

THREE PHASE WIRING FOR ASCO® SERIES 300 AUTOMATIC TRANSFER SWITCHES RATED 30, 70, 104, 150, 200, & 230 AMPERES WITH GROUP I CONTROLS

CONTROL FEATURES

FIELD CONNECTIONS

- VOLTAGE AND FREQUENCY SENSING**
- A. DIFFERENTIAL TYPE VOLTAGE SENSING ON ALL PHASES OF NORMAL SOURCE. DROPOUT SETTING SELECTABLE AT 90, 85, 80 OR 70% OF NOMINAL. FACTORY SET AT 85%. PICKUP VOLTAGE ADJUSTABLE AT 90 OR 95% OF NOMINAL. (DEFAULT IS 95% IF DROPOUT IS SET TO 90%).
- B. SINGLE PHASE VOLTAGE SENSING OF EMERGENCY SOURCE. NON-ADJUSTABLE DROPOUT SETTING AT 75% OF NOMINAL. NON-ADJUSTABLE PICKUP SETTING AT 90% OF NOMINAL.
- C. FREQUENCY SENSING OF EMERGENCY SOURCE. NON-ADJUSTABLE DROPOUT SETTING AT 85% OF NOMINAL. NON-ADJUSTABLE PICKUP SETTING AT 95% OF NOMINAL.

- TIME DELAYS**
- A. MOMENTARY NORMAL SOURCE OUTAGE DELAY – ACTIVATED WHEN THE NORMAL SOURCE FAILS. DEACTIVATED WHEN THE NORMAL SOURCE IS ACCEPTABLE. PROVIDES A SELECTABLE (1 OR 3 SECOND) DELAY ON TRANSFER AND ENGINE STARTING SIGNALS. FACTORY SET AT 3 SECONDS. (REFER TO THE OPERATOR'S MANUAL FURNISHED WITH EACH TRANSFER SWITCH REGARDING CONTROL PANEL SETTINGS).
- B. TRANSFER TO EMERGENCY DELAY – ACTIVATED AFTER THE MOMENTARY NORMAL SOURCE OUTAGE DELAY EXPIRES AND THE EMERGENCY SOURCE IS SENSED TO BE ACCEPTABLE. TRANSFER TO EMERGENCY IS COMMITTED TO ON INITIATION OF DELAY. DEACTIVATED WHEN THE EMERGENCY SOURCE IS UNACCEPTABLE. PROVIDES AN ADJUSTABLE DELAY FROM 0 TO 5 MINUTES. FACTORY SET AT 0 MINUTES. (REFER TO OPERATOR'S MANUAL FURNISHED WITH EACH TRANSFER SWITCH REGARDING CONTROL PANEL SETTINGS).
- C. RETRANSFER TO NORMAL DELAY – ACTIVATED WHEN THE NORMAL SOURCE IS ACCEPTABLE. DEACTIVATED WHEN THE NORMAL SOURCE FAILS WITH NO TRANSFER TO NORMAL. ALSO DEACTIVATED WHEN THE EMERGENCY SOURCE FAILS WHILE THE NORMAL SOURCE IS ACCEPTABLE WITH TRANSFER TO NORMAL. ADJUSTABLE DELAY FROM 1 SECOND TO 30 MINUTES. FACTORY SET TO 30 MINUTES. (REFER TO THE OPERATOR'S MANUAL FURNISHED WITH EACH TRANSFER SWITCH REGARDING CONTROL PANEL SETTINGS).
- D. UNLOADED RUNNING (ENGINE COOL DOWN) DELAY – ACTIVATED ON EXPIRATION OF RETRANSFER TO NORMAL DELAY OR FOLLOWING EXPIRATION OF THE NORMAL SOURCE OUTAGE DELAY WITHOUT A COMMIT TO TRANSFER TO EMERGENCY. NON-ADJUSTABLE DELAY OF 5 MINUTES.
- E. MOMENTARY EMERGENCY SOURCE OUTAGE DELAY – ACTIVATED WHEN THE SWITCH IS IN THE EMERGENCY POSITION AND THE EMERGENCY SOURCE FAILS. FACTORY SET AT 4 SECONDS. RESET IF EMERGENCY RESTORES WITHIN 4 SECONDS.

ENGINE CONTROL CONTACTS

ONE SET OF FORM C CONTACTS (1 N/O & 1 N/C) THAT CHANGE POSITION ON EXPIRATION OF THE NORMAL SOURCE OUTAGE DELAY AND RESET ON EXPIRATION OF THE UNLOADED RUNNING (ENGINE COOL DOWN) DELAY. OUTPUT CONTACTS (NR) ARE RATED 5 AMPS RESISTIVE AT 28V DC OR 120V AC MAXIMUM.

OPERATOR INTERFACE INDICATORS & CONTROLS
MEMBRANE TYPE

- A. TRANSFER SWITCH TEST – MOMENTARY PUSH-BUTTON TO SIMULATE NORMAL SOURCE FAILURE SEQUENCE OF OPERATION. PRESS AND HOLD FOR AT LEAST 15 SECONDS TO ALLOW TIME FOR ENGINE-GENERATOR SET TO START.
- B. BYPASS TIME DELAY – MOMENTARY PUSH-BUTTON TO BYPASS EITHER THE TRANSFER TO EMERGENCY DELAY, ENGINE EXERCISER PERIOD OR THE RETRANSFER TO NORMAL DELAY DEPENDING ON WHICH DELAY IS ACTIVE AT THE TIME THE PUSH-BUTTON IS ACTIVATED.
- C. SET ENGINE EXERCISER – MOMENTARY PUSH-BUTTON TO ACTIVATE A SEVEN (7) DAY TIMER FOR AUTOMATIC WEEKLY TESTING OF THE ENGINE GENERATOR SET EITHER WITH OR WITHOUT LOAD TRANSFER. THE TIMER IS POWERED BY A NON-RECHARGEABLE 9V BATTERY WHEN NORMAL AND EMERGENCY SOURCES ARE UNAVAILABLE. DEPRESSING THE MOMENTARY PUSH-BUTTON FOR 5 SECONDS SETS THE TIME OF WEEK AT WHICH TESTING IS TO OCCUR. THE FEATURE IS ACTIVATED BY SETTING A DIP SELECTOR SWITCH ON THE CONTROL PANEL. ENGINE START WITH OR WITHOUT LOAD TRANSFER IS SELECTED WITH A SECOND DIP SELECTOR SWITCH ON THE CONTROL PANEL. FACTORY SET TO DISABLED, NO LOAD. (REFER TO THE OPERATOR'S MANUAL FURNISHED WITH EACH TRANSFER SWITCH REGARDING CONTROL PANEL SETTINGS).
- D. LOAD CONNECTED TO INDICATORS
GREEN LED INDICATOR TO INDICATE WHEN THE TRANSFER SWITCH LOAD IS CONNECTED TO THE NORMAL SOURCE.
RED LED INDICATOR TO INDICATE WHEN THE TRANSFER SWITCH IS CONNECTED TO THE EMERGENCY SOURCE.
- E. SOURCE AVAILABLE INDICATORS
GREEN LED INDICATOR TO INDICATE WHEN THE NORMAL SOURCE IS AVAILABLE.
RED LED INDICATOR TO INDICATE WHEN THE EMERGENCY SOURCE IS AVAILABLE.

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 SWITCH REGARDING CONTROL PANEL SETTINGS). OUTPUT CONTACTS (OP) ARE RATED 5 AMPS RESISTIVE AT 28 VDC OR 120 VAC MAXIMUM.

MOTOR LOAD TRANSFER FEATURE

INPHASE TRANSFER CONTROL LOGIC TO INITIATE AN INPHASE TRANSFER OF MOTOR LOADS BETWEEN LIVE SOURCES. USED TO HELP PREVENT NUISANCE TRIPPING OF DISTRIBUTION CIRCUIT BREAKERS AND POSSIBLE DAMAGE TO MECHANICAL LOADS ASSOCIATED WITH OUT OF PHASE TRANSFER. ACTIVATED BY SETTING A DIP SWITCH ON THE CONTROL PANEL. FACTORY SET AS DISABLED. (REFER TO OPERATOR'S MANUAL FURNISHED WITH EACH TRANSFER SWITCH REGARDING CONTROL PANEL SETTINGS).

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 OPERATOR'S MANUAL FURNISHED WITH EACH TRANSFER SWITCH REGARDING CONTROL PANEL SETTINGS).

- A. REMOTE TEST FEATURE – REQUIRES A CUSTOMER SUPPLIED, REMOTE, NORMALLY CLOSED CONTACT. OPENING OF THE CONTACT SIMULATES A FAILURE OF THE NORMAL SOURCE SIMILAR TO THE SEQUENCE OUTLINED FOR THE TRANSFER SWITCH TEST PUSH-BUTTON. THE TRANSFER SWITCH WILL REMAIN CONNECTED TO THE EMERGENCY SOURCE UNDER ALL CONDITIONS WHILE THE CONTACT IS OPEN.
- B. REMOTE TRANSFER TO EMERGENCY FEATURE – REQUIRES A CUSTOMER SUPPLIED, REMOTE, NORMALLY CLOSED CONTACT. OPENING OF THE CONTACT CAUSES ENGINE START AND TRANSFER TO THE EMERGENCY SOURCE. RECLOSURE OF THE CONTACT ACTIVATES THE RETRANSFER TO NORMAL DELAY PRIOR TO RETRANSFER. IN THE EVENT THAT THE EMERGENCY SOURCE FAILS WHILE THE TRANSFER SWITCH IS CONNECTED TO EMERGENCY AND THE REMOTE CONTACT IS OPEN, THE TRANSFER SWITCH WILL AUTOMATICALLY RETRANSFER TO THE NORMAL SOURCE.
- C. INHIBIT TRANSFER TO EMERGENCY FEATURE – REQUIRES A CUSTOMER SUPPLIED, REMOTE, NORMALLY CLOSED CONTACT. OPENING OF THE CONTACT WILL PROHIBIT THE TRANSFER SWITCH FROM TRANSFERRING TO THE EMERGENCY SOURCE WHILE CONNECTED TO THE NORMAL SOURCE.
- D. BYPASS TRANSFER TIME DELAY FEATURE – REQUIRES A CUSTOMER SUPPLIED, REMOTE, NORMALLY CLOSED CONTACT. OPENING OF THE CONTACT BYPASSES THE RETRANSFER TO NORMAL DELAY IF ACTIVE.

GENERAL NOTES

- SWITCH SHOWN DE-ENERGIZED CONNECTED TO NORMAL SOURCE. DEVICE SYMBOLS AND DESIGNATIONS ARE IN ACCORDANCE WITH NEMA PUB. ICS 1-1983, PART 1-101A.
- ALL WIRING IS #16 AWG, TINNED, STRANDED COPPER UNLESS OTHERWISE INDICATED.
- O INDICATES CUSTOMER CONNECTION POINTS.
- INDICATES FACTORY CONNECTION POINTS.
- CONNECTION POINTS THAT HAVE BOTH CUSTOMER CONNECTIONS AND FACTORY CONNECTIONS ARE SHOWN OPEN AS CUSTOMER CONNECTION POINTS.
- THE TRANSFER UNIT IS MOUNTED ON THE BACK INSIDE SURFACE OF THE ENCLOSURE. THE CONTROL PANEL AND ANY OPTIONAL ACCESSORIES ARE MOUNTED ON THE INSIDE SURFACE OF THE DOOR.
- AN OPERATOR'S MANUAL IS FURNISHED WITH EACH AUTOMATIC TRANSFER SWITCH. REFER TO THIS PUBLICATION PRIOR TO INSTALLATION AND OPERATION OF THE SWITCH.
- GROUND STRAP ON CONTROL PANEL IS AFFIXED TO CHASSIS (ENCLOSURE) AT LOWER LEFT CONTROL PANEL MOUNTING STUD.

OPTIONAL ACCESSORIES

ACCESSORY 11BG – PROGRAMMABLE ENGINE EXERCISER & SOURCE AVAILABILITY SIGNAL MODULES

PROGRAMMABLE ENGINE EXERCISER: A PROGRAMMABLE SEVEN (7) DAY OR FOURTEEN (14) DAY ELECTRONIC TIME SWITCH FOR AUTOMATIC WEEKLY TESTING OF THE ENGINE GENERATOR SET EITHER WITH OR WITHOUT LOAD. EACH DAY OF THE WEEK IS INDIVIDUALLY PROGRAMMABLE. THE TIME OF DAY IS PRESERVED BY A BATTERY BUILT INTO THE GROUP 1 TRANSFER SWITCH CONTROL PANEL.

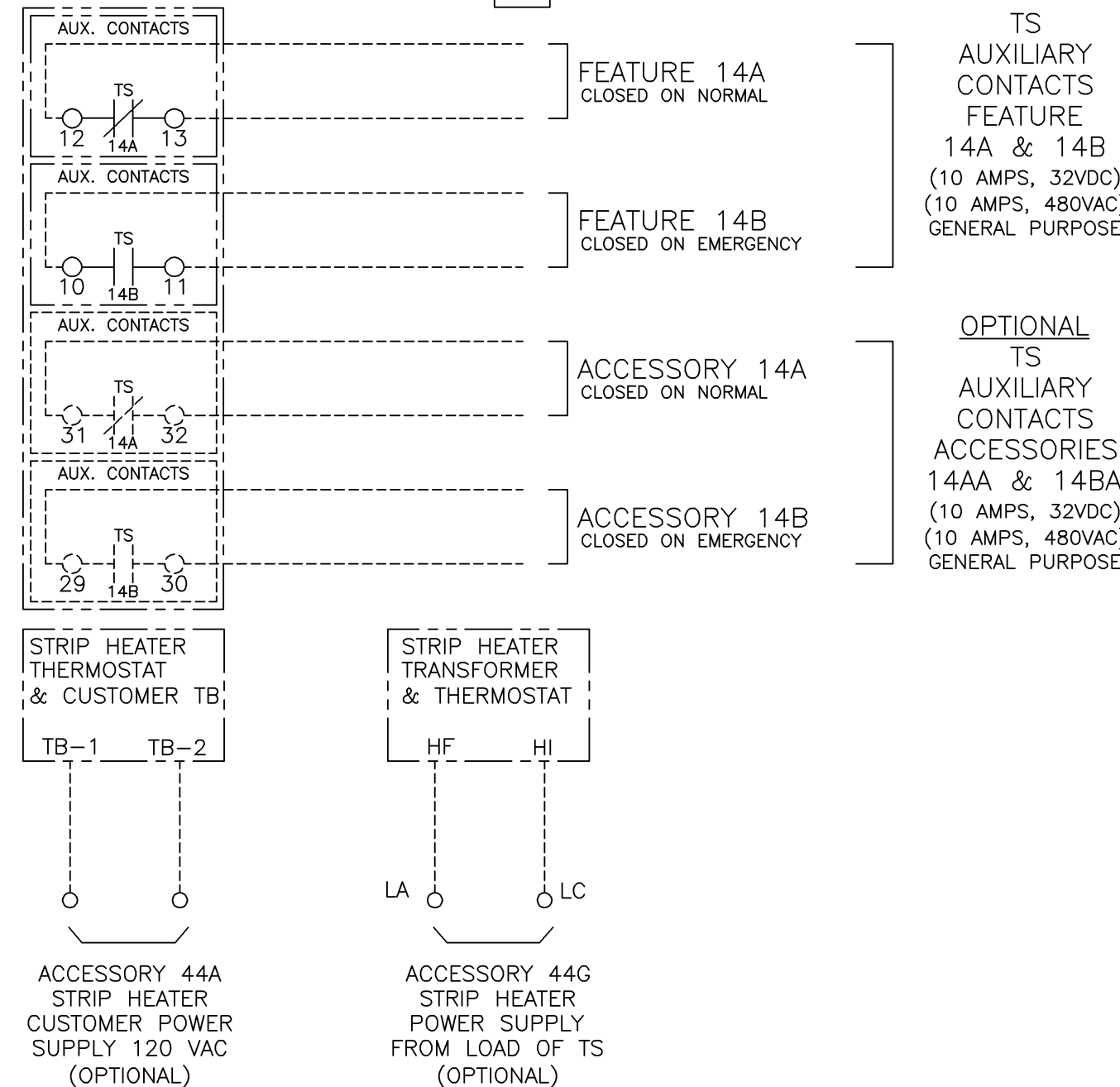
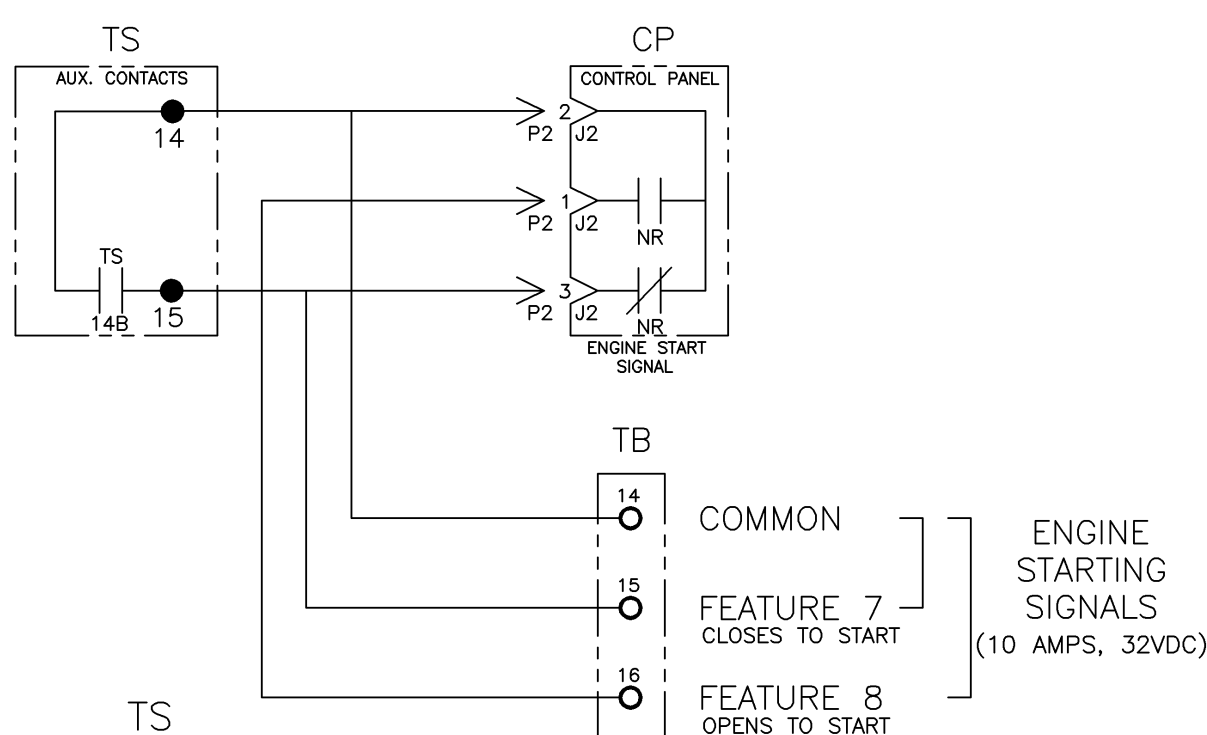
THE FEATURE IS ACTIVATED BY SETTING A DIP SELECTOR SWITCH ON THE CONTROL PANEL. ENGINE START WITH OR WITHOUT LOAD TRANSFER IS SELECTED WITH A SECOND DIP SELECTOR SWITCH ON THE CONTROL PANEL. (REFER TO THE OPERATOR'S MANUAL FURNISHED WITH EACH TRANSFER SWITCH REGARDING CONTROL PANEL AND TIMER SETTINGS).

SOURCE AVAILABILITY SIGNALING: ONE FORM C CONTACT EACH FOR THE NORMAL & EMERGENCY SOURCES SIGNAL THE ACCEPTABILITY OF THE SOURCE AS SENSED BY THE GROUP 1 CONTROL PANEL. THE SIGNAL CONTACTS OPERATE IN CONJUNCTION WITH THE SOURCE AVAILABILITY LED STATUS INDICATION PROVIDED ON THE OPERATOR INTERFACE. FIELD WIRING TERMINALS ARE PROVIDED AS SHOWN, LOCATED ON THE INSIDE DOOR BEHIND THE OPERATOR INTERFACE. CONTACTS RATED 2 AMPS @ 30VDC, 0.5 AMPS @ 125 VAC (RESISTIVE).

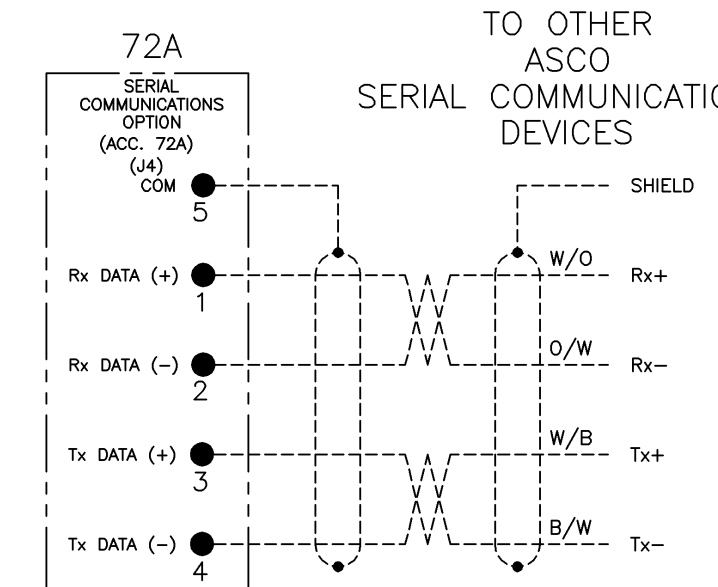
SERIAL COMMUNICATIONS INTERFACE (ACCESSORY 72A)

RS-485 SERIAL INTERFACE TO CONTROL PANEL. FOR REMOTE MONITORING AND CONTROL FROM ASCO COMMUNICATIONS BASED PRODUCTS.

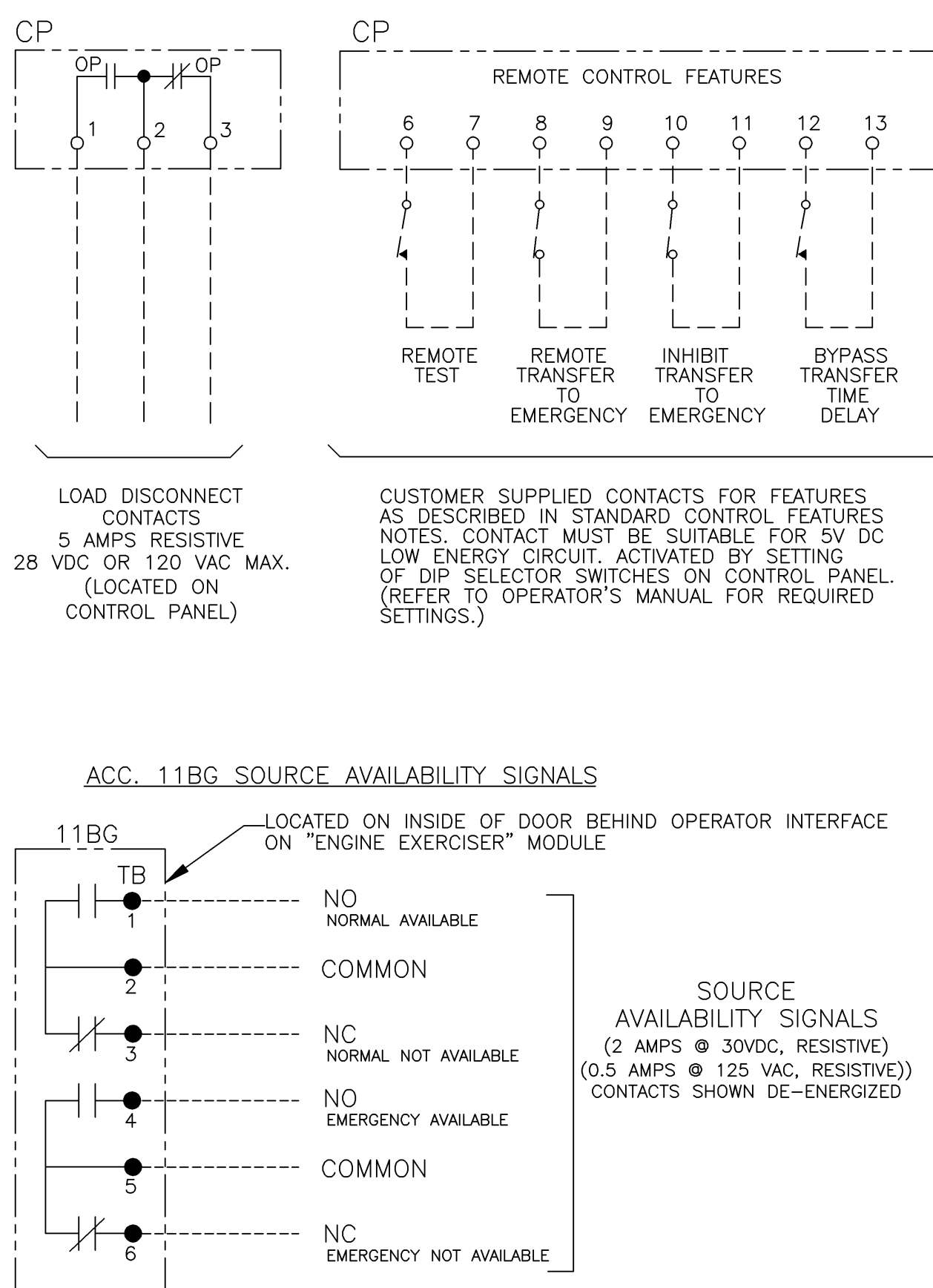
- ACC. 14AA (2) AUXILIARY CONTACT CLOSED ON NORMAL.
- ACC. 14BA (2) AUXILIARY CONTACT CLOSED ON EMERGENCY.
- ACC. 44A STRIP HEATER, THERMOSTAT & TB. CUSTOMER POWER SUPPLY 120VAC.
- ACC. 44G STRIP HEATER, THERMOSTAT & TRANSFORMER. POWER SUPPLY FROM LOAD TERMINALS OF TRANSFER SWITCH.



ACC. 72A SERIAL COMMUNICATIONS OPTION
COMMUNICATING WITH GROUP 5 CONTROL PANEL (CP)



- 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



| 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 3 PHASE (3 OR 4 WIRE) 50 OR 60 Hz | ENCLOSURE CODES | | | | | | | | | | | | |
| | | | | | | | | | CODE | DESCRIPTION | CODE | NOMINAL VOLTAGE | CODE | TYPE | DESCRIPTION | | | | | | | | | |
| D | 300 | B C | 3 | 30 70 104 150 200* 230* | C D E F H J K L M N Q R | 1 | X | C F G L M | BLANK B C | SOLID SWITCHING OVERLAPPING | | | BLANK C | 1 | OPEN TYPE (NO ENCLOSURE) GENERAL PURPOSE, INDOOR | | | | | | | | | |
| | | | | | | | | | | | C D E F | 208 220 230 240 | F G L | 3R 4 12 | OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT INDOOR/OUTDOOR, WATERTIGHT & DUSTTIGHT INDOOR, INDUSTRIAL ENVIRONMENTS, OILTIGHT & DUSTTIGHT | | | | | | | | | |
| | | | | | | | | | | | H J K L M N Q R | 380 400 415 440 460 480 | M | 3R | (SECURE ENCLOSURES) OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | BLANK FOR NONE | BLANK FOR OPEN TYPE | | | | | | | * 200 & 230 AMP SIZES ARE 480V MAX. |

CATALOG NUMBER _____

ASCO® CERTIFIED TO _____

S.O. _____

BY _____

DATE _____

FORM REV J

PROJECT NAME: _____

WIRING _____

SERIES D300 ATS 3PH 30-230 AMPS

"D" FRAME, GROUP 1 CONTROLS

DRAWN BY: SDH DATE: 6/02

CHECKED: SDH DATE: 6/02

PROJECT APPROVAL: SDH DATE: 6/02

FINAL APPROVAL: SDH DATE: 6/02

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

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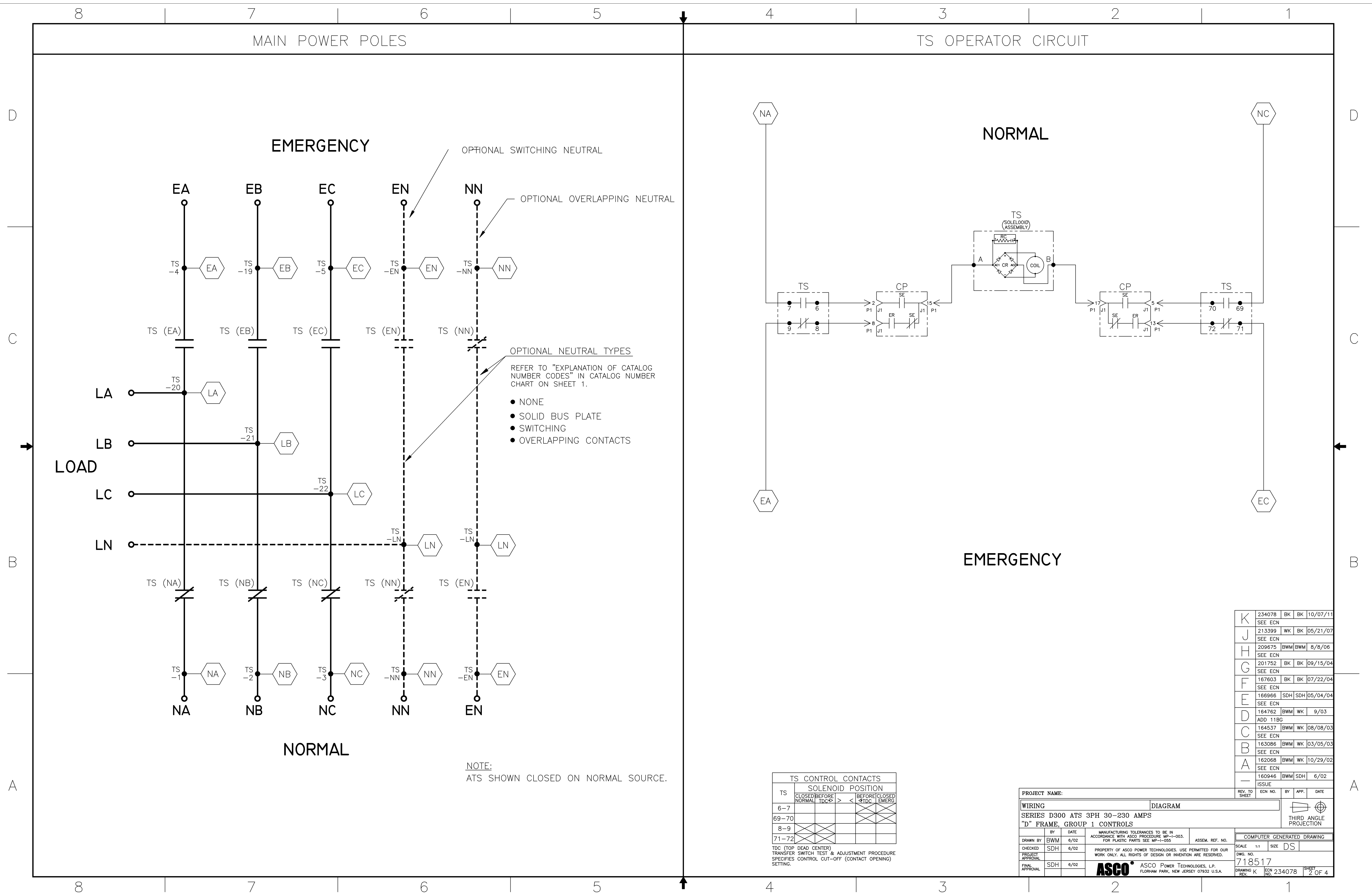
ASCO® ASCO POWER TECHNOLOGIES, L.P. FLORENCE PARK, NEW JERSEY 07832 U.S.A.

COMPUTER GENERATED DRAWING

SCALE: NONE SIZE: DS

DWG. NO.: 718517

DRAWING REV: K ECN NO: 234078 SHEET 1 OF 4



D

C

B

A

D

C

B

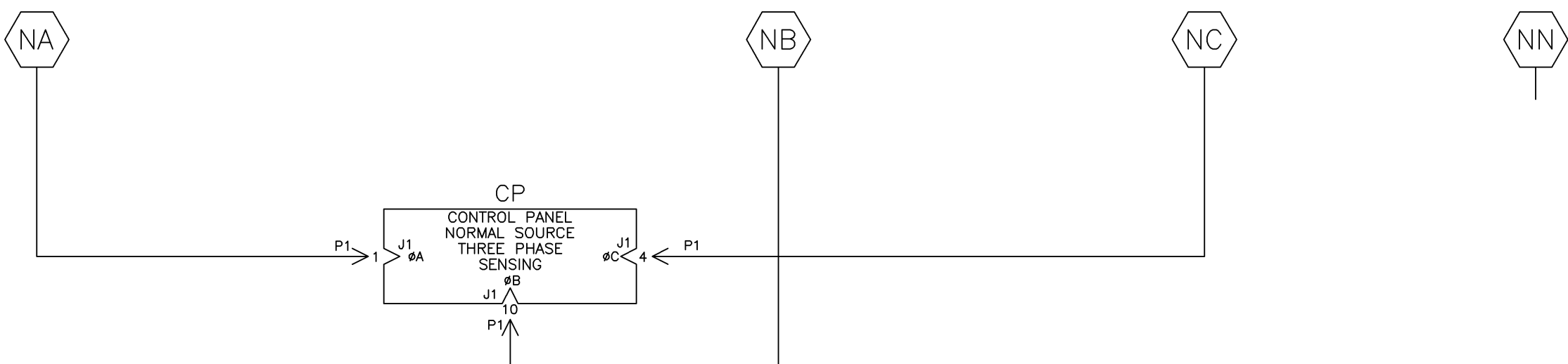
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WIRE RUN LISTING

CONTROL SIGNALS & INDICATION

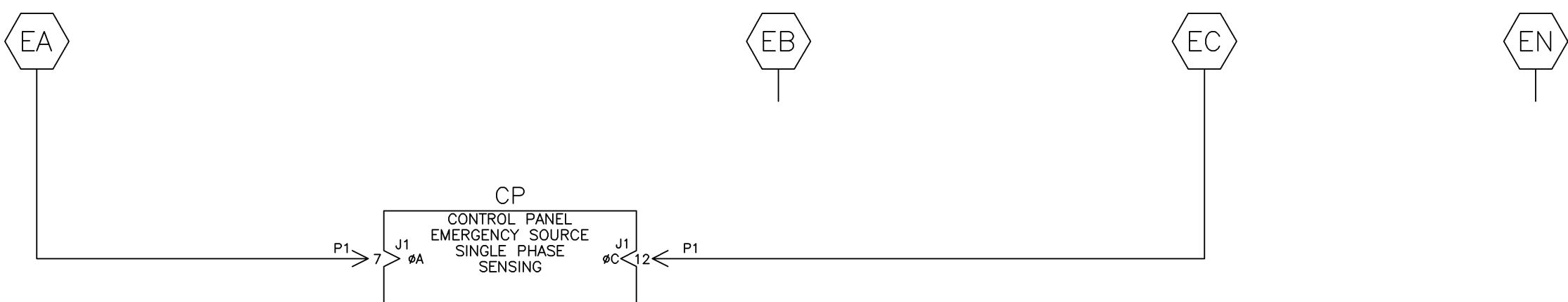
NORMAL SOURCE CIRCUITS

NORMAL



EMERGENCY SOURCE CIRCUITS

EMERGENCY



LOAD TERMINAL CIRCUITS

LOAD

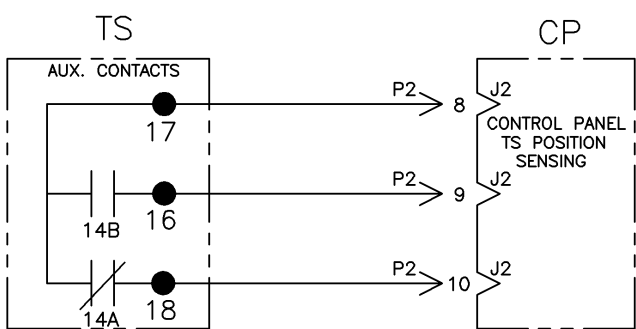
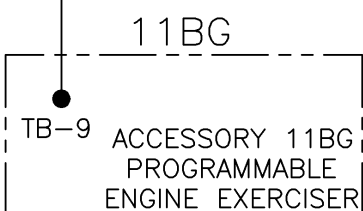
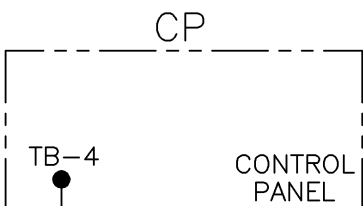


FOR 30-230 AMPS

| WIRE No. | 337782-002 (P1,P2) MAIN TS FOR 30-230 AMPS | CLR | AWG |
|-----------|--|-----|-----|
| 1 | TS-8,P1-8 | | 16 |
| 2 | TS-A,P1-15 | | |
| 3 | TS-6,P1-2 | | |
| 4 | TS-3,P1-4 | | |
| 5 | TS-B,P1-17 | | |
| 6 | TS-5,P1-12 | | |
| 7 | TS-4,P1-7 | | |
| 8 | TB-14,P2-2 | | |
| 9 | TB-15,P2-3 | | |
| 10 | TS-17,P2-8 | | |
| 11 | TS-2,P1-10 | | |
| 12 | TS-1,P1-1 | | |
| 13 | TS-16,P2-9 | | |
| 14 | TS-18,P2-10 | | |
| 15 | TS-70,P1-5 | | |
| 16 | TS-72,P1-13 | | |
| 17 | TS-4,TS-9 | | |
| 18 | TS-7,TS-1 | | |
| 19 | TS-3,TS-69 | | |
| 20 | TS-5,TS-71 | | |
| 23 | TB-16,P2-1 | | |
| ADD WIRES | | | |
| 21 | TS-14,TB-14 | | |
| 22 | TS-15,TB-15 | | |

| WIRE No. | ACC. 11BG | CLR | AWG |
|----------|-------------------|-----|-----|
| 28 | CP-TB-4,11BG-TB-9 | | 16 |

ACCESSORY 11BG PROGRAMMABLE ENGINE EXERCISER & SOURCE AVAILABILITY SIGNAL (OPTIONAL)



| | | | | |
|----------|--------|-----|-----|----------|
| K | 234078 | BK | BK | 10/07/11 |
| SEE ECN | | | | |
| J | 213399 | WK | BK | 05/21/07 |
| SEE ECN | | | | |
| H | 209675 | BWM | BWM | 8/8/06 |
| SEE ECN | | | | |
| G | 201752 | BK | BK | 09/15/04 |
| SEE ECN | | | | |
| F | 167603 | BK | BK | 07/22/04 |
| SEE ECN | | | | |
| E | 166966 | SDH | SDH | 05/04/04 |
| SEE ECN | | | | |
| D | 164782 | BWM | WK | 9/03 |
| ADD 11BG | | | | |
| C | 164537 | BWM | WK | 08/08/03 |
| SEE ECN | | | | |
| B | 163086 | BWM | WK | 03/05/03 |
| SEE ECN | | | | |
| A | 162068 | BWM | WK | 10/29/02 |
| SEE ECN | | | | |
| — | 160946 | BWM | SDH | 6/02 |
| ISSUE | | | | |

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|---------------------------------|-----|------|------|---|---------|-----------------|------|----------------------------|
| PROJECT NAME: | | | | REV. TO SHEET | ECN NO. | BY | APP. | DATE |
| WIRING | | | | DIAGRAM | | | | |
| SERIES D300 ATS 3PH 30-230 AMPS | | | | | | | | |
| "D" FRAME, GROUP 1 CONTROLS | | | | | | | | |
| DRAWN BY | BWM | DATE | 6/02 | 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 | SDH | DATE | 6/02 | PROPERTY OF ASCO POWER TECHNOLOGIES. USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED. | | DWG. NO. | | 718517 |
| PROJECT APPROVAL | SDH | DATE | 6/02 | ASCO POWER TECHNOLOGIES, L.P. | | DRAWING REV. | | ECN NO. 234078 |
| FINAL APPROVAL | SDH | DATE | 6/02 | FLOHAM PARK, NEW JERSEY 07832 U.S.A. | | SHEET | | 3 OF 4 |

