Chapter 11

DOUBLE-ACTING RELAY, TYPE D2703

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LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Type D2703	*Stores Ref. 5CW/1712*
Operating voltage	24
Intermittent rating	*300 amp.*
Coil resistance	*4·37 to 4·83 ohms*
Dimensions	*5·87 in. × 3·2 in. × 3·44 in.*

Introduction

1. The relay, Type D2703, is used in aircraft to control the battery feed to the starter and propeller feathering motors. The relay is actuated by a feathering push-switch in the pilot's cockpit. With the relay in the normal position the starter circuit is complete, but when the relay solenoid is energized by depression of the switch, the starter circuit is broken and the feathering circuit is made, allowing the hydraulic system to function.

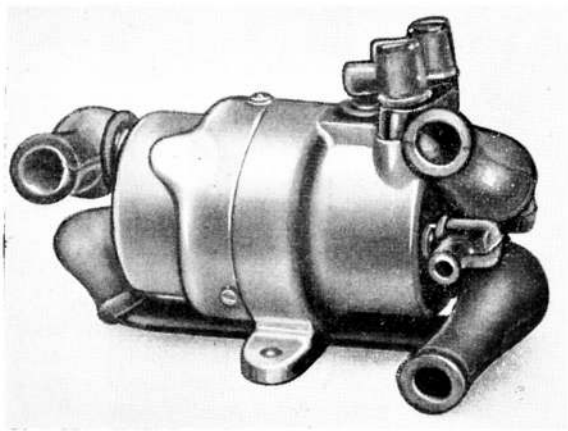

Fig. 1. General view of relay

DESCRIPTION

2. A general view of the relay, which consists of three main items, namely, a removable solenoid core assembly with two contacts, and two outer alloy casings, is given in fig. 1. The solenoid pot is located within the main outer casing by two grub screws, whilst the smaller casing is secured to the main casing by three round-headed screws which pass through plain holes in both casings into tapped holes in the solenoid pot.

3. The main casing carries two feathering motor terminals annotated 1 and 2, and two terminals annotated 6 which are connected to two spring-loaded auxiliary contacts. These contacts bear on one of the moving contacts of the solenoid assembly irrespective of whether either the starter or feathering circuit is completed, thus giving a permanent connection to the solenoid contact. The two terminals marked 6 are bridged by an insulated metal strip and only one of them need be used. Terminals 1 and 3 are similarly connected by an insulated metal bus-bar.

4. Two starter motor terminals marked 3 and 4 are located at the opposite end of the relay. A spring, housed in the main casing, presses on one end of the solenoid core and ensures that one of the moving contacts of the solenoid assembly is maintained in

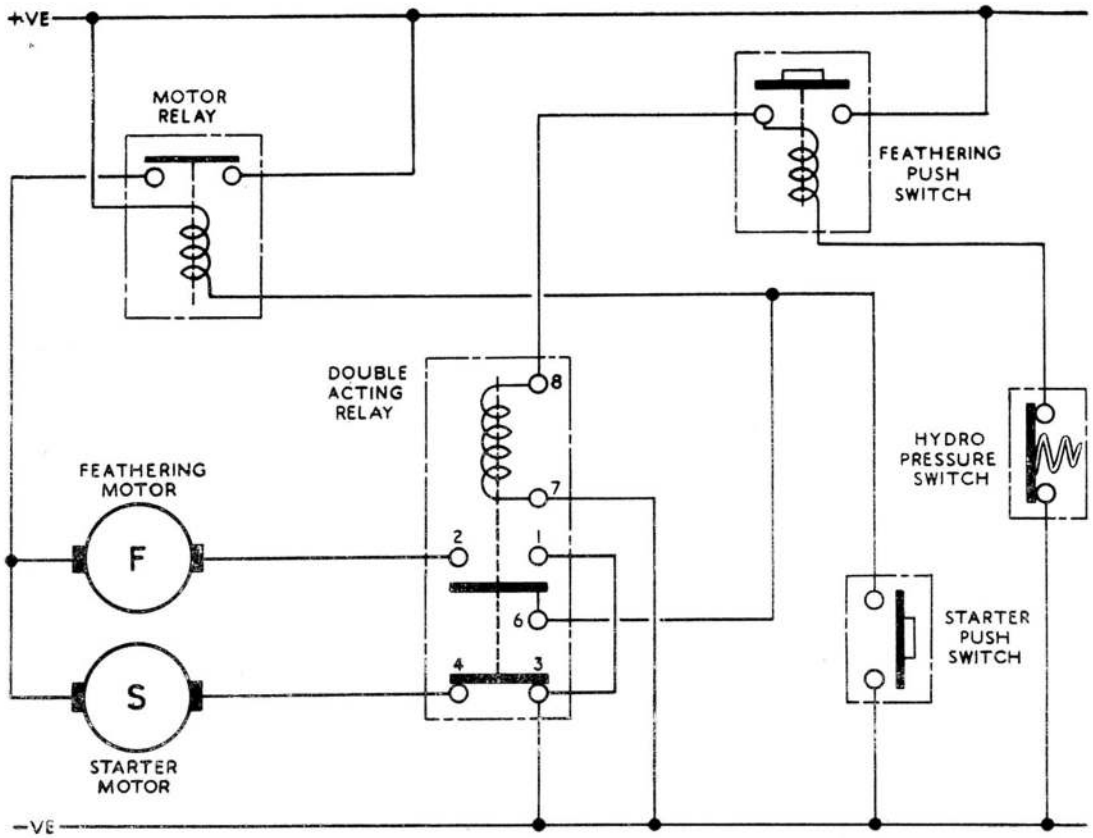

Fig. 2. Typical circuit diagram

contact across the starter motor terminals 3 and 4 when the relay solenoid is not energized.

5. The leads from the solenoid coil are brought out through a rubber grommet and connected to terminals 7 and 8 mounted on a terminal block on the top of the relay.

FUNCTIONING

6. Referring to fig. 2, it will be seen that in the normal position as illustrated, the negative supply to the starter motor is completed across terminals 3 and 4. The motor is operated by depression of the starter push-switch and the consequent energizing of the motor relay. To change from starting to feathering, the D2703 relay must be energized by depressing the feathering push-switch, which is magnetically retained in this position throughout the feathering operation. Current now passes through terminal 8 of the relay and energizes the solenoid which attracts the armature, breaks the starter motor contacts across terminals 3 and 4 and makes the negative line to the feathering motor via terminals 1 and 2. Terminal 6, being permanently connected to the moving contact performing the latter operation is thereby connected to terminals 1 and 2, negative potential being thus applied to the motor relay to complete the circuit of the feathering motor to the positive feed.

7. When feathering has been completed, hydraulic pressure opens the hydro pressure switch, and this in turn breaks the feathering push-switch circuit. When the solenoid is de-energized, the spring-loaded armature of the D2703 relay is returned to its original position and the circuit is once more made across terminals 3 and 4.

SERVICING

General

8. Normally, the relay should require very little attention; the terminals should be kept clean, and all cable connections firmly tightened down. After modification action, the operation of the unit should be checked as described in Vol. 6, Sect. 22 of this publication.