

# **Cutler-Hammer Beaver, PA**

Automatic Transfer Switch

## **ATVS/ATHSFD NTVS/NTHSFD Wiring Diagrams**

Version 3.1    October 18, 1995



**Cutler-Hammer**

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**EAT•N**

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Page No.

Date

VUPPER.DWG	10 Feb 95
UPPR100.DWG	2 Aug 95
ATVSXFMR.DWG	8 May 95
NTVSXFMR.DWG	19 Sep 95
VSSINTL.DWG	29 Jun 95
NTVSINTL.DWG	18 Apr 95
VSS01.DWG	17 Oct 95
VSS02.DWG	17 Oct 95
VSS03.DWG	17 Oct 95
VSS04.DWG	17 Oct 95
VSS05.DWG	25 Jul 95
VSS05A.DWG	1 Aug 95
VSS06.DWG	17 Oct 95
VSS07.DWG	17 Oct 95
VSS08.DWG	17 Oct 95
VSS09.DWG	17 Oct 95
VSS10.DWG	17 Oct 95
VSS11.DWG	18 Oct 95
VSS12.DWG	18 Oct 95
VSS13.DWG	17 Oct 95

Plug - Pin assignments for the SOLID STATE LOGIC Transfer Switch.

P1 - Switching Panel

S1 - Transformer Panel

1	Normal	N1	Phase A
2	Normal	N2	Phase B
3	Normal	N3	Phase C
4	Normal	N1	Phase A
5	Normal	N2	Phase B
6	Normal	N3	Phase C
7	N Aux Sw #1	N.O.	
8	N Aux Sw #1	C	
9	N Aux Sw #1	N.C.	
10	N Aux Sw #2	N.O.	
11	N Aux Sw #2	C	
12	N Aux Sw #2	N.C.	
13	N Aux Sw #3	N.O.	
14	N Aux Sw #3	C	
15	N Aux Sw #3	N.C.	

P2 - Switching Panel

S2 - Transformer Panel

1	Emergency	E3	Phase C
2	Emergency	E2	Phase B
3	Emergency	E1	Phase A
4	Emergency	E3	Phase C
5	Emergency	E2	Phase B
6	Emergency	E1	Phase A
7	E Aux Sw #1	N.O.	
8	E Aux Sw #1	C	
9	E Aux Sw #1	N.C.	
10	E Aux Sw #2	N.O.	
11	E Aux Sw #2	C	
12	E Aux Sw #2	N.C.	
13	E Aux Sw #3	N.O.	
14	E Aux Sw #3	C	
15	E Aux Sw #3	N.C.	

P3 - Switching Panel to  
S3 - Transformer Panel

1		
2		
3		
4	Motor	Bridge "AC" In
5	Motor	Bridge "AC" In
6		
7	Lockout (Normal)	N.C.
8		Com
9		N.O.
10	Lockout (Emergency)	N.C.
11		Com
12		N.O.

P4 - Transformer Panel to  
S4 - Intelligence Panel

1	Motherboard 1
2	Motherboard 2
3	Motherboard 3
4	Motherboard 4
5	Motherboard 5
6	Motherboard 6
7	Motherboard 7
8	Motherboard 8
9	Motherboard 9
10	Motherboard 10
11	Motherboard 11
12	Motherboard 12
13	Motherboard 13
14	Motherboard 14
15	

S5 - Transformer Panel to  
P5 - Intelligence Panel (Door)

1	Normal Operate
2	Emergency Operate
3	Control Neutral
4	Normal Control Power
5	Emergency Control Power
6	Normal Position Light
7	Emergency Position Light
8	Normal Logic Interrupt (Test Pushbutton)
9	Normal Logic Interrupt (Test Pushbutton)
10	Emergency Logic Interrupt

- 11 Emergency Logic Interrupt
- 12 Motor Circuit
- 13 NR Relay Output
- 14 Engine Start Circuit Source 2
- 15 Engine Start Circuit Source 2

S6 - Transformer Panel to  
P6 - Intelligence Panel (Door)

- 1 Service Disconnect Motor Interrupt
- 2 Service Disconnect Motor Interrupt
- 3 Disconnect Indicator
- 4 Voting Relay Output
- 5 Normal Trip Light Contact
- 6 Emergency Trip Light Contact

S7a - g Voltage Selector - Socket  
P7 - Plug

- 1 NT3
- 2 NT4
- 3 NT1
- 4 ET1
- 5 ET4
- 6 ET3

# Cutler-Hammer Automatic Transfer Switch Wiring Diagrams

## Directions for Use

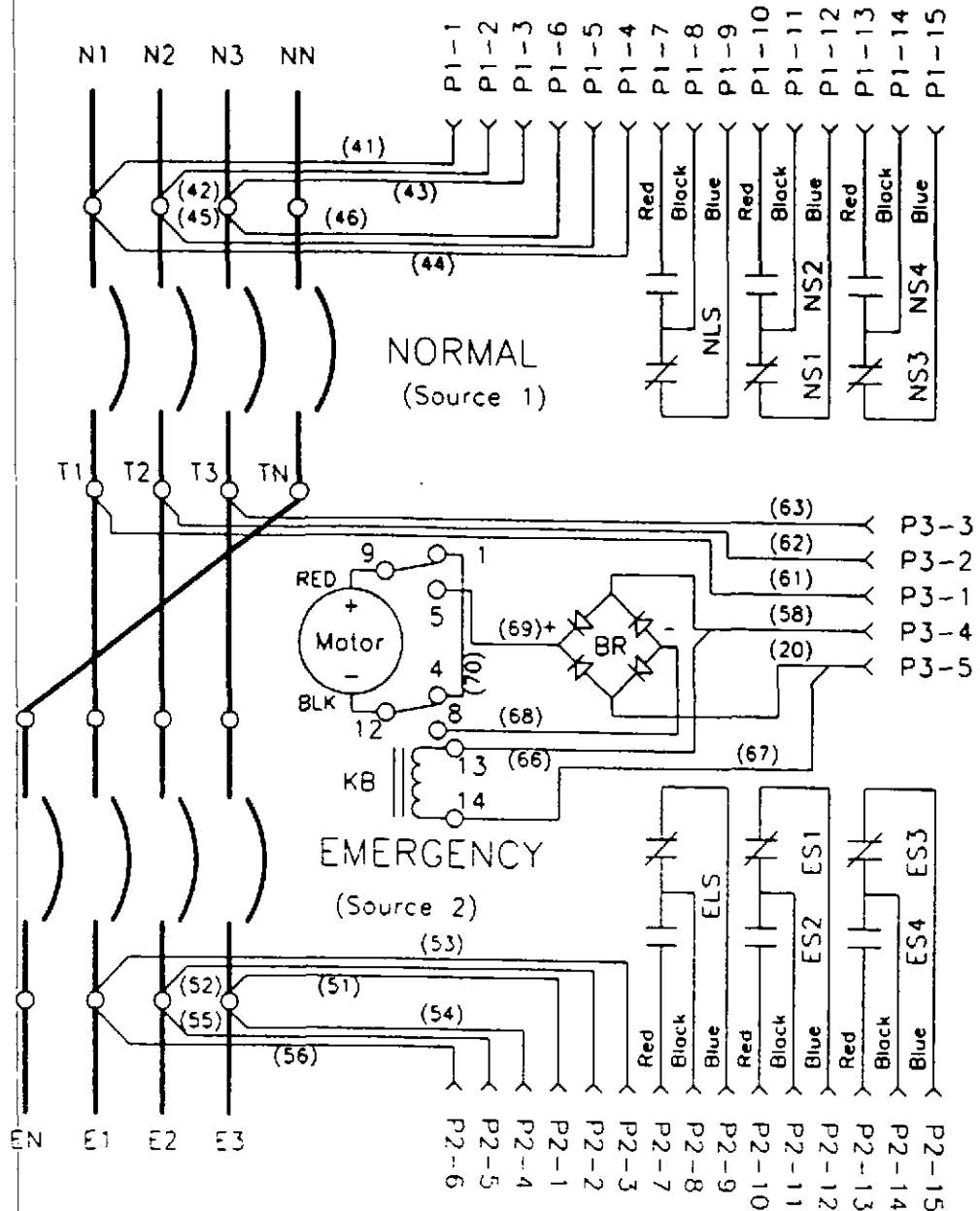
The drawing package can be used as a point to point wiring diagram for maintenance and diagnostic purposes for Solid State Logic Transfer Switches, 150 - 1000 Ampere, all voltages.

This document contains the following wiring information:

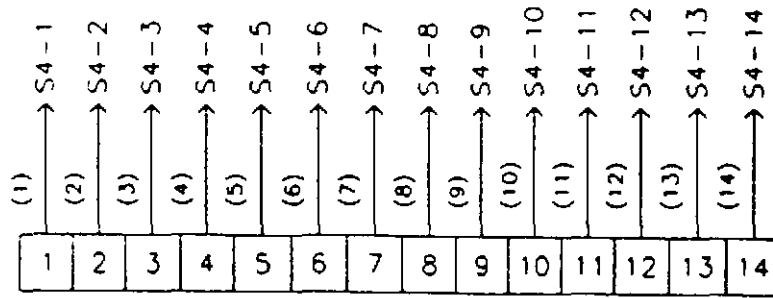
- Basic Switching Panel Wiring
- Basic wiring diagrams for the transformer and intelligence panels.
- Wiring for all normally available features. (Options)
- Legend Sheet describing symbols used throughout this document.

Note: Additional sheets may be provided with this document on occasion to illustrate custom wiring provided for a specifically supplied function which is not normally available.

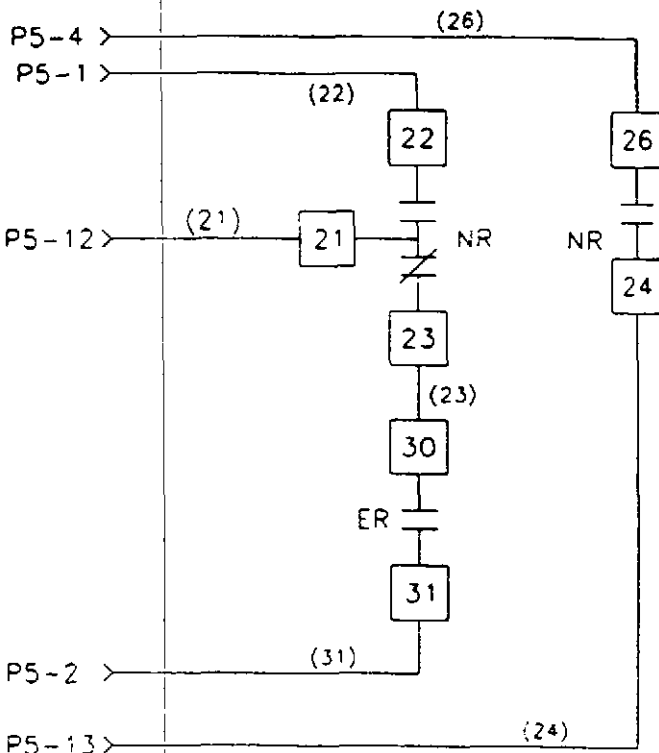
# Switching Panel (150 - 1000 Ampere, 2,3, or 4 pole)



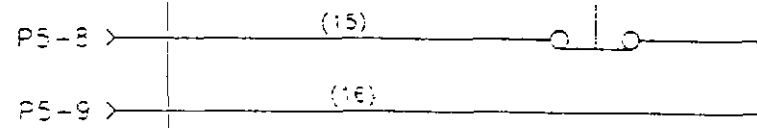
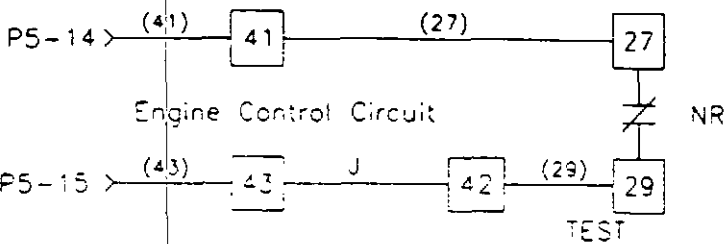
# Intelligence Panel



P5-3 > Control Neutral



P5-5 >



P5-10 >

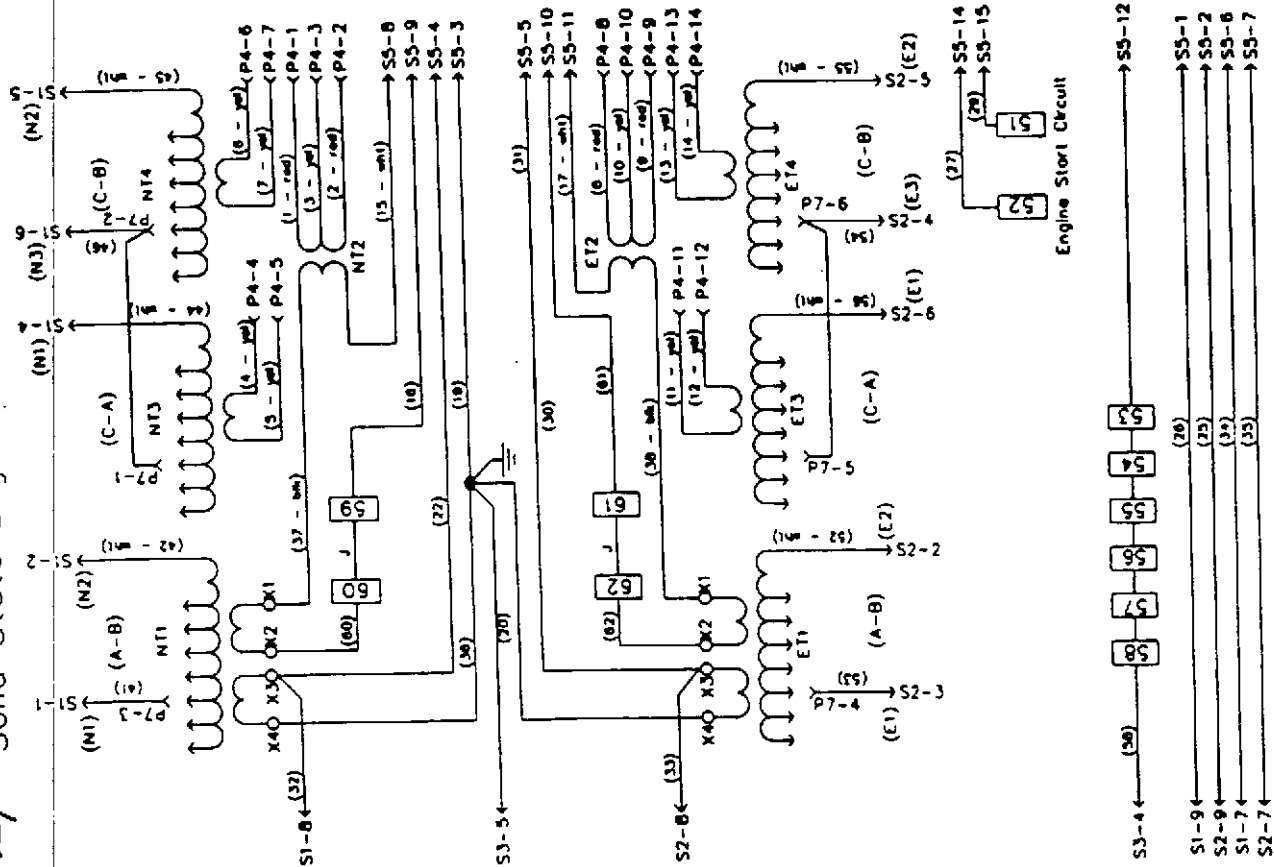
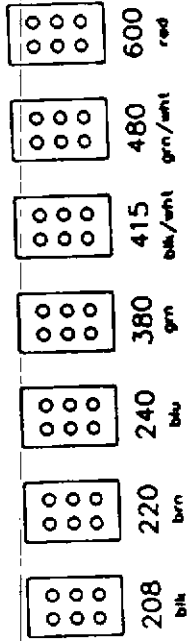
P5-11 > (17)

# ATVS/ATHSPD Solid State Logic Transformer Panel

## P7/S70-g Detail

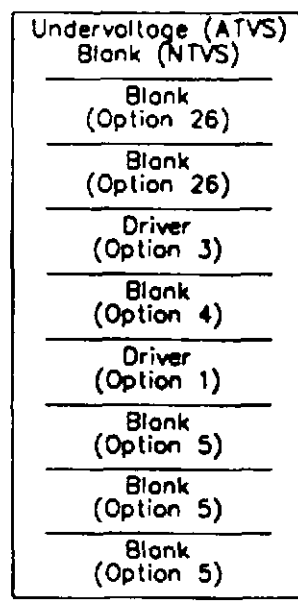
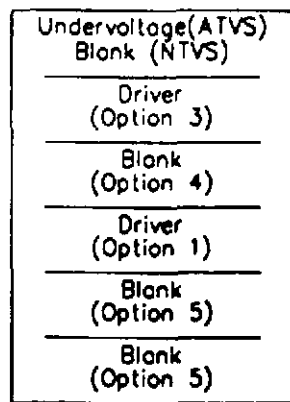
### Pin Assignments

- 1 - NT3
- 2 - NT4
- 3 - NT1
- 4 - ET1
- 5 - ET4
- 6 - ET3



6 Position Card Cage

9 Position Card Cage



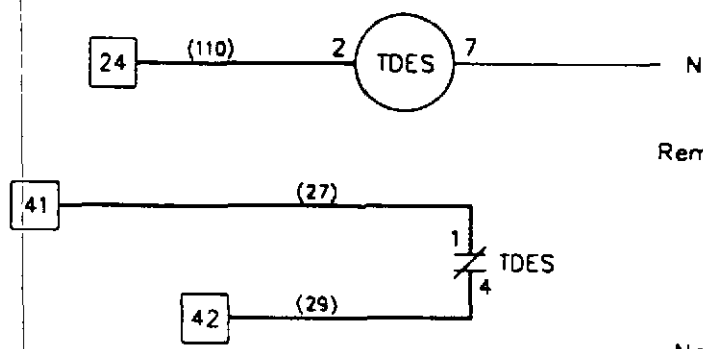
Option 1 Time Delay Normal to Emergency (TDNE)

6 Position Card Cage  
Replace Driver Card in Position 4  
with Timer Card

9 Position Card Cage  
Replace Driver CARD in Position 6  
with Timer Card

Not Available on NTVS

Option 2 Time Delay Engine Start (TDES)



Remove wires: #27 (Term 41 to Term 27)  
and #29 (Term 42 to Term 29)

Not Available on NTVS

Option 3 Time Delay Emergency to Normal (TDEN)

6 Position Card Cage  
Replace Driver Card in Position 2  
with Timer Card

9 Position Card Cage  
Replace Driver Card in Position 4  
with Timer Card

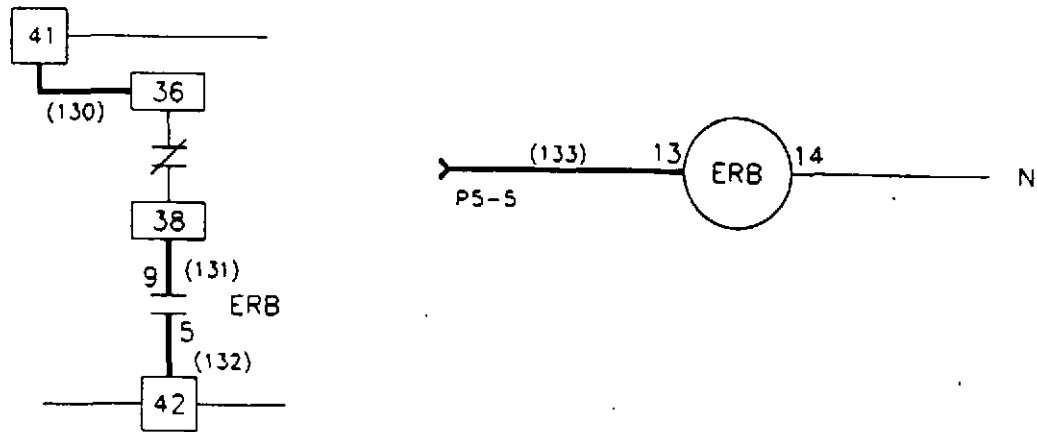
Not Available on NTVS

Option 4 Time Delay Engine Cooloff (TDEC)



- 6 Position Card Cage
- Replace Blank Card in Position 3 with Timer Card
- Add EC Relay to Motherboard
- Add ERB Relay to Intelligence Panel

- 9 Position Card Cage
- Replace Blank Card in Position 5 with Timer Card
- Add EC Relay to Motherboard



Not Available on NTVS

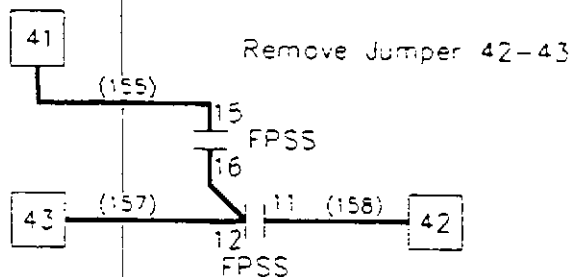
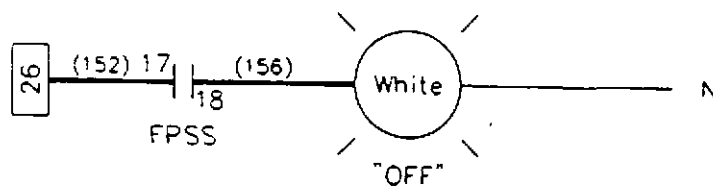
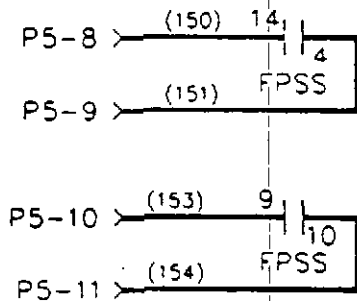
Option 5 Voltage/Frequency Sensing on Emergency

- 6 Position Card Cage
- Replace BLANK Card in Position 5 or 6 with Appropriate Sensing Card

- 9 Position Card Cage
- Replace BLANK Card in Position 7,8, or 9 with Appropriate Sensing Card

Option 6H Four Position Test Switch (FPSS)

Replaces Option 6B TEST Pushbutton



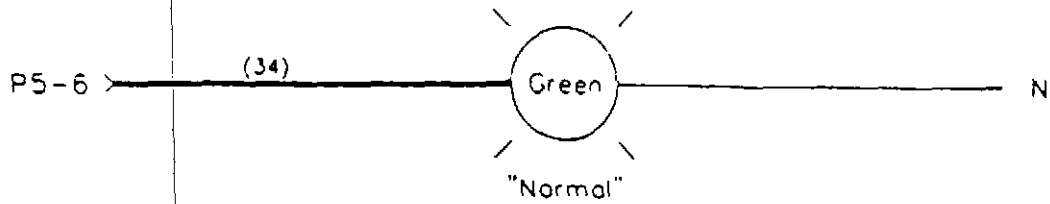
Remove Jumper 42-43

	9 10	11 12	4 14	15 16	17 18
TEST	X	X			
AUTO	X	X	X		
OFF				X	X
ENG. RUN	X		X	X	

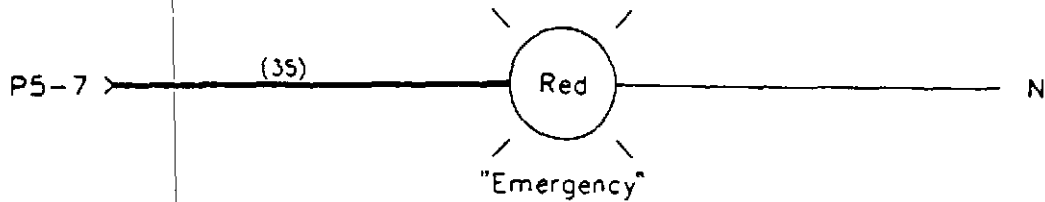
Not Available on NTVS

Option 12C Normal Position Light (NL)

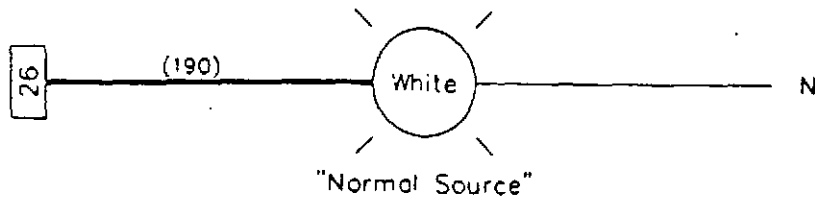
X



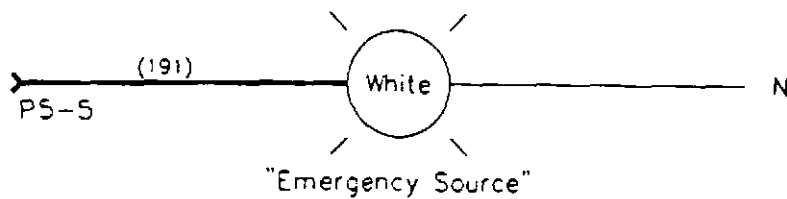
Option 12D Emergency Position Light



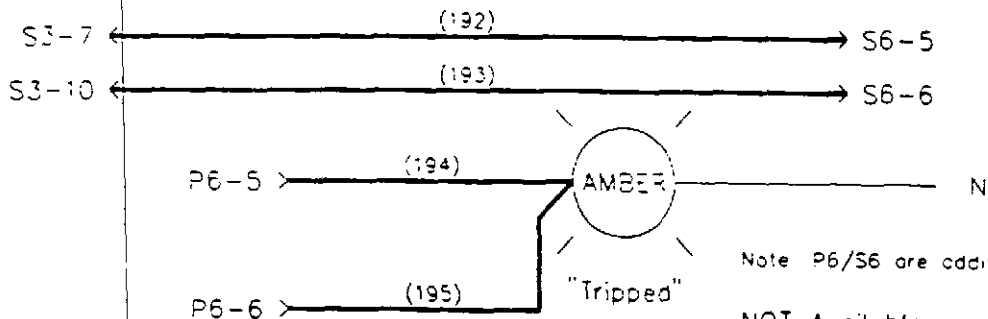
Option 12G Normal Source Light



Option 12H Emergency Source Light



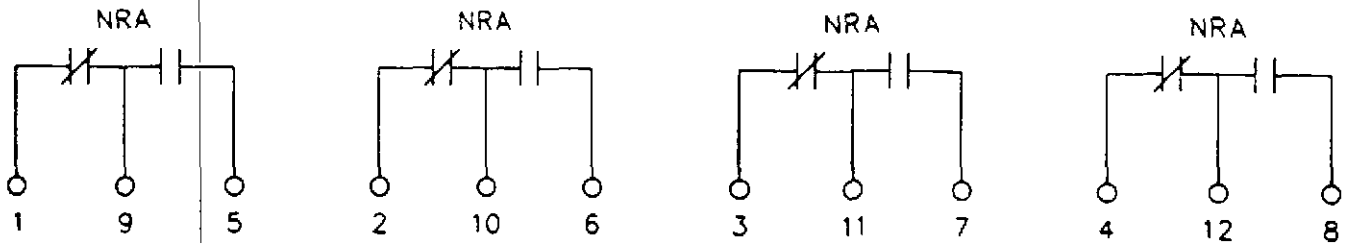
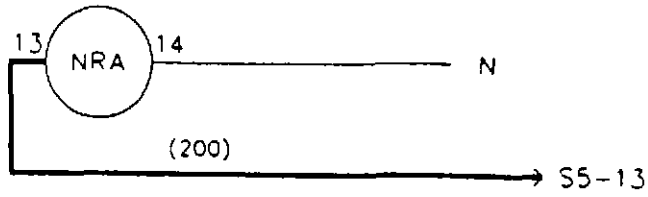
Option 12L Trip Indicator Light Only available with Option 16



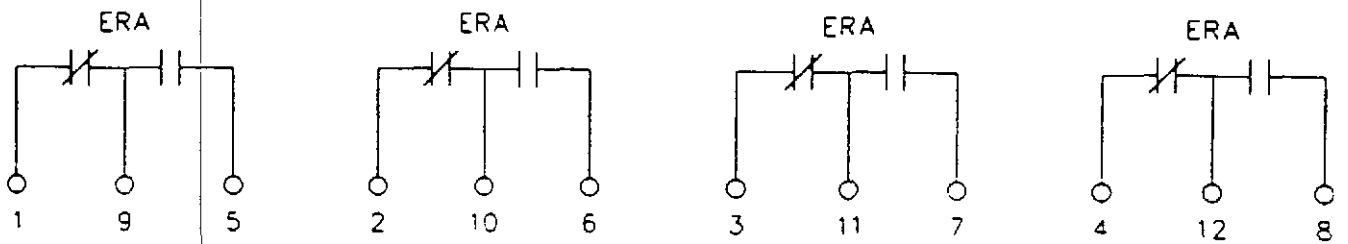
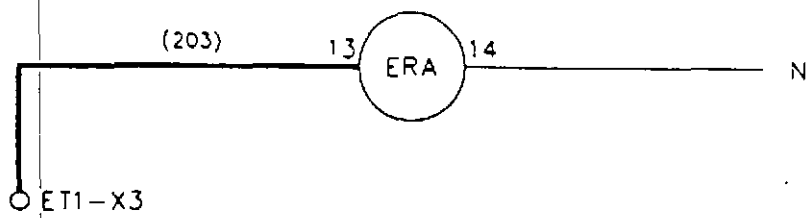
Note: P6/S6 are additional 12 pin plug/socket.  
NOT Available on 100 amp units

Option 14C Normal Auxiliary Relay (NRA)

X

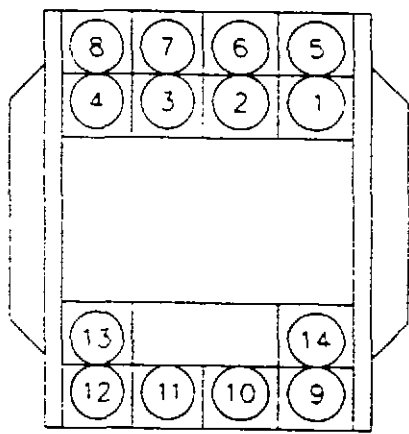


Option 14D Emergency Auxiliary Relay



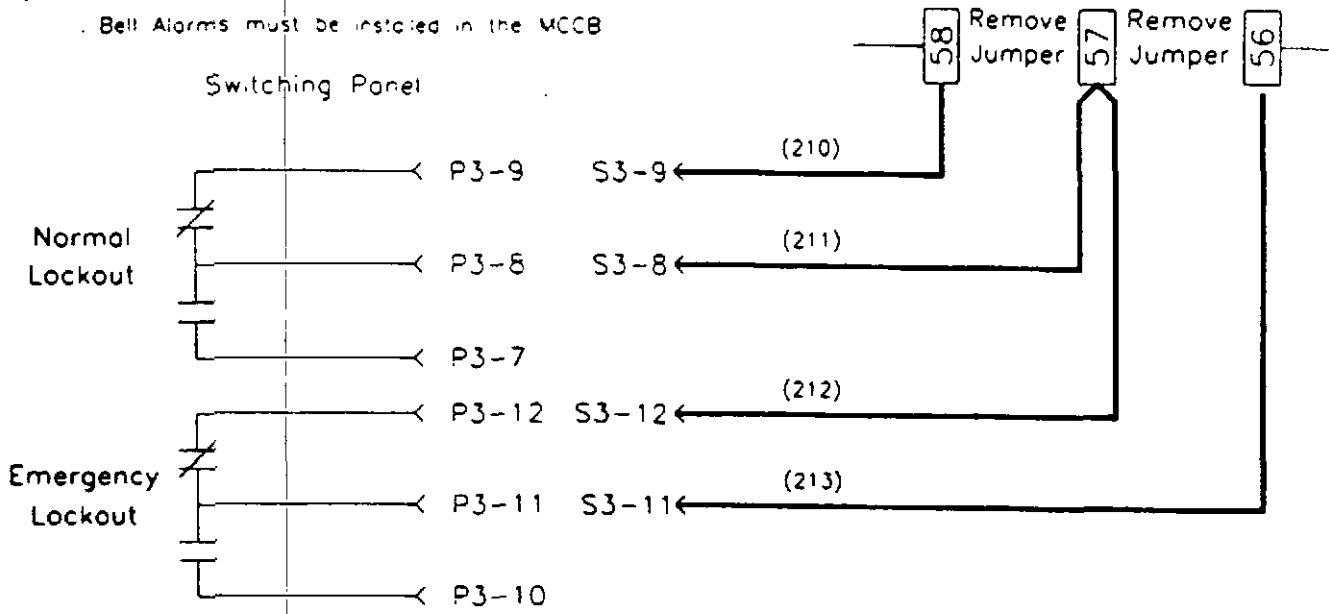
Customer Contacts are on Relay Socket

NRA/ERA Relay Socket

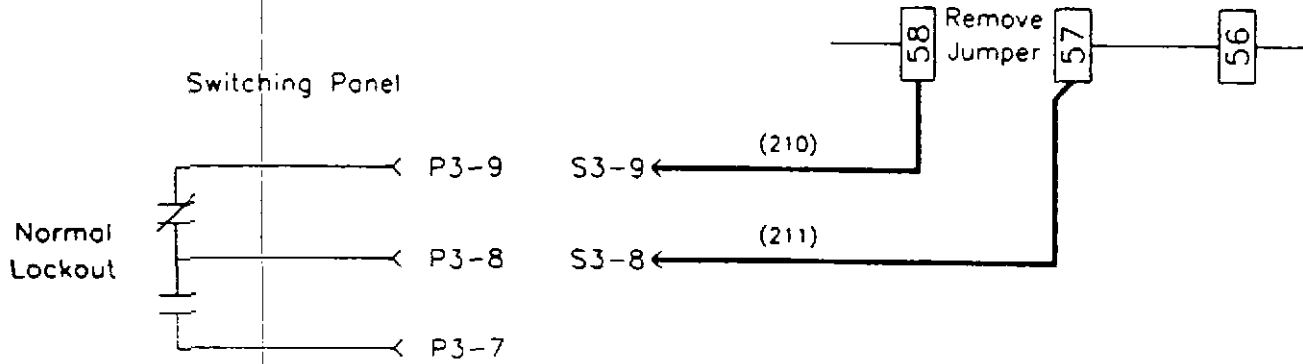


# Option 16B Thermal Magnetic Trips

Bell Alarms must be installed in the MCCB

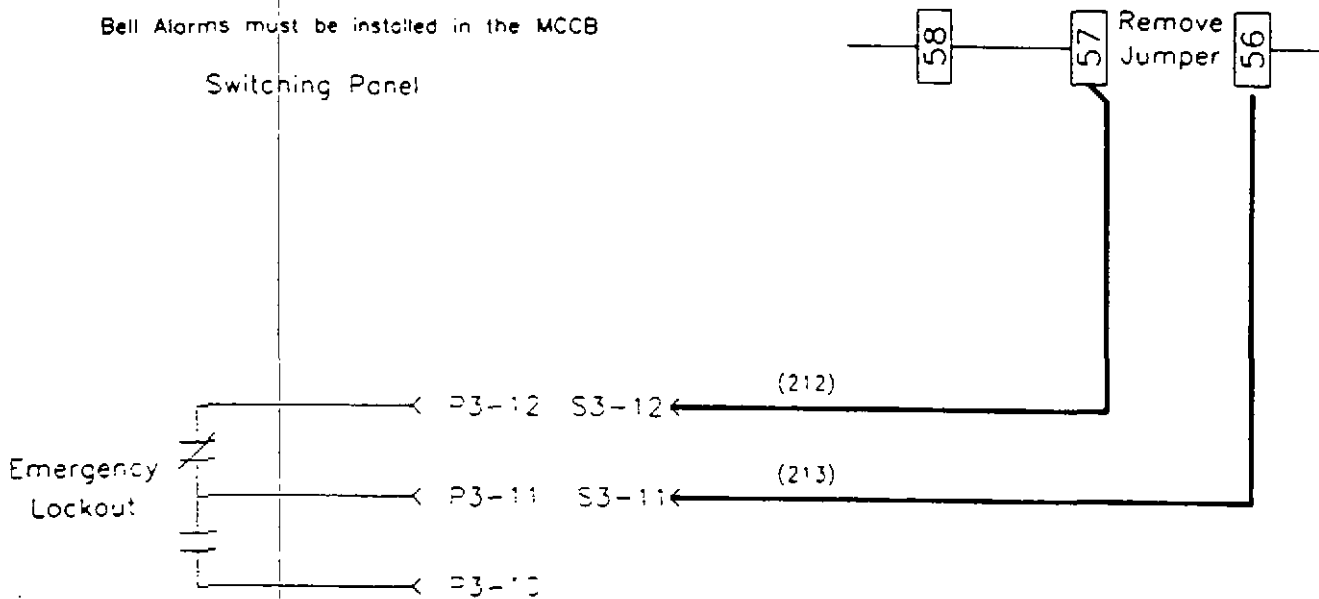


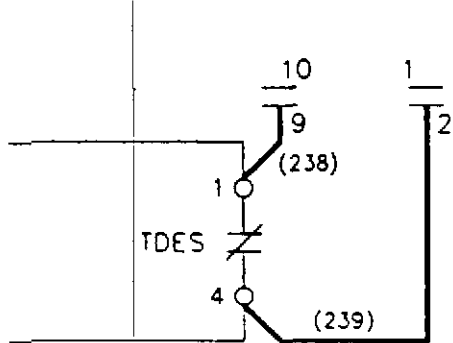
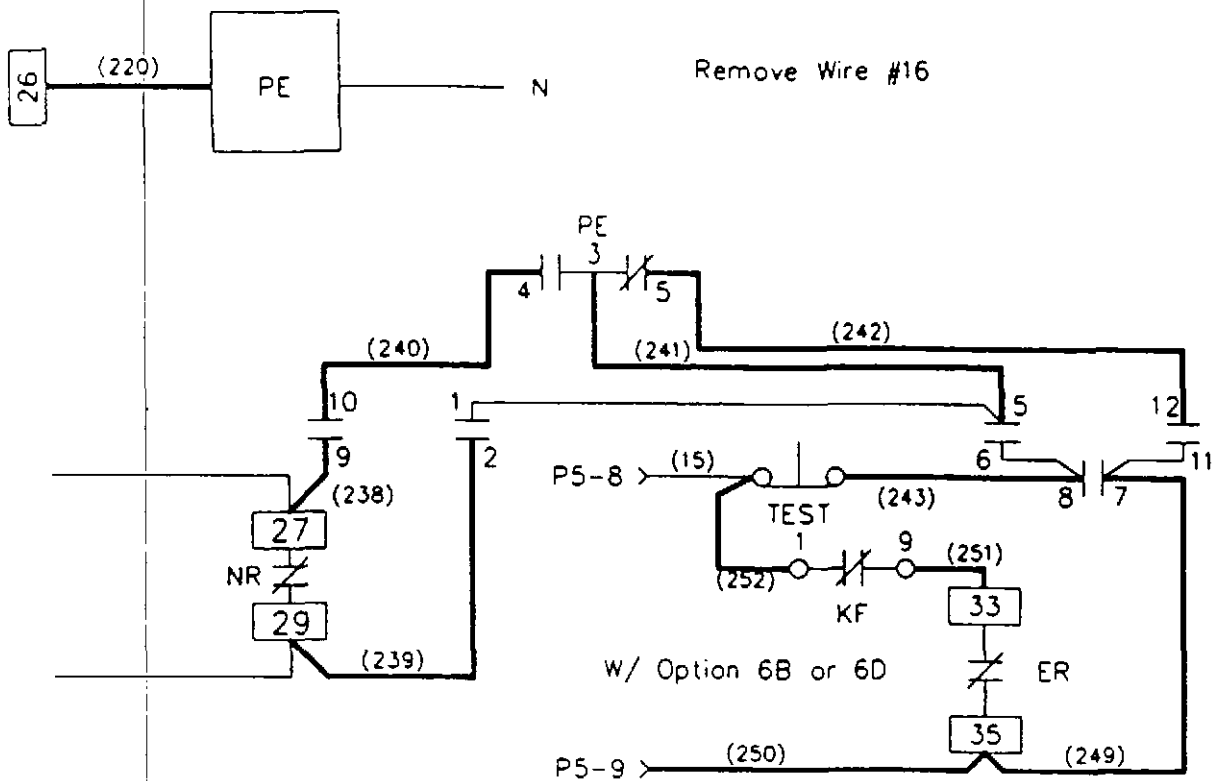
# Option 16N Thermal Magnetic Trip on Normal



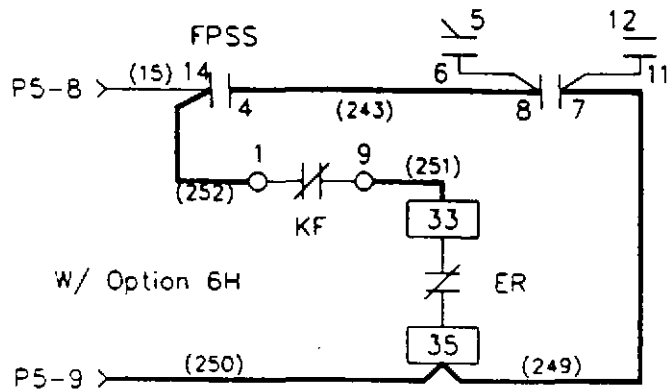
# Option 16E Thermal Magnetic Trip on Emergency

Bell Alarms must be installed in the MCCB

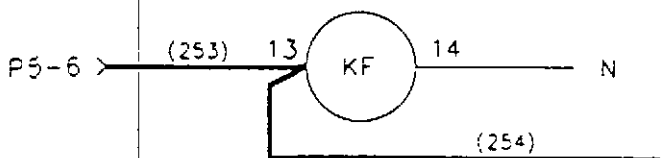




Option 23G w/Option 2 or  
Option 2 and 4

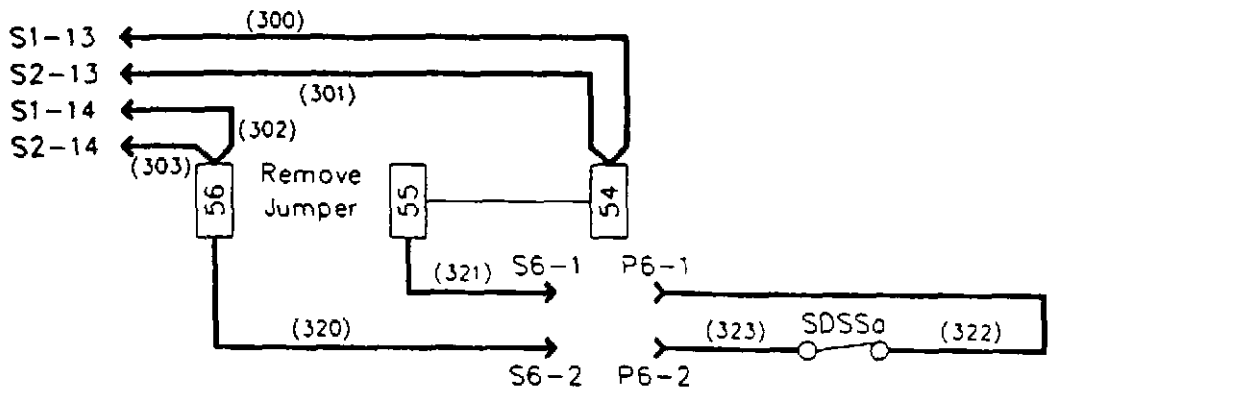
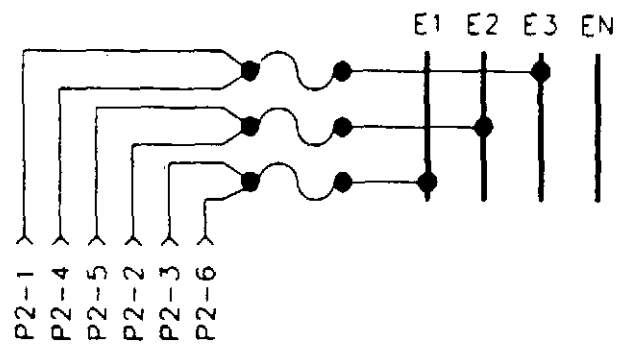
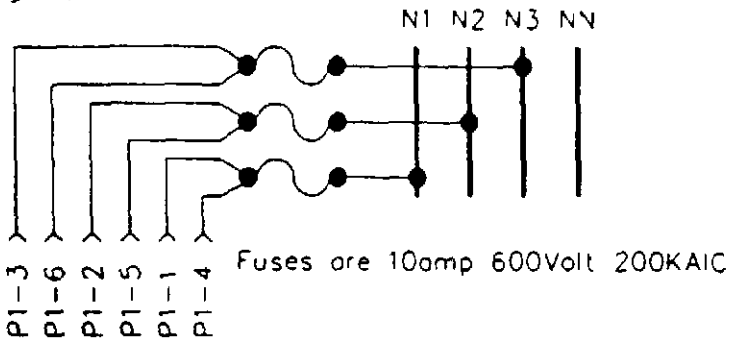


W/ Option 6H

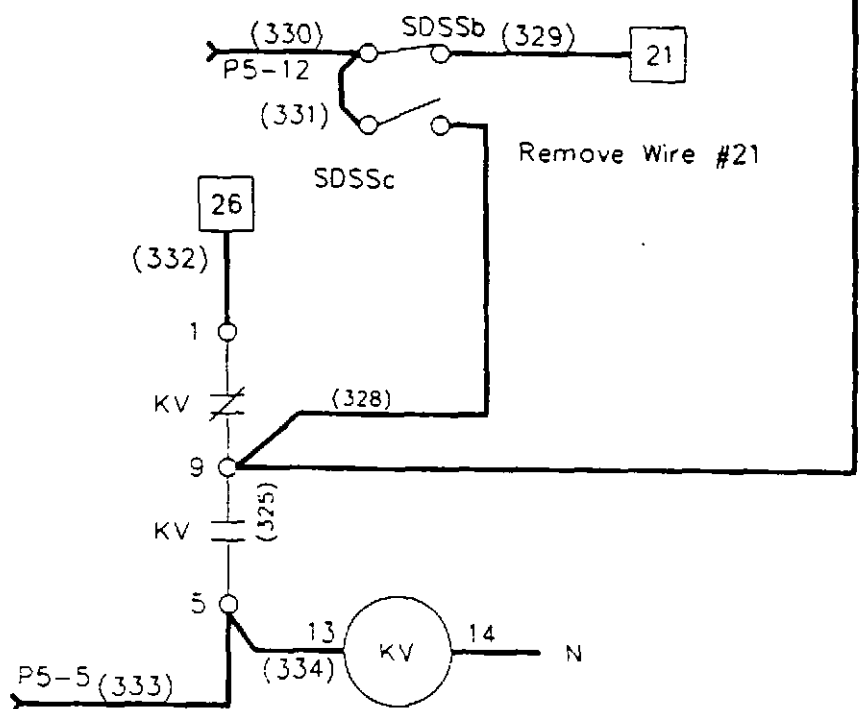
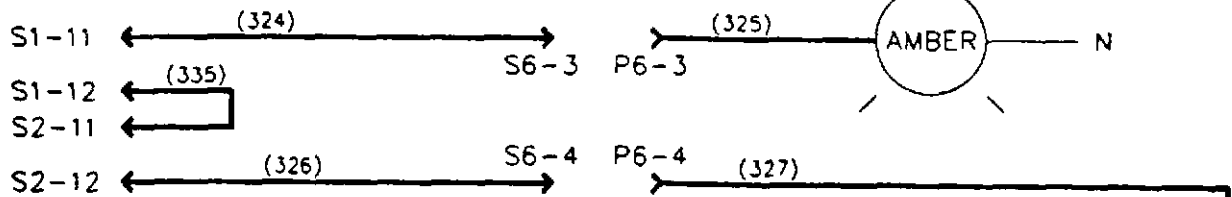


To NL if Option 12C is supplied

Option 37 Service Disconnect



Services Disconnected



## Legend Sheet

<b>BR</b>	<b>Bridge Rectifier</b>
<b>EL</b>	<b>Emergency Position Indicator Light</b>
<b>ER</b>	<b>Emergency Relay</b>
<b>ERA</b>	<b>Emergency Auxiliary Relay</b>
<b>ERB</b>	<b>Emergency Auxiliary Relay</b>
<b>ETx</b>	<b>Emergency Transformer</b>
<b>Ex</b>	<b>Emergency Power Terminal x</b>
<b>FPSS</b>	<b>Four Position Selector Switch (Option 6H)</b>
<b>KB</b>	<b>Brake Relay</b>
<b>KE</b>	<b>Emergency Failsafe Relay</b>
<b>KF</b>	<b>Failsafe Relay</b>
<b>MSS</b>	<b>Maintenance Selector Switch</b>
<b>NL</b>	<b>Normal Position Indicator Light</b>
<b>NR</b>	<b>Normal Relay</b>
<b>NRA</b>	<b>Normal Auxiliary Relay</b>
<b>NRB</b>	<b>Normal Auxiliary Relay</b>
<b>NTx</b>	<b>Normal Transformer x</b>
<b>Nx</b>	<b>Normal Power Terminal x</b>
<b>PBEN</b>	<b>Pushbutton Bypass TDEN timer</b>
<b>PBNE</b>	<b>Pushbutton Bypass TDNE timer</b>
<b>PE</b>	<b>Plant Exerciser Clock</b>
<b>PSDR</b>	<b>Pretransfer Signal Relay</b>
<b>PSDT</b>	<b>Pretransfer Signal Timer</b>
<b>Px-y</b>	<b>"Plug Number x, Pin Number y"</b>
<b>SDSS</b>	<b>Service Disconnect Selector Switch</b>
<b>Sx-y</b>	<b>"Socket Number x, Pin Number y"</b>
<b>TDCL</b>	<b>Time Delay Crank Limiter</b>
<b>TDEC</b>	<b>Time Delay Engine Cooloff</b>
<b>TDEN</b>	<b>Time Delay Emergency to Normal</b>
<b>TDES</b>	<b>Time Delay Engine Start</b>
<b>TDN</b>	<b>Time Delay Neutral</b>
<b>TDNE</b>	<b>Time Delay Normal to Emergency</b>