

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



I.S. 15545
Rev. D

LINE	TITLE OF SHEET	SHEET NO.	REV. NO.
1	Index – Diagrams	1	D
2	Index – References	2	
3	General Notes	3	A
4	Accessory Mounting Locations	4	
5	Accessory Legend and Misc. Details	5	A
6	AC Motor Operator Schematic – Standard	6	A
7	AC Motor Operator with External Connections	6A	A
8	AC Motor Operator Schematic – Local Electric Close	7	A
9	AC Motor Operator – Local Electric Close – with External Connections	7A	A
10	AC Motor Operator Schematic w/o Anti-Pump Relays	8	A
11	DC Motor Operator Schematic – Standard	9	A
12	DC Motor Operator with External Connections	9A	A
13	120V, AC Motor Operator Schematic for Use with Incom	10	B
14	120V, AC Motor Operator with External Connections for Use with Incom	10A	B
15	AC Spring Release with Anti-Pump Relay	11	
16	DC Spring Release with Anti-Pump Relay	12	
17	AC Spring Release w/o Anti-Pump Relay	13	
18	AC Spring Release w/o Anti-Pump Relay – Local Close	14	
19	DC Spring Release w/o Anti-Pump Relay	15	
20	AC Shunt Trip Schematic	16	
21	DC Shunt Trip Schematic	17	
22	Capacitor Trip Device	18	
23	2 (a/b) Auxiliary Switches OBSOLETE	19	
24	4 (a/b) Auxiliary Switches	20	
25	AC Undervoltage Release	21	A
26	DC Undervoltage Release	22	A
27	AC Time Delay UVR	23	
28	AC Time Delay UVR with Memory Contact	24	
29	GFP Zone Interlocking Connections	25	A
30	Short Delay Zone Interlocking Connections	26	A
31	Phase Overcurrent Connections 2000A (Compact) and Below	27	
32	Phase Overcurrent Connections 2000A (22 in. High) and Above	28	A
33	GFP Connections, 400-2000C, 3 Ph., 3 Wire	29	B
34	GFP Connections, 400-2000C, Residual	30	B
35	GFP Connections, 400-2000C, Source Ground	31	B
36	GFP Connections, 400-2000C, Zero Sequence OBSOLETE	32	A
37	GFP Connections, 2000-5000A, 3 Ph., 3 Wire	33	A
38	GFP Connections, 2000-5000A, Residual	34	A
39	GFP Connections, 2000-5000A, Source Ground	35	A
40	GFP Connections, 2000-5000A, Zero Sequence OBSOLETE	36	
41	GFP Typical Sensor Connections, 2000A, Compact	37	A
42	GFP Typical Sensor Connections, 2000A, Above	38	A
43	Remote ATR Alarms for Digitrip RMS 600/700/800	39	B
44	Incom Connections for Digitrip RMS 700/800	40	B
45	Digitrip RMS Connections, 2000A, Compact	41	C
46	Digitrip RMS Connections, 2000A, Above	42	B
47	Cell Switches	43	
48	Resistors	44	
49	INCOM Network Interconnections	45	A
50			

SPB MASTER CONNECTION DIAGRAM INDEX

LINE	TITLE OF SHEET	SHEET NO.	REV. NO.
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			
61			
62			
63			
64			
65			
66			
67			
68			
69			
70			
71			
72			
73			
74			
75			
LINE	REFERENCES	I.L. NO.	REV. NO.
A	General Instructions – SPB	I.L. 29-801	
B	Shunt Trip Devices	I.L. 15158	
C	Capacitor Trip Device	I.L. 15146	A
D	Auxiliary Switches	I.L. 15159	
E	UVR Time Delay Device	I.L. 15141	A
F	Secondary Contact Instructions	I.L. 15377	B
G	Undervoltage Release	I.L. 15162	
H	Mechanical Cable Interlock	I.L. 15129	
I	Supplemental Instructions – SPB	I.L. 29-855	
J			
K			
L			
M			
N			
O			
P			
Q			
R			
S			
T			
U			
V			
W			

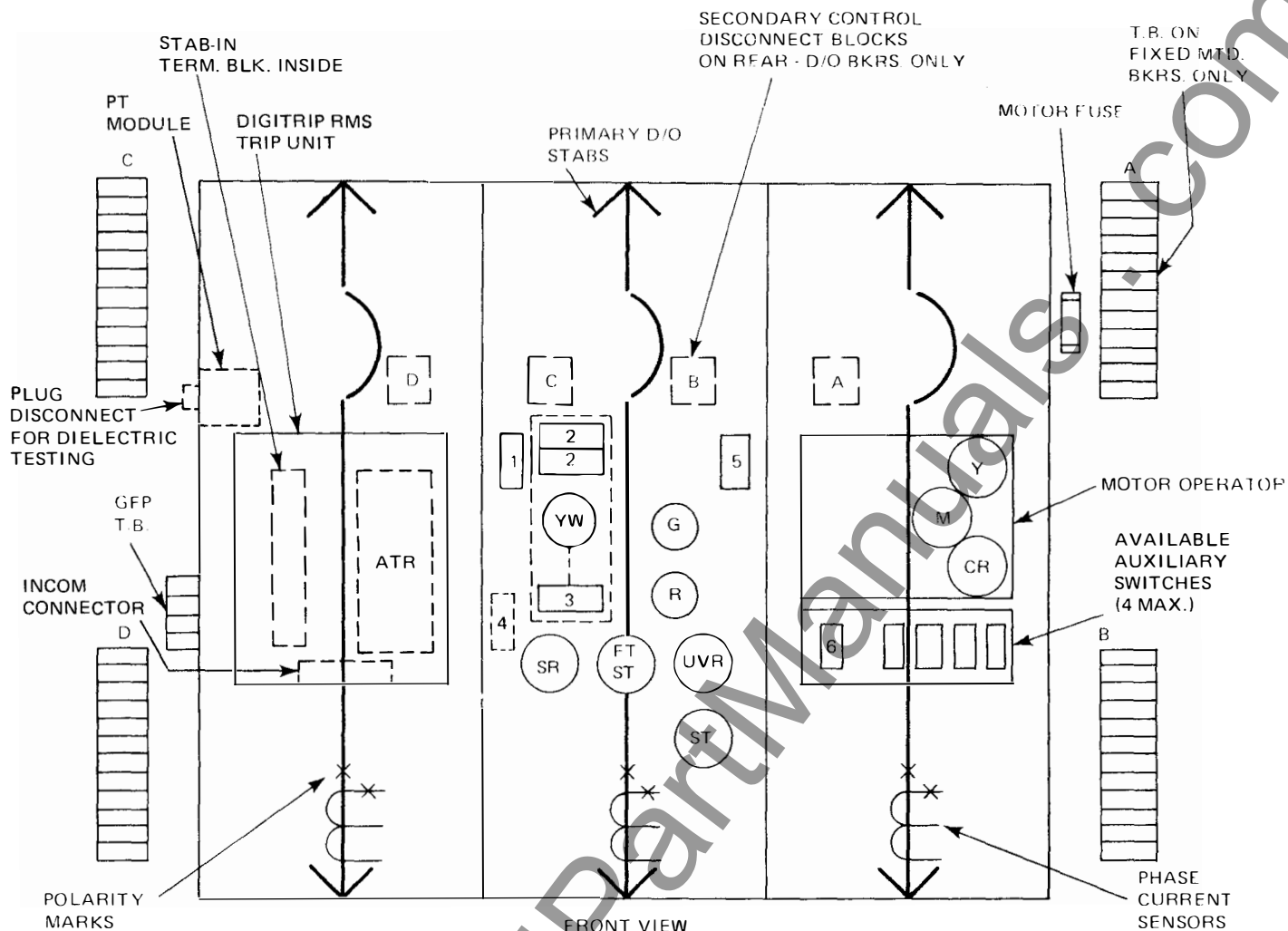
**SPB MASTER CONNECTION DIAGRAM DRAWING
REFERENCE INDEX**

1. On D/O Breaker Stationary Elements color coded pigtail leads provided on request for connecting 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 Proper Ground Fault Sensing complete connections must be included from appropriate referenced GFP sheets/drawings.
4. Any combination of accessories not utilizing same Secondary Control Stab Points may be used on any single breaker.
5. All SPB breakers equipped with GFP will trip near instantaneously (0.04-0.12 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 25.
6. All SPB breakers equipped with an adjustable short time delay setting will trip near instantaneously (0.04-0.12 sec.) regardless of the time band setting — if downstream interlock wiring is not employed and/or a jumper is not added between control terminals D9 and D10. With the jumper added, the breaker will respond to the pre-set time delay setting. For selective coordination, interlock wiring should be employed. See Sheet 26.
7. Pow-R breakers have been designed for maximum protection, control, communications and accessory utilization. For this reason all Leads in the secondary control blocks may not be used by a customer for a particular application.
8. Care must be taken in choosing a DC supply voltage for SPB DC accessories. The inductive reactance introduced due to ripple can affect accessory performance.

WARNING

**BREAKER AUTOMATIC OPEN AND CLOSE OPERATIONS BY INCOM
COMMUNICATION SIGNALS (VIA TERMINALS C11 AND C12) UNDER SYSTEM
OPERATING OR MAINTENANCE PERIODS COULD CAUSE SEVERE PERSONAL
INJURY OR DEATH. INSTALL APPROPRIATE PERMISSIVE CONTROL MEANS
(SEE I.S. 15545, SHEET 10A) TO AVOID UNDESIRABLE REMOTE CLOSING DURING
MAINTENANCE OPERATIONS AND PROVIDE ADEQUATE EQUIPMENT
WARNINGS FOR NORMAL OPERATION PERIODS.**

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

6 DEDICATED "b" AUX SWITCH FOR USE WITH DIGITRIP RMS, TYPE 800 ONLY

(ATR) POWER RELAY MODULE

(CR) CHARGE RELAY

(M) MOTOR

(ST) SHUNT TRIP

SPB MASTER CONNECTION DIAGRAM
Accessory Mounting Locations

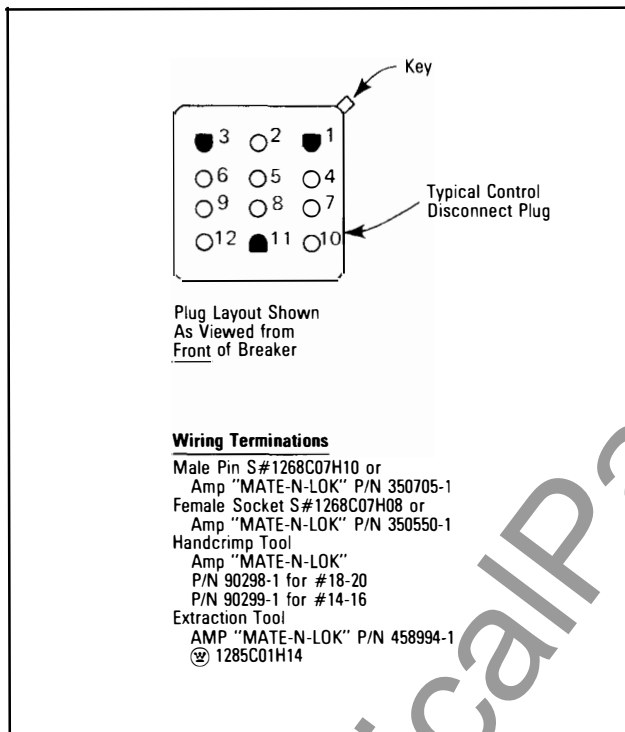
LEGEND*

SR - SPRING RELEASE - CLOSSES BREAKER ON REMOTE SIGNAL
 ST - SHUNT TRIP - OPENS BREAKER ON REMOTE SIGNAL
 FTST - FLUX TRANSFER SHUNT TRIP - OPENS BREAKER 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 BREAKER OPEN
 b - AUXILIARY SWITCH "CLOSED" WITH BREAKER OPEN
 ATR - POWER RELAY MODULE

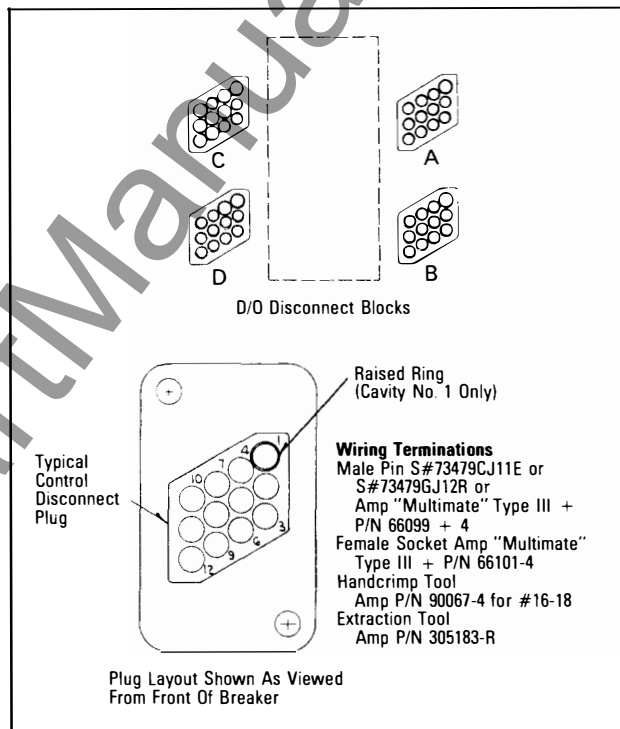
⊗ INDICATING LIGHT (W, WHITE; A, AMBER; R, RED; G, GREEN; L, COLOR TO SUIT; LED, LIGHT EMITTING DIODE)

PT - POTENTIAL TRANSFORMER MODULE

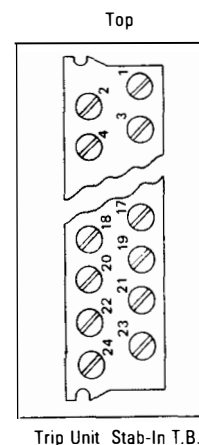
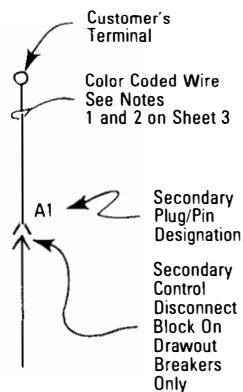
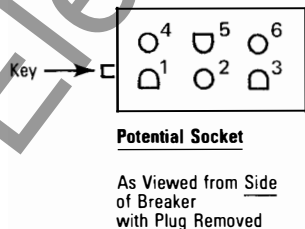
*ALL CONTACTS SHOWN IN BREAKER "OPEN" POSITION WITH SPRINGS DISCHARGED AND RELAYS DE-ENERGIZED.



Behind the Door Drawout



Through the Door Drawout

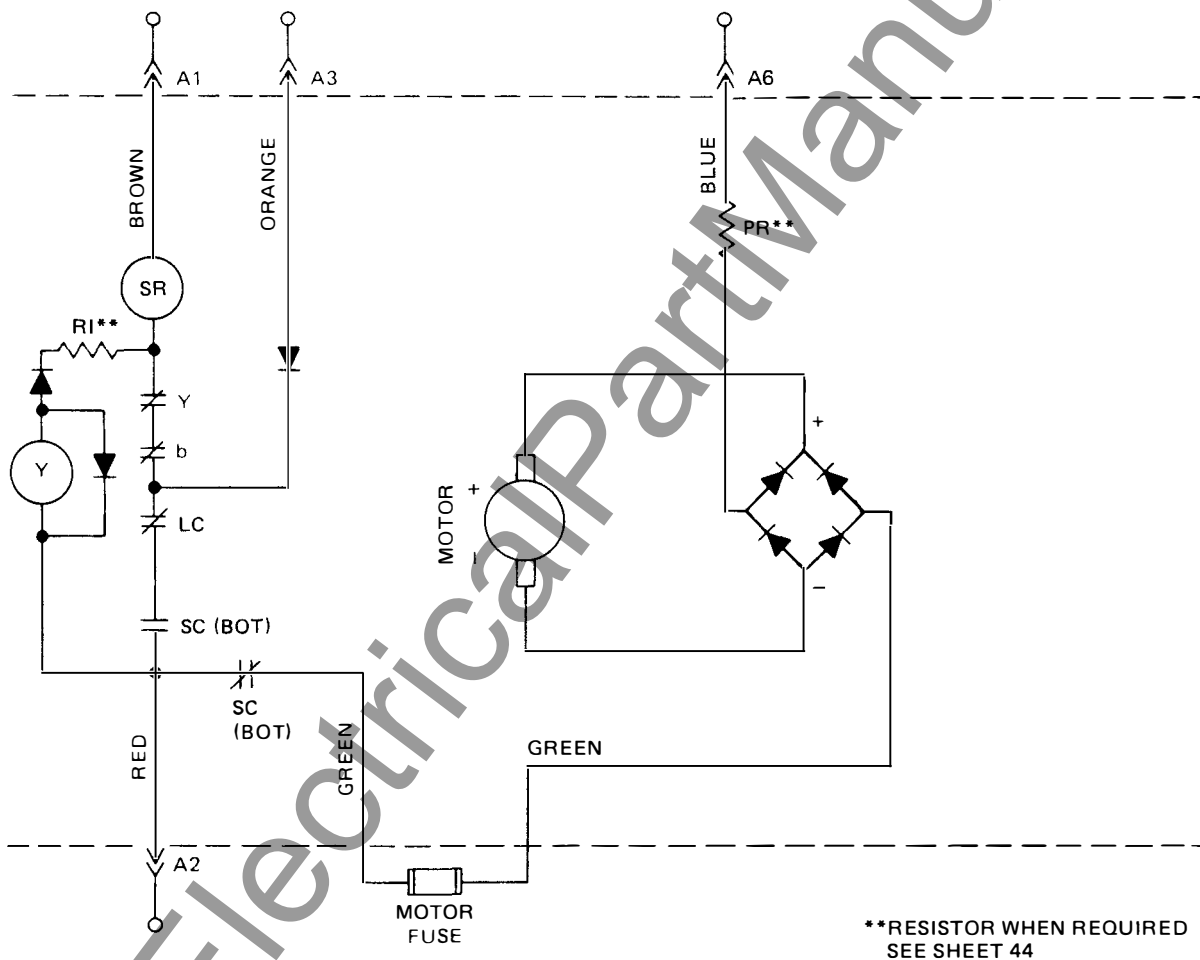


SPB MASTER CONNECTION DIAGRAM Accessory Legend and Misc Details

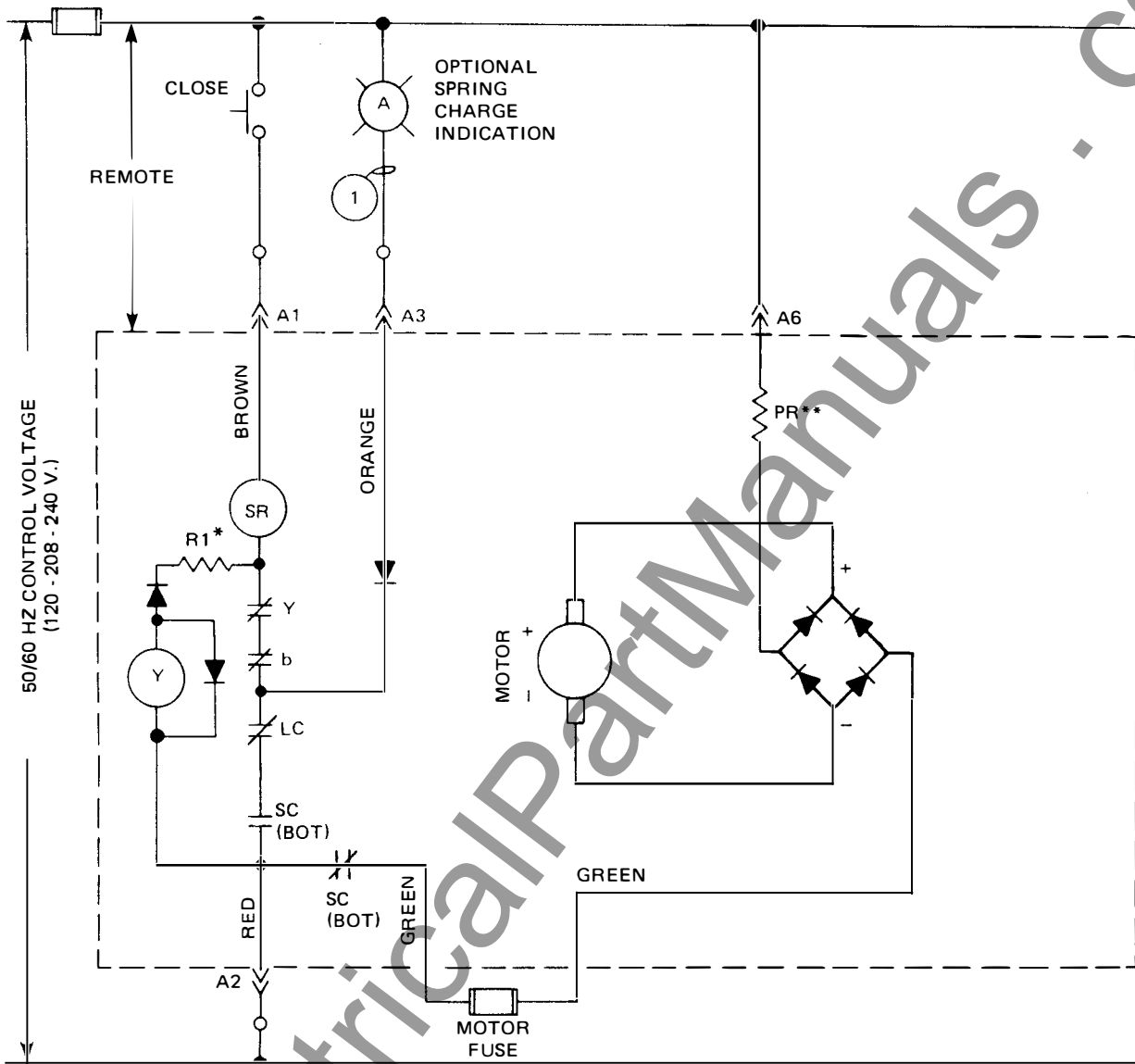
Reference
 I.L. 15377

AVAILABLE VOLTAGES 50/60 HZ	CAT. NO. SPBEO
120	120A*
208	208A*
240	240A*

*ADD "4" FOR
4000-5000A.
OR 4-POLE



SPB MASTER CONNECTION DIAGRAM
AC Motor Operator Schematic — Standard
(Use with Sheet 6A)



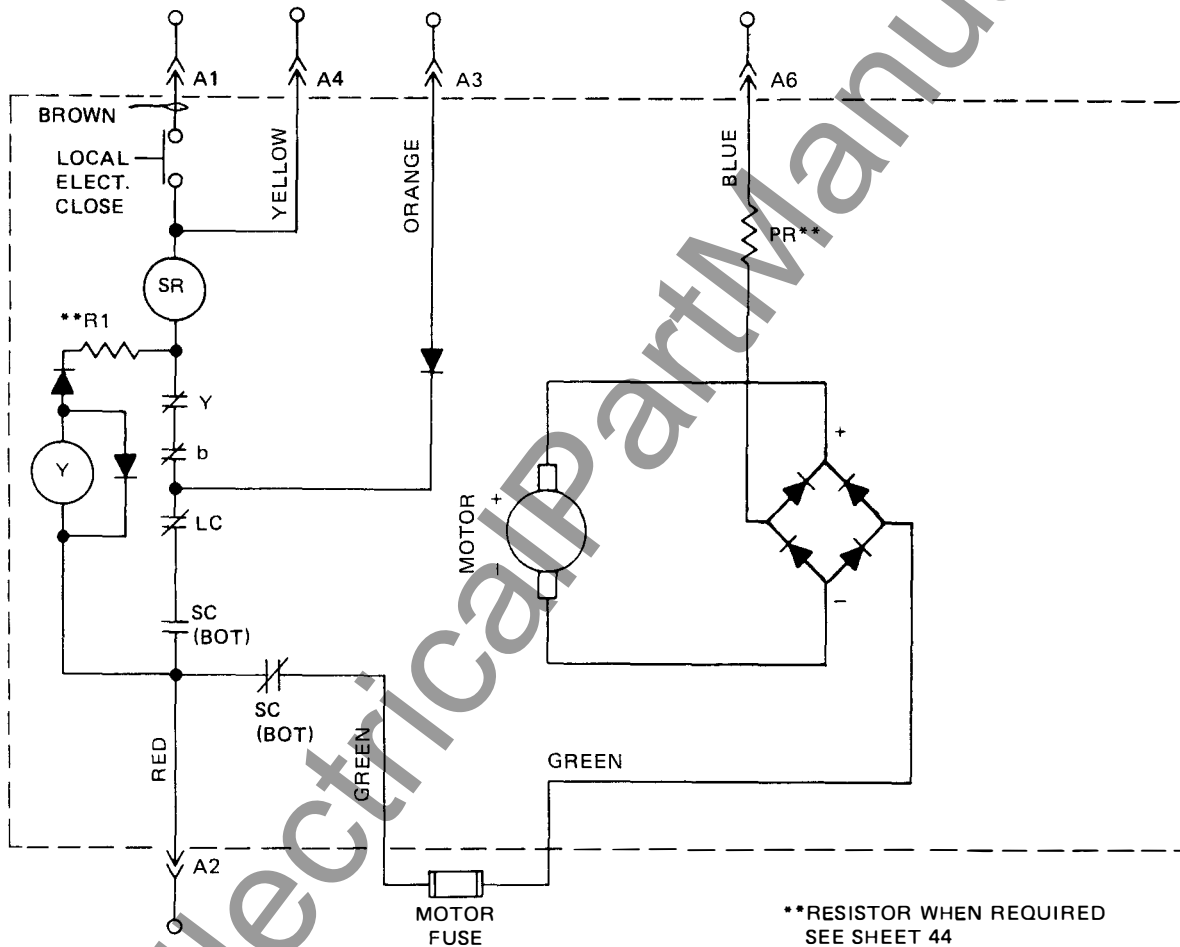
1 MAXIMUM CURRENT ALLOWED IN A3 CIRCUIT - 1.0 AMP

*RESISTOR WHEN REQUIRED
SEE SHEET 44

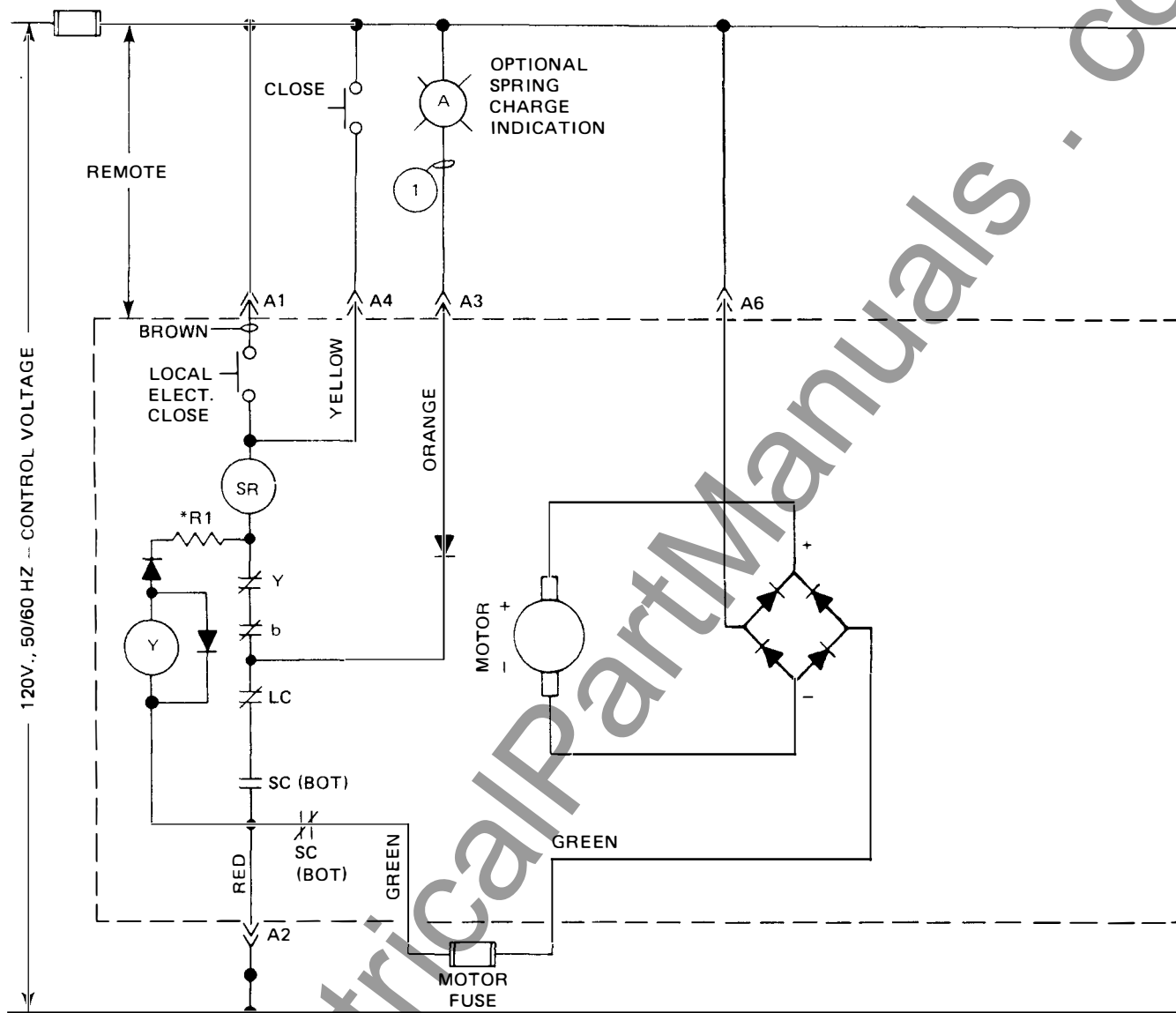
SPB MASTER CONNECTION DIAGRAM
Typical AC Motor Operator with External Connections
(Use with Sheet 6)

AVAILABLE VOLTAGES 50/60 HZ	CAT. NO. SPBEO
120	120A* WLEC

*ADD "4" FOR
4000-5000A.
OR 4-POLE



SPB MASTER CONNECTION DIAGRAM
AC Motor Operator Schematic For Local Electric Close
(Use with Sheet 7A)



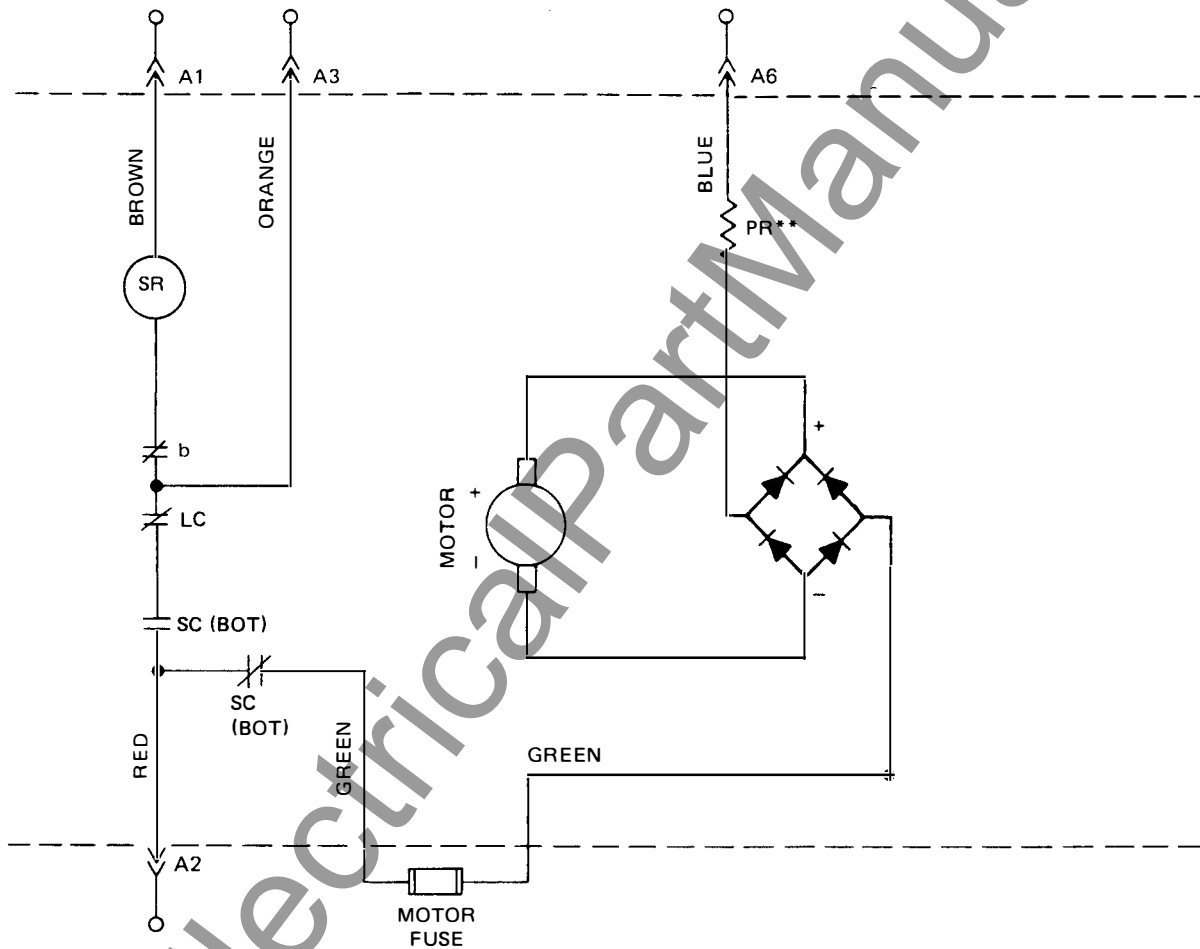
1 MAXIMUM CURRENT ALLOWED IN A3 CIRCUIT 1.0 AMP

*RESISTOR WHEN REQUIRED
SEE SHEET 44

SPM MASTER CONNECTION DIAGRAM
Local Electric Close Motor Operator
with External Connections
(Use with Sheet 7)

AVAILABLE VOLTAGES 50/60 HZ	CAT. NO. SPBEO
120	120A* WOAP

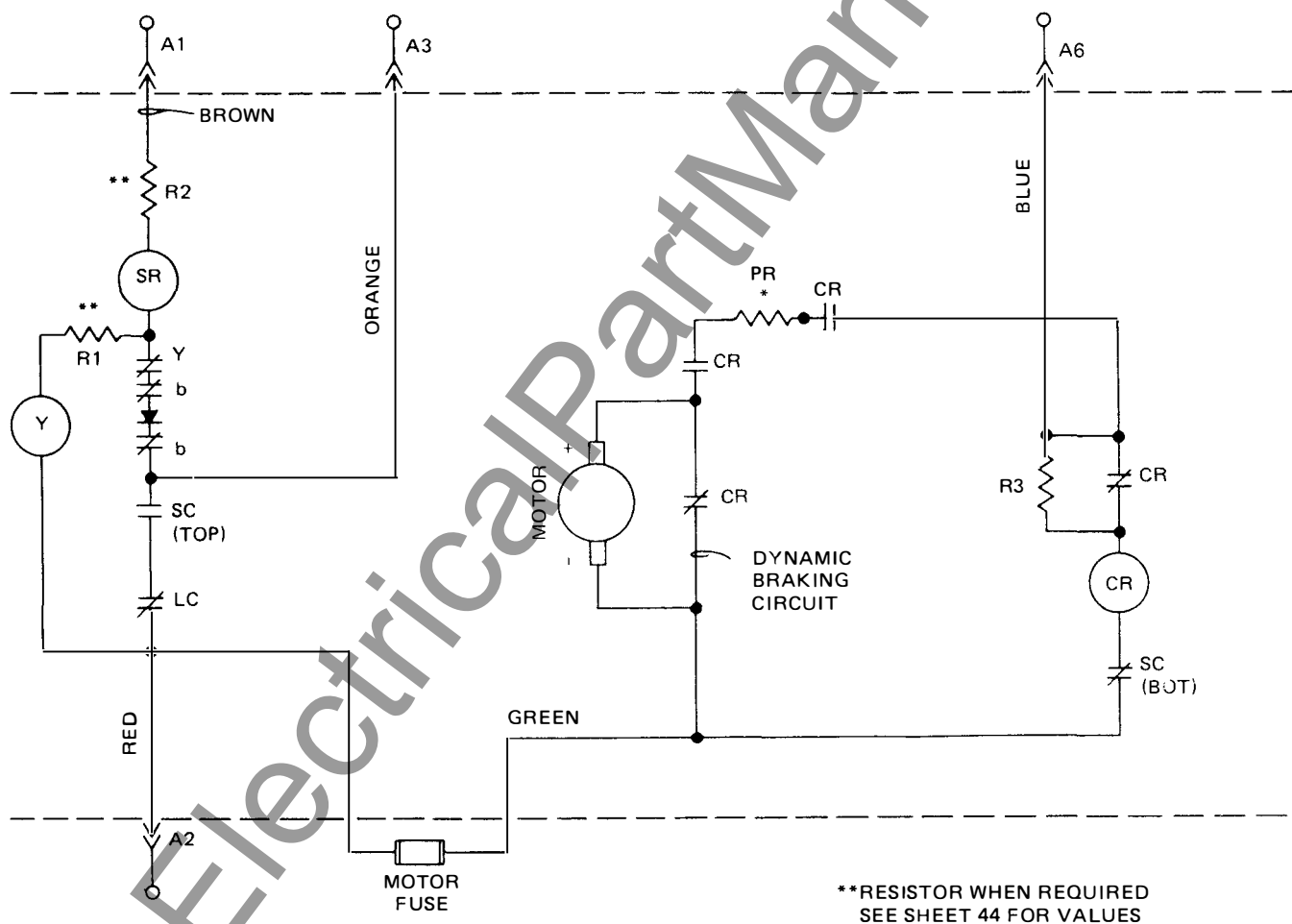
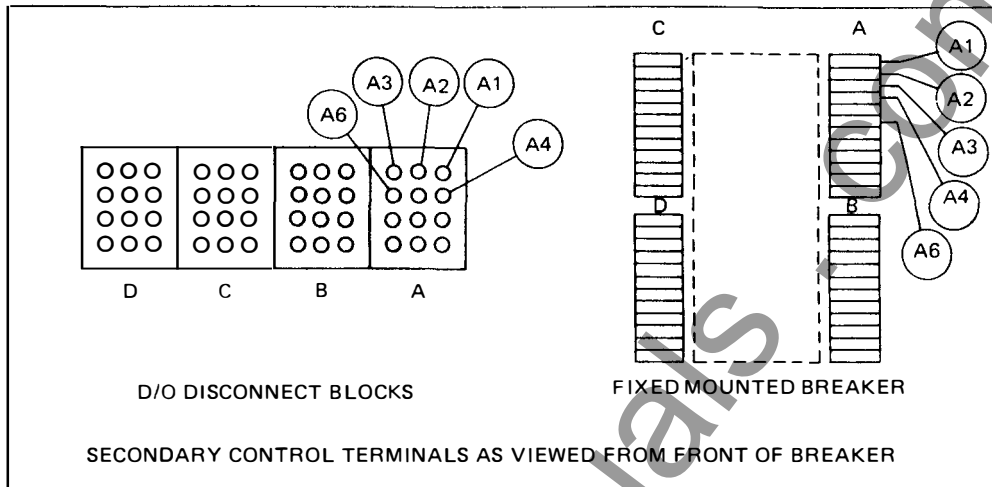
*ADD "4" FOR
4000-5000A.
OR 4-POLE



SPB MASTER CONNECTION DIAGRAM
AC Motor Operator Schematic w/o Antipump Relay
for ATS Applications

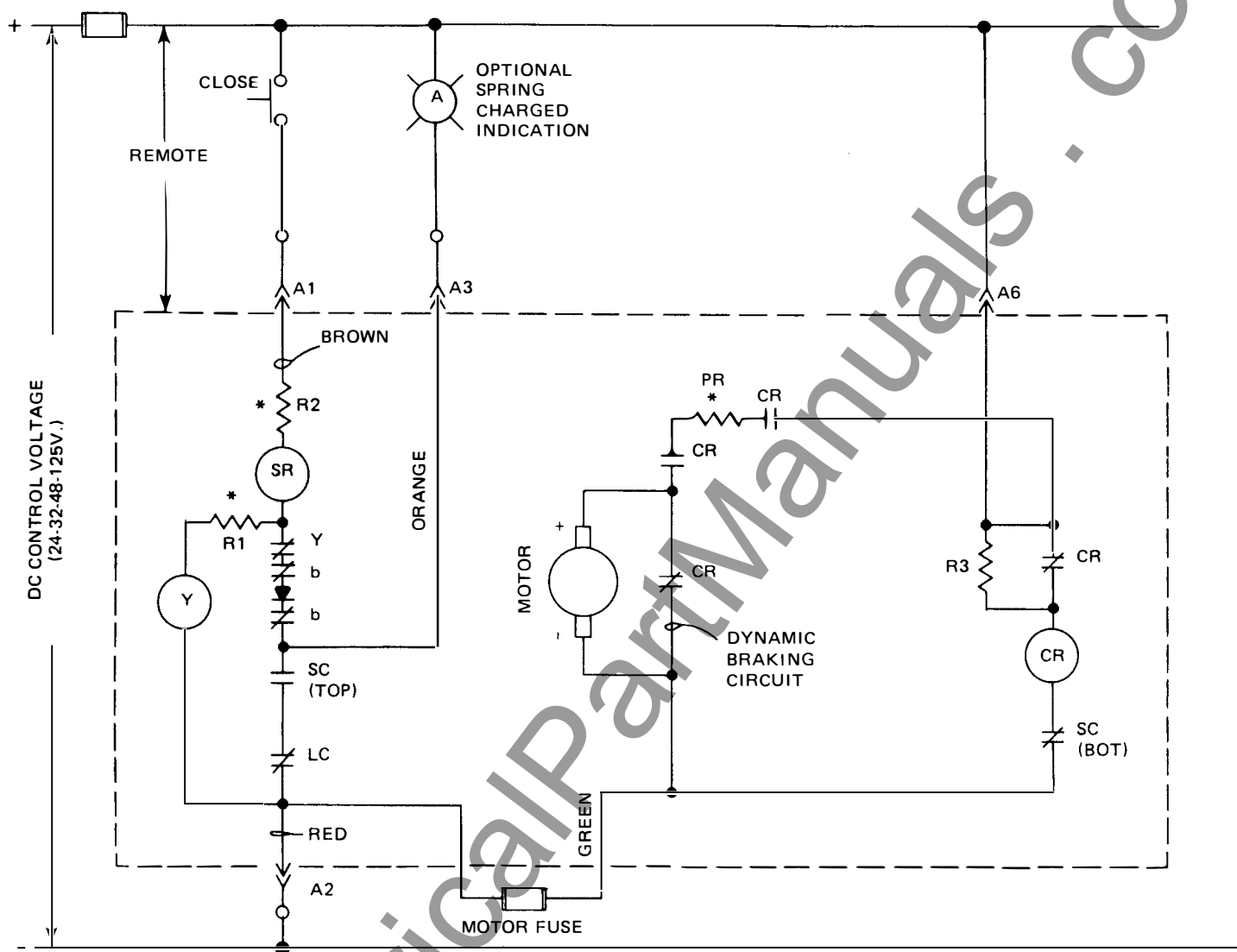
AVAILABLE VOLTAGES DC	CAT. NO. SPBEO
24	024D*
32	032D*
48	048D*
125	125D*

*ADD "4"
FOR 4000-5000A.
OR 4-POLE



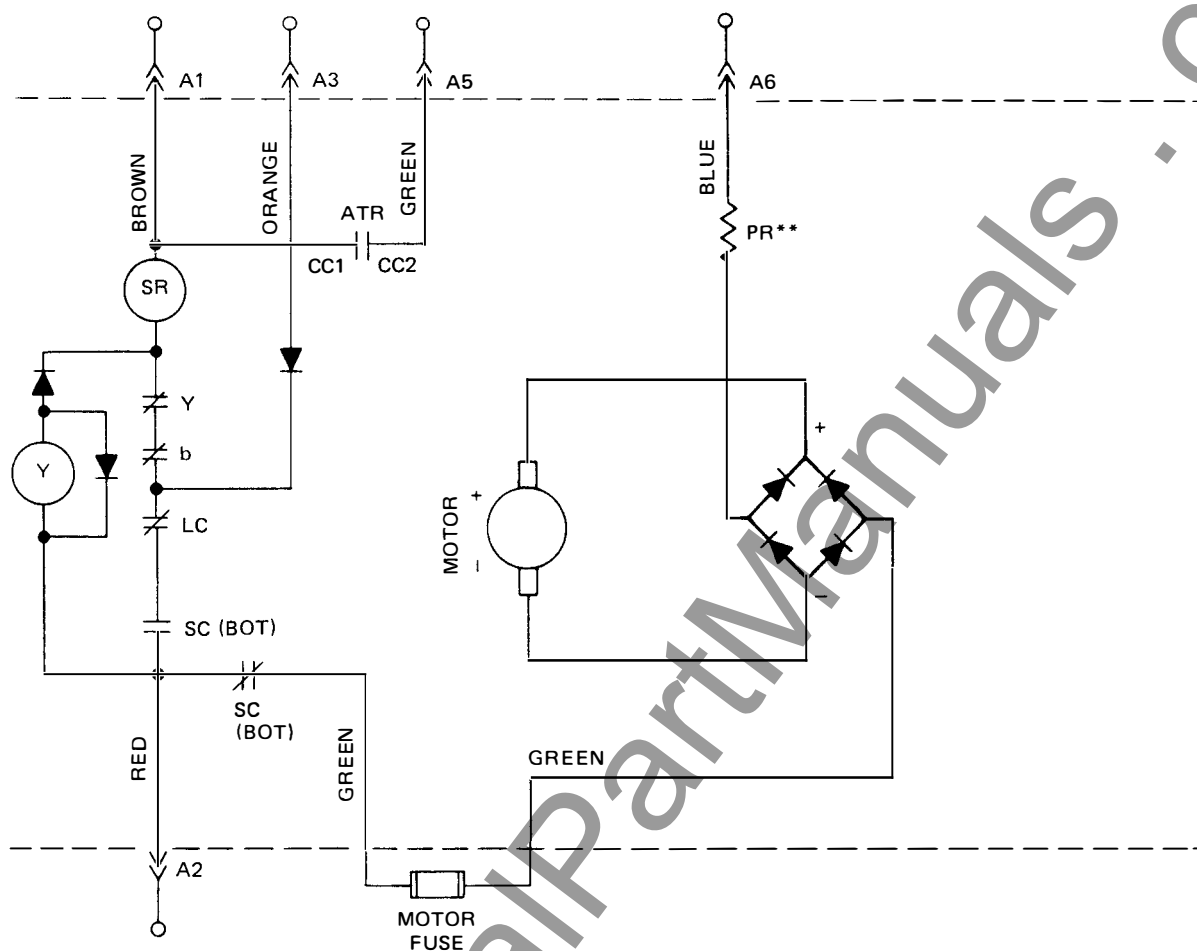
**RESISTOR WHEN REQUIRED
SEE SHEET 44 FOR VALUES

SPB MASTER CONNECTION DIAGRAM
DC Motor Operator Schematic
(Use with Sheet 9A)

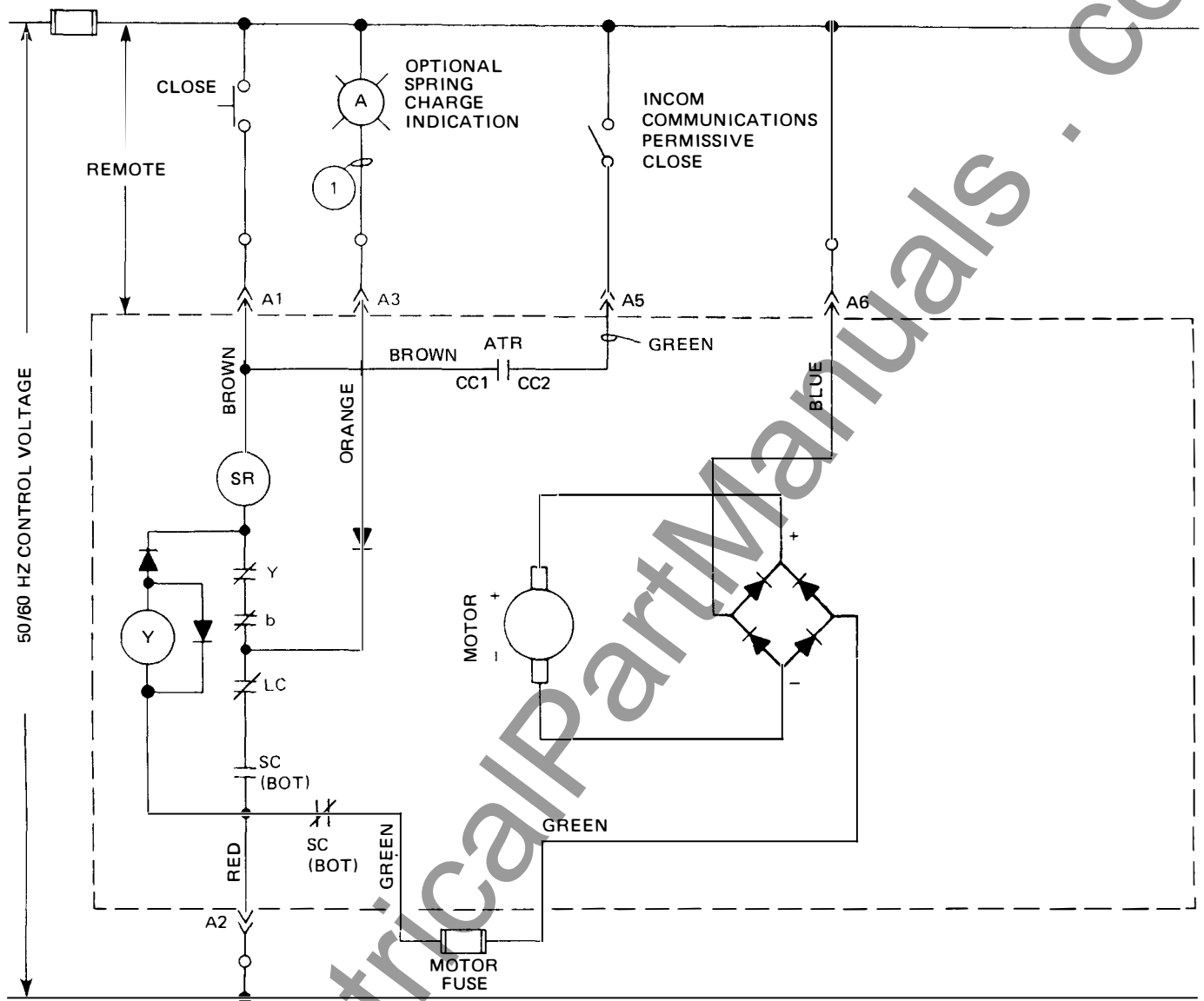


*RESISTOR WHEN REQUIRED
SEE SHEET 44 FOR VALUES

SPB MASTER CONNECTION DIAGRAM
Typical DC Motor Operator with External Connections
(Use with Sheet 9)



SPB MASTER CONNECTION DIAGRAM
AC Motor Operator Schematic for Use with Incom
(Use with Sheet 10A)

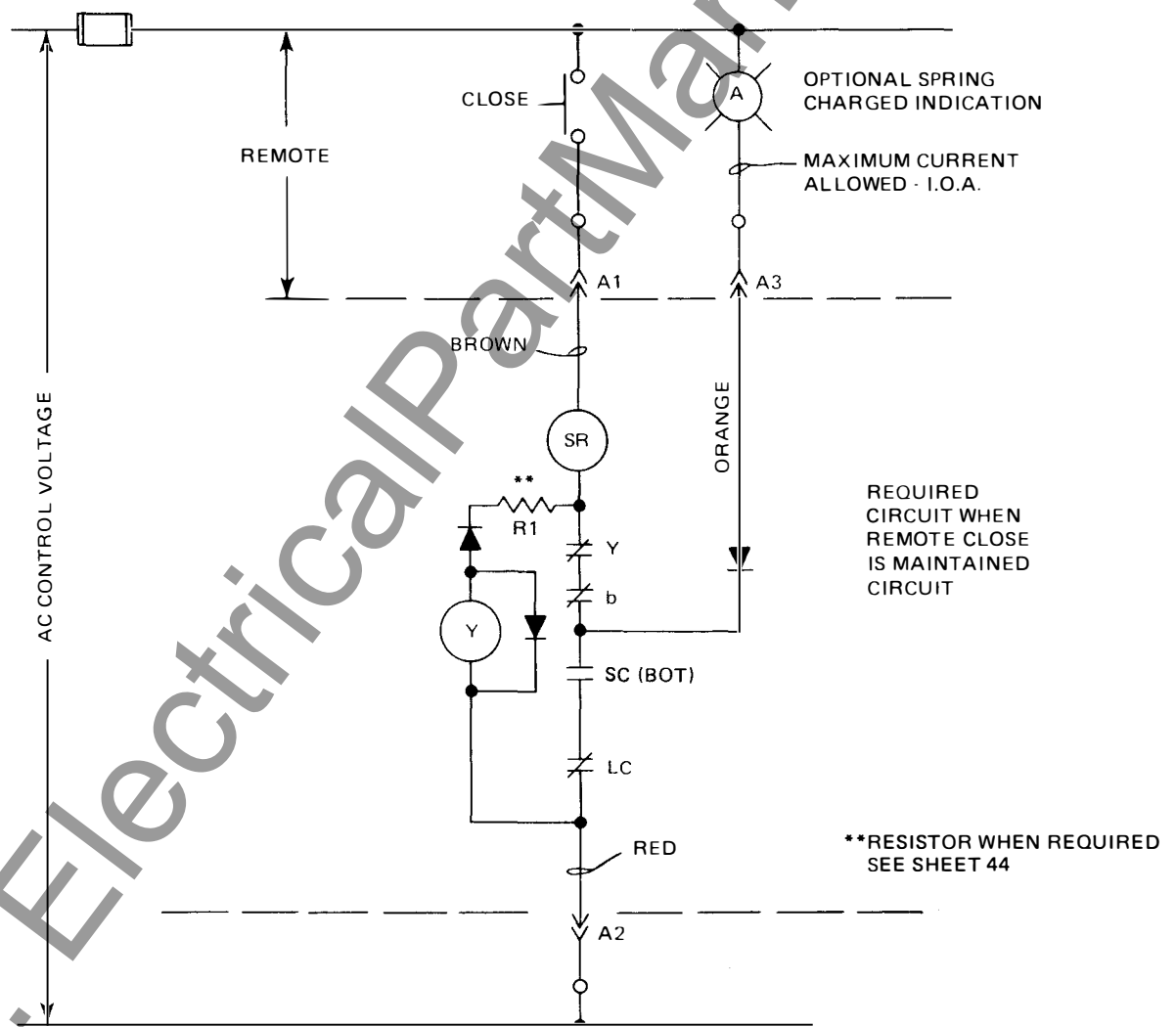
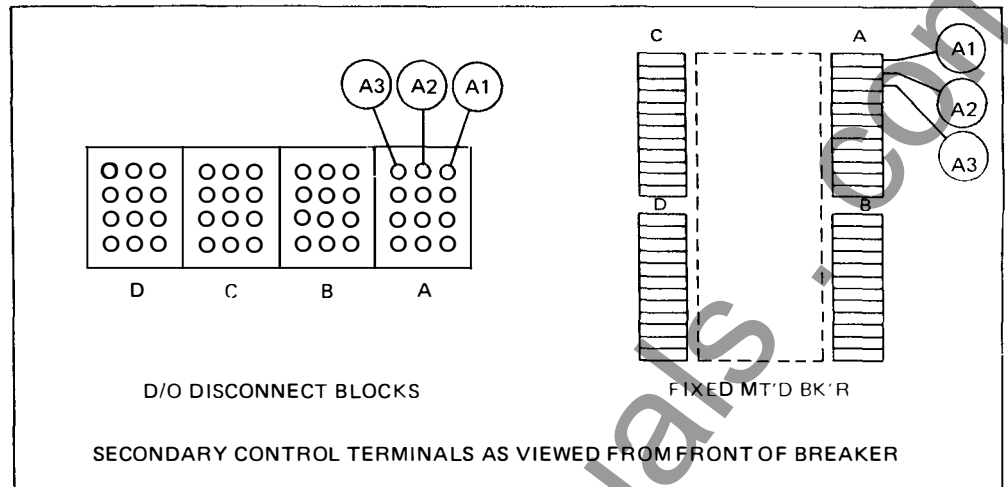


1 MAXIMUM CURRENT ALLOWED IN A3 CIRCUIT 1.0 AMP

SPB MASTER CONNECTION DIAGRAM
AC Motor Operator with
External Connections for Use with Incom
(Use with Sheet 10)

AVAILABLE VOLTAGES 50/60 HZ	CAT. NO. SPBSRP
120	120A*
208	208A*
240	240A*

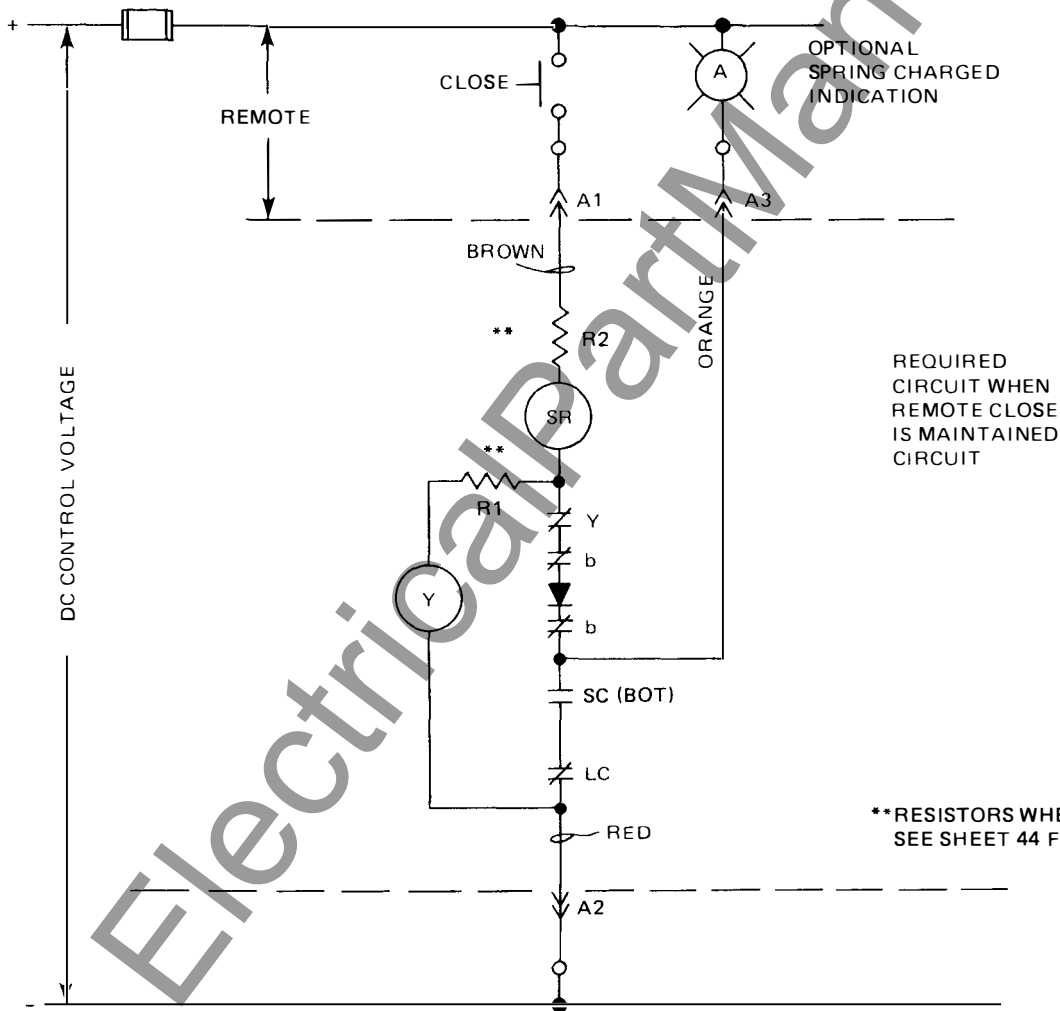
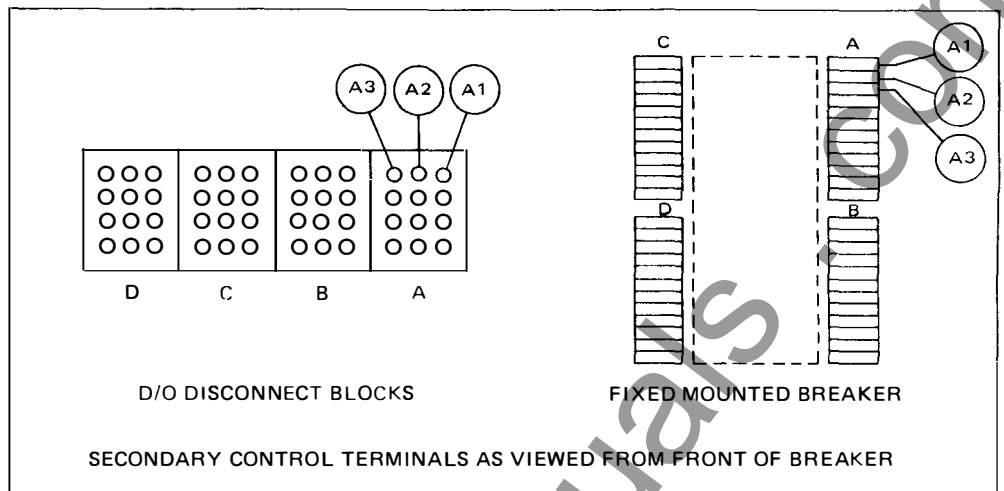
*ADD "4" FOR
4000-5000A.
OR 4-POLE



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

AVAILABLE VOLTAGES DC	CAT. NO. SPBSRP
24	024D*
32	032D*
48	048D*
125	125D*

*ADD "4" FOR
4000-5000A.
OR 4-POLE

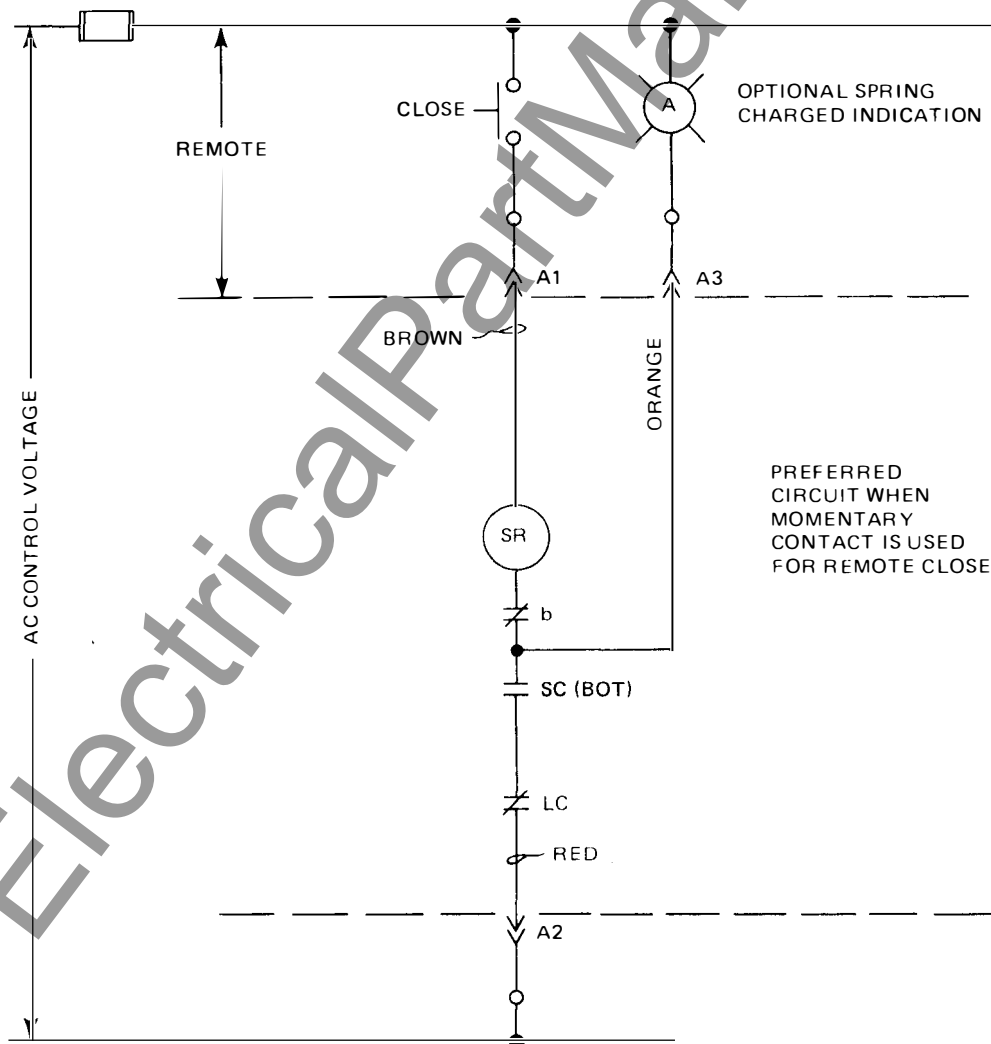
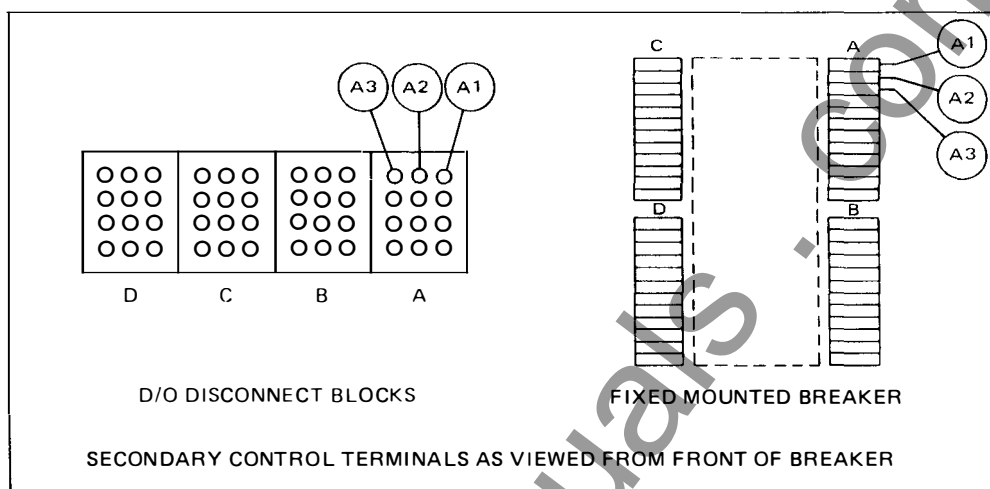


**RESISTORS WHEN REQUIRED
SEE SHEET 44 FOR VALUES.

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

AVAILABLE VOLTAGES 50/60 HZ	CAT. NO. SPBSR
120	120A*
208	208A*
240	240A*

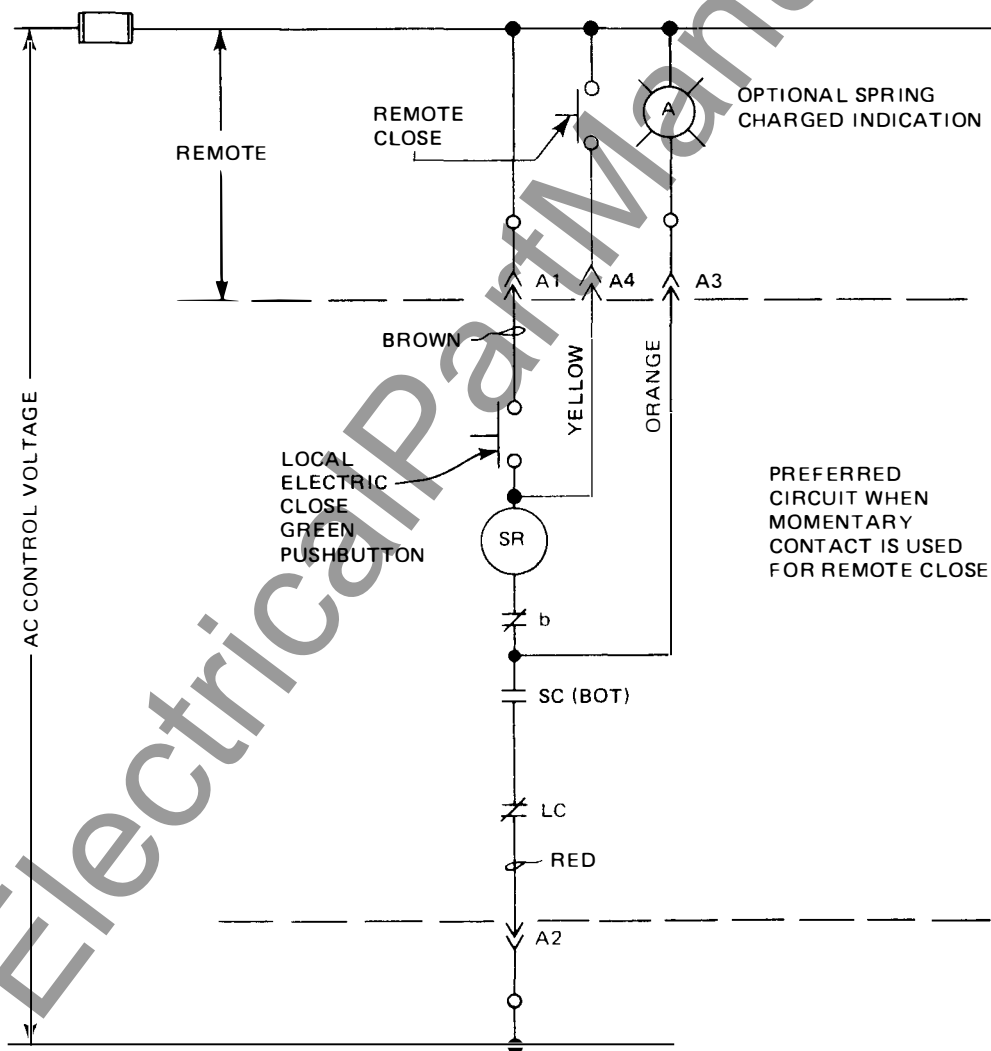
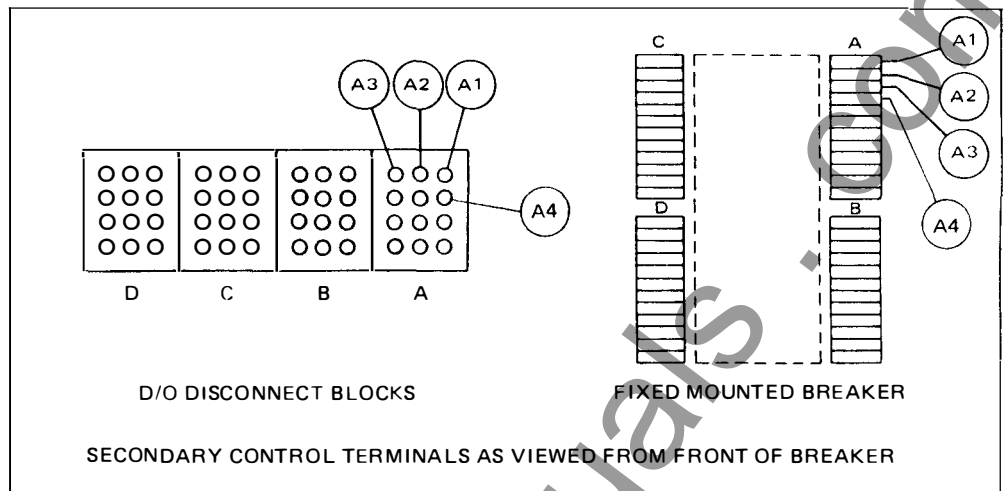
*ADD "4" FOR
4000-5000A.
OR 4-POLE



SPB MASTER CONNECTION DIAGRAM
AC Spring Release Without Anti-Pump Relay Schematic Diagram
(For Use with Manual Breakers)

AVAILABLE VOLTAGES 50/60 HZ	CAT. NO. SPBSR
120	120A* WLEC

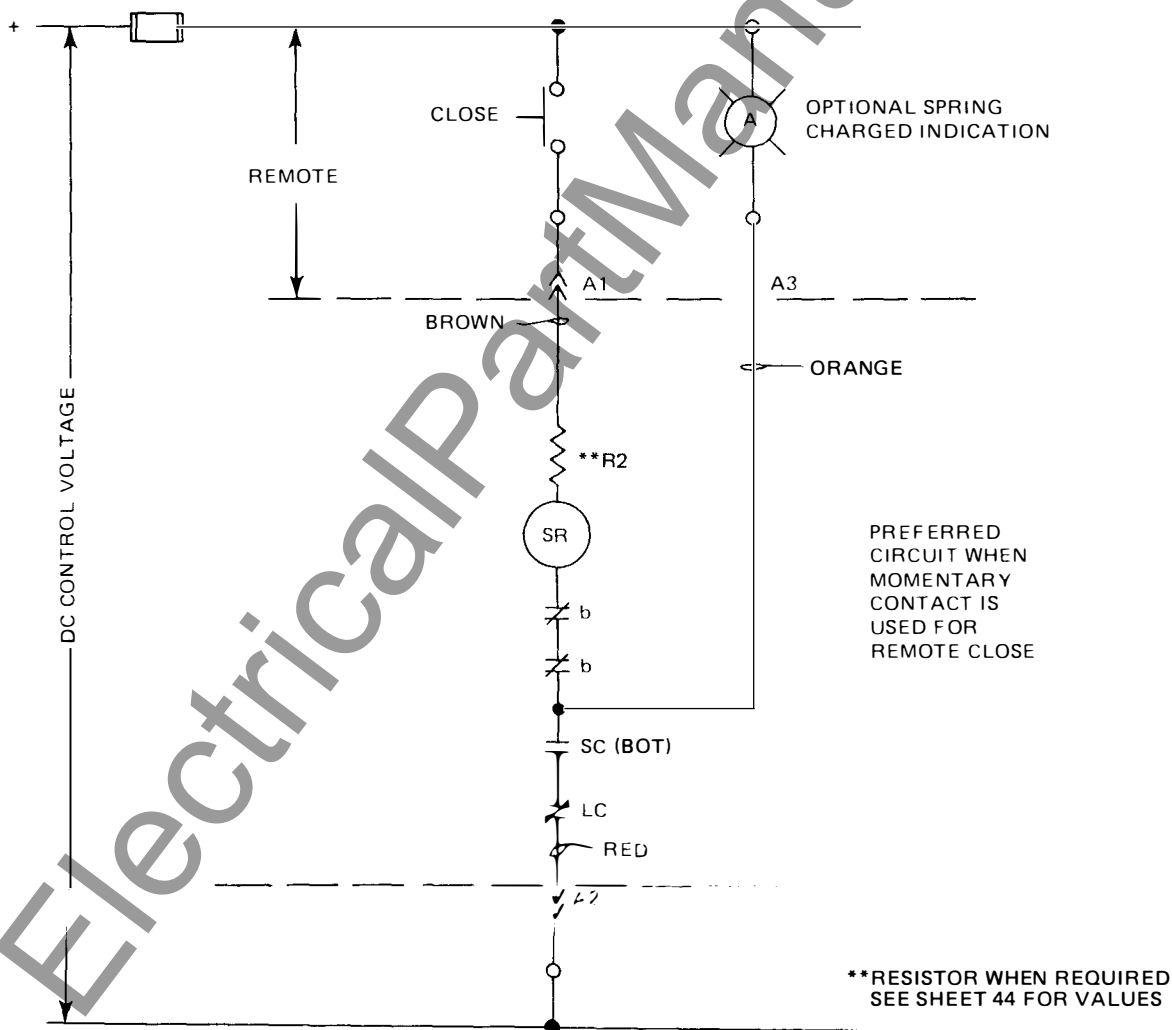
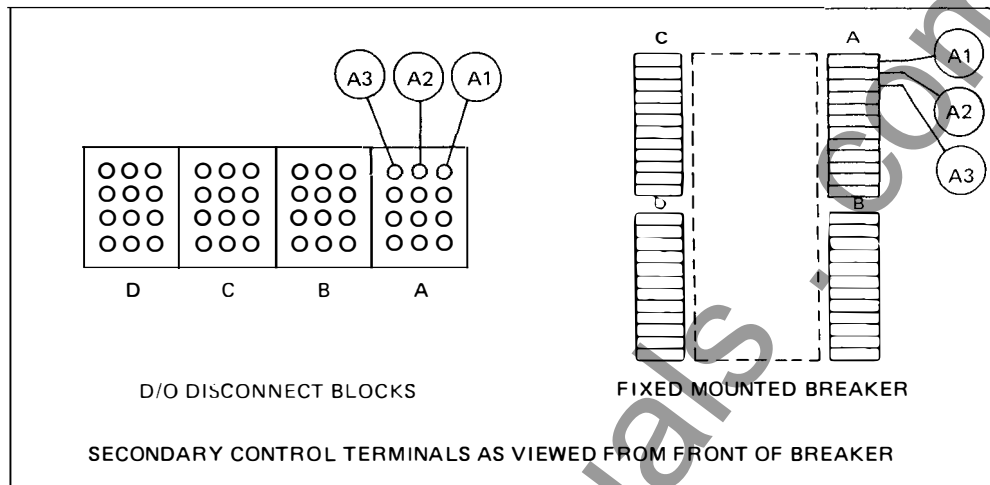
*ADD "4" FOR
4000-5000A.
OR 4-POLE



SPB MASTER CONNECTION DIAGRAM
AC Spring Release Without Anti-Pump Relay Schematic Diagram
(For Use with Manual Breakers)
with Special Local Electric Close Wiring

AVAILABLE VOLTAGES DC	CAT. NO. SPBSR
24	024D*
32	032D*
48	048D*
125	125D*

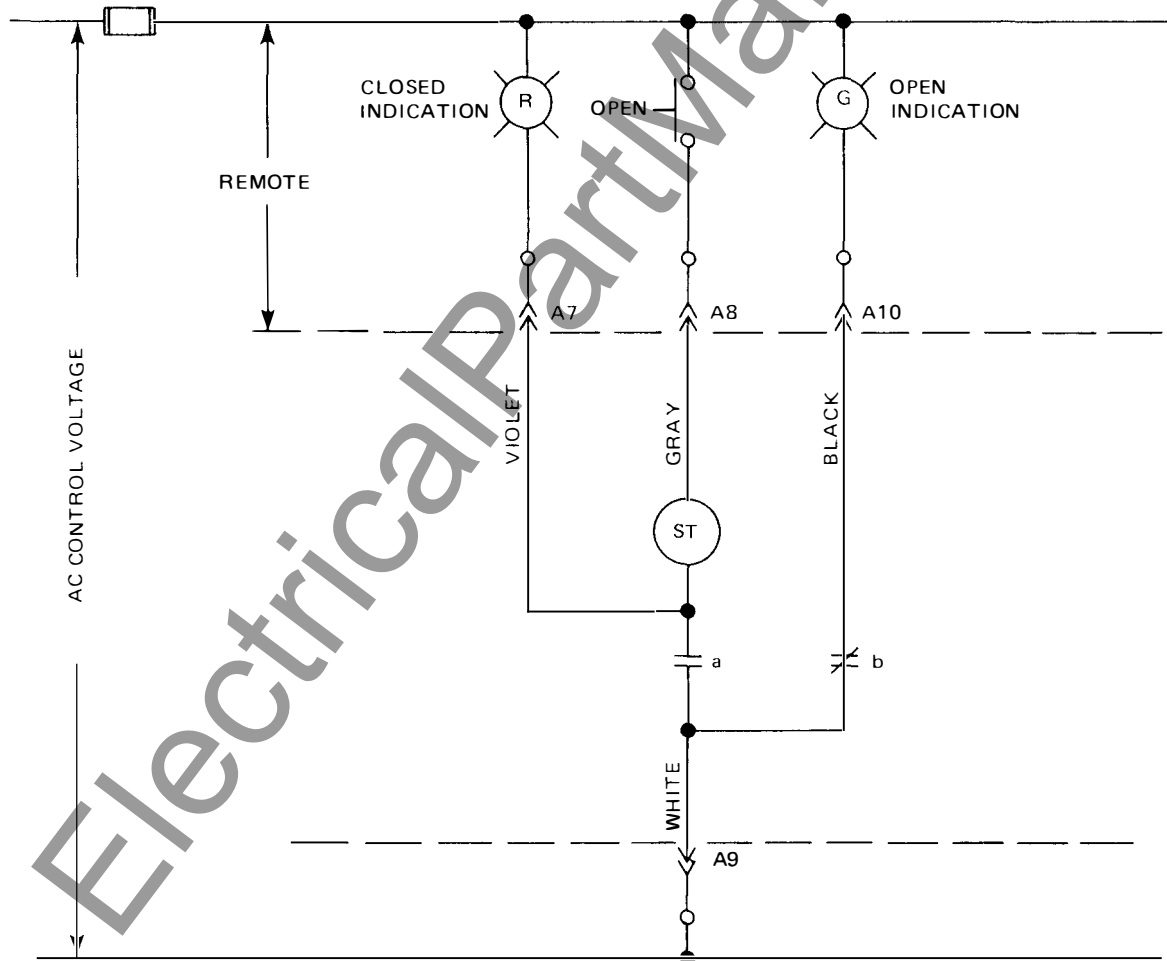
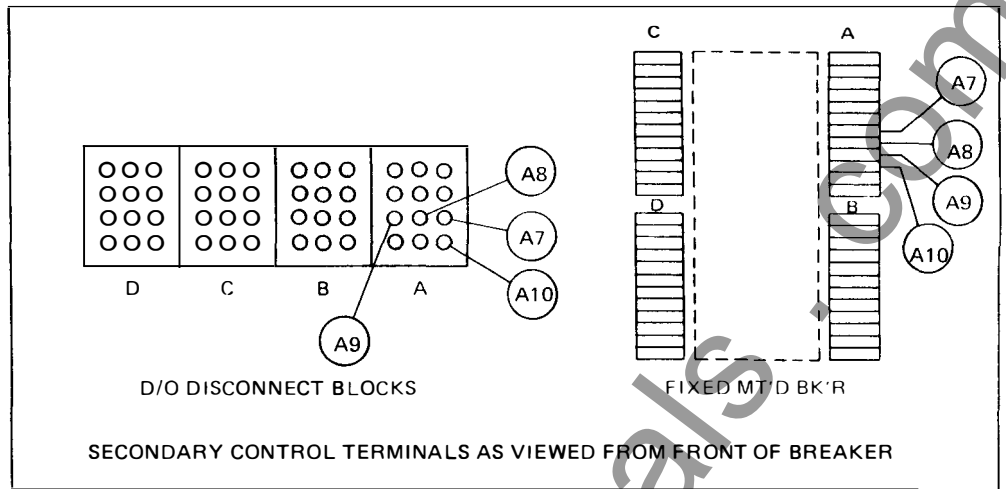
*ADD "4" FOR
4000-5000A.
OR 4-POLE



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

AVAILABLE VOLTAGES 50/60 HZ	CAT. NO. SPBST
24	024A*
48	048A*
120	120A*
208	208A*
240	240A*
480	480A*
600	600A*

*ADD "4" FOR
4000-5000A.
OR 4-POLE



SPB MASTER CONNECTION DIAGRAM
AC Shunt Trip Schematic Diagram

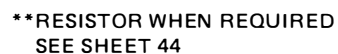
Reference
I.L. 15158

* ADD "4" FOR
4000-5000A.
OR 4-POLE



FIXED MT'D BK'R

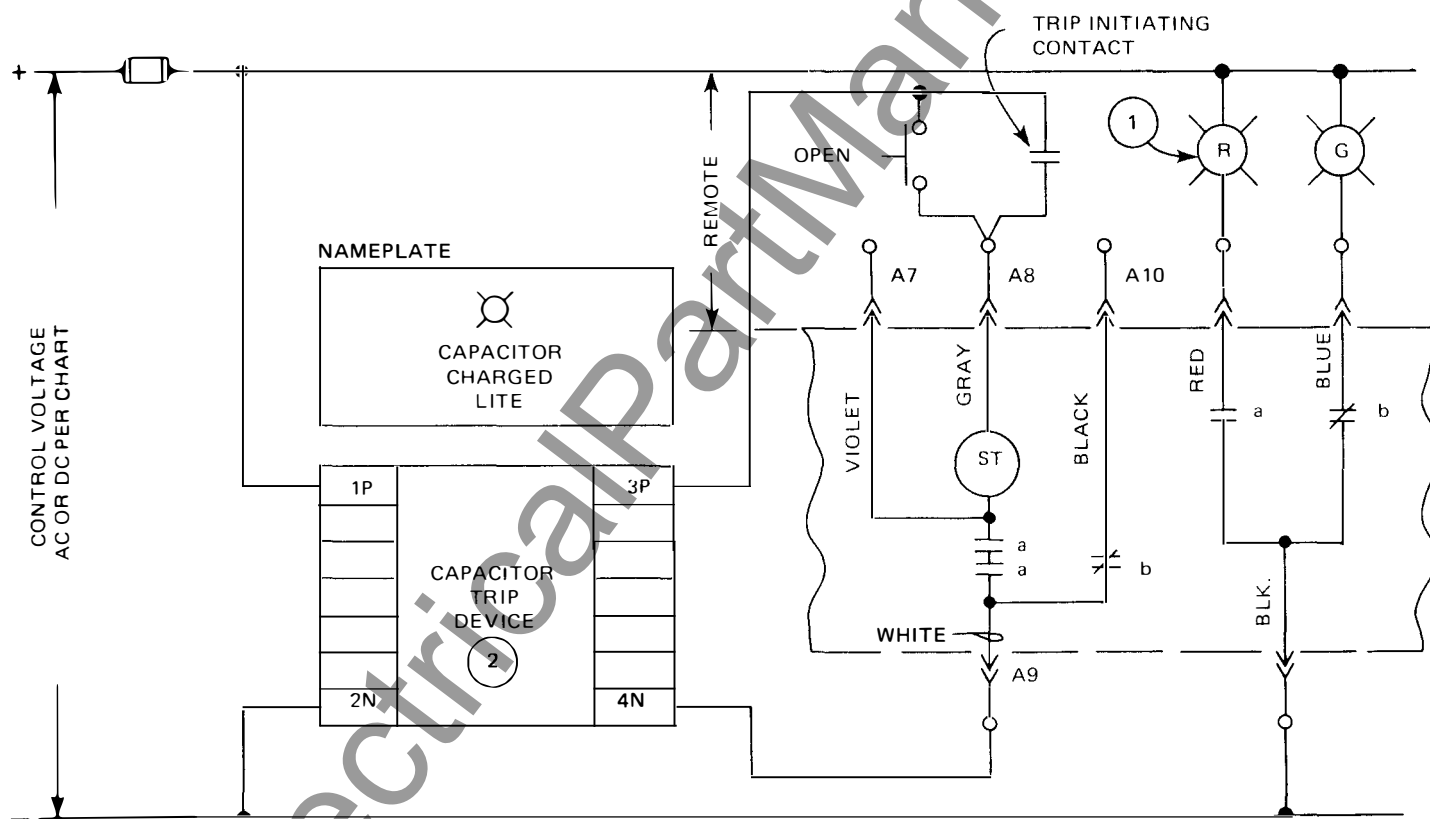
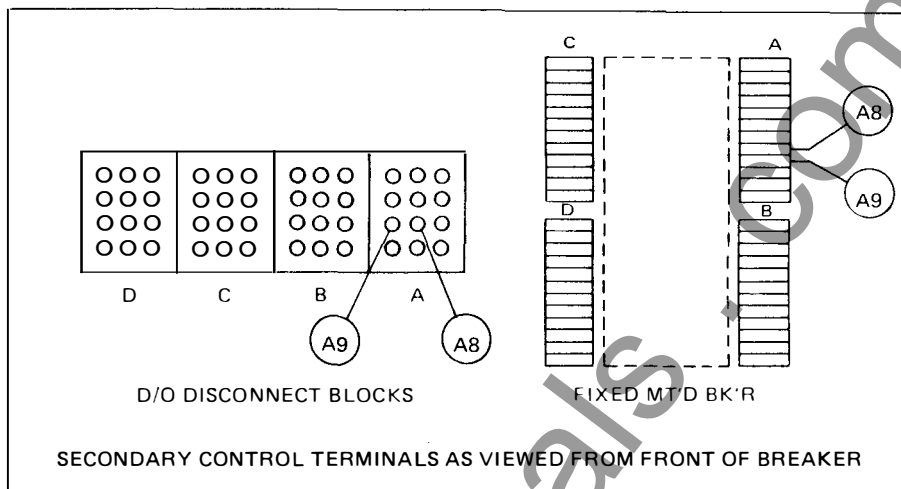
SECONDARY CONTROL TERMINALS AS VIEWED FROM FRONT OF BREAKER



I.S. 15545
Sheet 17

CAP. TRIP STYLE 1283C62	SHUNT TRIP VOLTAGE CAT. NO. SPBST	
	50/60 HZ	DC
G01	120 ³	125
	125D*	125D*
G02	60 ³	60
	060D*	060D*
G03	48	48
	048A*	048D*
G04	24	24
	024A*	024D*

*ADD "4" FOR
4000-5000A.
OR 4-POLE



- 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 CAT. NO. AS INDICATED.

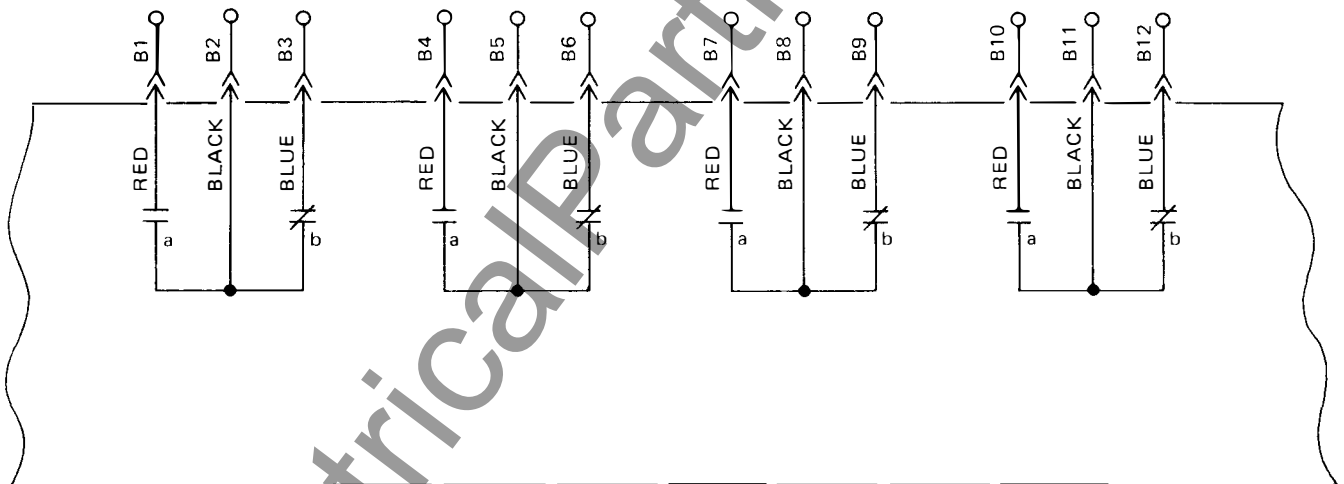
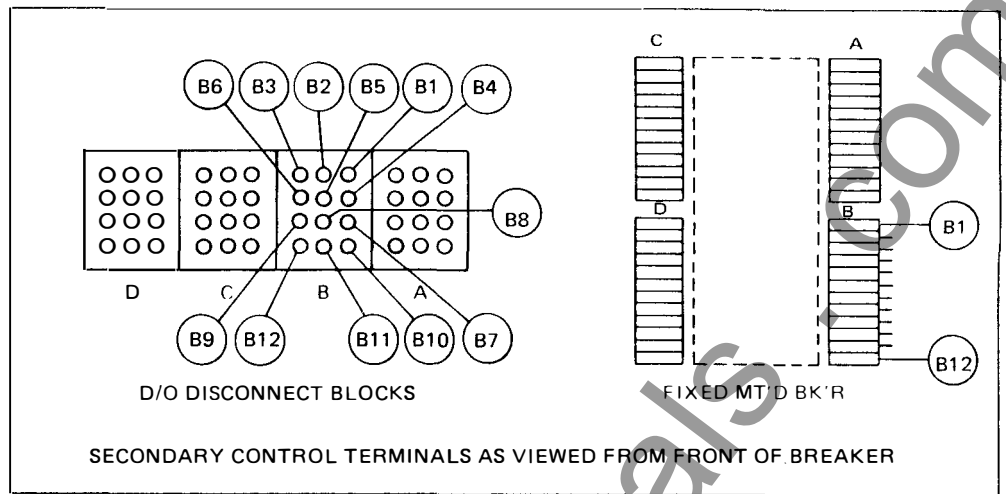
SPB MASTER CONNECTION DIAGRAM Capacitor Trip Device Connection Diagram

Reference
I.L. 15146

NO. OF a/b SWITCHES	CAT. NO. SPBAUX
4	164 304 404

*16 – 400-2000C A
30 – 2000-3000 A
40 – 4000-5000 A

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

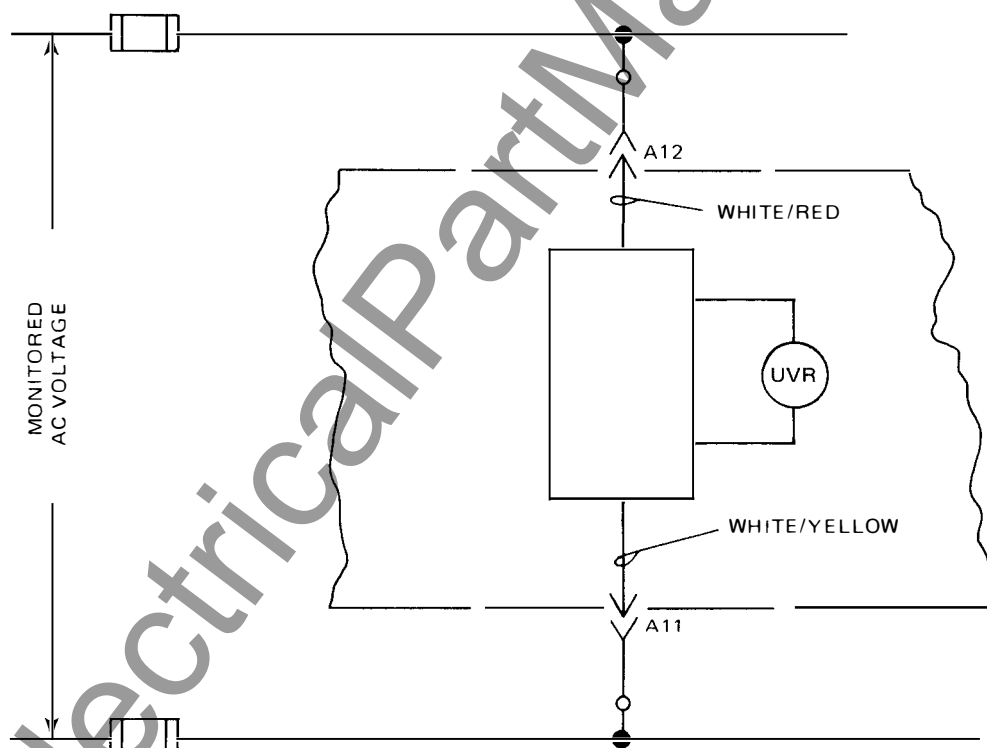
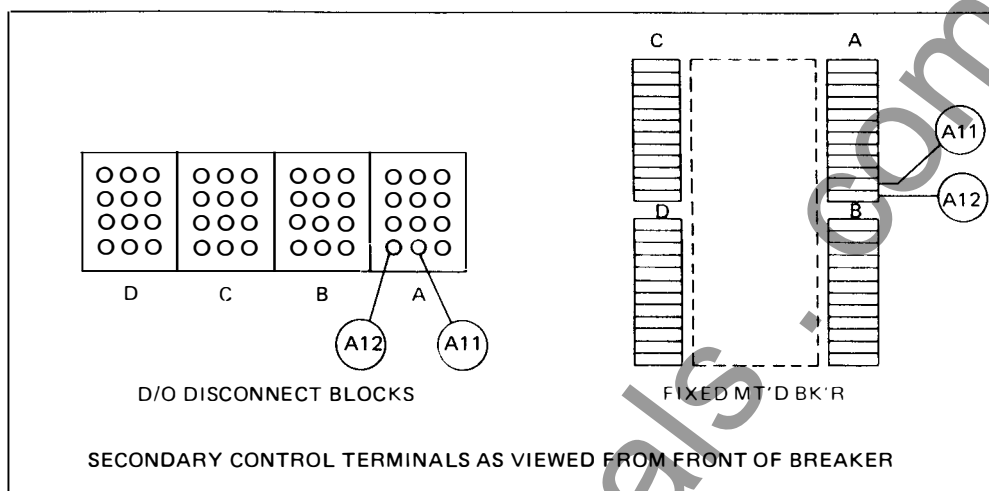


SPB MASTER CONNECTION DIAGRAM 4 (a/b) Auxiliary Switches

Reference
I.L. 15159

AVAILABLE VOLTAGES 50/60 HZ	CAT. NO. SPBUV
24	024A*
48	048A*
120	120A*
208	208A*
240	240A*
480	480A*
600	600A*

*ADD "4" FOR
4000-5000A.
OR 4-POLE

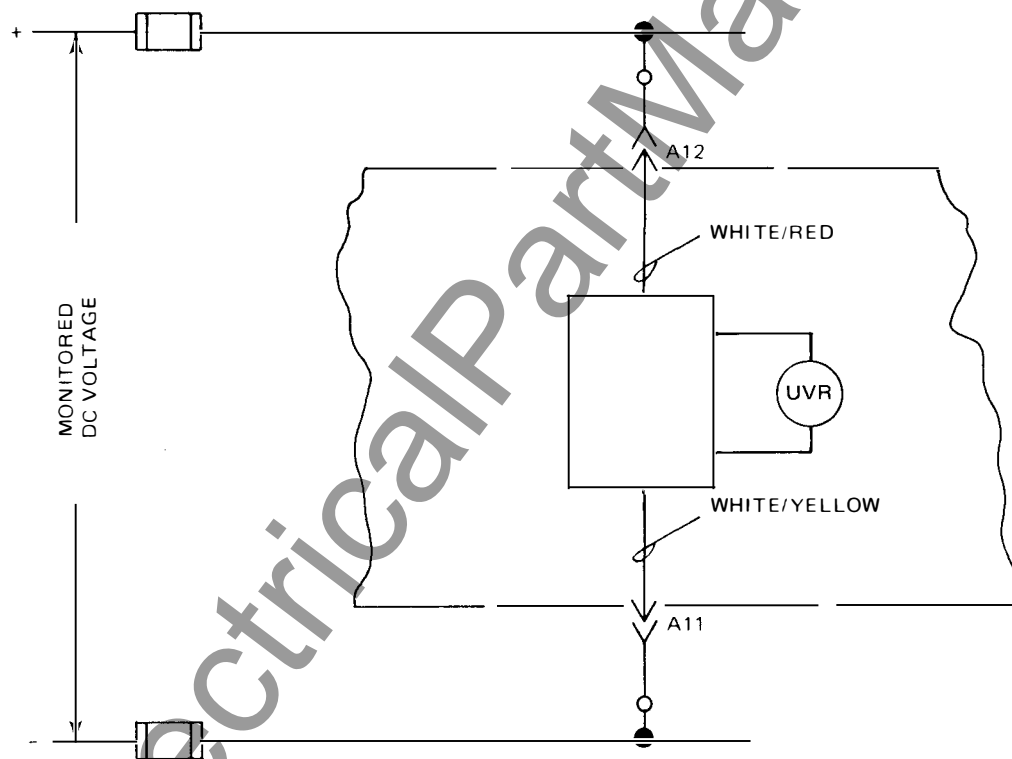
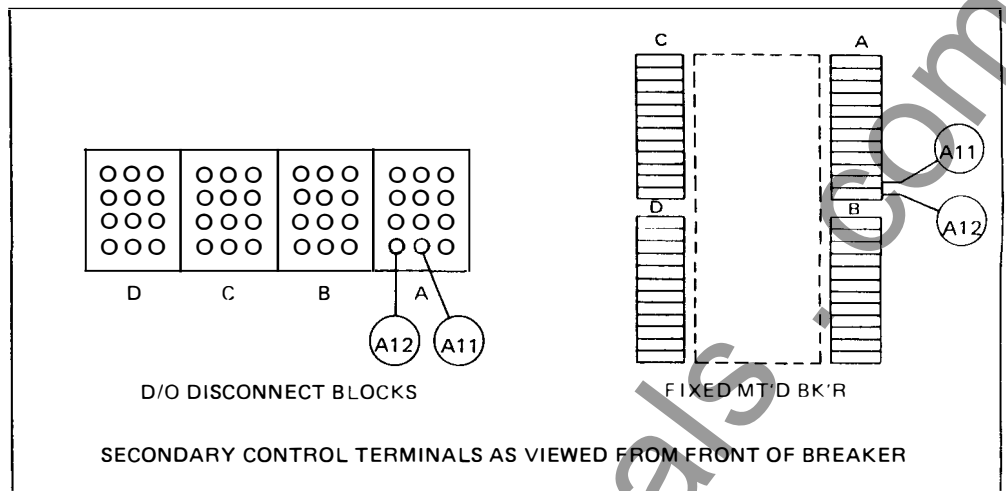


SPB MASTER CONNECTION DIAGRAM
AC Undervoltage Release – Instantaneous Only
Schematic Diagram

Reference
I.L. 15162

AVAILABLE VOLTAGES DC	CAT. NO. SPBUV
12	012D*
24	024D*
32	032D*
48	048D*
60	060D*
125	125D*
60 Special ^①	060DT*

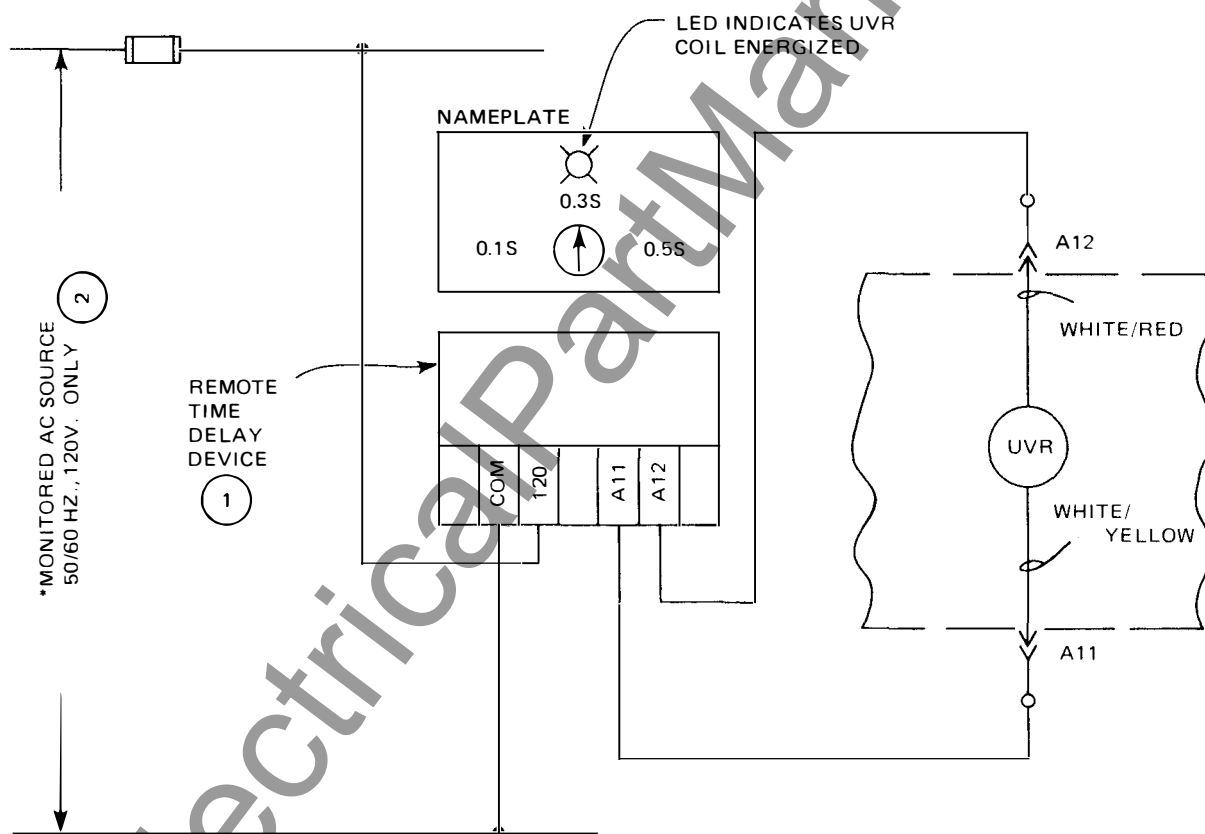
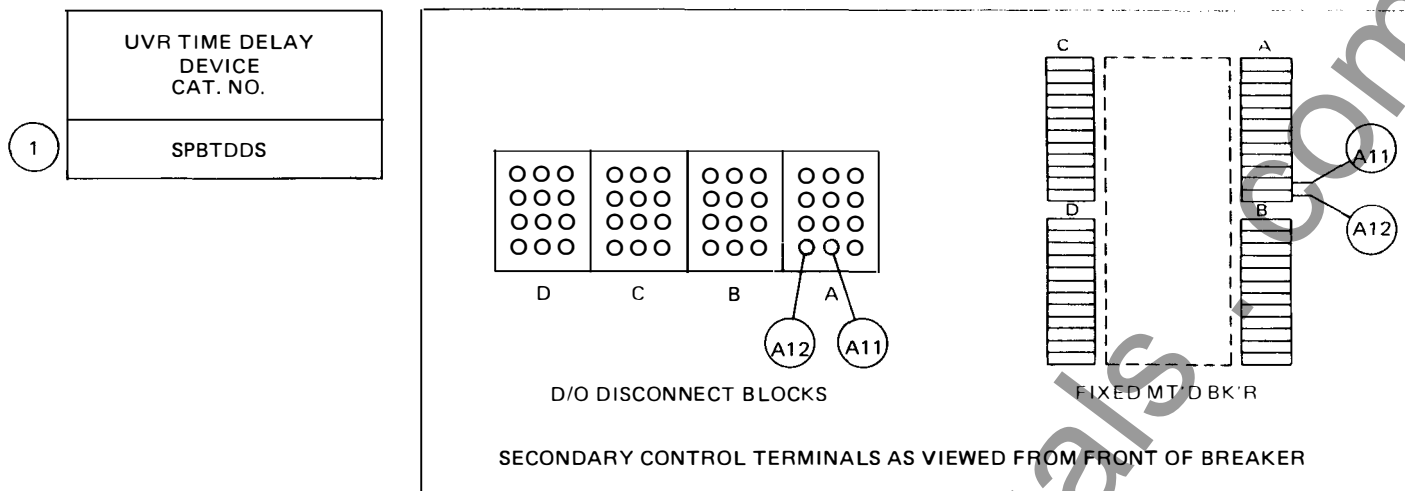
*ADD "4" FOR
4000-5000A.
OR 4-POLE



① USE ONLY WITH TIME DELAY DEVICE, SPBTDD5 OR SPBTDIS

SPB MASTER CONNECTION DIAGRAM DC Undervoltage Release — Instantaneous Only Schematic Diagram

Reference
I.L. 15162



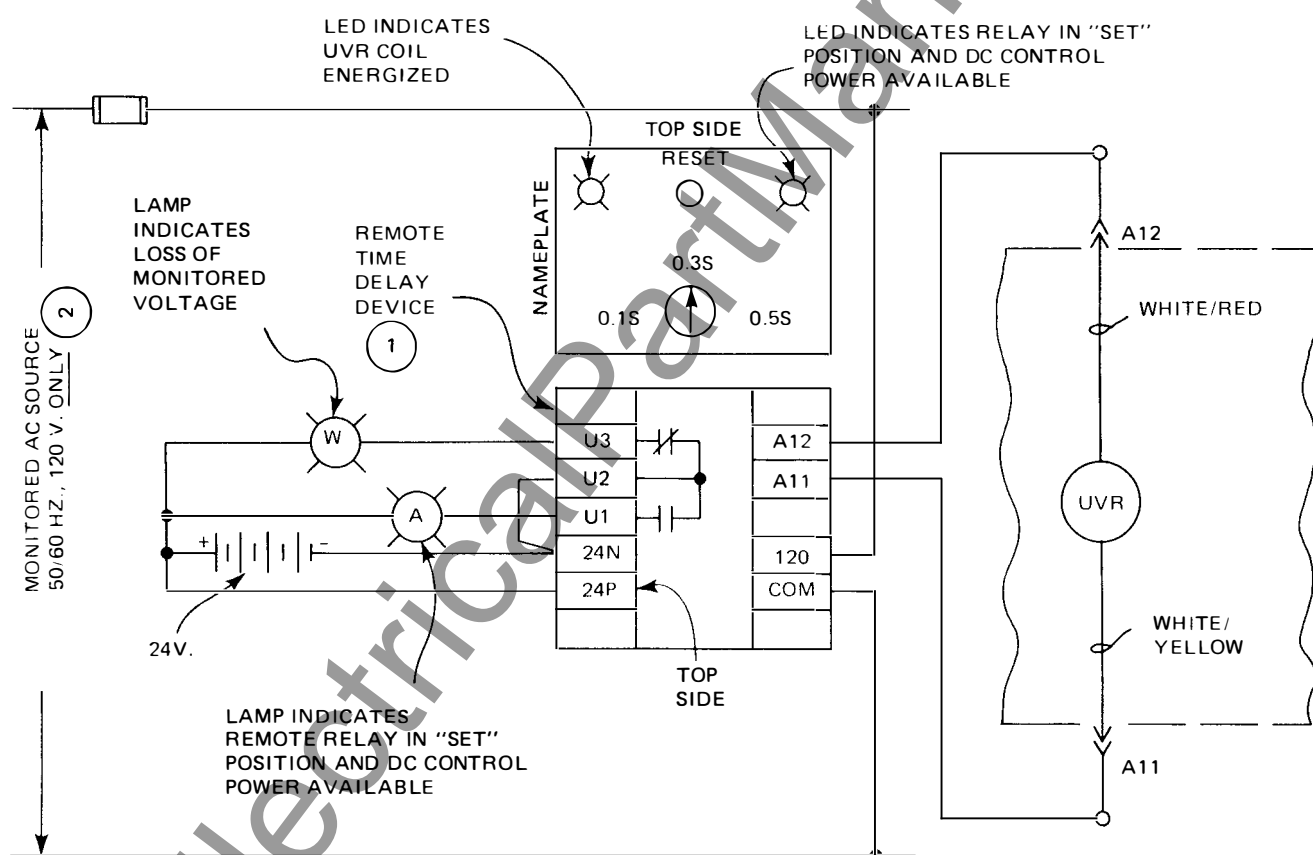
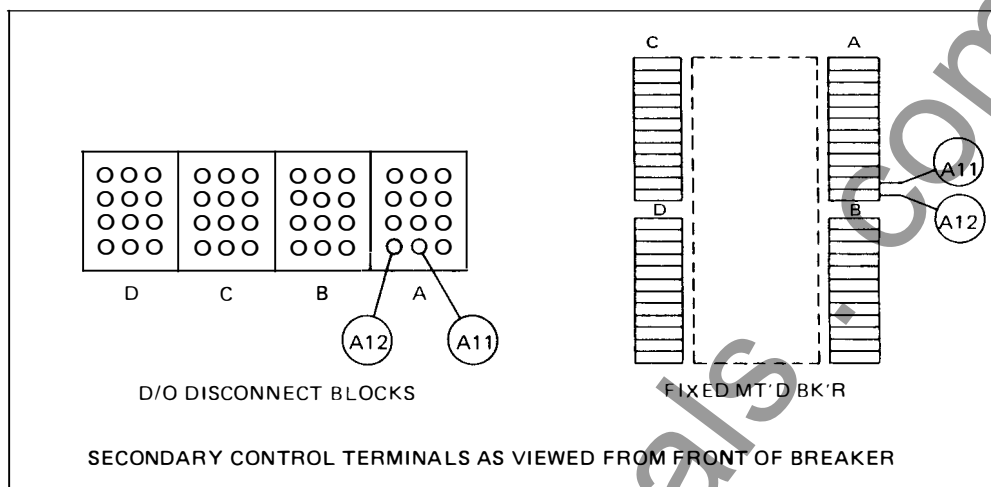
- 1 FOR USE ONLY WITH SPBUV060DT OR SPBUV060DT4 UNDERVOLTAGE RELEASE DEVICE
- 2 USE STEP DOWN TRANSFORMER WHERE REQUIRED TO INSURE 120V. MAX. ON UVR TIME DELAY DEVICE.

SPB MASTER CONNECTION DIAGRAM
AC Time Delay Device Connection Diagram

Reference
I.L. 15141
I.L. 15162

1	UVR TIME DELAY DEVICE CAT. NO.	
	SPBTDIS	

MEMORY CONTACT MAX. RATING	
120V. 50/60 HZ.	28V. DC
2 AMPS	2 AMPS

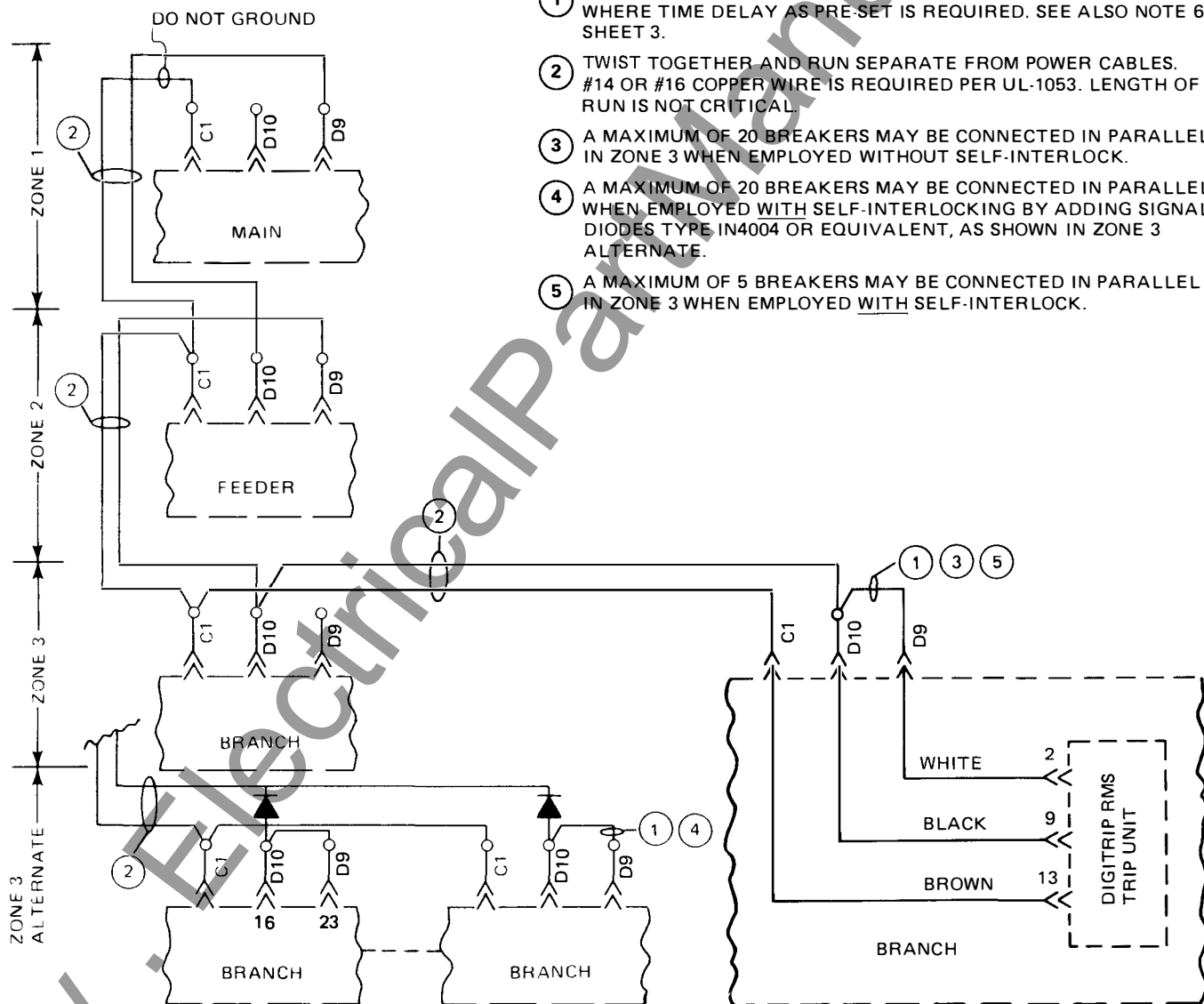
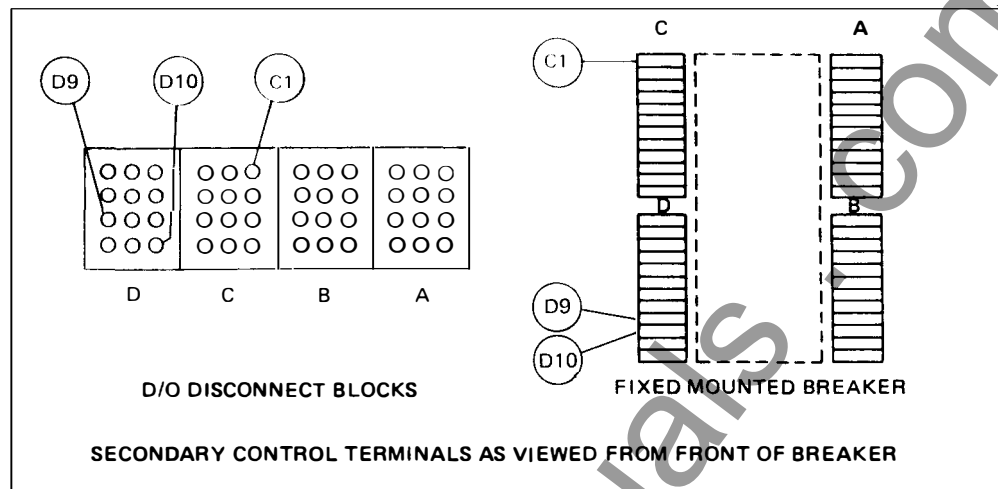


- 1 FOR USE ONLY WITH SPBUV060DT OR SPBUV060DT4 UNDERVOLTAGE RELEASE DEVICE
- 2 USE STEP DOWN TRANSFORMER WHERE REQUIRED TO INSURE 120 V. MAX. ON UVR TIME DELAY DEVICE

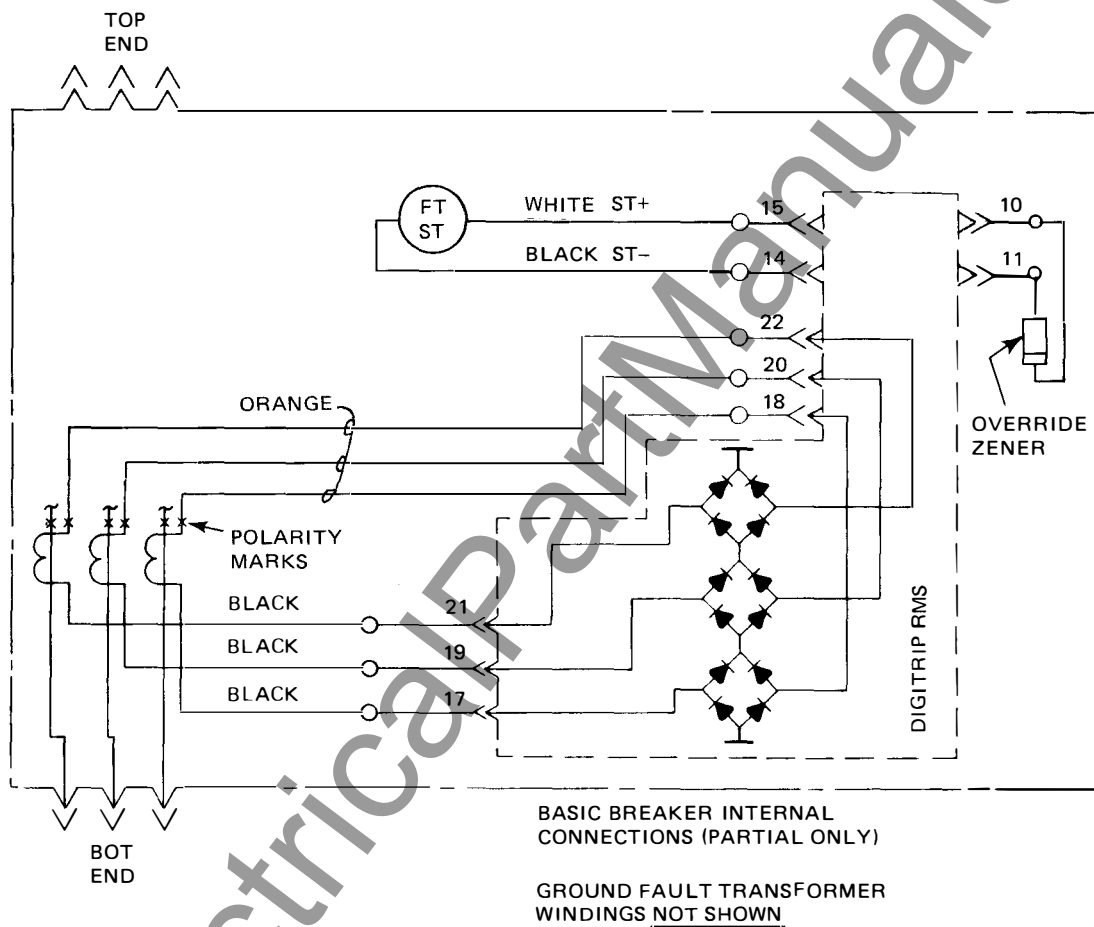
SPB MASTER CONNECTION DIAGRAM
Time Delay Device with Memory Contact
(Requires 24 vdc Control Voltage)

Reference
I.L. 15141
I.L. 15162

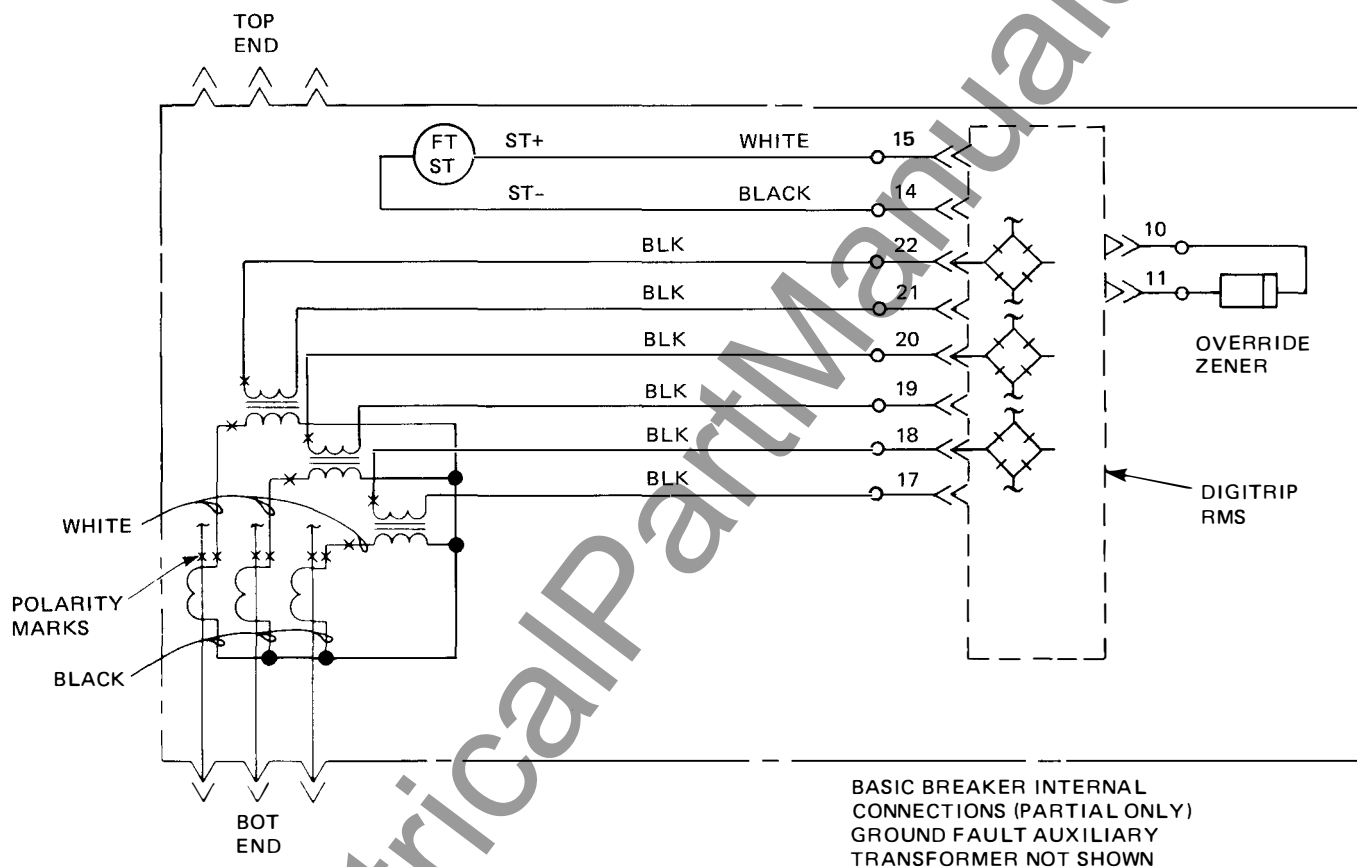
D10 - OUTPUT
D9 - INPUT
C1 - COMMON



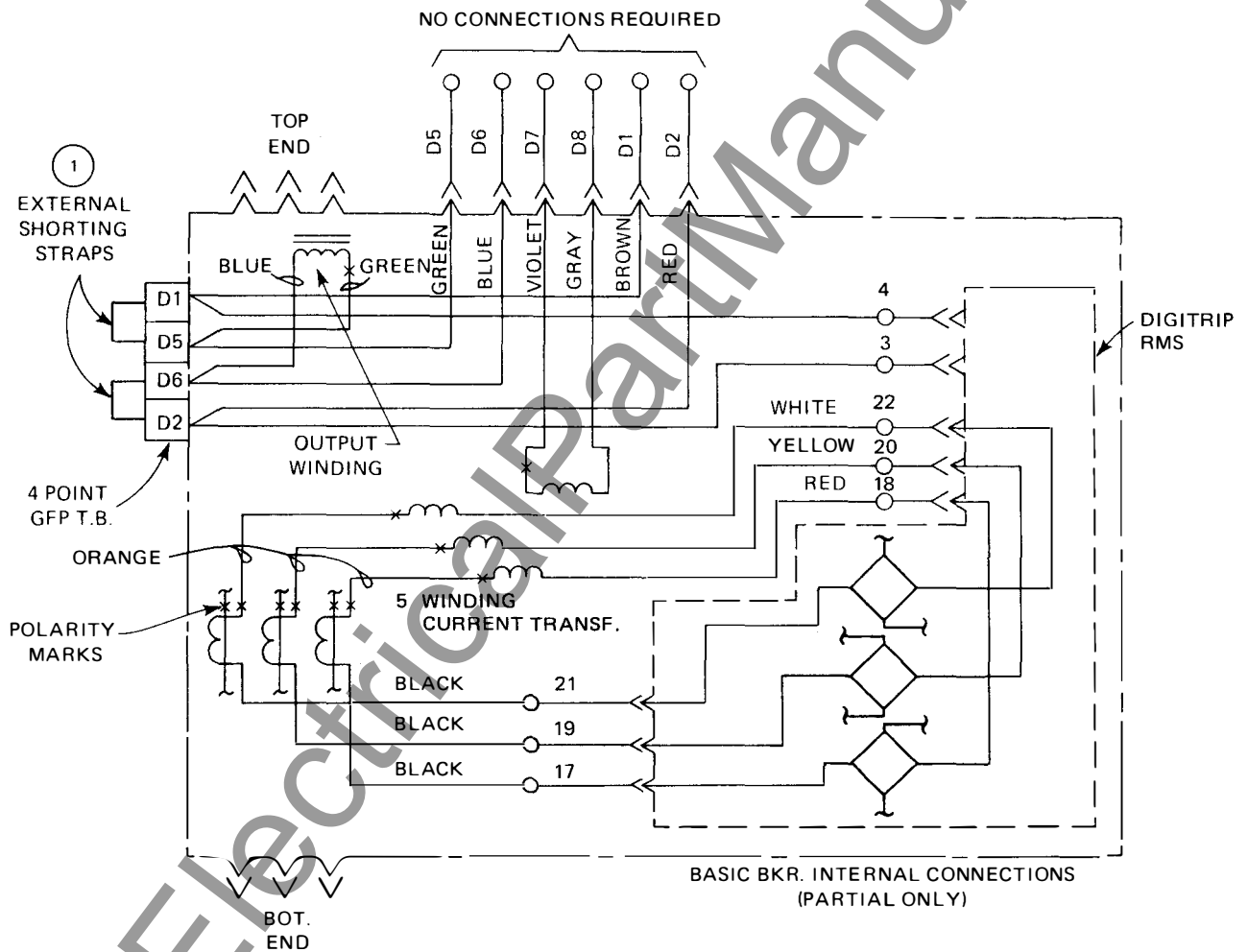
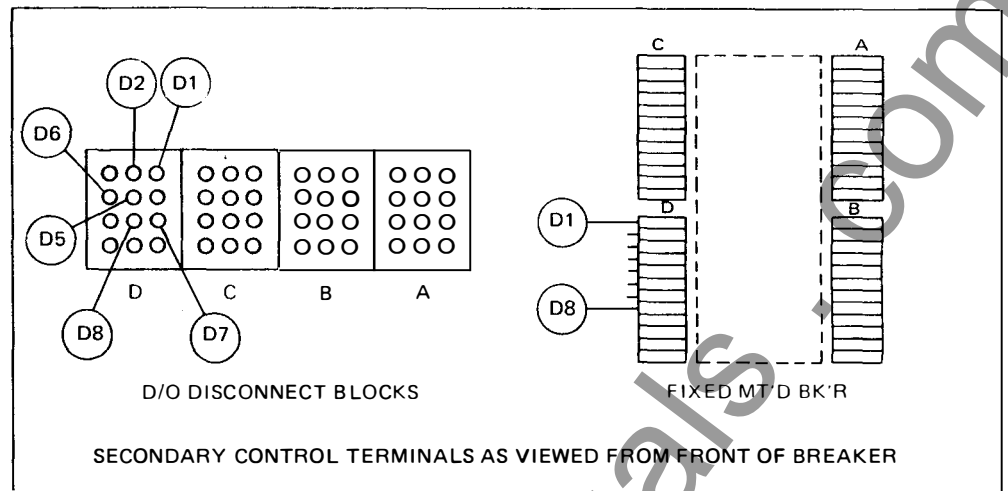
SPB MASTER CONNECTION DIAGRAM
Typical Short Delay Zone Interlocking
Connections for RADIAL Distribution System



SPB MASTER CONNECTION DIAGRAM
 Typical Connections for Phase
 Overcurrent Protection for
 2000A (Compact) and Less Frame Ratings



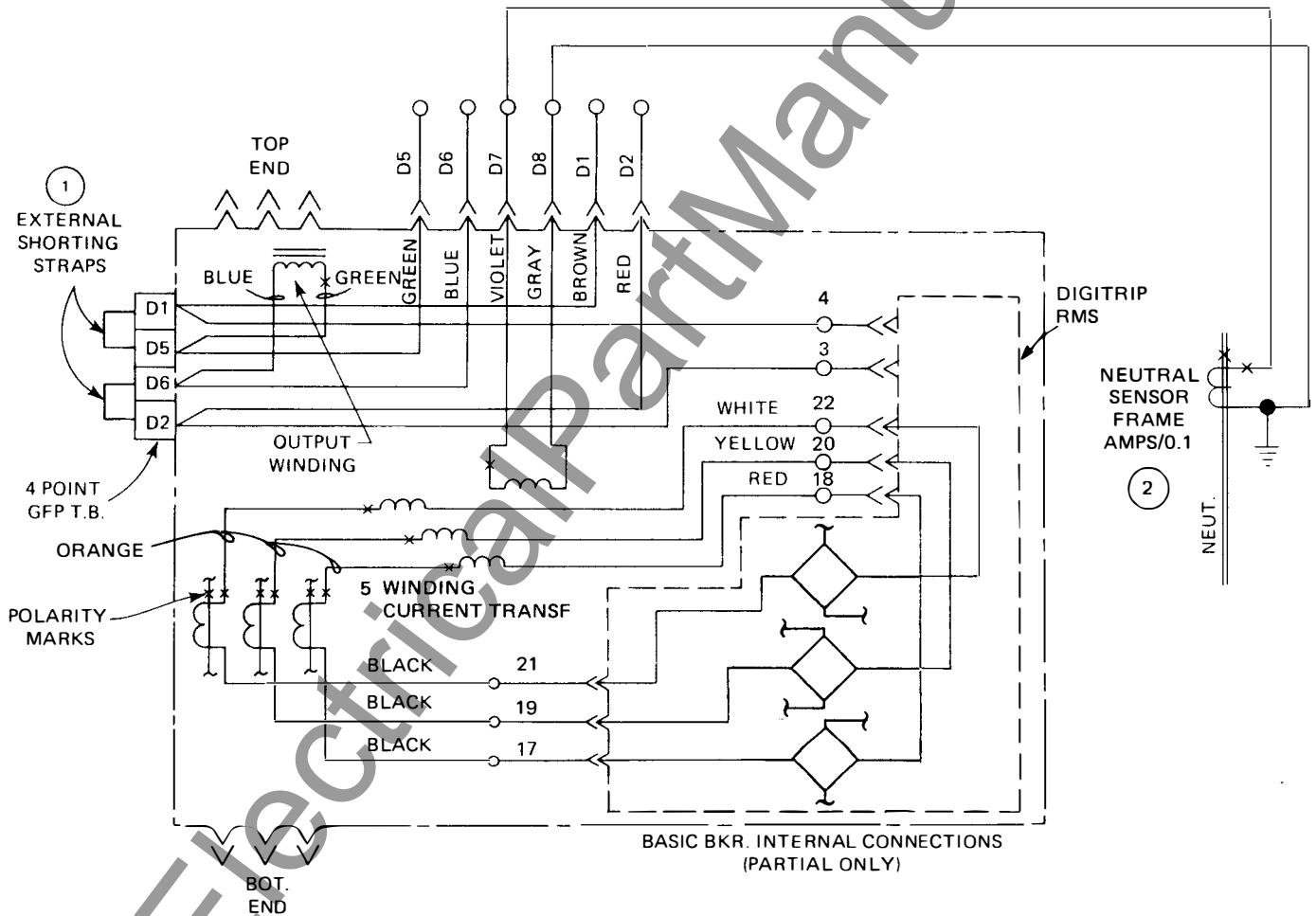
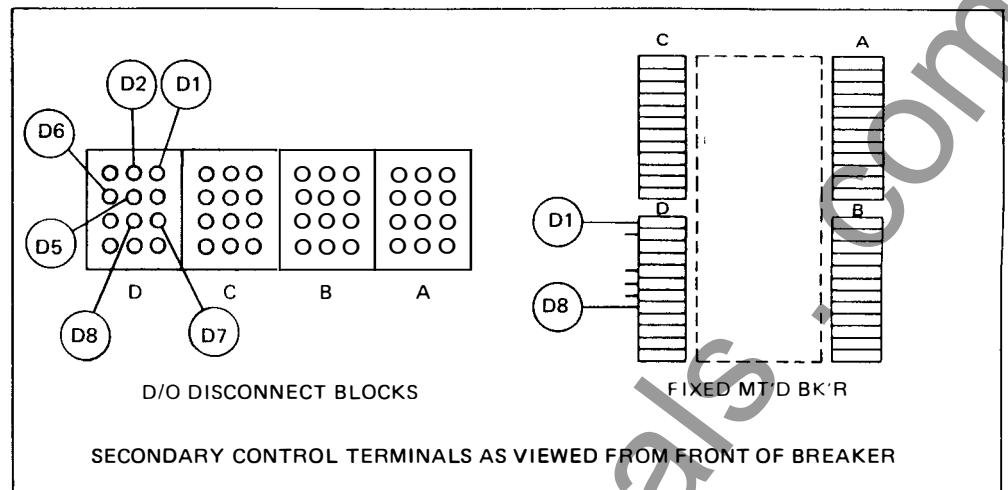
SPB MASTER CONNECTION DIAGRAM
 Typical Connections for Phase Overcurrent Protection
 for 2000/2500/2500/3000/4000/5000 Breakers
 (2000A. in 22 in. High Frame)



- 1 EXTERNAL SHORTING STRAPS MUST BE IN PLACE DURING TESTING AND OPERATING CONDITIONS PER INSTRUCTION N.P. ON SIDE OF BREAKER
- 2 SEE NOTE 5 ON SHEET 3 RE TERMINALS C4 AND C5.

SPB MASTER CONNECTION DIAGRAM
Ground Fault External Connections
3PH., 3W., 400/800/1200/1600/2000A. Breakers
(2000A. in Compact, 16 in. High Frame)

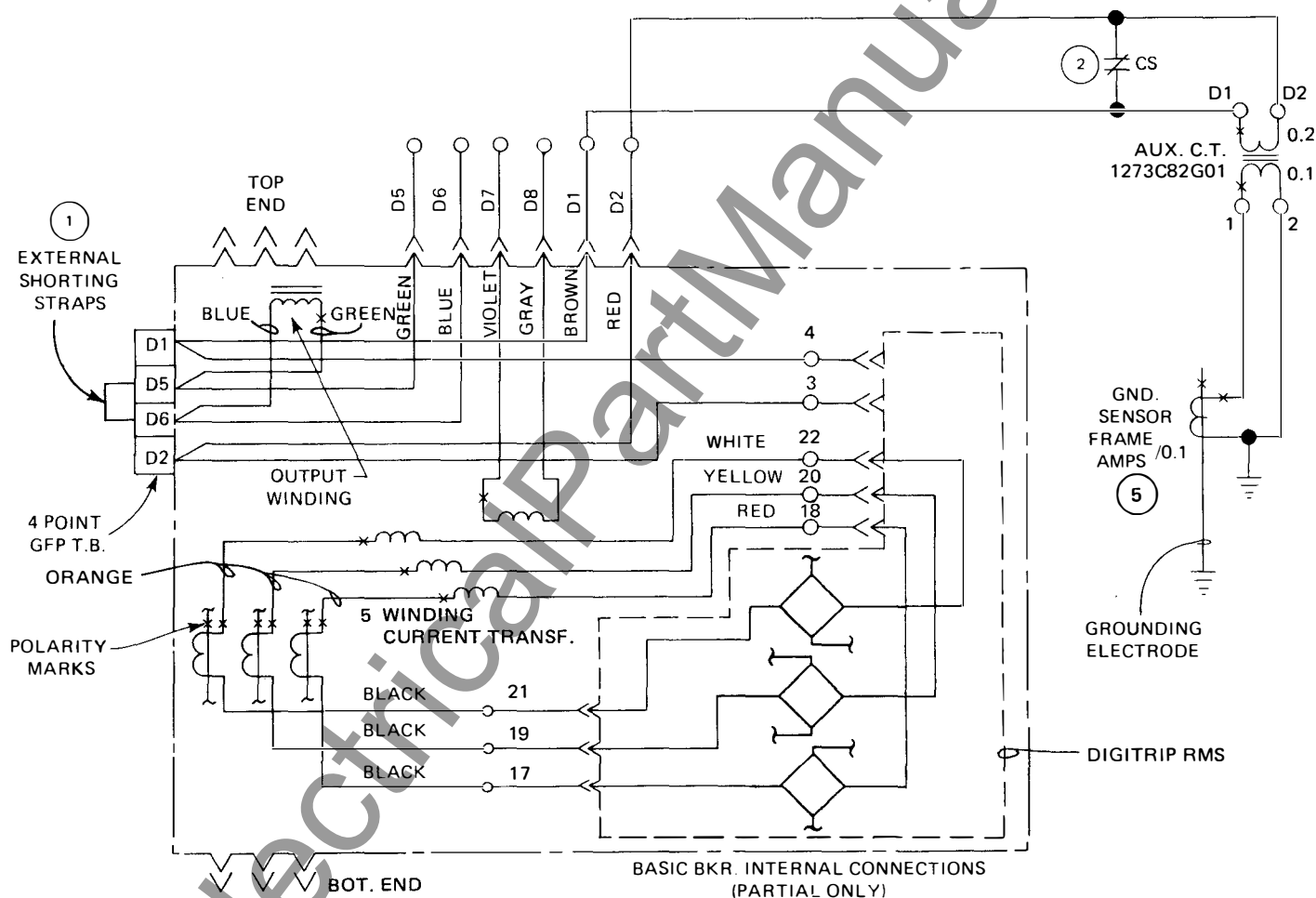
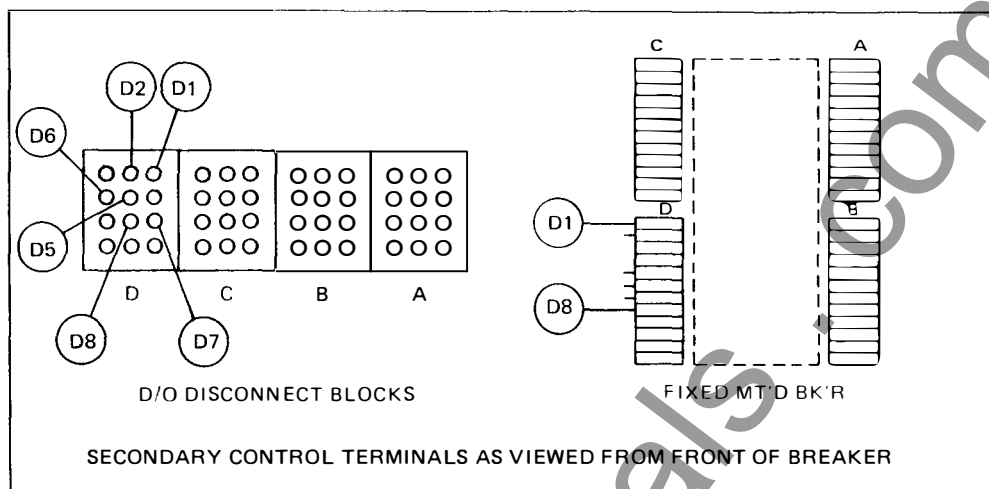
NEUTRAL SENSOR RATING	STYLE NO. 2608D25
400 A	G11
800 A	G03
1200 A	G04
1600 A	G02
2000 A	G05



- 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 5 ON SHEET 3 RE TERMINALS C4 AND C5.

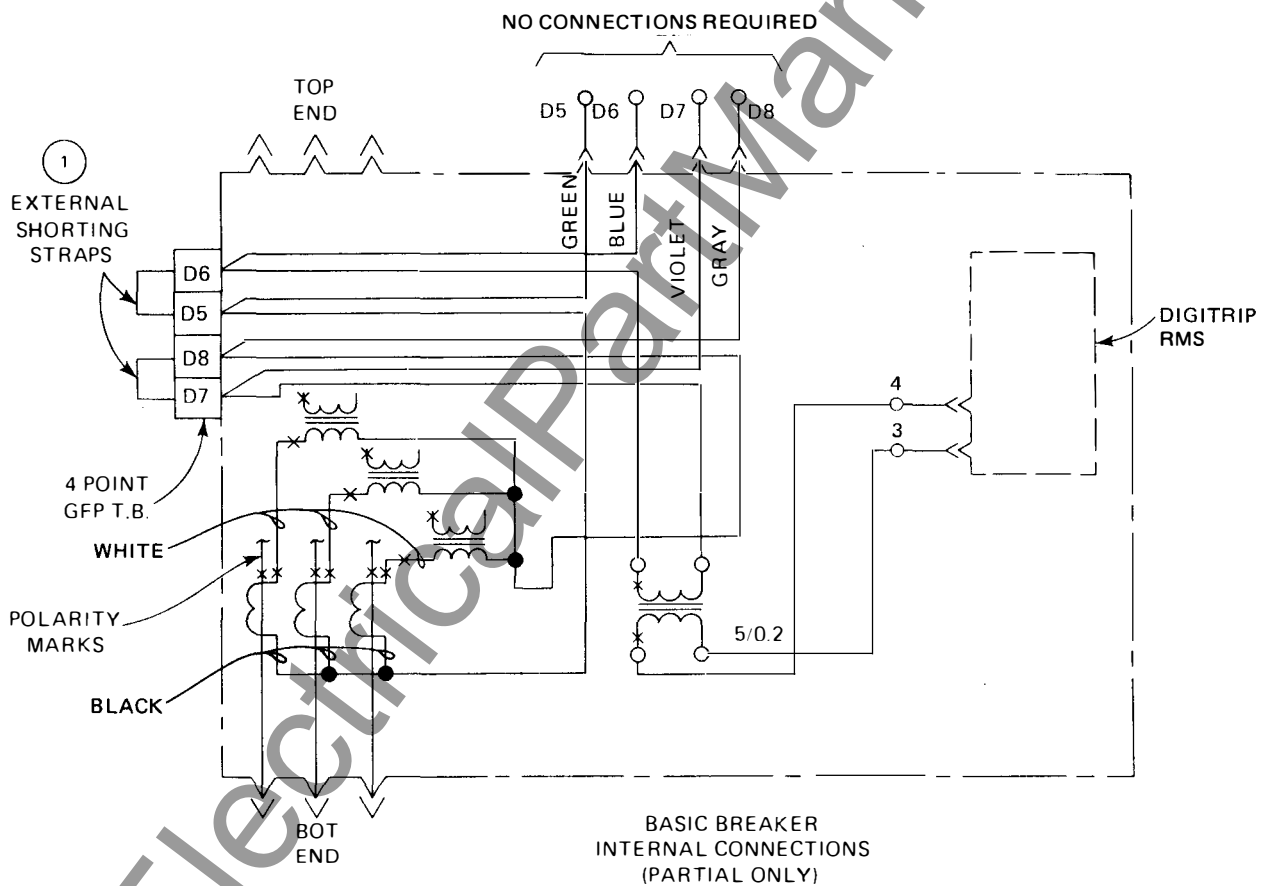
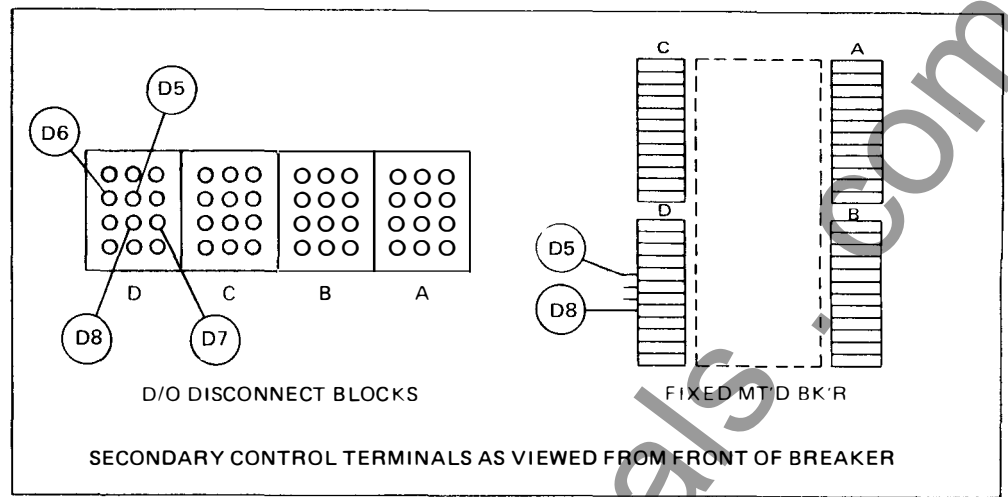
SPB MASTER CONNECTION DIAGRAM
Ground Fault External Connection
3PH., 4W., Residual, 400/800/1200/1600/2000A. Breakers
(2000A. in Compact, 16 in. High Frame)

GROUND SENSOR RATING AMPS	STYLE NO. 2608D25
400	G11
800	G03
1200	G04
1600	G02
2000	G05



- 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 BKR IN WITHDRAWN POSITION. (CELL SW. SHOWN IN BKR. WITHDRAWN POSITION.)
- 3 SEE NOTE 5 ON SHEET 3 RE TERMINALS C4 AND C5.
- 4 GROUND FAULT SENSOR AND AUX. C.T. 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
Ground Fault External Connections
3PH., 4W., Source Ground, 400/800/1200/1600/2000A. Breakers
(2000A. in Compact, 16 in. High Frame)

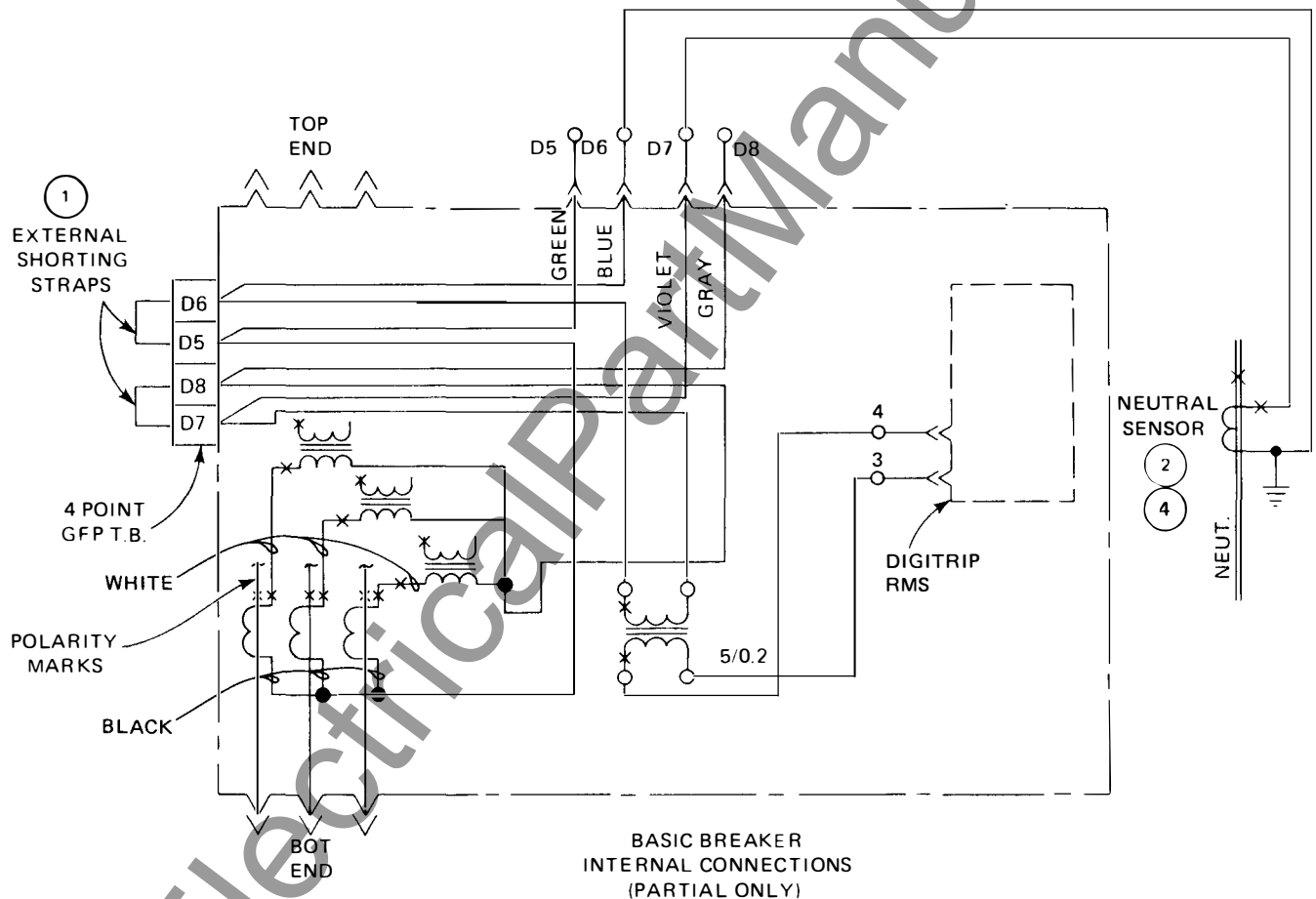
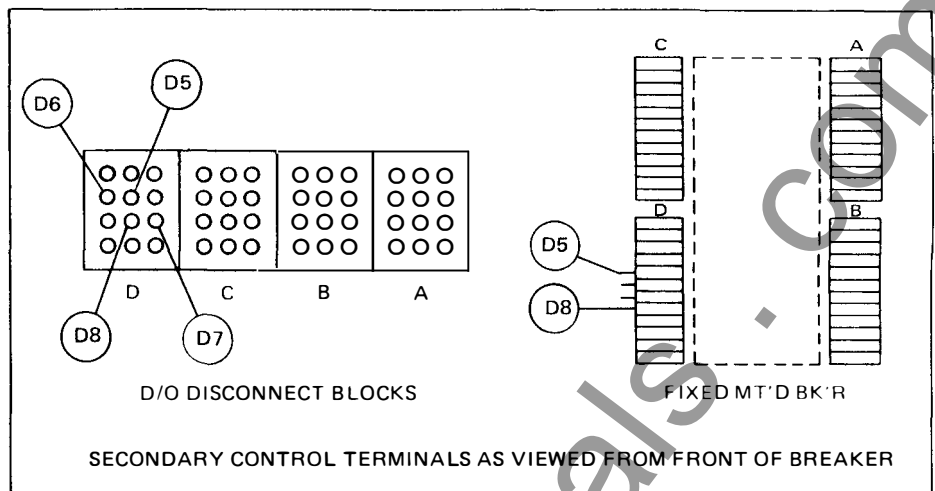


1 EXTERNAL SHORTING STRAPS MUST BE IN PLACE DURING TESTING AND OPERATING CONDITIONS PER INSTRUCTION N.P. ON SIDE OF BREAKER

2 SEE NOTE 5 ON SHEET 3 RE TERMINALS C4 AND C5.

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

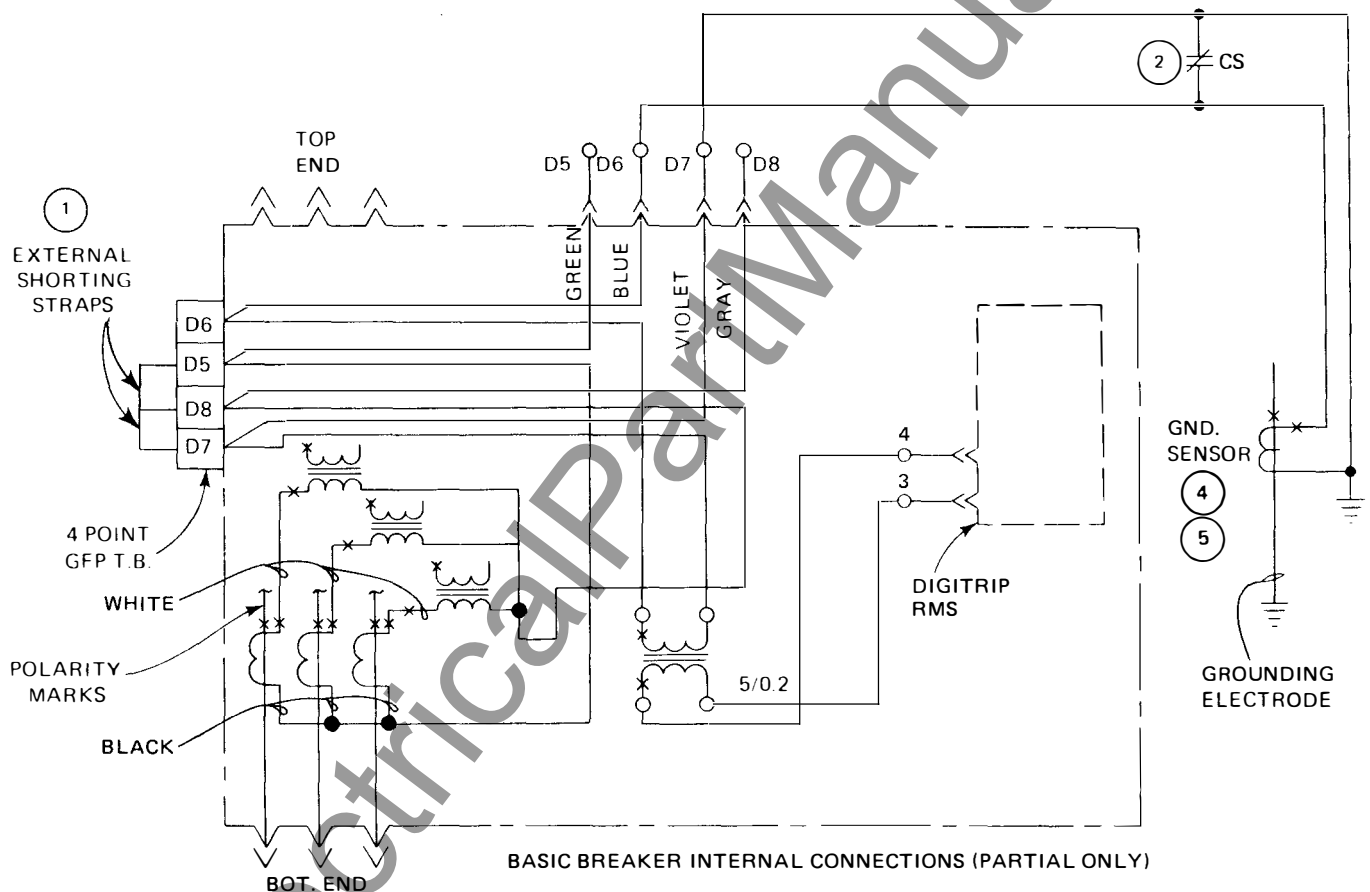
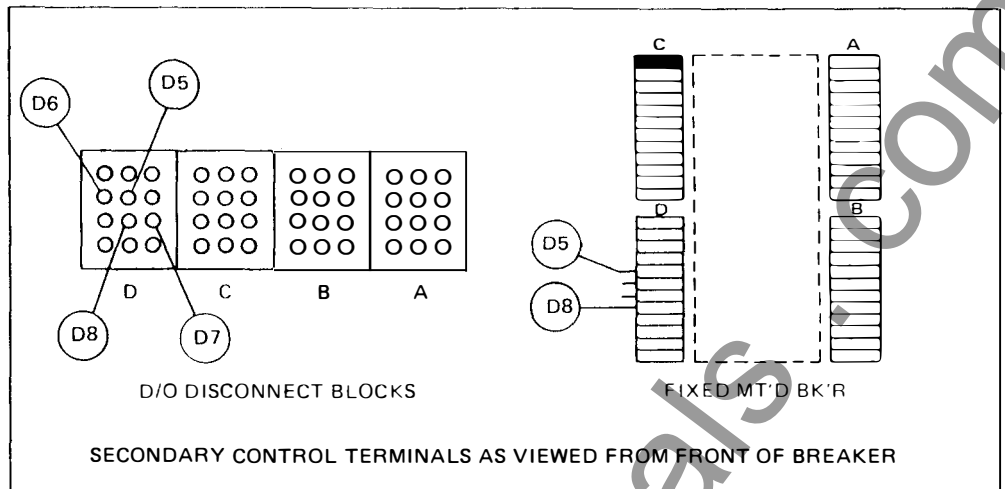
BREAKER FRAME RATING	NEUTRAL SENSOR RATING	STYLE NO.
2000 2500 3000	3000/5	2608D26G03
4000	4000/5	1367D69G01
5000	6000/5	1367D69G02



- 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 5 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.

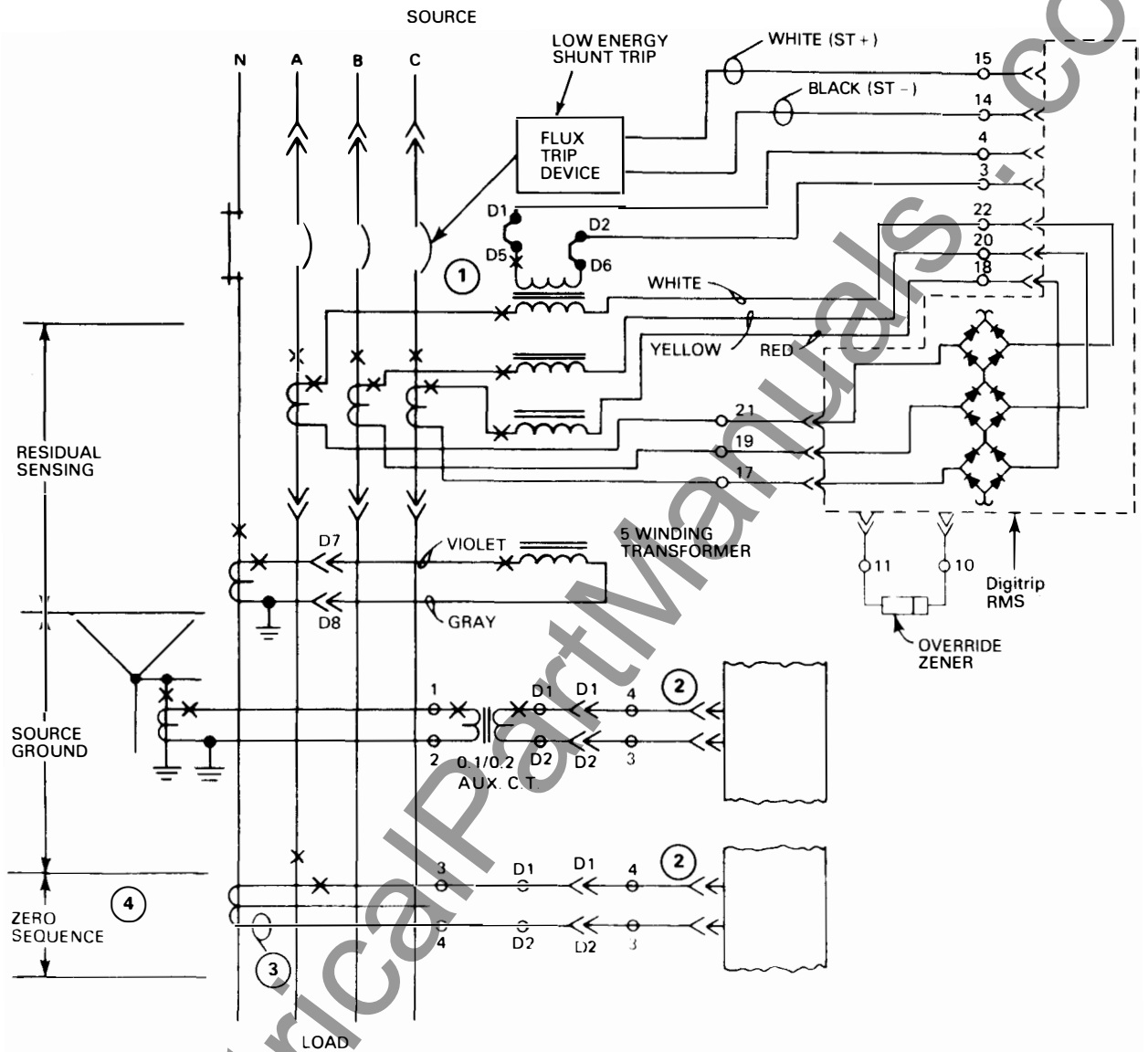
SPB MASTER CONNECTION DIAGRAM
Ground Fault External Connections
3PH., 4W., Residual, 2000/2500/3000/4000/5000A. Breakers
(2000A. in 22 in. High Frame)

GROUND SENSOR RATING AMPS	STYLE NO.
2000 2500 3000	2608D26G03
4000	1367D69G01
5000	1367D69G02



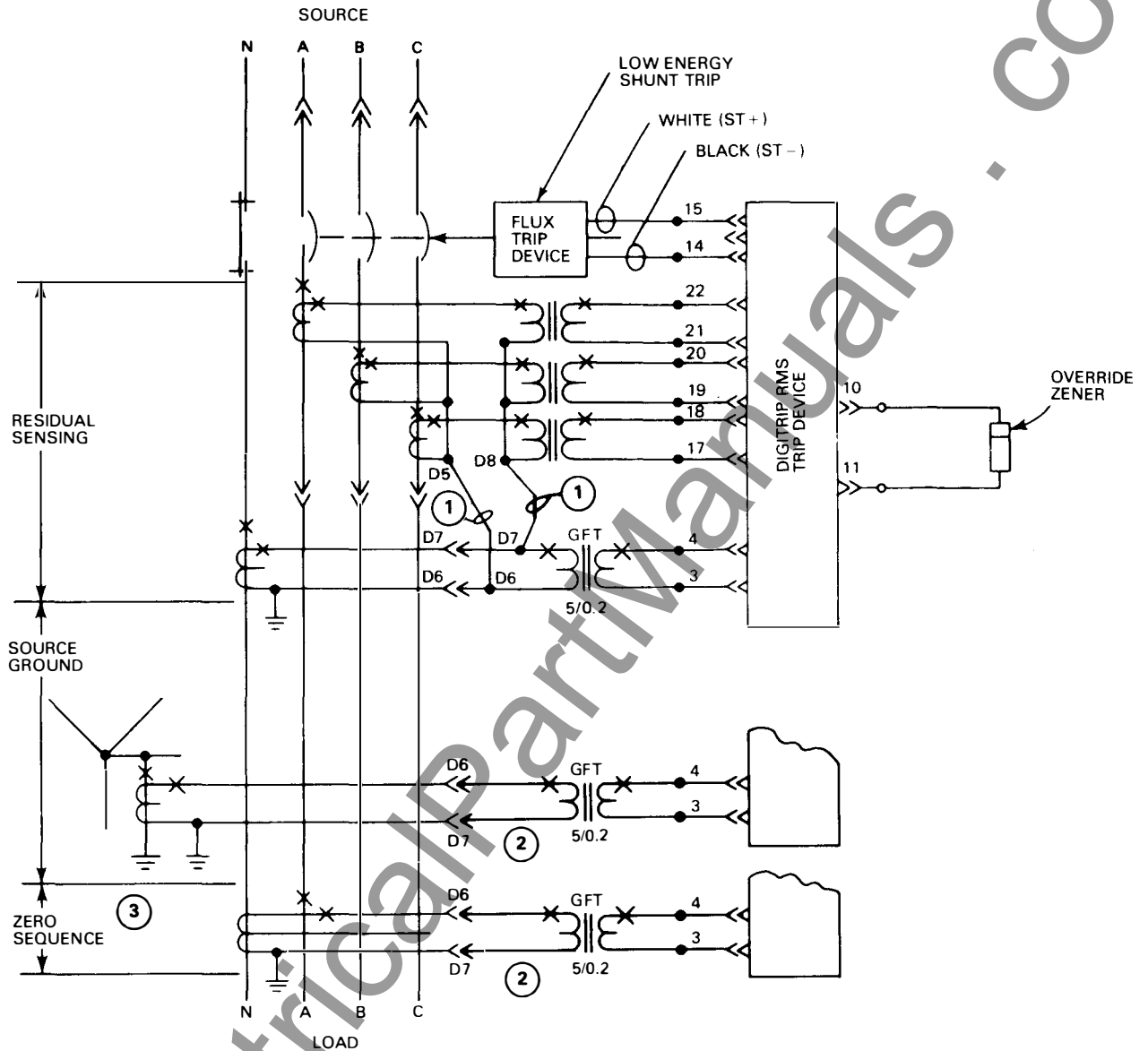
- 1 EXTERNAL SHORTING STRAPS MUST BE IN PLACE DURING TESTING AND OPERATING CONDITIONS PER INSTRUCTION N.P. ON SIDE OF BREAKER
- 2 ON MULTIPLE SOURCE SYSTEMS, USE CELL POSITION SWITCH TO AVOID VOLTAGE SURGES ON GROUND FAULT CURRENTS WITH D/O BREAKER IN WITHDRAWN POSITION. (CELL SWITCH SHOWN IN BKR. WITHDRAWN POSITION.)
- 3 SEE NOTE 5 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
Ground Fault External Connections, 3PH., 4W., Source Ground,
2000/2500/3000/4000/5000A. Breakers (2000A. in 22 in. High Frame)



- ① CONNECT D5 TO D1 AND D6 TO D2 ON 4 POINT GFP TERMINAL BLOCK FOR RESIDUAL SENSING.
- ② CONNECT D5 TO D6 ON 4 POINT GFP TERMINAL BLOCK FOR SOURCE GROUND AND ZERO SEQUENCE SENSING.
- ③ ZERO SEQUENCE SENSOR MUST NOT BE GROUND.
- ④ CONTACT WESTINGHOUSE FOR RECOMMENDATIONS WHEN ZERO SEQUENCE IS REQUIRED.

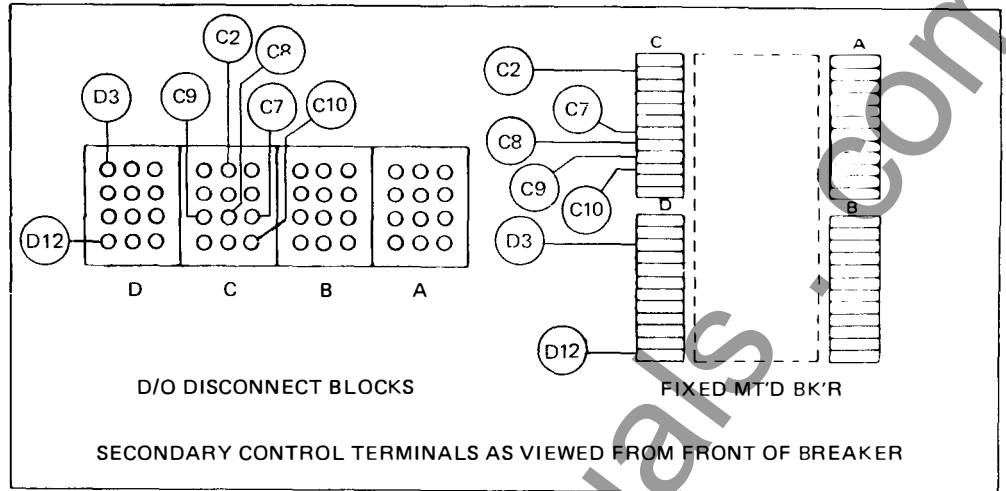
SPB MASTER CONNECTION DIAGRAM
 Typical Current Sensor Connections for
 2000A (Compact) and Less Frame Ratings



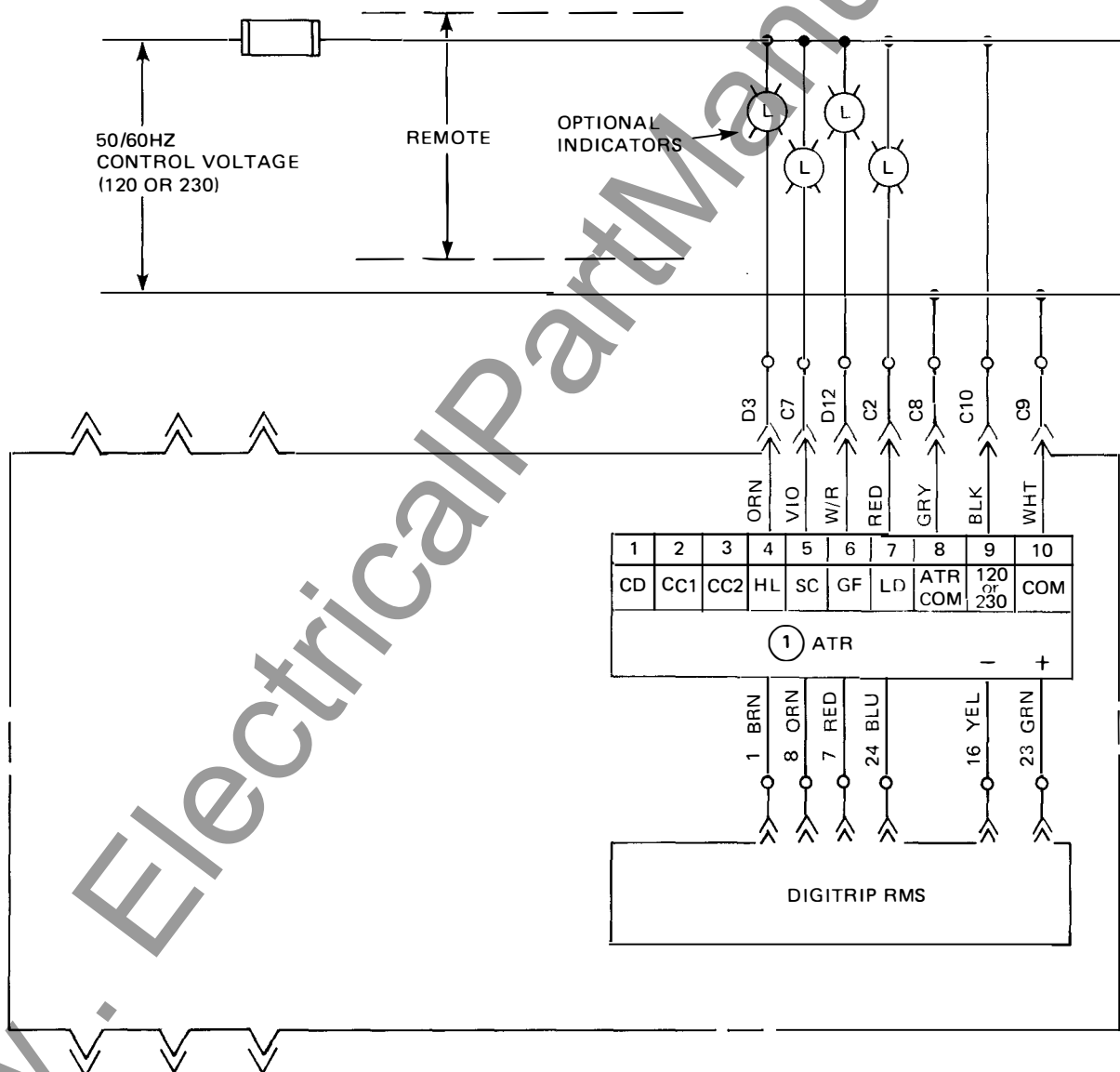
- ① CONNECT D5 TO D6 AND D7 TO D8 ON 4 POINT GFP TERMINAL BLOCK FOR RESIDUAL SENSING.
- ② CONNECT D5 TO D8 ON 4 POINT GFP TERMINAL BLOCK FOR SOURCE GROUND AND ZERO SEQUENCE SENSING.
- ③ CONTACT WESTINGHOUSE FOR RECOMMENDATIONS WHEN ZERO SEQUENCE IS REQUIRED.

SPB MASTER CONNECTION DIAGRAM
Typical Current Sensor Connections for
2000A and Greater Frame Ratings

AVAILABLE VOLTAGES 50/60 HZ	CAT NO.
120	PRTAATR
230	PRTAATR 230



- ① ATR CONTACT RATING
AC 0.5A @ 230 VAC
AC 1A @ 120 VAC
DC 1A @ 28 VDC



SPB MASTER CONNECTION DIAGRAM
Remote ATR Alarms for Use with
Digitrip RMS Types 600, 700 and 800

D/O DISCONNECT BLOCKS

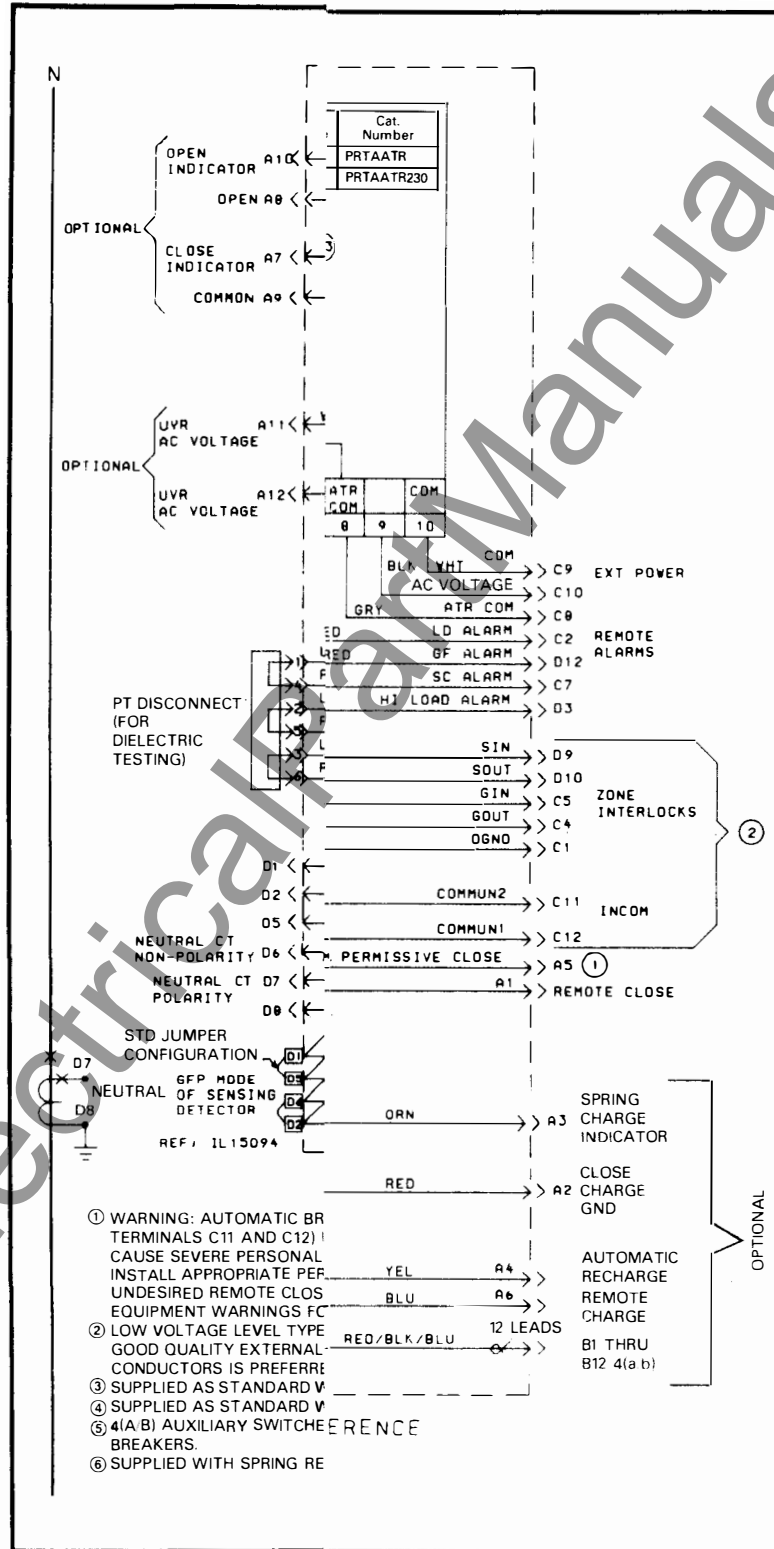
FIXED MOUNTED BREAKER

SECONDARY CONTROL TERMINALS AS VIEWED FROM FRONT OF BREAKER



SPB MASTER CONNECTION DIAGRAM
Connection Diagram for Use with Digitrip RMS (700/800)
and 400/800/1200/1600/2000C Circuit Breakers
(2000C in. 16 in. High Frame)

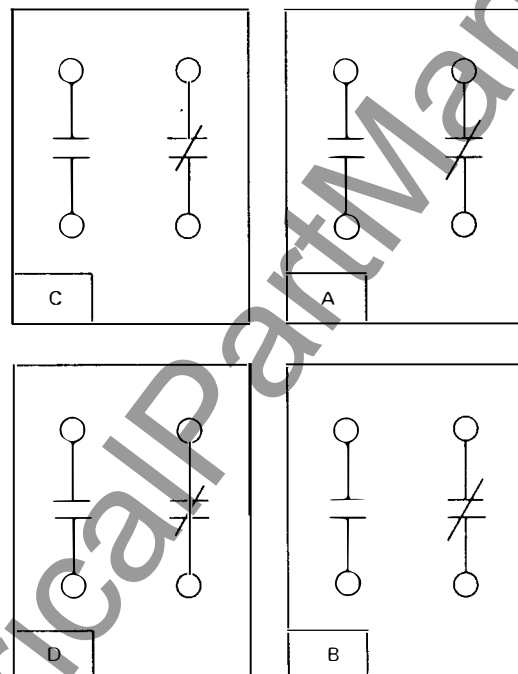
Westinghouse Electric Corporation
Pittsburgh, PA



NO. OF CELL SWITCHES	SWITCH MOUNTING POSITIONS	CAT. NO.
1a-1b	A	SPBCS1
2a-2b	A/B	SPBCS2
4a-4b	A/B/C/D	SPBCS4

SWITCH RATING (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 Cell Position Switches

ELECTRICAL OPERATOR AND SHUNT TRIP RESISTOR VALUES

DESIGNATED RESISTANCE VALUES IN OHMS AND (WATTS)

CONTROL VOLTAGE	R1	R2	R3	R4	R5	PR	SR ⑤	ST (CURRENT)	ST ⑤	SR (CURRENT)	FUSE	MOTOR CURRENT
24 DC	---	---	① 18.5(10W)	6.8(5W)	---	---	1.7	8.0	2.0	12	5	4.25
32 DC	220(1W)	---	② 25(10W)	6.8(5W)	1(15W)	---	2.0	8.0	2.0	16	5	4.25
48 DC	680(1W)	1(15W)	③ 75(10W)	37(5W)	3(15W)	4(25W)	2.0	8.0	2.0	16	5	4.25
60 DC	---	---	---	---	---	---	---	1.4	36	---	---	---
125 DC	---	---	● 500(10W)	300(5W)	---	---	106	1.2	106	1.2	3	1.2
24 AC	---	---	---	---	---	---	---	6.0	2	---	---	---
48 AC	---	---	---	---	---	---	---	12.5	2	---	---	---
120 AC	---	---	---	---	---	---	36	2.5	36	2.5	3	1.2
208 AC	12K(5W)	---	---	---	---	75(25W)	106	1.9	106	1.9	3	1.2
240 AC	15K(3W)	---	---	---	---	100(25W)	106	2.2	106	2.2	3	1.2
480 AC	---	---	---	---	---	---	---	0.4	1120	---	---	---
600 AC	---	---	---	---	---	---	---	0.5	1120	---	---	---

① 2 – 37Ω 5w in parallel

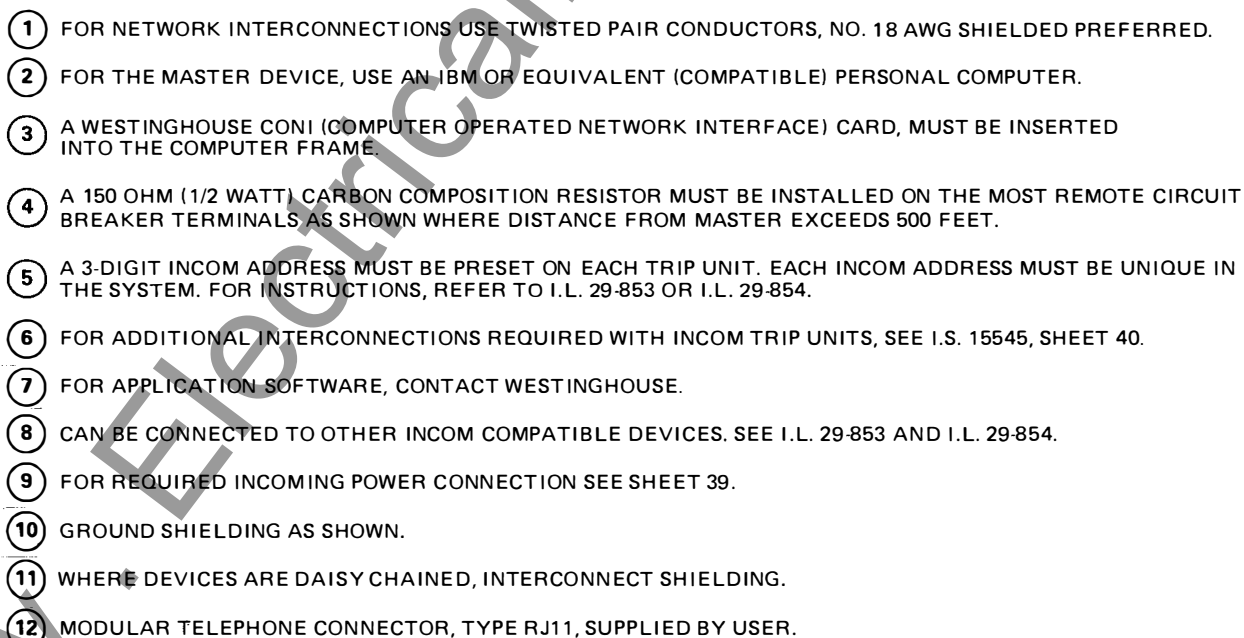
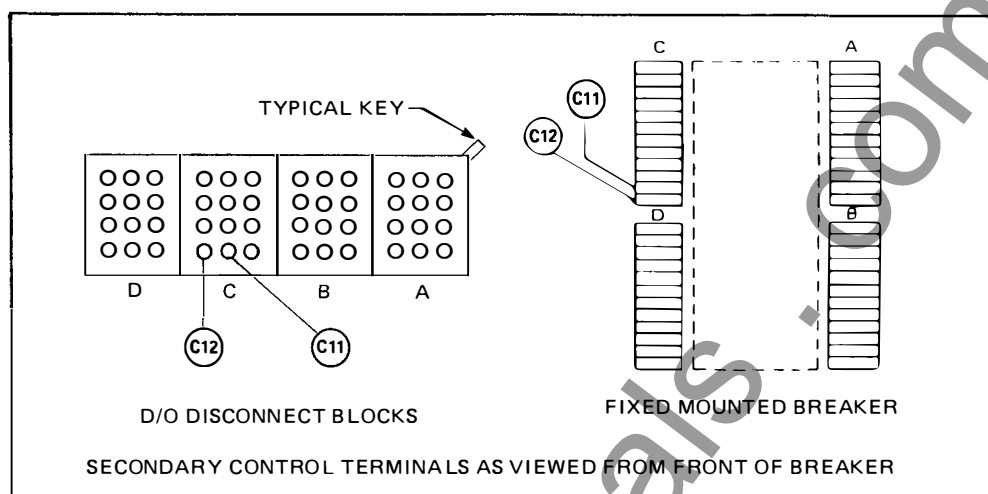
② 2 – 50Ω 5w in parallel

③ 2 – 150Ω 5w in parallel

④ 2 – 1000Ω 5w in parallel

⑤ Dc coil resistance for shunt trip (ST) and spring release (SR) coils.

SPB MASTER CONNECTION DIAGRAM
Motor Operator, Spring
Release and Shunt Trip Resistor Values



Rev. A
I.S. 15545
Sheet 45