INSTALLATION • OPERATION • MAINTENANCE

INSTRUCTIONS

TYPE TR-1 AUXILIARY TRIPPING RELAY

CAUTION Before putting protective relays into service, remove all blocking inserted for the purpose of securing the parts during shipment. Make sure that all moving parts operate freely. Inspect the contacts to see that they are clean and close properly, and operate the relay to check the settings and electrical connections.

APPLICATION

The TR-1 relay is an auxiliary relay energized by protective relays to trip two circuit breakers. Sufficient contacts are provided to seal in both trip circuits until the breaker auxiliary switches operate.

CONSTRUCTION

The TR-1 relay consists of two contactor switches mounted in a projection or semi-flush SG type case. The contactor switches are small solenoid-type d.c. operated elements. A cylindrical plunger with a silver disc mounted on its lower end moves in the core of the solenoid. As the plunger travels upward, the disc bridges three silver stationary contacts.

OPERATION

The coils of the contactor switches are energized through the trip contacts of the protective relays. The contacts of one switch seals in the trip circuit and trips one breaker. The contacts of the other switch are for tripping a second breaker.

It is necessary to add resistance in the CS1 and CS2 coil circuits to limit the current in these coils. This is done with separate external resistors, 22 ohms for a 125-volt trip circuit and 44 ohms for a 250-volt trip circuit. With these resistance values, the relay operating time is approximately one-half cycle (60-cycle basis).

INSTALLATION

The relays should be mounted on switchboard panels or their equivalent in a location free from dirt, moisture, excessive vibration and heat. Mount the semi-flush type relay vertically by means of the two mounting screws. Mount the projection type relay by first removing and discarding the screw in the middle of the rear side, then secure the relay to the panel using the mounting screw in the hardware bag. The mounting screws may be utilized for grounding the relay. The electrical connections may be made direct to the terminals by means of screws for steel panel mounting or to terminal studs furnished with the relay for ebony asbestos or slate panel mounting. The terminal studs may be easily removed or inserted by locking two nuts on the studs and then turning the proper nut with a wrench.

ADJUSTMENTS AND MAINTENANCE

The proper adjustments to insure correct operation of this relay have been made at the factory and should not be disturbed after receipt by the customer. If the adjustments have been changed, the relay taken apart for repairs, or if it is desired to check the adjustments at regular maintenance periods, the instructions below should be followed.

All contacts should be periodically cleaned with a fine file. Style 1002110 file is recommended for this purpose. The use of abrasive material for cleaning contacts is not recommended, because of the danger of embedding small particles in the face of the soft silver and thus impairing the contact.

Contactor Switch

Adjust the stationary core of the switch for clearance between the stationary core and the moving core of 1/64 inch when the switch is picked up.. This can be done by disconnecting the switch, turning it up-side down and screwing up the core screw until the contact just * separates. Then back off the core screws approximately one turn and lock in place. This prevents the moving coil striking and sticking to the stationary core because of residual magnetism. Adjust the contact clearance for 3/32 inch by means of the two small nuts on either side of the Micarta disc. The switch should pick up at two ampere d.c. Test for sticking after 30 amperes.d.c. are passed thru the coil. The resistance of the coil circuit is approximately 1/2 ohm.

RENEWAL PARTS

Repair work can be done most satisfactorily at the factory. However, interchangeable parts can be furnished to the customers who are equipped for doing repair work. When ordering parts, always give the complete nameplate data.

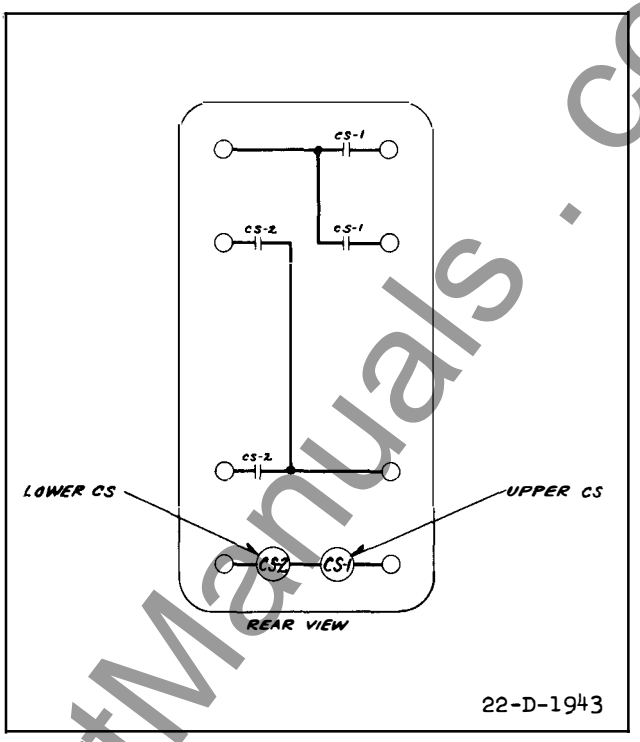

Fig. 1—Internal Schematic of the Type TR-1 Auxiliary Tripping Relay.

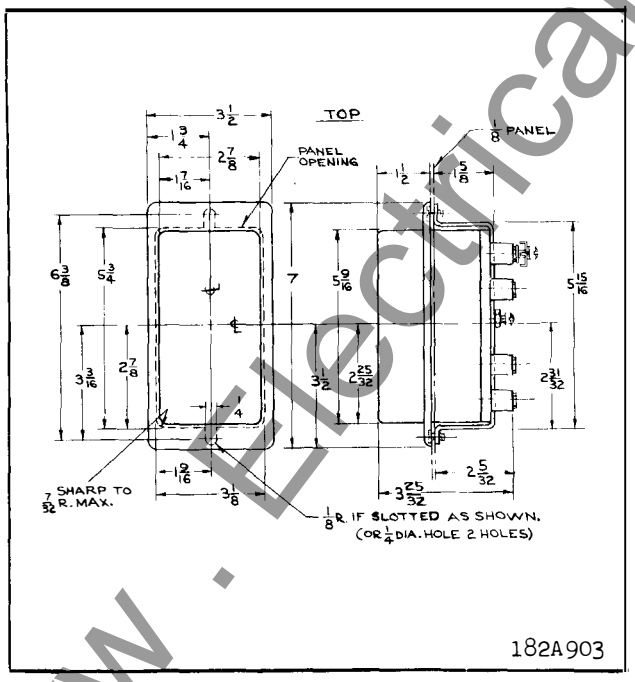

Fig. 2—Outline and Drilling Plan for the Type TR-1 Auxiliary Tripping Relay in the Semi-flush Case. For Reference Only.

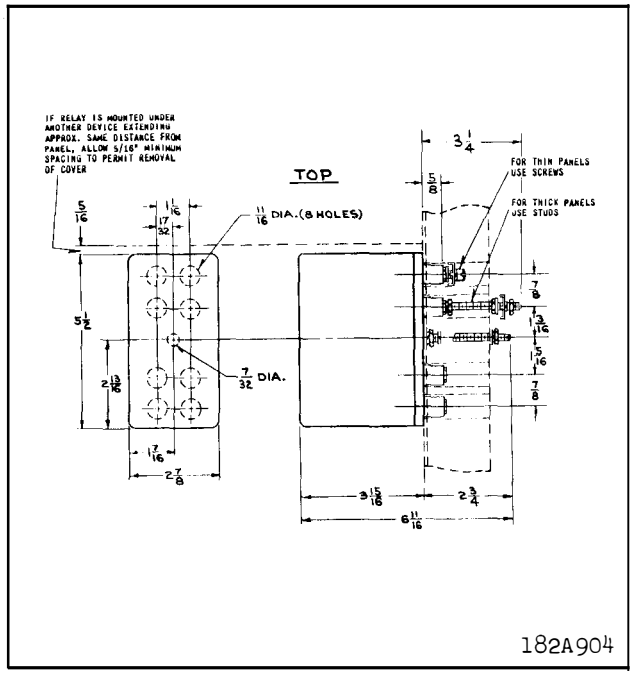

Fig. 3—Outline and Drilling Plan for the Type TR-1 Auxiliary Tripping Relay in the Projection Case. For Reference Only.