

Wiring Diagrams

DETROIT DIESEL



Closed-Transition Transfer and Bypass/Isolation Switches

Models:

SCL/SBL

100–4000 Amperes



Product Identification Information

Product identification numbers determine service parts. Record the product identification numbers in the spaces below immediately after unpacking the products so that the numbers are readily available for future reference. Record field-installed kit numbers after installing the kits.

Transfer Switch Identification Numbers

Record the product identification numbers from the transfer switch nameplate.

Model Designation _____

Serial Number _____

Accessory Number	Accessory Description
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

This manual provides wiring diagrams for the 100–4000 amp Model SCL/SBL closed-transition automatic transfer switches.

Information in this publication represents data available at the time of print. The manufacturer of DDC/MTU Power Generation products reserves the right to change this publication and the products represented without notice and without any obligation or liability whatsoever.

Service Assistance

For professional advice on generator set power requirements and conscientious service, please contact your nearest DDC/MTU Power Generation distributor.

- Consult the Yellow Pages under the heading Generators—Electric
- Visit the DDC/MTU Power Generation website at DDCMTUPowerGeneration.com
- Look at the labels and stickers on your DDC/MTU Power Generation product or review the appropriate literature or documents included with the product

Wiring Diagrams

Check the controller components mounted on the inside of the enclosure door. Compare the components to Figure 1 and Figure 3.

If your unit is equipped with the R/T box as shown in Figure 1, item 5, use the drawings listed in Figure 2.

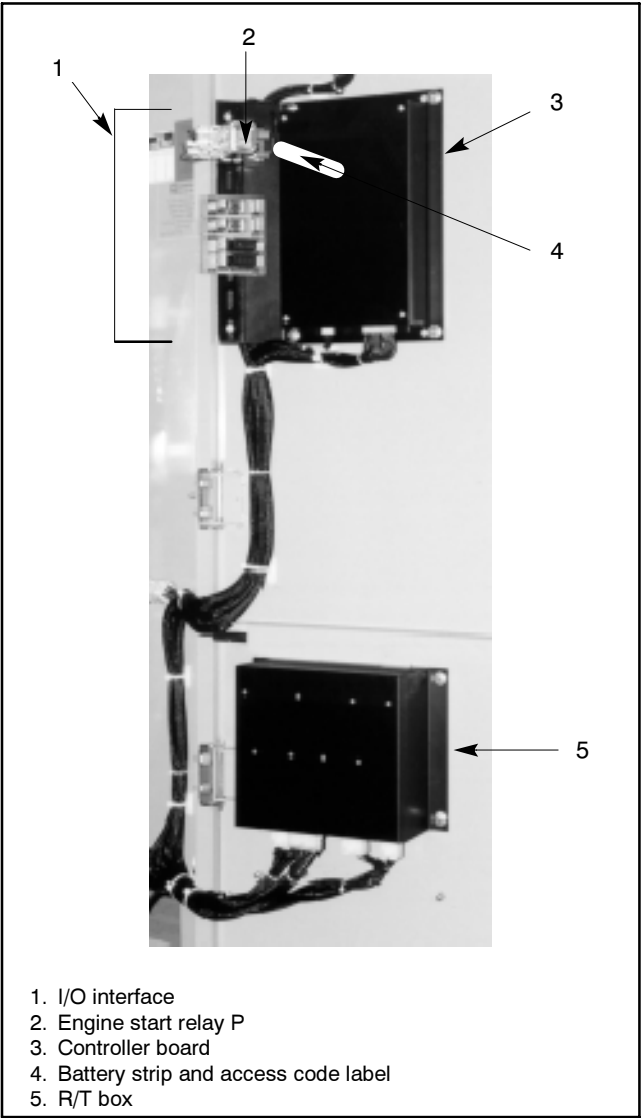


Figure 1 Major Controller Components

Wiring Diagrams	Part Number	Page
Auxiliary Contact	GM30415-S-A	7
Heater Kit	GM30421-S	8
Peak Shave/Remote Load Test	GM30424-S	9
Inhibit Transfer to Emergency	GM30425-S	10
Transfer—Emergency to Neutral		
Page 1	GM30426A-S	11
Page 2	GM30426B-S	12
Retransfer Presignal	GM30427-S	13
Pre and Post Transfer Output	GM30428-S	14
Modbus® Interface	GM30429-S	15
Standard, 100-400A		
Page 1	GM30431A-S	16
Page 2	GM30431B-S	17
Standard, 600-1200A		
Page 1	GM30432A-S	18
Page 2	GM30432B-S	20
Standard, 1600-3000A		
Page 1	GM30433A-S	22
Page 2	GM30433B-S	24
Standard, 4000A		
Page 1	GM30434A-S	26
Page 2	GM30434B-S	28
Bypass/Isolation, 100-400A		
Page 1	GM30435A-S	30
Page 2	GM30435B-S	31
Page 3	GM30435C-S	32
Page 4	GM30435D-S	33
Page 5	GM30435E-S	34
Bypass/Isolation, 600-1200A		
Page 1	GM30436A-S	35
Page 2	GM30436B-S	37
Page 3	GM30436C-S	39
Page 4	GM30436D-S	41
Page 5	GM30436E-S	43
Bypass/Isolation, 1600-3000A		
Page 1	GM30437A-S	45
Page 2	GM30437B-S	47
Page 3	GM30437C-S	49
Page 4	GM30437D-S	51
Page 5	GM30437E-S	53
Bypass/Isolation, 4000A		
Page 1	GM30438A-S	55
Page 2	GM30438B-S	57
Page 3	GM30438C-S	59
Page 4	GM30438D-S	61
Page 5	GM30438E-S	63
Operation		
Page 1	GM31606A-S	65
Page 2	GM31606B-S	66

Figure 2 Wiring Diagrams

If your unit is equipped with the controls power supply as shown in Figure 3, item 5, use the drawings listed in Figure 4.

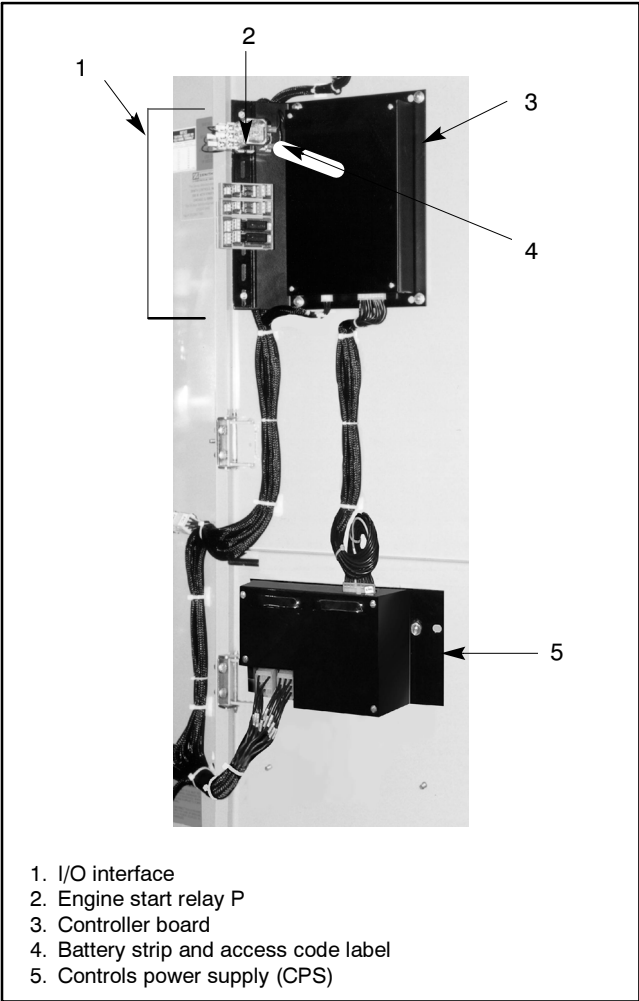


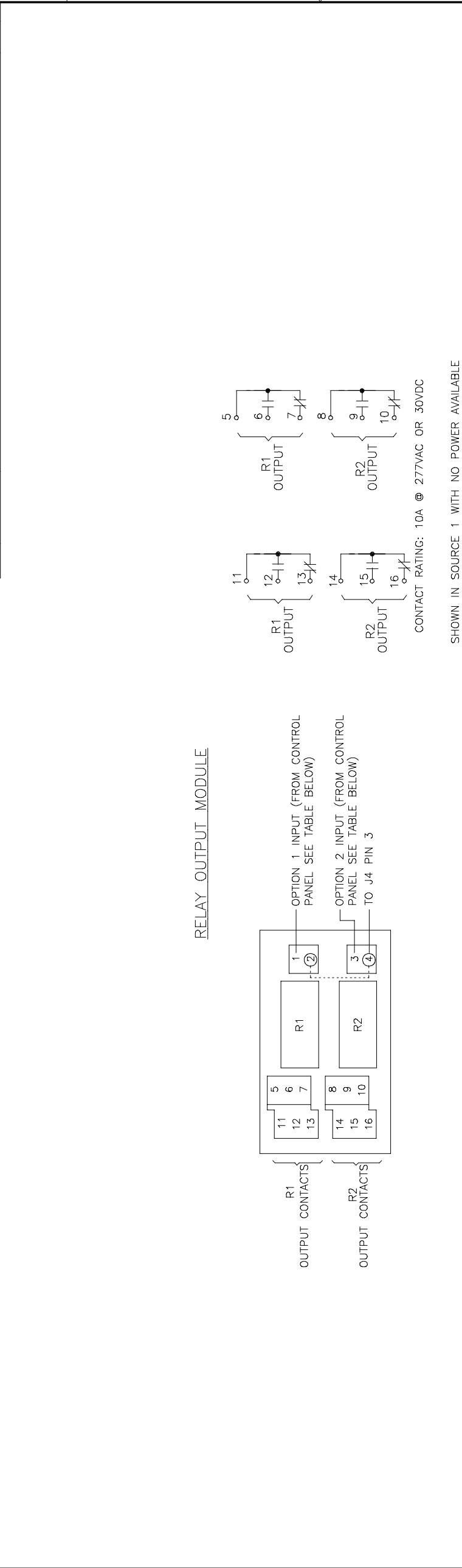
Figure 3 Major Controller Components

Wiring Diagram	Part Number	Page
Auxiliary Contact	GM30415-S-A	7
Heater Kit	GM30421-S	8
Peak Shave/Remote Load Test	GM30424-S	9
Inhibit Transfer to Emergency	GM30425-S	10
Transfer—Emergency to Neutral		
Page 1	GM30426A-S	11
Page 2	GM30426B-S	12
Retransfer Presignal	GM30427-S	13
Pre and Post Transfer Output	GM30428-S	14
Modbus® Interface	GM30429-S	15
Standard, 100-1200A		
Page 1	GM30432A-S-C	19
Page 2	GM30432B-S-C	21
Standard, 1600-3000A		
Page 1	GM30433A-S-C	23
Page 2	GM30433B-S-C	25
Standard, 4000A		
Page 1	GM30434A-S-B	27
Page 2	GM30434B-S-B	29
Bypass/Isolation, 100-1200A		
Page 1	GM30436A-S-B	36
Page 2	GM30436B-S-B	38
Page 3	GM30436C-S-B	40
Page 4	GM30436D-S-B	42
Page 5	GM30436E-S-B	44
Bypass/Isolation, 1600-3000A		
Page 1	GM30437A-S-B	46
Page 2	GM30437B-S-B	48
Page 3	GM30437C-S-B	50
Page 4	GM30437D-S-B	52
Page 5	GM30437E-S-B	54
Bypass/Isolation, 4000A		
Page 1	GM30438A-S-B	56
Page 2	GM30438B-S-B	58
Page 3	GM30438C-S-B	60
Page 4	GM30438D-S-B	62
Page 5	GM30438E-S-B	64
Operation		
Page 1	GM31606A-S	65
Page 2	GM31606B-S	66

Figure 4 Wiring Diagrams

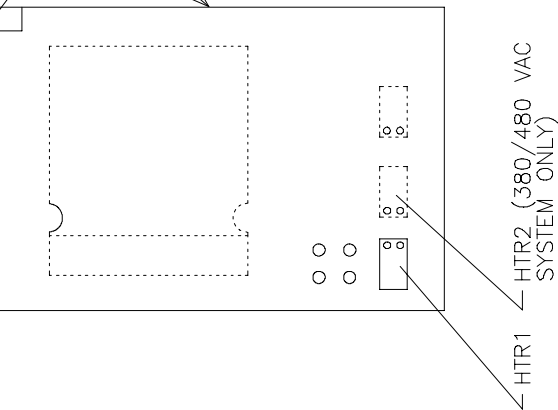
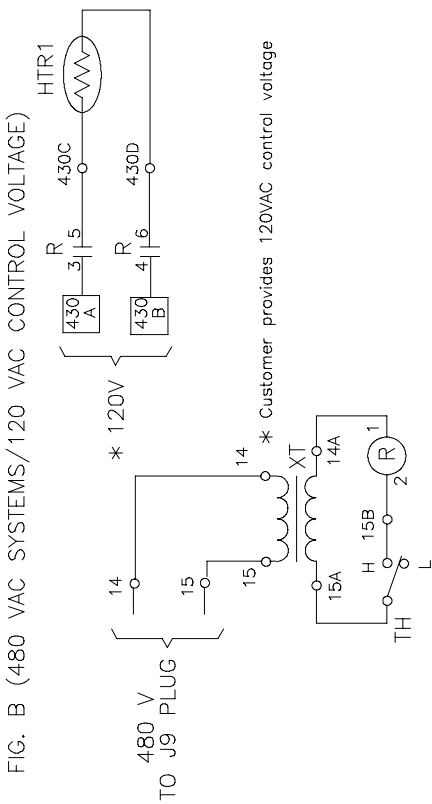
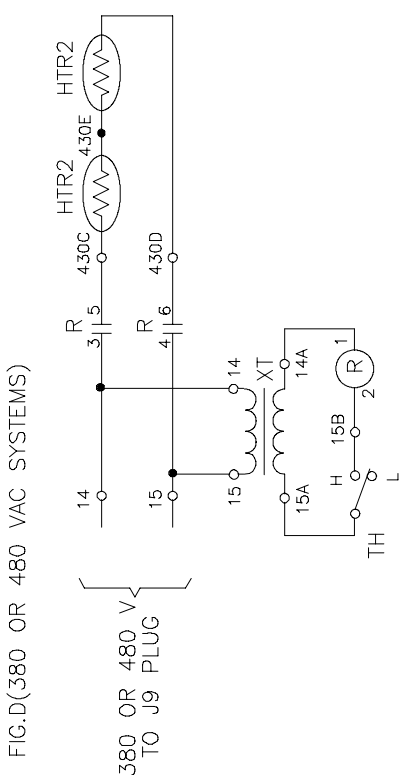
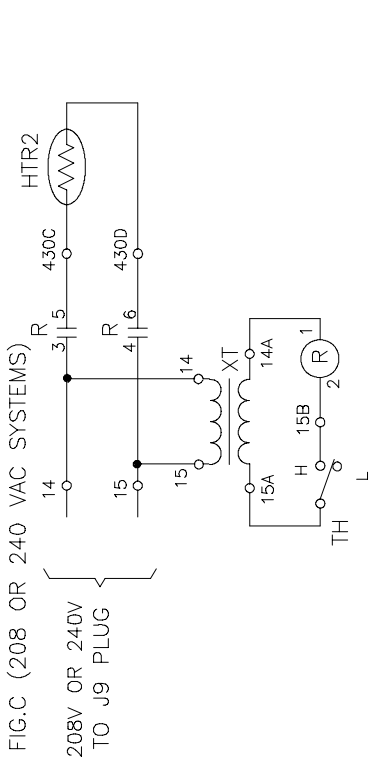
Notes

PART NO.	REV	OPTION CODE	CONTROL PANEL OUTPUT	DESCRIPTION	REV	DATE	REVISION	BY
GM30415	A	A1	J4 PIN 6	AUX CONTACT: OPERATES ON SOURCE 1 LINE FAILURE	—	8-8-03	NEW DRAWING [69951]	WSD
GM30416	A	A1E	J4 PIN 5	AUX CONTACT: OPERATES ON SOURCE 2 LINE FAILURE	A	10-15-03	(D-4) GM30416 ADDED, CHART UPDATED; (A-1) CONTACT, AUXILIARY WAS DIAGRAM, WIRING [70732]	WSD

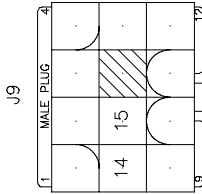


UNLESS OTHERWISE SPECIFIED —			
1) DIMENSIONS ARE IN INCHES			
2) TOLERANCES ARE:			
.XXX ± .010	ANGLES ± 1/2°		
.XX ± .030	SURFACE FINISH		
.X ± .060	MAX.		
FRACTIONS ±			
APPROVALS	DATE		
DRAWN WSD	8-8-03		
CHECKED AJH	8-8-03		
APPROVED AJH	8-8-03		

CLOSED TRANSITION AUXILIARY CONTACT			
CONTACT, AUXILIARY			
SCALE / /	CAD NO. GM30415.DWG	SHEET 1-1	
PLOTTED	DWG. NO. GM30415		B



Note:
Locate heaters to avoid
interference with cables
and lugs at bottom of ATS
and on neutral pad.



RELAY/TRANSFORMER BOX
TO AUXILIARY CONTROL PANEL

THERMOSTAT

LEGEND:

- T1, T2.....Load voltage from ATS
- 430A.....Control voltage 120 V (for fig. B option only)
- 430B.....Thermostat
- TH.....Thermostat
- HTR1 Strip heater, *125W., 120V
- HTR2 Strip heater, 150W., 240 V
- XT..... Transformer 120V secondary, 10A
- R.....Relay, DPDT

OPERATION:

When temperature in cabinet drops below thermostat set point, heater is turned "ON". Above set point, heater turns "OFF".

NOTES:

- 1. Thermostat factory set at 50 F unless otherwise specified.

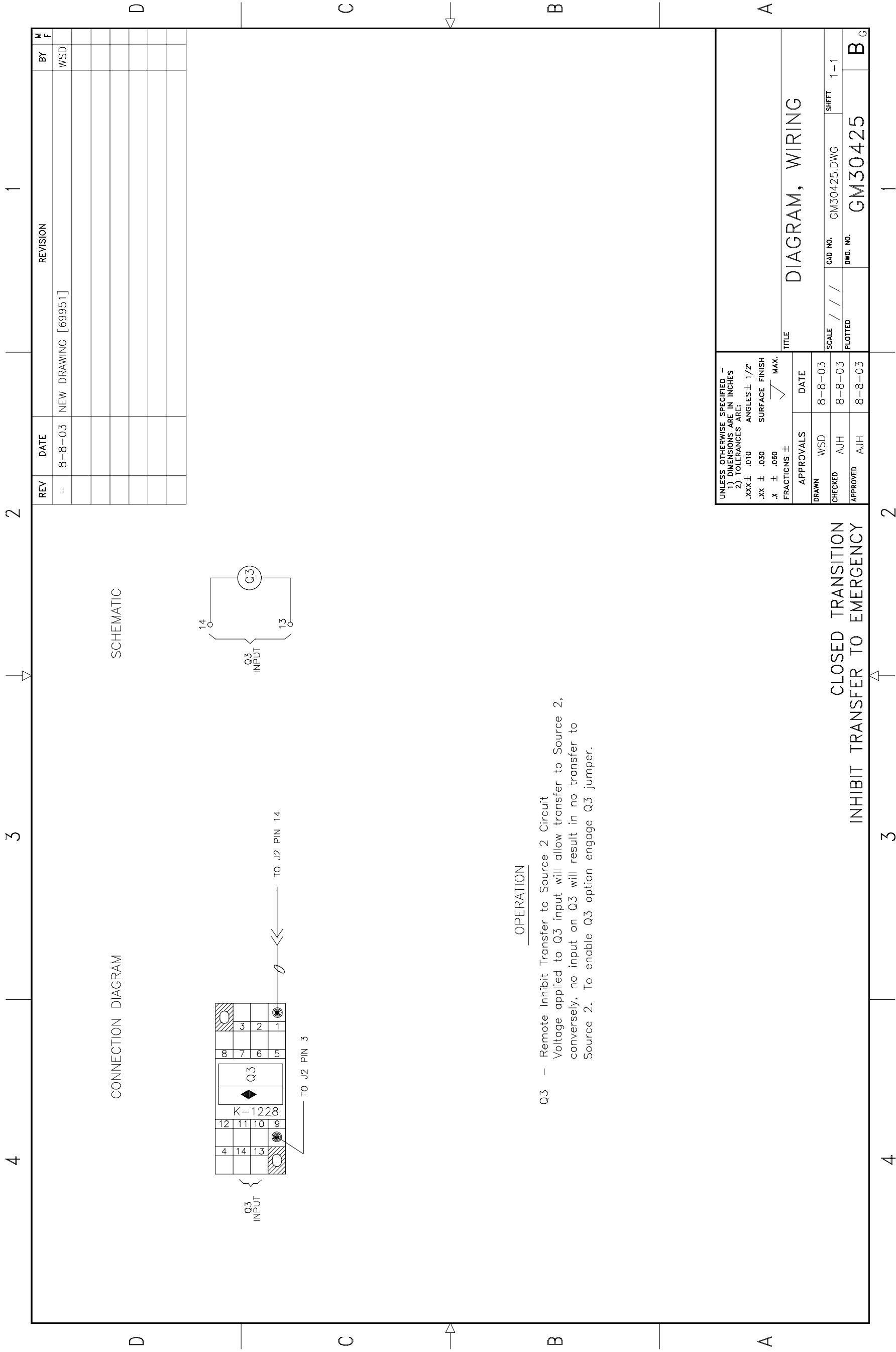
UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060
FRACTIONS ± MAX.

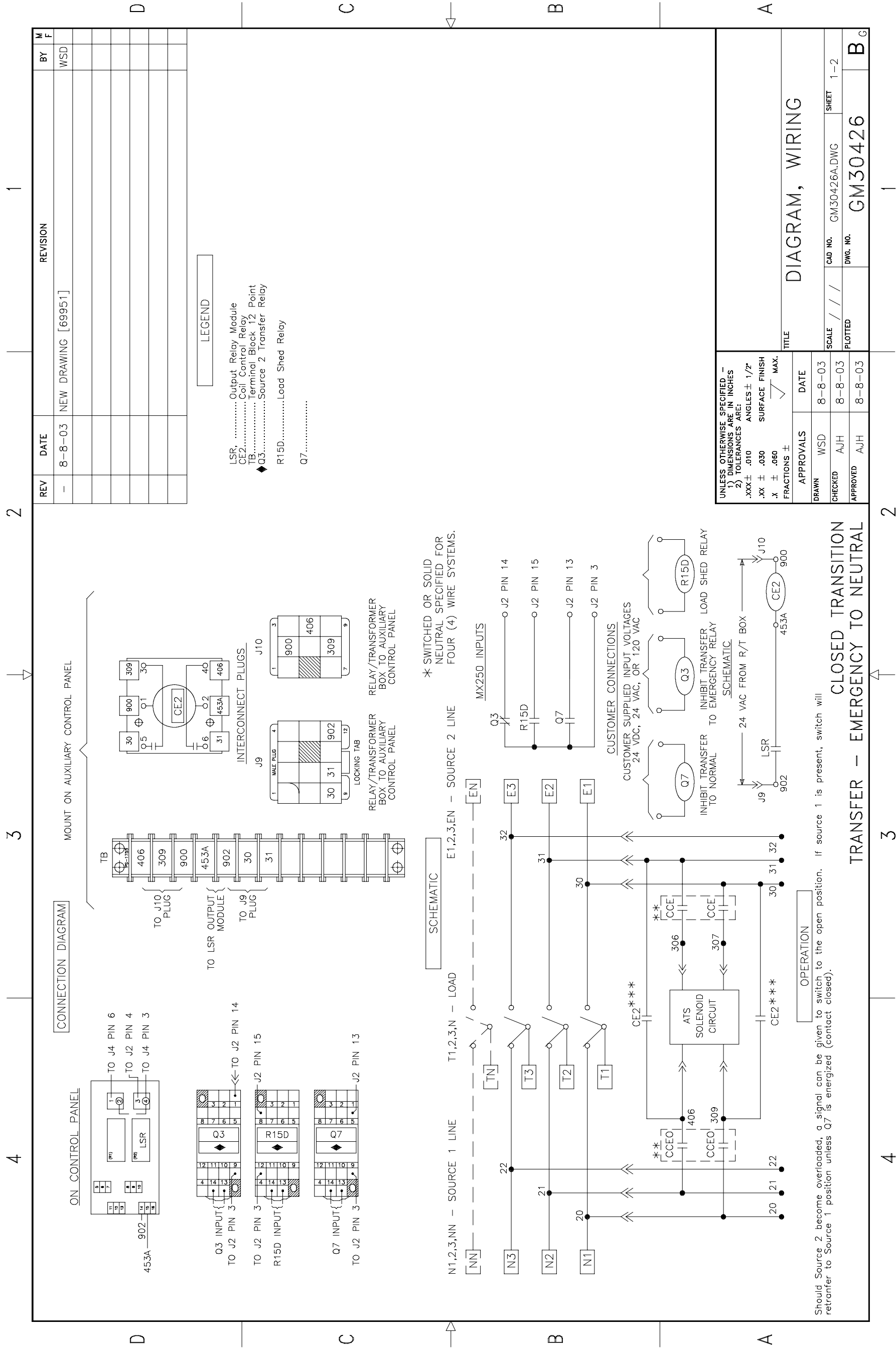
APPROVALS	DATE
DRAWN WSD	8-8-03
CHECKED AUH	8-8-03
APPROVED AUH	8-8-03

CLOSED TRANSITION
HEATER KIT

DIAGRAM, WIRING

SCALE	CAD NO.	SHEET
1/1	GM30421.DWG	1-1
PLOTTED	DWG. NO.	
	GM30421	





4

3

2

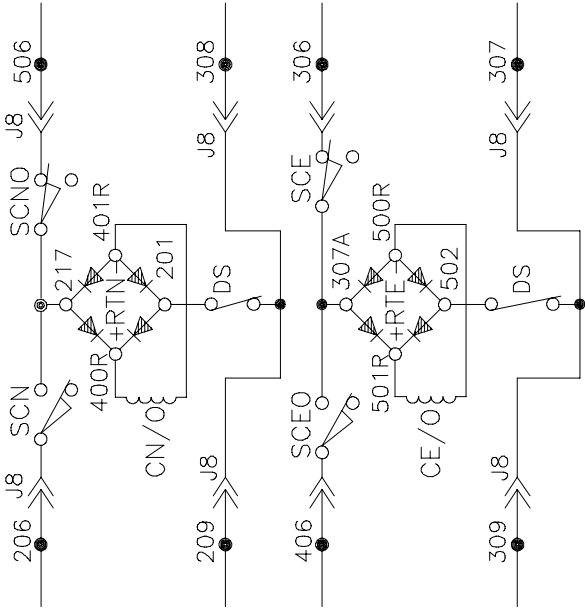
1

REV	DATE	REVISION	BY	F
—	8-8-03	NEW DRAWING [69951]	WSD	

D

D

ATS POWER
CIRCUIT SCHEMATIC



C



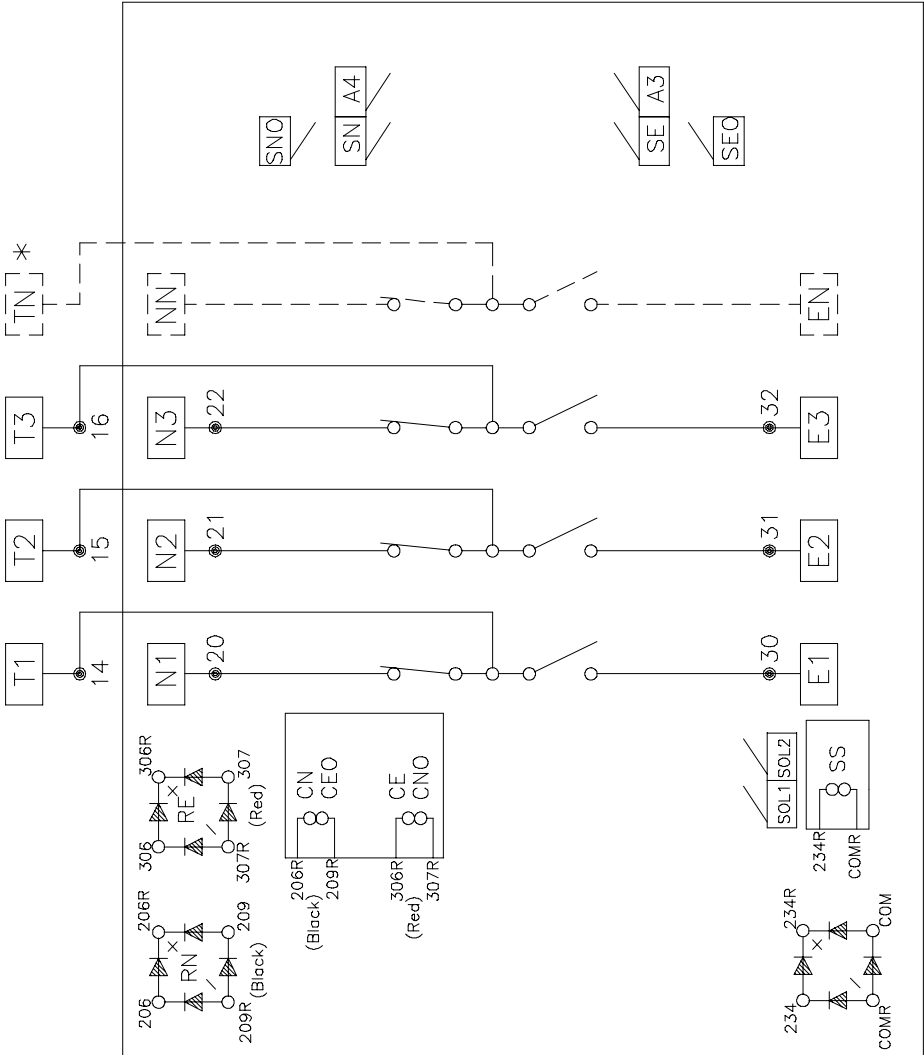
B

B

A

A

ATS POWER PANEL LAYOUT



UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX ± .010 ANGLES ± 1/2° .XX ± .030 SURFACE FINISH .X ± .060 FRACTIONS ± ✓ MAX.		APPROVALS		DATE	
		DRAWN	WSD	8-8-03	
		CHECKED	AJH	8-8-03	
		APPROVED	AJH	8-8-03	

TITLE					
DIAGRAM, WIRING					
SCALE		CAD NO.		SHEET	
/ / /		GM30426B.DWG		2-2	
PLOTTED		DWG. NO.		B	
		GM30426		G	

CLOSED TRANSITION
TRANSFER – EMERGENCY TO NEUTRAL

4

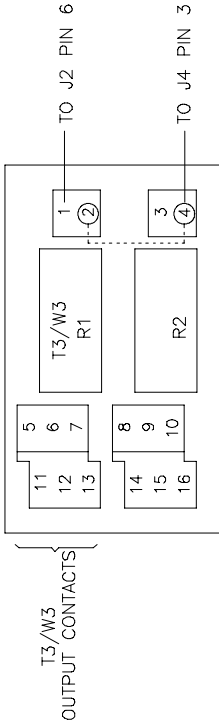
3

2

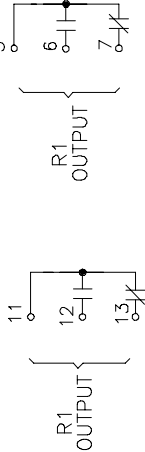
1

Wiring Diagram, Closed Transition, Transfer—Emergency to Neutral, GM30426B-S-

RELAY OUTPUT MODULE



SCHEMATIC



CONTACT RATING: 10A @ 277 VAC
OR 30VDC

OPTIONAL ACCESSORIES

- T3/W3 –Transfer pre-signal time delay.
- Normally open Auxiliary contact for elevator pre-signal.
 - Closes 0–60 seconds prior to transfer in either direction and reopens after transfer.
 - Timers are adjustable, 0–60 seconds in 1 second increments, factory default is 20 seconds.
 - Timers are bypassed when transferring from dead source.

TO SET TIMERS:

FROM S1 OK SCREEN:

1. Press **MORE** .
2. Press **SET** to **SET USER SETUP** menu.
3. Press **MORE** to scroll to **SET LOAD PRE-SIGNAL TD** then press **SEL** .
4. Enter Access code located on in white label on the inside cover, then press **SEL** .
5. Cursor is indicated as a line under character to be changed. Change values with up and down keys. Press **SAVE** after each entry to move to the next value to be changed.
6. When complete, press **MORE** to scroll to **BACK** .
7. Press **ESC** to the S1 OK screen.
8. During operation, ATA (Alternate Timer Active), indicates that there is another timer that is active or about to be active during or after the present timing cycle.
9. To display the status of that timer, press **MORE** .

CLOSED TRANSITION
RE-TRANSFER PRE-SIGNAL

UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX ± .010 ANGLES ± 1/2° .XX ± .030 SURFACE FINISH .X ± .060 FRACTIONS ±  MAX.		TITLE DIAGRAM, WIRING	
DRAWN	WSD	SCALE	/ / /
CHECKED	AJH	CAD NO.	GM30427.DWG
APPROVED	AJH	DWG. NO.	GM30427
DATE		SHEET	1 – 1
8-8-03		B	

4

2

3

1

RELAY OUTPUT MODULE

111213

567

141516

8910

1

2

R1

UMD R2

TO J2 PIN 10

TO J4 PIN 3

UMD-1 and 2
OUTPUT CONTACTS

14

15

16

8

9

10

UMD-1
OUTPUT

UMD-2
OUTPUT

CONTACT RATING: 10A @ 277VAC OR 30VDC

REV

DATE

REVISION

BY

F

–

8–8–03

NEW DRAWING [69951]

WSD

TO SET TIMERS:

1. Press **MORE**.

2. Press **SET** to **SET USER SETUP** menu.

3. Press **MORE** to scroll to **SET LOAD PRE–SIGNAL TD** then press **SEL**.

4. Enter Access code located on in white label on the inside cover, then press **SEL**.

5. Cursor is indicated as a line under character to be changed. Change values with up and down keys. Press **SAVE** after each entry to move to the next value to be changed.

6. When complete, press **MORE** to scroll to **BACK**.

7. Press **ESC** to the S1 OK screen.

9. To display the status of that timer, press **MORE**.

TO CONFIGURE TIMERS

1. Press **MORE** then **CFG**.

2. Press **MORE** to scroll to “**CONFIG LOAD DISCONNECT T/D**” screen.

3. The third line of the “**CONFIG LOAD DISCONNECT T/D**” screen will show either , **POST**, **BOTH**, or **OFF**.

4. If the third line shows the desired selection, press **MORE** repeatedly to **BACK**. Press **ESC** then proceed to the **SET** Menu to set the timers.

5. If the third line is not showing the desired selection, press **SEL**.

6. Enter Access code located on white label on the back of the controller.

7. Press **UP** or **DOWN** to select **PRE**, **POST**, **BOTH** or **OFF** as desired.

8. Press **SAVE**.

9. Press **MORE** repeatedly to **BACK**.

10. Press **ESC** to **S1 OK** screen.

CLOSED TRANSITION

PRE AND POST TRANSFER OUTPUT

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060
FRACTIONS ±  MAX.

APPROVALS

DATE

DRAWN

WSD

8–8–03

CHECKED

AJH

8–8–03

APPROVED

AJH

8–8–03

TITLE

DIAGRAM, WIRING

SCALE

/ / /

CAD NO.

GM30428.DWG

SHEET

1 – 1

PLOTTED

DWG. NO.

GM30428

B

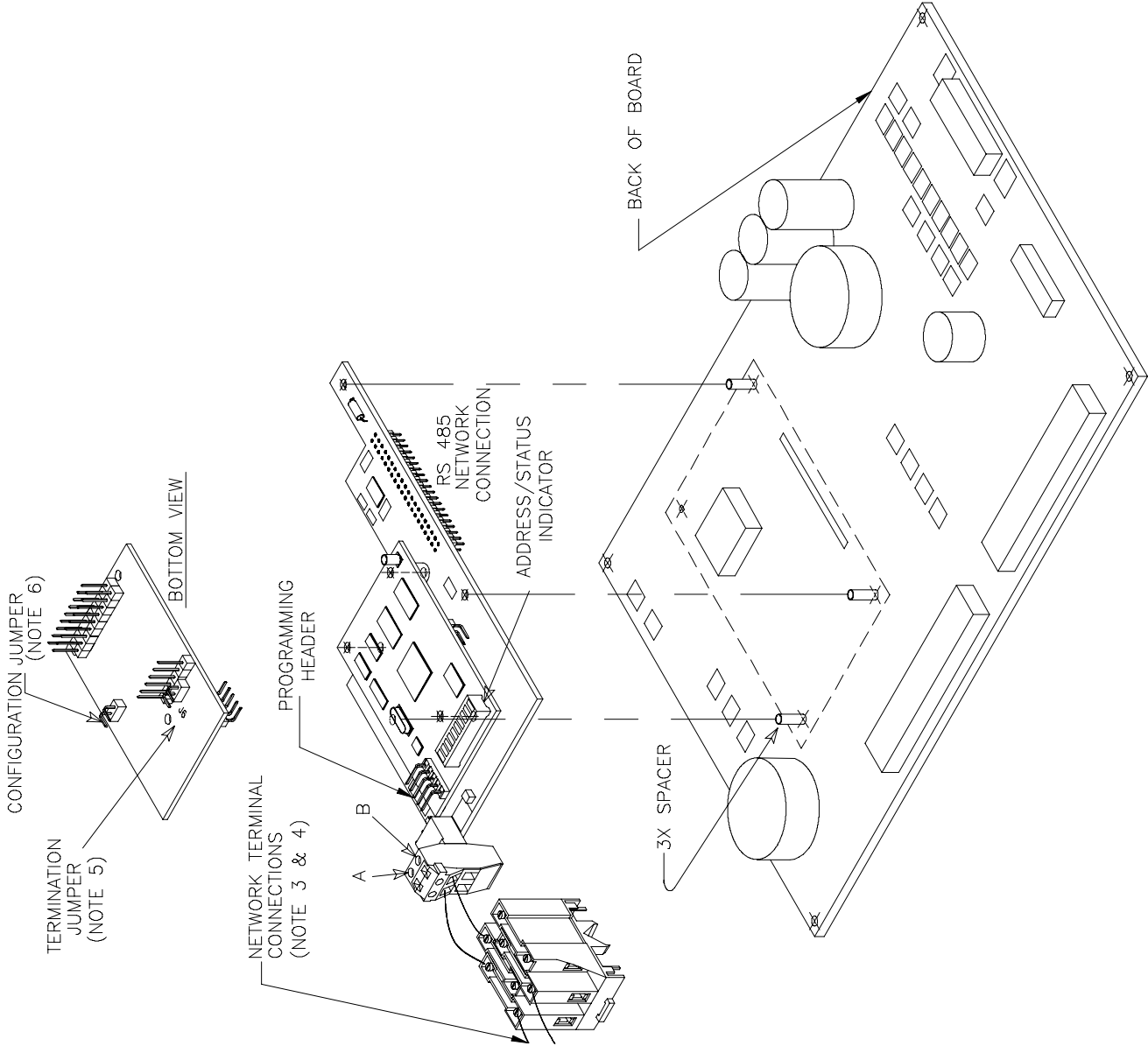
G

Wiring Diagram, Closed Transition, Pre and Post Transfer Output, GM30428-S-

14 Wiring Diagrams

MP-6266 3/06

MODBUS CARDS



CLOSED TRANSITION
MODBUS INTERFACE

INSTRUCTIONS

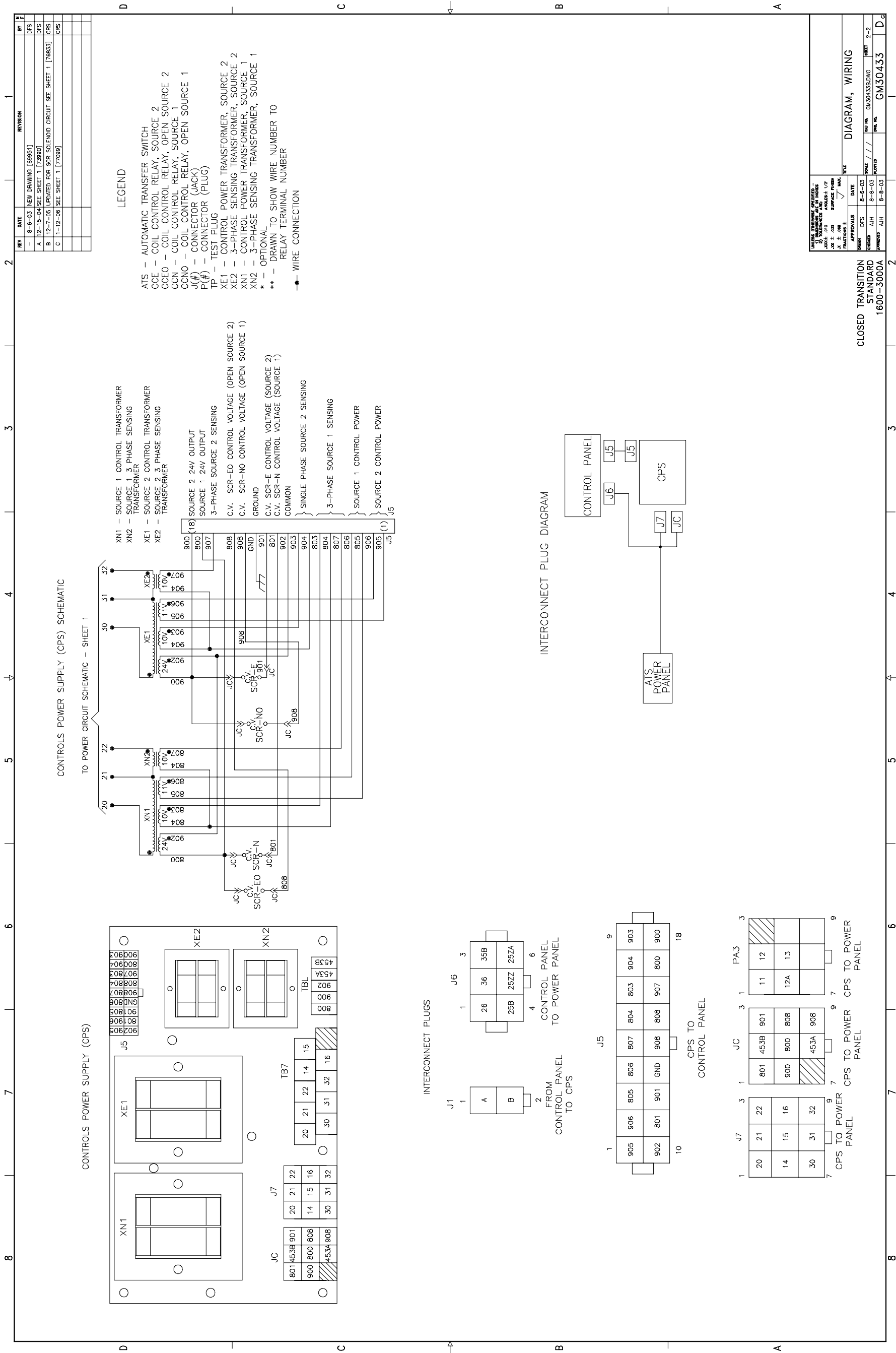
1. DISCONNECT ALL POWER TO PC BOARD BEFORE PLUGGING IN NETWORK CARD.
2. GROUND YOURSELF AND FOLLOW ESD PRECAUTIONS WHEN HANDLING NETWORK CARD AS WELL AS PC BOARD.
3. NETWORK CABLE TO BE BELDEN 8471, 16AWG (UNSHIELDED TWO CONDUCTOR TWISTED PAIR, NOT INCLUDED).
4. OBSERVE PROPER POLARITY WHEN MAKING NETWORK CONNECTIONS.
5. TERMINATION JUMPER(J6) TO BE CONNECTED ON LAST UNIT IN CHAIN.
6. CONFIGURATION JUMPER MUST BE INSTALLED TO CHANGE MODBUS ADDRESS AND MODE. REMOVE TO PLACE UNIT IN RUN MODE.

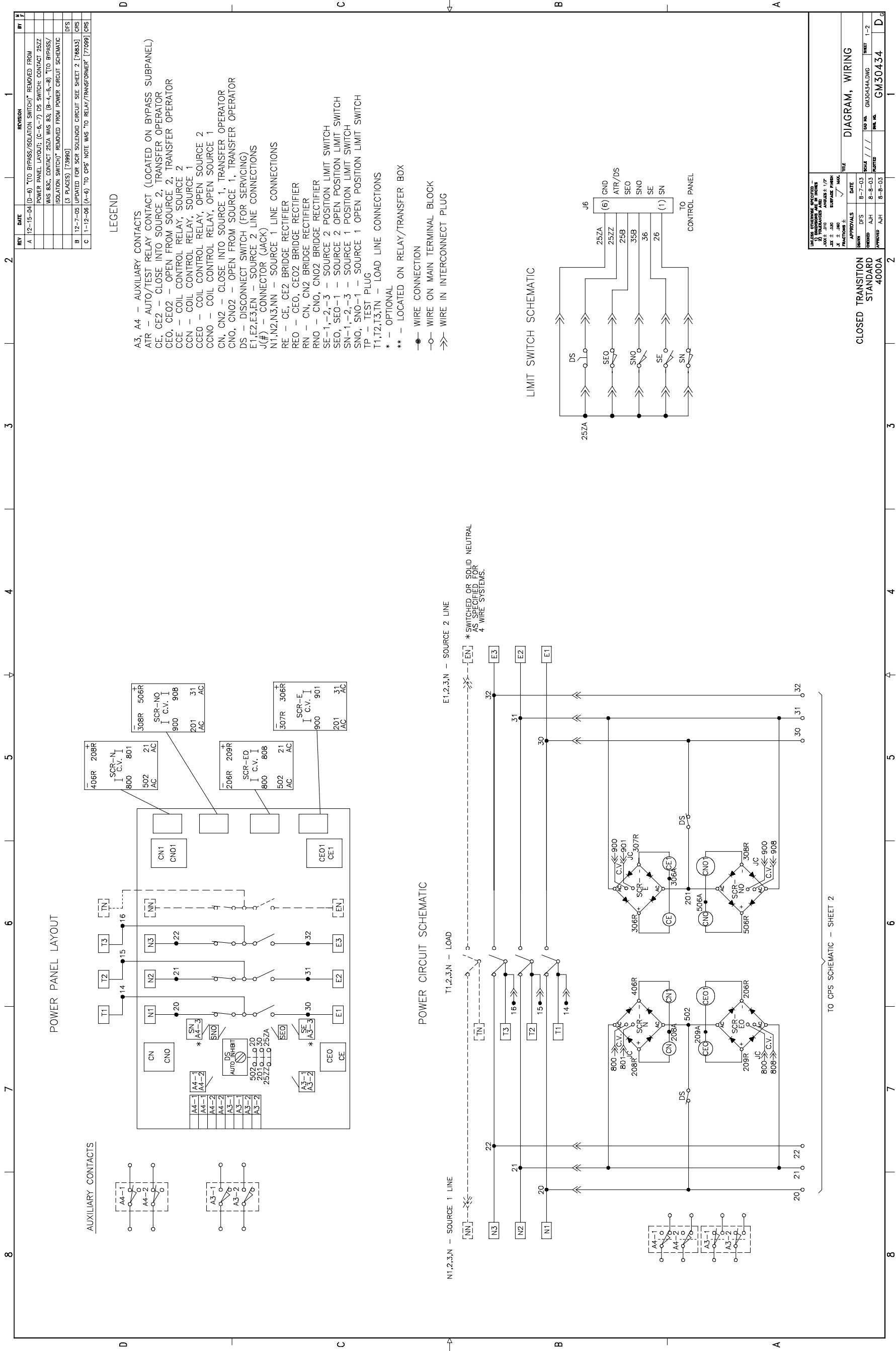
ENABLE NETWORK OPTION IN PROGRAMMING MENU.

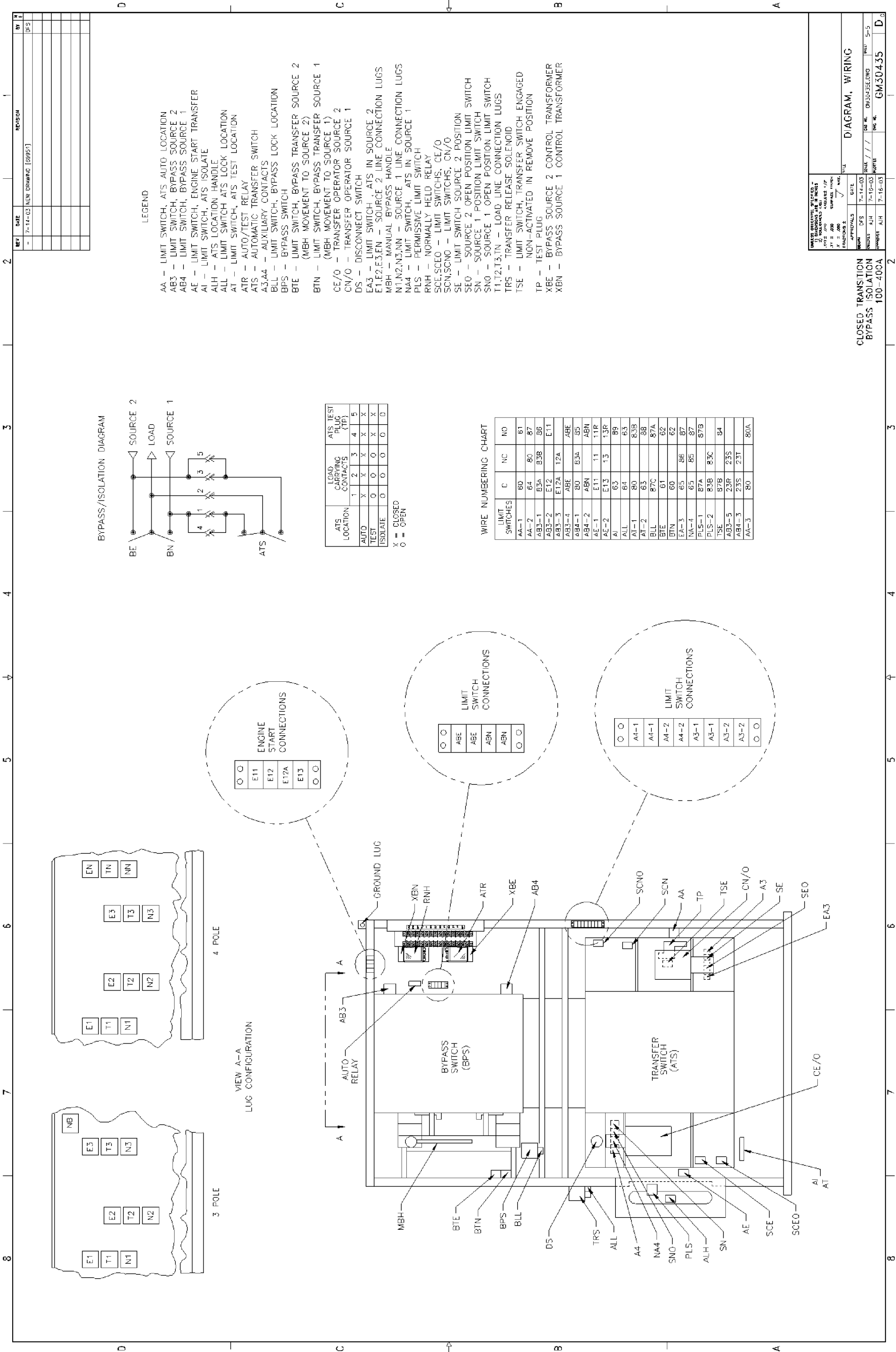
OPERATION

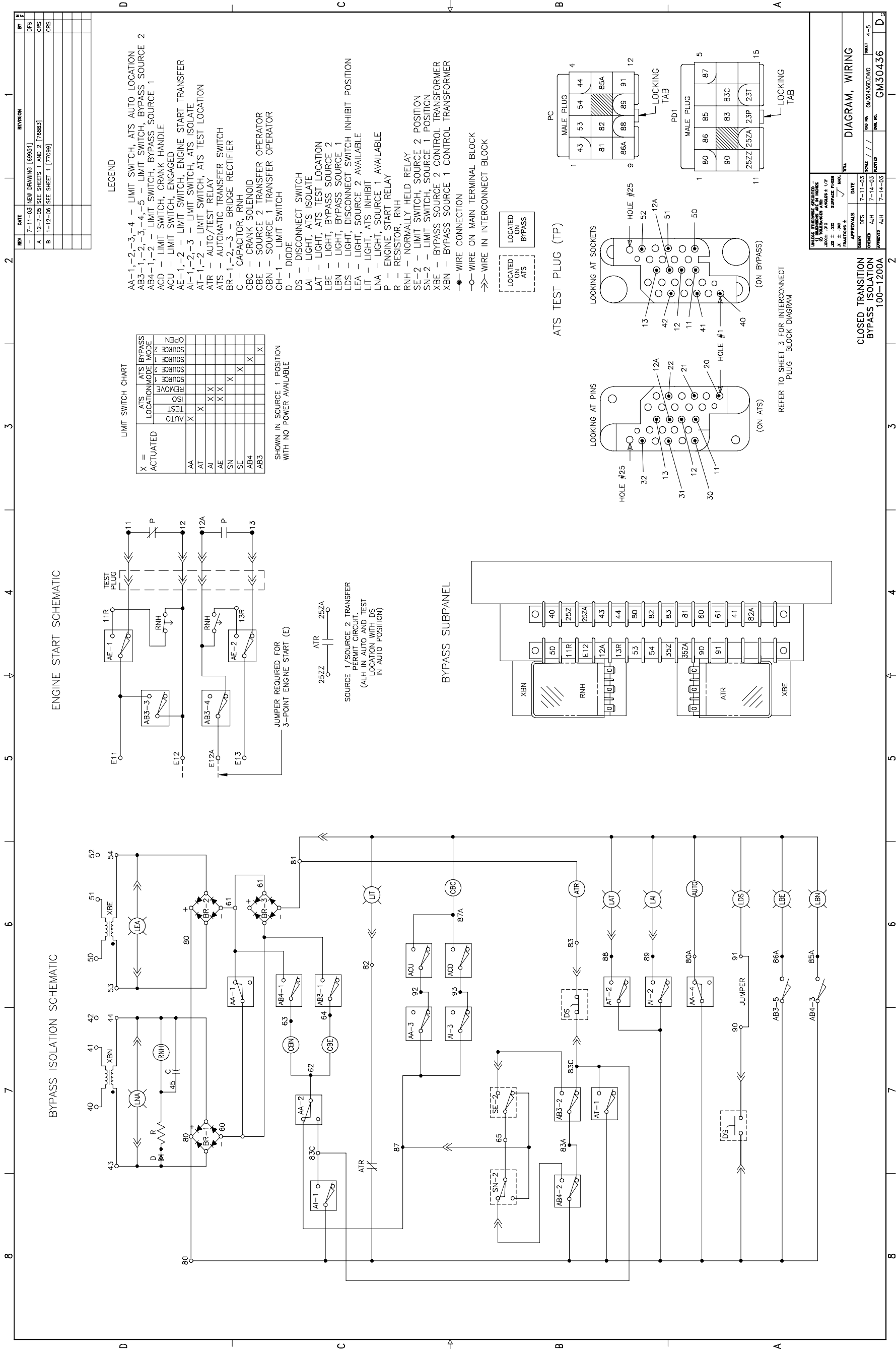
NETWORK CARD ALLOWS COMMUNICATION OF ATS POSITION, AVAILABLE SOURCE, TIMERS RUNNING, ETC. TO A REMOTE ANNUNCIATOR PANEL, PC OR PLC VIA ONE PAIR OF TWISTED WIRES.

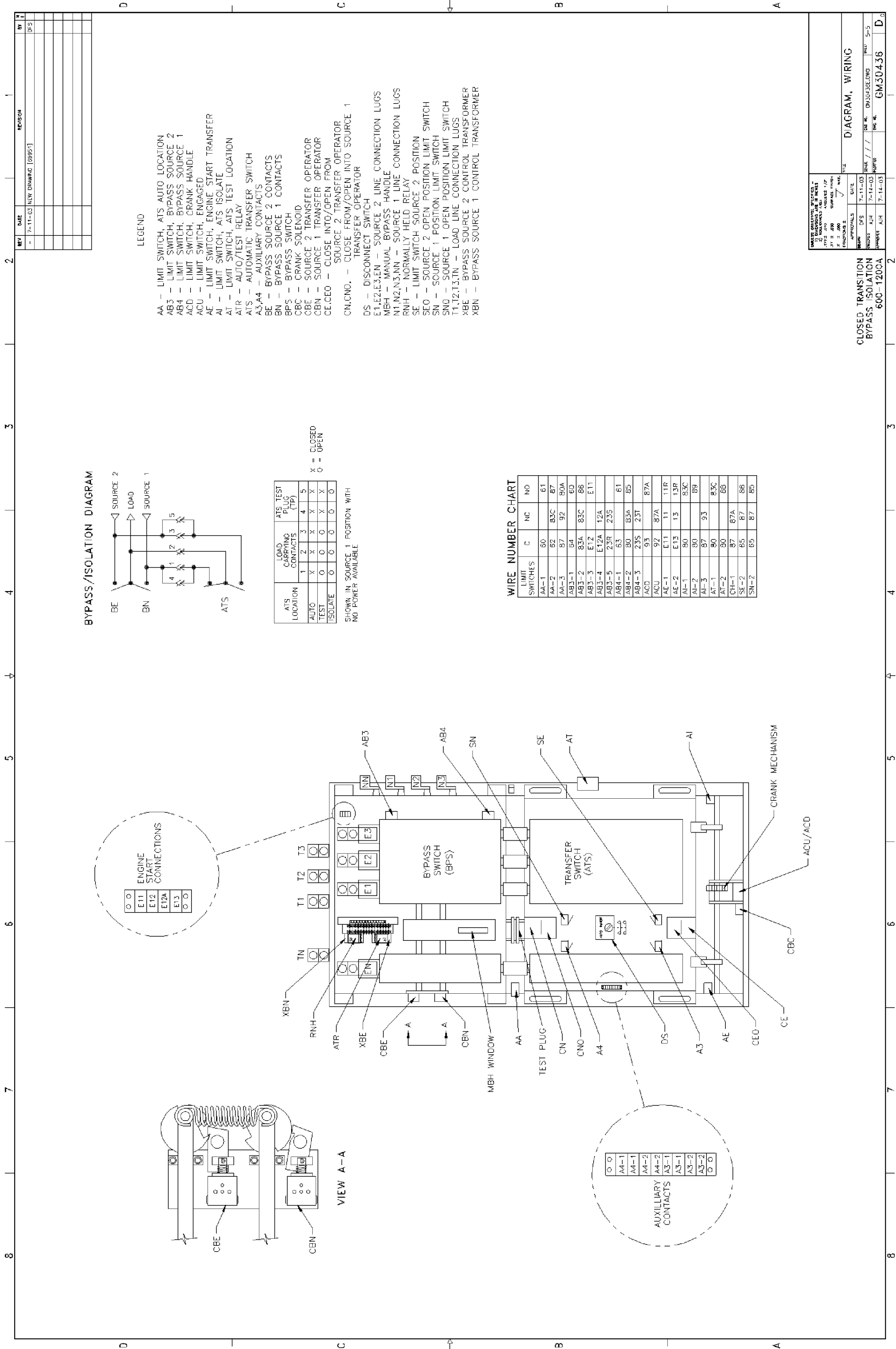
UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .xxx ± .010 ANGLES ± 1/2° .xx ± .030 SURFACE FINISH .x ± .060 FRACTIONS ±  MAX.		APPROVALS		DATE	
DRAWN		WSD		8-8-03	
CHECKED		AJH		8-8-03	
APPROVED		AJH		8-8-03	
TITLE		DIAGRAM, WIRING			
SCALE / / /		CAD NO. GM30429.DWG		SHEET 1-1	
PLOTTED		DWG. NO. GM30429		B	

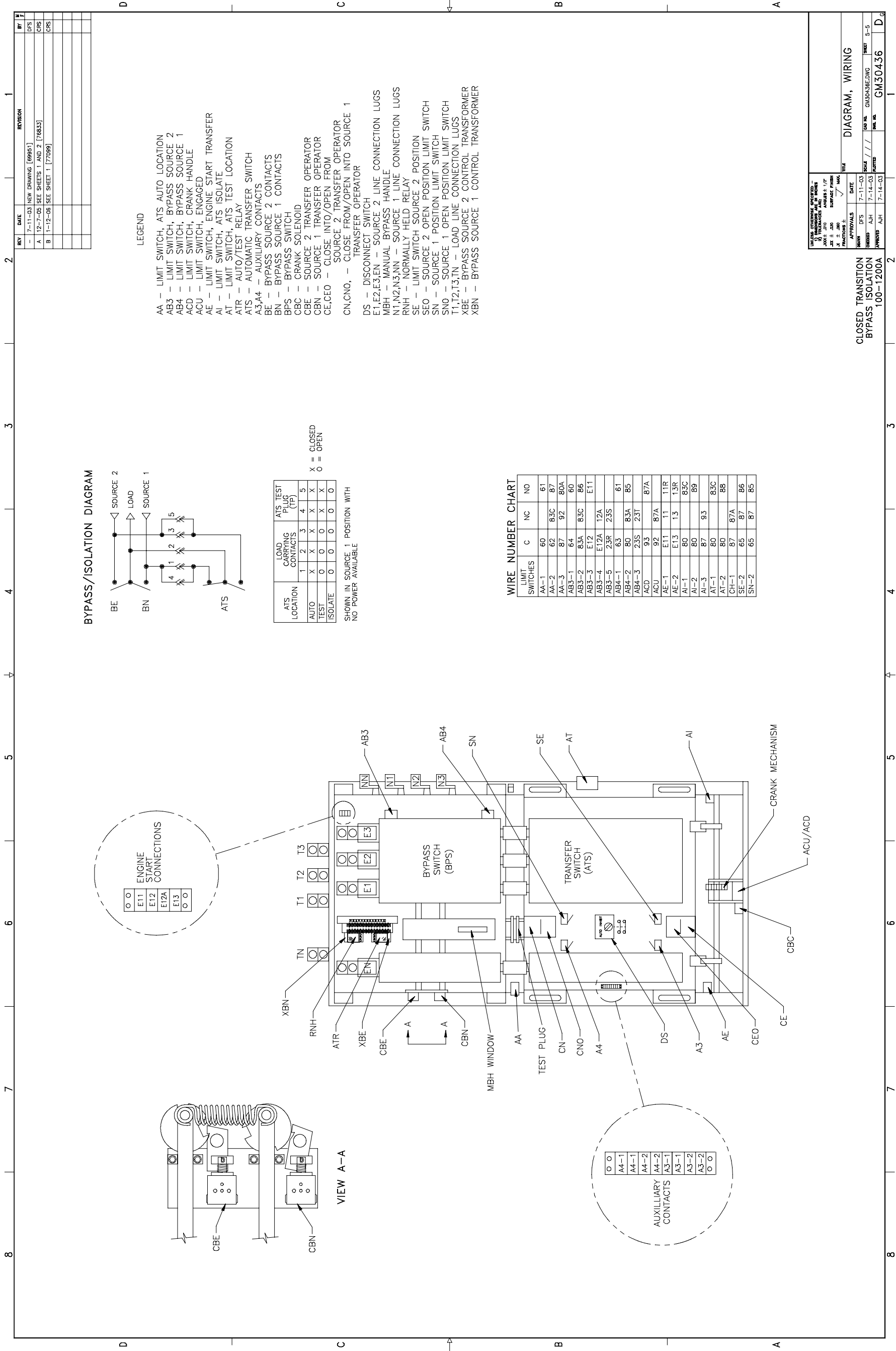


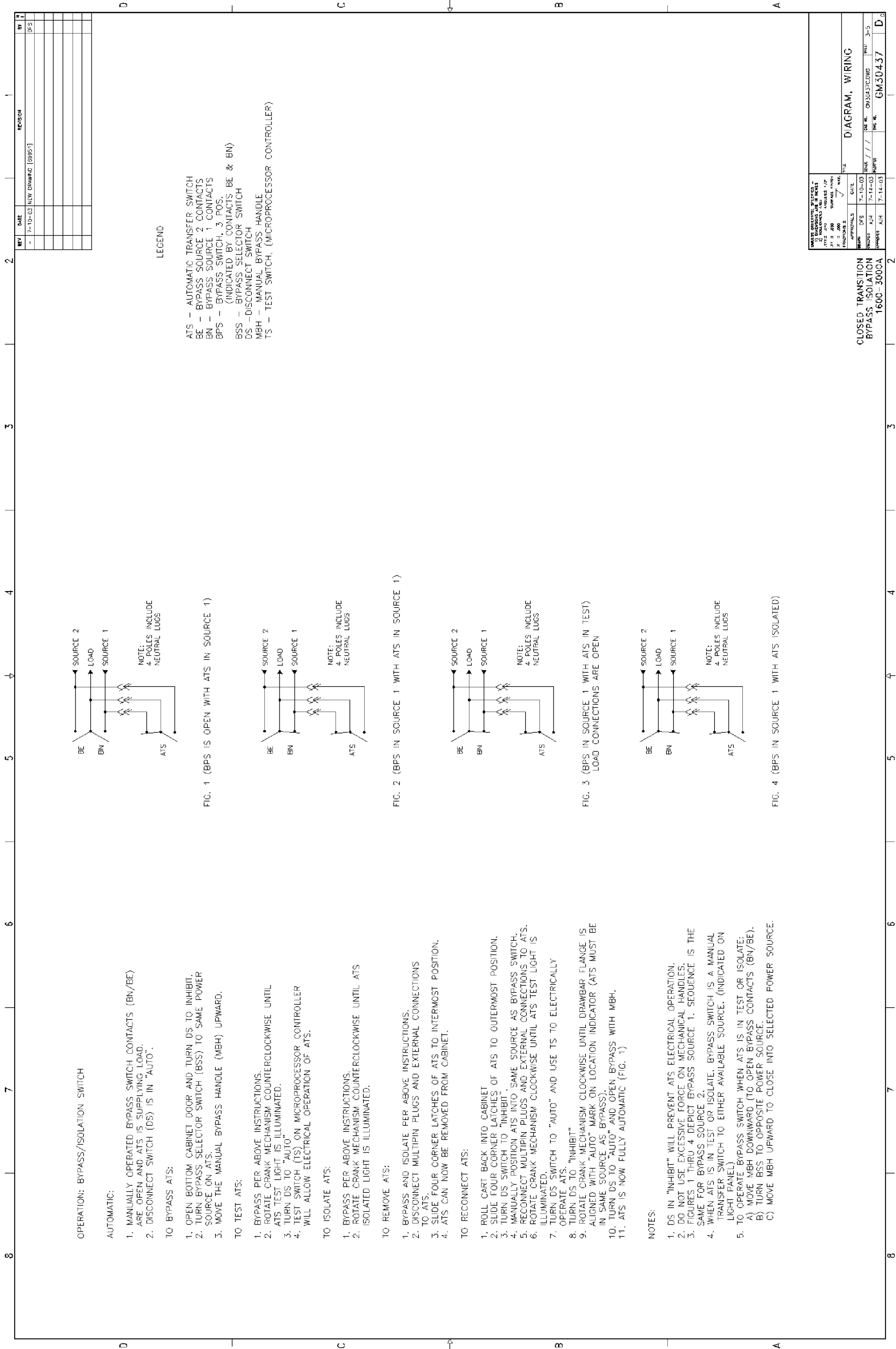


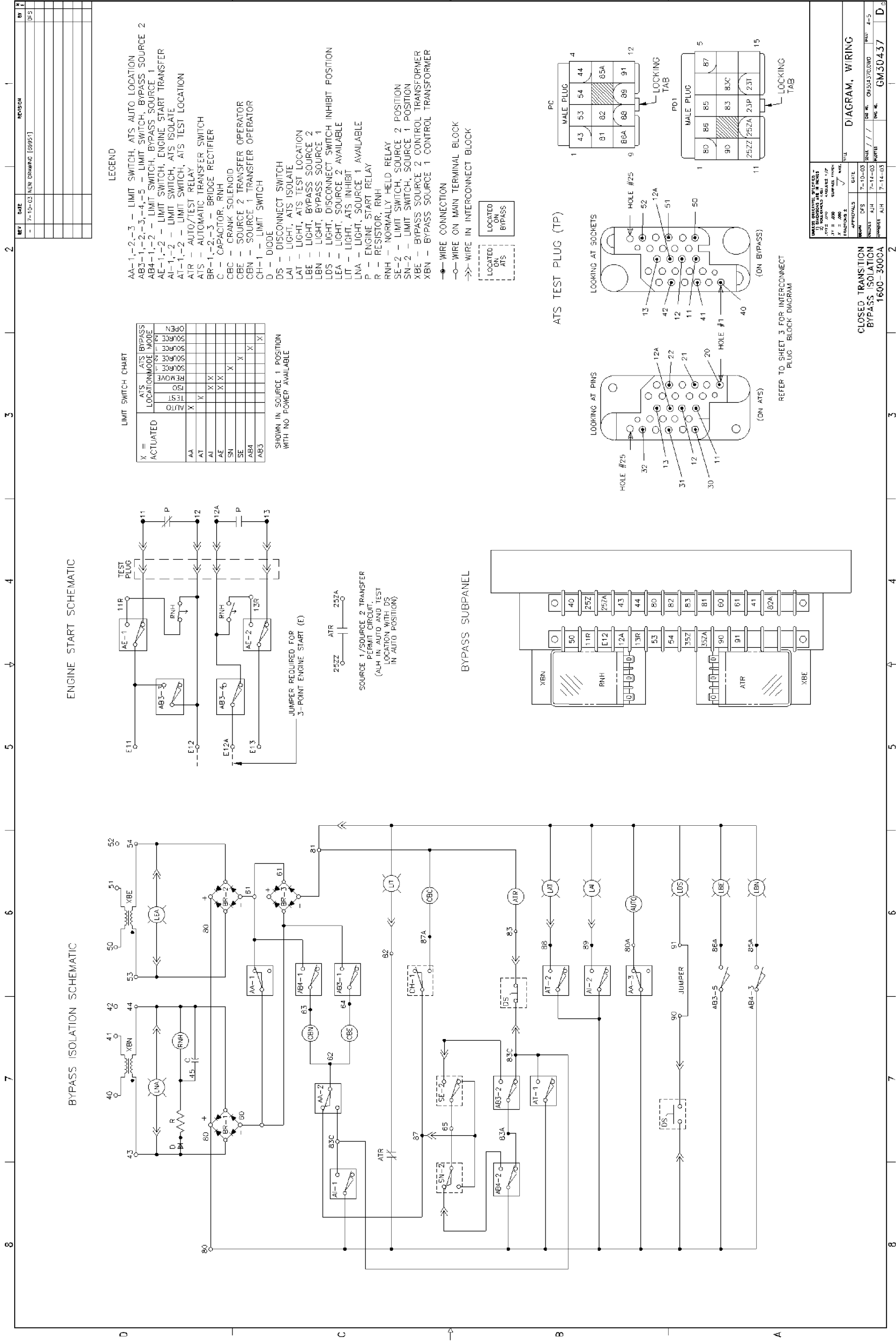


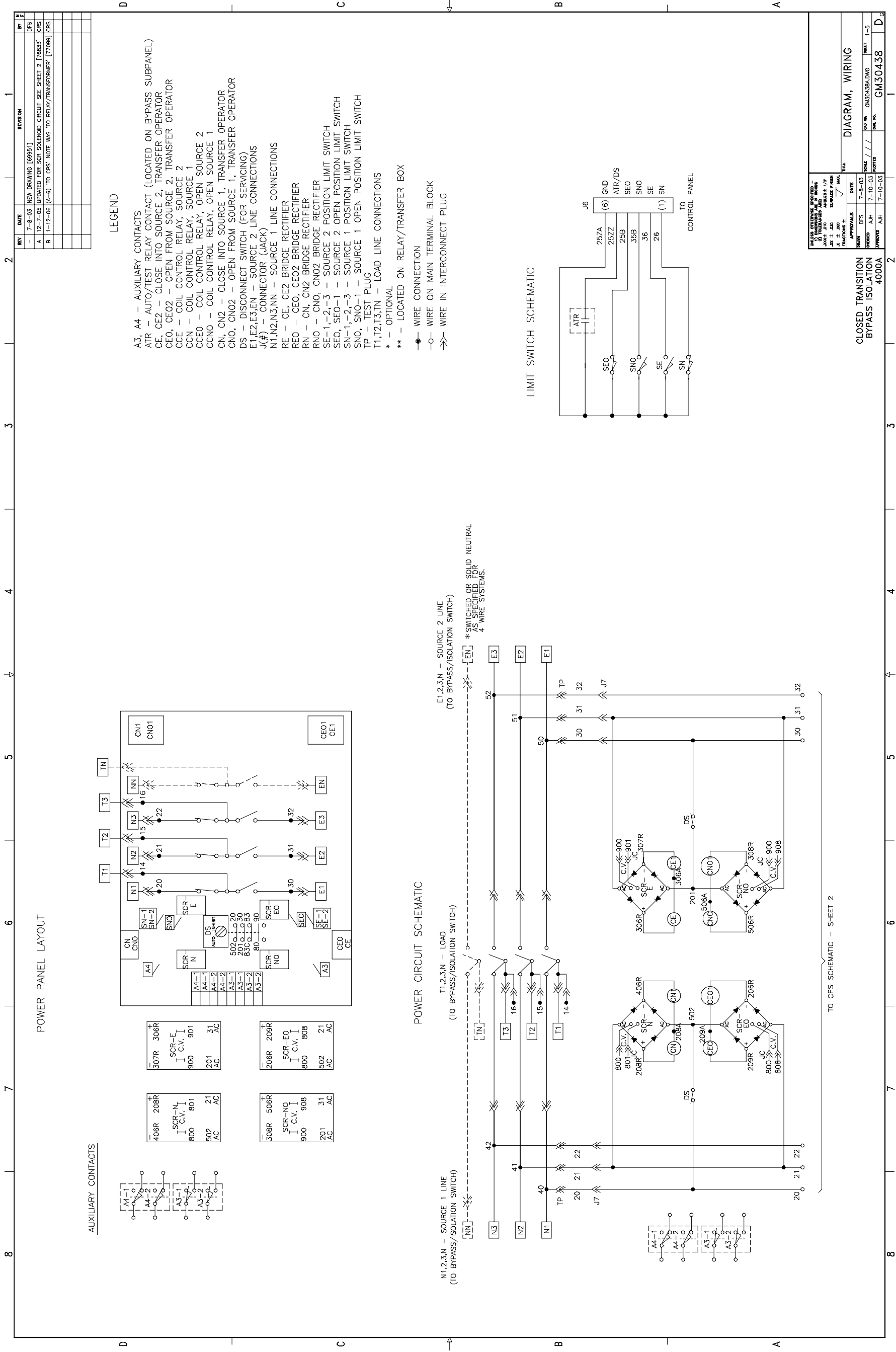


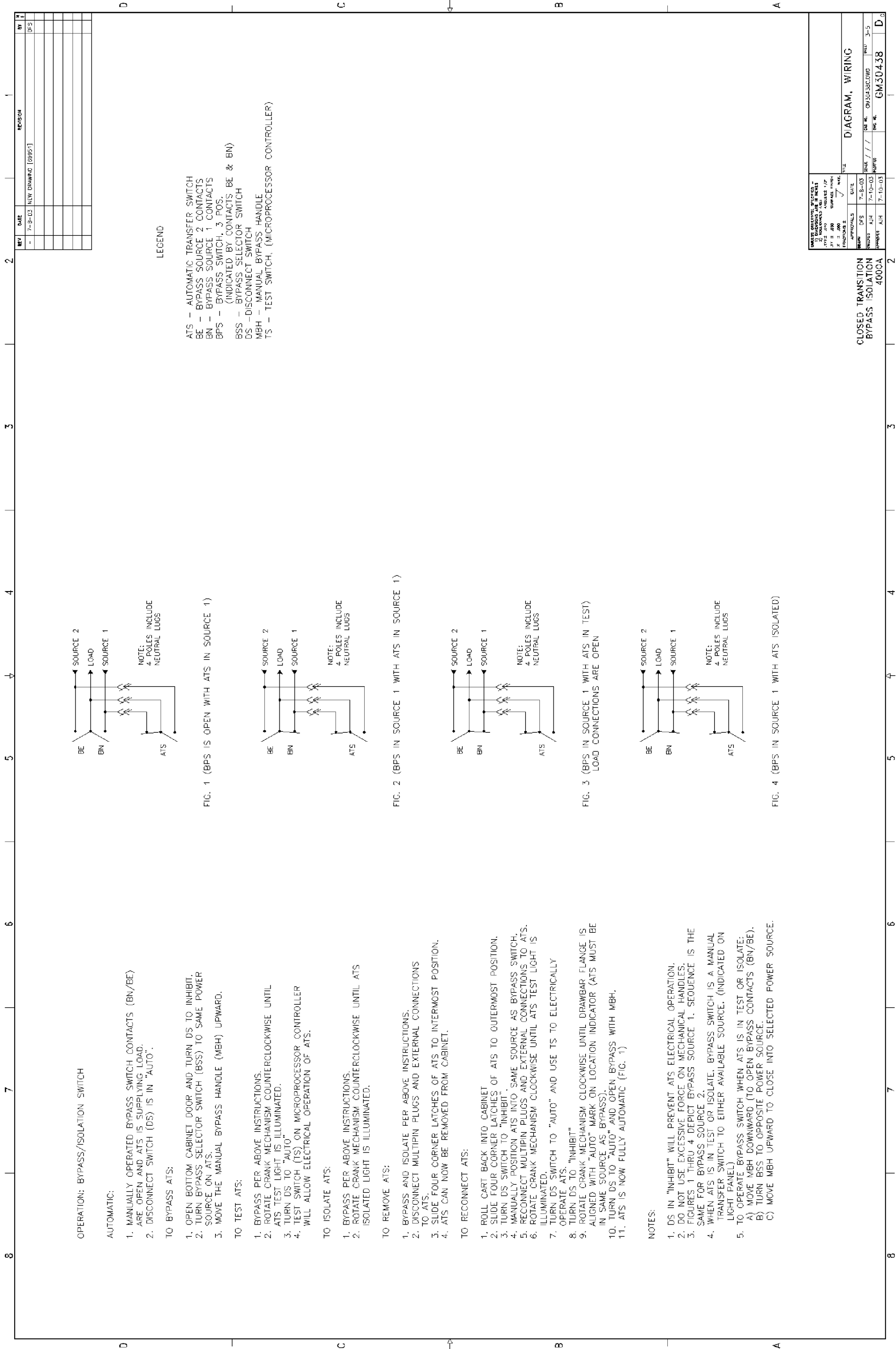


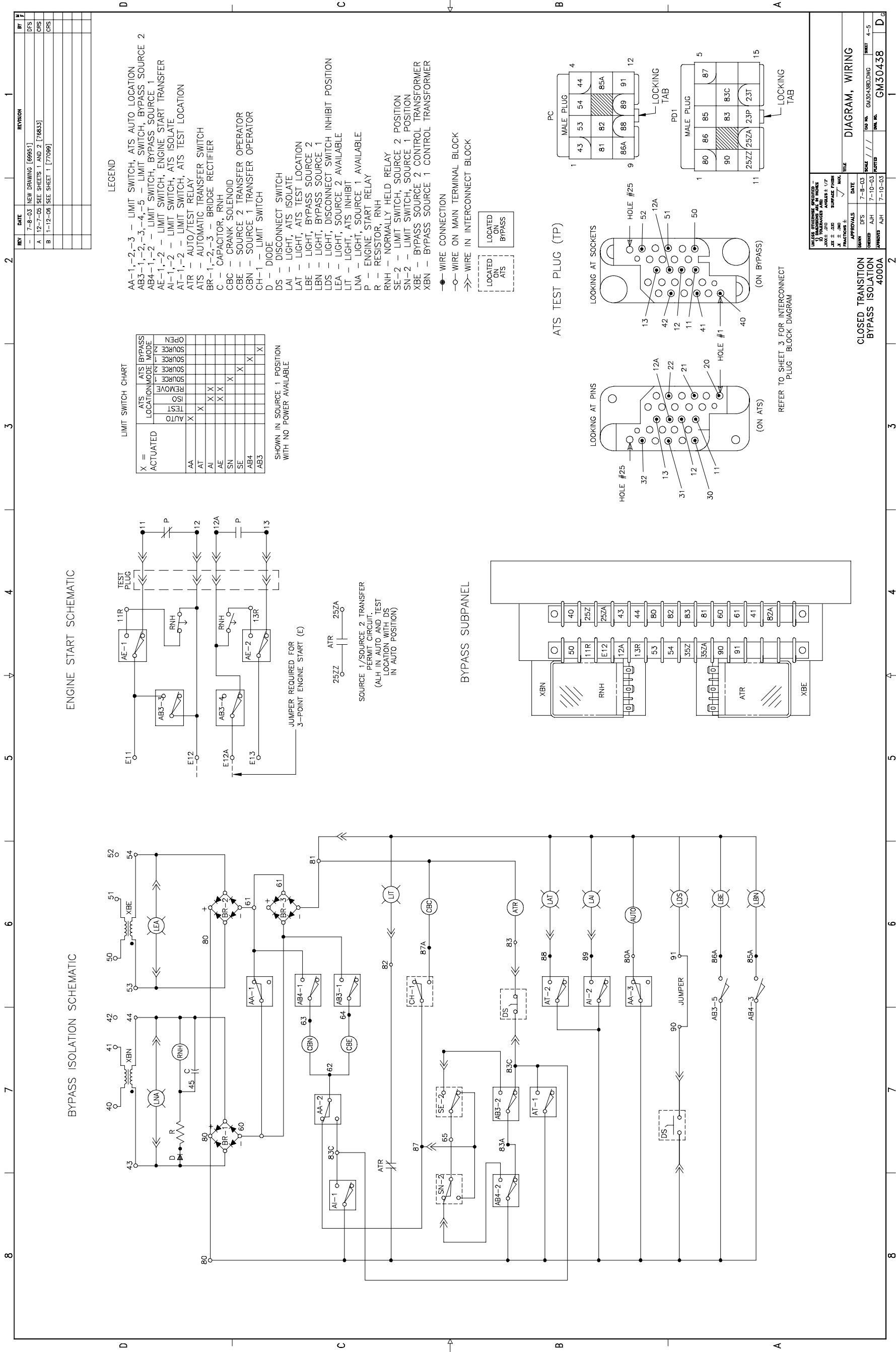






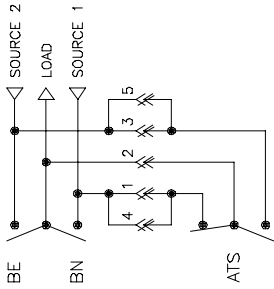






REV	DATE	DESCRIPTION	BY
-	7-8-03	NEW DRAWING [69951]	DPS
A	12-7-05	SEE SHEETS 1 AND 2 [76833]	CWS
B	1-12-08	SEE SHEET 1 [77099]	CWS

BYPASS/ISOLATION DIAGRAM



LEGEND

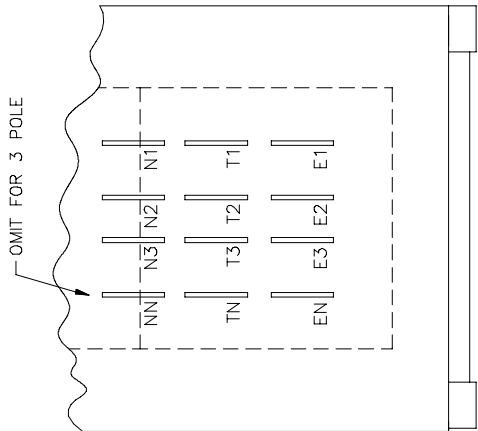
AA	-	LIMIT SWITCH, ATS AUTO LOCATION
AB3	-	LIMIT SWITCH, BYPASS SOURCE 2
AB4	-	LIMIT SWITCH, BYPASS SOURCE 1
AE	-	LIMIT SWITCH, ENGINE START TRANSFER
AI	-	LIMIT SWITCH, ATS ISOLATE
AT	-	LIMIT SWITCH, ATS TEST LOCATION
ATR	-	AUTO/TEST RELAY
ATS	-	AUTOMATIC TRANSFER SWITCH
A3,A4	-	AUXILIARY CONTACTS
BE	-	BYPASS SOURCE 2 CONTACTS
BN	-	BYPASS SOURCE 1 CONTACTS
BPS	-	BYPASS SWITCH
BSS	-	BYPASS SELECTOR SWITCH
CBC	-	CRANK SOLENOID
CBE	-	SOURCE 2 TRANSFER OPERATOR
CBN	-	SOURCE 1 TRANSFER OPERATOR
CE,CE2,CEO,CEO2	-	CLOSE INTO/OPEN FROM SOURCE 2 TRANSFER OPERATOR
CH-1	-	LIMIT SWITCH
CN,CN2,CNO,CNO2	-	CLOSE FROM/OPEN INTO TRANSFER OPERATOR
DS	-	DISCONNECT SWITCH
E1,E2,E3,EN	-	SOURCE 2 LINE CONNECTION
MBH	-	MANUAL BYPASS HANDLE
MT1,N2,N3,NN	-	SOURCE 1 LINE CONNECTION
RE	-	CE,CE2 BRIDGE RECTIFIER
REO	-	CEO CEO2 BRIDGE RECTIFIER
RN	-	CN,CN2 BRIDGE RECTIFIER
RNH	-	NORMALLY HELD RELAY
RNO	-	CNO,CNO2 BRIDGE RECTIFIER
SE-1,-2,-3,-4	-	LIMIT SWITCH SOURCE 2 POSITION
SE0-1,-2,-3,-	-	SOURCE 2 OPEN POSITION LIMIT SWITCH
SN-1,-2,-3,-4	-	SOURCE 1 POSITION LIMIT
SN0-1,-2,-3	-	SOURCE 1 OPEN POSITION LIMIT
TT1,T2,T3,TN	-	LOAD LINE CONNECTION LUGS
XBE	-	BYPASS SOURCE 2 CONTROL TRANSFER
XBN	-	BYPASS SOURCE 1 CONTROL TRANSFER

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

SHOWN IN SOURCE 1 POSITION WITH
NO POWER AVAILABLE

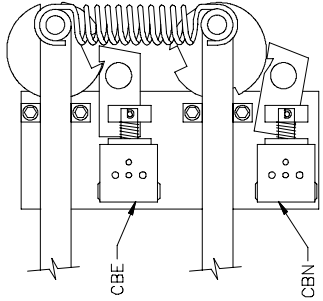
X = CLOSED

D

STANDARD LUG CONFIGURATION
-REAR OF CUBICLE-[illegible]

	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		
	AB3-5	63		61
	AB4-1	80	83A	85
	AB4-2	E11		11R
	AE-1	E13	13	13R
	AE-2	81	83C	83C
	AI-1	80		89
	AI-2	80		83C
	AT-1	80		88
	AT-2	80		
	CH-1	87	87A	
	SE-2	65	87	86
	SN-2	65	87	85
	AB3-5	80		80A
	AB3-6	23R	23S	
	AB4-3	23S	23T	

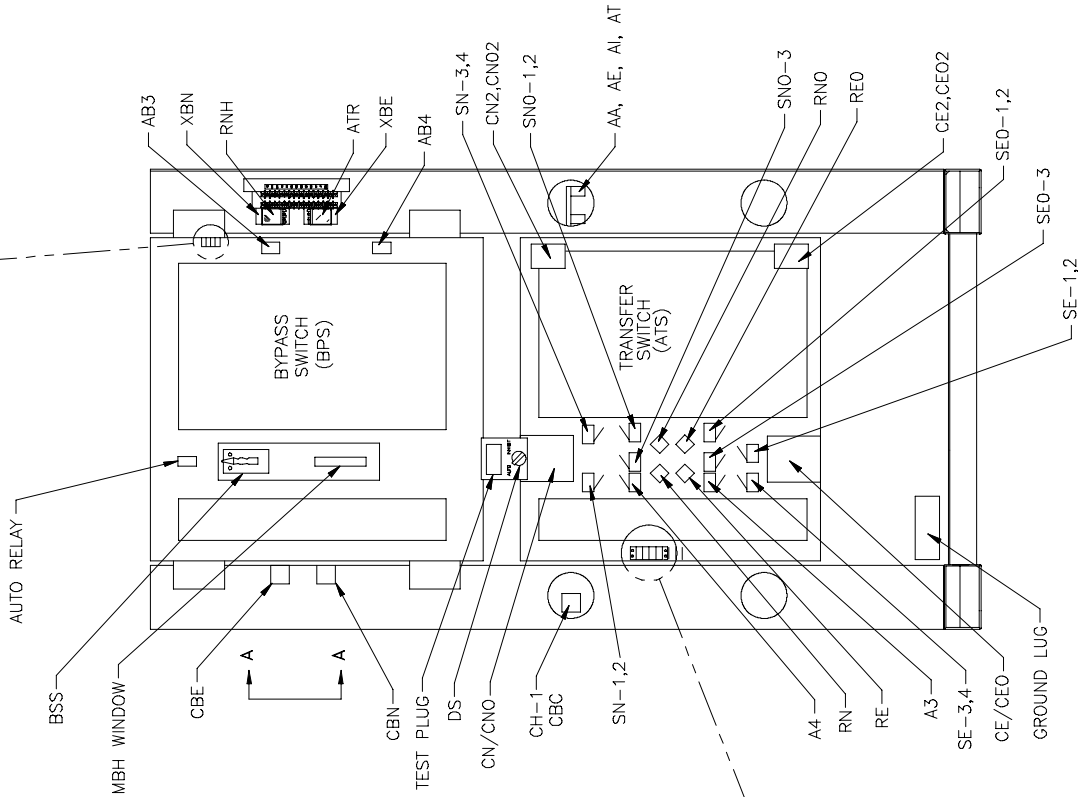
WIRE NUMBER CHART



VIEW A-A

0 0	A4-1	A4-1	A4-2	A4-2	A3-1	A3-1	A3-2	A3-2	0 0
-----	------	------	------	------	------	------	------	------	-----

AUXILIARY CONTACTS



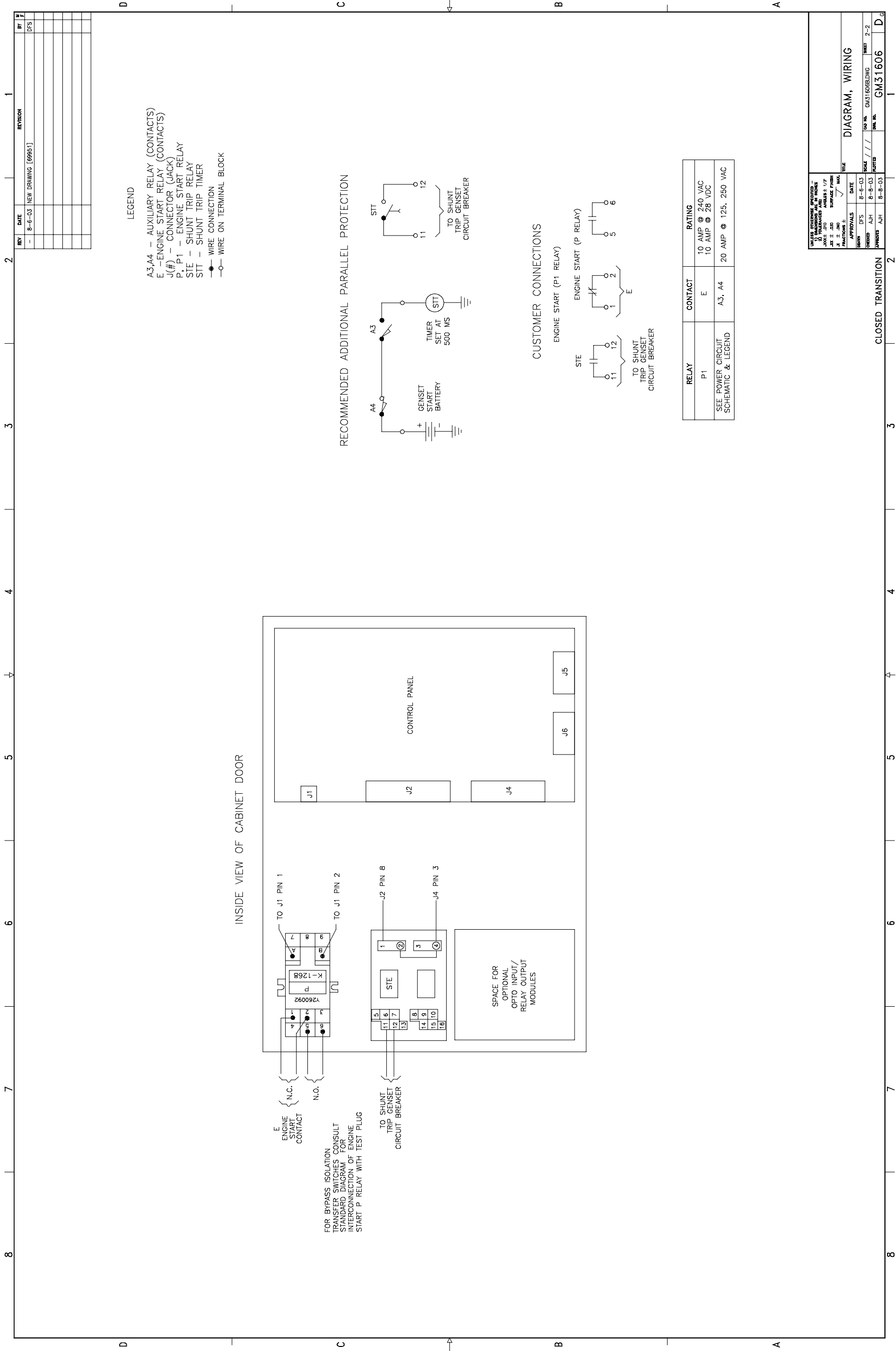
0 0	E11	E12	E12A	E13	0 0
-----	-----	-----	------	-----	-----

ENGINE
START
CONNECTIONS

ENGINE
START
CONNECTIONS

CLOSED TRANSITION
BYPASS ISOLATION
4000A

SCALE	///	QAD NO.	GM30438E.DWG	SHEET	5-5
PLOTTED		DWG. NO.	GM30438	D	





DDC/MTU Power Generation
605 North 8th Street, Suite 501
Sheboygan, Wisconsin 53081 USA
Phone 920-451-0846, Fax 920-451-0843
ddcmtupowergeneration.com