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AN OPERATION-TIME CONTROLLER FOR A RECORDING POTENTIOMETER[1]

By G. O. Handegord and D. G. Cole

Certain applications of recording potentiometers require that a record be made for only part of each day. In some cases, such as solar radiation measurements, the "on" period of the recorder does not coincide with normal working hours and manual starting and stopping of the instrument is not possible. The instrument can be operated continuously but this results in an excessive amount of chart being used, particularly in the winter months when sunshine occurs for only eight hours.

A standard time switch, such as the "Inter-matic" Model TS-60SP, manufactured by the International Register Co., may be employed to stop and start the instrument at any predetermined time. This time switch is commonly used in business places to operate display lighting during the dark hours of the evening.

When the potentiometer used incorporates a standard cell circuit with automatic standardization, one difficulty arises in that the time switch may stop the instrument when the standardizing circuit is closed, resulting in an undesirable drain on the standard cell during the "off" period. This difficulty may be overcome by incorporating a micro switch in parallel with the time switch to operate the instrument should the time switch open while standardization is in progress.

The Brown 153XIIV-X-27, strip chart recording potentiometer used for solar radiation measurements in Saskatoon has been modified in the above manner. The time switch and micro switch are incorporated into the instrument as shown in Fig. 1. The micro switch employed is a normally open type #BZ-2R, installed so that its contact pin bears against the standardization slide wire mechanism. During standardization, the mechanism is moved in towards the chassis so that the micro switch pin protrudes fully, thus closing the switch and operating the instrument until standardization is complete. The micro switch is mounted on a brass plate which is secured to one of the mounting posts of the standardization assembly cover as shown in Fig. 2. Both the time switch and micro switch are wired in parallel with the drive switch as shown in Fig. 3. This wiring arrangement does not involve any change in the original wiring of the instrument and all the connections may be made to the terminal board on the rear of the chassis.

The time switch and micro switch operate only the chart drive circuit of the instrument, power being supplied continuously during both "on" and "off" periods to the amplifier circuit as recommended by the manufacturer. Intermittent operation of the recorder as determined by the setting of the time

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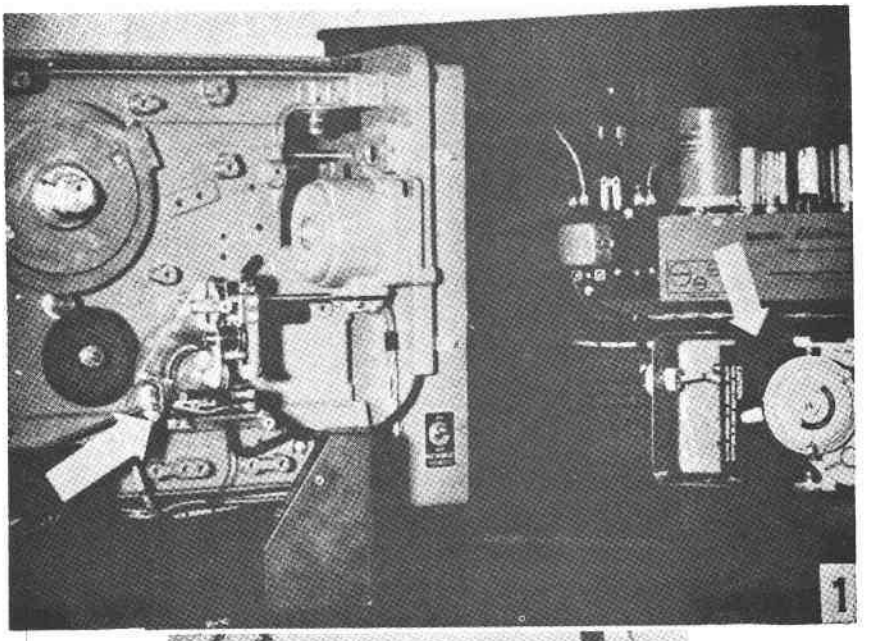

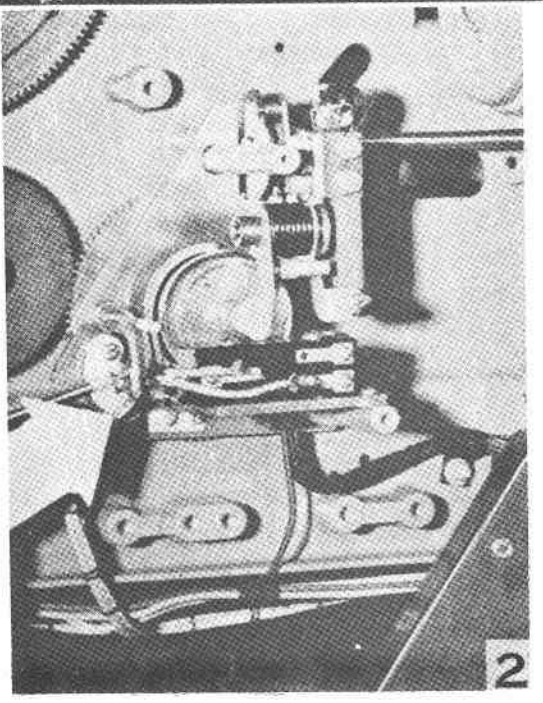

FIG. 1. Location of time switch and micro switch in recorder case.
FIG. 2. Close-up view of micro switch and mounting bracket.

switch is achieved with the instrument chart drive switch in the "off" position. Continuous operation of the recorder is readily obtained by moving the chart drive switch to the "on" position.

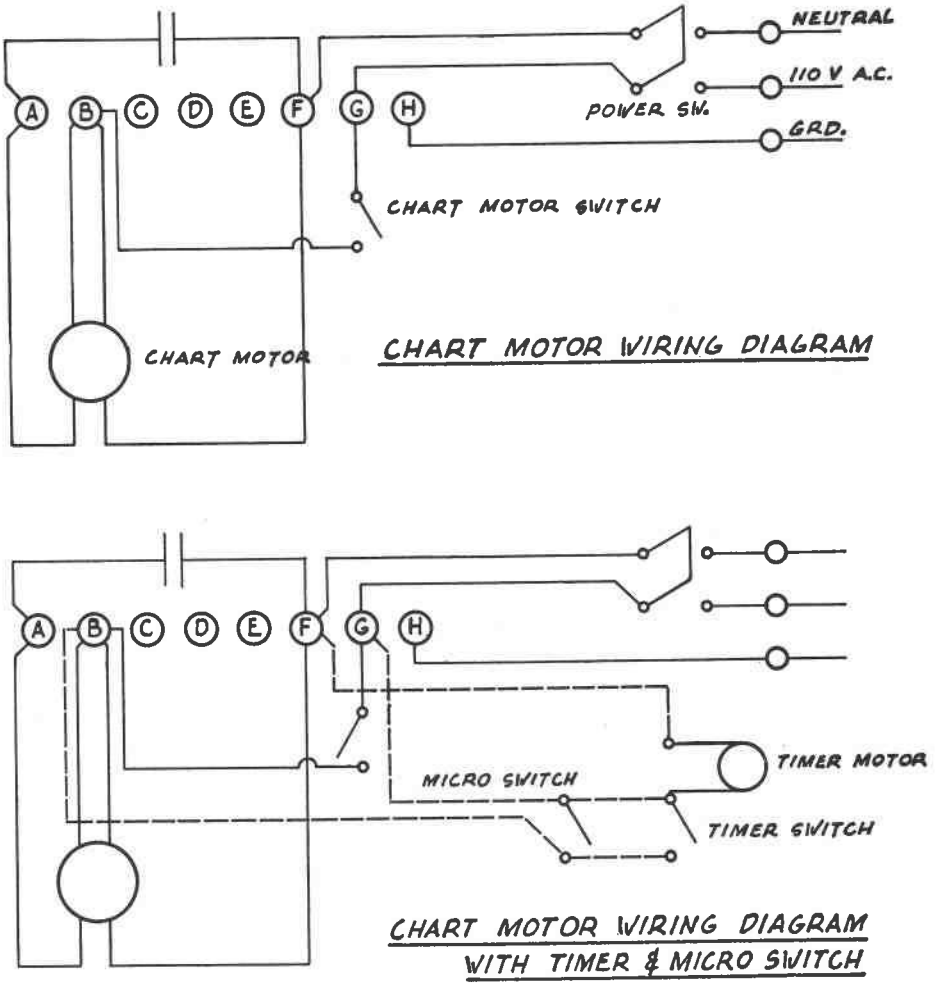

FIG. 3. Chart motor wiring diagram.

The total cost of materials required for this automatic switching arrangement is approximately thirteen dollars. The savings involved in chart consumption for the particular application cited will be approximately eighteen dollars per year, based on an average period of 14 hr. of sunshine and a chart cost of four dollars per roll.

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