Chapter 8

STEPLESS DRUM SWITCH, TYPE C1837Y

LIST OF CONTENTS

LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Type	*Ref. No.*	*Operating voltage*	*Weight (oz.)*	*Dimensions (in.)*
◄ C1837Y, Mk. 1 superseded by C1837Y, Mk. 101	5CW/5116	28 d.c.	13	3·5×3·5×2·64
C1837Y, Mk. 7 superseded by C1837Y, Mk. 102	5CW/5117	28 d.c.	13	3·5×3·5×2·64 ►

Introduction

1. The stepless drum switch, Type C1837Y, is a potentiometer type switch used in the control circuit for dive brakes operation.
It is used in conjunction with the single relay panel unit, Type C5101Y, described in Sect. 3; this unit incorporates a polarized relay, two slave relays, and certain trimmer resistors.

DESCRIPTION

2. A general view of this switch is shown in fig. 1, with details of the various Marks in Table 1. An internal schematic diagram is shown in fig. 2, the resistance values being quoted in Table 1. The significance of the angles mentioned is illustrated in fig. 3, the angular travel being indicated on the front of the switch by a pointer attached to the spindle.

3. ◄ Mk. 1 and 101, and Mk. 7 and 102 are electrically identical; Mk. 101 and 102 differ in certain mechanical details of design, and supersede Mk. 1 and 7 respectively. ►

4. The terminal arrangement is shown in fig. 4, with the cover removed. When a rubber grommet is used for the cable entry, the tips of the sleeves are cut off, as required, on installation.

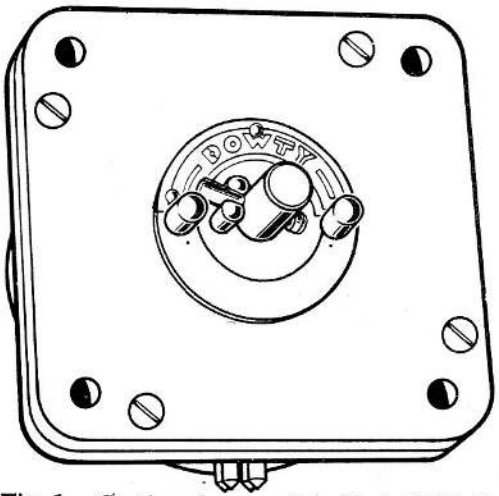

Fig. 1. *Stepless drum switch, Type C1837Y*

TABLE 1
Switch details

Type	Windings	Operating Angle (deg.)	Angle X (deg.) L.H.	Angle X (deg.) R.H.	Common terminals	Remarks
C1837Y, Mk. 101	2 each 1,000 Ω	120	30	30	4 and 8	—
C1837Y, Mk. 102	1 of 500 Ω 1 of 200 Ω	120	30	30	4 and 8	200 Ω winding between terminals 2 and 10

Operation

5. Two of these switches are normally used in the dive brakes control circuit, one operated by the pilot's dive brake selector and the other directly by the dive brakes. Each switch is virtually a potentiometer connected

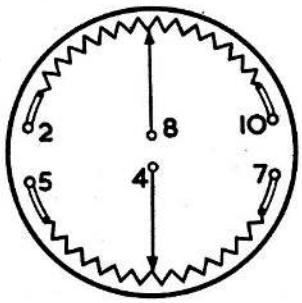

Fig. 2. *Internal schematic diagram*

between the positive supply and earth; the moving contacts are inter-connected through the coil of a polarized change-over relay which is incorporated in the relay panel unit, Type C5101Y. The control system thus forms a Wheatstone bridge circuit with the polarized relay sensing the out-of-balance current between the two driven arms.

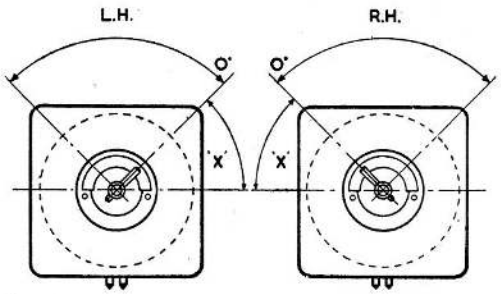

Fig. 3. *Diagram showing significance of angles*

6. If the pilot's selector lever is moved backwards or forwards (i.e., towards IN or OUT), the moving contacts on the switches are, initially, in different positions relative to each other. A potential difference thus exists between them, and current flows through the polarized relay coil, the direction of flow depending on the polarity of the P.D., determined by the direction of movement of the pilot's selector lever. If the lever has been moved towards OUT, the direction of the energizing current is such as to close a pair of contacts feeding an OUT slave relay in the C5101Y unit; if it has been moved towards IN, an IN slave relay is energized. Energization of the slave relay completes the circuit to a polarized selector magnet and the dive brakes start to move towards the position selected.

7. As the dive brakes move towards the selected position, thus driving the moving contact of the second drum switch, the P.D. between the two arms becomes less until the current is insufficient to energize the polarized relay; at this point the two switches are virtually in step again. The relay therefore becomes de-energized, and the dive brakes remain in the selected position.

8. The second winding on the drum switch which is operated by the dive brakes is used for transmitting dive brakes position to a position indicator on the pilot's panel.

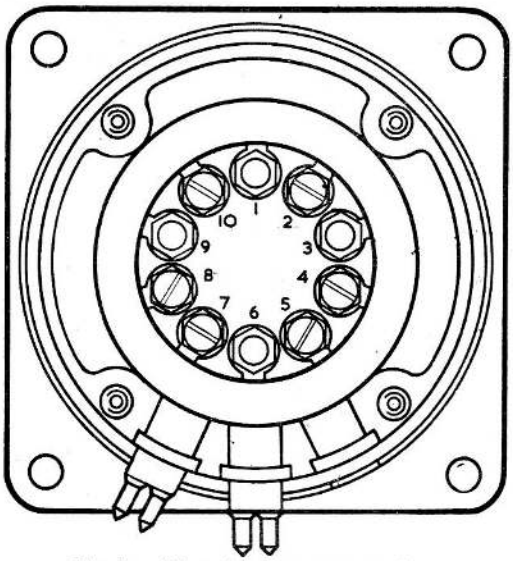

Fig. 4. *Terminal arrangement*

INSTALLATION

9. To fit a new switch having a rubber cable grommet, remove the back cover, nip the extreme tips off the sleeves required, and feed the conductors through, causing the sleeves to invert. Finally pull the conductor back to re-invert the sleeves.

10. The drum switch shaft, of $\frac{3}{8}$ in. diameter, is attached by any convenient means, normally a $\frac{1}{8}$ in. standard split pin driven into the shaft, to the pilot's selector lever or to linkage from the service under control. When a split pin is used for coupling the switch to the service, it forms a means of preventing the switch being turned beyond its limit of operation.

SERVICING

11. Since this switch is sealed, no servicing is possible; a faulty switch must be renewed.

Note . . .

On no account must a battery be connected to terminals 4 *and* 8.