

WIRING FOR ASCO® 185 SERIES AUTOMATIC TRANSFER SWITCHES RATED 100, 200, & 230 AMPERES, 240 VOLTS, 50-60 Hz, SINGLE PHASE/3 WIRE, GROUP 4 CONTROLS

CONTROL FEATURES

GENERAL NOTES

FIELD CONNECTIONS

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 SECONDS) 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.

REMOTE CONTROL FEATURES

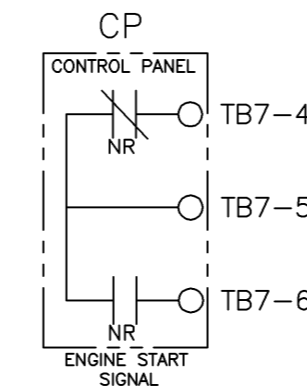
THE FOLLOWING CONTROL PANEL INPUTS PROVIDE REMOTE CONTROL FUNCTIONS FOR THE AUTOMATIC TRANSFER SWITCH. EACH CONTROL FUNCTION CAN BE IMPLEMENTED BY THE CUSTOMER PROVIDING THE FORM OF CONTROL CONTACT DESCRIBED. EACH CONTROL CONTACT MUST BE SUITABLE FOR A 5 VDC LOW ENERGY CIRCUIT. EACH CONTROL FEATURE IS 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.

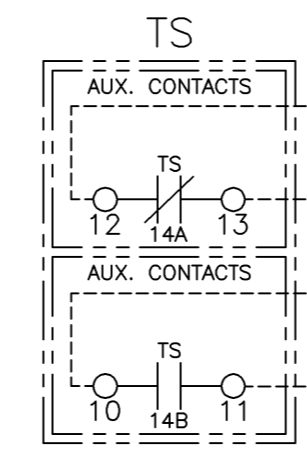
1. SWITCH SHOWN DE-ENERGIZED AND CONNECTED TO PREFERRED SOURCE. DEVICE SYMBOLS AND DESIGNATIONS ARE IN ACCORDANCE WITH NEMA PUB. ICS 1-1983, PART 1-101A.
2. ALL WIRING IS #16 AWG, TINNED, STRANDED COPPER UNLESS OTHERWISE INDICATED.
3. ○ INDICATES CUSTOMER CONNECTION POINTS.
4. ● INDICATES FACTORY CONNECTION POINTS.
5. CONNECTION POINTS THAT HAVE BOTH CUSTOMER CONNECTIONS AND FACTORY CONNECTIONS ARE SHOWN OPEN AS CUSTOMER CONNECTION POINTS.
6. A SERIES 185 OPERATOR'S MANUAL (PN 381333-319) IS PROVIDED WITH THE TRANSFER SWITCH. REFER TO THIS PUBLICATION PRIOR TO INSTALLATION AND OPERATION.

OPTIONAL ACCESSORIES

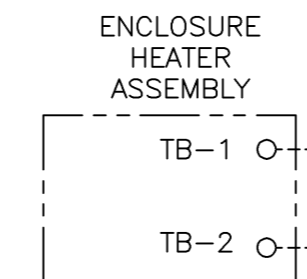
- ACC. 14A (1) AUXILIARY CONTACT CLOSED WHEN THE TRANSFER SWITCH IS CONNECTED TO THE PREFERRED SOURCE. FIELD INSTALLED KIT WHEN PROVIDED.
- ACC. 14B (1) AUXILIARY CONTACT CLOSED WHEN THE TRANSFER SWITCH IS CONNECTED TO THE ALTERNATE SOURCE. FIELD INSTALLED KIT WHEN PROVIDED.
- ACC. 44A ENCLOSURE HEATER 120 VAC. FIELD INSTALLED KIT WHEN PROVIDED.



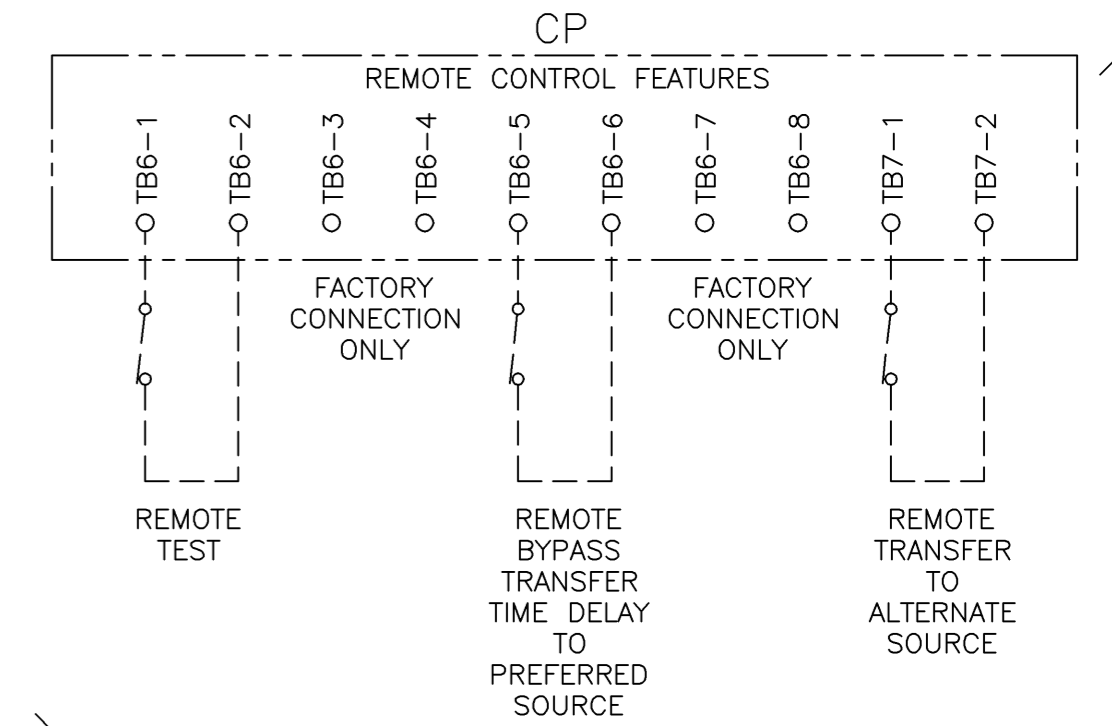
- FEATURE 7 CLOSSES TO START
 - COMMON
 - FEATURE 8 OPENS TO START
- ENGINE STARTING SIGNALS
(SHOWN IN START CONDITION)
(5 AMPS, 30VDC)
(2 AMPS, 250 VAC)



- ACCESSORY 14A CLOSED ON PREFERRED
 - ACCESSORY 14B CLOSED ON ALTERNATE
- OPTIONAL (FIELD INSTALLED KIT)
TS
AUXILIARY CONTACTS ACCESSORY
14A & 14B
(10 AMPS, 32VDC)
(10 AMPS, 480VAC)
GENERAL PURPOSE



- OPTIONAL (FIELD INSTALLED KIT)
ENCLOSURE HEATER ACCESSORY 44A
CUSTOMER PROVIDED POWER SUPPLY 120 VAC, 100 WATTS



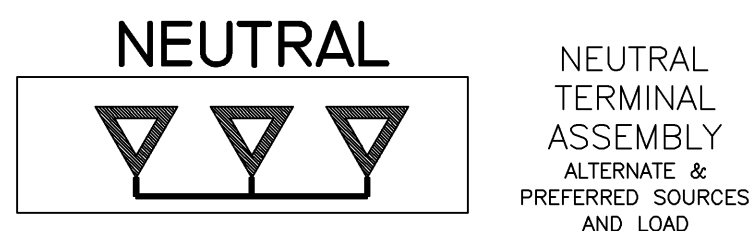
CUSTOMER SUPPLIED CONTACTS FOR FEATURES AS DESCRIBED IN STANDARD CONTROL FEATURES NOTES. CONTACT MUST BE SUITABLE FOR 5V DC LOW ENERGY CIRCUIT. ACTIVATED BY SETTING OF DIP SELECTOR SWITCHES ON CONTROL PANEL. (REFER TO OPERATOR'S MANUAL FOR REQUIRED SETTINGS.)

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	ENCLOSURE CODES			
									CODE	DESCRIPTION	CODE	TYPE	DESCRIPTION	
	D	185	A	2	100 200 230	F	4	X	C M	F	240	C M	1 3R	GENERAL PURPOSE, INDOOR OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT SECURE TYPE: EXTERIOR DOOR WITH INTERNAL DEAD FRONT PANEL.

PROJECT NAME:	WIRING DIAGRAM	REV. TO SHEET	ECN NO.	BY	APP.	DATE																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">DRAWN BY</td> <td style="width: 10%;">SDH</td> <td style="width: 10%;">DATE</td> <td style="width: 10%;">7/08</td> <td style="width: 10%;">MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-005</td> <td style="width: 10%;">ASSEM. REF. NO.</td> <td style="width: 10%;">COMPUTER GENERATED DRAWING</td> </tr> <tr> <td>CHECKED</td> <td></td> <td></td> <td></td> <td>PROPERTY OF ASCO POWER TECHNOLOGIES. USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.</td> <td>SCALE</td> <td>1:1</td> </tr> <tr> <td>PROJECT APPROVAL</td> <td></td> <td></td> <td></td> <td>844554</td> <td>SIZE</td> <td>DS</td> </tr> <tr> <td>FINAL APPROVAL</td> <td>SDH</td> <td>7/08</td> <td></td> <td>ASCO® ASCO POWER TECHNOLOGIES, L.P. FLORHAM PARK, NEW JERSEY 07932 U.S.A.</td> <td>DRAWING C</td> <td>REV. 1</td> </tr> </table>							DRAWN BY	SDH	DATE	7/08	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	PROJECT APPROVAL				844554	SIZE	DS	FINAL APPROVAL	SDH	7/08		ASCO® ASCO POWER TECHNOLOGIES, L.P. FLORHAM PARK, NEW JERSEY 07932 U.S.A.	DRAWING C	REV. 1
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SHEET NO. 224029 OF 2																																		

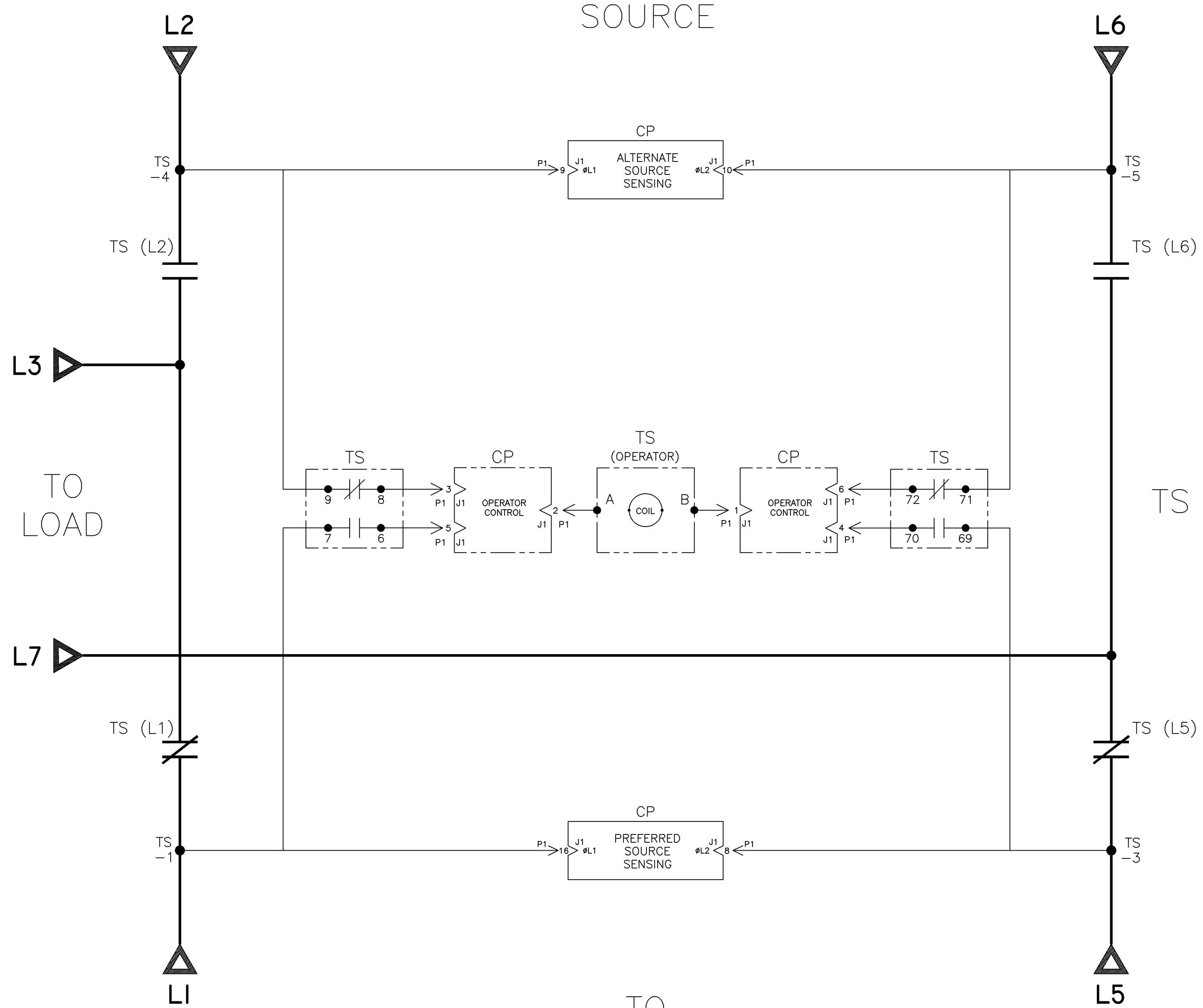
TRANSFER SWITCH POWER POLES, OPERATOR, AND SENSING

PHYSICAL DIAGRAM AND WIRING



TO ALTERNATE SOURCE

TO PREFERRED SOURCE

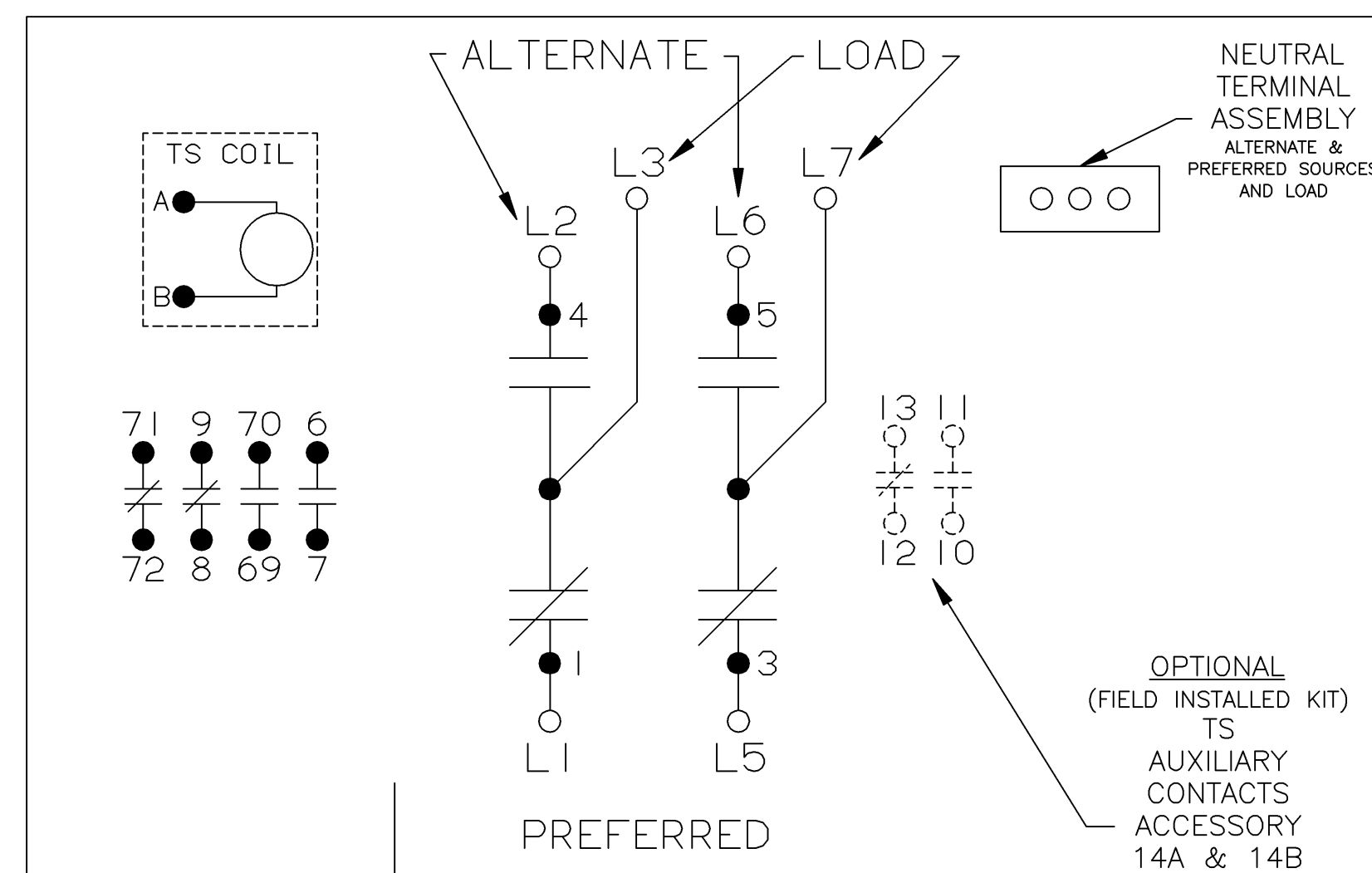


TS CONTROL CONTACTS		SOLENOID POSITION			
TS		CLOSED BEFORE PREFERRED		BEFORE CLOSED ALTERNATE	
		>	TDC	<	TDC
6-7					
69-70					
8-9					
71-72					

TDC (TOP DEAD CENTER)

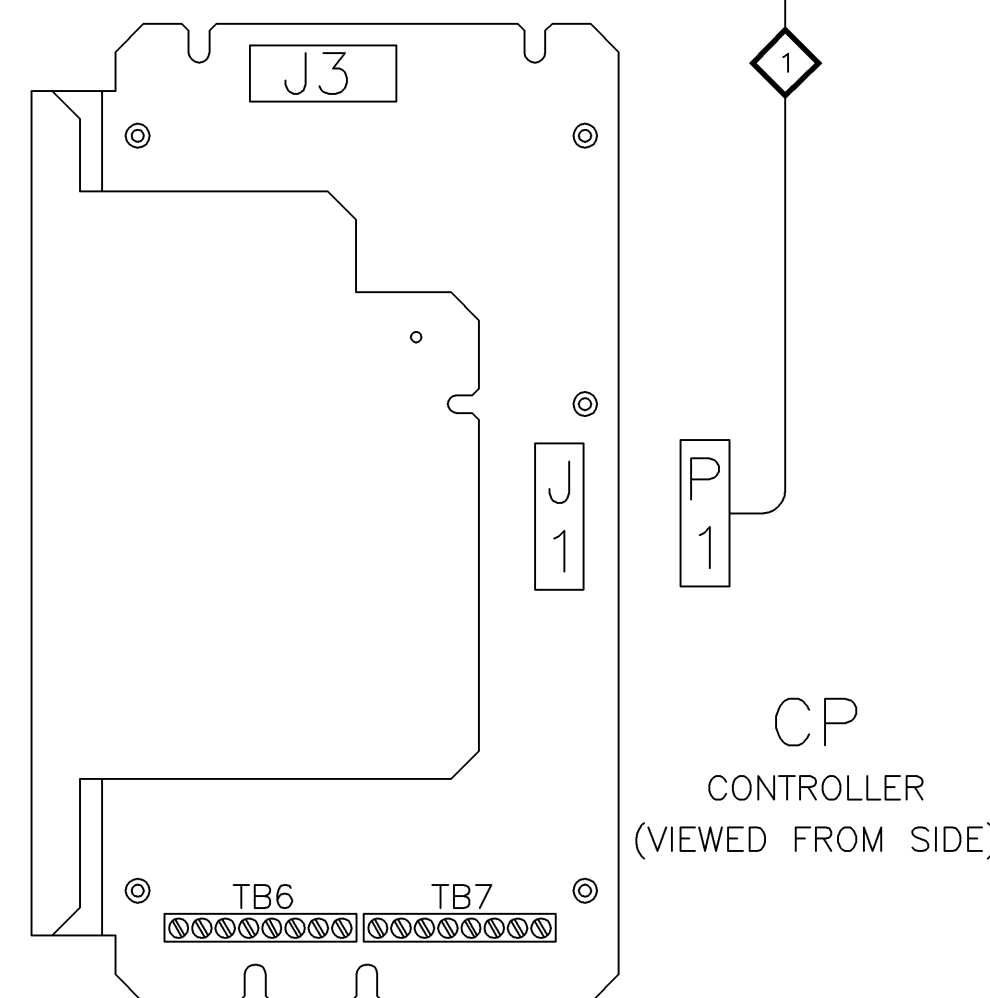
ATS SHOWN CLOSED ON PREFERRED SOURCE

TS TRANSFER SWITCH



WIRE RUN LISTING

WIRE No.	702645-002 (P1,P2)	MAIN TS	CLR	AWG
1	TS-8,P1-3			20
2	TS-B,P1-1			
3	TS-6,P1-5			
4	TS-3,P1-8			
5	TS-A,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			



C	224029	DAJ	JPB	8/25/09
B	221553	SDH	SDH	1/26/09
A	221452	JPB	JPB	01/19/09
-	219082	SDH	SDH	7/08

PROJECT NAME: _____

WIRING DIAGRAM

SERIES 185 ATS, SINGLE PHASE, 3 WIRE
D FRAME TRANSFER SWITCH (100, 200, 230 AMPS) GROUP 4 CONTROLS

BY	DATE	MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055	ASSEM. REF. NO.	COMPUTER GENERATED DRAWING
SDH	7/08			SCALE 1:1 SIZE DS
CHECKED		PROPERTY OF ASCO POWER TECHNOLOGIES. USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.		DWG. NO. 844554
PROJECT APPROVAL				DRAWING C
FINAL APPROVAL	SDH 7/08			ECN NO. 224029 SHEET 2 OF 2

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