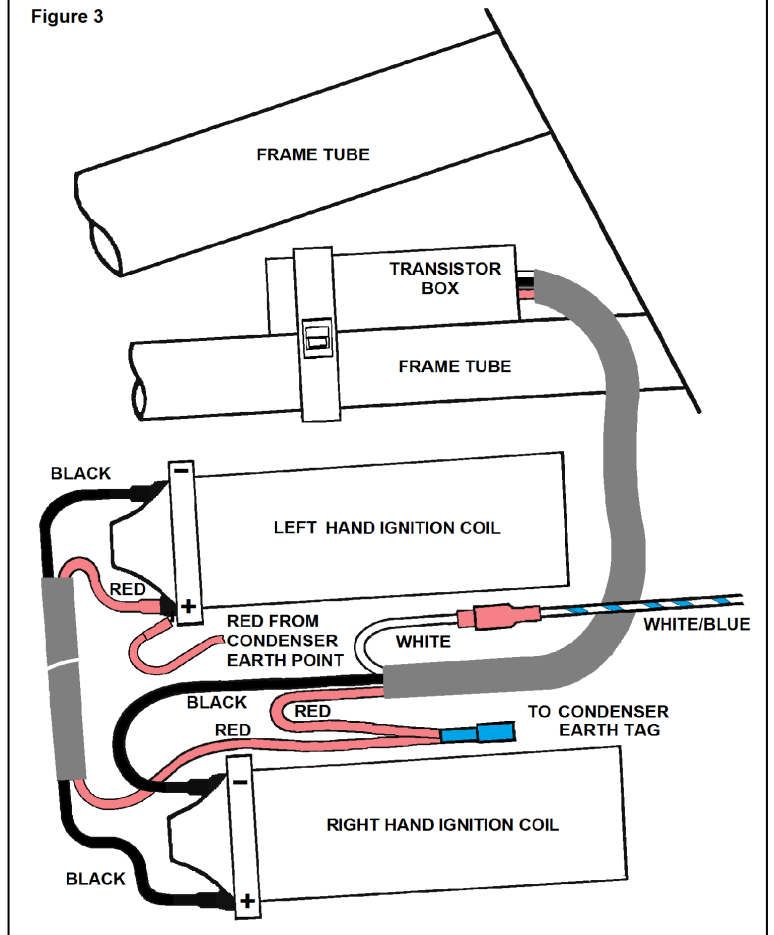
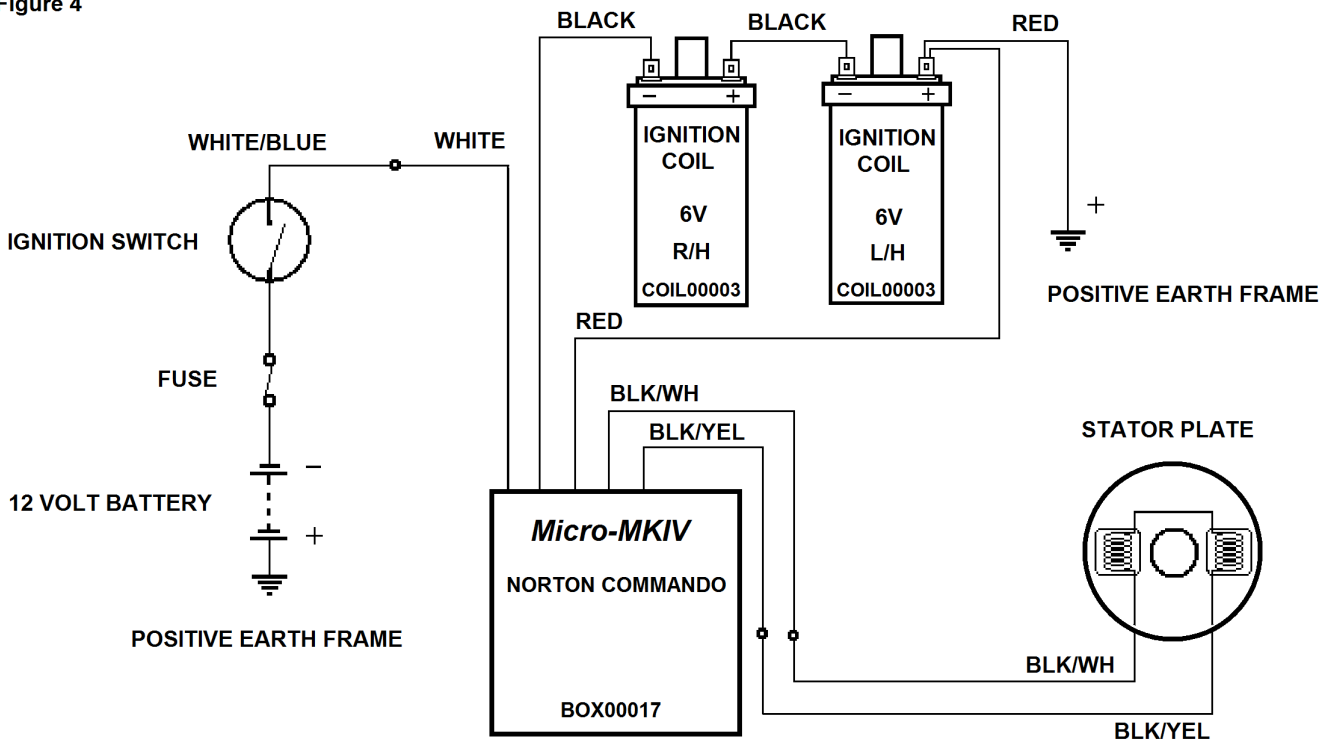


Figure 4



Micro-MKIV Norton Commando - Positive Earth Circuit