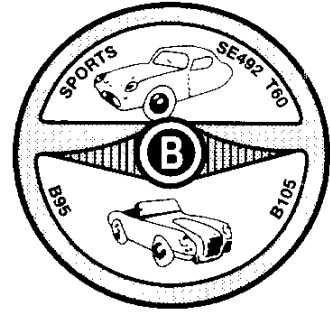




BERKELEY ENTHUSIASTS CLUB



NEWSLETTER • NEWSLETTER • NEWSLETTER

June 2002

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You should have received this issue a few days after the BEC gathering in Leicestershire. The weather in the weeks leading up to the event has generally been rather dull and damp at best, but hopefully a lot of you were able to attend, and we were blessed with a delightful sunny day ... or maybe not.

In any case, thanks to those of you who made the effort, the minutes of the AGM and reviews of the Rally will be included next month. We have had an offer of help with the newsletter and a possible applicant for the post of Membership Secretary, so the club should be able to continue running reasonably smoothly despite the departure of Mike Millen.

This month's *Facts? & Figures* attempts to explain how the Siba Dynastart works and includes some control box test figures.

Dave Perrin



New Members

The Club extends a warm welcome to the following :-

2234 Clive Whitham, Wanganui, New Zealand.

clive@wanganui.gov.nz SE328

2235 John Lonergan, Weymouth, Dorset. T60

2236 Stephen Hemingway, Tadcaster, North Yorks. Looking

2237 Simon Bouwmeester, Holland.

scj.bouwmeester@wxs.nl SE328

Watch for those articles !

With such a plethora of magazines about classic cars and motorcycles at the bookstalls, it is very hard to examine them all to see whether Berkeleys, Coronets, British Anzani, Excelsior or Royal Enfield are mentioned in news items, technical articles or features. Then there are the rarer magazines such as *Classic Van* (see note in the December issue about the Anzani powered Astra) and the many pages in club magazines and newsletters around the world.

We are keen as a club to record as much information as possible about our cars, but the club's officers cannot keep a watch on all these sources.

With this in mind please can all members keep a look out for us all and, if you see any article of interest, let one of the committee know - better still, send us a photocopy of the article. We are especially keen to receive technical articles on the engines, clutches and gearboxes which will most likely appear in classic motorcycle magazines.

The proof that this process works was recently proven by Nigel Halliday the BEC Spares Officer who, having received a lead from the classic bike world, went on to receive some interesting information on clutches and gearboxes.

Here are a few recent Microcar articles which we are already aware of :-

Classic & Sports Car, May 2003 - *Microcar Top 10* is allegedly an attempt to "round up the best and beast bubbles", from cute and cuddly to plain bizarre. Berkeleys do not feature - maybe we should be grateful !

Practical Classics, June 2002 - *Side by Side: Three Wheelers* compares Morgan F4, BMW Isetta, Bond Bug and Lomax 223 (Citroen 2CV based kit car), but also gives Berkeleys a brief plug, featuring a photo of MNH 60 in action.

Classics, June 2002 - 5-side article on the restoration of a Messerschmitt KR200 3-wheeler is followed by a ratings list for four "alternatives", unfortunately the Berkeley is not one of them.

Classic MotorCycle, July? 2002 - Geoff Price's T60 was recently driven and photographed for an upcoming feature - we will let you know which issue as soon as possible.

Nigel Halliday

Facts? and Figures - Part 8

The Siba Dynastart

Stator (Fixed Windings)

The periphery of the stator pole ring (central cylindrical section) carries twelve poleshoes, each of which becomes a magnetic pole when its winding is energised. Alternate windings are linked to form two series chains of six poles.

Two pairs of brush carriers are mounted on the inboard end of the pole ring. The wires from the lower pair of brushes are connected directly to the ring (earth), while the upper carriers are insulated from it and their brushes are connected to the common end of the two stator winding chains and the **D+** output lead. The Series (motor) winding **A** lead is fed by the Control Box starter solenoid output and the Shunt (generator) winding **DF** lead is driven by the Control Box regulator contacts.

Armature (Flywheel)

The armature consists of 91 wave windings which are linked into a ring arrangement, the flat face commutator therefore also has 91 segments. The sequence in which the windings are connected to the segments is relatively straightforward, with each winding spanning a gap of fourteen segments (i.e. the opposite ends of the two windings connected to a given segment are connected to the fifteenth segment away from it in either direction). The brushes are two segments wide, so each is generally in full contact with one segment and partial contact with those on either side of it. As the engine rotates, the brushes therefore make contact with a total of six sections of armature winding loop and the pairing of the brushes means that certain other sections of the loop are shorted.

Control Box

The Switch Assembly Box contains three sets of electromagnetically operated contacts, as follows:-

• Starter Solenoid

The Starter contacts remain open unless energised by operation of the starter switch. They then apply battery voltage through the heavy-gauge stator Series windings to the armature. In this configuration the dynastart functions as a series motor.

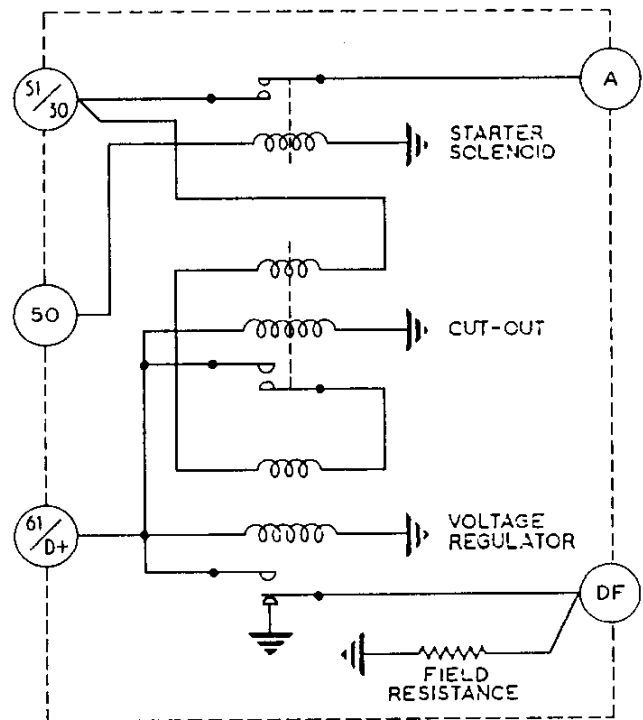
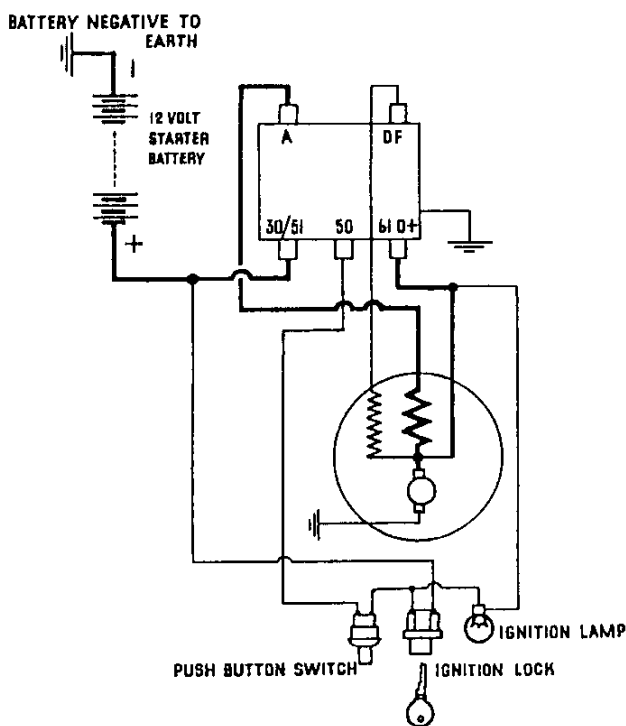
• Cutout

The Cutout contacts remain open until energised by a sufficiently high dynamo output voltage. The output is then switched out to the battery via the CVC

windings which protect the dynamo from heavy loads and prevent battery discharge at low engine revs.

• **Automatic Voltage Regulator**

Unlike the basic ON-OFF Starter and Cutout contacts, the AVR contacts perform an ON-ON changeover function. At tickover, the wiper is connected to the case (earth), as shown below, applying dynamo output directly to the stator Shunt field windings. When engine revs are increased, the resultant rise in dynamo output energises the wiper which shorts out the field winding, causing dynamo output to drop. The wiper is therefore released, causing dynamo output to rise and energise the wiper again. This sequence continues, with the contacts typically opening and closing perhaps 30 to 50 times per second (depending on engine revs and electrical load), until the revs again drop so low that dynamo output is incapable of opening the AVR contacts. The overall effect is to maintain a "constant" regulated dynamo output which only varies by a fraction of a volt regardless of loading or engine speed (provided that the revs are sufficiently high to produce a charging voltage).



• **Compensated Voltage Control**

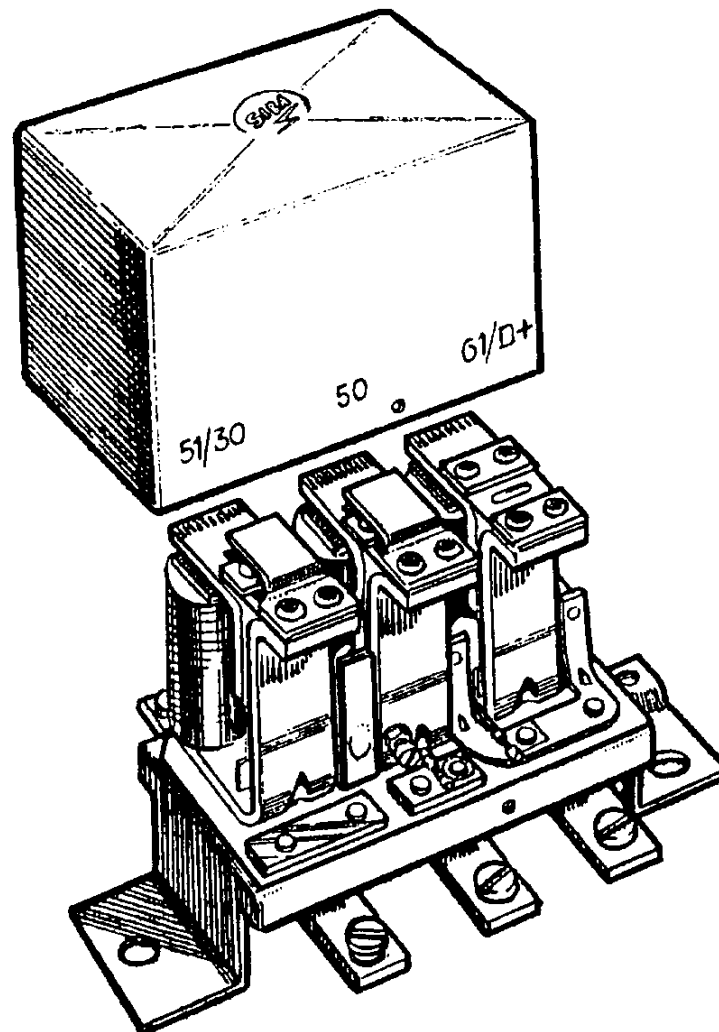
Due to the wide variation in terminal voltage of a lead acid battery between the fully-charged and fully-discharged states, the simple vibrating-contact constant-voltage regulator is not adequate. Without CVC, if the regulated voltage was set to balance that of a fully charged battery, then the resultant charge current demanded by a flat battery would cause the dynamo to overheat. The dynamo output current is therefore routed via supplementary series windings on the AVR and Cutout coils - these only come into operation when

charging has commenced (i.e. once the Cutout contacts have been energised).

Once a charge current is flowing, the supplementary Cutout winding assists the closing action on the Cutout contacts, thus preventing them from continually making and breaking in response to small variations in dynamo output voltage. However, when the dynamo output falls below battery voltage and a battery discharge current *into* the dynamo is established, the effect is reversed and the contacts will be released, preventing further discharge.

The supplementary AVR winding assists the opening of the AVR contacts, resulting in a drop in regulated output voltage proportional to the charge current. This limits the voltage differential between the dynamo and battery, thereby preventing the dynamo from overheating.

Detailed Function & Testing



• Starter Solenoid

The starter switch applies battery +ve voltage to terminal **50** and the resultant magnetic field in the LH coil pulls the normally-open starter contacts together. These connect the **51/30** battery +ve terminal to the **A** starter motor output

terminal. A test voltage of 7V applied to **50** with respect to the case should be sufficient to cause the starter solenoid contacts to close. Connecting a resistance meter between the **51/30** and **A** terminals allows these open-circuit and short-circuit conditions to be checked.

• **Cutout**

The central Cutout contacts are normally-open, so the resistance measured between **61/D+** and **51/30** should be an open-circuit. Application of not less than 12V to **61/D+** with respect to case should cause them to close, connecting the **61/D+** dynamo output terminal to the **51/30** battery +ve terminal via the CVC coils. The reading should therefore become a virtual short-circuit. On some control boxes, the Cutout contact spring loading is easily adjustable (see screw and lock-nut in the above illustration). Increasing the spring loading reduces the periods of charging. Decreasing the loading allows an earlier cut-in and later cut-out, but runs the risk of excessive battery discharge through the CVC windings at low engine rpm, when generator output is below that of the battery. The Cutout coil has a resistance of 40Ω (see note).

• **Automatic Voltage Regulator**

The RH coil operates the AVR contacts. As engine revs are increased from tickover, the resultant increase in dynamo output at the **61/D+** terminal causes the AVR coil magnetic field strength to rise. At a set value, it causes the AVR contacts to operate - the wiper moves away from the normally-closed contact (breaking the field circuit) and traverses the gap to the normally-open contact.

During this period the field resistor maintains a reduced field current, but when the normally-open contact closes, it shorts the field winding, causing its magnetic field to collapse. This in turn causes the dynamo voltage to drop rapidly until it reaches a level which allows the wiper to be released.

With the Cutout contacts closed, the voltage at the dynamo output cannot fall much below battery voltage (a small differential can exist across the CVC windings) and so, when the shorting contacts open, a current flow through the field winding and resistor can once again be established, causing the dynamo output to recover.

As before, when the normally-closed contacts re-make, the field resistor is shorted, applying full battery/dynamo voltage directly to the field windings. This results in an output voltage capable of delivering a charge current to the battery, but which (as it continues to rise) will also cause the AVR contact to

operate again.

The operate and release times of the AVR contacts are dependant on the amplitude of the potential (unregulated) dynamo output (which rises with engine speed), so the vibrating contacts insert the associated field resistor for variable periods according to battery state and engine revs. The normally-closed contacts therefore spend a greater proportion of their time open at higher revs, giving a suitably reduced average field strength which prevents the induced output voltage rising with engine speed.

Application of a high enough voltage to 61/D+ with respect to the case causes the contacts to swap over, but this will connect the Field resistor to the 61/D+ voltage, causing a current to flow through it and rendering it impossible to measure the value with a resistance meter. Testing can therefore only be carried out by manually operating the contacts.

When the engine is not running, the field resistor should be shorted by the normally-closed AVR contacts. The resistance measured between the DF terminal and case should therefore be a short-circuit until the contacts are separated, when the Field resistor value of approximately 6.5Ω can be checked. Simulate the pull of the AVR coil (by pushing its armature into contact with its core - NEVER apply pressure directly to the contacts as this could potentially upset their operation) to open the normally-closed contacts and measure the resistor. This will also close the normally-open contacts, allowing you to confirm that they are causing a short circuit between the 61/D+ and DF terminals. The AVR coil has a resistance of 92Ω (see note).

NOTE - since the Cutout and AVR coils are in parallel, the resultant resistance measured between the 61/D+ terminal and case should be 27.9Ω . A value of 40Ω (Cutout) or 92Ω (AVR) therefore indicates that the other coil is open circuit.



General maintenance and further fault-finding will be covered in the next installment in a month or two. If anyone would like me to cover the use of digital or analogue multimeters for voltage, current and resistance testing in a future issue (so that you can make some sense of the fault-finding bits) then please let me know.

Dave P.

A Grand Day Out

A couple of weekends ago, my well-laid plans went awry so I thought, "It's a nice day, I'll take the Camarotta for a spin". Although I don't usually need an excuse to take the car out on a nice day, I had a quick look through the assorted events lists and saw that the Rochdale Owners Club were putting on the Cheshire kit Car Show.

At last, here was the round tuit I had been waiting for. This show has been going for about 20 years but I never got a round tuit before. Now it pains me to admit it, but Rochdale got there before the Berkeley as far as glassfibre cars are concerned and had it not been for circumstance, my first car could easily have been a Rochdale and not a Berkeley, but that's another story.

The Cheshire show is held in the grounds of Capesthorpe Hall just south of Macclesfield. It's a magnificent old house with a splendid tea room. There is a lake and there are walks in the grounds. The various supporting clubs had promotional stands and other assorted vehicles were ranged on either side of the drive up to the imposing frontage of the house.

It is an informal affair and though it is billed as a kit car show, there are various other classics there too. It has a very friendly, laid-back atmosphere, reminiscent of some of the first car shows we were involved in years ago. I would strongly recommend it as a "must-go", "picnic in the park", type event. I will try to get details into this mag in advance of next years do.

To get to Capesthorpe, the run took me over the Derbyshire moors, through some of the best scenery in the world towards Buxton. Then a climb up to the "Cat & Fiddle" (highest pub in the universe,etc) through rugged limestone sheep country. Then, that absolutely exhilarating run, with its hairpin bends, sharp drops and the feeling that you just crossed the roof of the world, down into Macclesfield.

This particular run is sometimes part of the ACU Rally, and as certain Berkeley owners who have taken part will testify, it can be particularly hair-raising when attempted in the middle of the night!

The weather stayed dry for the whole day, which was mostly spent chatting to other enthusiasts who were impressed by the fact that the Camarotta was not a commercial kit. The highlight of the day however, had to be the totally unexpected winning of a "Highly Commended" award for my car!

The Rochdale Owners Club was formed in 1981 dedicated to the preservation and enjoyment of Rochdale Cars and has a world-wide membership of around 100 members. Registrars keep track of all known Rochdales and are always keen to hear of "new" finds.

Ratty

Editors Note

Rochdale were founded in 1948, producing their first road car project (a very basic GRP bodyshell conversion kit) in 1952 and went on to become one of the most successful kit car firms of the 1950s & 60s. Car production had reached almost 1500 by 1968 when they decided to concentrate on industrial glassfibre work.



Siba Spares

As Spares Secretary, I have dispatched about 25 letters to other microcar clubs spares secretaries or spares contacts in order to establish exactly what the Siba Spares situation is in the UK micro-world.

We have noticed that some Siba parts (particularly Switch Assembly Boxes) are becoming very scarce. Similarly, the complete dynastarts, even second hand, are not exactly common.

Feedback is slowly coming in and hopefully this will lead to some useful contacts and new sources of original spares or modern equivalents.

Nigel Halliday



BOC Loxwood Weekend

Don't forget the Bond Owners Club gathering on the 27th & 28th July. All Microcar owners are invited to North Hall, Loxwood, 14 miles south of Guildford on the B2133, deep in the West Sussex countryside.

Contact Sue Gore (01293-426954) for further details.



Events

July

5-7 **Bath Microcar Rally**

Stothert & Pitt Rugby Ground, Saltford.

On-site camping from Friday.

Main Rally day Sunday.

Contact: 0117-9642901 or 01225-762868.

7 **Classic Motorcycle Rally & Autojumble**

Battlesbridge Antique Centre, off the A130 mid-way between Chelmsford and Southend, Essex.

10am to 5pm. Admisssion: Adults £3.00, children & OAPs £1.00.

Contact: Justine Gallie, 01268-575000.

12-14 **Heinkel/Trojan Owners Club Rally**

Based at the Blacksmith's Arms, Kirkheaton, West Yorkshire (about 3 miles from Jⁿ25 of the M62, between Dewsbury and Huddersfield).

Friday: evening visit to the Miller Oil factory (adults only).

Saturday: road run to Yorkshire Mining Museum (AM) and Skopos Motor Museum (PM) with lunch available in Mining Museum cafe.

Sunday: Club Spares & Regalia sales and & AGM (AM), lunch available from pub and (PM) Technical Teach-Ins (including charging system, bodywork repair, front suspension and brakes).

All Micros welcome, but strictly by ticket (£10 each) due to limited numbers allowed on campsite.

Contact: Jim Hacking, 01924-497192 (evenings) or e-mail jimmy@loff.freeserveco.uk .

14 **Classic Vehicle Show**

Phasels Wood (A41 bypass), Hemel Hempstead, Hertfordshire.

Admisssion: Adults £5.00, children under 16 free.

Contact: 020-8421-9920 or e-mail: editor@watfordclassics.co.uk .

27/28 **Bond Owners Club Loxwood Weekend**

North Hall, Loxwood, West Sussex (14 miles south of Guildford on the B2133).

Contact: Sue Gore, 01293-426954.



Club Contacts

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Reasonable care is taken to verify the technical merit of all articles featured in the Newsletter, however neither the Editor or the BEC will be held liable for any damage to person or property resulting from recommendations herein.

Marketplace

1960 T60 KYJ284

Hard top. Red & black. Very original - 15,989 miles (garaged in 1969). Comprehensive history of full rebuild. Ready for MOT, but owner hospitalised, so must sell as is.

Offers: Dave Herd, 01337-830082 (Fife).

1960 T60 398AUL

Soft top. White. New suspension units fitted prior to lay-up in 1993. King pins worn and body requires minor structural repair. Spares include engine, screen frame & track rod. Complete fan-cooled Excelsior 328 engine available seperately (believed good). Car and all spares stored in Ipswich area, photos available by e-mail andrew.roddham@btinternet.com.

£600.

Contact: Andrew Roddham, 01733-204713.

1961 T60 TVM740

Red, with new double duck hood and vinyl bench seat in grey with red piping. All original parts with 328cc Excelsior engine. Very good condition throughout. Taxed and MOT'd until end of April 2003.

£1,900.

Contact: Paul Donnington, 01430-861412 (East Yorkshire)
or 07774-433491 (mobile).

1960 Unfinished T60 Project LVS652

One-off ladder frame chassis using Mini suspension components front and rear, but retaining standard T60 track. Includes standard T60 bodyshell, doors, bonnet & windscreen, custom Berkeley-based differential to take toothed belt final drive and Suzuki GSXR750 engine with ancillaries.

£750 ono.

Contact: John Melody, 01524-791966 (Preston, Lancs)
or e-mail jhnmldy@aol.com.

BD Mini

Berkeley-bodied Mini 1000 built by Dave Ratner. £2,800 ono.

Mark Hudson, 18 Bonny Muir Crescent, Bonny Bridge, Scotland, FK4 19D.

Wanted for T60

Good crankshaft for Excelsior twin (or complete good engine).

Bench seat.

"Umbrella" handbrake lever assembly.

Contact: Angus Thompson, 01249-783217 (Chippenham, Wilts).