

# BRASCH

## UNIVERSAL CONTROL PANEL (MULTI-POINT SYSTEM)

**Model Nos.:**      **GDCP-0**  
                          **GDCP-1**  
                          **GDCP-2**  
                          **GDCP-3**

### Instruction Manual

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# Table of Contents

Section	Title	Page
<b>1</b>	<b>Introduction and Specifications</b>	<b>1.1</b>
1-1	Introduction	1.1
1-3	Model Description	1.1
1-5	Optional Channel Extension Board	1.1
1-7	Specifications	1.1
<b>2</b>	<b>Operation</b>	<b>2.1</b>
2-1	Introduction	2.1
2-3	Initial setup	2.1
2-4	Unpacking and Inspection	2.1
2-6	AC Line Voltage Requirements	2.1
2-8	System Mounting Requirements	2.1
2-10	AC Line Voltage Connections	2.2
2-12	Signal Input Connections	2.4
2-14	Signal Output Connections	2.4
2-16	Initial Startup and Display Messages	2.5
2-18	Interior Switches and Indicators	2.5
2-20	Power Switch	2.5
2-22	Power Input Terminal Block	2.6
2-24	Panel Power Fuse	2.6
2-26	Power On Indicator	2.6
2-28	Battery Backup Package	2.6
2-30	Signal Input Terminal Blocks	2.6
2-32	Output Terminal Blocks	2.6
2-34	Output ON/OFF Indicators	2.7
2-36	High Alert Relay Contacts Configuration Jumper	2.6
2-38	Internal Alarm Element	2.7
2-40	Front Panel Features	2.7
2-41	Display	2.7
2-43	Keypad	2.7
2-45	Initial Programming	2.7
2-47	Setting Date and Time	2.8
2-49	General Programming Procedure	2.12
2-51	Programming Selections and Decisions	2.16
2-53	Using the Status Feature	2.19
2-55	Checking the Output Channel Status	2.19
2-57	Checking the Input Channel Status	2.19
2-59	Checking the Automatic Ventilation Status	2.19
2-61	Front Panel Display of Events	2.20
2-63	Description of Event Messages	2.20
2-64	Alert Message	2.20
2-66	Alarm Message	2.20
2-68	Failed Sensor Message	2.20
2-70	Sensor Over-range Message	2.20
2-72	Battery Replacement Message	2.20
2-74	Importance of Event Messages	2.20
2-76	Installing the Optional Channel Extension Board	2.21
<b>3</b>	<b>Maintenance</b>	<b>3.1</b>
3-1	Introduction	3.1
3-3	Service Information	3.1

<b>Section</b>	<b>Title</b>	<b>Page</b>
3-5	General Information	3.1
3-7	Interior Access	3.1
3-9	Changing the Battery	3.1
3-11	Calibration Requirements	3.2
3-13	Adjusting the Display Contrast	3.2
3-15	Troubleshooting	3.4
<b>4</b>	<b>Replacement Parts</b>	<b>4.1</b>
4-1	Introduction	4.1
4-3	List of Replacement Parts	4.1

## List of Figures

<b>Figure</b>	<b>Title</b>	<b>Page</b>
2-9.1	Mounting dimensions	2.2
2-11.1	Interior view of main control board	2.3
2- 48.1	Initial date and time programming flow chart	2.10
2- 48.2	Changing the date flow chart	2.11
2- 48.3	Changing the time flow chart	2.12
2- 50.1	Sensor/ transmitter programming flow chart	2.13
2- 50.2	Zone/ output programming flow chart	2.14
2- 50.3	Setting/ changing the automatic ventilation programming flow chart	2.15
2- 50.4	Setting/ changing the manual ventilation flow chart	2.16
2- 50.5	Password change programming flow chart	2.16
2- 77.1	Optional channel extension board (CPSLAVE) mounting location	2.22
3- 14.1	Display contrast adjustment location	3.3

## List of Tables

<b>Table</b>	<b>Title</b>	<b>Page</b>
1- 8.1	Universal Control Panel specifications	1.2
2- 46.1	Functional description of keypad keys	2.8
2- 56.1	Description of various programming choices	2.17

## OPERATION SAFETY NOTICE

Certain procedures and operations detailed in this manual require that specific precautions be taken prior to beginning the procedure or operation. When precautions are required, a notice will be printed in an appropriate location in the manual. The user is urged to read and understand all such notices.

### Types of Notices

Three types of notices are used in this manual to describe the severity of the situation encountered.

**WARNING** This notice indicates that conditions exist that could cause personal injury or loss of life.

**CAUTION** Conditions exist that could cause damage to the equipment or other property.

**Note** Special consideration should be given to the procedure or operation or an unexpected operational result could occur.

### **Limited Warranty**

Brasch Manufacturing Co., Inc. warrants gas transmitters, gas detectors, gas detector control panels and accessories for a period of one year from the date of shipment against defects in material and workmanship. Should any evidence of defects in material or workmanship occur during the warranty period, Brasch Manufacturing Co., Inc will repair or replace the faulty product at its own discretion, without charge. The company shall not be held responsible for any charges in connection with removal or replacement of allegedly defective equipment, nor for incidental or consequential damages.

# Section 1

## Introduction and Specifications

### 1-1 Introduction

- 1-2 Your Brasch Universal Control Panel and associated transmitters comprise a complete monitoring system for detection of dangerous concentrations of specific toxic gasses. The system is capable of monitoring remote locations for gasses such as carbon monoxide, nitrogen dioxide and various refrigerants and controlling alarms and ventilation fans to provide both a warning and reduce the ambient concentration of the contaminant.

Various types of gas sensors are available allowing control of very large areas with one centrally located panel. The standard system, GDCP-0, can receive signals from as many as 8 transmitters and control up to 4 ventilation systems. With the addition of optional printed circuit boards, a total of 20 transmitters and 10 ventilation systems can be accommodated. All data into and out of the transmitters and ventilation systems are entered and read at the control panel.

### 1-3 Model Descriptions

- 1-4 The Universal Control Panel is available in four models to meet the user's requirements. The different model designations reflect the maximum number of transmitters and ventilation systems the panel can control.

#### **Model GDCP-0**

This standard configuration is capable of monitoring up to 8 transmitters and controlling up to 4 ventilation systems.

#### **Model GDCP-1**

This model extends the standard panel's capacity to a total of 12 transmitters and 6 ventilation systems.

#### **Model GDCP-2**

The maximum number of transmitters is increased to 16 and up to 8 ventilation systems can be controlled.

#### **Model GDCP-3**

This model extends the panel to its full capacity of 20 transmitters and 10 ventilation systems.

Models GDCP-0, GDCP-1 and GDCP-2 can be upgraded to a larger capacity simply by installing an optional board, P/N GPSLAVE.

### 1-5 Optional Channel Extension Board

- 1-6 An optional channel extension board, P/N GPSLAVE, is available that extends the control panel's capacity by 4 transmitters and 2 ventilation systems. The panel can accommodate up to 3 optional boards.

Refer to section 2-76 for instructions on installing this optional board.

### 1-7 Specifications

- 1-8 Specifications for the Universal Control Panel are given in table 1-8.1

Note

All specifications current at the time the unit shipped. Brasch Manufacturing Company, Inc reserves the right to make any changes to future production units when such changes are deemed necessary. There is no implied responsibility to make these changes available to current users.

Table 1-8.1      Universal Control Panel specifications

<b>Electrical</b>	
Power requirements	
Voltage	120 VAC, +/- 10 %
Frequency	50/60 Hz.
Inductive power	120VA
Installation Category	II (local level, over-voltage transients below 1500 volts.)
<b>Environmental</b>	
Temperature	
Operating	-15° C to 40° C (5° F to 104° F)
Storage	-50° C to 120° C (-58° F to 248° F)
Humidity	
Operating	10 to 90 % (non-condensing)
Storage	10 to 90 % (non-condensing)
<b>General</b>	
Size	16¼ in. H x 11¾ in. W x 5¼ in. D 41.3 cm H x 29.8 cm W x 13.3 cm D
Weight	14 lb. 6.4 Kg.
Housing	Heavy gauge painted steel, NEMA 1 classification
<b>Recognition</b>	
Agency	ETL listed
<b>System, electrical</b>	
Display	20 char. x 4 line LCD with LED backlight
Keypad	4 x 4 matrix with tactile feedback switches
Timing	Real-time clock with output for minutes, hours, days, day-of-week, month and year
Circuit	Microprocessor controlled with battery backup

<b>Input channels</b>		
Number		8 (std.), 20 (max.)
Input signal		4 to 20 mA
Input resistance		50 Ohms
Maximum external resistance		250 Ohms
<b>Output channel</b>		
Number		4 (std.), 10 (max.)
Type of output		Mechanical relay contacts, fused at 5 Amps
Maximum voltage rating		125 VAC, 50/60 Hz
Current capacity		5 Amps resistive
Power (inductive)		250 VA (1/8 HP)
<b>Alarms</b>		
Type		1 external output, one internal transducer
External		
Type of output		Mechanical relay contacts, fused at 5 Amps
Maximum voltage rating		125 VAC, 50/60 Hz
Current capacity		5 Amps resistive
Power (inductive)		250 VA (1/8 HP)
Internal		
Type of output		Piezoelectric ceramic element
Frequency		3.7 KHz
Sound level		105 dB @ 10 cm

## Section 2 Operation

### 2-1 Introduction

2-2 This section of the manual provides instruction on operating your Universal Control Panel. Along with information on unpacking and setup, you will find detailed explanations on initial operation, initial programming and checkout, and techniques on programming to obtain the most efficient use of your system.

### 2-3 Initial setup

2-4 Unpacking and Inspection

2-5 Depending upon the model of control panel ordered, you may receive the shipment in more than one container. In any case, carefully unpack all containers and check all contents against your purchase order. Inspect all packing material to be sure that no components in the shipment are overlooked. Report any missing components to your Brasch representative or to the Brasch factory as soon as possible. You may want to save the packing cartons in case there is a reason to return any of the components to the factory at a later date.

### **WARNING**

**This system requires the connection of voltages with high enough potentials to cause fatal injuries. Proper procedures must be followed anytime work is performed on the unit.**

**ONLY QUALIFIED PERSONNEL SHOULD ATTEMPT TO MAINTAIN OR SERVICE THIS EQUIPMENT!**

2-6 AC Line Voltage Requirements

2-7 The control panel is designed to operate from 120 VAC, 50/60 Hz power at 120 VA. The user must supply the correct wiring to the control panel. This wiring must include a disconnect device or switch located within easy reach of the control panel and marked as the disconnect device for the panel. The proper connection of the AC power is discussed in paragraph 2.10 of this section.

2-8 System Mounting Requirements

2-9 Mount this unit only indoors in a dry location. Ensure that the user has easy access to the front panel controls and that the display can be easily read. A location close to where the users spend a good deal of their workday is ideal. This location will allow for the periodic monitoring of the data gathered from the remote transmitters.

The unit is equipped with back mounted brackets to allow attaching the housing to a wall or other upright, solid supports. The mounting dimensions are given in Fig. 2-9.1. Make sure that, when mounted, the door can swing completely open to allow access to the interior of the housing. Various knockout holes are provided on the left side of the housing for wiring and conduit connections. Follow the proper electrical code when making these connections.

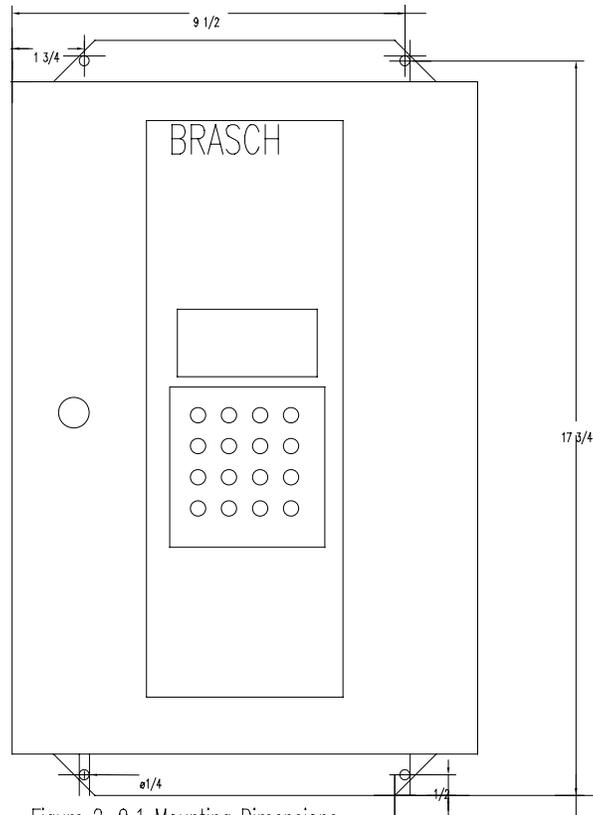


Figure 2-9.1 Mounting Dimensions

### WARNING

**Failure to follow the proper electrical wiring code could create a hazardous condition placing the user and others in danger.**

#### 2-10 AC Line Voltage Connections

2-11 The 120 VAC input connects to terminal block TB-1 positioned in the upper, left corner of the main PC board. See Fig. 2-11.1, Interior View, for more details. Connect the high side of the line, L1, to the top terminal, labeled “T1”. The neutral side of the line connects to the middle terminal, labeled “NEU”. Connect the ground to the bottom terminal, labeled “GND”. Use only 14 AWG stranded wires and terminate with the proper terminals. See the specifications section of this manual, section 1-9, for the ac power requirements.

### CAUTION

To avoid damage to the panel, do not apply AC power until all input and output connections are made, and you understand the meaning of the initial display messages described in this section.

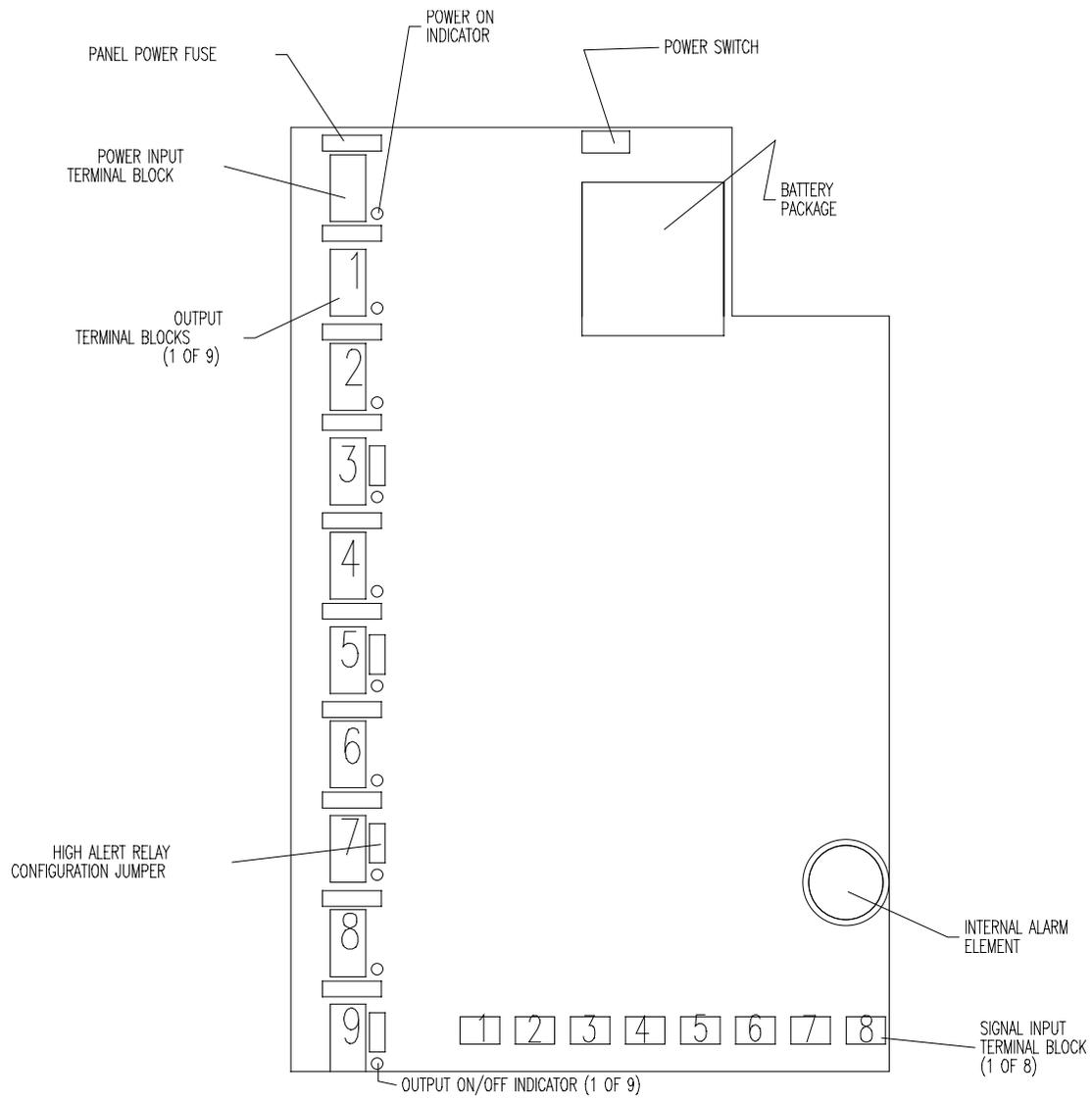


Figure 2-11.1 Interior View, Main Control Board

2-12 Signal Input Connections

- 2-13 This unit is designed to accept input signals from Brasch gas detectors, Models BGS-CM-TRNS, BGS-ND-TRNS, BGS-NCM-TRNS, BGS-REF-TRNS, BGS-CM-STD, BGS-ND-STD, BGS-NCM-STD, BGS-REF-STD and BGS-CD-STD. Use of other input devices could destroy the input section of the control electronics. Brasch Manufacturing Company, Inc. cannot accept responsibility for damage caused by the use of any other manufacturer's equipment.

CAUTION

The signal input connections are rated for a maximum of 10 Vdc between each input and ground. Connect only to Brasch manufactured gas detectors.

Depending upon the model of the control panel, up to 20 transmitters can be connected as inputs. All connections are made at the bottom edge of the printed circuit board to three position terminal blocks. See Fig. 2-11.1 for the location of these terminal blocks. To prevent the possibility of connecting improper voltage levels, these blocks are designed to accept no wire larger than 22 or smaller than 26 AWG. Each block is marked with its channel input number. This number corresponds to the sensor number that appears on the front panel display. Each block is also marked with "R1", "R2" and a triangle symbol indicating the input ground. The input positive wire must connect to R1 and the negative wire must connect to R2. Connect the input ground to the terminal marked with the ground symbol.

No special terminals are required to connect to the terminal blocks. Strip approximately 3/8 of an inch of insulation from the end of the input wires. To produce the best connection, tin the bare end of the wire with solder. Using a small tool, such as a flat blade screwdriver, lift up the white lever above the terminal to be connected. Making sure that there are no loose strands of wire, slip the lead into the opening in the side of the terminal block. While holding the wire in place, push the lever downward until it rests firmly into the recess in the top of the block. Gently pull outward on the wire to check for a firm connection.

Note

Excessive force can pull the wire lead out of the terminal. Leave sufficient wire inside the panel housing to allow for any strain that might be placed upon the wire along its travel path.

2-14 Signal Output Connections

- 2-15 Depending upon the model, up to 10 remote ventilation systems can be controlled from the panel. Each control output consists of two relays mounted on the printed circuit board. Each relay is connected to a three position terminal block. These blocks are mounted along the left hand edge of the circuit board, and are labeled with an output number. This number corresponds to the number that will appear on the front panel display. The three positions of each terminal block are marked with the numbers 1, 2 and the letters "GND". Each of the numbered terminals are also marked with the letter "L" or "H". The letter "L" is the symbol for the word "LOW", and refers to the low alert actuating signal for the output system. In most cases, this output system will be the ventilation equipment for the facility. The letter "H" is the symbol for

the word “HIGH”, and refers to the high alert actuating signal for the output system. The terminal marked “GND” refers to the grounding connection for the output system.

The output relays are limited in their voltage and current capabilities. See the specification section 1-7 of this manual for the maximum ratings.

**CAUTION**

Exceeding the maximum ratings of the relays will cause damage to the relay contacts. Damaged relays must be replaced by the Brasch factory. Make sure that the ratings of the relays and the requirements of the output system are observed prior to operation.

The size of the output wiring will depend upon the current electrical code and the requirements of the output system. However, 14 AWG stranded wire is recommended. Connect the wires, using the proper wire terminals, to the correct positions of the terminal blocks. Connect the position marked with the number “1” on the block to the wire considered the high potential lead. In some cases, such as when the wires terminate at another relay coil, there will be no high or low potential wires. In these instances, follow the accepted convention, or practice, when connecting the wire. Connect the low potential, or second wire, to the terminal marked with the number “2”. The remaining ground wire connects to the terminal marked “GND”.

Leave enough wire inside the housing to allow for any strain placed upon the wire along its travel path.

**CAUTION**

Prior to the initial startup, make sure that all steps described in paragraphs 2-3 to 2-15 have been completed. Also, check for any loose wires or connections. Make sure that the power switch is in the “RESET” position and that the 4 AA batteries are firmly in their holder.

2-16 Initial Startup and Display Messages

2-17 After you have completed steps 2-3 to 2-15, you are ready to apply ac power to the panel. If the door is not already open, open it at this time. Turn the ac power on at its source and then slide the power switch, in the top, center of the main printed circuit board, to the “RUN” position. Close the door but do not lock it at this time. The LCD display should be in the “SET DATE” mode, and you should see a flashing, black rectangle in the ten’s location of the month position. The system is now ready to accept programming data and commands. However, before beginning to program the system, a description of the various controls and indicators is in order.

2-18 Interior Switches and Indicators

2-19 Fig. 2-11.1 shows the locations of the interior switches and indicators. Please refer to this figure during the following discussion.

2-20 Power Switch

- 2-21 You are already familiar with the location and use of the power switch. This switch interrupts the 120 VAC and battery voltage when placed in the “RESET” position. This switch will also reset the main circuit board if the situation warrants. Since the “RESET” position interrupts the battery voltage to the circuit, any currently operating program will be lost. When the power switch is returned to the “RUN” position, the system must be re-programmed.
- 2-22 Power Input Terminal Block
- 2-23 The power input terminal block is located in the top, left corner of the main PC board. This block receives the wiring that supplies the 120 VAC to the panel. Refer to paragraphs 2-10 and 2-11 for a description of this component.
- 2-24 Panel Power Fuse
- 2-25 Located directly above the power input terminal block is the main power fuse for the panel. All power to the panel passes through this fuse. The fuse has 120 VAC on both its terminals. Should this fuse require replacement, turn off all the AC power to the panel at the power source and only replace the fuse with one of the same ratings. This fuse is a 5 mm x 20 mm metric size with a 250 VAC rating and a 1 Amp current capacity. The fuse has SLO-BLO (time-lag) characteristics.
- 2-26 Power On Indicator
- 2-27 Below the power fuse is a green LED that glows when the power switch is placed in the “RUN” position.
- 2-28 Battery Backup Package
- 2-29 The battery backup package is located at the top of the main panel board and just to the right of the transformer, TR1. The package contains four AA cells. Under normal circumstances, these batteries should be replaced at 2 year intervals. The orientation of the batteries is clearly marked on the inside bottom of the holder. Replace the batteries with fresh, alkaline cells for best performance. During a power loss, the circuit can operate in a stand-by condition up to approximately 8 hours.
- During normal operation, the system checks the condition of the battery package once a day at 12:00 am. If the package fails the test, a message is displayed indicating that the batteries must be replaced. Promptly replace the batteries to prevent a loss of the system’s program should a power failure occur.
- 2-30 Signal Input Terminal Blocks
- 2-31 Located at the bottom edge of the main panel, and at the bottom edge of the optional channel extension board, are the input terminal blocks. These blocks receive the input signal wires from the remote transmitters. Refer to sections 2-12 and 2-13 for a more complete description of these blocks.
- 2-32 Output Terminal Blocks
- 2-33 Located along the left edge of the main panel board, and along the left edge of the optional extension board, are the output terminal blocks. The terminal block directly below the power input terminal block is the remote alarm terminal block. This block is present only on the main panel board. The remaining blocks are the control output terminal blocks. Each output is fused with a 5 Amp, 250 Vac fuse with SLO-BLO (time-lag) characteristics. Refer to section 2-14 and 2-15 for a complete description of these blocks.
- 2-34 Output ON/OFF Indicators

2-35 Each control output channel includes an indicator that glows when the output is actuated. A glance at these red LEDs can provide the status of each of the output channels. The alarm channel also has an ON/OFF indicator.

2-36 High Alert Relay Contact Configuration Jumper

2-37 The high alert relay of each channel can be configured to operate either in the normally open or normally closed position. A movable jumper, located between the high alert relay and its output terminal block, determines the configuration. With the jumper shorting the upper two posts of the four-post header, the relay is configured as normally open and the contacts are open during normal operation. If a high alert condition occurs, the relay contacts close. By moving the jumper to the bottom two posts, the relay operates in the normally closed position when not receiving power. The relay is supplied with power during normal operation holding the contacts open. This configuration allows the high alert relay to operate as an extra alarm relay, and is only applicable to systems using certain types of transmitters. In most situations, the jumper is placed between the two upper header posts.

2-38 Internal Alarm Element

2-39 The internal alarm element is located at the bottom, right corner of the main panel board. This component will emit a 3.7 kHz, 105 dB signal whenever the alarm function is active. The transducer can be silenced by the “ALM OFF” key on the front panel keypad. Once silenced, the transducer will not actuate again while the current alarm condition is valid. However, it is active for future alarm conditions.

## **2-40 Front Panel Features**

2-41 Display

2-42 The four line, 20 character LCD display has two modes of operation. When programming the system, the display presents choices in a menu format and also echoes the information supplied by the user from the keypad. Depending upon the programming choice, one of several messages is possible.

The second mode of operation provides current information of the system’s status. Whenever an event occurs, such as an alert or alarm condition, a message is written on the display. Using this message, the operator can determine the proper response to the situation. More information on this mode can be found in sections 2-61 through 2-75.

2-43 Keypad

2-44 Information is input into the control panel through a keypad. While there are 16 keys, only the numbered keys, “MENU”, “NEW”, “ENT.” and “ALM. OFF” are active. The user presses these active keys in response to information presented on the front panel display. A detailed explanation of the function of each key is found in Tables 2-46.1.

## **2-45 Initial Programming**

2-46 All communication with the panel is accomplished through the keypad and LCD display. The user enters the data by pressing a key on the keypad and reads the response, or result, from the display.

The programming code for the panel uses “menu driven” software. This simply means that choices are presented in a “menu” or list. Selections are made by pressing the keypad number that appears to the left of your choice. A decision will usually bring up another menu requiring another selection. At some point in the process, a choice is made that places the system in a mode to receive data for storage in memory. This data is then used to define the various operational states of the system.

Program information for storage in memory is entered in the general fashion outlined below.

- a) Numbers are entered as two digit numbers:  
     1 is entered as "01"  
     12 is entered as "12"
- b) Decisions, such as "ON" or "OFF", "HI" or "LO" and selection of zones or sensors, are made using the "NEW" key to index or toggle to the required selection.
- c) Data is accepted for storage in memory by pressing the "ENT." key.

The control panel program include seven distinct functions. These are the DATE, TIME, OUTPUT ZONES, INPUT SENSORS, PASSWORD, AUTOMATIC VENTILATION and MANUAL VENTILATION functions. The programming steps for each function can best be described using flow charts. In some cases, two flow charts are necessary to completely describe a function as the initial programming steps are different from the steps required to change the program.

A flow diagram contains all the steps required to program each function. Each chart starts with the panel's display in the MAIN DISPLAY position. This display shows the current day-of-the-week, date, time and a brief message stating something about the status of the system. To leave this display and initiate a programming sequence, press the "MENU" key. Progress along the flow chart by entering the information asked for in the next circle. When all programming steps are completed, the system will again be in the MAIN DISPLAY position.

The numbers and words inside the flow chart circles refer to the keys of the panel's keypad. Table 2-46.1 describes the function of each key.

Table 2-46.1 Functional description of the keypad keys

KEY	FUNCTION
0 through 9	Numerical input for setting dates and time. Menu choice selection AM/PM selection, (0 and 1)
MENU	Displays the Choice Menu to allow initial selection. Returns display to MAIN DISPLAY message
NEW	Indexes through the ZONE, SENSOR and OVERRIDE menus. Toggles On/Off, exhaust type and LO/HI/OFF in various menus.
ENT.	Stores the current selection in memory
ALM. OFF	Silences the internal alarm once the alarm is active.

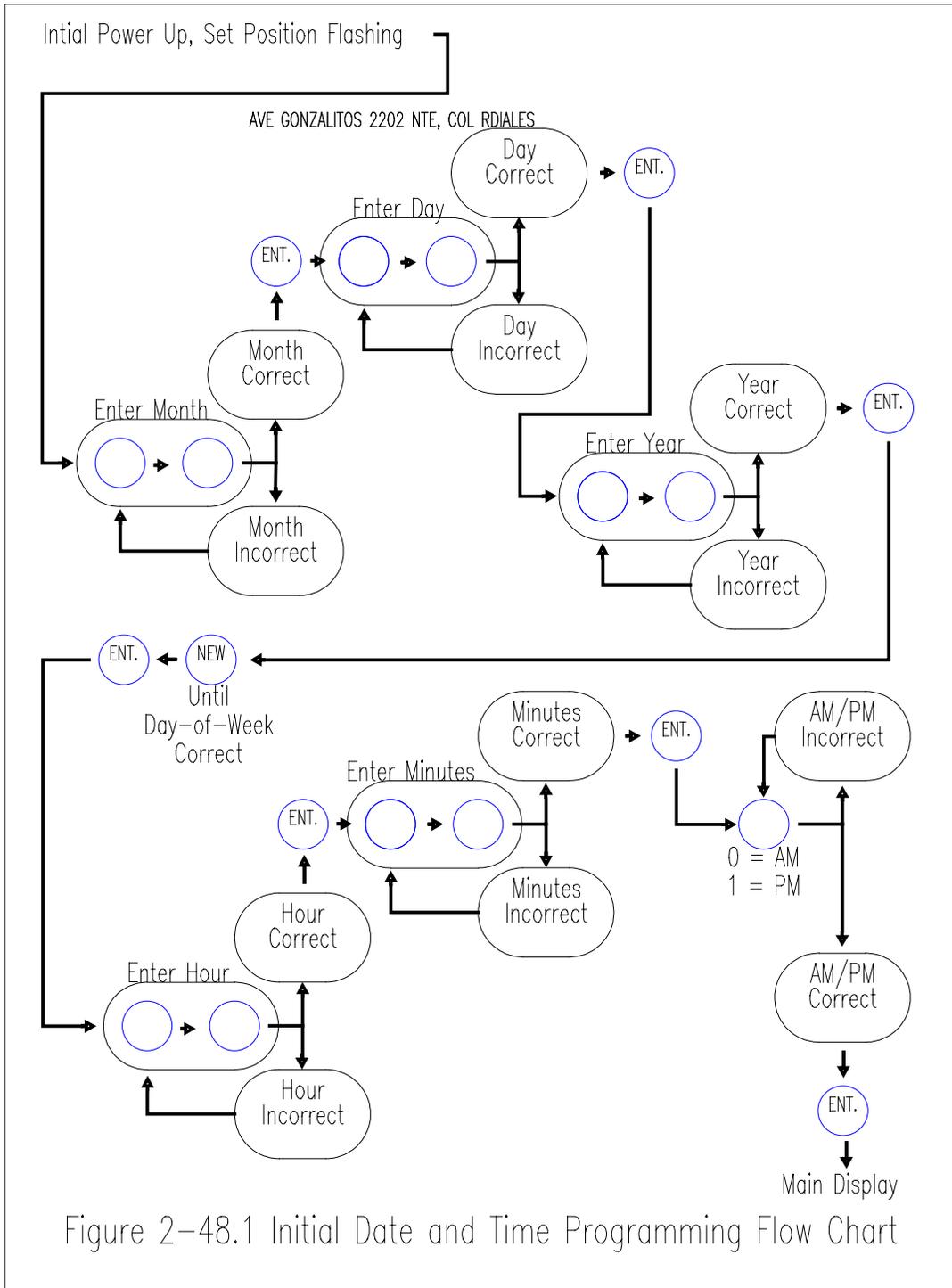
2-47 Setting the Date and Time

2-48 With an understanding of the relevant components of the system and the flow charts, you are now ready to begin the initial programming of the panel. The first step is to set the real-time clock. This clock controls

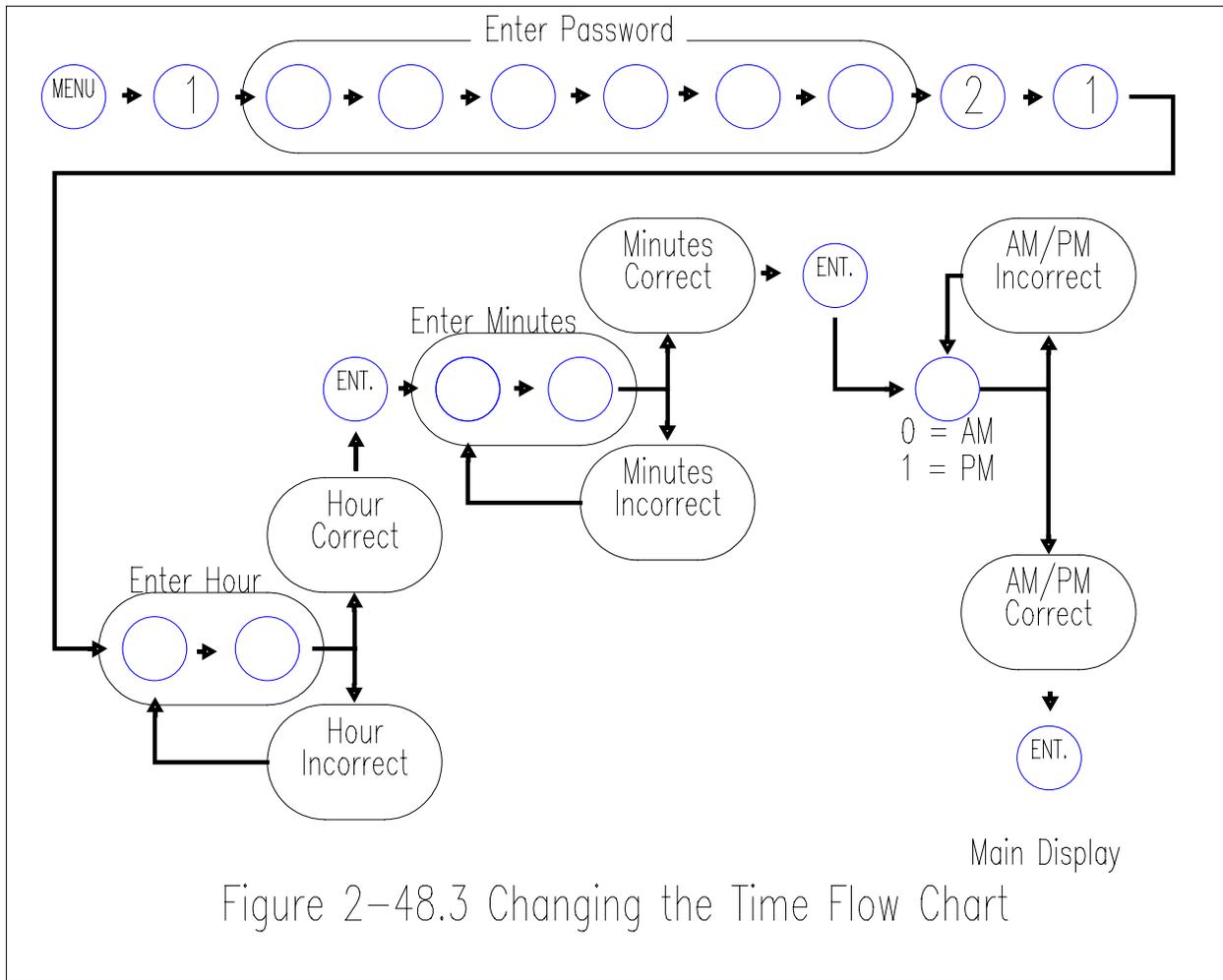
all the timing functions of the panel. The clock must be set for the correct date as well as the correct time. The programming sequence to accomplish this is shown in the flow chart of Fig. 2-48.1, Initial Date and Time Setting. Below is a detailed description of the programming sequence.

- a) The front panel display should be showing the “SET DATE” message, and the black, flashing rectangle should be in the ten’s position of the “MONTH” statement. If not, open the panel door and place the power switch in the “RESET” position for approximately 20 seconds. Place the switch back in the “RUN” position to reset the panel circuits and bring up the “SET DATE” message.
- b) Using the numerical keys, enter the current month.
- c) When the month is correct, press the “ENT” key.
- d) The black, flashing rectangle will move to the day’s position. You may now enter the correct day. Press the “ENT” key to accept the entry.
- e) The black, flashing rectangle will now move down to the year’s position. Enter the correct number for the year. Again, press the “ENT” key when the number is correct.
- f) The display message will now request that the day-of-the-week be set. Press the “NEW” key until the current day appears. Press “ENT” to accept it.
- g) The display will now change to request the current time. Enter the hour and the minutes as noted in the flow chart.
- h) Now select the “am” or “pm” period, followed by the “ENT” key.
- j) The display will now change to present the date and time as you have entered them, and there should be a flashing colon between the hour and minute indication. Also, two lines will be displayed below the “time” line. These lines may indicate that some events are happening. After one minute, the lines should change to indicate “PRESS MENU FOR FUNCTION CHOICE”.

After you have completed the initial programming described above, the system is ready to receive a program that is specific to your requirements.





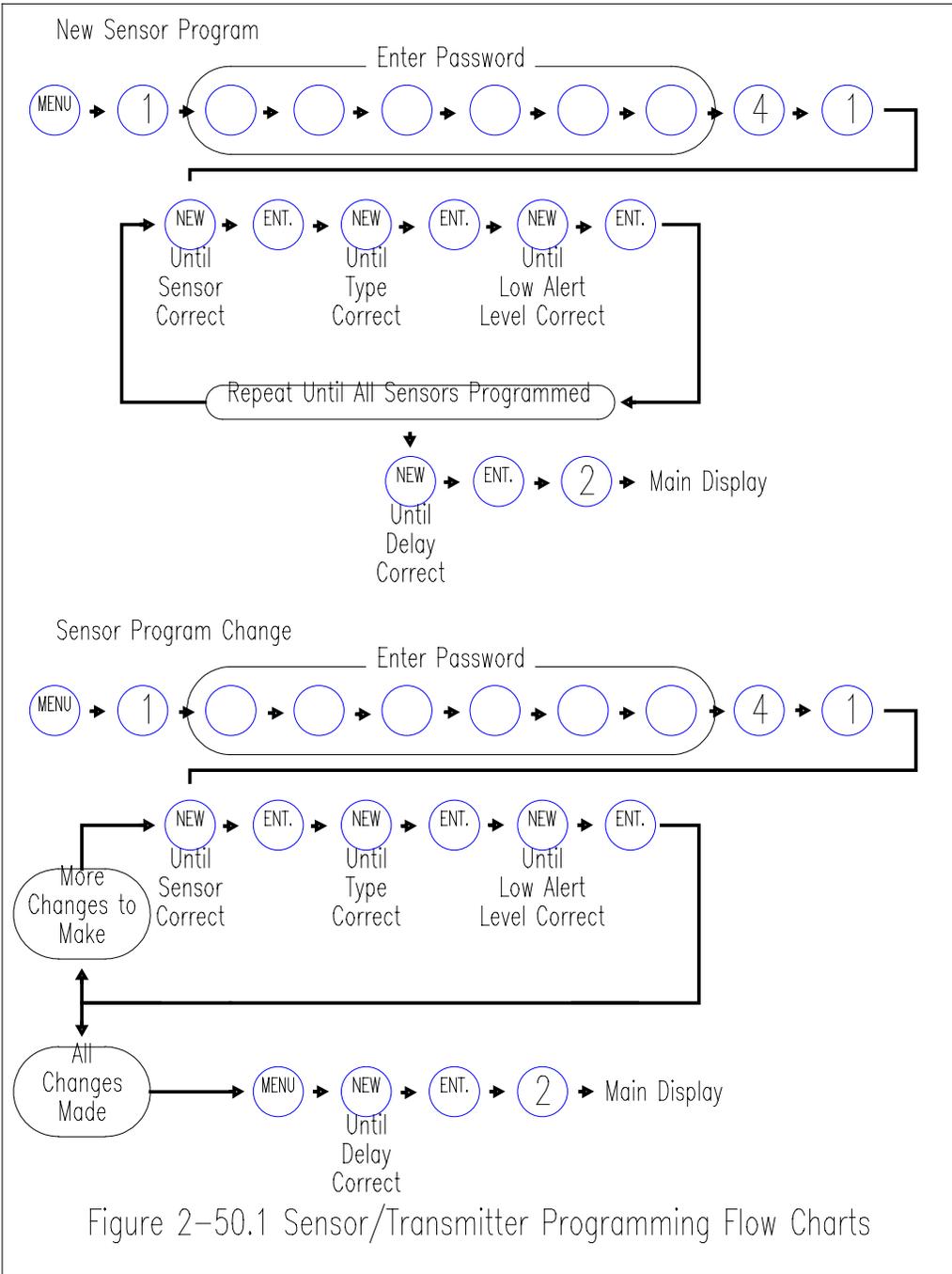


2-49 General Programming Procedure

2-50 After you have set the date and time, you are now ready to program the remaining functions. These functions can be programmed in any sequence, but the following sequence is recommended.

SENSOR, ZONE, AVENT, MVENT, if required, and password change.

Locate the appropriate flow diagram and follow the sequence in the same manner as for setting the Initial Date and Time. Make sure that the front panel display is showing the MAIN DISPLAY message before starting to program each function. Each programmable function requires the entry of a valid password. As shipped from the factory, this password is a series of six zeros. Figure 2-50.5 explains how to change the password.



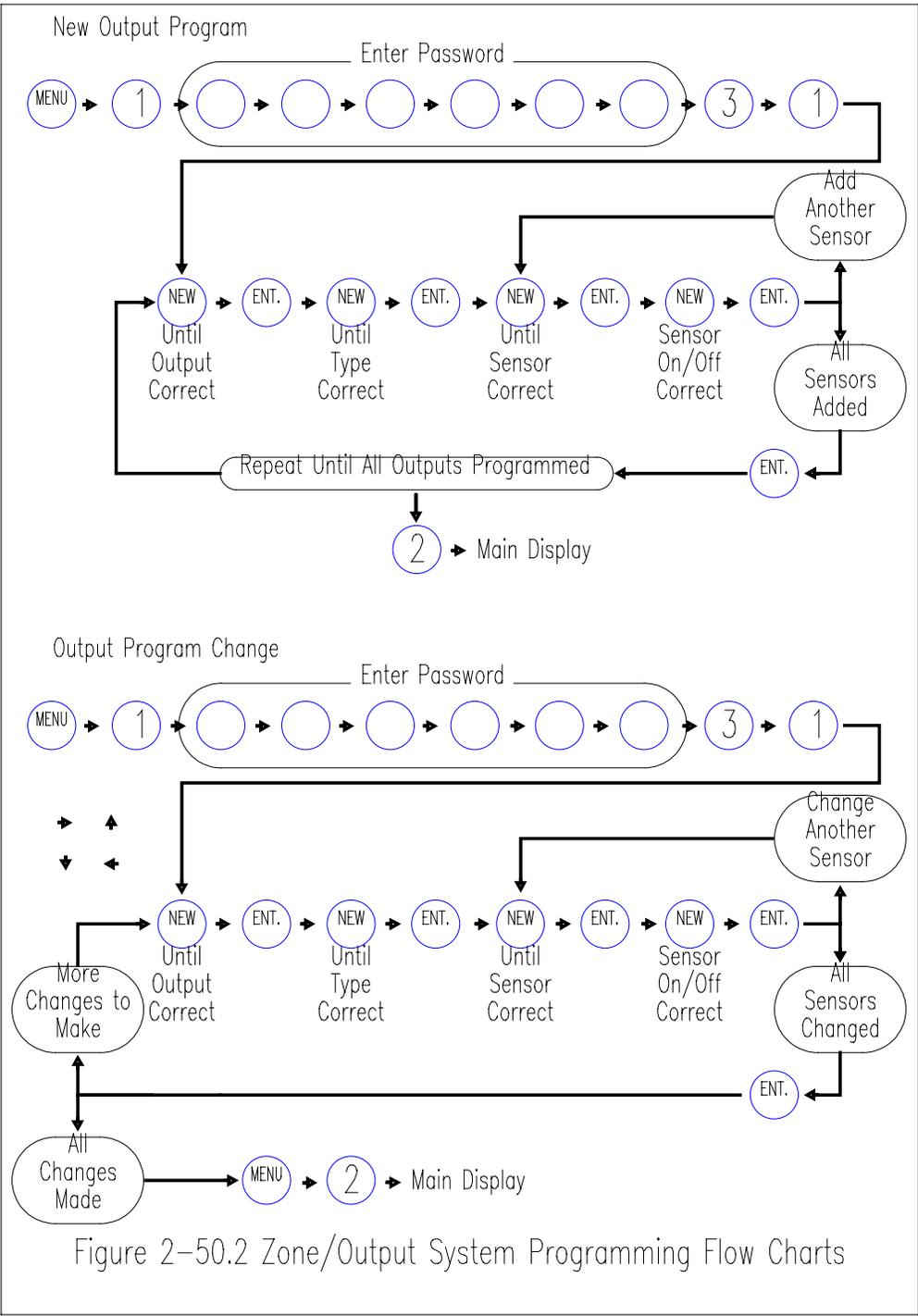


Figure 2-50.2 Zone/Output System Programming Flow Charts

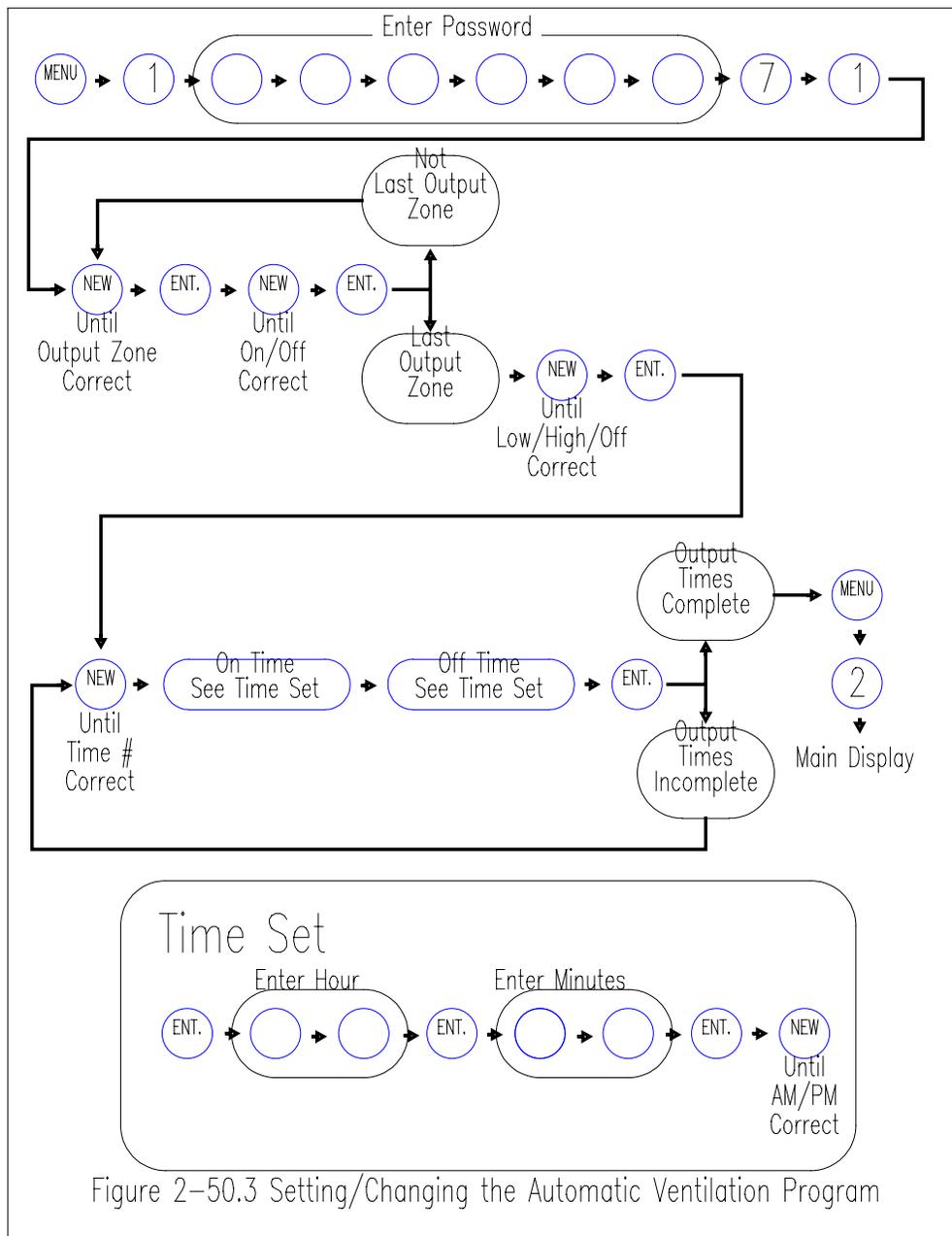
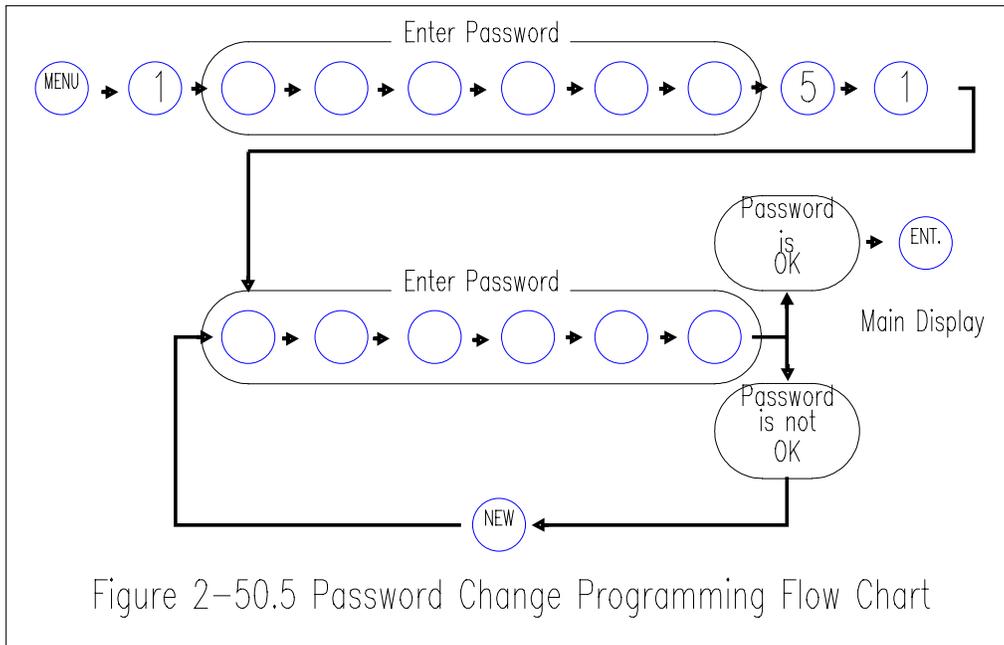
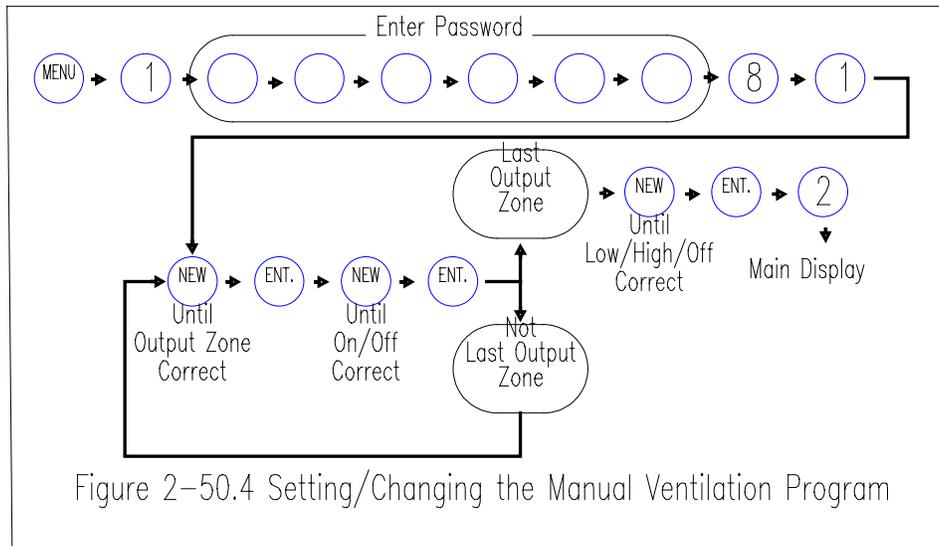


Figure 2-50.3 Setting/Changing the Automatic Ventilation Program



2-51 Programming Selections and Decisions

2-52 Sections 2-47 to 2-50 discussed the steps for programming the various functions. Now is a good time to present a complete description of the choices you will encounter during programming, and we do so in Table 2-56.1 below.

Table 2-56.1 Description of various programming choices

INPUT CHANNELS	
SENSOR #01	The number of the channel to be programmed. The word “sensor” is interchangeable with the word “transmitter”.
TYPE	15 types can currently be accommodated. These are CO, NO <sub>2</sub> , CO <sub>2</sub> , Refrigerant types R11, R12, R22, R23, R113, R123, R134a, R141b, R142b, R152a, R500 and R502. Also, a transmitter can be unassigned by choosing N/C.
LO ALRT	Abbreviation for the words “Low Alert”. A low alert concentration is chosen by indexing through the available selections using the “NEW” key and placed in memory using the “ENT.” key.
OUTPUT CHANNELS	
ZONE #01	The output channel being programmed. The word “Zone” refers to the area controlled by a specific ventilation system. You may index through the available zones by using the “NEW” key and select it using the “ENT.” key.
EXHST:	Abbreviation for the word “Exhaust”. The word “Exhaust” and the words “Ventilation System” are interchangeable. You may choose from two choices using the “NEW” key to toggle back and forth between the choices and “ENT.” to save it. The two choices are described below.
2-SPEED	A ventilation system with a fan having a motor capable of operating at two different speeds.
50/100 %	A ventilation system with two separate fans in which one operates during low alert and both operate during high alert conditions.
SENS: #	Number of the transmitter, or transmitters, assigned to that specific zone. Any active transmitter can be assigned and transmitters can be shared with other zones. Select the transmitter to be assigned by pressing the “NEW” key until the correct transmitter number appears, and then assign that transmitter by pressing the “ENT.” key. You will then be given a chance to make the transmitter inactive by again pressing the “ENT.” key when the word “OFF” appears, or, using the “NEW” key, toggle to the word “ON” and press “ENT.” thereby making the transmitter active. Any transmitter labeled as “N/C” when programming the input channels cannot be assigned to any of the zones.

Table 2-56.1 Description of various programming choices (cont.)

AUTOMATIC VENTILATION FEATURE	
AVENT	Abbreviation for the words “Automatic Ventilation”. This feature allows the ventilation system to operate during three distinct periods of time each day. All weekdays share the same time periods, and these time periods can be different from the three periods available for automatic ventilation on the weekend. The times, once programmed, will repeat until changed.
ZONE #01	The number of the ventilation zone that will operate during “AVENT”. Any specific zone or all zones can be chosen as long as they are active. Index to the zone number by pressing the “NEW” key and activate the zone by pressing the “ENT.” key. You will be given a choice of making the zone inactive by pressing the “ENT.” key when the word “OFF” appears, or make it active by toggling to the word “ON” by pressing the “NEW” key and then pressing the “ENT.” key.
EXHST LEVEL LO	You may choose the setting at which the ventilation system operates. Use the “NEW” key to index from “LO” to “HI” to “OFF”. Accept the selected level by pressing the “ENT.” key. All active zones will operate at the same setting during the automatic ventilation period.
TIME #1	One of the three available time periods for either the weekday or weekend period. Index to the appropriate time number using the “NEW” key and select it for programming by pressing the “ENT.” key. Once selected, a time period can be assigned a starting time by entering a 2 digit number from the keypad and then pressing the “ENT.” key.. You may then choose the morning period by pressing the “ENT.” key again, or toggle to the evening period by pressing the “NEW” key and then pressing the “ENT.” key. Once a starting time has been set, you may enter an ending time in the same manner as you selected the starting time.
MANUAL VENTILATION FEATURE	
MVENT	Abbreviation for the words “Manual Ventilation”. This feature allows for manually switching the ventilation system on or off. Once turned on, the system must be manually turned off using the “MVENT” feature. Any of the active zones can be selected. The feature sets all zones to the off condition at 12:00 midnight.

Table 2-56.1 Description of various programming choices (cont.)

MVENT (cont.)	This feature overrides “AVENT” and the transmitter control of the input, therefore, all active zones in “MVENT” must be turned off to allow normal operation of “AVENT” and the input channels.
ZONE #01	The number of the zone that will be turned on or off using “MVENT”. This procedure is the same as for “AVENT”. Since the active zones operate continuously, no time periods are available.
EXHST LEVEL LO	Setting at which the ventilation system operates. Same as described for the “AVENT” feature.

The information contained in Table 2-56.1 should give you a feeling for the parameters that must be programmed into the memory for the input channels, output channels, AVENT and MVENT.

### 2-53 Using the Status Feature

2-54 The Control Panel has a feature that allows the user to determine the current operating condition and program parameters of the system at any time. To use this feature, begin by pressing the “MENU” key and then choose selection # 3, the status selection. This will bring up a menu allowing a choice of checking the status of the output zones, input channels or the automatic ventilation settings.

#### 2-55 Checking the Output Channel Status

2-56 The output zone status contains information on the current condition of each output zone as well as information on the programming parameters. You can activate this feature by pressing #1 when the choice menu appears. By using the “NEW” key, you may index through each active zone to determine the current status. The information displayed for the exhaust level is the current operating condition of the ventilation system. All the other information is stored program parameters. When the status of the last active zone is checked, the display will return to the choice menu to allow checking the status of other functions, or the program function can be selected.

#### 2-57 Checking the Input Channel Status

2-58 Display the status of the input channels by choosing # 2 from the status choice menu. The data displayed is also a mixture of programmed parameters and current operating conditions. The “CONC” reading is the actual PPM level of the selected transmitter. All other information is stored program parameters. Press the “NEW” key to index through the active transmitters. When all transmitters have been checked, the display will return to the choice menu.

#### 2-59 Checking the Automatic Ventilation Status

2-60 By choosing choice # 3 from the status choice menu, the status of the “AVENT” program parameters can be checked. This information contains only the current settings of the program.

## 2-61 Front Panel Display of Events

2-62 In addition to the status of selected functions, the display will also indicate any of several abnormal events that occur. These messages are written on the third and fourth lines of the MAIN DISPLAY message. If no abnormal events are occurring, these two lines will read “PRESS MENU FOR FUNCTION CHOICE”. However, an abnormal event will cause one or more of five possible messages to be displayed. If only one event is occurring, the resulting message is continuously displayed. However, if more than one event occurs, the messages will change at six second intervals, and repeat, in sequence, as long as the events are valid. If one or more events become invalid, that event message is removed from the display. If all conditions return to normal, the display will again read “PRESS MENU FOR FUNCTION CHOICE”.

When an abnormal event occurs, the user should check the status of the various functions to determine the reason for the event.

## 2-63 Description of Event Messages

### 2-64 Alert Message

2-65 The alert message indicates that either a low alert or high alert condition exists. The level of the alert is displayed along with the ventilation zone affected by the alert. Check the status of the transmitters to determine the input channel experiencing the alert condition.

### 2-66 Alarm Message

2-67 If a high alert condition exists for 15 minutes, the alarm condition is activated. Any high alert messages will be replaced with the alarm message. The internal alarm, and any active external alarm, will actuate. Check the status of the transmitters to determine the reasons for the alarm.

### 2-68 Failed Sensor Message

2-69 If the sensor in an active transmitter fails or the transmitter fails, the number of the failed transmitter will be displayed. The failed transmitter can then be replaced or programmed as inactive.

### 2-70 Sensor Over-range Message

2-71 This message will occur when any active transmitter experiences a gas concentration that is higher than the maximum sensing range of that transmitter.

### 2-72 Battery Replacement Message

2-73 The battery is tested once each day at 12:00 am. If this test indicates that the battery voltage is below a safe level, a message telling the user to replace the batteries is displayed.

### 2-74 Importance of Event Messages

2-75 The occurrence of an abnormal event message requires immediate attention. Failure to determine the cause of any event, and then take the appropriate correction measures, could result in a hazardous condition placing people in the immediate area in danger.

2-76 Installation of the Optional Channel Extension Board

**WARNING**

**Do not attempt to install this optional board unless the power switch is in the RESET position and the AC power has been turned off at its source. To disregard this warning could result in injury from electrical shock and/or damage to electrical components.**

- 2-77 The standard control panel, Model GDCP-0, is supplied with all the required spacers and standoffs for mounting the optional board, CPSLAVE. With all power removed from the unit, the board is positioned over the mounting standoffs and aligned with the 32 pins projecting up from the main control board, CPMAIN. These 32 pins provide all the input and output signals between the main board and the optional board. Fig. 2-77.1 shows the location of the optional board when properly aligned. With all 32 pins positioned within the matching sockets on the optional board, gently push downward. When fully seated, the bottom of the board will contact the aluminum grounding spacer and the five plastic standoffs used to secure the optional board. You should be able to see the top of each pin protruding through the mating socket. The pins will stop approximately even with the top of the sockets. Complete the installation by installing and tightening the six screws, supplied with the board, into the

**CAUTION**

Make sure that all the pins are positioned correctly in their proper sockets. If any pin has been positioned wrong, or bent during installation, remove the board, straighten the pins and repeat the installation procedure.

threaded standoffs. Tighten the screws only enough to firmly secure the optional board. Do not over tighten.

When the installation is complete, and all input and output connections to the transmitters and ventilation systems have been made, turn on the power and follow the procedures in the operation section of this manual.

Additional optional boards are installed in the same manner as described under paragraph 2.76 except that each additional board attaches to the optional board below it. The pins and standoffs are arranged in the same dimensional relationship as those on the main control board.

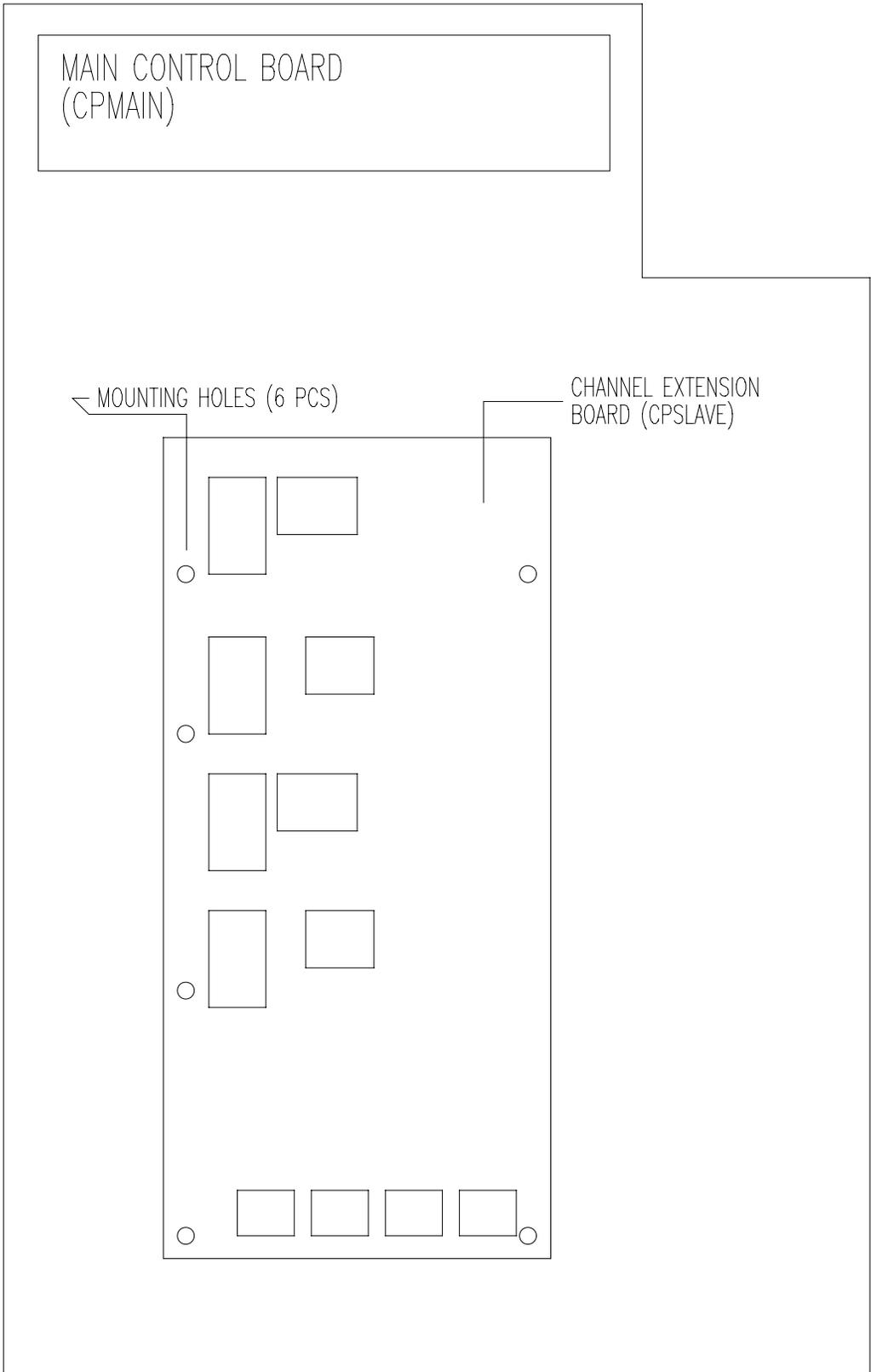


Figure 2-77.1 Channel Extension Board Mounting Location

## Section 3 Maintenance

### 3-1 Introduction

3-2 This section of the manual will cover the maintenance procedure that should be performed by the user at their facilities. Since the control panel requires little maintenance, the procedures will be few.

### 3-3 Service Information

3-4 If the panel fails to operate properly, use the troubleshooting chart included in this section to determine a likely cause for the problem. Once a cause is identified, or if the troubleshooting chart fails to identify a likely cause, contact the factory to determine the most expedient method of repair. The factory address is listed in Section 4, paragraph 4-2. Before contacting the factory, write down the model number, number of active transmitters and the number and configuration of the ventilation systems. Be prepared to give this information to the factory service technician.

### 3-5 General Information

3-6 Maintenance on the control panel consists of three items. These are discussed separately in the following paragraphs.

#### **WARNING**

**Dangerous voltage levels exist inside the control panel housing. Contact with this voltage can cause fatal injury. Before working on the internal circuit, make sure that the AC power is turned off at its source and that the power switch is placed in the "RESET" position.**

**ONLY QUALIFIED PERSONNEL SHOULD ATTEMPT TO SERVICE THIS EQUIPMENT!**

### 3-7 Interior Access

3-8 The access door to the interior of the control panel housing must be locked to meet safety concerns and prevent unauthorized entry. The key should be stored in a safe place that has limited accessibility.

Once the door is unlocked and opened, there is free access to the interior circuitry.

### 3-9 Changing the Batteries

3-10 Under normal conditions the batteries will last approximately 2 years. However, in situations where power outages are common, the batteries may require replacement at more frequent intervals.

The batteries are located in the upper, middle of the main control board. Replace the batteries with fresh, AA, alkaline cells to obtain the best performance. The battery holder is labeled on the bottom of each cell position indicating the orientation of the battery. Be careful that you do not damage the spring contacts at each end of the holder when removing or inserting the batteries. To ensure proper contact, rotate each battery slightly after insertion.

If you change the batteries while the control panel is operating, be careful not to allow tools or loose batteries to come in contact with any portion of the circuit board. The low voltage supply portion of the main circuit board lies just below the battery package. An unintentional short in this area will, at least, cause the main power fuse to open. However, more extensive damage could result.

### 3-11 Calibration Requirements

3-12 Under most conditions, the panel requires no calibration. However, after many hours of operation, the display contrast may need adjusting. If so, you will notice that the display wording will become dimmer and harder to read. Follow the directions in the next paragraph if you must adjust the contrast.

### 3-13 Adjusting the Display Contrast

3-14 The adjustment for the display contrast, P1, is mounted on the display PC board. Refer to Fig. 3-14.1 while making this adjustment.

The PC board must be removed from the front door of the control panel to gain access to the adjustment potentiometer. Follow the procedure in this paragraph. The panel will be operating while you make this adjustment. Do not allow the PC board to contact any part of the metal housing once it is removed from its supports. The glass front of the display is very fragile. Do not touch the display or allow the glass front to contact any hard objects.

- a) Carefully remove the four screws that attach the PC board to the four aluminum spacers. Place the screws in a safe place, they will be used to remount the display board.
- b) Holding the display board by the edges, turn the board so that the display is facing up.
- c) The adjustment potentiometer is located at the bottom edge of the PC board near the cable connector that leads to the keypad. Using a small, non-metallic screwdriver, adjust the potentiometer until the display wording is easily read while looking directly at the display's face. Do not adjust the contrast any higher than necessary. Too much contrast causes the inactive characters of the display lines to show up as dark rectangles.
- d) Carefully place the PC board back on its supporting standoffs and attach it with the four screws. Make sure that the display is centered in the panel door cutout, and that no part of the display comes in contact with the edges of the cutout.
- e) Tighten the mounting screws only enough to firmly secure the PC board to the panel door. Make sure that the cable from the PC board to the main control board lies close to the panel door surface and takes a direct path to the main control board down along the right side of the housing.
- f) Close the control panel door and check the display for the proper contrast.

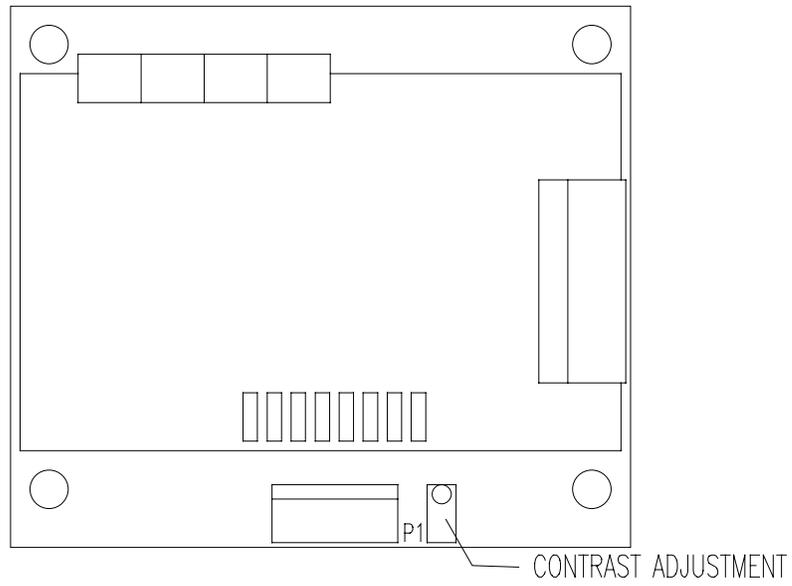


Figure 3-14.1 Display contrast adjustment potentiometer location

**3-15 Troubleshooting**

3-16 If you experience a problem with the control panel, the troubleshooting chart in this paragraph will help determine the most likely cause. Once you have found the cause, or if you are unsure of the cause after consulting the chart, contact a factory service technician to determine the best method of making the necessary repairs.

Troubleshooting Chart

Problem	Possible Cause
Power indicator on main control board does not glow.	No AC power to the panel. Main power fuse is open. Main power switch is in the "RESET" position.
No display message	No AC power to panel Main power fuse is open Power switch in "RESET" position 26 conductor cable from main control board is loose. Display not working, consult the factory.
No display back-lighting but display message is present.	Cable from main control board is loose. Display is not working, consult factory.
No response to keypad input.	Cable from keypad to display board is loose. Keypad not working, consult factory. +5 Volt supply not working, consult factory.
Loss of ventilation system control (one channel only)	5 Amp fuse in output circuit is open. Output relay is bad, consult factory. Program parameters not correct.
Loss of ventilation system control (all channels)	Program parameters not correct. +25 Volt supply not working, consult factory.
Loss of input signal from transmitter (one channel only)	Transmitter is programmed as inactive (N/C). Signal lead has pulled out of input terminal. Transmitter has lost AC power.
Loss of input signal from transmitter (all channels)	Input section not programmed correctly. Transmitters have lost AC power.
No recovery after power loss	Batteries need replacement. Power has not been restored to panel.

## Section 4 Replacement Parts

### 4-1 Introduction

- 4-2 Replacement parts are available from the factory or the factory representative. If you do not know the exact part you need, please consult the factory before ordering.

Note

Please contact the Service Department at the address or telephone/fax numbers below for factory consultation concerning operational problems or replacement parts.

**Brasch Manufacturing Company, Inc.**  
**2310 Millpark Drive**  
**Maryland Heights, Missouri 63043**

**314-291-0440 FAX 314-291-0646**

### 4-3 List of replacement parts

Description	Part Number
Cable, 26 conductor ribbon, main PC board to display board	C3AAT-2618G
Display, 20 char. x 4 line, LCD w / backlight	DMC-20481
Fuse, 1 Amp, 250 VAC, slo-blo, 5 x 20 mm	218-1
Fuse, 5 Amp, 250 VAC, slo-blo, 5 x 20 mm	GDC-5
Jumper, output relay, normal/extra configuration	Call Factory
PC board assy., display, w/o display	CPDSPLY
PC board assy., main control board, w/processors	CPMAIN
PC board assy., slave	CPSLAVE