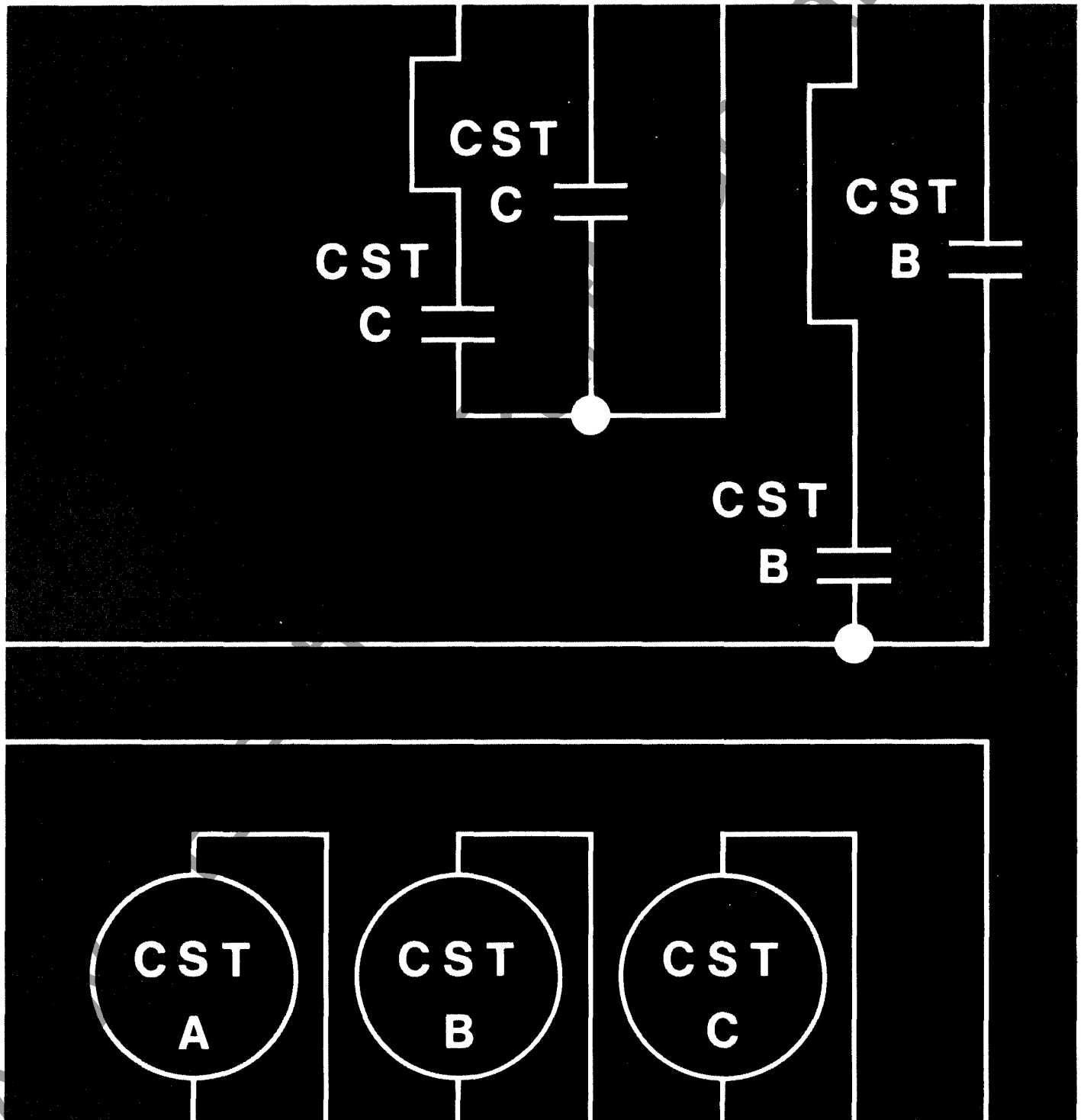


September, 1990
Supersedes DB 41-750C, pages 1-12,
dated December, 1987
Mailed to: E, D, C/41-900A

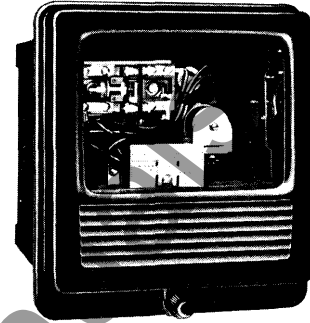
For Ac or Dc Voltage or Dc Current Operation
Device Number: 79, Type SX
Device Number: 94, Type TR-1

Types SX, TR-1, TRB-1, TRB-2, TRB-3, TRB-4 Auxiliary Relays



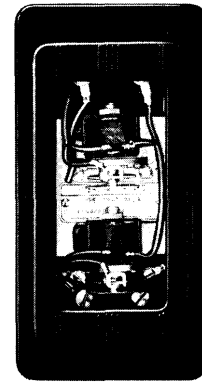
Selector Guide

| Type | Typical Applications | Operation Activated By: | Basic Operation and Construction Features | Pages |
|--|---|---------------------------------|---|-------|
| SX | High speed selective reclosing. Energization of multiple control circuits. Flexibility of contact arrangement; such as opening and closing several circuits simultaneously. | Ac or dc voltage, or dc current | High speed toggle type. Positive toggle action keeps contact closed until reset coil is energized. With or without time delay on reset. Spst, spdt, dpdt contacts. | 3-5 |
| TR-1 | Energization of multiple control circuits. | Dc current | Has four contacts available for trip circuits Non-adjustable. | 6-9 |
| TRB-1 | Blocking valve to allow trip current flow in one direction only. | Dc voltage | Energized by protective relay. | 10-12 |
| | Testunit for HU and HU-1 transformer differential relay harmonic restraint circuit. | Ac 60 Hertz source | | |
| TRB-2 TRB-3 TRB-4 | Solid state tripping units. | Dc voltage. | Blocking zeners. | 10-12 |



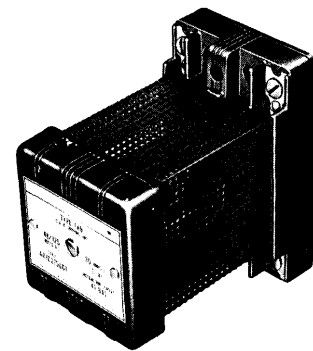
Type SX

Fig. 1



Types TR-1

Fig. 2



Types TRB-1, 2, 3, 4

Fig. 3

Type SX, Ac or Dc Voltage Operated, or Dc Current Operated (With or Without time Delay on Reset)

Type SX relay is a toggle type relay intended for auxiliary service where the relay contacts should operate and not reset until reset coil is energized. An automatic time delay on reset of 5 to 15 cycles may be obtained using relays supplied with a telephone type relay unit (X).

In a typical application, the type SX relays are used to provide selective reclosing where the breaker is instantaneously reclosed only after it is tripped by the carrier or instantaneous trip relays. The typical connections of this scheme are shown in Fig. 12. The instantaneous or carrier trip circuit No. 1, and operates the series operating coil of the type SX relay. This closes the type SX relay contact to initiate reclosing. All the other trip circuit paths are combined in trip circuit No. 2 which bypasses the type SX relay operating coil.

The type SX relay stays operated until the reset coil is energized. After the reclosure is completed, a switch on the breaker auxiliary contactor energizes the reset coil for subsequent operations.

The SX relay is available in the Flexitest® FT-11 (single unit) or FT-22 (double unit) case, or the small glass projection case (single unit).

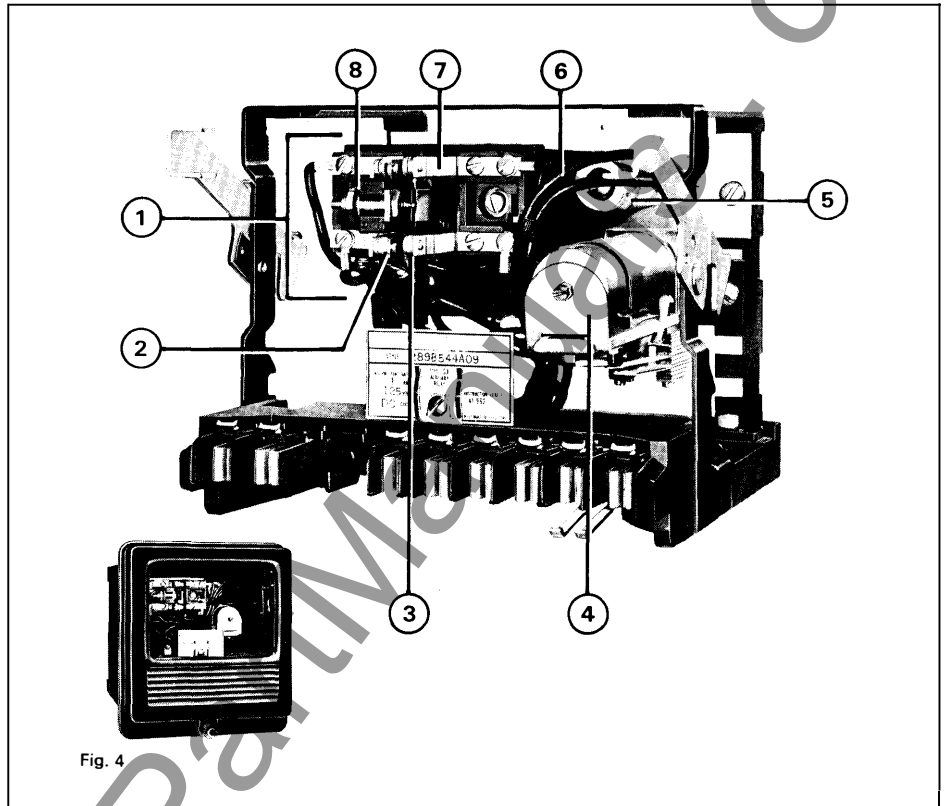


Fig. 4

① Toggle Element

When the operating coil is energized, its armature is toggled to the right, with the moving contact closing against the right-hand stationary contact. This contact position is maintained until the reset coil is energized.

② Moving Contact

③ Stationary Contact

④ Telephone Relay

Provides an adjustable time delay on reset over a range of 5 to 15 cycles.

⑤ Resistor

⑥ Operate Coil

⑦ Hinged Armature

⑧ Reset Coil

Characteristics

Contacts

The SX relay is supplied with double-pole double-throw (dpdt) contacts.

Operate and Reset Coils

Operate and reset coils are available in any combination of the following ratings:
Ac: 120 or 240 volts, 50 or 60 hertz (for intermittent duty only).
Dc: 125 or 250 volts, or for 1, 5, or 10 amperes dc (continuous duty).

Toggle Unit

The toggle unit operates at 80% of rated voltage, or 90% of its rated current.

Selective Reclosing Relays

Relays used for selective reclosing are usually provided with a 1-ampere operating coil having 1-watt power consumption. This coil is used in order to keep the resistance in series with the trip coil at as low a value as possible.

Operating Time

When energized from a dc source through a resistance load and using a 1-ampere coil, operating time is as follows:
At Rated Current27 ms
At 300% of Rated Current8 ms
At 2000% of Rated Current5 ms
When energized from a 120 volt, 60 hertz source, operating time is less than 16 ms.
When energized from a 125 volt dc source, operating time is less than 33 ms.

Burden Data

DC
At Rated Voltage5.5 watts
At Rated Current1.0 watts
Ac (120 Volts, 60 Hertz)
Open Gap20 volt-amperes
Closed Gap16 volt-amperes

Continuous Rating5 amperes

Ac Contact Interrupting Capacity (Non-Inductive)

At 120 Volts20 amperes
At 240 Volts10 amperes

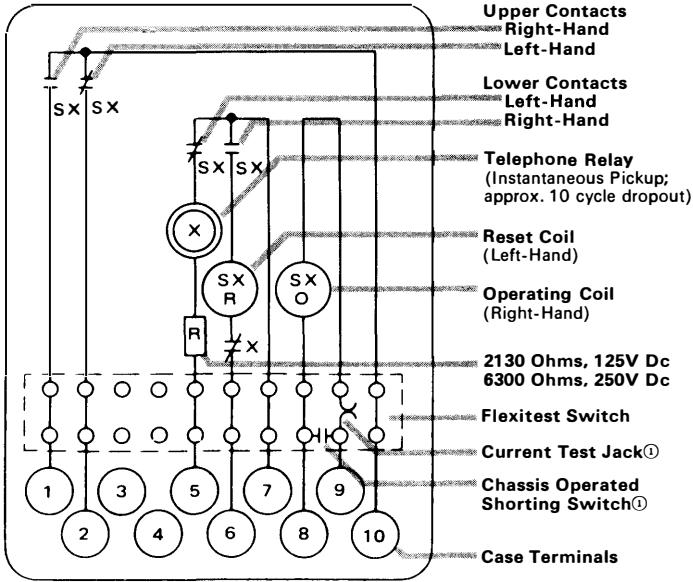
Dc Contact Interrupting Capacity

Capacity625 watts

Type SX, Internal Wiring

Flexitest Case Types (Front View)

**Single Unit, Spdt Contacts, Time Delay Reset,
Current Actuated, FT-11 Case**

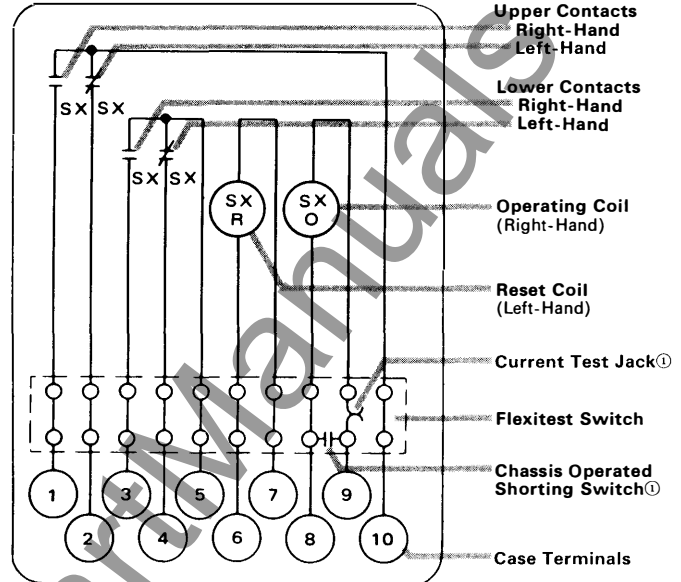


^①For selective reclosing scheme only.

Fig. 5

Sub. 2
184A180

**Single Unit, Dpdt Contacts,
Current Actuated, FT-11 Case**



^①For selective reclosing scheme only.

Fig. 6

Sub. 1
184A178

Contact Legend

- Cc: Circuit Closing
- Co: Circuit Opening
- Spst: Single-Pole Single-Throw
- Spdt: Single-Pole Double-Throw
- Dpdt: Double-Pole Double-Throw

Small Glass Projection Case Types (Rear View)

Independent cc Contacts

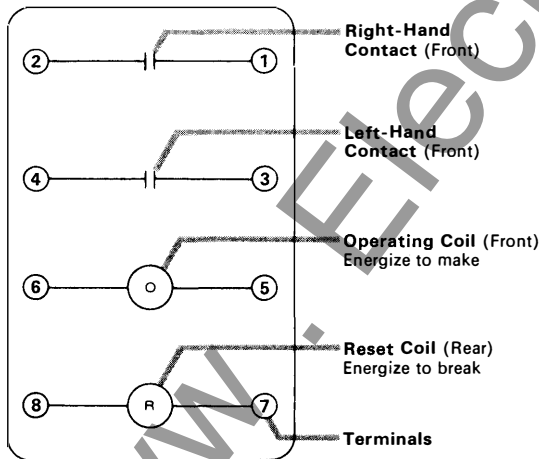
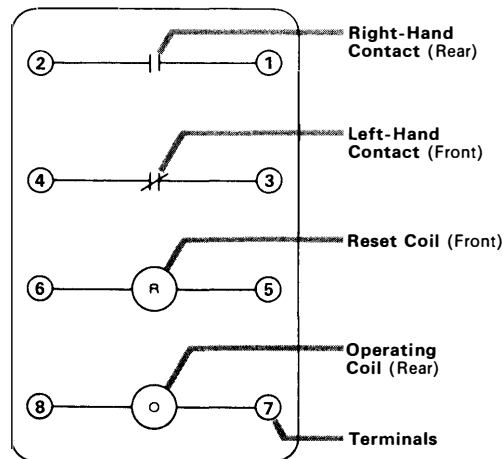


Fig. 9

Independent 1 Make, 1 Break Contacts

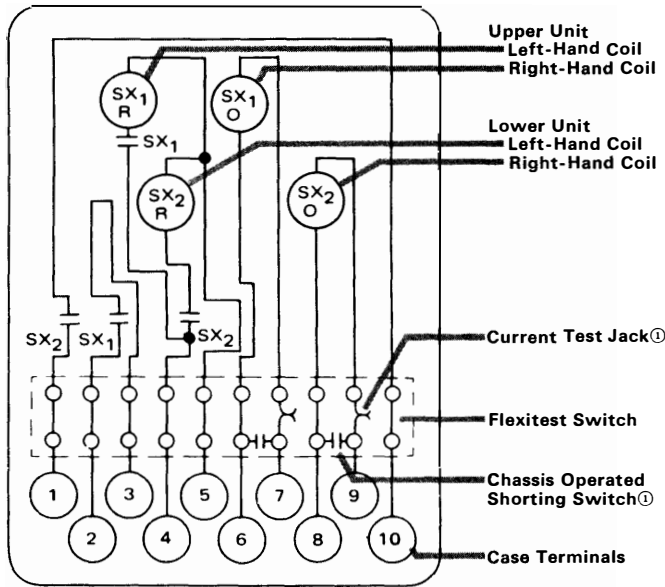


(Contacts shown in the reset position)

Fig. 10

Sub. 2
184A254

Double Unit, Contacts Selective Reclosing, Current Actuated For Dc Operation, FT-11 Case



① For selective reclosing scheme only.

Fig. 7

Sub. 2
184A214

Double Unit, Dpdt Contacts Voltage Actuated, FT-22 Case

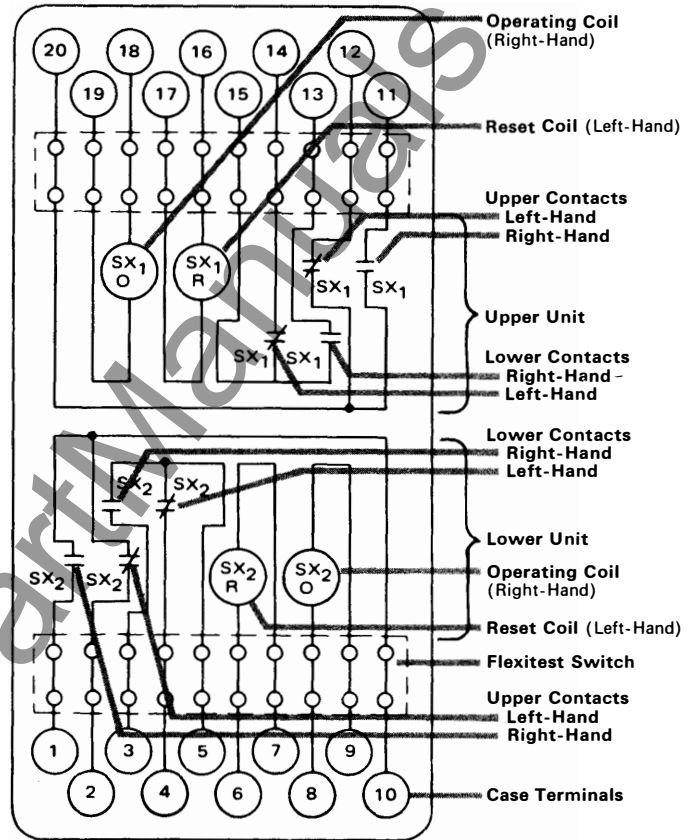
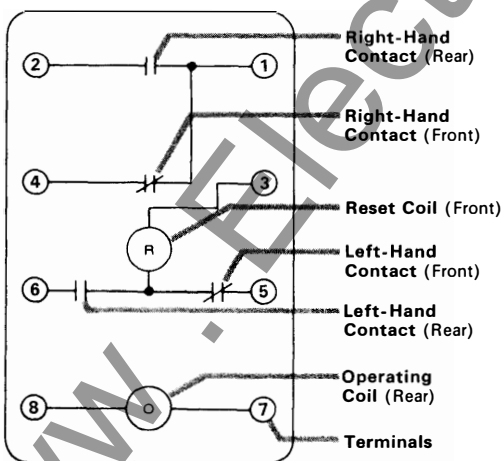


Fig. 8

Sub. 1
184A213

Independent Make-Break Contact and Reset Coil Interrupting Contact

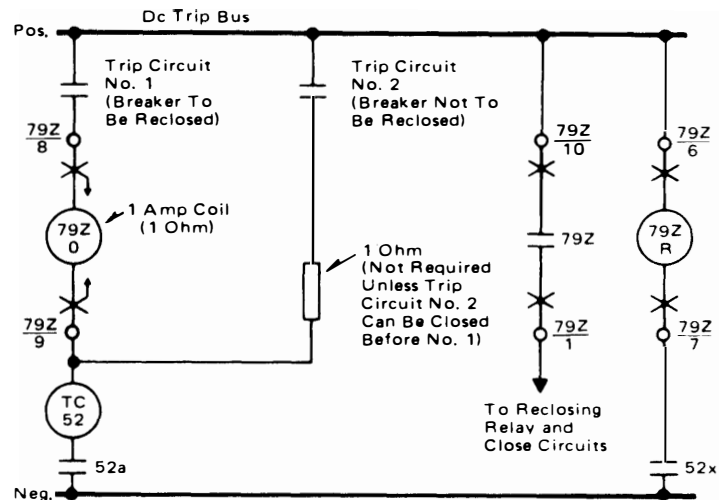


(Contacts shown in the reset position)

Fig. 11

Sub. 2
184A354

Type SX External Wiring



Device Number Chart

79Z—Auxiliary Reclosing Toggle Relay, Type SX
52—Power Circuit Breakers
a—Breaker Auxiliary Contact
TC—Breaker Trip Coil

Fig. 12

Sub. 1
184A253

Type TR-1 Auxiliary Tripping and Indicating Relay

Type TR-1

This 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.

Operation indication can be provided by targets which drop whenever the switch units within the relay operate.

Construction and Operation

Type TR-1

The TR-1 is available with one or two direct-current double-trip Indicating Contactor Switch (ICS) units.

Upon operation of the relay, the ICS indicator targets drop to indicate the relay's operation. The targets are manually reset by means of a push rod located in the bottom of the cover.

The TR-1 is also available with one or two dc non-indicating contactor switches with coils in series.

The coils of the contactor switch units (either indicating or non-indicating) are connected in series and energized through the trip contacts of the protective relays. The contacts of one unit seal in the trip circuit and trip one breaker. The contacts of the other switch are for tripping a second breaker.

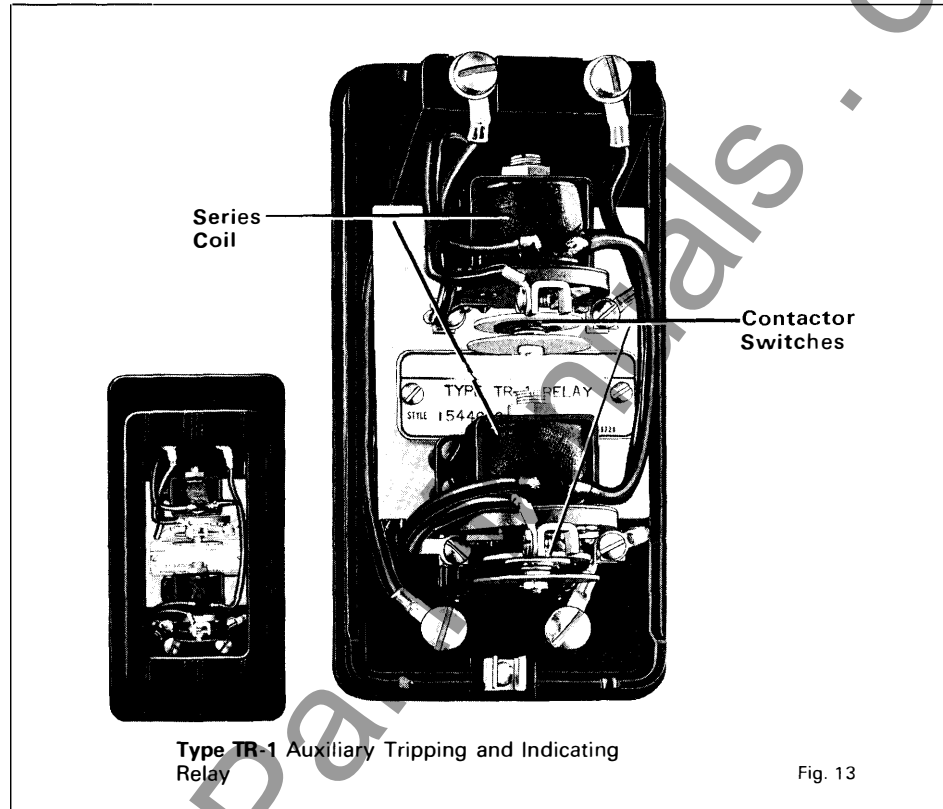
It is necessary to add resistance in the ICS unit coil circuit to limit current in these coils. This is accomplished by connecting the coils in series with an external resistor.

For the 1 ampere ICS unit relay, 22 ohms are used for a 125 volt dc trip circuit, and 44 ohms for a 250 volt dc trip circuit.

For the 0.2/2.0 ampere ICS unit relay, a 100 ohm mid-tap resistor is used for a 125 volt dc trip circuit, and a 200 ohm mid-tap resistor for a 250 volt dc trip circuit.

With these resistance values, the operating time of the relay is approximately 12.5 ms.

The relay case may be either the Flexitest FT-11 or the molded base type with glass window cover.



Type TR-1 Auxiliary Tripping and Indicating Relay

Fig. 13

ICS Unit Characteristics

| Tap Rating: Amps Dc | Tap | Coil Rating: Amps Dc | | Trip Circuit Constants (Ohms dc Resistance) |
|------------------------|-----|----------------------|------------|--|
| | | 1 Second | Continuous | |
| 1.0 | — | 140 | 5 | 0.1 |
| 0.2/2.0 | 0.2 | 11.5 | 0.4 | 6.5 |
| | 2.0 | 88.0 | 3.2 | 0.15 |

External Resistors, Outline Dimensions (Inches)

22 Ohms

Style Number 1164 990

40 Ohms for 48 Volts Dc, Style Number 290B664G48

100 Ohms for 125 Volts Dc, Style Number 1955 870

200 Ohms for 250 Volts Dc, Style Number 1955 871

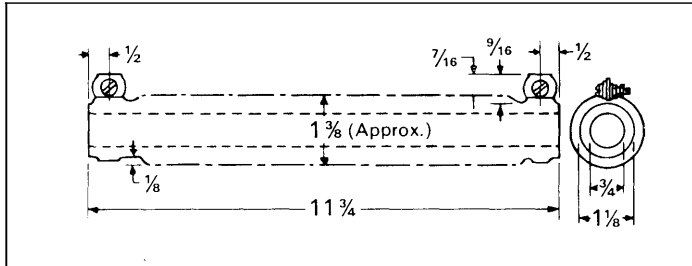


Fig. 14

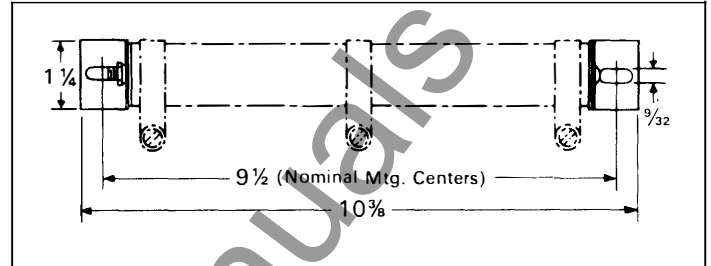


Fig. 15

Typical Wiring Diagrams

FOR 1.0 AMP ICS TAP

$$I = \frac{E}{R} = \frac{125}{22.2} = 5.63 \text{ AMPS}$$

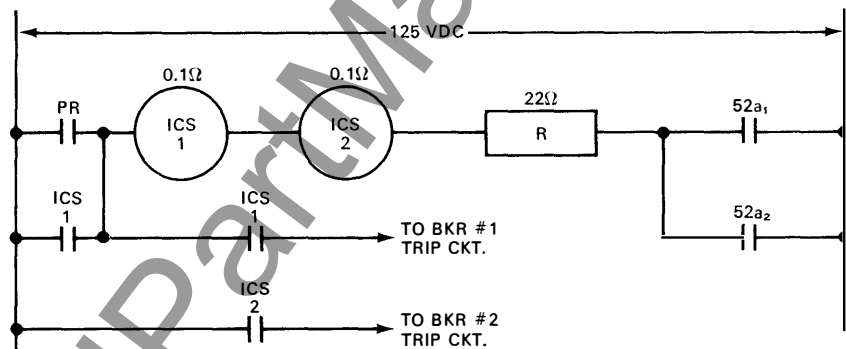


Figure 16

FOR 0.2 AMP ICS TAP

$$I = \frac{E}{R} = \frac{125}{113} = 1.11 \text{ AMPS}$$

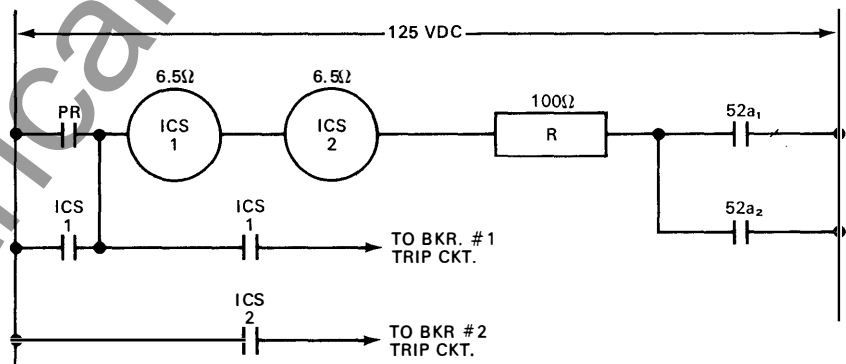


Figure 17

FOR 2.0 AMP ICS TAP

$$I = \frac{E}{R} = \frac{125}{25.3} = 4.95 \text{ AMPS}$$

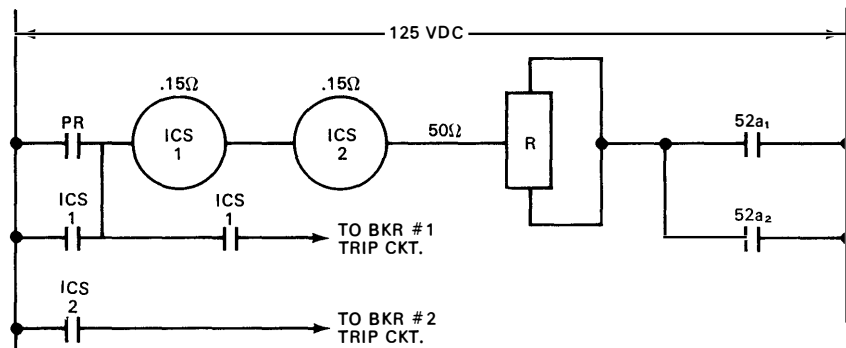


Figure 18

Type TR-1 Internal Wiring
Flexitest Case Type (Front View)
Type TR-1, Double Element,
2 cc Contacts Per Element, FT-11 Case

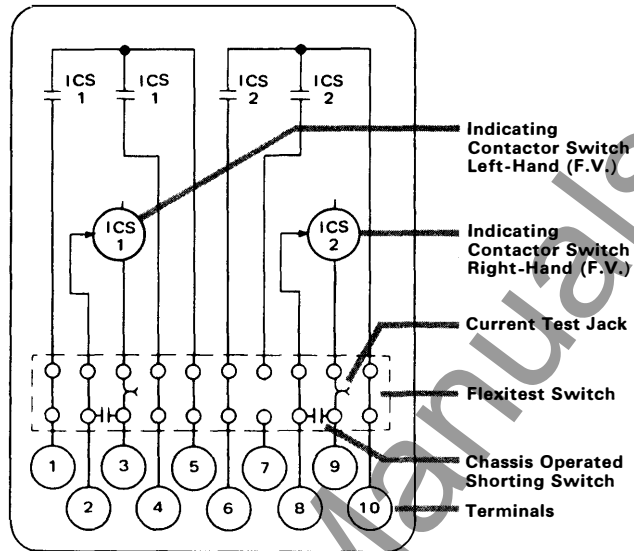


Fig. 19

Sub. 2
183A356

Internal Schematic of Type TR-1 Relay with one
0.2-2.0 ampere ICS unit in molded base, glass
window cover, case.

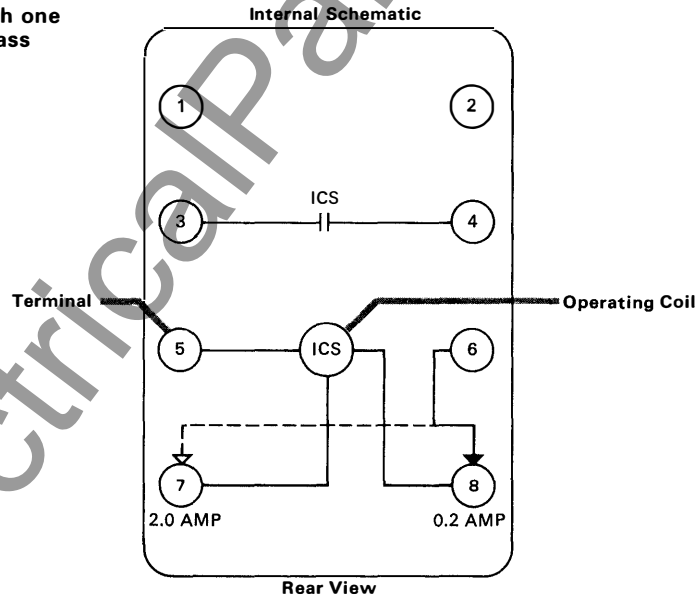


Fig. 20

836A926

Molded Base Types (Rear View)
Type TR-1, Single Trip, 2 cc Contacts,
Projection Mounted

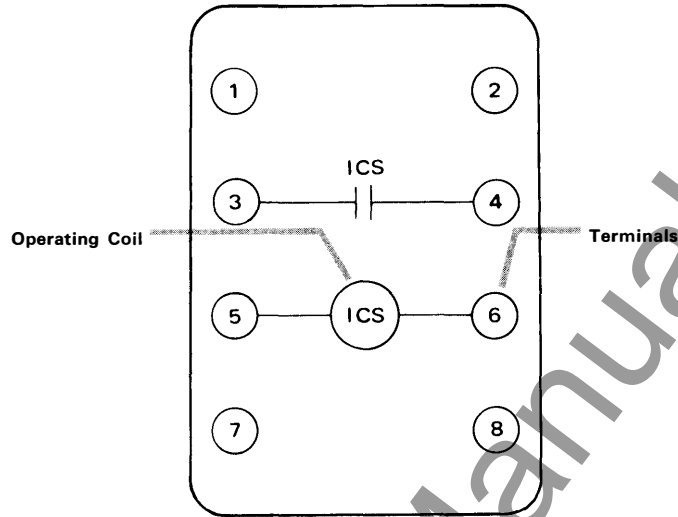


Fig. 21

Sub. 1
837A026

Type TR-1, 2 cc Contacts,
Semi-Flush Mounted

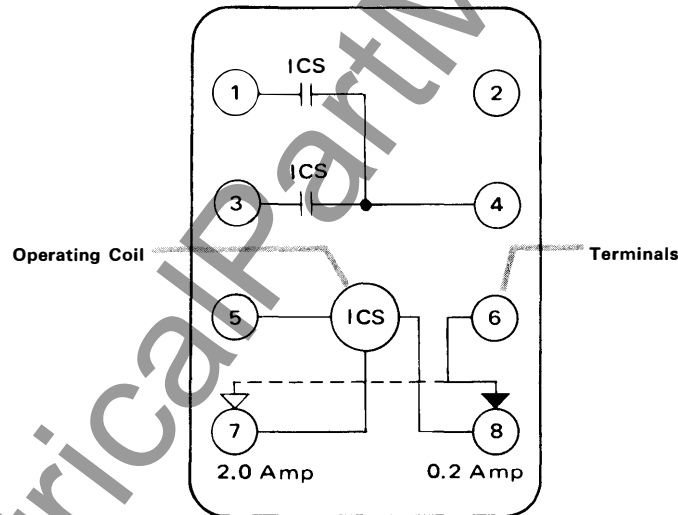


Fig. 22

Sub. 1
836A799

Type TR-1, 2 Element, 2 cc Contacts Per Element
Projection or Flush Mounted

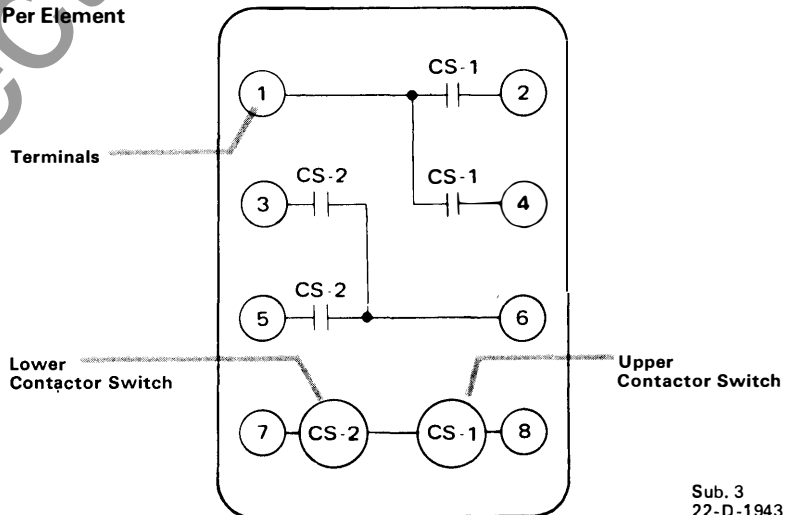


Fig. 23

Sub. 3
22-D-1943

Types TRB-2, TRB-3, TRB-4, Solid State Tripping Units

Type TRB-1, Blocking Valve and Type TRB-1 Test Unit

TRB-2, TRB-3, and TRB-4 solid state tripping units are auxiliary devices energized by protective relays. They provide for selective and double tripping of circuit breakers where the total trip current of the two breakers is within the relay contact rating (usually 30 amperes dc).

The TRB-1 blocking valve is an auxiliary device which is applied as a directional valve in a relaying scheme.

The TRB-1 test unit is primarily applied as a second harmonic generator for testing the harmonic restraint unit of HU and HU-1 transformer differential relays.

① Capacitor

② Silicon Rectifier

③ Terminal

④ Zener Diodes

Construction and Operation

TRB-2, TRB-3, TRB-4

These units consist of the requisite number of 50 watt Zener diodes mounted on brass plates contained within a short metal cage and mounted on a small molded base.

Transient voltages induced into the diode circuit in excess of their reverse blocking rating can be tolerated without damage to the diodes. This feature results from the Zener characteristic which allows current to flow in the reverse direction and limits voltage across the diode.

TRB-2

The TRB-2 consists of two 50-watt Zener diode circuits which are completely independent of each other. It is used to selectively trip two circuit breakers by their respective protective relays, and also allow tripping of both circuit breakers by a common protective relay.

TRB-3

This relay contains three Zener diodes, two of which have a common anode and separate cathode terminals. The third Zener diode is completely independent of the other two.

TRB-4

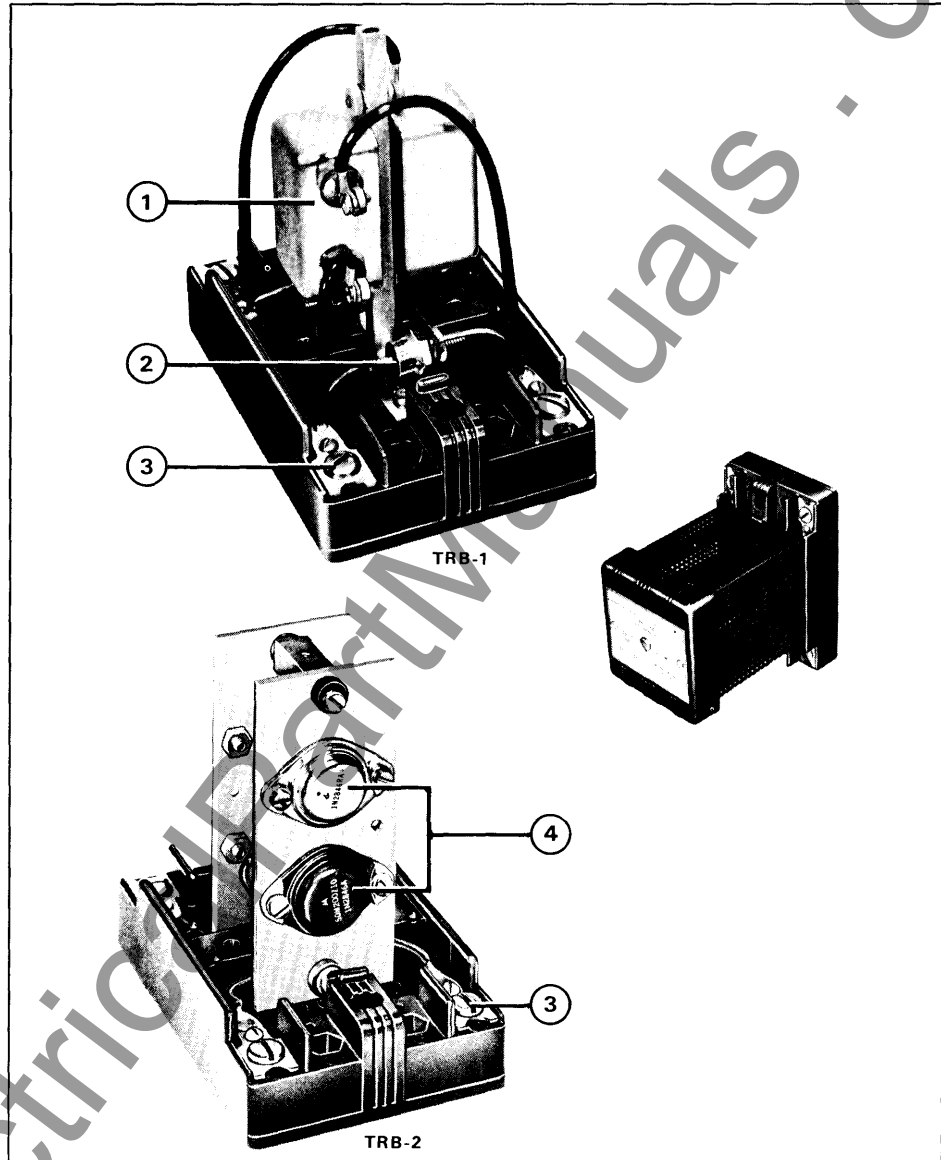
TRB-4 units contain four Zener diodes in two independent circuits, each of which has two diodes with a common anode terminal and separate cathode terminals.

TRB-1 Blocking Valve

This unit consists of a single silicon rectifier and one capacitor mounted in a small molded case. It is energized through the protective relay trip contacts, in such a way that trip current is allowed to flow in one direction and is blocked in the opposite direction.

TRB-1 Test Unit

Consists of a single silicon rectifier mounted in a small molded case which is energized by an ac 60 hertz source. See figure 30.



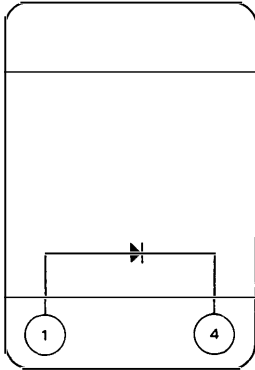
Internal Wiring Diagrams (Front View)
TRB-1 Test Unit


Fig. 24

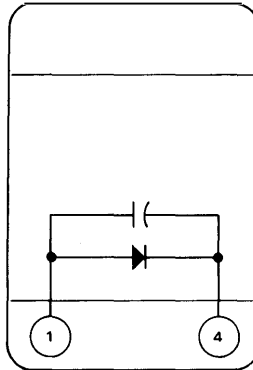
TRB-1 Blocking Valve

 Sub. 2
184A234

Fig. 25

 Sub. 2
184A415

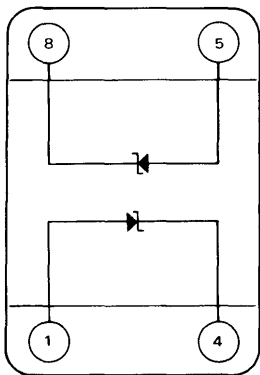
**TRB-2 Zener Tripping Unit
125 Volts Dc**


Fig. 26

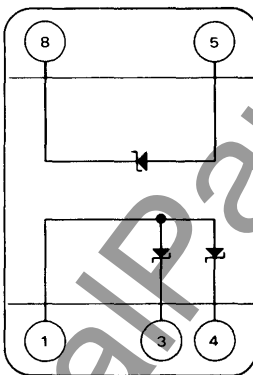
**TRB-3 Zener Tripping Unit
125 Volts Dc**

 Sub. 1
187A696

Fig. 27

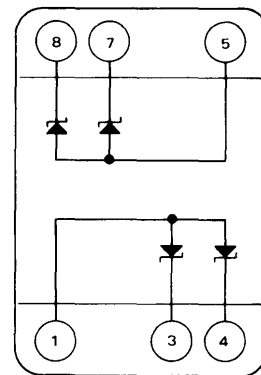
**TRB-4 Zener Tripping Unit
125 Volts Dc**

 Sub. 1
187A697

Fig. 28

 Sub. 1
187A698

Characteristics
TRB-1

| Type | Rated Circuit Volts | Diodes per Case | Maximum Volts | Leakage Current | | | Maximum Forward Voltage Drop |
|-----------------------------|---------------------|-----------------|---------------|----------------------------------|---------------------------------------|--------------------------------|------------------------------|
| | | | | At Maximum Volts | | At Circuit Volts | |
| | | | | Nominal At 25°C | Maximum At 150°C | | |
| TRB-1 Blocking Valve | 48/125 dc 250 dc | 1 1 | 300 600 | 2 microamperes 2 microamperes | 1.75 milliamperes, 1 milliamperere | 1 microampere 1 microampere | 1.25 1.25 |
| TRB-1 Test Unit | 120 ac | 1 | 300 | — | — | — | — |

TRB-2, TRB-3, TRB-4

| Type | Rated Circuit Volts | Diodes Per Case | Maximum Reverse Leakage Current | Zener Reverse Voltage | Maximum Zener Current | Maximum Forward Voltage Drop |
|--------------|---------------------|-----------------|----------------------------------|------------------------|------------------------------------|------------------------------|
| TRB-2 | 125 dc 250 dc | 2 4 | 4 milliamperes 4 milliamperes | 200 ± 10% 400 ± 10% | 75 milliamperes 75 milliamperes | 1.5 3.0 |
| TRB-3 | 125 dc | 3 | 4 milliamperes | 200 ± 10% | 75 milliamperes | 1.5 |
| TRB-4 | 125 dc | 4 | 4 milliamperes | 200 ± 10% | 75 milliamperes | 1.5 |

Current Rating (All Types) 1-Second: 30 amperes dc, Continuous: 5 amperes dc

September, 1990

Type TRB-2
Typical External Wiring Diagram

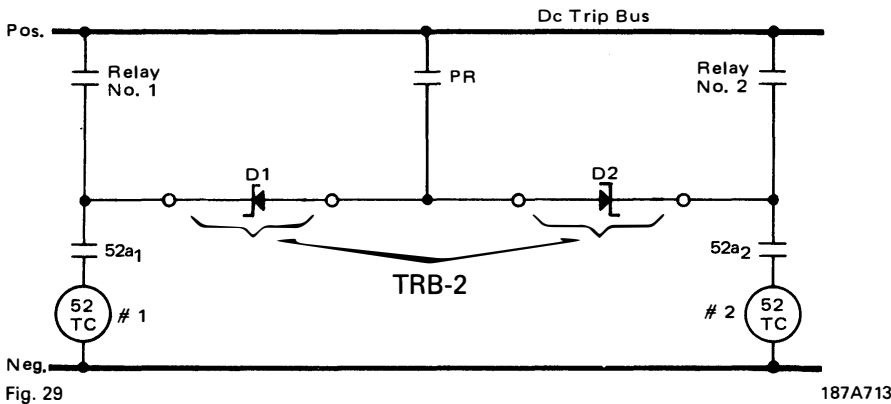


Fig. 29 187A713

Typical HU and HU-1 Test Setup Using Type TRB-1 Unit

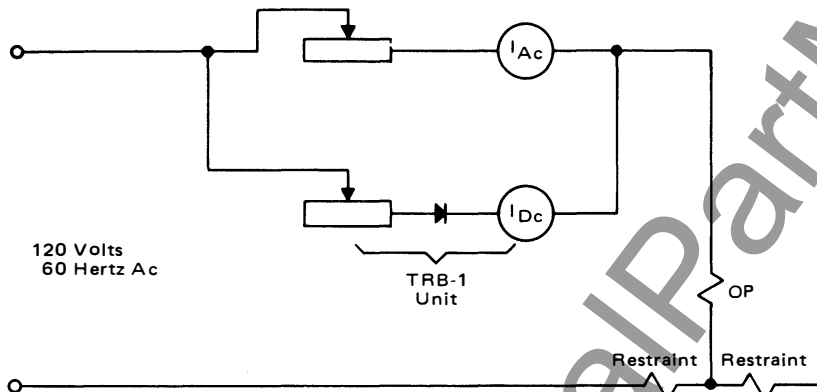


Fig. 30 Sub. 1 184A237

Shipping Weights and Carton Dimensions

| Relay Type | Case Type | Approx. Weights: Lbs. (kg) | | Domestic Shipping Carton Dimensions: Inches (mm) |
|--|-------------------------------------|----------------------------|-------------|--|
| | | Net | Shipping | |
| SX Single or Double Unit SX Double Unit | FT-11 | 6 (2.7 kg) | 9 (4.1 kg) | 10 x 10 x 13 (229 x 229 x 254) |
| | FT-22 | 7 (3.2 kg) | 10 (4.5 kg) | 10 x 13 x 13 (229 x 305 x 330) |
| | Small Glass Projection | 3 (1.4 kg) | 6 (2.7 kg) | 8½ x 9½ x 10 (216 x 241 x 254) |
| TR-1 | FT-11 | 6 (2.7 kg) | 9 (4.1 kg) | 10 x 10 x 13 (229 x 229 x 254) |
| TR-1 | Molded Base With Glass Window Cover | 1 (0.5 kg) | 2 (0.9 kg) | 8½ x 9½ x 10 (216 x 241 x 254) |
| TRB TRB-1 TRB-2 TRB-3 TRB-4 | Molded Case | 1 (0.5 kg) | 2 (0.9 kg) | 12½ x 7 x 7 (318 x 178 x 178) (4 in one carton) |

Further Information:

List Prices: PL 41-020
Technical Data: TD 41-025
Instructions:

- Type SX, IL 41-962.2
- Type TR-1, IL 41-758.2, IL 41-758
- Type TRB-1, IL 41-841
- Type TRB-2, TRB-3, TRB-4, IL 41-842

Renewal Parts:

Type SX, RPD 41-991
Flexitest Case Dimensions: DB 41-076
Contactor Switches: DB 41-081

Other Protective Relays:

Application Selector Guide, TD 41-016



December, 1990
Supersedes TD 41-020, Types SX, TR-1,
TRB-1, TRB-2, TRB-3, TRB-4 on
pages 136, 137, 144, dated November, 1987
Mailed to: E, D, C/41-900A

For Ac or Dc Voltage or Dc Current Operation

Types SX, TR-1, TRB-1, TRB-2 TRB-3, TRB-4 Auxiliary Relays

General Purpose

High Speed Toggle Type, Current or Voltage Operated (Device Number: 79Z)
No Time Delay on Reset
Small Glass Case Type

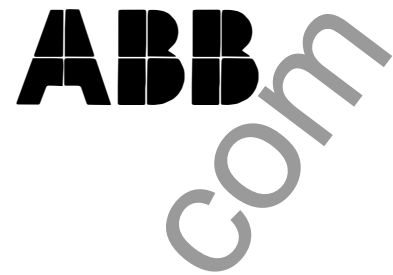
| Type | Units Per Case | Contacts | Operating Coil Rating | Reset Coil Rating | Small Glass Projection Case | |
|--|----------------|--------------------------------------|-----------------------|---------------------|-----------------------------|--------------|
| | | | | | Internal Schematic | Style Number |
| SX | 1 | 2 circuit closing Independent | 120 volts, 60 Hertz | 120 volts, 60 Hertz | 184A255 | 289B900A09 |
| | | | 240 volts, 60 Hertz | 240 volts, 60 Hertz | | |
| | | | 48 volts dc | 48 volts dc | | |
| | | | 125 volts dc | 125 volts dc | | |
| | | | 250 volts dc | 250 volts dc | | |
| | | | 1.0 amp dc | 125 volts dc | 837A038 | 289B900A14 |
| | | | 1.0 amp dc | 250 volts dc | | |
| | | | 1.0 amp dc | 125 volts dc | 184A254 | 289A900A17 |
| | | 1 circuit closing | 240 volts, 60 Hertz | 240 volts, 60 Hertz | | |
| | | 1 circuit opening | 48 volts dc | 48 volts dc | | |
| Independent | 125 volts dc | 125 volts dc | | | | |
| | 250 volts dc | 250 volts dc | | | | |
| | 1.0 amp dc | 125 volts dc | | | | |
| | 2.0 amps dc | 125 volts dc | 184A354 | 289B900A26 | | |
| 1 circuit closing | 1.0 amp dc | 120 volts, 60 Hertz | | | | |
| 1 circuit opening | 1.0 amp dc | 240 volts, 60 Hertz | | | | |
| Common contacts with reset coil cutoff Contact | 1.0 amp dc | 48 volts dc | | | | |
| | 1.0 amp dc | 125 volts dc | | | | |
| | 1.0 amp dc | 250 volts dc | | | | |

With or Without Time Delay on Reset
Flexitest Case Type

| Type | Units Per Case | Contacts | Operating Coil Rating | Reset Coil Rating | Time Delay on Reset ^① | Relay Data | | |
|------|----------------|-----------------|-----------------------|---------------------|----------------------------------|--------------------|--------------|-----------|
| | | | | | | Internal Schematic | Style Number | Case Size |
| SX | 1 | Spdt | 1.0 amp dc | 48 volts dc | Yes | 184A180 | 289B544A12 | FT-11 |
| | | | 1.0 amp dc | 125 volts dc | | | | |
| | | | 1.0 amp dc | 250 volts dc | | | | |
| | | | 5 amp dc | 125 volts dc | | | | |
| | | | 125 volts dc | 125 volts dc | | | | |
| | | Dpdt | 1.0 amp dc | 48 volts dc | No | 184A178 | 289B459A18 | |
| | | | 1.0 amp dc | 125 volts dc | | | | |
| | | | 1.0 amp dc | 250 volts dc | | | | |
| | | | 5.0 amps dc | 125 volts dc | | | | |
| | | | 125 volts dc | 125 volts dc | | | | |
| | | | 120 volts, 60 Hertz | 120 volts, 60 Hertz | | | | |
| | | | 5 amps dc | 48 volts dc | | | | |
| | | 1 amp dc | 120 volts ac | | | | | |
| | | 48 volts dc | 125 volts dc | 184A178 | 289B459A21 | | | |
| | | | | 184A179 | 289B459A22 | | | |
| | | 184A179 | 289B459A23 | | | | | |
| 2 | 2 | Spst (per unit) | 1.0 amp dc | 48 volts dc | No | 184A214 | 289B546A12 | FT-11 |
| | | | 1.0 amp dc | 125 volts dc | | | | |
| | | | 1.0 amp dc | 250 volts dc | | | | |
| | | | 5.0 amps dc | 125 volts dc | | | | |
| | | | 125 volts dc | 125 volts dc | | | | |
| | | 250 volts dc | 250 volts dc | | | | | |
| | | Dpdt (per unit) | 48 volts dc | 48 volts dc | 184A213 | 289B547A11 | FT-22 | |
| | | | 125 volts dc | 125 volts dc | | | | |
| | | | 250 volts dc | 250 volts dc | | | | |
| | | | | | | | | |
| | | | | | | | | |

⑨ Denotes item available from stock.

① 5 to 15 cycles (factory set at 10 cycles on a 60 Hz base).



Auxiliary

Dc Current, Non-Adjustable, Molded Base, Glass Window Cover (Device Number: 94)

| Type | Circuit Closing Contacts Per Unit | Elements | Ratings; Amps Dc | | Relay Data | | |
|------|---|----------|------------------|--------------------|-----------------------|-----------------------|-------------------------|
| | | | CS | ICS | Internal Schematic | Style Number | |
| | | | | | | Projection | Semi-Flush |
| TR-1 | Single | 1 | None | 0.2-2 [ⓐ] | 836A926 | | 290B311A25 [Ⓢ] |
| | Double | 1 | None | 0.2-2 [ⓐ] | 836A799 | | 290B311A26 |
| | Single | 1 | None | 1.0 [ⓑ] | 837A026 | 290B311A27 | |
| | Double | 1 | None | 1.0 [ⓑ] | 3502A41 | | 290B311A28 |
| | Double | 1 | 1.0 [ⓑ] | None | 184A741 | | 1726 850 |
| | Double | 1 | 2.0 [ⓑ] | None | 184A741 | 1961 049 | |
| | Double | 2 | 1.0 [ⓑ] | None | 182A938 | 1961 246 [ⓓ] | 1726 820 [ⓓ] |
| | Double | 2 | 2.0 [ⓑ] | None | 22D1943 | 1544 670 | 1544 669 |
| | Single | 2 | 2.0 [ⓑ] | None | 31D5224 | | 1727 494 |
| | Double | 2 | 1.0 [ⓑ] | None | 22D1943 | 290B311A20 | 290B311A13 |

Dc Current, Non-Adjustable (Device Number: 94)

| Type | Contacts | Elements | Rating: Amps Dc | | Relay Data | |
|----------------------|--|----------|-----------------|--------------------|-----------------------|-----------------------|
| | | | CS | ICS | Internal Schematic | Style Number |
| FT-11 Flexitest Case | | | | | | |
| TR-1 | Two circuit closing per element | 2 | None | 0.2-2 [ⓐ] | 183A356 | 1955 703 [Ⓢ] |
| | | 2 | None | 1.0 [ⓑ] | 184A062 | 1961 148 |

Static Tripping Units (Device Number: 94)

| Type ⓐ | Application | Diodes Per Case | Unit Reference Number | Voltage Rating: Dc Volts | Maximum Reverse Volts | Relay Data | |
|-----------|---------------------------------|-----------------------|-----------------------------|--------------------------------|-----------------------------|-----------------------|--|
| | | | | | | Internal Schematic | Style Number |
| TRB-1 | Test Unit (HU) | 1 | 304-F | 120 ac | 300 | 184A234 | 407C275G03 |
| | Blocking diode | 1 | 304-F 304-M | 48/125 250 | 300 600 | 184A415 184A415 | 184A414G12 [Ⓢ] 184A414G13 [Ⓢ] |
| TRB-2 | Blocking and Tripping Zeners | 2 | IN-2846A | 48/125 | ... | 187A696 | 408C003G01 [Ⓢ] |
| | | 4 | IN-2846RA IN-2846A } | 250 | ... | 187A617 | 408C003G02 |
| TRB-3 | | 3 | IN-2846A | 48/125 | ... | 187A697 | 408C003G03 |
| TRB-4 | | 4 | IN-2846A | 48/125 | ... | 187A698 | 408C003G04 |

Ⓢ Denotes item available from stock.
When used as an auxiliary relay,
ⓐ 1 and 2 amp dc: 125 volts dc use one style RW220AKS02[Ⓢ] series resistor 22 ohms.
250 volts dc use two style RW220AKS02[Ⓢ] series resistors 22 ohms.
ⓑ 0.2-2.0 amp dc: 125 volts dc use one style 1955 870[Ⓢ] series resistor 100 ohms.
250 volts dc use two style 1955 870[Ⓢ] series resistors 100 ohms.
ⓓ Independent contactor switch circuits.
ⓔ TRB-1 relays are rated 5 amps dc continuously, and 30 amps dc for one second.

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