PJG

Machine Field Ground Detector Relay

GE Protective Relays

For Detecting Grounds and Preventing Possible Short Circuits

DESCRIPTION

The Type PJG12B relay detects grounds in a normally ungrounded field winding of a synchronous machine. It may be used for machine fields rated 600 volts or less with ceiling excitation up to 750 volts and no more than 1000 volts reverse, or back, exci-tation. A choice of either instantaneous or time-delayed operation is determined by se-lection of link position. The PJG12B oper-ates for 120 or 240 volts ac, 50 or 60 Hertz. A filter circuit reduces ripple voltage in the rectifier bridge output to no more than 3 volts peak-to-peak.

The relay is arranged for either hand-reset or electric reset from a separate switch or push button.

The PJG12B consists of a plunger-type instantaneous overcurrent relay (A), a thermal time-delay unit (T), a hinged-armature auxiliary unit (AX), and a voltage operated instantaneous unit (AY) which provides output contacts and target indication. The output contacts (AY) will make and carry 6 amperes continuously and 30 amperes for tripping duty.

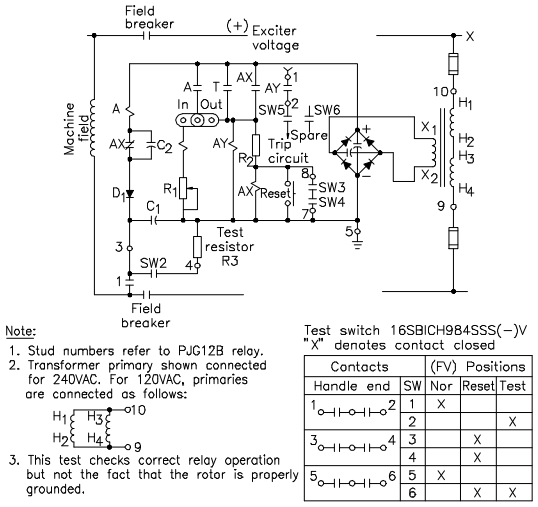
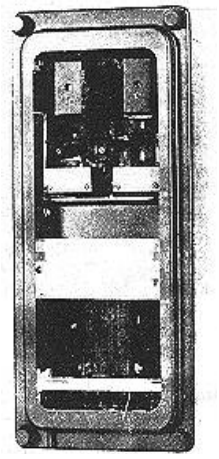


Fig. 1. Typical connections for Type PJG12B relay



(Photo 8008306)

Fig. 2. Type PJG ground detector relay

APPLICATION

Short circuits in normally-ungrounded fields of synchronous machines can often be prevented by detecting and removing a ground before a second ground results in a short circuit and possible serious damage. The Type PJG12B relay is designed for the detection of such grounds and can be used to sound an alarm or for tripping duty.

To ensure that this protection will function for a ground in the field winding, it is necessary that the rotor iron be grounded without depending on a path through the bearings, since this oil film may withstand the voltage applied by the relay, and thus prevent the relay from operating when required. Grounding means must not be installed where it will bypass the bearing insu-lation which is provided for prevention of shaft currents.①

The PJG12B may be used for instantaneous or time-delayed operation. The time delay is intended to override transient conditions which may occur when an excitation system is transferred between manual and automatic control. It is also desirable to prevent operation of this relay for grounds that may occur during maintenance on the field metering circuits. For instantaneous operation, the operating time is no more than 100 milliseconds at rated voltage. For time-delay operation, relay operating time is 2.0 ± 0.5 seconds at rated voltage and 25§C ambient temperature.

SENSITIVITY

The ground detector unit will respond to grounds in the negative field lead of up to 500 ohms at 80 percent of rated ac relay voltage.

BURDENS

The maximum burdens of these relays at their rated voltage and frequency are 66 volt-amps for 60 Hertz and 33 volt-amps for 50 Hertz applications.

SELECTION GUIDE

Volts②	Freq	Machine Field Voltage- Vdc			Model Number③	PJG Models Superseded by	Case size	Approx Wt (in lb (Kg)	
Ac	Hz.	Nominal	Ceiling	Reverse		PJG12B1A		Net	Ship
120/240	50/60	600	750	1000	12PJG12B1A	12PJG11B1A, 2A 12PJG11E3A 12PJG11F6A 12PJG11H1A	M1	23 (10.4)	28 (12.7)

① Recommended field grounding practice for a particular machine should be obtained from the machine manufacturer.

② Relay will be connected for 240 volts if requested on the requisition. Otherwise relay will be furnished connected for 120 volts. Voltage may be easily changed from 120 to 240 volts or vice-versa in the field.

③ Does not include test switch. Recommended switch is Model Number 16SB1CH984SSS(-)V.

REFERENCES :

Dimensions . . . . . .Section 16
How to Order Section1
Instruction Books . . . . . .Section 17
Target and Contact Data . .. . . . Section 16
Relay Standards . . . . . Section 16