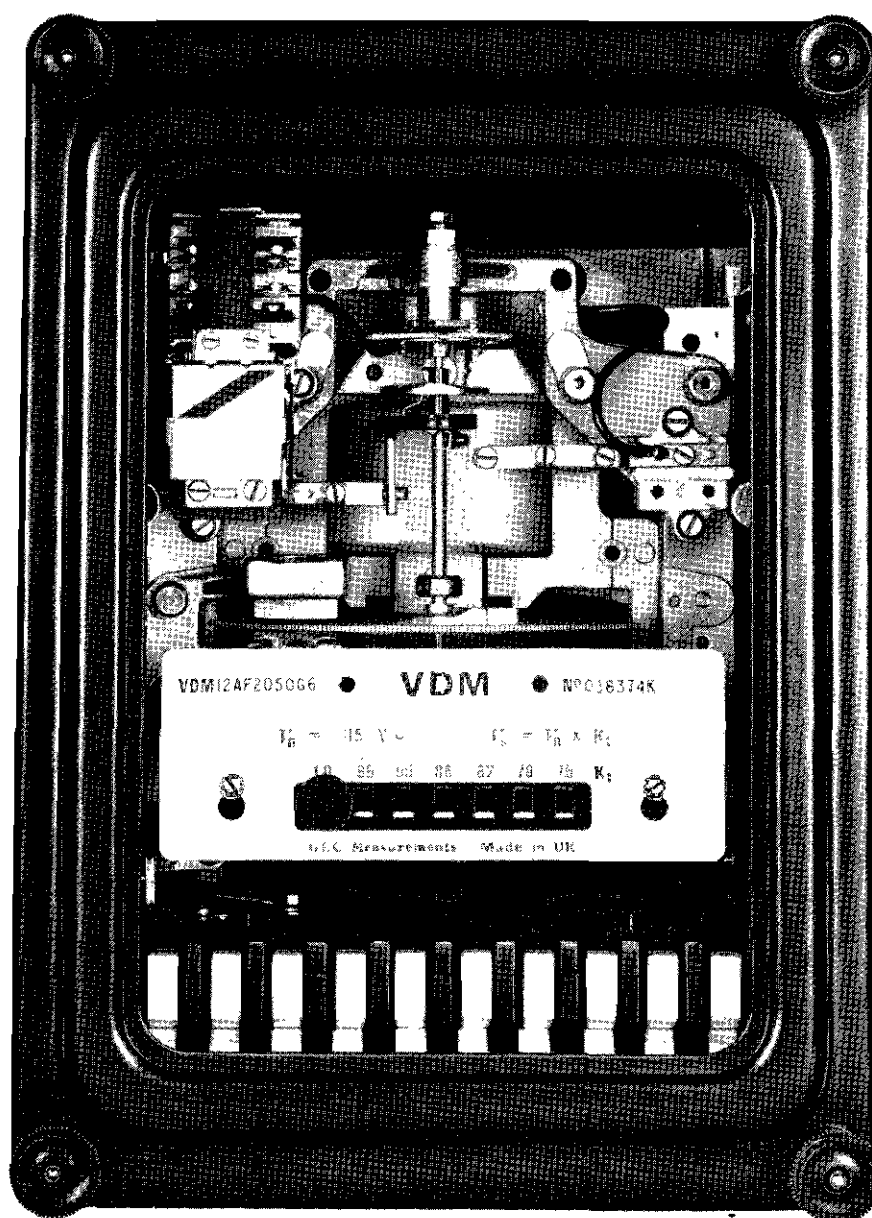


GEC Measurements

Type VDM

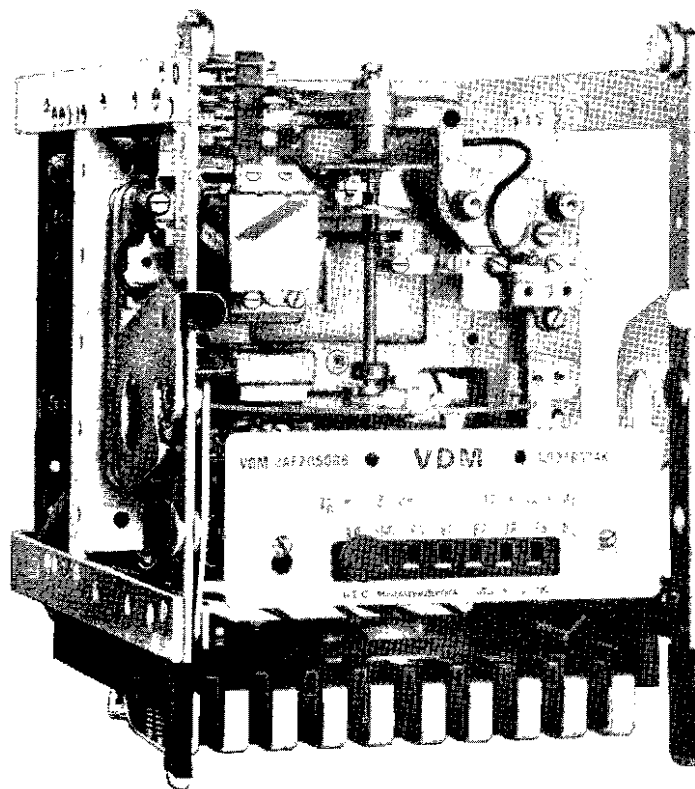
Reverse Phase Sequence and Undervoltage Relay



Type VDM

The principal features of the relay are:

- * Two alternative inverse-time operating characteristics for undervoltage conditions
Type VDM11 relay - Short time characteristic with 0.16s time delay for collapse of 3 phase voltage to zero
Type VDM12 relay - Long time characteristic with 2s delay for zero voltage
- * Voltage setting range - 100% to 75% rated voltage in seven steps
- * High drop-off/pick-up ratio ensures correct resetting after voltage fluctuations
- * Robust, well-proven measuring element
- * Four output contacts for direct tripping, interlocking and alarm



The type VDM relay has been designed to provide phase sequence and undervoltage protection for a.c. machines. Typical applications include electric lifts, conveyors, haulage systems and unattended converters.

In many installations it is particularly important that three-phase induction motors are protected against reverse running, overheating and possible damage which might result from starting the plant with abnormally low voltage, with the phases reversed, or with an open circuit on one phase of the supply.

Complete protection against these contingencies is provided by the type VDM relay which, besides affording protection to the plant, is a safeguard against accidents that may endanger life.

The relay comprises a wattmetric induction disc movement supplied with two line voltages from the three-phase motor supply. Voltage from one line is applied directly to one winding of the relay, and voltage from the other line is applied via a tapped transformer to the second winding. The transformer secondary has seven taps which are selected by a plug bridge, permitting the relay pick-up voltage to be adjusted from 0.75 to 1.0 times the nominal supply voltage.

When the protected circuit is healthy the phase rotation is normal and the torque exerted on the relay disc exceeds that of the restraint spring, thus maintaining the HS contacts in the closed position to allow the motor to be started, as shown in Figures 1 and 4. Reversal of the phases, or failure of one phase of the three-phase voltage, causes reversal or reduction of relay torque, and the disc rotates to close the LS contacts. Closure of the LS contacts actuates an auxiliary unit which initiates the motor trip device.

Two versions of the VDM relay are available:

- VDM11 - Short time characteristic
- VDM12 - Long time characteristic

Both types are supplied with a shunt trip auxiliary unit as shown in Figure 4.

Voltage ratings

50 Hz relays	110 or 440 volts phase to phase
60 Hz relays	120 or 480 volts phase to phase

Voltage settings

Plug-setting values are 0.75, 0.78, 0.82, 0.86, 0.9, 0.95 and 1.0 of nominal voltage.

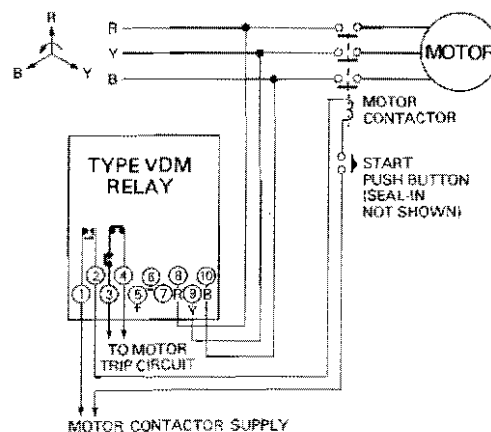
Note: The plugboard taps give the voltage which the supply voltage must exceed initially before motor starting is permitted. The undervoltage trip settings are 0.9 of the plugboard taps on the long-time relay and 0.99 of the plugboard taps on the short-time relay.

Frequency

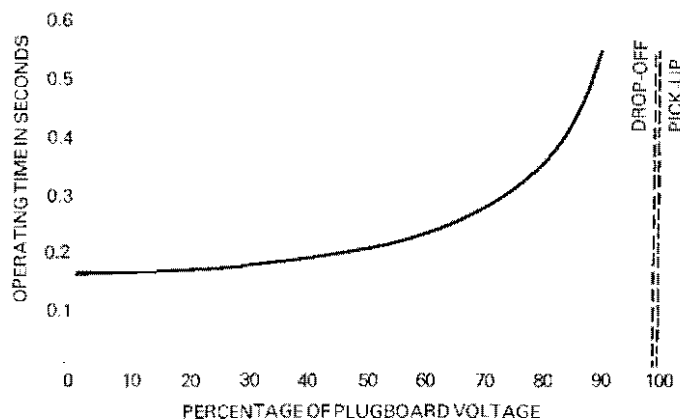
50 Hz or 60 Hz versions are available.

Burdens

The burden at rated voltage on any tap is less than 5VA per phase.



TIME/VOLTAGE CHARACTERISTICS FOR COLLAPSE OF THREE-PHASE VOLTS



Auxiliary d.c. supply

The auxiliary unit fitted is rated at 110 volts d.c. as standard. Under healthy conditions it is continuously energised and the total burden is 3 watts maximum. Other voltage ratings can be supplied on request.

Contacts

The disc contacts are reinforced by an auxiliary hinged armature unit which has two pairs of normally-open and two pairs of normally-closed, electrically separate, self reset contacts. Each contact is rated to make and carry 7500 VA for 0.5 seconds, with maxima of 30 amperes and 660 volts a.c. or d.c.

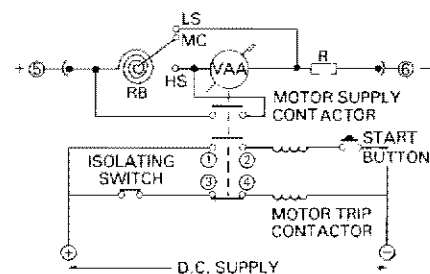
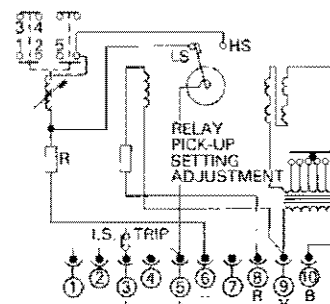
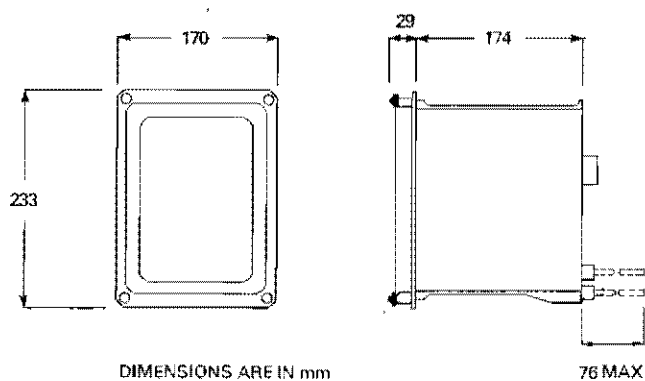
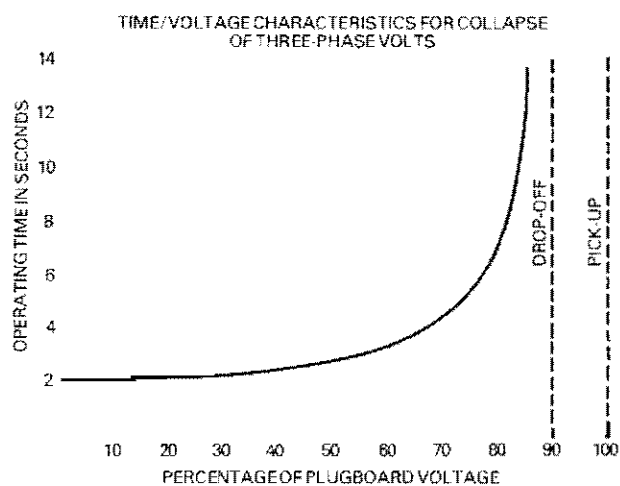
Relays are supplied in moulded size 1D drawout cases available for flush or projecting mounting, finished phenolic black as standard. See Figure 5.

Standard relays are finished to BS2011/20/040/04 and are satisfactory for normal tropical use. Relays for use in exceptionally severe environmental conditions can be finished to BS2011/20/050/56 at extra cost.

Type of relay - long or short time characteristic

Circuit details - voltage and frequency of supply trip circuit voltage

Case finish and whether flush or projecting mounted.



Our policy is one of continuous product development and the right is reserved to supply equipment which may vary slightly from that described.

GEC Measurements

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