Chapter 32

INERTIA SWITCHES (PENDULUM TYPE)

LIST OF CONTENTS

LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Type 1C ... ... *Stores Ref. 27N/20*
Number of poles ... ... *6 (6 normally open)*
Number of terminals *12*
Dimensions ... ... *4·2 in. × 3·5 in. × 4·35 in.*
Weight ... ... *1 lb. 9 oz.*

Type 2C ... ... *Stores Ref. 5CW/3955*
Number of poles ... ... *6 (4 normally open, 2 closed)*
Number of terminals *12*
Dimensions ... ... *4·2 in. × 3·5 in. × 4·35 in.*
Weight ... ... *1 lb. 9 oz.*

Type 3C ... ... *Stores Ref. 5CW/3521*
Number of poles ... ... *18 (18 normally open)*
Number of terminals *25*
Dimensions ... ... *5·0 in. × 3·87 in. × 4·44 in.*
Weight ... ... *1 lb. 14½ oz.*

Type 4C ... ... *Stores Ref. 5CW/4443*
Number of poles ... ... *12 (9 normally open, 3 closed)*
Number of terminals ... ... *24 (No. 7 not used)*
Dimensions ... ... *5·0 in. × 3·87 in. × 4·5 in.*
Weight ... ... *1 lb. 13 oz.*

Introduction

1. This chapter covers four pendulum type inertia switches, as listed under Leading Particulars, which differ in the number of terminals and in the contact arrangement. All are set to operate at 6g, so that in the event of a crash, the appropriate fire extinguisher circuits are automatically brought into action.

DESCRIPTION

2. The basic principle of operation of the four switches is similar; the intertia switch, Type 3C, is illustrated in fig. 1, 2 and 3. The switch contains a pendulum mounted on bearings which allow it to swing in any direction. The weight at the end of the pendulum is shaped like an inverted saucer, and when the switch is set for action a control arm, held by a spring, engages the weight at the deepest point of its concave depression and stops it from swinging. Any shock or impact over 6g will jolt the pendulum away from the control arm; the arm, released, springs up through an angle of 60 to 80 deg. and allows the contact points, shown in fig. 2 and 3, to complete the electrical circuit, thus switching on the associated electrical equipment.

3. The mechanism of the switch contact assembly is shown in the open position in the left-hand view of fig. 2 and 3. It consists of a rigid member and a leaf-spring, each provided with contact points. The leaf-spring contact is normally held away from contact with the rigid member by the insulating cam which is attached to the control arm holding the pendulum in place. An impact sufficient to jerk the pendulum free of the control arm releases the arm, which in turn relieves the pressure of the cam, and the leaf-spring springs back so that the contacts meet and complete the circuit. The right-hand views of fig. 2 and 3 show the inertia switch after operation.

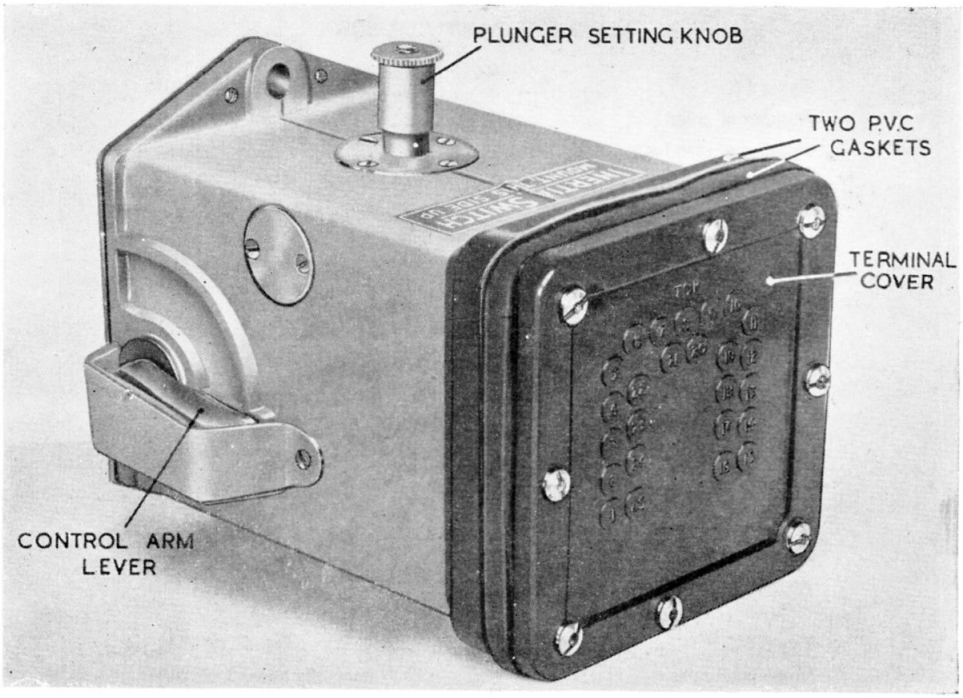

Fig. 1. Inertia switch, Type 3C

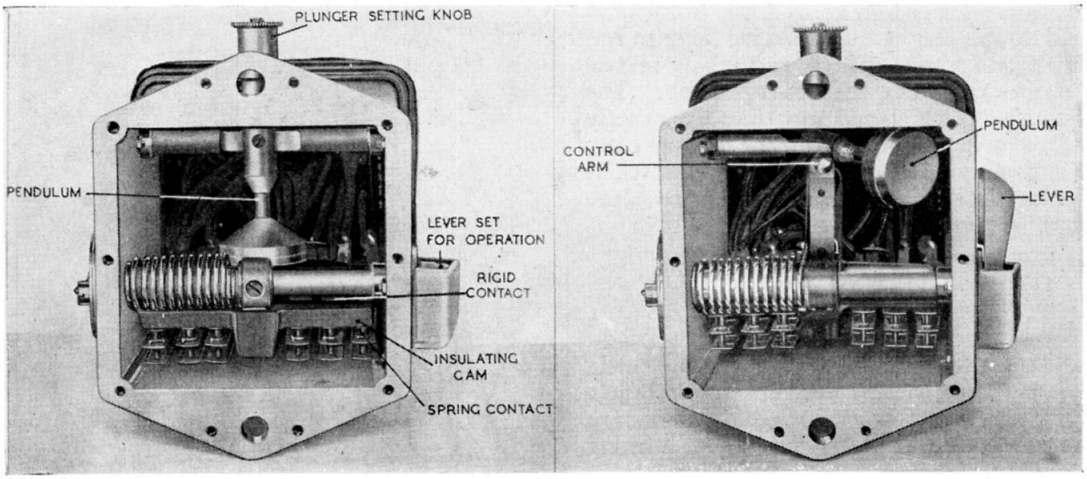

Fig. 2. Interior view of switch

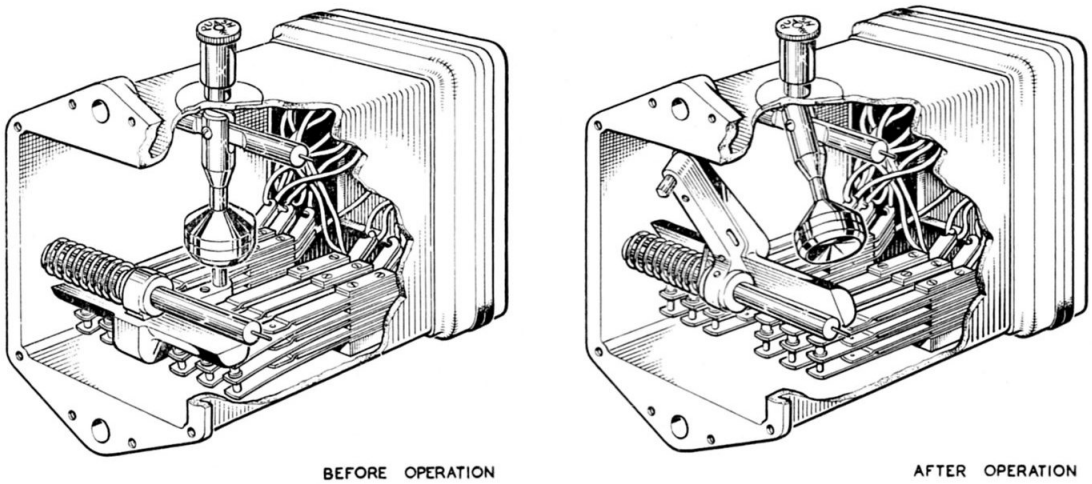

Fig. 3. Diagram of operation

4. After operation, the switch must be re-set. To do this, press down the re-setting lever on the side of the switch case to its lowest position, and hold down. Rotate the SET-TRIP knob on the top of the switch case until the indicating arrow points to the SET position. Press this knob down firmly and hold down. Allow the re-setting lever to rise slowly as far as it will go, and finally release the pressure from the set-trip knob. The re-setting lever should now line up exactly with the indicator rib on the switch case; if it does not line up exactly, the switch is incorrectly set, and the re-setting procedure must be repeated.

SERVICING

5. It is vitally important that the inertia switch should work smoothly and instantly when it is required; it is therefore necessary to ensure that it is kept in good working condition.

Electrical test

6. Remove all fire extinguisher containers, disconnect the time delay switches and insert an inspection lamp, Mk. 2 (Stores Ref. 5CX/369) in the extinguisher plug-in sockets. Rotate the indicator knob until the arrow points to TRIP. Press the knob firmly; the contacts should close with a movement that is definite and audible, and all the test lamps inserted in the extinguisher plug-in sockets should light.

7. The switch must be re-set after this test in the manner described in para. 4. When the inertia switch is correctly set, all test lamps should be out. If the test lamps fail to go out when the switch has been tested and is found to be set correctly, it is evident that the inertia switch itself has developed a fault; it must therefore be removed for examination, and a new switch fitted in its place.

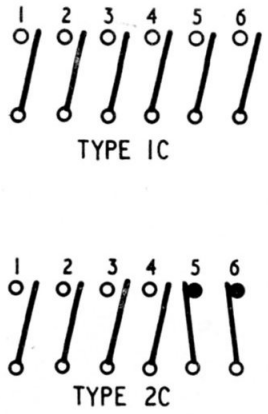

Fig. 4. Circuit diagrams

P24807 544830/3152 9/55 2125 C & P **Gp. 1**