

TC Clock Repair

The clock in my TC has never run for more than a few hours even though it has been returned to a well respected instrument restorer a number of times. Come to think of it I don't think I've seen many TCs with a reliable clock. It's not surprising really as the clock always had a reputation for poor reliability. For this reason many people may have already incorrectly attributed it, like everything else in the car that has wires attached and is unreliable, to the Prince of Darkness, Joseph Lucas. However on this occasion they'd be wrong, the TC clock was actually made by Smiths Motor Accessories Ltd.

The Smiths 'Pin' clock first appeared in 1938 and was intended to replace their 8-day hand-wound clockwork car clock as fitted to the TA. Their pin clock is a hybrid of 17th Century clock technology which uses a balance wheel and spring to measure time and an electromagnet to provide its driving force. The clock appeared in many guises with different faces, cases and setting stems, but the basic 'engine' was common to all. It quickly dominated the car clock market and was still being fitted as the car clock of choice well into the 1960s, including to marques far more prestigious than MG, including by Jaguar, Alvis, Bristol and Rolls Royce/Bentley.

It is an ingenious design and has refinements such as jewelled bearings for the balance staff but the cause of the unreliability and hence the clock's poor reputation are the contacts that apply

power to the electromagnet each time the balance wheel rotates. The balance wheel oscillates back and forth five times a second, so over 3 million times every week. Or put another way, if my clock had run continuously since my car was built in 1947 the balance wheel would by now have oscillated an incredible 11 billion times! The problem is that each time the contacts apply power to the electromagnet a minute part of the contact material is vaporised by the tiny arc produced as the contacts open. The result is that the contacts wear quickly and soon the clock only shows the correct time twice a day.

Now Clocks 4 Classics* have devised a simple repair kit that will get your clock going again for far less than the price of a tank of fuel. Their repair kit consists of a tiny printed circuit board containing a processor (bottom centre) that drives the electromagnet in place of the contacts.



The circuit board showing the controller (bottom centre)

The kit is not a quartz crystal conversion. Instead the balance wheel and spring are retained and continue to be used to measure time.

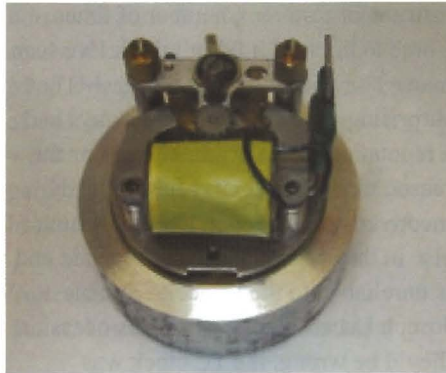
Fitting the repair kit is not difficult and requires no soldering. There are versions for positive earth and negative earth cars. It does however mean stripping the clock down to its component parts, including removing the hands and dial. Clocks 4 Classics have videos on their website (www.clocks4classics.com) which firstly tell you how to determine if your clock is suitable for repair and then provide an overview of exactly what is involved in fitting the kit. There are also detailed fitting instructions to download. If the idea of dismantling your clock doesn't appeal Clocks 4 Classics will fit the kit for you.

The first step is to remove the clock from the car and then remove the four screws that attach the base and setting stem (Photo 3). For this part of the repair, and to use later during reassembly, it is a good idea to make a simple holder to protect the hands and dial when working on the clock face down.



The clock as removed from the Rev Counter ready to be modified.

The next step is to remove the two brass hexagonal spacers that hold the coil and then remove the coil assembly by snipping the wires, leaving them as long as possible.



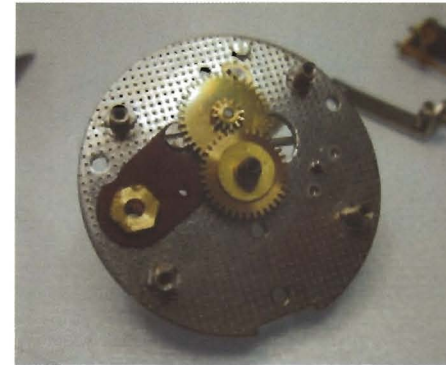
The clock with back and setting stem removed.

Next the balance wheel and support can be removed by unscrewing the remaining two brass spacers.



The coil removed ready to remove the input terminal for modification

Supplied in the kit is a sticker which fits to the underside of the balance wheel to register its rotational position. Next the tag which is connected to the battery supply can be removed. The tag has to be modified but this is not a difficult operation. The remaining gears on the back side of the clock can be left in place. On the front of the clock the hands and dial can then be removed.



Front of the clock with hands and dial removed

With the clock now largely disassembled the parts can be cleaned and the pivots lubricated if necessary before fitting the printed circuit board and beginning re-assembly.

Re-assembly is the reverse of the dismantling process and is described in detail in the instructions. Once the balance wheel and support are back in place the coil can be re-fitted. Next the wires from the coil can be plugged into the circuit board terminals and the modified input tag re-fitted. The clock can then be tested by applying 12 volts from a battery or power supply. As

power is applied the balance wheel will rotate then freeze for a few seconds before beginning to oscillate. The circuit board must be shielded from bright light for correct operation. If all is well the coil wires can be fixed to the circuit board by heatshrinking sleeves over the terminals. Finally the clock back and setting stem can be re-fitted with its four screws. Re-assembly at the back of the clock is then complete and all that remains is to re-fit the dial and the hands.



The finished clock with kit fitted ready for refitting into the Rev Counter.

I found the kit to be well made and supplied with very clear fitting instructions. The videos on the website show exactly what is involved before you take the plunge. Now thanks to Clocks 4 Classics after 70 years my clock is finally tickety- boo!

Peter Cole.

* I have no connection with Clocks 4 Classics other than being a satisfied customer. I have been able to negotiate 10% price reduction for readers of TTT2 who order a repair kit quoting this article.