



Effective: February 1996

Supersedes I.L. 41-758B, Dated July 1976

(|) Denotes Changes since previous issue

Type TR-1 Auxiliary Tripping Relay



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.

1. APPLICATIONS

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.

2. 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 dc 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.

3. 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-hertz basis).

4. CHARACTERISTICS

The contactor switch will operate at a current value not greater than the particular contactor switch nominal rating. The operating current should be at least 2-1/2 times rated value in order to keep the time of operation of the switch to a minimum and provide positive operation.

4.1. Trip Circuit Constants

2 ampere rating: 0.23 ohms dc resistance
1 ampere rating: 0.56 ohms dc resistance

4.2. Coil Ratings

Coil Rating in Amperes dc		
Nominal Rating	1 Second	Continuous
1.0	28.0	1.0
2.0	44.0	1.6

5. INSTALLATION

The relays should be mounted on switchboard panels or their equivalent in a location free from dirt, mois-

All possible contingencies which may arise during installation, operation or maintenance, and all details and variations of this equipment do not purport to be covered by these instructions. If further information is desired by purchaser regarding this particular installation, operation or maintenance of this equipment, the local ABB Power T&D Company Inc. representative should be contacted.

ture, 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.

6. 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 it is desired to check the adjustments at regular maintenance periods, the instructions below should be followed.

All contacts should be cleaned periodically. A contact burnisher Style #182A836H01 is recommended for this purpose. The use of abrasive material for clean-

ing contacts is not recommended, because of the danger of embedding small particles in the face of the soft silver and thus impairing the contact.

6.1. Contactor Switch

Adjust the stationary core of the switch for clearance between the stationary core and the moving core for 1/64 inch when the switch is picked up. This can be done by disconnecting the switch, turning it upside down and screwing up the core screw until the contact just separates. Then back off the core screw 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 one or two ampere dc (depending on its rating). Test for sticking after 30 amperes dc are passed thru the coil.

7. RENEWAL PARTS

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

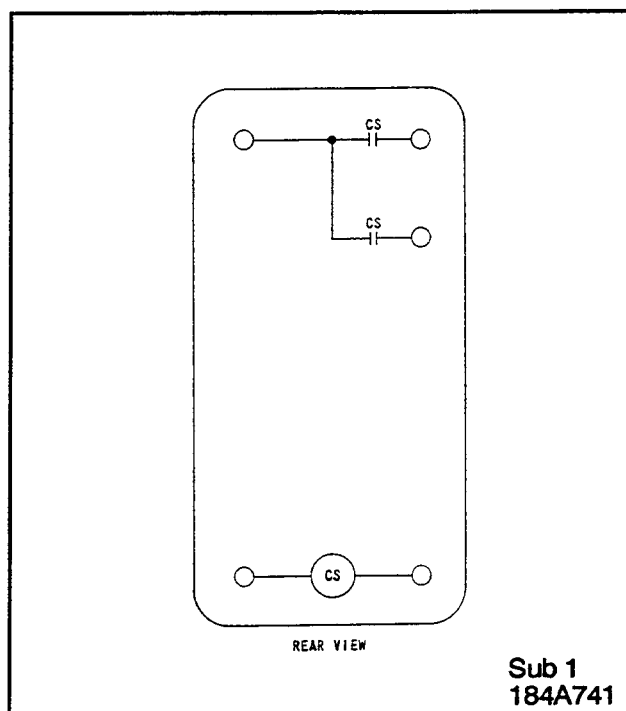


Figure 1. Internal Schematic of the one unit Type TR-1 Auxiliary Tripping Relay.

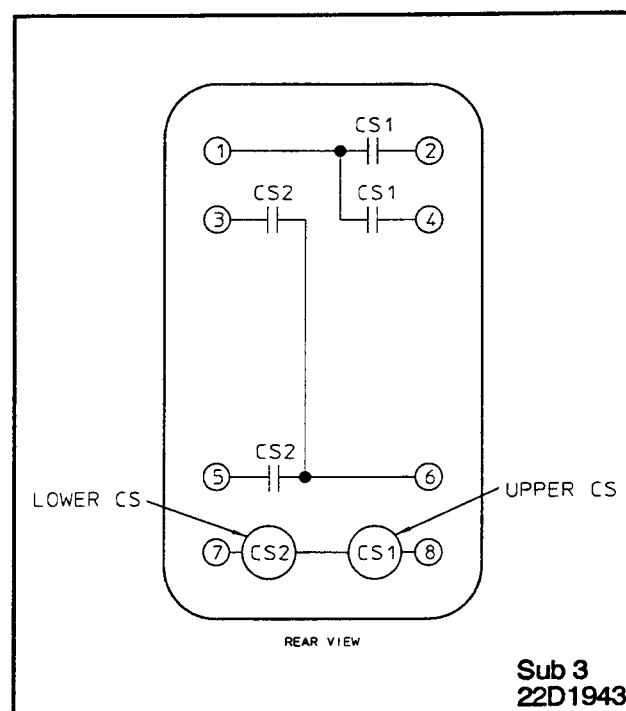


Figure 2. Internal Schematic of the two unit TR-1 Auxiliary Tripping Relay.

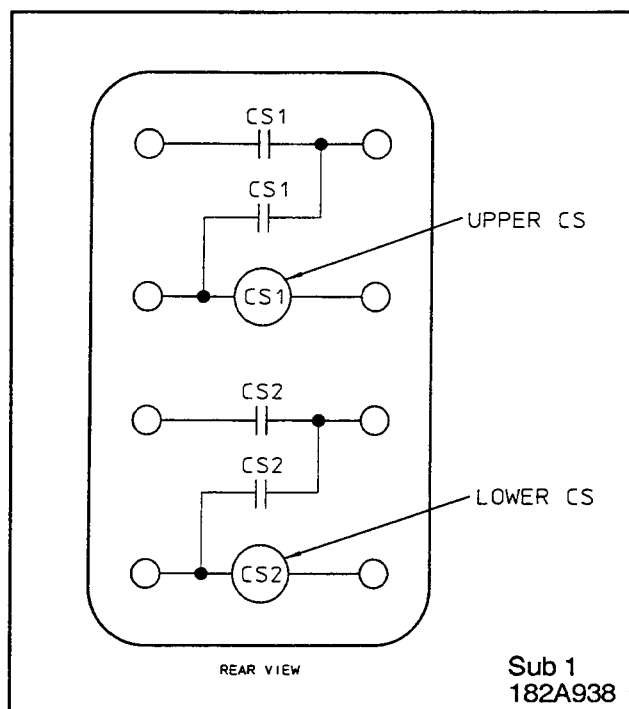


Figure 3. Internal Schematic of the two unit Type TR-1 Auxiliary Tripping Relay with Independent CS Circuits.

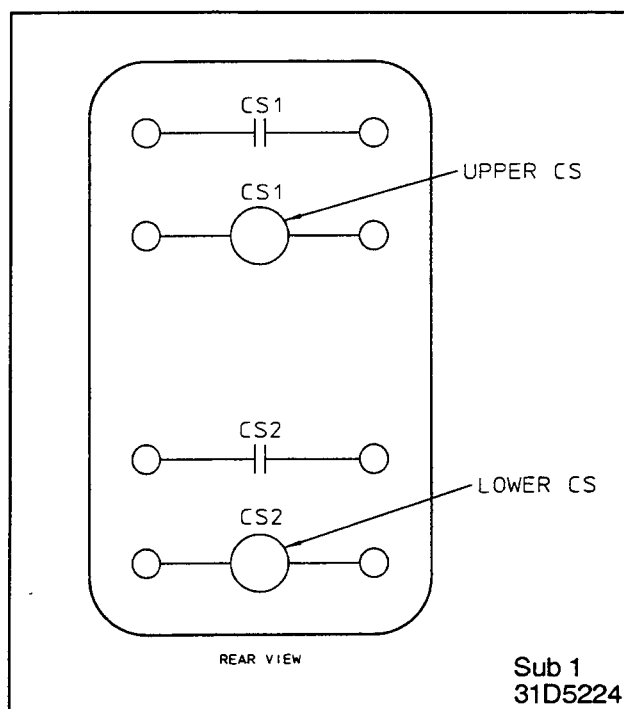


Figure 4. Internal Schematic of the two unit TR-1 Auxiliary Tripping Relay with Independent CS coil and contact circuits.

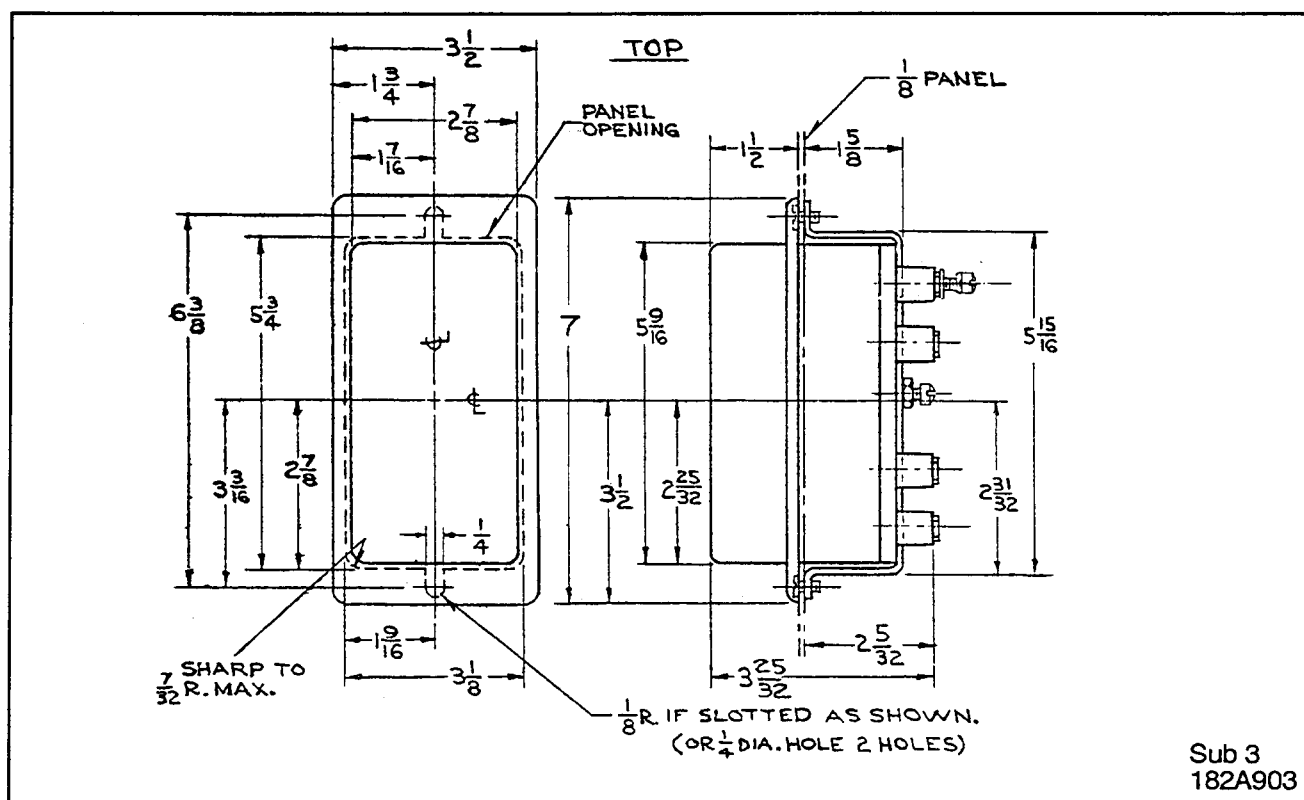


Figure 5. Outline and Drilling Plan for the Type TR-1 Auxiliary Tripping Relay in the Semi-flush (molded base, glass window cover) case.

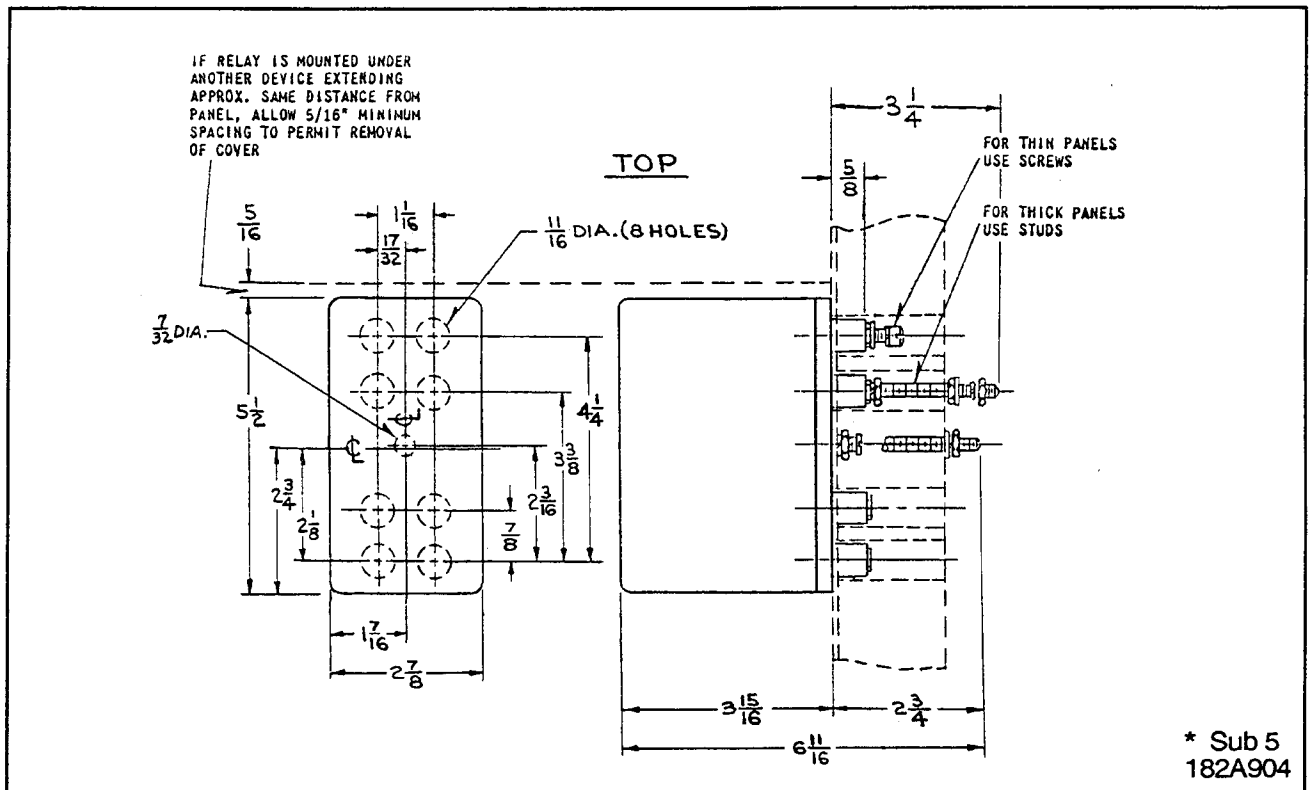


Figure 6. Outline and Drilling Plan for the Type TR-1 Auxiliary Tripping Relay in the Projection (molded base, glass window cover) case.

* Denotes change since previous issue

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