# THREE PHASE WIRING FOR ASCO 4000 SERIES DELAYED TRANSITION TRANSFER SWITCHES TYPES G4ADTS & G4NDTS RATED 1000–3000 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 4000 SERIES TRANSFER SWITCHES USER'S GUIDE (PART NO. 381333–126) PROVIDED WITH EVERY 4000 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 |
| 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. UPON EXPIRATION OF 1C,TRANSFER TO EMERGENCY IS INITIATED ON AUTOMATIC UNITS (4ADTS) 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. UPON EXPIRATION OF THE DELAY, RETRANSFER TO NORMAL WILL BE INITIATED ON AUTOMATIC UNITS (4ADTS).

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 AUTOMATIC (4ADTS) OR MANUAL (4NDTS) RETRANSFER.

FEAT. 3A – RETRANSFER TO NORMAL DELAY (TEST MODE)
DELAY STARTS FOLLOWING A USER INITIATED "TRANSFER TEST" WHEN THE "RETRANSFER TO NORMAL" KEYPAD IS DEPRESSED ON AUTOMATIC UNITS (4ADTS) 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).

DELAYED TRANSFER (LOAD "OFF" TIME) –
PROVIDES A USER DEFINABLE PERIOD DURING WHICH THE LOAD IS DISCONNECTED FROM BOTH THE NORMAL AND EMERGENCY SOURCES DURING AUTOMATIC (4ADTS) OR MANUAL (4NDTS) TRANSFER IN EITHER DIRECTION. 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 IS INITIATED.

### ENGINE EXERCISER

THE ENGINE EXERCISER FEATURE PROVIDES A MEANS TO PERFORM AUTOMATIC EXERCISING OF THE ENGINE–GENERATOR SET EITHER WITH OR WITHOUT LOAD TRANSFER FOR AUTOMATIC UNITS (4ADTS) OR WITHOUT LOAD TRANSFER FOR NON–AUTOMATIC UNITS (4NDTS).
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 | |
| HOUR | 0–23 | Eastern Standard Time |
| 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

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 ON AUTOMATIC UNITS (4ADTS) OR PERMITTED TO BE MANUALLY TRANSFERRED ON NON–AUTOMATIC UNITS (4NDTS) TO THE EMERGENCY SOURCE BY MEANS OF A DELAYED TRANSITION, PROGRAMMED LOAD DISCONNECT PERIOD.

DELAYED TRANSITION TRANSFER TO EMERGENCY WILL CAUSE THE NORMAL SOURCE CONTACTOR (CN) TO OPEN. AFTER THE LOAD DISCONNECT DELAY, AS SET VIA THE USER INTERFACE OF THE GROUP 5 CONTROL PANEL, THE EMERGENCY SOURCE CONTACTOR (CE) WILL CLOSE. DURING THE PERIOD THAT BOTH CONTACTORS ARE OPEN AND THE TIME DELAY IS ACTIVE, A "LOAD DISCONNECT ACTIVE" LED WILL BE LIT (AMBER LED).

WHEN THE NORMAL SOURCE IS RESTORED FOR THE DURATION OF THE FEATURE 3A (RETRANSFER TO NORMAL TIME DELAY) SETTING AND FOLLOWING OPERATION OF THE "TRANSFER TO NORMAL" KEYPAD ON NON–AUTOMATIC UNITS (4NDTS), THE LOAD WILL BE RETRANSFERRED TO THE NORMAL SOURCE IN A DELAYED TRANSITION MANNER.

DELAYED TRANSITION RETRANSFER TO NORMAL WILL CAUSE THE EMERGENCY SOURCE CONTACTOR (CE) TO OPEN. AFTER THE LOAD DISCONNECT TIME DELAY EXPIRES, THE NORMAL SOURCE CONTACTOR (CN) WILL CLOSE.

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

DELAYED TRANSITION TRANSFER WILL ALSO BE INITIATED DURING A TRANSFER TEST OPERATION BY ACTIVATION OF THE FEATURE 5 "TRANSFER TEST" KEYPAD ON AUTOMATIC UNITS (4ADTS) OR AFTER OPERATION OF THE "TRANSFER TO EMERGENCY" KEYPAD ON NON–AUTOMATIC UNITS (4NDTS). RETRANSFER WILL OCCUR IN A DELAYED TRANSITION MANNER AT THE END OF THE TEST ON AUTOMATIC UNITS (4ADTS) OR UPON ACTIVATION OF THE TRANSFER TO NORMAL KEYPAD ON NON–AUTOMATIC UNITS (4NDTS).

### 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). THE 1C DELAY IS BYPASSED ON NON–AUTOMATIC UNITS (4NDTS) WHEN TRANSFER IS INITIATED BY OPERATION OF THE "TRANSFER TO NORMAL" KEYPAD AND THE NORMAL SOURCE IS AVAILABLE, FEATURE 7 CLOSES 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) MOUNTED ON THE FRONT OF THE TRANSFER SWITCH FRAME. CONTACT RATED 5 AMPS AT 32 VDC/120VAC RESISTIVE.

B. FEATURES 14AA & 14BA – TRANSFER SWITCH AUXILIARY POSITION INDICATING CONTACTS.
TWO (2) FORM A CONTACTS EACH TO INDICATE CONNECTION OF THE TRANSFER SWITCH TO NORMAL (14A) OR EMERGENCY (14B). CONTACTS CONNECTED TO THE FIELD CONNECTIONS TERMINAL BLOCK (TB) MOUNTED ON THE FRONT OF THE TRANSFER SWITCH FRAME. 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 ON AUTOMATIC UNITS (4ADTS). 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. LOCATED ON TERMINAL BLOCK (TB1) ON THE REAR OF THE OPERATOR INTERFACE MODULE ON THE FRONT DOOR.

### USER CONTROLS AND INDICATIONS

A. FEATURES 5 & 6B – "TRANSFER TEST" & "RETRANSFER TO NORMAL" KEYPAD CONTROLS. STANDARD ON AUTOMATIC UNITS (4ADTS).
TRANSFER TEST" KEYPAD:
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 TO NORMAL" KEYPAD:
OPERATION WILL BYPASS THE FEATURE 3A (RETRANSFER TO NORMAL DELAY) INITIATING RETRANSFER TO THE NORMAL SOURCE.

FEATURE 6Z & 6C – MANUAL TRANSFER CONTROL, "TRANSFER TO EMERGENCY" & "TRANSFER TO NORMAL" KEYPAD CONTROLS. STANDARD ON NON–AUTOMATIC UNITS (4NDTS).
"TRANSFER TO EMERGENCY" KEYPAD:
OPERATION CAUSES IMMEDIATE ENGINE START IF NORMAL IS AVAILABLE AND TRANSFER TO THE EMERGENCY SOURCE WHEN THE EMERGENCY SOURCE IS AVAILABLE. TRANSFER SWITCH WILL REMAIN CONNECTED TO THE EMERGENCY SOURCE UNTIL THE UNIT IS MANUALLY RETRANSFERRED TO THE NORMAL SOURCE.
"TRANSFER TO NORMAL" KEYPAD:
OPERATION CAUSES TRANSFER TO THE NORMAL SOURCE IF IT IS AVAILABLE. THE ENGINE START SIGNAL WILL RUN FOR THE ACCESSORY 2E DELAY ON ENGINE SHUTDOWN FOLLOWING TRANSFER. THE TRANSFER SWITCH WILL REMAIN CONNECTED TO THE NORMAL SOURCE UNTIL THE UNIT IS MANUALLY TRANSFERRED TO THE 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. LOAD DISCONNECTED – INDICATES THAT THE TRANSFER SWITCH IS IN THE LOAD DISCONNECTED POSITION, BOTH NORMAL (CN) AND EMERGENCY (CE) CONTACTORS OPEN. (AMBER LED)

### OPTIONAL ACCESSORIES

A. ACCESSORY 14AC & 14BC – TWO (2) ADDITIONAL TRANSFER SWITCH AUXILIARY POSITION INDICATING CONTACTS EACH, TO INDICATE CONNECTION OF THE TRANSFER SWITCH TO NORMAL (14A) OR EMERGENCY (14B). CONTACTS CONNECTED TO THE FIELD CONNECTIONS TERMINAL BLOCK (TB) MOUNTED ON THE FRONT OF THE TRANSFER SWITCH FRAME. CONTACTS RATED 10 AMPS, 32 VDC, 250 VAC.

B. ACCESSORY 18Z & 18Z2 – OPTION RELAY MODULE. PROVIDES A RELAY MODULE ASSEMBLY THAT CONNECTS TO THE REAR OF THE USER INTERFACE MODULE. ACCESSORY 18Z PROVIDES ONE (1) RELAY MODULE & ACCESSORY 18Z2 PROVIDES TWO (2) RELAY MODULES.

EACH RELAY MODULE PROVIDES 4 INDEPENDANT, FORM C RELAY OUTPUTS EACH RATED 2 AMPS, 30 VDC MAX. THE RELAY PROVIDE THE FOLLOWING SIGNALS;

RELAY 1 (RL1) ENERGIZES IF THE EMERGENCY SOURCE HAS BEEN ACCEPTED BY THE CONTROLLER.

RELAY 2 (RL2) ENERGIZES IF THE NORMAL SOURCE HAS BEEN ACCEPTED BY THE CONTROLLER.

RELAY 3 (RL3) ENERGIZES IF THE CONTROLLER'S LOAD DISCONNECT SIGNAL IS ACTIVE.
(FEATURE 31, REFER TO THE GROUP 5 CONTROLLER USER'S MANUAL, PN 381333–126).

RELAY 4 (RL4) USER CONFIGURED OUTPUT THAT CAN BE USER DEFINED TO OPERATE AS FOLLOWS;

- SAME AS RELAY 1.
- SAME AS RELAY 2.
- ENERGIZES IF "LOAD DISCONNECTED" INDICATOR IS ON.
- DE–ENERGIZES IF BOTH SOURCES ARE UNACCEPTABLE AND PROVIDES ONBOARD JUMPER TO PERMIT THE RELAY TO BE USED TO ALLOW AN EXTERNAL 24 VDC SOURCE TO POWER THE CONTROLLER FOR EXTENDED ENGINE STARTING TIME DELAY SETTINGS WHEN POWER IS NOT AVAILABLE.

REFER TO INSTRUCTION SHEET PN 381339–260 FOR INSTRUCTIONS.

### 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 TRANSFER SWITCH. REFER TO THIS PUBLICATION PRIOR TO INSTALLATION AND OPERATION OF THE UNIT.

| BASE CATALOG NUMBER | | | | | CATALOG NUMBER SUFFIXES | | | |
|---|---|---|---|---|---|---|---|---|
| TS FRAME | CATALOG TYPE | NEUTRAL TYPE | PHASE POLES | AMPS | VOLT CODE | CONTROLLER | OPTIONAL ACCESSORY | ENCLOSURE CODE |
| G | 4ADTS 4NDTS | A B | 3 | 1000 1200 1600 2000 2600 3000 | C D E F H U K L M N P Q R | 5 | X | C E F G H J K L M N P Q |
| | | BLANK FOR NONE | | | | | BLANK FOR NONE | BLANK FOR OPEN TYPE |

| EXPLANATION OF CATALOG NUMBER CODES | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CATALOG TYPE | | NEUTRAL TYPE | | VOLTAGE CODES (3 OR 4 WIRE) 50 OR 60 Hz | | ENCLOSURE CODES | | |
| CODE | DESC. | CODE | DESCRIPTION | CODE | NOMINAL VOLTAGE | CODE | TYPE | DESCRIPTION |
| 4ADTS | AUTOMATIC | BLANK | NONE | C | 208 | BLANK | | OPEN TYPE (NO ENCLOSURE) |
| 4NDTS | MANUAL | A | SOLID | D | 220 | C | 1 | GENERAL PURPOSE, INDOOR |
| | | B | SWITCHING | E | 230 | E | 2 | INDOOR, WATER & DUST RESISTANT |
| | | | | F | 240 | F | 3R | OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT |
| | | | | H | 380 | G | 4 | INDOOR/OUTDOOR, WATERTIGHT & DUST TIGHT |
| | | | | J | 400 | H | 4X | TYPE 4 PLUS CORROSION RESISTANCE (STAINLESS STEEL) |
| | | | | K | 415 | J | 4X | TYPE 4 PLUS CORROSION RESISTANCE (FIBERGLASS) |
| | | | | L | 440 | K | 7 | EXPLOSION PROOF |
| | | | | M | 460 | L | 12 | INDOOR, INDUSTRIAL ENVIRONMENTS, OIL TIGHT & DUST TIGHT |
| | | | | N | 480 | | | |
| | | | | P | 550 | | | (SECURE ENCLOSURES) |
| | | | | Q | 575 | M | 3R | OUTDOOR, RAINPROOF, SLEET & ICE RESISTANT |
| | | | | R | 600 | N | 4 | INDOOR/OUTDOOR, WATERTIGHT & DUSTTIGHT |
| | | | | | | P | 4X | TYPE 4 PLUS CORROSION RESISTANCE (STAINLESS STEEL) |
| | | | | | | Q | 12 | INDOOR, INDUSTRIAL ENVIRONMENTS, OILTIGHT & DUSTTIGHT |

CATALOG NUMBER _____
CERTIFIED TO ASCO® S.O. _____
BY _____
DATE _____
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| | ISSUE | | | |

PROJECT NAME:
WIRING DIAGRAM
4000 SERIES (G4ADTS/G4NDTS)
GROUP 5 CONTROLS

THIRD ANGLE PROJECTION

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MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP–I–003. FOR PLASTIC PARTS SEE MP–I–055
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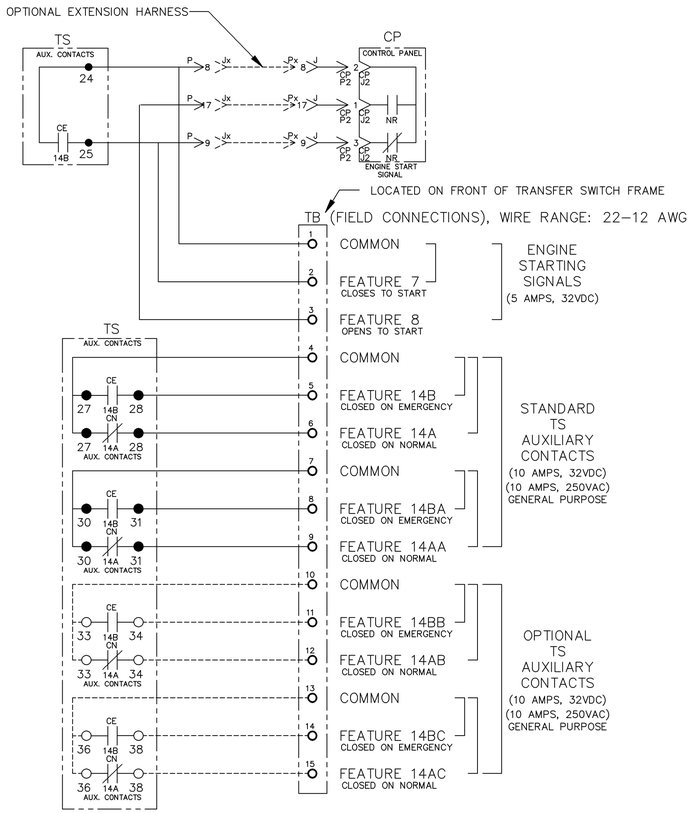
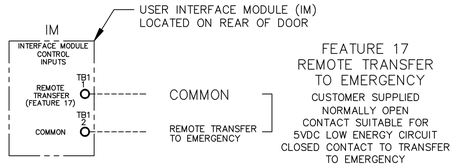
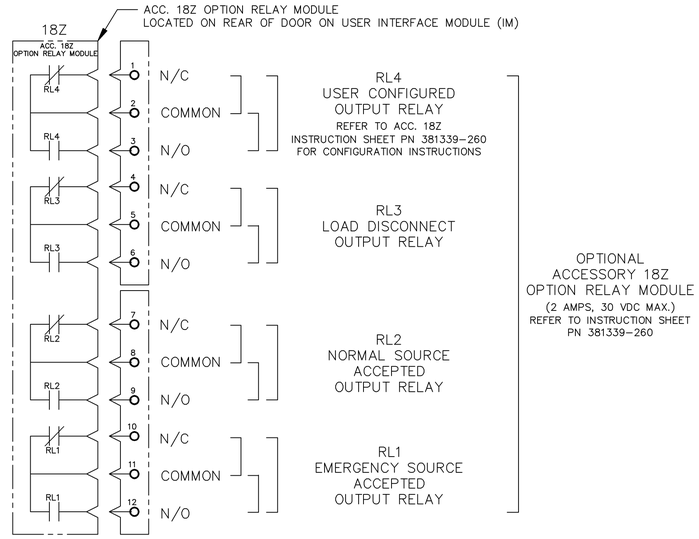
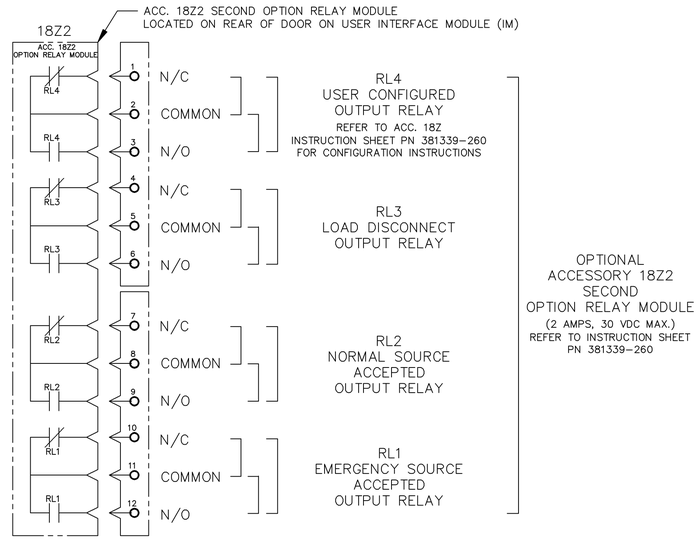
# FIELD CONNECTIONS

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PROJECT NAME:

WIRING DIAGRAM
4000 SERIES (G4ADTS/G4NDTS)
GROUP 5 CONTROLS

THIRD ANGLE PROJECTION

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

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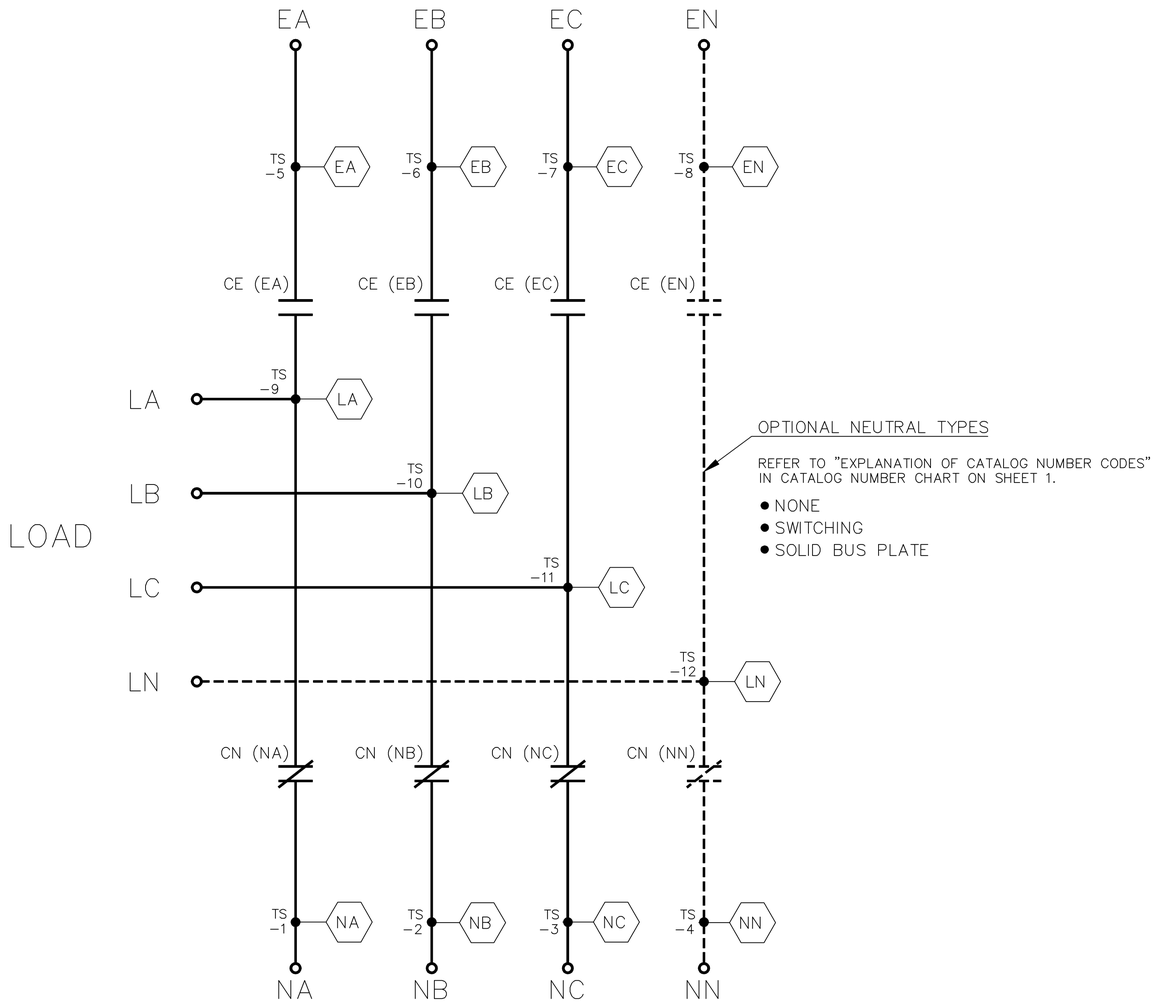
## MAIN POWER POLES

### EMERGENCY

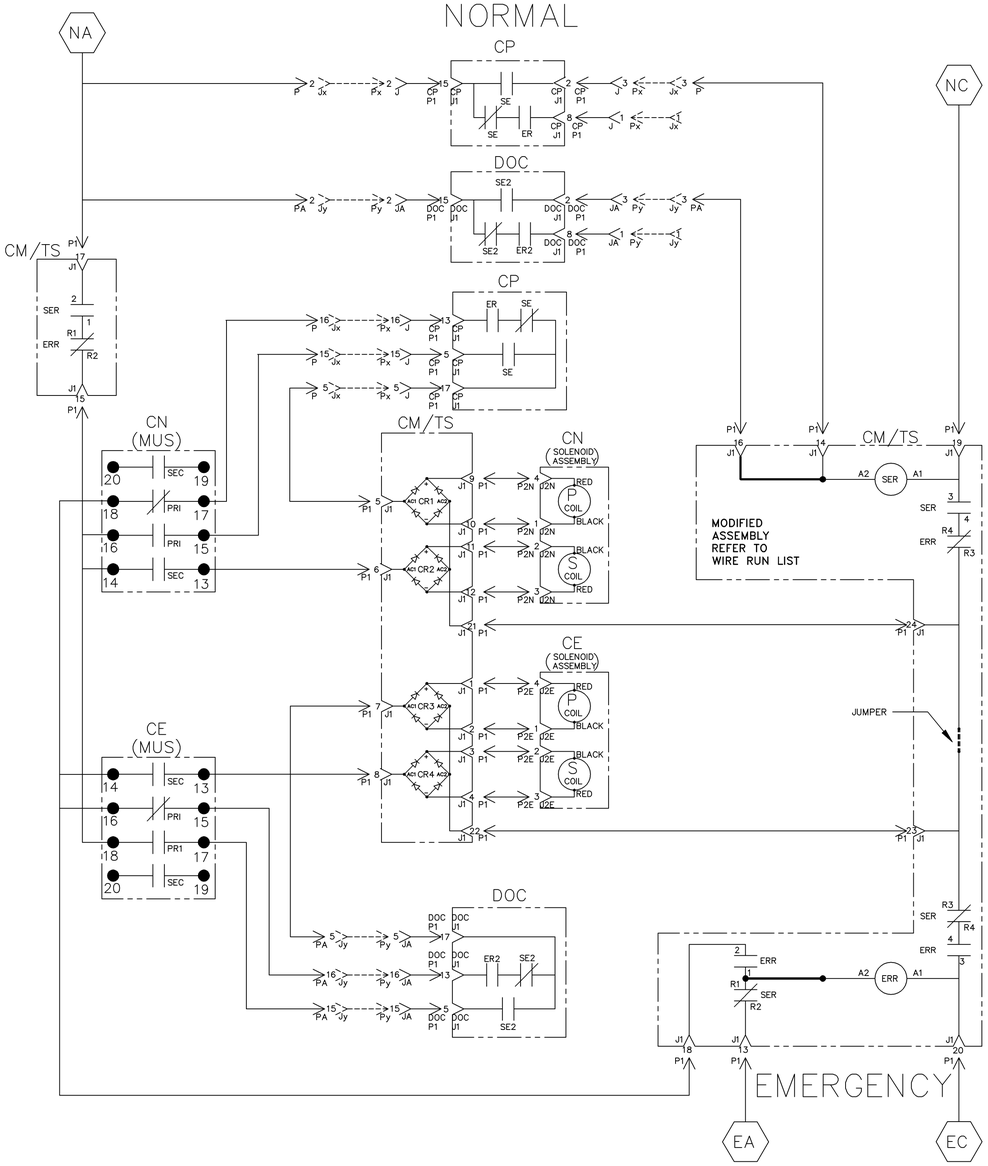



LOAD

### NORMAL

NOTE:
ATS SHOWN CLOSED ON NORMAL SOURCE.

## TS OPERATOR CIRCUIT




| CN (MUS) CONTACTS | | | | | |
|---|---|---|---|---|---|
| MUS | SOLENOID POSITION | | | | |
| | NORM | > | AFTER TDC * | < | OPEN |
| 13–14 | | | | | |
| 15–16 | | | | | |
| 17–18 | | | | | |
| 19–20 | | | | | |

| CE (MUS) CONTACTS | | | | | |
|---|---|---|---|---|---|
| MUS | SOLENOID POSITION | | | | |
| | OPEN | > | AFTER TDC * | < | EMER |
| 13–14 | | | | | |
| 15–16 | | | | | |
| 17–18 | | | | | |
| 19–20 | | | | | |

* AFTER SOLENOID CORE PASSES THROUGH TOP DEAD CENTER POSITION.

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PROJECT NAME:

WIRING DIAGRAM
4000 SERIES (G4ADTS/G4NDTS)
GROUP 5 CONTROLS

THIRD ANGLE PROJECTION

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

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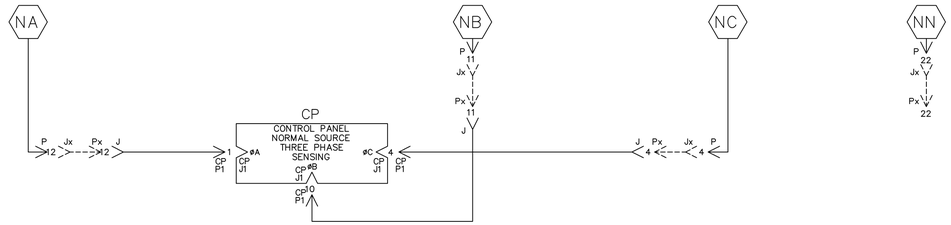
EMERGENCY SOURCE CIRCUITS

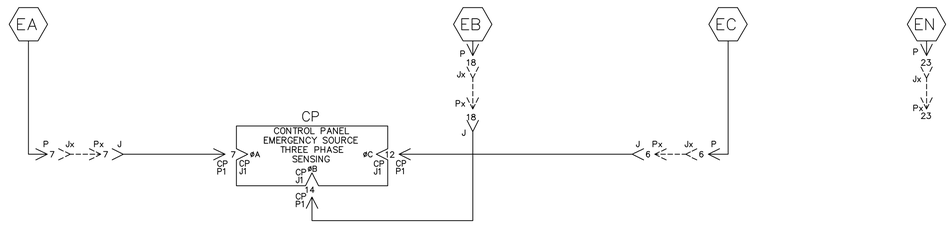
ADDITIONAL CIRCUITS

## NORMAL




EMERGENCY SOURCE CIRCUITS

## EMERGENCY

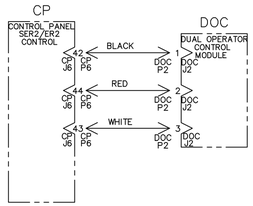



LOAD TERMINAL CIRCUITS

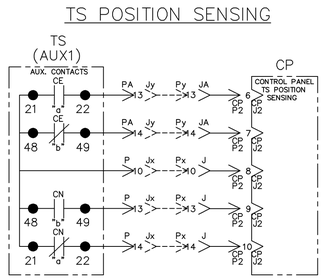
## LOAD


CONTROL SIGNALS & INDICATION

### SER2/ER2 CONTROL




### TS POSITION SENSING




| | | | | | |
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THIRD ANGLE PROJECTION

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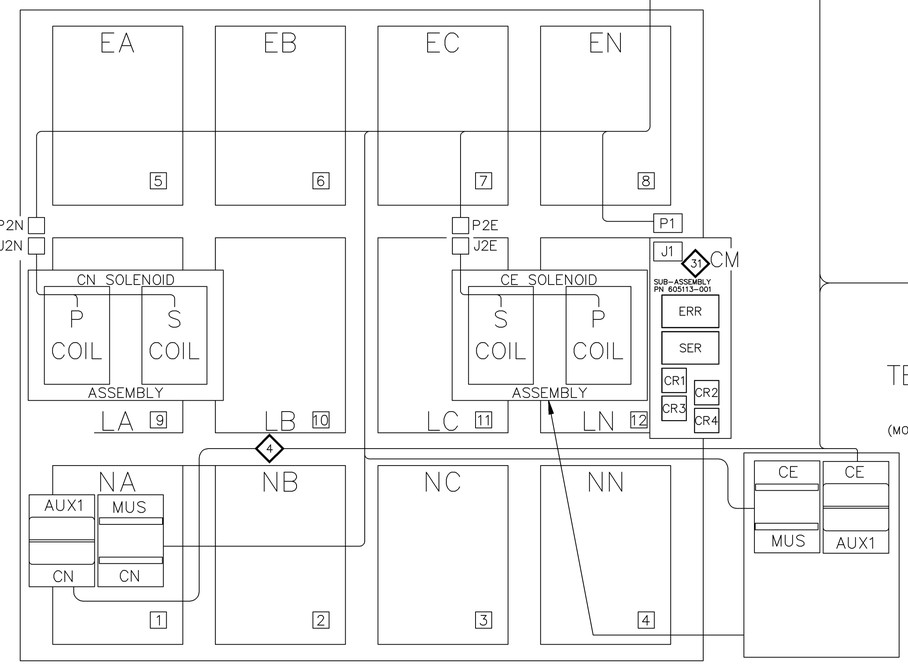
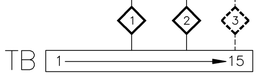
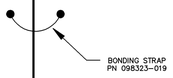
# PHYSICAL DIAGRAM

## ENCLOSURE

### TS (TRANSFER SWITCH)



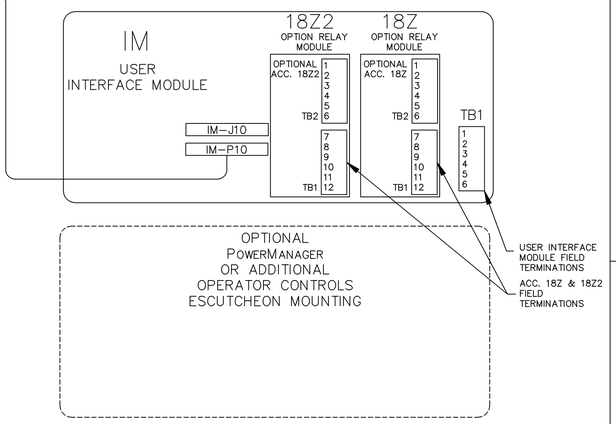







## DOOR, INSIDE




AP
OPTIONAL
ACCESSORY ADD-ON PANEL
MOUNTING

AP2
OPTIONAL
ACCESSORY ADD-ON PANEL
MOUNTING

AP1
OPTIONAL
ACCESSORY ADD-ON PANEL
MOUNTING

AP3
OPTIONAL
ACCESSORY ADD-ON PANEL
MOUNTING

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# WIRE RUN LISTING

## 1 — HARNESS LOCATOR (BOX CHECKED IF HARNESS IS MODIFIED ☒)

| WIRE No. | HARNESS 619510-026 (P,P1,P2N,P2E,J3,) MAIN TS | CLR | AWG |
|---|---|---|---|
| 1 | P-2,TS-1 | | 16 |
| 1 | P1-17,TS-1 | | |
| 1 | PA-2,TS-1 | | |
| 2 | P-3,P1-14 | | |
| 3 | P-4,TS-3 | | |
| 3 | P1-19,TS-3 | | |
| 22 | P-5,P1-5 | | |
| 5 | P-6,TS-7 | | |
| 5 | P1-20,TS-7 | | |
| 4 | P-7,TS-5 | | |
| 4 | P1-13,TS-5 | | |
| 6 | P-8,CE(AUX1)-24 | | |
| 6 | CE(AUX1)-24,J3-1 | | |
| 7 | P-9,CE(AUX1)-25 | | |
| 7 | CE(AUX1)-25,J3-2 | | |
| 8 | P-10,CE(AUX1)-21 | | |
| 8 | CE(AUX1)-21,CN(AUX1)-21 | | |
| 8 | CN(AUX1)-21,CN(AUX1)-48 | | |
| 9 | P-11,TS-2 | | |
| 10 | P-12,TS-1 | | |
| 11 | P-13,CN(AUX1)-49 | | |
| 12 | P-14,CN(AUX1)-22 | | |
| 200 | P-15,CN(MUS)-15 | | |
| 13 | P-16,CN(MUS)-17 | | |
| 14 | P-17,J3-3 | | |
| 15 | P-18,TS-6 | | |
| 16 | P-19,TS-9 | | |
| 17 | P-20,TS-10 | | |
| 18 | P-21,TS-11 | | |
| 19 | P-22,TS-4 | | |
| 20 | P-23,TS-8 | | |
| 21 | P-24,TS-12 | | |
| 31 | P1-1,P2E-4 | | |
| 32 | P1-2,P2E-1 | | |
| 33 | P1-3,P2E-2 | | |
| 34 | P1-4,P2E-3 | | |
| 23 | P1-6,CN(MUS)-13 | | |
| 39 | P1-8,CE(MUS)-13 | | |
| 24 | P1-9,P2N-4 | | |
| 25 | P1-10,P2N-1 | | |
| 26 | P1-11,P2N-2 | | |
| 27 | P1-12,P2N-3 | | |
| 29 | P1-15,CE(MUS)-18 | | |
| 29 | CE(MUS)-18,CN(MUS)-14 | | |
| 29 | CN(MUS)-14,CN(MUS)-16 | | |
| 28 | P1-18,CE(MUS)-16 | | |
| 28 | CE(MUS)-16,CE(MUS)-14 | | |
| 28 | CE(MUS)14,CN(MUS)-18 | | |
| 30 | P1-21,P1-24 | | |
| 35 | P1-22,P1-23 | | |
| 202 | PA-3,P1-16 | | |
| 38 | PA-5,P1-7 | | |
| 211 | PA-13,CE(AUX1)-22 | | |
| 212 | PA-14,CE(AUX1)-49 | | |
| 213 | PA-15,CE(MUS)-17 | | |
| 214 | PA-16,CE(MUS)-15 | | |
| 215 | PA-17,CE(AUX2)-80 | | |
| 216 | PA-18,CN(AUX2)-80 | | |
| 223 | CE(AUX2)-78,CN(AUX2)-78 | | |
| | | | |
| | REMOVE WIRES | | |
| 6 | CE(AUX1)-24,J3-1 | | |
| 7 | CE(AUX1)-25,J3-2 | | |
| 14 | P-17,J3-3 | | |
| | | | |
| | ADD WIRES | | |
| 6 | CE(AUX1)-24,TB-1 | | |
| 7 | CE(AUX1)-25,TB-2 | | |
| 14 | P-17,TB-3 | | |
| | | | |
| 199 | J3-4 | | |
| | | | |
| 300 | P-1 | | |
| | | | |
| 201 | PA-1 | | |
| 203 | PA-4 | | |
| 204 | PA-6 | | |
| 205 | PA-7 | | |
| 206 | PA-8 | | |
| 207 | PA-9 | | |
| 208 | PA-10 | | |
| 209 | PA-11 | | |
| 210 | PA-12 | | |
| 217 | PA-19 | | |
| 218 | PA-20 | | |
| 219 | PA-21 | | |
| 220 | PA-22 | | |
| 221 | PA-23 | | |
| 222 | PA-24 | | |

## 2 — HARNESS LOCATOR (BOX CHECKED IF HARNESS IS MODIFIED ☒)

| WIRE No. | TS STD. AUX. CONTACTS | CLR | AWG |
|---|---|---|---|
| 40 | TB-4,CE(AUX1)-27 | | 16 |
| 41 | TB-5,CE(AUX1)-28 | | |
| 42 | TB-6,CN(AUX1)-28 | | |
| 43 | TB-7,CE(AUX1)-30 | | |
| 44 | TB-8,CE(AUX1)-31 | | |
| 45 | TB-9,CN(AUX1)-31 | | |

## 3 — HARNESS LOCATOR (BOX CHECKED IF HARNESS IS MODIFIED ☐)

| WIRE No. | OPTIONAL AUX. CONTACTS | CLR | AWG |
|---|---|---|---|
| 46 | TB-10,CE(AUX1)-33 | | 16 |
| 47 | TB-11,CE(AUX1)-34 | | |
| 48 | TB-12,CN(AUX1)-34 | | |
| 49 | TB-13,CE(AUX1)-36 | | |
| 50 | TB-14,CE(AUX1)-38 | | |
| 51 | TB-15,CN(AUX1)-38 | | |

## 4 — HARNESS LOCATOR (BOX CHECKED IF HARNESS IS MODIFIED ☐)

| WIRE No. | HARNESS 609051-001-A TS STD. AUX. CONTACTS | CLR | AWG |
|---|---|---|---|
| 40 | CE(AUX1)-27,CN(AUX1)-27 | | 16 |
| 43 | CE(AUX1)-30,CN(AUX1)-30 | | |
| 46 | CE(AUX1)-33,CN(AUX1)-33 | | |
| 49 | CE(AUX1)-36,CN(AUX1)-36 | | |
| 52 | CE(AUX1)-39,CN(AUX1)-39 | | |
| 55 | CE(AUX1)-42,CN(AUX1)-42 | | |
| 58 | CE(AUX1)-45,CN(AUX1)-45 | | |
| 8 | CE(AUX1)-48,CN(AUX1)-48 | | |

## 5 — HARNESS LOCATOR (BOX CHECKED IF HARNESS IS MODIFIED ☐)

| WIRE No. | HARNESS 483763 (J,CP-P1,CP-P2) CONTROL PANEL | CLR | AWG |
|---|---|---|---|
| 350 | J-1,CP-P1-8 | | 18 |
| 1 | J-2,CP-P1-15 | | |
| 2 | J-3,CP-P1-2 | | |
| 3 | J-4,CP-P1-4 | | |
| 4 | J-5,CP-P1-17 | | |
| 5 | J-6,CP-P1-12 | | |
| 4 | J-7,CP-P1-7 | | |
| 6 | J-8,CP-P2-2 | | |
| 7 | J-9,CP-P2-3 | | |
| 8 | J-10,CP-P2-8 | | |
| 9 | J-11,CP-P1-10 | | |
| 10 | J-12,CP-P1-1 | | |
| 11 | J-13,CP-P2-9 | | |
| 12 | J-14,CP-P2-10 | | |
| 200 | J-15,CP-P1-5 | | |
| 13 | J-16,CP-P1-13 | | |
| 14 | J-17,CP-P2-1 | | |
| 15 | J-18,CP-P1-14 | | |
| | | | |
| | ADD WIRES | | |
| 16 | J-19 | | |
| 17 | J-20 | | |
| 18 | J-21 | | |
| 19 | J-22 | | |
| 20 | J-23 | | |
| 21 | J-24 | | |

## 6 — HARNESS LOCATOR (BOX CHECKED IF HARNESS IS MODIFIED ☐)

| WIRE No. | HARNESS 619385 (JA,CP-P2,CP-P6) CONTROL MODULE | CLR | AWG |
|---|---|---|---|
| 1 | JA-2,DOC-P1-15 | | 16 |
| 202 | JA-3,DOC-P1-2 | | |
| 201 | JA-1,DOC-P1-8 | | |
| 214 | JA-16,DOC-P1-13 | | |
| 213 | JA-15,DOC-P1-5 | | |
| 38 | JA-5,DOC-P1-17 | | |
| 211 | JA-13,CP-P2-6 | PIN | |
| 212 | JA-14,CP-P2-7 | PIN | |
| | | | |
| | ADD WIRES | | |
| 203 | JA-4 | | |
| 204 | JA-6 | | |
| 205 | JA-7 | | |
| 206 | JA-8 | | |
| 207 | JA-9 | | |
| 208 | JA-10 | | |
| 209 | JA-11 | | |
| 210 | JA-12 | | |
| 215 | JA-17 | | |
| 216 | JA-18 | | |
| 217 | JA-19 | | |
| 218 | JA-20 | | |
| 219 | JA-21 | | |
| 220 | JA-22 | | |
| 221 | JA-23 | | |
| 222 | JA-24 | | |

## 7 — HARNESS LOCATOR (BOX CHECKED IF HARNESS IS MODIFIED ☐)

| WIRE No. | HARNESS 309320-005 OPTIONAL 8 IN. EXTENSION HARNESS | CLR | AWG |
|---|---|---|---|
| 350 | Jx-1,Px-1 | | 16 |
| 1 | Jx-2,Px-2 | | |
| 2 | Jx-3,Px-3 | | |
| 3 | Jx-4,Px-4 | | |
| 4 | Jx-5,Px-5 | | |
| 5 | Jx-6,Px-6 | | |
| 4 | Jx-7,Px-7 | | |
| 6 | Jx-8,Px-8 | | |
| 7 | Jx-9,Px-9 | | |
| 8 | Jx-10,Px-10 | | |
| 9 | Jx-11,Px-11 | | |
| 10 | Jx-12,Px-12 | | |
| 11 | Jx-13,Px-13 | | |
| 12 | Jx-14,Px-14 | | |
| 200 | Jx-15,Px-15 | | |
| 13 | Jx-16,Px-16 | | |
| 14 | Jx-17,Px-17 | | |
| 15 | Jx-18,Px-18 | | |
| 16 | Jx-19,Px-19 | | |
| 17 | Jx-20,Px-20 | | |
| 18 | Jx-21,Px-21 | | |
| 19 | Jx-22,Px-22 | | |
| 20 | Jx-23,Px-23 | | |
| 21 | Jx-24,Px-24 | | |

## 8 — HARNESS LOCATOR (BOX CHECKED IF HARNESS IS MODIFIED ☐)

| WIRE No. | HARNESS 309320-005 OPTIONAL 8 IN. EXTENSION HARNESS | CLR | AWG |
|---|---|---|---|
| 201 | Jy-1,Py-1 | | 16 |
| 1 | Jy-2,Py-2 | | |
| 202 | Jy-3,Py-3 | | |
| 203 | Jy-4,Py-4 | | |
| 38 | Jy-5,Py-5 | | |
| 204 | Jy-6,Py-6 | | |
| 205 | Jy-7,Py-7 | | |
| 206 | Jy-8,Py-8 | | |
| 207 | Jy-9,Py-9 | | |
| 208 | Jy-10,Py-10 | | |
| 209 | Jy-11,Py-11 | | |
| 210 | Jy-12,Py-12 | | |
| 211 | Jy-13,Py-13 | | |
| 212 | Jy-14,Py-14 | | |
| 213 | Jy-15,Py-15 | | |
| 214 | Jy-16,Py-16 | | |
| 215 | Jy-17,Py-17 | | |
| 216 | Jy-18,Py-18 | | |
| 217 | Jy-19,Py-19 | | |
| 218 | Jy-20,Py-20 | | |
| 219 | Jy-21,Py-21 | | |
| 220 | Jy-22,Py-22 | | |
| 221 | Jy-23,Py-23 | | |
| 222 | Jy-24,Py-24 | | |

## 31 — HARNESS LOCATOR (BOX CHECKED IF HARNESS IS MODIFIED ☒)

| WIRE No. | SUB-ASSEMBLY 605113-001 (J1,CM) DUAL SOLENOID UNIT CONTROL MODULE ASSEMBLY | CLR | AWG |
|---|---|---|---|
| | | | 16 |
| | J1-1,CR3-(+) | | |
| | J1-2,CR3-(-) | | |
| | J1-3,CR4-(+) | | |
| | J1-4,CR4-(-) | | |
| | J1-5,CR1-AC1 | | |
| | J1-6,CR2-AC1 | | |
| | J1-7,CR3-AC1 | | |
| | J1-8,CR4-AC1 | | |
| | J1-9,CR1-(+) | | |
| | J1-10,CR1-(-) | | |
| | J1-11,CR2-(+) | | |
| | J1-12,CR2-(-) | | |
| | J1-13,SER-R2 | | |
| | J1-14,SER-A2 | | |
| | J1-15,ERR-R2 | | |
| | J1-16,ERR-A2 | | |
| | J1-17,SER-2 | | |
| | J1-18,ERR-2 | | |
| | J1-19,SER-A1 | | |
| | SER-A1,SER-3 | | |
| | J1-20,ERR-A1 | | |
| | ERR-A1,ERR-3 | | |
| | J1-21,CR1-AC2 | | |
| | CR1-AC2,CR2-AC2 | | |
| | J1-22,CR3-AC2 | | |
| | CR3-AC2,CR4-AC2 | | |
| | J1-23,SER-R3 | | |
| | J1-24,ERR-R3 | | |
| | SER-R3,ERR-R3 | | |
| | SER-1,ERR-R1 | | |
| | SER-R1,ERR-1 | | |
| | SER-4,ERR-R4 | | |
| | SER-R4,ERR-4 | | |
| | | | |
| | NOTE: SUB-ASSEMBLY NO WIRE NUMBERS NEEDED | | |
| | | | |
| | REMOVE WIRES | | |
| | J1-16,ERR-A2 | | |
| | | | |
| | ADD WIRES | | |
| | J1-16,SER-A2 | | |
| | ERR-1,ERR-A2 | | |

| WIRE No. | ADDITIONAL WIRING | CLR | AWG |
|---|---|---|---|
| 134 | CP-P6-42,DOC-P2-1 | BLK | |
| 135 | CP-P6-43,DOC-P2-3 | WHT | 22 |
| 136 | CP-P6-44,DOC-P2-2 | RED | (4 COND) |

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PROJECT NAME: WIRING DIAGRAM
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GROUP 5 CONTROLS

THIRD ANGLE PROJECTION

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| FINAL APPROVAL | SDH | 6/05 |

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