

BEV WR5 Baby Jane restoration / recommissioning - Andy Kempen – Part 2 & Lockdown 2 update.

I ended the previous article saying – when normality returns, I will mark out and drill the side rails, assemble it and have a trial fitting to check the function.



Well that was sort of what happened, but no one had expected the length of Lockdown 1 and the subsequent slow return to any normality. I ended up making another visit to the GVL R Works to re-measure things due to the passage of time inducing doubts.

Following my re-measurement of the control box, I was able to complete the first stage of construction of the contactor housing for which I had designed and machined the end plates before lockdown 1. This involved marking out, cutting and drilling the insulating Tufnol. I was able to do it in my own workshop at home, using my Grandfathers turn of the century hand-cranked pillar drill with hydraulic feed, shown in the picture.

I was then able to have a trial assembly using some bolts that I had at home, although they were of the incorrect length, not having enough thread to allow the cable terminals to attach, but good enough to try out the fit.

The end plates hang off two support brackets around the cam spindle in the control box, the support studs being clamped by some screw down caps, you can see long bolts in the picture below ready to perform the task of the support studs at my next visit to the GVL R Running Shed/Workshop - the correct length of the studs was not yet known.



Another visit to the Works in a 'Covid Safe' manner on a Sunday proved that it all fitted & I was able to determine the correct support stud length. Following a discussion with Ed Draper who was there that Sunday, it was decided that we should utilise the available Arc Chute attachments for the top of modern Schaltbau contactors (not available or fitted to the old Sevcon units). They are a device that fits on top of the contactor, it is used to contain and rapidly blow out the arc created as the contactors open the connection of the relatively high current provided by the batteries, sustained by the induction energy of the motor coils. Baby Jane will be better than new!

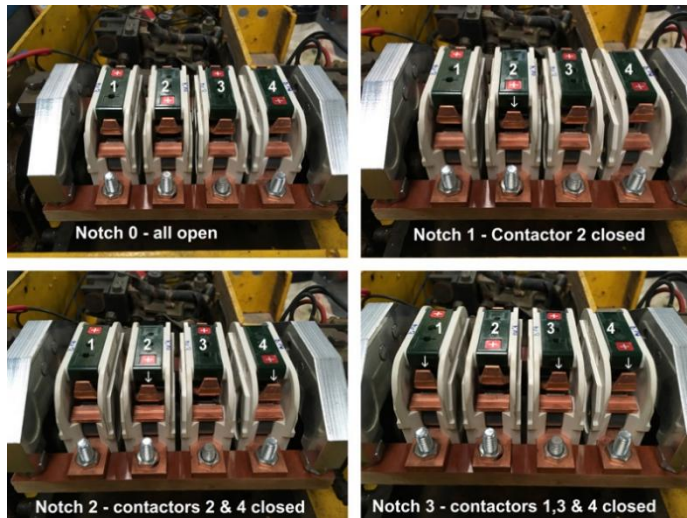
I did some more internet research into the Schaltbau Arc Chutes and found some available in the USA at £5.40 each. We need four, one for each contactor, but even with the postage the total was cheaper than buying 1 from the UK supplier, just like the contactors were! Presumably these were surplus stock, so they were hurriedly ordered from the USA after an e-mail conversation with the project sponsor/owner.

When the Arc Chutes arrived, I arranged a further visit to the Works for another trial fitting session. I had made the support studs at home so this time a complete fitment could be made to allow an exact measurement to be taken from the cam in the control box to the contactor switch roller plunger.

I had made my design of the contactor carrier so when fitted the roller plunger was close but clear of the cam in the open/up position, so precise positioning could be achieved and allow provision for

adjustment due to wear by using spacers & shims. An initial spacer would have to be made to ensure the correct 4mm working stroke was achieved without exceeding the additional 2mm free stroke of the contactor. I used a series of small drills of known diameter until I found one that just dragged on the sprung roller plunger to measure the exact gap size, added 6mm and the answer by simple maths gave the required spacer thickness – as it happened I was able to find some loose nuts of the correct thickness to perform as temporary spacers so a full operational trial was possible.

Below, if you look closely, you can see the operation sequence of the assembled contactors in the control box.



If you have received this publication in a digital format use the link below to see a short video of the contactors in operation (if not you would have to type the complete line of text, exactly as seen, into a web browser)

<https://drive.google.com/file/d/19XIAP4g3pCwgu7S48SFQHA71vyEYZT1r/view?usp=sharing>

So as you can see it all works, what next? I will make proper spacers of the correct height and then before it is wired up and tested under power all of the other components in the control box will

need to be cleaned, inspected renovated and repaired where necessary. We have also received some wiring information from Bryan Lawson which I am studying and I am in the process of creating a complete schematic of the three-speed control box, what I had previously to work from was a four-speed schematic/wiring diagram.

Once this has all been done the control box lid will be trial fitted and modified where needed as the Arc Chutes will be a very tight fit, maybe too tight – this can be seen in the final picture of the fully assembled controller below.

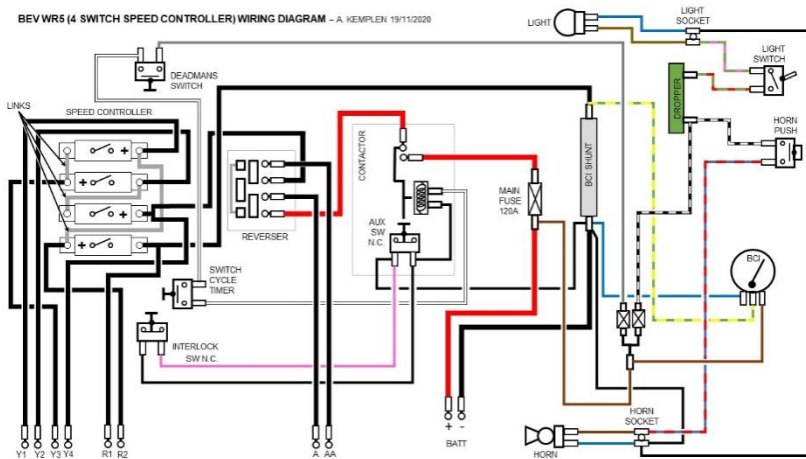


You can also see from that picture that the battery condition gauge is missing, it should be in the large round hole to the top right of the image– I am on the hunt for one of those currently as well.

Lockdown 2 Update

As lockdown 2 was forced onto us I have been able to stay safe and keep on with the project by collecting the entire controller back to my workshop at home.

I did careful study and testing of the internal low current control wiring, then using the original wiring information that we had and the drawings from Brian I produced a wiring diagram correct for Baby Jane.



I now felt comfortable that I would be able to correctly re-assemble it having a diagram, so I proceeded to strip it completely to pieces ready for cleaning and renovation, as seen in the next image.



When taking it carefully apart a few problem areas were identified such as a sticking micro switch, an out of place bushing piece on the

cam shaft and there was also a small actuating rod inside the Deadman handle that was crudely made from an over long old screw, down the mine running repairs? (probably the cause of the misplaced bushing).

Upon close inspection of the sticking switch it was found to have a broken and cracked casing, I was able to read off it though a manufacturer and part number, Craig and Derricott Ltd, A2A 20A - after a bit of online searching I found the exact part available 'New Old Stock' on e-bay, for just £10.00 with free postage ! – it has been ordered - interestingly the horn push button which is also made by the same manufacturer has a date stamp sticker of 06/79.

My next major task after the cleaning and reconditioning of all the components will be to make up a new internal control wiring loom, test and refit the contactors and also test them.

Andy