# **GEC** Measurements

# Type VDG13

The type VDG13 undervoltage relay is a frequency compensated induction disc unit with an adjustable inverse time/voltage characteristic. Applications include the protection of induction motors against restoration of voltage on loss of supply or severe voltage dip.

Overload or temperature relays will usually prevent a motor from running on sustained undervoltage as this condition generally causes overcurrent. Undervoltage protection must be applied to a fan motor however, because the load drops sharply with speed and prevents the motor current from increasing.

Taps on the operating coil and a series resistance are connected to a link board and provide a constant inductance/resistance ratio for frequency compensation on each voltage setting.

Adjustment of the time setting is made by rotating a knurled moulded disc against a graduated time multiplier scale.

The disc unit contact is closed when the operating coil is de-energised.

## **VOLTAGE SETTINGS**

50–90% of 110 volts a.c. adjustable in five equal steps or 30–90% of 110 volts a.c. in seven equal steps (with externally mounted resistor) at 50 or 60 c/s.

An external voltage transformer can be supplied to enable operation on 230/250 or 440/480 volts a.c.

#### **Resetting Voltage**

105% of voltage setting

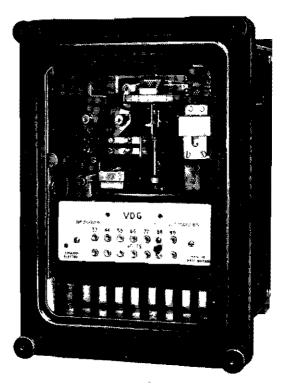
#### TIME SETTINGS

0-5 seconds at zero voltage (see characteristic)

#### **Resetting Times**

If the voltage reduction is sustained long enough to cause the relay to operate, on restoration to rated volts and with the time multiplier set at 1.0, resetting times are:

fielay setting (%)		30	40	50	60	70	80	90
Resetting time (seconds)	į	1	1.5	2	4	5	10	12



#### BURDENS

At voltage setting: 5VA

At normal voltage:

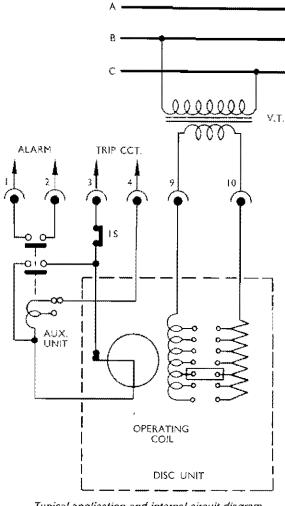
	1		30-90% version					
Relay setting (%)	I		50-90% version					
	30	40	50	60	70	80	90	
VA at normal voltage	50	31	20	14	10.5	8	6	

#### FREQUENCY ERRORS

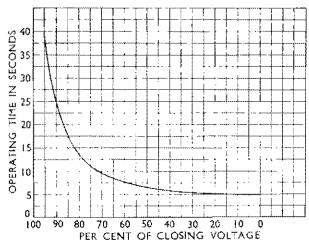
The maximum pickup variation between 40 and 70 c/s is 7%.

## AUXILIARY UNITS AND OPERATION INDICATORS

An auxiliary attracted armature with a hand reset operation indicator for either shunt reinforcing or series seal in is fitted as standard.



Typical application and internal circuit diagram



Time/voltage characteristic. Time multiplier setting=1.0

## STANDARD COIL RATINGS

Voltage operated (shunt) auxiliary units; 30, 50, 110, 125, 220 or 250 volts d.c. at a nominal burden of 3 watts continuously.

The series seal in unit has two current taps. Standard ratings are as follows:

Minimum operating current (amps)	0-1/0-3	0.2/2.0	0-6/2-4
Coll resistance (ohms)	9-2/2-1	6-0/0-125	0-29/0-031

Other coil ratings are available with both types of auxiliary unit.

#### Contacts

Two electrically separate normally open self or hand reset contacts are fitted, rated to make and carry 7500 VA for 0.5 second with maxima of 30 amps and 660 volts a.c. or d.c.

#### CASES

The relays are supplied in a size 1 drawout case available for flush or projecting mounting, finished phenolic black Relays for use in exceptionally severe environments can be finished to B.S. 2011 : 20/50/56 at extra cost; standard relays are finished to B.S. 2011: 20/40/4 and are satisfactory for normal tropical use.

	Maximum Overall Dimensions						
	Height		w	dth	Depth*		
	ins.	mm	ins.	mm	ins.	n m	
Relay case	9 😤	233	6 🕂	170	71	197	
External resistor	3 <del>, 7</del>	87	7 👯	198	2 👬	58	
External transformer	41	121	31	92	31	95	

"Add 3" (76 mm) for maximum length of 2BA terminal studs.

#### **INFORMATION REQUIRED WITH ORDER**

Supply frequency Voltage setting External transformer requirements Trip circuit (shunt reinforcing or series seal in) Trip circuit current (series seal in) Trip circuit voltage (shunt reinforcing) Auxiliary contacts (hand or self reset) Operation indicator inscription if required Case finish and mode of mounting

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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