

HILLMAN CAR CLUB  
OF SOUTH AUSTRALIA INC

Tech Tips:

Repair of Smiths Pin Clock

CE 3120/3123 series

Commentary by the late Graham Robinson,

Hillman Owners Club of Australia

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Failures of these clocks as used in Humber Snipes, Hawks, Alpines and maybe Hillmans are many and causes are varied. Refer to Fig. 6 (exploded parts view) below.

Main cause is the carbonising of the offset pin on the balance wheel (48) and the corresponding contact pin (14) that sits on a fulcrum post.

Second cause is incorrect polarity applied when installing causing the rectifier bridge (17) and other items to be burnt out, rendering the clock inoperative. White rectifier assembly (17) is negative ground where Green rectifier assembly (17) is positive earth.

Third is that any loose posts (15/10 & 19/21) within the clock itself will cause shorting to ground and cause carbonising in other areas. Balance wheel hairspring (48) is one.

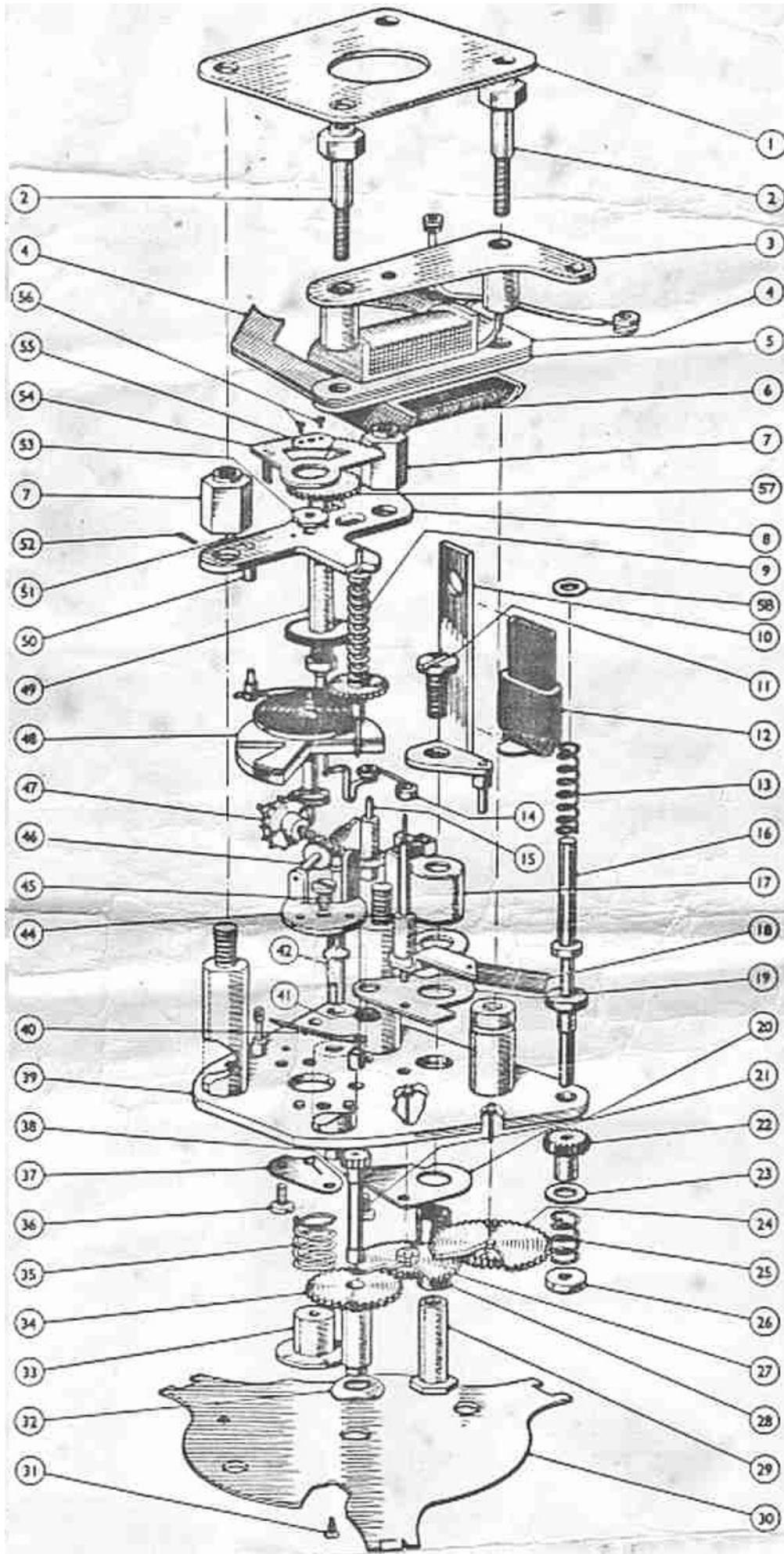
Fourth is when the earthing pin (16) to start the clock is used too often and particularly if any loose posts (15 & 10) are prevalent will cause secondary burning or carbonising throughout the clock mechanism.

Minor adjustments to the circuit can circumvent a lot of these problems.

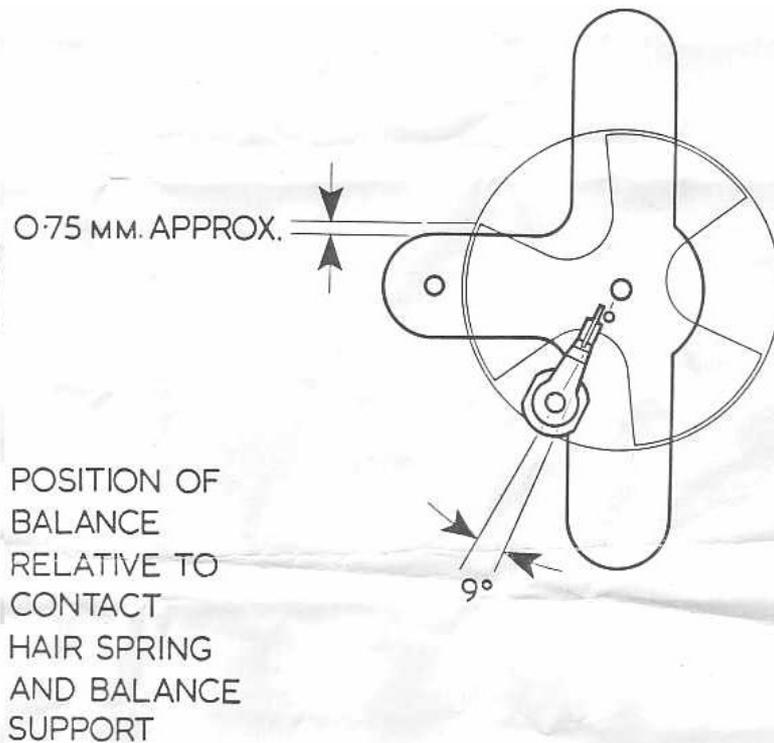
One is to install a separate switch to disable the clock when not in use or when standing for long periods. The second is to fit a small power diode (EM401) across the rectifier assembly (17) protecting it and the clock from spurious voltage sparks that causes carbonising. Lastly a suitable capacitor 10uf 25V also fitted to ground from the rectifier assembly will reduce sparking and noise if a radio is fitted.

It is prudent to have the offset balance wheel cleaned every couple of years to stop carbonising, where possible.

Or one could fit a Kienzle or other quartz movement into the housing. I believe some Rover clocks are also compatible.



- 1 Back Plate
- 2 Pole Piece Securing Screw
- 3 Setting Support Plate
- 4 Pole Piece
- 5 Spacer
- 6 Coil
- 7 Balance Support Nut
- 8 Balance Support Assembly
- 9 Centre Spindle and Wheel Assembly
- 10 Connecting Bracket
- 11 Diode Screw
- 12 Insulating Sleeve
- 13 Setting Spindle Return Spring
- 14 Contact Hairspring Assembly
- 15 Contact Hairspring Pillar
- 16 Setting Spindle
- 17 Diode
- 18 Diode Bridge
- 19 Upper Insulating Plate
- 20 Screw (for contact hairspring pillar)
- 21 Lower Insulating Plate
- 22 Setting Pinion
- 23 Setting Spindle Washer
- 24 Setting Wheel
- 25 Setting Pinion Spring
- 26 Setting Spindle Collar
- 27 Minute Wheel
- 28 Insulating Tube
- 29 Diode Pillar
- 30 Retaining Plate
- 31 Retaining Plate Screw
- 32 Dial Washer
- 33 Regulation disc
- 34 Hour Wheel
- 35 Spring (for regulation disc)
- 36 Locating Plate Screw
- 37 Bottom Bearing Locating Plate & Adjustable Bearing
- 38 Cannon Pinion
- 39 Balance Platform Assembly
- 40 Friction Spring
- 41 Insulating Ring
- 42 Regulating Spindle
- 43
- 44 Double Support Plate
- 45 Double Support Plate Securing Screw
- 46 Transverse Wheel Assembly
- 47 Escape Wheel Assembly
- 48 Balance Wheel Assembly
- 49 Regulator Disc Spindle Assembly
- 50 Anchor Post
- 51 Anchor Post Screw
- 52 Hairspring Taper Pin
- 53 Top Bearing Assembly
- 54 Regulator Lever Assembly
- 55 Regulator Lever Washer
- 56 Top Bearing Screw
- 57 Regulator Wheel
- 58 Setting Spindle Washer (Brass)



The balance wheel should now rest as shown in the illustration above. If this is not the case, steady the balance wheel, insert the into-beat tool SR/D. 170 into the slot in the hairspring collet and adjust the hairspring tension until the correct position is obtained.

IT IS IMPORTANT THAT THE IMPULSE PIN DOES NOT TOUCH THE CONTACT ARM. The bottom bearing should now be screwed in until there is just sufficient end play in the balance to ensure free running. The reset wheel should now be fitted using a hollow punch or a similar suitable tool.

Technical Description:

Current flows from the supply terminal to the wiper contact via the rectifier, rectifier bridge, contact hairspring and the coil which is connected in parallel with the rectifier. The earth return for completing the circuit occurs through the hairspring when the wiper contact touches the impulse pin.

When the starting spring is brought into contact with the rectifier bridge it completes the circuit and energises the pole pieces causing the balance to deflect.

When the spring is released current ceases to flow in the coil allowing the hairspring to return the balance.

The wiper contact and impulse pin now take over the function of supplying the current pulses to the coil as the balance oscillates.

