

## USER'S MANUAL

**MODEL: 5970-80**

**MODEL: 5970-160**

## CURRENT REVERSAL SWITCH

**Date Sold:** \_\_\_\_\_

**Serial number:** \_\_\_\_\_

PROPRIETARY

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Continued

## **DRAWINGS (continued)**

Drawing 11900561 5970-80 General Assembly, [shown with optional ADI]  
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Drawing 15900000 5970-80/160 Control PCB Assembly  
Drawing 15900010 5970-80/160 Front Panel PCB Assembly

**Section 1**  
**SPECIFICATIONS**  
**Table 1. Model 5970-80 Specifications**

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**Electrical**

DC Voltage (maximum):	100 Volts
DC Current (maximum):	80 Amps
AC Voltage:	100-125 or 200-250 Volts
AC Current:	2.0/1.0 Amps
DC Internal power supply (control power):	24VDC/2.4A

**Fuse Ratings**

AC Input:	for 115V use 20 x 5 mm 2.0Amp SLO-BLOW
AC Input:	for 230V use 20 x 5 mm 1.0Amp SLO-BLOW
DC Interlock:	use 20 x 5 mm 2Amp SLO-BLOW

**Electrical Connections**

DC Current: (up to 80A max)	M6 Stud
DC Control wiring:	Phoenix Plug/Header Type: MSTB
AC Power:	IEC320

**Analog Device Interface (Option)**

GPIB Plug.	GPIB Female
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**Spare Parts Kit**

- Pilot lamps 12V (x 2).
- Fuses type 20 x5 mm 1.0 Amp SLO-BLOW (x 5)
- Fuses type 20 x5 mm 2.0 Amp SLO-BLOW (x 5)

**Dimensions**

483 mm W x 541mm D x 177 mm H.  
(19.0 inch W x 21.3 Inch D x 7.0 inch H).

**Weight**

20kg (44 lb), excluding interconnecting cables.

**Section 1**  
**SPECIFICATIONS**  
**Table 1. Model 5970-160 Specifications**

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**Electrical**

DC Voltage (maximum):	100 Volts
DC Current (maximum):	160 Amps
AC Voltage:	100-125 or 200-250 Volts
AC Current:	2.0/1.0 Amps
DC Internal power supply (control power):	24VDC/2.4A

**Fuse Ratings**

AC Input:	for 115V use 20 x 5 mm 2.0Amp SLO-BLOW
AC Input:	for 230V use 20 x 5 mm 1.0Amp SLO-BLOW
DC Interlock:	use 20 x 5 mm 2Amp SLO-BLOW

**Electrical Connections**

DC Current: (up to 160A max)	M12 Stud
DC Control wiring:	Phoenix Plug/Header Type: MSTB
AC Power:	IEC320

**Analog Device Interface (Option)**

GPIB Plug.	GPIB Female
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**Spare Parts Kit**

- Pilot lamps 12V (x 2).
- Fuses type 20 x5 mm 1.0 Amp SLO-BLOW (x 5)
- Fuses type 20 x5 mm 2.0 Amp SLO-BLOW (x 5)

**Dimensions**

483 mm W x 495 mm D x 266 mm H.  
(19.0 inch W x 19.5 inch D x 10.5 inch H)

**Weight**

22 kg (48 lb), excluding interconnecting cables.

## Section 2

### WARNINGS

#### REFER TO WARNINGS BELOW BEFORE OPERATING CURRENT REVERSAL SWITCH

##### 1 AC Power

Ensure that the **VOLTAGE SELECTOR** has been set to the correct input voltage before applying AC Input Power. To check the Voltage Selector first turn off power on the AC input receptacle and remove the AC input plug. The voltage displayed next to the triangle on the lower right hand side of the AC input receptacle is the voltage setting. To change the voltage settings insert a small bladed screwdriver into the slot on the top of the Fuse Drawer located directly below the ground pin on the AC input receptacle and pull the Fuse Drawer out. Check the the correct fuse is inserted in the correct location. A 2.0A fuse is used for 115 Vac and 1.0A fuse used for 230Vac The Fuse Drawer should then be rotated 180° and reinserted. Check that the correct voltage setting is displayed next to the triangle on the lower right hand side of the AC input receptacle.

##### 2 DC Interlock

Check the operation of the DC Interlock circuit before operating the Reversal Switch. Turn on the DC Power Supply and increase the output voltage to 2 volts. The High Current Interlock light on the front panel should illuminate and relay RL2 should be energized. If the lamp does not illuminate check the High Current Interlock circuit and remedy the problem before using the Reversal Switch.

##### 3 Arcing

The magnet stores considerable energy in its field during operation. Do not disconnect any high current or ac power lead while under load or the magnetic field energy may be discharged across the interruption causing severe and hazardous arcing.

##### 4 Current Rating

Do not exceed the current rating for the Current Reversal Switch given in the specification tables in section 1 of this User's Manual. Exceeding the current rating is dangerous and will damage the internal components. Damage caused by using the Current Reversal Switch at higher currents than specified will void the warranty.

##### 5 Watches, Credit Cards, Magnetic Discs and Pacemakers

Do not move magnetically sensitive items into the close vicinity of the magnet. Even some anti-magnetic watches can be damaged when placed in close proximity to the pole gaps during operation. Credit cards, magnetic discs and pacemakers may be affected by magnetic fields as low as 5G (0.5mT).

**Table 2. Model 5970-80/160 Electrical Connections**

**DC Current to Magnet** (refer to drawing 13900360/1)

**TB1** Left hand terminal: Positive  
**TB1** Right hand terminal: Negative

**DC Current from Power Supply** (refer to drawing 13900360/1)

**TB2** Left hand terminal: Positive  
**TB2** Right hand terminal: Negative

**Ground** (refer to drawing 13900360/1)

Ground connections are provided at two locations on the main terminal block on Model 5970-80.  
A grounding stud is provided near the main terminal block on Model: 5970-160.

**Magnet Interlocks** (refer to drawing 13900360/1)

Pin 1 & Pin 2 Water flow: Normally open.  
Closed when flow OK. (not used in standard GMW systems)

Pin 3 & Pin 4 Over temperature: Normally closed.  
Open when coil temperature exceeds 50°C.

**CAUTION:** Ensure that the high current connections are tight. Loose connections may lead to oxidation and overheating. The field stability may be degraded and the current terminations damaged.

## Section 3

### INSTALLATION

#### Unpacking Instructions

The Model 5970-80/160 is supplied assembled. If damage is evident, report the damage in detail to the shipper for claim and simultaneously notify GMW in case assessment of the damage must be made. Included in the carton should be:

- 1 x 5970-80/160 Current reversing Switch
- 1 x Manual
- 1 x Spare Parts Kit
- \* 1 x ADI-123 (Optional)
- \* 1 x ADI-Mounting Kit (Optional)

\* If the ADI Option has been ordered it will be installed in the Model 5970-80/160.

#### Mounting Position

The Model 5970-80/160 Reversal Switch is intended to be operated in the horizontal position either as a bench top unit or in a 19" EIA Equipment Rack.

#### Electrical Circuit

Never connect or remove cables from the Reversal Switch with the power supply powered. The stored energy in the magnet can cause arcing resulting in severe injury to personnel or equipment damage. All terminals should be tight. If terminals come loose in operation local heating at the terminations can cause rapid oxidation leading to a high contact resistance and high power dissipation at the terminals. If left unattended this can cause enough local heating to damage the terminals.

**AC Power** (refer to section 2.1)



## Section 4

### OPERATION

#### General

Check that the AC voltage setting has been set correctly (refer to previous section) then insert the AC input connector and turn on the AC Power switch. The green pilot light on the front panel should illuminate indicating that the 24V control power supply is on. The white '**HIGH CURRENT INTERLOCK**' should come on if the DC Power Supply voltage is above 2 volts. The reversal switch is interlocked and cannot change the DC polarity until the power supply voltage drops below 1.5V. The yellow pilot lights on the front panel indicate the position of the internal reversal contactor.

#### To reverse polarity

Push the green push button on the front panel labeled '**PUSH TO REVERSE**'. The following events should take place:

1. Relay RL1 will latch closed programming the DC power supply down to zero current output.
2. Relay RL2 will de-energize when the DC power supply voltage drops below 1.5V, turning off the front panel High Current Interlock light.
3. Then relay RL2 de-energizes it starts both timers TM1 & TM2.
4. Timer TM2 times out after 5.0 seconds providing a delay before actuating the current reversal contactor.
5. M1 then times out after 6.0 seconds resetting RL1 and turning the DC power supply back on. The reversal switch is then ready for another cycle.

Note: The settings of TM1 and TM2 should not need adjustment. If they are readjusted TM1 must be at least 0.5 seconds longer than TM2 delay. A maximum time of 8 seconds should not be exceeded.

## Section 5

### ANALOG DEVICE INTERFACE (OPTION)

#### GENERAL

The Analog Device Interface provides computer control of the Current Reversal Switch using GPIB communications. It is optional equipment and can be field installed if required using the ADI Installation Kit detailed below. Full details on the Group 3 Model ADI-123 Analog Device Interface are given in the separate manual. The ADI has 1 Analog output channel, 2 Analog status channels, and 3 Two-state channels. The channel assignments are given below.

#### Analog Channels

Analog output: Power supply current output programming.  
Analog input 1: Power supply current monitor.  
Analog input 2: Power supply voltage monitor.

#### Two State Channels

Ch1: Magnet temperature and water flow interlock status.  
Ch2: Reversal switch control.  
Ch3: Reversal switch position status.

#### ADI Installation Kit

The following components make up the ADI Installation Kit.

- 1 x ADI-123G Analog Device Interface.
- 2 x ADI Mounting Bars. [ Dwg no 17900670]
- 2 x ADI Mounting Studs. [ Dwg no 179006780]
- 4 x ADI Mounting Nuts. [M6 Kepnuts]
- 1 x ADI Control Wiring Harness. [Connects ADI to R/S Control PCD]
- 1 x ADI Control Wiring Harness. [Connects ADI to R/S Control PCD]
- 1 x ADI Mains Wiring Harness. [Connects ADI to R/S Control PCD]
- 1 x ADI Connecting GPIB Cable 0.5M long [Connects ADI to R/S bulkhead GPIB Connector].
- 1 x R/S GPIB Bulkhead GPIB Connector.
- 4 x R/S GPIB Bulkhead Connector Mountings Screws.
- 4 x R/S GPIB Bulkhead Connector Mountings Washers
- 4 x R/S GPIB Bulkhead Connector Mountings Nuts.

#### GPIB Installation Kit

The following components are required to control the Current Reversal Switch through the ADI using a computer. All the following items can be purchased through GMW Associates if required.

- Controlling Computer.
- Controlling Software.
- GPIB Interface Board IEEE-488 [National Instruments Part no or similar].
- GPIB Connecting Cable IEEE-488 [National Instruments Part no or similar].

## Section 5

### ANALOG DEVICE INTERFACE (OPTION)

#### **Field Installation of the Analog Device Interface.**

1. Turn off the magnet power supply and turn off the ac power and remove the power cord to the current reversal switch.
2. Remove the four screws securing the reversal switch cover and remove top cover.
3. Remove the four screws and cover plate from the cutout for the GPIB connector on the back panel.
4. Screw on a kepnut onto the ADI mounting studs about 6mm, so that the lock washer faces the short end of the mounting stud. Repeat for the other mounting stud.
5. Screw the mounting studs 6mm into the current reversal switch base plate threaded holes using the short threaded end.
6. Tighten down the kepnut on the mounting stud against the current reversal switch base plate, repeat for the other mounting stud.
7. Remove the ADI's bottom cover by undoing the center securing screw and mount the ADI mounting bars to the bottom cover using M3 pan head screws. [Only required if the ADI mounting bars are not fitted to the ADI].
8. Set the ADI DIP switches as required. GMW normally uses address 1 for the ADI installed in the current reversal switch. [Only required if ADI has not been set up at GMW or end user needs to change the ADI to another GPIB address.]
9. Reinstall the bottom cover onto the ADI and secure with the single center screw.
10. Plug in the control wiring harness into the ADI with the 9way connector.
11. Plug in the control wiring harness into the ADI with the 10way connector.
12. Mount the ADI into the current reversal switch by sliding the mounting bars over the two vertical mounting studs located on the current reversal switch base plate.
13. Secure the ADI in place with two kepnuts.
14. Pull off one of the QC connectors located on the back of the ac input power receptacle. Push on a QC receptacle from the ADI power lead with the same color wire onto the ac power filter.
15. Push on the removed QC receptacle from the internal power supply onto the tab of the ADI QC receptacle.
16. Repeat for the other three QC connections.
17. Check that the wire colors are the same on each terminal of the ac filter and the removed QC receptacles are returned to their original location.
18. Plug in the control wiring from the ADI with the 9-way plug into the vertical receptacle on the control PCD.
19. Plug in the control wiring from the ADI with the 10-way plug into the vertical receptacle on the control PCD. The connector should be installed with the male GPIB connection and mounting flange facing the inside of the reversal switch case.
20. Secure the bulkhead GPIB connector onto the rear panel of the current reversal switch using the pan head screw provided.
21. Connect the short length GPIB cable between the back of the bulkhead connector on the rear panel and the GPIB connector on the ADI.

## Section 5

### ANALOG DEVICE INTERFACE (OPTION)

**ADI Commands** (Full details given in the ADI User's Manual)

#### Analog Output Channel

- W16383: Set analog output to full scale.
- W00000: Set analog output to zero.

#### Analog Input Channels

- R1: Read channel 1, zero input = 0  
full scale = 16383.
- R2: Read channel 2, zero input = 0  
full scale = 16383.

#### Two State Channels

- TR1: Read status 1 (magnet temp and water flow interlock). State 1 = OK.
- TR2: Not used.
- TR3: Read status 3 (reversal switch position). State 1 = REVERSE.
  
- TW21: Turns on channel 2 (reversal switch start).
- TW20: Turns off channel 2.

- Note:**
1. After TW2 is turned on it must be turned off again to allow the reversal switch circuit to reset before another reversal cycle can take place. Time between TW21 and TW20 should be about 1 sec
  2. The ADI two state channel 1 is set with jumpers to the passive position and monitors the magnet interlocks at terminal 4 on P1.

#### Software Drivers

##### LabVIEW Driver

A LabVIEW driver is available from GMW Associates. It provides control and monitoring of the model: 5970-80/160 current reversal switch and power supply. The driver is supplied free of charge.

## Section 6

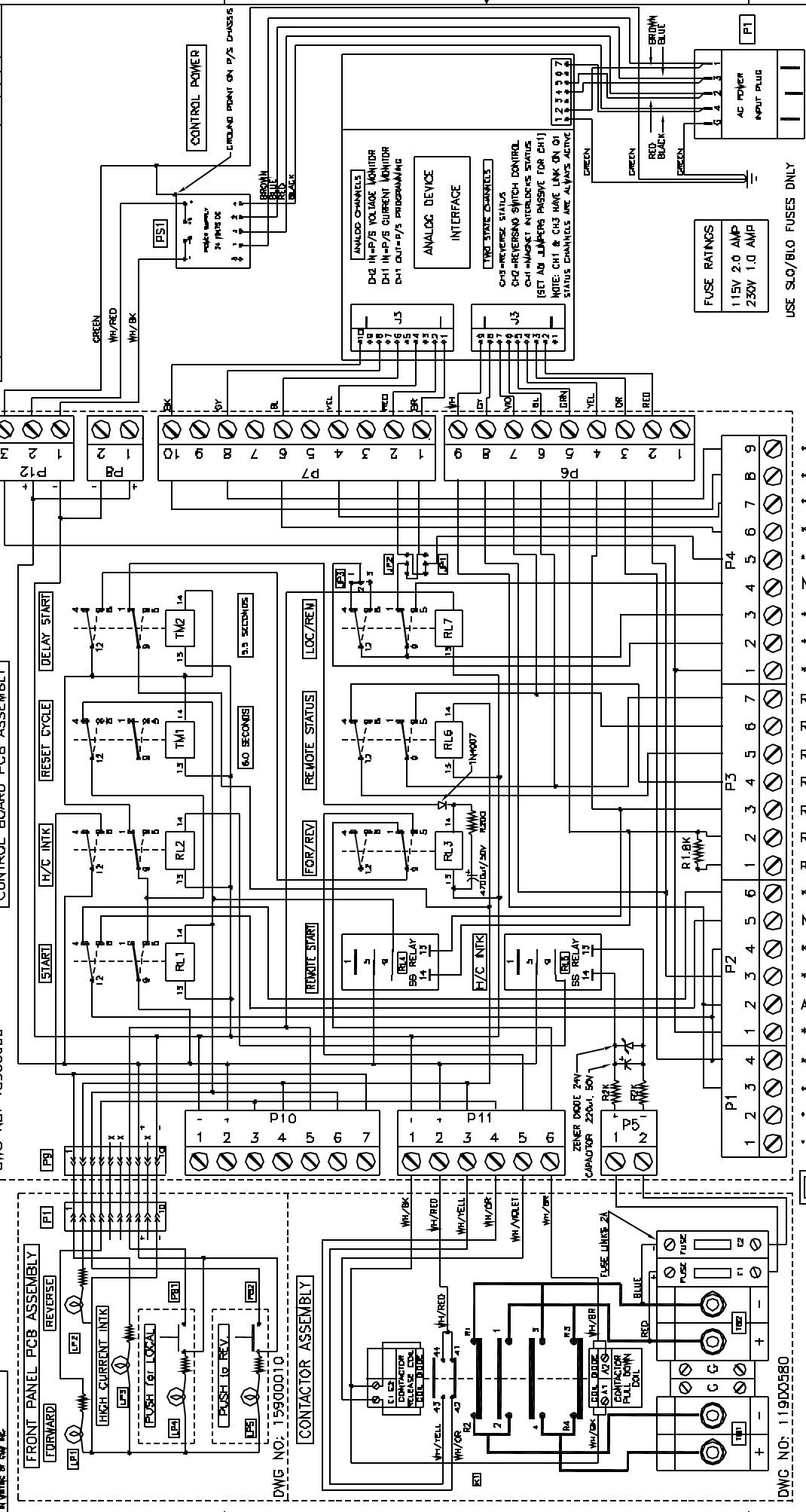
### MAINTENANCE

The only routine maintenance required is to ensure that the high current connections are tight and the High Current Interlock is working correctly.

To check the operation of the DC High Current Interlock circuit turn on the DC Power Supply and increase the output voltage to 2 volts. The High Current Interlock light on the front panel should illuminate and relay RL2 should be energized. **If the lamp does not illuminate check the High Current Interlock circuit and remedy the problem before using the Reversal Switch.**

**Section 7**

**DRAWINGS**



- \* P/S MONITOR VOLTS [LOW]
- \* P/S MONITOR VOLTS [HIGH]
- \* P/S MONITOR AMPS [LOW]
- \* P/S MONITOR AMPS [HIGH]
- \* P/S AN PROGRAMMING [HIGH]
- \* NORMALLY OPEN CONTACT
- \* P/S ADI RETURN/ENABLE
- \* P/S REMOTE COMMON
- \* SYSTEM/CHASSIS GROUND
- \* REMOTE STATUS [REVERSE]
- \* REMOTE STATUS [REVERSE]
- \* REMOTE STATUS [FORWARD]
- \* REMOTE STATUS [FORWARD]
- \* REMOTE START RELAY [LOW]
- \* REMOTE START RELAY [HIGH]
- \* REMOTE START RELAY 230VAC
- \* P/S ON/OFF CONTROL [NC]
- \* NO EXTERNAL CONNECTION
- \* P/S ON/OFF CONTROL [C]
- \* ADI EXT POWER [-12VDC]
- \* ADI EXT POWER [+12VDC]
- \* SYSTEM/CHASSIS GROUND
- \* MAGNET TEMPERATURE INTK
- \* MAGNET TEMPERATURE INTK
- \* MAGNET WATER FLOW INTK (not used)
- \* MAGNET WATER FLOW INTK (not used)

\* = USER CONNECTIONS

DC CURRENT OUTPUT

DC CURRENT INPUT

NOTE:  
 THE 160 AMP VERSION OF THE REVERSAL SWITCH USES A DIFFERENT CONTACTOR ASSEMBLY SEE SCHEMATIC DWG: 15900370

PARIS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	115V 2.0 AMP	FUSE
2	1	250V 1.0 AMP	FUSE

WARNING: ENSURE VOLTAGE SELECTOR IS SET FOR CORRECT INPUT VOLTAGE BEFORE APPLYING POWER

USE SLO/BLO FUSES ONLY

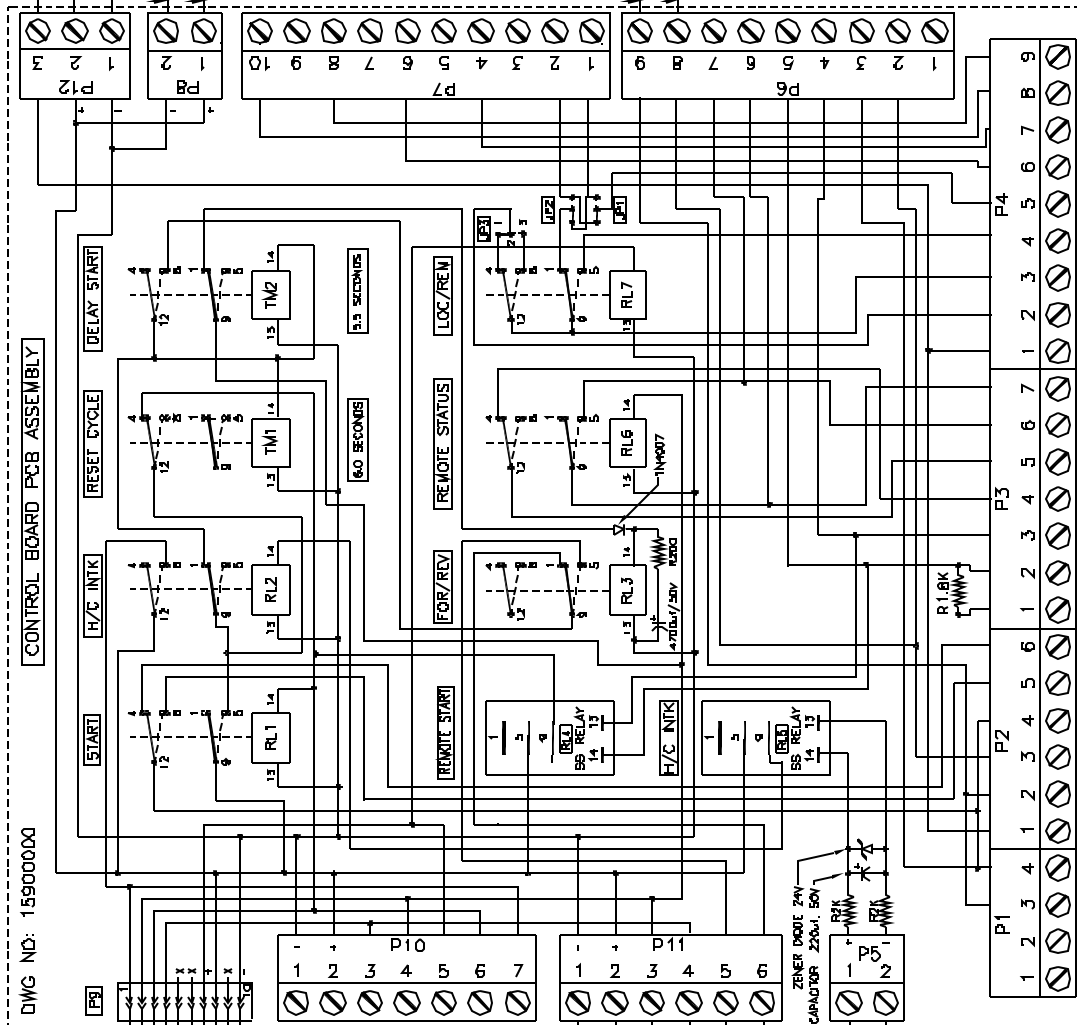
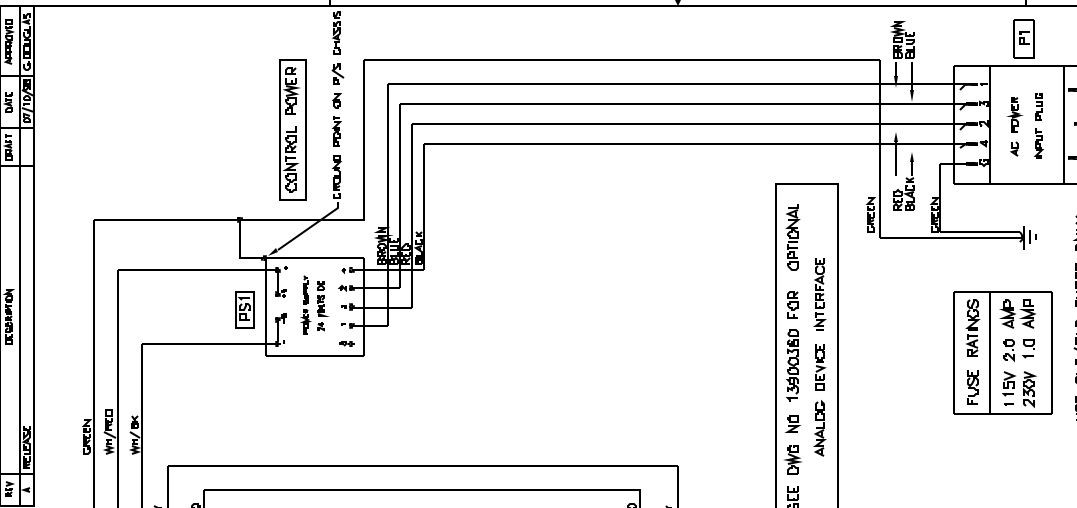
FUSE RATINGS  
 115V 2.0 AMP  
 250V 1.0 AMP

GMW  
 P.O. Box 2618, Hayward City, CA 94604  
 Tel: (510) 882-0332 Fax: (510) 882-0298

REVERSAL SWITCH  
 MAIN SCHEMATIC

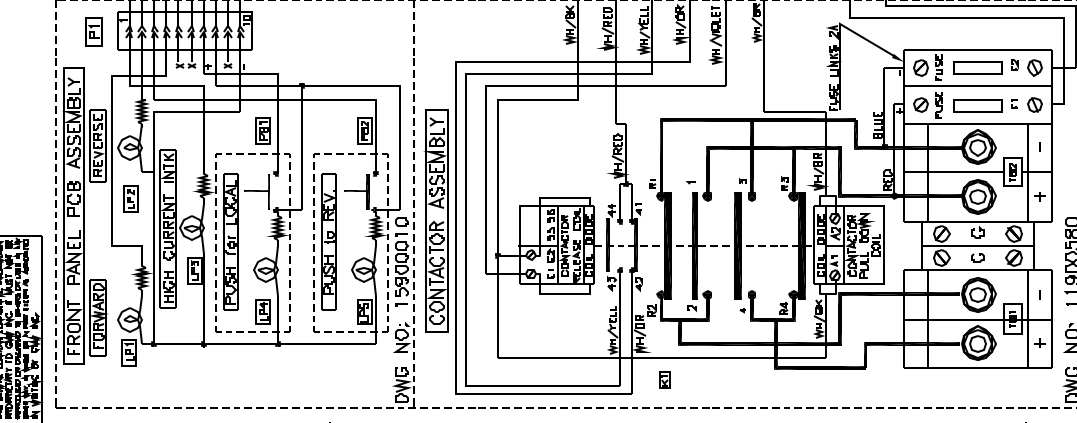
REV: 1  
 DWG: 15900360  
 SHEET 1 OF 1

REV	DESCRIPTION	DATE	APPROVED
1	RELEASE	07/10/98	C. DEJULIAS



- 1 USED FOR ADI OPTION ONLY
- 2 USED FOR ADI OPTION ONLY
- 3 USED FOR ADI OPTION ONLY
- 4 USED FOR ADI OPTION ONLY
- 5 USED FOR ADI OPTION ONLY
- 6 USED FOR ADI OPTION ONLY
- 7 REMOTE STATUS [REVERSE]
- 8 REMOTE STATUS [REVERSE]
- 9 REMOTE STATUS [FORWARD]
- 10 REMOTE STATUS [FORWARD]
- 11 REMOTE START RELAY [LOW]
- 12 REMOTE START RELAY [HIGH]
- 13 REMOTE START RELAY 230VAC
- 14 \* P/S ON/OFF CONTROL [NC]
- 15 NO EXTERNAL CONNECTION
- 16 \* P/S ON/OFF CONTROL [C]
- 17 \* EXTERNAL POWER [-24VDC]
- 18 EXTERNAL POWER [+24VDC]
- 19 \* SYSTEM/CHASSIS GROUND
- 20 \* MAGNET TEMPERATURE INTK
- 21 \* MAGNET TEMPERATURE INTK
- 22 \* MAGNET WATER FLOW INTK (not used)
- 23 \* MAGNET WATER FLOW INTK (not used)

\* = USER CONNECTIONS



NOTE: THE 160 AMP VERSION OF THE REVERSAL SWITCH USES A DIFFERENT CONTACTOR ASSEMBLY SEE SCHEMATIC DWG: 13900370

FUSE RATINGS  
115V 2.0 AMP  
250V 1.0 AMP

USE SLO/BL0 FUSES ONLY

SEE DWG NO 13900380 FOR OPTIONAL ANALOG DEVICE INTERFACE

WARNING: ENSURE VOLTAGE SELECTOR IS SET FOR CORRECT INPUT VOLTAGE BEFORE APPLYING POWER

ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
1	1	13900380	OPTIONAL ANALOG DEVICE INTERFACE	
2	1	13900380	OPTIONAL ANALOG DEVICE INTERFACE	

**GMW**  
P.O. Box 2678, Hayward City, CA 94604  
Tel: (510) 882-0332 Fax: (510) 882-4298

**REVERSAL SWITCH MAIN SCHEMATIC**

REV: 13900370  
REV: 13900380  
REV: 13900381

SCALE: 1:1

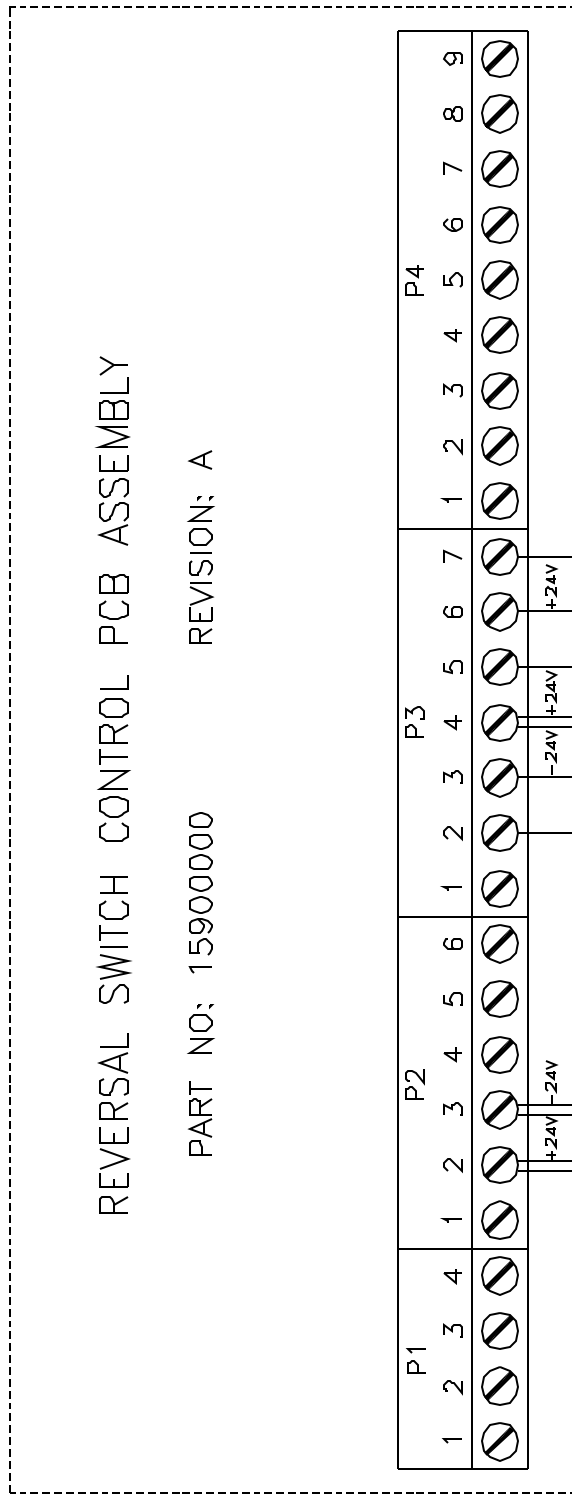
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REV	RELEASE	DESCRIPTION	DATE	APPROVED
A			07/24/21	C. DEJULIUS

8 7 6 5 4 3 2 1

PROPERTY OF  
 GM HOLDING CORPORATION, A Subsidiary of  
 GENERAL MOTORS CORPORATION  
 300 Renaissance Boulevard  
 Warrendale, PA 15149-1100



PUSH to REVERSE          FORWARD          REVERSE

REMOTE CONTROLS USING INTERNAL 24V POWER SUPPLY

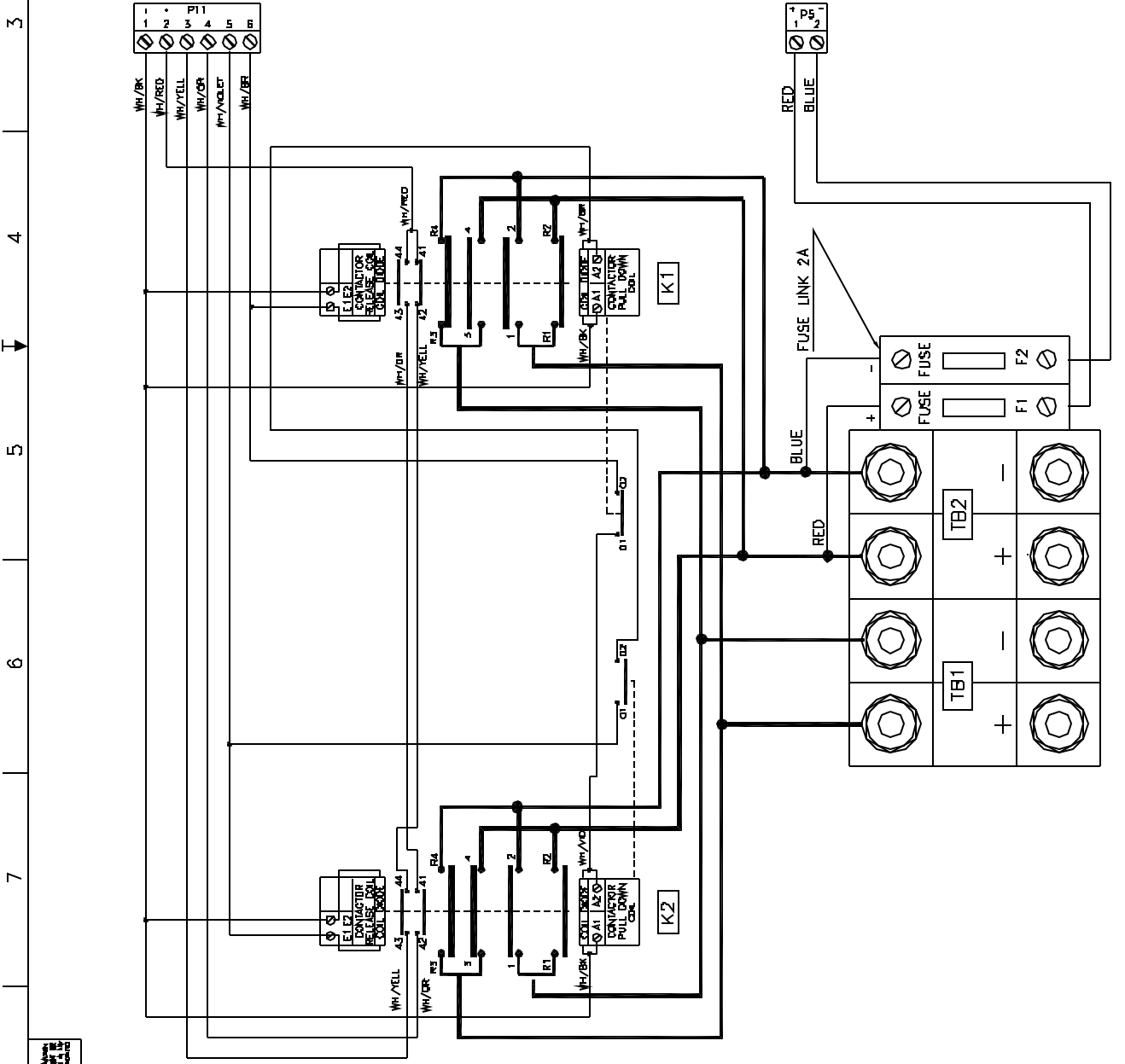
SEE DRAWING NO 13900312 FOR REMOTE CONTROLS USING EXTERNAL POWER SUPPLY

ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE																																																																																																
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<p>GMW            P.O. Box 3519, Reedwood City, CA 94064            Tel: (650) 432-5023; Fax: (650) 432-4258</p>																																																																																																				
<p>REVERSAL SWITCH            REMOTE CONTROLS</p>																																																																																																				
<p>REV: 001/01/2021            EMPLOYEE NO: AI13900311</p>																																																																																																				
<p>SOFTWARE: AUTOCAD 13</p>																																																																																																				
<p>SCALE: NONE 1/1 IN</p>																																																																																																				



REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	07/27/01	C. DEJULIAS



FORWARD POLARITY  
K1 DE-ENERGIZED  
K2 ENERGIZED

REVERSE POLARITY  
K1 ENERGIZED  
K2 DE-ENERGIZED

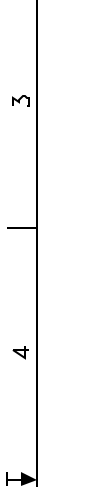
ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
1	1	160A	160 AMP REVERSAL SWITCH	
2	1	13900370	REVERSAL SWITCH 160 AMP SCHEMATIC	

GMW  
P.O. Box 2618, Hayward City, CA 94604  
Tel: (510) 602-0332 Fax: (510) 602-0298

SCALE: N/A  
DATE: 07/27/01  
DRAWN BY: C. DEJULIAS  
CHECKED BY: [Signature]  
APPROVED BY: [Signature]

DC POWER TO MAGNET  
DC POWER FROM P/SUPPLY

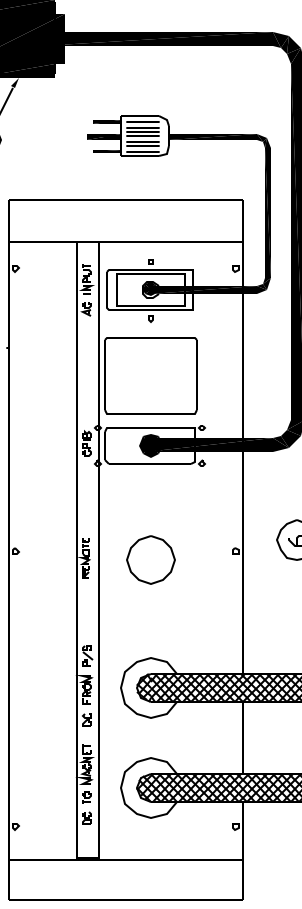
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	07/17/87	C. DEJUGLAS



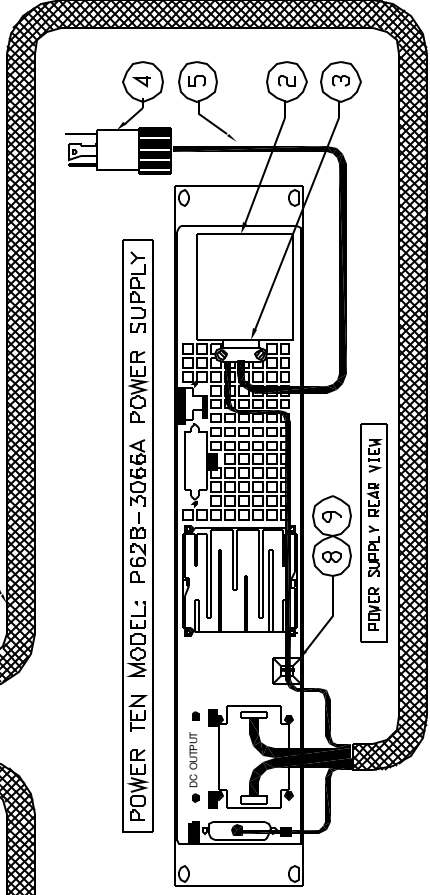
ELECTROMAGNET MODEL: 5403

FRONT VIEW LH TERMINAL COVER REMOVED

REVERSAL SWITCH MODEL: 5970-80



POWER TEN MODEL: P62B-3066A POWER SUPPLY



POWER SUPPLY REAR VIEW

**WARNING**  
 See safety section of this manual for  
 instructions on safe use of this  
 equipment. Do not use this  
 equipment unless you have read and  
 understand the manual.

NOTE

1. POWER SUPPLY SHOWN WITH 2 PHASE 208V AC INPUT
2. REFER TO TABLE ON DWG 1.3900290 FOR AC INPUT RATINGS OTHER THAN 2 PHASE 208V.
3. ABOVE SYSTEM SHOWN WITH OPTIONAL ADI AND GPB CABLES

N/S=NOT SUPPLIED

ITEM	QTY	PART NUMBER	DESCRIPTION
4	1	108461	CABLE TIE ADHESIVE MTG. NYL BAP-LON
6	1	918429	CABLE TIE NYLON 2.5mm WIDE BAR-LDK
7	1	13900011-3	GPB INTERFACE CABLE (2IN LONG)
6	1	16900210	REV/SW TO P62 INTERFACE CABLE
5	1	4A-1203	POWER CORD TYPE S0 3 CORE 12AWG N/S
4	1	115-20P	PLUG 3-PHASE/2-PA. NYLON BRYANT N/S
3	1	13303	CABLE CLAMP THOMAS & BETTS
2	1	12900010	AC TERMINAL BOX
1	1	16900200	CURRENT & INTERLOCK CABLE 60A

PART LIST		SCALE	
DATE	BY	DD	NOT SCALE
08/17/87	C. DEJUGLAS		FROM DRAWING
			INDICATED BY DIMENSIONS
			UNLESS OTHERWISE SPECIFIED
			FINISHES
			SYMBOLS
			STANDARD SYMBOLS
			AS SHOWN
			UNLESS OTHERWISE SPECIFIED
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			UNLESS OTHERWISE SPECIFIED
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			UNLESS OTHERWISE SPECIFIED

REV	DATE	BY	APP'D
1	07/17/87	C. DEJUGLAS	

GMW P.O. Box 2678 Redwood City, CA 94064 Tel: (650)602-0332 Fax: (650)602-0298	ELECTRICAL ASSY 5403/RS/P62
--	--------------------------------

REV	DATE	BY	APP'D
1	07/17/87	C. DEJUGLAS	

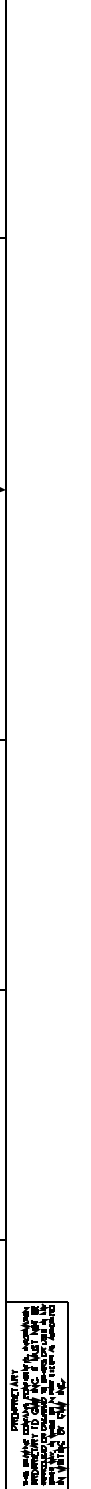
SOFTWARE	AL11900790
AUTOCAD 1.3	

SCALE	NONE
SHEET	1 OF 1

**\*\*\* WARNING \*\*\***  
 CHECK AC POWER VOLTAGE AND FREQUENCY MATCH POWER SUPPLY  
 SPECIFIED REQUIREMENTS BEFORE APPLYING AC INPUT POWER

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	07/15/87	C. DOUGLAS
B	CORRECT WIRING ERROR ON CONNECTOR J1	07/11/88	C. DOUGLAS
C	ADD PROTECTION DIODE	12/07/88	C. DOUGLAS



REVERSAL SWITCH MODEL: 5970-80  
 CONTROL PCB ASSEMBLY SEE DWG 15900000

ELECTROMAGNET MODEL: 5403

POWER TEN  
 DC POWER SUPPLY  
 MODEL: P62B-3066A

AC MAIN POWER INPUT

CONNECTOR J1

TEMP SW

TEMP SW

WELDING CABLE #50/ANM [4 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

REVERSAL SWITCH MODEL: 5970-80  
 CONTROL PCB ASSEMBLY SEE DWG 15900000

POWER TEN  
 DC POWER SUPPLY  
 MODEL: P62B-3066A

AC MAIN POWER INPUT

CONNECTOR J1

TEMP SW

TEMP SW

WELDING CABLE #50/ANM [4 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

- NOTE:
- CONNECT MAGNET TEMPERATURE INTERLOCK WIRING DIRECTLY ONTO DC TABS ON TEMP SWITCHES.
  - LEAVE WHITE AND GREEN WIRES FULL LENGTH AND INSULATE WITH HEAT SHRINK SLEEVING. CAN BE USED FOR WATER FLOW SWITCH INTERLOCK (OPTIONAL)
  - REMOVE LINK ON CONNECTOR J1 ON POWER SUPPLY, CONNECT WIRES AS SHOWN. [LINK MUST BE FITTED TO ENABLE POWER SUPPLY DC OUTPUT WITHOUT INTERLOCKS CONNECTED]

ELECTROMAGNET SYSTEM ELECTRICAL REQUIREMENTS	
AC INPUT POWER 2 PHASE, 3 WIRE	208V
AC INPUT FULL LOAD CURRENT	10
RECOMMENDED MAIN AC BREAKER	20
RECOMMENDED AC POWER OUTLET	L15-20R
RECOMMENDED AC CABLE SIZE	3' 50/ANM

NOTE: DRAWING SHOWS POWER SUPPLY FOR US 208V AC POWER

REVERSAL SWITCH	
INPUT POWER:	1PHASE 110V or 230V, 47HZ to 63HZ
FULL LOAD CURRENT:	110V/1.0AMPS or 230V/0.5AMPS

CURRENT AND INTERLOCK CABLE 60A  
 PART NO 169D0200  
 PROTECTION DIODE 95A/600V  
 NTE6076 OR SIMILAR

POWER SUPPLY REV/SW INTERFACE CABLE  
 PART NO 169D0210

WELDING CABLE #50/ANM [4 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

REVERSAL SWITCH MODEL: 5970-80  
 CONTROL PCB ASSEMBLY SEE DWG 15900000

POWER TEN  
 DC POWER SUPPLY  
 MODEL: P62B-3066A

AC MAIN POWER INPUT

CONNECTOR J1

TEMP SW

TEMP SW

WELDING CABLE #50/ANM [4 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

WELDING CABLE #50/ANM [10 AWG]

ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
1	1	5403	ELECTROMAGNET	
2	1	5970-80	REVERSAL SWITCH	
3	1	P62B-3066A	POWER TEN DC POWER SUPPLY	

GMW  
 P.O. Box 2618, Hayward, CA 94604  
 Tel: (510) 602-4232 Fax: (510) 602-4298  
 ELECTRICAL ASSY  
 5403/RS/P62  
 AI 13900290

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	02/17/97	C. DEJONGAS



REVERSAL SWITCH MODEL: 5970-80

POWER TEN MODEL: P62B-4050A POWER SUPPLY

POWER SUPPLY REAR VIEW

ELECTROMAGNET MODEL: 3472-50

REAR VIEW TERMINAL COVER REMOVED

\*\*\* WARNING \*\*\*  
 CHECK AC POWER VOLTAGE AND FREQUENCY MATCH POWER SUPPLY SPECIFIED REQUIREMENTS BEFORE APPLYING AC INPUT POWER

NOTE

1. POWER SUPPLY SHOWN WITH 2 PHASE 208V AC INPUT
2. REFER TO TABLE ON DWG 13900280 FOR AC INPUT RATINGS OTHER THAN 2 PHASE 208V.
3. ABOVE SYSTEM SHOWN WITH OPTIONAL ADI AND CPFB CABLES

N/A=NOT SUPPLIED

QTY	PART NUMBER	DESCRIPTION
1	16900010	AC TERMINAL BOX
2	12900010	CURRENT & INTERLOCK CABLE 80A
3	13903	CABLE CLAMP, THOMAS & BETTS
4	1115-20P	PLUS 3-PHASE/2-PH, NYLON, BRYANT N/S
5	14A-1203	POWER CORD TYPE S0 3 CORE 12AWG N/S
6	16900180	REV/SW TO P62 INTERFACE CABLE
7	1190001-3	CPFB INTERFACE CABLE (2IN LONG)
8	119461	CABLE TIE NYLON 5mm WIDE, BAR-LOK
9	10284	CABLE TIE NYLON 5mm WIDE, BAR-LOK

DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

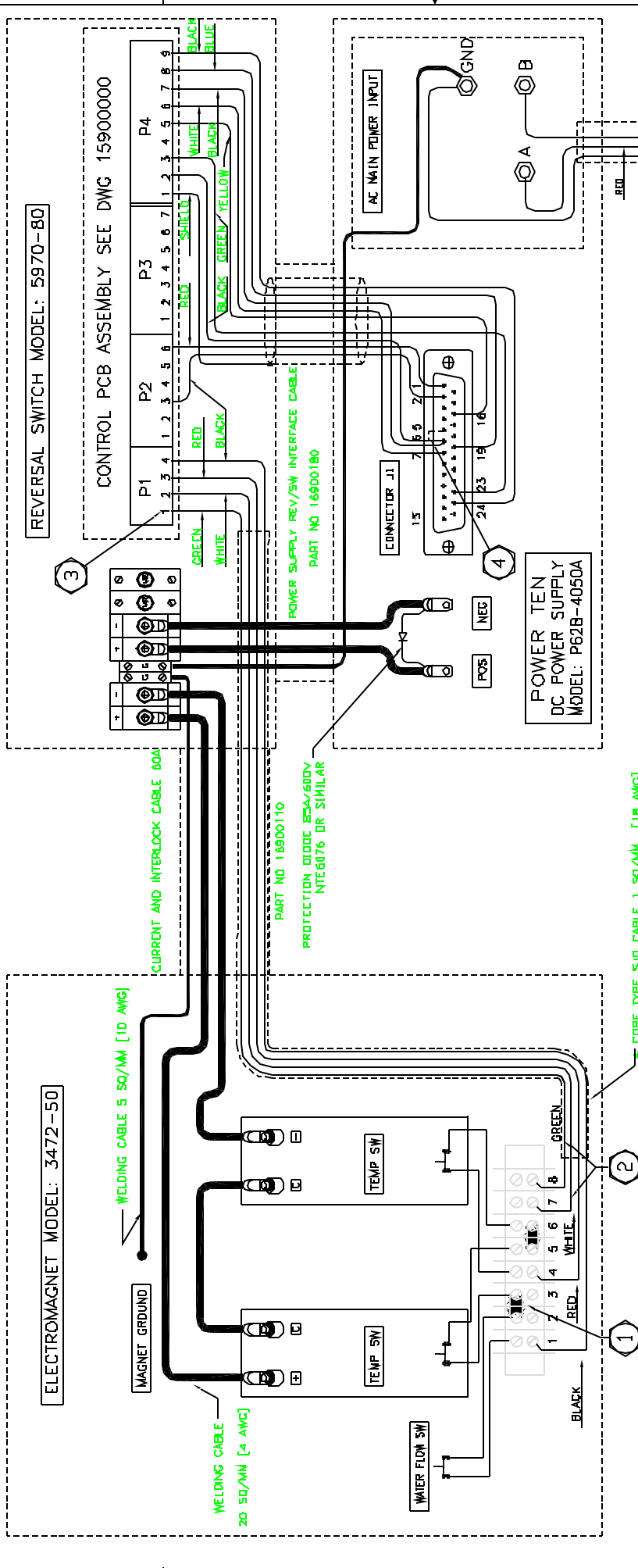
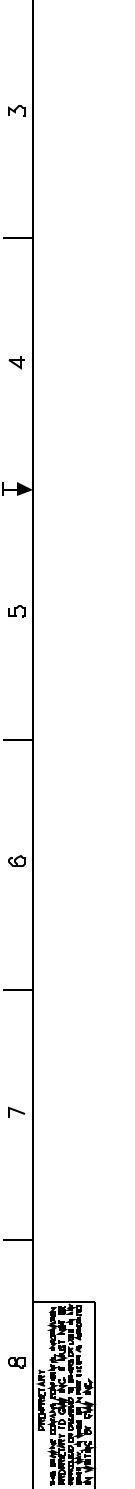
DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

DATE	SCALE	DESIGNED BY	DRWING
02/17/97	1:1	C. DEJONGAS	13

GMW  
 P.O. Box 2618, Hayward City, CA 94604  
 Tel: (650)802-6332, Fax: (650)802-6298  
 ELECTRICAL ASSY  
 3472-50/RS/P62  
 A111900780

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	07/18/87	C. DOUGLAS
B	CORRECT WIRING ERROR ON CONNECTOR J1	09/11/88	C. DOUGLAS
C	ADD PROTECTION DIODE	09/07/88	C. DOUGLAS
D	CORRECT WIRING ERROR @ BT	11/19/89	C. DOUGLAS



**REVERSAL SWITCH MODEL: 5970-80**

**CONTROL PCB ASSEMBLY SEE DWG 15900000**

**ELECTROMAGNET MODEL: 3472-50**

**POWER TEN DC POWER SUPPLY MODEL: P62B-4050A**

**CONNECTOR J1**

**AC MAIN POWER INPUT**

**WELDING CABLE 20 50/AMM (4 AWG)**

**WELDING CABLE 5 50/AMM (10 AWG)**

**CURRENT AND INTERLOCK CABLE 60A**

**PROTECTION DIODE SEMI/500V NTE6076 OR SIMILAR**

**POWER SUPPLY REV/SW INTERFACE CABLE PART NO 16900180**

**MAINS CABLE TYPE: 3 CORE 3 50/AMM (12 AWG)**

**MAINS PLUG NEMA TYPE L15-20P**

**CORE TYPE SLD CABLE 1 50/AMM (18 AWG)**

**REVERSAL SWITCH**

**INPUT POWER: 1PHASE 110V or 230V, 47HZ to 63HZ**

**FULL LOAD CURRENT: 110V/1.0AMPS or 230V/0.5AMPS**

**NOTE:**

- MAGNET WATER FLOW AND TEMP INTERLOCKS LINKED IN SERIES ON MAGNET
- WHITE AND GREEN WATER FLOW INTERLOCK WIRES TIED TO TERM 7 & TERM 8. [not used]
- WHITE AND GREEN WATER FLOW INTERLOCK WIRES TIED TO PINS 1 & PIN 2. [not used]
- REMOVE LINK ON CONNECTOR J1 ON POWER SUPPLY. CONNECT WIRES AS SHOWN. [LINK MUST BE FITTED TO ENABLE POWER SUPPLY DC OUTPUT WITHOUT INTERLOCKS CONNECTED]

**ELECTROMAGNET SYSTEM ELECTRICAL REQUIREMENTS**

AC INPUT	PHASE	VOLTS	FREQ	TYPE
230V	-	-	-	-
114	-	-	-	-
20	-	-	-	-
L15-20P	-	-	-	-
3 50/AMM	-	-	-	-

**NOTE: DRAWING SHOWS POWER SUPPLY FOR US 208V AC POWER**

**REVISIONS**

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	07/18/87	C. DOUGLAS
B	CORRECT WIRING ERROR ON CONNECTOR J1	09/11/88	C. DOUGLAS
C	ADD PROTECTION DIODE	09/07/88	C. DOUGLAS
D	CORRECT WIRING ERROR @ BT	11/19/89	C. DOUGLAS

**GMW**  
 P.O. Box 2618, Hayward, CA 94544  
 Tel: (510) 602-4332 Fax: (510) 602-4298  
**ELECTRICAL ASSY**  
**3472-50/RS/P62**

**SCALE: NEMA 1/8"**

**DATE: 11/19/89**

**BY: AI 13900280**

**REV: D**

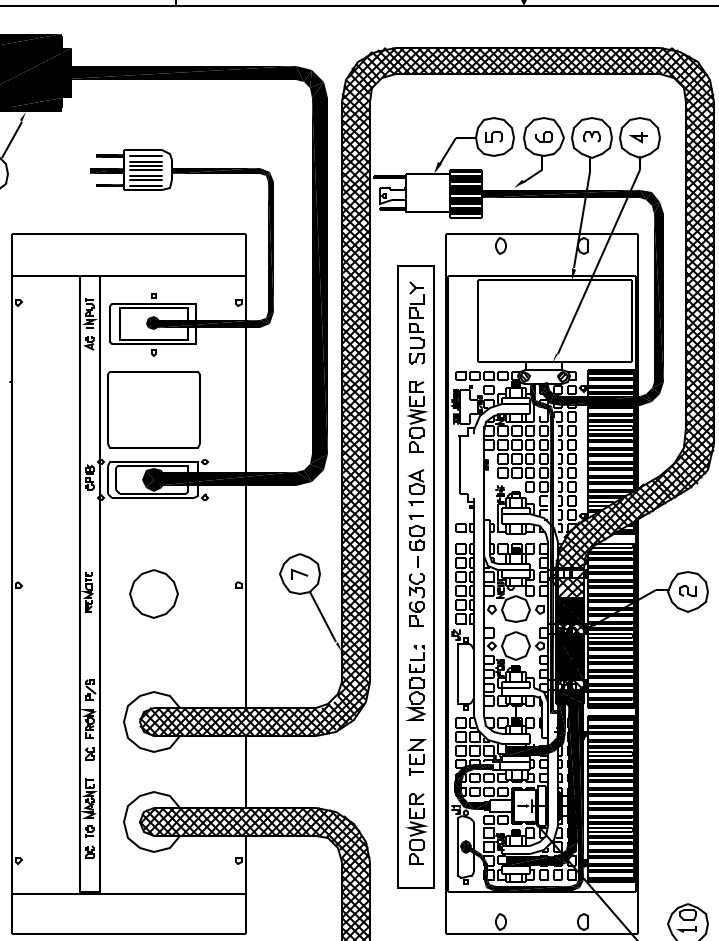
**SHEET 1 OF 1**

1 2 3 4 5 6 7 8

PROPERTY OF  
 THE UNITED STATES GOVERNMENT  
 FORM NO. 104, APRIL 1964 EDITION  
 GSA FPMR (41 CFR) 101-11.6

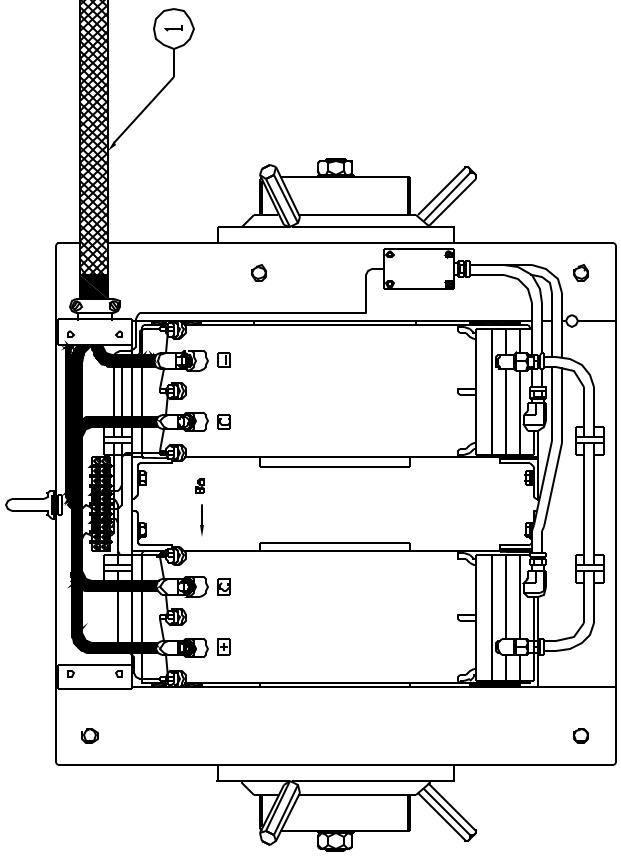
REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	07/17/87	C. DELOGLAS
B	ADD PROTECTION DOOR	12/07/88	C. DELOGLAS

REVERSAL SWITCH MODEL: 5970-80



POWER SUPPLY REAR VIEW

ELECTROMAGNET MODEL: 3472-70



REAR VIEW TERMINAL COVER REMOVED

\*\*\* WARNING \*\*\*  
 CHECK AC POWER VOLTAGE AND FREQUENCY MATCH POWER SUPPLY  
 SPECIFIED REQUIREMENTS BEFORE APPLYING AC INPUT POWER

- NOTE
1. POWER SUPPLY SHOWN WITH 3 PHASE 208V AC INPUT
  2. REFER TO TABLE ON DWG 13900270 FOR AC INPUT RATINGS OTHER THAN 3 PHASE 208V.
  3. ABOVE SYSTEM SHOWN WITH OPTIONAL ADI AND GFB CABLES.

N/S=NOT SUPPLIED

ITEM	QTY	PART NUMBER	DESCRIPTION
10	1	HEATSHRINK 8mm 3/8" SLEEVING BLACK	
9	1	RECORDER DIODE (Protection Diode) N/S	
8	1	1500I 031-1-3	GFB INTERFACE CABLE (2M LONG)
7	1	REV/SW TO P63C-60110A	INTERFACE CABLE
6	1	4A-1204	POWER EXPD. TYPE 50 4 CORE 12AWG N/S
5	1	115-20P	PULL. 3-PHASE/20A NYLON BRYANT N/S
4	1	3503	CABLE CLAMP, THOMAS & BETTS
3	1	129000100	AC TERMINAL BOX
2	5	10984	CABLE TIE, NYLON 5mm WIDE, BAR-LDK
1	1	16900120	CURRENT & INTERLOCK CABLE 80A

DATE	SCALE	DRWING	DESIGNED BY	CHECKED BY	APPROVED BY
08/17/87	1:1	13900270	C. DELOGLAS		

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	3472-70	ELECTRICAL ASSY

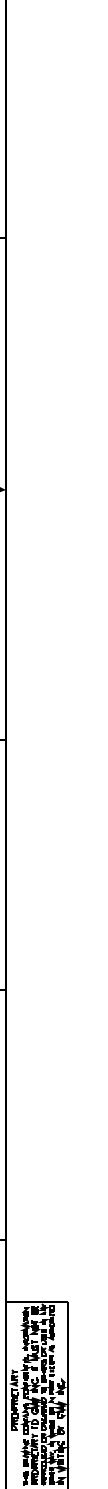
REV	DATE	DESCRIPTION
A	08/17/87	INITIAL RELEASE
B	12/07/88	ADD PROTECTION DOOR

GMW  
 P.O. Box 2618, Hayward City, CA 94604  
 Tel: (510)862-0332 Fax: (510)862-0298

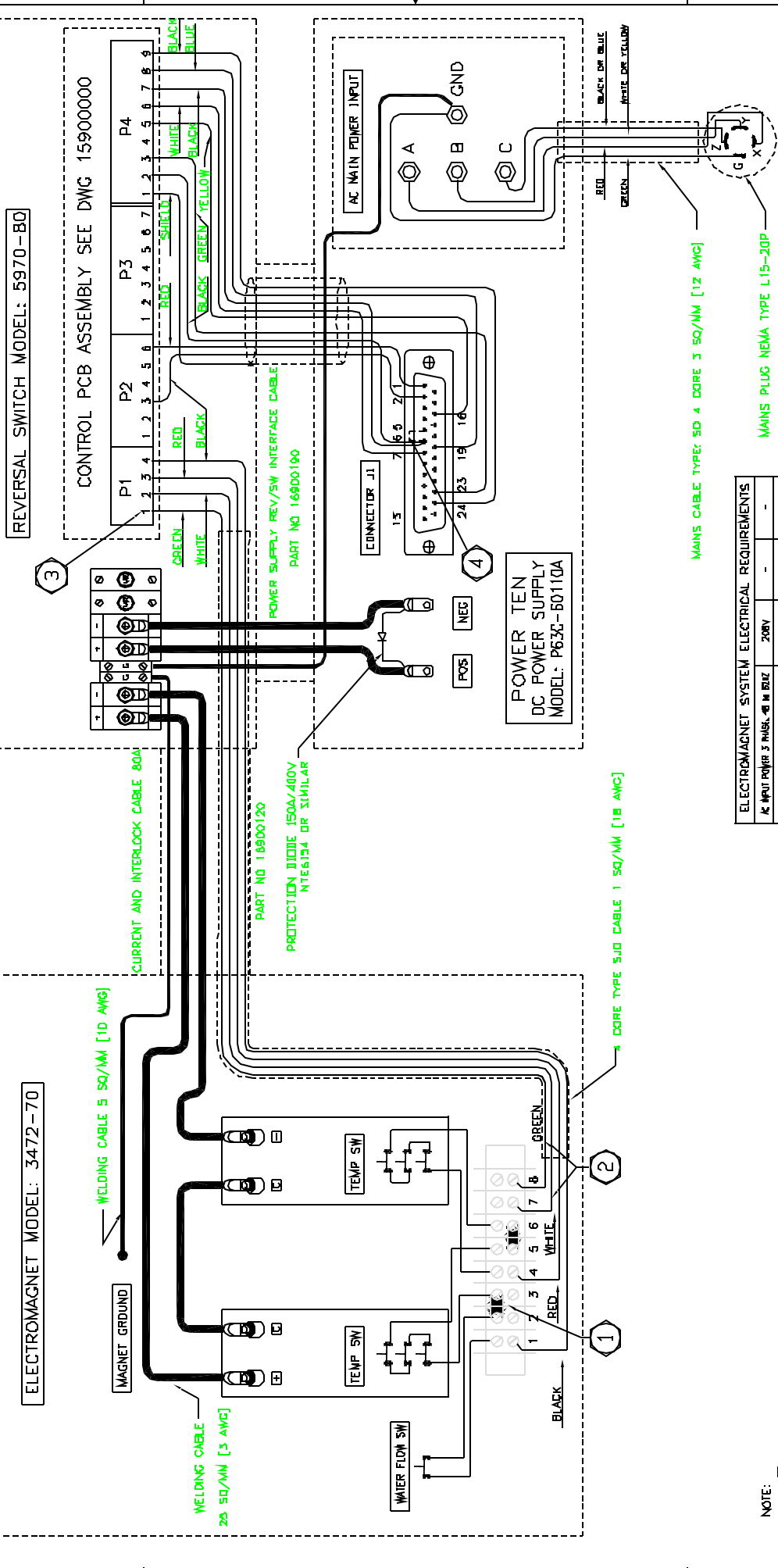
3472-70/RS/P63  
 ELECTRICAL ASSY  
 A111900770



REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	07/19/87	C. DOUGLAS
B	CORRECT WIRING ERROR ON CONNECTOR J1	07/11/88	C. DOUGLAS
C	ADD PROTECTION DIODE	07/07/88	C. DOUGLAS
D	CORRECT WIRING ERROR @ BT	11/19/89	C. DOUGLAS



PROPERTY OF  
GENERAL MOTORS CORPORATION  
ALL RIGHTS RESERVED  
NO PARTS TO BE REPRODUCED  
WITHOUT WRITTEN PERMISSION  
OF GENERAL MOTORS CORPORATION



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ALL RIGHTS RESERVED  
NO PARTS TO BE REPRODUCED  
WITHOUT WRITTEN PERMISSION  
OF GENERAL MOTORS CORPORATION

ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
1	1	5970-80	REVERSAL SWITCH	
2	1	P63G-60110A	DC POWER SUPPLY	
3	1	5970-80	REVERSAL SWITCH	
4	1	5970-80	REVERSAL SWITCH	
5	1	5970-80	REVERSAL SWITCH	
6	1	5970-80	REVERSAL SWITCH	
7	1	5970-80	REVERSAL SWITCH	
8	1	5970-80	REVERSAL SWITCH	
9	1	5970-80	REVERSAL SWITCH	

ELECTROMAGNET SYSTEM ELECTRICAL REQUIREMENTS	
AC INPUT POWER 3 PHASE, 480 V	208V
AC INPUT FULL LOAD CURRENT	16
RECOMMENDED MAIN AC BREAKER	20
RECOMMENDED AC POWER OUTLET	L15-20R
RECOMMENDED AC CABLE SIZE	3 SQ/MM

NOTE: DRAWING SHOWS POWER SUPPLY FOR US 208V AC POWER

REVERSAL SWITCH  
INPUT POWER: 1PHASE 110V or 230V, 47HZ to 63HZ  
FULL LOAD CURRENT: 110V/1.0AMPS or 230V/0.5AMPS

NOTE:  
 1 MAGNET WATER FLOW AND TEMP INTERLOCKS LINKED IN SERIES ON MAGNET  
 2 WHITE AND GREEN WATER FLOW INTERLOCK WIRES TIED TO TERM 7 & TERM 8. [not used]  
 3 WHITE AND GREEN WATER FLOW INTERLOCK WIRES TIED TO PINS 1 & PIN 2. [not used]  
 4 REMOVE LINK ON CONNECTOR J1 ON POWER SUPPLY, CONNECT WIRES AS SHOWN. [LINK MUST BE FITTED TO ENABLE POWER SUPPLY DC OUTPUT WITHOUT INTERLOCKS FITTED]

REVERSAL SWITCH MODEL: 5970-80  
CONTROL PCB ASSEMBLY SEE DWG 15900000

REVERSAL SWITCH MODEL: 3472-70

WELDING CABLE 200 SQ/MM [3 AWG]  
WELDING CABLE 5 SQ/MM [10 AWG]  
CURRENT AND INTERLOCK CABLE 800A  
PROTECTION DIODE 1500V/400V NTE6334 OR SIMILAR  
PART NO 16900120  
POWER SUPPLY REV/SW INTERFACE CABLE PART NO 16900190  
CONNECTOR J1  
AC MAIN POWER INPUT  
DC POWER SUPPLY MODEL: P63G-60110A  
POWER TEN  
MAGNET GROUND  
WATER FLOW SW  
TEMP SW  
TEMP SW  
MAGNET

WELDING CABLE 200 SQ/MM [3 AWG]  
WELDING CABLE 5 SQ/MM [10 AWG]  
CURRENT AND INTERLOCK CABLE 800A  
PROTECTION DIODE 1500V/400V NTE6334 OR SIMILAR  
PART NO 16900120  
POWER SUPPLY REV/SW INTERFACE CABLE PART NO 16900190  
CONNECTOR J1  
AC MAIN POWER INPUT  
DC POWER SUPPLY MODEL: P63G-60110A  
POWER TEN  
MAGNET GROUND  
WATER FLOW SW  
TEMP SW  
TEMP SW  
MAGNET

MAINS CABLE TYPE: 5D 4 CORE 3 SQ/MM [12 AWG]  
MAINS PLUG NEMA TYPE L15-20P

REVERSAL SWITCH MODEL: 3472-70

WELDING CABLE 200 SQ/MM [3 AWG]  
WELDING CABLE 5 SQ/MM [10 AWG]  
CURRENT AND INTERLOCK CABLE 800A  
PROTECTION DIODE 1500V/400V NTE6334 OR SIMILAR  
PART NO 16900120  
POWER SUPPLY REV/SW INTERFACE CABLE PART NO 16900190  
CONNECTOR J1  
AC MAIN POWER INPUT  
DC POWER SUPPLY MODEL: P63G-60110A  
POWER TEN  
MAGNET GROUND  
WATER FLOW SW  
TEMP SW  
TEMP SW  
MAGNET

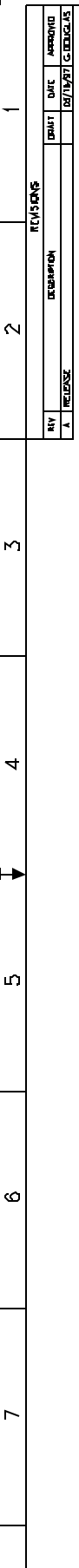
MAINS CABLE TYPE: 5D 4 CORE 3 SQ/MM [12 AWG]  
MAINS PLUG NEMA TYPE L15-20P

GMW  
P.O. Box 2618, Redwood City, CA 94064  
Tel: (650) 962-4332 Fax: (650) 962-4298  
ELECTRICAL ASSY  
3472-70/RS/P63  
REV: 01/13/00  
AI 13900270

SCALE: 1" = 1'

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	07/17/87	C. DELOGLAS



QTY	PART NUMBER	DESCRIPTION
1	108432	CABLE TIE NYLON 2.5MM WIDE BAR-LOK
1	018461	CABLE TIE MOUNT, ADHESIVE BAR-LOK
1	11900001-1-3	GPIB INTERFACE CABLE (2M LONG)
1	16900180	REV/SW TO P62 INTERFACE CABLE
1	4A-1203	POWER CORD TYPE S0 3 CORE 13AWG N/S
1	115-20P	PLUG 3-PHASE/2-PA. NYLON BRYANT N/S
1	13303	CABLE CLAMP, THOMAS & BETTS
1	12900010	AC TERMINAL BOX
1	16900110	CURRENT & INTERLOCK CABLE 60A

DATE	SCALE	DRS	LET	NO.	SCALE
07/17/87	AS SHOWN	C. DELOGLAS		1	1

DATE	SCALE	DRS	LET	NO.	SCALE
07/17/87	AS SHOWN	C. DELOGLAS		1	1

DATE	SCALE	DRS	LET	NO.	SCALE
07/17/87	AS SHOWN	C. DELOGLAS		1	1

DATE	SCALE	DRS	LET	NO.	SCALE
07/17/87	AS SHOWN	C. DELOGLAS		1	1

DATE	SCALE	DRS	LET	NO.	SCALE
07/17/87	AS SHOWN	C. DELOGLAS		1	1

DATE	SCALE	DRS	LET	NO.	SCALE
07/17/87	AS SHOWN	C. DELOGLAS		1	1

DATE	SCALE	DRS	LET	NO.	SCALE
07/17/87	AS SHOWN	C. DELOGLAS		1	1

DATE	SCALE	DRS	LET	NO.	SCALE
07/17/87	AS SHOWN	C. DELOGLAS		1	1

DATE	SCALE	DRS	LET	NO.	SCALE
07/17/87	AS SHOWN	C. DELOGLAS		1	1

DATE	SCALE	DRS	LET	NO.	SCALE
07/17/87	AS SHOWN	C. DELOGLAS		1	1

DATE	SCALE	DRS	LET	NO.	SCALE
07/17/87	AS SHOWN	C. DELOGLAS		1	1

\*\*\* WARNING \*\*\*  
CHECK AC POWER VOLTAGE AND FREQUENCY MATCH POWER SUPPLY SPECIFIED REQUIREMENTS BEFORE APPLYING AC INPUT POWER

REAR VIEW TERMINAL COVER REMOVED

NOTE

1. POWER SUPPLY SHOWN WITH 2 PHASE 208V AC INPUT
2. REFER TO TABLE ON DWG 13900260 FOR AC INPUT RATINGS OTHER THAN 2 PHASE 208V.
3. ABOVE SYSTEM SHOWN WITH OPTIONAL ADI AND GPIB CABLES

N/S=NOT SUPPLIED

**GMW**  
P.O. Box 2618, Hayward City, CA 94604  
Tel: (510) 882-9332 Fax: (510) 882-9298

**ELECTRICAL ASSY**  
3473-50/RS/P62

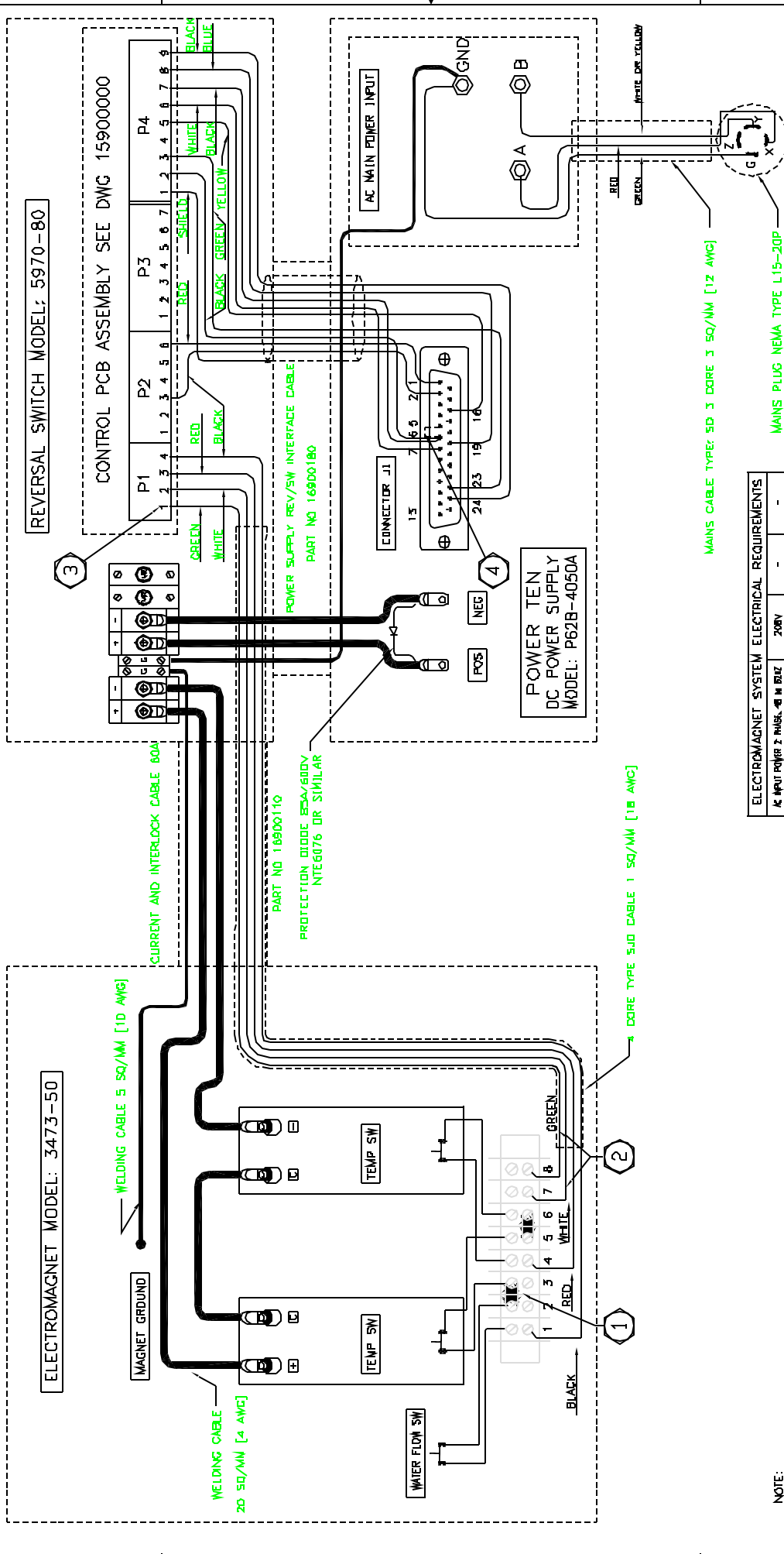
REV: 1  
SCALE: N/A  
DATE: 07/17/87

SCHEMATIC: AI11900760

See note on page 11 for information on cable assembly. Do not use the cable assembly for any other application.

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	07/18/87	C. DOUGLAS
B	CORRECT WIRING ERROR ON CONNECTOR J1	07/11/88	C. DOUGLAS
C	ADD PROTECTION DIODE	10/07/88	C. DOUGLAS
D	CORRECT WIRING ERROR @ BT	11/19/89	C. DOUGLAS



**ELECTROMAGNET SYSTEM ELECTRICAL REQUIREMENTS**

AC INPUT POWER 2 WIRE, Ø IN SIZE	208V
AC INPUT FULL LOAD CURRENT	16
RECOMMENDED MAIN AC BREAKER	20
RECOMMENDED AC POWER OUTLET	L15-20P
RECOMMENDED AC CABLE SIZE	3 SQ/MM

NOTE: DRAWING SHOWS POWER SUPPLY FOR US 208V AC POWER

**REVERSAL SWITCH**

INPUT POWER: 1PHASE 110V or 230V, 47HZ to 63HZ
FULL LOAD CURRENT: 110V/1.0AMPS or 230V/0.5AMPS

- NOTE:
- 1 MAGNET WATER FLOW AND TEMP INTERLOCKS LINKED IN SERIES ON MAGNET
  - 2 WHITE AND GREEN WATER FLOW INTERLOCK WIRES TIED TO TERM 7 & TERM 8. [not used]
  - 3 WHITE AND GREEN WATER FLOW INTERLOCK WIRES TIED TO PINS 1 & PIN 2. [not used]
  - 4 REMOVE LINK ON CONNECTOR J1 ON POWER SUPPLY, CONNECT WIRES AS SHOWN. [LINK MUST BE FITTED TO ENABLE POWER SUPPLY DC OUTPUT WITHOUT INTERLOCKS CONNECTED]

ITEM | QTY | PART NUMBER | DESCRIPTION

DATE LIST

DO NOT SCALE FROM DRAWING

GMW  
P.O. Box 2618, Hayward, CA 94604  
Tel: (510) 602-4332 Fax: (510) 602-4298

ELECTRICAL ASSY  
3473-50/RS/P62

REV: [ ]

DATE: [ ]

SCALE: NITE 1/16"

WORK CENTER: AUTOCAD 13

PROJECT: [ ]

DATE: [ ]

REV: [ ]

SCALE: NITE 1/16"

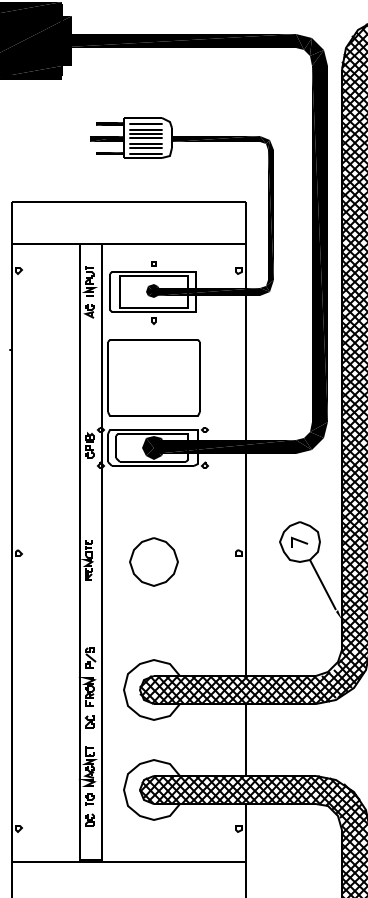
WORK CENTER: AUTOCAD 13

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	07/17/87	C. DELOGLAS
B	ADD PROTECTION DOOR	12/07/88	C. DELOGLAS

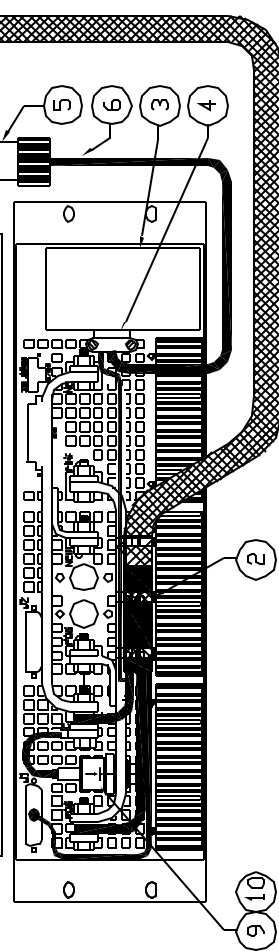
REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	07/17/87	C. DELOGLAS
B	ADD PROTECTION DOOR	12/07/88	C. DELOGLAS

PROPERTY OF  
 THE UNITED STATES GOVERNMENT  
 FORM NO. 104-101 (REV. 10-67)  
 GSA FPMR (41 CFR) 101-11.6

REVERSAL SWITCH MODEL: 5970-80

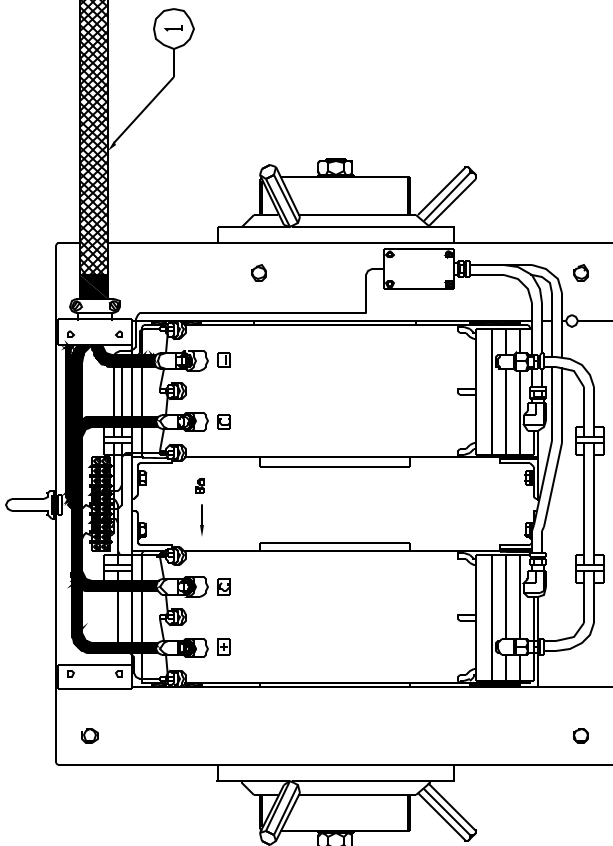


POWER TEN MODEL: P63C-60110A POWER SUPPLY



POWER SUPPLY REAR VIEW

ELECTROMAGNET MODEL: 3473-70



REAR VIEW TERMINAL COVER REMOVED

NOTE

1. POWER SUPPLY SHOWN WITH 3 PHASE 208V AC INPUT
2. REFER TO TABLE ON DWG 13900250 FOR AC INPUT RATINGS OTHER THAN 3 PHASE 208V.
3. ABOVE SYSTEM SHOWN WITH OPTIONAL ADI AND GPB CABLES.

N/S NOT SUPPLIED

\*\*\* WARNING \*\*\*

CHECK AC POWER VOLTAGE AND FREQUENCY MATCH POWER SUPPLY SPECIFIED REQUIREMENTS BEFORE APPLYING AC INPUT POWER

ITEM	QTY	PART NUMBER	DESCRIPTION
10	1	HEATSHRINK 3/8" SLEEVING BLACK	
9	1	RECIVER DOOR [Protection Door] N/E	
8	1	15000 0011-1-3 GPB INTERFACE CABLE 12M LONG	
7	1	REV/SW TO P63C-60110A INTERFACE CABLE	
6	1	4A-120/4 POWER EXPD. TYPE 50 4 CORE 12AWG N/S	
5	1	115-20P PULG. 3-PHASE/20A NYLON BRYANT N/S	
4	1	3503 CABLE CLAMP, THOMAS & BETTS	
3	1	129000000 AC TERMINAL BOX	
2	5	10584 CABLE TIE, NYLON 5mm WIDE, BAR-LDK	
1	1	16900120 CURRENT & INTERLOCK CABLE 80A	

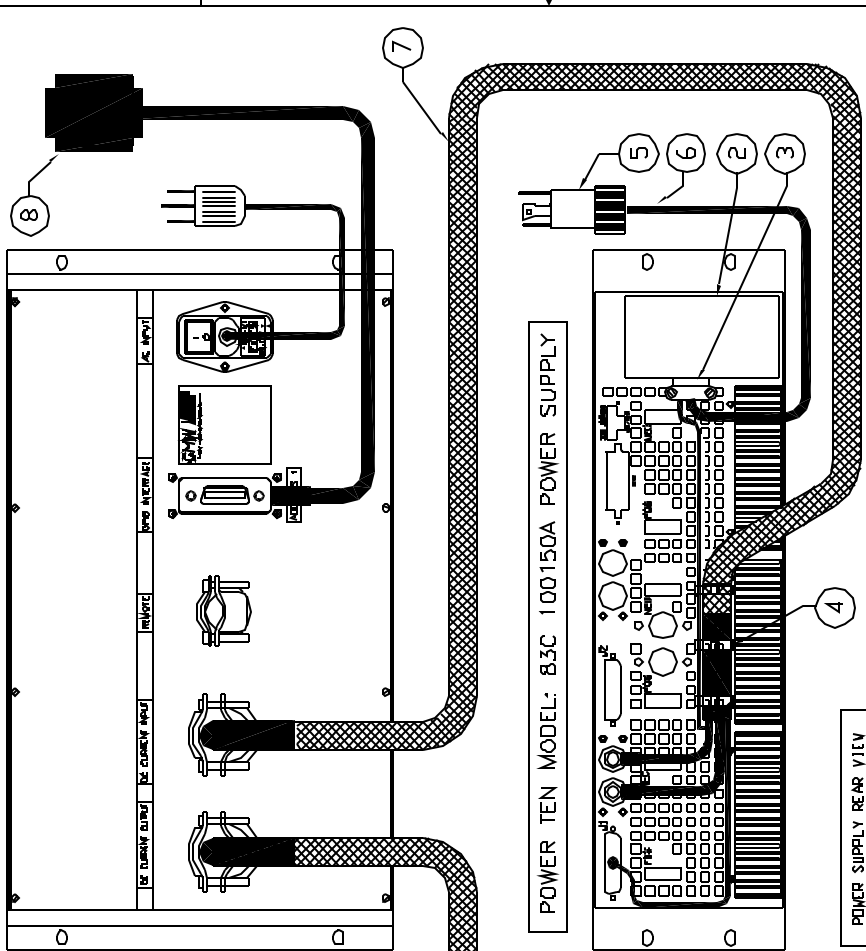
DATE	SCALE	DRWING	BY	CHKD	APP'D	REV
12/07/88	1:1	13900250	C. DELOGLAS	C. DELOGLAS	C. DELOGLAS	1
07/17/87	1:1	13900250	C. DELOGLAS	C. DELOGLAS	C. DELOGLAS	1

GMW  
 P.O. Box 2618, Hayward City, CA 94604  
 Tel: (510) 882-0332, Fax: (510) 882-0298  
 ELECTRICAL ASSY  
 3473-70/RS/P63  
 Part Number: A111900750



REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	17/08/81	C. DEJONGHIS

REVERSAL SWITCH MODEL: 5970-160



ITEM	QTY	PART NUMBER	DESCRIPTION
8	1	15001001-1-3	CRIMP INTERFACE CABLE (2N LONG)
7	1	15900430	REV/SW TO P83C INTERFACE CABLE
6	1	4A-D4G4	CABLE, TYPE SO 4 CORE 4AWG, ANXIERN/5
5	1	845GNP	PLUG, 3-PHASE/50A BRYANT
4	3	10264	CABLE TIE NYLON 5mm WDE. BAR-LOK
3	4	3303	CABLE CLAMP, THOMAS & BETT'S
2	1	12900010	AC TERMINAL BOX
1	1	15900420	CURRENT & INTERLOCK CABLE 150A

DATE: 17/08/81 DRAWN BY: C. DEJONGHIS CHECKED BY: C. DEJONGHIS APPROVED BY: C. DEJONGHIS	
DO NOT SCALE FROM DRAWING DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED	
TITLE: REVERSAL SWITCH MODEL: 5970-160	PARTS LIST
DRAWN BY: C. DEJONGHIS CHECKED BY: C. DEJONGHIS APPROVED BY: C. DEJONGHIS	DATE: 17/08/81 SCALE: 1:1 SHEET: 1 OF 1
G.M.W. P.O. Box 2618, Hayward City, CA 94604 Tel: (510) 882-8332 Fax: (510) 882-8298	ELECTRICAL ASSEMBLY 3474/RS/P83C
PART NUMBER: A111900860	SCALE: 1:1

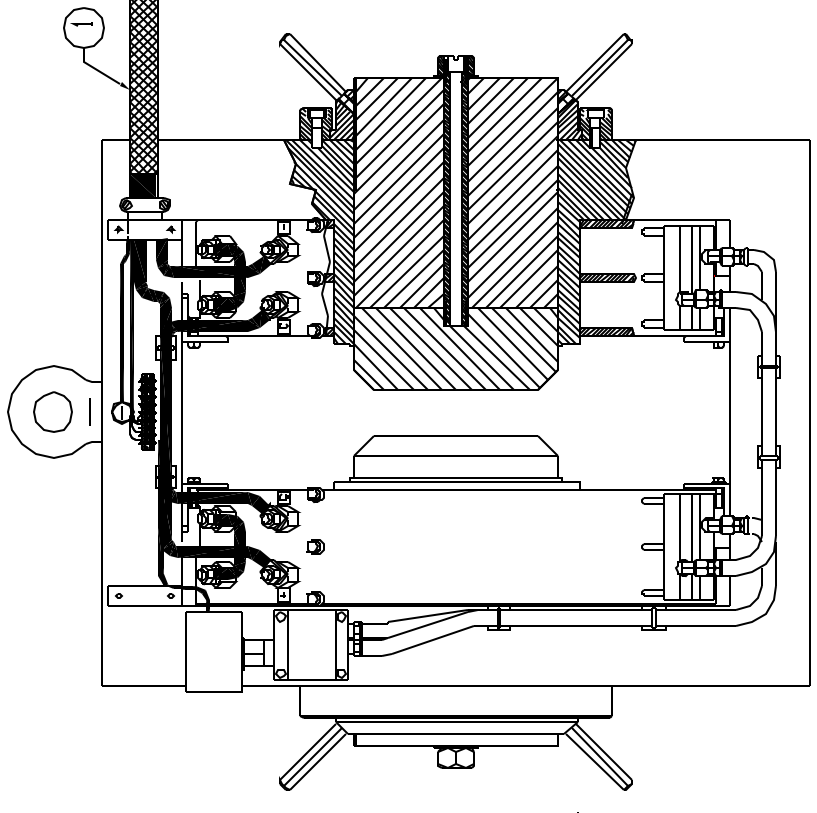
- NOTE
1. POWER SUPPLY SHOWN WITH 3 PHASE 208V AC INPUT
  2. REFER TO TABLE ON DWG 1390D390 FOR AC INPUT RATINGS OTHER THAN 3 PHASE 208V
  3. MAGNET SHOWN WITH 140 AMP CURRENT CONNECTIONS
  4. MAGNET SHOWN WITH LH CABLE ENTRY, RH ENTRY OPTIONAL
  5. ABOVE SYSTEM SHOWN WITH OPTIONAL ADI AND CRIMP CABLES

N/5 = NOT SUPPLIED

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	17/08/81	C. DEJONGHIS

\*\*\* WARNING \*\*\*  
 CHECK AC POWER VOLTAGE AND FREQUENCY MATCH POWER SUPPLY SPECIFIED REQUIREMENTS BEFORE APPLYING AC INPUT POWER

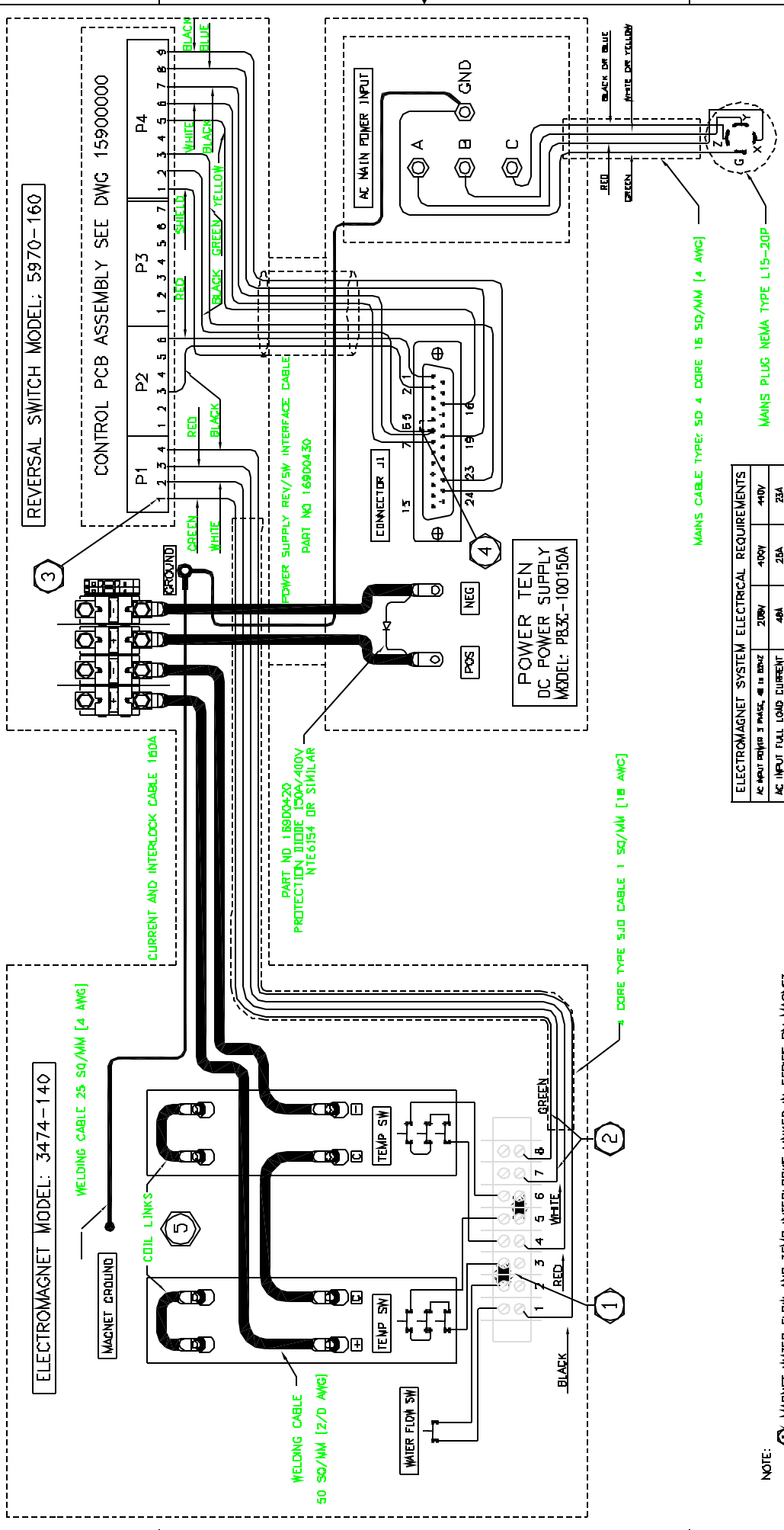
ELECTROMAGNET MODEL: 3474-140



REAR VIEW TERMINAL COVER REMOVED

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	17/07/81	C. DEJONGHIS

PROPERTY OF  
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 DRAWING IS TO BE REPRODUCED OR  
 TRANSMITTED IN ANY FORM OR BY ANY  
 MEANS, ELECTRONIC OR MECHANICAL,  
 INCLUDING PHOTOCOPYING, RECORDING,  
 OR BY ANY INFORMATION STORAGE AND  
 RETRIEVAL SYSTEM.



ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
1	1	5970-160	REVERSAL SWITCH	
2	1	P83C-100150A	DC POWER SUPPLY MODEL: P83C-100150A	
3	1	169D0430	POWER SUPPLY REV/SW INTERFACE CABLE PART NO 169D0430	
4	1	50/AMM [18 AWG]	MAINS CABLE TYPEZ SJO CABLE 1 50/AMM [18 AWG]	
5	1	L15-20P	MAINS PLUG NEMA TYPE L15-20P	

ELECTROMAGNET SYSTEM ELECTRICAL REQUIREMENTS	
AC INPUT VOLTAGE 3 PHASE 4 WIRE	480V
AC INPUT FULL LOAD CURRENT	200A
RECOMMENDED MAIN AC BREAKER	40A
RECOMMENDED AC POWER DIODE	50A
RECOMMENDED AC CABLE SIZE	15-50P
NOTE: DRAWING SHOWS POWER SUPPLY FOR US 3 PHASE 208V AC POWER	

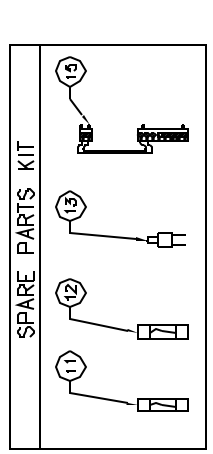
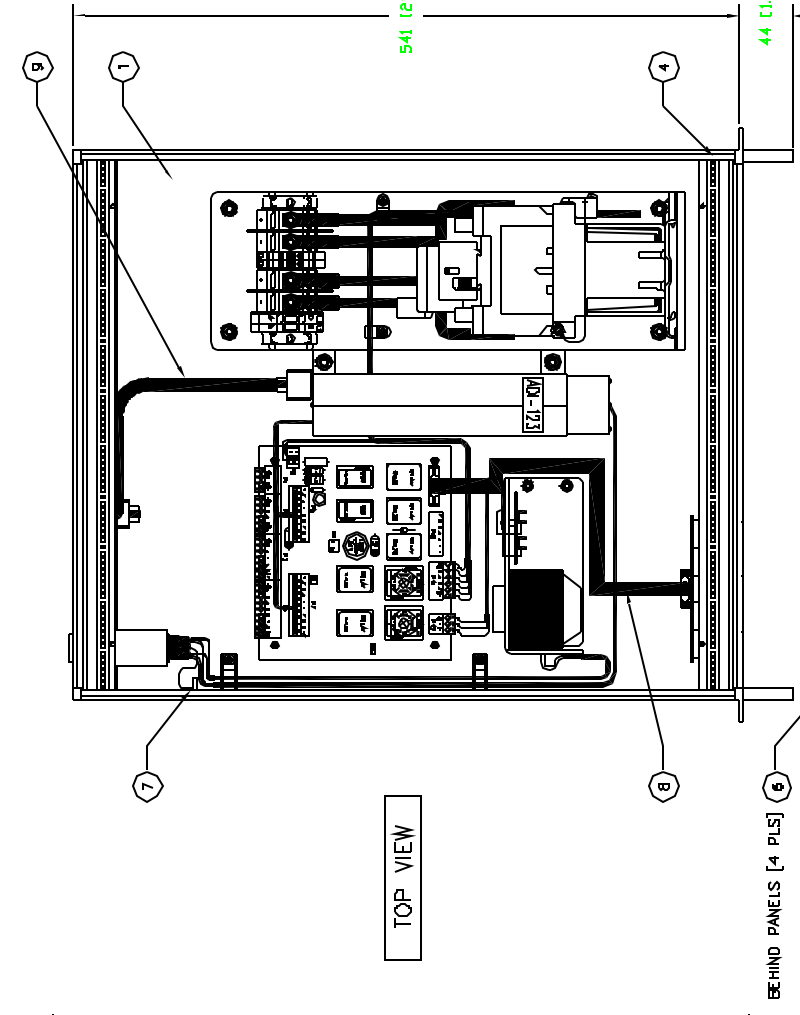
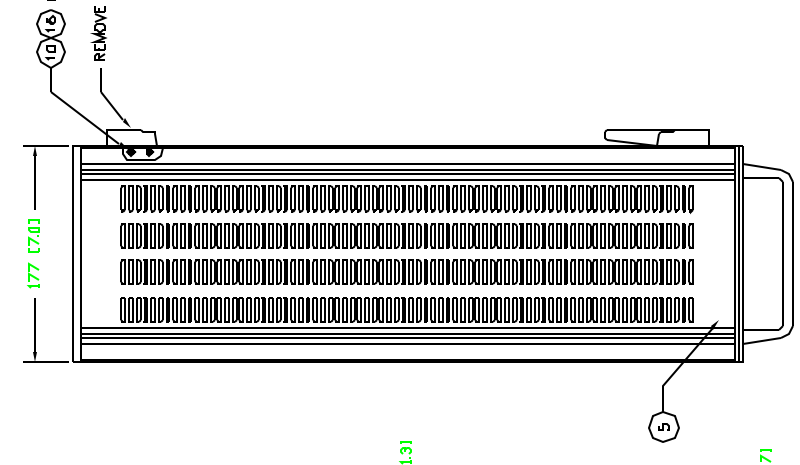
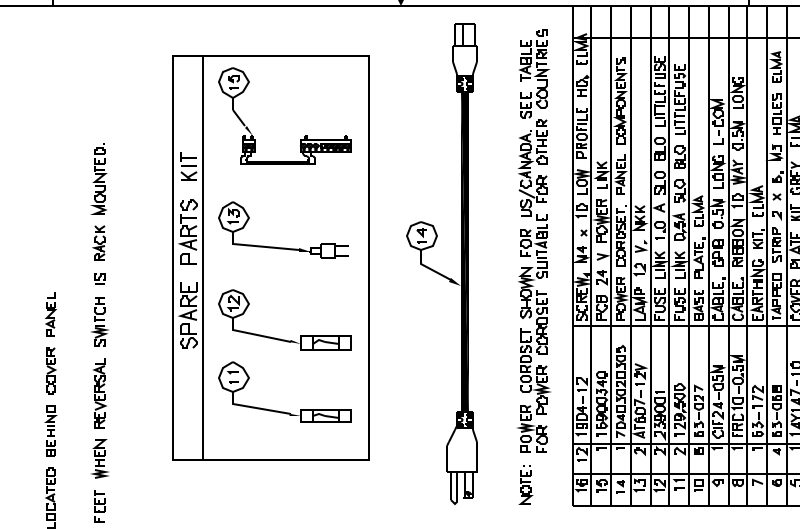
- NOTE:
- 1 MAGNET WATER FLOW AND TEMP INTERLOCKS LINKED IN SERIES ON MAGNET
  - 2 WHITE AND GREEN WATER FLOW INTERLOCK WIRES TIED TO TERM 7 & TERM 8. [not used]
  - 3 WHITE AND GREEN WATER FLOW INTERLOCK WIRES TIED TO PINS 1 & PIN 2. [not used]
  - 4 REMOVE LINK ON CONNECTOR J1 ON POWER SUPPLY. CONNECT WIRES AS SHOWN. [LINK MUST BE FITTED TO ENABLE POWER SUPPLY DC OUTPUT WITHOUT INTERLOCKS CONNECTED]
  - 5 COIL LINKS SHOWN WITH SERIES CONNECTION. SEE DWG NO 11801800 FOR DETAILS

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	1/19/00	C. DELOUAS
B	ADD ITEM 16, CHANGE ITEM 14	05/22/01	C. DELOUAS

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	1/19/00	C. DELOUAS
B	ADD ITEM 16, CHANGE ITEM 14	05/22/01	C. DELOUAS

PROPERTY OF  
 GMW  
 ALL RIGHTS RESERVED  
 NO PARTS TO BE REPRODUCED  
 WITHOUT WRITTEN PERMISSION  
 FROM GMW

WHEN INTERNAL ADI IS FITTED TO REVERSAL SWITCH USE DWG NO 11900561  
 WHEN INTERNAL ADI IS OMITTED ON REVERSAL SWITCH USE DWG NO 11900562



NOTE: POWER CORDSET SHOWN FOR US/CANADA. SEE TABLE FOR POWER CORDSET SUITABLE FOR OTHER COUNTRIES

ITEM	QTY	PART NUMBER	DESCRIPTION
16	12	18D4-12	SCREW, M4 x 10 LOW PROFILE HD, ELMA
15	1	16A00340	PCB 24 V POWER LINK
14	1	70403020305	POWER CORDSET, PANEL COMPONENT'S
13	2	11807-12V	LAMP 12 V, INK
12	2	239001	FUSE LINK 1.0 A SLO BLO LITTLEFUSE
11	2	129500	FUSE LINK 0.5A SLO BLO LITTLEFUSE
10	5	53-027	BASE PLATE, ELMA
9	1	CU24-03M	CABLE, 6PB, 0.5M LONG, L-COM
8	1	PRE-10-03M	CABLE, RIBBON 10 WAT 0.5M LONG
7	1	163-172	EARTHING KIT, ELMA
6	4	53-08B	TAPPED STRIP 2 x 6, M3 HOLES ELMA
5	1	14V147-10	COVER PLATE KIT GREY, ELMA
4	1	14B047	CASE, RACK MFG 4U [With handles] ELMA
3	1	11900561	FRONT PANEL ASSEMBLY
2	1	11900561	BACK PANEL ASSEMBLY
1	1	11900571	BASE PLATE ASSEMBLY

COUNTRY	RATING	MANUFACTURER AND PART NUMBER
USA/CANADA	115V/13A	PANEL COMPONENTS PART NO 70403020305
EUROPE	250V/16A	PANEL COMPONENTS PART NO 86235D000
UK/INDIA	230V/13A	PANEL COMPONENTS PART NO 86385D090
ARGENTINA	220V/10A	PANEL COMPONENTS PART NO 86390D10
SWITZERLAND	230V/10A	PANEL COMPONENTS PART NO 86394D000
ITALY	230V/10A	PANEL COMPONENTS PART NO 86394D000

**GMW**  
 P.O. Box 2618, Hayward City, CA 94604  
 Tel: (510) 862-0532 Fax: (510) 862-0298

REVERSAL SWITCH  
 GENERAL ASSEMBLY

SCALE: 1:2 VP 1/8"

DATE: 11/01/01

REV: B



COMPONENTS ARE SHOWN IN THEIR ORIGINAL MANUFACTURER'S PACKAGING. TO ORDER PARTS, CONTACT THE MANUFACTURER OF THE ORIGINAL EQUIPMENT OR THE MANUFACTURER OF THE ORIGINAL EQUIPMENT.

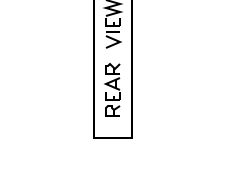
REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	11/24/01	C. DEBOULAS
B	CHANGE PARTS LIST AND ITEMS 9, 10	05/22/01	C. DEBOULAS

REVISIONS

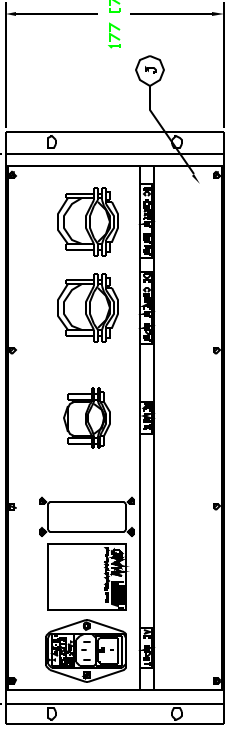
2

3

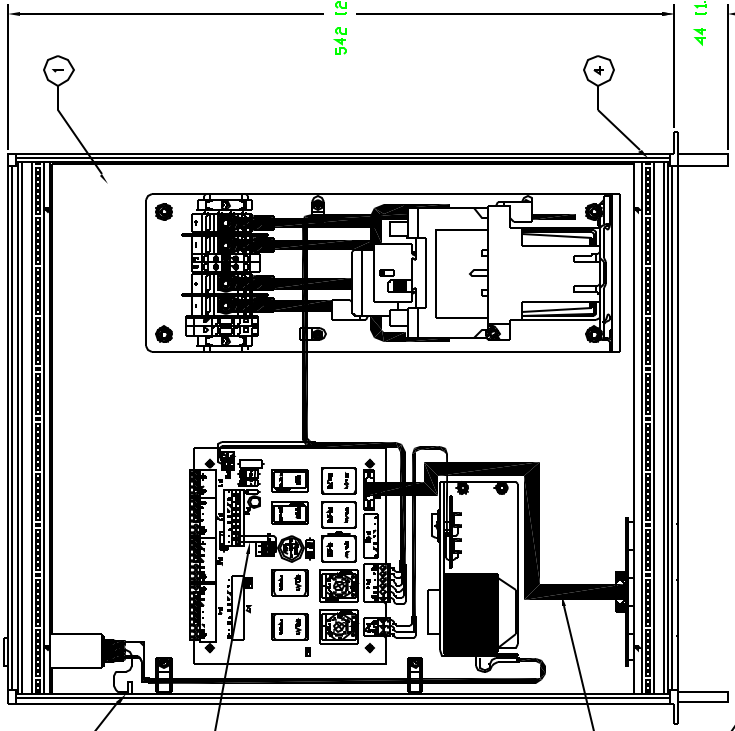
4



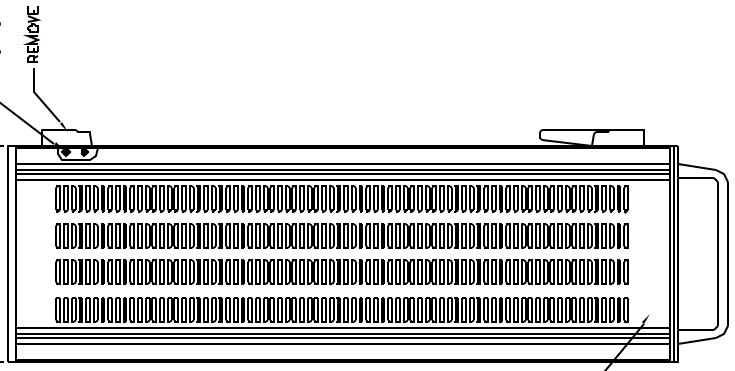
REAR VIEW



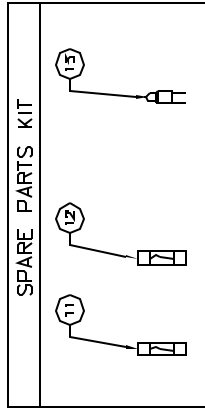
SIDE VIEW



TOP VIEW



REMOVE FEET WHEN REVERSAL SWITCH IS RACK MOUNTED.

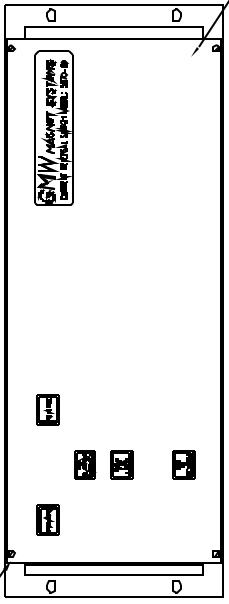


NOTE: POWER CORDSET SHOWN FOR US/CANADA. SEE TABLE FOR POWER CORDSET SUITABLE FOR OTHER COUNTRIES.

ITEM	QTY	PART NUMBER	DESCRIPTION
15	1	11900340	PCB 24 V POWER LINK
14	1	7040320300	POWER CORDSET, PANEL COMPONENTS
13	2	41607-12Y	LAMP 12 V, 1W
12	2	239001	FUSE LINK 1.0 A SLO BLO LITTLEFUSE
11	2	1294500	FUSE LINK 0.5A SLO BLO LITTLEFUSE
10	5	63-027	BASE PLATE, ELMA
9	12	1904-12	SCREW, M4 X 10 LOW PROFILE HD, ELMA
8	1	1RE-10-05M	CABLE, RIBBON 10 WAY 0.5M LONG
7	1	163-172	EARTHING KIT, ELMA
6	4	63-08B	TAPPED STRIP 2 X 6, M3 HOLES ELMA
5	1	14Y147-10	COVER PLATES, ALL SLOTTED GREY ELMA
4	1	14B147	CASE, RACK MFG-40 (WITH HOLES) ELMA
3	1	11900592	BACK PANEL ASSEMBLY
2	1	11900390	FRONT PANEL ASSEMBLY
1	1	11900572	BASE PLATE ASSEMBLY

COUNTRY	RATING	MANUFACTURER AND PART NUMBER
USA/CANADA	115V/15A	PANEL COMPONENTS PART NO 7040320300
EUROPE	250V/16A	PANEL COMPONENTS PART NO 86235000
UK/INDIA	230V/15A	PANEL COMPONENTS PART NO 86395290
ARGENTINA	220V/10A	PANEL COMPONENTS PART NO 86390010
SWITZERLAND	230V/10A	PANEL COMPONENTS PART NO 86396000
ITALY	230V/10A	PANEL COMPONENTS PART NO 86394000

FRONT VIEW



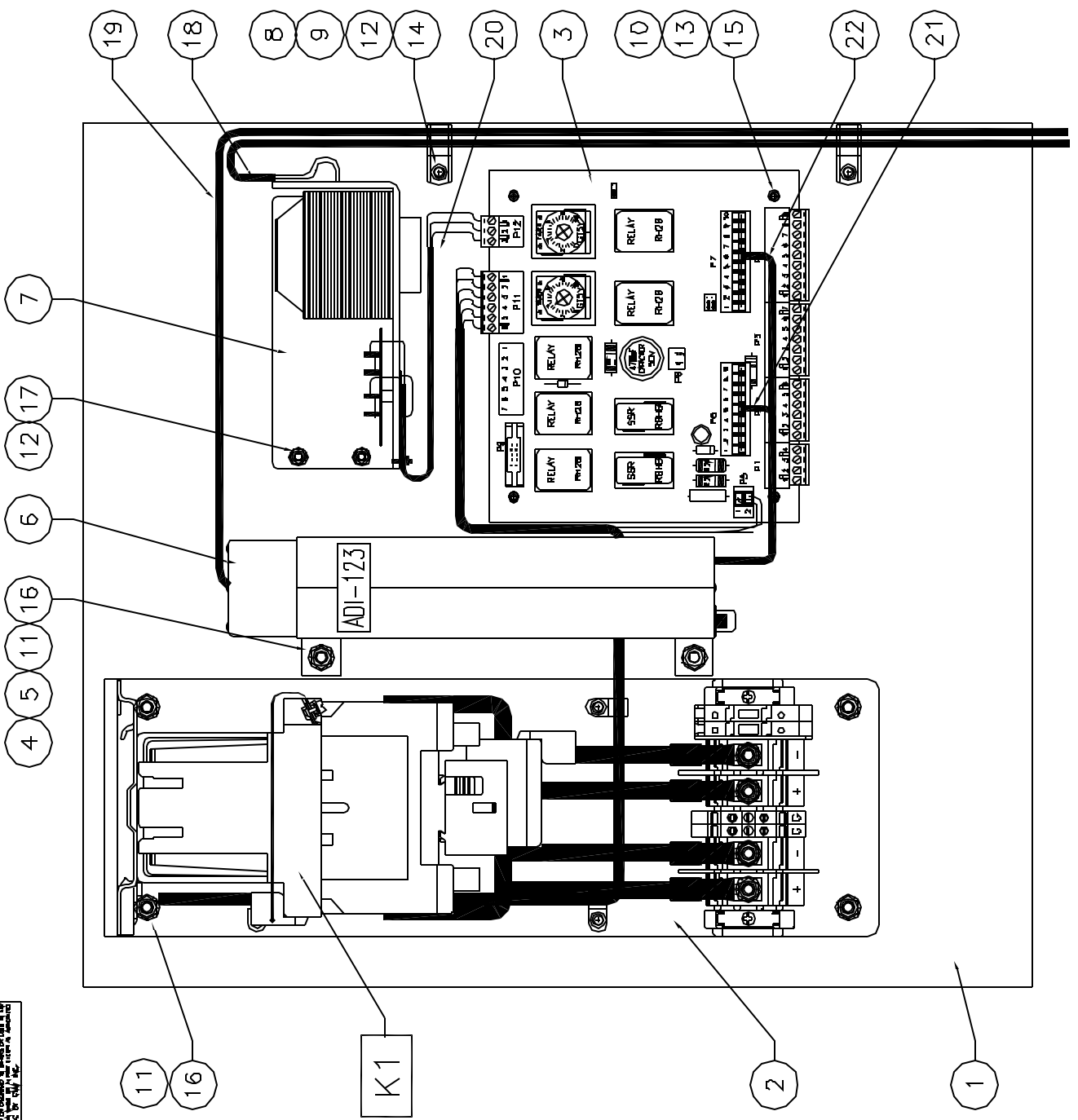
BEHIND PANELS (4 PLS)

SCALE: 1:2	VP: Jg	SHEET 1	OF 1
<b>GMW</b> P.O. Box 2618, Redwood City, CA 94064 Tel: (650) 962-9332, Fax: (650) 962-9298			
<b>REVERSAL SWITCH</b> <b>GENERAL ASSEMBLY</b>		DATE	REV
A111900562		DATE	REV
A111900562		DATE	REV
B		DATE	REV

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	11/29/81	C. DEGLAS

REVISIONS

PROPERTY OF  
 GENERAL ELECTRIC COMPANY  
 ALL RIGHTS RESERVED



WHEN INTERNAL ADI IS FITTED TO  
 REVERSAL SWITCH USE DWG NO 11900571  
 -----  
 WHEN INTERNAL ADI IS OMITTED ON  
 REVERSAL SWITCH USE DWG NO 11900572

ITEM	QTY	PART NUMBER	DESCRIPTION
22	1	500BC	CABLE, B CORE 22 AWG. ALPHA
21	1	500BC	CABLE, B CORE 21 AWG. ALPHA
20	1	5053C	CABLE, 3 CORE 20 AWG. ALPHA
19	1	5056C	CABLE, 6 CORE 20 AWG. ALPHA
18	1	5056C	CABLE, 6 CORE 20 AWG. ALPHA
17	4		TERMIN. M4 S/S
16	B		TERMIN. M6 S/S
15	4	DIN 6797	WASHER, M3 NT LOCK S/S
14	2	DIN 6797	WASHER, M4 NT LOCK S/S
13	4	DIN 125 A	WASHER, M3 FLAT S/S
12	2	DIN 125 A	WASHER, M4 FLAT S/S
11	4	DIN 7984A	WASHER, M6 FLAT S/S
10	4	DIN 7984A	WASHER, M3 X 16 PAN HD S/S
9	2	DIN 7985A	SCREW, M4 X B PAN HD S/S
8	2	EGCB	CABLE CLAMP
7	1	HC24-24A	POWER SUPPLY 24V CONDOR
6	1	AD1-123	ANALOG DEVICE INTERFACE, GROUP 3
5	1	17900840	AD MOUNTING STUDS
4	2	17900870	AD MOUNTING BRACKETS
3	1	19900000	MAIN CONTROL BOARD
2	1	11900300	CONTACTOR ASSEMBLY 80 AMP
1	1	17900930	BASE PLATE

SCALE: 1:1

DATE: 11/29/81

BY: C. DEGLAS

APPROVED: C. DEGLAS

PROPERTY OF  
 GENERAL ELECTRIC COMPANY  
 ALL RIGHTS RESERVED

REVISIONS

REV A 11/29/81 C. DEGLAS

DESCRIPTION: REVERSAL SWITCH BASE PLATE ASSY

ITEM NO: 11900571

DATE: 11/29/81

BY: C. DEGLAS

APPROVED: C. DEGLAS

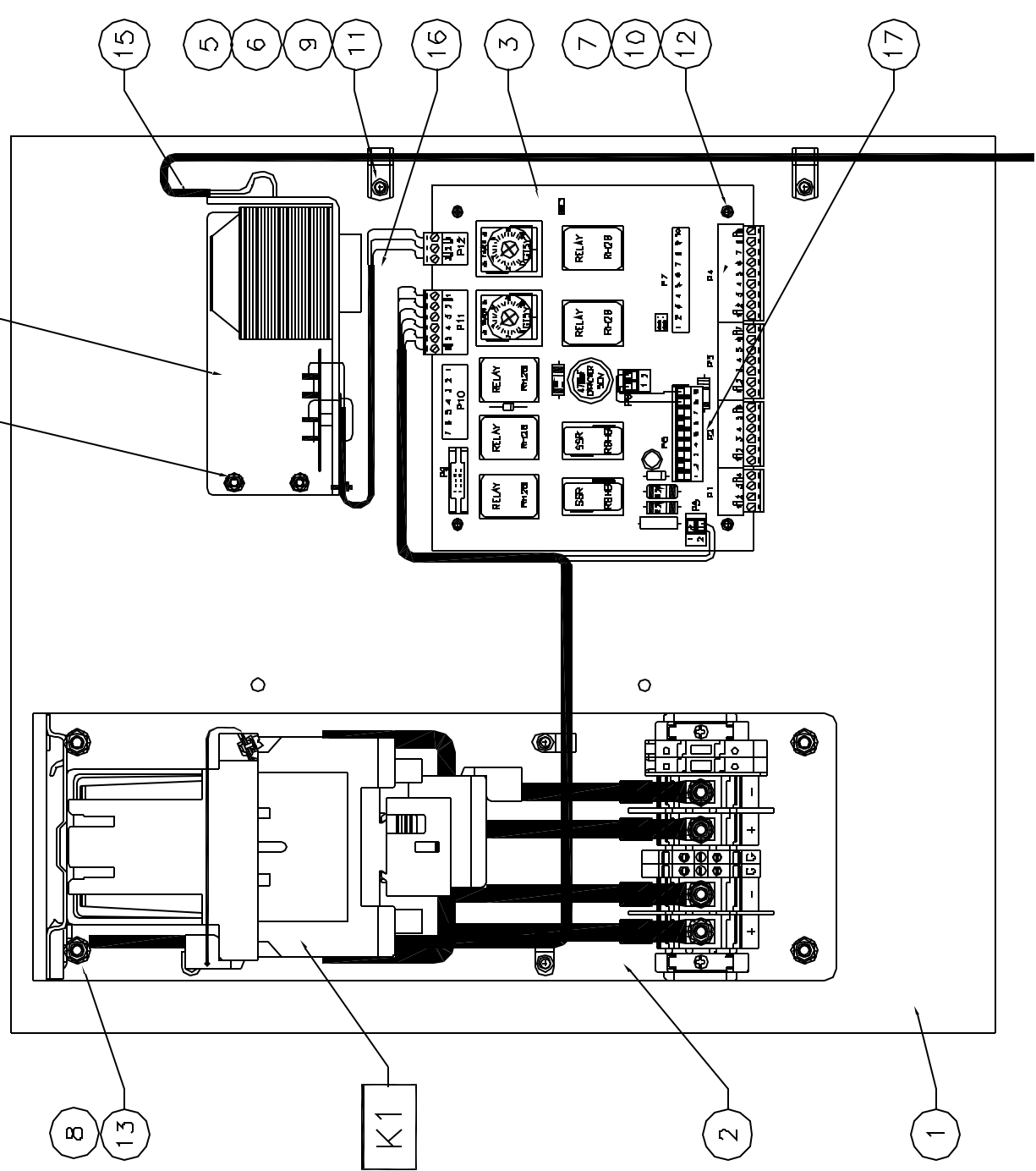
SCALE: 1:1

SHEET 1 OF 1

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	11/20/01	C. DEUGLAS

1 2 3 4 5 6 7 8

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 GM  
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 NO PARTS TO BE REPRODUCED  
 WITHOUT PERMISSION  
 FROM GM



WHEN INTERNAL ADI IS FITTED TO  
 REVERSAL SWITCH USE DWG NO 11900571  
 -----  
 WHEN INTERNAL ADI IS OMITTED ON  
 REVERSAL SWITCH USE DWG NO 11900572

ITEM	QTY	PART NUMBER	DESCRIPTION
17	1	1B90034	PCB 24 V POWER LINK
16	1	15D53C	CABLE, 3 CORE 20 AWG ALPHA
15	1	15D46C	CABLE, 6 CORE 20 AWG ALPHA
14	4		KEPNUT, M4 S/S
13	4		KEPNUT, M6 S/S
12	4	DN 6797	WASHER, M3 INT LOCK S/S
11	2	DN 6797	WASHER, M4 INT LOCK S/S
10	4	DN 125 A	WASHER, M5 FLAT S/S
9	8	DN 125 A	WASHER, M4 FLAT S/S
8	4	DN 125 A	WASHER, M6 FLAT S/S
7	4	DN 7969A	SCREW, M3 X 12 PAN HD S/S
6	2	DN 7969A	SCREW, M4 X 8 PAN HD S/S
5	2	EGCA	CABLE CLAMP
4	1	HC24-2-4A	POWER SUPPLY 24V CONDOR
3	1	11900000	MAIN CONTROL BOARD
2	1	11900000	CONTACTOR ASSEMBLY 80 AMP
1	1	17900030	BASE PLATE

DATE: 11/20/01  
 DRAWN BY: C. DEUGLAS  
 CHECKED BY: [Signature]  
 APPROVED BY: [Signature]

SCALE: 1:1

GMW  
 P.O. Box 2618, Redwood City, CA 94064  
 Tel: (650) 962-0332 Fax: (650) 962-0298

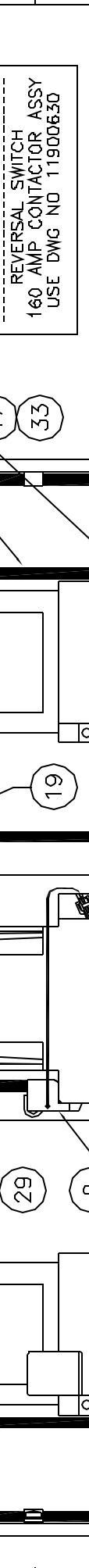
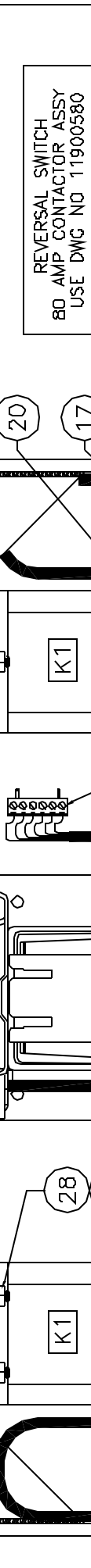
REVERSAL SWITCH  
 BASE PLATE ASSY

REV: A  
 PART NUMBER: 11900572

DATE: 11/20/01

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	11/27/01	C. DEJULIAS

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	11/27/01	C. DEJULIAS



REVERSAL SWITCH  
80 AMP CONTACTOR ASSY  
USE DWG NO 11900580

REVERSAL SWITCH  
160 AMP CONTACTOR ASSY  
USE DWG NO 11900630

ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
36	2		LABEL, GROUND	
35	2		LABEL, NEGATIVE	
34	2		LABEL, POSITIVE	
33	2		TE. PAD, ADHESIVE MOUNT	
32	1/8		SLEEVEING, HEATSHRINK 10mm 3/8" BLACK	
31	8	PV6-14RX-E	LUG, 6 AWG 1/8 HOLE PANDUIT	
30	1/8	5J-0801	CABLE, 6 AWG WELDING BLACK ANXYTER	
29	3	DN 125A	WASHER, FLAT M6 S/S	
28	7		WASHER, W4	
27	3	DN 6797	WASHER, W4 NT LOCK S/S	
26	3	DN 125 A	WASHER, W4 FLAT S/S	
25	3	DN 7985A	SCREW, W4 X 10 PAN HD S/S	
24	3	DN 6797	WASHER, W3 FLAT S/S	
23	3	DN 125 A	WASHER, W3 FLAT S/S	
22	3	DN 7985A	SCREW, W3 X 10 PAN HD S/S	
21	1		CABLE, 2 CORE	
20	1	1175701	FLUJE, 6 WAY PHOENIX	
19	1	1757010	FLUJE, 2 WAY PHOENIX	
18	1	1757010	FLUJE, 2 WAY PHOENIX	
17	9	PCT2M-C	CABLE TIE, MINIATURE PANDUIT	
16	5		CABLE CLAMP	
15	2	239002	FUSE LINK, 2 AMP 20x40MM, LITTLEFUSE	
14	1	3803.6	PARTITION, ASK1 WEIDMULLER	
13	2	4745.8	FUSE TERMINAL, ASK1 WEIDMULLER	
12	2	6611.6	GROUND TERMINAL, WEIDMULLER	
11	2	6071.0	PARTITION, WEIDMULLER	
10	4	6498.2	STUD TERMINAL, M6 WEIDMULLER	
9	2	DN1-5	CLAMPS, DN RAL DEC	
8	2	L44-DC3U	COIL SUPPRESSOR, TELEMECANIQUE	
7	1	LAI-DN10	AUX CONTACT NO, TELEMECANIQUE	
6	1	LAI-DN10	AUX CONTACT NO, TELEMECANIQUE	
5	1	LAI-DK108	CONTACTOR LATCH TELEMECANIQUE	
4	1	LPT-085008-B	CONTACTOR, 2NC/2NO TELEMECANIQUE	
3	1	BRAD1000	DN RAL, ALUMINUM DEC	
2	5	17900970	STANDOFF	
1	1	17900940	CONTACTOR MOUNTING BRACKET	

**GMW**  
P.O. Box 2618, Redwood City, CA 94064  
Tel: (650) 862-6332, Fax: (650) 862-6298

SCALE: 1:1 VP 1/8"

DATE: 11/27/01

REV: A

PROJECT: 11900580

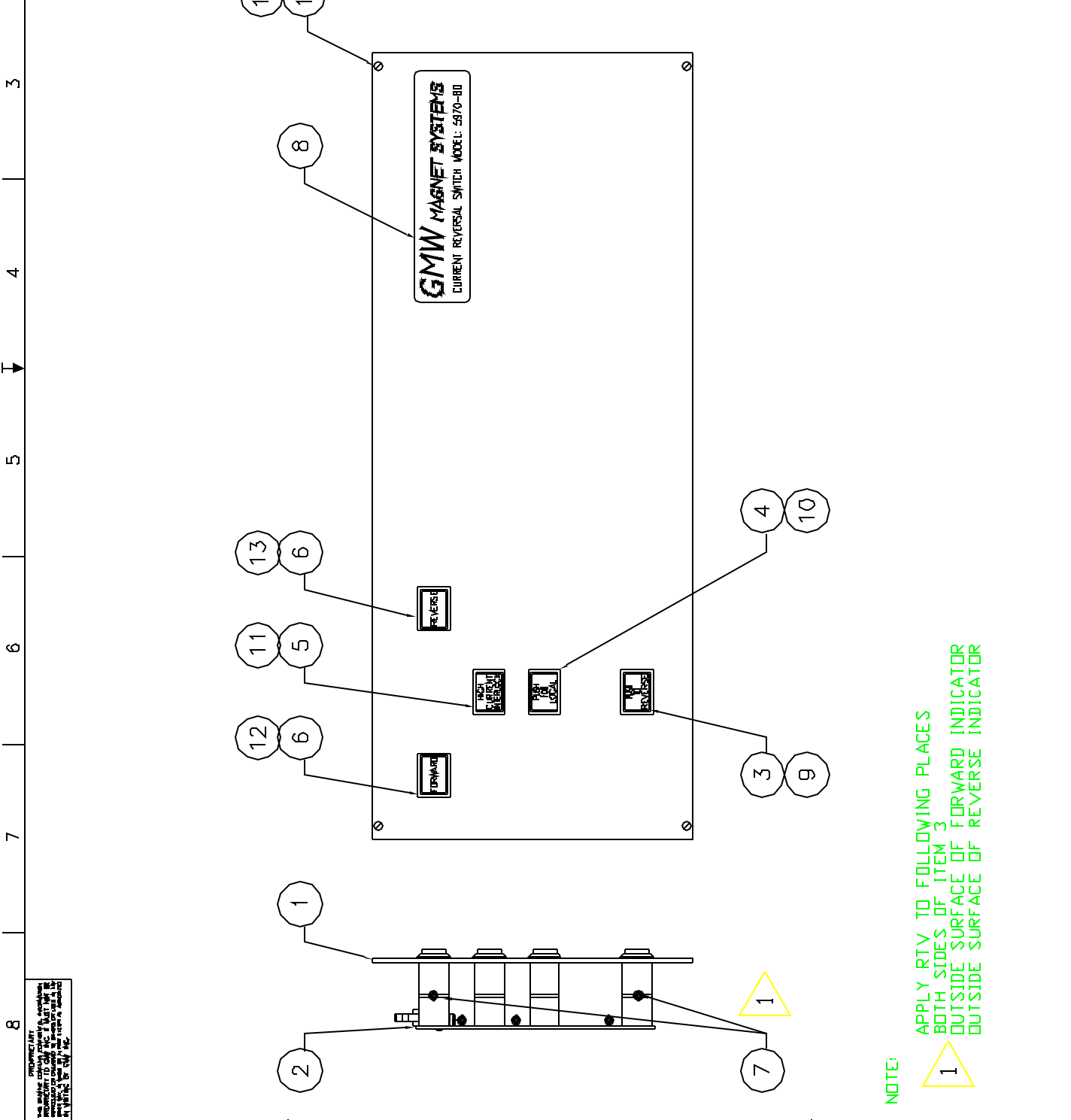
DESCRIPTION: REVERSAL SWITCH CONTACTOR ASSY

SCALE: 1:1 VP 1/8"

SHEET 1 OF 1

PROPERTY OF  
GENERAL ELECTRIC COMPANY  
ALL RIGHTS RESERVED  
NO PARTS TO BE REUSED  
WITHOUT WRITTEN PERMISSION  
FROM GE

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	11/13/20	C. DEUGLAS



ITEM	QTY	PART NUMBER	DESCRIPTION
15	4	63-119	SCREWS, RETAINING ELMA
14	4	63-301	BUSHINGS, ELMA
13	1		LABEL, REVERSE
12	1		LABEL, FORWARD
11	1		LABEL, HIGH CURRENT INTERLOCK
10	1		LABEL, PUSH FOR LOCAL
9	1		LABEL, PUSH TO REVERSE
8	1		LABEL, MODEL NUMBER
7	1	7A/RI DOW CORN 3149	RTV ADHESIVE, NON CORROSIVE
6	2	1B03K40112BJ	INDICATOR, YELLOW LENS NKK
5	1	1B03K40112BJ	INDICATOR, WHITE LENS NKK
4	1	1B25BK10112BJ	PUSHBUTTON, LATCH WHITE LENS NKK
3	1	1B25BK10112FJ	PUSHBUTTON, MOMENTARY GREEN LENS NKK
2	1	19900010	FRONT PANEL PCB ASSEMBLY
1	1	17900050	FRONT PANEL

GMW  
 P.O. Box 3519, Redwood City, CA 94064  
 Tel: (650) 962-5022; Fax: (650) 962-4258

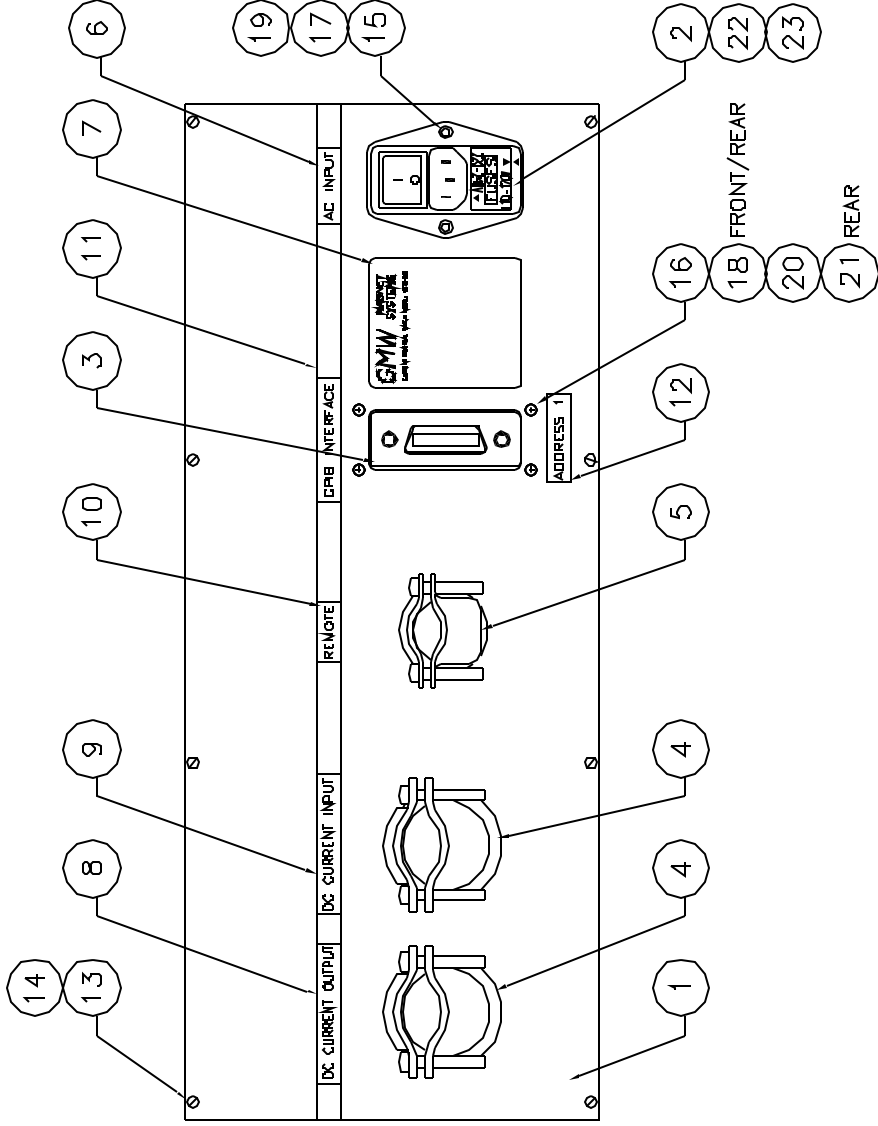
DATE: 11/13/20  
 DRAWN BY: C. DEUGLAS  
 CHECKED BY: C. DEUGLAS  
 TITLE: REVERSAL SWITCH FRONT PANEL ASSY

SCALE: 1:1  
 SHEET 1 OF 1

SOFTWARE: AUTOCAD 13

PROPRIETARY  
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REV	DESCRIPTION	DATE	APPROVAL
A	RELEASE	11/17/06	C. DOUGLAS



QTY	PART NUMBER	DESCRIPTION
1	2390D1	FUSE LINK 1.0 A SLO BLO LITLIFUSE
2	12390D2	FUSE LINK 2.0 A SLO BLO LITLIFUSE
2	DN 934	NUT, HEX M4 5/5
4	DN 6797	WASHER, M4 INTERNAL LOCK 5/5
2	DN 6797	WASHER, M3 INTERNAL LOCK 5/5
2	DN 433	WASHER, M4 5/5
2	DN 433	WASHER, M3 5/5
4	DN 7985A	SCREW, M4 X 12 PAN HD PHILLIPS 5/5
2	DN 965A	SCREW, M3 X 10 FLAT HD PHILLIPS 5/5
8	63-119	SCREW, RETAINING ELMA
8	63-501	BUSHINGS, ELMA
1		LABEL, ADDRESS 1
1		LABEL, GPB INTERFACE
1		LABEL, REMOTE
1		LABEL, DC CURRENT INPUT
1		LABEL, DC CURRENT OUTPUT
1		LABEL, SPECIFICATION
1		LABEL, AC INPUT
1	3304	CABLE CLAMP, THOMAS & BETTS
1	3309	CABLE CLAMP, THOMAS & BETTS
1	CE74BA	CONNECTOR, GPB BULKHEAD MFG
1	433T1420	PLUG/SWITCH/FILTER
1	1790D660	BACK PANEL

PARTS LIST	
REV	DATE
1	11/17/06
DESIGNED BY	C. DOUGLAS
CHECKED BY	C. DOUGLAS
DATE	11/17/06
REV	DATE
1	11/17/06
2	11/17/06
3	11/17/06
4	11/17/06
5	11/17/06
6	11/17/06
7	11/17/06
8	11/17/06
9	11/17/06
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16	11/17/06
17	11/17/06
18	11/17/06
19	11/17/06
20	11/17/06
21	11/17/06
22	11/17/06
23	11/17/06
TOTAL	151 (M/L)

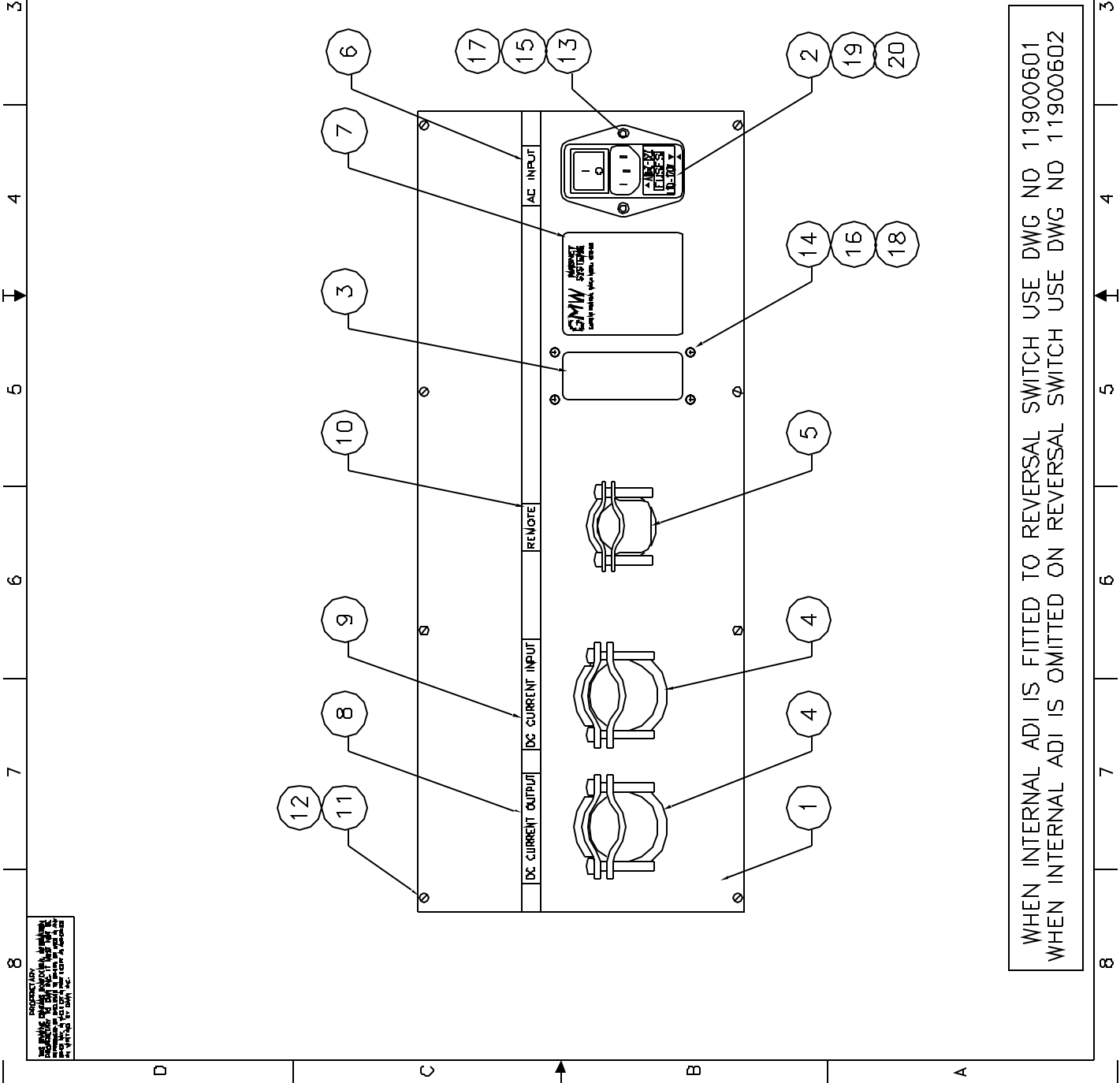
GMW  
 1000 S. RAYBURN AVE.  
 RICHMOND, CA 94804  
 TEL: (925)802-8200 FAX: (925)802-8206

REVERSAL SWITCH  
 BACK PANEL ASSY  
 PART NUMBER: A111900601

WHEN INTERNAL ADI IS FITTED TO REVERSAL SWITCH USE DWG NO 11900601  
 WHEN INTERNAL ADI IS OMITTED ON REVERSAL SWITCH USE DWG NO 11900602

REV	DESCRIPTION	DATE	BY	APPROVED
A	RELEASE	11/25/06	C. DOUGLAS	

REVISIONS



QTY	DESCRIPTION
1	17900060
1	17900060
2	17900060
2	17900060
3	17900060
4	17900060
5	17900060
6	17900060
7	17900060
8	17900060
9	17900060
10	17900060
11	8 63-119
12	8 63-119
13	2 UN 5/8 X 10 FLAT HD PHILLIPS S/S
14	4 UN 7/8 X 12 PAN HD PHILLIPS S/S
15	2 UN 4.33
16	8 UN 4.33
17	2 UN 8/19
18	4 UN 8/19
19	4 UN 2.0 A SLO BLD LUTLEUSE
20	1 2.390001

PARTS LIST	
REV	DATE
1	11/25/06
2	11/25/06
3	11/25/06
4	11/25/06
5	11/25/06
6	11/25/06
7	11/25/06
8	11/25/06
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14	11/25/06
15	11/25/06
16	11/25/06
17	11/25/06
18	11/25/06
19	11/25/06
20	11/25/06
TOTAL	131

GMW  
 1100 S. Foothill Blvd., Redwood City, CA 94064  
 Tel: (650)802-8200 Fax: (650)802-8206

REVERSAL SWITCH  
 BACK PANEL ASSY

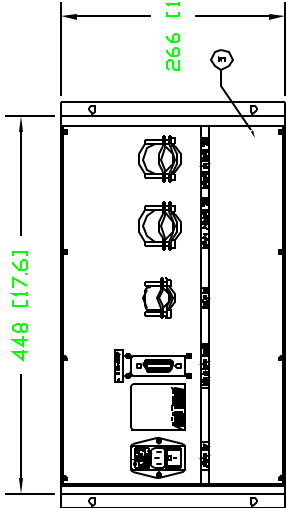
REV: 11/25/06  
 PART NO: A111900602

SHEET 1 OF 1

WHEN INTERNAL ADI IS FITTED TO REVERSAL SWITCH USE DWG NO 11900601  
 WHEN INTERNAL ADI IS OMITTED ON REVERSAL SWITCH USE DWG NO 11900602

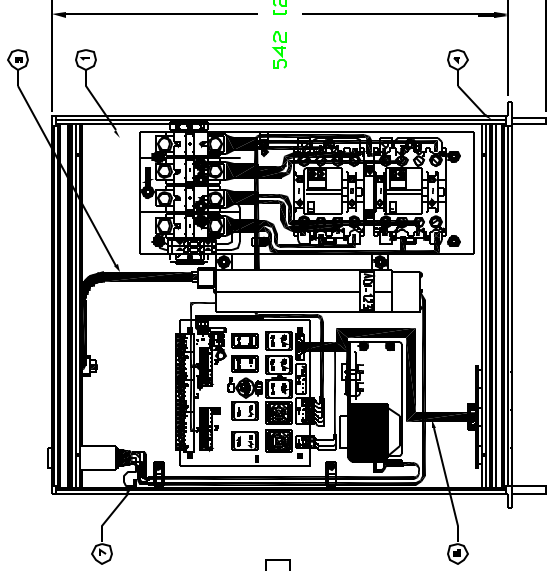
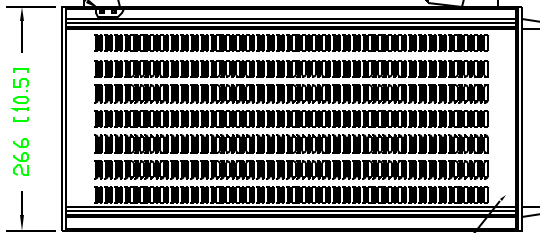
PROPRIETARY  
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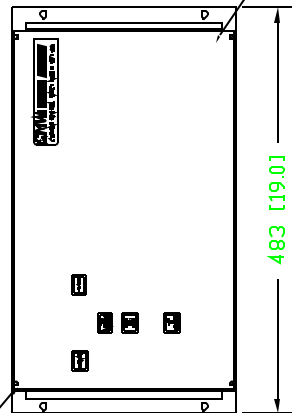


WHEN INTERNAL ADI IS FITTED TO  
REVERSAL SWITCH USE DWG NO 11900611  
WHEN INTERNAL ADI IS OMITTED ON  
REVERSAL SWITCH USE DWG NO 11900612

SIDE VIEW



BEHIND PANELS (4 PLS)

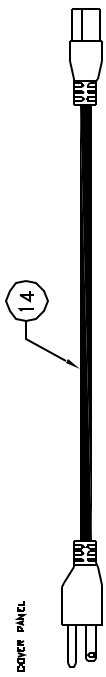
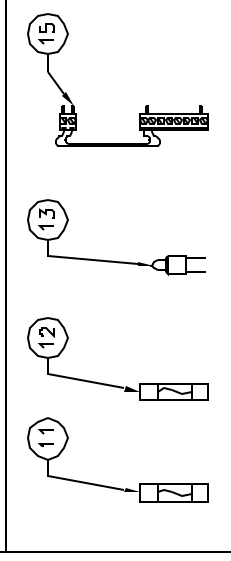


COUNTRY	RATING	MANUFACTURER AND PART NUMBER
USA/CANADA	115V/13A	PANEL COMPONENTS PART NO 704HX0203D5
EUROPE	250V/16A	PANEL COMPONENTS PART NO 8623500D
UK/INDIA	230V/13A	PANEL COMPONENTS PART NO BR39509D
ARGENTINA	220V/10A	PANEL COMPONENTS PART NO BR39D01D
SWITZERLAND	230V/10A	PANEL COMPONENTS PART NO 8639600D
ITALY	230V/10A	PANEL COMPONENTS PART NO 8639400D

REVERSAL SWITCH POWER CORDSETS

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	12/04/98	G.DOUGLAS
B	ADD ITEM 16	03/22/00	G.DOUGLAS

SPARE PARTS KIT



NOTE: POWER CORDSET SHOWN FOR US/CANADA. SEE TABLE  
FOR POWER CORDSET SUITABLE FOR OTHER COUNTRIES

ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
16	12	1904-12	SCREW, M4 x 10 LOW PROFILE HD, ELMA	
15	1	16900340	PCB 24 V POWER LINK	
14	1	704030203D5	POWER CORDSET, PANEL COMPONENTS	
13	2	AT607-12V	LAMP 12 V, NKK	
12	5	239001	FUSE LINK 1.0 A SLO BLO LITTLEFUSE	
11	5	129002	FUSE LINK 2.0A SLO BLO LITTLEFUSE	
10	6	63-027	BASE PLATE KIT, ELMA	
9	1	CIF24-05M	CABLE, GPIB 0.5M LONG L-COM	
8	1	FRC10-0.5M	CABLE, RIBBON 10 WAY 0.5M LONG	
7	1	63-172	EARTHING KIT, ELMA	
6	4	63-088	TAPPED STRIP 2 x 6, M3 HOLES ELMA	
5	1	14Y167-10	COVER PLATE KIT GREY, ELMA	
4	1	14B067	CASE, RACK MTC 6U [with handles] ELMA	
3	1	11900651	BACK PANEL ASSEMBLY	
2	1	11900590	FRONT PANEL ASSEMBLY	
1	1	11900621	BASE PLATE ASSEMBLY	

PARTS LIST

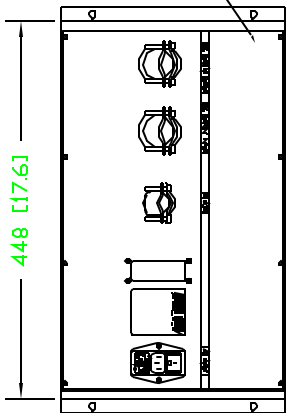
DO NOT SCALE FROM DRAWING UNLESS DIMENSIONS ARE SHOWN IN PARENTHESES	DATE	SCALE	PROJECTION
DATE	12/04/98	1:4	1ST ANGLE
CHECK	DATE		
ENGINEERING	DATE		
DESIGNER	DATE		
DRAWN	DATE		
SCALE	1:4		
PROJECTION	1ST ANGLE		
SIZE	A2		
DRAWING NO.	A2 11900611		
REV	B		

G.D. DOUGLAS & COMPANY  
P.O. Box 2578, Redwood City, CA 94064  
Tel: (650)802-8282 Fax: (650)802-8288

REVERSAL SWITCH  
GENERAL ASSEMBLY



PROPRIETARY  
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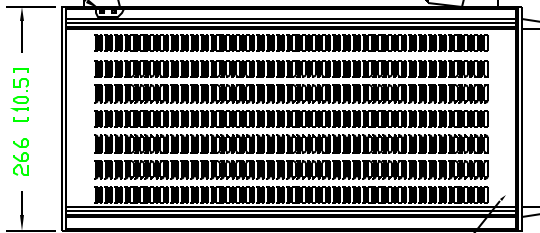


448 [17.6]

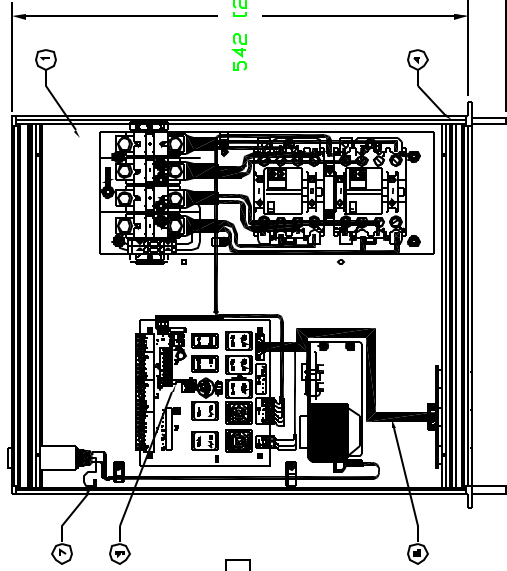
WHEN INTERNAL ADI IS FITTED TO  
REVERSAL SWITCH USE DWG NO 11900611  
WHEN INTERNAL ADI IS OMITTED ON  
REVERSAL SWITCH USE DWG NO 11900612

SIDE VIEW

266 [10.5]



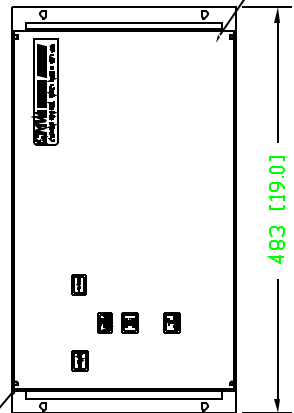
(3) LOCATED BEHIND REAR PANEL



542 [21.3]

44 [1.7]

BEHIND PANELS (4 PLS)

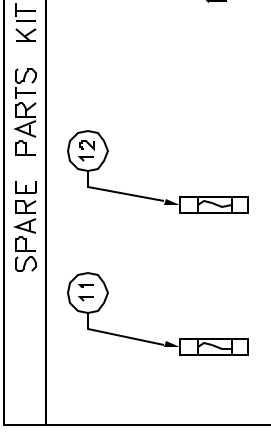


483 [19.0]

COUNTRY	RATING	MANUFACTURER AND PART NUMBER
USA/CANADA	115V/13A	PANEL COMPONENTS PART NO 70403020305
EUROPE	250V/16A	PANEL COMPONENTS PART NO B823500D
UK/INDIA	230V/13A	PANEL COMPONENTS PART NO B639509D
ARGENTINA	220V/10A	PANEL COMPONENTS PART NO B639001D
SWITZERLAND	230V/10A	PANEL COMPONENTS PART NO B639600D
ITALY	230V/10A	PANEL COMPONENTS PART NO B639400D

REVERSAL SWITCH POWER CORDSETS

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	12/04/98	G.DOUGLAS
B	ADD ITEM 15	03/22/00	G.DOUGLAS



(14)



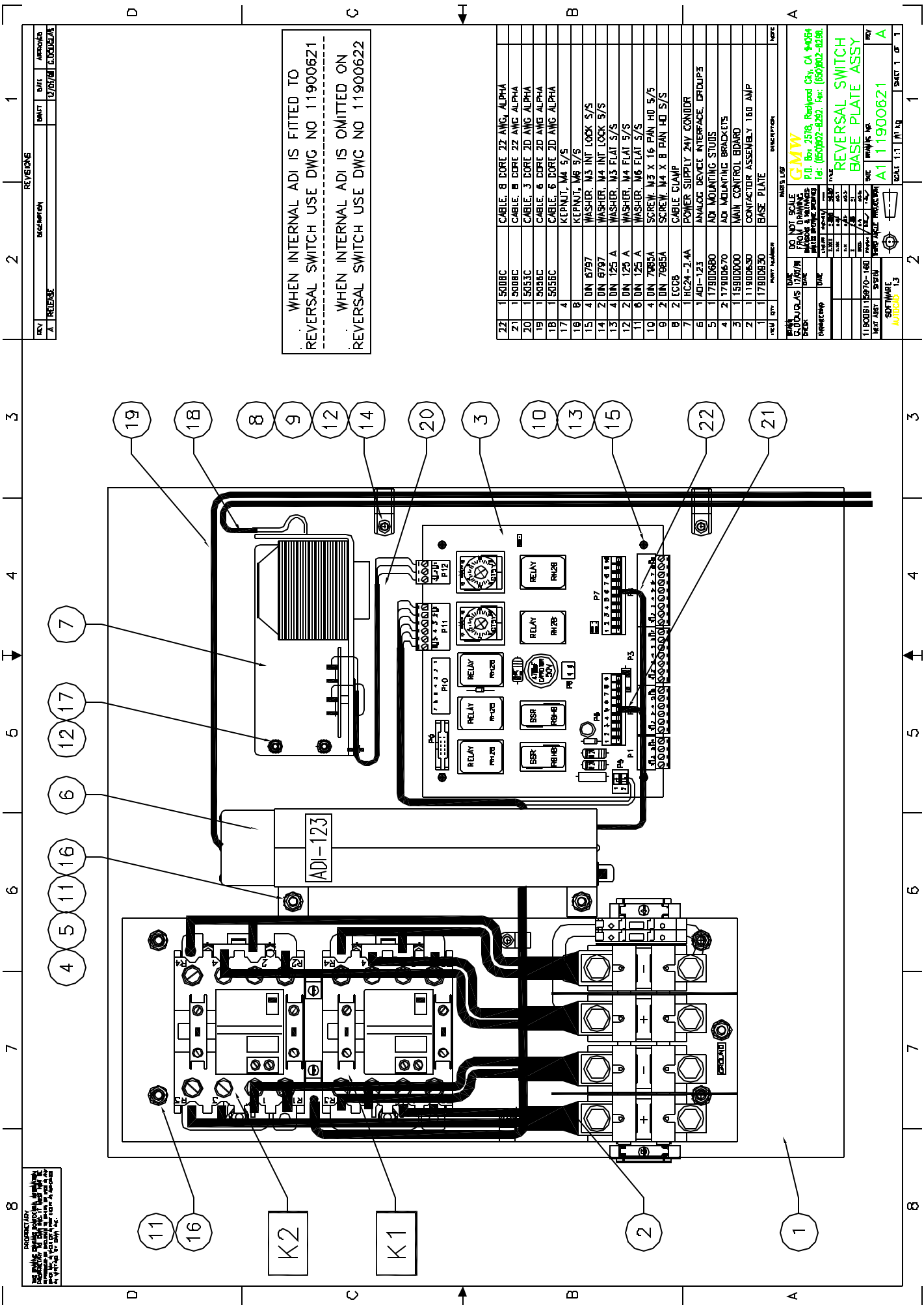
NOTE: POWER CORDSET SHOWN FOR US/CANADA. SEE TABLE FOR POWER CORDSET SUITABLE FOR OTHER COUNTRIES

ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
15	12	1904-12	SCREW, M4 x 10 LOW PROFILE HD, ELMA	
14	1	70401020244	POWER CORDSET, PANEL COMPONENTS	
13	2	AT607-12V	LAMP 12 V, NKK	
12	5	239001	FUSE LINK 1.0 A SLO BLO LITTLEFUSE	
11	5	129002	FUSE LINK 2.0 A SLO BLO LITTLEFUSE	
10	6	63-027	BASE PLATE KIT, ELMA	
9	1	16900340	PCB 24 V POWER LINK	
8	1	FRC10-0.5M	CABLE, RIBBON 10 WAY 0.5M LONG	
7	1	63-172	EARTHING KIT, ELMA	
6	4	63-088	TAPPED STRIP 2 x 6, M3 HOLES ELMA	
5	1	14Y167-10	COVER PLATE KIT GREY, ELMA	
4	1	14B067	CASE, RACK MTC 6U [with handles] ELMA	
3	1	11900652	BACK PANEL ASSEMBLY	
2	1	11900590	FRONT PANEL ASSEMBLY	
1	1	11900622	BASE PLATE ASSEMBLY	

PARTS LIST

GMW  
P.O. Box 2578, Redwood City, CA 94064  
Tel: (650)802-8282, Fax: (650)802-8288

REVERSAL SWITCH  
GENERAL ASSEMBLY  
DRAWING NO. A2 11900612  
REV B  
SCALE 1:4 WT.kg  
SHEET 1 OF 1



REV	DESCRIPTION	DATE	BY	APPROVED
A	RELEASE	12/25/98	C. DORRIGAN	
REVISIONS				
2				
3				
4				
5				
6				
7				
8				

WHEN INTERNAL ADI IS FITTED TO REVERSAL SWITCH USE DWG NO 11900621  
 -----  
 WHEN INTERNAL ADI IS OMITTED ON REVERSAL SWITCH USE DWG NO 11900622

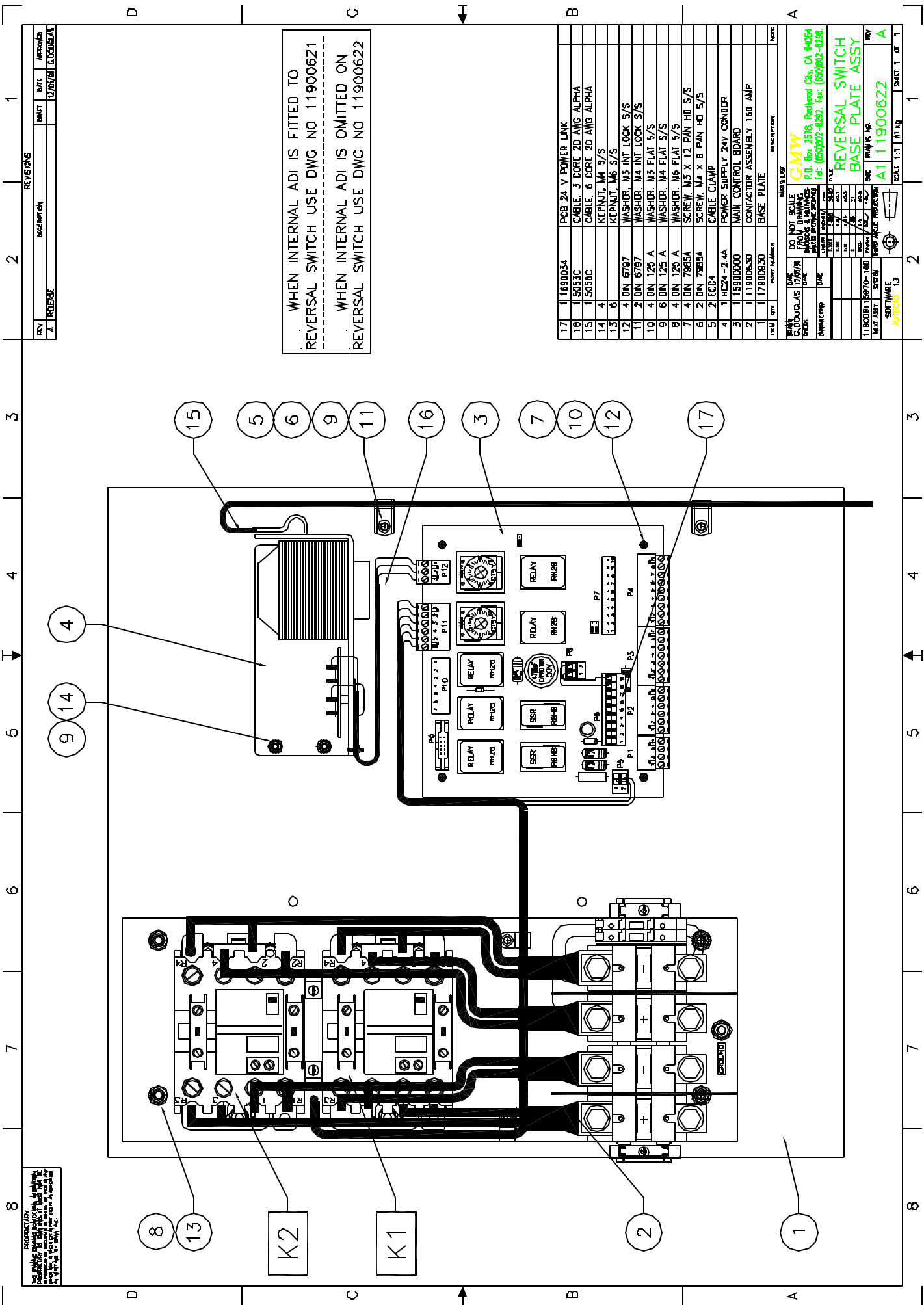
REV	QTY	PART NUMBER	DESCRIPTION
22	1	5008C	CABLE, 8 CORE 22 AWG, ALPHA
21	1	5008C	CABLE, 8 CORE 22 AWG, ALPHA
20	1	5053C	CABLE, 3 CORE 20 AWG, ALPHA
19	1	5053C	CABLE, 3 CORE 20 AWG, ALPHA
18	1	5058C	CABLE, 6 CORE 20 AWG, ALPHA
17	4		KEPNUT, M4 5/5
16	8		KEPNUT, M6 5/5
15	4	DN 6797	WASHER, M3 INT, LOCK 5/5
14	2	DN 6797	WASHER, M4 INT, LOCK 5/5
13	4	DN 125 A	WASHER, M3 FLAT 5/5
12	2	DN 125 A	WASHER, M4 FLAT 5/5
11	6	DN 125 A	WASHER, M6 FLAT 5/5
10	4	DN 7885A	SCREW, M3 X 16 PAN, HD 5/5
9	2	DN 7885A	SCREW, M4 X 8 PAN, HD 5/5
8	2	EC23	CABLE CLAMP
7	1	RC24-2-4A	POWER SUPPLY 24V CONTROL
6	1	AD1-123	ANALOG DEVICE INTERFACE, CRDUPS
5	1	17700670	AD1 MOUNTING BRACKETS
4	2	17700670	AD1 MOUNTING BRACKETS
3	1	15800000	MAIN CONTROL BOARD
2	1	11900650	CONTACTOR ASSEMBLY 160 AMP
1	1	117900830	BASE PLATE

PARTS LIST	
REV	DATE
1	12/25/98
2	12/25/98
3	12/25/98
4	12/25/98
5	12/25/98
6	12/25/98
7	12/25/98
8	12/25/98
9	12/25/98
10	12/25/98
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14	12/25/98
15	12/25/98
16	12/25/98
17	12/25/98
18	12/25/98
19	12/25/98
20	12/25/98
21	12/25/98
22	12/25/98
TOTAL 151 PARTS	

PROPRIETARY  
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GMW  
 P.O. Box 2578, Redwood City, CA 94064  
 Tel: (650)802-8200, Fax: (650)802-8258  
 REVERSAL SWITCH  
 BASE PLATE ASSY  
 A1 11900621  
 SHEET 1 OF 1

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WHEN INTERNAL ADI IS FITTED TO REVERSAL SWITCH USE DWG NO 11900621  
 -----  
 WHEN INTERNAL ADI IS OMITTED ON REVERSAL SWITCH USE DWG NO 11900622

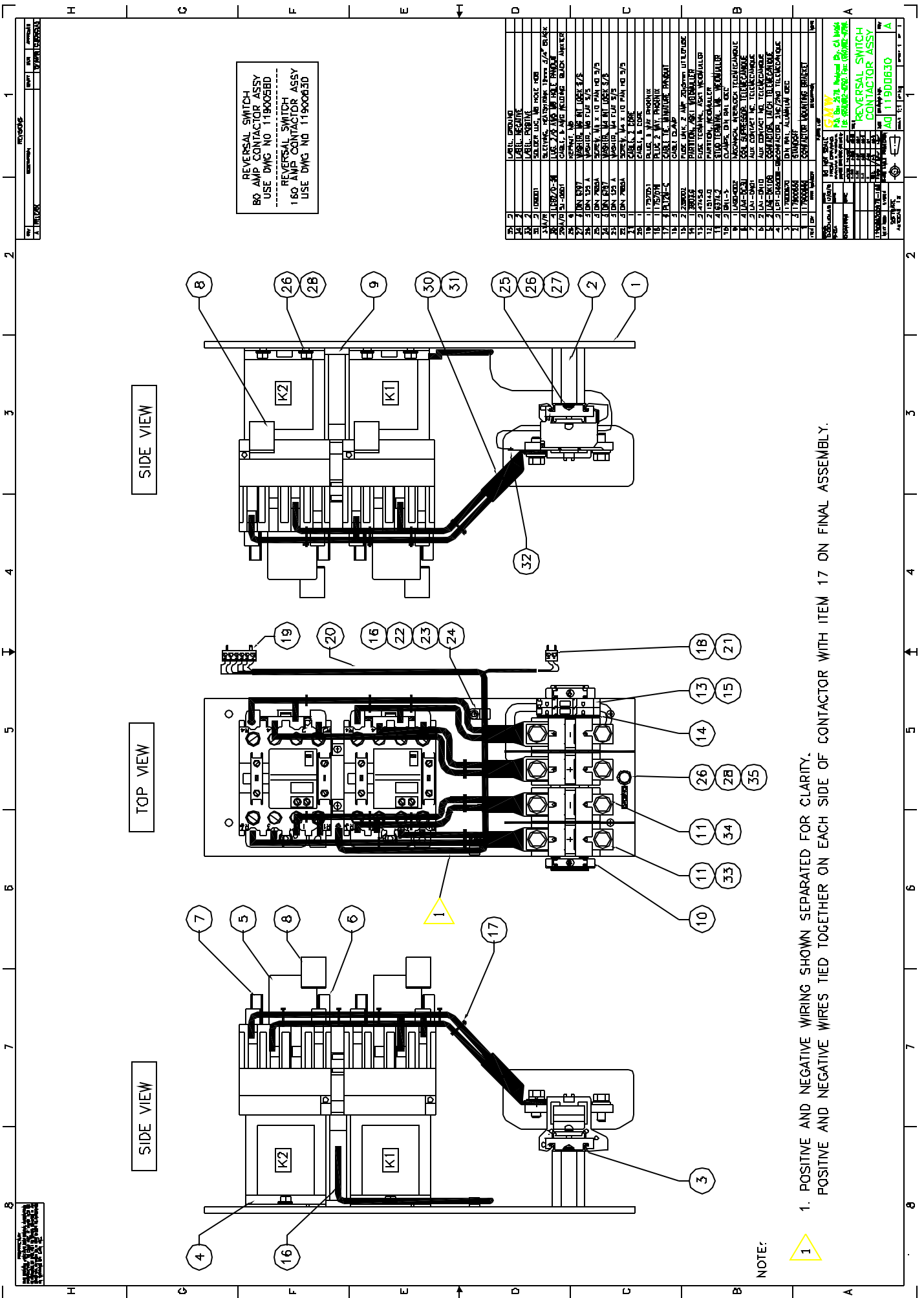
REV	DESCRIPTION	DATE	BY	APPROVED
1	RELEASE	12/29/88	C. DORRMAN	

REV	QTY	PART NUMBER	DESCRIPTION
17	1	1690054	PCSB 24 V POWER LINK
16	1	5053C	CABLE 3 CORE 2D AWG ALPHA
15	1	5056C	CABLE 6 CORE 2D AWG ALPHA
14	4		KEPNUT M4 5/8
13	6		KEPNUT M6 5/8
12	4	DN 6797	WASHER M3 INT LOCK 5/8
11	2	DN 6797	WASHER M4 INT LOCK 5/8
10	4	DN 125 A	WASHER M4 FLAT 5/8
9	6	DN 125 A	WASHER M4 FLAT 5/8
8	4	DN 125 A	WASHER M6 FLAT 5/8
7	4	DN 7955A	SCREW M3 X 12 PAN HD 5/8
6	2	DN 7955A	SCREW M4 X 8 PAN HD 5/8
5	2	EC24	CABLE CLAMP
4	1	H24-2.4A	POWER SUPPLY 24V CONDUIT
3	1	1580000	MAIN CONTROL BOARD
2	1	11900650	CONTACTOR ASSEMBLY 180 AMP
1	1	17900930	BASE PLATE

REV	QTY	PART NUMBER	DESCRIPTION
11	1	1690054	PCSB 24 V POWER LINK
10	1	5053C	CABLE 3 CORE 2D AWG ALPHA
9	1	5056C	CABLE 6 CORE 2D AWG ALPHA
8	4		KEPNUT M4 5/8
7	6		KEPNUT M6 5/8
6	4	DN 6797	WASHER M3 INT LOCK 5/8
5	2	DN 6797	WASHER M4 INT LOCK 5/8
4	4	DN 125 A	WASHER M4 FLAT 5/8
3	6	DN 125 A	WASHER M4 FLAT 5/8
2	4	DN 125 A	WASHER M6 FLAT 5/8
1	4	DN 7955A	SCREW M3 X 12 PAN HD 5/8
1	2	DN 7955A	SCREW M4 X 8 PAN HD 5/8
1	2	EC24	CABLE CLAMP
1	1	H24-2.4A	POWER SUPPLY 24V CONDUIT
1	1	1580000	MAIN CONTROL BOARD
1	1	11900650	CONTACTOR ASSEMBLY 180 AMP
1	1	17900930	BASE PLATE

TOTAL 151 P/L/14  
 SHEET 1 OF 1

GMW  
 P.O. Box 2578, Redwood City, CA 94064  
 Tel: (650)802-8200, Fax: (650)802-8258  
 REVERSAL SWITCH  
 BASE PLATE ASSY  
 A1 11900622  
 REV A



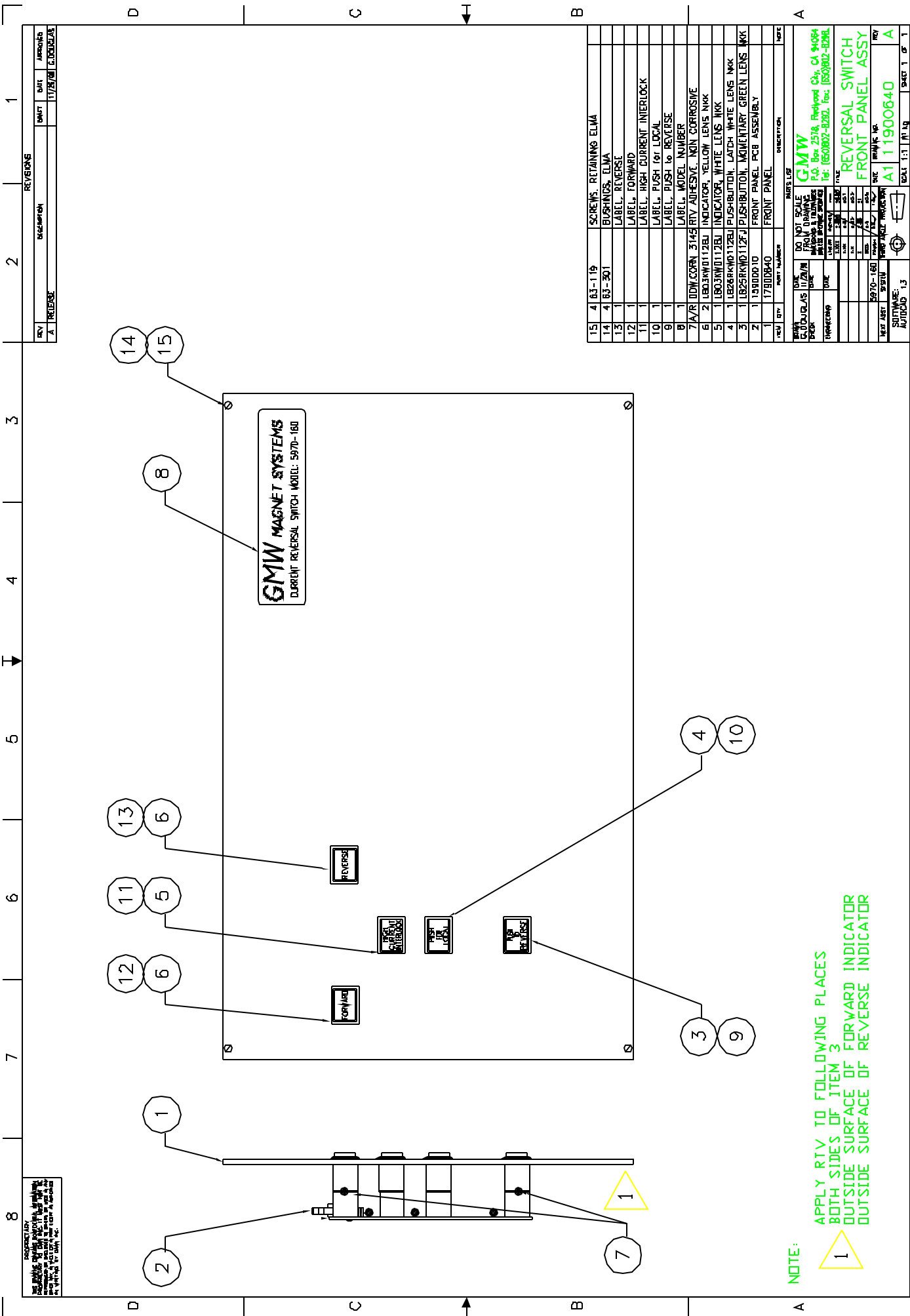
**NOTE:**

1. POSITIVE AND NEGATIVE WIRING SHOWN SEPARATED FOR CLARITY.  
 POSITIVE AND NEGATIVE WIRES TIED TOGETHER ON EACH SIDE OF CONTACTOR WITH ITEM 17 ON FINAL ASSEMBLY.



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REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	11/25/98	G. DOBROWAL



QTY	PART NUMBER	DESCRIPTION
15	463-119	SCREWS RETAINING ELMA
14	463-301	BUSHINGS, ELMA
13		LABEL, REVERSE
12		LABEL, FORWARD
11		LABEL, HIGH CURRENT INTERLOCK
10		LABEL, PUSH (for LOCAL)
9		LABEL, PUSH TO REVERSE
8		LABEL, MODEL NUMBER
7	ADM COORN 3145	RIV ADHESIVE, NEON CORROSIVE
6	LEO3KW0112BU	INDICATOR, YELLOW LENS NKK
5	LEO3KW0112BU	INDICATOR, WHITE LENS NKK
4	LE26RKM0112BU	PUSHBUTTON LATCH WHITE LENS NKK
3	LE25RKM0112BU	PUSHBUTTON, MOMENTARY GREEN LENS NKK
2	179000010	FRONT PANEL PCB ASSEMBLY
1	179000040	FRONT PANEL

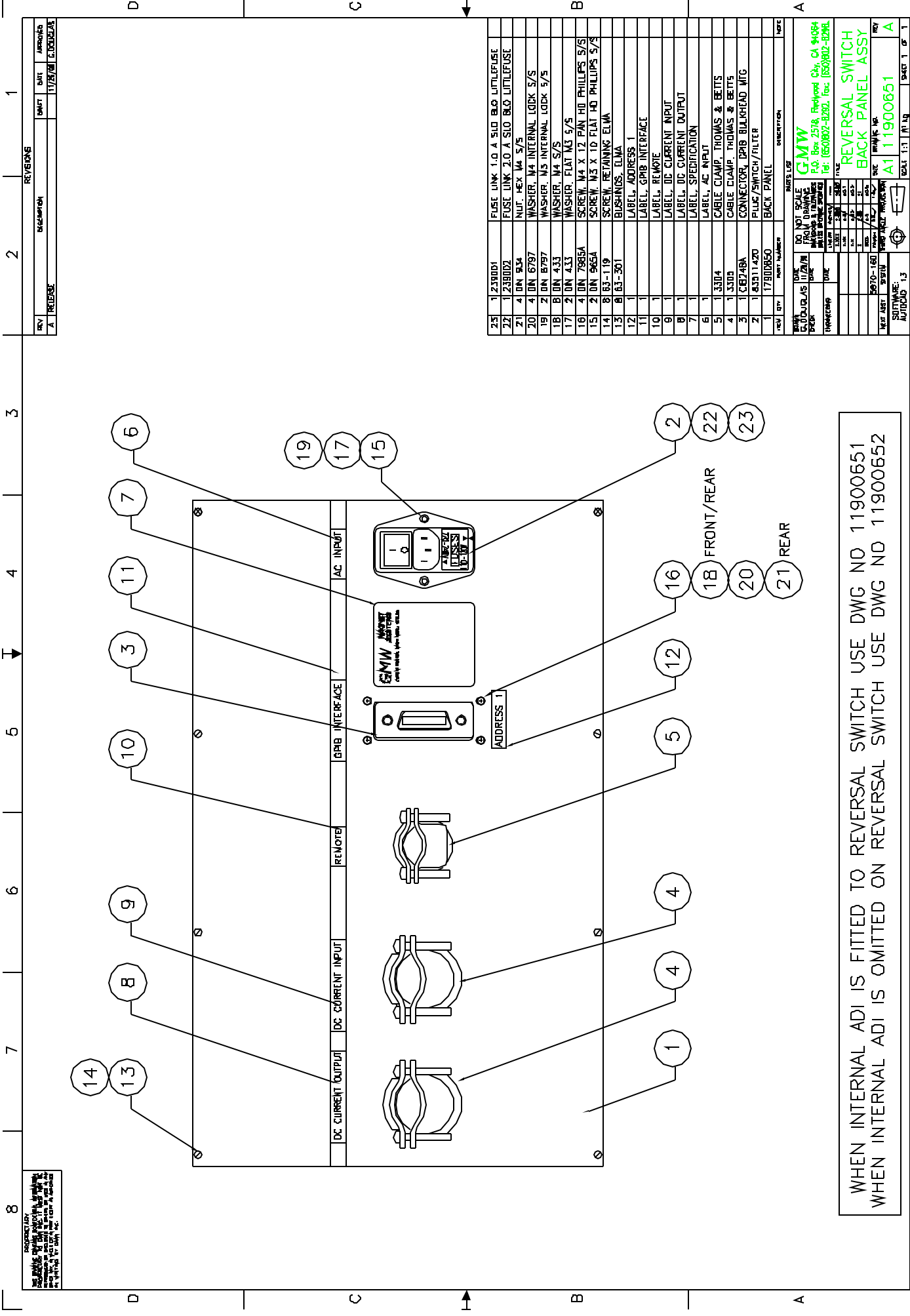
REV	DATE	BY	CHKD	APP'D	PAGE	OF
A	11/25/98	G. DOBROWAL			1	1

REV	DATE	BY	CHKD	APP'D	PAGE	OF
A	11/25/98	G. DOBROWAL			1	1

**NOTE:**  
 APPLY RTV TO FOLLOWING PLACES  
 BOTH SIDES OF ITEM 3  
 OUTSIDE SURFACE OF FORWARD INDICATOR  
 OUTSIDE SURFACE OF REVERSE INDICATOR



TOTAL	151	1	1
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PROPRIETARY  
 INFORMATION  
 GMW, INC.  
 17750 E. COLLEGE AVENUE  
 SUITE 100  
 IRVINE, CA 92614  
 TEL: (949) 224-1000  
 FAX: (949) 224-1001

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	11/28/01	C. COOPER/AL

REVISIONS

QTY	PART NUMBER	DESCRIPTION
1	23900D1	FUSE LINK 1.0 A SLO BLO LITLIFUSE
1	23900D2	FUSE LINK 2.0 A SLO BLO LITLIFUSE
4	DN 934	NUT, HEX M4 5/8
4	DN 6797	WASHER, M4 INTERNAL LOCK 5/8
2	DN 6797	WASHER, M3 INTERNAL LOCK 5/8
2	DN 433	WASHER, M4 5/8
2	DN 433	WASHER, M3 5/8
4	DN 7985A	SCREW, M4 X 12 PAN HD PHILLIPS 5/8
2	DN 965A	SCREW, M3 X 10 FLAT HD PHILLIPS 5/8
8	63-119	SCREW, RETAINING, ELMA
8	63-501	BUSHINGS, ELMA
1		LABEL, ADDRESS 1
1		LABEL, GPB INTERFACE
1		LABEL, REMOTE
1		LABEL, DC CURRENT INPUT
1		LABEL, DC CURRENT OUTPUT
1		LABEL, SPECIFICATION
1		LABEL, AC INPUT
1	3304	CABLE CLAMP, THOMAS & BETTS
1	3309	CABLE CLAMP, THOMAS & BETTS
1	CB748A	CONNECTOR, GPB BULKHEAD MFG
2	43511420	PLUG/SWITCH/FILTER
1	17900850	BACK PANEL

PAGES LIST		DESCRIPTION
1	1	REVERSE SWITCH BACK PANEL ASSY

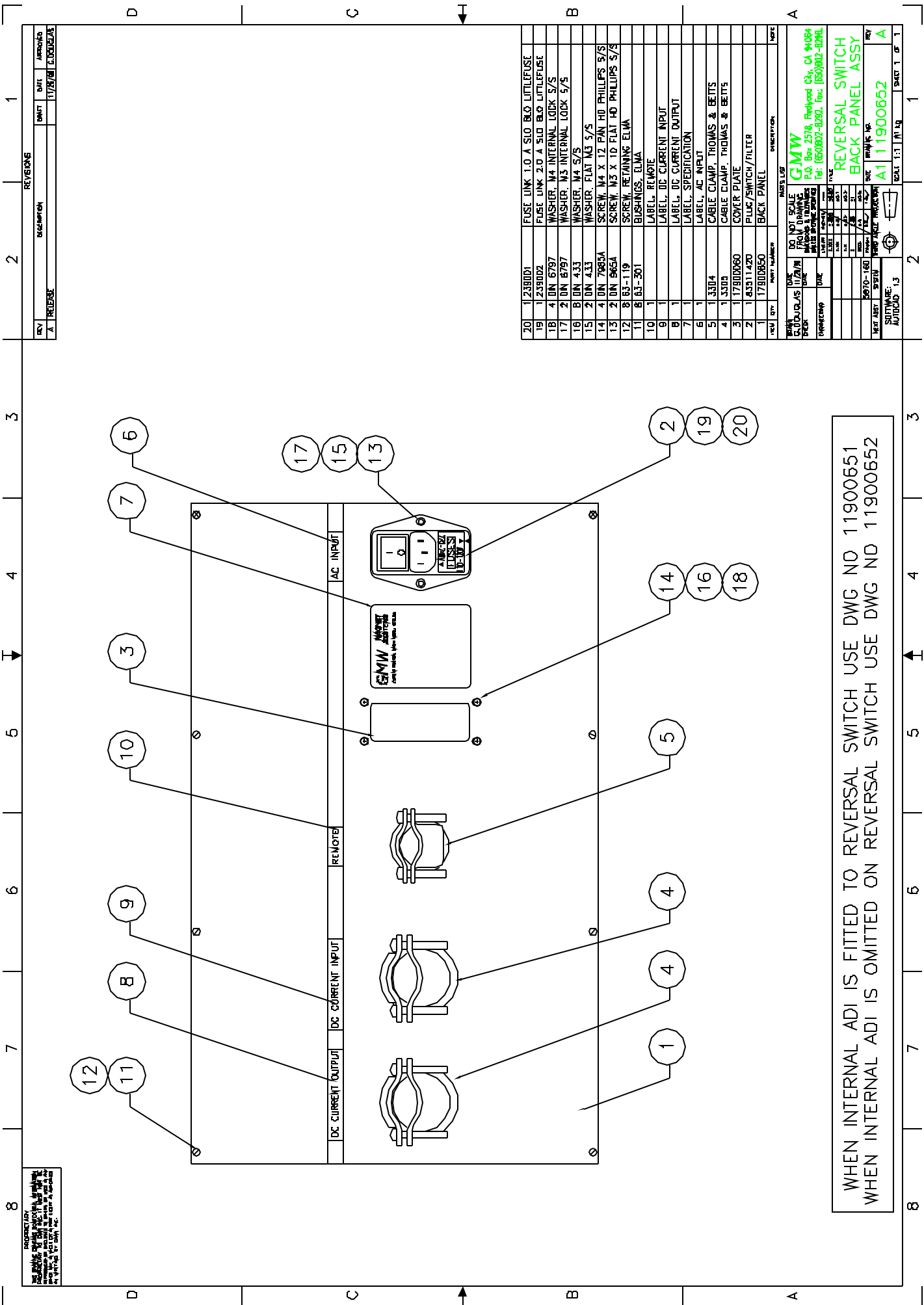
GMW  
 17750 E. COLLEGE AVENUE  
 SUITE 100  
 IRVINE, CA 92614  
 TEL: (949) 224-1000  
 FAX: (949) 224-1001

REVERSE SWITCH  
 BACK PANEL ASSY

REV: A1  
 PART NUMBER: 11900651

TOTAL: 1.3 (M/L) 1.3 SHEET 1 OF 1

WHEN INTERNAL ADI IS FITTED TO REVERSAL SWITCH USE DWG NO 11900651  
 WHEN INTERNAL ADI IS OMITTED ON REVERSAL SWITCH USE DWG NO 11900652



REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	11/25/06	C. DOUGLAS

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	11/25/06	C. DOUGLAS

QTY	PART NUMBER	DESCRIPTION
1	17900060	BACK PANEL
2	143011420	PLUG/SWITCH/FILTER
3	17900060	COVER PLATE
4	13304	CABLE CLAMP, THOMAS & BETTS
6	1	LABEL, AC INPUT
7	1	LABEL, SPECIFICATION
8	1	LABEL, DC CURRENT OUTPUT
9	1	LABEL, REMOTE
11	8 63-301	BUSHINGS, ELVA
12	8 63-119	SCREW, RETAINING ELVA
13	2 0N 566A	SCREW, M3 X 10 FLAT HD PHILLIPS S/S
14	4 0N 7085A	SCREW, M4 X 12 PAN HD PHILLIPS S/S
15	2 0N 433	WASHER, M3 S/S
16	8 0N 433	WASHER, M4 S/S
17	2 0N 8797	WASHER, M3 INTERNAL LOCK S/S
18	4 0N 6797	WASHER, M4 INTERNAL LOCK S/S
19	1 239003	FUSE LINK, 2.0 A SLO BLO LITTLEFUSE
20	1 239003	FUSE LINK, 1.0 A SLO BLO LITTLEFUSE

PARTS LIST	
QTY	DESCRIPTION
1	BACK PANEL
2	PLUG/SWITCH/FILTER
3	COVER PLATE
4	CABLE CLAMP, THOMAS & BETTS
6	LABEL, AC INPUT
7	LABEL, SPECIFICATION
8	LABEL, DC CURRENT OUTPUT
9	LABEL, REMOTE
11	8 BUSHINGS, ELVA
12	8 SCREW, RETAINING ELVA
13	2 SCREW, M3 X 10 FLAT HD PHILLIPS S/S
14	4 SCREW, M4 X 12 PAN HD PHILLIPS S/S
15	2 WASHER, M3 S/S
16	8 WASHER, M4 S/S
17	2 WASHER, M3 INTERNAL LOCK S/S
18	4 WASHER, M4 INTERNAL LOCK S/S
19	1 FUSE LINK, 2.0 A SLO BLO LITTLEFUSE
20	1 FUSE LINK, 1.0 A SLO BLO LITTLEFUSE

REVISIONS	
REV	DESCRIPTION
A	RELEASE

WHEN INTERNAL ADI IS FITTED TO REVERSAL SWITCH USE DWG NO 11900651  
 WHEN INTERNAL ADI IS OMITTED ON REVERSAL SWITCH USE DWG NO 11900652

PROPRIETARY  
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GMW  
 10000 S. RAYBURN AVE.  
 RICHMOND, CA 94804  
 TEL: (925) 882-8200 FAX: (925) 882-8206

REVERSAL SWITCH  
 BACK PANEL ASSY  
 PART NUMBER: A111900652

TOTAL 1.31 IN. LQ  
 SHEET 1 OF 1

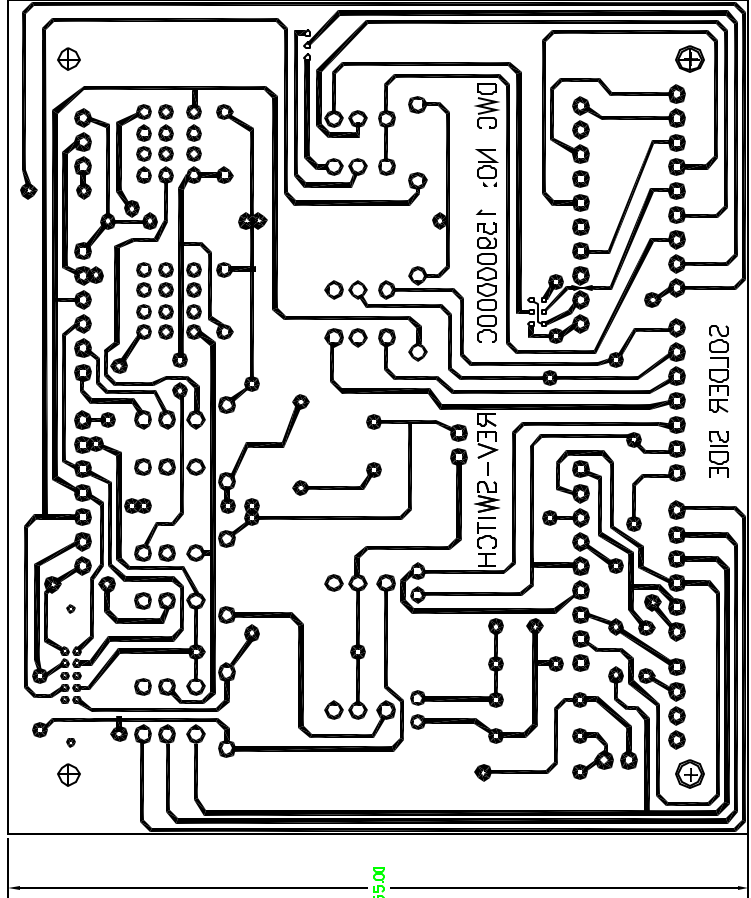
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REV	DESCRIPTION	DATE	BY	APPROVED
A	RELEASE	07/05/04	CM	CM
B	ADD CAPACITOR & B7	07/05/04	CM	CM
C	INCREASE SPACE BETWEEN P1, P2, P3, P4	12/02/04	CM	CM

D C B A

TIMER SETTINGS	
TM1	TM2
6.0 SECONDS	5.5 SECONDS
NOTE MINIMUM TIME DIFFERENCE BETWEEN TIMERS TM1 AND TM2 IS 0.5 SECONDS	



REV	QTY	PART NUMBER	DESCRIPTION	NOTE
32	1		CAPACITOR 0.33uF	
31	2		SCREW M3 X 6 PAN HD 5/5	
30	1		CABLE WIRE WRAP	
29	3	68786-202	JUMPER/DIAG. BERG	
28	1	68180-303	CONNECTOR, LEADER 3 WAY BERG	JPLZ
27	1	67987-303	CONNECTOR, HEADER 6 WAY BERG	
26	1	CDN-104-1DS-1	CONNECTOR, RIBBON VERT PAN PACIFIC	P9
25	1	1754817	CONNECTOR, 10 WAY VERTICAL PHOENIX	P7
24	1	1755804	CONNECTOR, 8 WAY VERTICAL PHOENIX	P6
23	2	1755786	CONNECTOR, 2 WAY VERTICAL PHOENIX	P5
22	1	1757310	CONNECTOR, 8 WAY HORIZONTAL PHOENIX	P4
21	1	1757287	CONNECTOR, 7 WAY HORIZONTAL PHOENIX	P5
20	2	1757284	CONNECTOR, 6 WAY HORIZONTAL PHOENIX	P2
19	1	1757285	CONNECTOR, 4 WAY HORIZONTAL PHOENIX	P1
18	1	1757285	CONNECTOR, 3 WAY HORIZONTAL PHOENIX	P12
17	1	15K24X	DIODE, ZENER 24V 1W, HARRIS	
16	1	114007	DIODE, 1A, MOTOROLA	
15	1		CAPACITOR, 4700uF/50V NTE	
14	1		CAPACITOR, 270uF/50V NTE	
13	2		RESISTOR, 2K OHM/2W NTE	
12	1		RESISTOR, 1.8K OHM/2W NTE	
11	1		RESISTOR, 200 OHM/2W NTE	
10	3	5V45-51F1	SPRING, HOLD DOWN, IDEC	
9	5	SH48-62	BASE, 8 BLADE PCB MFG, IDEC	
8	3	R42B-1C-0024	RELAY, 2 IN/4C, 8 BLADE, BASE, IDEC	
7	1	SH48-62	BASE, 5 BLADE, PCB MFG, IDEC	
6	1	RE18-0502	RELAY, DC, 5 BLADE, BASE, IDEC	
5	1	SFA-302	SPRING, RELAY/TIMER HOLD DOWN, IDEC	
4	2	5V45-61	BASE, TIMER BLADE TYPE, PCB MFG, IDEC	
3	2	GT5Y-25N1024	TIMER, DELAY ON, DPDT, 24VDC, IDEC	
2	4	K15C-3-5-6	STANDOFFS, SELF CLANCHING, PEM	
1	1	114810000	PRINTED CIRCUIT BOARD	

REV	QTY	PART NUMBER	DESCRIPTION	NOTE
1	1	114810000	PRINTED CIRCUIT BOARD	

DMC NO: 128000000  
 REV-2 SWITCH  
 SOLDER SIDE  
 175.00  
 155.00

**GMW**  
 2578, Redwood City, CA 94064  
 Tel: (650)802-8202 Fax: (650)802-8258

**REVERSAL SWITCH CONTROL PCB ASSY**  
 A1 15900000  
 C

TOTAL 2578 1M 1M 1M SHEET 1 OF 1

JUMBER POSITIONS [DEFAULT]

JP2     
 JP1

FOR POWER TEN P63/P62 SERIES

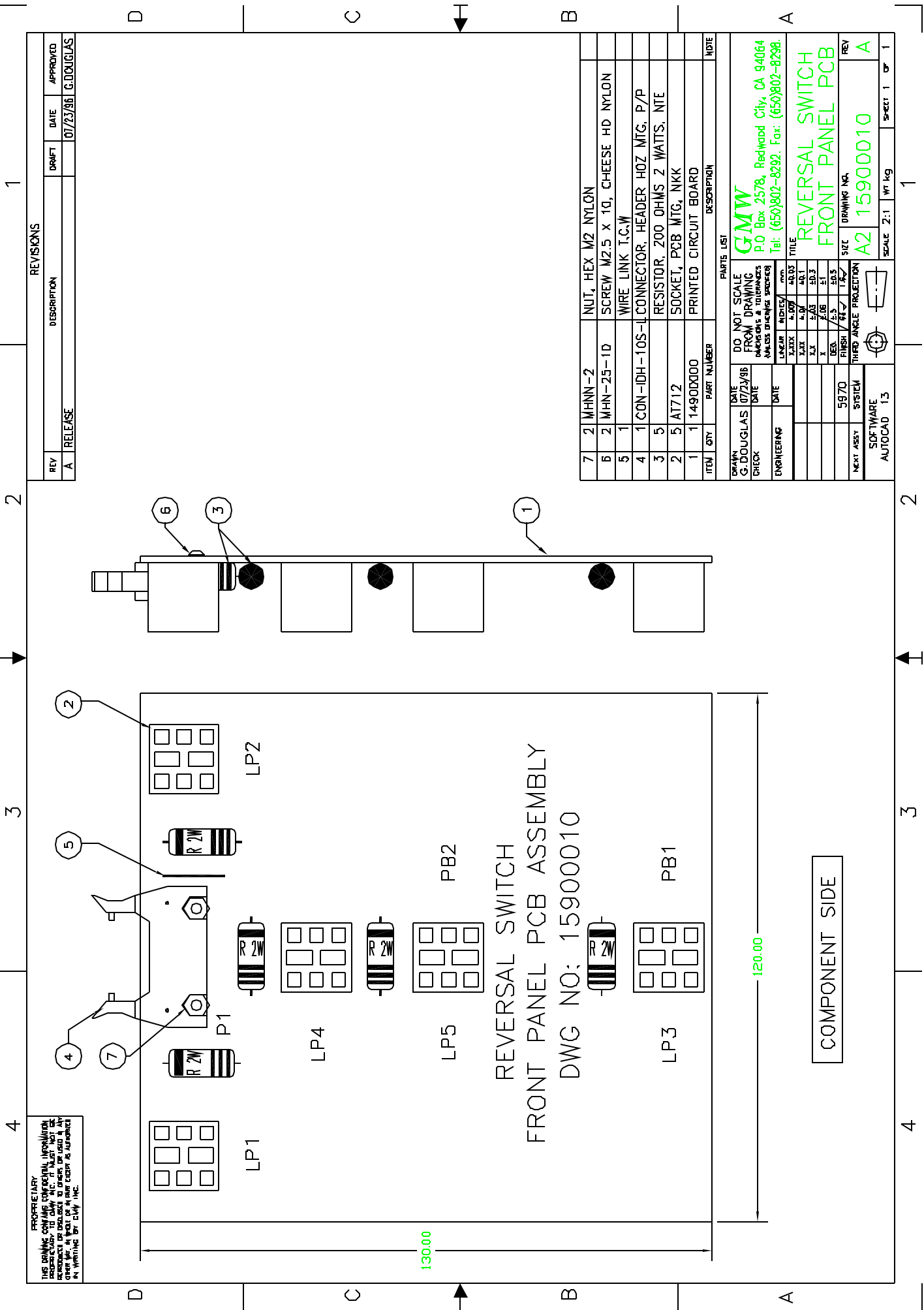
JUMBER POSITIONS [OPTIONAL]

JP2     
 JP1     
 JP3

FOR POWER TEN 3300/4500/4600 SERIES

8 7 6 5 4 3 2 1





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IN WRITING BY GFMW, INC.

**REVISIONS**

REV	DESCRIPTION	DATE	APPROVED
A	RELEASE	07/23/96	G. DOUGLAS

ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
7	2	MHN-2	NUT, HEX M2 NYLON	
6	2	MHN-25-10	SCREW M2.5 X 10, CHEESE HD NYLON	
5	1		WIRE LINK T.C.W	
4	1	CON-IDH-10S-1	CONNECTOR, HEADER HOZ MTC, P/P	
3	5		RESISTOR, 200 OHMS 2 WATTS, NTC	
2	5	AT712	SOCKET, PEB MTC, NKK	
1	1	14900000	PRINTED CIRCUIT BOARD	

PARTS LIST			
DATE	07/23/96	DO NOT SCALE	
DRAWN	G. DOUGLAS	FROM DRAWING	
CHECK		NUMBER	
ENGINEERING		DATE	
		DATE	
		DATE	
		DATE	
		DATE	
DATE	59/70	FINISH	5.5
SYSTEM		THIRD ANGLE PROJECTION	
SOFTWARE	AUTOCAD 15		

**GFMW**  
P.O. Box 2578, Redwood City, CA 94064  
Tel: (650)802-8292, Fax: (650)802-8298

**REVERSAL SWITCH  
FRONT PANEL PCB**

SIZE: A2  
DRAWING NO: 15900010  
REV: A

SCALE: 2:1  
Wt: kg  
SHEET 1 OF 1