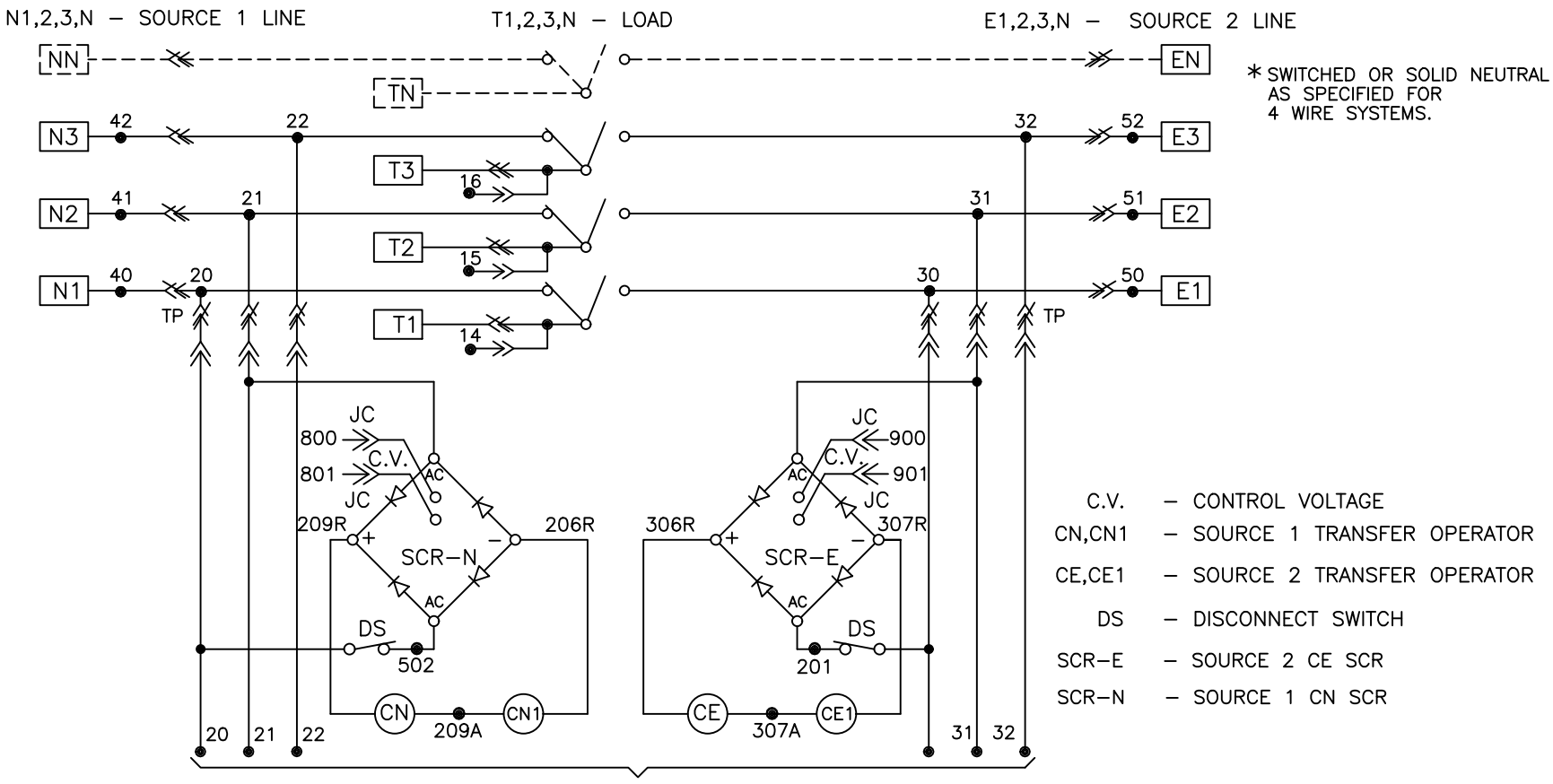
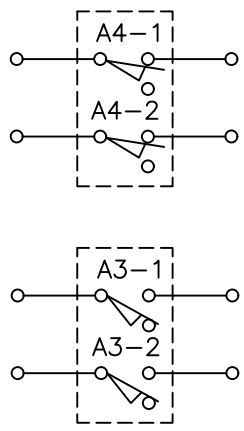
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
4	C077003 UPDATED REBRANDING	09/23/19	AR MAS

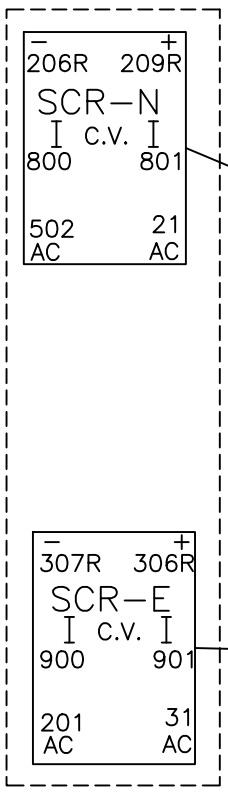
ATS POWER CIRCUIT SCHEMATIC



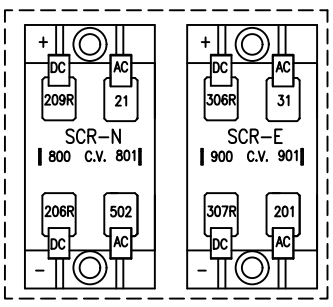
TO CONTROLS POWER SUPPLY (CPS) SCHEMATIC – SHEET 2

AUXILIARY CONTACTS





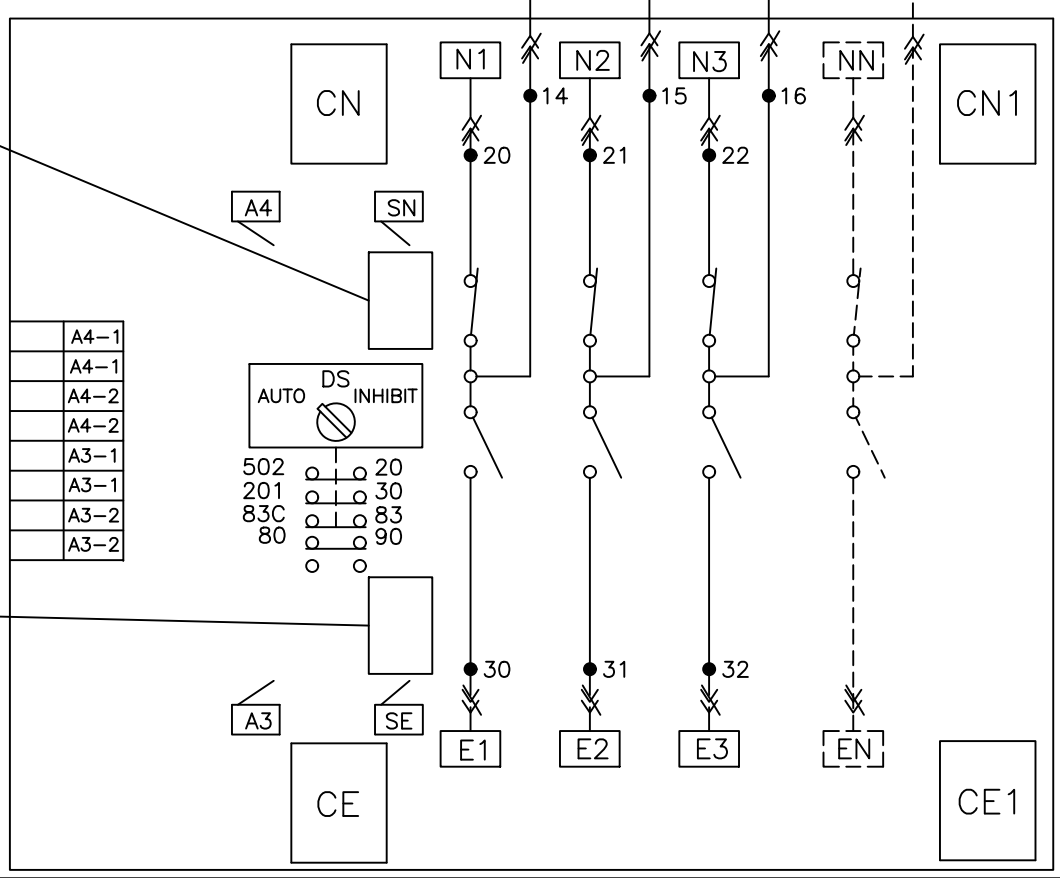
Construction Cyrdom SCR



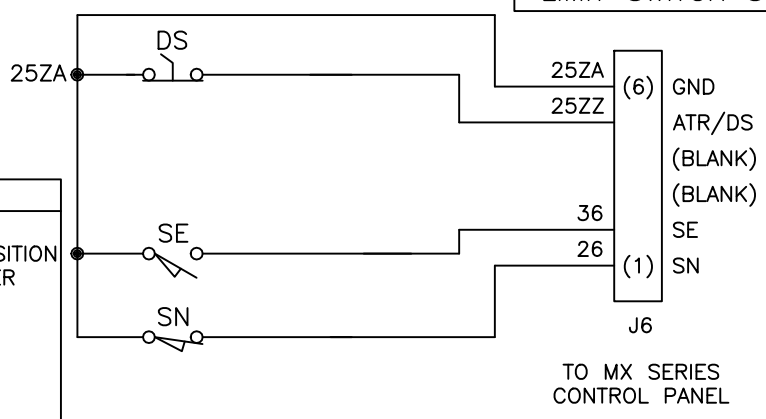
Alternate construction Ruihua SCR

A4–1
A4–1
A4–2
A4–2
A3–1
A3–1
A3–2
A3–2

ATS POWER PANEL LAYOUT



LIMIT SWITCH SCHEMATIC



DS – DISCONNECT SWITCH
SE – SOURCE 2 POSITION LIMIT SWITCH
SN – SOURCE 1 POSITION LIMIT SWITCH

LEGEND	REFERENCE NOTES	
WIRE CONNECTION WIRE ON TERMINAL BLOCK WIRE IN INTERCONNECT PLUG * OPTIONAL	LEGEND, OPERATION, AND ACCESSORIES: 72A–0900 FOR PRODUCTION ONLY: CPS AND PLUG– SHEET 2 MX250 CONTROLLER– 71A–0500	ATS SHOWN IN SOURCE 1 POSITION WITH NO POWER AVAILABLE.

THIRD ANGLE PROJECTION

FOR ADDITIONAL INFO REFER TO APPLIED PRACTICES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ON:
2 PL. DECIMALS ± .020
3 PL. DECIMALS ± .005
ANGLES ± 1°
FRACTIONS ± 1/64

FINISH

AutoCad Generated

SIGNATURES		DATE
MODEL	GG	04/07/03
DETAIL		
CHECKED		
ENGRG	FS	
MFG		
QUALITY		
ISSUED		

DRAWING FILE: 73a–4000.dwg
MODEL / ASSEMBLY FILE: ZBTS(4000AMP)

CTQs ⊖ CRITICAL TO QUALITY CHARACTERISTIC

TITLE: ATS POWER CIRCUIT & LAYOUT

FIRST MADE FOR: ZBTS(4000AMP)

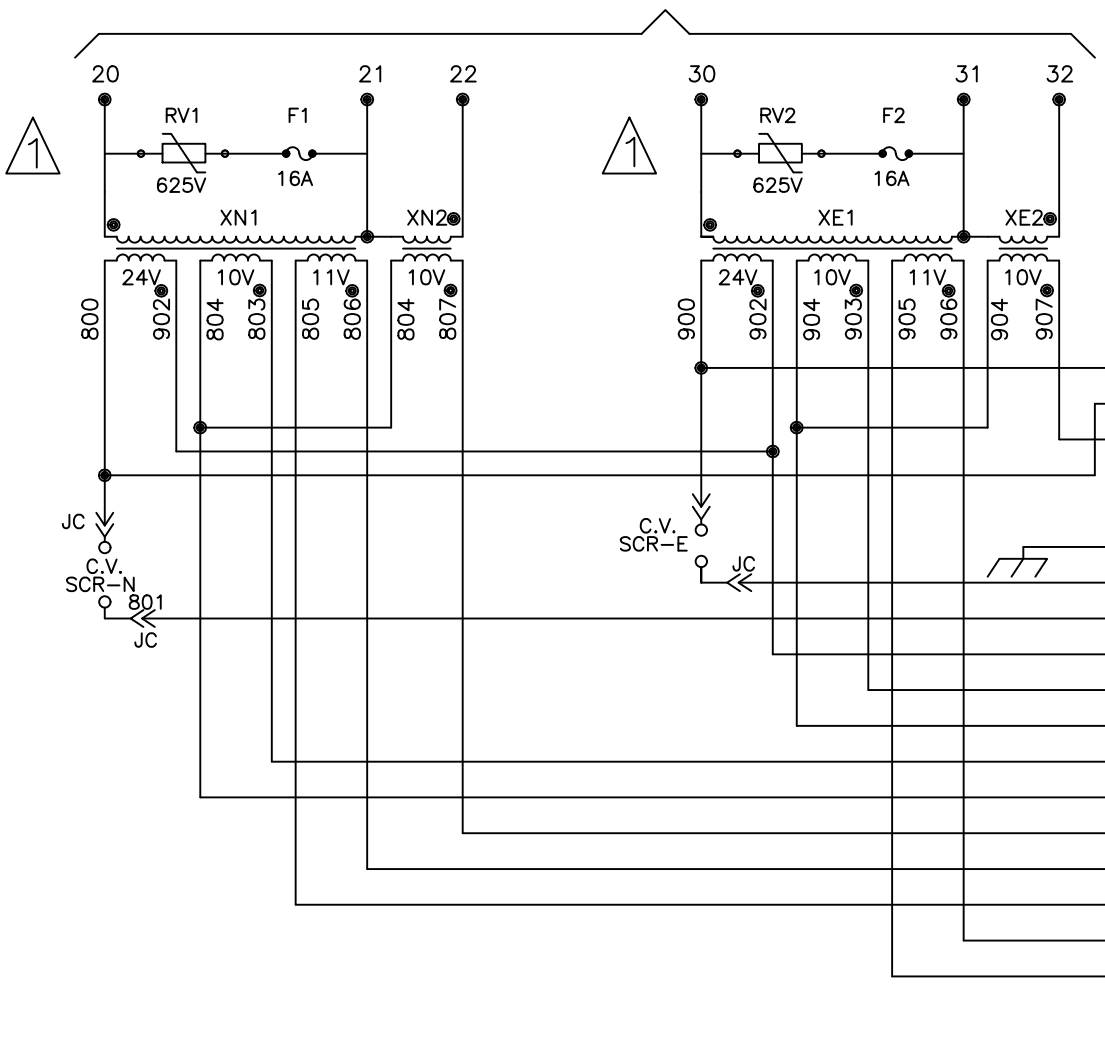
SIZE	CAGE CODE	DWG NO
B		73A–4000

SCALE: NA

SHEET 1 OF 5

CONTROLS POWER SUPPLY (CPS) SCHEMATIC

TO POWER CIRCUIT SCHEMATIC – SHEET 1

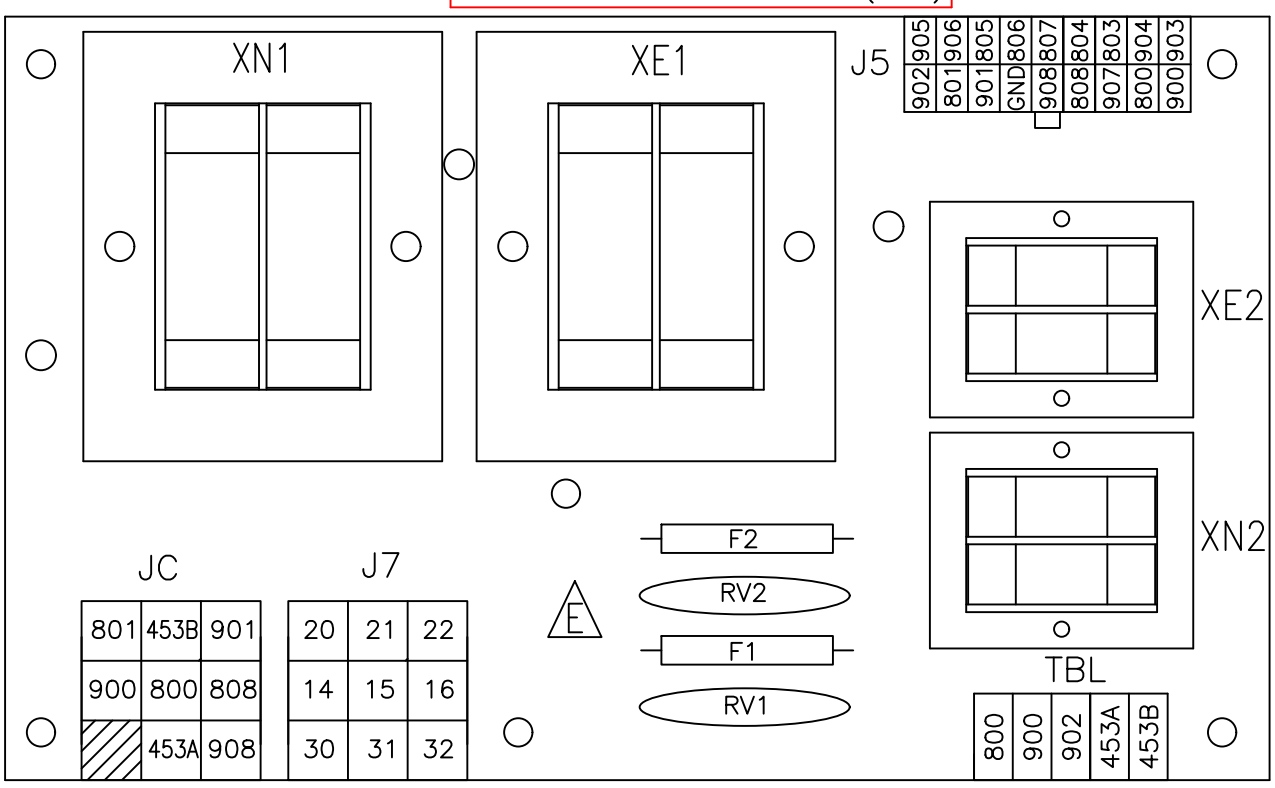


XN1 – SOURCE 1 CONTROL TRANSFORMER
XN2 – SOURCE 1 3 PHASE SENSING TRANSFORMER
XE1 – SOURCE 2 CONTROL TRANSFORMER
XE2 – SOURCE 2 3 PHASE SENSING TRANSFORMER

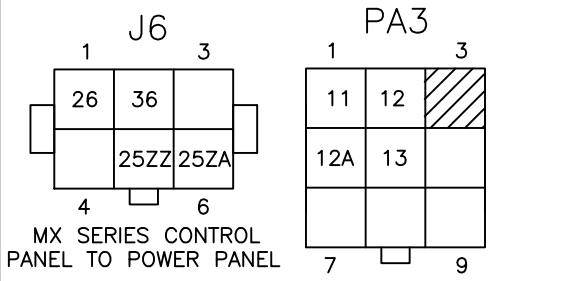
900	(18)	SOURCE 2 24V OUTPUT
800		SOURCE 1 24V OUTPUT
907		3–PHASE SOURCE 2 SENSING
808		(BLANK)
908		(BLANK)
GND		GROUND
901		C.V. SCR–N CONTROL VOLTAGE (SOURCE 2)
801		C.V. SCR–E CONTROL VOLTAGE (SOURCE 1)
902		COMMON
903		SINGLE PHASE SOURCE 2 SENSING
904		
803		3–PHASE SOURCE 1 SENSING
804		
807		
806		SOURCE 1 CONTROL POWER
805		
906		SOURCE 2 CONTROL POWER
905	(1)	

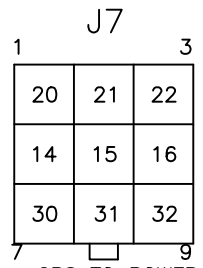
J5

CONTROLS POWER SUPPLY (CPS)

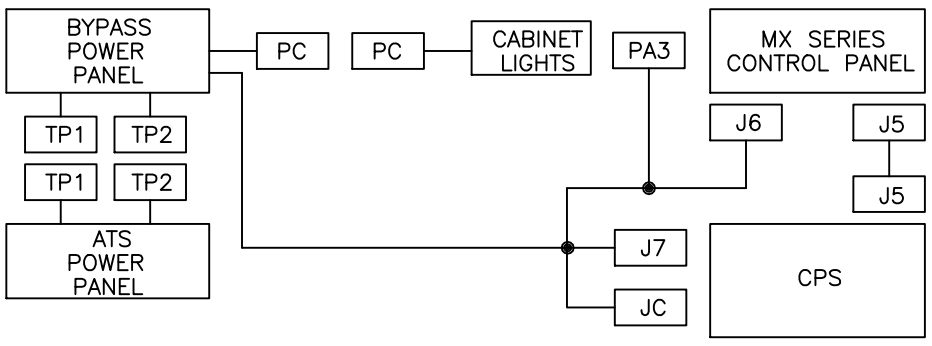


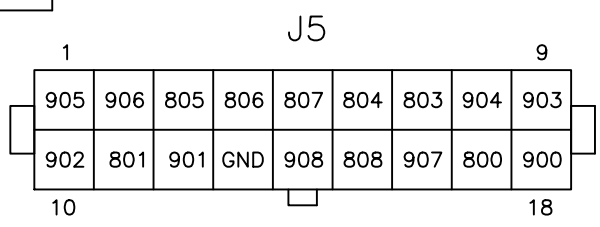
INTERCONNECT PLUGS

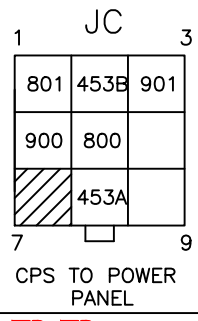




INTERCONNECTION PLUG DIAGRAM







LEGEND

WIRE CONNECTION
* OPTIONAL

THIRD ANGLE PROJECTION

FOR ADDITIONAL INFO REFER TO APPLIED PRACTICES
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ON:
2 PL. DECIMALS ± .020
3 PL. DECIMALS ± .005
ANGLES ± 1°
FRACTIONS ± 1/64

FINISH

AutoCad Generated

SIGNATURES		DATE
MODEL	GG	05/08/03
DETAIL		
CHECKED		
ENGRG	FS	
MFG		
QUALITY		
ISSUED		

DRAWING FILE: 73a–4000.dwg
MODEL / ASSEMBLY FILE: ZBTS(4000AMP)

CTQs ⊖ CRITICAL TO QUALITY CHARACTERISTIC

TITLE
CONTROLS POWER SUPPLY
CPS & INTERCONNECT PLUGS

FIRST MADE FOR: ZBTS(4000AMP)

SIZE	CAGE CODE	DWG NO
B		73A–4000

SCALE: N/A

SHEET 2 OF 5

OPERATION: BYPASS/ISOLATION SWITCH

AUTOMATIC

1. Manaully operated Bypass Switch contacts (BN/BE) are open and ATS is supplying load.
2. Disconnect Switch (DS) is in "AUTO".

TO BYPASS ATS

1. Open bottom cabinet door and turn DS to "INHIBIT".
2. Turn Bypass Selector Switch (BSS) to same power source as ATS.
3. Move the Manual Bypass Handle (MBH) upward.

TO TEST ATS

1. Bypass per above instructions.
2. Rotate crank mechanism counterclockwise until ATS TEST light is illuminated.
3. Turn DS to "AUTO".
4. Test Switch (TS) on bottom cabinet door will allow electrical operation of ATS.

TO ISOLATE ATS

1. Bypass per above instructions.
2. Rotate crank mechanism counterclockwise until ATS ISOLATED light is illuminated.

TO REMOVE ATS

1. Bypass and Isolate per above instructions.
2. Disconnect multipin plugs and external connections to ATS.
3. Slide four corner latches of ATS to innermost position.
4. ATS can now be removed from cabinet.

TO RECONNECT ATS

1. Roll cart back into cabinet.
2. Slide four corner latches of ATS to outermost position.
3. Turn DS Switch to "INHIBIT".
4. Manually position ATS into same source as Bypass Switch.
5. Reconnect multipin plugs and external connections to ATS.
6. Rotate crank mechanism clockwise until ATS TEST light is illuminated.
7. Turn DS Switch to "AUTO" and use TS to electrically operate ATS.
8. Turn DS to "INHIBIT".
9. Rotate crank mechanism clockwise until ATS location pointer is aligned with "AUTO" mark on location indicator. (ATS must be in same source as Bypass).
10. Turn DS to "AUTO" and open Bypass with MBH.
11. ATS is now fully automatic (Figure 1).

NOTES:

1. DS in "INHIBIT" will prevent ATS electrical operation.
2. DO NOT use excessive force on mechanical handles.
3. Above Figures depict Bypass SOURCE 1. Sequence is same for Bypass SOURCE 2.
4. When ATS is in TEST or ISOLATE, Bypass Switch is a manual transfer switch to either available source. (Indicated on light panel).
5. To operate Bypass Switch when ATS is in TEST or ISOLATE:
   a) Move MBH downward (to open Bypass Contacts BN/BE).
   b) Turn BSS to opposite power source.
   c) Move MBH upward to close into selected power source.

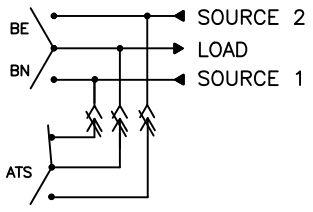


FIG. 1 BP IS OPEN WITH ATS IN SOURCE 1

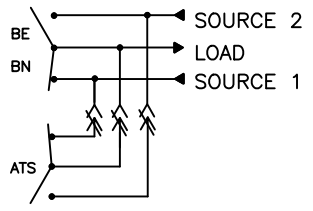


FIG. 2 BP IN SOURCE 1 WITH ATS IN SOURCE 1

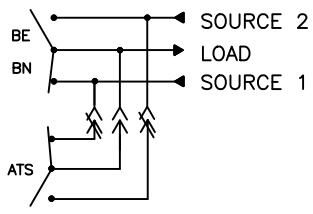


FIG. 3 BP IN SOURCE 1 WITH ATS IN TEST (LOAD CONNECTIONS ARE OPEN)

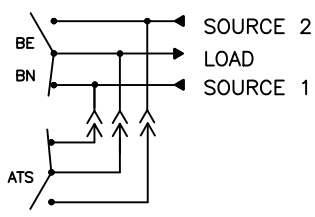


FIG. 4 BP IN SOURCE 1 WITH ATS ISOLATED

NOTES:
1. BP—Bypass switch (indicated by contacts BN/BE) is a 3 position switch.
2. ATS—Automatic Transfer Switch

LEGEND: BYPASS/ISOLATION SWITCH (BP)

I. (BP) BYPASS/ISOLATION SWITCH: MECHANICAL COMPONENTS

N1,2,3,(N)..... SOURCE 1 Line connections_____
E1,2,3,(N)..... SOURCE 2 Line connections_____
T1,2,3,(N)..... Load Line connections_____
BE..... Bypass SOURCE 2 contacts
BN..... Bypass SOURCE 1 contacts
BSS..... Bypass Selector Switch
MBH..... Manual Bypass Handle

II. (BP) BYPASS/ISOLATION: ELECTRICAL COMPONENTS

AA—1,2..... Limit switch held actuated in Auto location of ATS, Non—actuated Test and Isolated locations.
AB3,—1,2,3,4..... Limit switch, actuated in Bypass SOURCE 2 position
AB4—1,2..... Limit switch, actuated in Bypass SOURCE 1 position
AE—1,2..... Limit switch, switches Engine Start from ATS control to bypass control during ATS Isolate
AI—1,2..... Limit switch, actuated in Isolate location
AT—1,2..... Limit switch, actuated in Test location
ATR..... Auto/Test Relay. Energized in AUTO and TEST locations
BR..... Bridge Rectifier
C..... Capacitor: RNH
CBC..... Crank Solenoid
CBE..... SOURCE 2 Bypass Permissive Solenoid
CBN..... SOURCE 1 Bypass Permissive Solenoid
CH—1..... Limit switch actuated when crankhandle is engaged
D1..... Diode
RNH..... Relay normlly held, 24 VDC coil, 3PDT
R1..... Resistor: RNH
XBE..... SOURCE 2 line control transformer
XBN..... SOURCE 1 line control transformer

III. (BP) BYPASS/ISOLATION SWITCH: INDICATOR LIGHTS

LNA..... SOURCE 1 available
LEA..... SOURCE 2 available
LBN (NOTE 1)..... Bypass SOURCE 1 (BN closed)
LBE (NOTE 1)..... Bypass SOURCE 2 (BE closed)
LAT (NOTE 1)..... ATS in Test location
LAI (NOTE 1)..... ATS in Isolate location
LIT (NOTE 1)..... ATS Inhibit
LDS (NOTE 1)..... ATS DS switch in INHIBIT position

NOTES:

1. Indicator off during automatic operation of ATS.
2. Four pole includes neutral lugs.

THIRD ANGLE PROJECTION

FOR ADDITIONAL INFO REFER TO APPLIED PRACTICES
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2 PL. DECIMALS ± .020
3 PL. DECIMALS ± .005
ANGLES ± 1°
FRACTIONS ± 1/64
FINISH

AutoCad Generated

SIGNATURES		DATE
MODEL	GG	04/21/03
DETAIL		
CHECKED		
ENGRG	FS	
MFG		
QUALITY		
ISSUED		

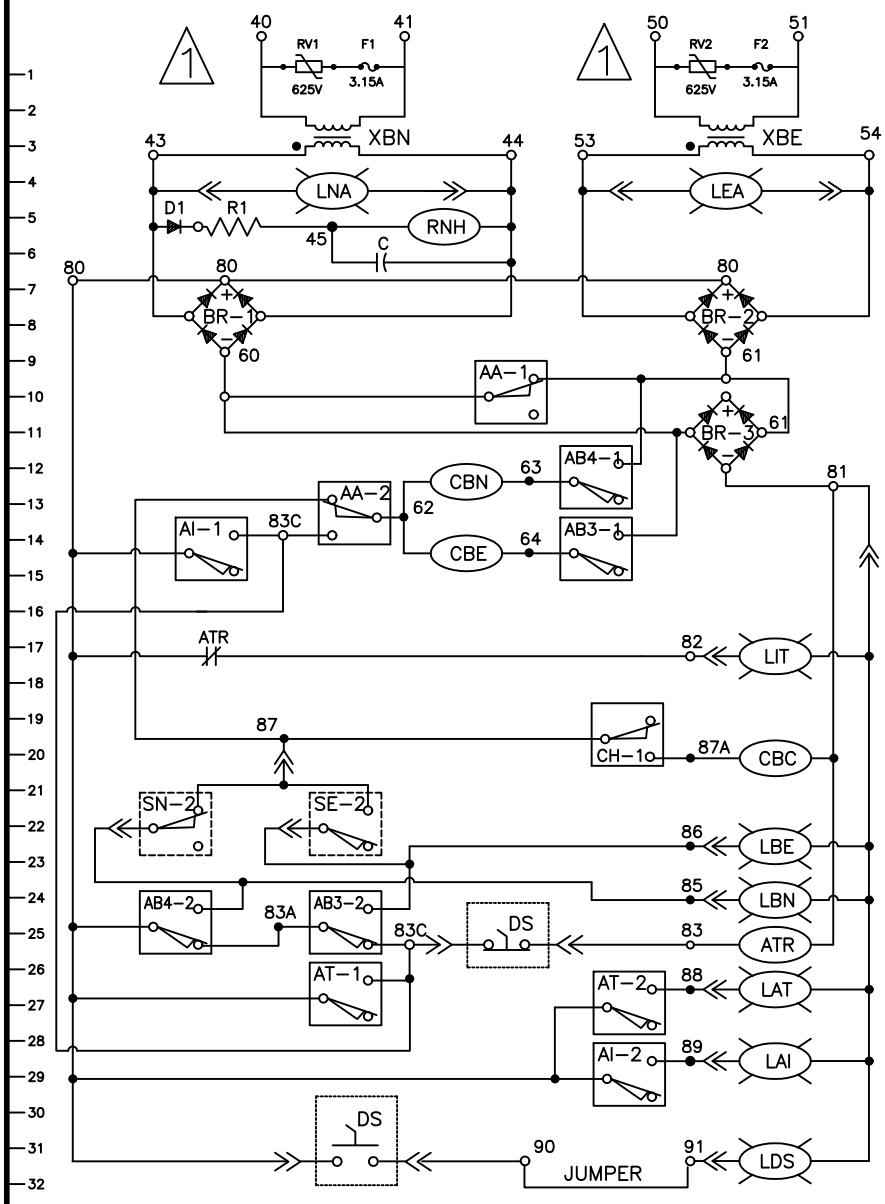
DRAWING FILE: 73a—4000.dwg
MODEL / ASSEMBLY FILE: ZBTS(4000AMP)
CTQs
⊖ CRITICAL TO QUALITY CHARACTERISTIC

TITLE
BYPASS/ISOLATION
LEGEND & OPERATION
FIRST MADE FOR: ZBTS(4000AMP)

SIZE	CAGE CODE	DWG NO
B		73A—4000

SCALE: NA
SHEET 3 OF 5

BYPASS/ISOLATION SCHEMATIC



XBN – BYPASS SOURCE 1 CONTROL TRANSFORMER
XBE – BYPASS SOURCE 2 CONTROL TRANSFORMER
LNA – SOURCE 1 AVAILABLE LIGHT
LEA – SOURCE 2 AVAILABLE LIGHT
RNH – NORMALLY HELD RELAY
D1 – DIODE
R1 – RESISTOR, RNA
BR–1,–2,3 BRIDGE RECTIFIER
C – CAPACITOR, RNA
AA–1 – LIMIT SWITCH, ATS AUTO LOCATION

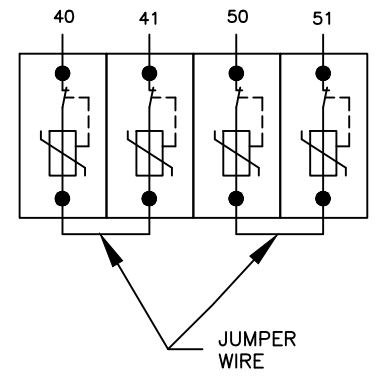
AB4–1– LIMIT SWITCH, BYPASS SOURCE 1
CBN – SOURCE 1 TRANSFER OPERATOR
AA–2 – LIMIT SWITCH, ATS IN AUTO
CBE – SOURCE 2 TRANSFER OPERATOR
AB3–1– LIMIT SWITCH, BYPASS SOURCE 2
AI–1 – LIMIT SWITCH, ATS IN ISOLATE

LIT – ATS INHIBIT LIGHT
DS – DISCONNECT SWITCH

CBC – CRANK SOLENOID
CH–1 – LIMIT SWITCH
LBE – BYPASS SOURCE 2
AB4–2– LIMIT SWITCH, BYPASS SOURCE 1
LBN – BYPASS SOURCE 1 LIGHT
AB3–2– LIMIT SWITCH, BYPASS SOURCE 2
ATR – AUTO/TEST RELAY
AT–1 – LIMIT SWITCH, ATS TEST LOCATION
LAT – ATS TEST LOCATION LIGHT
AT–2 – LIMIT SWITCH, ATS TEST LOCATION
LAI – ATS ISOLATE LIGHT
AI–2 – LIMIT SWITCH, ATS IN ISOLATE

LDS – DISCONNECT SWITCH LIGHT

600V SPD ASSEMBLY SCHEMATIC



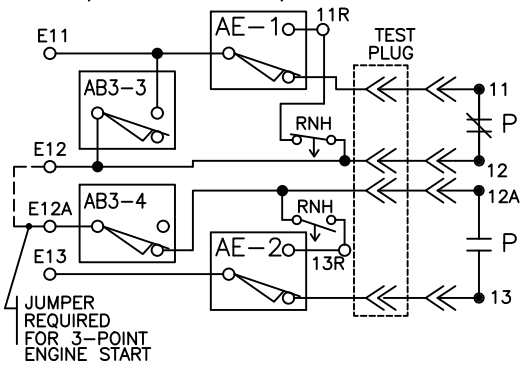
NOTE:
SPD INPUT SIGNALS TO BE WIRED FROM BYPASS SUBPANEL

LOCATED ON ATS

LOCATED ON BYPASS

ENGINE START SCHEMATIC

AE–1,2 – LIMIT SWITCH, ENGINE START TRANSFER
AB3–3,4 – LIMIT SWITCH, BYPASS SOURCE 2

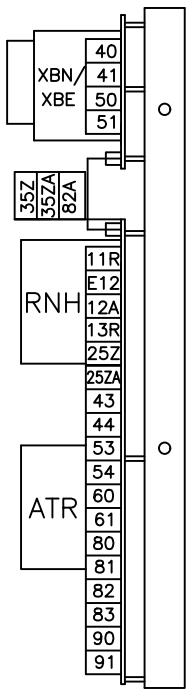


SOURCE 1/SOURCE 2 TRANSFER PERMIT CIRCUIT.
(ALH IN AUTO AND TEST LOCATION WITH DS IN AUTO POSITION)

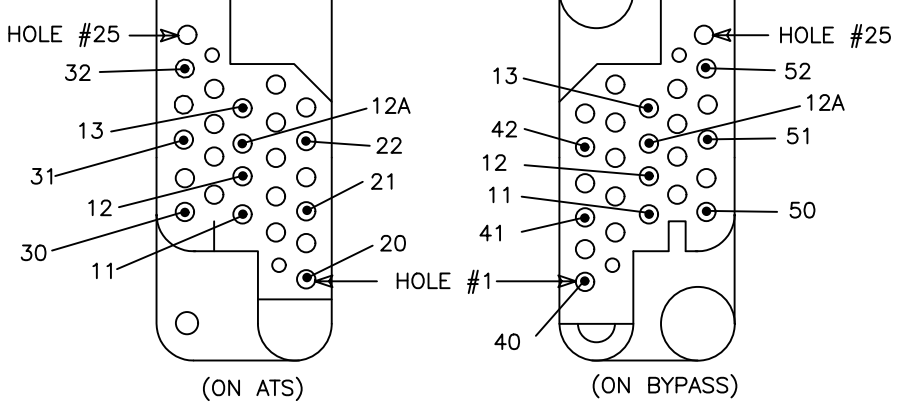
LIMIT SWITCH CHART

X = ACTUATED	ATS LOCATION				ATS MODE		BYPASS MODE		
	AUTO	TEST	ISO	REMOVE	SOURCE 1	SOURCE 2	SOURCE 1	SOURCE 2	OPEN
AA	X								
AT		X							
AI			X	X					
AE			X	X					
SN					X				
SE						X			
AB4							X		
AB3								X	

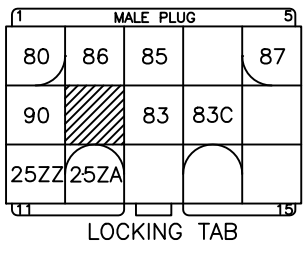
BYPASS SUBPANEL



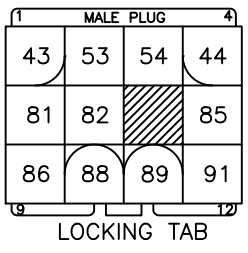
ATS TEST PLUG (TP)



PD1



PC



REFER TO SHEET 2 FOR INTERCONNECT PLUG DIAGRAM

LEGEND
- WIRE CONNECTION
- WIRE ON TERMINAL BLOCK
- WIRE IN INTERCONNECT PLUG

NOTES
ATS SHOWN IN SOURCE 1 POSITION WITH NO POWER AVAILABLE.

THIRD ANGLE PROJECTION

FOR ADDITIONAL INFO REFER TO
APPLIED PRACTICES
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2 PL. DECIMALS ± .020
3 PL. DECIMALS ± .005
ANGLES ± 1°
FRACTIONS ± 1/64
FINISH
AutoCad Generated

SIGNATURES		DATE
MODEL	GG	04/21/03
DETAIL		
CHECKED		
ENGRG	FS	
MFG		
QUALITY		
ISSUED		

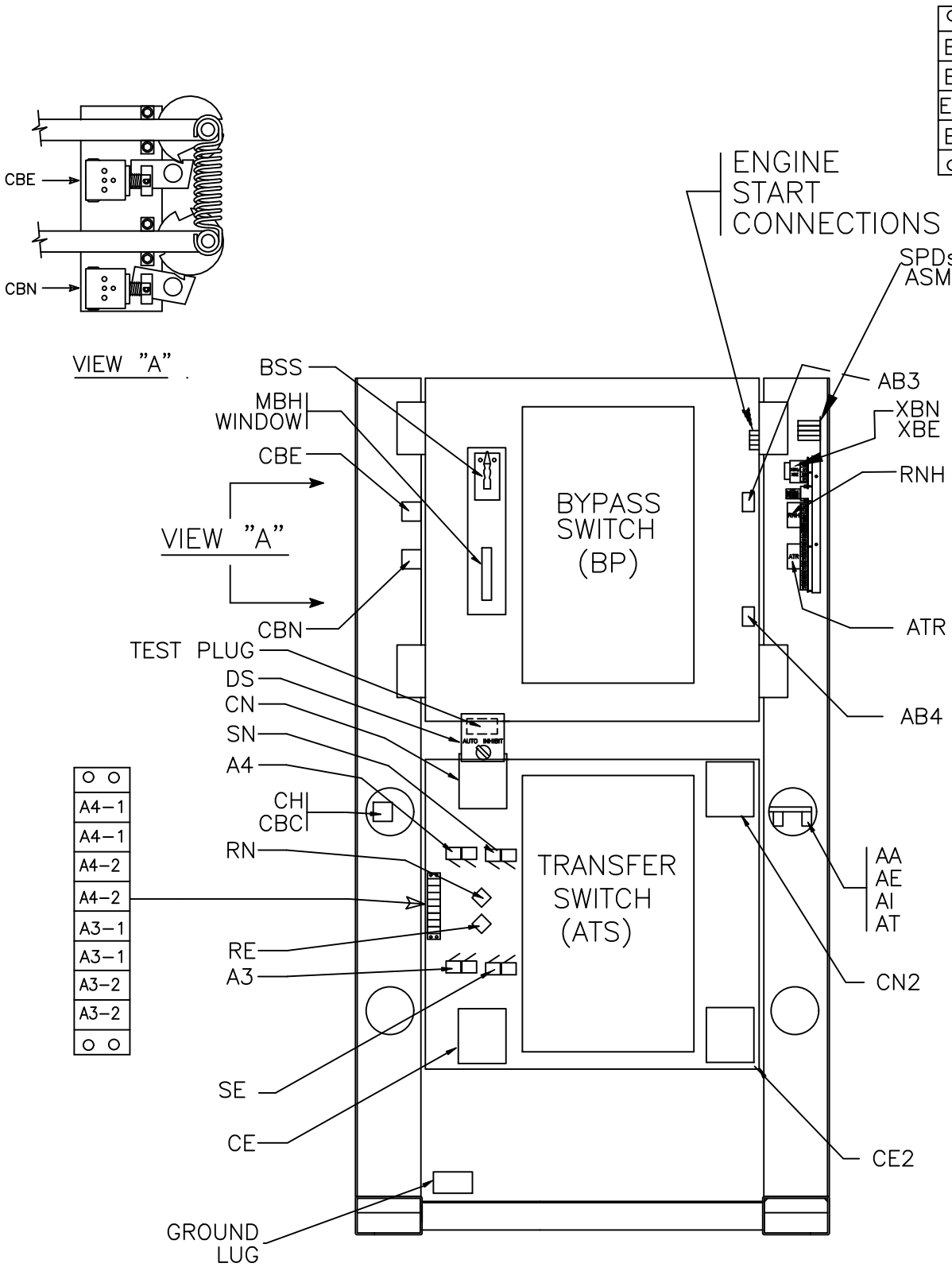
DRAWING FILE: 73a–4000.dwg
MODEL / ASSEMBLY FILE: ZBTS(4000AMP)
CTQs
⊖ CRITICAL TO QUALITY CHARACTERISTIC

TITLE
BYPASS/ISOLATION SCHEMATIC PLUGS
FIRST MADE FOR: ZBTS(4000AMP)

SIZE	CAGE CODE	DWG NO
B		73A–4000

SCALE: NA
SHEET 4 OF 5

BYPASS/ISOLATION TRANSFER SWITCH



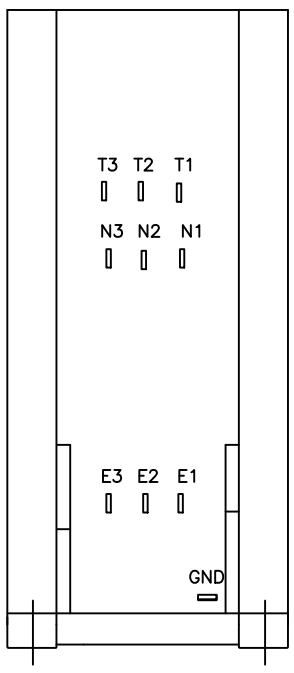
WIRE NUMBERING CHART

LIMIT SWITCHES	C	NC	NO
AA–1	60		61
AA–2	62	83C	87
AB3–1	64		60
AB3–2	83A	83C	86
AB3–3	E12		E11
AB3–4	E12A	12A	
AB4–1	63		61
AB4–2	80	83A	85
AE–1	E11	11	11R
AE–2	E13	13	13R
AI–1	80		83C
AI–2	80		89
AT–1	80		83C
AT–2	80		88
CH–1	87	87A	
SE–2	86		87
SN–2	85		87

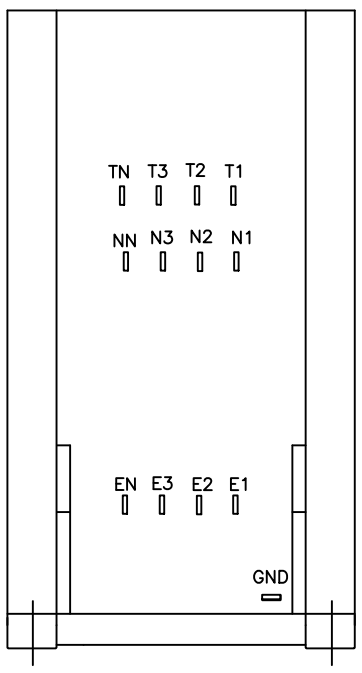
NOTES

ATS SHOWN IN NORMAL POSITION WITH NO POWER AVAILABLE.

STANDARD LUG CONFIGURATION
(CONSULT FACTORY FOR OPTIONAL CONFIGURATIONS)
REAR VIEW OF ENCLOSURE

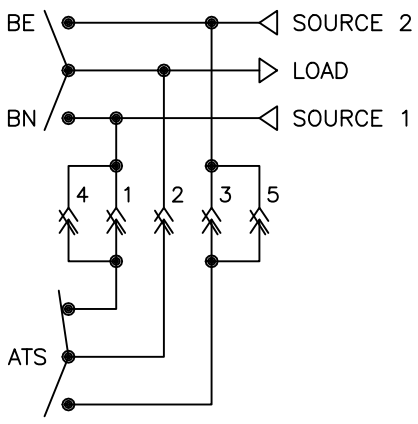


2/3–POLE SWITCH



4–POLE SWITCH

BYPASS/ISOLATION DIAGRAM



ATS LOCATION	LOAD CARRYING CONTACTS			ATS TEST PLUG (TP)	
	1	2	3	4	5
AUTO	X	X	X	X	X
TEST	O	O	O	X	X
ISOLATE	O	O	O	O	O

X = CLOSED
O = OPEN

ABB PROPRIETARY AND CONFIDENTIAL INFORMATION

THIRD ANGLE PROJECTION

FOR ADDITIONAL INFO REFER TO
APPLIED PRACTICES
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ON:
2 PL. DECIMALS ± .020
3 PL. DECIMALS ± .005
ANGLES ± 1°
FRACTIONS ± 1/64
FINISH

AutoCad Generated

SIGNATURES		DATE
MODEL	GG	04/21/03
DETAIL		
CHECKED		
ENGRG	FS	
MFG		
QUALITY		
ISSUED		

DRAWING FILE: 73a–4000.dwg
MODEL / ASSEMBLY FILE: ZBTS(4000AMP)
CTQs
⊖ CRITICAL TO QUALITY CHARACTERISTIC

TITLE
BYPASS/ISOLATION TRANSFER SWITCH
FIRST MADE FOR: ZBTS(4000AMP)

SIZE	CAGE CODE	DWG NO
B		73A–4000

SCALE: NA

SHEET 5 OF 5