

SINGLE PHASE WIRING FOR **ASCO** 7000 SERIES AUTOMATIC TRANSFER SWITCHES TYPE H7ATS RATED 600, 800, 1000 & 1200 AMPERES

FEATURES, SETTINGS, OPERATION, ACCESSORIES & NOTES

THE FOLLOWING FEATURES AND RELATED SETTINGS ARE PART OF THE GROUP 5 CONTROL PANEL'S USER CONFIGURABLE PARAMETERS. FOR DETAILED INFORMATION REGARDING THE CONFIGURATION OF THESE PARAMETERS AND OTHER FEATURES OF THE GROUP 5 CONTROL PANEL, REFER TO THE GROUP 5 CONTROL PANEL FOR ASCO 7000 SERIES AUTOMATIC TRANSFER SWITCHES USER'S GUIDE (PART NO. 381333-126) PROVIDED WITH EVERY 7000 SERIES AUTOMATIC TRANSFER SWITCH.

THE NOMINAL OPERATING VOLTAGE & FREQUENCY IS PRE-PROGRAMMED AT THE FACTORY BASED ON THE NAMEPLATE DATA PRINTED ON THE TRANSFER SWITCH & CONTROL PANEL NAMEPLATES.

VOLTAGE & FREQUENCY SENSING

THE FOLLOWING SETTINGS ARE EXPRESSED AS A PERCENTAGE OF THE CONTROL PANEL'S NOMINAL VOLTAGE SETTING UNLESS STATED OTHERWISE. ALL SETTINGS ARE ADJUSTABLE IN INCREMENTS OF 1%.

A. RMS VOLTAGE SENSING ON ALL PHASES OF THE NORMAL & EMERGENCY SOURCES.

PARAMETER	RANGE OF SETTINGS	DEFAULT SETTING
NORMAL VOLTAGE DROPOUT	70-98%	85%
NORMAL VOLTAGE PICKUP	85-100%	90%
NORMAL OVER VOLTAGE TRIP	102-115%	OFF
NORMAL VOLTAGE UNBALANCE	YES/NO	NO
NORMAL VOLTAGE UNBALANCE DROPOUT	5-20% OF AVG. NORMAL VOLTAGE	20% (if ON)
NORMAL VOLTAGE UNBALANCE PICKUP	3-18% OF AVG. NORMAL VOLTAGE	10% (if ON)
EMERGENCY VOLTAGE DROPOUT	70-98%	75%
EMERGENCY VOLTAGE PICKUP	85-100%	90%
EMERGENCY OVER VOLTAGE TRIP	102-115%	OFF
EMERGENCY VOLTAGE UNBALANCE	YES/NO	NO
EMERGENCY VOLTAGE UNBALANCE DROPOUT	5-20% OF AVG. EMERGENCY VOLTAGE	20% (if ON)
EMERGENCY VOLTAGE UNBALANCE PICKUP	3-18% OF AVG. EMERGENCY VOLTAGE	10% (if ON)

B. FREQUENCY SENSING OF THE NORMAL & EMERGENCY SOURCES.

PARAMETER	RANGE OF SETTINGS	DEFAULT SETTING
NORMAL FREQUENCY DROPOUT	85-98%	90%
NORMAL FREQUENCY PICKUP	90-100%	95%
NORMAL OVER FREQUENCY TRIP	102-110%	OFF
EMERGENCY FREQUENCY DROPOUT	85-98%	90%
EMERGENCY FREQUENCY PICKUP	90-100%	95%
EMERGENCY OVER FREQUENCY TRIP	102-110%	OFF

TIME DELAYS

THE FOLLOWING TIME DELAY SETTINGS ALL HAVE AN ADJUSTABLE RANGE OF 0-60 min 59 sec UNLESS STATED OTHERWISE. ADJUSTABLE IN INCREMENTS OF 1 sec.

NOTE: SOME TIME DELAYS MAY BE EFFECTED BY CUSTOMER REQUESTED ACCESSORIES PROVIDED WITH THE UNIT. REFER TO THE DESCRIPTIONS PROVIDED UNDER THE "ACCESSORIES" NOTES ON THIS PAGE.

FEATURE	NAME	DEFAULT SETTING
1C	NORMAL SOURCE FAILURE TO ENGINE START	1 sec
2B	TRANSFER TO EMERGENCY ON AVAILABILITY OF EMERGENCY SOURCE	0 sec
1F	EMERGENCY SOURCE FAILURE RETRANSFER (NORMAL SOURCE AVAILABLE)	0 sec
2E	ENGINE COOLDOWN FOLLOWING RETRANSFER TO NORMAL	5 min
3A	RETRANSFER TO NORMAL (NORMAL FAILURE MODE)	30 min
3A	RETRANSFER TO NORMAL (TEST MODE)	30 sec
-	DELAYED TRANSFER (LOAD "OFF" TIME), [0-5 min 59 sec]	3 sec

DESCRIPTIONS OF TIME DELAYS:

- FEAT. 1C** - DELAY ON NORMAL SOURCE OUTAGE. STARTS ON FAILURE OF NORMAL SOURCE. RESETS IF NORMAL SOURCE IS ACCEPTED BEFORE EXPIRATION. INHIBITS ENGINE STARTING AND AUTOMATIC TRANSFER UNTIL EXPIRATION.
- FEAT. 2B** - DELAY PRIOR TO TRANSFER TO THE EMERGENCY SOURCE. DELAY STARTS ON EXPIRATION OF FEAT. 1C AND WHEN THE EMERGENCY SOURCE HAS BEEN ACCEPTED. DELAY RESETS IF THE EMERGENCY SOURCE FAILS PRIOR TO EXPIRATION. ON EXPIRATION, TRANSFER TO EMERGENCY IS INITIATED UNLESS THE NORMAL SOURCE HAS RECOVERED AND THE "COMMIT TO TRANSFER" FEATURE IS SET TO "NO" COMMIT. PROVIDES A PERIOD FOR EMERGENCY SOURCE STABILIZATION OR STAGING OF MULTIPLE TRANSFER SWITCH CONTROLLED LOADS TO THE EMERGENCY SOURCE.
- FEAT. 1F** - DELAY ON RETRANSFER TO NORMAL IN THE EVENT OF EMERGENCY SOURCE FAILURE. DELAY BEGINS ON FAILURE OF THE EMERGENCY SOURCE IF THE NORMAL SOURCE IS ACCEPTABLE. ON EXPIRATION, RETRANSFER TO NORMAL WILL BE INITIATED.
- FEAT. 2E** - DELAY ON ENGINE SHUTDOWN (ENGINE COOL DOWN PERIOD). DELAY STARTS FOLLOWING RETRANSFER TO THE NORMAL SOURCE. PROVIDES A PERIOD FOR THE ENGINE-GENERATOR SET TO RUN UNLOADED PRIOR TO SHUTDOWN.
- FEAT. 3A** - RETRANSFER TO NORMAL DELAY (NORMAL FAILURE MODE) DELAY STARTS WHEN NORMAL SOURCE IS ACCEPTED (FOLLOWING IT'S FAILURE) AND WHILE THE LOAD IS CONNECTED TO EMERGENCY. RESETS IF NORMAL FAILS PRIOR TO EXPIRATION OR IF THE EMERGENCY SOURCE FAILS BEFORE EXPIRATION AND FEAT. 1F EXPIRES (AUTOMATIC BYPASS ON EMERGENCY SOURCE FAILURE). PROVIDES A PERIOD FOR THE NORMAL SOURCE TO STABILIZE PRIOR TO RETRANSFER.
- FEAT. 3A** - RETRANSFER TO NORMAL DELAY (TEST MODE) DELAY STARTS WHEN THE "TRANSFER TEST" SWITCH IS RESET TO "AUTO" (FOLLOWING A USER INITIATED TRANSFER TEST) AND WHILE THE LOAD IS CONNECTED TO EMERGENCY. RESETS IF NORMAL FAILS PRIOR TO EXPIRATION OR IF THE EMERGENCY SOURCE FAILS BEFORE EXPIRATION AND FEAT. 1F EXPIRES (AUTOMATIC BYPASS ON EMERGENCY SOURCE FAILURE).

MOTOR LOAD TRANSFER FEATURE

- FEAT. 27** - INPHASE TRANSFER CONTROL LOGIC TO INITIATE AN INPHASE TRANSFER OF LOADS BETWEEN LIVE SOURCES. USED TO PREVENT NUISANCE TRIPPING OF CIRCUIT BREAKERS AND POSSIBLE DAMAGE TO MECHANICAL LOADS CAUSED BY OUT OF PHASE TRANSFER.
- ACTIVATED VIA THE GROUP 5 CONTROL PANEL USER INTERFACE (TRANSFER CONTROL CENTER) BY SELECTING "IN-PHASE MONITOR ENABLE" = YES. AN ADJUSTABLE DELAY (0.0-3.0 sec, FACTORY SET TO 1.5 sec, IN INCREMENTS OF 0.1 sec) DELAYS SENSING TO PERMIT STABILIZATION OF THE SOURCES PRIOR TO SENSING. FACTORY SETTING IS DISABLED UNLESS SPECIFIED TO BE FACTORY ACTIVATED AT THE TIME OF ORDER.

ENGINE EXERCISER

THE ENGINE EXERCISER FEATURE PROVIDES A MEANS TO PERFORM AUTOMATIC EXERCISING OF THE ENGINE-GENERATOR SET EITHER WITH OR WITHOUT LOAD TRANSFER. THE USER CAN PROGRAM UP TO SEVEN DIFFERENT EXERCISE ROUTINES. EACH ROUTINE INCLUDES:

1. ENABLE OR DISABLE THE ROUTINE
2. ENABLE OR DISABLE TRANSFER OF THE LOAD DURING THE ROUTINE
3. SET START TIME OF ROUTINE -
 - TIME OF DAY
 - DAY OF WEEK
 - WEEK OF MONTH (1st, 2nd, 3rd, 4th, ALTERNATE OR ALL)
4. SET THE DURATION OF THE ROUTINE

PARAMETER	RANGE OF SETTING		DEFAULT SETTING
MONTH	(CLOCK SET)	JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	CURRENT DATE
DAY		1-31	1-31
YEAR		00-99	00-99
HOUR		0-23	0-23
MINUTE		0-59	0-59
ENABLE ROUTINE (ROUTINE 1-7)		YES/NO	NO
TRANSFER LOAD		YES/NO	NO
START HOUR		0-23	0
START MINUTE		0-59	0
RUN WEEK		ALL, ALTERNATE, 1st, 2nd, 3rd, 4th, 5th	ALL
RUN DAY		SUN MON TUE WED THU FRI SAT	SUN
DURATION HOURS		0-23	0
DURATION MINUTES		0-59	0

USER CONTROLS AND INDICATIONS

- A. FEATURES 5 & 6B - TRANSFER TEST/RETRANSFER TIME DELAY BYPASS SELECTOR.

TRANSFER TEST:

OPERATION CAUSES A NORMAL SOURCE FAILURE SEQUENCE. ACTIVATE AND HOLD FOR AT LEAST 15 SECONDS TO ALLOW TIME FOR THE ENGINE-GENERATOR TO START.

RETRANSFER TIME DELAY BYPASS:

OPERATION WILL BYPASS THE FEATURE 3A (RETRANSFER TO NORMAL DELAY).

- B. FEATURES 9A & 9B - TRANSFER SWITCH POSITION INDICATORS.
 FEATURE 9A: TRANSFER SWITCH CLOSED ON NORMAL (GREEN LED)
 FEATURE 9B: TRANSFER SWITCH CLOSED ON EMERGENCY (RED LED)
- C. FEATURES 9C & 9D - SOURCE ACCEPTANCE INDICATORS.
 FEATURE 9C: NORMAL SOURCE ACCEPTED (GREEN LED)
 FEATURE 9D: EMERGENCY SOURCE ACCEPTED (RED LED)

GENERAL NOTES

1. SWITCH SHOWN DE-ENERGIZED AND CONNECTED TO THE NORMAL SOURCE.
2. DEVICE SYMBOLS AND DESIGNATIONS ARE IN ACCORDANCE WITH NEMA PUBLICATION ICS 1-1983, PART 1-101A.
3. ALL WIRING IS #16 AWG, TINNED, STRANDED COPPER UNLESS OTHERWISE INDICATED.
4. ○ ON TERMINAL BLOCKS INDICATES AVAILABLE FIELD CONNECTION POINT.
5. ● ON TERMINAL BLOCKS INDICATES FACTORY CONNECTION POINT.
6. CONTROL AND ACCESSORY WIRING IS ROUTED IN ACCORDANCE WITH ASCO ASSEMBLY PROCEDURE GS451261.
7. AN OPERATOR'S MANUAL IS FURNISHED WITH EACH AUTOMATIC TRANSFER SWITCH. REFER TO THIS PUBLICATION PRIOR TO INSTALLATION AND OPERATION OF THE UNIT.

SIGNALS & AUXILIARIES

- A. FEATURES 7 & 8 - ENGINE START SIGNAL SIGNAL INITIATED BY DROPOUT OF CONTROL PANEL RELAY (NR) FOLLOWING EXPIRATION OF THE FEATURE 1C TIME DELAY (DELAY TO OVERRIDE MOMENTARY NORMAL SOURCE OUTAGES). FEATURE 7 CLOSING TO SIGNAL ENGINE START. FEATURE 8 OPENS TO SIGNAL ENGINE START. ENGINE STARTING SIGNAL RESETS FOLLOWING RETRANSFER TO THE NORMAL SOURCE AND EXPIRATION OF THE FEATURE 2E (ENGINE COOL DOWN) TIME DELAY. FEATURES 7 & 8 ARE PROVIDED AS A SINGLE FORM C CONTACT CONNECTED TO THE FIELD CONNECTIONS TERMINAL BLOCK (TB). CONTACT RATED 5 AMPS AT 32 VDC/120VAC RESISTIVE.

- B. FEATURES 14AG & 14BG - TRANSFER SWITCH AUXILIARY POSITION INDICATING CONTACTS. EIGHT (8) FORM C CONTACTS TO INDICATE CONNECTION OF THE TRANSFER SWITCH TO NORMAL (14A) OR EMERGENCY (14B). CONTACTS CONNECTED TO THE FIELD CONNECTIONS TERMINAL BLOCK (TB). CONTACTS RATED 10 AMPS, 32 VDC, 250 VAC.

- C. FEATURE 17 - REMOTE TRANSFER TO EMERGENCY. REQUIRES A CUSTOMER SUPPLIED NORMALLY OPEN CONTACT. CLOSING OF THE CONTACT CAUSES ENGINE START AND TRANSFER TO THE EMERGENCY SOURCE. OPENING OF THE CONTACT ACTIVATES THE FEATURE 3A (RETRANSFER TO NORMAL) DELAY PRIOR TO RETRANSFER. IN THE EVENT THE EMERGENCY SOURCE FAILS WHILE THE TRANSFER SWITCH IS CONNECTED TO EMERGENCY AND THE REMOTE CONTACT IS CLOSED, THE TRANSFER SWITCH WILL RETRANSFER TO THE NORMAL SOURCE. CONNECTED TO THE FIELD CONNECTIONS TERMINAL BLOCK (TB).

OPERATION

IF THE NORMAL SOURCE FAILS, THE TRANSFER SWITCH INITIATES STARTING OF THE ENGINE-GENERATOR SET. WHEN PROPER VOLTAGE AND FREQUENCY HAVE BEEN ATTAINED, THE LOAD WILL BE TRANSFERRED TO THE EMERGENCY SOURCE.

WHEN THE NORMAL SOURCE IS RESTORED FOR THE DURATION OF THE FEATURE 3A (RETRANSFER TO NORMAL) TIME DELAY SETTING, THE LOAD WILL BE RETRANSFERRED TO THE NORMAL SOURCE.

THE ENGINE WILL CONTINUE TO RUN FOR THE ENGINE COOL DOWN PERIOD, FEATURE 2E.

BASE CATALOG NUMBER				CATALOG NUMBER SUFFIXES			EXPLANATION OF CATALOG NUMBER CODES									
TS	CATALOG	NEUTRAL	PHASE	AMPS	VOLT	CONTROLLER	OPTIONAL	ENCLOSURE	NEUTRAL TYPE		ENCLOSURE CODES					
FRAME	TYPE	TYPE	POLES		C		ACCESSORY	CODE		CODE		CODE	TYPE	DESCRIPTION		
H	7ATS	A B C	2	600 800 1000 1200	D E F G H J K L M N P Q R	5	X	BLANK	BLANK		BLANK	1		OPEN TYPE (NO ENCLOSURE)		
								A	NONE	C	208	C	1	GENERAL PURPOSE, INDOOR		
								B	SOLID	D	220	E	2	INDOOR, WATER & DUST RESISTANT		
								C	SWITCHING	E	230	F	3R	OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT		
								F	OVERLAPPING	F	240	G	4	INDOOR/OUTDOOR, WATERTIGHT & DUSTTIGHT		
								H		H	380	J	4X	TYPE 4 PLUS CORROSION RESISTANCE (STAINLESS STEEL)		
								J		J	400	K	4X	TYPE 4 PLUS CORROSION RESISTANCE (FIBERGLASS)		
								K		K	415	L	7	EXPLOSION PROOF		
								L		L	440	M	12	INDOOR, INDUSTRIAL ENVIRONMENTS, OILTIGHT & DUSTTIGHT		
								M		M	460	M	3R	(SECURE ENCLOSURES)		
								N		N	480	N	4	OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT		
								P		P	550	P	4X	INDOOR/OUTDOOR, WATERTIGHT & DUSTTIGHT		
								Q		Q	575	P	4X	TYPE 4 PLUS CORROSION RESISTANCE (STAINLESS STEEL)		
								R		R	600	Q	12	INDOOR, INDUSTRIAL ENVIRONMENTS, OILTIGHT & DUSTTIGHT		
		BLANK FOR NONE						BLANK FOR NONE						INDOOR, INDUSTRIAL ENVIRONMENTS, OILTIGHT & DUSTTIGHT		
								BLANK FOR OPEN TYPE								

CATALOG NUMBER _____
 CERTIFIED TO _____
ASCO® S.O. _____

BY _____

DATE _____

FORM REV C

PROJECT NAME: _____

WIRING _____ DIAGRAM _____

7000 SERIES (H7ATS)

GROUP 5 CONTROLS

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055.

ASSEM. REF. NO. _____

SCALE: 1:1 ACAD FILE

SIZE: DWG. NO. _____

DS713500

CHANGE LETTER C ECR NO. 166900 SHEET 1 OF 6

166900 SDH SDH 04/23/04

SEE ECR

160049 WK WK 02/25/02

SEE ECR

158293 BWM WK 7/24/01

SEE ECR

156547 SDH SDH 01/01

ISSUE

CHANGE LETTER ECR NO. BY APP. DATE

SUBSIDIARY DISTRIBUTION

AE AN AM AJ AL

CH AV AA PS AR

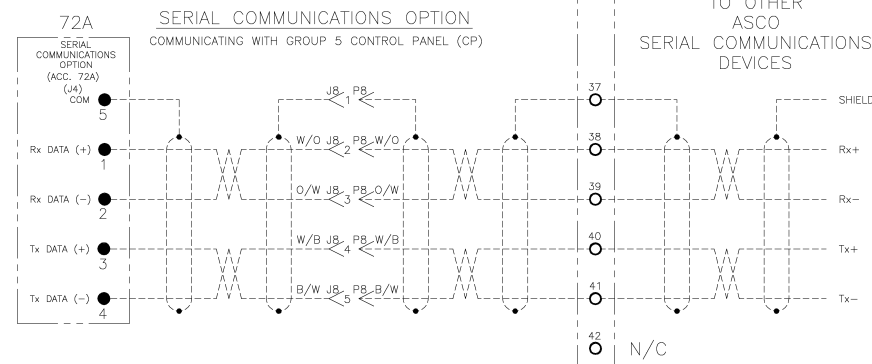
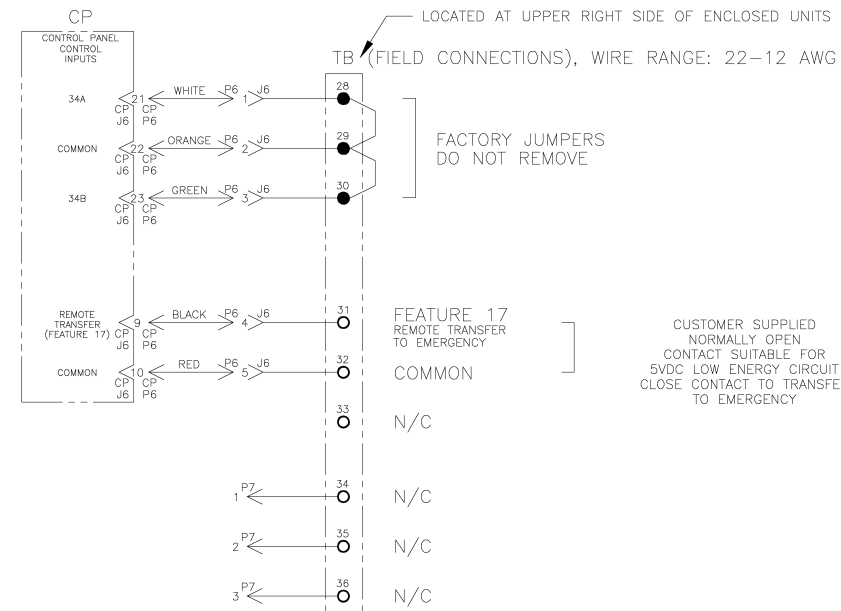
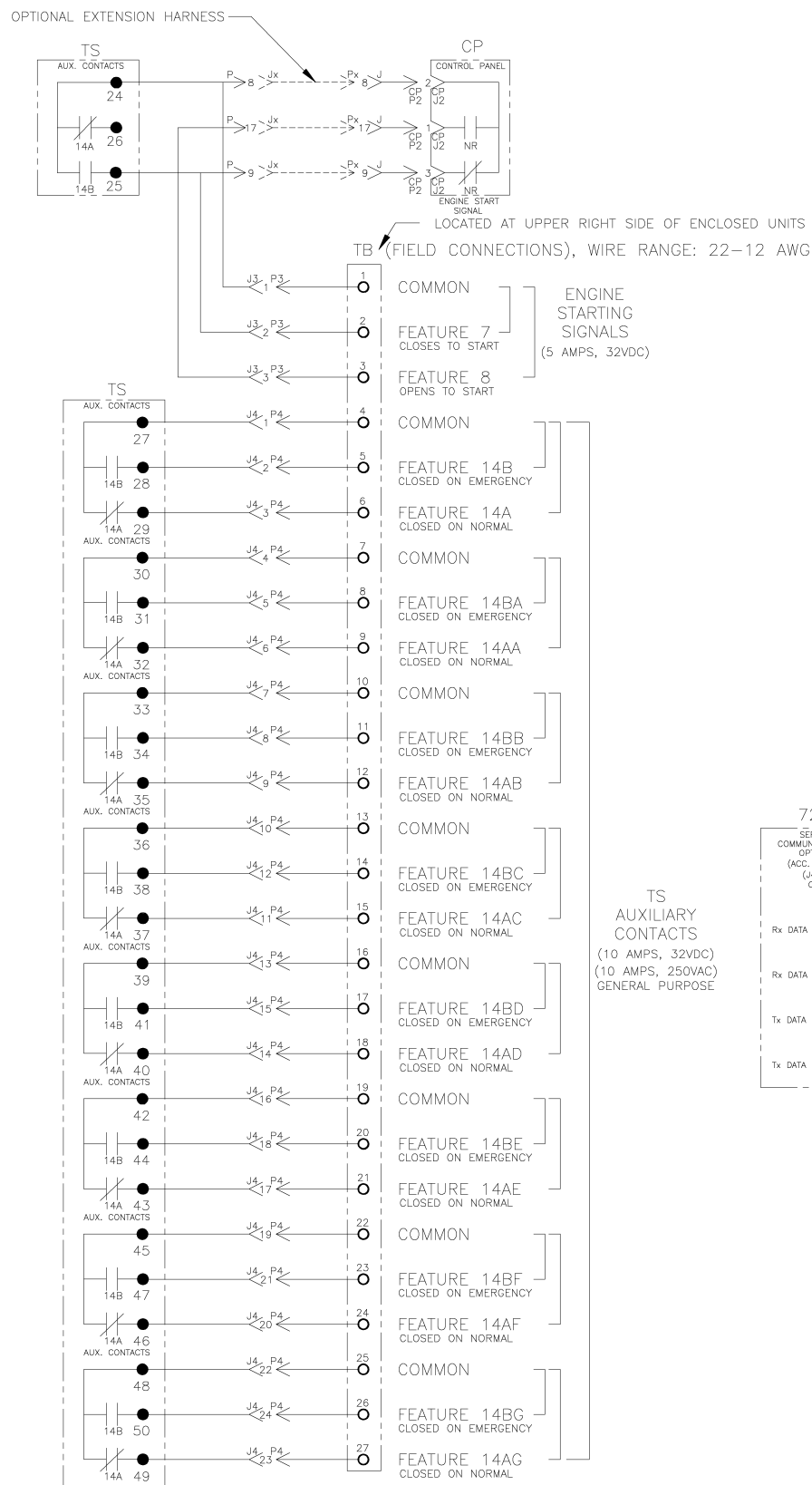
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 FLORHAM PARK, NEW JERSEY 07932 U.S.A.

FIELD CONNECTIONS



72A NOTES:

- EARTH GROUND SHIELD AT HOST DEVICE ONLY.
- FIELD WIRING: USE UL LISTED, STRANDED, TWISTED PAIRS, OVERALL FOIL SHIELD WITH STRANDED DRAIN WIRE SUITABLE FOR RS-422 EQUIVALENT TO:
 - (STANDARD 80°C) BELDEN 9842 OR 9829 OR ALPHA 6202C OR 6222C
 - (PLENUM RATED) BELDEN 89729 OR 82729 OR ALPHA 58902

C	166900	SDH	SDH	04/23/04
B	160049	WK	WK	02/25/02
A	158293	BWM	WK	7/24/01
	156547	SDH	SDH	01/01
				ISSUE

PROJECT NAME:		WIRING DIAGRAM		THIRD ANGLE PROJECTION	
BY	DATE	MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055	ASSEM. REF. NO.	SCALE	1:1
SDH	01/01			ACAD	FILE
CHECKED		PROPERTY OF ASCO POWER TECHNOLOGIES. USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.		SIZE	DWG. NO.
DRAFTING APPROVAL				DS	713500
FINAL APPROVAL	SDH	01/01	ASCO	ASCO POWER TECHNOLOGIES, L.P.	FLORHAM PARK, NEW JERSEY 07932 U.S.A.
CHANGE LETTER	ECN NO.	BY	APP.	DATE	
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CH	AV	AA	PS	AR	
AG	AP	AC	AS		
CHANGE LETTER	ECN NO.	166900	SHEET	2	OF 6

MAIN POWER POLES

TS OPERATOR CIRCUIT

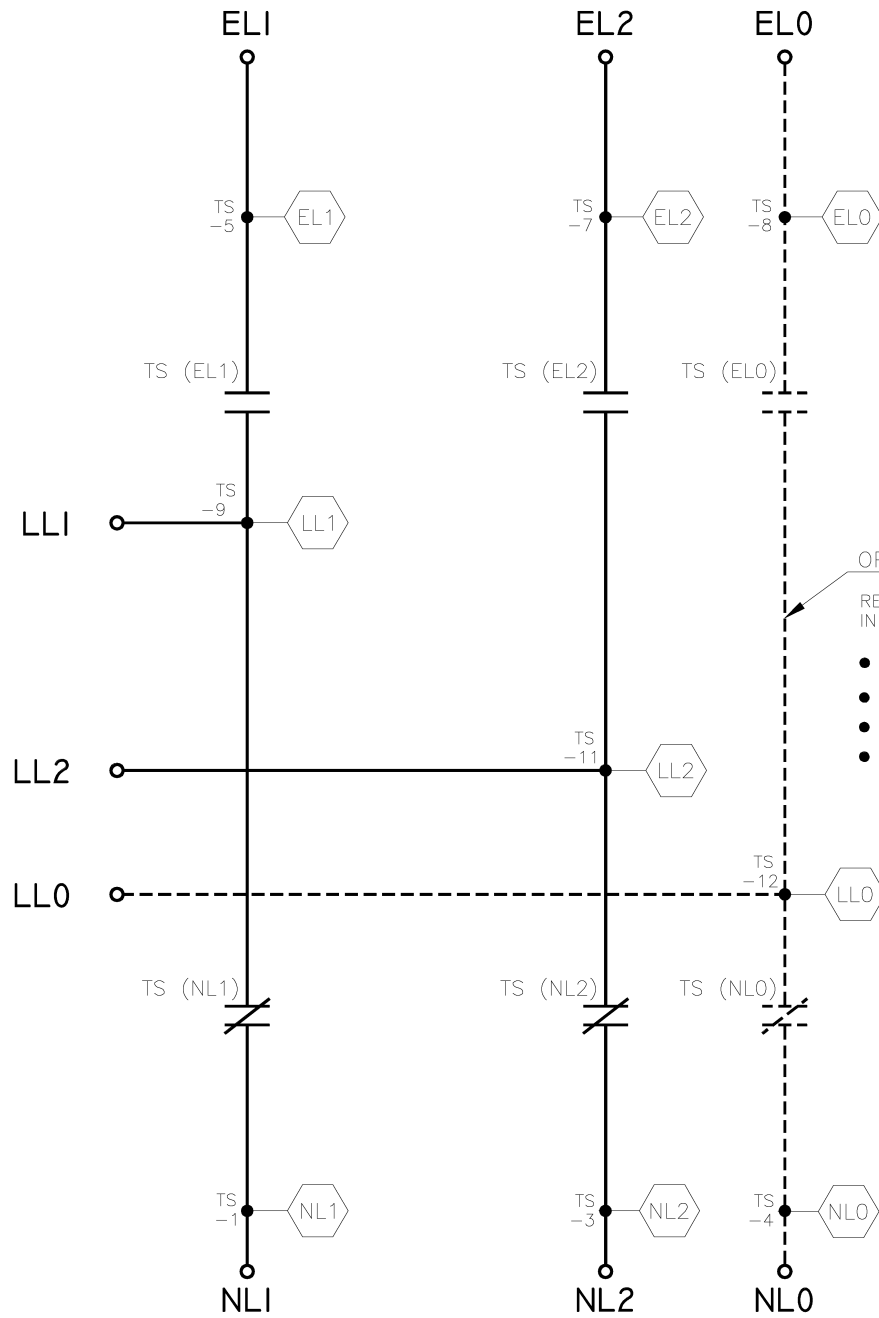
EMERGENCY

NORMAL

LOAD

EMERGENCY

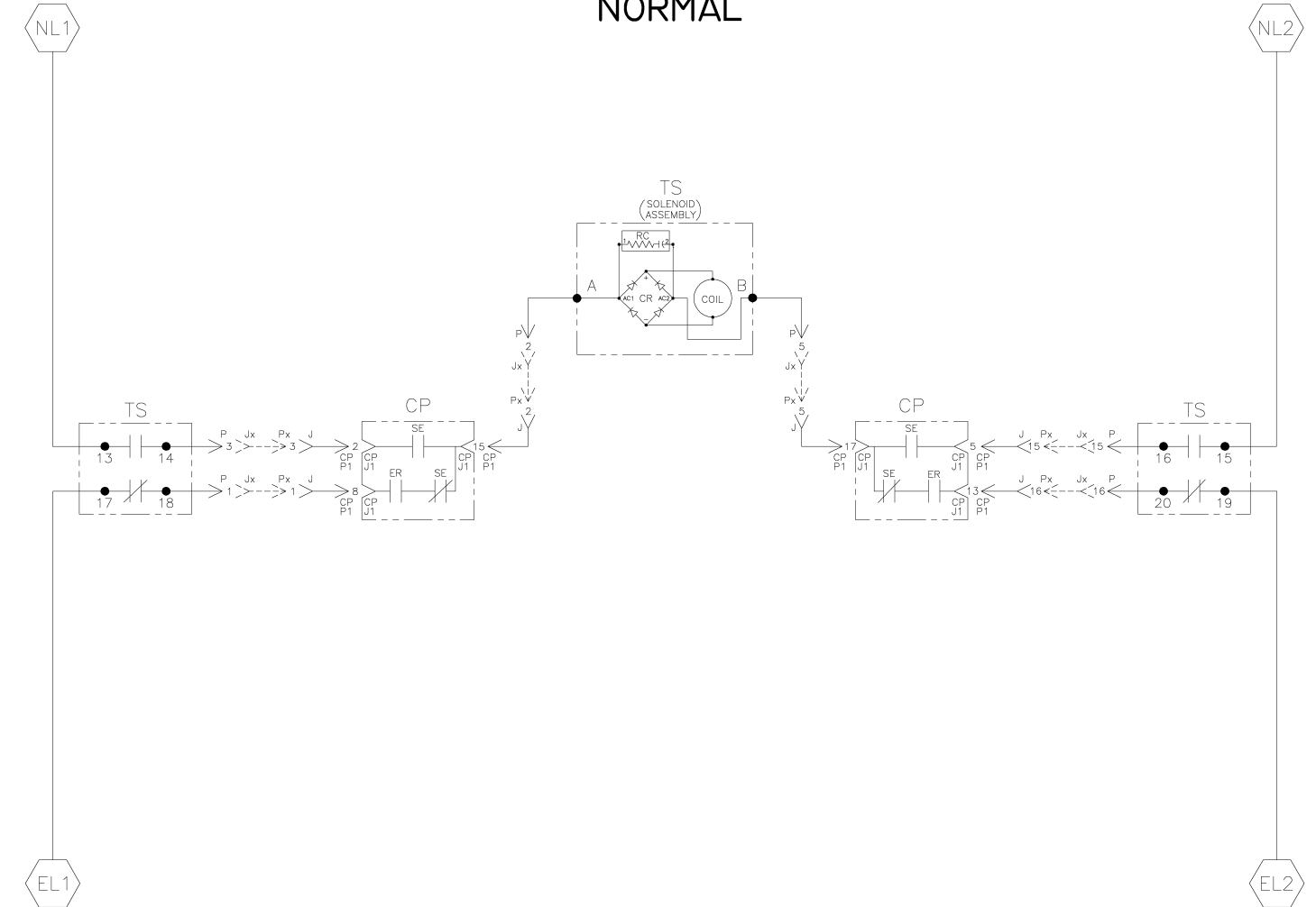
NORMAL



OPTIONAL NEUTRAL TYPES
REFER TO "EXPLANATION OF CATALOG NUMBER CODES"
IN CATALOG NUMBER CHART ON SHEET 1.

- NONE
- SWITCHING CONTACTS
- OVERLAPPING CONTACTS
- SOLID BUS PLATE

NOTE:
ATS SHOWN CLOSED ON NORMAL SOURCE.



TS	SOLENOID POSITION	
	CLOSED BEFORE NORMAL TDC	BEFORE CLOSED <TDC EMERG
13-14		
15-16		
17-18		
19-20		

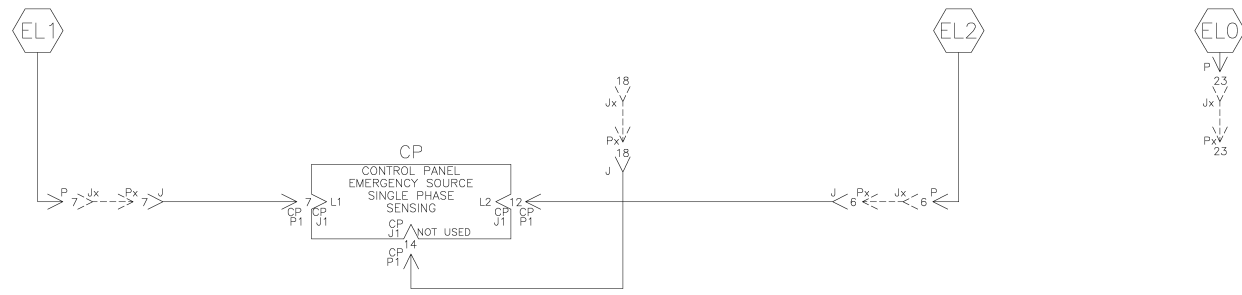
TDC (TOP DEAD CENTER)
TRANSFER SWITCH TEST & ADJUSTMENT PROCEDURE
SPECIFIES CONTROL CUT-OFF (CONTACT OPENING)
SETTING.

PROJECT NAME:		WIRING DIAGRAM		THIRD ANGLE PROJECTION	
DRAWN BY: SDH		DATE: 01/01		ASSEMBLY NO.:	
CHECKED BY:		DATE:		SCALE: 1:1	
DRAFTING APPROVAL:		DATE:		SIZE: DWG. NO.	
FINAL APPROVAL: SDH		DATE: 01/01		FILE: DS713500	
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EMERGENCY SOURCE CIRCUITS

ADDITIONAL CIRCUITS

EMERGENCY



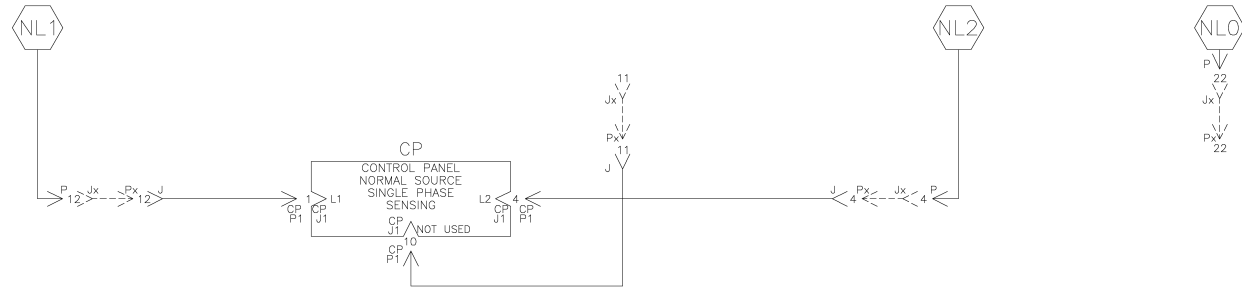
LOAD TERMINAL CIRCUITS

LOAD

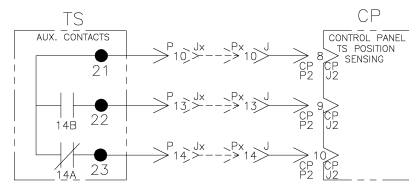


NORMAL SOURCE CIRCUITS

NORMAL



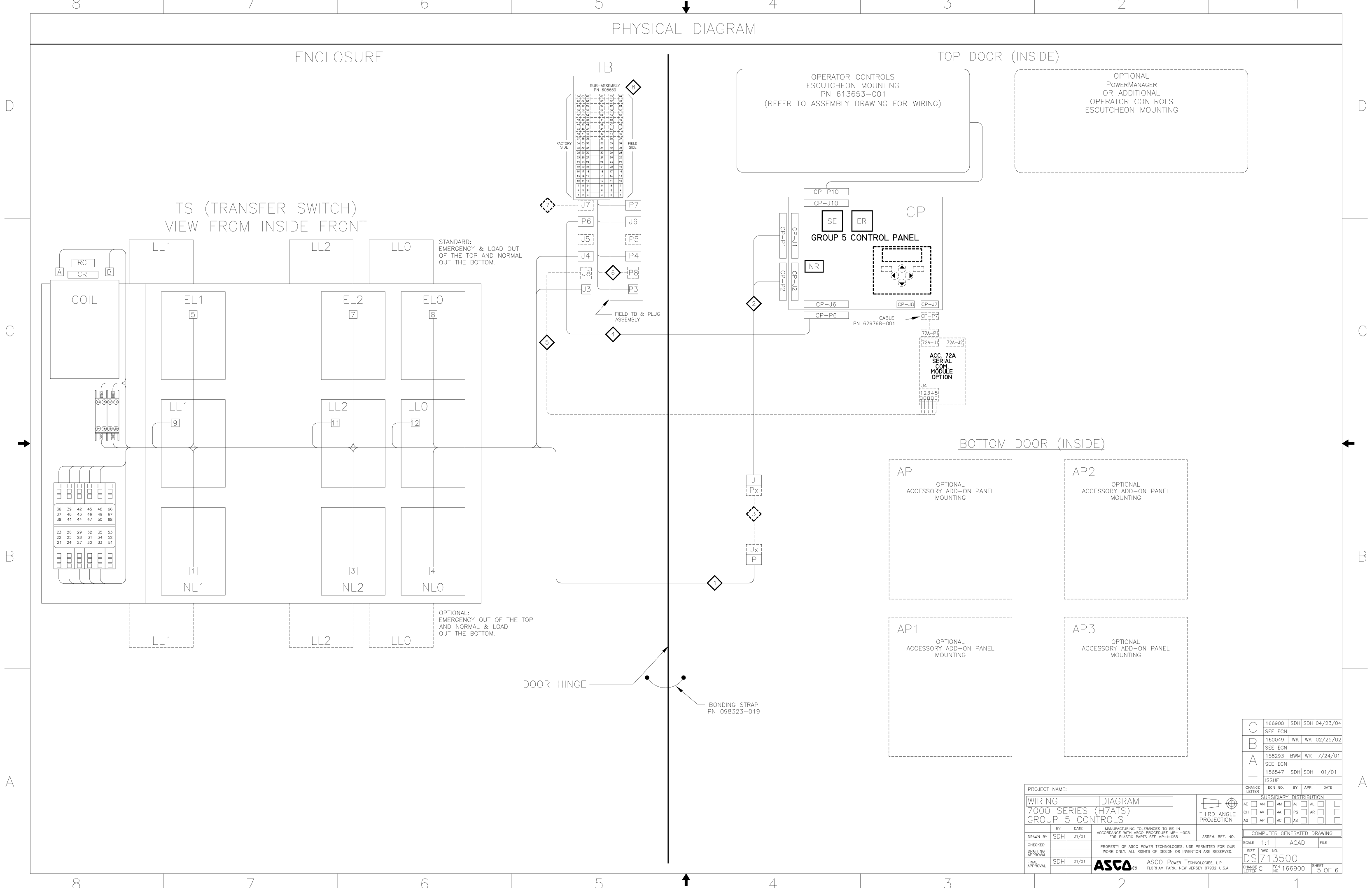
CONTROL CIRCUITS



C	166900	SDH	SDH	04/23/04
	SEE ECN			
B	160049	WK	WK	02/25/02
	SEE ECN			
A	158293	BWM	WK	7/24/01
	SEE ECN			
	156547	SDH	SDH	01/01
	ISSUE			

PROJECT NAME:		WIRING DIAGRAM		THIRD ANGLE PROJECTION	
DRAWN BY: SDH		DATE: 01/01		ASSEM. REF. NO.	
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PHYSICAL DIAGRAM



DOOR HINGE

BONDING STRAP
PN 098323-019

C	166900	SDH	SDH	04/23/04
SEE ECN				
B	160049	WK	WK	02/25/02
SEE ECN				
A	158293	BWM	WK	7/24/01
SEE ECN				
-	156547	SDH	SDH	01/01
ISSUE				

PROJECT NAME:		WIRING DIAGRAM	
7000 SERIES (H7ATS)		GROUP 5 CONTROLS	
BY	DATE	MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-I-003. FOR PLASTIC PARTS SEE MP-I-055.	ASSEM. REF. NO.
SDH	01/01		
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DRAFTING APPROVAL			SIZE DWG. NO.
SDH	01/01	ASCO ASCO POWER TECHNOLOGIES, L.P. FLORENCE PARK, NEW JERSEY 07932 U.S.A.	DS713500
FINAL APPROVAL			CHANGE LETTER C ECN 166900 SHEET 5 OF 6

