Chapter 6

CONTROL UNITS, FIRETEC 4-ZONE

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LEADING PARTICULARS

*Control unit, Type TP*4504	... *Ref. No.* 5CZ/5834
*Control unit, Type TP*5904	... *Ref. No.* 5CZ/6911
Electrical supply—	
Nominal	24*V d.c.*
Minimum	20*V d.c.*
Overall dimensions—	
Length	13·891 *in.*
Height	3·562 *in.*
Width	5·812 *in.*
Weight	7 *lb.* 4 *oz.*

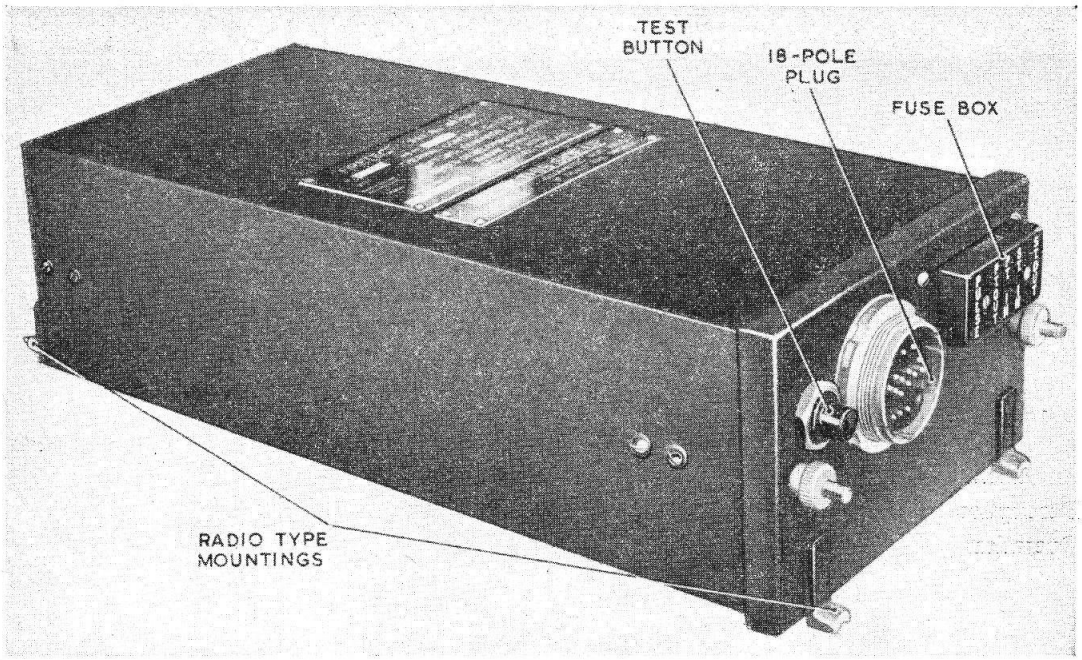


Fig. 1. Control unit, Type TP4504

Introduction

1. The 4-zone control units Type TP4504 and Type TP5904, which is a modified unit fitted with new type pulsing relays and different value resistors R2 and R9, are used in the Firetec system of fire detection in conjunction with four chains of detector heads. Information on the complete system is given in A.P.4343, Vol. 1, Sect. 22 and on the thermocouple detector heads in Chapter 8 of this Section.

DESCRIPTION

2. The control units contain one pulse circuit of three relays and four fire warning circuits. The components and operation of each of the fire warning circuits are identical to that of the single zone control unit described in A.P.4343, Vol. 1, Sect. 22 to which reference should be made. The pulse circuit consists of three Post Office type relays; in the Type TP4504 unit they are Type 600 relays and in the Type TP5904 unit Type 2400 relays.

3. Five fuses are included in the circuits, one for protecting the pulse circuit and four for protecting the four warning circuits. They are Belling-Lee, miniature, cartridge type, rated 2·5A. If the pulse fuse blows, the pulse circuit will not operate. The four fire warning circuits, however, will still operate, but the warning may be slightly delayed owing to the non-operation of the pulse circuit allowing the relay contacts to stick slightly due to the absence of the 'knock-off' voltage. If the fuse of a warning circuit blows, no warning will be given either under fire conditions or when the test button is pressed.

OPERATION

4. The operation of the fire warning and test circuits in these units is similar to that of the single zone unit described in A.P.4343, Vol. 1, Sect. 22, the operation of the pulse circuit is given below.

5. Initially the positive supply from pin S is fed through fuse A1 and resistor R8 to the coil of relay L1; the coils of relays L2 and L3 being shorted by the contacts of relays L3 and L1 respectively. Relay L1 is then energised opening the normally closed contacts which are short-circuiting the coil of relay L3, thus allowing relay L3 to be energised by the positive supply through resistor R6. The opening of the contacts of relay L3 allows relay L2 to be energised the contacts of which now short-circuit the coil of relay L1 which is then de-energised. The closing of the normally closed contacts of L1 replaces the short-circuit across the coil of L3 which in

turn is de-energised replacing the short-circuit across the coil of L2 and the cycle of operation is again repeated giving a continual pulsing of the three relays.

INSTALLATION

6. The installation of the control unit is illustrated in fig. 3, which shows a typical installation of a unit in a 4-engine fire warning system. Further information is contained in A.P.4343, Vol. 1, Sect. 22.

SERVICING

7. Servicing instructions are contained in A.P.4343, Vol. 1, Sect. 22. In addition to these, check the pulse and warning circuit fuses for being blown or intact when a fault in the system has occurred. If a fuse has blown fit a new one of the correct type in its place.

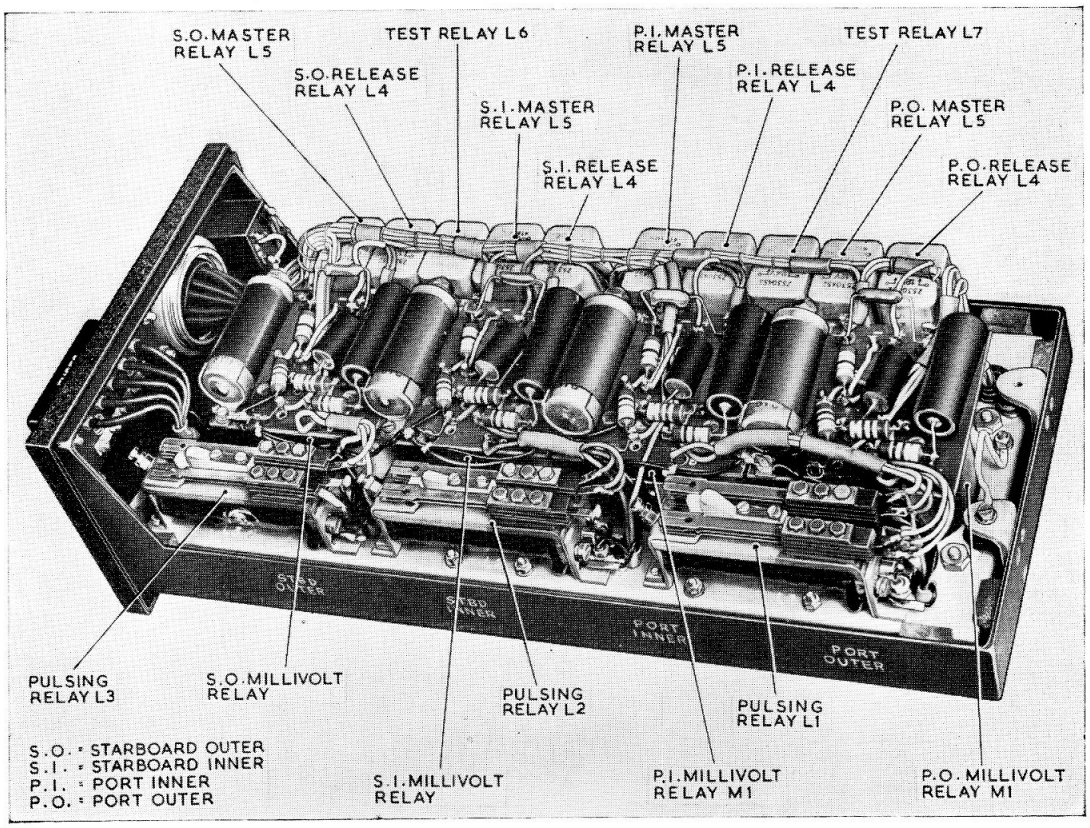
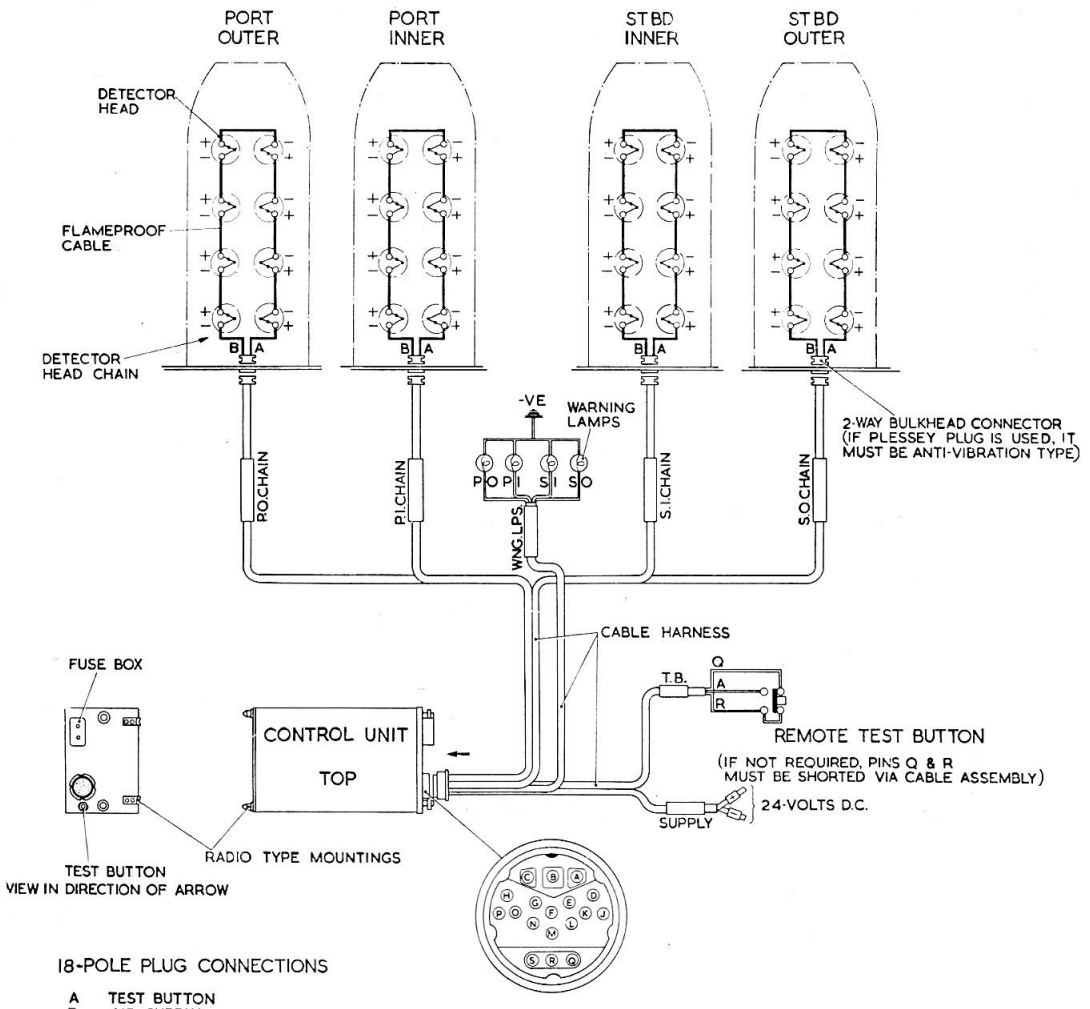


Fig. 2. Control unit with cover removed



18-POLE PLUG CONNECTIONS

A	TEST BUTTON
B	-VE SUPPLY
C	PORT OUTER LAMP
D	PORT INNER LAMP
E	-VE SCREEN
F	STBD INNER LAMP
G	PORT OUTER CHAIN + VE
H	PORT OUTER CHAIN - VE
J	PORT INNER CHAIN + VE
K	PORT INNER CHAIN - VE
L	STBD INNER CHAIN + VE
M	STBD INNER CHAIN - VE
N	STBD OUTER CHAIN + VE
O	STBD OUTER CHAIN - VE
P	STBD OUTER LAMP
Q	TEST BUTTON
R	TEST BUTTON
S	+VE SUPPLY

Fig. 3. Typical installation in a 4-zone fire warning system

TABLE 1

List of components

Reference	Component	Type
Plug	Plessey, 18 pole, Mk. 4	Z560190
Socket	Plessey, 18 pole, Mk. 4	Z560210
A1	Fuse, 2·5A, Belling-Lee miniature	Glass cartridge
A2	Fuse, 2·5A, Belling-Lee miniature	Glass cartridge
C1	Capacitor, 0·2μF, 150V d.c.	WA.19
C2	Capacitor, 0·75μF, 150V d.c.	WA.11 5C.3602
C3	Capacitor, 0·75μF, 150V d.c.	WA.11 5C.3602
C4	Capacitor, 0·1μF, 350V d.c.	CP45N
C5	Capacitor, 0·1μF, 350V d.c.	CP10N
C6	Capacitor, 0·1μF, 150V d.c.	WA.57
◀ L1	Relay, P.O., 2C.O./1B, 600 Ω	2400 (TP.5904)
L1	Relay, P.O., 2C.O./1B, 600 Ω	600 (TP.4504)
L2	Relay, P.O., 1C.O./1M, 600 Ω	2400 (TP.5904)
L2	Relay, P.O., 1C.O./1M, 600 Ω	600 (TP.4504)
L3	Relay, P.O., 1C.O./1B, 600 Ω	2400 (TP.5904)
L3	Relay, P.O., 1C.O./1B, 600 Ω	600 (TP.4504) ▶
L4	Relay, S.T.C., sealed, 12V, 170 Ω	4184GC
L5	Relay, S.T.C., sealed, 12V, 170 Ω	4184GC
L6	Relay, S.T.C., 700 Ω	4184GD
L7	Relay, S.T.C., 700 Ω	4184GD
L8	Choke, R.F., 0·5mH	Dust cored
M1	Millivolt relay unit, 5 Ω coil, screened	0·5–0·75mA
PB1	Test switch push-button	10F.1786
R1	Resistor, 5 Ω, ¼W, incorporated in M1	Wire wound
◀ R2	Resistor, 1 Ω ± 5%, 4W	Wire wound vitreous (TP.5904)
R2	Resistor, 18 Ω, ¼W	Moulded carbon (TP.4504) ▶

TABLE 1 (continued)

Reference	Component	Type
R4	Resistor, 100 Ω, $\frac{1}{4}$W	Moulded carbon
R5	Resistor, 100 Ω, $\frac{1}{4}$W	Moulded carbon
R6	Resistor, 800 Ω, $\frac{1}{2}$W	Moulded carbon
R7	Resistor, 800 Ω, $\frac{1}{2}$W	Moulded carbon
◀ R8	Resistor, 400 Ω, 4W	Wire wound vitreous (TP.5904)
R8	Resistor, 800 Ω, $\frac{1}{2}$W	Moulded carbon (TP.4504)
R9	Resistor, 1300 Ω ± 5%, 4W	Wire wound vitreous (TP.5904)
R9	Resistor, 5000 Ω, $\frac{1}{4}$W	Moulded carbon (TP.4504) ▶
R10	Resistor, 330 Ω, 4W	Wire wound vitreous
R11	Resistor, 150 Ω, $\frac{1}{4}$W	Moulded carbon

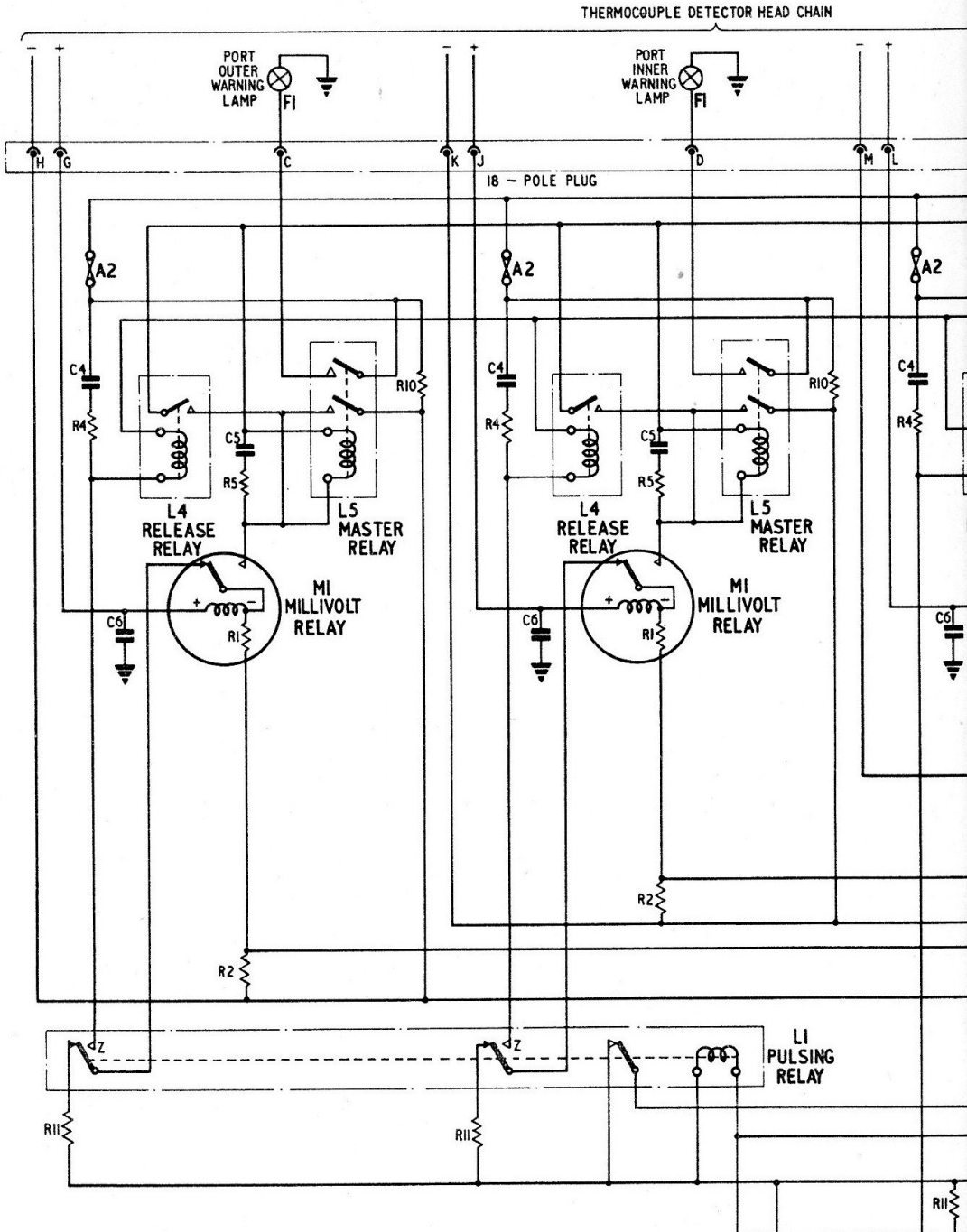


Fig. 4.

Circuit diagram of contr

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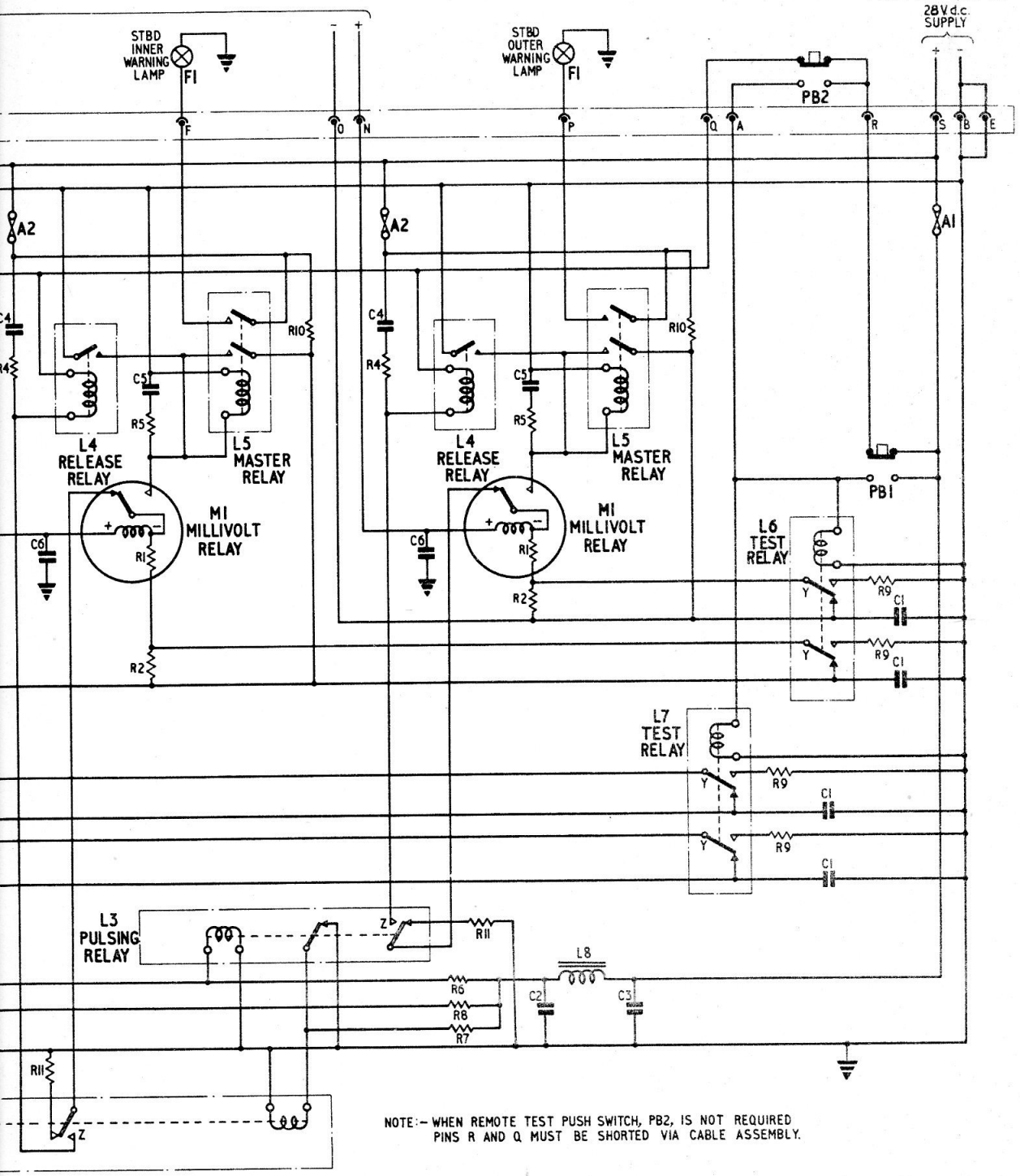

control unit and external connections

Fig. 4.