

THREE PHASE WIRING FOR ASCO® 7000 SERIES NON-AUTOMATIC CLOSED TRANSITION TRANSFER & BYPASS-ISOLATION SWITCHES TYPE H7NCTB RATED 600 - 1200 AMPERES

FEATURES, SETTINGS, OPERATION & 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 TRANSFER SWITCHES USER'S GUIDE (PART NO. 381333-126) PROVIDED WITH EVERY 7000 SERIES 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
—	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.

IN SYNC – IN SYNC TIME DELAY BEGINS BEFORE A CLOSED TRANSITION TRANSFER FOLLOWING ACCEPTANCE OF THE SOURCE TO WHICH TRANSFER IS BEING MADE. ON EXPIRATION OF THE DELAY, THE LOGIC WAITS AN IN SYNC CONDITION FOR SUBSEQUENT CLOSED TRANSITION TRANSFER.

EXTENDED PARALLEL – EXTENDED PARALLEL TIMER BEGINS WHEN THE SOURCES ARE PARALLELED (CN & CE CLOSED). IF THE TWO SOURCES REMAIN IN PARALLEL WHEN THE DELAY EXPIRES, THE CONTROL LOGIC TAKES THE FOLLOWING ACTIONS:

- THE LOGIC WILL ATTEMPT TO OPERATE THE TRANSFER SWITCH TO A "SAFE" STATE WHERE THE SOURCES WILL NO LONGER BE PARALLELED AND THE LOAD WILL BE SERVICED BY AN AVAILABLE SOURCE.
- THE CONTROL PANEL IS LOCKED OUT FROM ANY FURTHER AUTOMATIC OPERATION.
- THE "TS LOCKED OUT" INDICATOR (RED LED) IS LIT.
- THE UNIT WILL REMAIN LOCKED OUT UNTIL THE "TS LOCKED OUT" PUSH–BUTTON IS DEPRESSED FOR RESET.

FAIL TO SYNC – FAILURE TO SYNC TIMER BEGINS WHEN THE LOGIC BEGINS TO CHECK FOR AN IN SYNC CONDITION FOR WHICH TO ALLOW CLOSED TRANSITION TRANSFER. IF THE DELAY EXPIRES PRIOR TO AN IN SYNC CONDITION OCCURRING, THE "FAILURE TO SYNCHRONIZE" SIGNAL IS ACTIVATED (RED LED) AND CLOSURE OF THE TFR RELAY CONTACT AVAILABLE AT THE FIELD CONNECTIONS TERMINAL BLOCK (TB).

FEAT. 62F – EXTENDED PARALLEL ALARM TIMER BEGINS TIMING WHEN THE SOURCES ARE PARALLELED (CN & CE CLOSED). THE ENABLING OF THE EXTENDED PARALLEL ALARM TIMER OCCURS AT THE SAME TIME THAT THE CONTROLLER'S EXTENDED PARALLEL TIMER BEGINS.

THE FEATURE 62F EXTENDED PARALLEL ALARM TIMER IS INDEPENDENT OF THE CONTROLLER'S EXTENDED PARALLEL TIMER DESCRIBED UNDER "DESCRIPTION OF TIME DELAYS".

ON EXPIRATION OF THE FEATURE 62F EXTENDED PARALLEL ALARM TIME DELAY, OUTPUT RELAY (RL3) (2) FORM C CONTACTS, CONNECTED TO THE FIELD CONNECTIONS TERMINAL BLOCK (TB), TRANSFER.

THE FEATURE 62F EXTENDED PARALLEL ALARM DELAY IS ADJUSTABLE VIA POTENTIOMETER (P2) LOCATED ON THE DUAL OPERATOR CONTROL (DOC) WHICH IS ADJUSTABLE FROM 0–1 SECOND. FACTORY SET AT 1 SEC.

NOTE: THE TIMER SHOULD BE SET ABOVE 0.7 SECONDS TO PERMIT THE CONTROLLER TO ATTEMPT TO OPERATE THE TRANSFER SWITCH TO A "SAFE" STATE WHERE THE SOURCES WILL NO LONGER BE PARALLELED. THE TIMER CAN BE SET LOWER TO BE USED TO ISOLATE THE TWO SOURCES WITH AN EXTERNALLY CONTROLLED FEEDER CIRCUIT BREAKER. HOWEVER THE CONTROLLER MAY NOT BE ABLE TO PLACE THE TRANSFER SWITCH IN A "SAFE" STATE.

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	↓
YEAR	00–99	Eastern Standard Time
HOUR	0–23	↓
MINUTE	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

OPERATION

ALL TRANSFERS TO AND FROM EMERGENCY ARE PERFORMED MANUALLY WITH THE USE OF A MANUALLY OPERATED SELECTOR SWITCH.

IF THE NORMAL SOURCE FAILS, THE TRANSFER SWITCH INITIATES STARTING OF THE ENGINE–GENERATOR SET. WHEN PROPER VOLTAGE AND FREQUENCY HAVE BEEN ATTAINED, AND AFTER THE MANUALLY OPERATED SELECTOR SWITCH HAS BEEN SET TO EMERGENCY, THE LOAD WILL BE TRANSFERRED IN AN OPEN TRANSITION (BREAK BEFORE MAKE) OPERATION TO THE EMERGENCY SOURCE.

WHEN THE NORMAL SOURCE IS RESTORED FOR THE DURATION OF THE FEATURE 3A, RETRANSFER TO NORMAL TIME DELAY SETTING, THE CONTROLS WILL BEGIN MONITORING PHASE, FREQUENCY, AND VOLTAGE DIFFERENTIAL BETWEEN NORMAL AND EMERGENCY SOURCES.

WHEN THE TWO SOURCES ARE APPROACHING SYNCHRONISM, AND THE MANUALLY OPERATED SELECTOR SWITCH HAS BEEN SET TO NORMAL, A CLOSED TRANSITION (MAKE BEFORE BREAK) TRANSFER TO THE NORMAL SOURCE WILL BE INITIATED. THE NORMAL AND EMERGENCY CONTACTORS (CN & CE) WILL BE IN AN OVERLAP CONDITION FOR LESS THAN 0.1 SECONDS.

CLOSED TRANSITION BYPASS OPERATION: THE "CT BYPASS OPTIONS" DISPLAY OF THE CONTROL PANEL ALLOWS SETTING THE TRANSFER SWITCH'S CLOSED TRANSITION BYPASS BEHAVIOR. CLOSED TRANSITION BYPASS CAUSES THE TRANSFER SWITCH TO INTERRUPT POWER TO THE LOAD DURING TRANSFER. THE AVAILABLE OPTIONS ARE:

- FAIL TO SYNC AUTO BYPASS ENABLE – CAUSES A "FAILURE TO SYNCHRONIZE" CONDITION TO RESULT IN AN AUTOMATIC CLOSED TRANSITION BYPASS. DEFAULT SETTING IS NO AUTOMATIC BYPASS.
- CT BYPASS – ALLOWS SELECTIONS AS TO WHETHER THE CLOSED TRANSITION BYPASS WILL OCCUR WITH OR WITHOUT A DELAYED TRANSITION (LOAD "OFF" TIME). DEFAULT SETTING IS OPEN TRANSITION (NO DELAY).
- DT BYPASS – SETS THE LENGTH OF THE DELAYED TRANSFER (LOAD "OFF" TIME) IF THE PREVIOUS PARAMETER HAS BEEN SELECTED TO OPERATE WITH DELAYED TRANSITION. THE DELAY ("OFF" PERIOD) BEGINS FOLLOWING THE OPENING OF THE SOURCE CONTACTOR, (CN OR CE), CONNECTED TO THE SOURCE FROM WHICH TRANSFER IS BEING MADE. UPON EXPIRATION, CLOSURE OF THE OPPOSITE SOURCE CONTACTOR IN INITIATED.

BASE CATALOG NUMBER				CATALOG NUMBER SUFFIXES				EXPLANATION OF CATALOG NUMBER CODES									
CATALOG TYPE	NEUTRAL TYPE	PHASE POLES	AMPS	VOLT CODE	CONTROLLER	OPTIONAL ACCESSORY	ENCLOSURE CODE	NEUTRAL TYPE		VOLTAGE CODES 3 PHASE (3 OR 4 WIRE) 50 OR 60 Hz		ENCLOSURE CODES					
H7NCTB	A	3	600 800 1000 1200	A	5	X	C	CODE	DESCRIPTION	CODE	NOMINAL VOLTAGE	CODE	TYPE	DESCRIPTION			
				B				BLANK	NONE	A	115	BLANK	1	OPEN TYPE (NO ENCLOSURE)			
				C				A	SOLID	B	120	C	1	GENERAL PURPOSE, INDOOR			
				D				B	SWITCHING	C	208	E	2	INDOOR, WATER & DUST RESISTANT			
				E				D		D	220	F	3R	OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT			
				F				E		E	230	G	4	INDOOR/OUTDOOR, WATERTIGHT & DUSTTIGHT			
				G				F		F	240	H	4X	TYPE 4 PLUS CORROSION RESISTANCE (STAINLESS STEEL)			
				H				G		G	277	J	4X	TYPE 4 PLUS CORROSION RESISTANCE (FIBERGLASS)			
				J				H		H	380	K	7	EXPLOSION PROOF			
				K				J		J	400	L	12	INDOOR, INDUSTRIAL ENVIRONMENTS, OILTIGHT & DUSTTIGHT			
				L				K		K	415						
				M				L		M	460	M	3R	(SECURE ENCLOSURES)			
				N				M		N	480	N	4	OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT			
				P				N		P	550	P	4X	INDOOR/OUTDOOR, WATERTIGHT & DUSTTIGHT			
				Q				P		Q	575	Q	12	TYPE 4 PLUS CORROSION RESISTANCE (STAINLESS STEEL)			
				R				Q		R	600			INDOOR, INDUSTRIAL ENVIRONMENTS, OILTIGHT & DUSTTIGHT			
	BLANK FOR NONE																
								BLANK FOR NONE									
									BLANK FOR OPEN TYPE								

SIGNALS & AUXILIARIES

- A. FEATURES 7 – 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 CLOSURES 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.
FEATURE 7 CONSISTS OF A FORM A CONTACT CONNECTED TO THE FIELD CONNECTIONS TERMINAL BLOCK (TB). CONTACTS RATED 5 AMPS AT 32VDC/120VAC RESISTIVE.
- B. FEATURES 14AE & 14BE – TRANSFER SWITCH AUXILIARY POSITION INDICATING CONTACTS.
SIX (6) FORM C CONTACTS TO INDICATE CONNECTION OF THE TRANSFER SWITCH TO NORMAL (14A) AND SIX (6) FOR EMERGENCY (14B). CONTACTS CONNECTED TO THE FIELD CONNECTIONS TERMINAL BLOCK (TB). CONTACTS RATED 10 AMPS, 32 VDC, 250 VAC.

USER CONTROLS AND INDICATIONS

- A. MANUALLY OPERATED SELECTOR SWITCH TO AFFECT TRANSFER TO THE NORMAL OR EMERGENCY SOURCE.
- 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)
- D. EXTENDED PARALLEL TIME – INDICATES THAT THE MAIN CONTACTORS (CN & CE) HAVE BEEN SIMULTANEOUSLY CLOSED FOR A PERIOD EXCEEDING THE TIME ALLOTTED. (RED LED)
- E. FAILURE TO SYNCHRONIZE – INDICATES THE THE TWO SOURCES DID NOT MEET THE PARAMETERS REQUIRED FOR A CLOSED TRANSITION TRANSFER. (RED LED)
- F. TS LOCKED OUT – INDICATES THAT A FAILURE OF THE TRANSFER SWITCH OPERATOR HAS OCCURRED AND THAT THE TRANSFER SWITCH HAS TAKEN CORRECTIVE ACTION AS REQUIRED. ONCE THIS FAILURE RECOVERY OPERATION TAKES PLACE, THE TRANSFER SWITCH IS PREVENTED FROM FURTHER OPERATION UNTIL THE CONDITION IS CORRECTED. ONCE THE CONDITION IS CORRECTED, THE TS LOCKED OUT SWITCH MAY BE DEPRESSED TO RESET THE CONTROL PANEL (RED LED).
- G. ALARM RESET SWITCH – RESETS FAILURE TO SYNCHRONIZE AND EXTENDED PARALLEL ALARMS.
- H. CLOSED TRANSITION BYPASS SWITCH – BYPASSES CLOSED TRANSITION TRANSFER WHEN OPERATED DURING THE PERIOD WHILE THE TRANSFER SWITCH CONTROL PANEL IS MONITORING FOR AN INPHASE CONDITION. CAUSES OPEN TRANSITION TRANSFER TO THE OPPOSITE SOURCE IF CONDITIONS PERMIT.

BYPASS SWITCH & ISOLATION USER CONTROLS & INDICATIONS

A. BYPASS / ISOLATION DISPLAY INDICATORS – LED TYPE, COMMON LAMP TEST

NORMAL SOURCE AVAILABLE – GREEN
EMERGENCY SOURCE AVAILABLE – RED

TRANSFER SWITCH CONNECTED TO NORMAL – GREEN
TRANSFER SWITCH CONNECTED TO EMERGENCY – RED

BYPASS SWITCH CONNECTED TO NORMAL – GREEN
BYPASS SWITCH CONNECTED TO EMERGENCY – RED

LOAD CONNECTED – AMBER

TS IN CONNECTED POSITION – AMBER
TS IN TEST POSITION – AMBER
TS ISOLATED – AMBER

UNIT NOT IN AUTOMATIC – AMBER

- B. BYPASS / ISOLATION DISPLAY ENGINE CONTROL SWITCH
TWO (2) POSITION)
"AUTO" – ENGINE STARTING CONTROLLED BY TRANSFER SWITCH CONTROL PANEL
"RUN" – SIGNALS ENGINE TO START

C. BYPASS / ISOLATION INTERLOCKS (SOLENOID ACTUATED)
SL1: INTERLOCKS THE TRANSFER SWITCH ISOLATION CRANK WITH THE TRANSFER AND BYPASS SWITCHES TO INSURE THAT:

THE TRANSFER SWITCH CANNOT BE DISCONNECTED WITHOUT BEING BYPASSED.

THE TRANSFER SWITCH CANNOT BE RECONNECTED UNLESS IT IS IN THE SAME POSITION AS THE BYPASS SWITCH.

SL2: INTERLOCKS THE BYPASS SWITCH OPERATOR WHEN THE TRANSFER SWITCH IS IN THE CONNECTED POSITION TO INSURE THAT THE BYPASS SWITCH CANNOT BE OPERATED TO A SOURCE OTHER THAN THAT WHICH THE TRANSFER SWITCH IS CONNECTED TO.

FACTORY CP SETTINGS

PARAMETER	SETTING	
	DEFAULT	FACTORY
<TEST OR MANUAL MODE INPUT>		
TEST OPERATION	"YES"	"NO"
MANUAL OPERATION	"NO"	"YES"
TD E>N (TEST MODE)	"30 sec"	"0 sec"

GENERAL NOTES

1. SWITCH SHOWN DE-ENERGIZED AND CONNECTED TO THE NORMAL SOURCE. THE BYPASS SWITCH OPERATOR IS IN THE "AUTOMATIC" POSITION (NORMAL & EMERGENCY BYPASS CONTACTS OPEN). THE ISOLATION HANDLE IS IN THE "CLOSED" POSITION (TS CONNECTED).
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 TRANSFER SWITCH. REFER TO THIS PUBLICATION PRIOR TO INSTALLATION AND OPERATION OF THE UNIT.

CATALOG NUMBER _____

ASCO® CERTIFIED TO
S.O. _____

BY _____

DATE _____

FORM REV G

PROJECT NAME: _____

WIRING _____

7000 SERIES (H7NCTB) 3PH 600–1200 AMPS

"H" FRAME, GROUP 5 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			
DRAWN BY	DJB	03/12/04		PROPERTY OF ASCO POWER TECHNOLOGIES. USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.				SCALE	NONE	SIZE	DS
CHECKED	BK	03/12/04						DWG. NO.	755570		
PROJECT APPROVAL	WK	03/12/04						DRAWING REV.	G	ECN NO.	290979
FINAL APPROVAL								SHEET 1 OF 10			

TECHNICAL DATA

BYPASS SWITCH AUXILIARY CONTACTS				
BP AUXILIARY CONTACT	STATUS (*)	BP SWITCH POSITION (AUX3)		
		EMERG	OFF	NORMAL
81-82	●			
83-84				
85-86	●			
87-88	●			
89-90	●			
91-92				
93-94				
101-102				
103-104				
105-106	●			
107-108				
109-110	●			
111-112	●			
113-114				
115-116				
117-118				
125-126				
127-128				

BYPASS SWITCH OPERATOR AUXILIARY CONTACTS			
BP AUXILIARY CONTACT	STATUS (*)	BP HANDLE POSITION (AUX4)	
		EMERG (OUT)	NORMAL (IN)
137-138	●		
137-139			
140-141	●		
140-142			

BYPASS SWITCH OPERATOR AUXILIARY CONTACTS				
BP AUXILIARY CONTACT	STATUS (*)	BP SWITCH HANDLE POSITION (AUX5)		
		OFF	<> ±10°	BYPASS (±90°)
143-144	●			
143-145	●			
146-147	●			
146-148	●			

ISOLATION (TRANSFER SWITCH CARRIAGE POSITION) AUXILIARY CONTACTS						
IS AUXILIARY CONTACT	STATUS (*)	TRANSFER SWITCH CARRIAGE POSITION				
		CONNECT	> <	TEST	> <	ISOLATE
1-2	●					
1-3	●					
4-5	●					
4-6	●					
7-8	●					
7-9	●					
10-11	●					
10-12	●					
13-14	●					
13-15	●					
16-17	●					
16-18	●					
19-20	●					
19-21	●					
22-23	●					
22-24	●					
25-26	●					
25-27	●					
28-29	●					
28-30	●					

(*) CONTACT AVAILABILITY STATUS:

“●” CONTACT PROVIDED & USED IN CIRCUITRY
“BLANK” CONTACT NOT USED. IF PHYSICALLY AVAILABLE,
CONTACT IS FOR FACTORY USE ONLY!

G		290979	VDS	HSL	08/24/21
F		237985	TR	WK	7/13/12
E		236802	TR	BK	04/27/12
REV. TO SHEET		ECN NO.	BY	APP.	DATE
PROJECT NAME: WIRING DIAGRAM					
7000 SERIES (H7NCTB) 3PH 600-1200 AMPS					
"H" FRAME, GROUP 5 CONTROLS					
DRAWN BY		BY	DATE	MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-I-003. FOR PLASTIC PARTS SEE MP-I-055	
DJB		DJB	03/12/04	ASSEM. REF. NO.	
CHECKED		BK	03/12/04	PROPERTY OF ASCO POWER TECHNOLOGIES. USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.	
PROJECT APPROVAL		WK	03/12/04	DWG. NO. 755570	
FINAL APPROVAL				DRAWING REV. G ECN NO. 290979	
				SHEET 2 OF 10	

ASCO

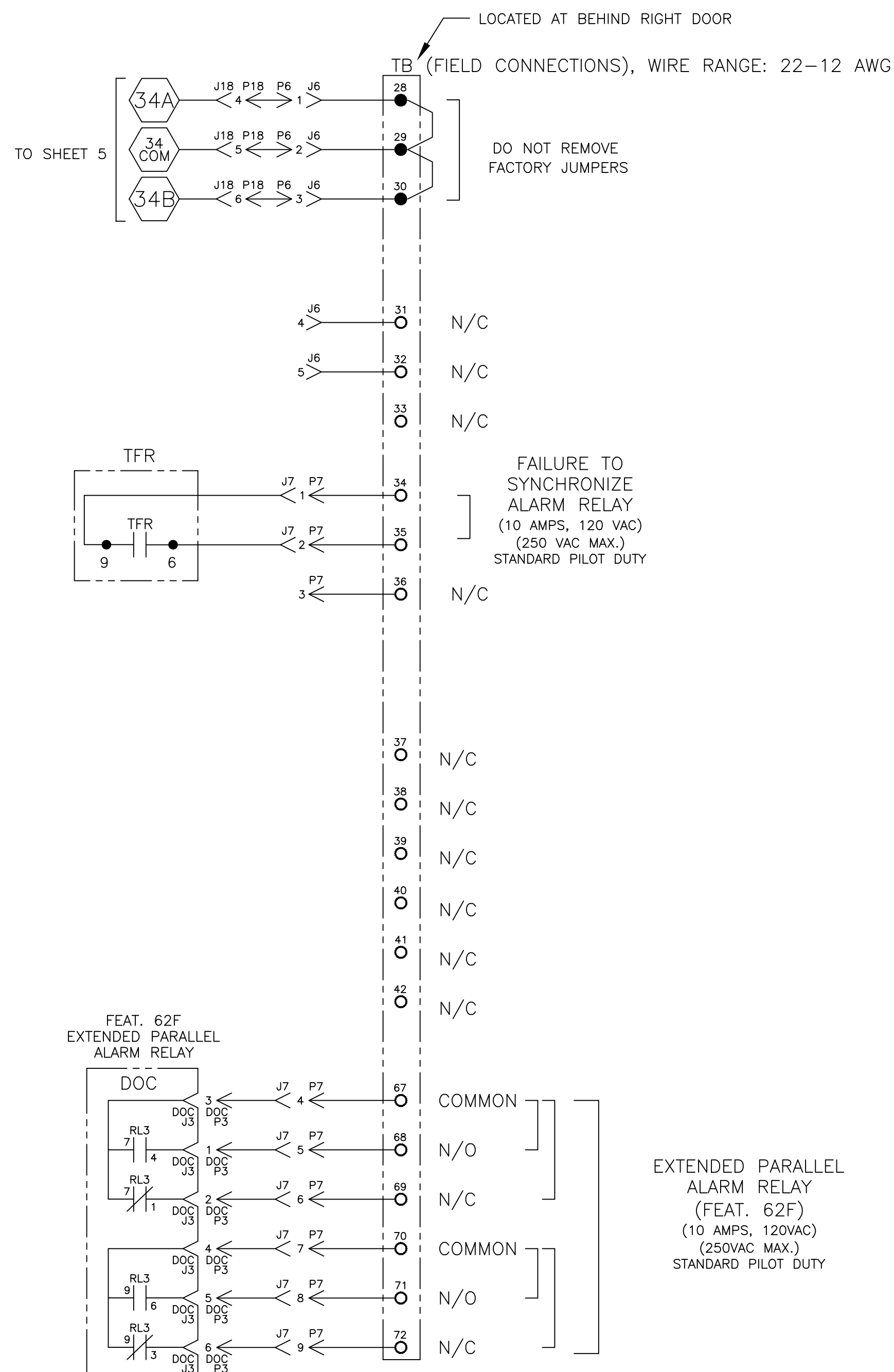
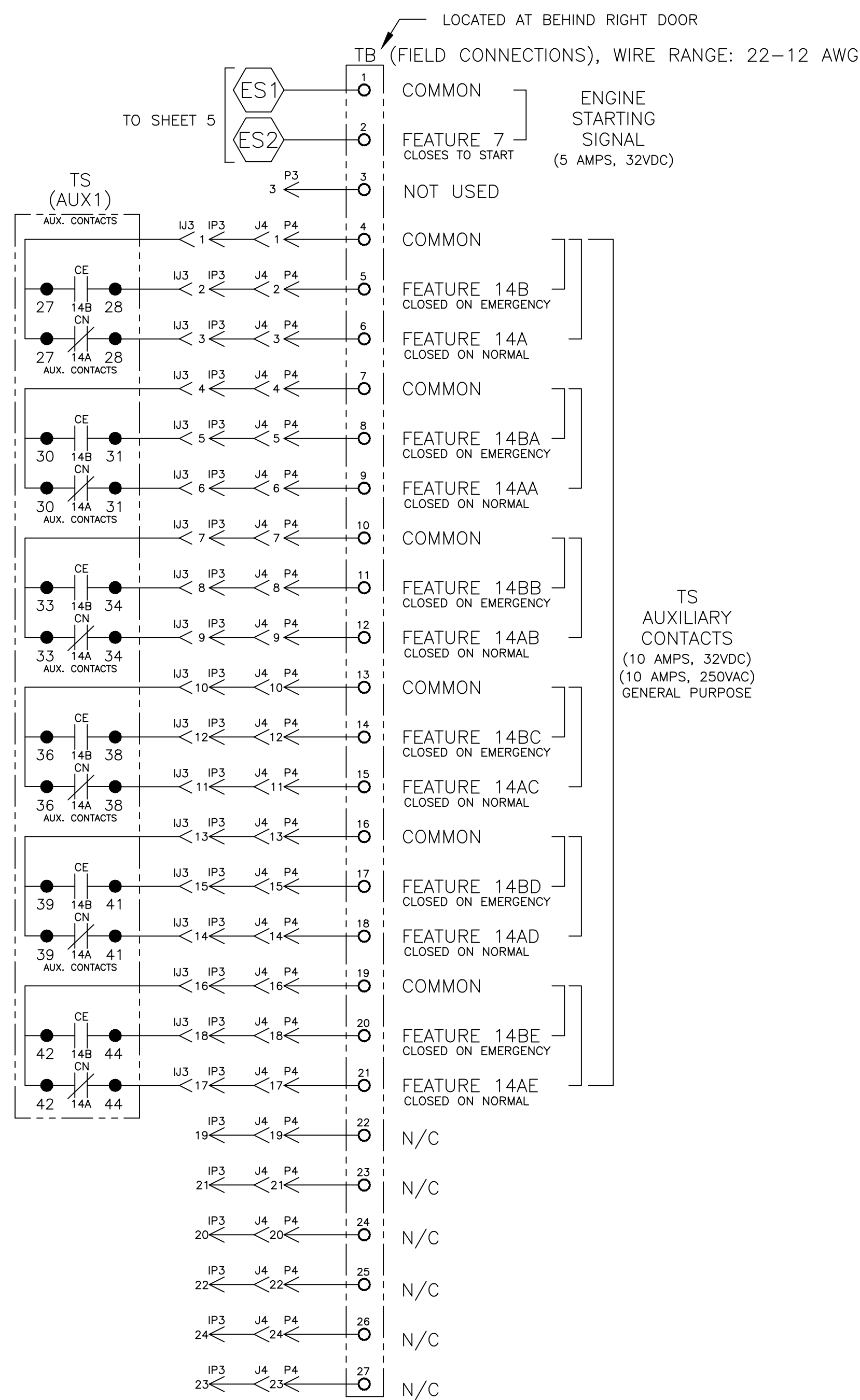
ASCO POWER TECHNOLOGIES, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

COMPUTER GENERATED DRAWING

SCALE NONE SIZE DS

THIRD ANGLE PROJECTION

FIELD CONNECTIONS



G	290979	VDS	HSL	08/24/21
	SEE ECN			
F	237985	TR	WK	7/13/12
	SEE ECN			
E	236802	TR	BK	04/27/12
	SEE ECN			

PROJECT NAME:				REV. TO	ECN NO.	BY	APP.	DATE
WIRING 7000 SERIES (H7NCTB) 3PH 600-1200 AMPS "H" FRAME, GROUP 5 CONTROLS				DIAGRAM 		THIRD ANGLE PROJECTION		
DRAWN BY	DJB	03/12/04	MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-005		ASSEM. REF. NO.			
CHECKED	BK	03/12/04	PROPERTY OF ASCO POWER TECHNOLOGIES, USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.					
PROJECT APPROVAL	WK	03/12/04						
FINAL APPROVAL								
			COMPUTER GENERATED DRAWING SCALE: NONE SIZE: DS DWG. NO. 755570 REV. ECN 290979 SHEET 3 OF 10					
			ASCO ® ASCO POWER TECHNOLOGIES, L.P. FLOHAM PARK, NEW JERSEY 07932 U.S.A.					

D

C

B

A

D

C

B

A

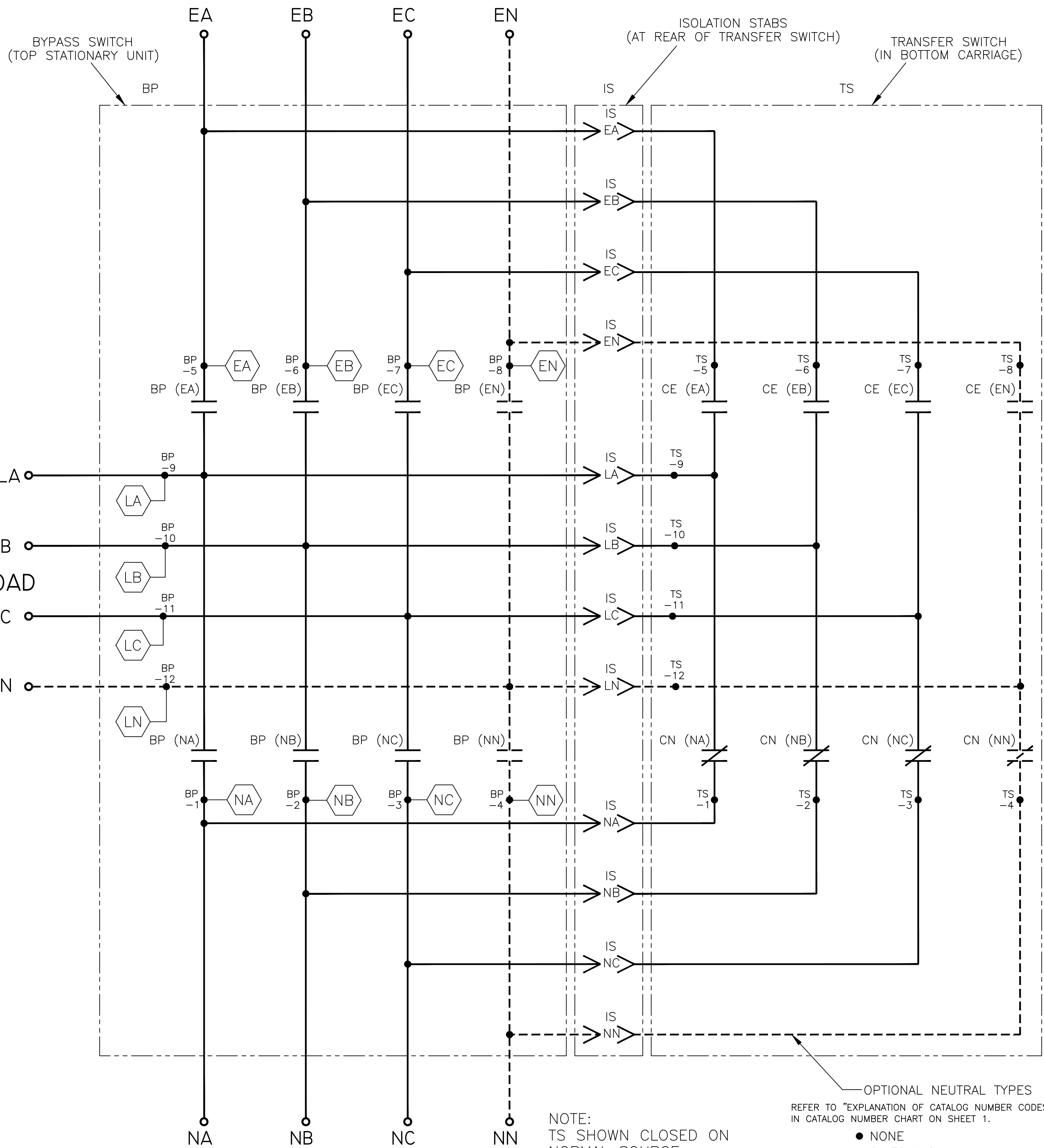
MAIN POWER POLES

TS OPERATOR CIRCUIT

EMERGENCY

NORMAL

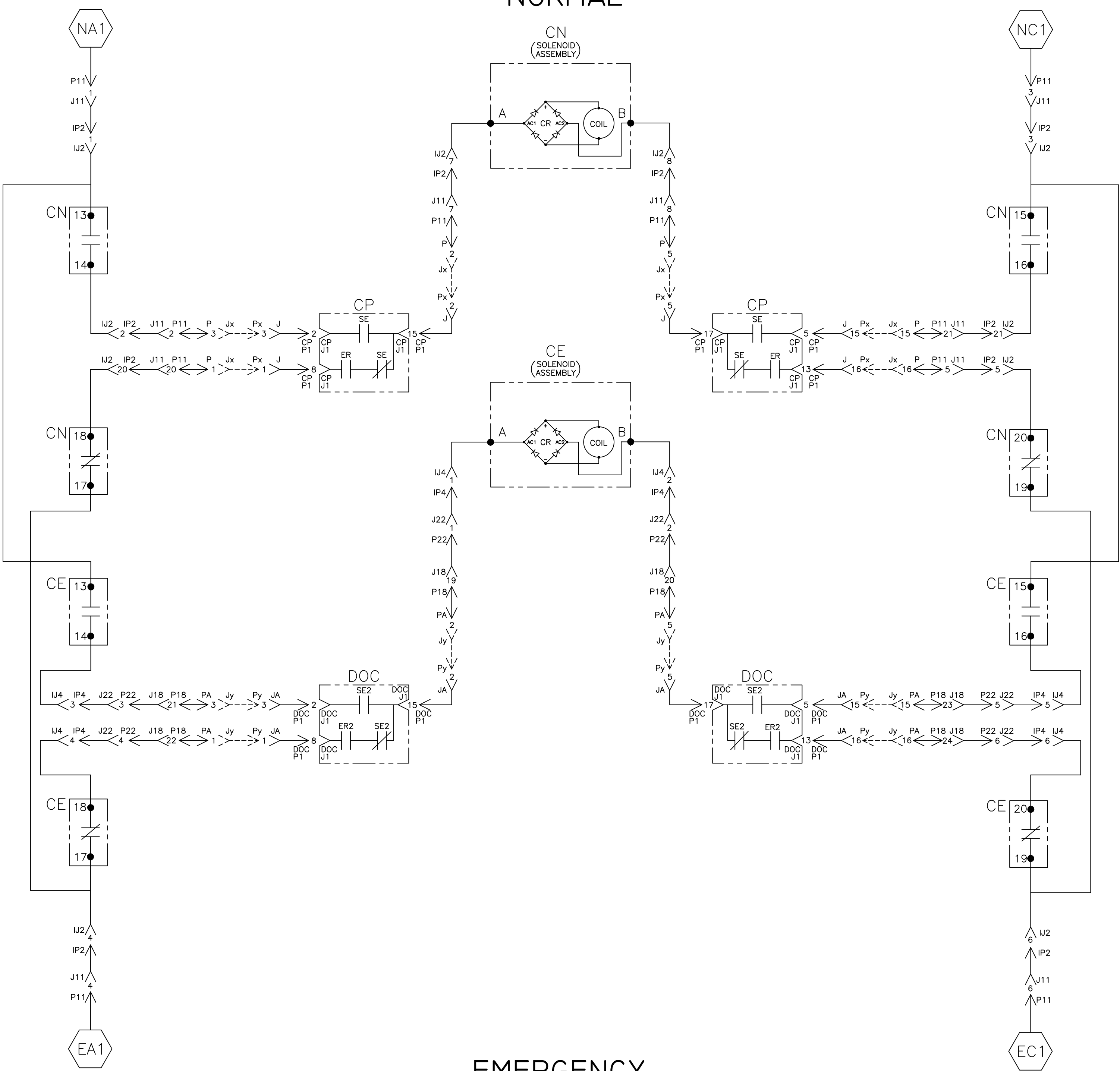
EMERGENCY



NOTE:
TS SHOWN CLOSED ON
NORMAL SOURCE.
BYPASS SWITCH IN
(AUTOMATIC) POSITION.

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

- NONE
- SWITCHING
- SOLID BUS PLATE



CN	SOLENOID POSITION			
	CN CLOSED	BEFORE TDC	>	BEFORE TDC
13-14				
15-16				
17-18				
19-20				

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

CE	SOLENOID POSITION			
	CE CLOSED	BEFORE TDC	>	BEFORE TDC
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:		290979 VDS HSL 08/24/21	
WIRING		DIAGRAM	
7000 SERIES (H7NCTB) 3PH 600-1200 AMPS			
"H" FRAME, GROUP 5 CONTROLS			
DRAWN BY	BY	DATE	MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055
CHECKED	BK	03/12/04	ASSEM. REF. NO.
PROJECT APPROVAL	WK	03/12/04	COMPUTER GENERATED DRAWING
FINAL APPROVAL			SCALE NONE SIZE DS
DWG. NO. 755570		REV. TO SHEET	
ASCOPower Technologies, L.P. FLORHAM PARK, NEW JERSEY 07932 U.S.A.		ECN NO. 290979	
SHEET 4 OF 10			

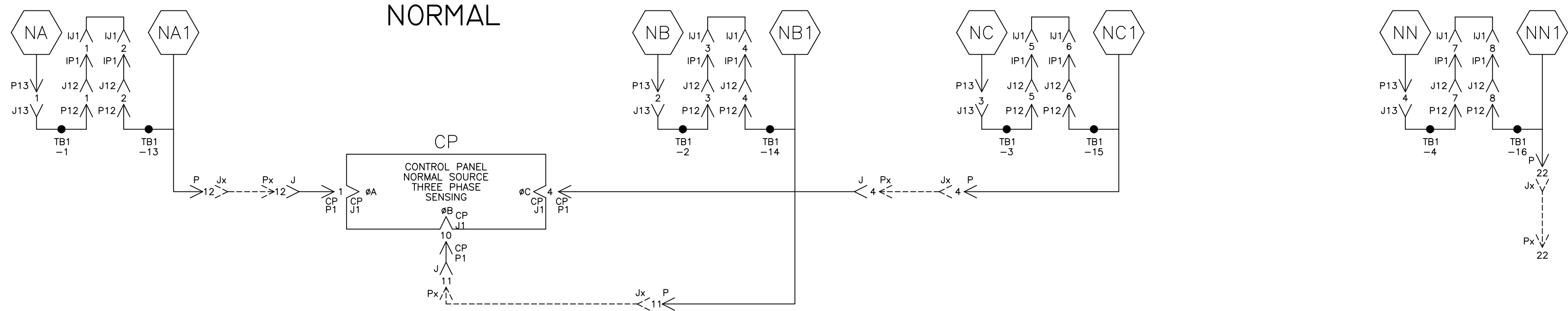
D

C

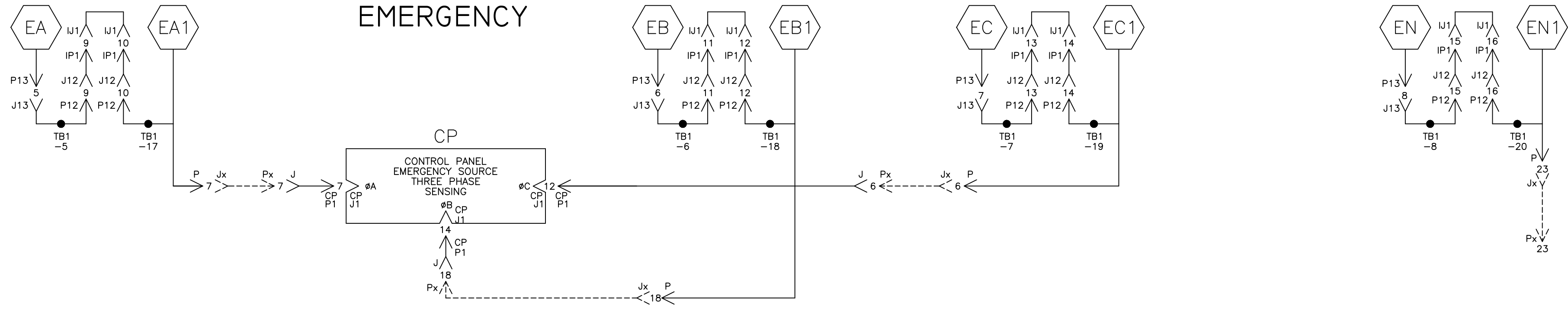
B

A

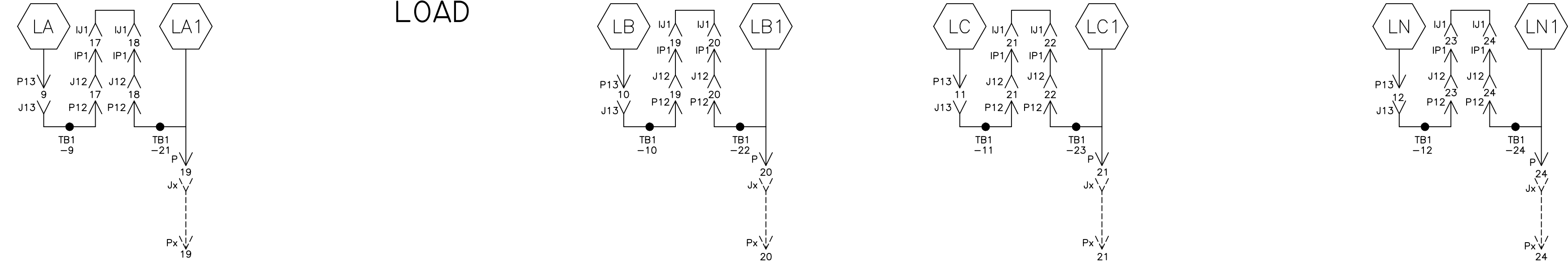
NORMAL SOURCE CIRCUITS



EMERGENCY SOURCE CIRCUITS

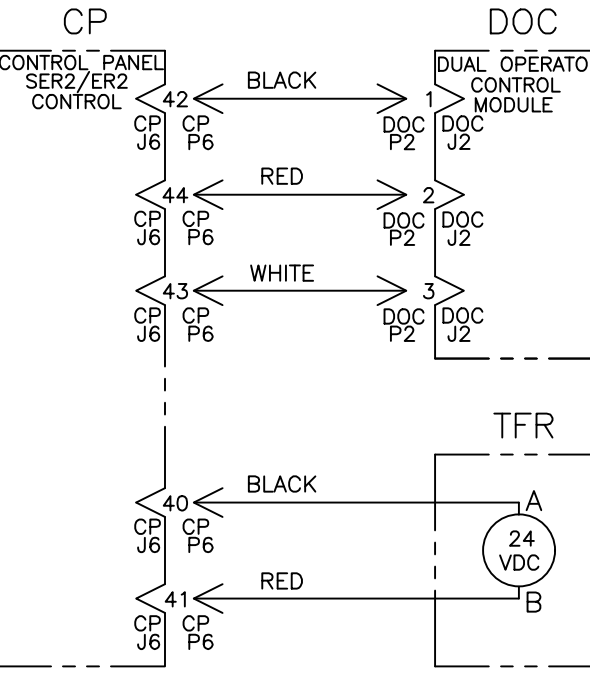


LOAD TERMINAL CIRCUITS

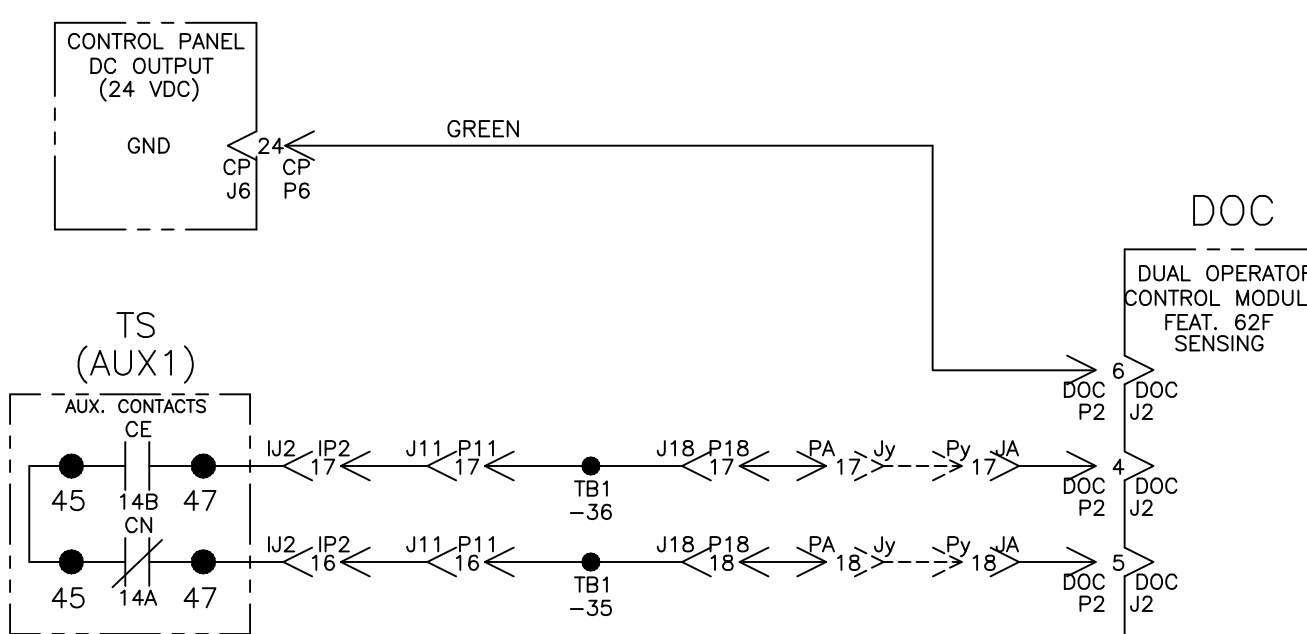


CONTROL SIGNALS & INDICATION

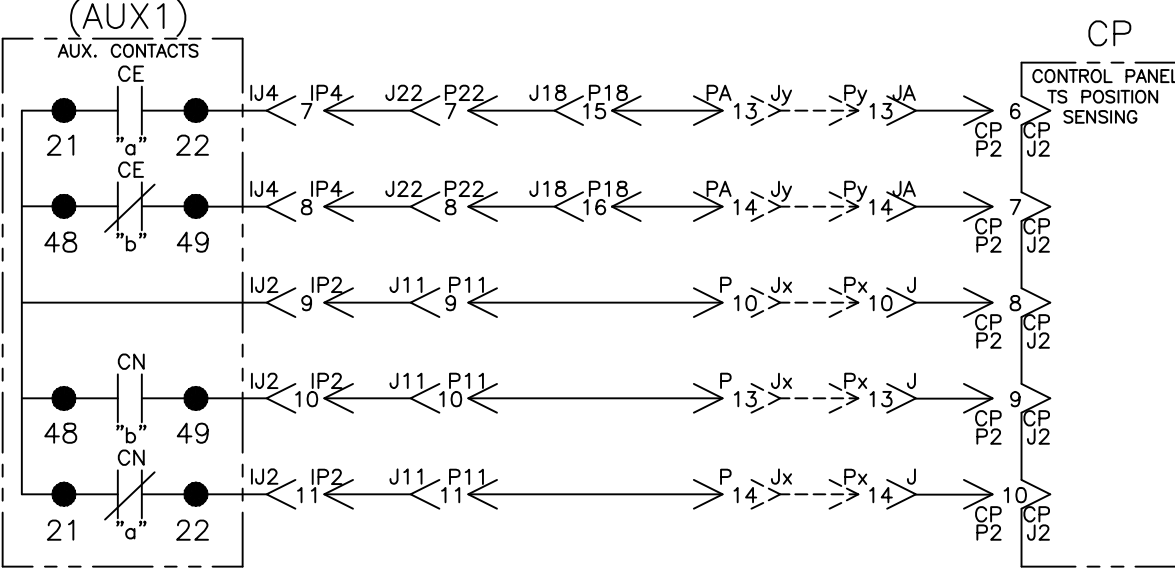
SER2/ER2 CONTROL



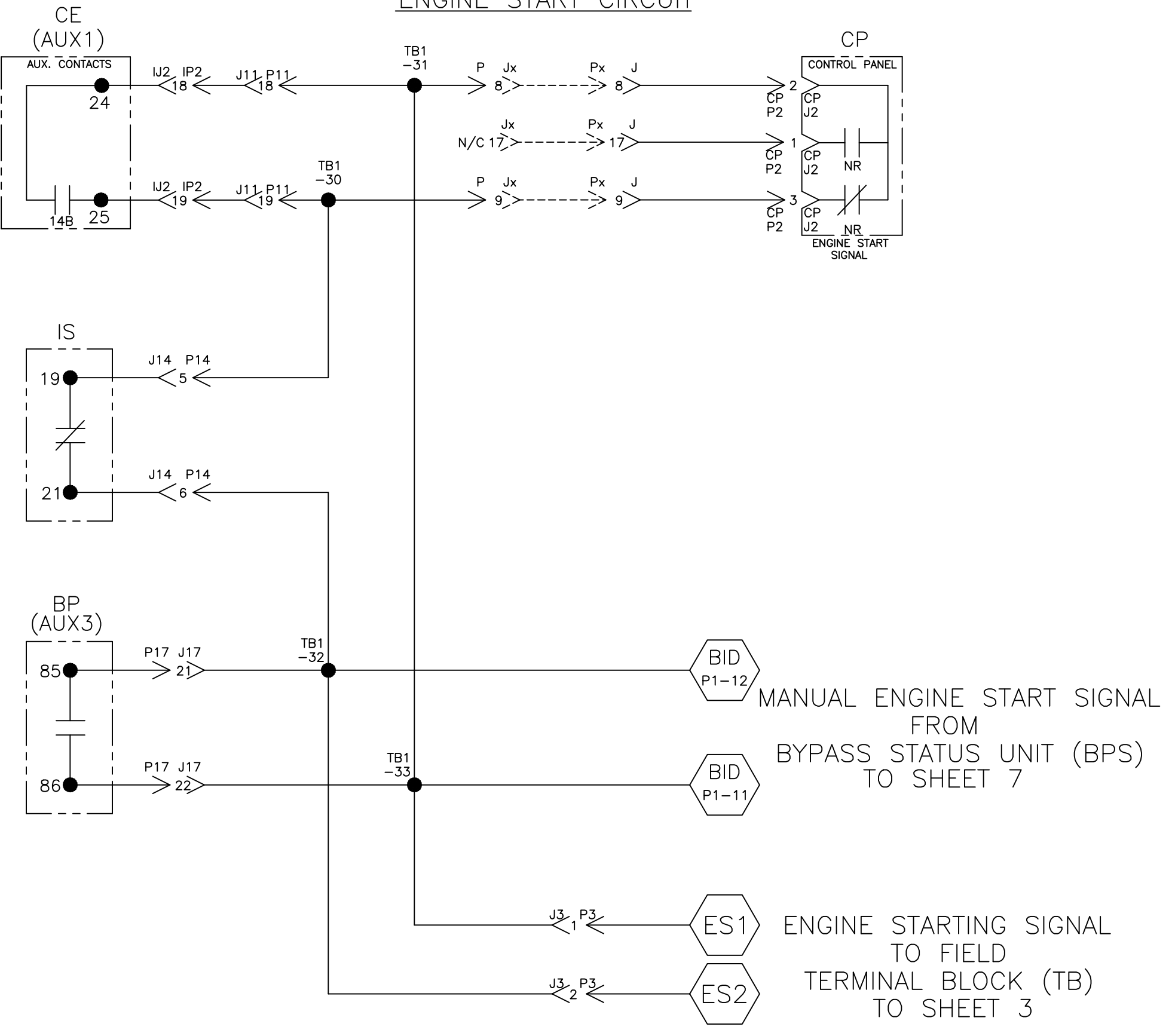
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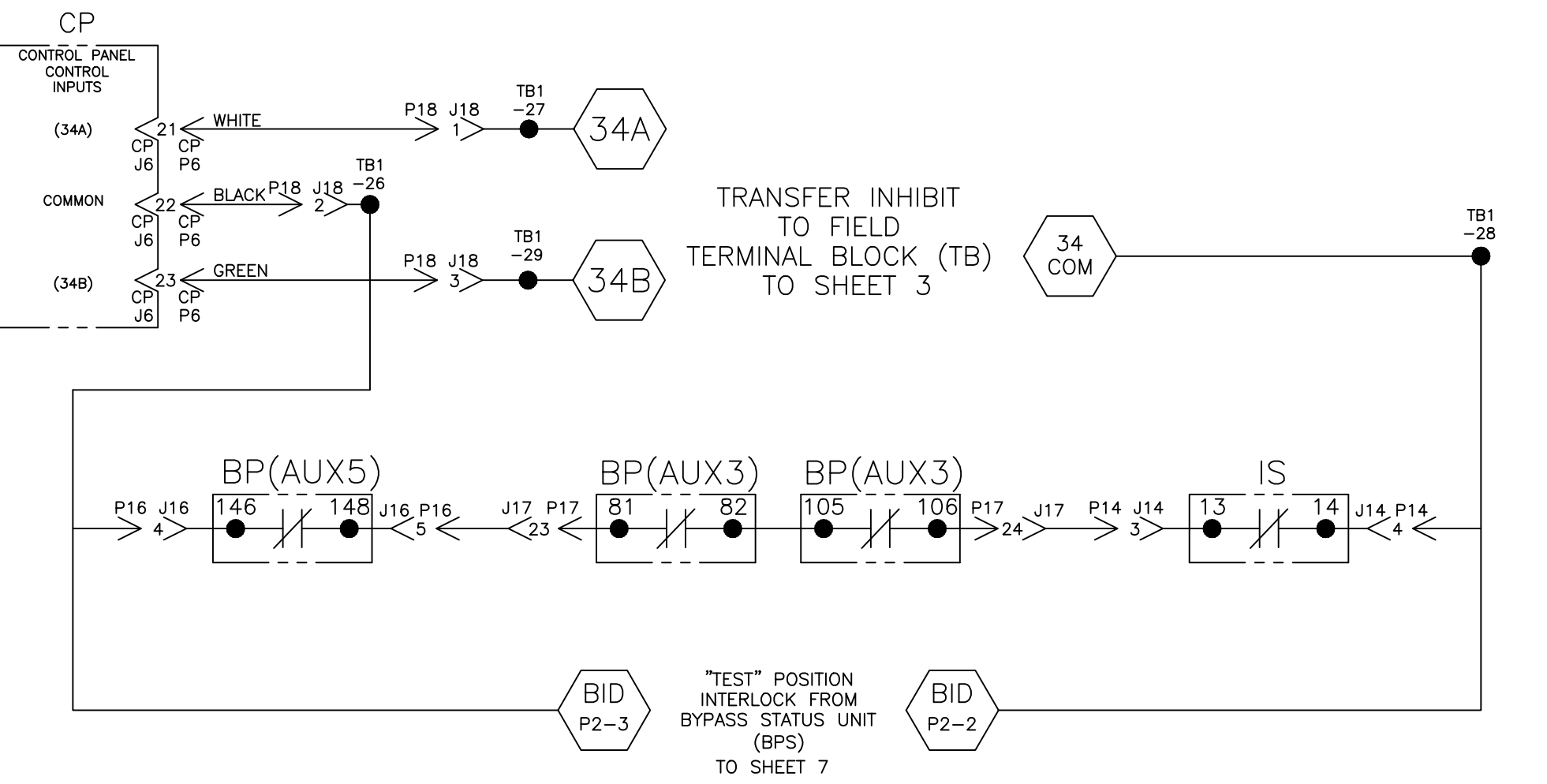
TS POSITION SENSING



ENGINE START CIRCUIT



CONTROL PANEL/BYPASS-ISOLATION INTERLOCKS



		G		290979	VDS	HSL	08/24/21	
		F		237985	TR	WK	7/13/12	
		E		236802	TR	BK	04/27/12	
				SEE ECN				
PROJECT NAME:				REV. TO SHEET	ECN NO.	BY	APP.	DATE
WIRING				DIAGRAM				 THIRD ANGLE PROJECTION
7000 SERIES (H7NCTB) 3PH 600-1200 AMPS								
"H" FRAME, GROUP 5 CONTROLS								
DRAWN BY	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	
CHECKED	BK	03/12/04	PROPERTY OF ASCO POWER TECHNOLOGIES. USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.				SCALE: NONE SIZE: DS	
PROJECT APPROVAL	WK	03/12/04	ASCO POWER TECHNOLOGIES, L.P. FLORHAM PARK, NEW JERSEY 07932 U.S.A.				DWG. NO. 755570	
FINAL APPROVAL							DRAWING G ECN 290979 SHEET 5 OF 10	

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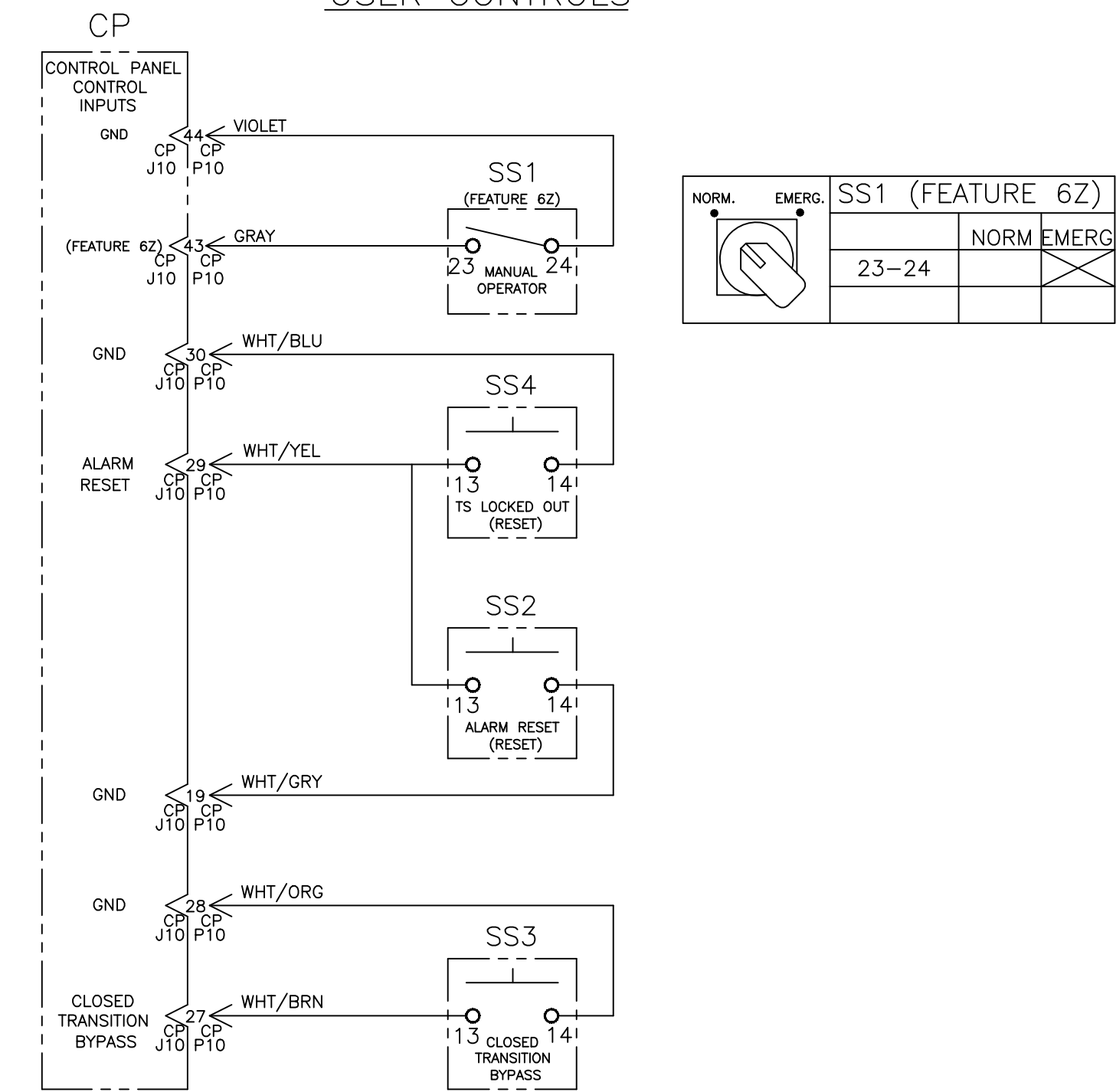
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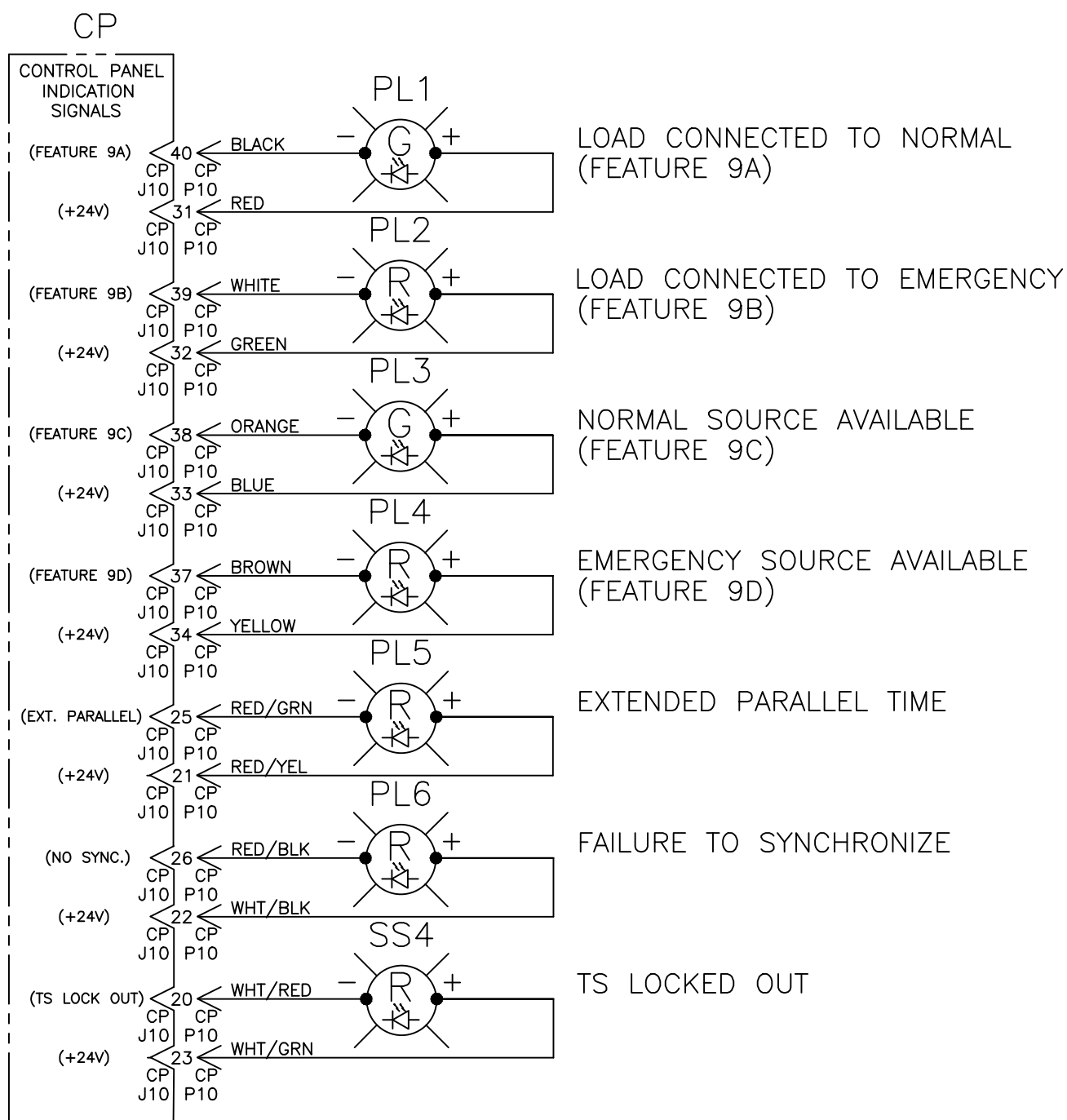
CONTROL SIGNALS & INDICATION

ADDITIONAL CIRCUITS

USER CONTROLS



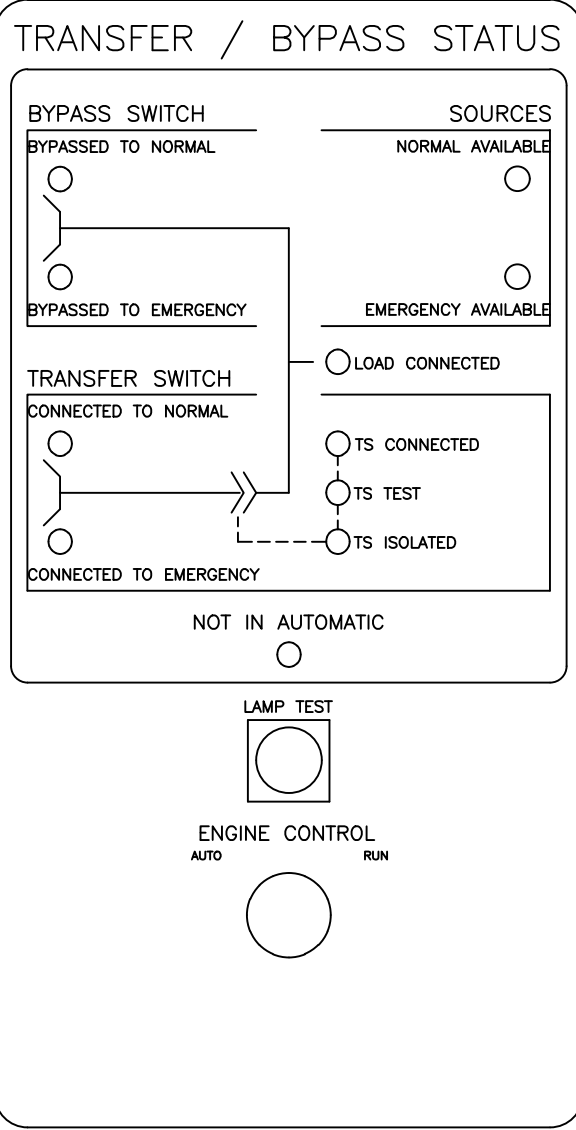
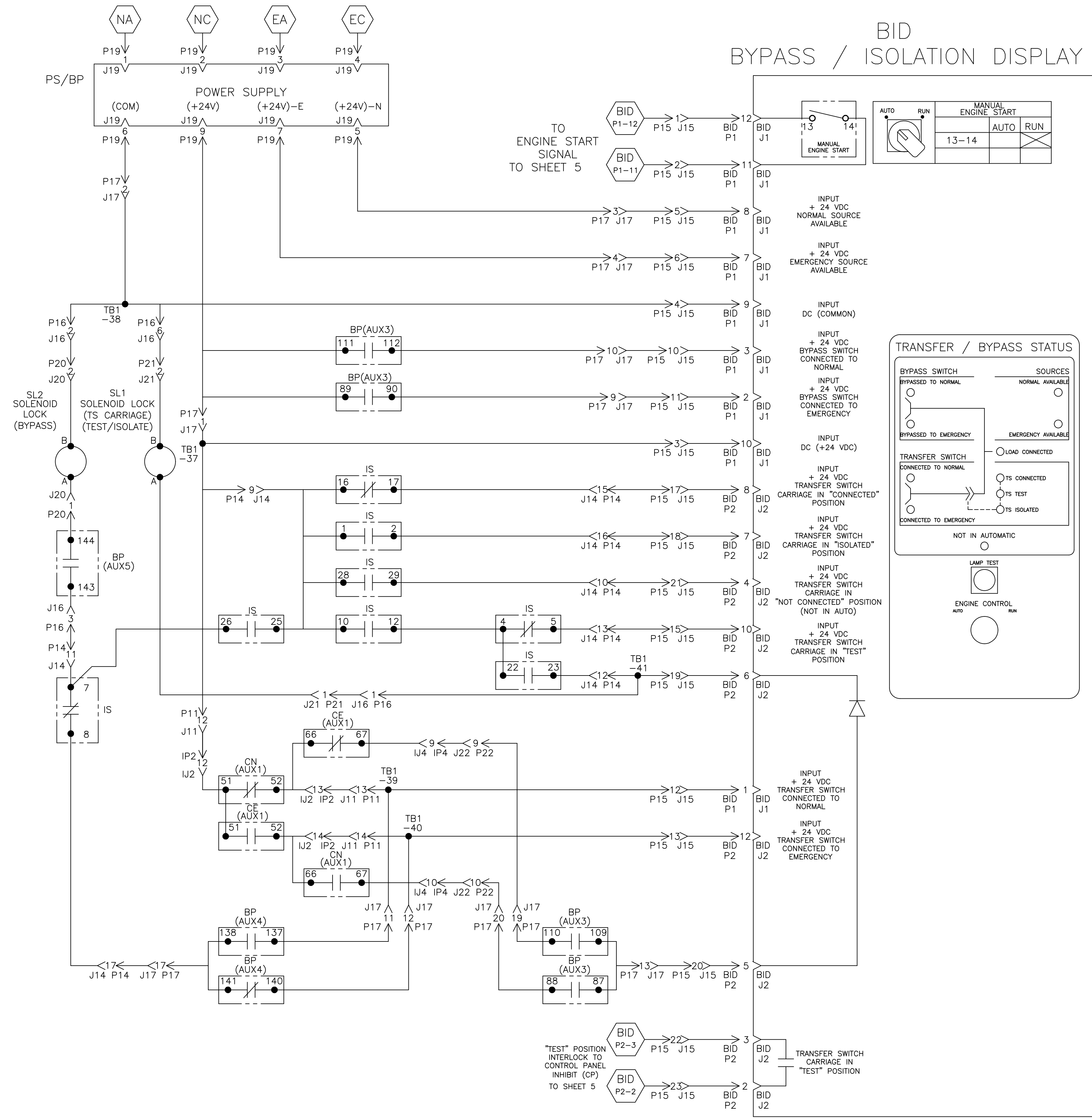
INDICATION



		290979		VDS		HSL		08/24/12	
G		SEE ECN							
F		237985		TR		WK		7/13/12	
		SEE ECN							
E		236802		TR		BK		04/27/12	
		SEE ECN							
PROJECT NAME:				REV. TO SHEET		ECN NO.		BY APP. DATE	
WIRING				DIAGRAM					
7000 SERIES (H7NCTB) 3PH 600-1200 AMPS									
"H" FRAME, 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.	
DRAWN BY		DJB		03/12/04					
CHECKED		BK		03/12/04		PROPERTY OF ASCO POWER TECHNOLOGIES. USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.			
PROJECT APPROVAL		WK		03/12/04					
FINAL APPROVAL									
						COMPUTER GENERATED DRAWING			
						SCALE		NONE	
						SIZE		DS	
						DWG. NO. 755570			
						DRAWING REV. G		ECN NO. 290979	
						SHEET		6 OF 10	

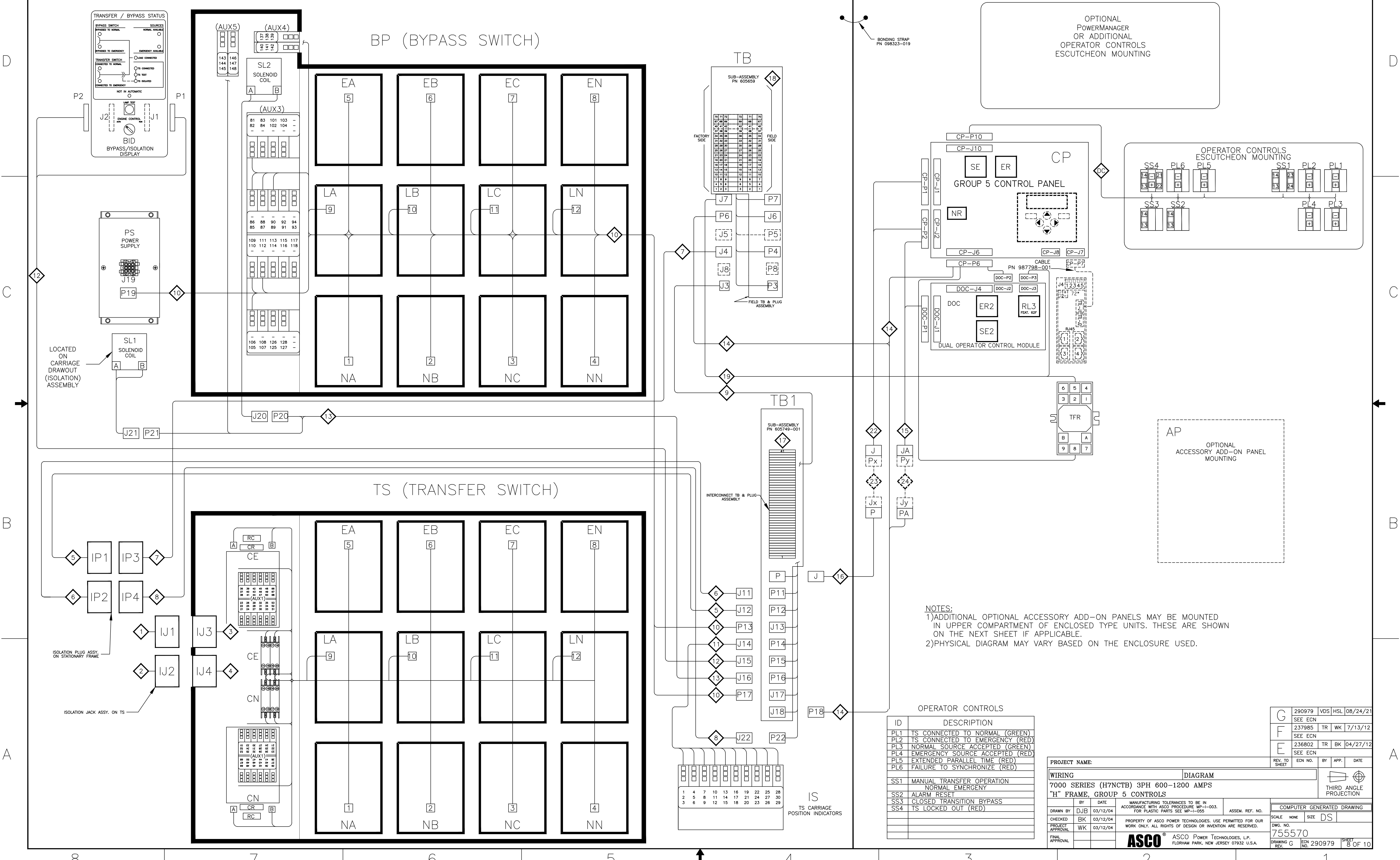
BYPASS / ISOLATION INTERLOCKING & INDICATION

BID
BYPASS / ISOLATION DISPLAY



PROJECT NAME:		290979 VDS HSL 08/24/21	
WIRING	DIAGRAM	SEE ECN	7/13/12
7000 SERIES (H7NCTB) 3PH 600-1200 AMPS		SEE ECN	04/27/12
"H" FRAME, GROUP 5 CONTROLS		SEE ECN	
DRAWN BY: DJB 03/12/04		MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-I-003. FOR PLASTIC PARTS SEE MP-I-055	
CHECKED BY: BK 03/12/04		PROPERTY OF ASCO POWER TECHNOLOGIES. USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.	
PROJECT APPROVAL: WK 03/12/04		COMPUTER GENERATED DRAWING	
FINAL APPROVAL:		SCALE: NONE SIZE: DS	
		DWG. NO. 755570	
		REV. G ECN NO. 290979	
		ASCO POWER TECHNOLOGIES, L.P. FLORHAM PARK, NEW JERSEY 07932 U.S.A.	

PHYSICAL DIAGRAM



 HARNESS LOCATOR		☐ BOX CHECKED IF HARNESS IS WIRRED	☐
WIRE No.	HARNESS 713083-003 (CP-P10) DOOR CONTROLS & INDICATORS	CLR	AWG
150	CP-P10-31, PL1(+)	RED	22
151	CP-P10-42, SS1-14	TAN	25 (COND. CORD)
152	CP-P10-40, PL1(-)	BLK	
153	CP-P10-39, PL2(-)	WHT	
154	CP-P10-38, PL3(-)	ORG	
155	CP-P10-37, PL4(-)	BRN	
156	CP-P10-43, SS1-23	GRY	
157	CP-P10-41, SS1-13	PNK	
158	CP-P10-32, PL2(+)	GRN	
159	CP-P10-33, PL3(+)	BLU	
160	CP-P10-34, PL4(+)	YEL	
161	CP-P10-44, SS1-24	RED	
162	CP-P10-25, PL5(-)	VIO/GRN	

[illegible]

G F E	290979	VDS	HSL	0
	SEE ECN			
	237985	TR	WK	3
	SEE ECN			
	236802	TR	BK	0
SEE ECN				
REV. TO SHEET	ECN NO.		BY	APP.

DIAGRAM



200 AMPS

DESIG. NO. 1003-003-005

ASSEM. REF. NO.

COMPUTER GENERATED DRAWING

DESIG. NO. 755570

SCALE NONE SIZE DS

DATE 10/1/80

DESIGNER

DATE 10/1/80

SCALE NONE SIZE DS

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