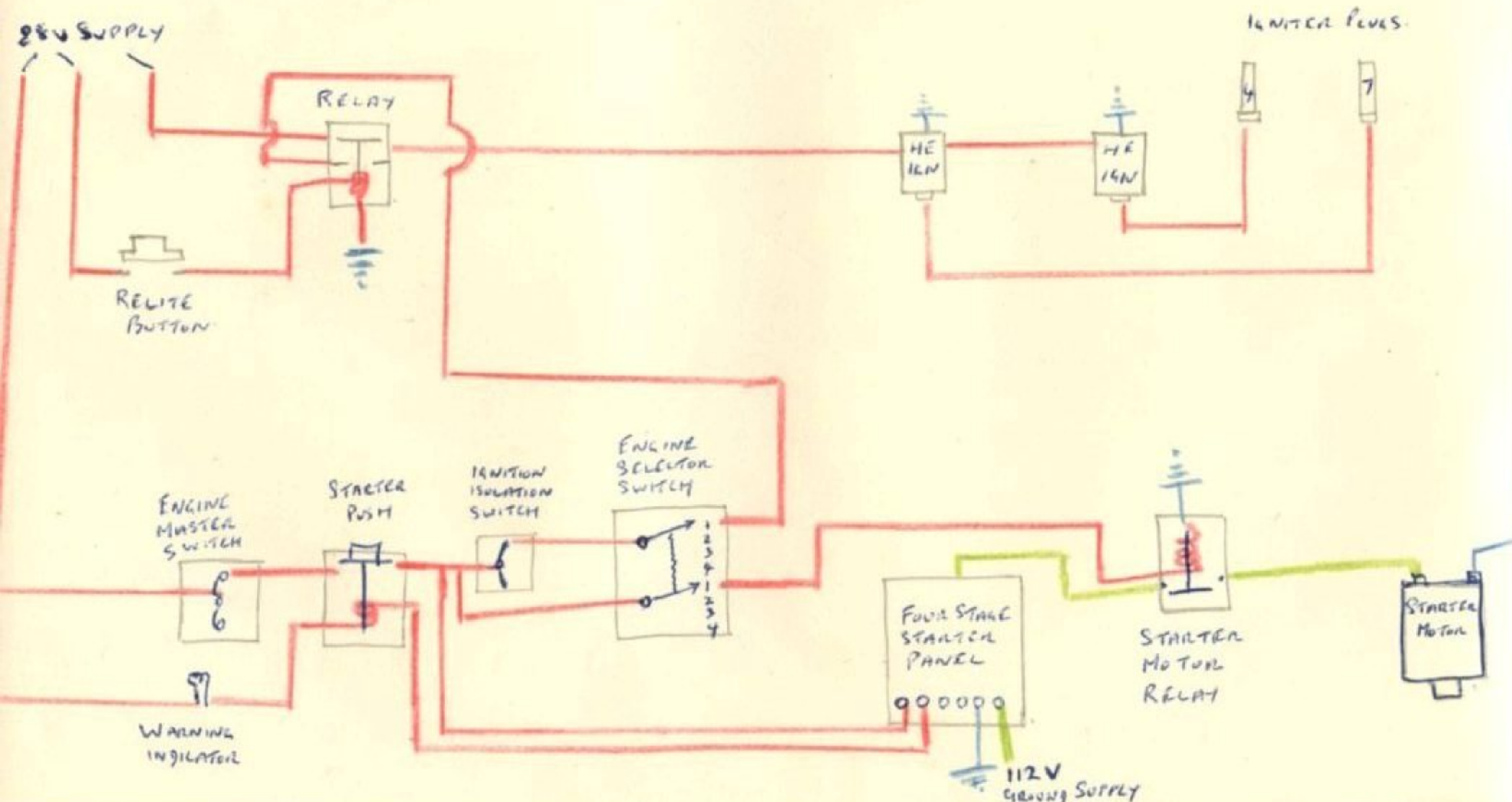


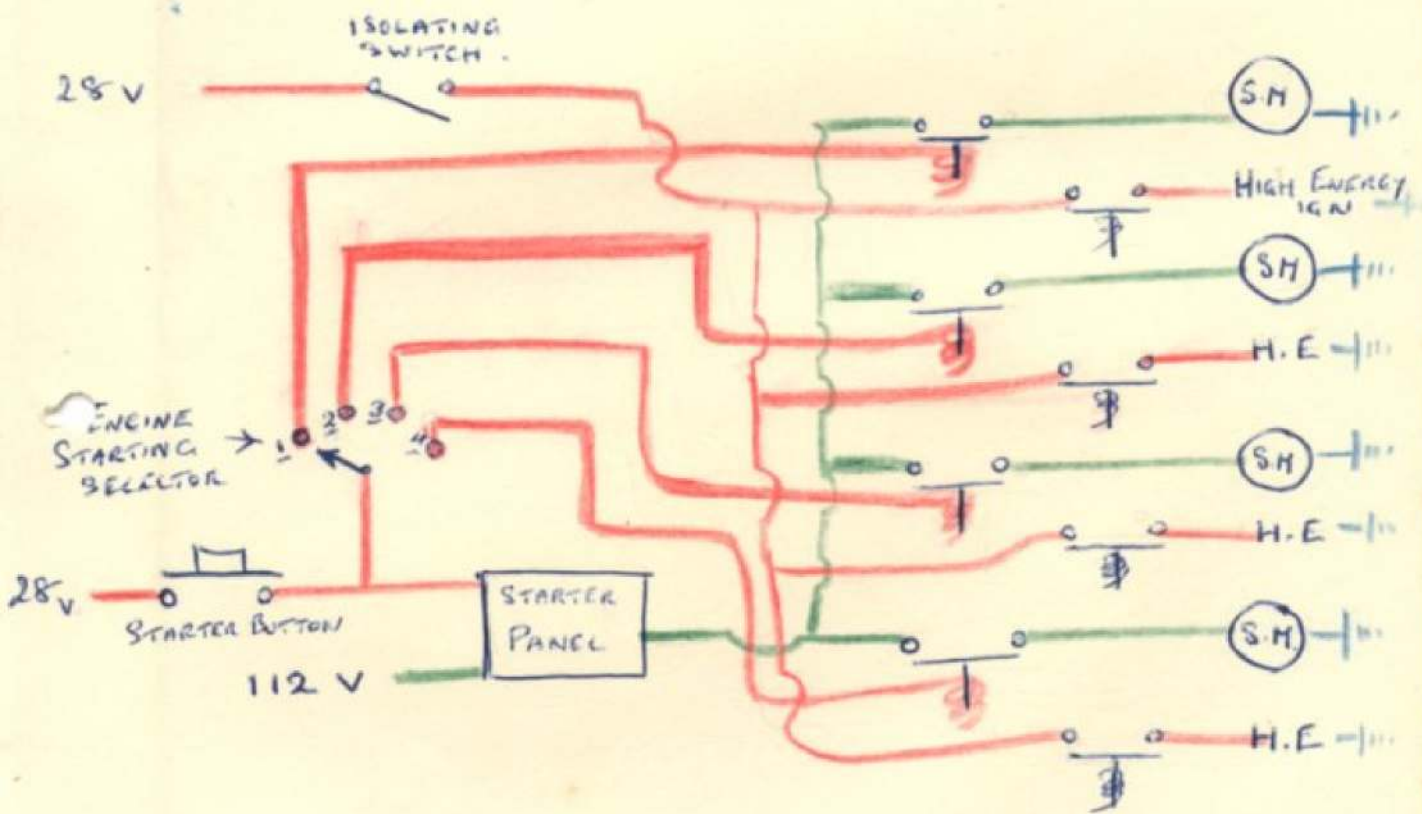
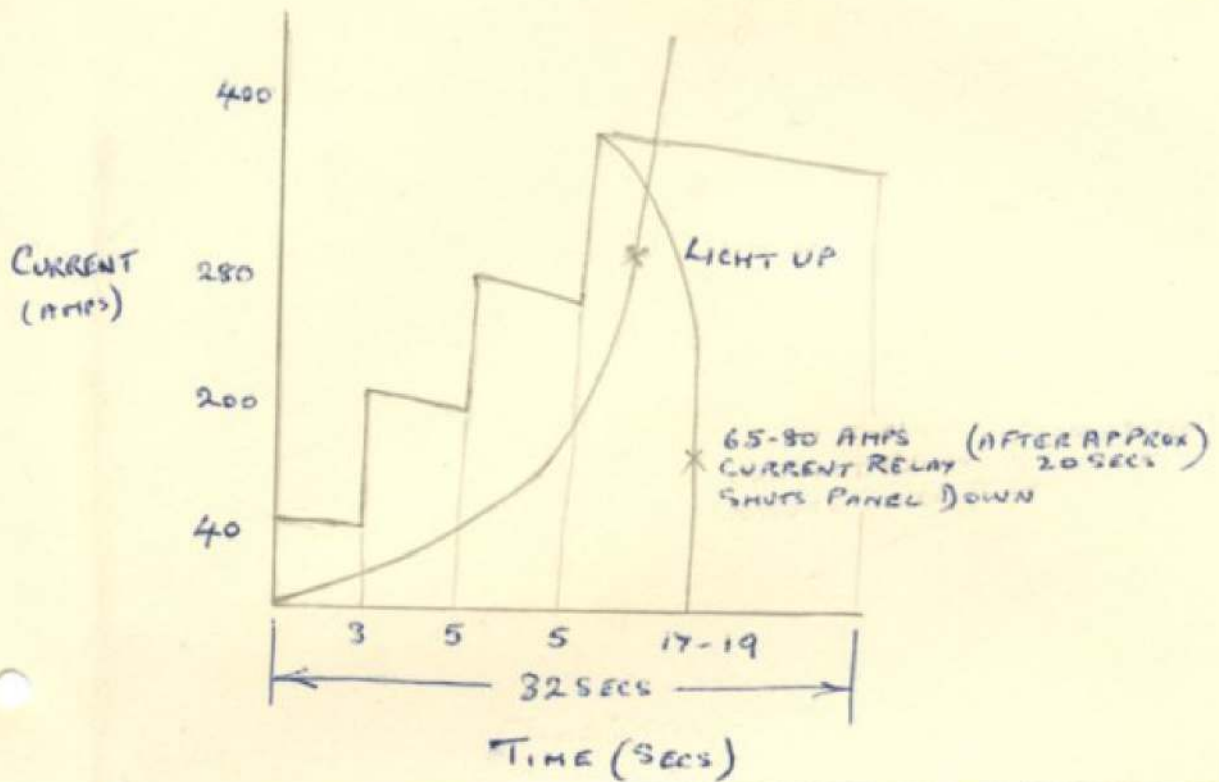


## SECTION 7 CONTENTS

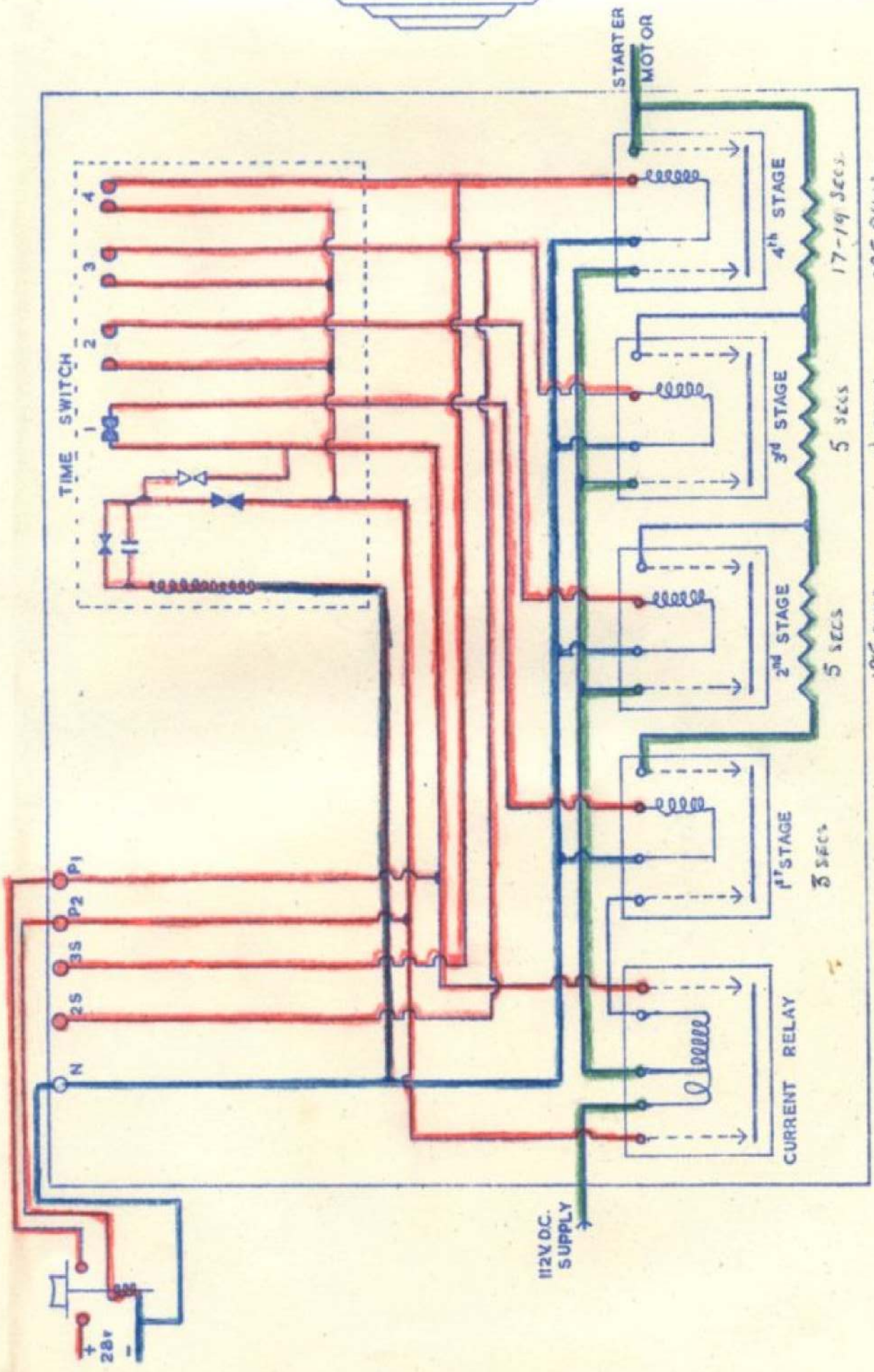
- 1 ENGINE STARTER MOTOR
- 2 STARTER PANEL
- 3 HIGH ENERGY IGNITION
- 4 SURFACE DISCHARGE PLUG
- 5 OIL PRESSURE INDICATOR
- 6 COMPRESSOR R.P.M.
- 7 HOT AIR VALVES
- 8 FIRE SYSTEM
- 9 GENERATOR

# OLYMPUS STARTER PANEL





4 ENGINE STARTING CIRCUIT



185 OHMS 1 OHMS 0.05 OHMS

STARTER PANEL

AES.304.

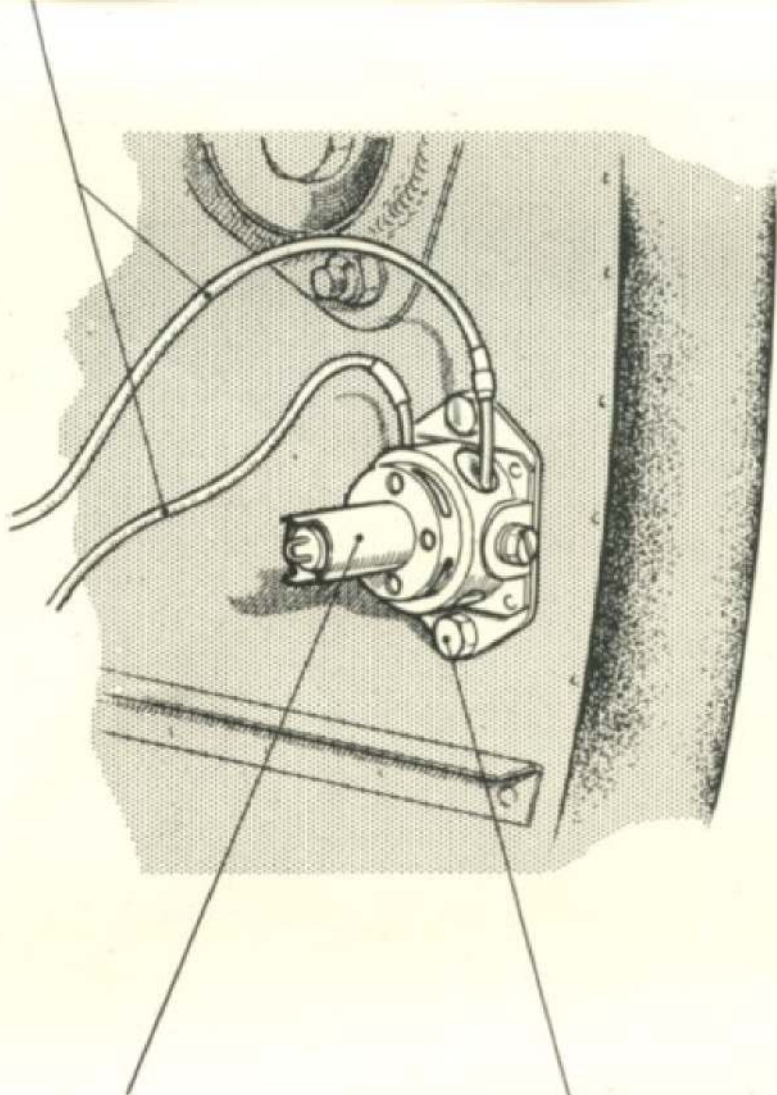


### FIRE CONTROL

The detector works on the termo-couple principle i.e. when heat is applied to the junction of two dissimilar metals a voltage is produced.

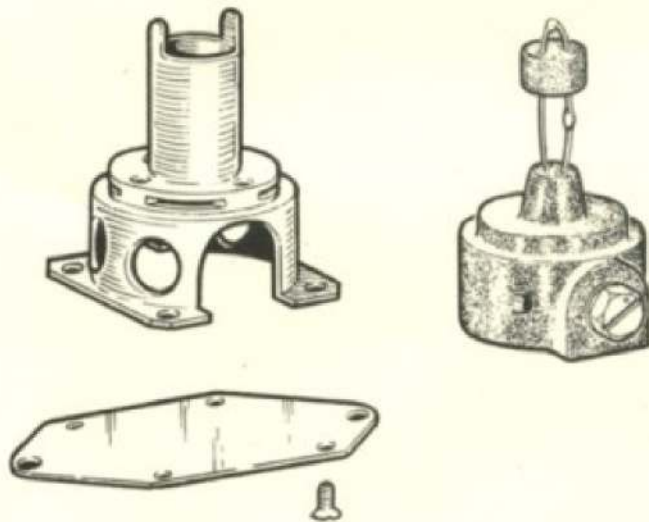
The type used has two such junctions connected in series. As depicted on illustration TP.2611A, one of these junctions is exposed. the other being shrouded by the unit body. During an engine run up, the rate of rise in temperature is slow enough to produce only a small variation between the two junctions, consequently only a very small voltage appears at the terminals. Should a fire occur the exposed junction temperature will rise at a faster rate than the shrouded one and when the temperature differential is  $185^{\circ}\text{C}$  the generated voltage is sufficient to operate a sensitive relay. This relay assisted by a pulsing circuit energises a heavier duty relay which operates the warning system.

There are 13 detectors in each engine bay, 8 in zone 2A and 5 in 2B, all connected in series. Should any one detector or the combined detector chain have a differential of  $185^{\circ}\text{C}$  the system will indicate a fire. The operation of the fire system is indicated by a red light fitted to the fire extinguisher discharge button. The four buttons being mounted on the coaming above the centre instrument panel. To test the ~~lamp~~ <sup>WHOLE SYSTEM</sup> pull out the button, pushing the button in discharges the fire extinguisher bottles.



FLAME DETECTOR

ATTACHMENT BOLT



DETAILS OF FLAME DETECTOR

FLAME DETECTOR.  
INSTALLATION.



### Fire Control Unit Operation

When the fire warning temperature level is reached, the thermo couple output is sufficient to energise the coil of M.1. and its moving contact will change position. As the 'Z' contacts close and complete a circuit, current will flow from the 24V supply, through R.3., pulsing contacts 'Z', M.1. contacts, relay L.5. to the negative of supply.

The relay L.5. being energised operates its contacts and latches in a feed via the contact of L.4. relay, relieving the small contacts of M.1. of any load. Through the top contact of L.5. the fire warning circuit is energised. The approved Fire Drill is then carried out.

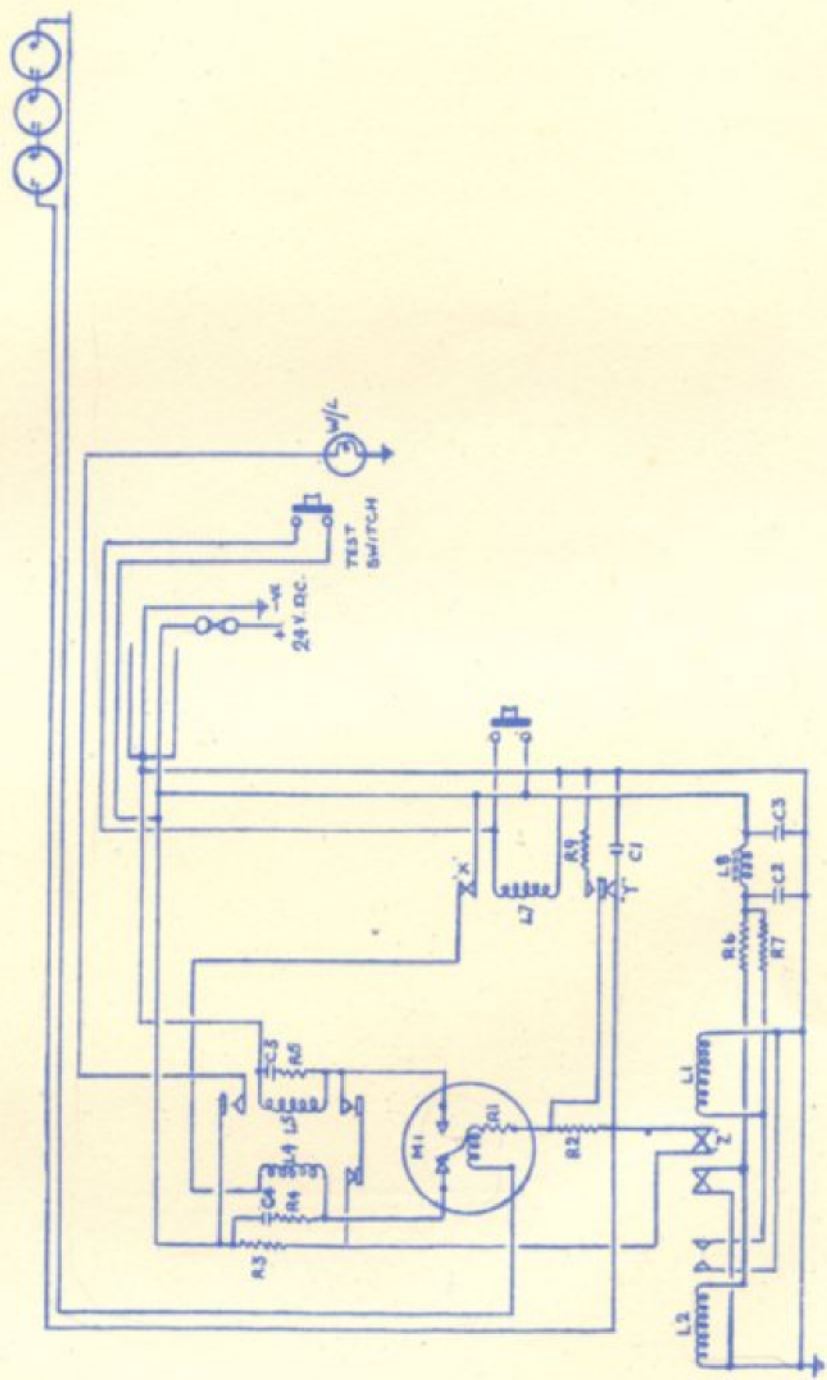
When the fire has extinguished, and the thermo couple output has fallen to the reset level the M.1. coil is de energised and its moving contact returned to its normal position. Relay L.4. is now energised via contacts 'X' of relay L.7., coil of L.4. relay, M.1. contacts, R.1., contacts 'Y', pulsing contacts 'Z' and the closed contacts of L.4. and L.5. relays. As relay L.4. is energised its contacts open, open circuiting the supply to L.4. and L.5. The fire warning circuit is broken and the control unit is reset ready for further service.

Operation of the test switch or button energises relay L.7. operating changeover contacts 'Y' and connecting R.9. to the negative supply. A positive supply is fed through R.3. pulsing contacts 'Z', the thermo couple chain,



M.1. relay, R.1. and R.9. to negative. The current flow through M.2. is equivalent to that of fire conditions.

Releasing the test switch or button de energises L.7. relay and through contacts 'X' the system is reset as already described.



**FIRE WARNING CIRCUIT.**



## Compressor R.P.M. Generator & Percentage Indicator

Kelvin & Hughes KB159/01 & KB140/01

### Generator

This is a 2 pole magnet rotor 3 phase generator of a miniature type. It is directly mounted and has a square drive shaft. The rotor is designed to run in oil and the windings are impregnated to withstand Ester based oils and high working temperatures.

### Indicator

The indicator operates on the drag cup principle. It is mounted on a 2" case and the main pointer has a sweep of 270°. The main pointer reads against the outer scale, graduated in 2% intervals from 0 - 100%. A secondary pointer makes a complete revolution of a small dial for 10% movement of the main pointer. The accuracy of the instrument is  $\pm .5\%$ . The instrument case is filled with an inert gas to ensure long life.

The percentage system of indicating R.P.M. is being adopted to standardise instrumentation. The system depending on the provision of a suitable drive which at maximum engine R.P.M. will turn the generator at 4,200 R.P.M. The ratio of the generator to indicator is such that at 4,200 generator R.P.M. the indicator reads 100%. An overspeed of 10% can be accommodated and would be indicated by the secondary pointer.

Both generator and indicator are fitted with Cannon plugs type G.502 - 105L - 3P.



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