

WIRING FOR ASCO® 185 SERIES SERVICE EQUIPMENT POWER TRANSFER SWITCH RATED 400 AMPERES, 240 VOLTS, 50-60 Hz, SINGLE PHASE/3 WIRE, GROUP 4 CONTROLS

CONTROL FEATURES

VOLTAGE AND FREQUENCY SENSING

- A. VOLTAGE SENSING – PREFERRED SOURCE
DROPOUT SETTING ADJUSTABLE AT 198V, 187V, 176V, OR 154V. FACTORY SET AT 187V
PICKUP VOLTAGE ADJUSTABLE AT 209V OR 198V. FACTORY SET AT 198V
(IF DROPOUT IS SET AT 198V, PICKUP MUST BE SET AT 209V).
(REFER TO THE SERIES 185 OPERATOR'S MANUAL, PN 381333-319)
- B. VOLTAGE SENSING – ALTERNATE SOURCE
NON-ADJUSTABLE DROPOUT SETTING: 165V
NON-ADJUSTABLE PICKUP SETTING: 198V
- C. FREQUENCY SENSING – ALTERNATE SOURCE
NON-ADJUSTABLE DROPOUT SETTING:
51Hz (FREQUENCY SET AT 60Hz NOMINAL), 43Hz (FREQUENCY SET AT 50Hz NOMINAL)
NON-ADJUSTABLE PICKUP SETTING:
57Hz (FREQUENCY SET AT 60Hz NOMINAL), 48Hz (FREQUENCY SET AT 50Hz NOMINAL)

TIME DELAYS

(FOR ADDITIONAL INFORMATION REFER TO THE SERIES 185 OPERATOR'S MANUAL, PN 381333-319)

- A. OVERRIDE MOMENTARY PREFERRED SOURCE OUTAGE DELAY – ACTIVATED WHEN THE PREFERRED SOURCE FAILS. DEACTIVATED WHEN THE PREFERRED SOURCE IS ACCEPTABLE. PROVIDES A SELECTABLE (1 OR 3 SECOND) DELAY ON ENGINE STARTING AND TRANSFER. FACTORY SET AT 3 SECONDS.
- B. TRANSFER TO ALTERNATE SOURCE DELAY – PROVIDES A DELAY TO ALLOW STABILIZATION OF THE ALTERNATE SOURCE. ACTIVATED AFTER THE ALTERNATE SOURCE IS ACCEPTABLE, WHEN THE PREFERRED SOURCE FAILS OR WHEN A TEST IS INITIATED. NON-ADJUSTABLE DELAY SETTING: 10 SECONDS (APPROXIMATE)
- C. OVERRIDE MOMENTARY ALTERNATE SOURCE OUTAGE DELAY – ACTIVATED WHEN THE TRANSFER SWITCH IS IN THE ALTERNATE POSITION AND THE ALTERNATE SOURCE FAILS. DEACTIVATED WHEN THE ALTERNATE SOURCE IS ACCEPTABLE. RETRANSFER TO THE PREFERRED SOURCE WILL OCCUR WHEN THE DELAY EXPIRES IF THE PREFERRED SOURCE IS AVAILABLE. PROVIDES A SELECTABLE (0 OR 4 SECONDS) DELAY. FACTORY SET AT 4 SECONDS.
- D. RETRANSFER TO PREFERRED SOURCE DELAY – ACTIVATED WHEN THE PREFERRED SOURCE IS ACCEPTABLE. DEACTIVATED WHEN THE PREFERRED SOURCE FAILS WITH NO RETRANSFER TO THE PREFERRED SOURCE. ALSO DEACTIVATED WHEN THE ALTERNATE SOURCE FAILS WHILE THE PREFERRED SOURCE IS ACCEPTABLE, RESULTING IN RETRANSFER TO THE PREFERRED SOURCE. NON-ADJUSTABLE DELAY SETTING: 5 MINUTES (APPROXIMATE)
- E. UNLOADED RUNNING (GENERATOR COOL DOWN) DELAY – ACTIVATED AFTER RETRANSFER TO THE PREFERRED SOURCE. PROVIDES A SELECTABLE (2 OR 5 MINUTES) DELAY BEFORE ENGINE SHUTDOWN. FACTORY SET AT 2 MINUTES.

ENGINE CONTROL CONTACTS

ONE FORM C CONTACT THAT CHANGES POSITION ON EXPIRATION OF THE MOMENTARY PREFERRED SOURCE OUTAGE DELAY AND RESET ON EXPIRATION OF THE UNLOADED RUNNING (GENERATOR COOL DOWN) DELAY. OUTPUT CONTACTS (NR RELAY) ARE RATED 5 AMPS RESISTIVE AT 30 VDC, 2 AMPS RESISTIVE AT 250 VAC.

OPERATOR INTERFACE INDICATORS & CONTROLS

- A. TRANSFER SWITCH TEST – MOMENTARY PUSHBUTTON TO SIMULATE PREFERRED SOURCE FAILURE SEQUENCE OF OPERATION. PRESS AND HOLD FOR AT LEAST 15 SECONDS TO ALLOW TIME FOR THE GENERATOR SET TO START.
- B. BYPASS TIME DELAY – MOMENTARY PUSHBUTTON TO BYPASS THE ENGINE EXERCISER OPERATION OR THE RETRANSFER TO NORMAL DELAY, DEPENDING ON WHICH FUNCTION IS ACTIVE.
- C. SET ENGINE EXERCISER – MOMENTARY PUSHBUTTON TO ACTIVATE A SEVEN (7) DAY TIMER FOR AUTOMATIC, WEEKLY TESTING OF THE GENERATOR. SETTINGS ALLOW TESTING WITH OR WITHOUT LOAD TRANSFER. FACTORY SET TO OCCUR WITHOUT LOAD TRANSFER. THE TIMER IS POWERED BY A 9 VOLT BATTERY WHEN THE PREFERRED AND ALTERNATE SOURCES ARE NOT AVAILABLE. DEPRESSING THE MOMENTARY PUSHBUTTON FOR 5 SECONDS CAUSES THE EXERCISE TO OCCUR IMMEDIATELY AND AT THE SAME TIME OF WEEK THEREAFTER. THE FEATURE IS ACTIVATED AS A SETTING ON THE CONTROLLER. (REFER TO THE SERIES 185 OPERATOR'S MANUAL, PN 381333-319)
- D. LOAD CONNECTED INDICATORS:
GREEN LED TO INDICATE WHEN THE LOAD IS CONNECTED TO THE PREFERRED SOURCE.
RED LED TO INDICATE WHEN THE LOAD IS CONNECTED TO THE ALTERNATE SOURCE.
- E. SOURCE ACCEPTABILITY INDICATORS
GREEN LED TO INDICATE WHEN THE PREFERRED SOURCE IS ACCEPTABLE.
RED LED INDICATOR TO INDICATE WHEN THE ALTERNATE SOURCE IS ACCEPTABLE.

LOAD DISCONNECT FEATURE

ONE SET OF FORM C CONTACTS (1 N/O & 1 N/C) THAT CHANGE POSITION ON ACTIVATION OF A SELECTABLE TIME DELAY BEFORE TRANSFER (LD TDBT) AND RESET EITHER IMMEDIATELY FOLLOWING TRANSFER OR FOR THE SAME DELAY AS SET FOR PRE-SIGNAL BEFORE TRANSFER. SELECTABLE AS 0, 3, 10 OR 20 SECONDS. FACTORY SET AT 0. (REFER TO THE OPERATOR'S MANUAL FURNISHED WITH EACH TRANSFER SWITCHING DEVICE REGARDING CONTROL PANEL SETTINGS). OUTPUT CONTACTS (OP) ARE RATED 5 AMPS RESISTIVE AT 28 VDC OR 120 VAC MAXIMUM.

REMOTE CONTROL FEATURES

THE FOLLOWING CONTROL PANEL INPUTS PROVIDE REMOTE CONTROL FUNCTIONS FOR THE AUTOMATIC TRANSFER SWITCH. EACH CONTROL FUNCTION CAN BE IMPLEMENTED BY THE CUSTOMER PROVIDING THE FORM OF CONTROL CONTACT DESCRIBED. EACH CONTROL CONTACT MUST BE SUITABLE FOR A 5 VDC LOW ENERGY CIRCUIT. EACH CONTROL FEATURE IS ACTIVATED BY SETTING A DIP TYPE SELECTOR SWITCH ON THE CONTROL PANEL. (REFER TO THE SERIES 185 OPERATOR'S MANUAL, PN 381333-319)

- A. REMOTE TEST FEATURE – REQUIRES A CUSTOMER SUPPLIED, NORMALLY CLOSED CONTACT. OPENING OF THE CONTACT SIMULATES A FAILURE OF THE PREFERRED SOURCE. THE TRANSFER SWITCH WILL REMAIN CONNECTED TO THE ALTERNATE SOURCE UNDER ALL CONDITIONS OF THE GENERATOR WHILE THE CONTACT IS OPEN.

- B. REMOTE TRANSFER TO ALTERNATE SOURCE FEATURE – REQUIRES A CUSTOMER SUPPLIED, NORMALLY CLOSED CONTACT. OPENING OF THE CONTACT CAUSES ENGINE STARTING AND TRANSFER TO THE ALTERNATE SOURCE. RECLOSURE OF THE CONTACT ACTIVATES THE RETRANSFER TO PREFERRED SOURCE DELAY FOLLOWED BY RETRANSFER TO THE PREFERRED SOURCE. IF THE ALTERNATE SOURCE FAILS WHILE THE TRANSFER SWITCH IS CONNECTED TO IT AND THE REMOTE CONTACT IS OPEN, THE TRANSFER SWITCH WILL RETRANSFER TO THE PREFERRED SOURCE.
- C. BYPASS TRANSFER TIME DELAY FEATURE – REQUIRES A CUSTOMER SUPPLIED, REMOTE, NORMALLY CLOSED CONTACT. OPENING OF THE CONTACT BYPASSES THE RETRANSFER TO PREFERRED SOURCE DELAY IF ACTIVE.

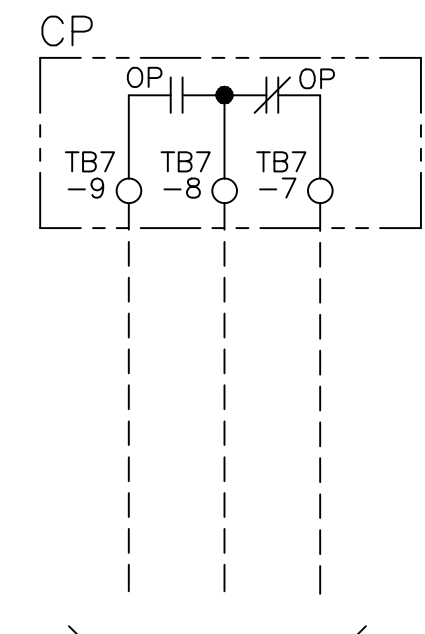
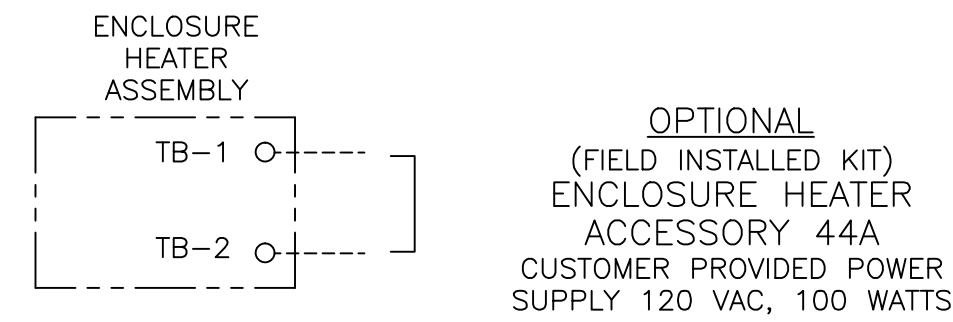
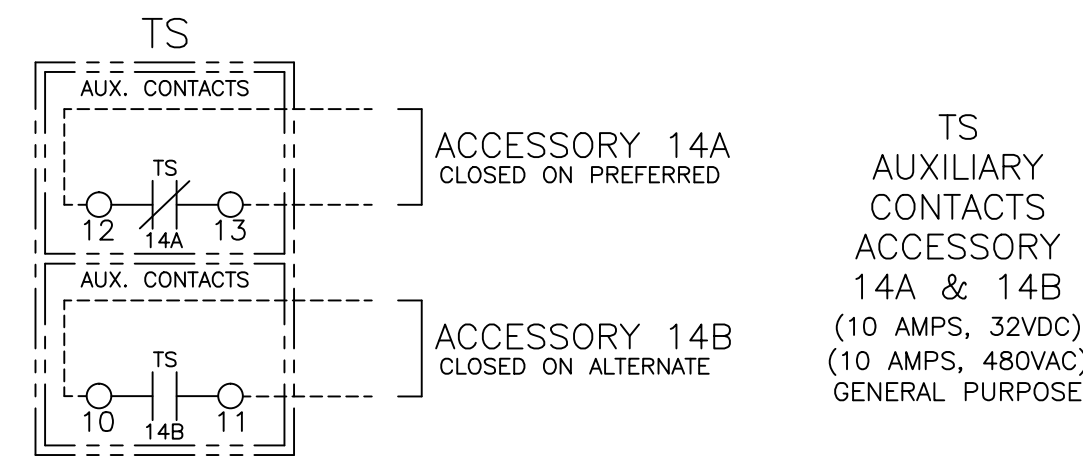
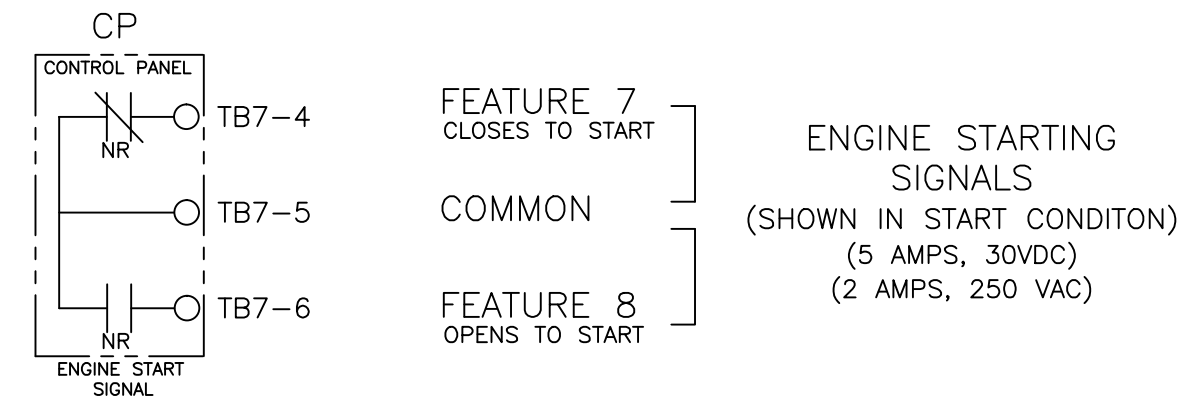
GENERAL NOTES

1. SWITCH SHOWN DE-ENERGIZED AND CONNECTED TO PREFERRED SOURCE. DEVICE SYMBOLS AND DESIGNATIONS ARE IN ACCORDANCE WITH NEMA PUB. ICS 1-1983, PART 1-101A.
2. ALL WIRING IS #16 AWG, TINNED, STRANDED COPPER UNLESS OTHERWISE INDICATED.
3. ○ INDICATES CUSTOMER CONNECTION POINTS.
4. ● INDICATES FACTORY CONNECTION POINTS.
5. CONNECTION POINTS THAT HAVE BOTH CUSTOMER CONNECTIONS AND FACTORY CONNECTIONS ARE SHOWN OPEN AS CUSTOMER CONNECTION POINTS.
6. THE TRANSFER UNIT IS MOUNTED ON THE REAR, INSIDE SURFACE OF THE ENCLOSURE. THE CONTROLLER AND ANY OPTIONAL ACCESSORIES ARE MOUNTED ON THE INSIDE SURFACE OF THE DOOR.
7. A SERIES 185 INSTALLATION MANUAL (PN 381333-319) AND GROUP 4 USER'S GUIDE (PN 381333-320) IS PROVIDED WITH THE TRANSFER SWITCH. REFER TO THESE PUBLICATIONS PRIOR TO INSTALLATION AND OPERATION.

OPTIONAL ACCESSORIES

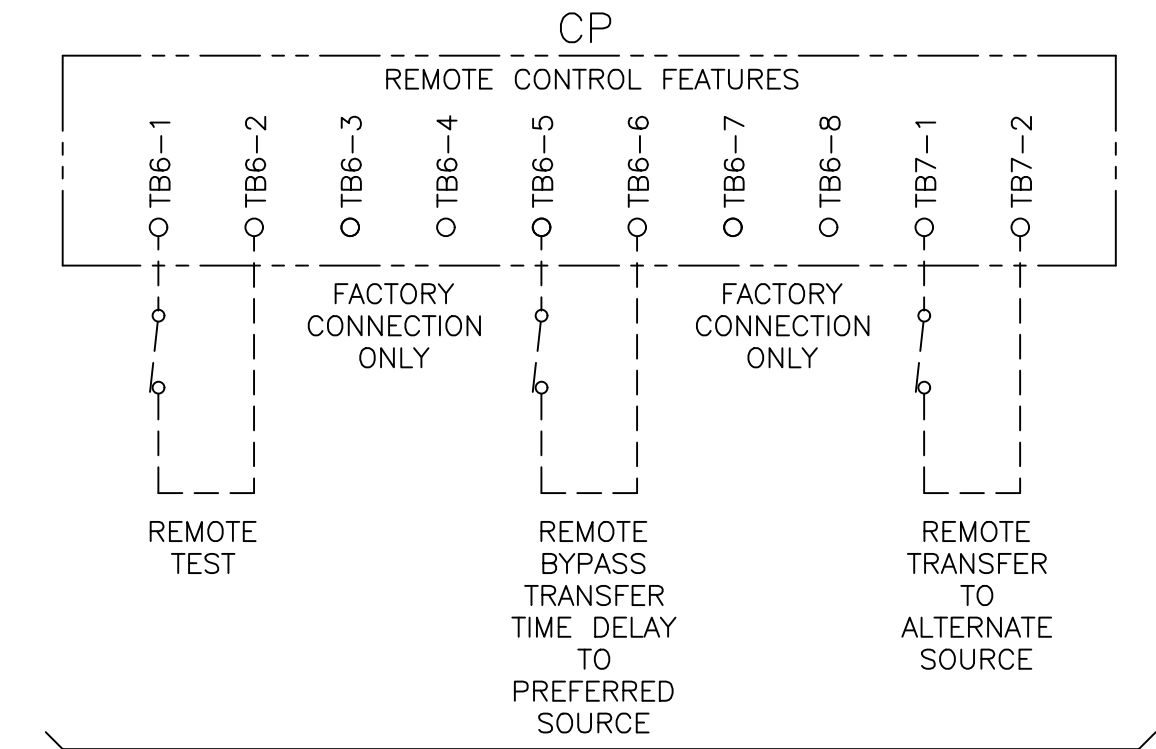
ACC. 44A ENCLOSURE HEATER 120 VAC. FIELD INSTALLED KIT WHEN PROVIDED.

FIELD CONNECTIONS



LOAD DISCONNECT CONTACTS
5 AMPS RESISTIVE
28 VDC OR 120 VAC MAX.
(LOCATED ON CONTROL PANEL)

BASE CATALOG NUMBER								CATALOG NUMBER SUFFIXES			EXPLANATION OF CATALOG NUMBER CODES					
TS FRAME	CATALOG TYPE	NEUTRAL TYPE	PHASE POLES	AMPS	VOLT CODE	CONTROLLER	OPTIONAL ACCESSORY	ENCLOSURE CODE	NEUTRAL TYPE		VOLTAGE CODES 1 PHASE (2 OR 3 WIRE) 50 OR 60 HZ		ENCLOSURE CODES		DESCRIPTION	
CODE	DESCRIPTION	CODE	NOMINAL VOLTAGE	CODE	TYPE	DESCRIPTION										
E	01AUS	A	2	400	F	4	X	C M	A	SOLID	F	240	C M	1 3R	GENERAL PURPOSE, INDOOR OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT SECURE TYPE: FULL EXTERIOR DOOR WITH INTERNAL DEAD FRONT PANEL.	
									ASCO® 185 SERIES AUTOMATIC POWER TRANSFER SWITCH RATED 400 AMPS, 240 VAC SUITABLE FOR USE AS SERVICE EQUIPMENT – NORMAL SOURCE ONLY. AN ADDITIONAL DISCONNECT MUST BE READILY ACCESSIBLE FOR THE ALTERNATE SOURCE, UNLESS THE ALTERNATE SOURCE IS AN ACCESSIBLE GENERATOR AND CAN BE READILY SHUTDOWN. FOR USE IN OPTIONAL STANDBY SYSTEMS							



CUSTOMER SUPPLIED CONTACTS FOR FEATURES AS DESCRIBED IN STANDARD CONTROL FEATURES NOTES. CONTACT MUST BE SUITABLE FOR 5V DC LOW ENERGY CIRCUIT. ACTIVATED BY SETTING OF DIP SELECTOR SWITCHES ON CONTROL PANEL. (REFER TO OPERATOR'S MANUAL FOR REQUIRED SETTINGS.)

E	237958	JPB	JPB	07/16/12	SEE ECN
D	224172	DAJ	JPB	08/14/09	SEE ECN
C	223979	DAJ	JPB	8/07/09	SEE ECN
B	221553	SDH	SDH	1/26/09	SEE ECN
A	221452	JPB	JPB	01/19/09	SEE ECN
	221396	JPB	JPB	01/13/09	ISSUE
PROJECT NAME:					
WIRING DIAGRAM SERIES 185, E01AUS, 400A, SINGLE PHASE, 3 WIRE, GROUP 4 CONTROLS E FRAME TRANSFER SWITCH, SUITABLE FOR SERVICE EQUIPMENT					
DRAWN BY		DATE		MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-005.	
CHECKED		DATE		ASSEM. REF. NO.	
PROJECT APPROVAL		DATE		PROPERTY OF ASCO POWER TECHNOLOGIES. USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.	
FINAL APPROVAL		DATE		SCALE: 1:1 SIZE: DS COMPUTER GENERATED DRAWING DWG. NO. 857485-002 DRAWING E ECN NO. 237958 SHEET 1 OF 2	
ASCO Power Technologies, L.P. FLOHAM PARK, NEW JERSEY 07932 U.S.A.					

TRANSFER SWITCH POWER POLES, OPERATOR, AND SENSING

PHYSICAL DIAGRAM AND WIRING

D

D

C

C

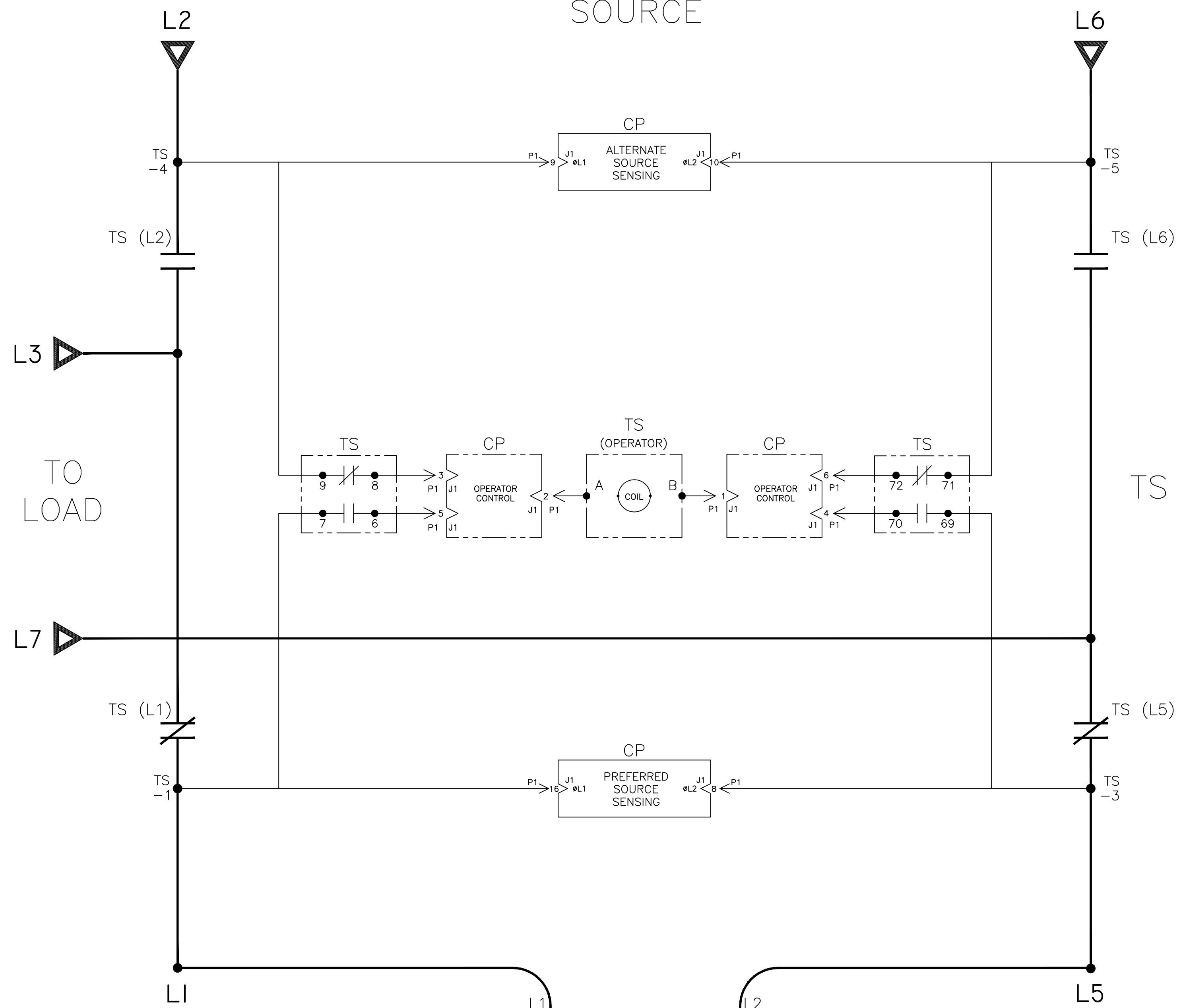
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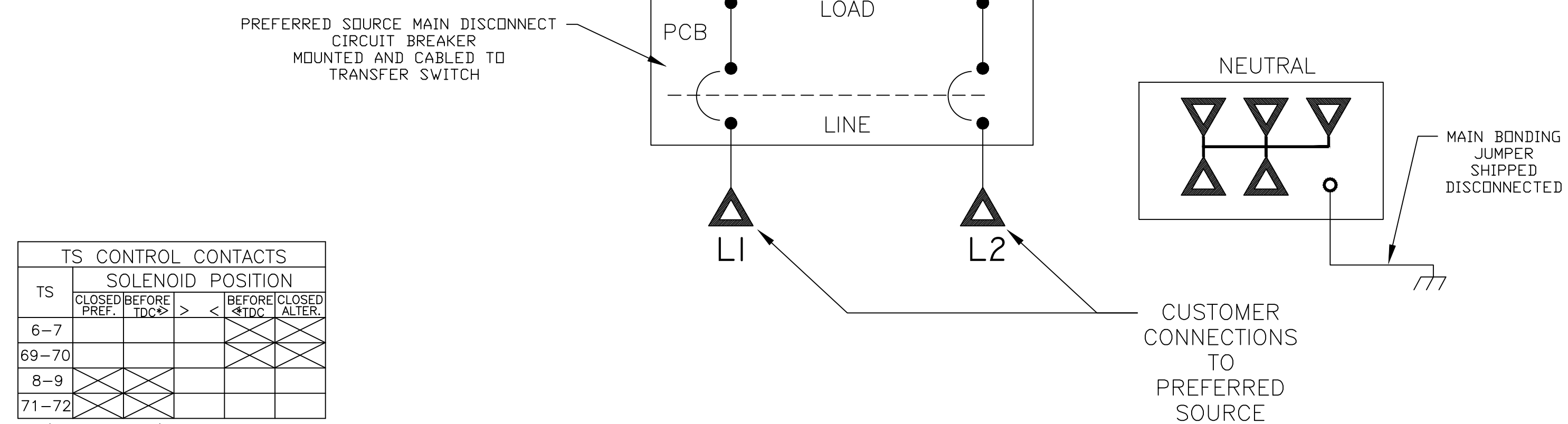
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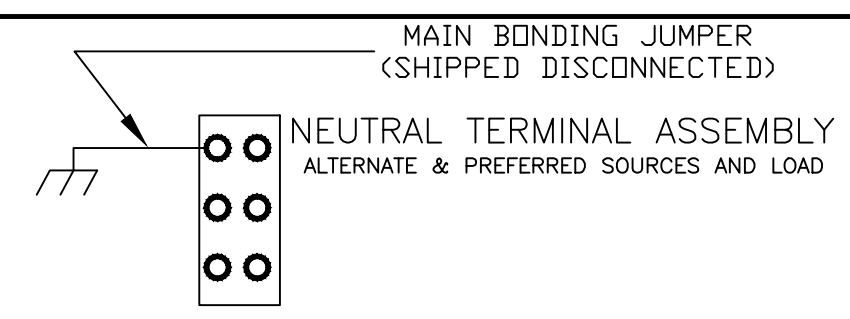
TO
ALTERNATE
SOURCE



TO
LOAD

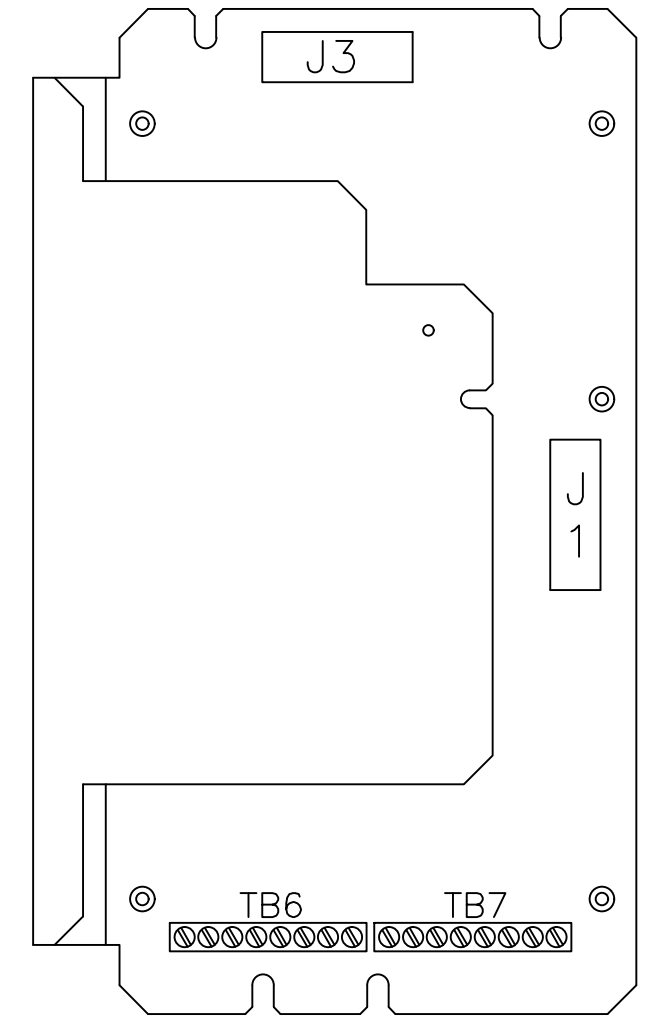
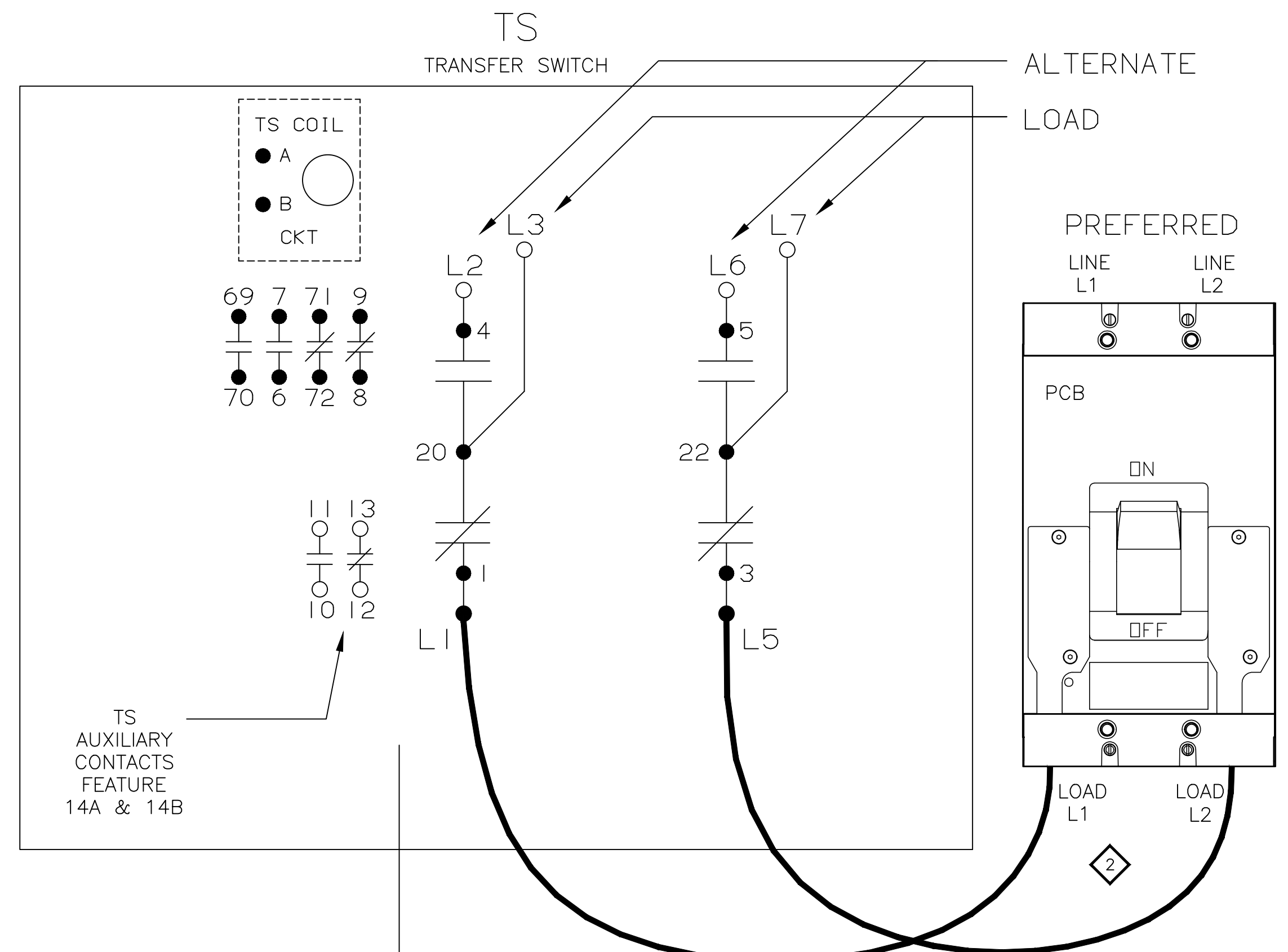
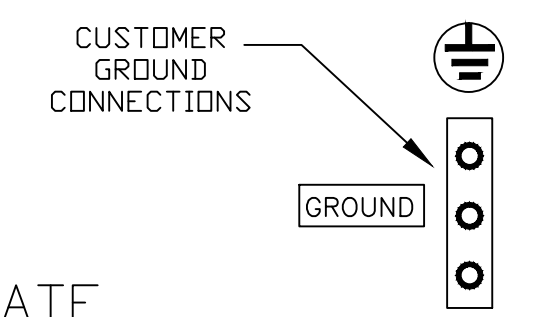


ATS SHOWN CLOSED ON PREFERRED SOURCE



WIRE No.	702645-003 (P1,P2)	MAIN TS	CLR	AWG
1	TS-8,P1-3			20
2	TS-COIL(BLK),P1-1			
3	TS-6,P1-5			
4	TS-3,P1-8			
5	TS-COIL(BLK),P1-2			
6	TS-5,P1-10			
7	TS-4,P1-9			
8	TS-1,P1-16			
9	TS-70,P1-4			
10	TS-72,P1-6			
11	TS-7,TS-1			
12	TS-69,TS-3			
13	TS-9,TS-4			
14	TS-71,TS-5			

WIRE No.	ADDITIONAL WIRES	CLR	AWG
	PCB-LOAD-L1,TS-L1		(2) 3/0
	PCB-LOAD-L2,TS-L5		



TS	SOLENOID POSITION			
	CLOSED BEFORE PREFERRED	BEFORE TDC	TDC	CLOSED AFTER
6-7				
69-70				
8-9				
71-72				

TDC (TOP DEAD CENTER)

E	237958	JPB	JPB	07/16/12
	SEE ECN			
D	224172	DAJ	JPB	08/14/09
	SEE ECN			
C	223979	DAJ	JPB	8/07/09
	SEE ECN			
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	SEE ECN			
-	221396	JPB	JPB	01/13/09
	ISSUE			

PROJECT NAME:		REV. TO SHEET	ECN NO.	BY	APP.	DATE
WIRING DIAGRAM						
SERIES 185, E01AUS, 400A, SINGLE PHASE, 3 WIRE, GROUP 4 CONTROLS E FRAME TRANSFER SWITCH, SUITABLE FOR SERVICE EQUIPMENT						
DRAWN BY	JPB	DATE	01/13/09	MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-005	ASSEM. REF. NO.	COMPUTER GENERATED DRAWING
CHECKED				PROPERTY OF ASCO POWER TECHNOLOGIES. USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.	SCALE	1:1 SIZE DS
PROJECT APPROVAL					DWG. NO.	857485-002
FINAL APPROVAL	JPB	01/13/09			DRAWING REV.	E ECN NO. 237958 SHEET 2 OF 2

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