

**Master Connection Diagram  
for the  
Systems Pow-R Breaker  
All Frame Ratings**



I.S. 15262-A

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| 25   |                                                          |           |
| 26   |                                                          |           |
| 27   |                                                          |           |
| 28   |                                                          |           |
| 29   |                                                          |           |
| 30   |                                                          |           |
| 31   |                                                          |           |
| 32   |                                                          |           |
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| 35   |                                                          |           |
| 36   |                                                          |           |
| 37   |                                                          |           |
| 38   |                                                          |           |
| 39   |                                                          |           |
| 40   |                                                          |           |
| 41   |                                                          |           |
| 42   |                                                          |           |
| 43   |                                                          |           |
| 44   |                                                          |           |
| 45   |                                                          |           |
| 46   |                                                          |           |
| 47   |                                                          |           |
| 48   |                                                          |           |
| 49   |                                                          |           |
| 50   |                                                          |           |

## SPB MASTER CONNECTION DIAGRAM ACCESSORY INDEX

| LINE | REFERENCES                 | FRAME RATING | TYPE TRIP | DWG. NO.   | NOTES (SEE SH. 3) |
|------|----------------------------|--------------|-----------|------------|-------------------|
| 51   | Modular Key Drawing        | 250-800      | $\phi$    | 1371D01    | 3                 |
| 52   | Modular Key Drawing        | 250-800      | PRT       | 1371D05    | 3                 |
| 53   | Modular Key Drawing        | 1600         | $\phi$    | 1371D02    | 3                 |
| 54   | Modular Key Drawing        | 1600         | PRT       | 1371D06    | 3                 |
| 55   | Modular Key Drawing        | 2000-3000    | $\phi$    | 1371D03    | 3*                |
| 56   | Modular Key Drawing        | 2000-3000    | PRT       | 1371D07    | 3*                |
| 57   | Modular Key Drawing        | 4000         | $\phi$    | 1371D04    | 3                 |
| 58   | Modular Key Drawing        | 1200         | $\phi$    | 1371D01    | 3                 |
| 59   | Modular Key Drawing        | 1200         | PRT       | 1371D05    | 3                 |
| 60   | Modular Key Drawing        | 2000         | $\phi$    | 1371D02    | 3**               |
| 61   | Modular Key Drawing        | 2000         | PRT       | 1371D06    | 3**               |
| 62   | Master Wiring Diagram      | All          | All       | 1366D30    |                   |
| 63   | Gnd. Fault Scheme          | 250-1600     | $\phi$    | 1273C41    | 4                 |
| 64   | Gnd. Fault Scheme          | 2000-4000    | $\phi$    | 1273C40    | 4                 |
| 65   |                            |              |           |            |                   |
| 66   |                            |              |           |            |                   |
| 67   |                            |              |           |            |                   |
| 68   |                            |              |           |            |                   |
| 69   |                            |              |           |            |                   |
| 70   |                            |              |           |            |                   |
| 71   |                            |              |           |            |                   |
| 72   |                            |              |           |            |                   |
| 73   |                            |              |           |            |                   |
| 74   |                            |              |           |            |                   |
| 75   |                            |              |           |            |                   |
| 76   |                            |              |           |            |                   |
| 77   |                            |              |           |            |                   |
| 78   |                            |              |           |            |                   |
| 79   |                            |              |           |            |                   |
| 80   | Field Testing              | All          | All       | I.L. 15094 |                   |
| 81   | Mechanical Cable Interlock | All          | —         | I.L. 15129 |                   |
| 82   | General Instructions       | All          | —         | I.L. 15082 |                   |
| 83   |                            |              |           |            |                   |
| 84   |                            |              |           |            |                   |
| 85   |                            |              |           |            |                   |
| 86   |                            |              |           |            |                   |
| 87   |                            |              |           |            |                   |
| 88   |                            |              |           |            |                   |
| 89   |                            |              |           |            |                   |
| 90   |                            |              |           |            |                   |
| 91   |                            |              |           |            |                   |
| 92   |                            |              |           |            |                   |
| 93   |                            |              |           |            |                   |
| 94   |                            |              |           |            |                   |
| 95   |                            |              |           |            |                   |
| 96   |                            |              |           |            |                   |
| 97   |                            |              |           |            |                   |
| 98   |                            |              |           |            |                   |
| 99   |                            |              |           |            |                   |
| 100  |                            |              |           |            |                   |

## SPB MASTER CONNECTION DIAGRAM DRAWING REFERENCE INDEX

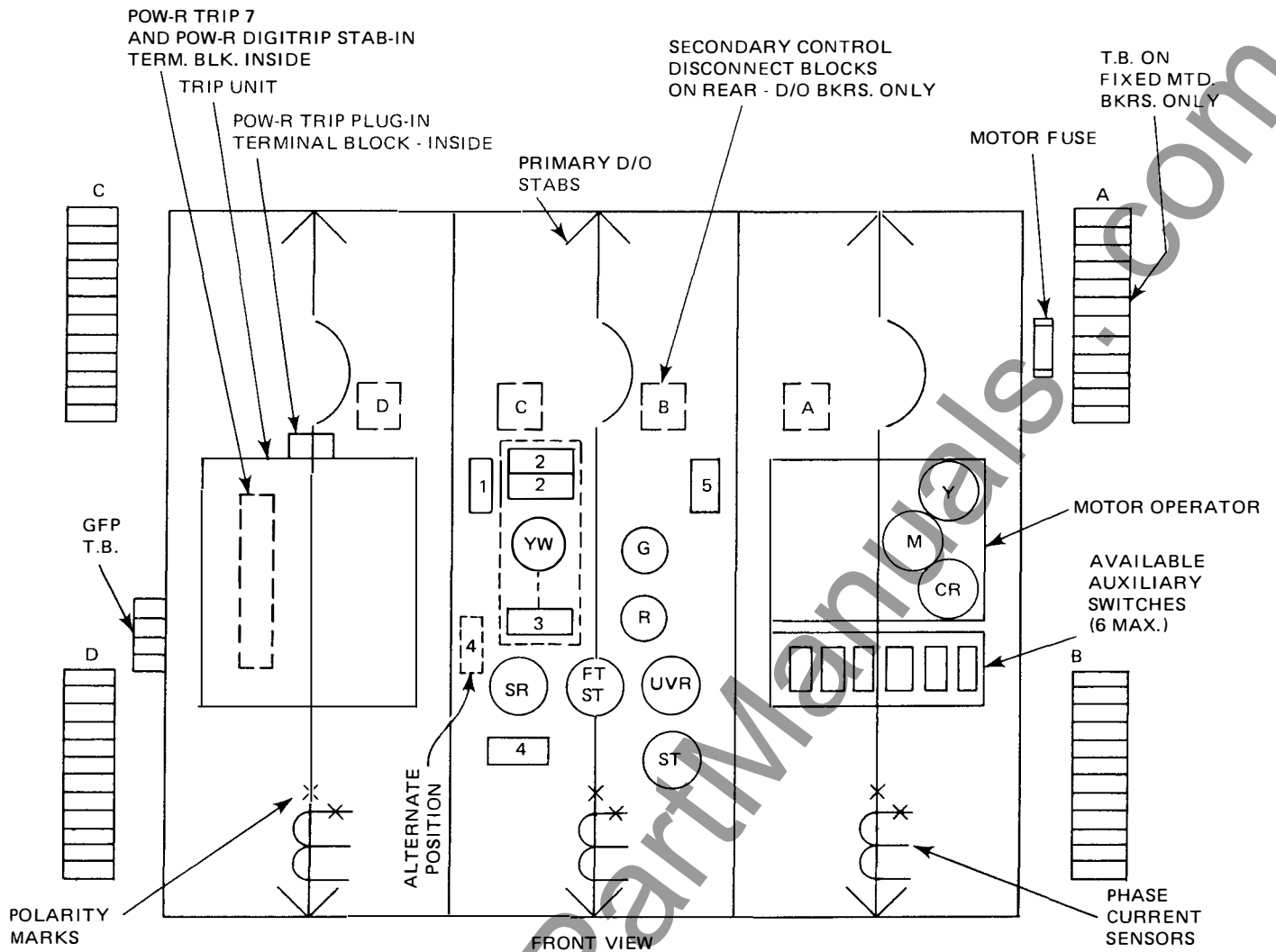
\*2000A. in 22 in. high frame

\*\*2000A. in compact, 16 in. high frame

$\phi$  Pow-R Trip 7 or Pow-R Digitrip

1. On D/O Breakers color coded pigtail leads provided for connecting to customer's terminal block. Standard length 6 feet unless ordered special.
2. Term Blocks available for Mounting on Stationary D/O Frame Sides on special order.
3. For Reference purposes, specific accessory styles are shown on the appropriate Modular Key Drawings referenced on Sheet 2. The exact location of this style can be determined by combining the appropriate Modular Key Drawing No. and Key Code (from the individual diagram sheet utilized).
4. For Proper Ground Fault Sensing complete connections must be included from appropriate referenced drawing.
5. Any combination of accessories not utilizing same Secondary Control Stab Points may be used on any single breaker.
6. All SPB breakers equipped with GFP will trip near instantaneous (0.03-0.08 sec.) Regardless of the time band setting — if downstream interlock wiring is not employed and/or a jumper is not added between control terminals C4 and C5. With the jumper added, the breaker will respond to the pre-set time delay setting. Consider adding this jumper for all installations with GFP on the main breaker only. For installations with multiple levels of GFP, see Sheet 31.
7. On breakers with Pow-R Trip 7, Lead C6 (Blue) is used for factory test purposes only. On breakers with Pow-R Digitrip, Lead C6 (Blue) is used in ATR/Power Pack — See Sheet 41. On breakers with Pow-R Trip, Leads C5 (Green) and C6 (Blue) are used for factory test purposes only.
8. Pow-R breakers have been designed for maximum ground fault and electronic attachment flexibility and interchangeability. For this reason many Leads in the C and D block will be supplied but may not be used by a customer for his particular application.

#### SPB MASTER CONNECTION DIAGRAM GENERAL NOTES



- 1 SPRING RELEASE CUT-OFF SWITCH (b)
- 2 TWO SPRING CHARGE SWS. (SC). TOP SW. IS (SR) CUT-OFF,— BOTTOM SW. IS (M) CUT-OFF.
- 3 MOTOR CHARGE P.B. CONTACT SWITCH
- 4 LATCH CHECK SWITCH (LC)
- 5 SHUNT TRIP CUT-OFF SWITCH (a/b)
- (YW) MOTOR CHARGE P.B. (YELLOW)
- (G) MECHANICAL CLOSE P.B. (GREEN)
- (R) MECHANICAL OPEN P.B. (RED)
- (Y) ANTI-PUMP RELAY
- (FT ST) FLUX TRANSFER SHUNT TRIP
- (SR) SPRING RELEASE
- (UVR) UNDERVOLTAGE RELEASE
- (CR) CHARGE RELAY
- (M) MOTOR
- (ST) SHUNT TRIP

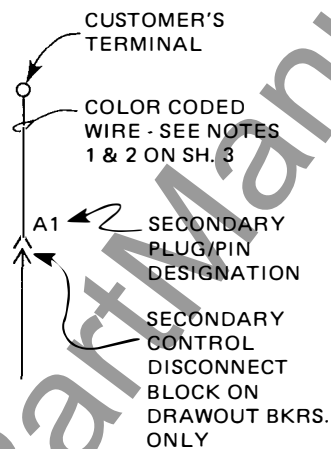
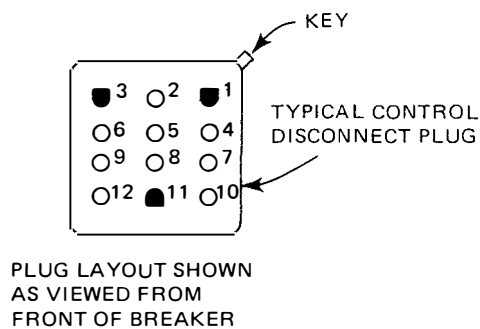
**SPB MASTER CONNECTION DIAGRAM**  
**SPB - Accessory Mounting Locations**

# LEGEND\*

- SR — SPRING RELEASE - CLOSSES BKR. ON REMOTE SIGNAL
- ST — SHUNT TRIP - OPENS BKR. ON REMOTE SIGNAL
- FTST — FLUX TRANSFER SHUNT TRIP - OPENS BKR. ON SIGNAL FROM TRIP UNIT
- CR — MOTOR CHARGE RELAY - 3 SECONDS CHARGE TIME
- Y — ANTI-PUMP RELAY
- SC — SPRING CHARGED SWITCH
- LC — LATCH CHECK SWITCH - HELD IN OPEN POSITION BY ROTATING TRIPPER (D/O MECHANISM OR KEY INTERLOCK), OR OMISSION OF RATING PLUG
- UVR — UNDERVOLTAGE RELEASE
- a — AUXILIARY SWITCH "OPEN" WITH BKR., OPEN
- b — AUXILIARY SWITCH "CLOSED" WITH BKR. OPEN
- ATR — AUTOMATIC TRIP RELAY

 INDICATING LIGHT (W, WHITE; A, AMBER; R, RED; G, GREEN; L, COLOR TO SUIT; LED, LIGHT EMITTING DIODE)

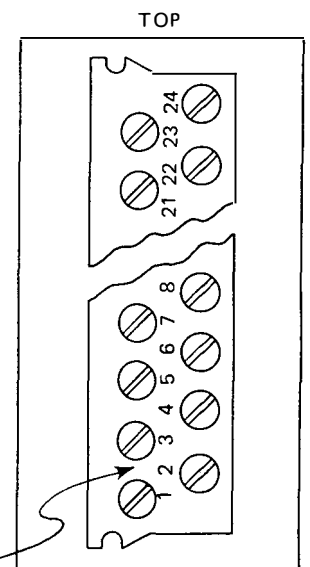
\*ALL CONTACTS SHOWN IN BREAKER "OPEN" POSITION



## WIRING TERMINATIONS

- MALE PIN - S#1268C07H10 OR AMP "MATE-N-LOK" P/N 350705-1
- FEMALE SOCKET - S#1268C07H08 OR AMP "MATE-N-LOK" P/N 350550-1
- HANDCRIMP TOOL - AMP "MATE-N-LOK" P/N - 90298-1 FOR #18-20 P/N - 90299-1 FOR #14-16
- EXTRACTION TOOL - AMP "MATE-N-LOK" P/N 458994-1  1285C01H14

CORRECT NUMBER SEQUENCE - DISREGARD NUMBERS ON MOLD

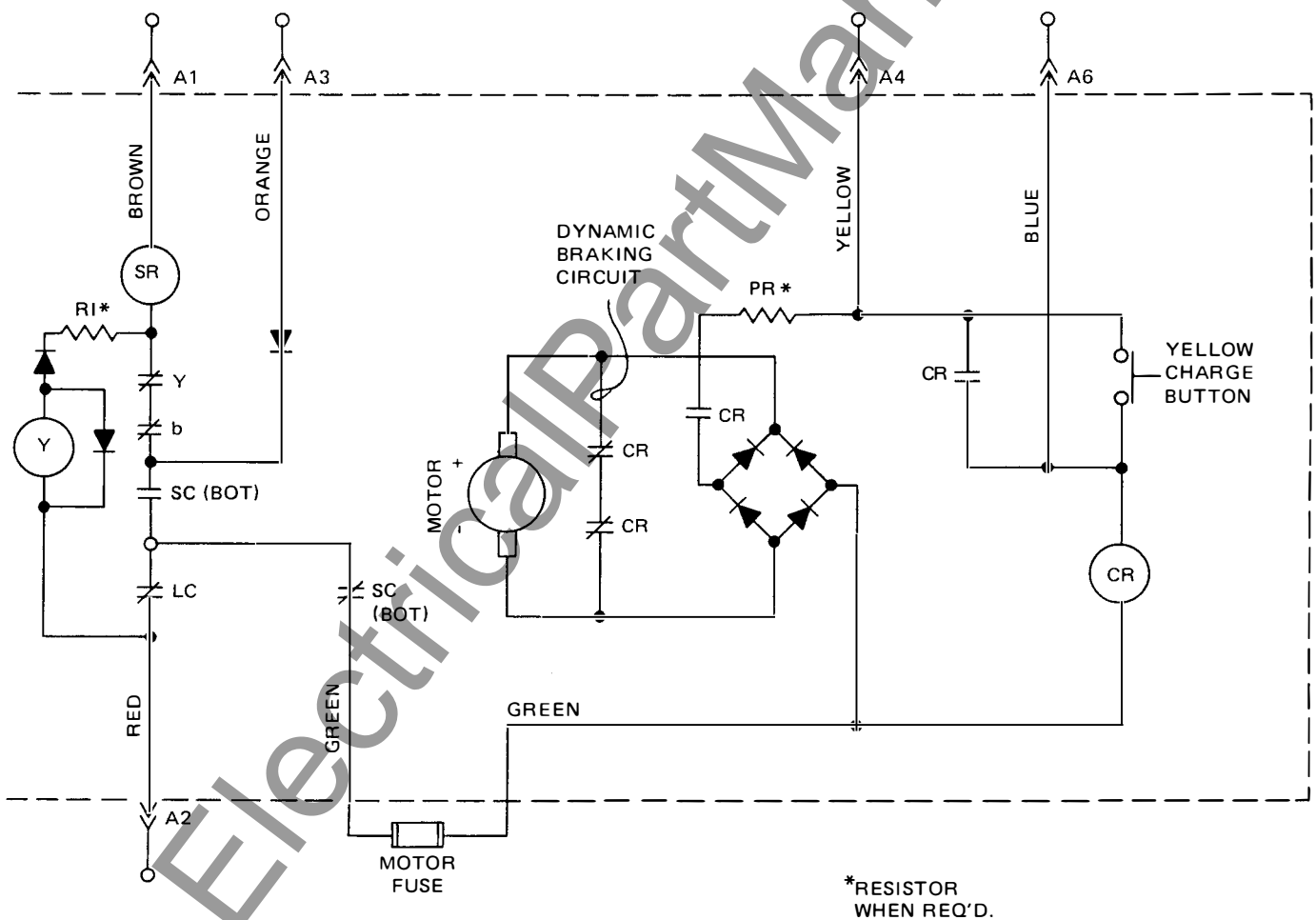
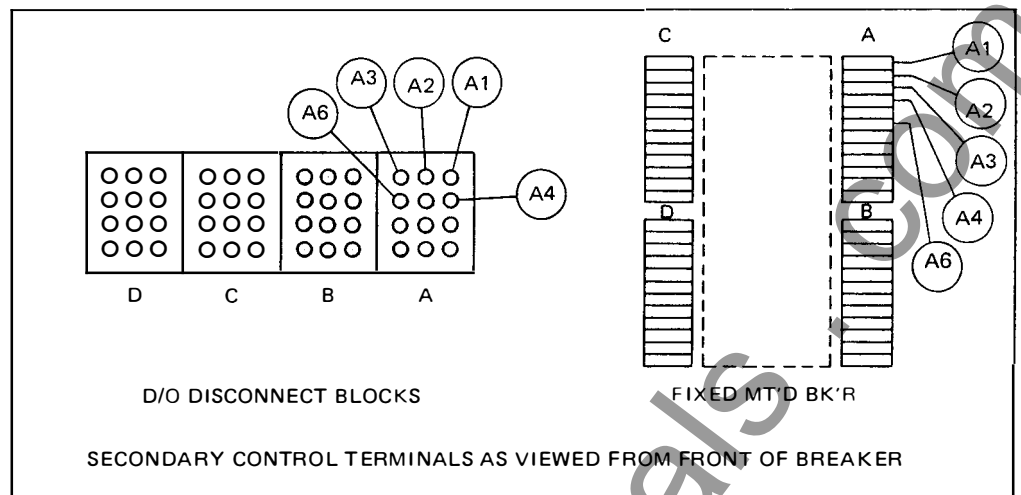


## SPB MASTER CONNECTION DIAGRAM SPB - Accessory Legend and Misc Details

Reference  
I.L. 15377



| AVAILABLE<br>VOLTAGES<br>50/60 HZ | KEY<br>CODE |
|-----------------------------------|-------------|
| 120                               | H01         |
| 208                               | H02         |
| 240                               | H03         |



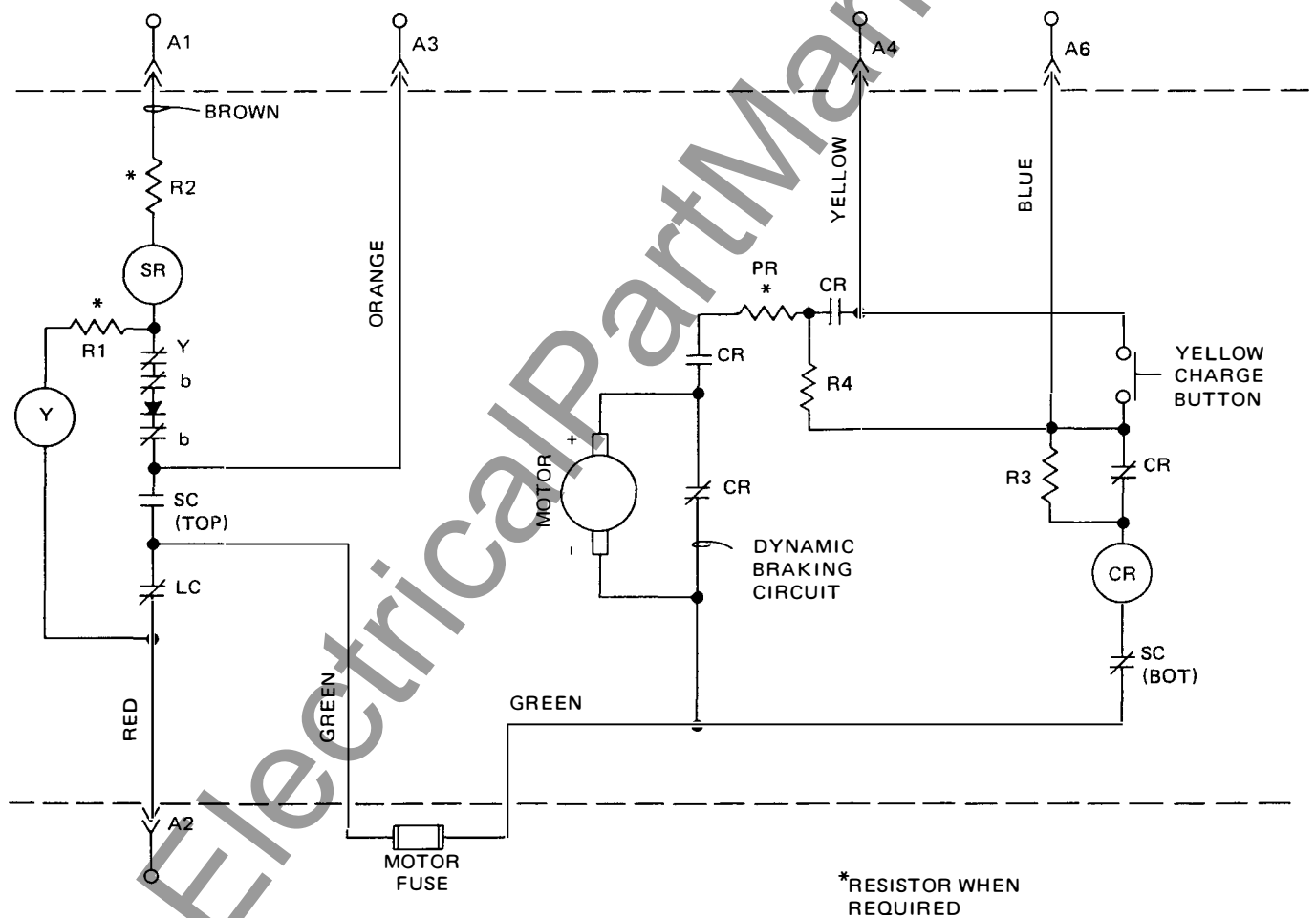
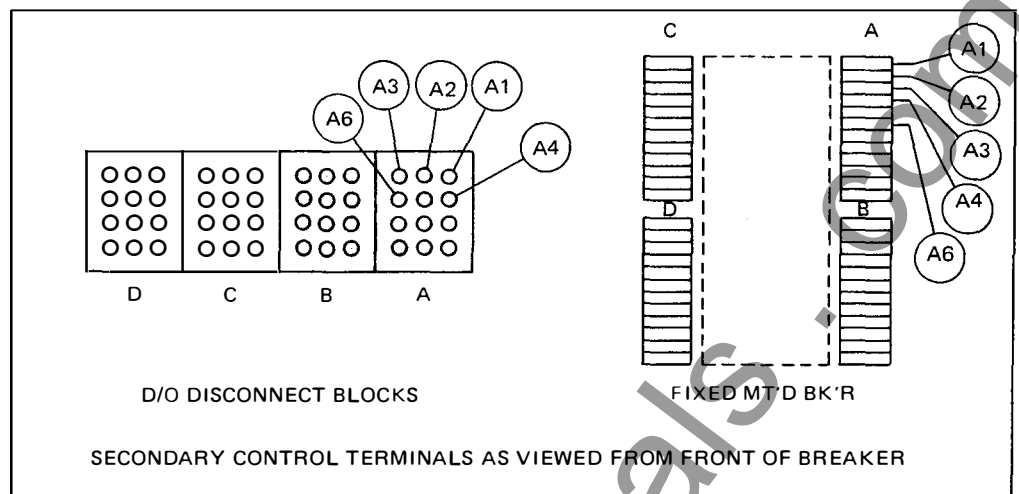
## SPB MASTER CONNECTION DIAGRAM

### SPB - AC Motor Operator Schematic



**I.S. 15262**  
**Sheet 8**

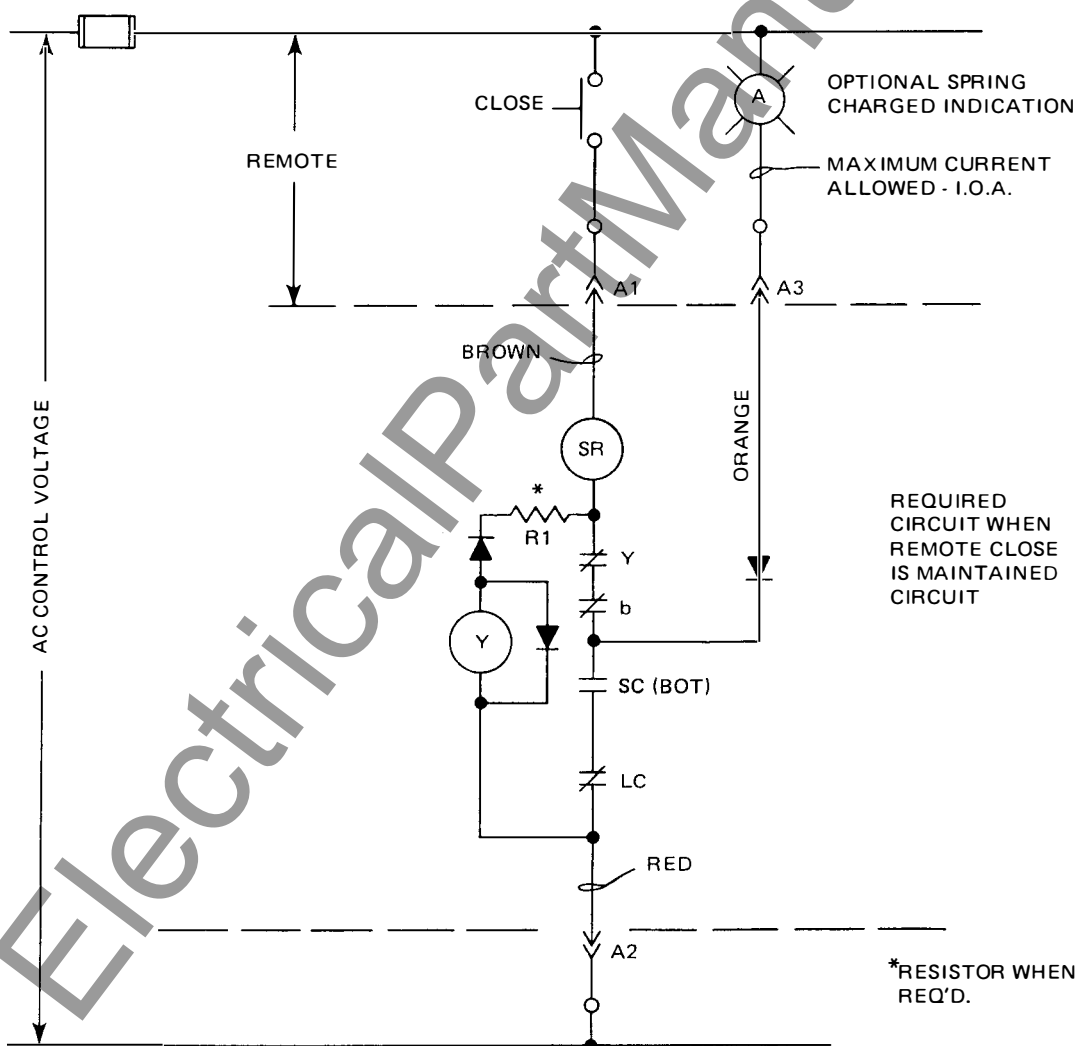
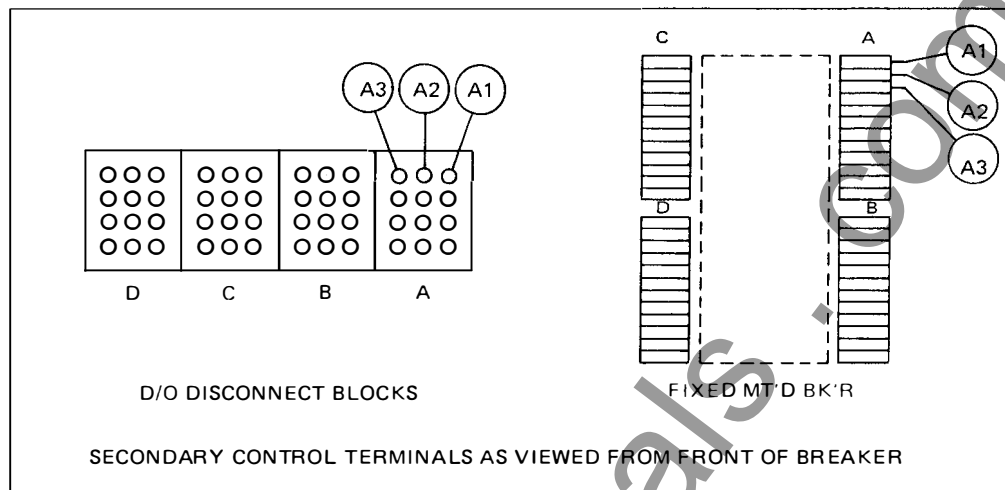
| AVAILABLE<br>VOLTAGES<br>DC | KEY<br>CODE |
|-----------------------------|-------------|
| 24                          | H06         |
| 32                          | H07         |
| 48                          | H08         |
| 125                         | H10         |



## SPB MASTER CONNECTION DIAGRAM

### SPB - DC Motor Operator Schematic

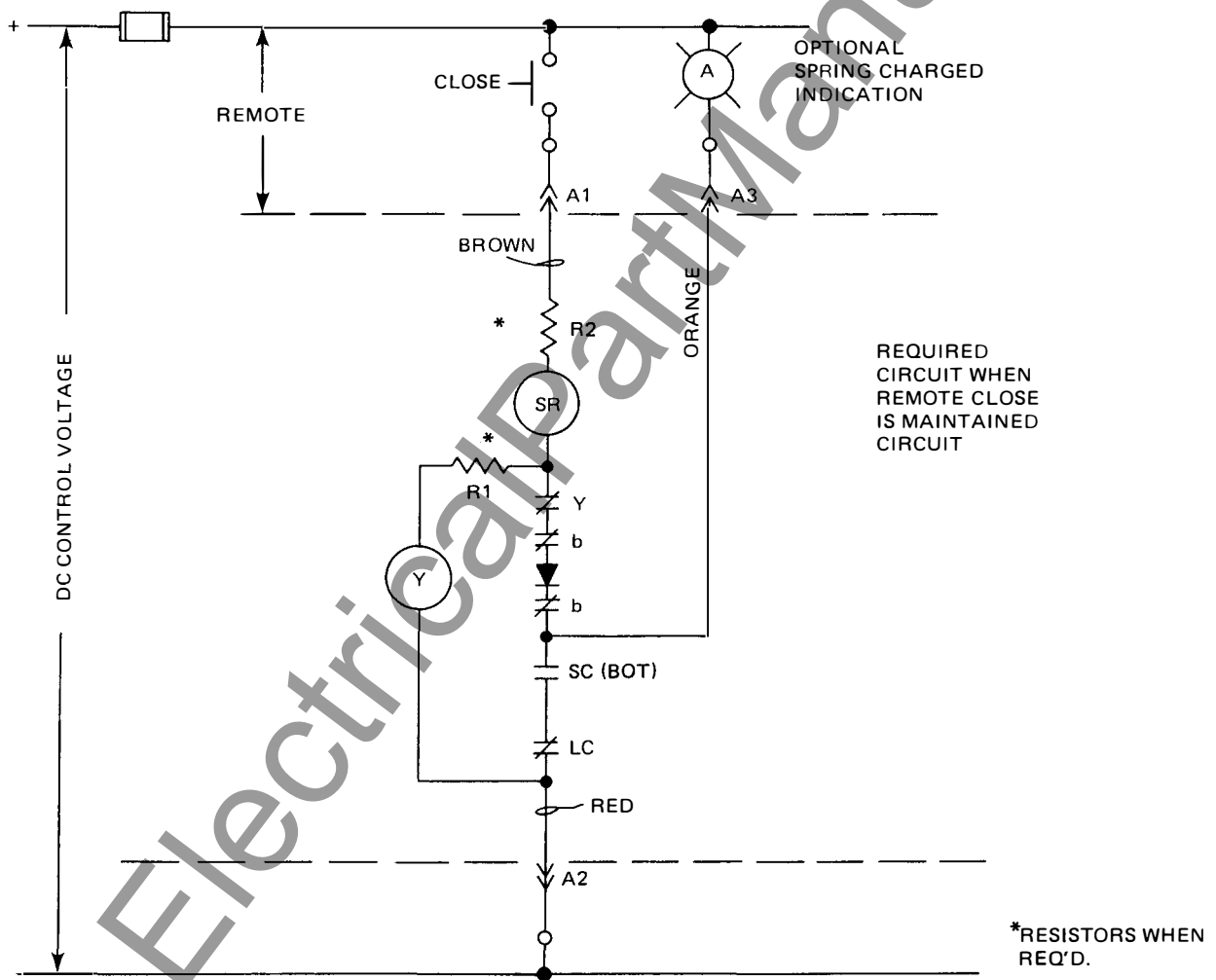
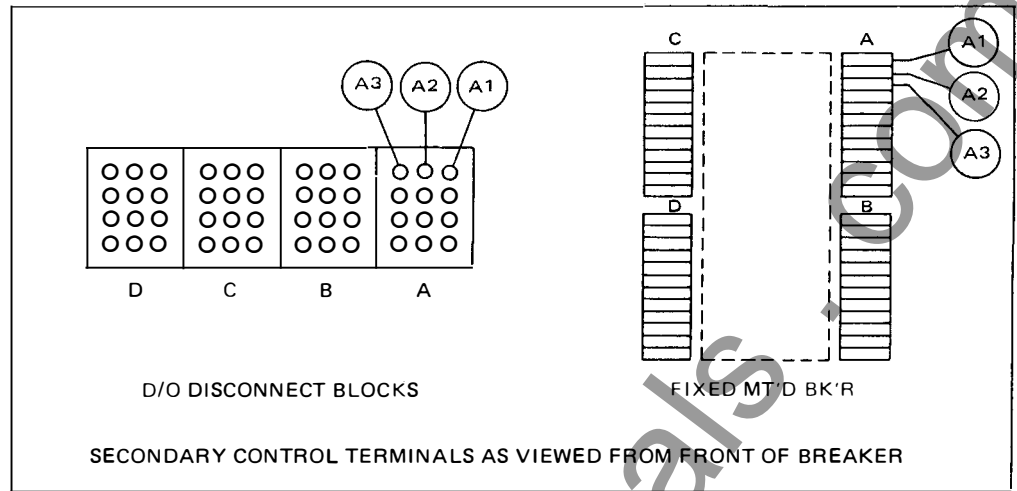
| AVAILABLE<br>VOLTAGES<br>50/60 HZ | KEY<br>CODE |
|-----------------------------------|-------------|
| 120                               | M23         |
| 208                               | M24         |
| 240                               | M25         |



### SPB MASTER CONNECTION DIAGRAM

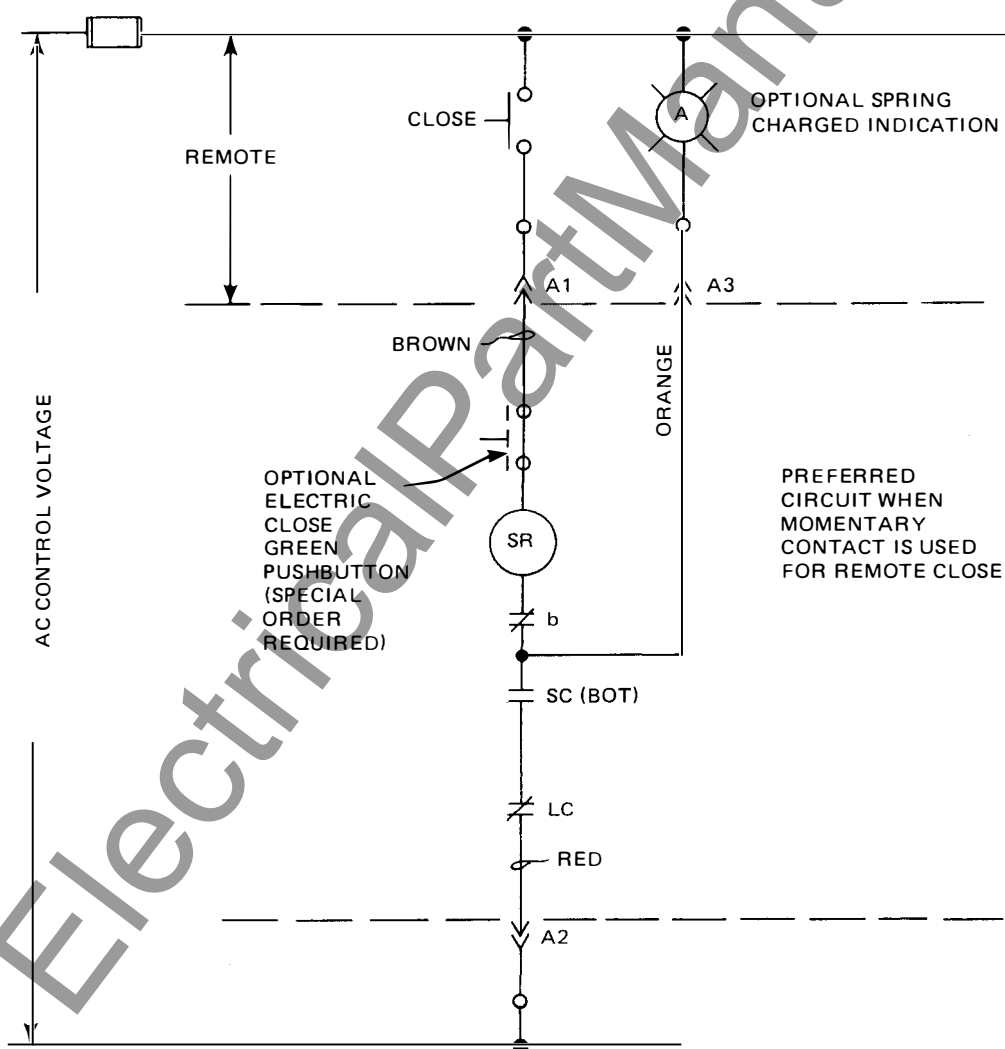
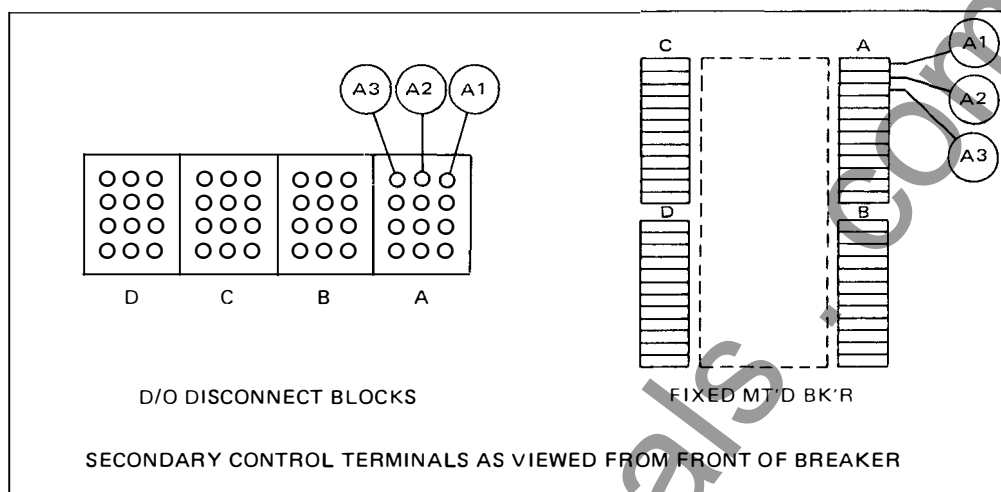
SPB - AC Spring Release With Anti-Pump Relay Schematic Diagram (For Use With Manual Breakers)

| AVAILABLE VOLTAGES DC | KEY CODE |
|-----------------------|----------|
| 24                    | M29      |
| 32                    | M30      |
| 48                    | M31      |
| 125                   | M33      |



**SPB MASTER CONNECTION DIAGRAM**  
**SPB - DC Spring Release With Anti-Pump Relay Schematic Diagram (For Use With Manual Breakers)**

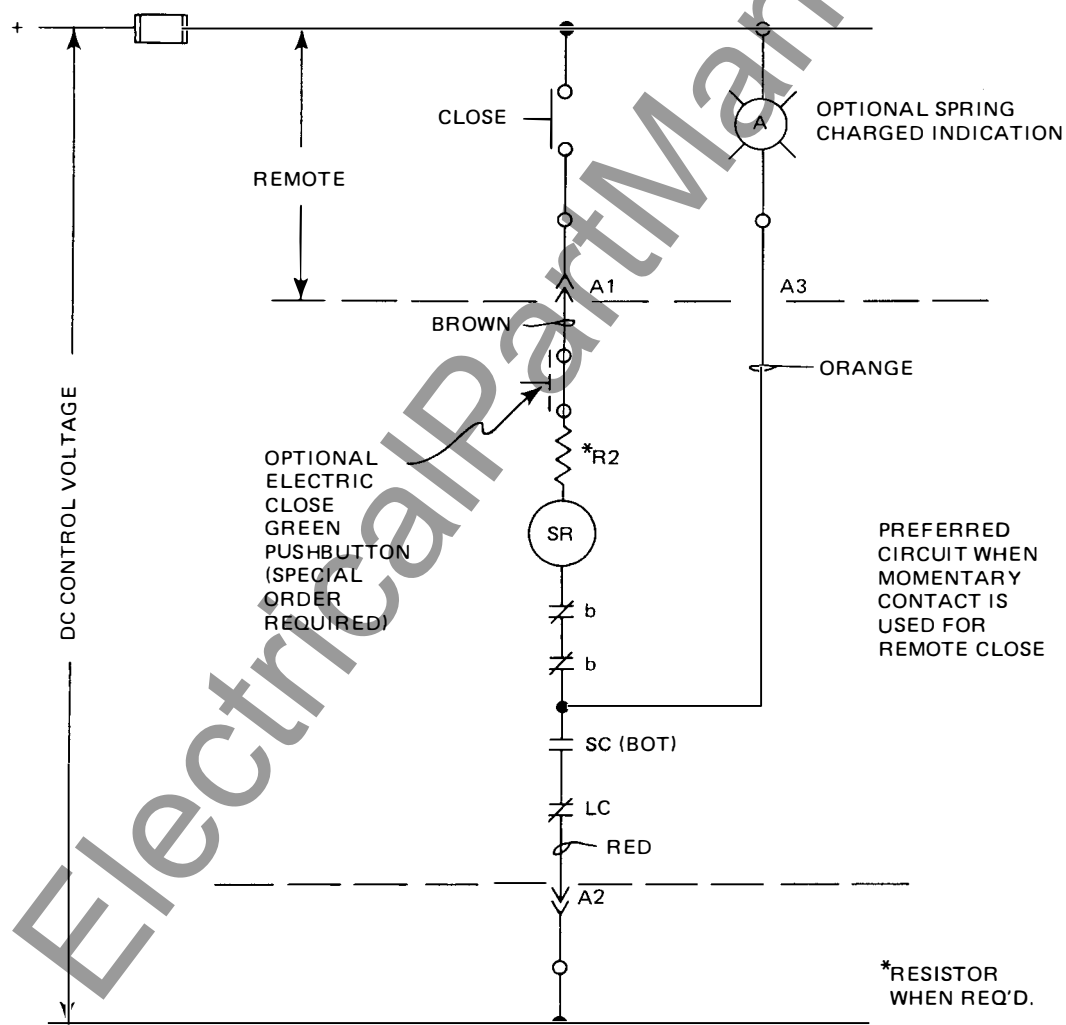
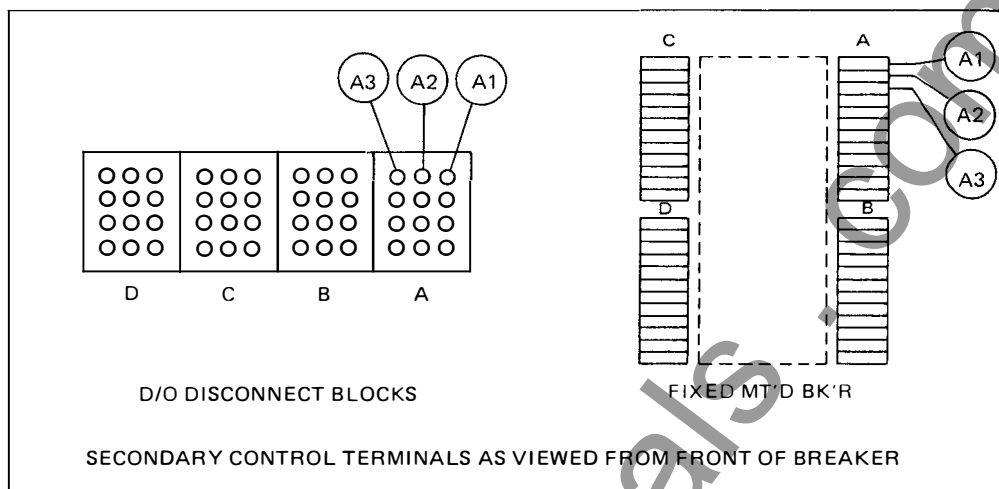
| AVAILABLE<br>VOLTAGES<br>50/60 HZ | KEY<br>CODE |
|-----------------------------------|-------------|
| 120                               | M03         |
| 208                               | M04         |
| 240                               | M05         |



## SPB MASTER CONNECTION DIAGRAM

**SPB - AC Spring Release Without Anti-Pump Relay Schematic Diagram (For Use With Manual Breakers)**

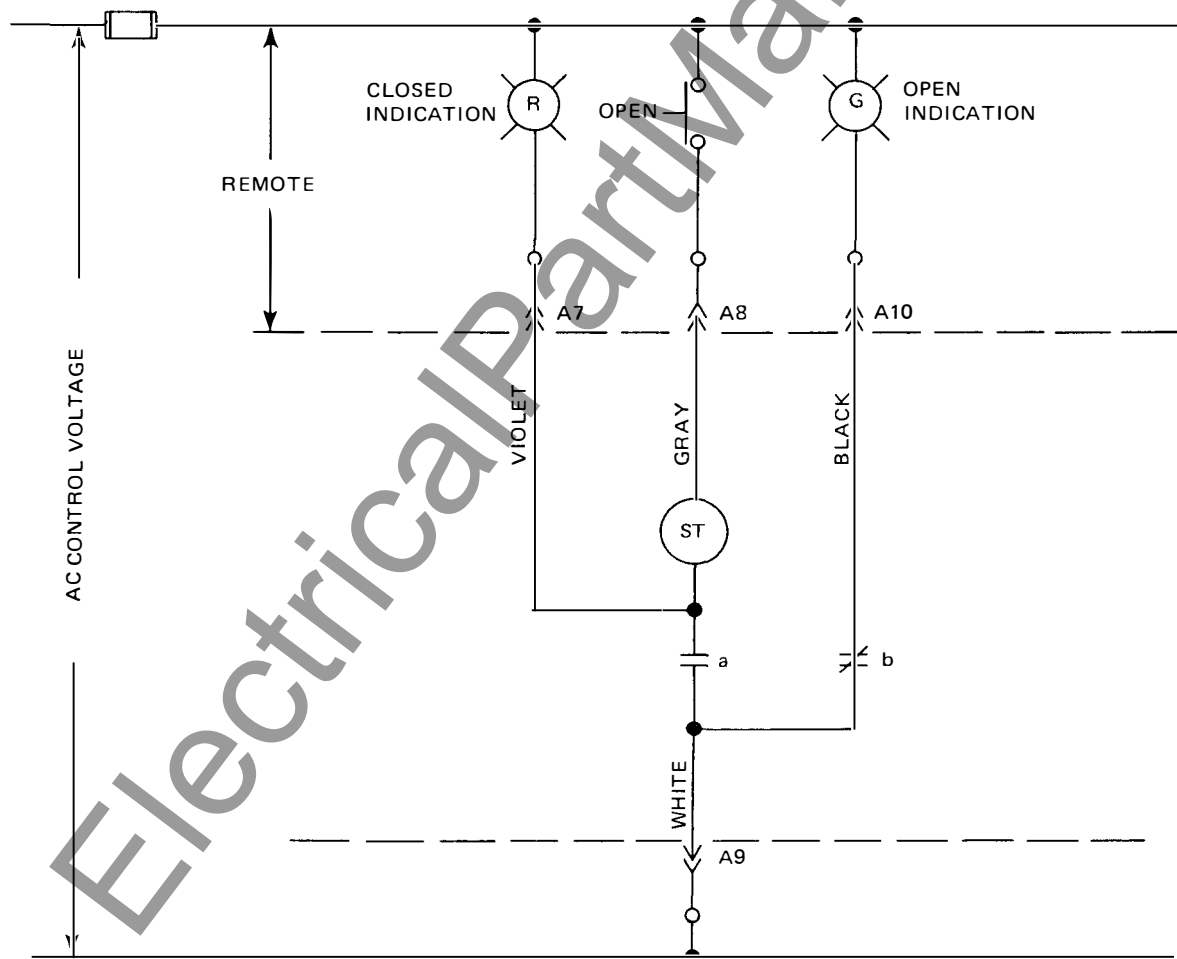
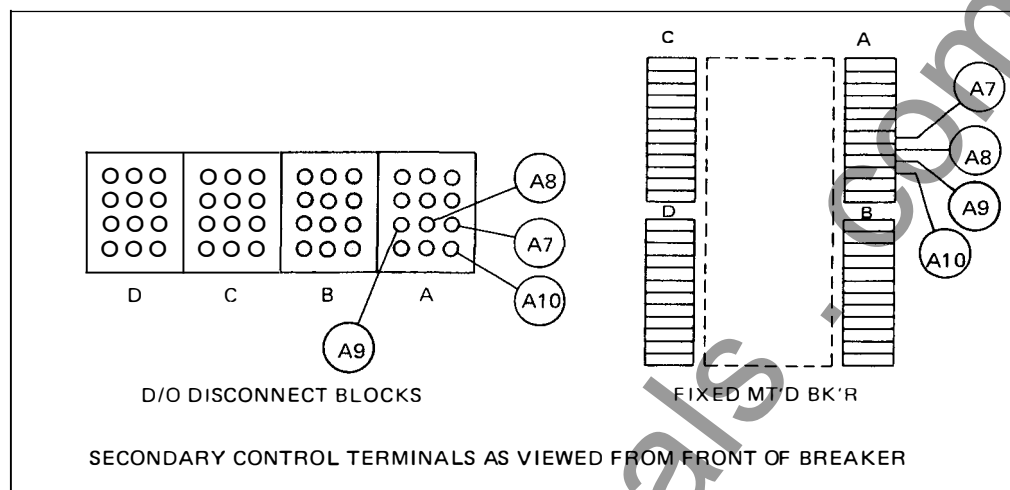
| AVAILABLE VOLTAGES DC | KEY CODE |
|-----------------------|----------|
| 24                    | M09      |
| 32                    | M10      |
| 48                    | M11      |
| 125                   | M13      |



### SPB MASTER CONNECTION DIAGRAM

SPB - DC Spring Release Without Anti-Pump Relay Schematic Diagram (For Use With Manual Breakers)

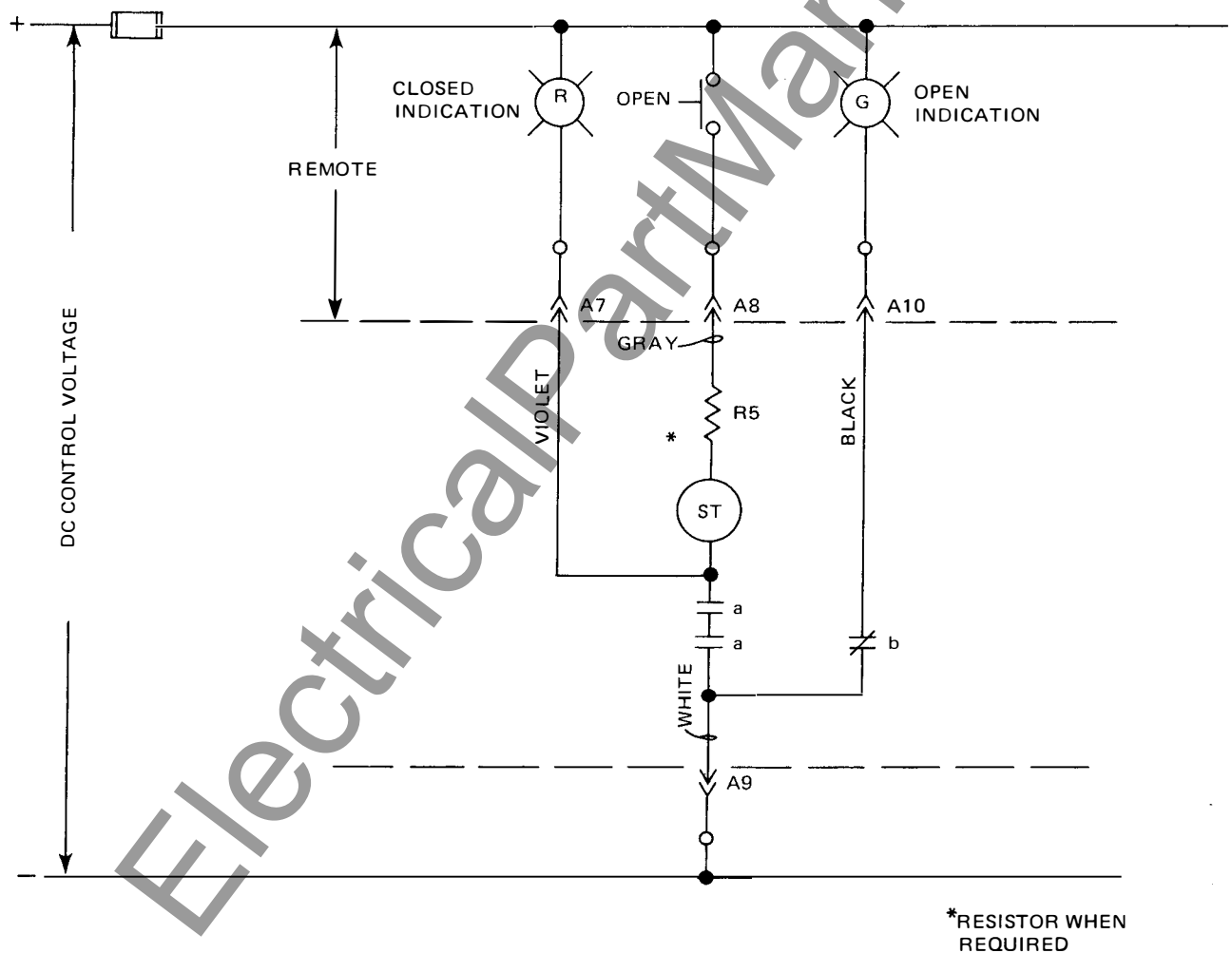
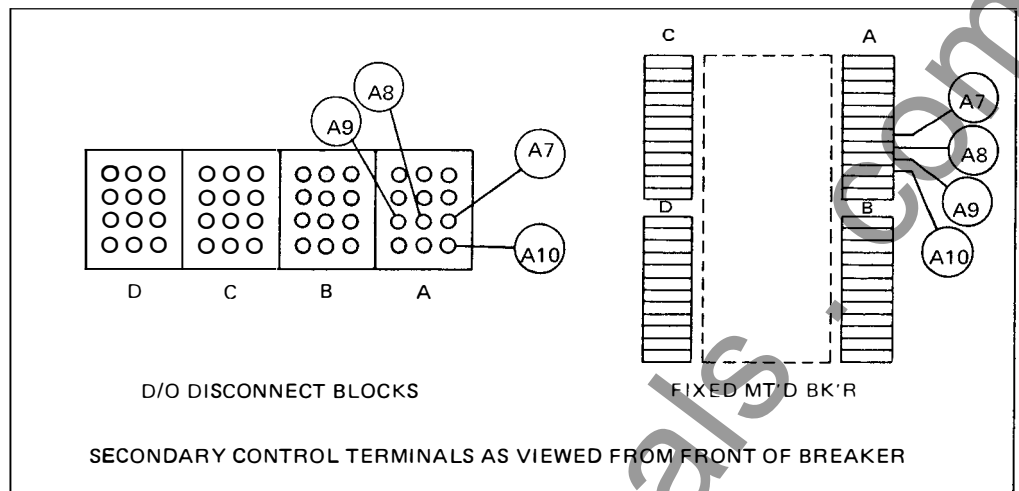
| AVAILABLE<br>VOLTAGES<br>50/60 HZ | KEY<br>CODE |
|-----------------------------------|-------------|
| 24                                | J01         |
| 48                                | J02         |
| 120                               | J03         |
| 208                               | J04         |
| 240                               | J05         |
| 480                               | J06         |
| 600                               | J07         |



SPB MASTER CONNECTION DIAGRAM  
SPB - AC Shunt Trip Schematic Diagram

Reference  
I.L. 15158

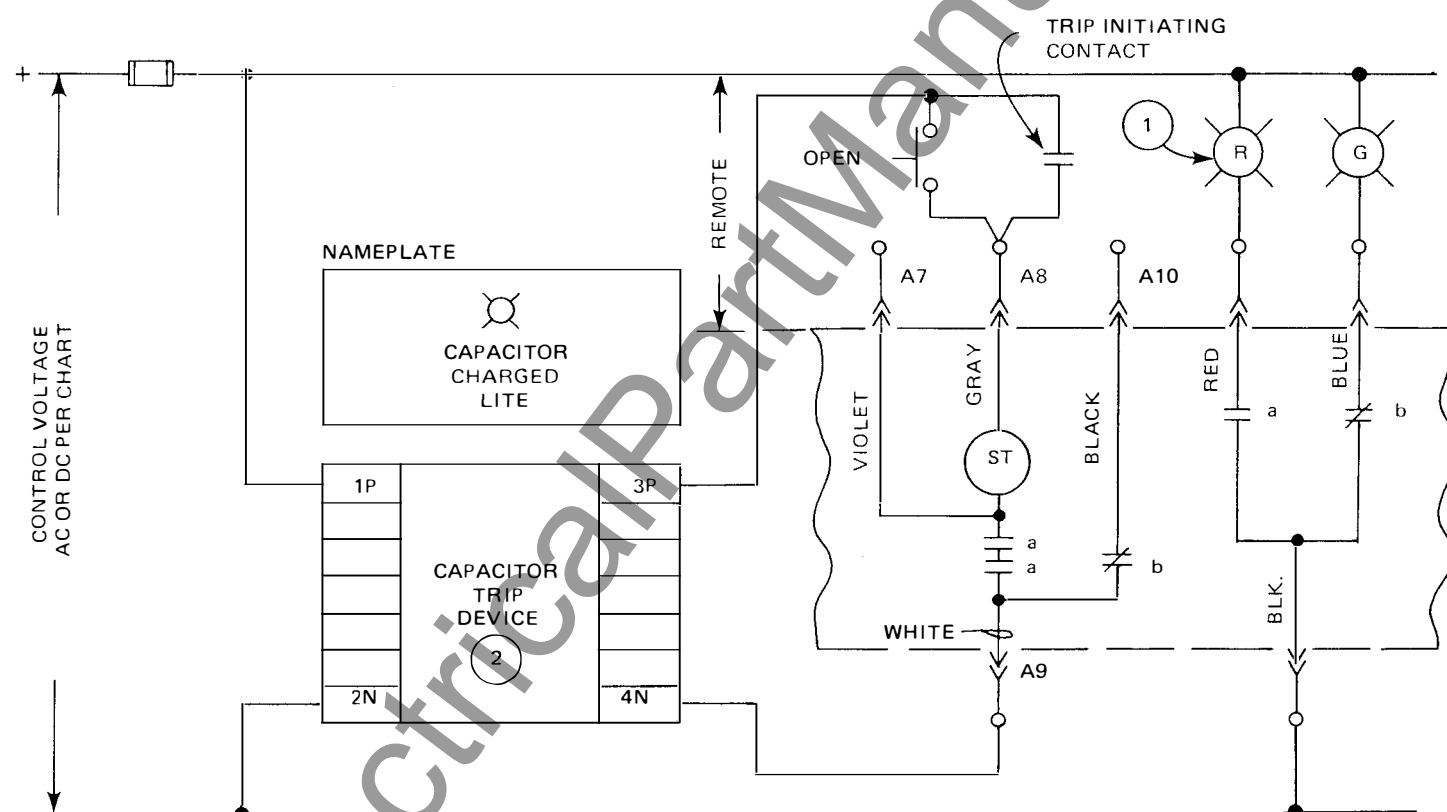
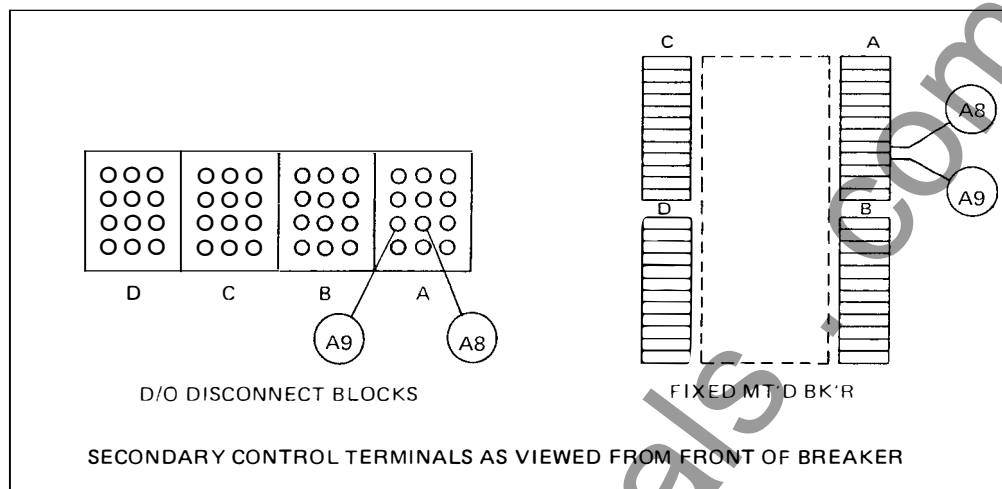
| AVAILABLE VOLTAGES DC | KEY CODE |
|-----------------------|----------|
| 24                    | J09      |
| 32                    | J10      |
| 48                    | J11      |
| 60                    | J12      |
| 125                   | J13      |



SPB MASTER CONNECTION DIAGRAM  
SPB - DC Shunt Trip Schematic Diagram

Reference  
I.L. 15158

| CAP. TRIP<br>STYLE<br>1283C62 | SPB<br>SHUNT TRIP<br>VOLTAGE<br>KEY CODE |     |
|-------------------------------|------------------------------------------|-----|
|                               | 50/60 HZ                                 | DC  |
| G01                           | 120 ③                                    | 125 |
|                               | J13 ③                                    | J13 |
| G02                           | 60 ③                                     | 60  |
|                               | J12                                      | J12 |
| G03                           | 48                                       | 48  |
|                               | J2                                       | J11 |
| G04                           | 24                                       | 24  |
|                               | J1                                       | J9  |



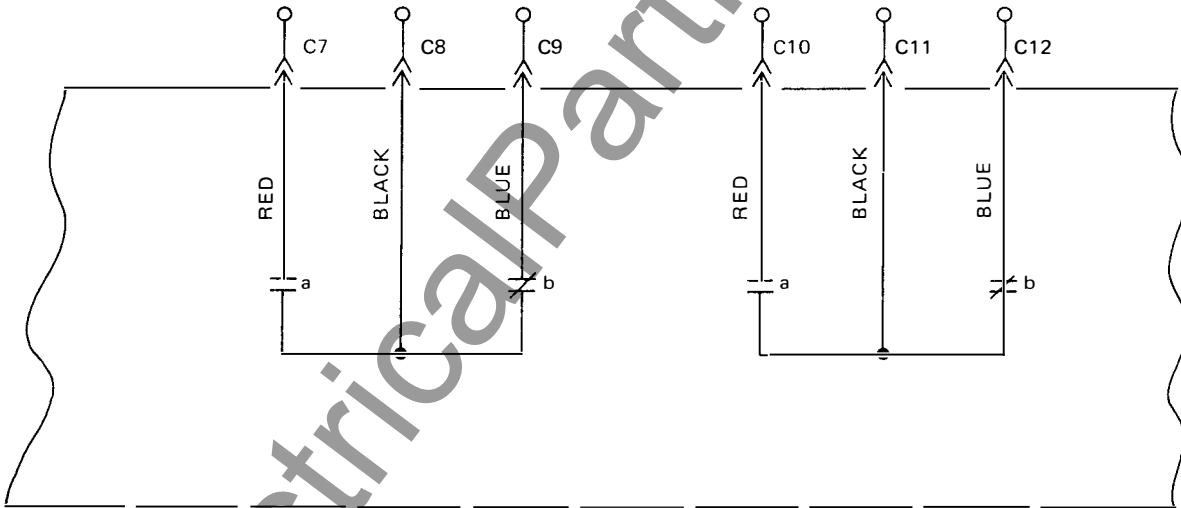
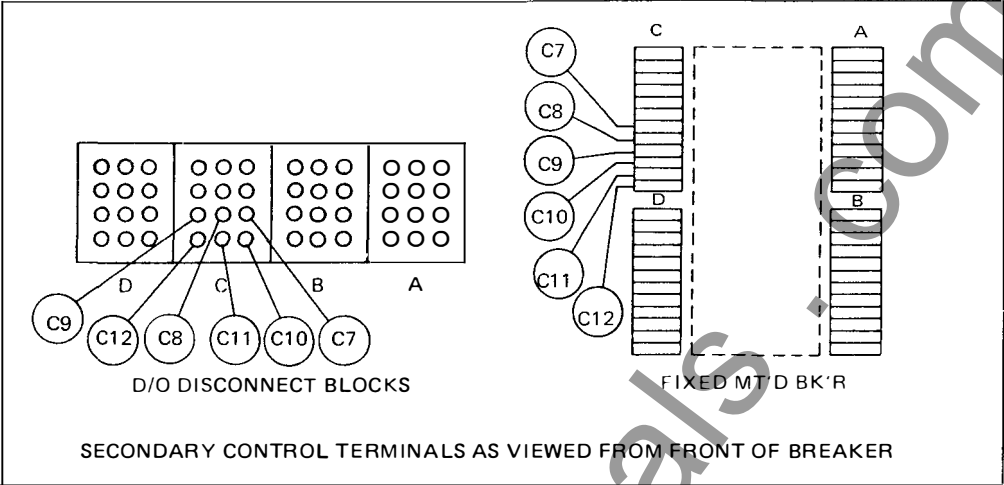
- ① TO AVOID UNNECESSARY DRAIN ON CAPACITOR, USE SPARE AUXILIARY CONTACTS FOR REMOTE INDICATION.
- ② MINIMUM STORAGE TIME – 5 SECONDS TO 75% VOLTAGE.
- ③ FOR 50/60 HZ CONTROL VOLTAGE, SELECT DC SHUNT TRIP WITH KEY CODE AS INDICATED.

### SPB MASTER CONNECTION DIAGRAM SPB - Capacitor Trip Device Connection Diagram

Reference  
I.L. 15146

| NO. OF<br>a/b<br>SWITCHES | KEY<br>CODE |
|---------------------------|-------------|
| 2                         | L01         |

| AUXILIARY SW.<br>CONTACT RATING<br>(MAX.) |                       |
|-------------------------------------------|-----------------------|
| 120-600<br>VOLTS<br>50/60 HZ.             | 24-125<br>VOLTS<br>DC |
| 6.0A.                                     | 0.5A.                 |

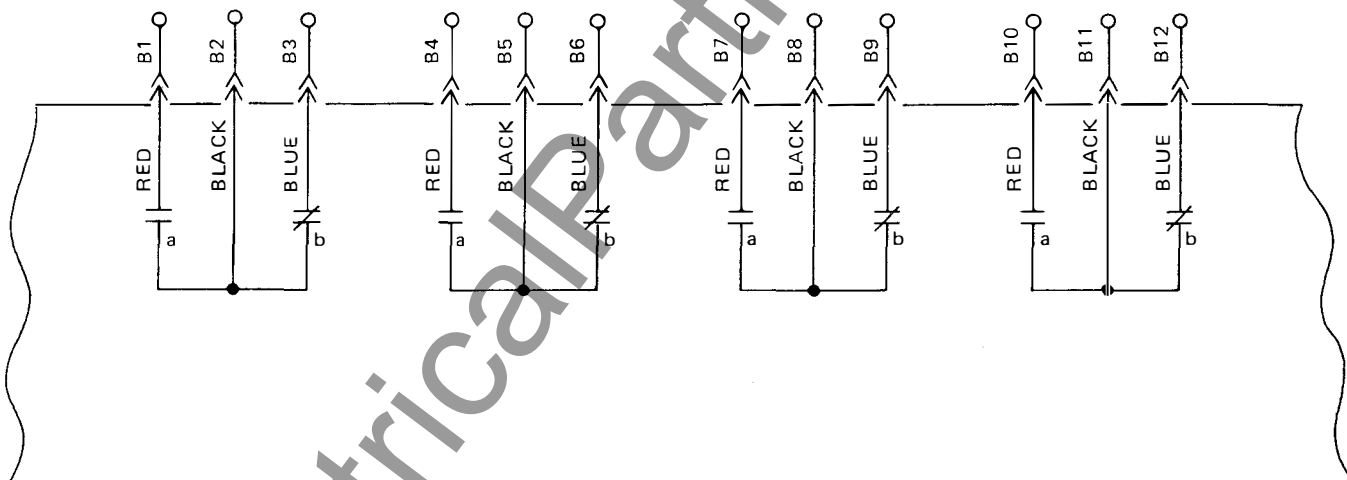
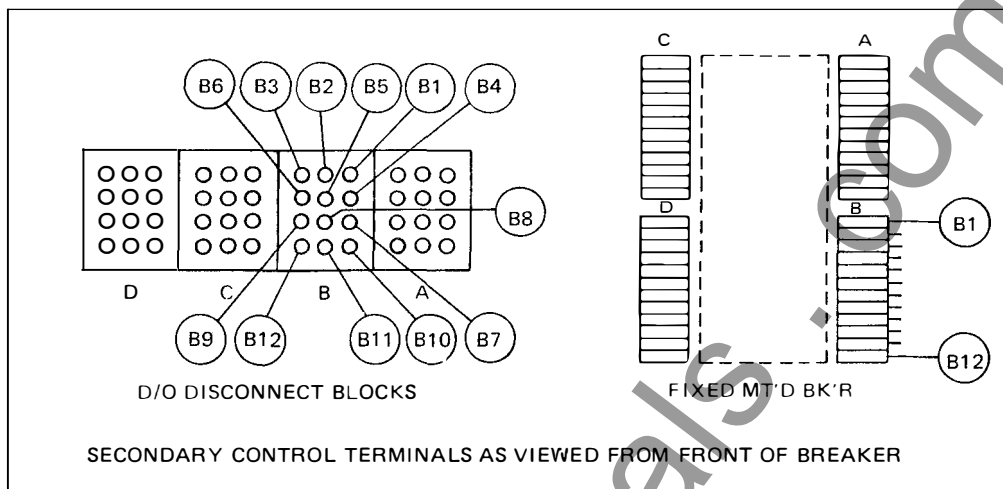


# SPB MASTER CONNECTION DIAGRAM SPB - 2 (a/b) Spare Auxiliary Switches

Reference  
I.L. 15159

| NO. OF<br>a/b<br>SWITCHES | KEY<br>CODE |
|---------------------------|-------------|
| 4                         | L02         |

| AUXILIARY SW.<br>CONTACT RATING<br>(MAX.) |                       |
|-------------------------------------------|-----------------------|
| 120-600<br>VOLTS<br>50/60 HZ.             | 24-125<br>VOLTS<br>DC |
| 6.0 A.                                    | 0.5 A.                |

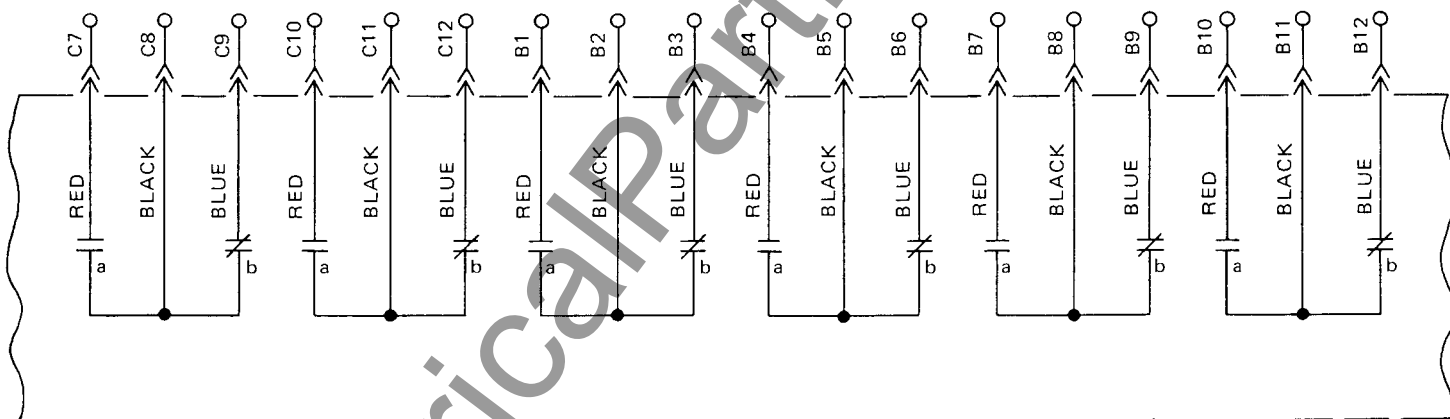
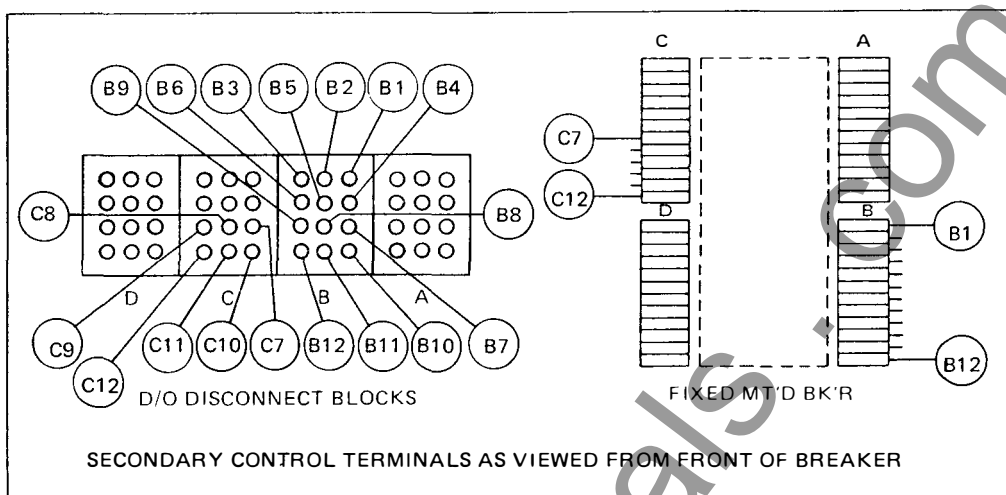


# SPB MASTER CONNECTION DIAGRAM SPB - 4 (a/b) Spare Auxiliary Switches

Reference  
I.L. 15159

| NO. OF<br>a/b<br>SWITCHES | KEY<br>CODE |
|---------------------------|-------------|
| 6                         | L03         |

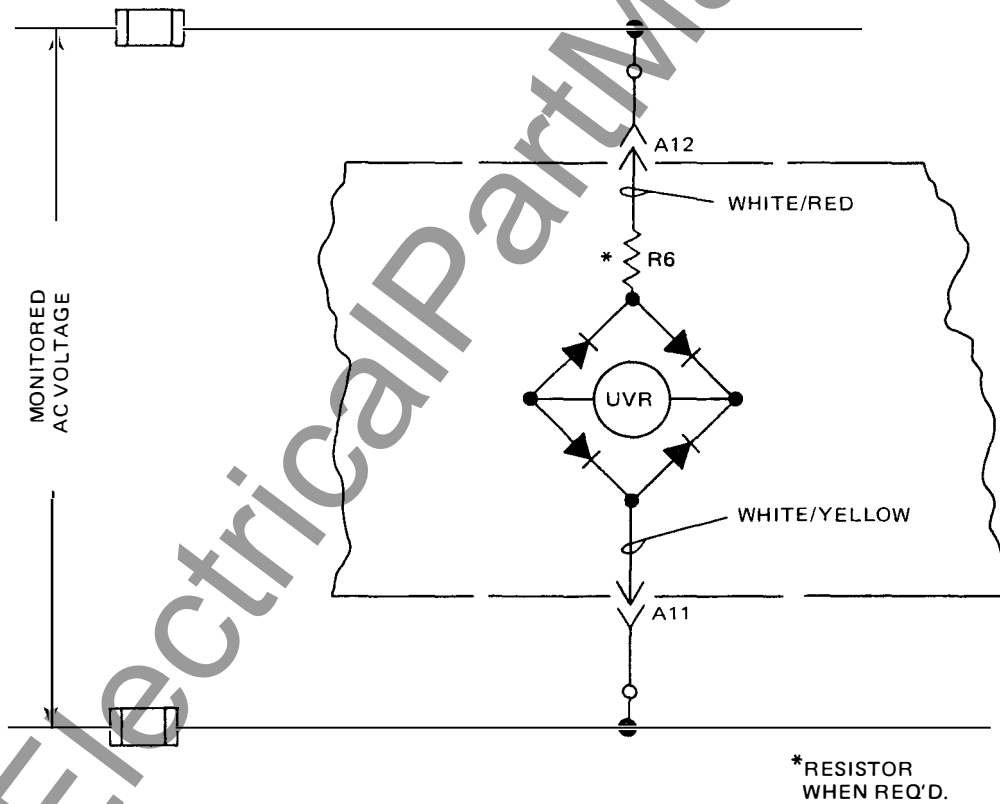
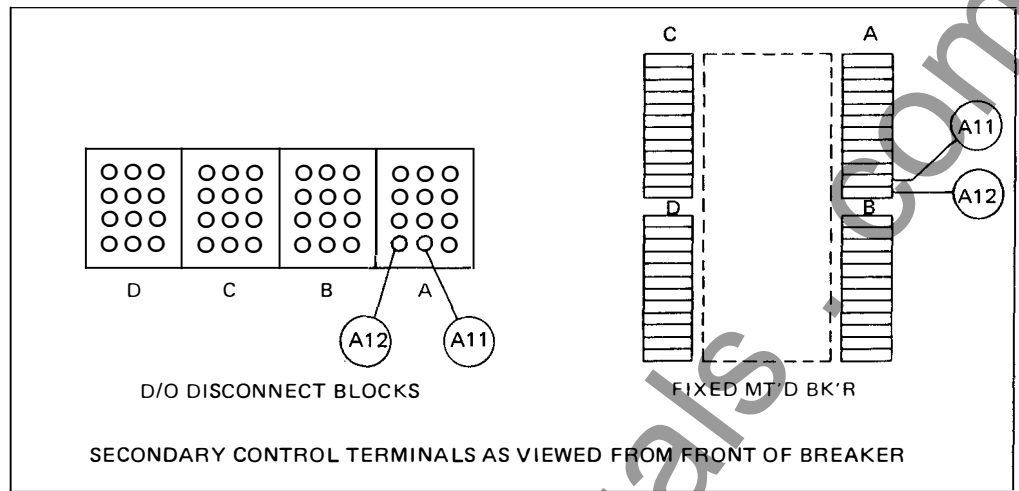
| AUXILIARY SW.<br>CONTACT RATING<br>(MAX.) |                       |
|-------------------------------------------|-----------------------|
| 120 - 600<br>VOLTS<br>50/60 HZ.           | 24-125<br>VOLTS<br>DC |
| 6.0A.                                     | 0.5A.                 |



# SPB MASTER CONNECTION DIAGRAM SPB - 6 (a/b) Spare Auxiliary Switches

Reference  
I.L. 15159

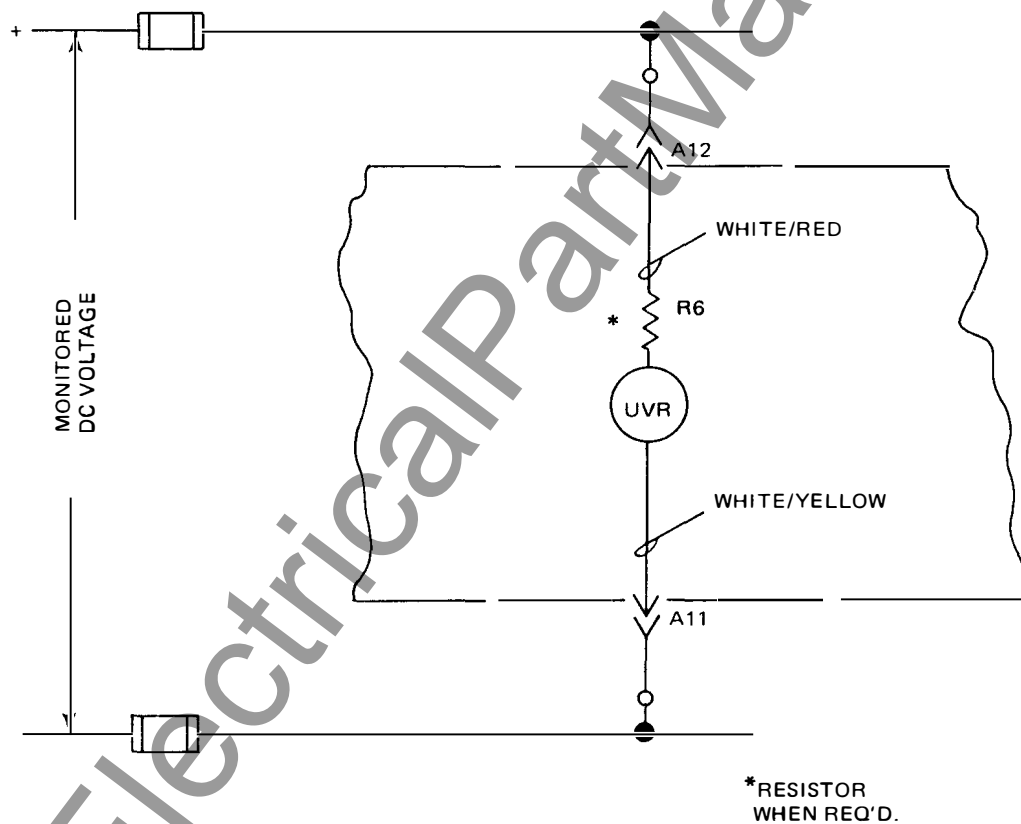
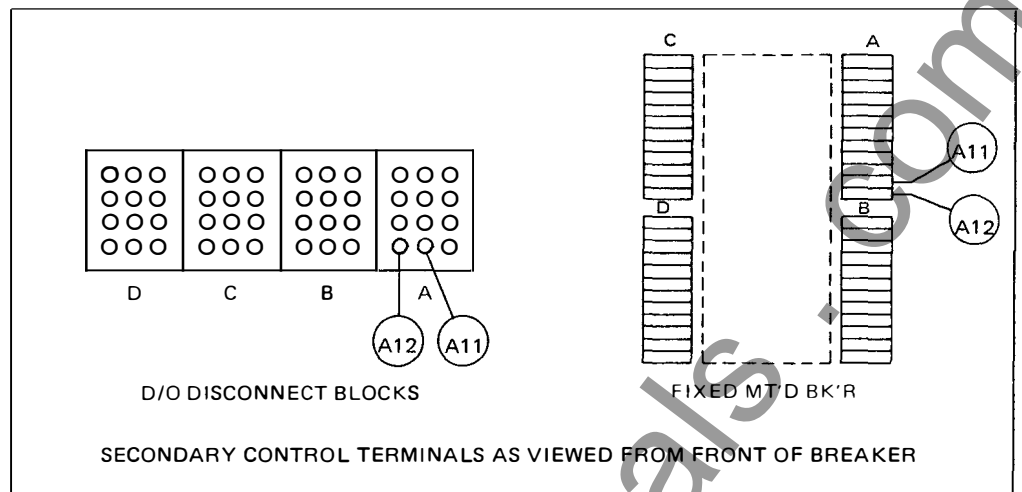
| AVAILABLE VOLTAGES<br>50/60 HZ | KEY CODE |
|--------------------------------|----------|
| 24                             | K01      |
| 48                             | K02      |
| 120                            | K03      |
| 208                            | K04      |
| 240                            | K05      |
| 480                            | K06      |
| 600                            | K07      |



**SPB MASTER CONNECTION DIAGRAM**  
**SPB - AC Undervoltage Release - Instantaneous Only - Schematic Diagram**

Reference  
I.L. 15162

| AVAILABLE<br>VOLTAGES<br>DC | KEY<br>CODE |
|-----------------------------|-------------|
| 12                          | K08         |
| 24                          | K09         |
| 32                          | K10         |
| 48                          | K11         |
| 60                          | K12         |
| 125                         | K13         |
| 60<br>Special ①             | K14         |

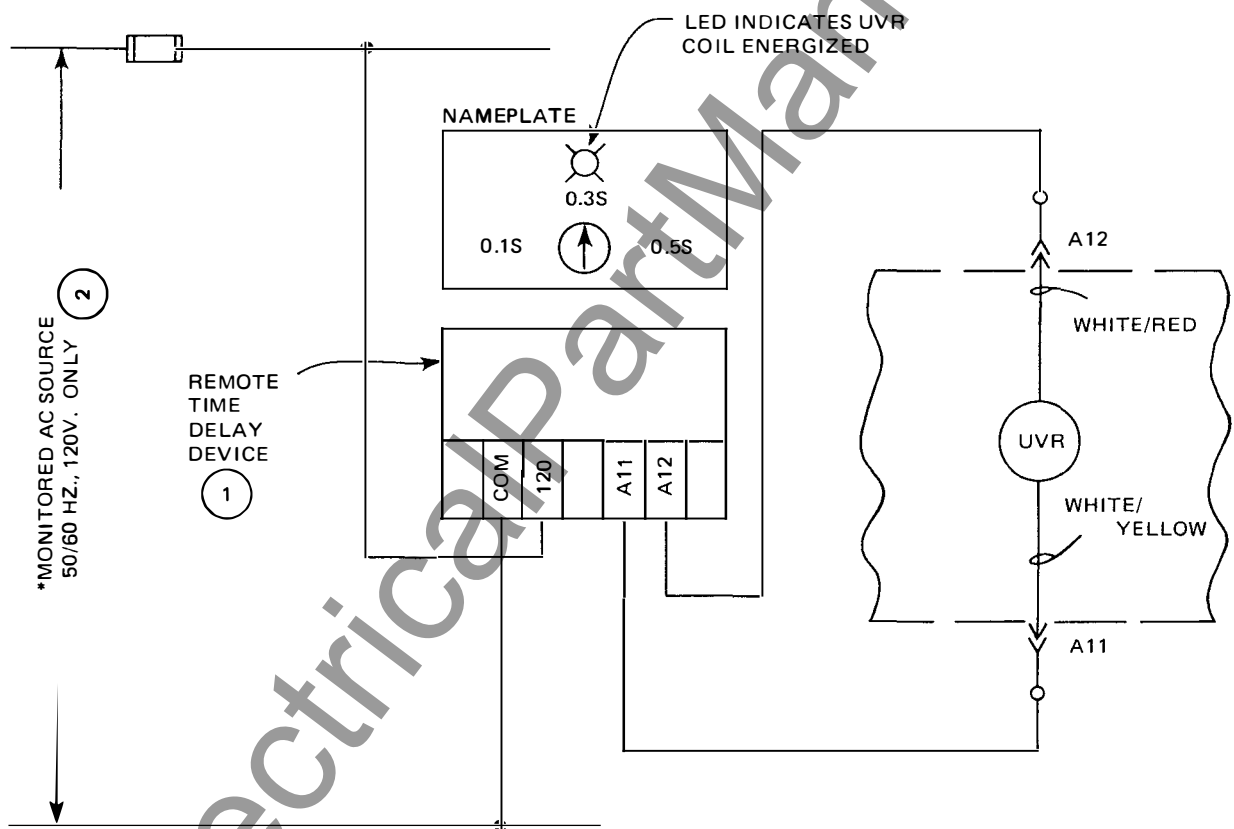
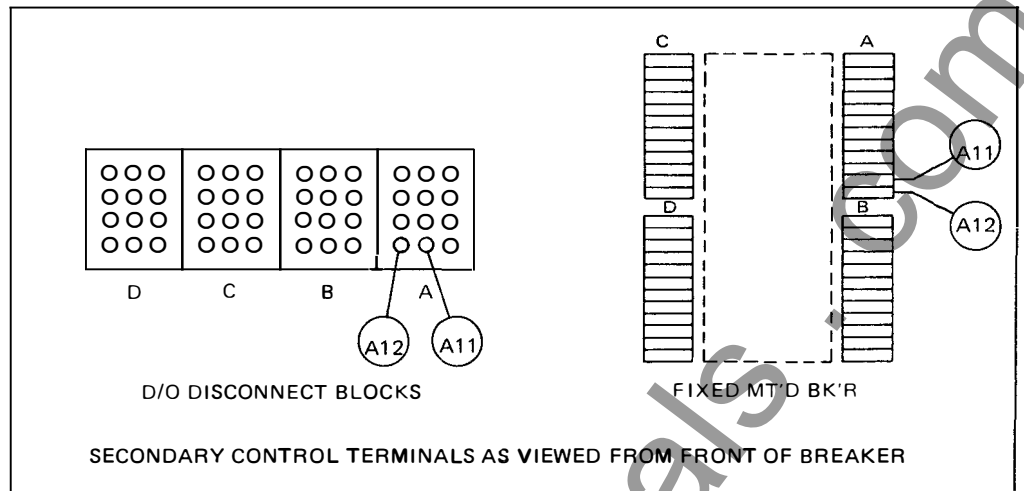


① USE ONLY WITH TIME DELAY DEVICE, OPTIONS Y1 AND Y2

# SPB MASTER CONNECTION DIAGRAM SPB - DC Under Voltage Release - Instantaneous Only - Schematic Diagram

Reference  
I.L. 15162

|                                      |             |
|--------------------------------------|-------------|
| UVR TIME DELAY<br>DEVICE<br>CAT. NO. | KEY<br>CODE |
| SPBTDDSD                             | Y01         |



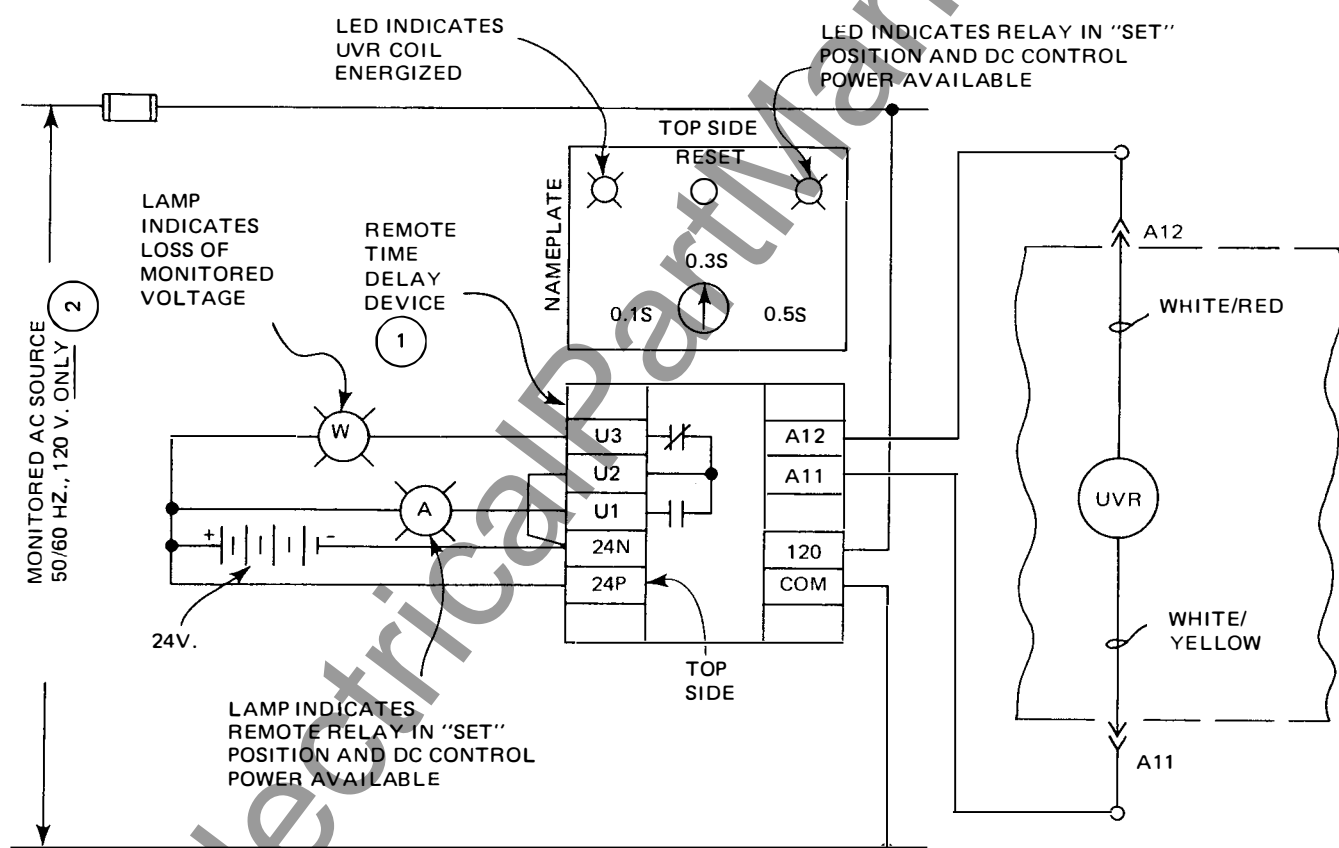
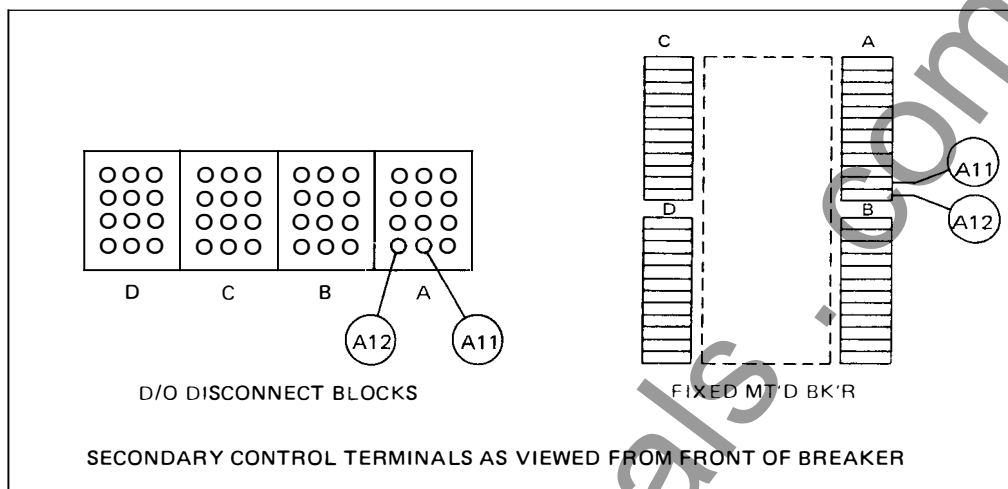
- 1 FOR USE ONLY WITH (CODE K14) UNDERVOLTAGE RELEASE DEVICE
- 2 USE STEP DOWN TRANSFORMER WHERE REQUIRED TO INSURE 120V. MAX. ON UVR TIME DELAY DEVICE.

**SPB MASTER CONNECTION DIAGRAM**  
**SPB - AC Time Delay Device Connection Diagram**

Reference  
I.L. 15141  
I.L. 15162

|                                      |             |
|--------------------------------------|-------------|
| UVR TIME<br>DELAY DEVICE<br>CAT. NO. | KEY<br>CODE |
| SPBTDIS                              | Y02         |

|                               |            |
|-------------------------------|------------|
| MEMORY CONTACT<br>MAX. RATING |            |
| 120V.<br>50/60 HZ.            | 28V.<br>DC |
| 2 AMPS                        | 2 AMPS     |



1 FOR USE ONLY WITH (CODE K14) UNDERVOLTAGE RELEASE DEVICE

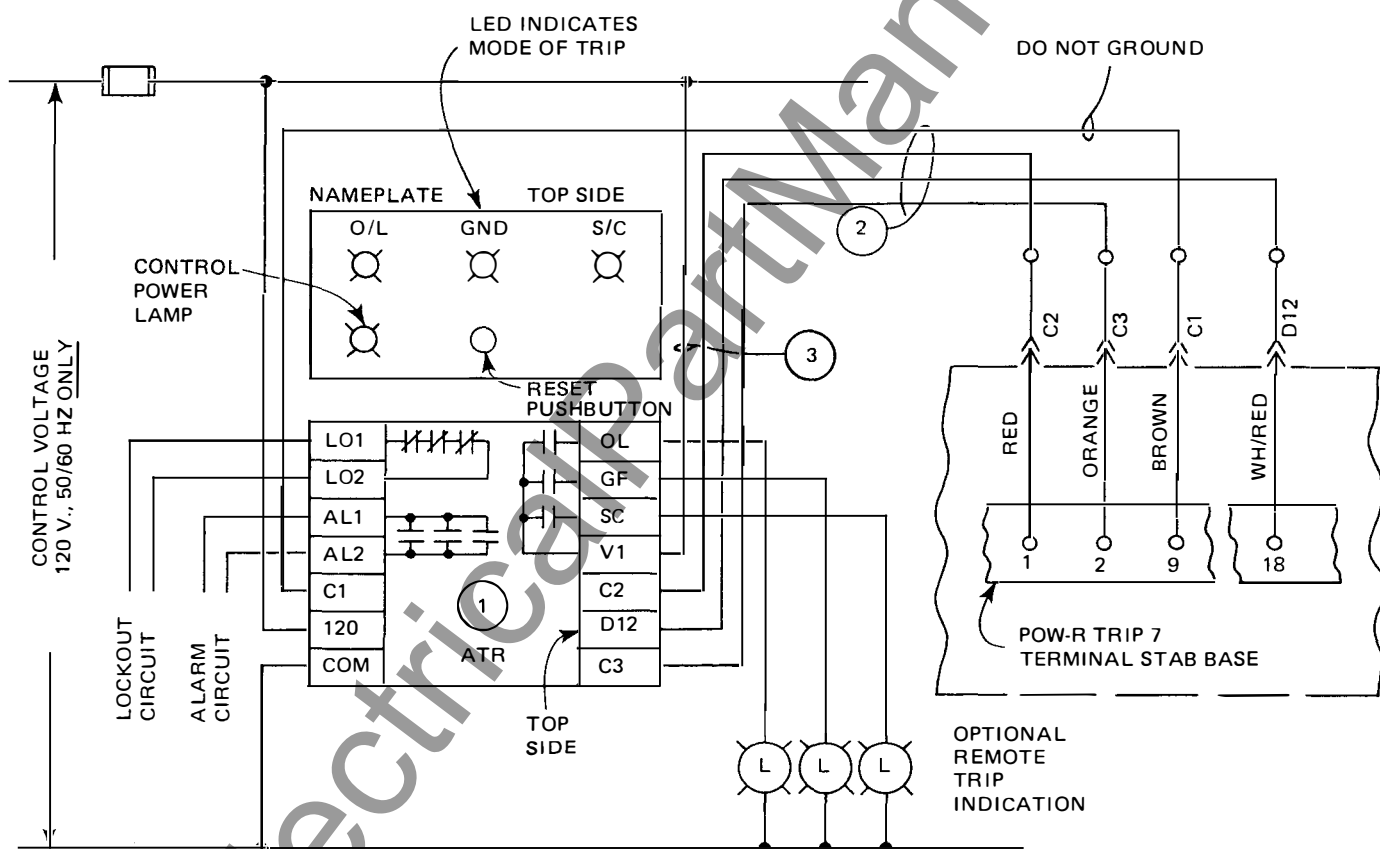
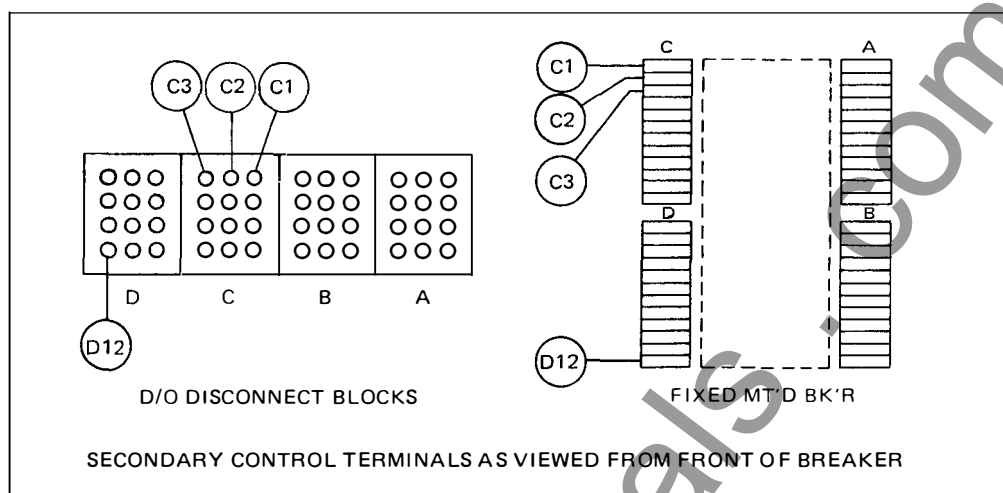
2 USE STEP DOWN TRANSFORMER WHERE REQUIRED TO INSURE 120 V. MAX. ON UVR TIME DELAY DEVICE

**SPB MASTER CONNECTION DIAGRAM**  
**SPB - Time Delay Device with Memory Contact**  
**Connection (Requires 24 vdc Control Voltage)**

Reference  
 I.L. 15141  
 I.L. 15162

|                                |             |
|--------------------------------|-------------|
| AUTO TRIP<br>RELAY<br>CAT. NO. | KEY<br>CODE |
| SPBATROIS                      | X01         |

|                         |               |
|-------------------------|---------------|
| CONTACT RATING<br>(MAX) |               |
| 120 VOLT<br>50/60 HZ    | 28 VOLT<br>DC |
| 2.0 AMP                 | 2.0 AMP       |



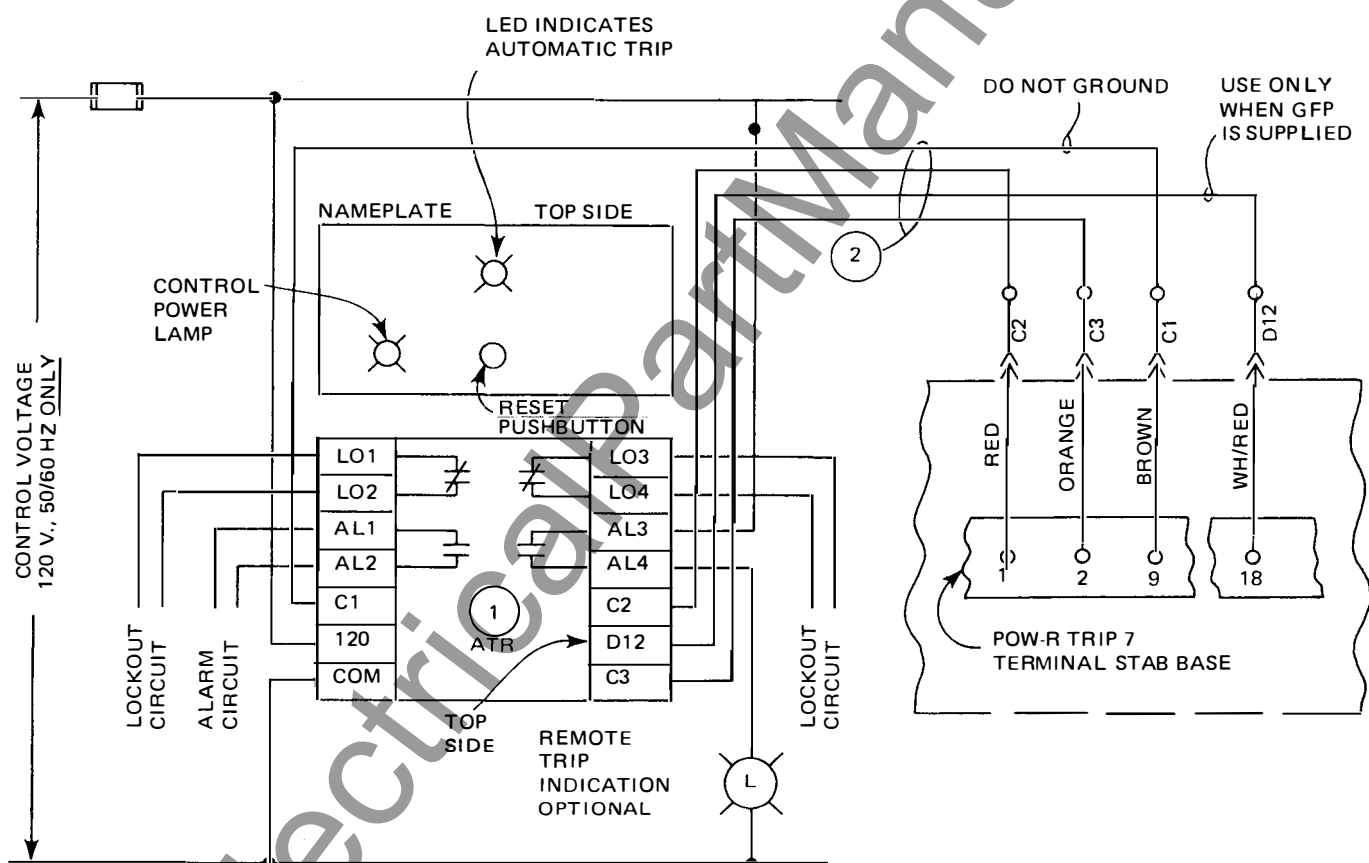
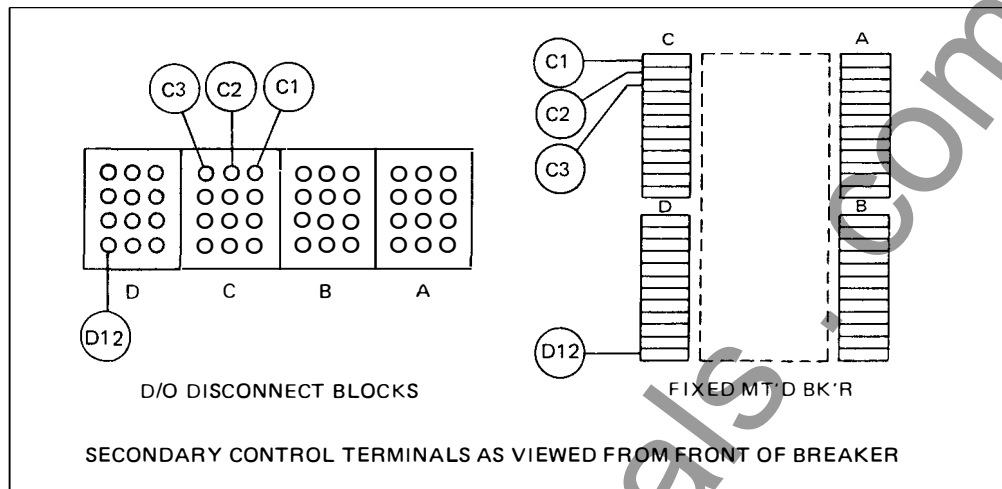
- 1 RELAY CONTACTS RESET ON LOSS OF CONTROL POWER
- 2 RUN SEPARATE FROM POWER CABLES, WIRE SIZE NOT CRITICAL. SHIELDED CABLE (PREFERRED) OR TWISTED CONDUCTORS REQUIRED. MAX. RUN OF 50 FT. SUGGESTED.
- 3 SELECT VOLTAGE SOURCE TO MATCH REMOTE PILOT LIGHT REQUIREMENTS – 120V., 50/60 HZ MAX.

**SPB MASTER CONNECTION DIAGRAM**  
**SPB - Comb. Remote Trip Mode Indicator and**  
**Auto Trip Relay Connection Diagram**  
 (Use with Pow-R Trip 7 only)

Reference  
I.L. 15087

|   |                                |             |
|---|--------------------------------|-------------|
| 1 | AUTO TRIP<br>RELAY<br>CAT. NO. | KEY<br>CODE |
|   | SPBATR02S                      | X02         |

| CONTACT RATING<br>(MAX.) |               |
|--------------------------|---------------|
| 120 VOLT<br>50/60 HZ     | 28 VOLT<br>DC |
| 2.0 AMP                  | 2.0 AMP       |



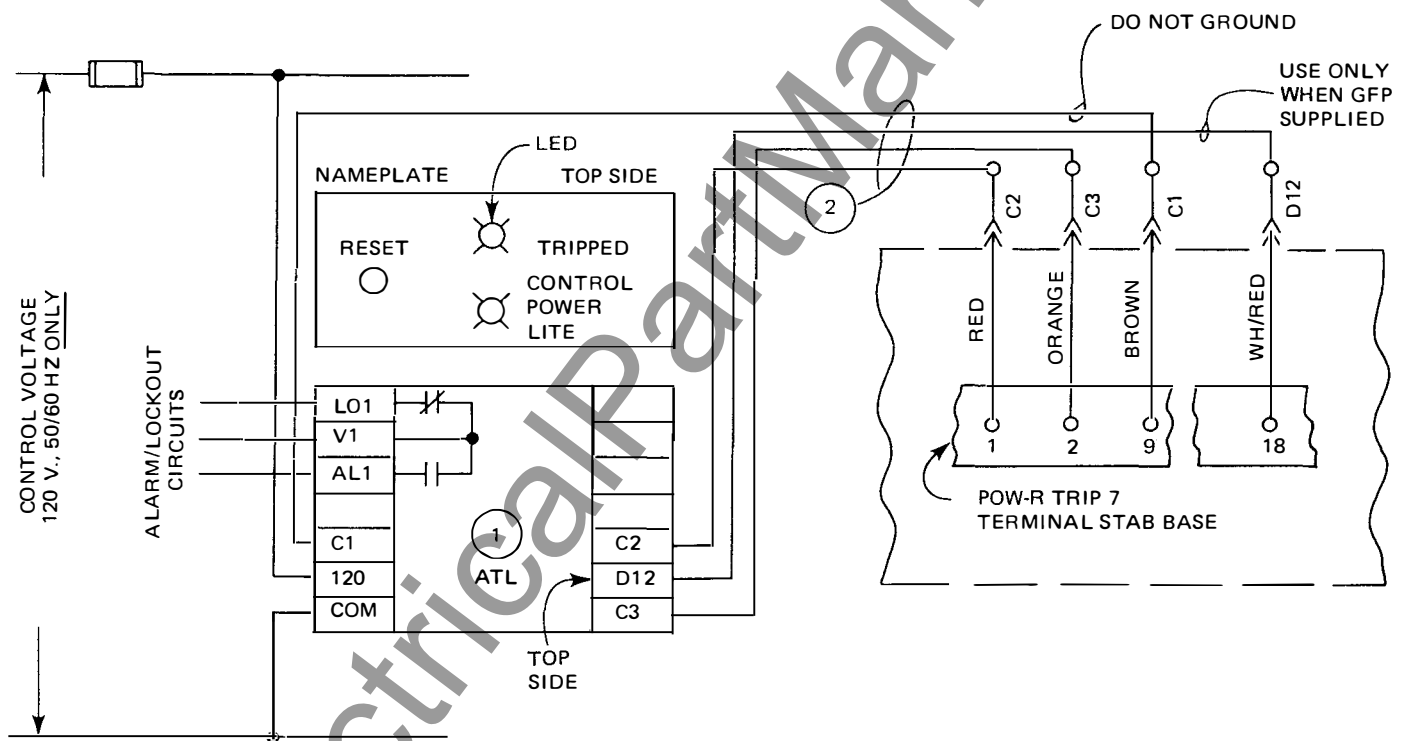
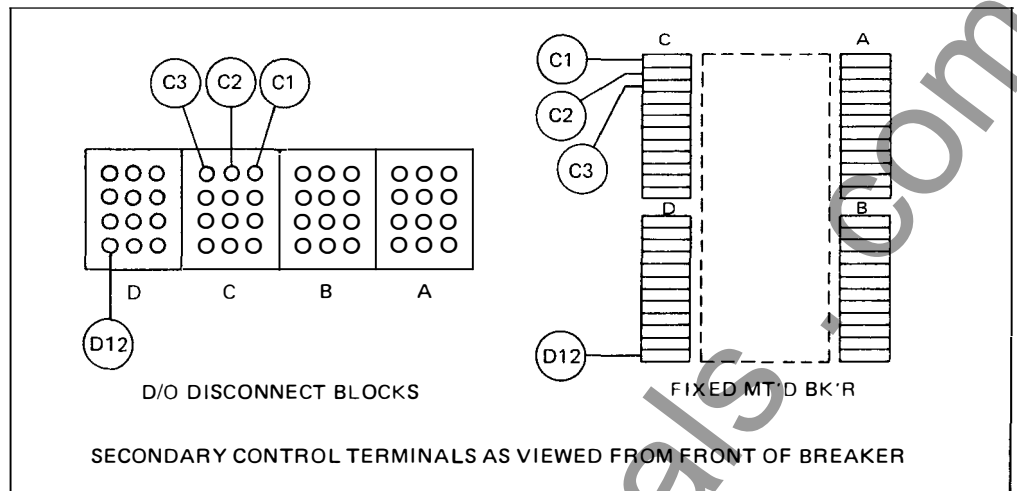
- 1 RELAY CONTACTS RESET ON LOSS OF CONTROL POWER
- 2 RUN SEPARATE FROM POWER CABLES, WIRE SIZE NOT CRITICAL. SHIELDED CABLE (PREFERRED) OR TWISTED CONDUCTORS REQUIRED. MAX. RUN OF 50 FT. SUGGESTED.

**SPB MASTER CONNECTION DIAGRAM**  
**SPB - Automatic Trip Relay Connection Diagram**  
 (Use with Pow-R Trip 7 only)

Reference  
I.L. 15087

|                                |             |
|--------------------------------|-------------|
| AUTO TRIP<br>RELAY<br>CAT. NO. | KEY<br>CODE |
| SPBATL                         | X03         |

|                          |                |
|--------------------------|----------------|
| CONTACT RATING<br>(MAX.) |                |
| 240 VOLTS<br>50/60 HZ    | 28 VOLTS<br>DC |
| 10.0 A @<br>80% P.F.     | 10.0 A         |



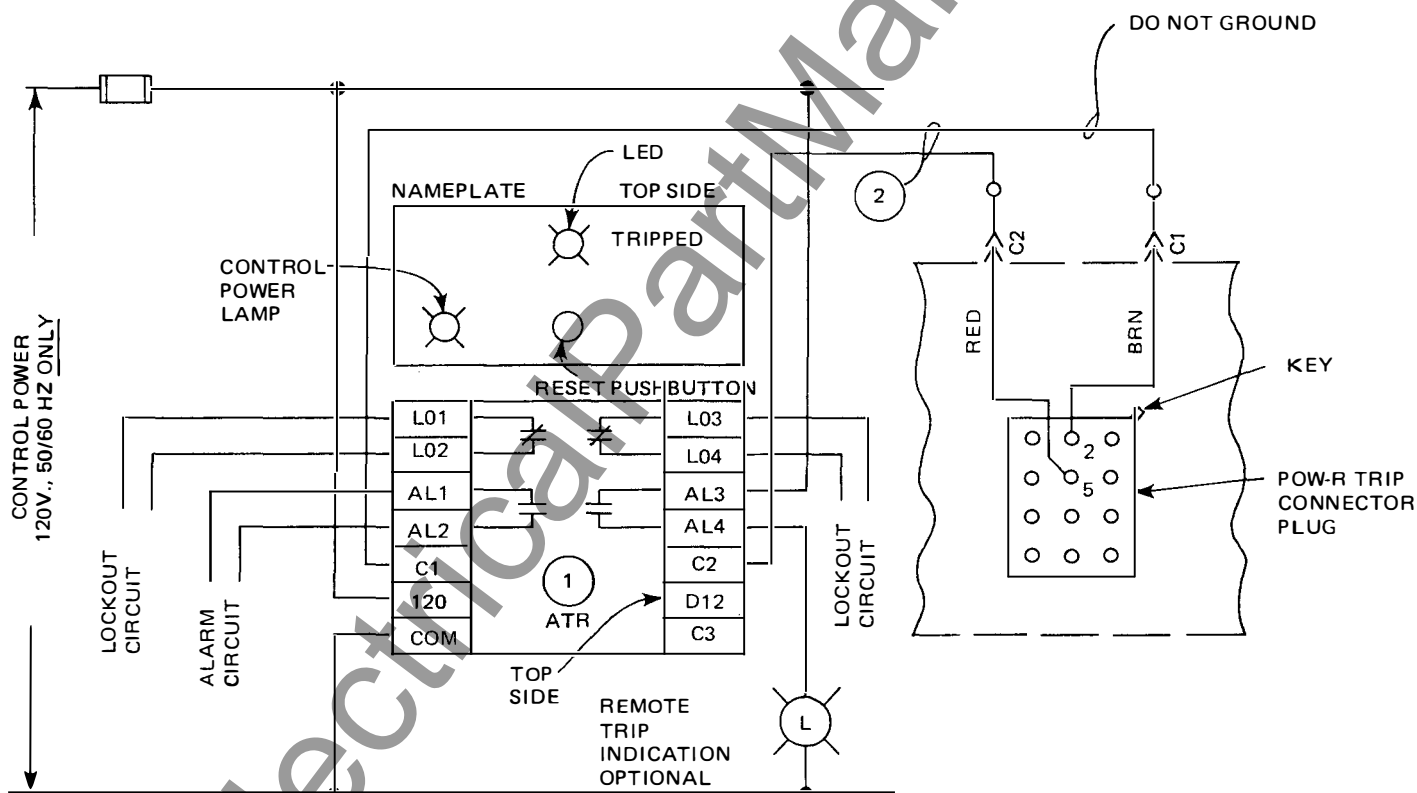
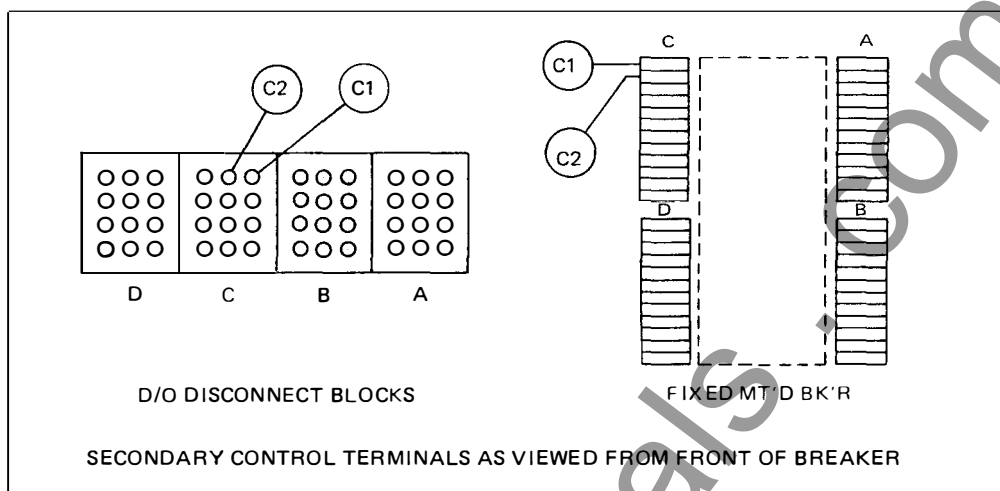
- 1 RELAY CONTACTS LATCH FOLLOWING TRIP INDICATION AND MUST BE MECHANICALLY UNLATCHED WITH LOCAL RESET PROVIDED.
- 2 RUN SEPARATE FROM POWER CABLES, WIRE SIZE NOT CRITICAL. SHIELDED CABLE (PREFERRED) OR TWISTED CONDUCTORS REQUIRED. MAX. RUN OF 50 FT. SUGGESTED.

**SPB MASTER CONNECTION DIAGRAM**  
**SPB - Automatic Trip Relay (With Latching Contacts)**  
**Connection Diagram (Use with Pow-R Trip 7 only)**

Reference  
I.L. 15087

|   |                          |          |
|---|--------------------------|----------|
| 1 | AUTO TRIP RELAY CAT. NO. | KEY CODE |
|   | SPBATRO2S                | X02      |

| CONTACT RATING (MAX) |            |
|----------------------|------------|
| 120 VOLT 50/60 HZ    | 28 VOLT DC |
| 2.0A.                | 2.0A.      |



1 RELAY CONTACTS RESET ON LOSS OF CONTROL POWER

2 RUN SEPARATE FROM POWER CABLES, WIRE SIZE NOT CRITICAL. SHIELDED CABLE (PREFERRED) OR TWISTED CONDUCTORS REQUIRED. MAX. RUN OF 50 FT. SUGGESTED.

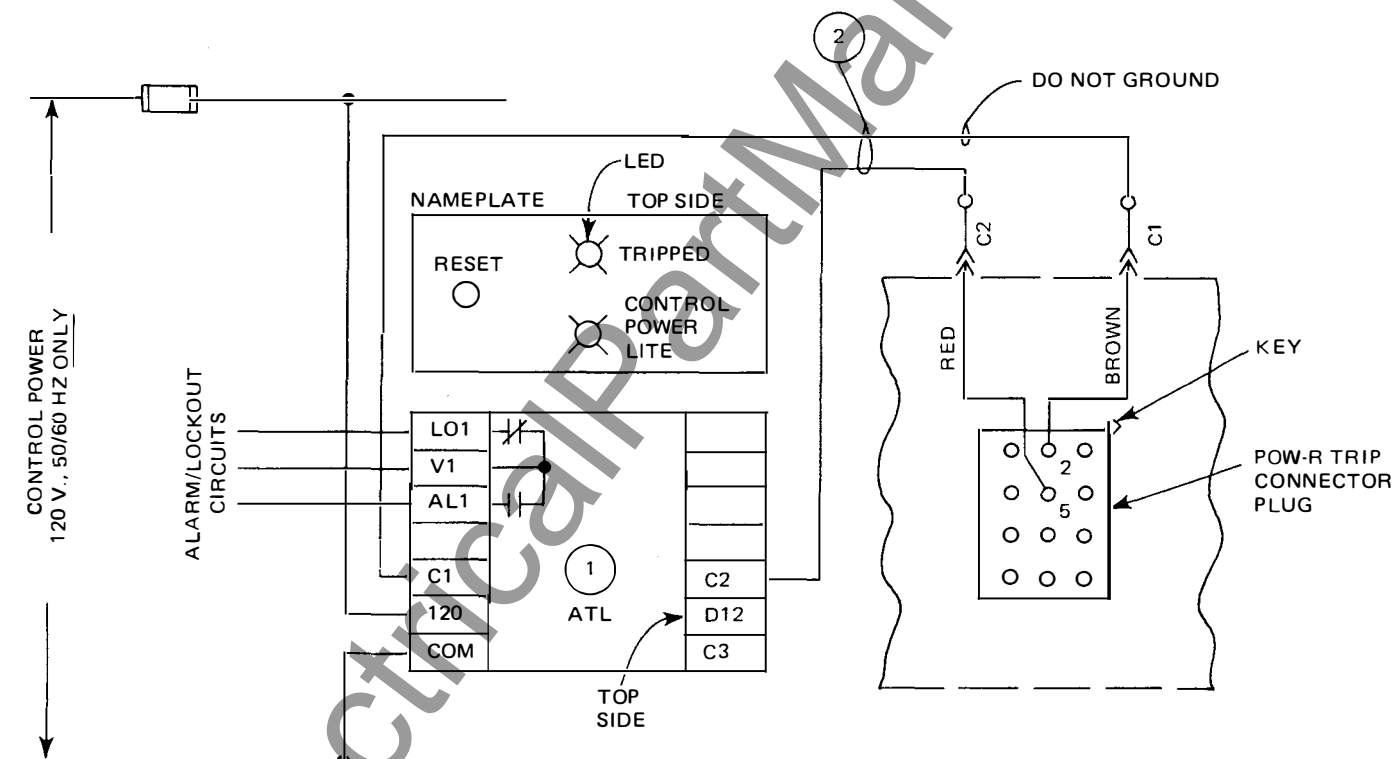
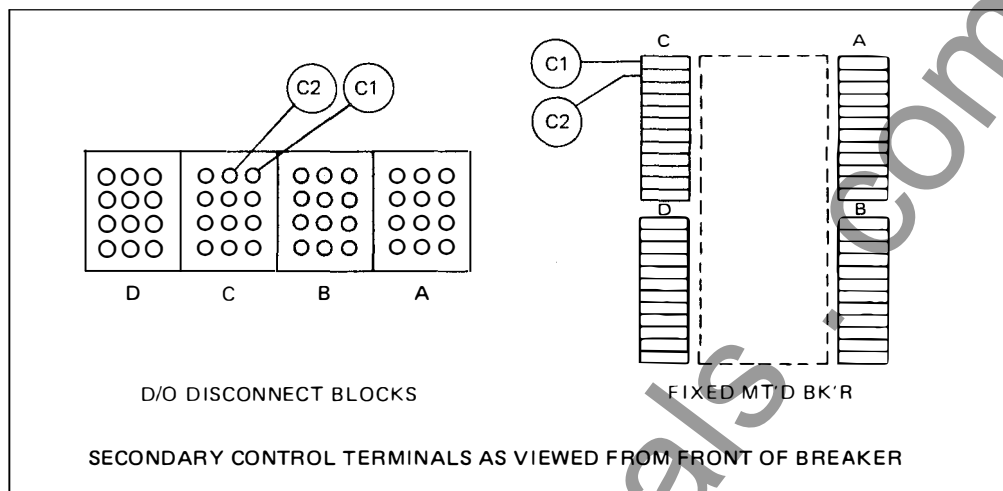
### SPB MASTER CONNECTION DIAGRAM

#### SPB - Automatic Trip Relay Connection Diagram (Use with Pow-R Trip Only)

Reference  
I.L. 15087

|   |                                |             |
|---|--------------------------------|-------------|
| 1 | AUTO TRIP<br>RELAY<br>CAT. NO. | KEY<br>CODE |
|   | SPBATL                         | X03         |

| CONTACT RATING<br>(MAX.) |                |
|--------------------------|----------------|
| 240 VOLTS<br>50/60 HZ    | 28 VOLTS<br>DC |
| 10.0 A. @<br>80% P.F.    | 10.0 A.        |

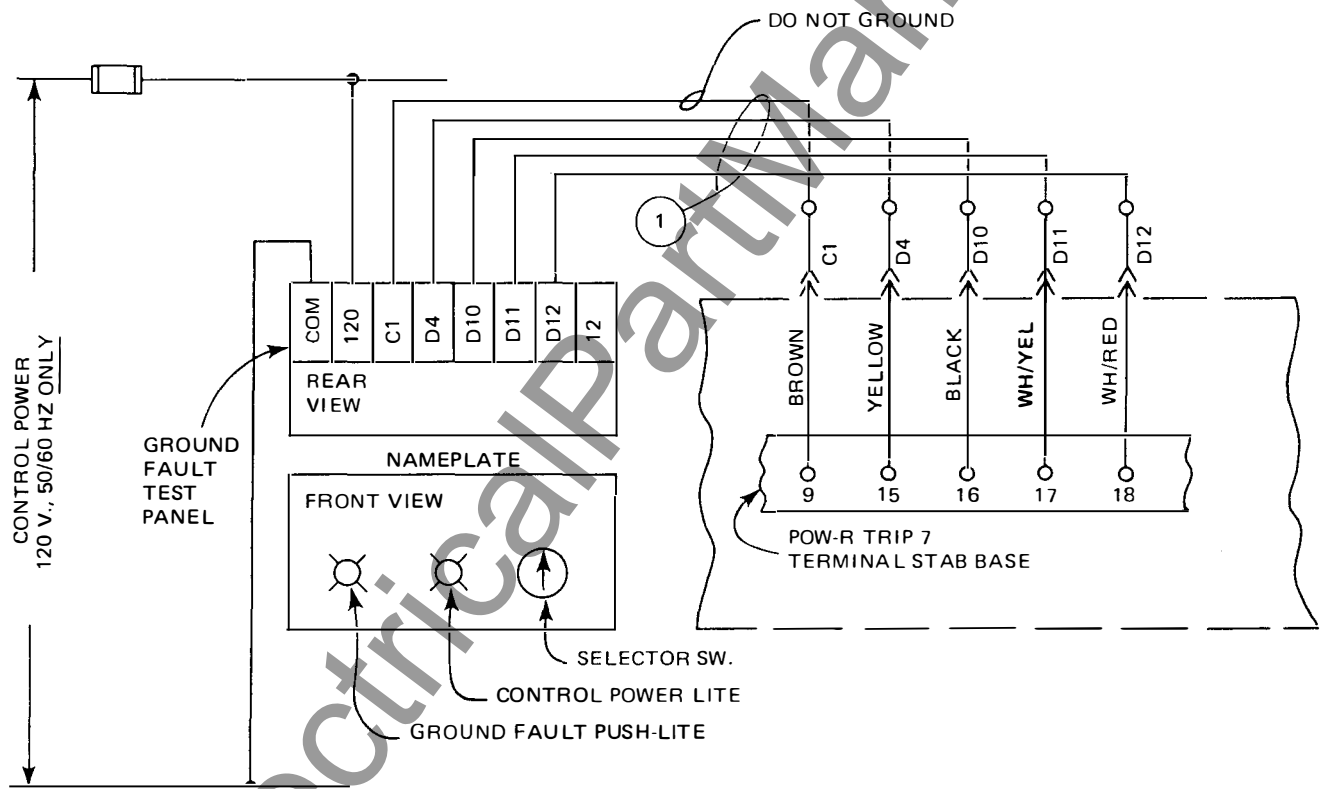
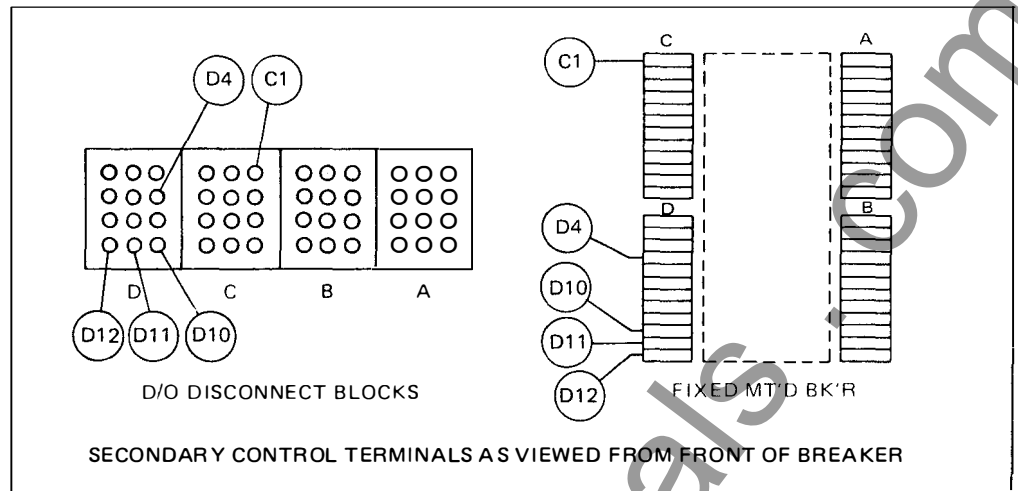


- 1 RELAY CONTACTS LATCH FOLLOWING TRIP INDICATION AND MUST BE MECHANICALLY UNLATCHED WITH RESET PROVIDED.
- 2 RUN SEPARATE FROM POWER CABLES, WIRE SIZE NOT CRITICAL. SHIELDED CABLE (PREFERRED) OR TWISTED CONDUCTORS REQUIRED. MAX. RUN OF 50 FT. SUGGESTED.

**SPB MASTER CONNECTION DIAGRAM**  
**SPB - Automatic Trip Relay (With Latching Contacts)**  
**Connection Diagram (Use with Pow-R Trip only)**

Reference  
I.L. 15087

|                                       |             |
|---------------------------------------|-------------|
| GROUND FAULT<br>TEST PANEL<br>CAT.NO. | KEY<br>CODE |
| SPBGFTP                               | U01         |

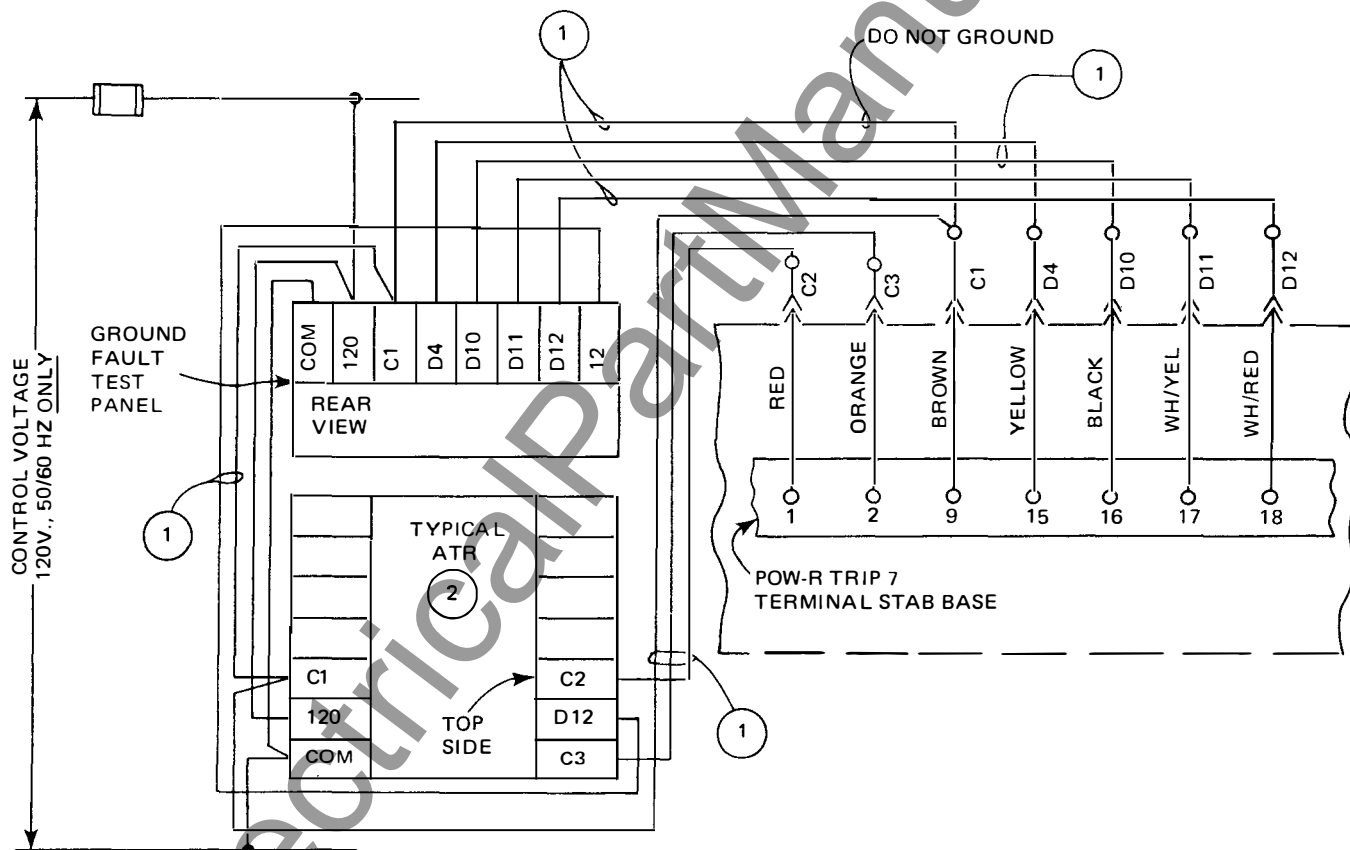
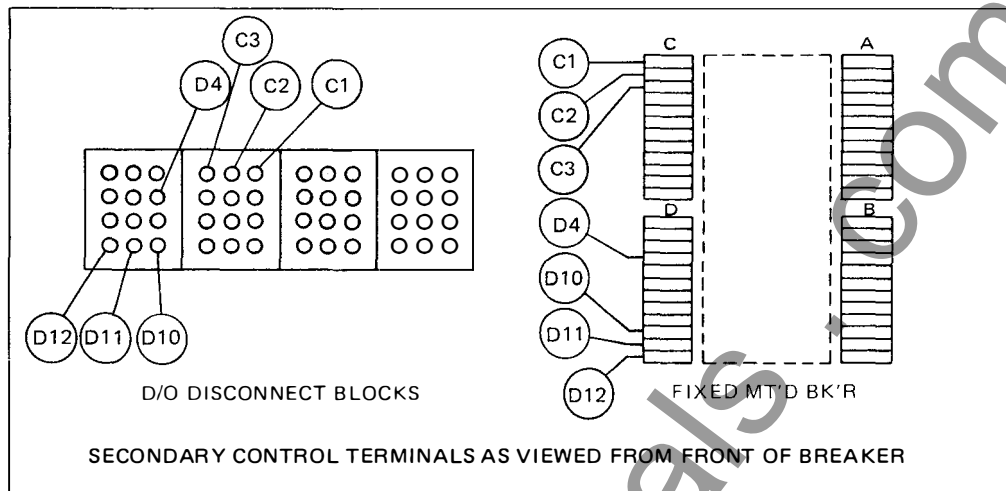


- 1 RUN SEPARATE FROM POWER CABLES, WIRE SIZE NOT CRITICAL. SHIELDED CABLE (PREFERRED) OR TWISTED CONDUCTORS REQUIRED. MAX. RUN OF 50 FT. SUGGESTED.

**SPB MASTER CONNECTION DIAGRAM**  
**SPB - Ground Fault Test Panel Connection Diagram**  
 (Use with Pow-R Trip 7 only)

Reference  
 I.L. 15072

|                                        |             |
|----------------------------------------|-------------|
| GROUND FAULT<br>TEST PANEL<br>CAT. NO. | KEY<br>CODE |
| SPBGFTP                                | U01         |

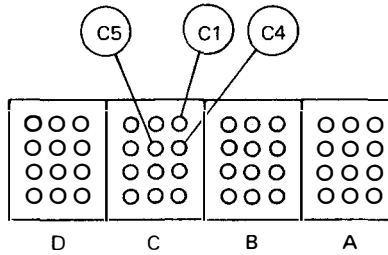


- 1 RUN SEPARATE FROM POWER CABLES. WIRE SIZE NOT CRITICAL. SHIELDED CABLE (PREFERRED) OR TWISTED CONDUCTORS. REQUIRED MAX. RUN OF 50 FT. SUGGESTED.
- 2 REFER TO SPECIFIC DIAGRAM FOR TERMINAL CONFIGURATION OF ATR USED.

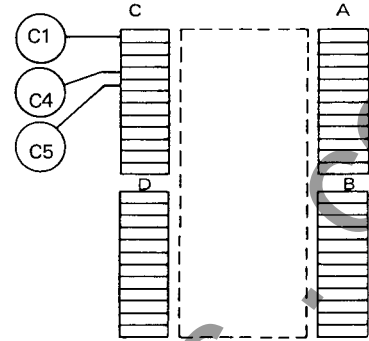
**SPB MASTER CONNECTION DIAGRAM**  
**SPB - Ground Fault Test Panel Connection Diagram When Used in Conjunction With**  
**Automatic Trip Relay. (Use With Pow-R Trip 7 Only)**

Reference  
I.L. 15072  
I.L. 15087

C4 – OUTPUT  
C5 – INPUT  
C1 – COMMON



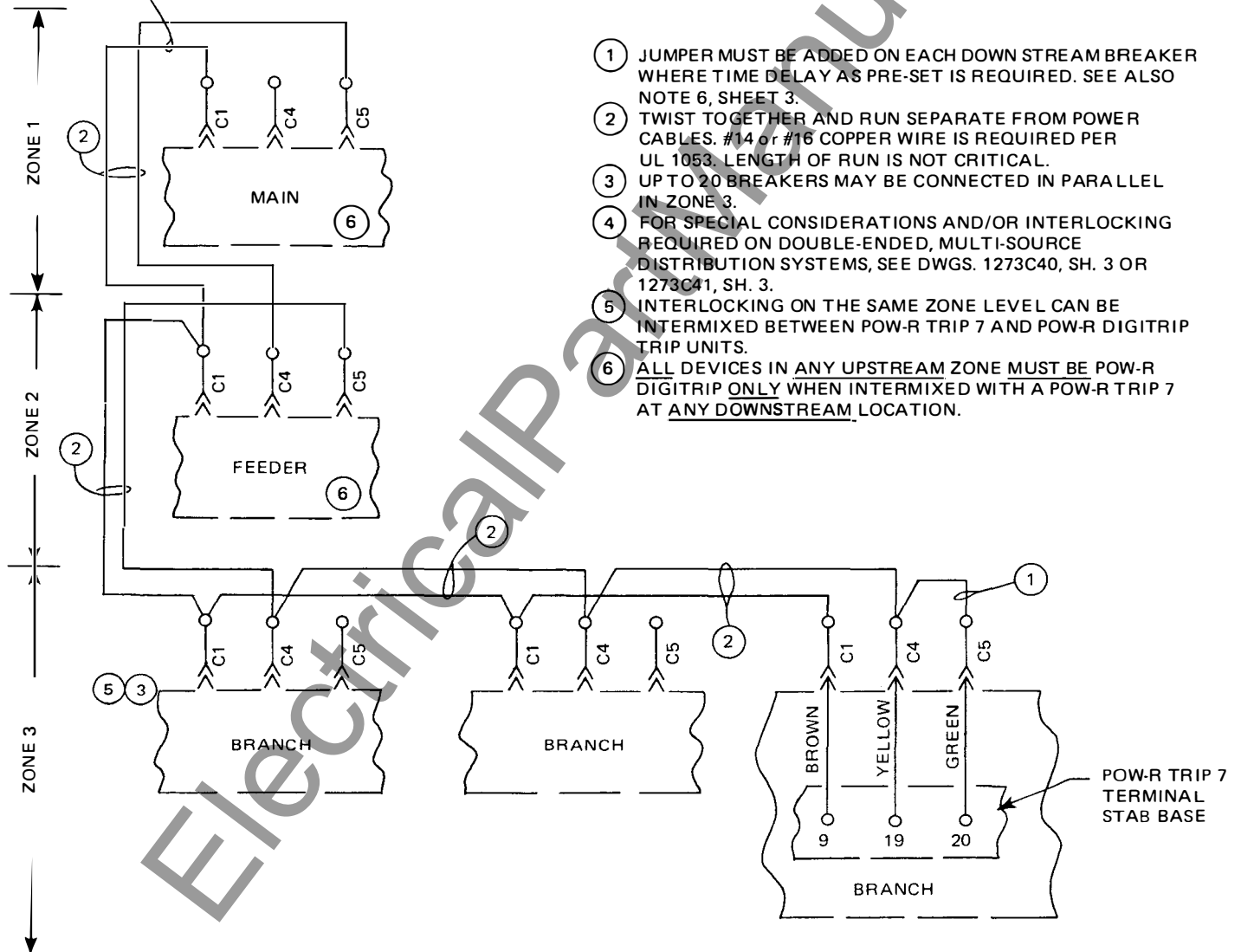
D/O DISCONNECT BLOCKS



FIXED MT'D BK'R

SECONDARY CONTROL TERMINALS AS VIEWED FROM FRONT OF BREAKER

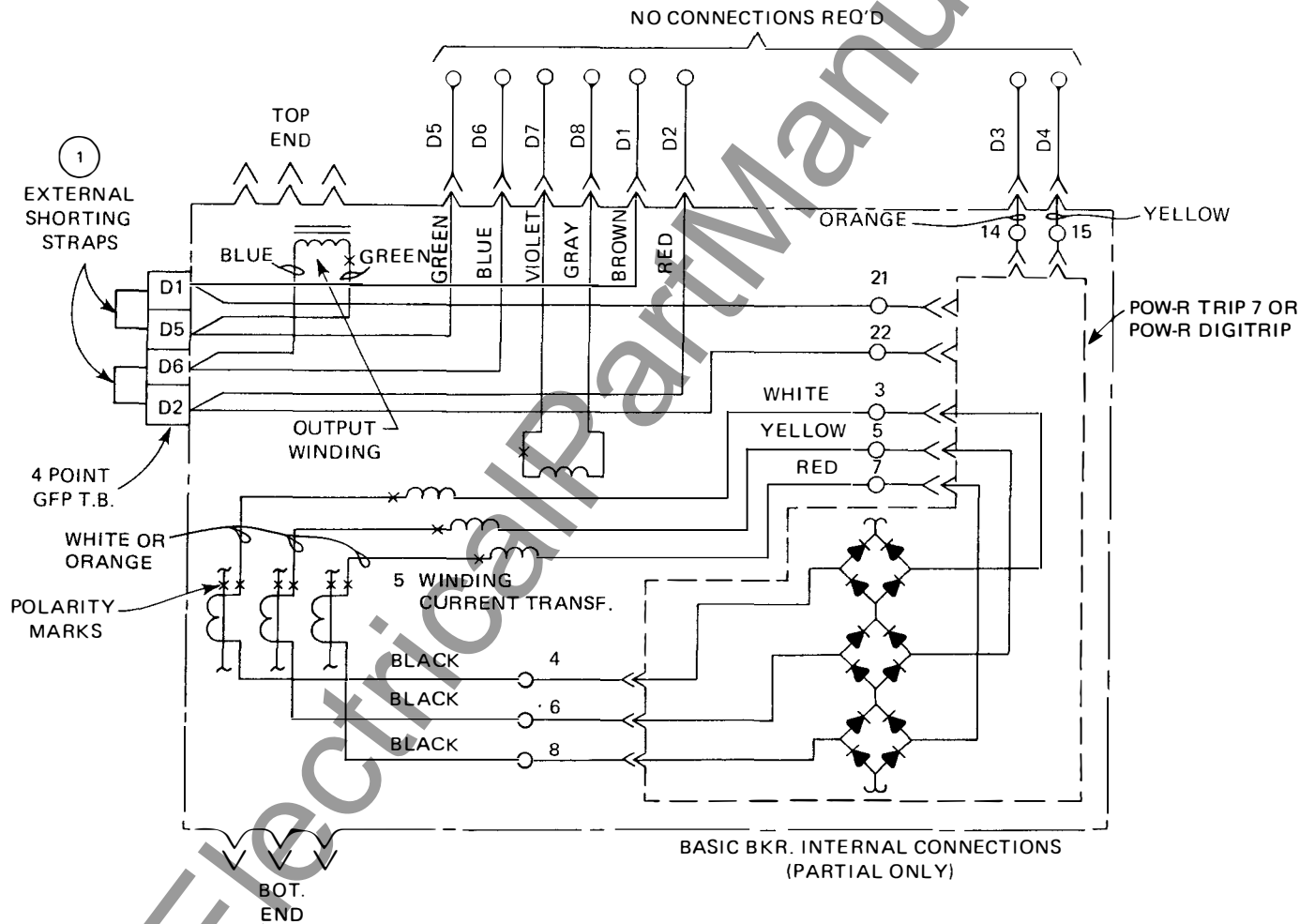
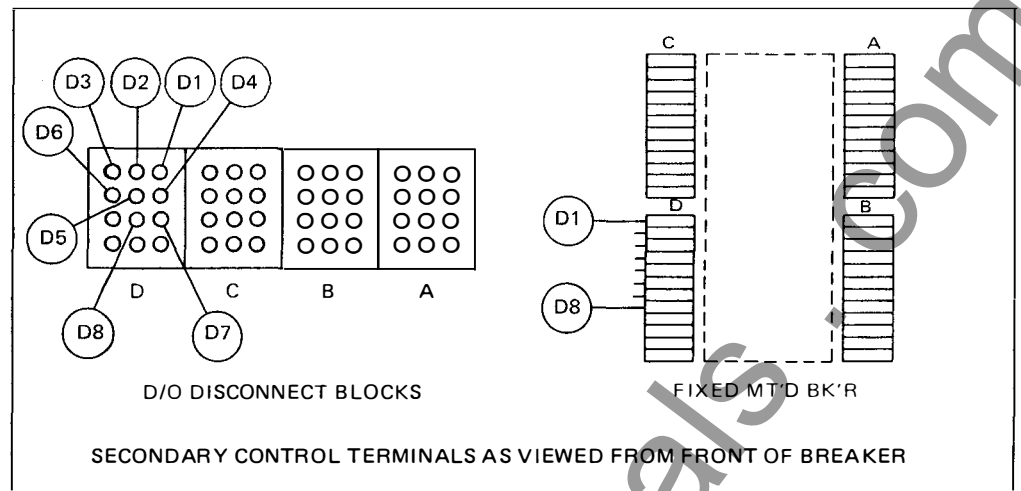
DO NOT GROUND



- ① JUMPER MUST BE ADDED ON EACH DOWN STREAM BREAKER WHERE TIME DELAY AS PRE-SET IS REQUIRED. SEE ALSO NOTE 6, SHEET 3.
- ② TWIST TOGETHER AND RUN SEPARATE FROM POWER CABLES. #14 or #16 COPPER WIRE IS REQUIRED PER UL 1053. LENGTH OF RUN IS NOT CRITICAL.
- ③ UP TO 20 BREAKERS MAY BE CONNECTED IN PARALLEL IN ZONE 3.
- ④ FOR SPECIAL CONSIDERATIONS AND/OR INTERLOCKING REQUIRED ON DOUBLE-ENDED, MULTI-SOURCE DISTRIBUTION SYSTEMS, SEE DWGS. 1273C40, SH. 3 OR 1273C41, SH. 3.
- ⑤ INTERLOCKING ON THE SAME ZONE LEVEL CAN BE INTERMIXED BETWEEN POW-R TRIP 7 AND POW-R DIGITRIP TRIP UNITS.
- ⑥ ALL DEVICES IN ANY UPSTREAM ZONE MUST BE POW-R DIGITRIP ONLY WHEN INTERMIXED WITH A POW-R TRIP 7 AT ANY DOWNSTREAM LOCATION.

## SPB MASTER CONNECTION DIAGRAM

SPB - Typical Ground Fault Zone Interlocking Connections for RADIAL<sup>®</sup> Distribution System



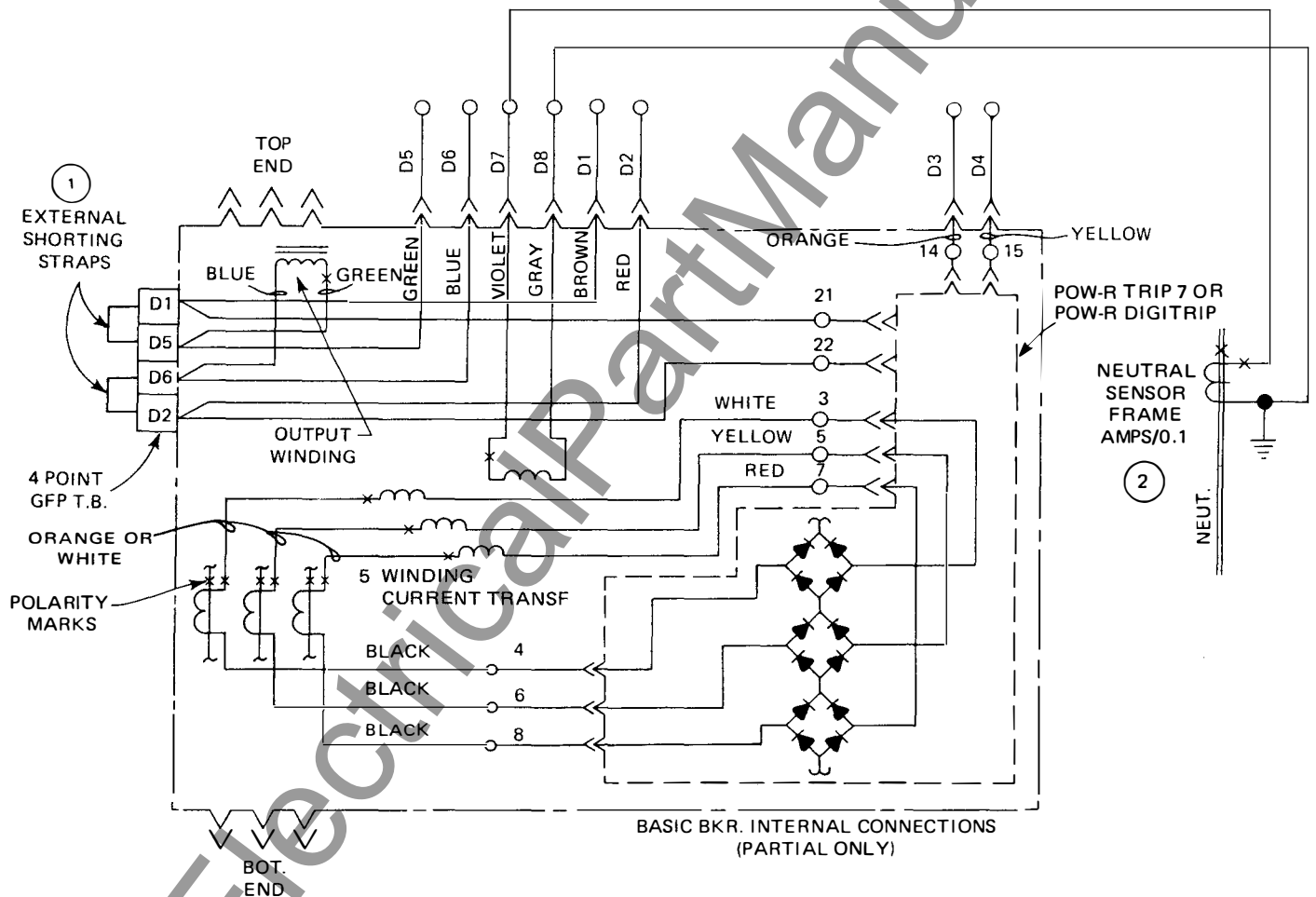
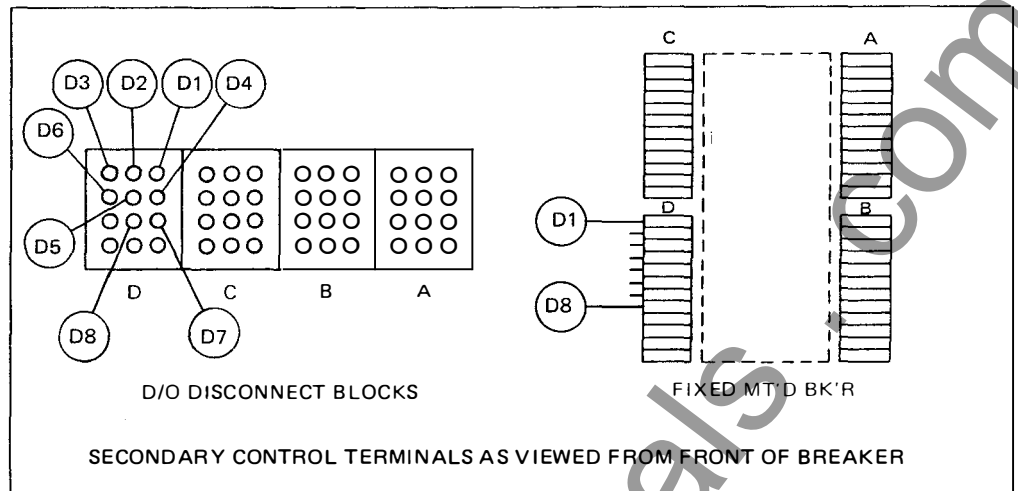
1 EXTERNAL SHORTING STRAPS MUST BE IN PLACE DURING TESTING AND OPERATING CONDITIONS PER INSTRUCTION N.P. ON SIDE OF BREAKER

2 SEE NOTE 6 ON SHEET 3 RE TERMINALS C4 AND C5

### SPB MASTER CONNECTION DIAGRAM

SPB - Ground Fault External Connections 3PH., 3W., 250/800/1200/1600/2000A. Breakers  
(2000A. in Compact, 16 in. High Frame)

| NEUTRAL<br>SENSOR<br>RATING | KEY<br>CODE |
|-----------------------------|-------------|
| 250 A.                      | D01         |
| 800 A.                      | D02         |
| 1200 A.                     | D03         |
| 1600 A.                     | D01         |
| 2000 A.                     | D02         |



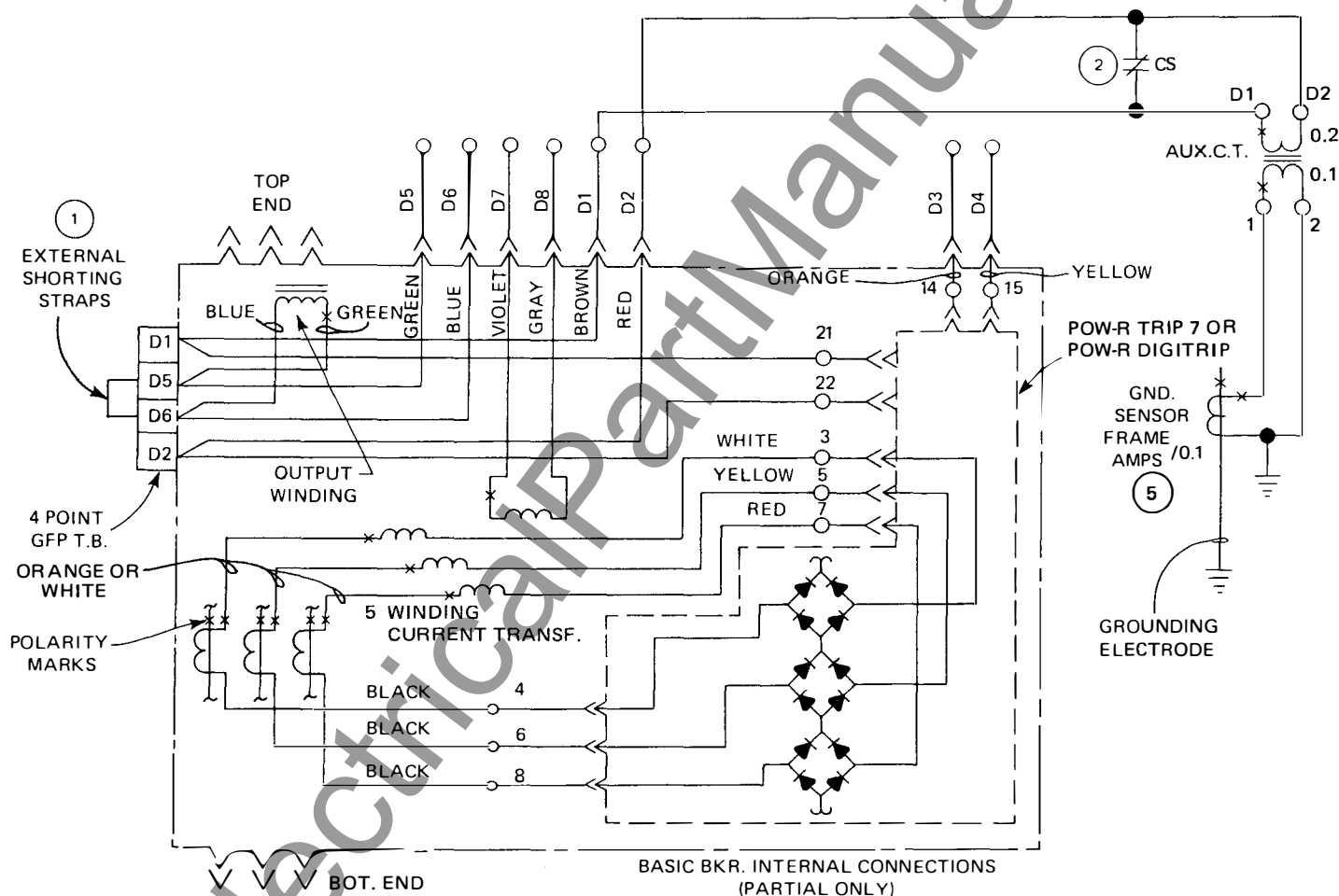
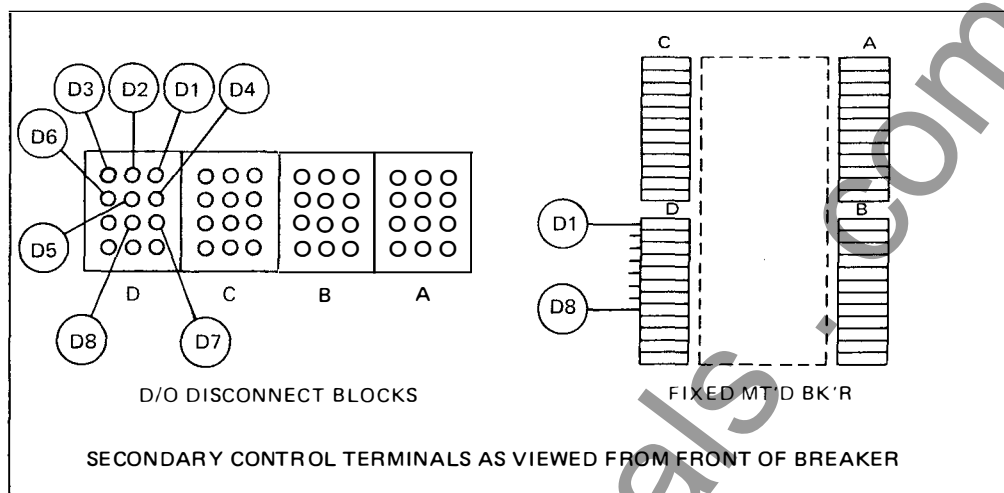
- EXTERNAL SHORTING STRAPS MUST BE IN PLACE DURING TESTING AND OPERATING CONDITIONS PER INSTRUCTION N.P. ON SIDE OF BREAKER.
- CONNECT NEUTRAL SENSOR SO THAT POLARITY RELATIONSHIP TOWARDS SOURCE IS IDENTICAL FOR PHASE AND NEUTRAL SENSORS. NO. 14 OR NO. 12 COPPER WIRE IS REQUIRED PER UL 1053 FOR SECONDARY WIRING OF NEUTRAL SENSORS.
- SEE NOTE 6 ON SEET 3 RE TERMINALS C4 AND C5

### SPB MASTER CONNECTION DIAGRAM

SPB - Ground Fault External Connection 3PH., 4W., Residual, 250/800/1200/1600/2000A. Bkrs.  
(2000A. in Compact, 16 in. High Frame)

| GROUND<br>SENSOR<br>RATING AMPS | KEY<br>CODE<br>* |
|---------------------------------|------------------|
| 250                             | D05              |
| 800                             | D06              |
| 1200                            | D07              |
| 1600                            | D05              |
| 2000                            | D06              |

\* INCLUDES AUX. C.T.



- EXTERNAL SHORTING STRAPS MUST BE IN PLACE DURING TESTING AND OPERATING CONDITIONS PER INSTRUCTION N.P. ON SIDE OF BREAKER
- ON MULTIPLE SOURCE SYSTEMS, USE CELL POSITION SWITCH TO AVOID VOLTAGE SURGES ON GROUND FAULT CURRENTS WITH D/O BKR IN WITHDRAWN POSITION. (CELL SW. SHOWN IN BKR. WITHDRAWN POSITION.)
- SEE NOTE 6 ON SHEET 3 RE TERMINALS C4 AND C5
- GROUND FAULT SENSOR AND AUX. C.T. WIRING MUST BE NO. 14 OR NO. 12 COPPER WIRE PER UL 1053.
- LOWER THAN STANDARD GROUND FAULT TRIP LEVELS ARE POSSIBLE WITH THIS SCHEME. CONSULT THE FACTORY.

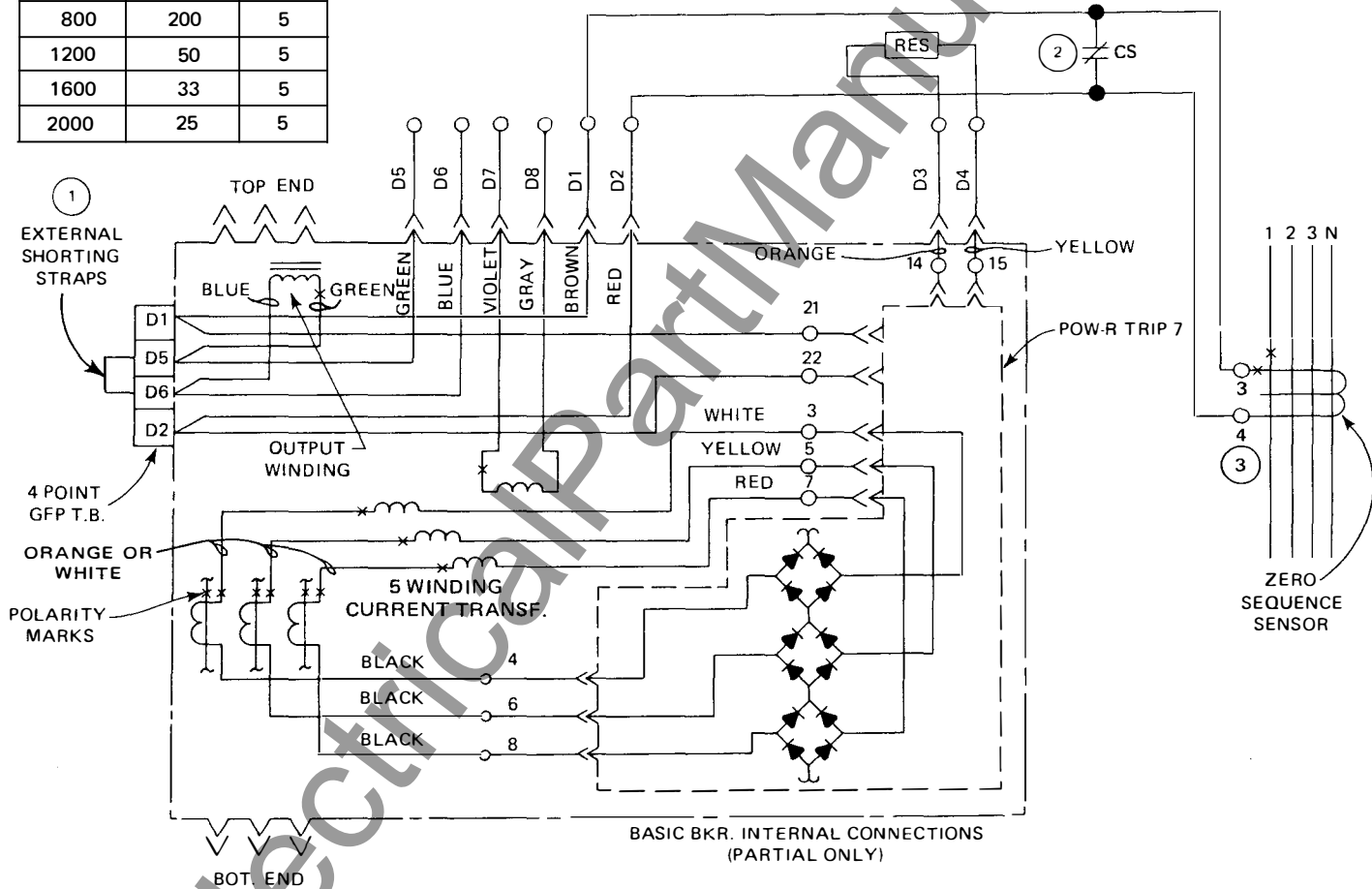
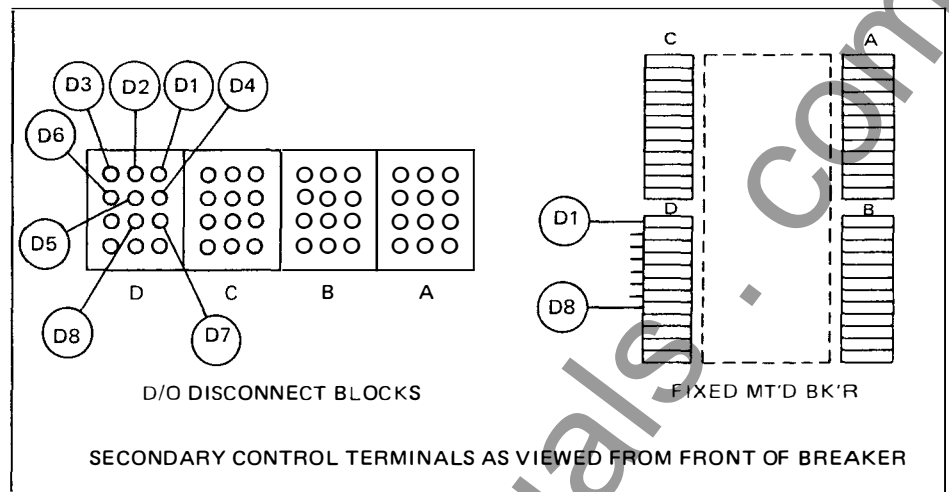
### SPB MASTER CONNECTION DIAGRAM

SPB - Ground Fault External Connections 3PH., 4W., Source Ground, 250/800/1200/1600/2000A. Bkrs.  
(2000A. in Compact, 16 in. High Frame)

| FRAME<br>RATING<br>AMPS     | WINDOW<br>OPENING<br>(INCHES) | KEY<br>CODE<br>* |
|-----------------------------|-------------------------------|------------------|
| 250                         | 8.25 I.D.                     | D10              |
| 800 or 1600<br>1200 or 2000 | 7.81 x 11                     | D11<br>D14       |
| 800 or 1600<br>1200 or 2000 | 9.94 x 17                     | D12<br>D15       |
| 800 or 1600<br>1200 or 2000 | 5.81 x 33.5                   | D13<br>D16       |

\* INCLUDES RESISTOR

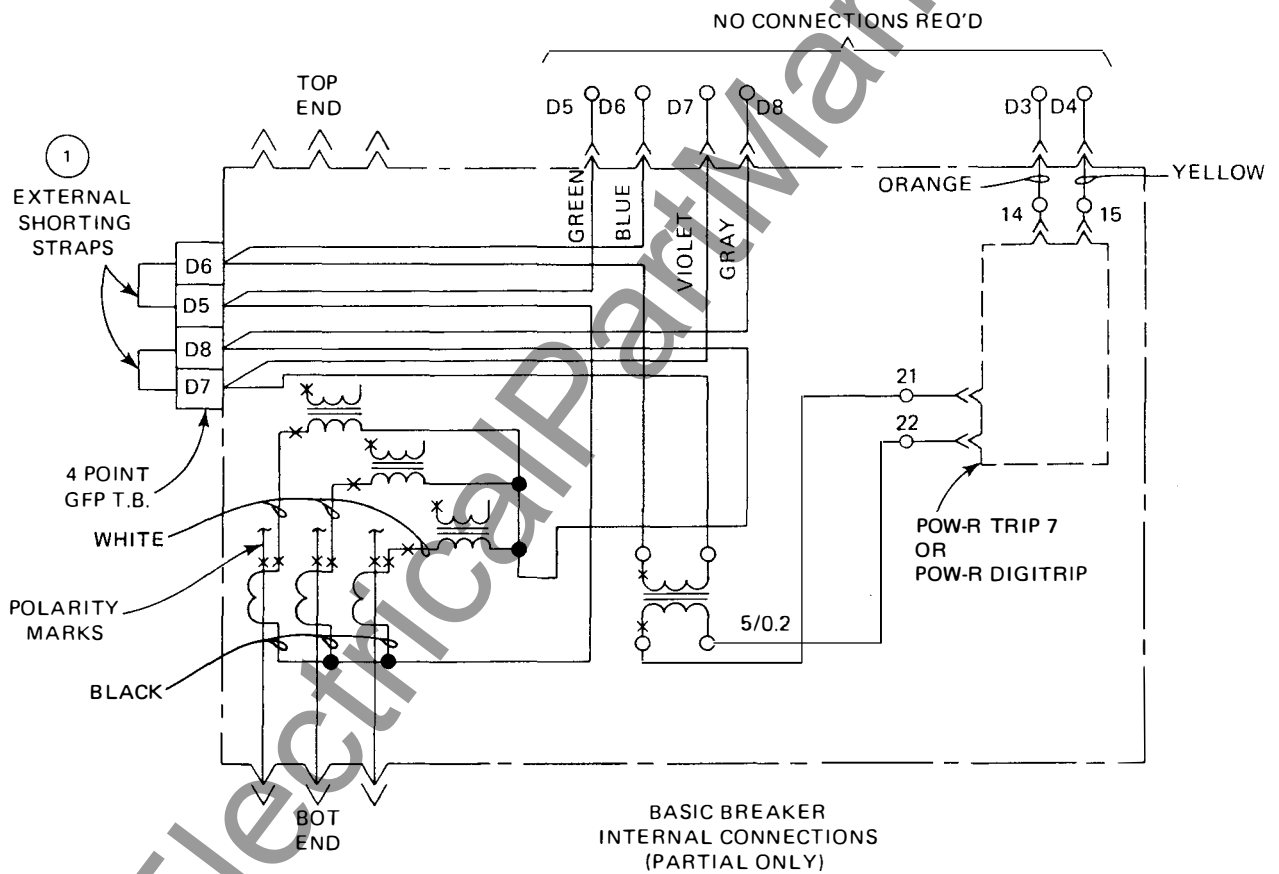
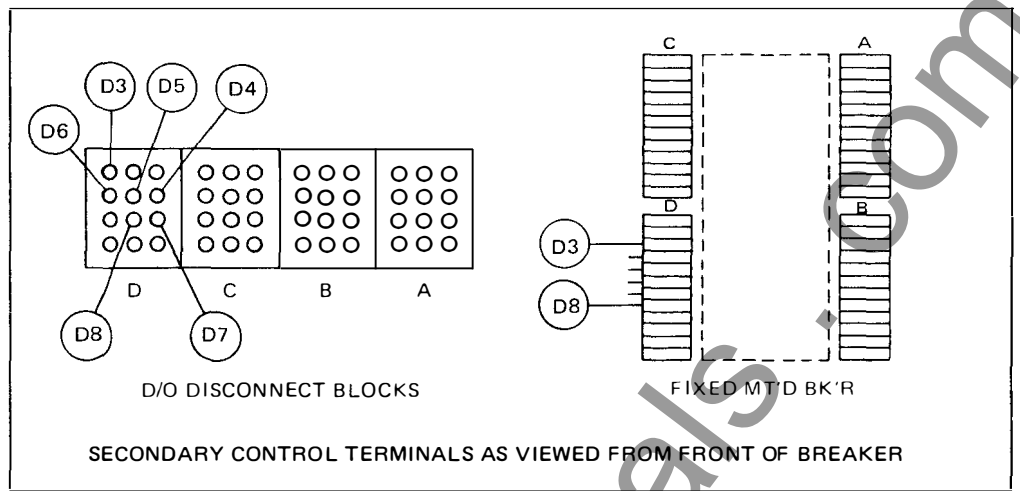
| FRAME<br>AMPS | RES.<br>OHMS | RES.<br>WATTS |
|---------------|--------------|---------------|
| 250           | 78           | 5             |
| 800           | 200          | 5             |
| 1200          | 50           | 5             |
| 1600          | 33           | 5             |
| 2000          | 25           | 5             |



- EXTERNAL SHORTING STRAPS MUST BE IN PLACE DURING TESTING AND OPERATING CONDITIONS PER INSTRUCTION N.P. ON SIDE OF BREAKER
- ON MULTIPLE SOURCE SYSTEMS, USE CELL POSITION SWITCH ON MAINS AND TIES TO AVOID VOLTAGE SURGES ON GROUND FAULT CURRENTS WITH D/O BKR. IN WITHDRAWN POSITION. (CS SHOWN IN BKR. WITHDRAWN POSITION.)
- ZERO SEQUENCE SENSOR MUST NOT BE GROUNDED
- SEE NOTE 6 ON SHEET 3 RE TERMINALS C4 AND C5
- NO. 14 OR NO. 12 COPPER WIRE IS REQUIRED PER UL 1053 FOR SECONDARY WIRING OF ZERO SEQUENCE SENSOR

### SPB MASTER CONNECTION DIAGRAM

SPB - Ground Fault External Connections 3 PH., 4W., Zero Sequence, 250/800/1200/1600/2000A. Breakers (2000A. in Compact, 16 in. High Frame) (Use with Pow-R Trip 7 only)



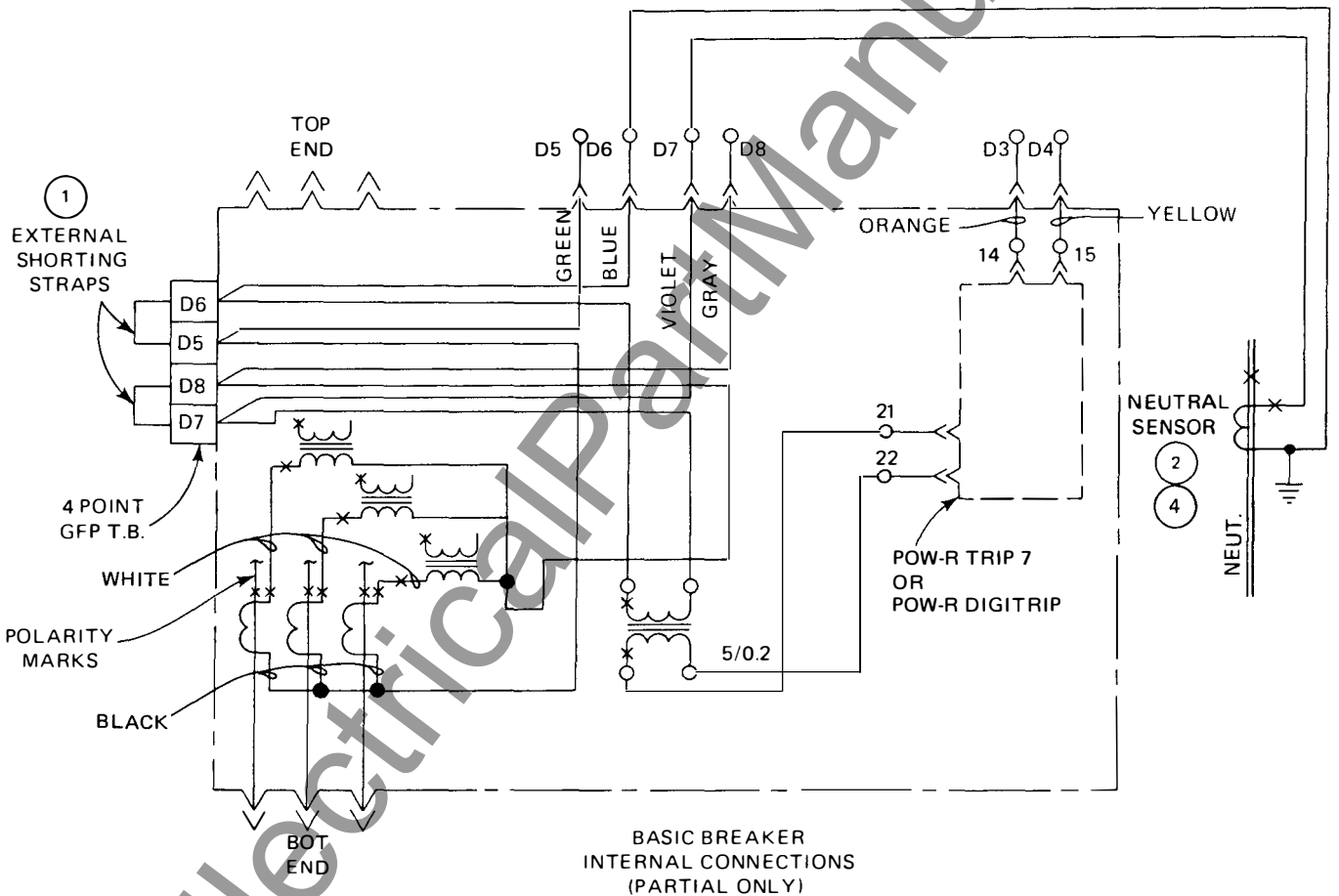
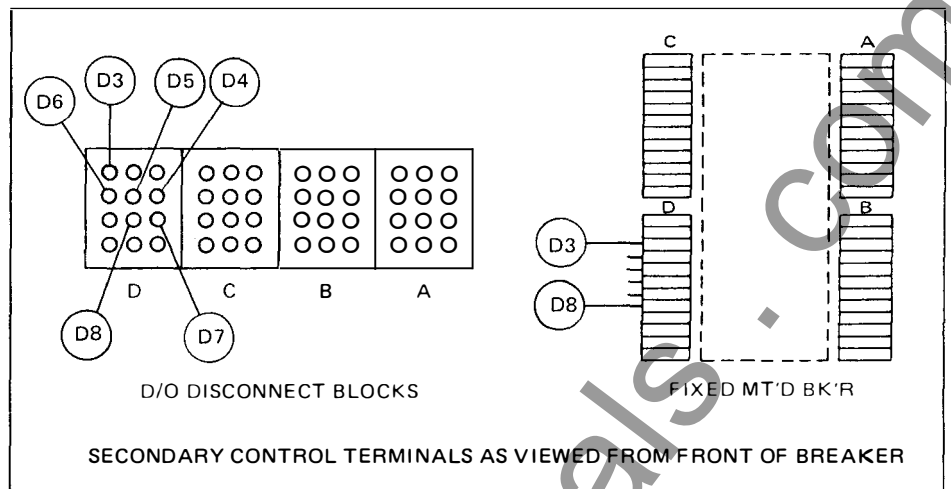
1 EXTERNAL SHORTING STRAPS MUST BE IN PLACE DURING TESTING AND OPERATING CONDITIONS PER INSTRUCTION N.P. ON SIDE OF BREAKER

2 SEE NOTE 6 ON SHEET 3 RE TERMINALS C4 AND C5

### SPB MASTER CONNECTION DIAGRAM

SPB - Ground Fault External Connections 3PH., 3W., 2000/2500/3000/4000/5000A. Breakers  
(2000A. in 22 in. High Frame)

| BREAKER<br>FRAME<br>RATING | NEUTRAL<br>SENSOR<br>RATING | KEY<br>CODE |
|----------------------------|-----------------------------|-------------|
| 2000<br>2500<br>3000       | 3000/5                      | D01         |
| 4000                       | 4000/5                      | D01         |
| 6000                       | 6000/5                      | D02         |

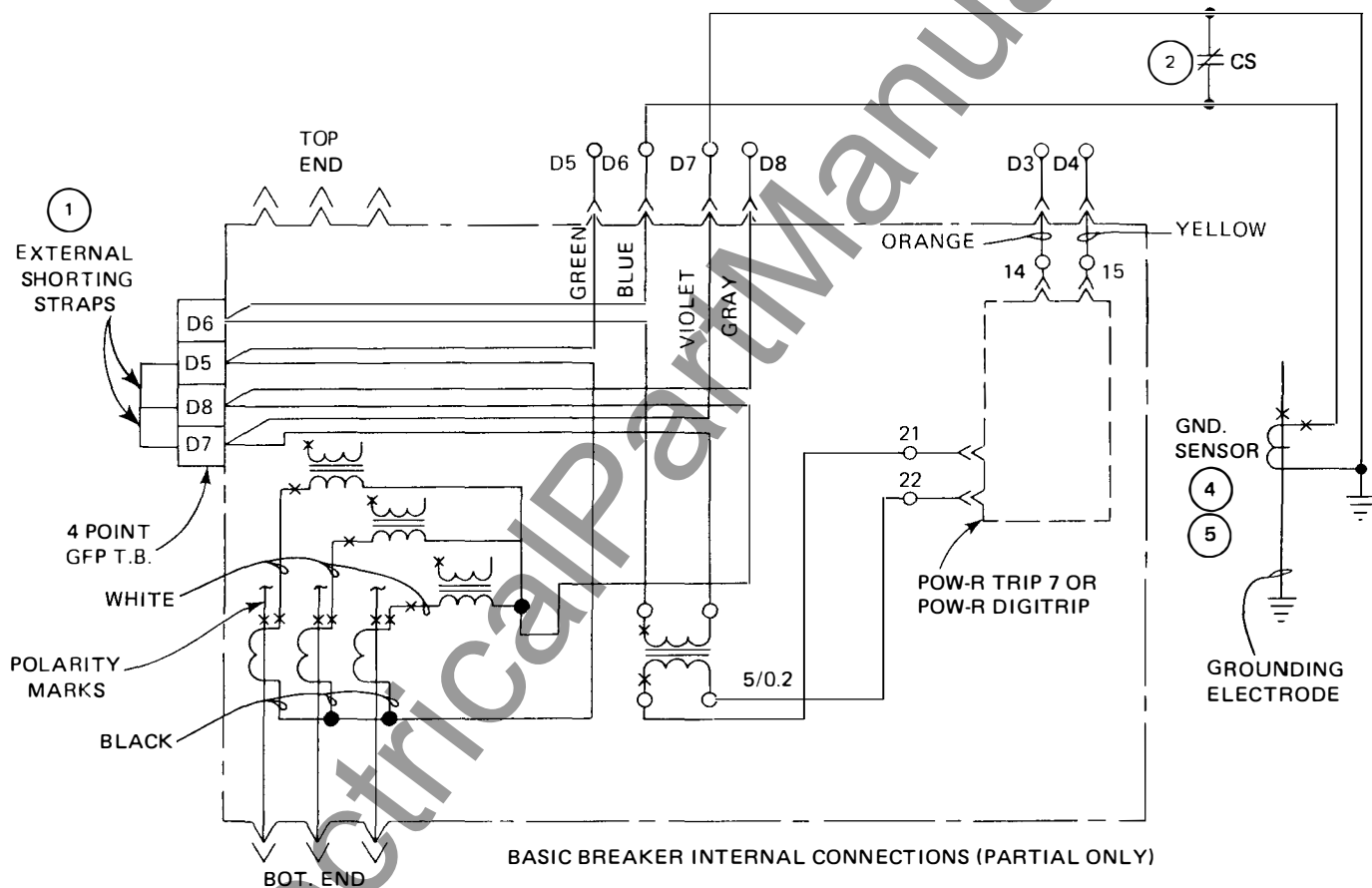
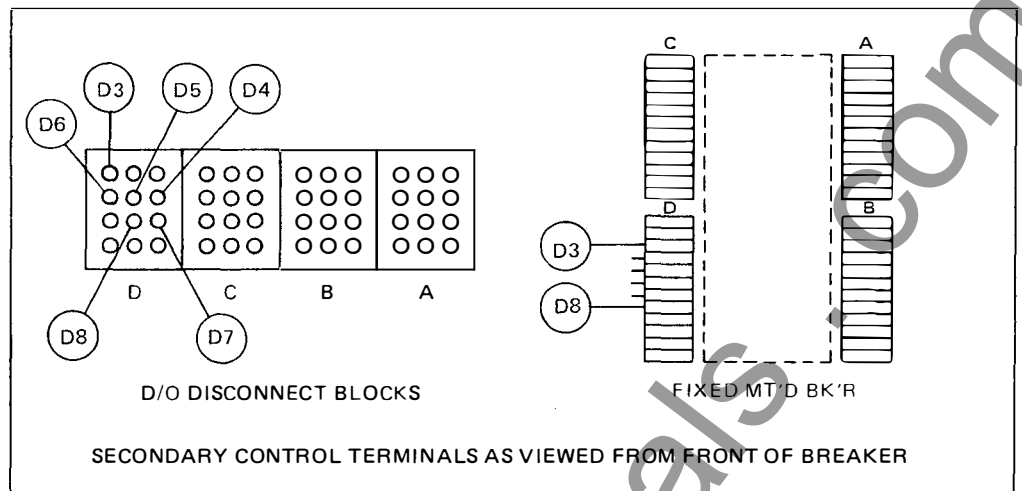


- 1 EXTERNAL SHORTING STRAPS MUST BE IN PLACE DURING TESTING AND OPERATING CONDITIONS PER INSTRUCTION N.P. ON SIDE OF BREAKER.
- 2 CONNECT NEUTRAL SENSOR SO THAT POLARITY RELATIONSHIP TOWARDS SOURCE IS IDENTICAL FOR PHASE AND NEUTRAL SENSORS
- 3 SEE NOTE 6 ON SHEET 3 RE TERMINALS C4 AND C5
- 4 USE NO. 14 OR NO. 12 COPPER WIRE PER UL 1053 ON NEUTRAL SENSOR SECONDARY CONNECTIONS.

### SPB MASTER CONNECTION DIAGRAM

SPB - Ground Fault External Connections 3PH., 4W., Residual, 2000/2500/3000/4000/5000A. Breakers  
(2000A. in 22 in. High Frame)

| GROUND<br>SENSOR<br>RATING AMPS | KEY<br>CODE |
|---------------------------------|-------------|
| 2000/2500/3000                  | D03         |
| 4000                            | D05         |
| 5000                            | D06         |



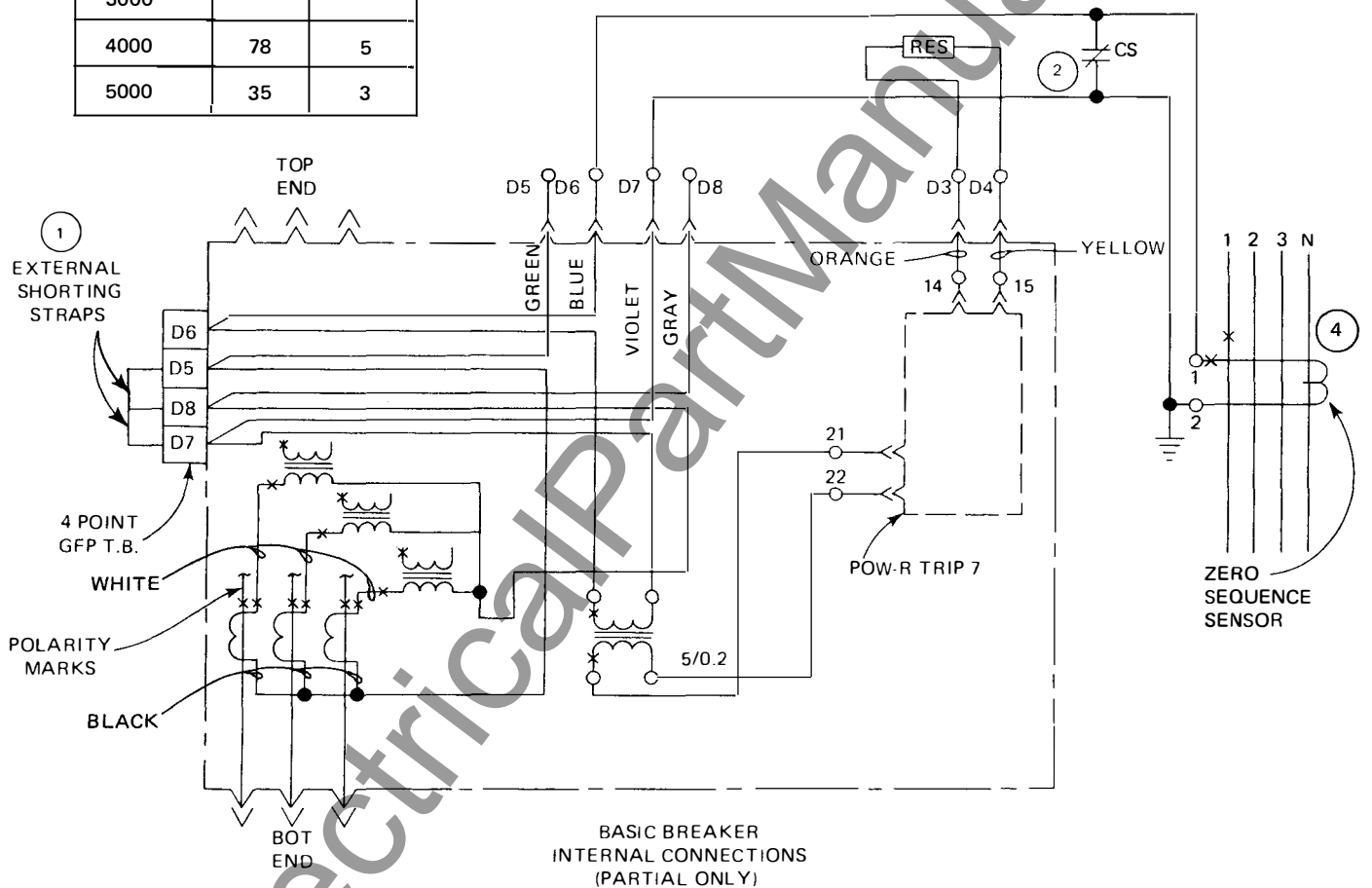
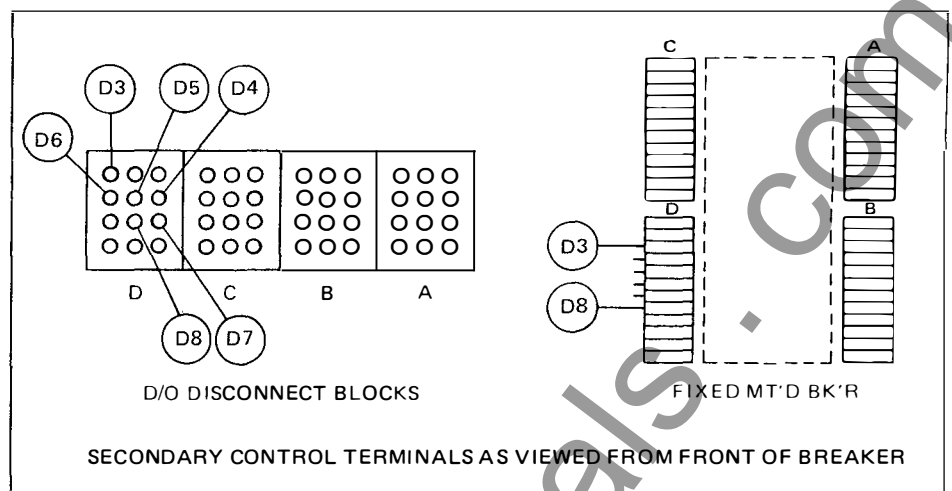
- 1 EXTERNAL SHORTING STRAPS MUST BE IN PLACE DURING TESTING AND OPERATING CONDITIONS PER INSTRUCTION N.P. ON SIDE OF BREAKER
- 2 ON MULTIPLE SOURCE SYSTEMS, USE CELL POSITION SWITCH TO AVOID VOLTAGE SURGES ON GROUND FAULT CURRENTS WITH D/O BREAKER IN WITHDRAWN POSITION. (CELL SWITCH SHOWN IN BKR. WITHDRAWN POSITION.)
- 3 SEE NOTE 6 ON SHEET 3 RE TERMINALS C4 AND C5
- 4 GROUND SENSOR WIRING MUST BE NO. 14 OR NO. 12 COPPER WIRE PER UL 1053.
- 5 LOWER THAN STANDARD GROUND FAULT TRIP LEVELS ARE POSSIBLE WITH THIS SCHEME. CONSULT THE FACTORY.

**SPB MASTER CONNECTION DIAGRAM**  
**SPB - Ground Fault External Connections 3PH., 4W., Source Ground,**  
**2000/2500/3000/4000/5000A. Breakers (2000A. in 22 in. High Frame)**

| FRAME<br>RATING<br>AMPS | WINDOW<br>OPENING<br>(INCHES) | KEY<br>CODE<br>* |
|-------------------------|-------------------------------|------------------|
| 2000<br>2500<br>3000    | 7.81 x 11                     | D11              |
|                         | 9.94 x 17                     | D12              |
|                         | 5.81 x 33.5                   | D13              |
| 4000                    | 5.81 x 33.5                   | D10              |
| 5000                    |                               | D11              |

\* INCLUDES RESISTOR

| FRAME<br>AMPS      | RES.<br>OHMS | RES.<br>WATTS |
|--------------------|--------------|---------------|
| 2000/2500/<br>3000 | 500          | 5             |
| 4000               | 78           | 5             |
| 5000               | 35           | 3             |



1. EXTERNAL SHORTING STRAPS MUST BE IN PLACE DURING TESTING AND OPERATING CONDITIONS PER INSTRUCTION N.P. ON SIDE OF BREAKER
2. ON MULTIPLE SOURCE SYSTEMS, USE CELL POSITION SWITCH ON MAINS AND TIES TO AVOID VOLTAGE SURGES ON GROUND FAULT CURRENTS WITH D/O BKR IN WITHDRAWN POSITION. (CS SHOWN IN BREAKER WITHDRAWN POSITION.)
3. SEE NOTE 6 ON SEET 3 RE TERMINALS C4 AND C5.
4. ZERO SEQUENCE SENSOR SECONDARY WIRING MUST BE NO. 14 OR NO. 12 PER UL 1053.

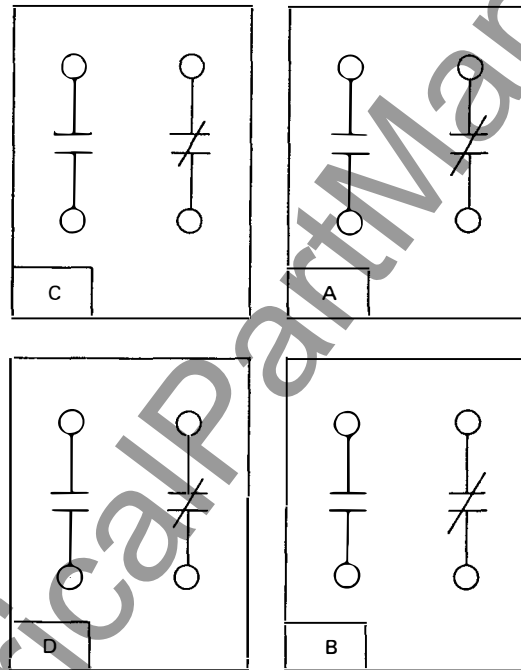
### SPB MASTER CONNECTION DIAGRAM

SPB - Ground Fault External Connections 3PH., 4W., Zero Sequence, 2000/2500/3000/4000/5000A. Breakers (2000A. in 22 in. High Frame) (Use with Pow-R Trip 7 only)

| NO. OF<br>CELL<br>SWITCHES | SWITCH<br>MOUNTING<br>POSITIONS | KEY<br>CODE |
|----------------------------|---------------------------------|-------------|
| 1a-1b                      | A                               | N01         |
| 2a-2b                      | A/B                             | N02         |
| 4a-4b                      | A/B/C/D                         | N03         |

| SWITCH RATING<br>(AMPS) |       |        |
|-------------------------|-------|--------|
| 50/60 HZ                | CONT. | INRUSH |
| 115                     | 15    | 40     |
| 230                     | 10    | 20     |
| 440                     | 6     | 10     |
| 550                     | 5     | 8      |
| DC                      | IND   | RES    |
| 125                     | 0.3   | 0.6    |

LEFT SIDE  
FRAME OF  
STATIONARY  
D/O ASS'Y.



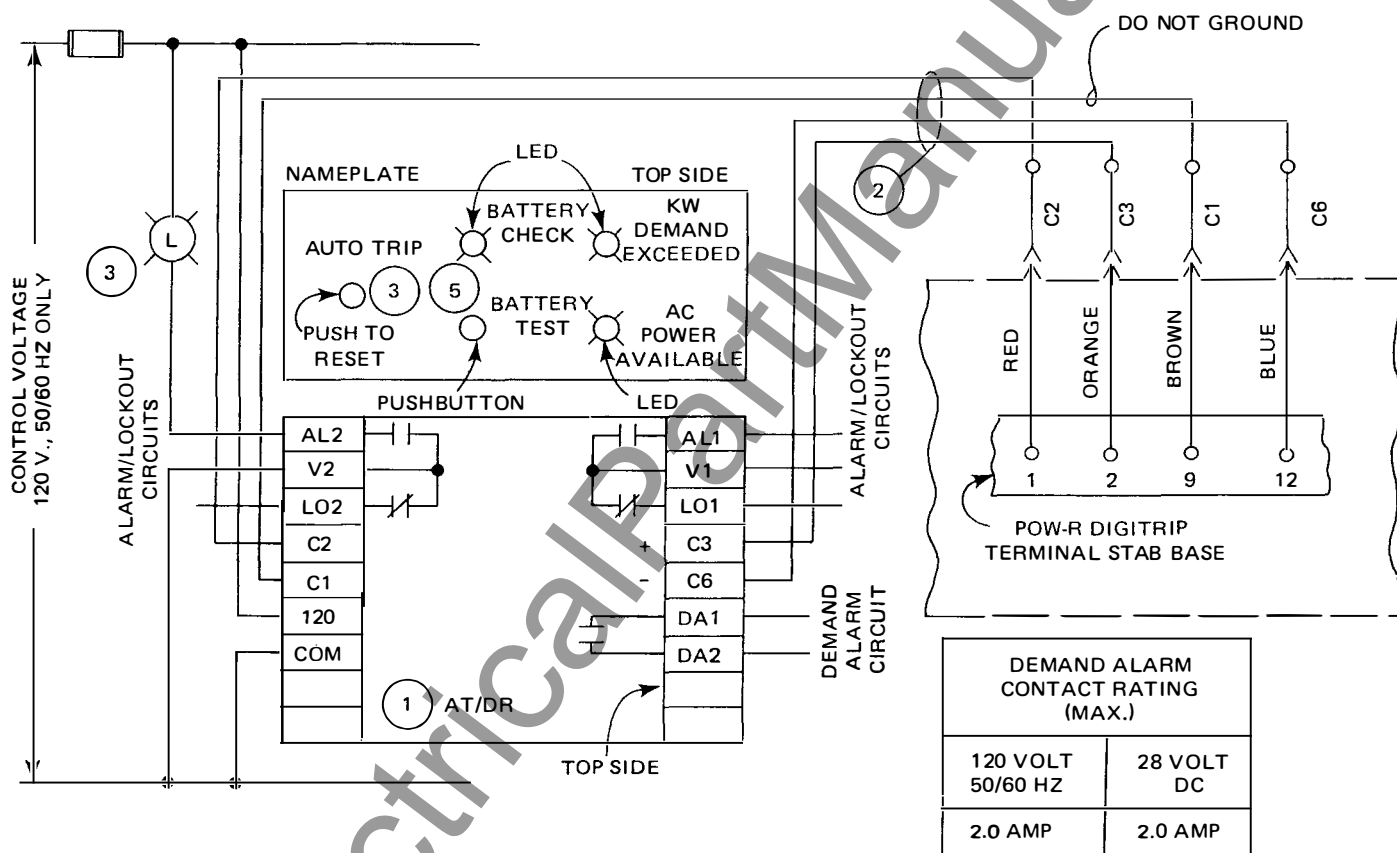
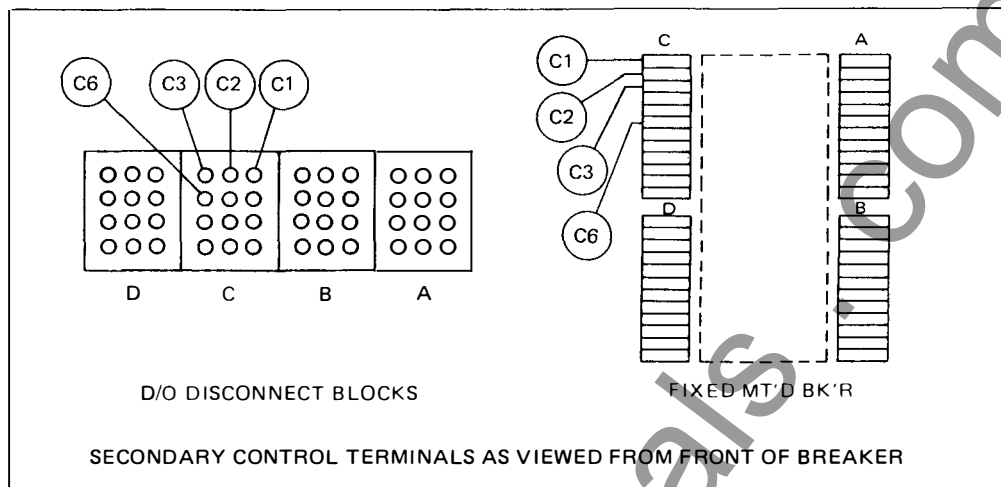
- 1 SWITCHES SHOWN IN BREAKER TEST/DISCONNECT/  
WITHDRAWN POSITIONS. POSITIONS REVERSE WITH  
BREAKER IN CONNECTED POSITION.

### SPB MASTER CONNECTION DIAGRAM SPB - Cell Position Switches

|   |                                |             |
|---|--------------------------------|-------------|
| 5 | AUTO TRIP<br>RELAY<br>CAT. NO. | KEY<br>CODE |
|   | SPBATRDB                       | XX01        |
|   | SPBATRDO                       | XX02        |

|                                           |                |   |
|-------------------------------------------|----------------|---|
| ALARM/LOCKOUT<br>CONTACT RATING<br>(MAX.) |                | 4 |
| 240 VOLTS<br>50/60 HZ                     | 28 VOLTS<br>DC |   |
| 10.0 A @<br>80% P.F.                      | 10.0 A         |   |



- RELAY CONTACTS LATCH FOLLOWING TRIP. PUSH SYSTEM RESET ON ASSOCIATED POW-R DIGITRIP FIRST AND THEN AT/DR MUST BE MECHANICALLY UNLATCHED WITH LOCAL RESET PROVIDED.
- RUN SEPARATE FROM POWER CABLES. WIRE SIZE NOT CRITICAL. SHIELDED CABLE (PREFERRED) OR TWISTED CONDUCTORS REQUIRED. MAX RUN OF 50 FT. SUGGESTED.
- AUTO TRIP INDICATION IS INCLUDED WITH RESET BUTTON. HOWEVER BECAUSE OF LOW-VISIBILITY A SEPARATE PILOT LIGHT IS RECOMMENDED TO BE WIRED TO ALARM CONTACTS TO INDICATE TRIP WHEN DESIRED.
- A MAKE/BREAK RATING OF 1.1 AMPERES @ 125 VOLT DC CAN BE OBTAINED BY WIRING THE TWO ALARM/LOCKOUT CONTACTS IN SERIES.
- INTERNAL BATTERY MODULE AND RELATED BATTERY CHECK COMPONENTS ARE NOT SUPPLIED WITH SPBATRO.

**SPB MASTER CONNECTION DIAGRAM**  
**SPB - Automatic Trip Relay (With Latching Contacts) and Demand Relay**  
**Connection Diagram (Use with Pow-R Digitrip only)**

Reference  
I.L. 15164