

ATS POWER CIRCUIT SCHEMATIC

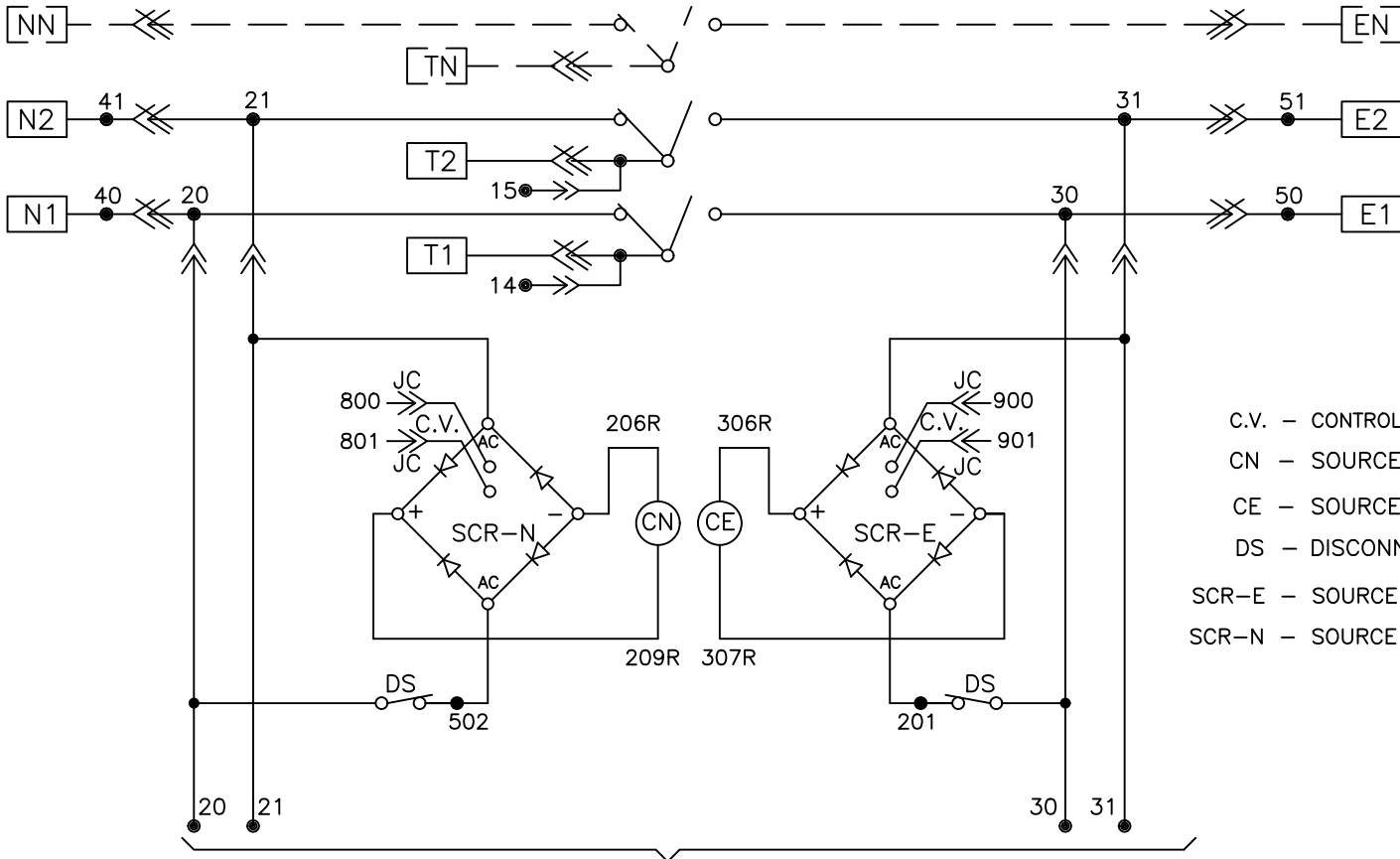
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
3	C077097	09/24/19	AR MAS

N1,2,N - SOURCE 1 LINE
(TO BYPASS/ISOLATION SWITCH)

T1,2,N - LOAD
(TO BYPASS/ISOLATION SWITCH)

E1,2,N - SOURCE 2 LINE
(TO BYPASS/ISOLATION SWITCH)

* SWITCHED OR SOLID NEUTRAL
AS SPECIFIED FOR
4 WIRE SYSTEMS.

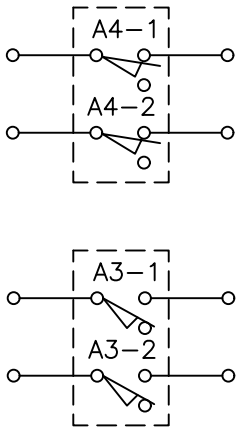


- C.V. - CONTROL VOLTAGE
- CN - SOURCE 1 TRANSFER OPERATOR
- CE - SOURCE 2 TRANSFER OPERATOR
- DS - DISCONNECT SWITCH, LOCATED ON DOOR
- SCR-E - SOURCE 2 CE SCR
- SCR-N - SOURCE 1 CN SCR

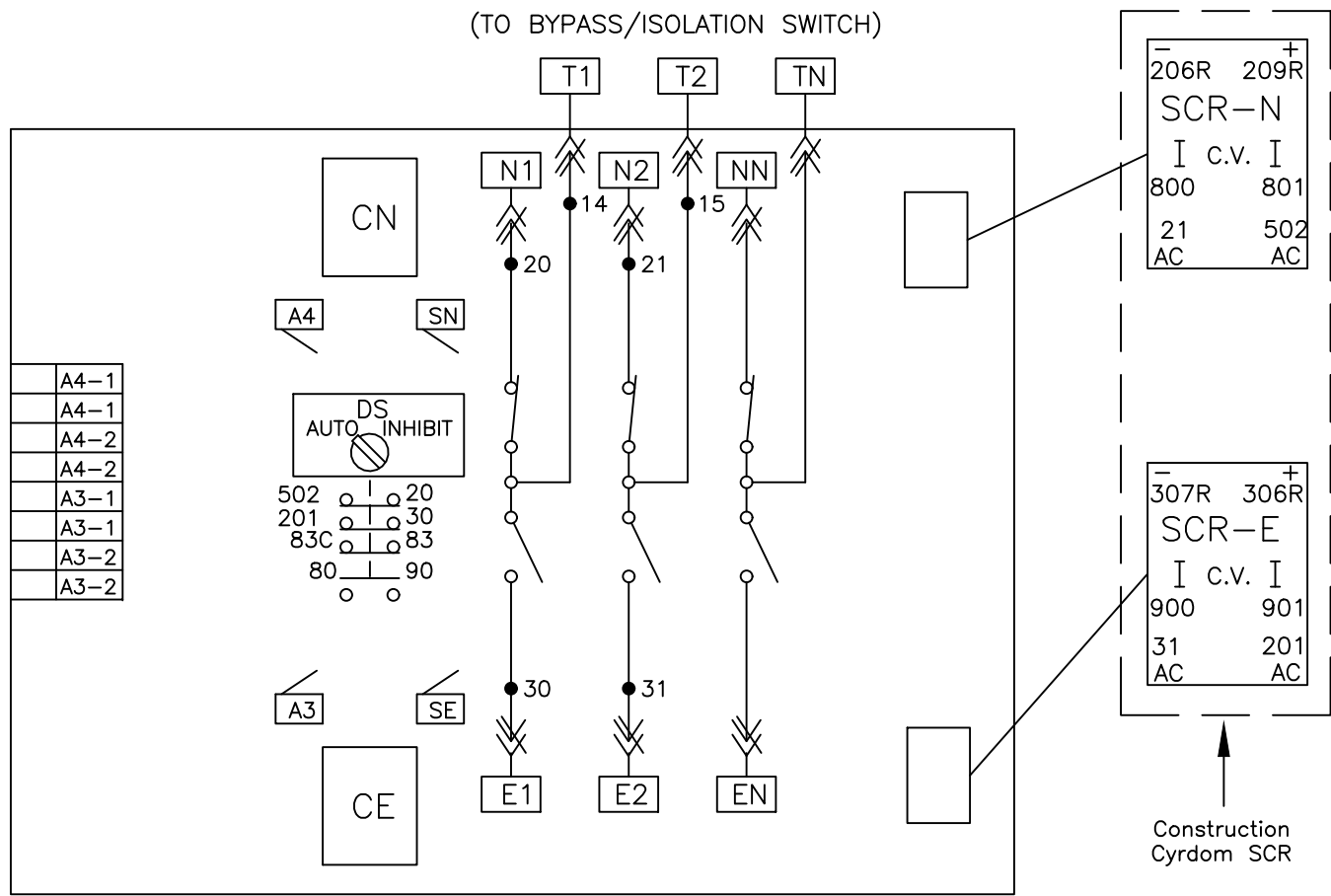
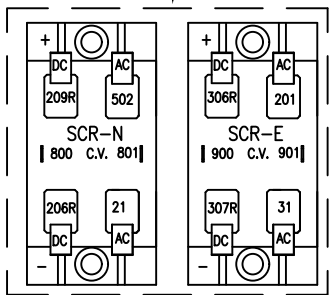
TO CONTROLS POWER SUPPLY (CPS) SCHEMATIC SHEET 2

AUXILIARY CONTACTS

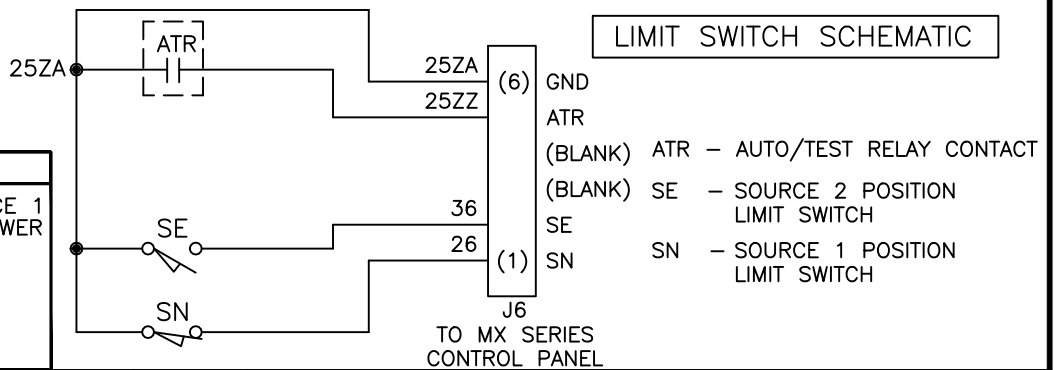
ATS POWER PANEL LAYOUT



Alternate construction
Ruihua SCR



LIMIT SWITCH SCHEMATIC



LEGEND	REFERENCE	NOTES
● WIRE CONNECTION	LEGEND, OPERATION, AND ACCESSORIES: 72A-0900 MX250 CONTROLLER-71A-0500	ATS SHOWN IN SOURCE 1 POSITION WITH NO POWER AVAILABLE.
○ WIRE ON TERMINAL BLOCK		
↔ WIRE IN INTERCONNECT PLUG		
* OPTIONAL		

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THIRD ANGLE PROJECTION

FOR ADDITIONAL INFO REFER TO	SIGNATURES	DATE
APPLIED PRACTICES	MODEL GG	04/15/03
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	DETAIL	
TOLERANCES ON:	CHECKED	
2 PL. DECIMALS ± .020	ENGRG FS	-
3 PL. DECIMALS ± .005	MFG	
ANGLES ± 1°	QUALITY	
FRACTIONS ± 1/64	ISSUED	
FINISH	DRAWING FILE: 73a-2001.dwg	
AutoCad Generated	MODEL / ASSEMBLY FILE:	
	# CTQs	
	⊖ CRITICAL TO QUALITY CHARACTERISTIC	

ABB

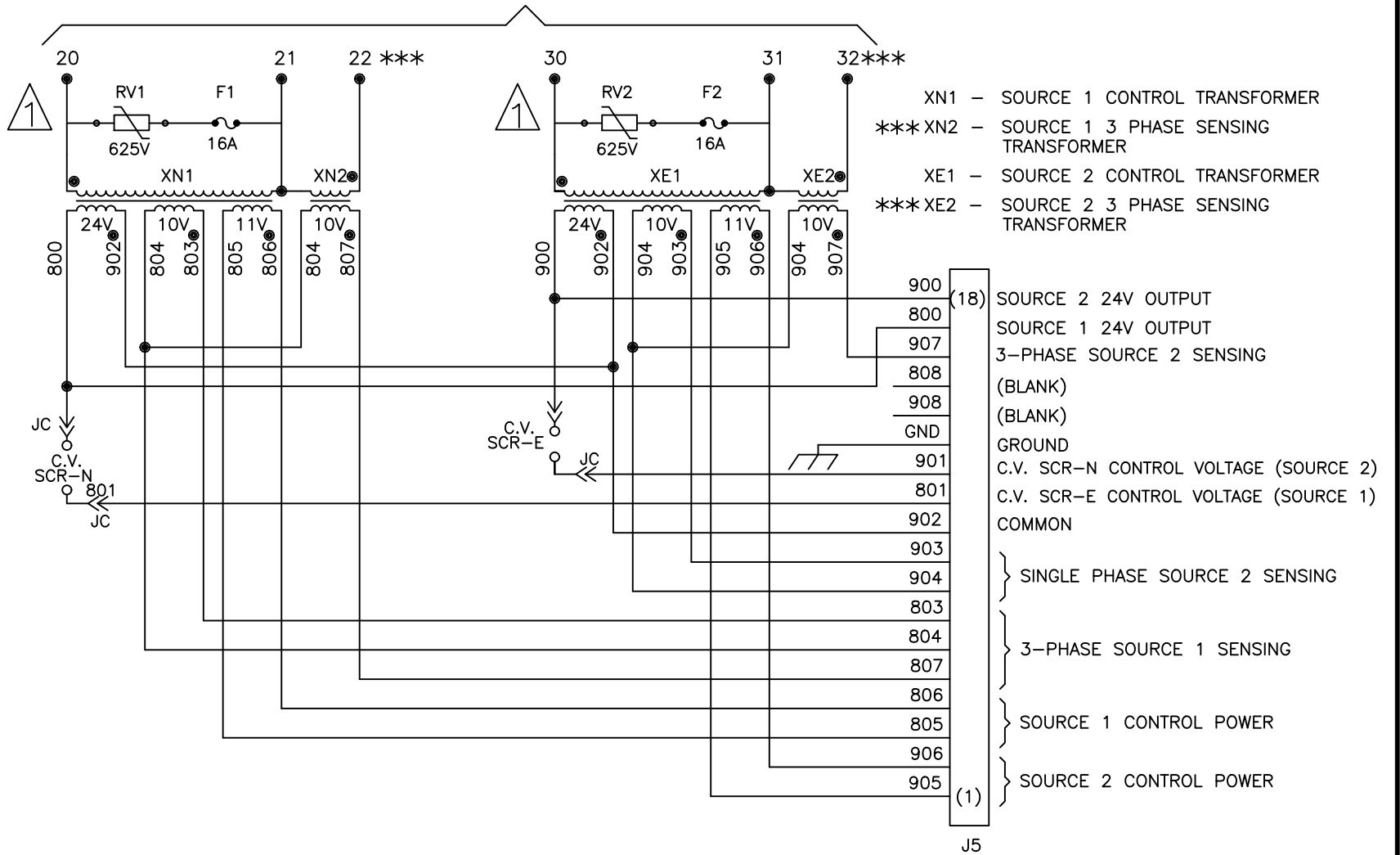
TITLE: **ATS POWER CIRCUIT & LAYOUT**

FIRST MADE FOR: ZBTS(600-1200 AMP) (2 POLE)

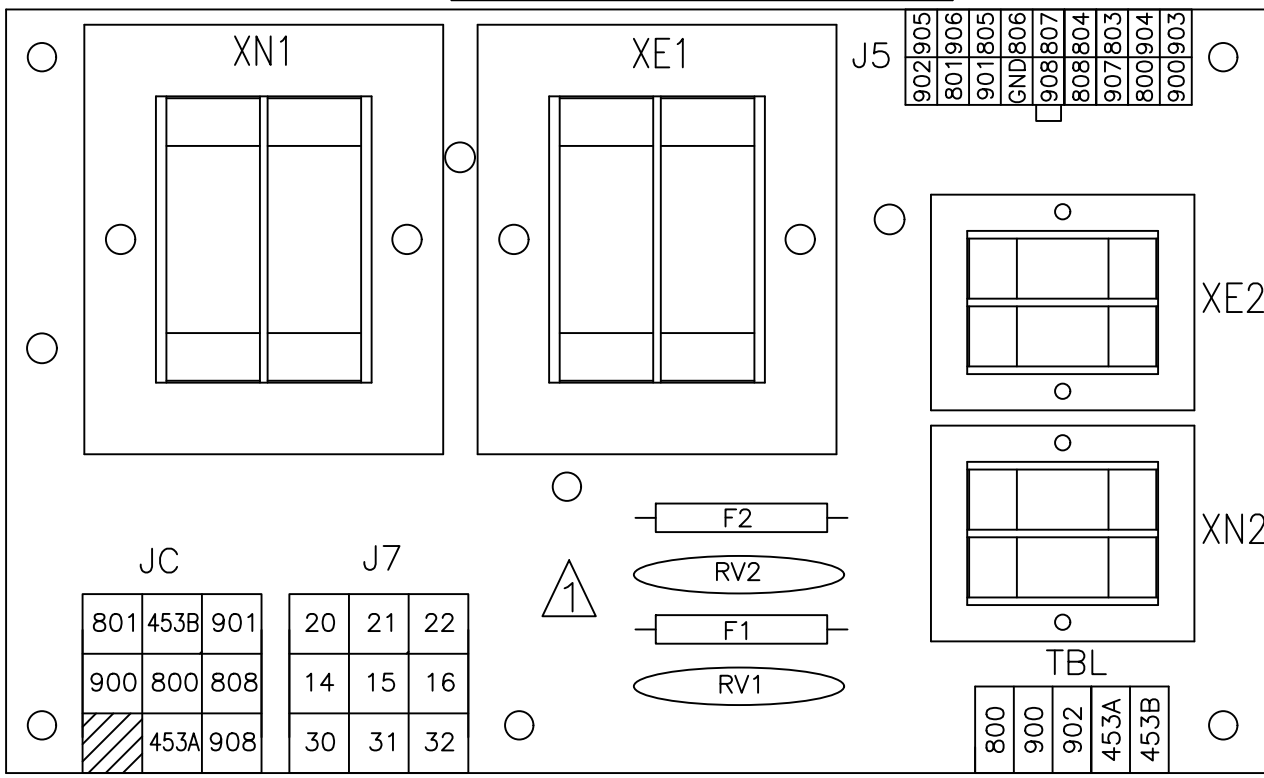
SIZE: B	CAGE CODE:	DWG NO: 73A-2001
SCALE: NA	SHEET 1 OF 5	

CONTROLS POWER SUPPLY (CPS) SCHEMATIC

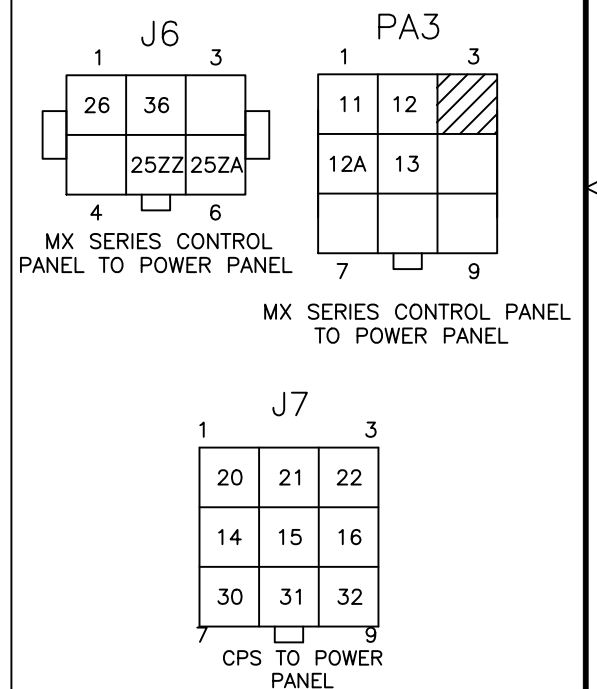
TO POWER CIRCUIT SCHEMATIC - SHEET 1



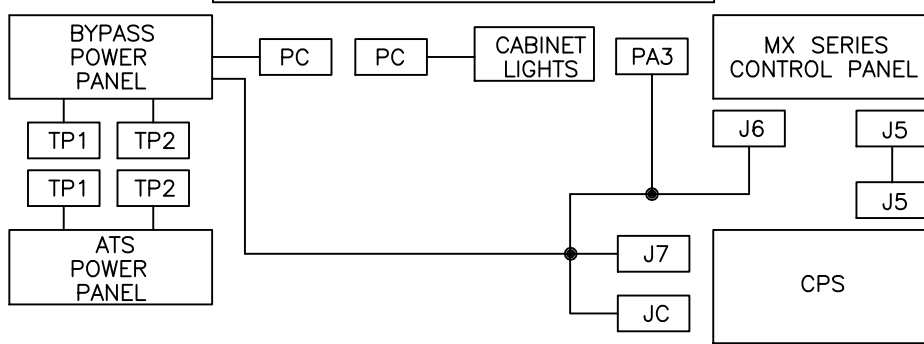
CONTROLS POWER SUPPLY (CPS)



INTERCONNECT PLUGS



INTERCONNECTION PLUG DIAGRAM



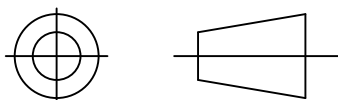
LEGEND

- WIRE CONNECTION
- * OPTIONAL
- *** WIRE# 22 & 32 REMAIN IN CPS AND ARE NOT CONNECTED ON ATS

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THIRD ANGLE PROJECTION



FOR ADDITIONAL INFO REFER TO	SIGNATURES	DATE
APPLIED PRACTICES	MODEL GG	12/14/04
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	DETAIL	
TOLERANCES ON:	CHECKED	
2 PL. DECIMALS ± .020	ENGRG FS	
3 PL. DECIMALS ± .005	MFG	
ANGLES ± 1°	QUALITY	
FRACTIONS ± 1/64	ISSUED	
FINISH	DRAWING FILE: 73a-2001.dwg	SIZE
AutoCad Generated	MODEL / ASSEMBLY FILE: ZBTS(600-1200AMP)	CAGE CODE
	# CTQs	DWG NO
	CRITICAL TO QUALITY CHARACTERISTIC	



CONTROLS POWER SUPPLY
CPS & INTERCONNECT PLUGS

FIRST MADE FOR: ZBTS(600-1200AMP) (2 POLE)

SIZE B CAGE CODE DWG NO 73A-2001

SCALE: N/A SHEET 2 OF 5

OPERATION: BYPASS/ISOLATION SWITCH

AUTOMATIC

1. Manually 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. Rotate four power panel latches to vertical position, slide ATS forward & lock mechanism in place.
4. ATS can now be removed from cabinet.

TO RECONNECT ATS

1. Place ATS in slide mechanism.
2. Unlock slide mechanism. Slide ATS over power panel latches and rotate latches to horizontal 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.

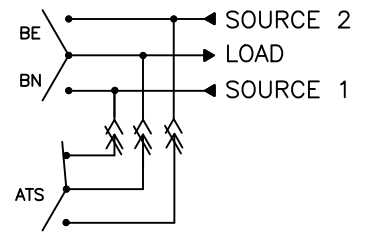


FIG. 1 BP IS OPEN WITH ATS IN SOURCE 1

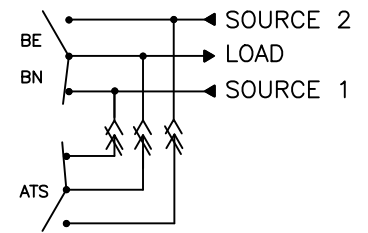


FIG. 2 BP IN SOURCE 1 WITH ATS IN SOURCE 1

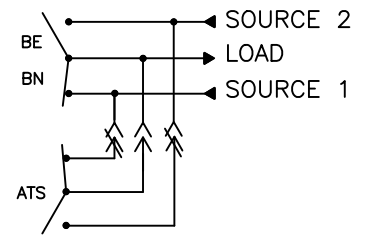


FIG. 3 BP IN SOURCE 1 WITH ATS IN TEST (LOAD CONNECTIONS ARE OPEN)

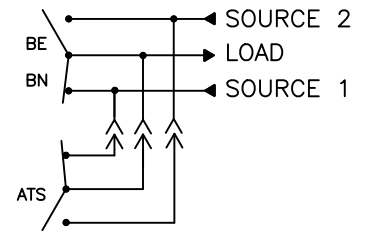


FIG. 4 BP IN SOURCE 1 WITH ATS ISOLATED

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-1,2,3.....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
- ACU/ACD.....Limit Switch, actuated when crankhandle is engaged
- AE-1,2.....Limit switch, switches Engine Start from ATS control to bypass control during ATS Isolate
- AI-1,2,3.....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-1,2,3.....Bridge Rectifier
- C.....Capacitor: RNH
- CBC.....Crank Solenoid
- CBE.....SOURCE 2 Bypass Permissive Solenoid
- CBN.....SOURCE 1 Bypass Permissive Solenoid
- D1.....Diode
- RNH.....Relay normally held, 24 VDC coil, 3PDT
- R1.....Resistor: RNH
- XBE.....SOURCE 2 line control transformer
- XBN.....SOURCE 1 line control transformer

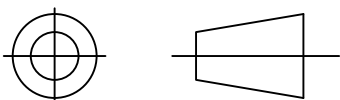
III. (BP) BYPASS/ISOLATION SWITCH: INDICATOR LIGHTS

- 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

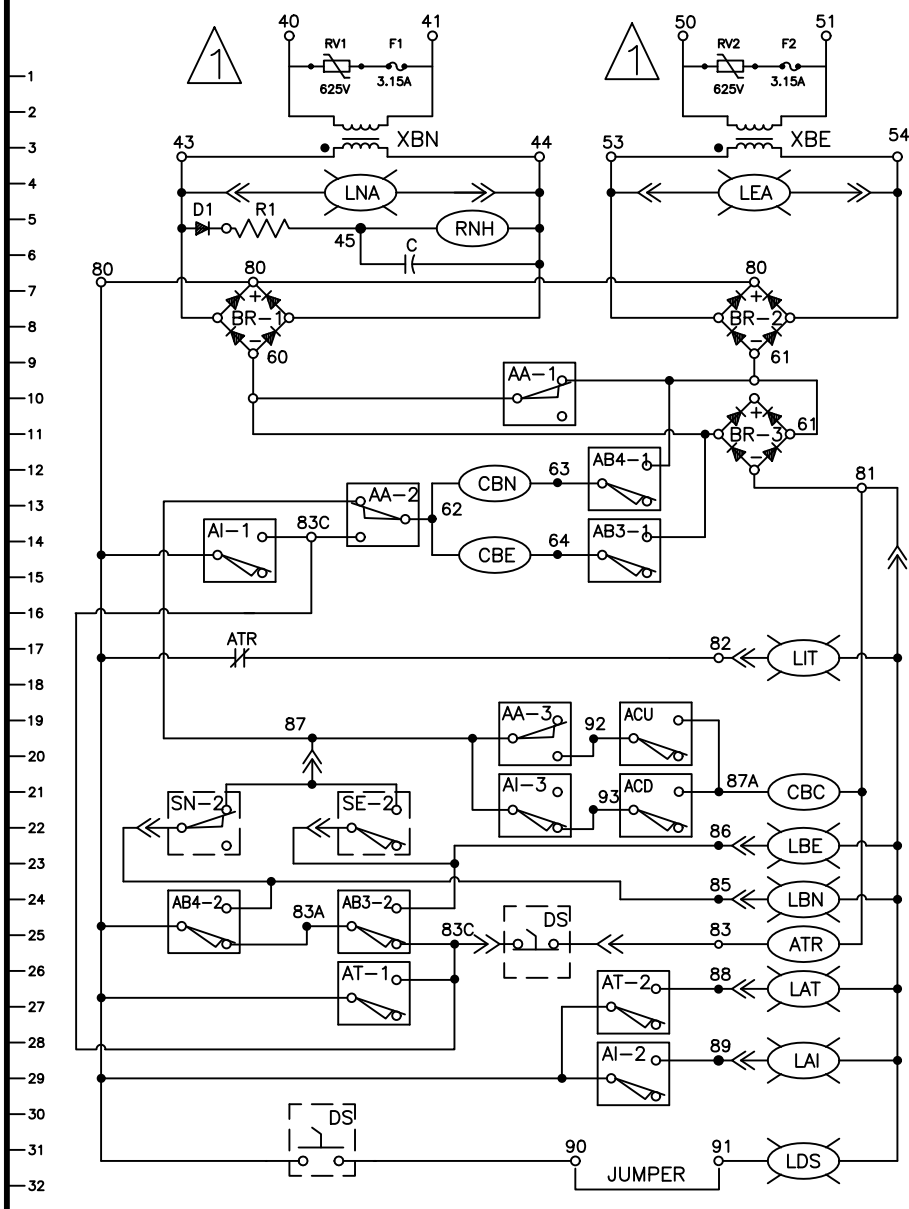
NOTES:

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

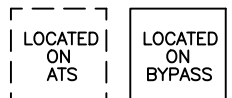
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	APPLIED PRACTICES	MODEL GG	12/14/04	
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	DETAIL		FIRST MADE FOR: ZBTS(600-1200 AMP) 2 POLE
	TOLERANCES ON:	CHECKED		SIZE
	2 PL. DECIMALS ± .020	ENGRG FS	-	CAGE CODE
	3 PL. DECIMALS ± .005	MFG		DWG NO
	ANGLES ± 1°	QUALITY		73A-2001
	FRACTIONS ± 1/64	ISSUED		SCALE: NA
	FINISH	DRAWING FILE: 73a-2001.dwg		SHEET 3 OF 5
	AutoCad Generated	MODEL / ASSEMBLY FILE: ZBTS(600-1200 AMP)		
		# CTQs	CRITICAL TO QUALITY CHARACTERISTIC	



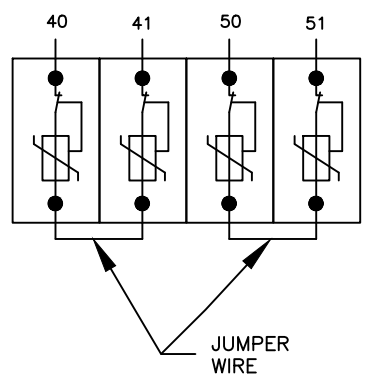
BYPASS/ISOLATION SCHEMATIC



- 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, RNH
- C - CAPACITOR, RNH
- BR- - BRIDGE RECTIFIER
- 1,2,3 - LIMIT SWITCH, ATS AUTO LOCATION
- 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
- AB3-1 - LIMIT SWITCH, BYPASS SOURCE 2
- CBE - SOURCE 2 TRANSFER OPERATOR
-
- LIT - ATS INHIBIT LIGHT
- AI-1 - LIMIT SWITCH, ATS IN ISOLATE
- AA-3 - LIMIT SWITCH, ATS IN AUTO
- ACD - LIMIT SWITCH, CRANK HANDLE
- ACU - ENGAGED
- AI-3 - LIMIT SWITCH, ATS IN ISOLATE
- CBC - CRANK SOLENOID
- LBE - LIGHT, BYPASS SOURCE 2
- LBN - LIGHT, BYPASS SOURCE 1
- AB4-2 - LIMIT SWITCH, BYPASS SOURCE 1
- AB3-2 - LIMIT SWITCH, BYPASS SOURCE 2
- ATR - AUTO/TEST RELAY
- AT-1 - LIMIT SWITCH, ATS TEST LOCATION
- LAT - ATS TEST LOCATION
- AT-2 - LIMIT SWITCH, ATS IN TEST
- LAI - ATS ISOLATE LIGHT
- AI-2 - LIMIT SWITCH, ATS IN ISOLATE
- DS - ATS DISCONNECT SWITCH
- LDS - DISCONNECT SWITCH, INHIBIT POSITION LIGHT
- MBH - MANUAL BYPASS HANDLE

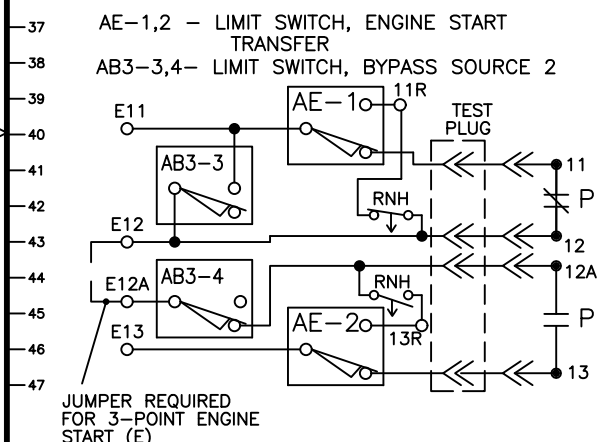


600V SPD ASSEMBLY SCHEMATIC



NOTE: SPD INPUT SIGNALS TO BE WIRED FROM BYPASS SUBPANEL

ENGINE START SCHEMATIC

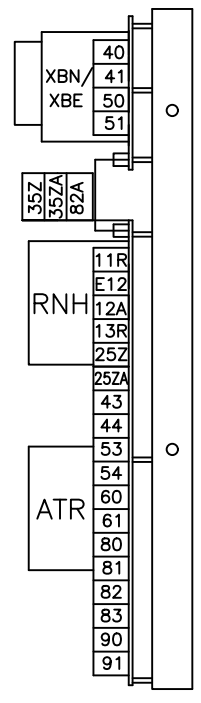


SOURCE 1/SOURCE 2 TRANSFER PERMIT CIRCUIT.
(ALH IN AUTO AND TEST LOCATION WITH DS IN AUTO POSITION)

LIMIT SWITCH CHART

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

BYPASS SUBPANEL



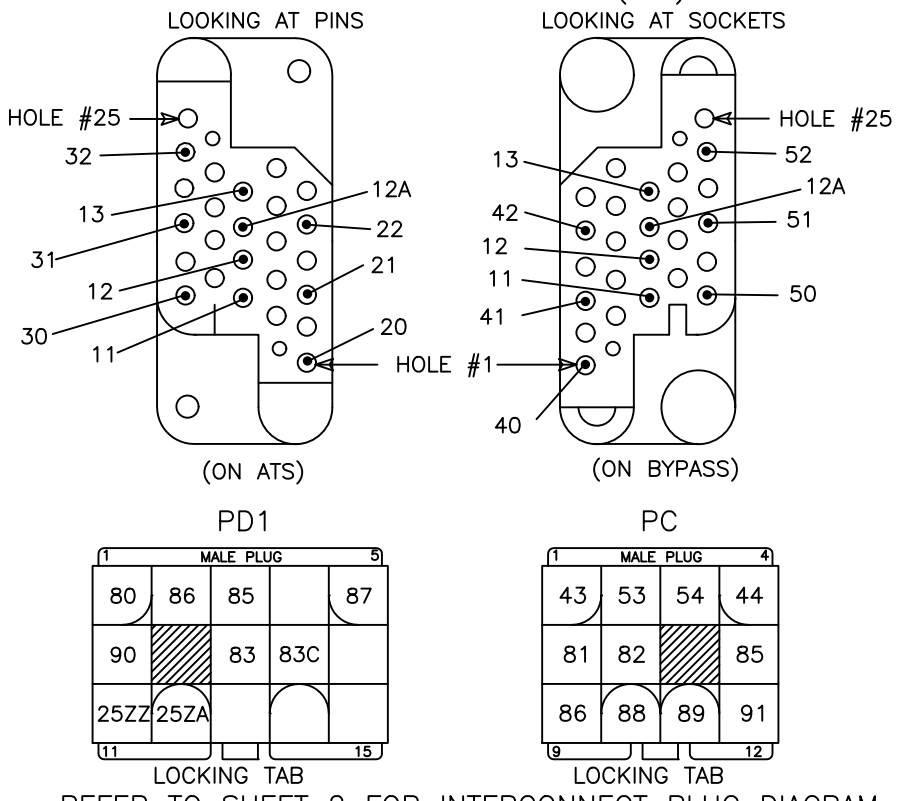
LEGEND

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

NOTES

ATS SHOWN IN SOURCE 1 POSITION WITH NO POWER AVAILABLE.

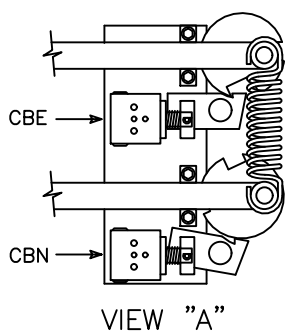
ATS TEST PLUG (TP)



REFER TO SHEET 2 FOR INTERCONNECT PLUG DIAGRAM

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	TOLERANCES ON: 2 PL. DECIMALS ± .020 3 PL. DECIMALS ± .005 ANGLES ± 1° FRACTIONS ± 1/64	CHECKED	ENGRG FS		MFG
	FINISH ✓	QUALITY	ISSUED		
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	# CTQs	CRITICAL TO QUALITY CHARACTERISTIC	SCALE: NA	<h1 style="margin: 0;">73A-2001</h1> <p>SHEET 4 OF 5</p>	

BYPASS/ISOLATION TRANSFER SWITCH

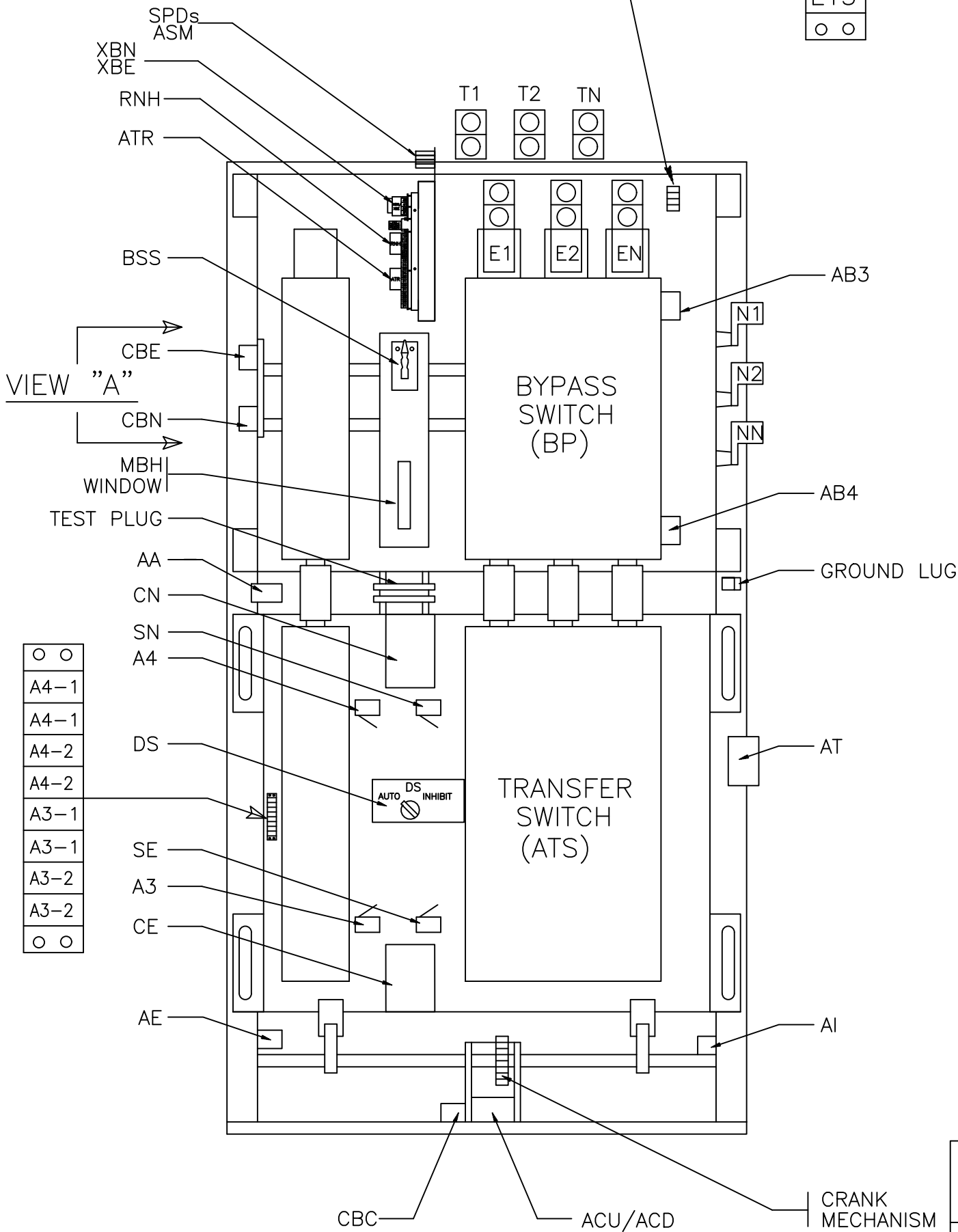


○ ○
E 11
E 12
E 12A
E 13
○ ○

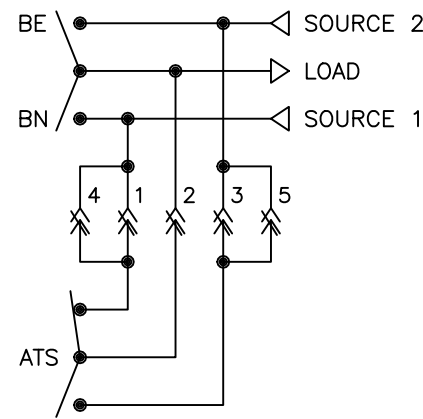
ENGINE START CONNECTIONS

WIRE NUMBERING CHART

LIMIT SWITCHES	C	NC	NO
AA-1	60		61
AA-2	62	83C	87
AA-3	87	92	
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
ACD	93		87A
ACU	92		87A
AE-1	E11	11	11R
AE-2	E13	13	13R
AI-1	80		83C
AI-2	80		89
AI-3	87	93	
AT-1	80		83C
AT-2	80		88
SE-2	86		87
SN-2	85		87



BYPASS/ISOLATION DIAGRAM



ATS LOCATION	LOAD CARRYING CONTACTS			ATS TEST PLUG (TP)	
	1	2	3	4	5
AUTO	X	X	X	X	X
TEST	0	0	0	X	X
ISOLATE	0	0	0	0	0

X = CLOSED
0 = OPEN

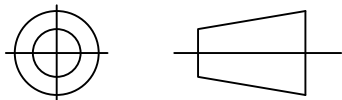
NOTES

ATS SHOWN IN SOURCE 1 POSITION WITH NO POWER AVAILABLE.

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BYPASS/ISOLATION TRANSFER SWITCH

FIRST MADE FOR: ZBTSL60-120 (600-1200 AMP) (2POLE)

SIZE B CAGE CODE DWG NO

73A-2001

SCALE: NA

SHEET 5 OF 5