

INSTALLATION INSTRUCTIONS

Original Issue Date: 11/10

Model: **ZCS-6 Programmed-Transition Transfer Switches**

Market: **ATS**

Subject: **M340+ to MPAC™ 1500 Controller Conversion Kit GM69378-S6**

Introduction

The conversion kit allows the replacement of the M340+ controller with an MPAC™ 1500 controller on model ZCS-6 programmed-transition automatic transfer switches.

See Figure 1 for an illustration of the installed kit. See Figure 2 for controller identification, if necessary. The optional accessory board (I/O) assembly shown in the figures is available separately.

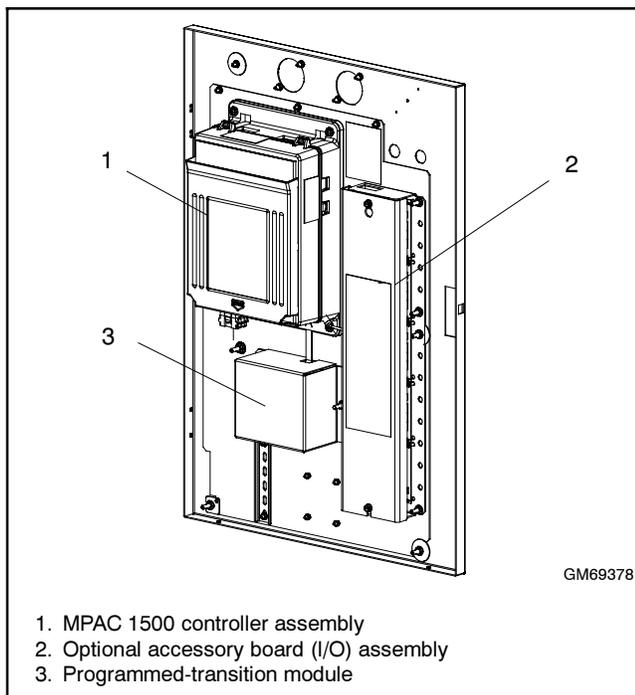


Figure 1 MPAC™ 1500 Controller Conversion Kit, Installed

Tools and Materials Required:

- Phillips screwdriver
- Small flat tip screwdriver
- Wire cutter
- 7/16 nut driver
- 11/32 nut driver
- 5/16 nut driver

Read the entire installation procedure and compare the kit parts with the parts list in this publication before beginning installation. Refer to the wiring diagrams at the end of this publication as needed during the installation. Perform the steps in the order shown.

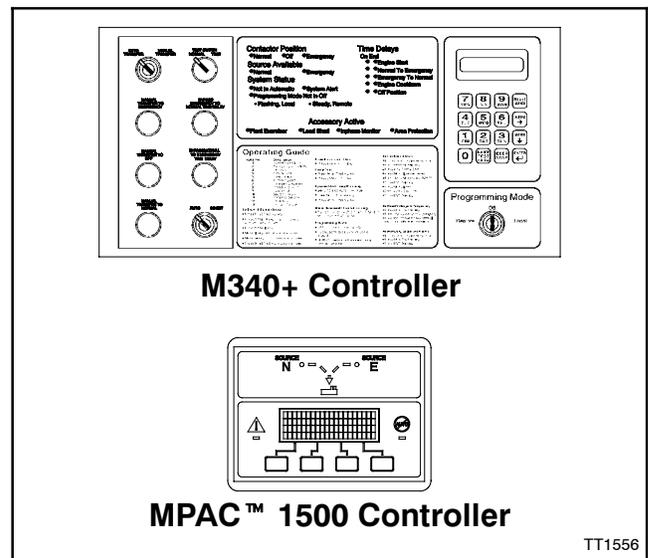


Figure 2 Controller Identification

Controller Accessories

Many functions that required optional accessories with the M340+ controller are integrated into the MPAC™ 1500 controller operation. For example, an active time delay can be ended by pressing a button on the MPAC™ 1500 controller. Separate time delay bypass switches are not required. See Figure 3 for accessory information.

M340	MPAC™ 1500
Bypass (end) Time Delay Switches	Integrated
Source Monitor	Integrated
Test Switch	Integrated
Override Switches	Integrated
Preferred Source Switch	Alarm Module required (see Figure 4)
Current Meter (amps)	Current Sensing Kit required (see Figure 6)
Plant Exerciser	Integrated
Manual Switch Operation	Supervised Transfer Control Switch (see Figure 5)
Voltage/Frequency Meters	Integrated
Load Shed Contact	Integrated Load Control Function (one output connection required)

Figure 3 Accessories

Accessory Modules

Optional accessory modules are listed in Figure 4. One module mounting kit holds up to five accessory modules.

Module Accessories	Part Number
Module Mounting Assembly *	GM46258-S
Standard I/O Module	GM46888-S
High Voltage/Current I/O Module	GM46890-S
Alarm Module	GM40808-S
External Battery Supply Module	GM46889-S

* One mounting assembly holds up to 5 modules.

Figure 4 Module Accessories for MPAC™ 1500

Other Accessories

Other MPAC™ 1500 accessories are available. See Figure 5. Contact your local distributor/dealer for more information.

Other MPAC 1500 Accessories	Part Number
Controller Disconnect Switch	GM46770-S3
Supervised Transfer Control Switch †	GM40807-S1
Remote Annunciator	GM52650-KP1

† Includes alarm module GM40808-S.

Figure 5 Other Accessories

Current Sensing

If current sensing is required (i.e. for current [amps] monitoring and display), obtain the appropriately rated current sensing kit (with 3 m [10 ft.] harness) before starting the conversion procedure. If the transfer switch is equipped with current transformers (CTs), they will need to be replaced with the new current transformers during the controller conversion procedure. See Figure 6 for current sensing kit numbers. Check the amp rating and number of phases of the transfer switch and select the closest current sensing kit with an equal or higher amp rating.

Current Sensing Kit Number	Kit Description	
	Amps	Phases
GM47965-S19	1000	3
GM47965-S20	1200	3
GM47965-S21	2000	3
GM47965-S22	3000	3
GM47965-S23	1000	1
GM47965-S24	1200	1
GM47965-S25	200	3
GM47965-S26	200	1
GM47965-S27	400	3
GM47965-S28	400	1

Figure 6 Current Sensing Kits

Model Designation

To interpret the transfer switch model designation, see the model designation chart in Figure 7.

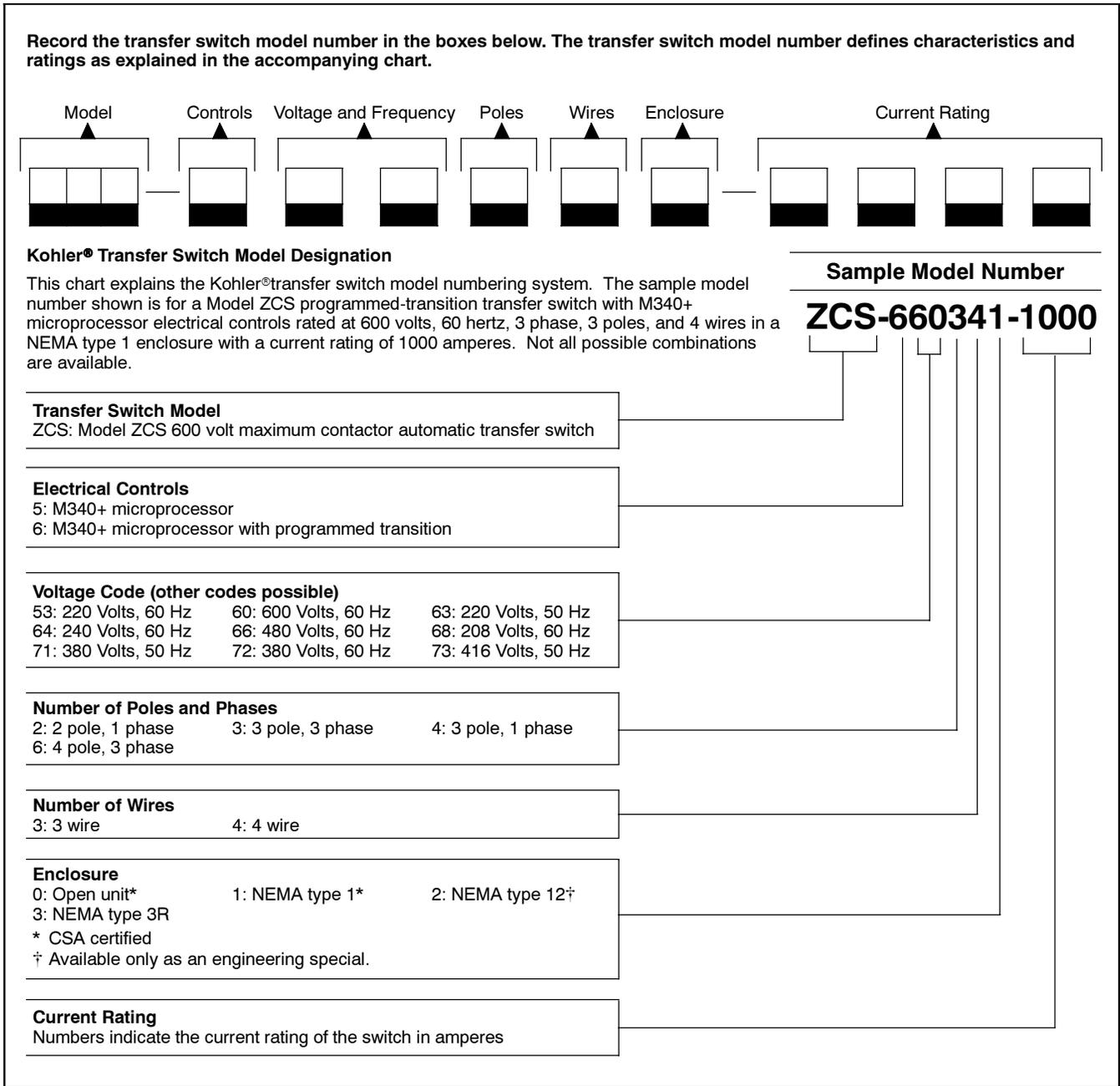


Figure 7 Model Designation Key

Safety Precautions

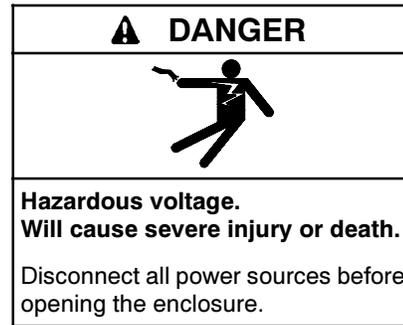
Observe the following safety precautions while installing the kit.



**Accidental starting.
Can cause severe injury or death.**

Disconnect the battery cables before working on the generator set. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or connected equipment, disable the generator set as follows: (1) Move the generator set master switch to the OFF position. (2) Disconnect the power to the battery charger. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent starting of the generator set by an automatic transfer switch, remote start/stop switch, or engine start command from a remote computer.



Servicing the transfer switch. Hazardous voltage can cause severe injury or death. Deenergize all power sources before servicing. Turn off the main circuit breakers of all transfer switch power sources and disable all generator sets as follows: (1) Move all generator set master controller switches to the OFF position. (2) Disconnect power to all battery chargers. (3) Disconnect all battery cables, negative (-) leads first. Reconnect negative (-) leads last when reconnecting the battery cables after servicing. Follow these precautions to prevent the starting of generator sets by an automatic transfer switch, remote start/stop switch, or engine start command from a remote computer. Before servicing any components inside the enclosure: (1) Remove all jewelry. (2) Stand on a dry, approved electrically insulated mat. (3) Test circuits with a voltmeter to verify that they are deenergized.

Installation Procedure

Note: The photos and diagrams shown in this procedure represent a typical transfer switch. They may not be an exact match for your ATS model.

1. Bypass the ATS to normal. Then rack the ATS out to the isolate position. See the bypass/isolation switch manual for instructions to bypass and isolate the transfer switch.
2. Place the generator set master switch in the OFF position.
3. Disconnect the power to the battery charger, if equipped.
4. Disconnect the generator set engine starting battery(ies), negative (-) lead first.
5. Disconnect power from the transfer switch on both sources, Normal and Emergency.

Remove M340+ Controller and Accessories

6. Remove the plastic protective panel that covers the electronic components on the inside of the enclosure door. See Figure 8.
7. Disconnect plug P9. See Figure 9.

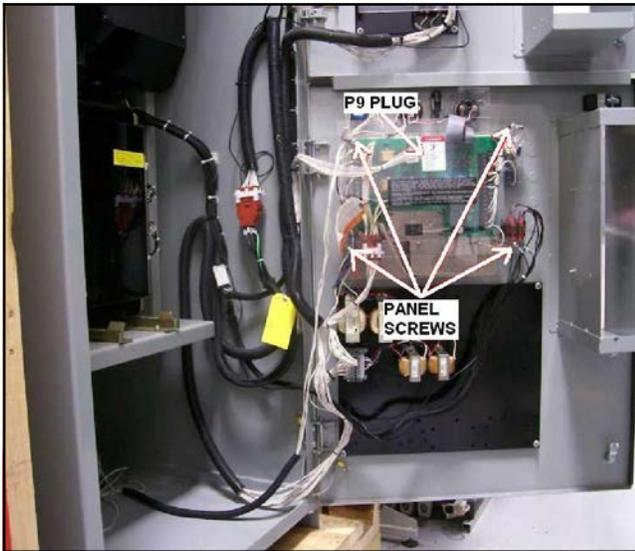


Figure 8 Remove Plastic Panel

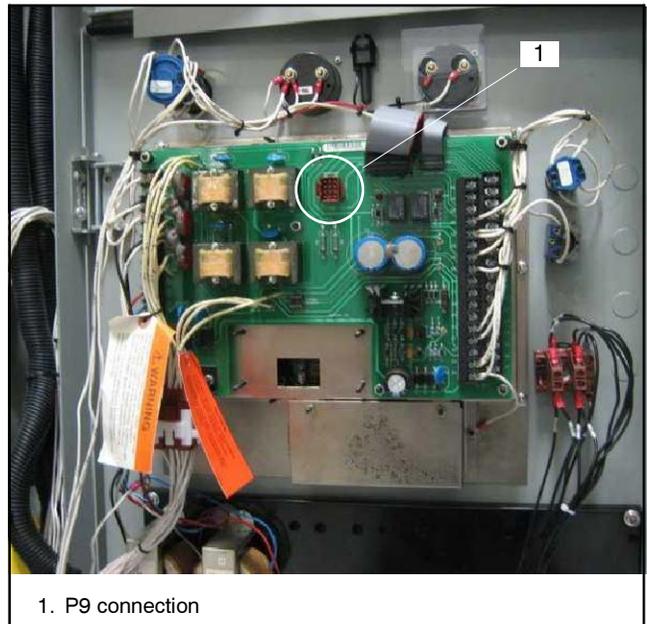


Figure 9 Plug P9 Disconnected

8. If the transfer switch is equipped with current transformers (CTs), remove all CTs from the power lines of the ATS.
9. Disconnect the Auto/Inhibit ATS disconnect switch. See Figure 10 and Figure 11. Do not remove the individual leads from the plug.

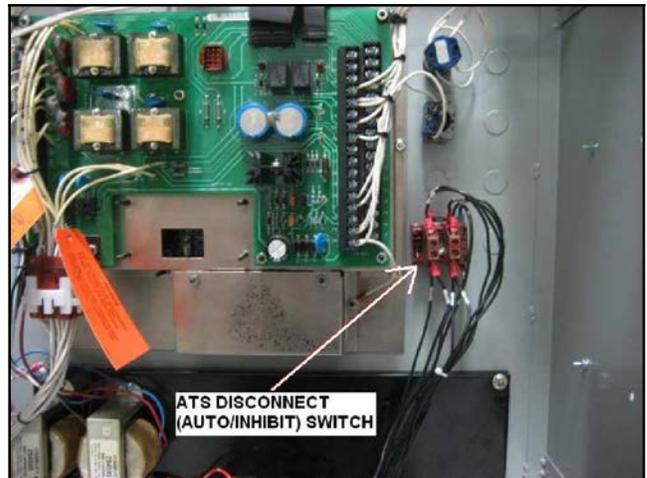


Figure 10 Auto/Inhibit ATS Disconnect Switch

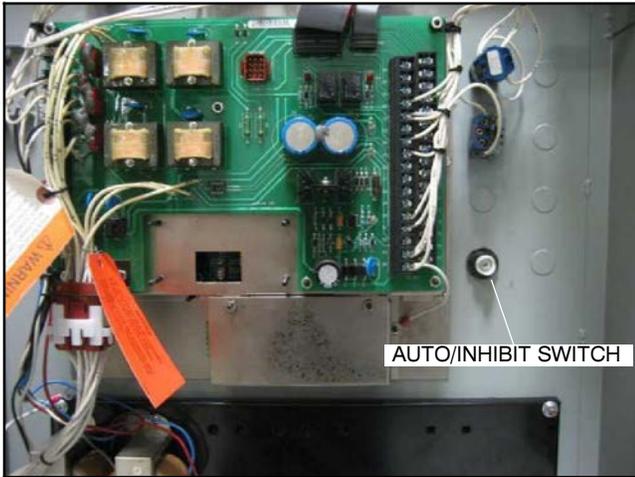


Figure 11 Auto/Inhibit Switch Disconnected

10. Disconnect the AUTO/TEST switch and the bypass time delay pushbutton. See Figure 12.

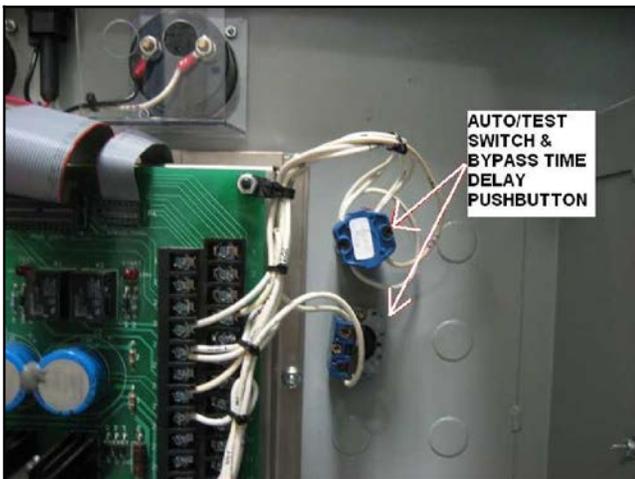


Figure 12 Disconnect the AUTO/TEST Switch and Bypass Time Delay Button

11. Remove the AUTO/TEST switch, the BYPASS TIME DELAY pushbutton, the ATS (AUTO/INHIBIT) disconnect switch, and any other optional switches in this area. See Figure 13.

Keep the ATS (AUTO/INHIBIT) disconnect switch for reinstallation later in this procedure. Other switch functions are integrated into the new MPAC™ 1500 controller.

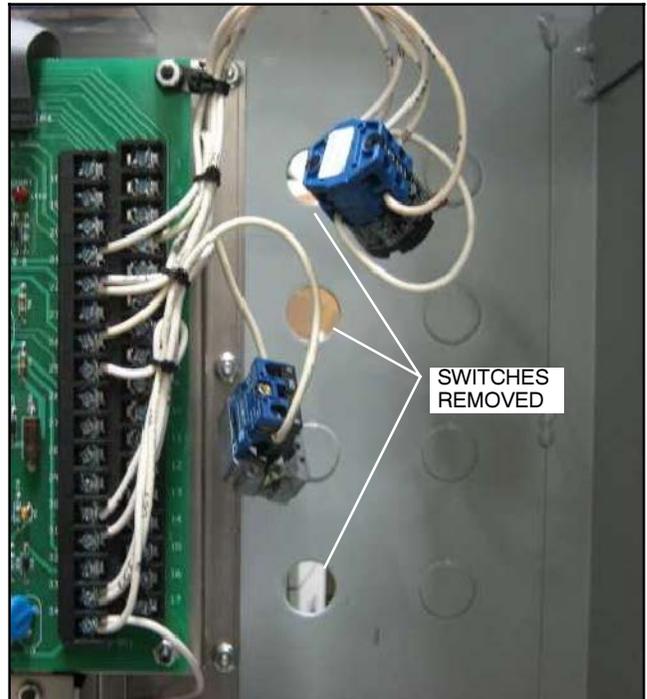


Figure 13 Switches and Pushbutton Removed

12. If the transfer switch is equipped with meters, disconnect and remove all meters and the selector switch. See Figure 14 and Figure 15.

Note: Separate meters are not required with the MPAC 1500 controller. Voltage, frequency, and current (amps)* are shown on the controller display.

* For current monitoring and display, a current sensing kit is required. See Figure 6.

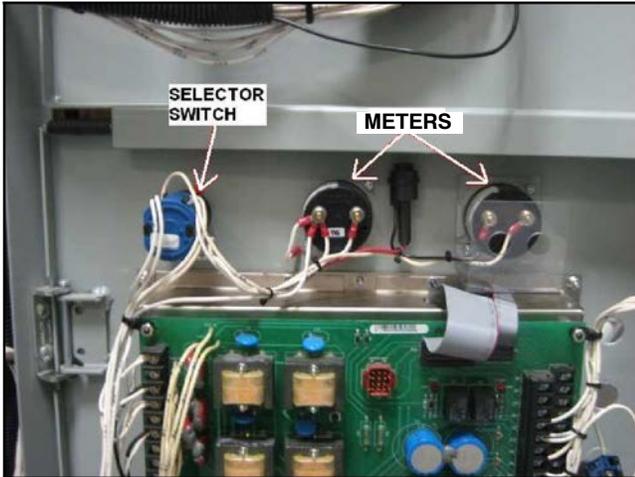


Figure 14 Disconnect the Meters and Selector Switch



Figure 15 Meters and Selector Switch Removed

13. Disconnect plug P24 and the ground connection. See Figure 16.

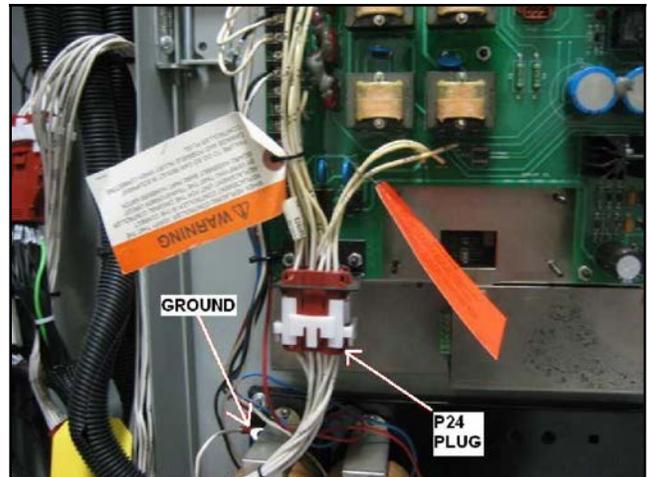


Figure 16 Disconnect P24 and Ground

14. Without disconnecting the leads, remove the mounting screws that secure transformers NCPT and ECPT and the terminal block to the lower panel. See Figure 17 and Figure 18.

Note: Transformers NCPT and ECPT and the terminal block will be mounted onto the new mounting plate later.

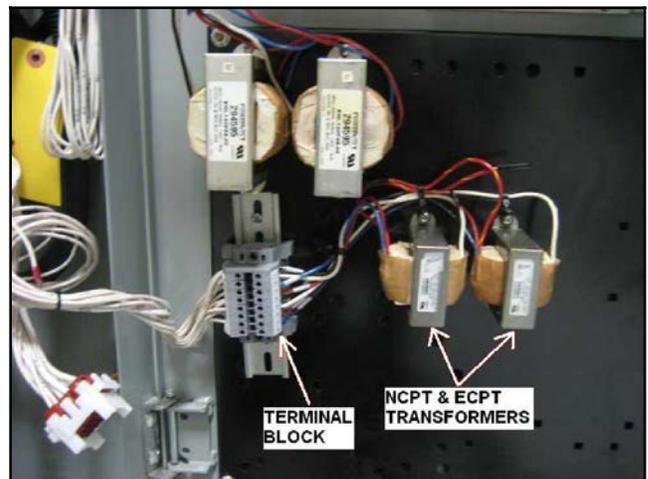


Figure 17 Transformers and Terminal Block on Lower Panel (do not disconnect electrical connections)

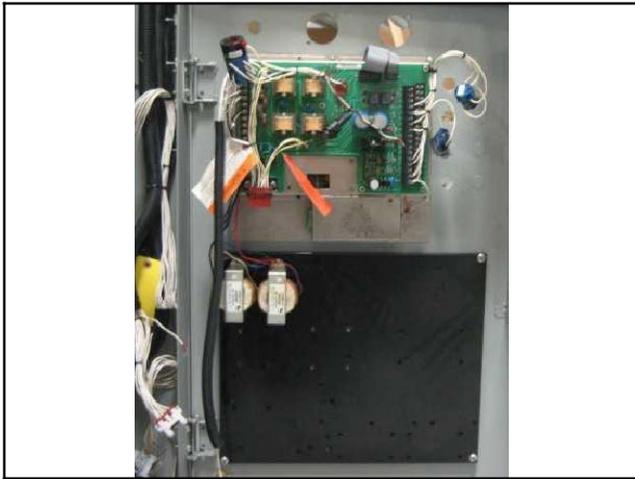


Figure 18 Transformers and Terminal Block Removed from Lower Panel but Not Disconnected

15. Remove the metal cover over the optional communication module, if present. See Figure 19.

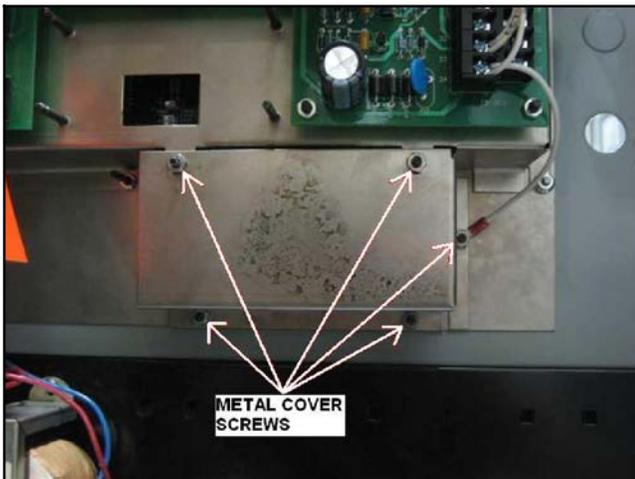


Figure 19 Remove Cover Screws

16. Remove the controller and the lower panel from the lower door of the enclosure. See Figure 20.

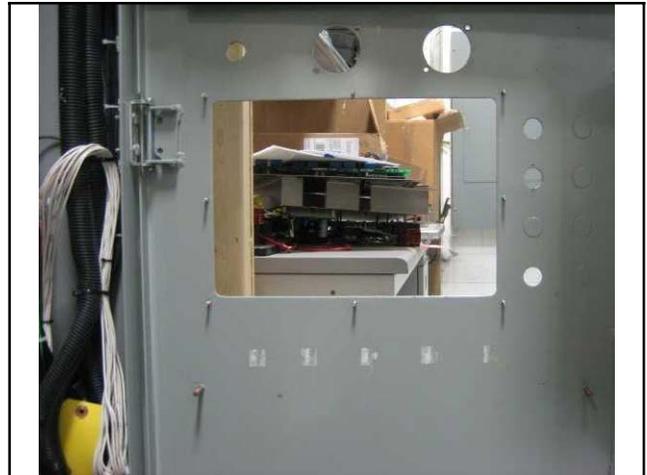


Figure 20 Controller and Lower Panel Removed

Mounting Plate and Cover Plate

Note: Refer to the notes in Figure 22 before installing the mounting plate and switch cover plate. Some door studs may need to be cut off and some mounting holes enlarged in the field, depending on the specific application.

17. Install conversion kit mounting plate GM60611. Use seven lock washers X-22-7 and seven nuts X-6210-4 to install the mounting plate as shown in Figure 21 and Figure 22. Install three flat washers X-25-122 with three nuts X-6210-2 as shown.
18. Install DIN rail GM47488 using two nuts X-6210-4. Install panel retainer GM70051. See Figure 21.

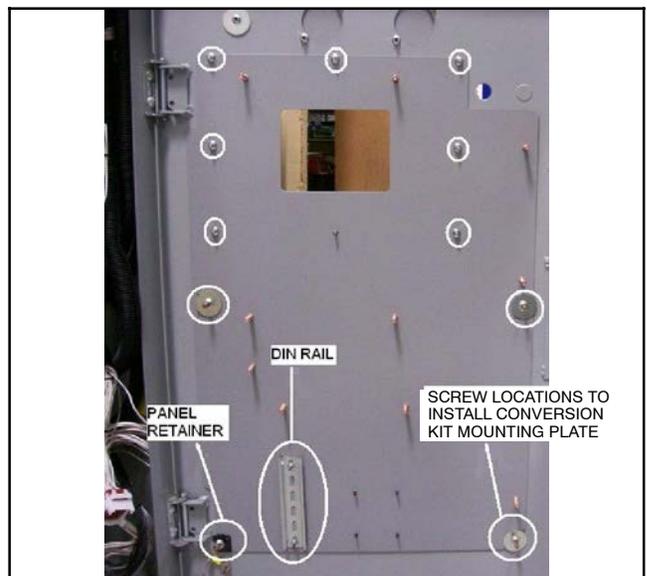


Figure 21 Mounting Plate Installation

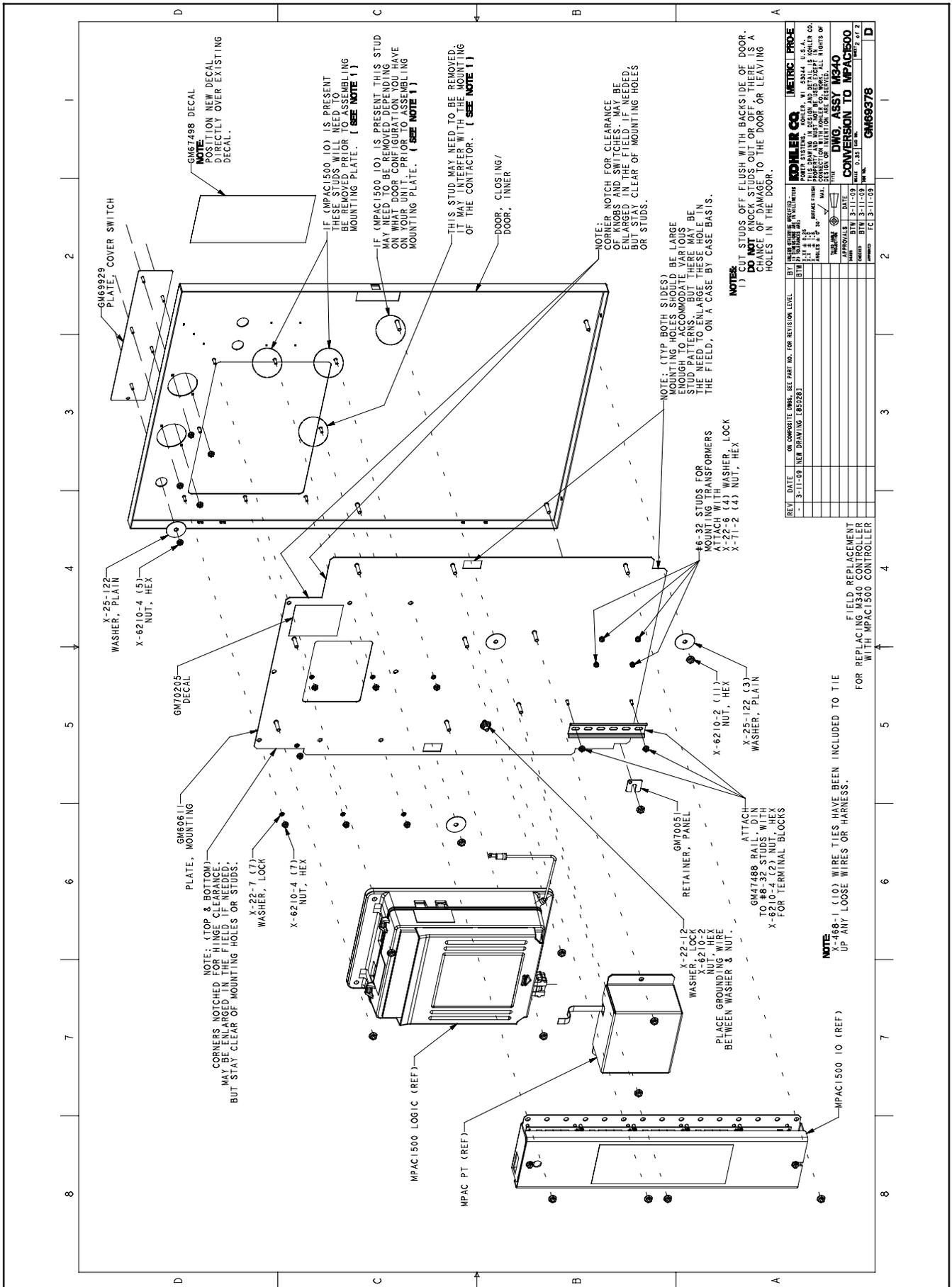


Figure 22 Conversion Kit Assembly

19. Install switch cover plate GM69929. Use one washer X-25-122 and five nuts X-6210-4 to install the cover plate as shown in Figure 22 and Figure 23.

The installed plates are shown in Figure 24.

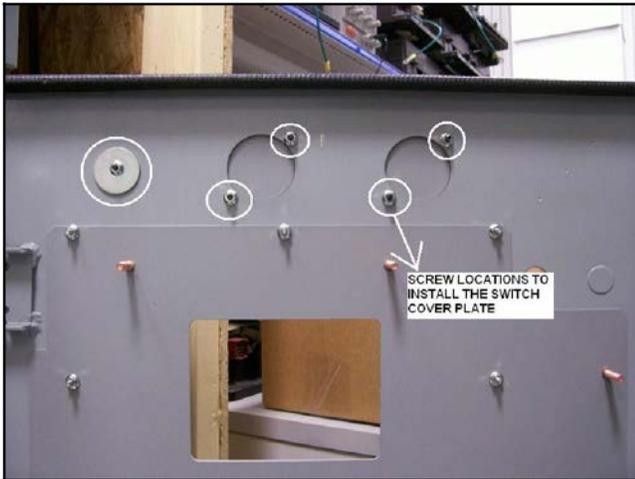


Figure 23 Switch Cover Plate GM69929



Figure 24 Door with Mounting Plate and Switch Cover Plate

MPAC™ 1500 Controller Assembly

20. Install MPAC™ 1500 controller assembly GM46733-1 onto the conversion kit mounting plate using four nuts X-6210-2. See Figure 25.

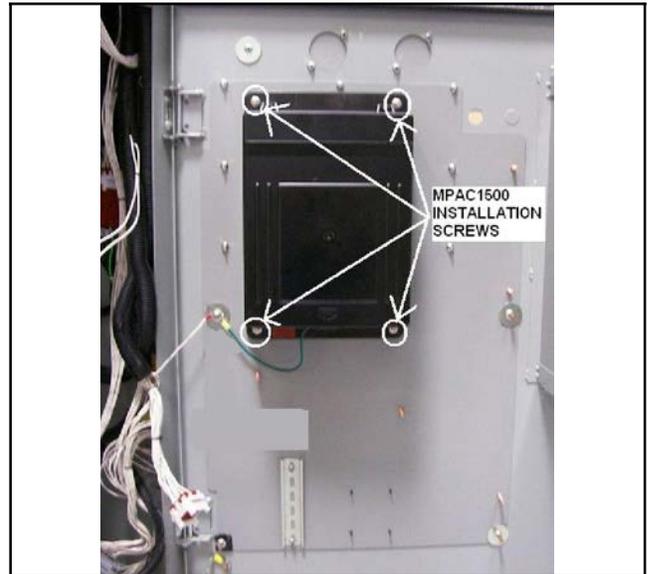


Figure 25 Controller Assembly Installation

21. See Figure 26 for ground connections. Use green grounding lead LK-1212-1515 to connect the ground stud on the conversion panel to the ground lug on the door. Using lock washer X-22-12, connect the ground wires to the ground stud on the door. Place the grounding wires between the washer and the nut.

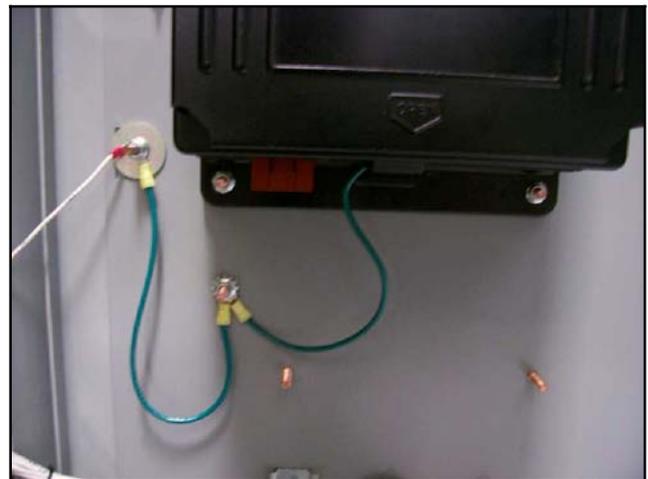


Figure 26 Ground Lead Connections

PTIB Assembly

22. Press programmed transition interface board (PTIB) circuit board GM21268 firmly onto the 5 studs on mounting plate GM21391. See Figure 27.

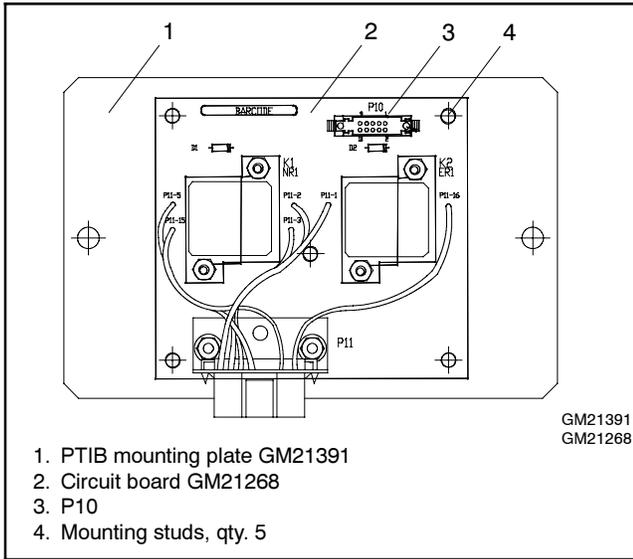


Figure 27 PTIB Circuit Board and Mounting Plate

23. Place the PTIB assembly onto two studs on the mounting plate. See Figure 22 and Figure 28 for the location.
24. Use ribbon cable GM21340 to connect P10 of the PTIB to P2 on the MPAC 1500 power board.
25. Install PTIB cover GM21392 and secure the entire PTIB assembly with two X-6210-2 nuts.

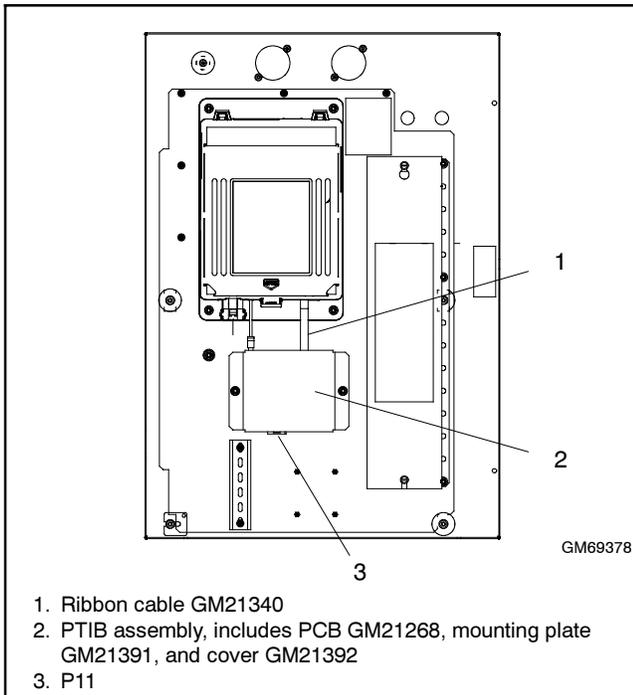


Figure 28 PTIB Installation

Transformers and Terminal Block

26. Reinstall the transformers and terminal block that were removed in step 14. See Figure 29 and Figure 30.
 - a. Use four lock washers X-22-6 and four nuts X-71-2 to re-install transformers NCPT and ECPT onto the conversion kit mounting plate.
 - b. Mount the terminal block onto the DIN rail, which was installed in step 18.

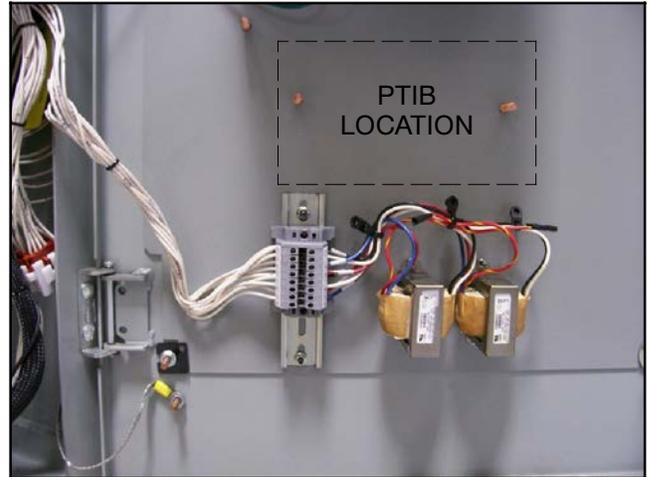


Figure 29 Transformer and Terminal Block Installation

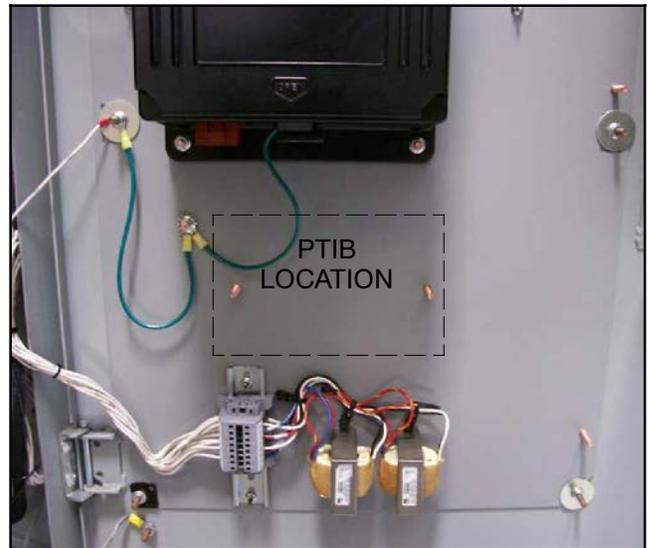


Figure 30 Transformers and Terminal Block Installed

Decals

27. Remove the existing Auto/Inhibit switch decal, if necessary. Verify that the surface is clean and dry, and affix conversion kit decal GM67498 over the old decal on the outside of the bottom door. See Figure 31 and Figure 32.



Figure 31 Remove Auto/Inhibit Switch Decal (if necessary)



Figure 32 Decal GM67498 Installed

Disconnect Switch

28. Re-install the disconnect (AUTO/INHIBIT) switch through the conversion kit mounting plate. See Figure 33 and Figure 34.



Figure 33 Disconnect Switch Re-Installed



Figure 34 Disconnect Switch (inside door)

29. Connect the AUTO/INHIBIT disconnect switch to the existing plug that was disconnected in step 9. See Figure 35.



Figure 35 AUTO/INHIBIT Switch Connection

Conversion Kit Wiring Harness

30. Connect plug P24 of conversion kit harness GM77827 to contactor harness plug P24, which was disconnected from the M340+ controller in step 13. See Figure 36.
31. Connect plug P1 of the conversion kit wire harness to the MPAC 1500 controller. See Figure 36.

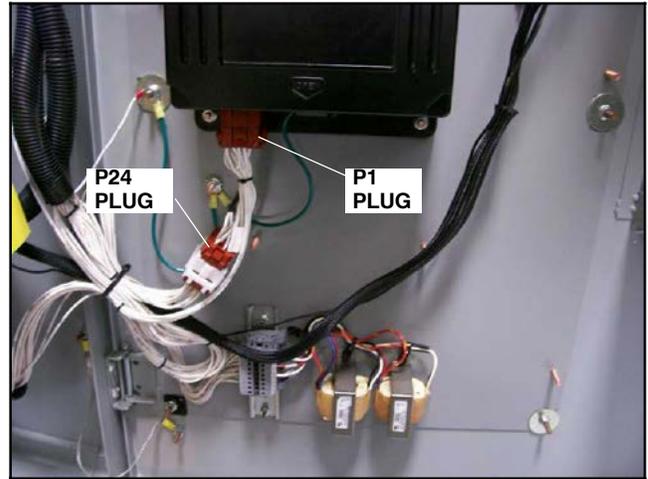


Figure 36 Conversion Kit Harness Connection to Controller Assembly (PTIB not shown)

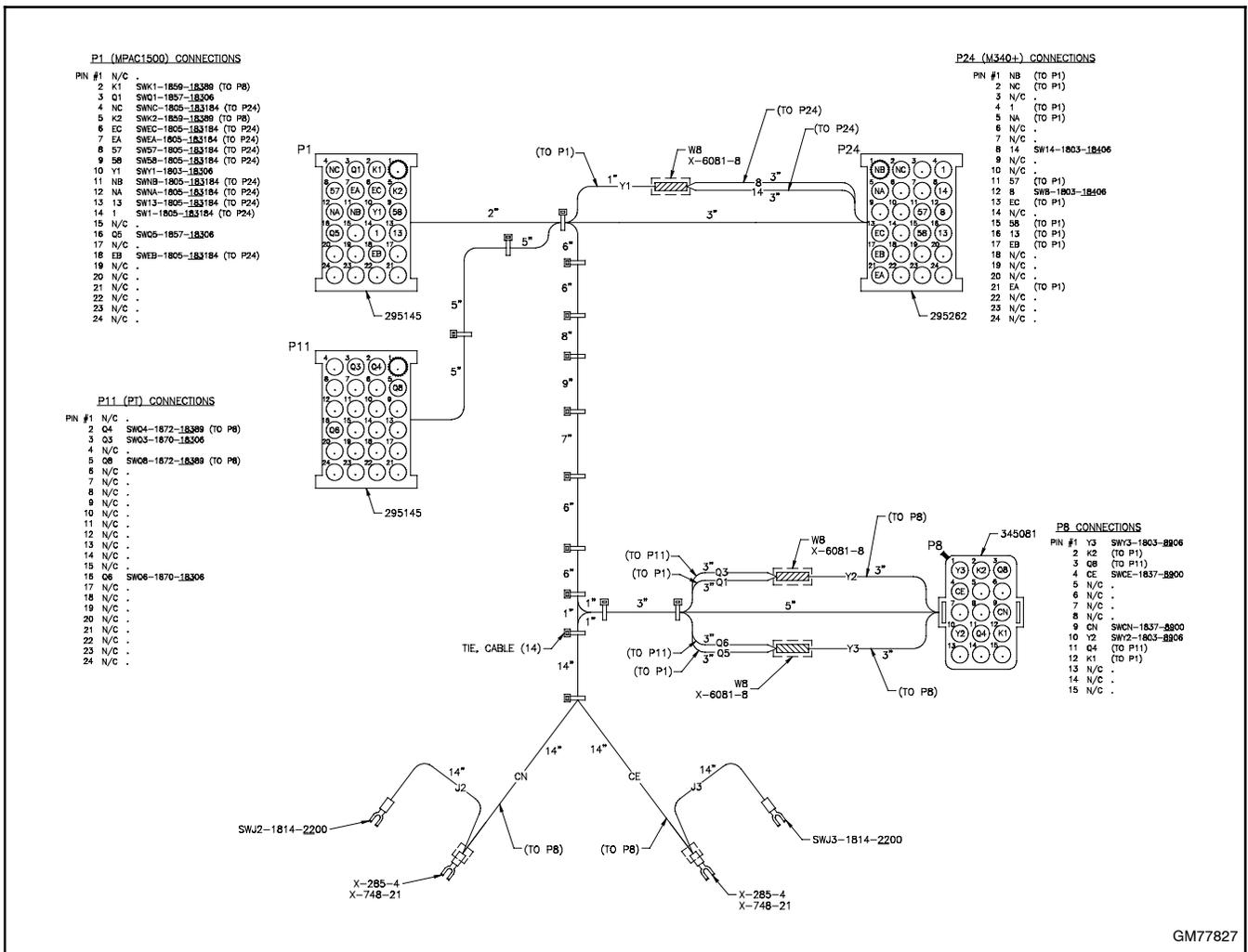


Figure 37 Conversion Kit Harness GM77827 for Model ZCS-6

Interface Panel

- Remove the plastic cover from the interface panel components on the upper door. See Figure 38.

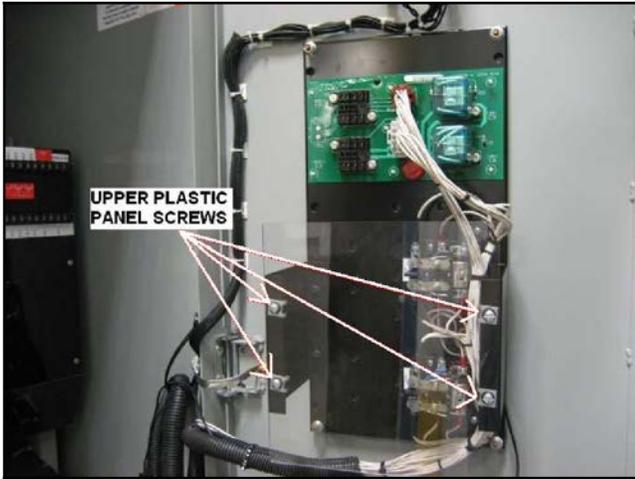


Figure 38 Remove Plastic Cover on Interface Panel

- On the interface panel assembly, disconnect lead 33 from terminal 1 on the four relays on the interface panel. See Figure 39 and Figure 40.

The labels on the relays vary by model and may include the following: CCN, CCE, CCN0, CCE0, CN1, CE1, CN0, CE0, SLN, or SLE. Refer to the wiring diagram for your model at the end of this document.

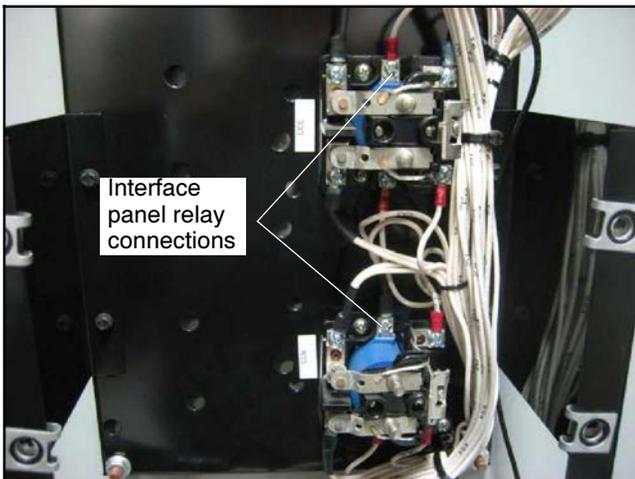


Figure 39 Disconnect Lead 33 from Interface Panel Relays (two relays not shown)

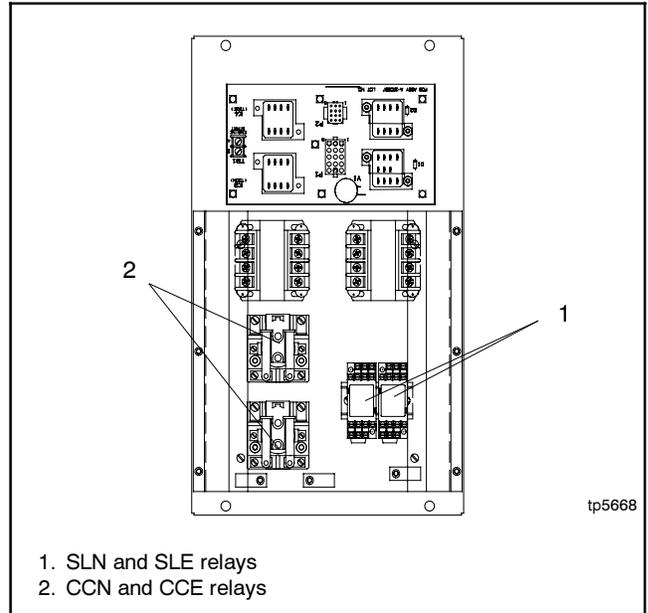


Figure 40 Interface Panel Assembly Relays, typical (relays vary by model)

- Separate the leads labeled 33 from the harness. Cut the forked terminal from the end of the longer lead 33. See Figure 41. Discard the short jumper leads that were connected between the relays.
- Lead 33 will not be reconnected. Tape the end of the remaining lead and tuck the lead out of the way.

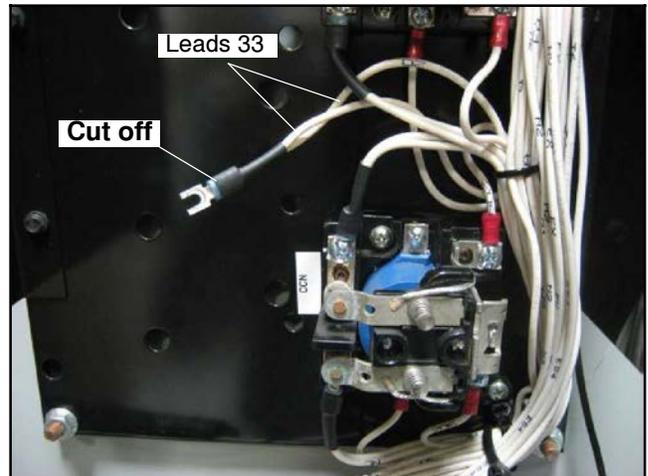


Figure 41 Cut Off Terminal

36. Disconnect plug P8 from the upper board. See Figure 42.

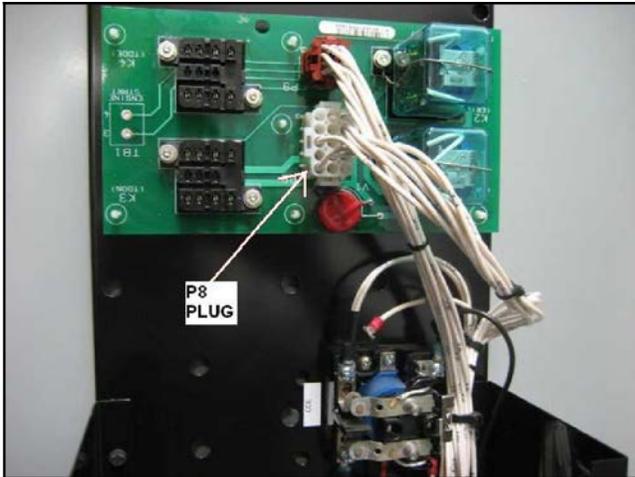


Figure 42 Disconnect Plug P8

37. Connect the conversion kit wire harness GM77827 connector P8 to plug P8 that was disconnected from the upper board in the previous step. See Figure 43.

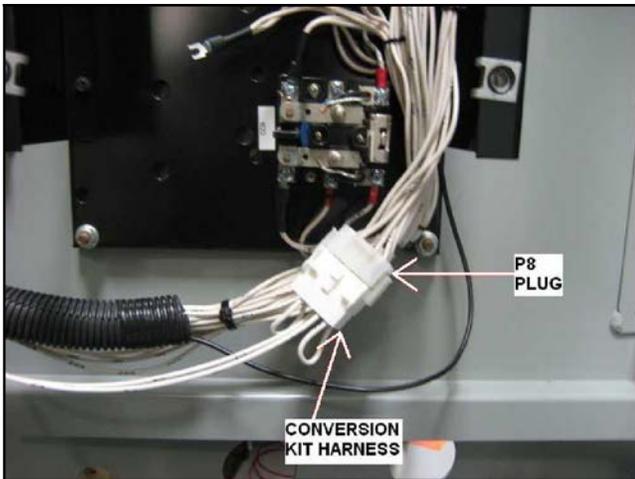


Figure 43 Connect Conversion Kit Wire Harness Connector P8 to Plug P8

38. Disconnect plug P9 from the upper board. See Figure 44. Cut the cable ties to separate the harness from the other wiring and discard the P9 harness. (The other end of this harness was disconnected in step 7.)

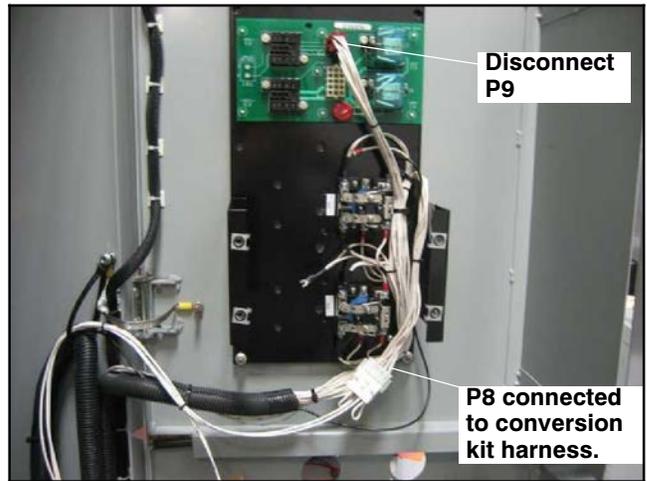


Figure 44 Disconnect P9

39. Connect leads CN, CE, J2, and J3 of the conversion kit harness GM77827 to the interface panel assembly relays. See Figure 45 and refer to the partial wiring diagrams shown in Figure 46 through Figure 48.

40. Route the conversion kit wire harness neatly using the cable ties provided.

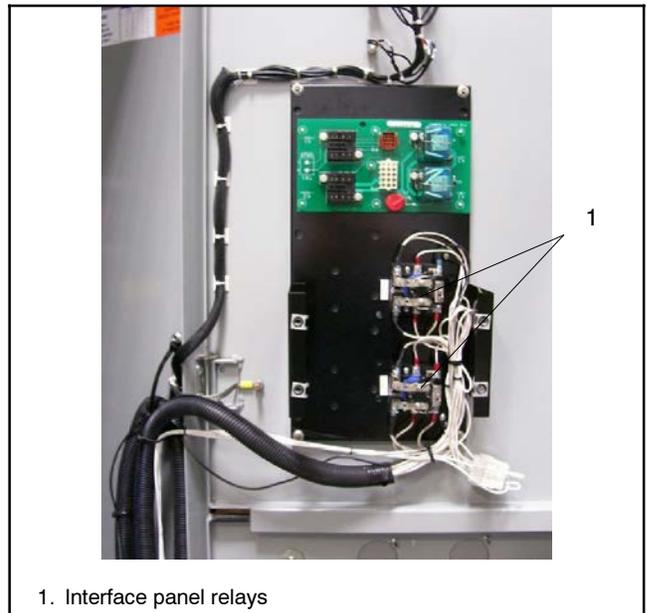


Figure 45 Interface Panel Relay Locations (two relays not shown)

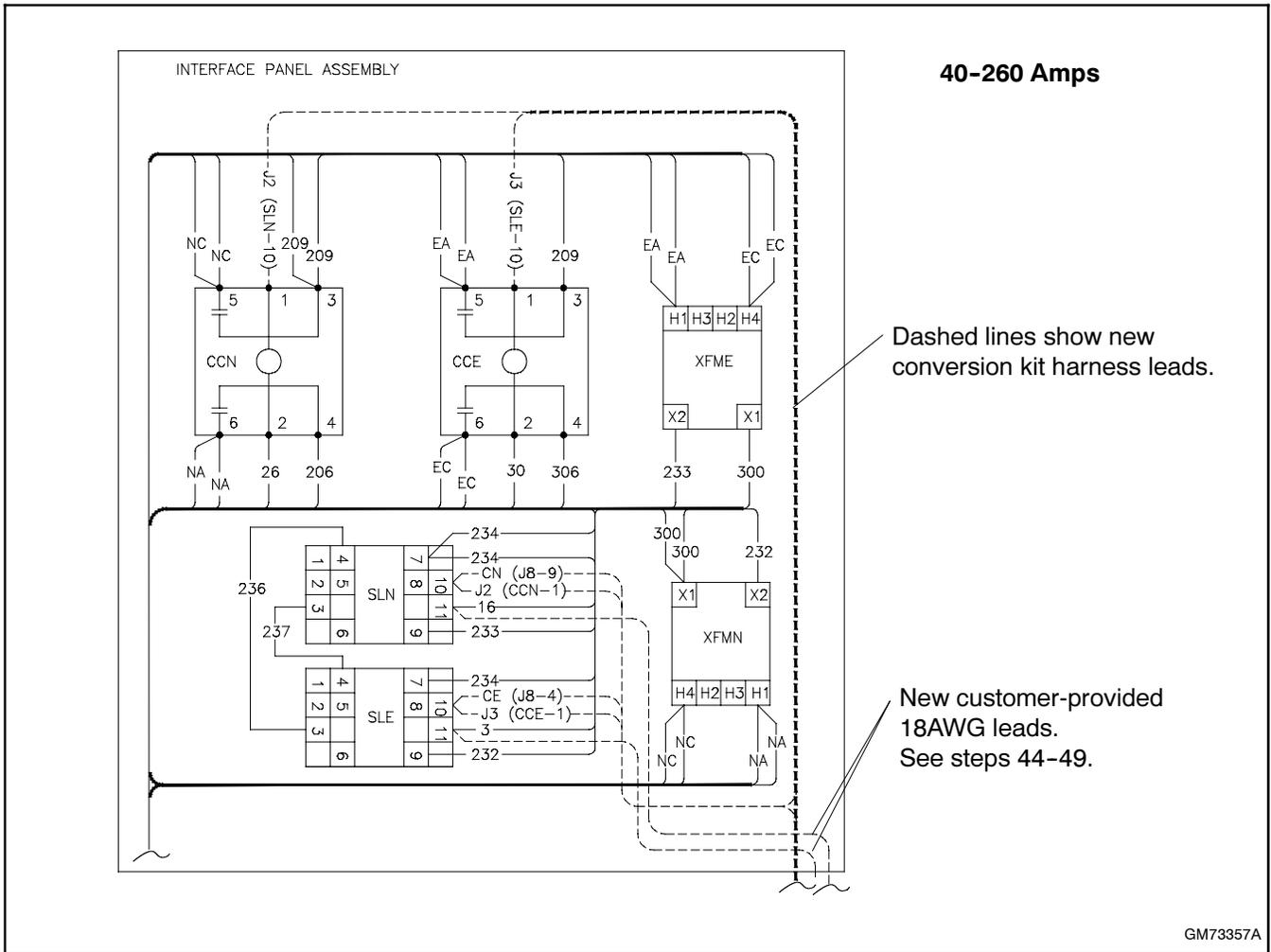


Figure 46 Interface Panel Relay Connections, 40-260 Amps

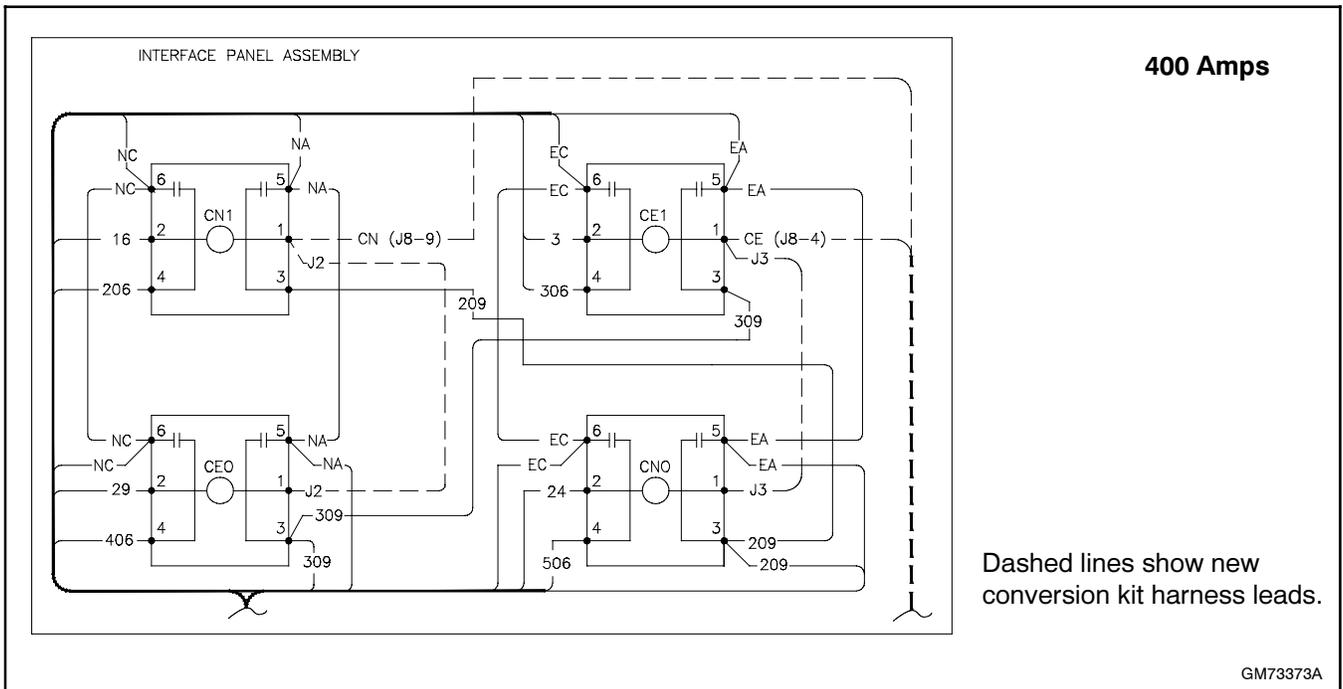


Figure 47 Interface Panel Relay Connections, 400 Amps

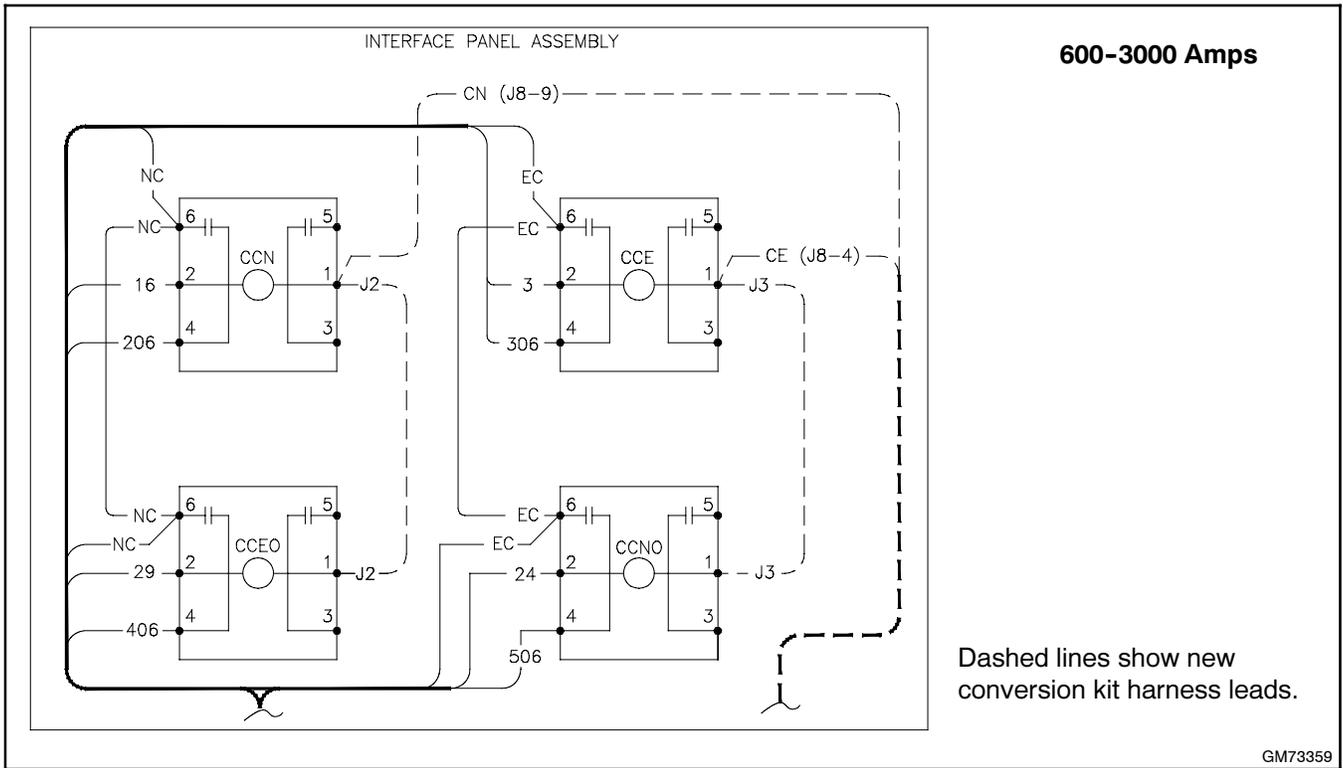


Figure 48 Interface Panel Relay Connections, 600-3000 Amps

41. Connect P11 of the conversion kit wire harness to P11 on the PTIB. See Figure 28 for the location of P11 on the PTIB.

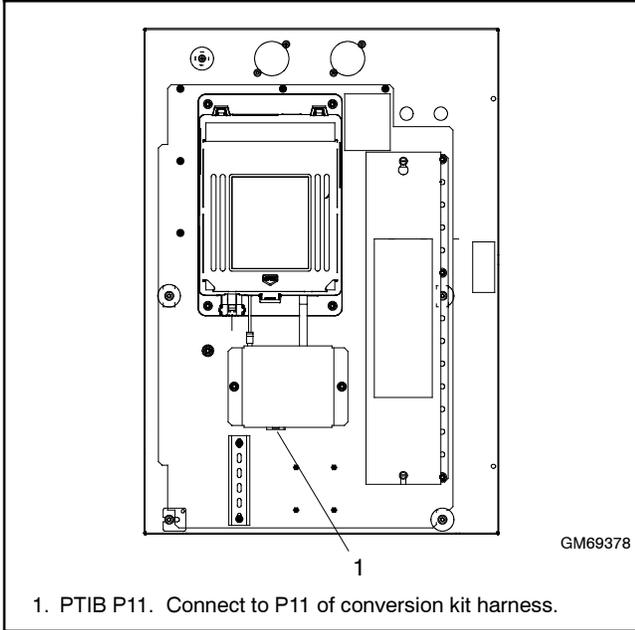


Figure 49 PTIB Connection

42. Remove the circuit board from the upper panel. See Figure 50.



Figure 50 Remove the Upper Panel Circuit Board

43. Re-install the upper plastic cover, and finish routing the conversion kit wire harness neatly using the cable ties provided. See Figure 51.

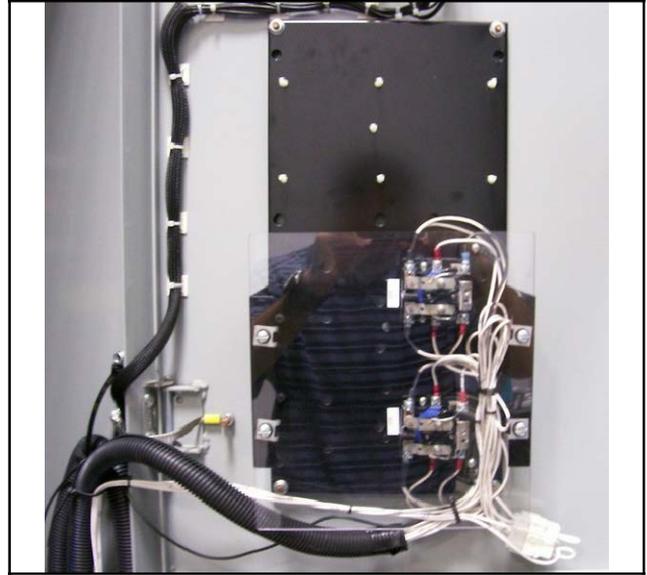


Figure 51 Re-Install Plastic Cover

For 40-260 Amp 2, 3, and 4-pole models only:

Steps 44-49 apply to 40-260 Amp 2, 3, and 4-pole models only. For other models, proceed to step 50.

The following steps require two customer-provided 18 AWG leads.

44. Find switches SOL-1, SOL-2, and SNO-1, located on the left side of the contactor assembly. See Figure 52.
45. Disconnect lead 9 from terminal C of SOL-1. See Figure 53. Tape off lead 9 and secure it out of the way.
46. Add a lead (customer-provided 18 AWG lead) from SOL-1-C to relay SLN-11 on the interface panel. See Figure 46 and Figure 54.
47. Disconnect lead 21 from SOL-2 terminal C. See Figure 53.
48. Reroute lead 21 to SNO-1 terminal C. See Figure 54. (Re-use or disconnect and discard the existing lead 21 connected to SNO-1-C.)
49. Add a lead (customer-provided 18 AWG lead) from SOL-2 terminal C to relay SLE-11 on the interface panel. See Figure 46 and Figure 54.

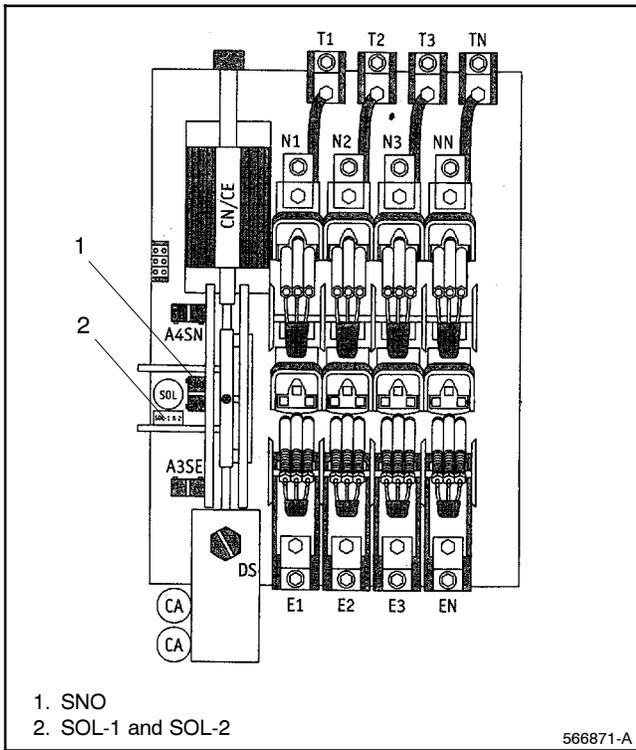


Figure 52 40-260 Amp Contactors

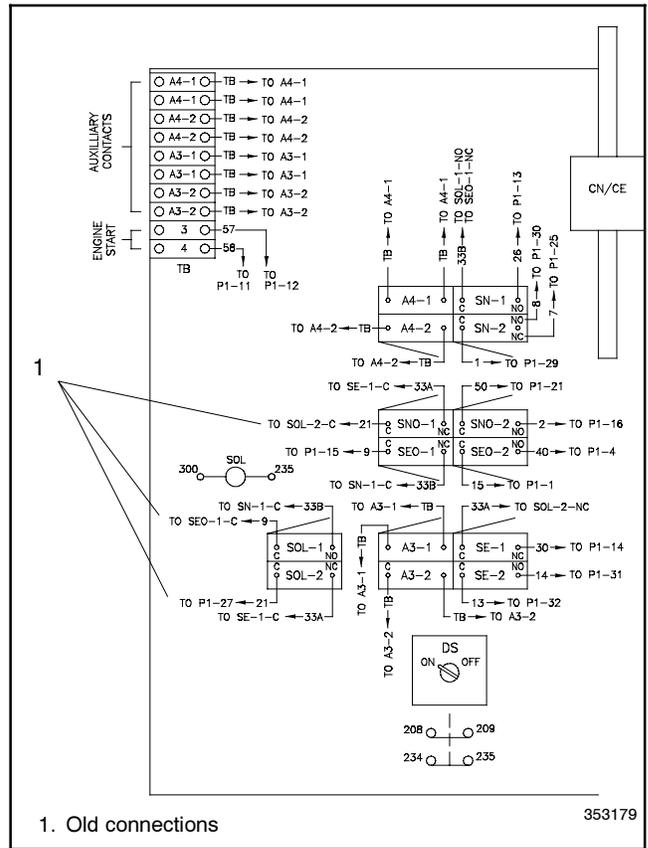


Figure 53 Old Connections, 40-260 Amp Models

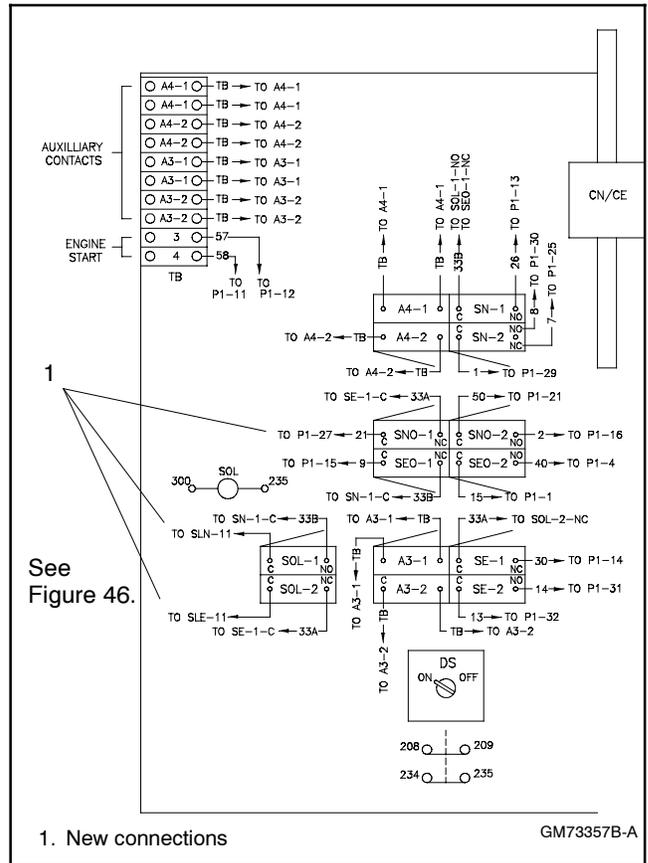


Figure 54 New Connections, 40-260 Amp Models

Current Sensing Kit Installation

50. If current sensing is required (i.e. for current [amps] monitoring and display), obtain the appropriately rated current sensing kit with 10 foot harness, and

install according to Figure 55. See Figure 6 or the Parts Lists for current sensing kit numbers.

51. Connect the current transformers as shown in Figure 56.

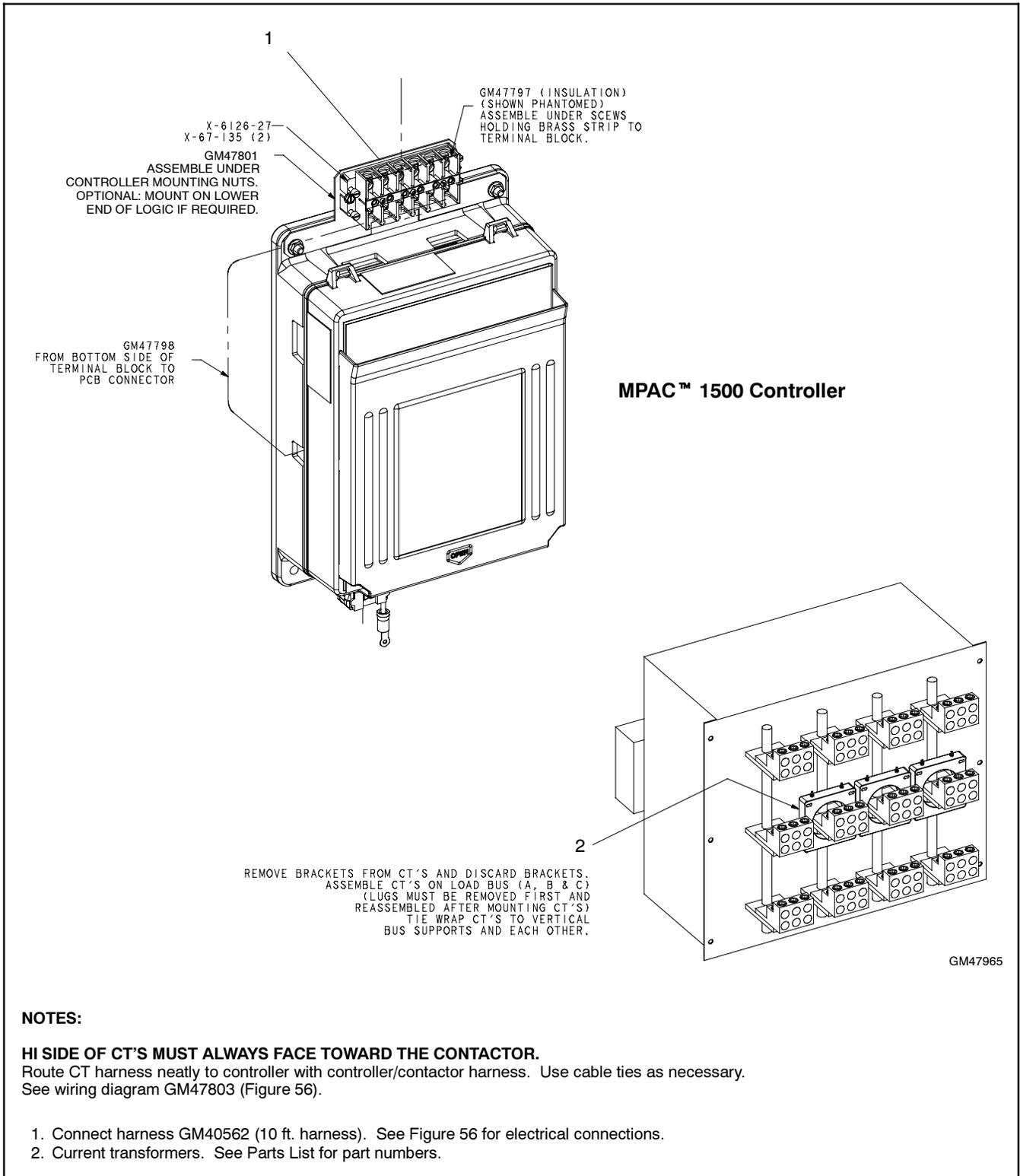


Figure 55 Current Sensing Kit Installation

52. Record the required information on decal GM70205 (see Figure 57). See Figure 6 or the Parts Lists for the current sensing kit number. See Figure 60 for the wiring diagram number.
53. Verify that the surface is clean and dry, and place decal GM70205 on the mounting plate as shown in Figure 58.

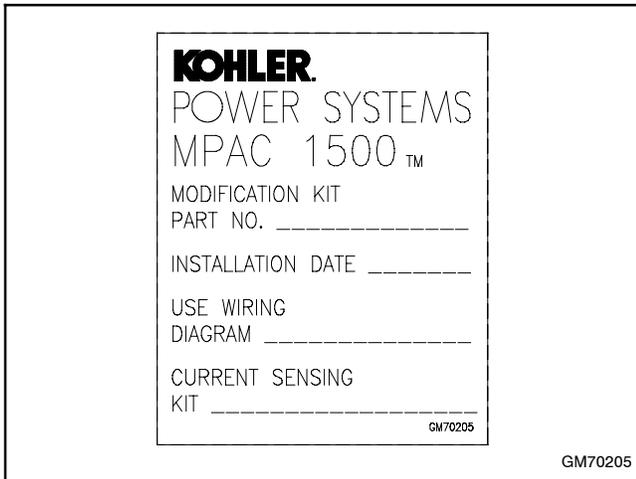


Figure 57 Decal GM70205



Figure 58 Decal GM70205 Location

Accessories

54. If optional accessory modules are used, attach the accessory mounting kit to the conversion kit mounting plate (GM77130). See Figure 22. Then refer to instruction sheet TT-1449, provided with

the accessory mounting kit, to install and connect the modules.

55. For installation of other optional accessories, refer to the instructions provided with the accessory kit or see the MPAC™ 1500 Operation Manual, TP-6714.

Setup and Test

56. Reconnect power to the transfer switch.
57. Check that the generator set master switch is in the OFF position.
58. Reconnect the generator set engine starting battery, negative (-) lead last.
59. Reconnect power to the battery charger, if equipped.
60. On the MPAC 1500 controller, program the system parameters shown in Figure 59. Refer to the transfer switch nameplate for the ATS ratings. Also check time delays and other settings that affect the ATS operation. See TP-6714, Operation Manual, for instructions.

System Parameter	Factory Setting
Standard or programmed transition	Set these parameters to match the transfer switch †
Single/three phase	
Operating voltage	
Operating frequency (50 or 60 Hz)	
Rated current	
Phase rotation	ABC
Commit to transfer (yes or no)	No
Operating mode: Generator-to-Generator, Utility-to-Generator, or Utility-to-Utility	Utility-to-Generator
In-phase monitor	Disabled
In-phase monitor transfer angle	5°
† See the ATS nameplate.	

Figure 59 System Parameters

61. Run the operation tests outlined in Operation Manual TP-6714 to verify system operation.
62. Keep these installation instructions and wiring diagrams with the transfer switch documentation for future reference.

Parts Lists

ZCS-6 M340+ to MPAC™ 1500 Conversion Kit

Kit: GM69378-S6		
Qty.	Description	Part Number
1	Plate, mounting	GM60611
1	Plate, cover switch	GM69929
1	Decal	GM70205
1	Decal	GM67498
1	Logic, MPAC1500 assembly	GM46733-1
1	Harness - ZCS - 6 MPAC1500	GM77827
10	Tie, cable	X-468-1
2	Tie, cable	X-468-3
5	Washer, plain	X-25-122
1	Retainer, panel	GM70051
13	Nut, hex	X-6210-2
5	Nut, hex	X-71-2
5	Washer, lock	X-22-6
1	Rail, din	GM47488
1	Washer, lock	X-22-12
1	Cable, ground	LK-1212-1515
15	Nut, hex	X-6210-4
8	Washer, lock	X-22-7
1	Ribbon cable assembly	GM21340
1	Plate, mounting	GM21391
1	Cover, pt	GM21392
1	PCB assembly, PTIB	GM21268
1	Operation manual - MPAC1500	TP-6714
1	Conversion installation inst ZCS MPAC1500	TT-1555
1	Dwg, assy	GM69378

Current Sensing Kits

Description	Part Number	Part Quantity									
		Kit number GM47965:									
		-S19	-S20	-S21	-S22	-S23	-S24	-S25	-S26	-S27	-S28
		1000 A 3 ph	1200 A 3 ph	2000 A 3 ph	3000 A 3 ph	1000 A 1 ph	1200 A 1 ph	200 A 3 ph	200 A 1 ph	400 A 3 ph	400 A 1 ph
Harness, CT 10 FT.	GM40562	1	1	1	1	1	1	1	1	1	1
Transformer, Current	GM47788							3	2		
Transformer, Current	GM47789									3	2
Transformer, Current	GM47790	3				2					
Transformer, Current	GM47791		3				2				
Transformer, Current	GM47792			3							
Transformer, Current	GM47793				3						
Insulation, Terminal Block	GM47797	1	1	1	1	1	1	1	1	1	1
Harness, CT	GM47798	1	1	1	1	1	1	1	1	1	1
Bracket, Terminal Block Mounting	GM47801	1	1	1	1	1	1	1	1	1	1
Diagram, Wiring CT MPAC 1500	GM47803	1	1	1	1	1	1	1	1	1	1
Drawing, Assembly Current Sensing	GM47965	1	1	1	1	1	1	1	1	1	1
Terminal Block	X-6126-27	1	1	1	1	1	1	1	1	1	1
Screw, Hex, Washer, Thread-forming	X-67-135	2	2	2	2	2	2	2	2	2	2

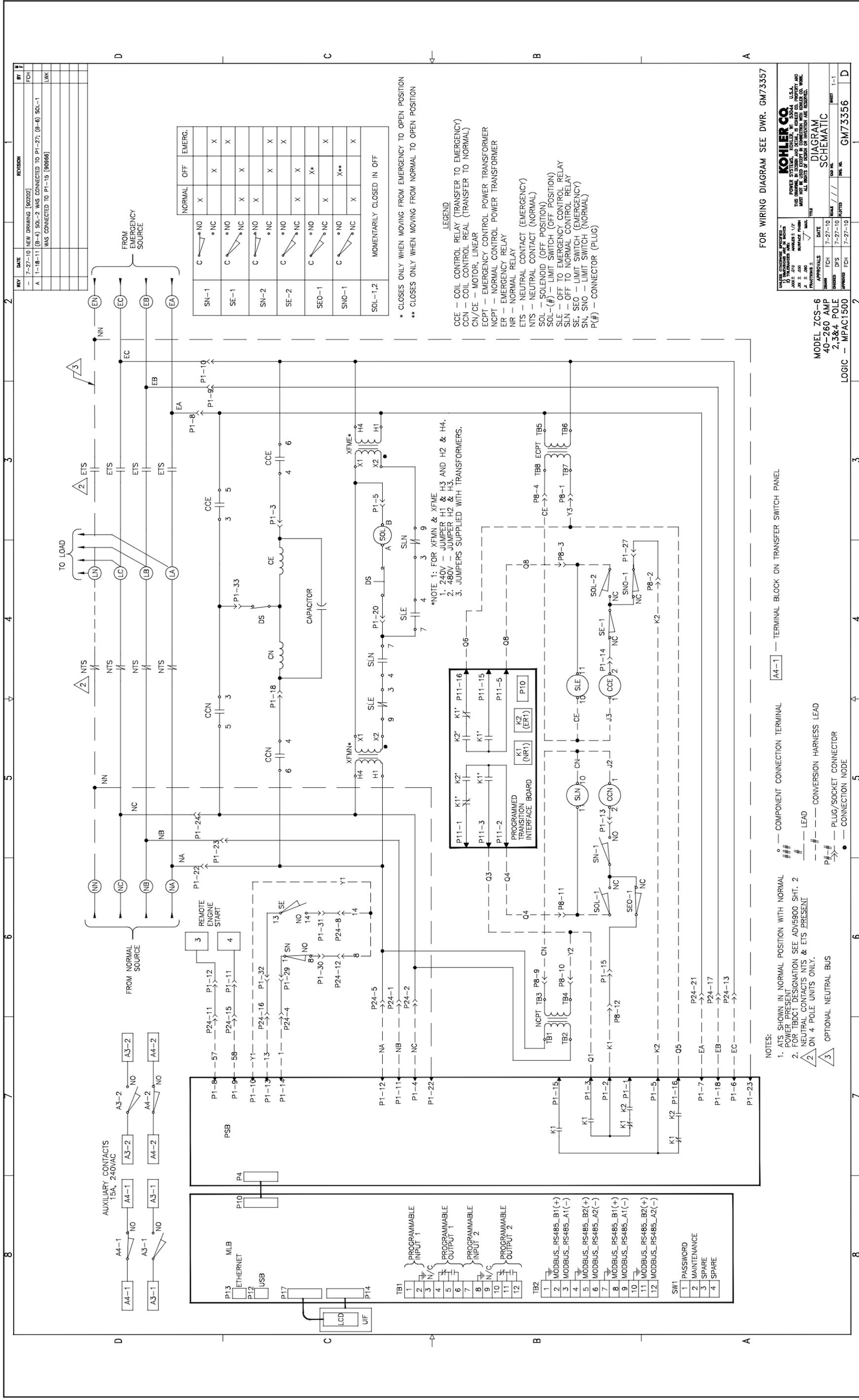
ATS Wiring Diagrams and Schematics

Use the table below to identify the drawings for your Model ZCS-6 programmed-transition transfer switch. The M340+ drawing numbers are shown for reference only. The MPAC 1500 conversion drawings are arranged **in numerical order** by drawing number on the following pages.

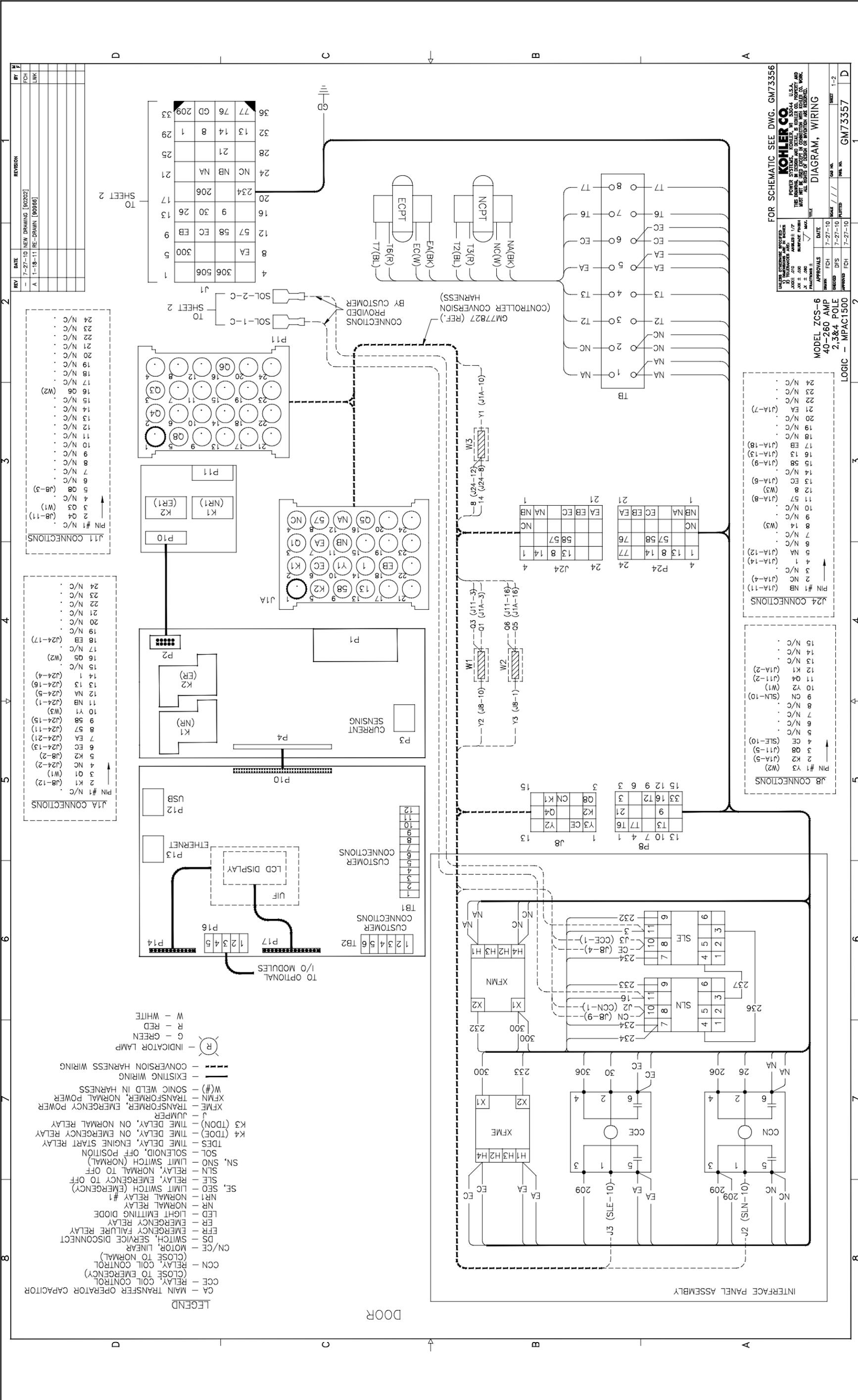
ATS Model *	Poles*	Amps	M340+ Drawing Numbers (for reference only)		MPAC 1500 Conversion Drawings	
			Schematic	Wiring Diagram	Schematic	Wiring Diagram
ZCS-6	2	40-260	353175	353179	GM73356	GM73357
	3					
	4					
	2	400	321300	321297	GM73372	GM73373
	3					
	4					
	3	600-3000	321286	321298	GM73358	GM73359
	4					

* See Figure 7 to interpret the model designation, if necessary.

Figure 60 Drawing Numbers



Schematic, Model ZCS-6 Programmable Transition with MPAC 1500 Controls, 40-260 Amps, GM73356-A



FOR SCHEMATIC SEE DWG. GM73356

REV	DATE	BY	CHK
A	1-18-11	RE-DRAWN [00866]	

REV	DATE	BY	CHK

MODEL ZCS-6
 40-260 AMP
 2,3&4 POLE
 LOGIC - MPAC1500

J24 CONNECTIONS

24	N/C
23	N/C
22	N/C
21	EA
20	N/C
19	N/C
18	N/C
17	EB
16	(J1A-13)
15	58
14	N/C
13	(J1A-6)
12	(W3)
11	57
10	N/C
9	(J1A-8)
8	74
7	N/C
6	N/C
5	NA
4	(J1A-14)
3	N/C
2	NC
1	NB

J8 CONNECTIONS

15	N/C
14	N/C
13	N/C
12	K1
11	Q4
10	(W1)
9	NC
8	(SLN-10)
7	N/C
6	N/C
5	N/C
4	CE
3	Q8
2	(J1A-5)
1	(W2)

J1A CONNECTIONS

24	N/C
23	N/C
22	N/C
21	N/C
20	N/C
19	N/C
18	EB
17	N/C
16	Q5
15	(W2)
14	(J24-4)
13	(J24-16)
12	NA
11	NB
10	(W3)
9	58
8	57
7	EA
6	EC
5	K2
4	NC
3	Q1
2	K1
1	(J8-12)

J11 CONNECTIONS

24	N/C
23	N/C
22	N/C
21	N/C
20	N/C
19	N/C
18	N/C
17	N/C
16	Q6
15	N/C
14	N/C
13	N/C
12	N/C
11	N/C
10	N/C
9	N/C
8	N/C
7	N/C
6	N/C
5	Q8
4	(J8-3)
3	Q4
2	(J8-11)
1	N/C

J12 CONNECTIONS

24	N/C
23	N/C
22	N/C
21	N/C
20	N/C
19	N/C
18	N/C
17	N/C
16	N/C
15	N/C
14	N/C
13	N/C
12	N/C
11	N/C
10	N/C
9	N/C
8	N/C
7	N/C
6	N/C
5	N/C
4	N/C
3	N/C
2	N/C
1	N/C

- LEGEND
- CA - MAIN TRANSFER OPERATOR CAPACITOR
 - CCE - RELAY, COIL CONTROL (CLOSE TO EMERGENCY)
 - CCN - RELAY, COIL CONTROL (CLOSE TO NORMAL)
 - CN/CE - MOTOR, LINEAR
 - DS - SWITCH, SERVICE DISCONNECT
 - EFR - EMERGENCY FAILURE RELAY
 - ER - EMERGENCY RELAY
 - LED - LIGHT EMITTING DIODE
 - NR - NORMAL RELAY
 - NR1 - NORMAL RELAY #1
 - SE - LIMIT SWITCH (EMERGENCY)
 - SLE - RELAY, EMERGENCY TO OFF
 - SLN - RELAY, NORMAL TO OFF
 - SN - LIMIT SWITCH (NORMAL)
 - SNO - LIMIT SWITCH (NORMAL)
 - SOL - SOLENOID, OFF POSITION
 - TDES - TIME DELAY, ENGINE START RELAY
 - K4 (TDOE) - TIME DELAY, ON EMERGENCY RELAY
 - K3 (TDON) - TIME DELAY, ON NORMAL RELAY
 - J - JUMPER
 - XFME - TRANSFORMER, EMERGENCY POWER
 - XFMN - TRANSFORMER, NORMAL POWER
 - (#) - SONIC WELD IN HARNESS
 - - EXISTING WIRING
 - - - - - CONVERSION HARNESS WIRING
 - (R) - INDICATOR LAMP
 - W - WHITE
 - R - RED
 - G - GREEN

REV	DATE	BY	CHK
A	1-18-11	RE-DRAWN [00866]	

J11 CONNECTIONS

24	N/C
23	N/C
22	N/C
21	N/C
20	N/C
19	N/C
18	N/C
17	N/C
16	Q6
15	N/C
14	N/C
13	N/C
12	N/C
11	N/C
10	N/C
9	N/C
8	N/C
7	N/C
6	N/C
5	Q8
4	(J8-3)
3	Q4
2	(J8-11)
1	N/C

J1A CONNECTIONS

24	N/C
23	N/C
22	N/C
21	N/C
20	N/C
19	N/C
18	EB
17	N/C
16	Q5
15	(W2)
14	(J24-4)
13	(J24-16)
12	NA
11	NB
10	(W3)
9	58
8	57
7	EA
6	EC
5	K2
4	NC
3	Q1
2	K1
1	(J8-12)

J1A CONNECTIONS

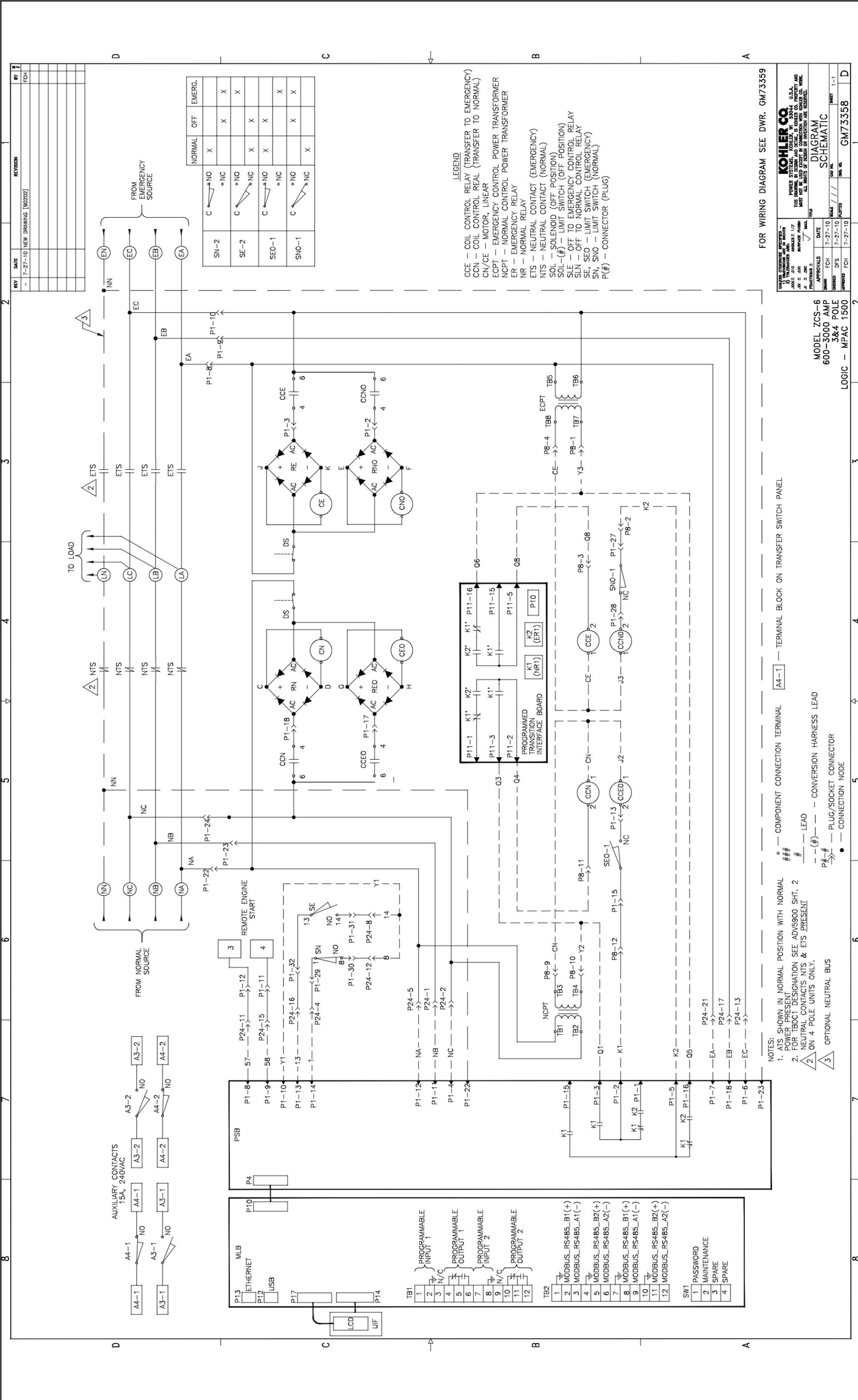
24	N/C
23	N/C
22	N/C
21	N/C
20	N/C
19	N/C
18	EB
17	N/C
16	Q5
15	(W2)
14	(J24-4)
13	(J24-16)
12	NA
11	NB
10	(W3)
9	58
8	57
7	EA
6	EC
5	K2
4	NC
3	Q1
2	K1
1	(J8-12)

J11 CONNECTIONS

24	N/C
23	N/C
22	N/C
21	N/C
20	N/C
19	N/C
18	N/C
17	N/C
16	Q6
15	N/C
14	N/C
13	N/C
12	N/C
11	N/C
10	N/C
9	N/C
8	N/C
7	N/C
6	N/C
5	Q8
4	(J8-3)
3	Q4
2	(J8-11)
1	N/C

J12 CONNECTIONS

24	N/C
23	N/C
22	N/C
21	N/C
20	N/C
19	N/C
18	N/C
17	N/C
16	N/C
15	N/C
14	N/C
13	N/C
12	N/C
11	N/C
10	N/C
9	N/C
8	N/C
7	N/C
6	N/C
5	N/C
4	N/C
3	N/C
2	N/C
1	N/C



FOR WIRING DIAGRAM SEE DWR. GM73359

DESIGNED BY	DATE	REVISION
APPROVED BY	DATE	REVISION
CHECKED BY	DATE	REVISION
TESTED BY	DATE	REVISION
ASSEMBLED BY	DATE	REVISION

MODEL	ZCS-6
RATING	600-3000 AMP
POLE	3&4 POLE
LOGIC	MPAC 1500

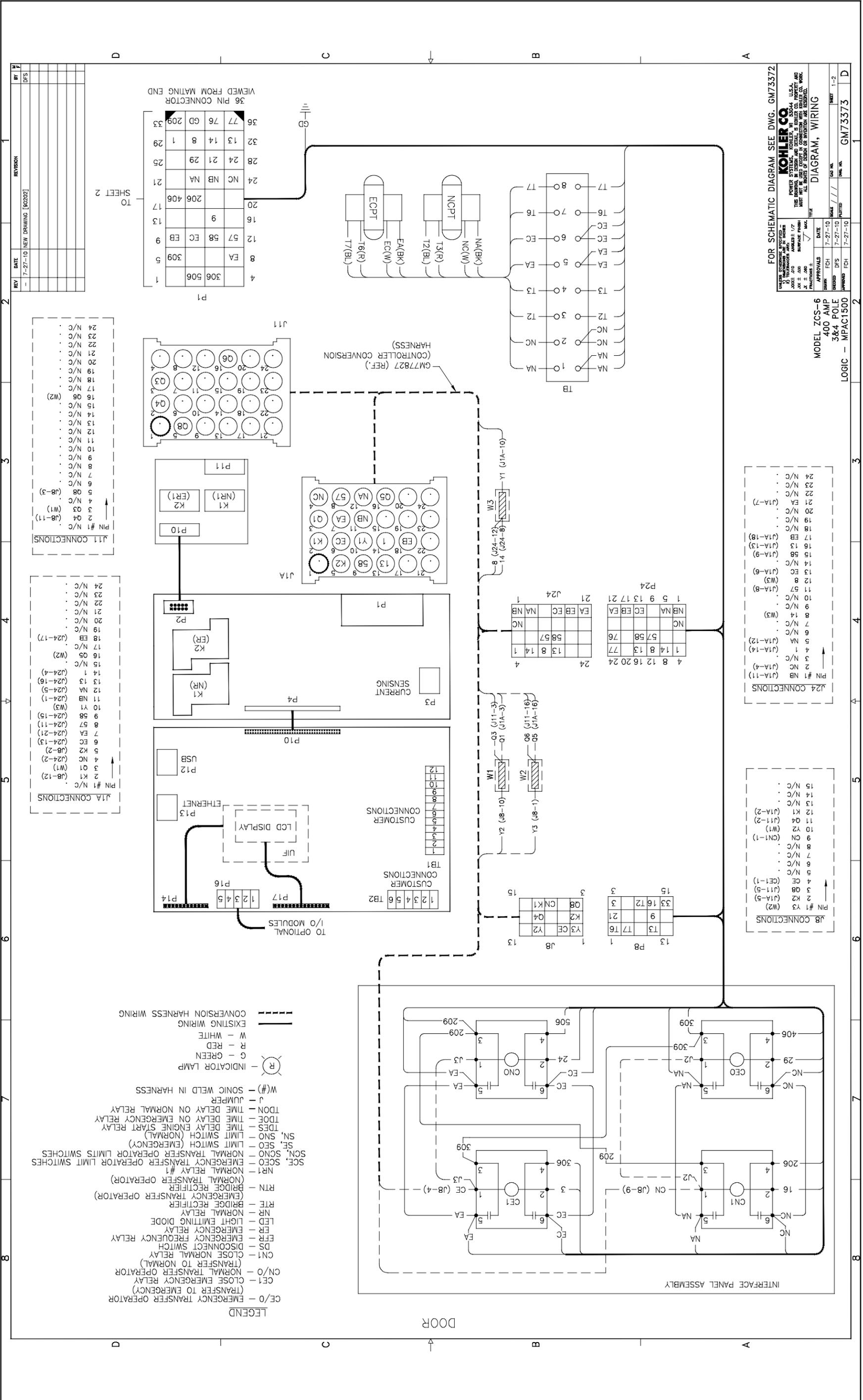
APPROVALS	DATE
DESIGNED	7-27-10
CHECKED	7-27-10
TESTED	7-27-10
ASSEMBLED	7-27-10

COIL CONTROL RELAY (TRANSFER TO EMERGENCY)	CCE	NO	NC	EMERG.
COIL CONTROL REAL (TRANSFER TO NORMAL)	CCN	NO	NC	EMERG.
MOTOR, LINEAR	CE	NO	NC	EMERG.
EMERGENCY CONTROL POWER TRANSFORMER	ECPT	NO	NC	EMERG.
EMERGENCY RELAY	ER	NO	NC	EMERG.
NORMAL RELAY	NR	NO	NC	EMERG.
NEUTRAL CONTACT (EMERGENCY)	ETS	NO	NC	EMERG.
NEUTRAL CONTACT (NORMAL)	NTS	NO	NC	EMERG.
SOLENOID (OFF POSITION)	SOL	NO	NC	EMERG.
LIMIT SWITCH (OFF POSITION)	SLE	NO	NC	EMERG.
OFF TO EMERGENCY CONTROL RELAY	SLE	NO	NC	EMERG.
OFF TO NORMAL CONTROL RELAY	SLE	NO	NC	EMERG.
LIMIT SWITCH (EMERGENCY)	SE	NO	NC	EMERG.
LIMIT SWITCH (NORMAL)	SN	NO	NC	EMERG.
CONNECTOR (PLUG)	P(#)	NO	NC	EMERG.

- NOTES:
- ATS SHOWN IN NORMAL POSITION WITH NORMAL FOR PRESENCE OF POWER.
 - FOR TBDCI DESIGNATION SEE ADV5900 SHT. 2
 - NEUTRAL CONTACTS NTS & ETS PRESENT ON 4 POLE UNITS ONLY.
 - OPTIONAL NEUTRAL BUS

- LEGEND:
- — COMPONENT CONNECTION TERMINAL
 - — TERMINAL BLOCK ON TRANSFER SWITCH PANEL
 - — — — — LEAD
 - (#) — CONVERSION HARNESS LEAD
 - — — — — PLUG/SOCKET CONNECTOR
 - — CONNECTION NODE

Schematic Diagram, Model ZCS-6 Programmed Transition with MPAC 1500 Controls, 600-3000 Amps, GM73358



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