MCP-4 Control Unit

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Part Number: MC075

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Declaration of Conformity

(According to EN 45014)

The following declaration is issued under the sole responsibility of the manufacturer:

Manufacturer:	Valco Melton A division of Valco Cincinnati, Incorporated 411 Circle Freeway Drive Cincinnati, OH 45246 USA	
Authorized Representatives in Europe:	Valco Cincinnati, Ltd. Unit 7-8 Hortonwood 32 Telford TF1 7YN England	Melton S.L.U. Pol. Industrial Agustinos calle G, n. 34 31160 Orcoyen Navarra, Spain

declares that the product:

Product Name:	MCP-4 Control Unit

complies with the following Council Directives:

Safety of Machinery:	2006/42/EC
Low Voltage Equipment:	2014/35/EU
EMC:	2014/30/EU
Reduction of Hazardous Substances (RoHS)	2011/65/EC

and conforms to the following standards:

Safety:	EN60204-1:2006 EN13849-1
Risk:	ISO12100:2010
EMC Emissions:	EN61000-6-4:2007 EN61000-4-2
EMC Immunity:	EN61000-6-2:2005 EN61000-4-3 EN61000-4-4 EN61000-4-5 EN61000-4-6 EN61000-4-8 EN61000-4-11
Place and Date:	Cincinnati, Ohio USA CE Mark first fixed 2006
Signature:	Cincinnati, OH USA David H. Swedes, Vice President of Engineering & Manufacturing

This Declaration of Conformity has been generated electronically and is legally binding without signature

Table of Contents

Section 1 - Introduction

System Description

This manual has been prepared by Valco Cincinnati, Inc. to provide assistance in the installation, operation, and servicing of your MCP-4 Control Unit.

The MCP-4 Control Unit from Valco provides operators with a full-featured affordable solution to adhesive system pattern control. The control features 4-channel operation, multiple glue patterns, and an optional flow control capability. The unit allows program changes and adjustments, so you can get desired results immediately. The control has a compact design and features “plug-and-run” connectors for easy installation and quick start up.

Features/Capabilities

The MCP-4 Control Unit works with a variety of Valco’s cold-glue or hot melt adhesive dispensing valves. Features/Capabilities of the MCP-4 Unit include:

- Suited to high-speed converting, such as:

  -folding carton production
  -envelope manufacturing
  -paper-folders
  -book and magazine production
  -bag-making
  -corrugated box making

- Multiple valves, complex glue patterns
- 4 channels, 10 programmable patterns per channel
- Continuous, stitch, and auto glue patterns
- Large storage memory of 100 jobs
- EPC flow control option
- Encoder-based or timer mode
- Web break detection option
- CE Compliant

All hardware must be up-to-date for all new functions to work. Please see the Parts List for a compatibility chart.

Section 2 - Safety and Use

Read Thoroughly Before Handling Equipment

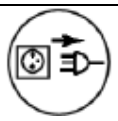
WARNING!

Read and follow all safety precautions, warnings, cautions, and other recommendations in this manual. OTHERWISE, DEATH, PERSONAL INJURY OR EQUIPMENT DAMAGE COULD OCCUR.

Read this entire section before handling the equipment.

Symbols

The following symbols may be used on the equipment and/or in this manual.

	This symbol represents a **Caution** or a **Warning**. *Cautions* draw special attention to anything that could damage equipment or cause the loss of data. *Warnings* draw special attention to anything that could injure or kill the reader. Both Cautions and Warnings are placed before the step they apply to.
	This symbol represents a **Hot Surface**.
	This symbol represents a **Puncture Risk.** It is usually used in regard to nozzle cleaning appliances and other sharp instruments that can cause puncture wounds and risk exposure to bloodborne pathogens and other debris.
	This symbol means that **Working Gloves** are required.
	This symbol means that **Goggles** are required.
	This symbol indicates a Shock Hazard. There is a presence of non-insulated dangerous voltage within the product's enclosure. This voltage may cause electrical shock or fire.
	This symbol indicates the need to Unplug/Disconnect All Power Sources and to let them de-energize before attempting any type of work or maintenance. Remember that there can still be energy in equipment, cords, and wires even when unplugged/disconnected.
	This symbol indicates the need to **Lock Out All Power Sources** and to let them de-energize before attempting any type of work or maintenance. If power is not locked out, the person working on the equipment may be injured or killed if someone unknowingly switches on the power to the equipment.
	This symbol indicates a Note. Notes point out something of special interest or importance to the reader. They give tips, hints, and information in addition to what is necessary for the step preceding it.

Owner Responsibilities

The owner of the equipment is under obligation to manage all safety information. Some examples include:

- Examine all safety materials and documents as well as jurisdictional laws and make certain all laws, recommendations, and other safety/hazard laws, certification requirements, training, and instructions are followed and kept current.
- Maintain all safety materials including tags, labels, documents, and MSDS information. Make certain they are distinct and can be read/understood. Replace any that are dirty, worn, or unreadable.
- Make sure all personnel who will handle, install, maintain, operate, fix, and work around the equipment have ready access to the safety information, training, and equipment according to jurisdictional authorities.

The owner of the equipment is under obligation to make certain that all instructions, requirements, and jurisdictional laws are met. Some examples include:

- Make sure there are regular inspections of equipment and safety devices.
- Have regular safety drills and inspections supervised by the proper authorities.
- Provide all required safety items, first aid equipment, and training.

The owner of the equipment is under obligation to make certain that all personnel who will handle, install, maintain, operate, fix, and work around the equipment are qualified, trained, and up-to-date with all information regarding the equipment. Some examples include:

- Make sure all personnel have the proper safety training, equipment, education, and abilities necessary for the job function according to safety instructions and all jurisdictional laws and regulations.
- It is strongly advised that personnel receive first-responder medical care training in case of burns, medical emergencies, or other injuries. Training should be kept up to date.
- Make sure all personnel understand and can follow safety policies and procedures for the organization as well as for the specific equipment.
- Make sure that all personnel are consistently trained, evaluated, free of alcohol and medications that may impair judgment and reflexes, and are tested for banned substances according to jurisdictional authorities.

Limitations of Use

Read this document and all information regarding the equipment before handling the equipment. The intended use of the equipment is stated in Section 1 of this manual.

Do not use this equipment for anything other than its intended use. Do not modify, change, or alter the equipment in any way. If you are unsure of the intended use and the limitations of use for the equipment, contact your Valco Melton Representative before handling the equipment.

Installation/Startup/Use Safety Information

Valco Melton hot melt units, cold glue units, controllers, inspection systems and all related accessories have the following universal safety precautions (this is not intended to be an exhaustive list; follow all instructions and safety precautions for the specific type of equipment involved):

WARNING!

Only qualified personnel should install the equipment. Valco Melton strongly recommends that a Valco Melton Technician install all equipment. OTHERWISE, DEATH, PERSONAL INJURY, OR DAMAGE TO EQUIPMENT COULD OCCUR.

WARNING!

The equipment should be installed so that it can be turned off at a location **away** from the equipment in case of injury, electrical problems, or malfunction. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING!

Properly route all electrical wires. Never tamper with equipment. Only use approved and correct voltage, type of current, fuses, and other power supplies. Replace worn cords, hoses, etc. immediately. FAILURE TO OBSERVE WARNING MAY RESULT IN DEATH, PERSONAL INJURY, AND/OR EQUIPMENT DAMAGE.

WARNING!

Poor ventilation, smoking, and open flames can cause overheated hot melt to ignite. Adequate ventilation must be provided. Smoking should be prohibited in the immediate vicinity of the molten adhesive. Open flames must be kept away from the area around molten adhesive. OTHERWISE, DEATH, PERSONAL INJURY, OR DAMAGE TO EQUIPMENT COULD OCCUR.

WARNING!

Never use any Valco Melton equipment in an explosive environment. Explosive environments include, but are not limited to, solvent-based cleaners or adhesives, explosive materials, radioactive materials, etc. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING!

Equipment will start automatically when remotely controlled by triggering devices. Be sure to disable all triggering devices, carefully release hydraulic pressure, and disconnect air pressure before servicing or working near guns, valves, and other triggered devices. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

Shut Down Safety Information

Valco Melton hot melt units, cold glue units, controllers, inspection systems and all related accessories have the following universal safety precautions (this is not intended to be an exhaustive list; follow all instructions and safety precautions for the specific type of equipment involved):

WARNING! Purge the fluid pressure and the air pressure from the system before disconnecting/disabling any part of the system. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING! Disconnect and lock out all power before maintenance or other need to open the equipment. Only qualified personnel should open and service the control. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING! Equipment may still be energized even if unplugged! When making adjustments or performing checkout procedures, stay clear of any moving mechanical parts and do not touch exposed electrical equipment or electrical connectors. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING! Disconnect/disable all mechanical and/or electrical devices that send activation signals to the gun(s), valve(s), melter pump(s), etc. This includes pattern controls, timers, input/output signals, etc. Only qualified personnel should open and service the control. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING! Disable all triggering devices, relieve all residual pressure (hydraulic and air) and allow adhesive to cool before attempting to disconnect guns, hoses, valves, etc. Only qualified personnel should open and service the control. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING! Never point an adhesive dispensing gun, valve, hose, air hose, or anything else at yourself or another person. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

Hot-Melt-Specific, General Safety Information

Valco Melton hot melt units have the following universal safety precautions in addition to all other universal precautions previously mentioned (this is not intended to be an exhaustive list; follow all instructions and safety precautions for the specific type of equipment involved):

WARNING! **Never** process any polyurethane reactive (PUR) hot melt or solvent-based material in a Valco Melton unit unless you are certain that the unit is compatible and is marked “PUR”! Read all instructions and MSDS sheets carefully, following manufacturer’s instructions, especially regarding heat levels. If you have any question as to the compatibility of a Valco Melton unit for PUR hot melt, call your Valco Melton Representative before attempting to use the unit for PUR or solvent-based materials. OTHERWISE, HAZARDOUS FUMES, EXPLOSION, DEATH, OR PERSONAL INJURY COULD OCCUR.

WARNING! Keep pump cover and electrical enclosures closed except during setup, service, and checkout procedures. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING! People with respiratory problems (e.g., asthma, bronchitis, etc.) should not work in the vicinity of molten adhesive. RESPIRATORY PROBLEMS MAY BE AGGRAVATED BY THE FUMES. Do not wear a face mask when working around molten adhesive. THE MASK MAY TRAP THE FUMES AND DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING! Keep hot melt hoses away from walkways and the moving parts of hot melt systems. OTHERWISE, PERSONAL INJURY OR EQUIPMENT DAMAGE COULD OCCUR.

WARNING! Hot surfaces! Do not touch! Use extreme caution when refilling the unit by hand. OTHERWISE, PERSONAL INJURY COULD OCCUR.

WARNING! Wear protective gloves and goggles at all times around all machinery, especially hot melt. OTHERWISE, SERIOUS PERSONAL INJURY COULD OCCUR.

WARNING! Never use an open flame to heat hot melt components or adhesive. OTHERWISE, DEATH, PERSONAL INJURY, OR DAMAGE TO EQUIPMENT COULD OCCUR.

What to Do if Contact with Hot Adhesive Occurs

If hot adhesive comes in contact with the skin, do the following:

WARNING! Do not attempt to remove heated hot melt adhesive from the skin. OTHERWISE, SEVERE PERSONAL INJURY AND DEATH COULD OCCUR.

1. Immediately immerse the contacted area in clean, cold water.

   It is strongly recommended that a source of clean, cold water be provided near the hot melt work area.

2. Cover the affected area with a clean, wet compress and call the emergency medical response system (such as 911) immediately.
3. Watch for and treat the subject for signs of shock while waiting for professional help to arrive.

What to Do if Inhalation of Adhesive Fumes Occurs

If adhesive fumes are inhaled, immediately follow these steps:

1. Take the victim away from the immediate work area.
2. Provide victim with fresh air.
3. Call the emergency medical response system (such as 911) immediately.

What to Do if Adhesive-Related Fire or Explosion Occurs

During the heating and melting process, the surface of the adhesive will be exposed to air. The mixture of polymer fumes and air can catch fire if the hot melt is overheated.

WARNING! 

Poor ventilation, smoking, and open flames can cause overheated hot melt to ignite. Adequate ventilation must be provided. Smoking should be prohibited in the immediate vicinity of the molten adhesive. Open flames must be kept away from the area around molten adhesive. OTHERWISE, DEATH, PERSONAL INJURY, OR DAMAGE TO EQUIPMENT COULD OCCUR.

WARNING! 

Exposed arcing may ignite the fume/air mixture. Shield all electrical equipment from melt fumes to avoid exposed arcing. OTHERWISE, PERSONAL INJURY OR EQUIPMENT DAMAGE COULD OCCUR.

WARNING! 

Do not use a water extinguisher to extinguish the fire! OTHERWISE, PERSONAL INJURY OR EQUIPMENT DAMAGE COULD OCCUR.

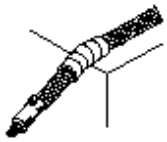
If the hot melt adhesive ignites, promptly perform the following steps:

1. Sound a fire alarm.
2. Evacuate the immediate area.
3. Turn off all local electrical equipment at the source.
4. Leave the area immediately if conditions are unsafe.

If you feel you can fight the fire **safely**, do ***one*** of the following:

- Smother the fire with a fire blanket.
- Aim a CO_2 fire extinguisher at the base of the flames.
- Aim a dry-powder fire extinguisher at the base of the flames.

Hose Safety Information

DO NOT		DO	
Do not use bindings, wire ties, or unapproved fasteners around the hoses.		**Do** use approved wrapping (P/N KAP0434), making sure the wrapping is slightly snug but not tight.	
Do not place hoses close together.		**Do** allow at least 2 inches (5.1 cm) between hoses for proper ventilation.	
Do not bend hoses sharply. **Do not** allow kinks or indentations in the hoses.		**Do** use a minimum bend radius of 10 inches for a 20-inch diameter coil hose.	
Do not use unapproved hooks to hang hoses. **Do not** wrap hoses over or around objects.		**Do** use a hose hanging kit (P/N 781xx827).	
Do not use the “one handed/one wrench” technique to attach or remove hoses. **Do not** wrench on any surface other than the large hexagon swivel nuts.		**Do** use two hands and two wrenches to tighten or loosen connections on hoses. **Do** wrench only on large hexagon swivel nuts.	
Do not allow hoses to rub against objects or to come into contact with sharp edges or points.		**Do** wrap the hoses in approved padding (P/N 795xx549) if the hoses must be installed where they will come into contact with objects.	
Do not use worn, damaged, or bent hoses.		**Do** inspect all hoses regularly for damage and/or wear and replace damaged or worn hoses immediately.	

Section 3 - Basic features

MCP-4 Control

Front Panel

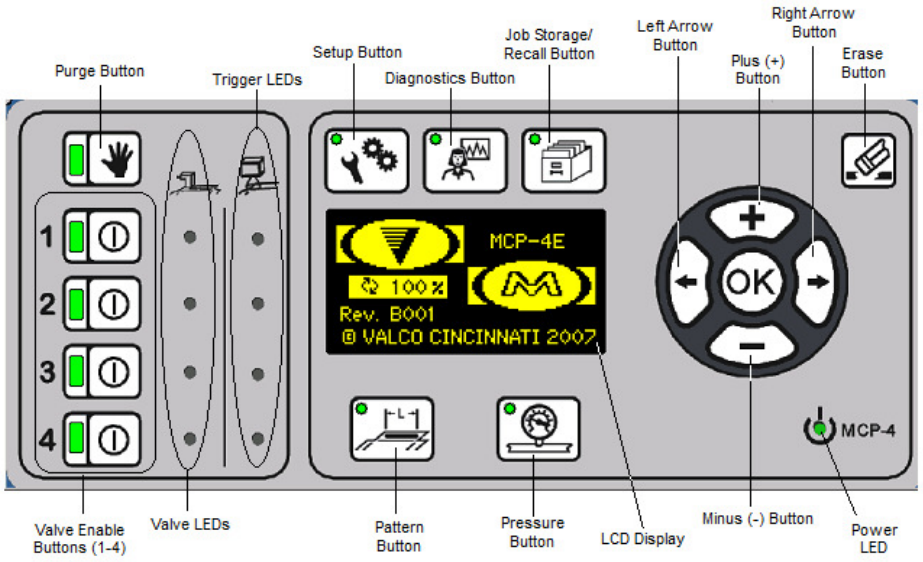


Figure 3-1. MCP-4 Operator Panel

Back Panel

*For the EPC Air Pressure Input, use an 8mm air line OR use the 1/4” tube adapter that is included in your Installation Kit.

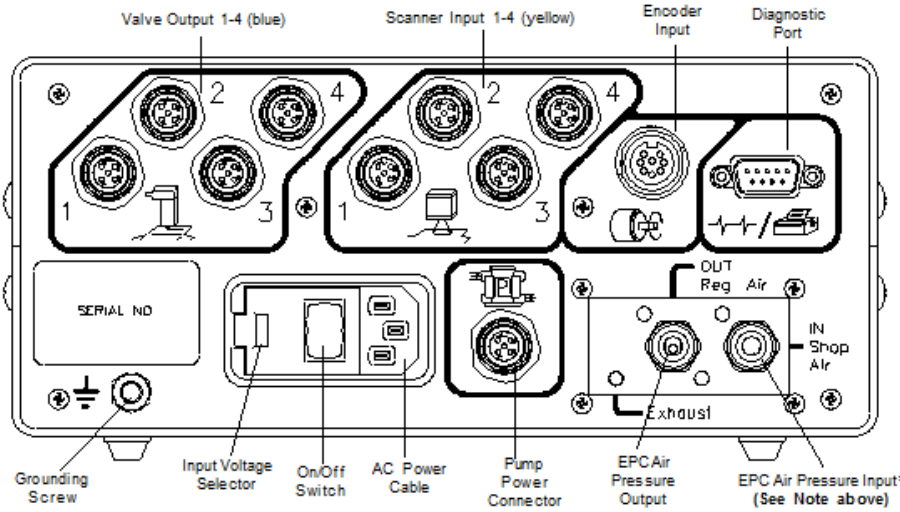


Figure 3-2. MCP-4 Back Panel

Input Voltage Selector

Changing the Voltage

WARNING! The setup may vary, depending on the country of installation. It is the purchaser's responsibility to ensure that all local, county, state, and national codes, regulations, rules, and laws relating to safety and safe operating conditions are met and followed. OTHERWISE, DEATH, PERSONAL INJURY, OR DAMAGE TO EQUIPMENT COULD OCCUR.

CAUTION! Check the Parts List carefully and only use recommended parts (especially fuses). Also be certain the voltage in the Input Voltage Selector Window is correct before plugging in a power cord! OTHERWISE, DAMAGE TO EQUIPMENT COULD OCCUR.

To change the voltage input, do the following:

1. Make certain the unit is OFF and unplugged.
2. Carefully open the input voltage selector compartment cover by prying up on the tab with a small screwdriver (see Figure 3-3A).
3. Remove the fuse drawer and make sure the fuse(s) in the holder remain in place.

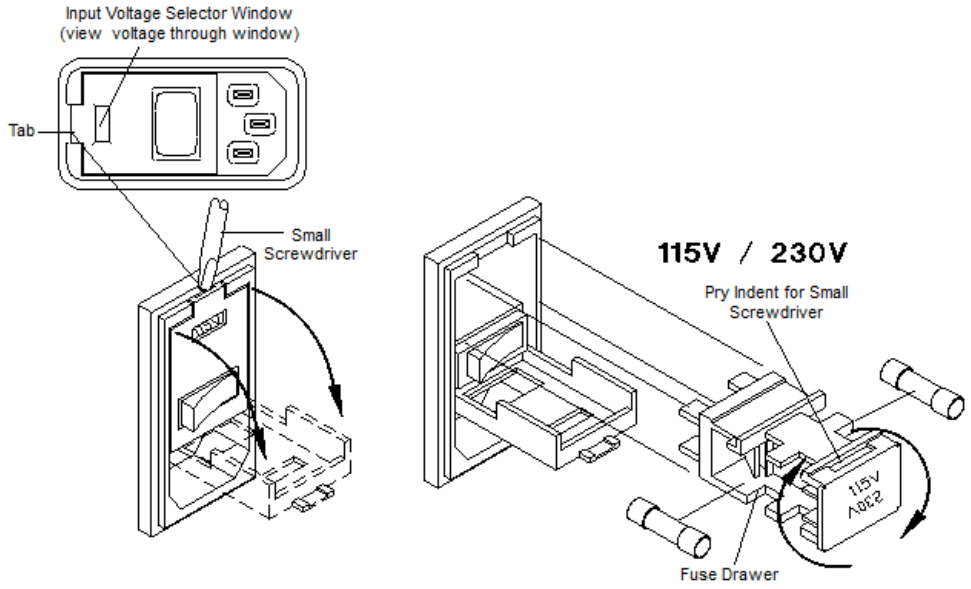


Figure 3-3A. Voltage Selector/Fuse Drawer (086xx055)

4. **If the control will be connected to 115VAC**, rotate the drawer so that 115V will show through the door opening. **If the control will be connected to 230VAC**, rotate the drawer to the 230V position (see Figure 3-3A).

Changing the Voltage - Continued

5. For line-to-neutral operation, use either the shorting clip and one fuse, or use two fuses. (The shorting clip will be on the left side of the drawer when rotated to the correct voltage position as shown in Figure 3-3B.) For line-to-line use, discard the shorting clip and use two fuses (see Parts List Section for part numbers).

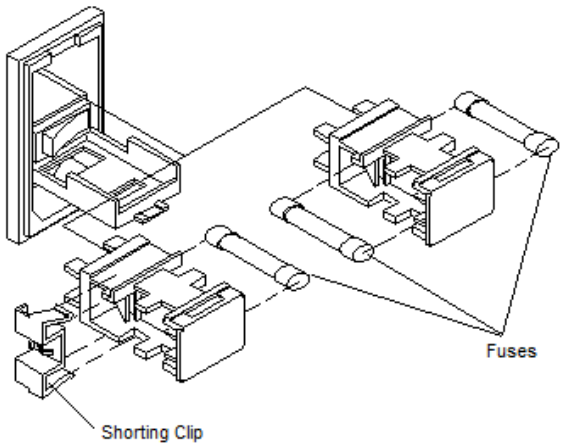


Figure 3-3B. Shorting Clip and Fuses

6. Replace the fuseholder drawer in the correct voltage position, and close the fuseholder door.
7. Ensure that the correct operating voltage shows through the window in the fuse drawer.

MCP-4P Control (24VDC)

The MCP-4P Control Unit is available in a 24VDC version and a 115/230VAC version with valve driver. Both units are vertically mounted. The operator panel is the same as the MCP-4 unit (see Figure 3-1).

The MCP-4P 24VDC version is field wirable (see Figure 3-6).

Front Panel

Figure 3-4. MCP-4P (24VDC version) Front View

Bottom Panel

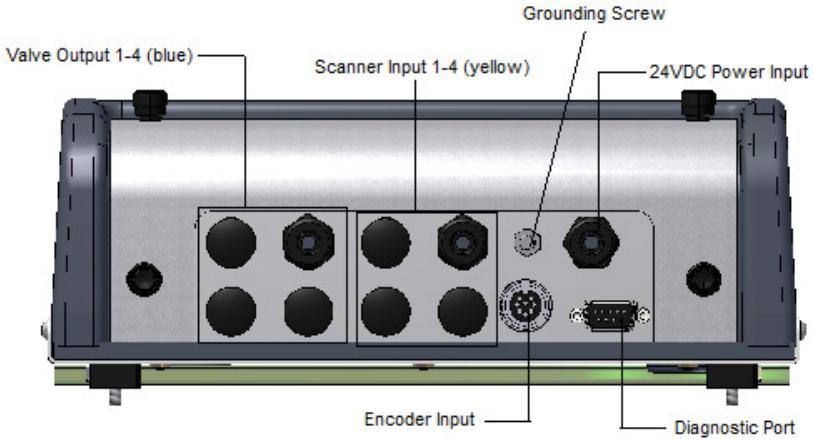


Figure 3-5. MCP-4P (24VDC version) Bottom View (enlarged to show detail).

MCP-4P Control (24VDC) - Continued

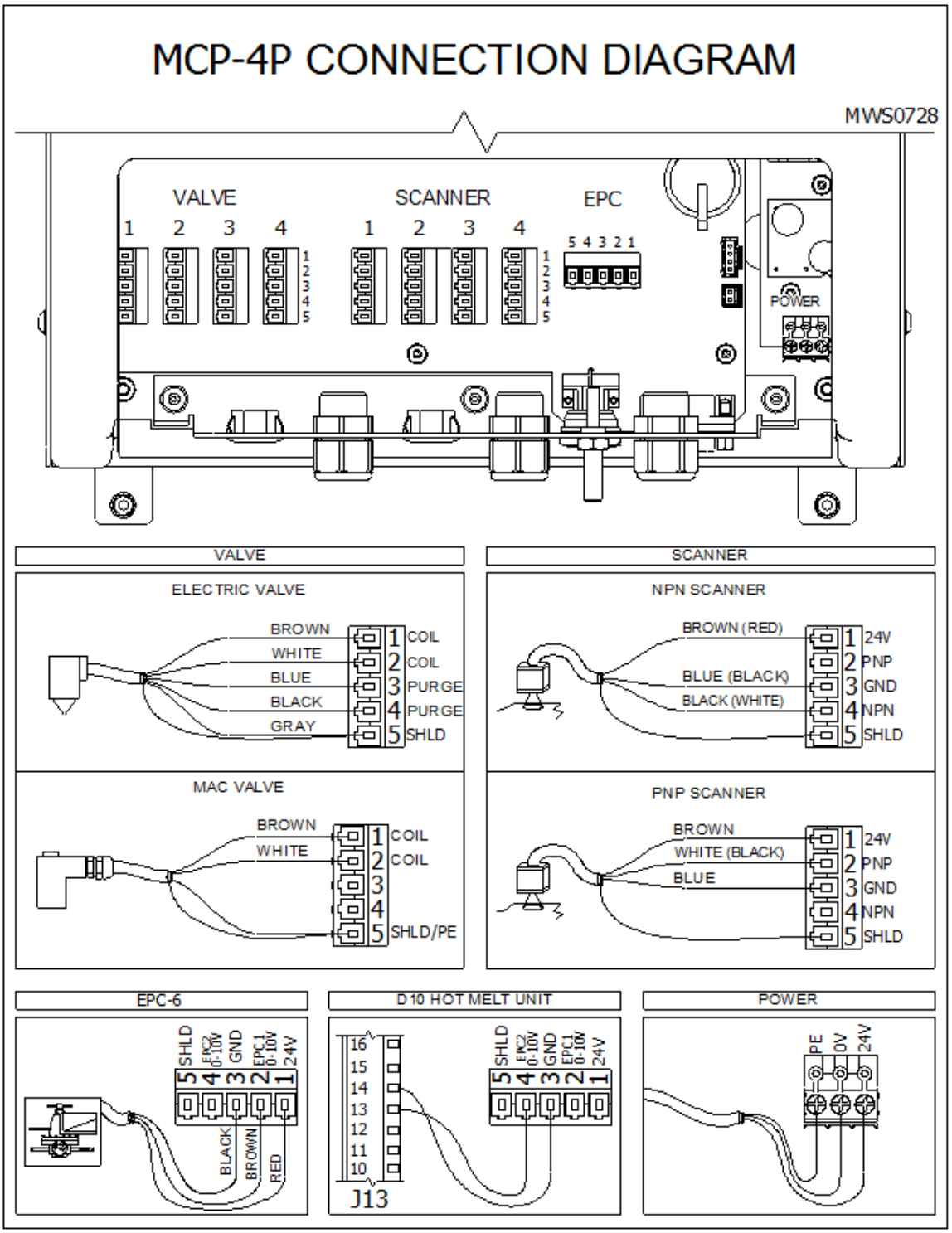


Figure 3-6. MCP-4P 24VAC Field Wirable Connections

MCP-4P Control (115/230VAC)

Front Panel

Figure 3-7. MCP-4P (115/230VAC version) Front View

Bottom Panel

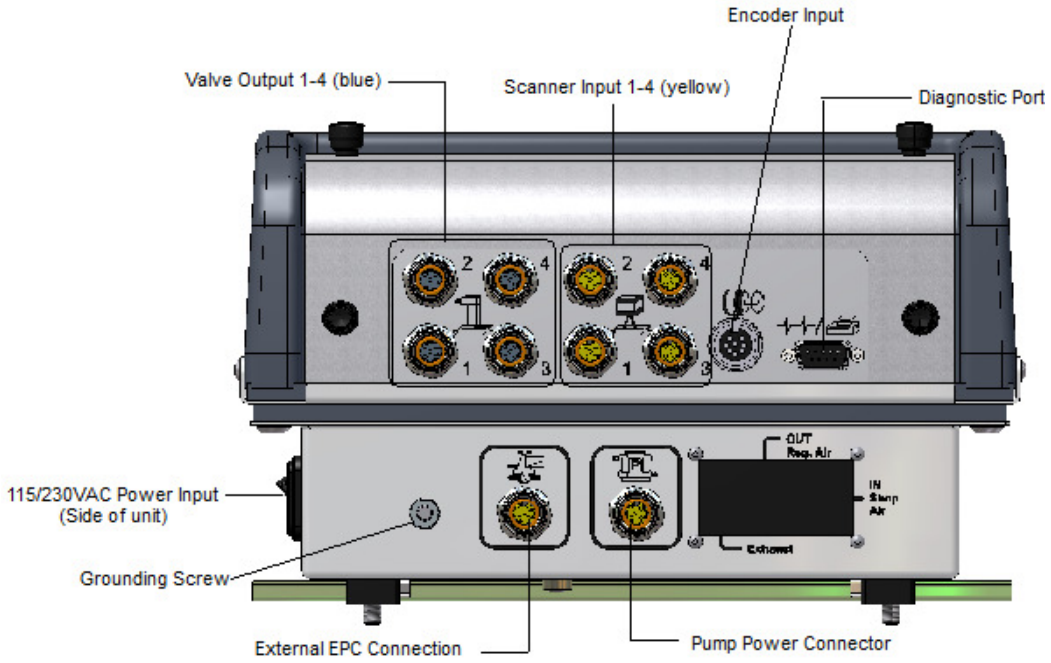


Figure 3-8. MCP-4P (115/230VAC version) Bottom View (enlarged to show detail)

MCP-4F Control

The MCP-4F Control Unit is available in a 115/230VAC version featuring an internal EPC flow control for variable speed applications. The operator panel is the same as the MCP-4 unit (see Figure 3-1).

Front Panel

Figure 3-9. MCP-4F Front View

Bottom Panel

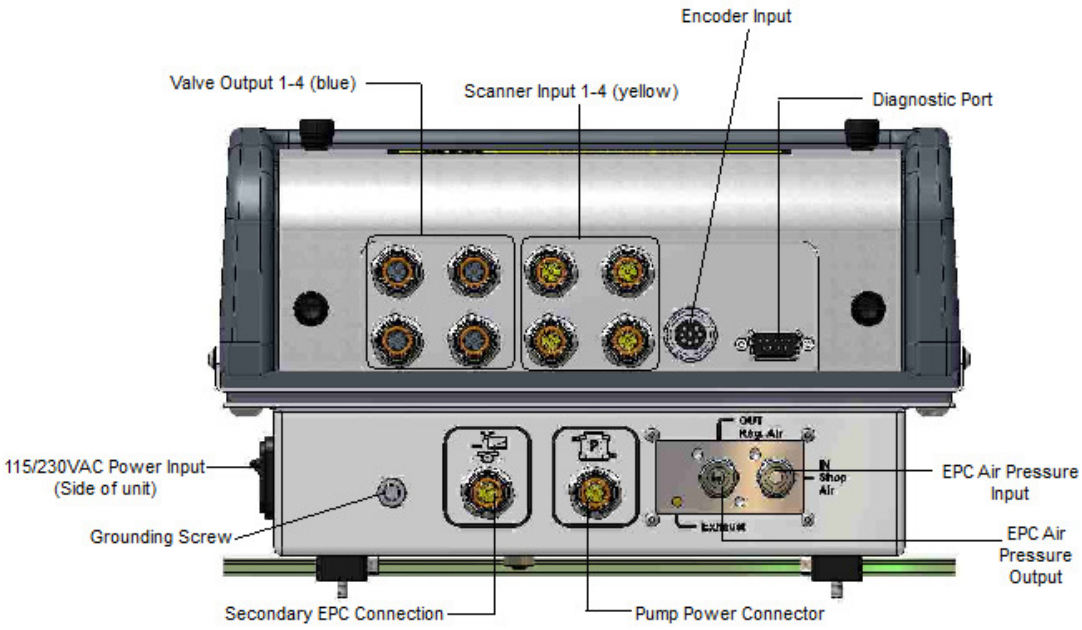


Figure 3-10. MCP-4F Bottom View (enlarged to show detail)

MCP-4 Valve Driver Instructions

One of three wiring configurations can be used to trigger the valves. Chose the one that best fits the needs of your system. Detailed instructions for each configuration are given in the next section.

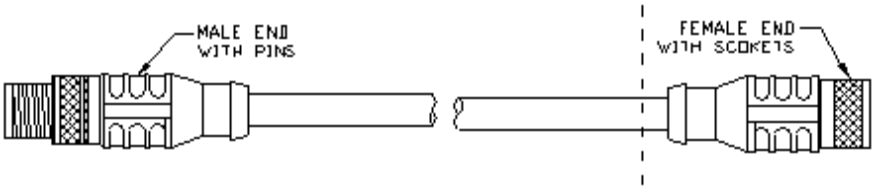
WARNING! The triggering device used must be configured to output only 24VDC. If the control unit has a spike, it will damage the input circuit for the scanner.

Wiring Configurations for Triggering the Valves

WARNING! Disconnect all power and input signal wiring before attempting to install or replace any part of the glue system. Otherwise, personal injury or death may occur!

Wiring the Scanner Cable

1. Make sure the MCP-4 power switch is OFF and the unit is unplugged.
2. Cut the female connector off of the Scanner 1 cable.



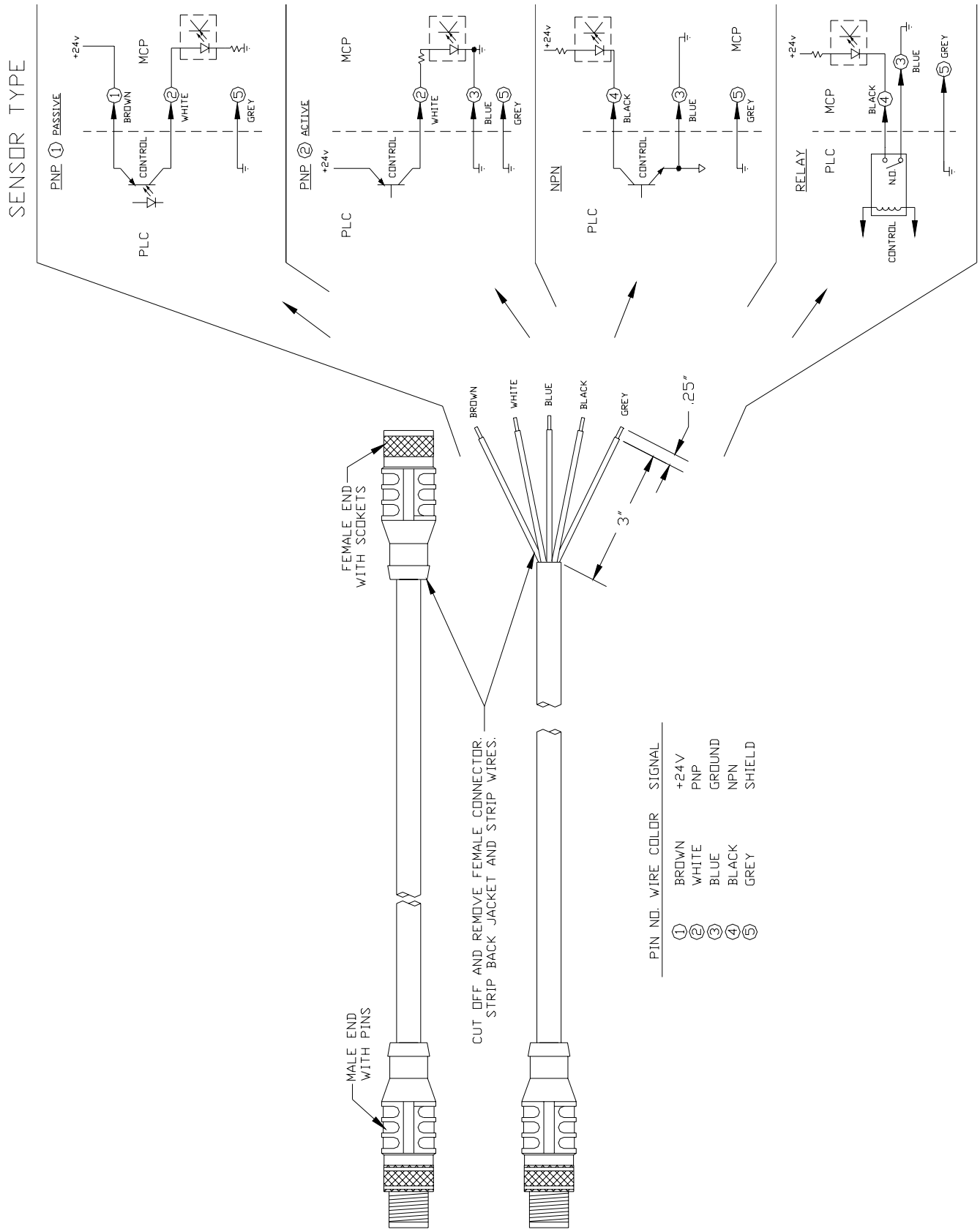
Cut off and discard the female end of the cable.

3. Plug the male connector (on the Scanner 1 cable) into the Scanner 1 input port on the back of the MCP-4 Control Unit.

Scanner cable (male connector) plugged into the Scanner 1 input

4. Carefully strip the scanner cable jacket back and strip the individual wire insulations about 0.25 inch.
5. Wire the modified scanner cable according to the Wiring Diagram (next page).

Wiring the Scanner Cable - Continued



Encoder Installation

Mechanical Installation of Encoder

An encoder must be installed in order for the control to determine the speed of the parent machine. For best results, 100 pulses per inch (25.4 mm) of product travel should be supplied to the MCP-4. If less than 100 pulses per inch (25.4 mm) are supplied, poor resolution may result in pattern placement errors. If more than 100 pulses per inch (25.4 mm) are supplied, the maximum specified speed of 2000 feet/min (610 m/min) must be reduced.

There are two primary types of encoders:

- Wheel-driven encoder
- Gear-driven encoder

Wheel-Driven Encoder

If using a wheel-driven encoder (Figure 5-6), a VDD-1000 encoder with a 10-inch measuring wheel is recommended.

To install a wheel-driven encoder, follow these steps:

1. Mount the encoder's bracket to the frame of the parent machine.
2. Ensure that the wheel of the encoder rides securely against the belt and does not slip.
3. In the level-4 menu screen, set ratio compensation to 100 pulses.

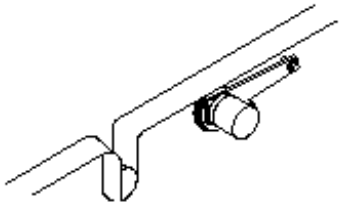


Figure 3-11. Example of a Wheel-Driven Encoder

Gear-Driven Encoder

The following formula can be used to determine the correct combination of gear teeth and encoder for approximately 100 pulse per inch (25.4 mm):

$$\frac{\text{Teeth-S}}{\text{Teeth-E}} \times \frac{\text{Counts}}{\text{Travel}} = \text{Pulses per inch (25.4 mm) of travel}$$

Teeth-S = Number of teeth on the line-shaft driver gear
Teeth-E = Number of teeth on the encoder driven gear
Counts = Number of encoder pulses per revolution
Travel = Product travel in inches (or millimeters divided by 25.4) per revolution of the drive shaft

Example:

Using a 92-tooth split line shaft gear (driver), a 24-tooth encoder driven gear, a 500-pulse encoder, and 18 inches (or 457 millimeters divided by 25.4) of travel per drive shaft revolution.

$$\frac{92}{24} \times \frac{500}{18} = 106.48$$

Therefore, the ratio compensation setting should be 106.5.

Gear-Driven Encoder - Continued

To install a gear-driven encoder (Figure 3-12), follow these steps:

1. Install the driver gear on the line shaft. Tighten the set-screws.
2. Position and install the encoder so that it is square with the driver gear.
3. Raise or lower the encoder to tighten the belt against the driver gear. (Ensure that the two sides of the belt are not pressed together under the wheel.) Due to the low torque required, the belt should not be extremely tight.

> At least 7-9 teeth should engage in the line shaft driver gear. It may be necessary to fabricate an adjustable bracket to connect the encoder base to the parent machine frame.

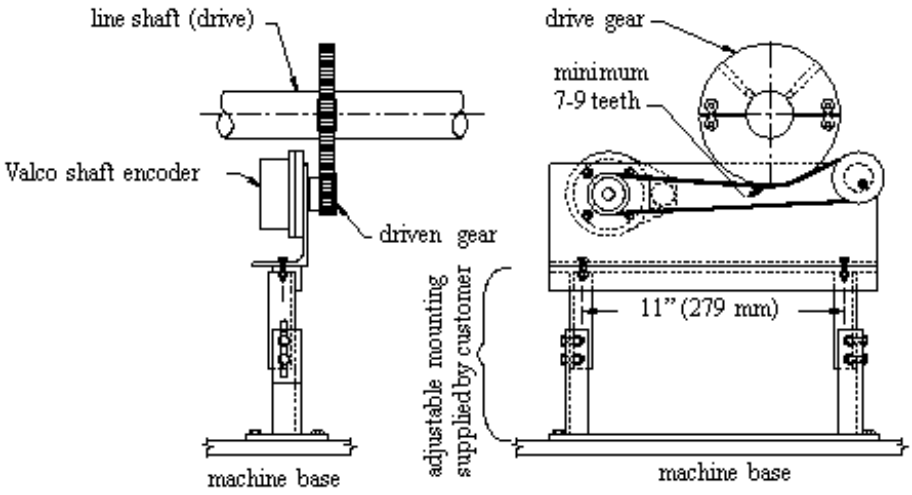


Figure 3-12. Typical Installation of a Gear-Driven Encoder

Section 4 - Programming

Mounting

The MCP-4 Control Unit can be mounted on any flat, stable surface close to the machine glue station.

1. Be sure the four (4) rubber feet are firmly attached to the unit. The rubber feet reduce vibration to the unit. Do not remove the rubber feet from the unit for any reason.
2. Valco makes a rolling cart (738xx878 Complete System Cart; 579xx322 Control Stand only) that can be used to securely mount the MCP-4 Control Unit. Please contact your Valco sales representative for purchasing information.
3. The MCP-4P and MCP-4F Control Units are vertically mounted. See the mounting footprints in the Parts List Section.
4. A swivel shelf mount (582xx780) is available for models 074xx037 and 074xx038.

Using the Operator Interface

The Operator Interface Buttons

The Operator Interface Buttons can be grouped into four categories (see Figure 4-1):

- Main Menu Buttons
- Valve Buttons
- Navigation Buttons
- Edit Buttons

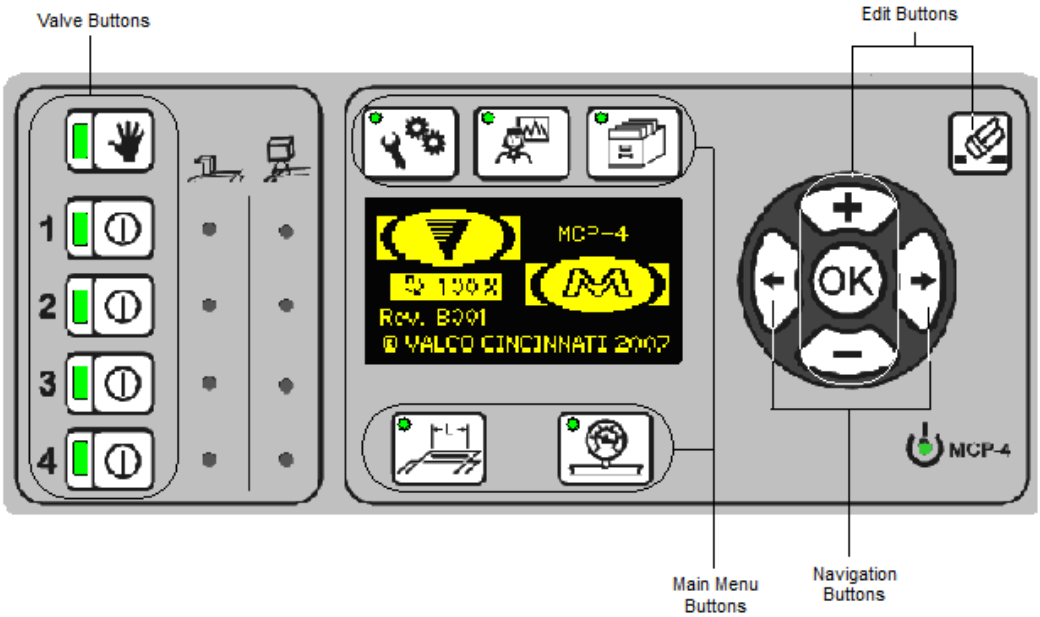


Figure 4-1. The Operator Interface Buttons

The Main Menu Buttons

There are 5 Main Menu Buttons. The LED in the upper Left hand side of the Buttons indicates which Main Menu Button is selected.

Pattern Button - Pressing the Pattern Button allows you to begin to enter gluing patterns for valves 1-4.

Pressure Button - Pressing the Pressure Button allows you to begin to enter the pressure settings.

Setup Button - Pressing the Setup Button allows you to begin to setup the MCP-4 Control Unit.

Diagnostics Button - Pressing the Diagnostics Button allows you to view the MCP-4 Control Unit diagnostics.

Job Button - Pressing the Job Button allows you to save a job and load a job.

The Valve Buttons

There are 5 Valve Buttons:

Purge Button - Pressing the Purge Button allows you to turn the Manual Purge Mode on and off.

> When the Purge Button LED is on, Manual Purge Mode is on. In this Mode, the Valve Buttons act as “purge buttons.” When the LED is off, the Valve Buttons turn the valves on and off.

Valve 1-4 Buttons - Pressing the individual Valve Button(s) allows you to tell the MCP-4 Control Unit which valves you are going to use for the job you will run. The LED in the upper Left hand side of the Buttons indicates which valve is selected.

The Navigation Buttons

There are 2 Navigation Buttons: the Right Arrow Button and the Left Arrow Button:

Right Arrow Button - Pressing the Right Arrow Button moves the cursor to the right, highlighting each editable field (see Figure 4-2A through 4-2C).

When there are no more editable fields on the screen to highlight, a Right Arrow Symbol may appear in the lower right corner of the screen (see Figure 4-2C). If this Right Arrow Symbol appears, there is an additional menu screen to the right of the current display. Press the Right Arrow Button to view the menu screen to the right.

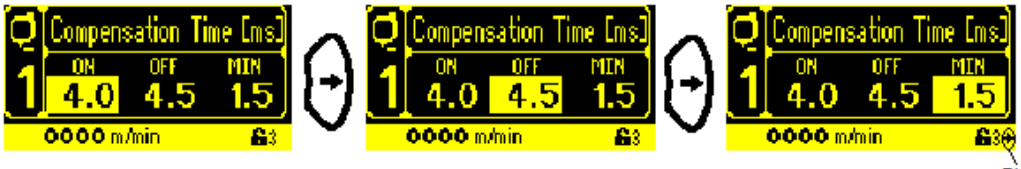


Figure 4-2A *Figure 4-2B* *Figure 4-2C*

The Navigation Buttons - Continued

Left Arrow Button - Pressing the Left Arrow Button moves the cursor to the left, highlighting each editable field (see Figure 4-3A and 4-3B).

If a Left Arrow Symbol appears in the lower left corner of the screen, it indicates there is an additional menu screen to the left of the current display (see Figure 4-3B). Press the Left Arrow Button to view the menu screen to the left of the current display.

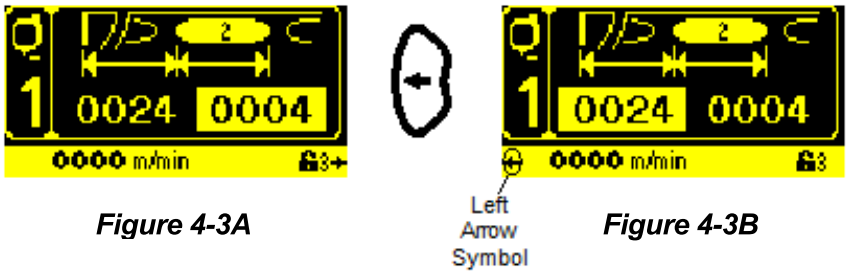


Figure 4-3A ***Figure 4-3B***

Flash Memory Storage

The symbol consisting of two arrows in a circular pattern indicates that a value has been changed but the change is not yet stored in the flash memory (see Figure 4-4).

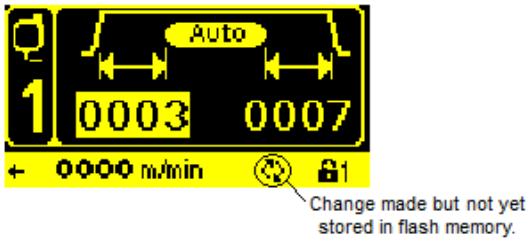


Figure 4-4. The "Storing Information" Symbol

The Edit Buttons

There are 4 Edit Buttons: the Plus Button, the Minus Button, the Erase Button, and the OK Button. These Buttons are used to change/enter information.

You can only change a value when it is highlighted (see Figure 4-5).

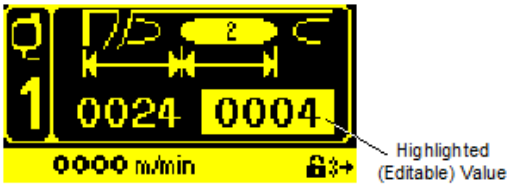


Figure 4-5. Highlighted Value

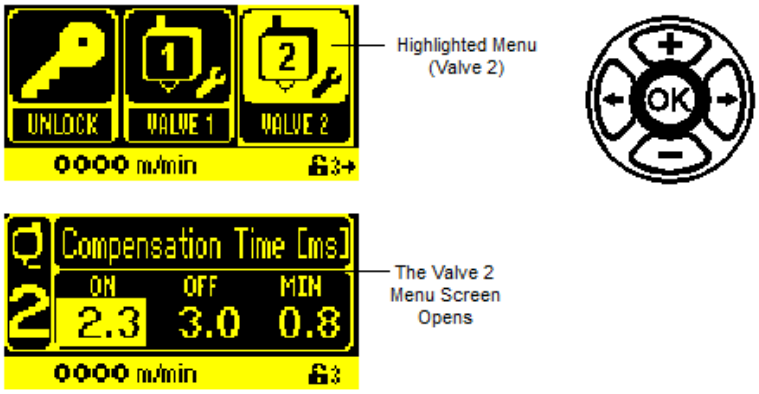
Plus Button - Pressing the Plus Button allows you to increase the value of the input.

Minus Button - Pressing the Minus Button allows you to decrease the value of the input.

Erase Button - Pressing the Erase Button allows you to return to the factory default settings. Holding the Erase Button longer than five seconds will change all pattern settings to “0.”

OK Button - Pressing the OK Button opens and closes the thumbwheel control. It also “opens” highlighted menu screens for editing (see example next page).

Open a Highlighted Menu with the OK Button



If a highlighted menu will not open with the OK Button, check the password level. A higher password level may be required to view the menu.

Thumbwheel vs. Single Digit Edit

When editable information is numerical, the information may be edited with the Plus/Minus Buttons for single digit editing, or the OK Button may be pressed to bring up a thumbwheel for more detailed editing.

Single Digit Editing

Thumbwheel Editing

> In Thumbwheel Edit, use the Right/Left Arrow Buttons to select the digit position, and the Plus/Minus Arrow Buttons to increase/decrease the value of the selected digit.

The Status LEDs

Status LEDs - The Status Display LEDs show on/off status. When an LED is on (lit up), the corresponding input or output is activated (see Figure 4-6).

> Be sure the encoder, scanners, valves, and the MCP-4 Control Unit have been properly mounted to the parent machine before setting up the control. The glue and air lines are not connected until after the control is programmed.

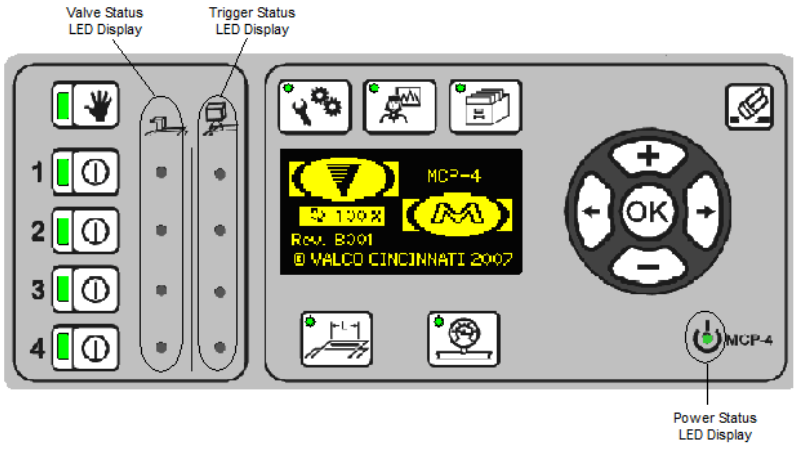


Figure 4-6. Status LEDs

Screen Contrast Adjustment

To adjust image contrast on the LCD Display Screen, press the Setup Button and either the Plus or Minus Button simultaneously.

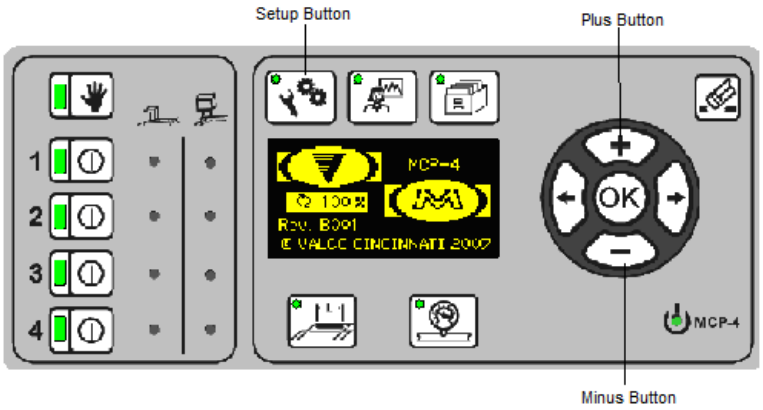


Figure 4-7. Screen Contrast Adjustment

First Use Setup (Wizard)

> The following is an example for the “other” application. Scroll through all choices to see which fits your needs the best. Applications that have the screen are listed after the screen name.

The first time the MCP-4 Control Unit is switched on, it will guide you through a series of menus in order to setup your control for your unique production needs. If these needs change later, the settings can be changed in the setup.

The first time the MCP-4 Control Unit is switched on, the following screen will appear:

Use the Plus/Minus Buttons to scroll though choices. If asked to enter a numerical value, press the OK Button for the Thumbwheel Mode or use the Plus/Minus Buttons for single digit editing. Press the Right Arrow Button to move to the next setup choice. Continue this until all selections are made. For example:

Language

(All Applications)

Language - Language is a global setting. This means that all screens will appear in the chosen language.

Application

(All Applications)

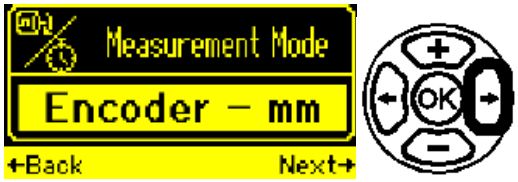
Application - Many applications are available. Each application type has “built in, behind-the-scenes” default settings to assist you in programming the unit for the application type. If your application type is not listed, simply choose “other.” (Use the Plus/Minus Buttons as needed to scroll through the choices.)

Actual application options may vary based on the system.

Application	Description
Corrugated	Applying glue to partial-assembly points of corrugated material in a Flexofolder gluing system (end product folded flat).
Folding Carton	Applying glue to folding carton partial-assembly points (end product folded flat)
Envelope	Applying glue to envelope assembly points
Packaging	Applying glue to erected-and-filled boxes for closing/sealing
Core Winding	Applying glue to paper stock that is wound to create roll cores (for paper towels, bathroom tissue, etc.)
Timer	Mode for monitoring product location in system flow
Valve Driver	Mode for controlling valve power levels based on PLC input
Burn-In Test	Test function used ONLY by Valco Melton personnel
Others	Unique applications not listed in standard options

Measurement Mode

(Corrugated, Folding Carton, Envelope, Packaging, Core Winding, and Others)



Measurement Mode - Set the units to Inch or Millimeter.

Encoder

(Corrugated, Folding Carton, Envelope, Packaging, Core Winding, and Others)

Encoder - Set the encoder type.

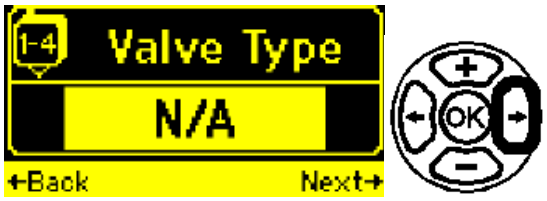
> If the Wizard does not list the encoder your system uses, select “other.” The ratio compensation settings will be entered at a later time using the Encoder Menu Screen (discussed in this Section under “Encoder Menu Screen”).

Red Encoder Wheel		
Pulses	**Setup**	**Circumference**
1000	Metric	250 mm
	Imperial	9.84 inches
500	Metric	250 mm
	Imperial	9.84 inches

Black Encoder Wheel		
Pulses	**Setup**	**Circumference**
1000	Metric	254 mm
	Imperial	10.0 inches
500	Metric	254 mm
	Imperial	10.0 inches

Valve Type

(All Applications)



Valve Type - Set the valve type for valves 1-4. If the default valve type that appears is not applicable, use the Plus/Minus Buttons to scroll through the list of valve types available.

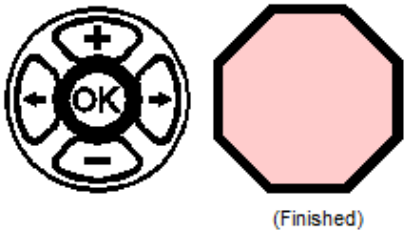
Jog Mode

(Corrugated, Folding Carton, Envelope, Packaging, and Others)

Jog Mode - Adhesive will be applied in a “dot” pattern when the machine is running below a certain speed (V-jog). (Enabling jog mode allows Jog Mode Setup Menus to appear during setup; this is covered later in this manual.)

Finish Configuration

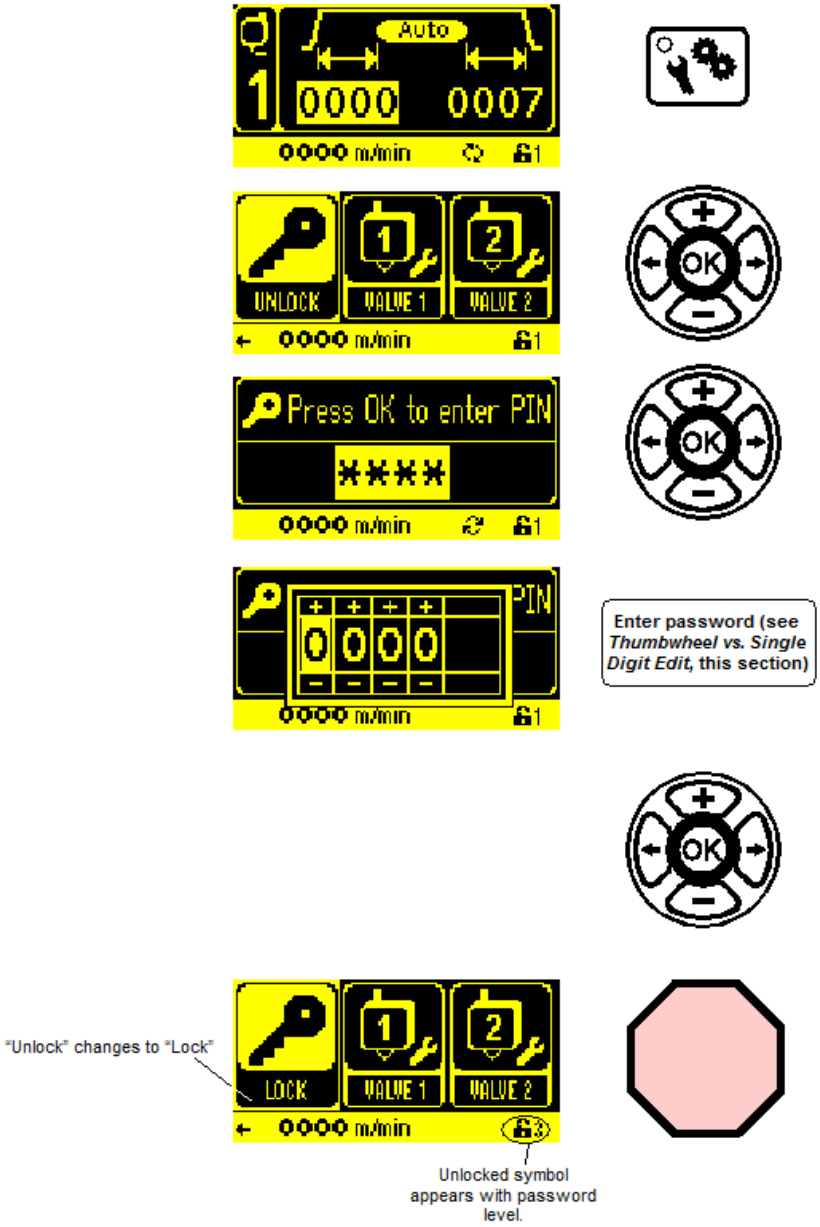
(All Applications)



You must answer “Yes” to the “Finish Configuration” prompt and press the OK Button for all changes to take effect. Choosing “No” will return the unit to the previous settings with no changes made.

Enter Password

To view, setup, and use the various functions of the MCP-4 Control Unit, passwords are used. This ensures safety and security of all settings. To enter a password, do the following:



Password Levels

There are five password levels:

Level 0: Protected

When the unit is set to Level 0, only basic pattern settings can be entered or changed. Level 0 provides the ultimate safety settings to prevent unauthorized and/or accidental changes. This level can be set as the “Default” level by someone with a Level 2 (Supervisor) password.

Level 1: Operator (No password required)

This is the “Default” level of operation when the unit is first turned on (unless the “Default” setting has been changed to Level 0 by a Supervisor). Level 1 allows Operators to set patterns, pressures, load jobs, and enter basic parameters necessary to run jobs.

Level 2: Supervisor (Default Password = 1234)

This is the highest user password level. At this level, the “Default” password level can be set, individual valve settings can be viewed and changed, jobs can be saved (as well as loaded), and the memory can be backed up. The Level 2 password can be changed (this is explained under the heading “Level 2 Password Options”).

Level 3: Service

This password level is reserved for Authorized Service Personnel.

Level 4: Programmer

This password level is reserved for Factory Programmers.

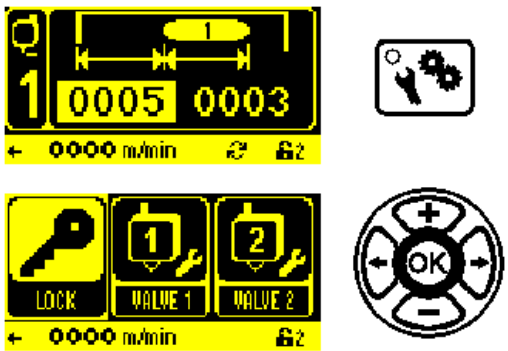
Level 2 Password Options

A Level 2 Supervisor has the ability to place the unit into the Protected Level Mode (Level 0) and to change the Level 2 password.

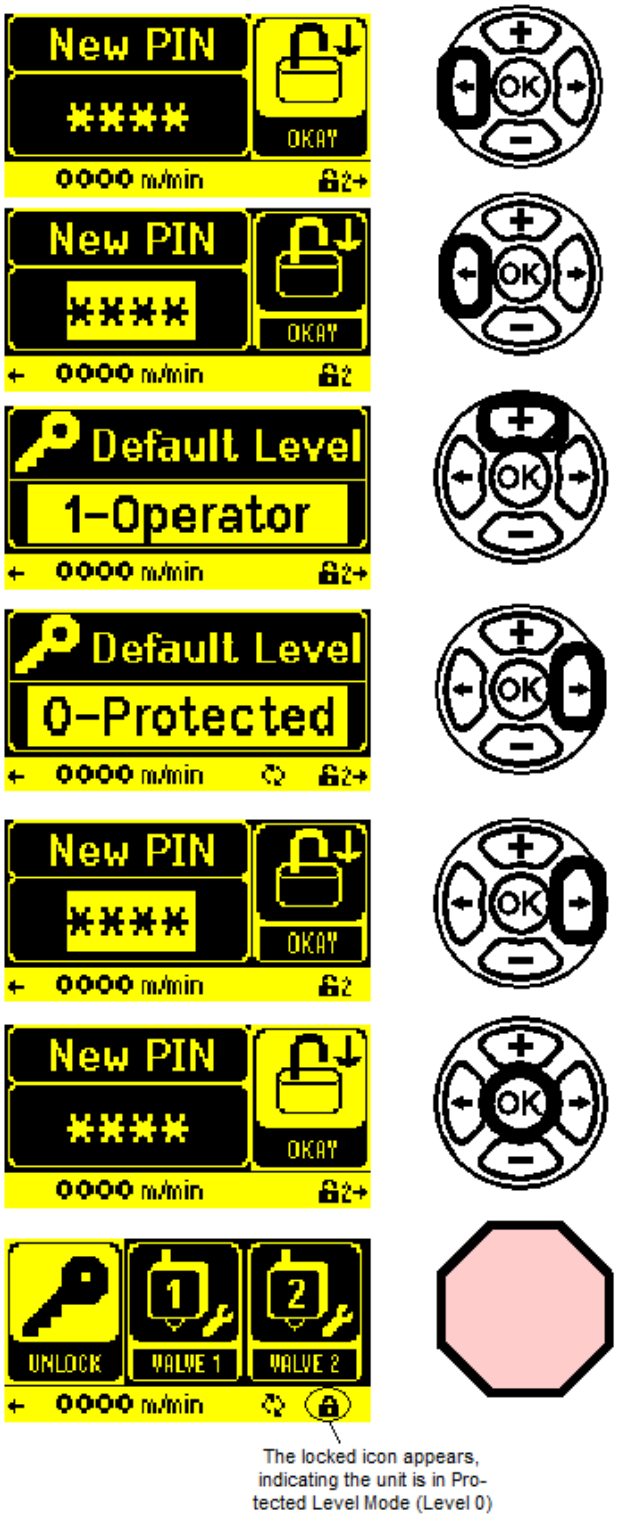
Protected Level Mode

The Protected Level Mode (Level 0) increases security by changing the Default Level of the unit from Level 1 to Level 0. This means that when the unit is turned on, it will automatically be in Level 0 instead of Level 1 (until the supervisor changes the Default Mode to Level 1). Only someone with the Level 2 password can change the Default Level of the unit.

To change the Default Level of the unit, do the following:



Protected Level Mode - Continued

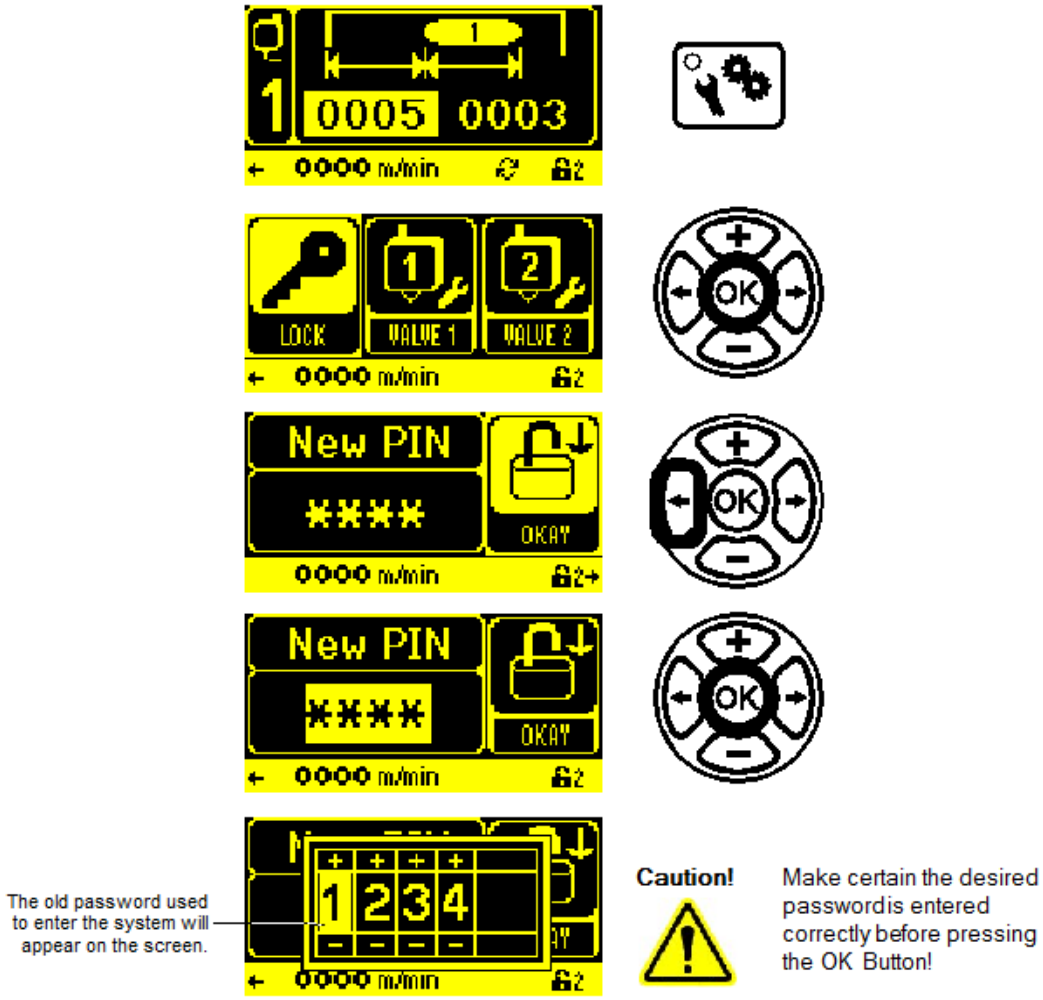


The locked icon appears, indicating the unit is in Protected Level Mode (Level 0)

Change the Level 2 Default Password

The Level 2 Default Password (1234) can be changed to a different numerical password containing four digits.

To change the Default Password for Level 2, do the following:



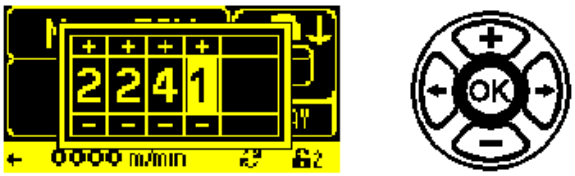
Use the Plus/Minus Buttons to increase/decrease the numbers and the Left/Right Arrow Buttons to move from digit to digit.

> To cancel without changing the password, be sure the current password showing is correct, and (only after this confirmation), press the OK Button.

Change the Level 2 Default Password – Continued

When the desired password is entered, press the OK Button to enter the new password.

> The following is an example only. The password can be changed to any four digit number desired.

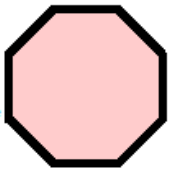


If the Default Level is set at Level 1, this screen appears.

OR

If the Default Level is set at Level 0, this screen appears.

The unit is now locked to the Set Default Level (see above). The new password saved for Level 2 access is required to unlock the system for Level 2 access (see the heading "Enter Password" in this section).



> If the new Level 2 password is forgotten, you may call Valco Cincinnati, Inc. Technical Service for assistance at (513) 874-6550.

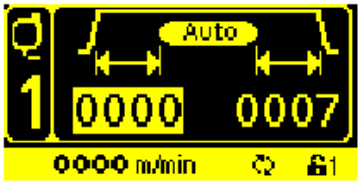
Configure the Valve/Channel Settings

The settings are preprogrammed for the specific application selected. It is best not to change any setting unless you are a trained technician and/or have assistance from a member of the Valco Technical Assistance Team.

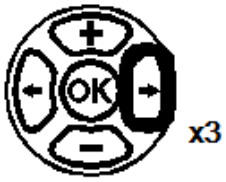
CAUTION!

Changing settings may bring unwanted consequences in the performance of your system. Valco Cincinnati, Inc. recommends having a qualified technician setup your system parameters. Otherwise, loss of production time may result from improper settings.

> All screens for configuring the valves/channels are available in all applications.



Compensation Time



On Compensation Time (Ton) - This is the amount of time (in milliseconds) from when the valve is activated to when the glue is applied. Increasing the "ON" Compensation Time will move the start of the pattern forward.

Off Compensation Time (Toff) - This is the amount of time (in milliseconds) from when the valve is turned off to when the adhesive application is stopped. Increasing the Off compensation time will make the glue line shorter.

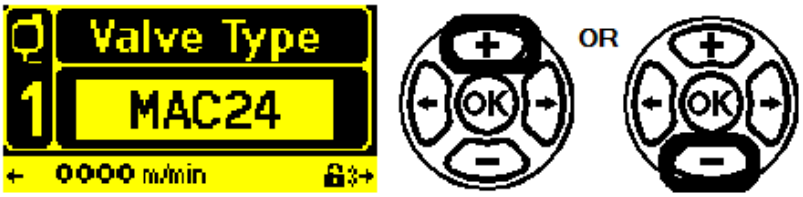
Minimum Compensation Time (Tmin) - This is the time the valve will be open, no matter what the pattern length, the machine speed, and the "OFF" Compensation Times are set at.

Speed Settings

V-min (Minimum Product Speed) -The minimum speed the machine must reach before glue is applied to the product.

V-jog (Jog Speed) - Between minimum speed and jog speed, a glue line will be separated into dots in order to make the glue volume even more precise.

Valve Type



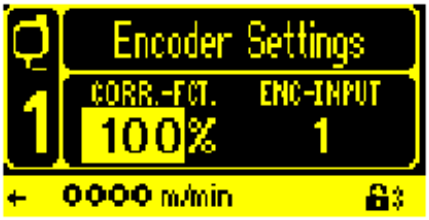
The Plus/Minus Buttons can be used to scroll through the different valve types available.

Scanner Settings

Minimum Product Length - The length of a product that is necessary to trigger a start signal. If there are tabs and/or dust causing false trigger signals, increase the Minimum Product Length.

Maximum Product Length - (Only active in Auto Glue) Determines the maximum pattern length in Auto Glue Mode. If this is set to “0” the function is disabled.

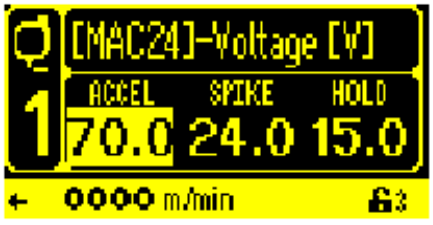
Encoder Settings



Correction Factor - The scaling factor used to adjust an individual/system ratio for the selected channel. This feature is used on right angle machines when the valves are mounted in sections that are running at different speeds. To be as precise as possible, the encoder should always be mounted in the section that is running the fastest.

Encoder Input - Use to choose a scanner (1 through 4) or the encoder Z pulse to trigger the selected channel.

Valve - Voltage Settings

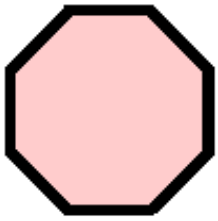


Acceleration Voltage - This is the voltage applied to the valve during the valve acceleration phase.

Spike Voltage - This is the voltage applied to the valve during the spike phase.

Hold Voltage Value - This is the voltage required to hold the valve after the Acceleration Phase and the Spike Phase.

Valve - Timing Settings

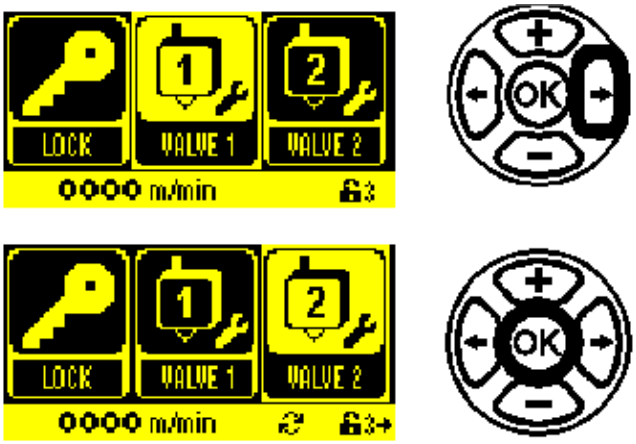


Acceleration Time - This time (in milliseconds) represents the length (duration) of the valve acceleration phase.

Spike Time - This time (in milliseconds) represents the duration of the spike phase.

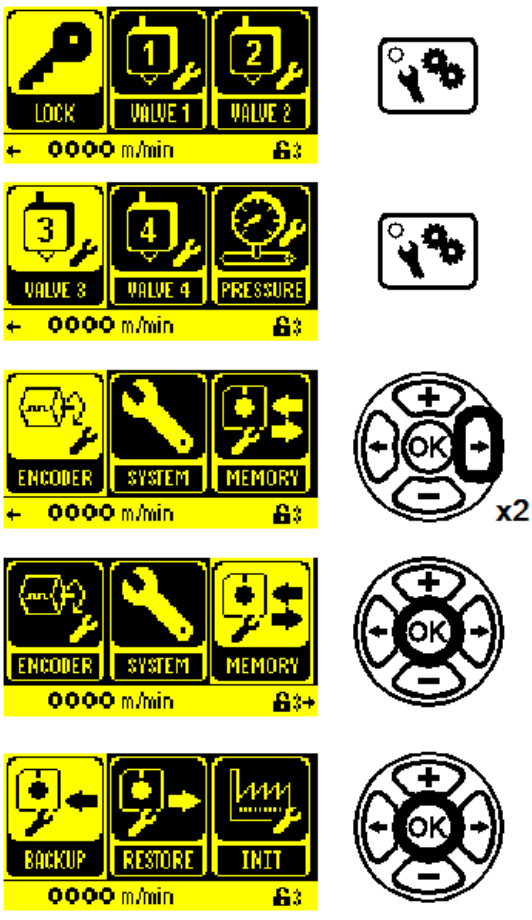
Boost Mode (On/Off) - To overcome problems when a valve sits idle for a long time under high pressure, the Boost Mode can be enabled for each individual valve (1-4). If the Boost Mode is enabled, it will become active when the machine is idle for a specified amount of time. Then, the standard valve parameters will be overwritten with higher values for a defined number of products.

Check Other Valves/Channels



Check valve/channel 2 settings. Repeat for all valves being used.

Memory (Backup)



Memory (Backup) - Continued

Backup - Saves all configuration settings into memory so they are not lost. The backup can be used to restore the system configuration, if necessary.

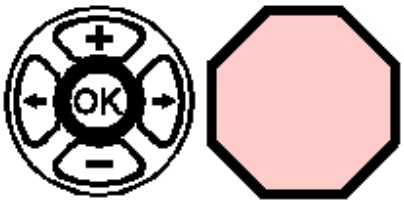
Press the Right Arrow Button to highlight “OK.”

Press the OK Button to save the configuration.

Restore

Restore - Restores all configuration settings from the last backup.

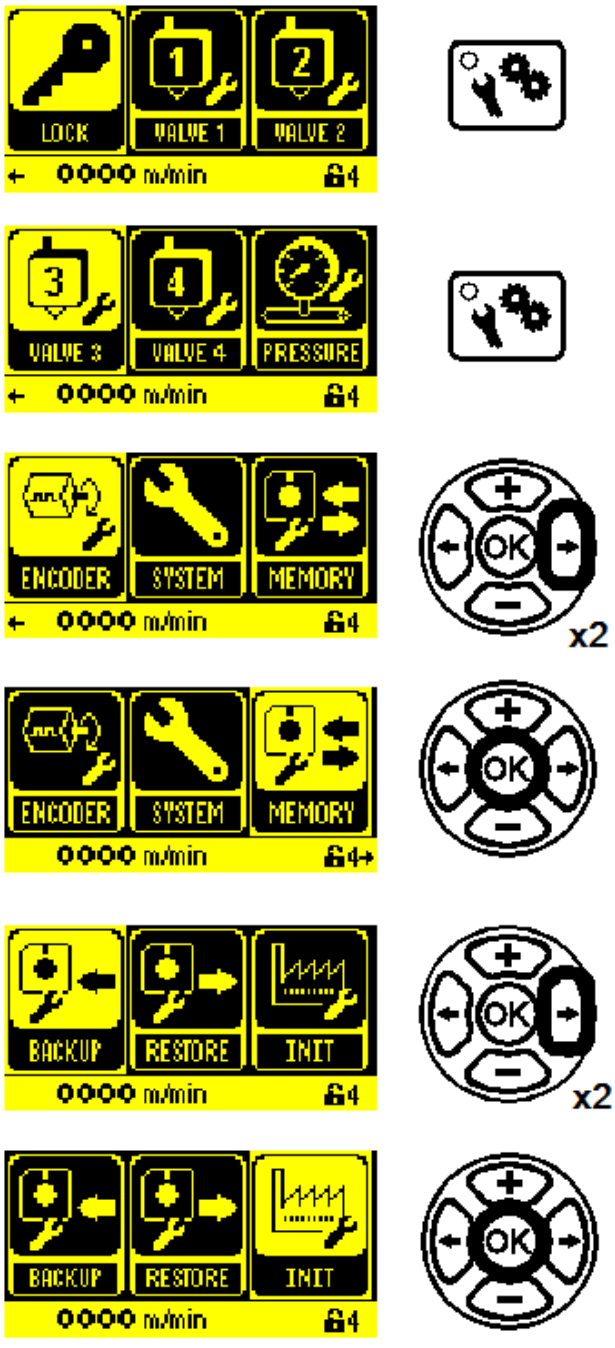
Press the Right Arrow Button to highlight “OK.”



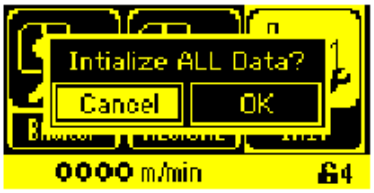
Press the OK Button to load the configuration.

Initialize Settings

The Initialize feature is only available for Level 4 Programmers. Initialization will clear all settings back to the factory defaults; all Job Files and Backup Configurations are lost. Valco Cincinnati, Inc. highly recommends that Initialization is only performed by an authorized Valco Cincinnati Service Technician/Programmer.



Initialize Settings - Continued



The Wizard appears for "first use set up" (see Section 4 - Programming).

Additional Setup Button Parameters

Some parameter screens that appeared in the “Wizard” may also appear in the Setup Button Menu.

Use the Plus/Minus Buttons to scroll through all available choices. Make sure the desired choice is highlighted on the screen before moving to the next parameter setting. To move though the parameter screens, use the Right/Left Buttons.

Language

(All Applications)

Language - Language is a global setting. This means that all screens will appear in the chosen language.

Jog Mode

(Corrugated, Folding Carton, and Others)

Jog Mode - Adhesive will be applied in a “dot” pattern when the machine is running below a certain speed. Enabling jog mode allows Jog Mode Setup Menus to appear during setup (see Section 5 - Operation).

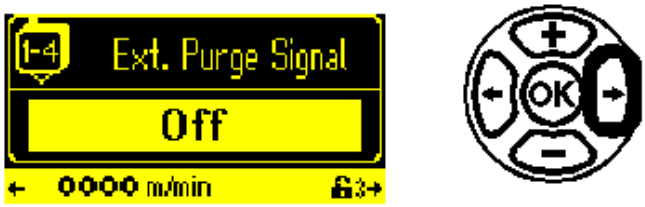
Batch Counter

(All Applications)

Batch Counter must be enabled in this menu (Pattern Menu) so individual Batch Count Menus will appear during setup (see Section 5 - Operation).

External Purge Signal

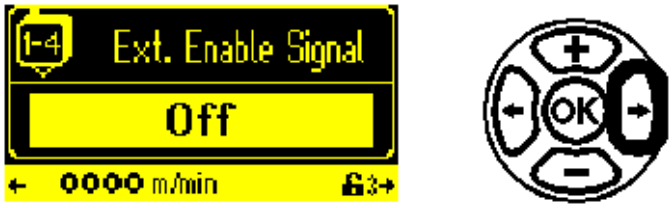
(All Applications)



External Purge Signal - This is a collective purge. When the External Purge Signal is on, scanner 3 cannot be used as a trigger input.

External Enable Signal

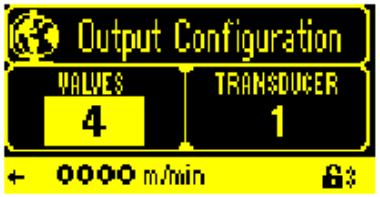
(All Applications)



External Enable Signal - (This was also known as “web break detection.”) When enabled, this function uses Scanner #4 to enable and disable gluing.

Output Configuration

(All Applications)

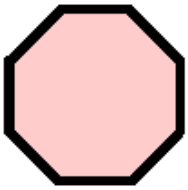


Output Configuration--Valves - Set the number of valves being used. Up to four valves (channels) are available.

Output Configuration--Transducer - Set the number of transducers being used. Up to two are available.

Menu Configuration

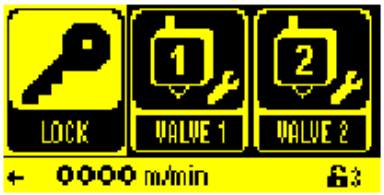
(All Applications)



Menu Configuration--Maximum Patterns - Set the number of patterns being used. Up to ten patterns are available.

Menu Configuration--Maximum Pressure Points - Set the number of pressure points being used, from two to four.

Encoder Menu Screen



Ratio Compensation

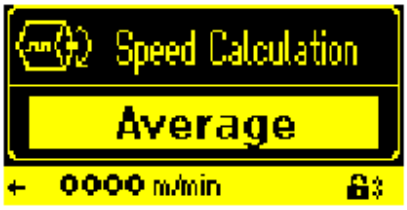
Ratio Compensation Pulses/Repeat Length - The scaling factors used to calculate the correction factor.

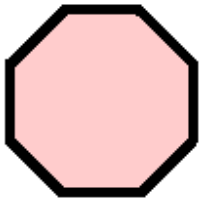
If the encoder type “Others” is entered in the Initial Setup (Wizard), it is necessary to input the encoder parameters on this screen. The following tables may be helpful:

Red Encoder Wheel		
Pulses	**Setup**	**Circumference**
1000	Metric	250 mm
	Imperial	9.84 inches
500	Metric	250 mm
	Imperial	9.84 inches
250	Metric	250 mm
	Imperial	9.84 inches

Black Encoder Wheel		
Pulses	**Setup**	**Circumference**
1000	Metric	254 mm
	Imperial	10.0 inches
500	Metric	254 mm
	Imperial	10.0 inches
250	Metric	254 mm
	Imperial	10.0 inches

Speed Calculation





Speed Calculation Immediate/Average - “Average” is the default setting and will work for the majority of jobs. However, if an immediate reaction to a change of the encoder speed is needed, the setting should be changed to “Immediate.”

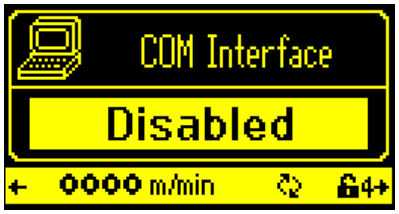
COM Interface Option

> This function is an optional feature, and is not included in the standard control unit.

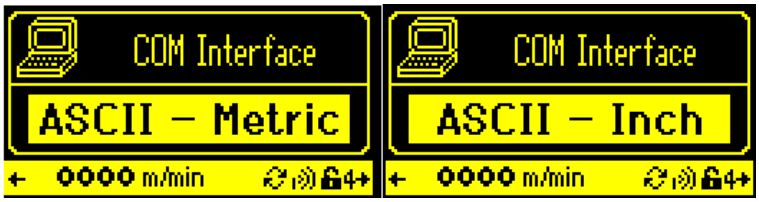
Enable the interface

1. Select 'System Setup' menu, and press OK.

2. Scroll left to get to the 'COM Interface.'



3. Based on how the data is sent, select 'ASCII -Metric' or 'ASCII -Inch'.



Status Bar

Communication status is shown in the bottom right corner of the status bar:

The icon above indicates that the last transmission was successful. If a '!' is displayed, the interface has not yet received data, or the last transmission had errors.

Section 5 - Operation

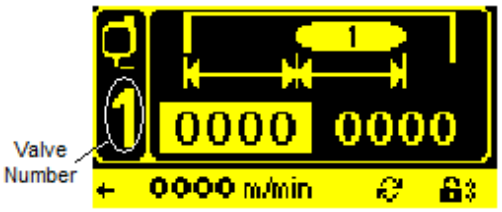
Set the Pattern Menu Information

After completing the mounting and the programming of the MCP-4 Unit, the unit is ready to operate. The first task is to input all pattern data and other essential information. Many of the options are “enabled” in the Setup Menu (see Section 4 - Programming). If you do not see a particular setting you need, be sure to check the programming parameters that were set in Section 4 of this manual--the desired option may not be enabled, and that option’s menu screens are hidden.

To edit the highlighted value, press the OK Button for the thumbwheel or press the Plus/Minus Buttons for single digit editing (see Section 4 - Programming, “Thumbwheel vs. Single Digit Edit”).

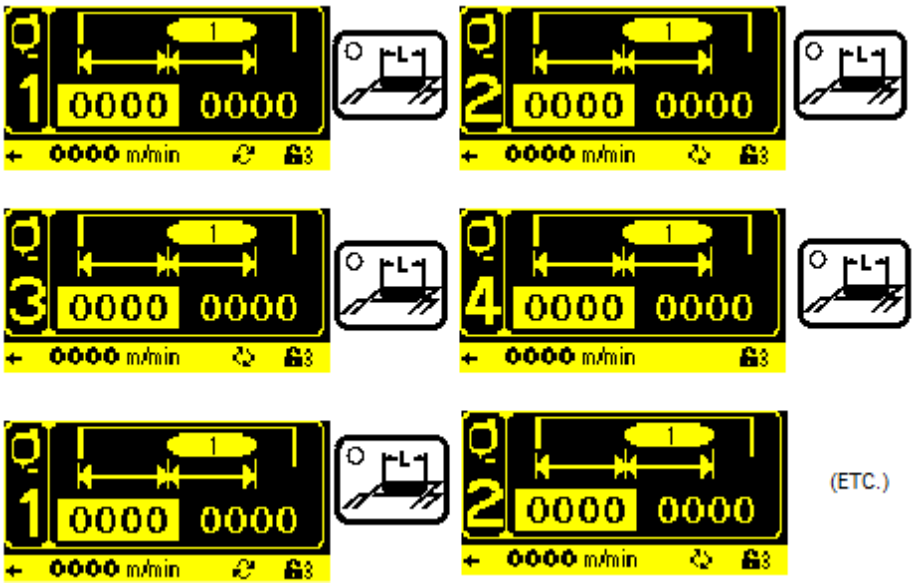
The default screen always shows valve 1. Before entering any data, it is advisable to check the left side of the screen for the valve number. Make certain the desired valve number appears before entering data.

> Depending on the password level, some screens may not be seen and/or available. This is a security feature of the MCP-4.

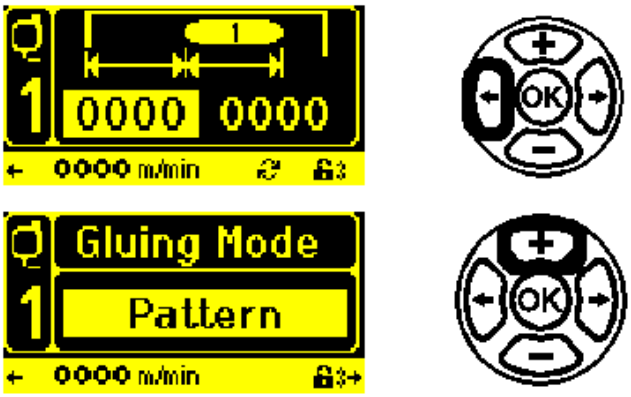


Scrolling Through Valve Numbers with the Pattern Button

Each press of the Pattern Button will increase the valve number by one. When valve 4 is reached, the valve numbers restart at valve 1. For example:



Gluing Mode



Glue Mode - The gluing style. Use the Plus/Minus Buttons to scroll through the choices. These are (depending on the application chosen):

1. **Pattern -** Adhesive is applied in a pattern on each product.

> The Pattern Glue Mode is available in the following applications: Corrugated, Folding Carton, Envelope, Timer, Core Winding, and Others.

2. **Stitch -** Applies adhesive in a stitch-like pattern.

> The **Stitch** Glue Mode is available in the following applications: Folding Carton, Envelope, and Others.

3. **Continuous -** Applies adhesive continuously when speed is higher than the Vmin setting.

> The Continuous Glue Mode is available in the following applications: Others.

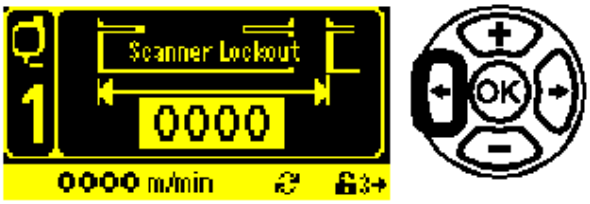
Gluing Mode - Continued

Auto Glue - Applies a strip of adhesive based on the length of the scanner signal. Input the start delay (length from the leading edge of the product to the beginning of the glue line) and the end delay (the end of the glue line to the trailing edge of the product).

> The **Auto Glue** Glue Mode is available in the following applications: Corrugated, Folding Carton, Packaging, and Others.

Scanner Lockout

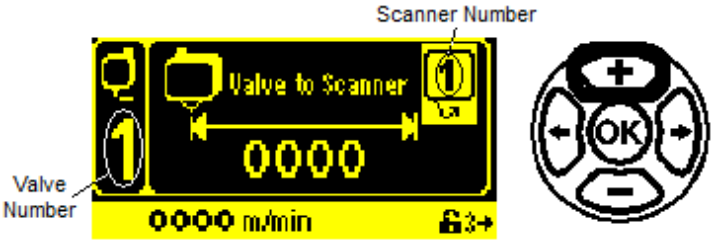
(Available in Corrugated, Folding Carton, Envelope, Packaging, Timer, Core Winding, and Others)



Scanner Lockout - Enter a product length to act as a scanner lockout when holes, writing, or other items produce a false trigger by the scanner.

Valve to Scanner Distance

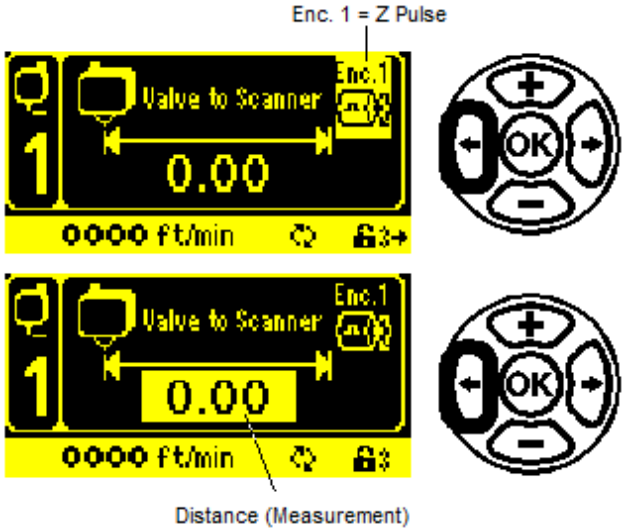
(All Applications)



Valve to Scanner Distance - Scanner Number - The number of the assigned scanner.

Scanner Number/Z Pulse

To choose a scanner or the Z Pulse, press the Plus Button until the desired scanner number or Z Pulse shows in the upper right corner of the screen.



Valve to Scanner Distance - Measurement - The distance between the valve (shown on the left of the screen) to the scanner number shown in the upper right corner (see “Valve to Scanner Distance - Scanner Number” above).

Jog Mode Parameter

(Available in Corrugated, Folding Carton, Envelope, Packaging, Core Winding, and Others)

The Jog Mode Parameter is only available when Jog Mode is enabled.

Jog Mode--On/Off - Turn the jog mode on and off with the “switch” using the Plus/Minus Buttons.

Jog Gap Distance - This is the distance between the glue dots while the machine is running below the jogging speed threshold. Increase the distance to decrease the glue volume.

Jog Mode--Dot - The size of the dots of adhesive, from 1 (smallest) to 9 (largest).

Batch Counter

(All Applications)

Batch Counter must be enabled under the Setup Menu (see Section 4 - Programming).

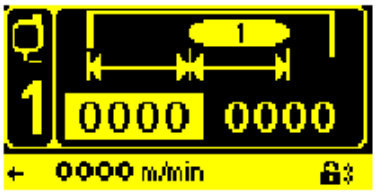
Batch Counter--On/Off - Turn the batch counter on and off with the “switch” using the Plus/Minus Buttons.

Batch Counter--Skip - The total number of products for which the pattern will be skipped (no adhesive will be applied).

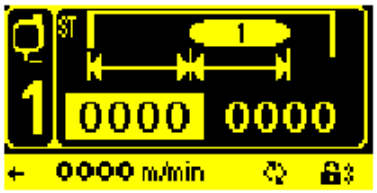
Batch Counter--Glue - The total number of products the adhesive pattern will be applied to, one after the other without skipping any products.

Input Values/Gluing Mode

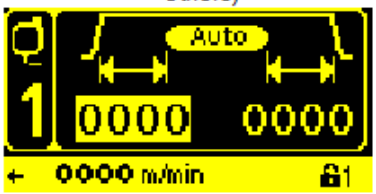
Depending on the application and the gluing mode chosen, input your values:



Pattern Mode
(Corrugated, Folding Carton, Envelope, Timer, Core Winding, and Others)



Stitch
(Folding Carton, Envelope, and Others)



Auto Glue
(Corrugated, Folding Carton, Packaging, and Others)

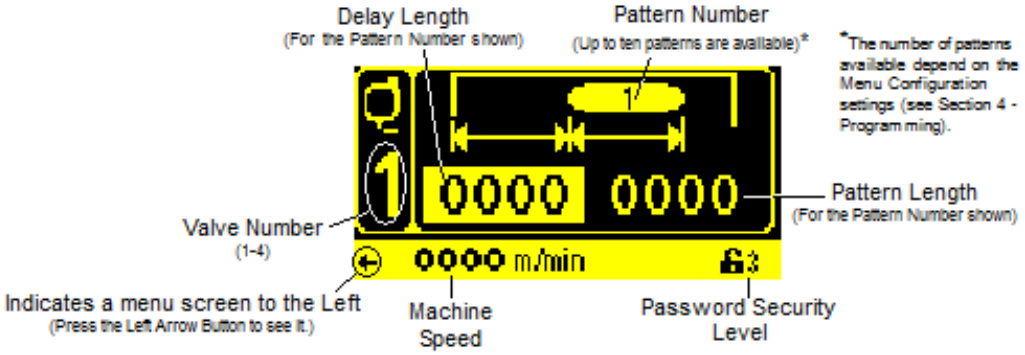
Continuous
(Others)

The screens above are unique to each gluing mode. Each screen is designed to show comprehensive information at a glance. The following subsection “Glue Mode Screen Information” explains how.

Glue Mode Screen Information

Pattern Mode

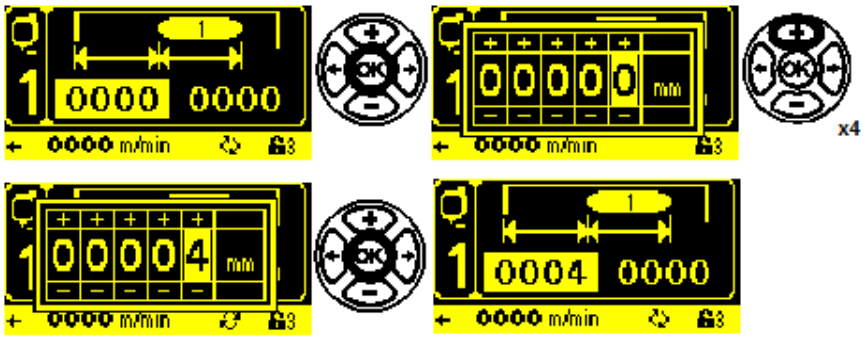
The Pattern Glue Mode can also be called “pattern-skip-pattern” mode or “normal mode.”



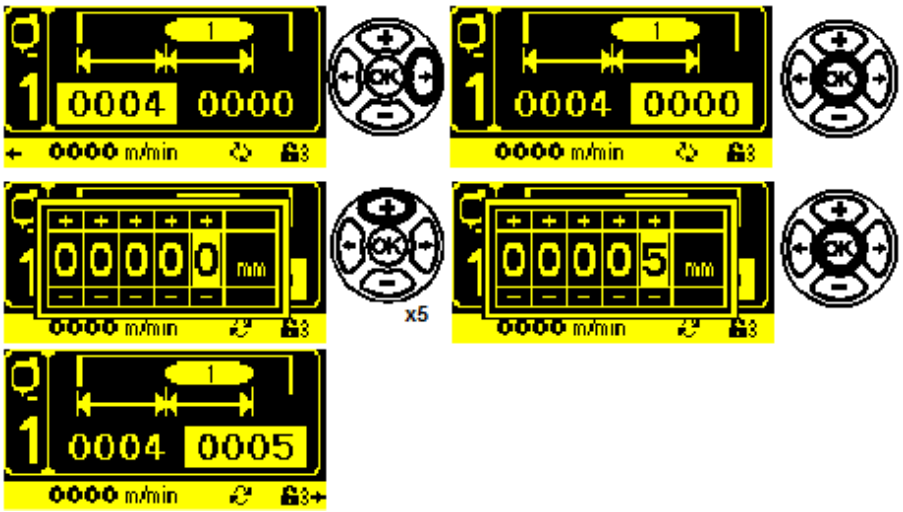
The following is an example of setting up a pattern gluing mode with three patterns for valve one:

1. Set the Delay Length for pattern 1. The Delay Length for pattern 1 is the measurement from the first edge of the product to where you want the first glue line to start.

Pattern Mode - Example

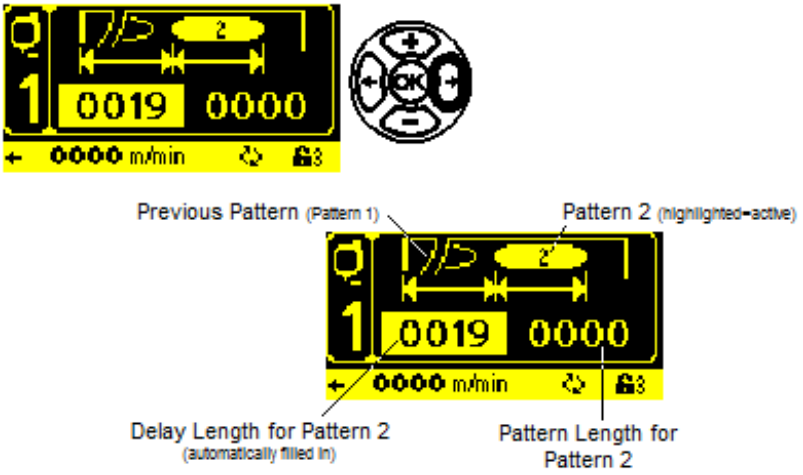


2. Press the Right Arrow Button to view the Pattern Length for pattern 1. The Pattern Length is the length of the glue line (for the pattern number indicated). Press the OK Button to view the thumbwheel, and use the Plus/Minus Buttons to change. Press the OK Button to enter the setting.

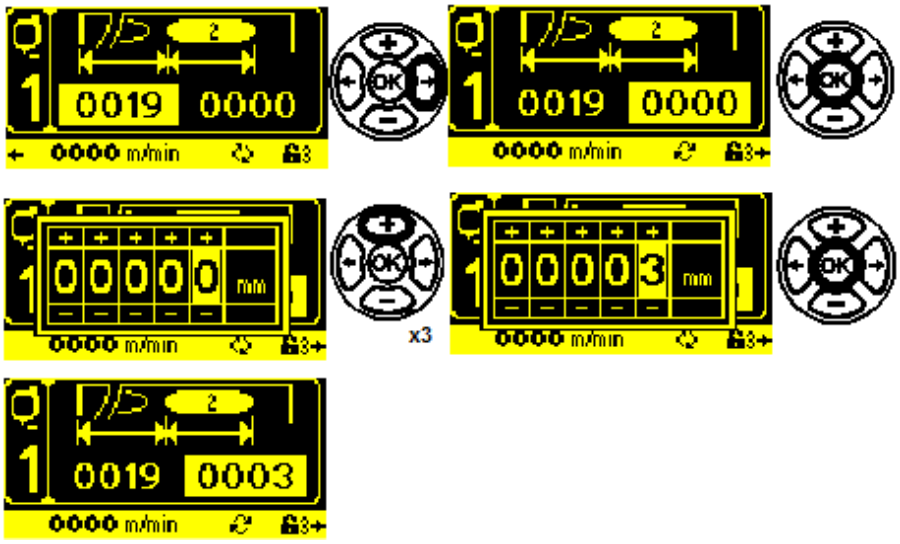


Pattern Mode - Example - Continued

3. Press the Right Arrow Button to view the Delay Length for pattern 2. The control automatically fills in the Delay Length for pattern 2 (so the next pattern does not interfere with the previous pattern). This number can be adjusted if desired.



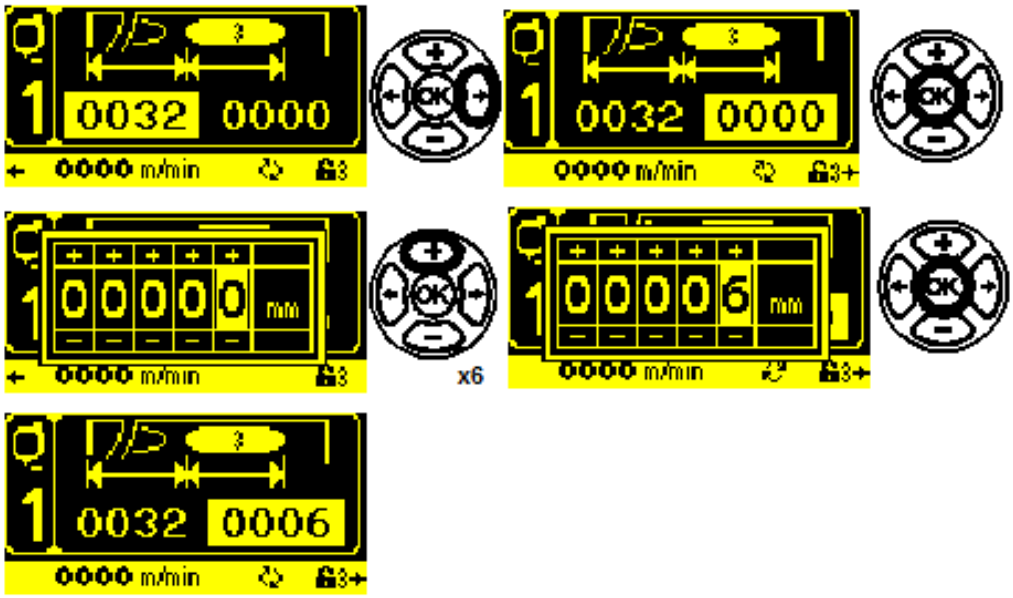
4. Press the Right Arrow Button to view the Pattern Length for pattern 2. Press the OK Button to view the thumbwheel, and use the Plus/Minus Buttons to change. Press the OK Button to enter the setting.



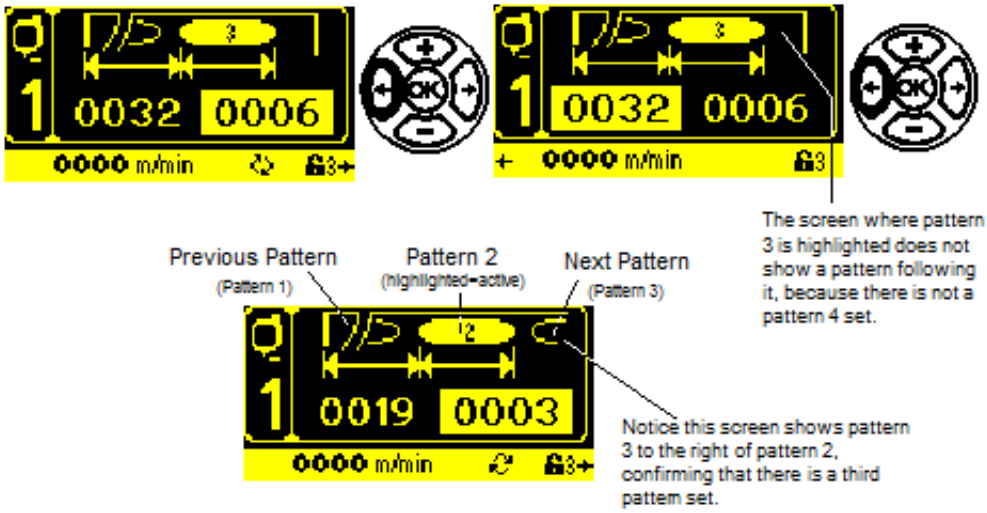
5. Press the Right Arrow Button to view the Delay Length for pattern 3.

Pattern Mode - Example - Continued

6. If the Delay Length is acceptable, press the Right Arrow Button to view the Pattern Length for pattern 3. Press the OK Button to view the thumbwheel, and use the Plus/Minus Buttons to change. Press the OK Button to enter the setting.



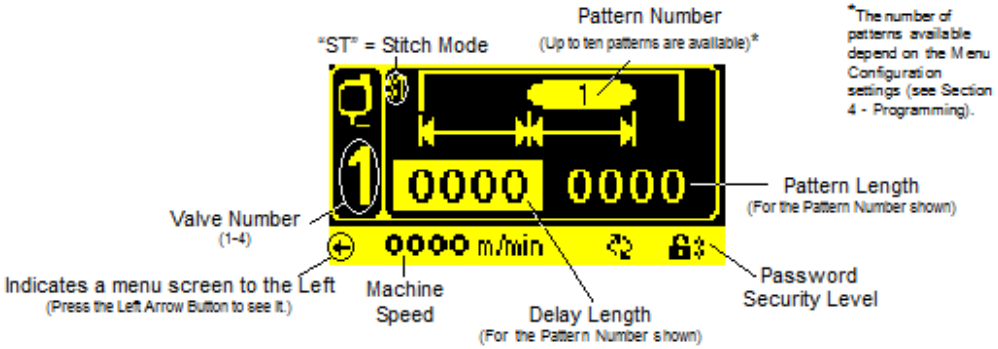
7. All three patterns are now set. To review them, use the Left Arrow Button.



8. Use the Left and Right Arrow Buttons to review all information as desired. All three patterns have been set and the Pattern Glue Mode for Valve 1 is now ready.

Stitch Mode

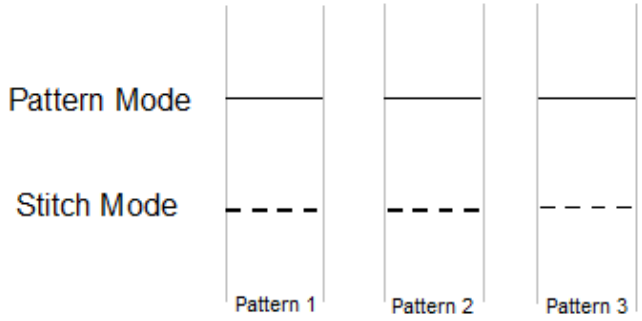
Stitch Mode is very similar to Pattern Mode, with the exception that the glue “patterns” are applied in a stitch-like pattern.



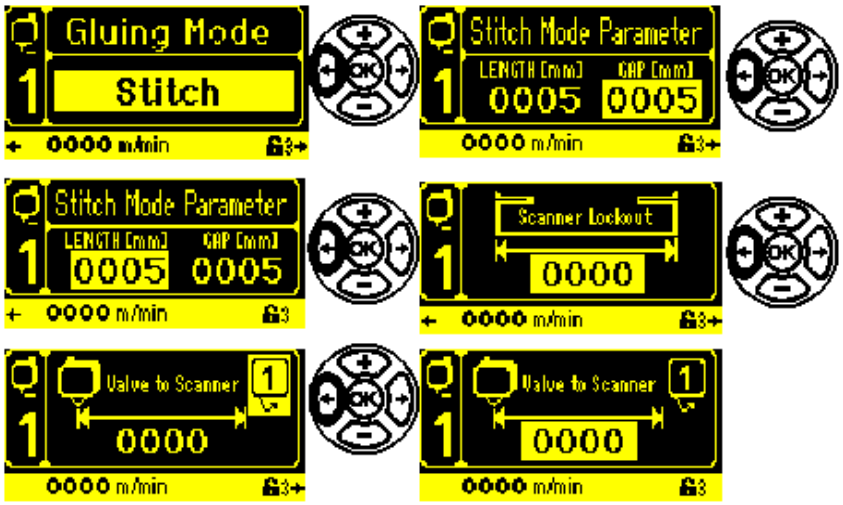
Setting the patterns for Stitch Mode is very similar to setting the patterns for Pattern Mode.

The difference between Pattern Mode and Stitch Mode is the application of the glue. The Pattern Mode applies a continuous strip of glue for the pattern length specified. The Stitch Mode applies the glue in a stitch pattern for the pattern length specified. To illustrate:

The length of patterns 1, 2, and 3 are all 5 mm for both glue modes.

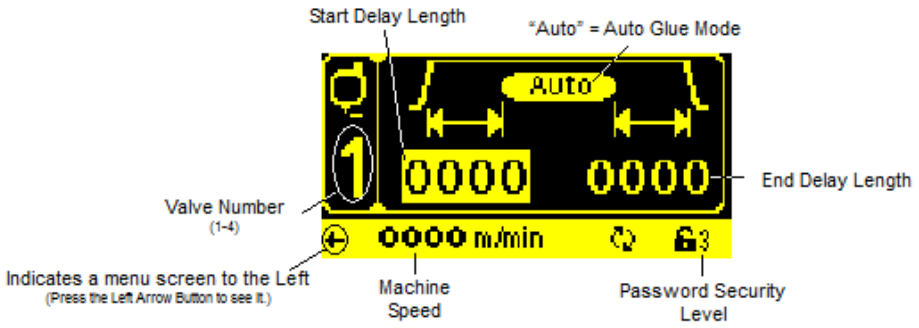


Stitch Mode Menus

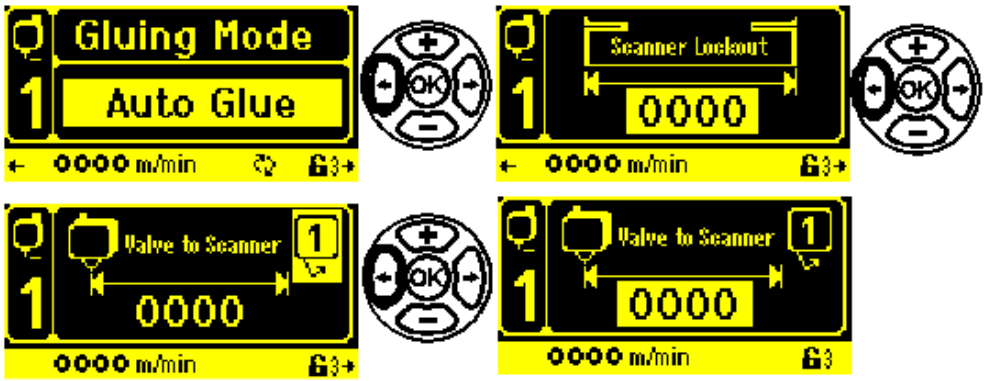


Auto Glue Mode

In Auto Glue Mode, one Start Delay Length (the length from the leading edge of the product to the beginning of the glue line) and one End Delay Length (the end of the glue line to the trailing edge of the product) are entered. The glue is applied automatically based on the length of the scanner signal.

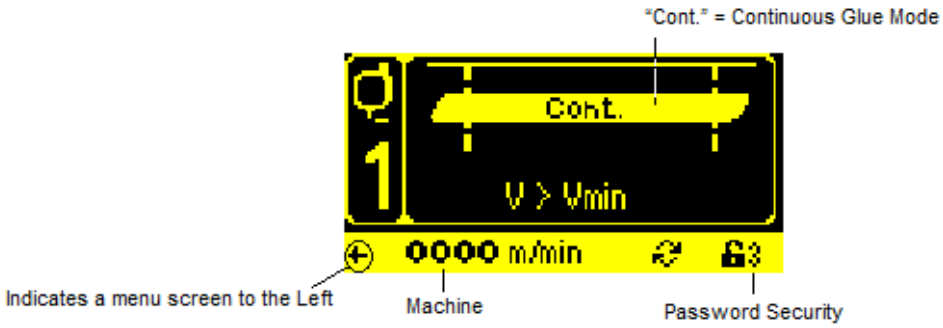


Auto Glue Mode Menus

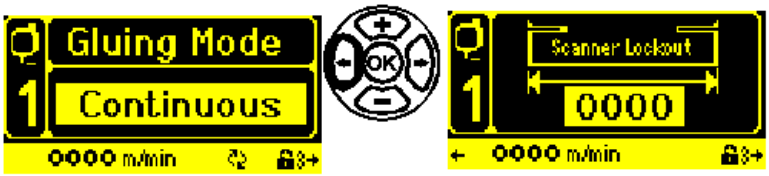


Continuous Glue Mode

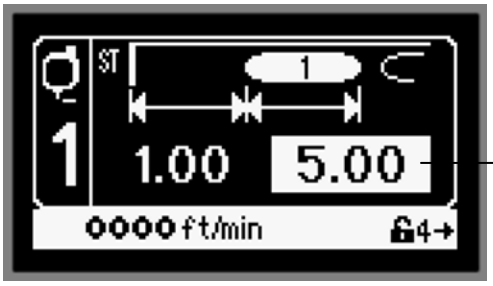
In Continuous Glue Mode, the glue will flow continuously as long as the speed is greater than Vmin.



Continuous Glue Mode Menus



Glue Pattern Length Range



When adjusting the glue pattern length, the limits are:

Minimum Length: 0” (0mm)

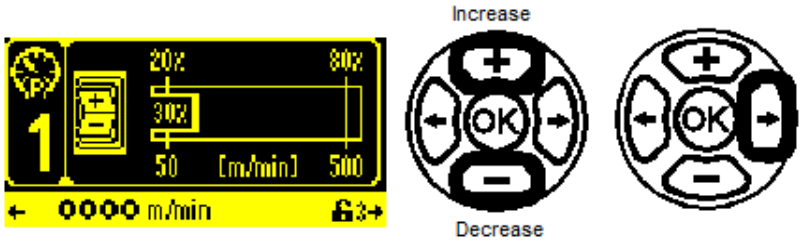
Maximum Length: 258.01” (6554mm)

Set the Pressures

The Pressure Button is used to enter/change the Electronic Pressure Control (EPC) parameter values.

Pressure Offset Value

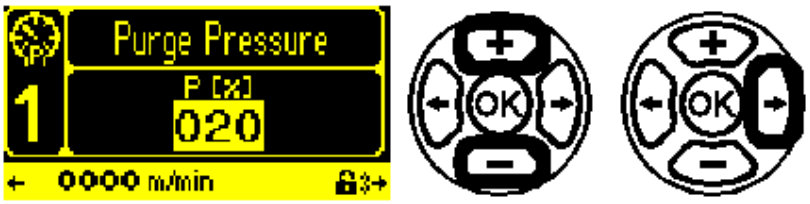
(All Applications)



Pressure Offset Value - Used to increase/decrease the current pressure. The Pressure Offset is used to do minor pressure adjustments instantly. It does not change the pressure table profile.

Purge Pressure %

(All Applications)

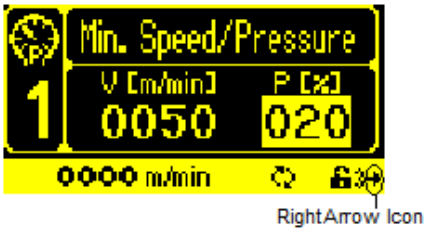


Purge Pressure - The pressure setting when the machine is at zero speed.

> The number on the left side of the pressure screen refers to the EPC number (two EPCs are available on some models of the MCP-4 Control Unit. See the Parts List Section for details). The second EPC is the 0-10 Volt output for speed tracking. Both EPCs are programmed in the same way; just be certain the desired EPC number appears on the screen before programming. To switch between EPCs, press the Pressure Button until the desired EPC number appears.

Minimum Speed/Pressure

(All Applications)



V (m/min) - The machine speed.

P (%) - The percent of pressure.

> Press the Left/Right Buttons as indicated by Left/Right Arrow Icons on the bottom of the screen (see example at left) to see all available pressure setting menus.

Maximum Speed/Pressure

(All Applications)

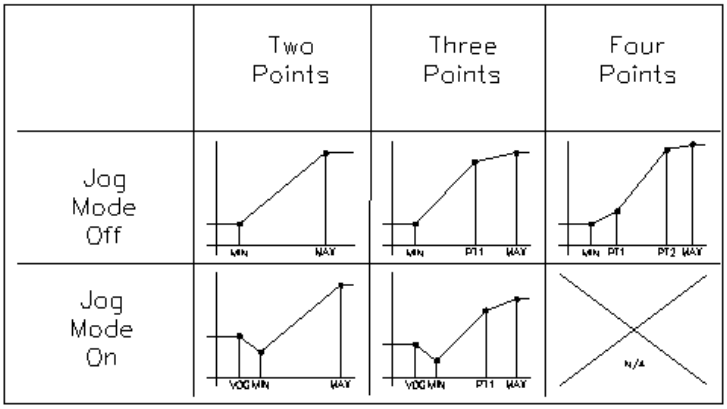
When one/two pressure points are enabled, the two screens will be named “PT1” and “PT2” respectively. These pressure points are set up just like the Maximum and Minimum Pressures.

> The number of pressure points on the pressure curve are input during setup. See Section 4 - Programming, “Additional Setup Button Parameters” - “Menu Configuration”

Pressure Point 1 (PT1)

Pressure Point 2 (PT2)

Speed/Pressure Graphs - Examples



The graph above illustrates two, three, and four points on the pressure curve with Jog Mode off and on. The majority of projects will be fine with the Jog Mode off and only two points on the pressure curve. If more control is necessary, try adjusting the number of points on the pressure curve. Also see the tips below.

Helpful Hints about Pressures

The four pressures/speeds are dependent upon each other. For example, the first speed setting can never be greater than the second speed setting, and the second speed setting can never be greater than the third, and so on. Also, the second speed setting can never be less than the first speed setting, the third speed setting can never be less than the second speed setting, and so on. Therefore, if you cannot set speeds to where you want them (the Plus/Minus Arrow Buttons will not increase or decrease the setting), check all four of the settings. Use the Left Arrow and Right Arrow Buttons to move through all pressures/speeds and check them. Reset them as necessary using the Plus/Minus Arrow Buttons. You can also go back to factory defaults by pressing the Erase Button until the setting will no longer change.

Diagnostic Button

(All Applications)

Total Products/Products per Hour

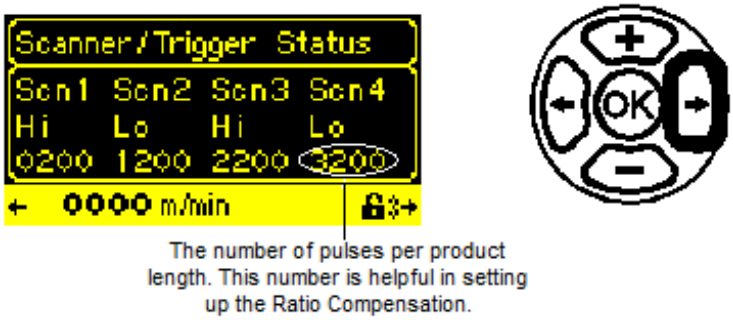
The first diagnostic screen shows the total number of products and the number of products per hour. The total number of products count can be reset to zero by pressing the Erase Button.

Valve Status

The second diagnostic screen shows the valve status. The top numbers show the valve type. The bottom numbers will switch back and forth from showing the valve voltage to showing the valve status (enabled or disabled).

> A voltage reading of 0.0 could indicate a blown fuse. See Section 8, Parts List, for fuse numbers and placement.

Scanner and Trigger Status



The scanner/trigger information screen displays the scanner and trigger settings.

Version Information

The version information screen displays the CPU, the Logic (PLD), and the Timer (TPU) software version information.

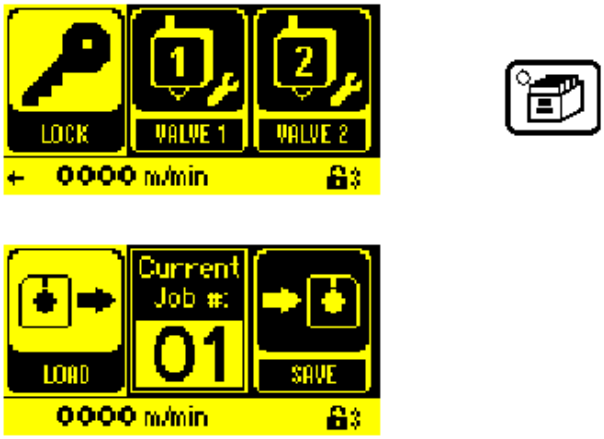
Event History

The event history screen displays error messages.

Job Button

(All Applications)

The Job Save/Recall Mode allows the MCP-4 Control Unit to save and recall up to 100 different jobs for fast programming.



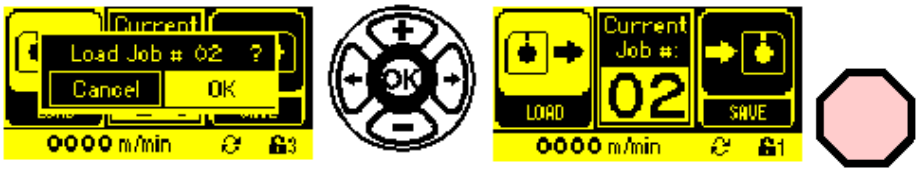
Load - Load a previously saved job.

Load a Job

Any level (including 0) can load a job.

When “Load” is highlighted, press the OK Button to enter a job number. Use the Plus/Minus Buttons to change the job number.

When the desired job number has been entered, press the Right Arrow Button to highlight “OK” and press the OK Button. The job is loaded.

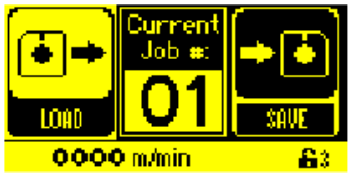


Load a Job - Continued

> Enter the job number and information in a chart (see Appendix A - Job Charts) for quick job set up. Also, jobs can be overwritten, so it is important to keep track of them.

Save a Job

> Only password levels 2 or higher can save a job.

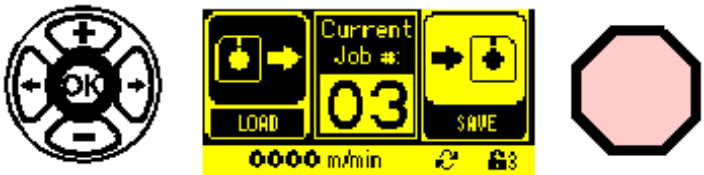


Save - Save all settings under a job number.

Press the Right Arrow Button to highlight “Save” and then press the OK Button.

Use the Plus/Minus Buttons to change the job number.

Press the Right Arrow Button to highlight “OK.” Press the OK Button to save the job. Be sure to write the job name and job number for reference (see Appendix A - Job Charts).



Section 6 - Maintenance

This section contains maintenance procedures for the Valco MCP-4 Control. A regular maintenance program helps ensure longer life and efficient operation of your system. A few minutes spent on maintenance greatly reduces downtime.

Purging the Adhesive

The system should be purged of air at every startup or shift change. To purge the system, follow these steps:

1. Install the applicator head onto the contact glue valve.
2. Purge adhesive until no air is present and the glue flows evenly.

> The glue valves can be purged manually using an activator located on the valve itself, by a solenoid-operated air valve, or they can be purged using the touchscreen panel and control.
>
> When using any valve in the top-down position for the first time, it might be necessary to remove the valve and hold it so that the applicator head is at the top. The fluid pressure should then be set to 4 bar, and the solenoid should be fired until all the air is out and a flow of glue is present.

Performing Downtime Maintenance

The type of downtime maintenance that is necessary for the MCP-4 Control Unit depends on the length of time the unit is down.

During short periods of downtime, such as order changeover, follow these steps:

1. Apply lithium grease or petroleum jelly to the orifice of the applicator head (contact extrusion valve) to prevent dried adhesive from clogging the valve.
2. Wipe the valve clean before restarting production.

For longer periods of downtime, follow these steps:

1. Remove the applicator head from the contact glue valve.
2. Install a stopper onto the contact glue valve in place of the applicator head.
3. Flush the applicator head with clean water.

If the system is idle for 30 days or longer, follow these steps:

1. Flush the entire glue supply system (including the pump or tank) with clean water (see Flushing the Glue System in this section).

Flushing the Glue System

To flush the glue system, follow these steps:

> Follow the procedures for your system. These are general guidelines only.

1. Turn on the tank and any hoses or valves that are to be cleaned.
2. Pump out the old hot-melt adhesive, and then fill the tank with hot-melt purge. Allow it to heat to at least 350 degrees F.

> If you use a glue that operates at 250 degrees F, the tank only needs to be heated to the standard operating temperature.

3. Once the tank is molten, turn on the pump and engage the valves.
4. Flow the old adhesive and purge through the valves until only purge is extruding from the valves. When you reach this point, turn the system power OFF and remove air from the pump.
5. Next, remove the lid cover screws on the surface of the melt unit. This allows you to remove the pump and heating grid from the tank itself.
6. Once the screws are removed, use gloves to lift the lid and pump assembly out of the molten tank.
7. Place the lid and pump assembly in a vertical position on a clean, solid, flat surface and allow the excessive adhesive to slowly drip off of the fins.
8. Take the pot, lifting from the edges, and pour the molten material into a sealed corrugated box.
9. Use a clean rag to wipe the tank clean thoroughly and dispose of the rag. Now, you can re-insert the lid and pump assembly into the pot and tighten the lid cover screws. This completes the “clean and flush” process.

Lubricating the System

To lubricate the system, follow these steps:

1. Use lithium grease on all machined threads and fittings when servicing the system.
2. Grease quick-disconnect fittings frequently to prevent dried glue from causing excessive wear.

Section 7 - Specifications

Item	MCP-4 Unit (074xx037 & 074xx038)	MCP-4P (074xx041)	MCP-4P (074xx040)	MCP-4F (074xx039)
Control dimensions:	**Height:** 4.33" (110 mm) **Depth:** 9.57" (243 mm) **Width:** 9.41" (239 mm) **Approximate weight:** 8.5 lbs. (3.86 kg)	**Height:** 9.66" (245 mm) **Depth:** 4.19" (106 mm) **Width:** 11.12" (282 mm) **Approximate weight:** 5.5 lbs. (2.49 kg)	**Height:** 9.66" (245 mm) **Depth:** 6.61" (168 mm) **Width:** 11.12" (282 mm) **Approximate weight:** 12.8 lbs. (5.81 kg)	**Height:** 9.66" (245 mm) **Depth:** 6.61" (168 mm) **Width:** 11.12" (282 mm) **Approximate weight:** 12.8 lbs. (5.81 kg)
Input voltage:	100/115/200/230 VAC, 50-60 Hz (field-selectable)	24VDC	100/115/200/230 VAC, 50-60 Hz (field-selectable)	100/115/200/230 VAC, 50-60 Hz (field-selectable)
IP Rating	IP40	IP54	IP54	IP54
Number of channels:	4-channel operation with up to 8 programmable patterns per channel			
Glue pattern resolution:	0.01 in. or 1 mm			
Minimum Glue Pattern Length	0" (0mm)			
Maximum Glue Pattern Length	258.01" (6554mm)			
Number of scanner inputs:	Up to 4 with scanner lockout			
Glue pattern tolerance:	Less than 1 mm (0.4 inches) at 610 m/min (2000 ft/min)			
Job storage memory:	100 jobs (C009 and above)			
Miscellaneous:	Encoder-based or timer mode Multi-valve, complex glue pattern capabilities "Continuous" and "Stitch" pattern gluing Adjustable minimum speed Inch or metric calibration CE compliant Password protection for key system parameters Integral fluid-flow control option (EPC) Web break detection option Batch count/production count Programmable valve output voltages depending upon base unit			

Section 8 - Part Number List

How to Order Parts

To order parts, please contact your closest Valco office by mail, phone, or Email:

USA

Valco Cincinnati, Inc.
411 Circle Freeway Drive
Cincinnati, OH 45246
TEL: (513) 874-6550
FAX: (513) 874-3612
Email: sales@valcomelton.com
Web: http://www.valcomelton.com

England

Valco Cincinnati Limited
Hortonwood 32
Telford, TFI 7YN, England
TEL: (+44) 1952-677911
FAX: (+44) 1952-677945
Email: sales@valco.co.uk
Web: http://www.valco.co.uk

Germany

alco Cincinnati GmbH
Bonnerstrasse 349
40589 Dusseldorf-Benrath, Germany
Tel: +49 211 984 798-0
Fax: +49 211 984 798-20

Spain

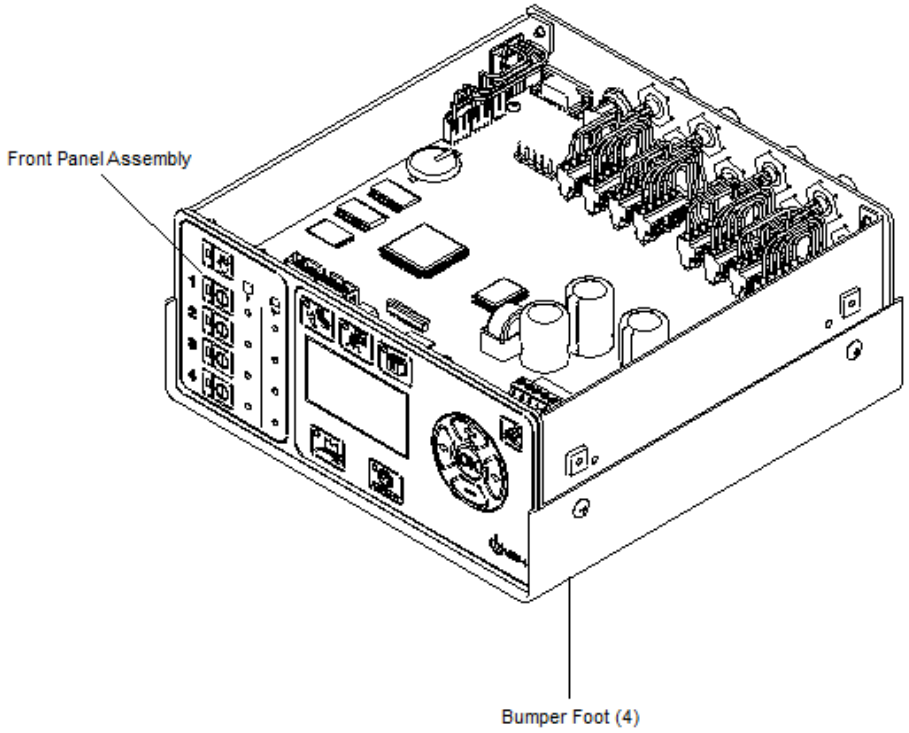
Melton S.L.U.
Pol. Industrial Agustinos
calle G, n. 34
31160 Orcoyen, Navarra, Spain
Tel: (34) 948-321-580
Fax: (34) 948-326-584

France

Valco Melton France
Technoparc des Hautes Faventines
32 Rue Jean Bertin
26000 Valence
Tel: +33 (0)4 75 78 13 73
Fax: +33 (0)4 75 55 74 20

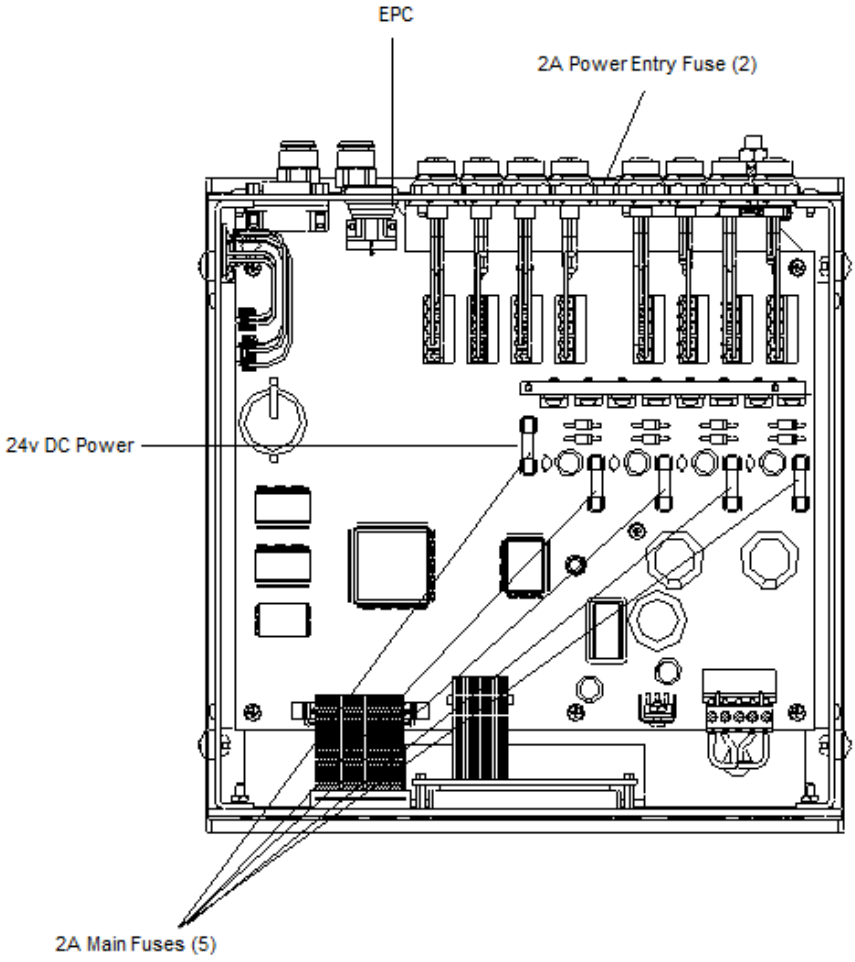
MCP-4 without EPC (074xx037)

Part Number	Description
137xx012	MCP-4 Front Panel Assembly
085xx017	Fuse, 2 Amp Slo/Blo, Power Entry
091xx274	Bumper Foot
085xx208	3.15A Mini Fuse, PCB Main Board (5 places)

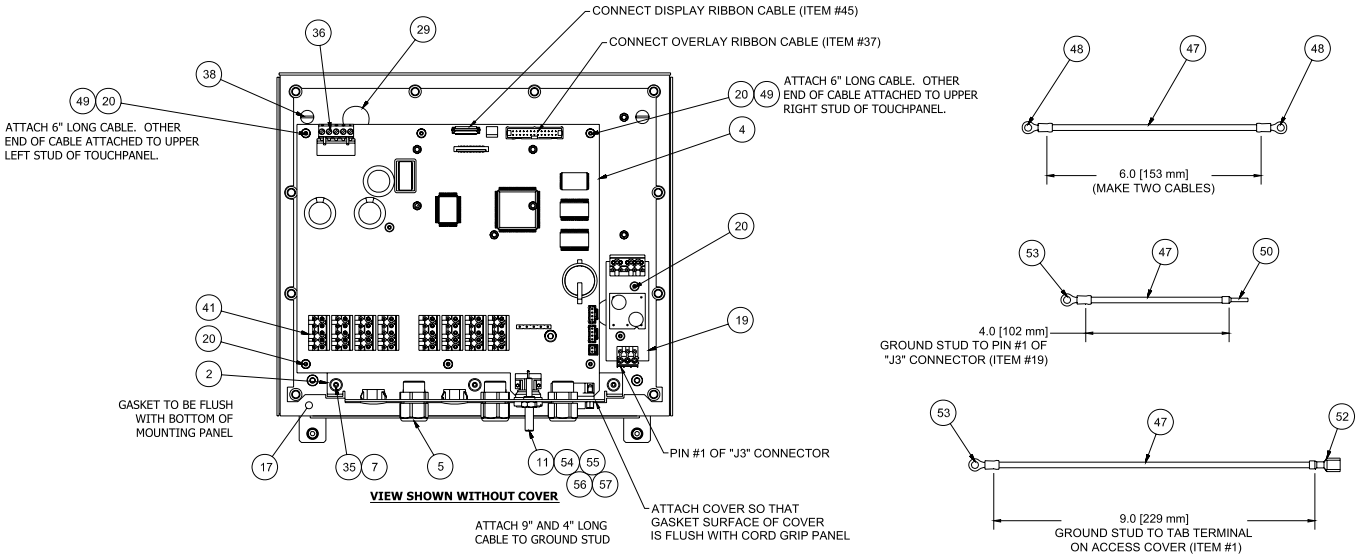


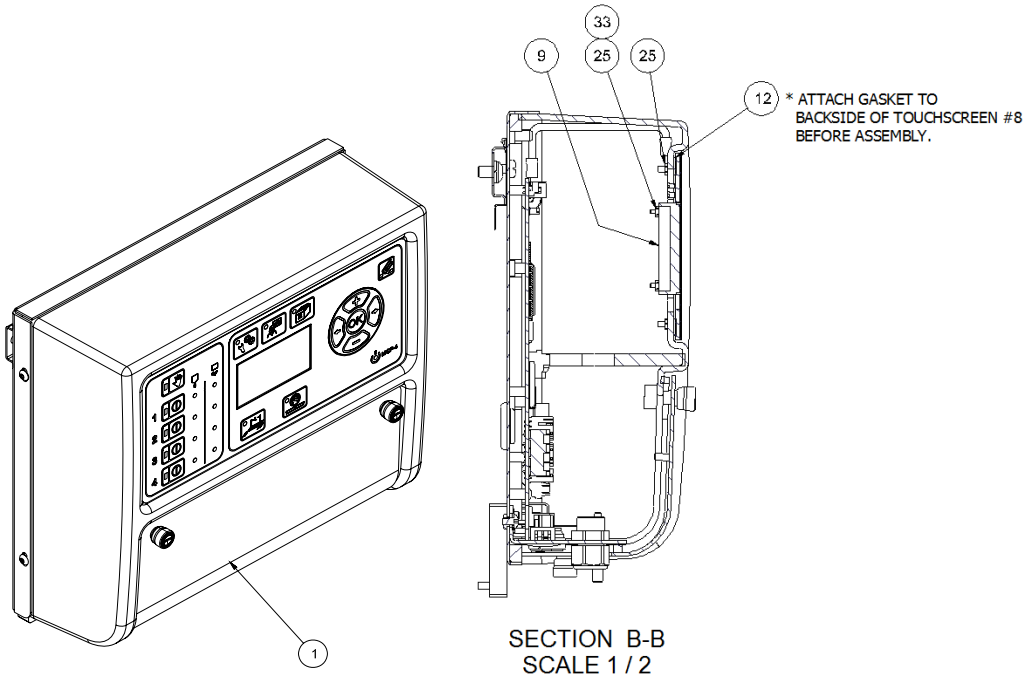
MCP-4 with EPC (074xx038)

Part Number	Description
137xx012	MCP-4 Front Panel Assembly
085xx017	Fuse, 2 Amp Slo/Blo, Power Entry
091xx274	Bumper Foot
085xx208	3.15A Mini Fuse, PCB Main Board (5 places)
753xx436	Manifold Assembly, MCP-4 0-10V

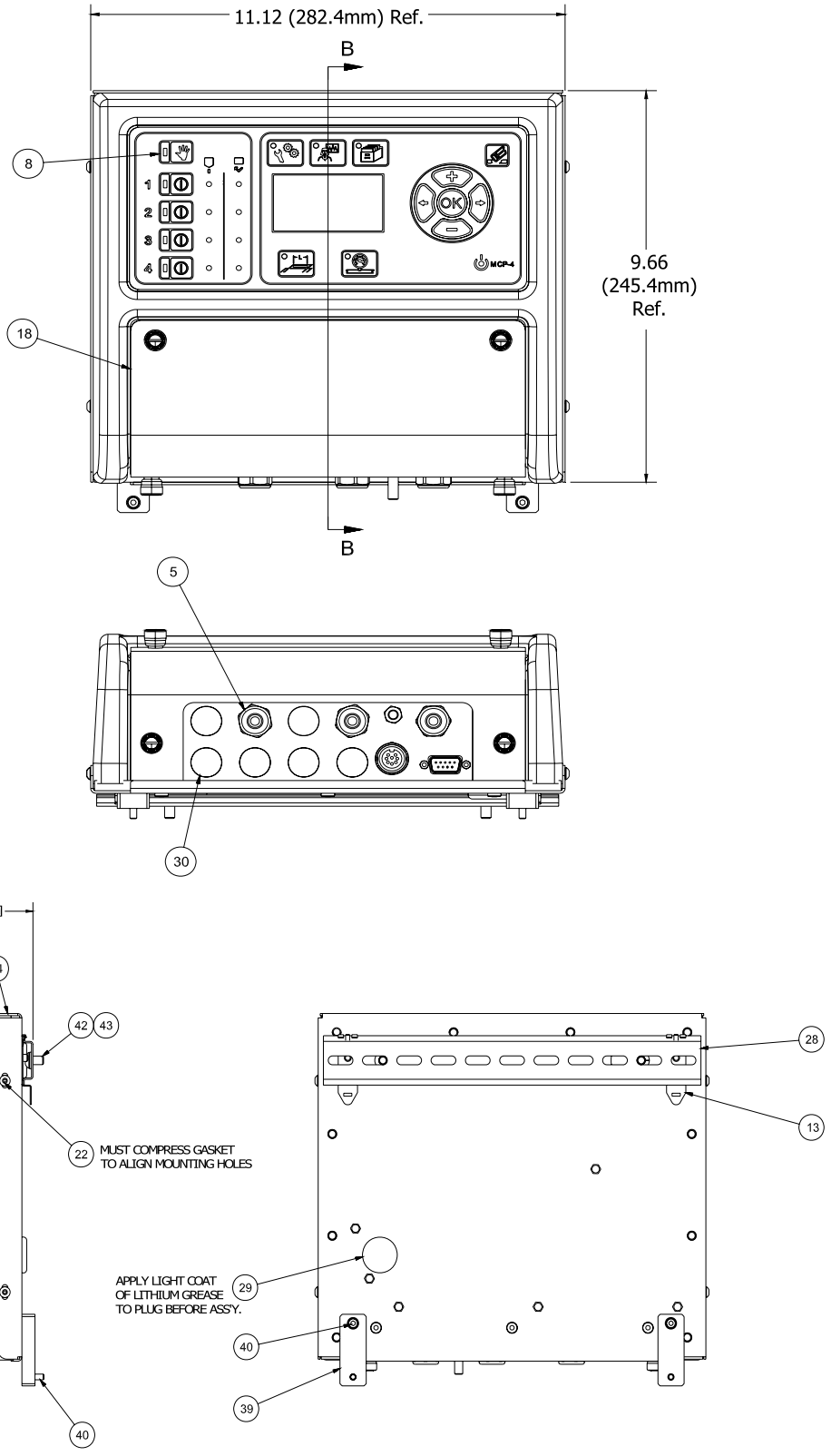


MCP-4P Unit - 24VDC (074xx041)





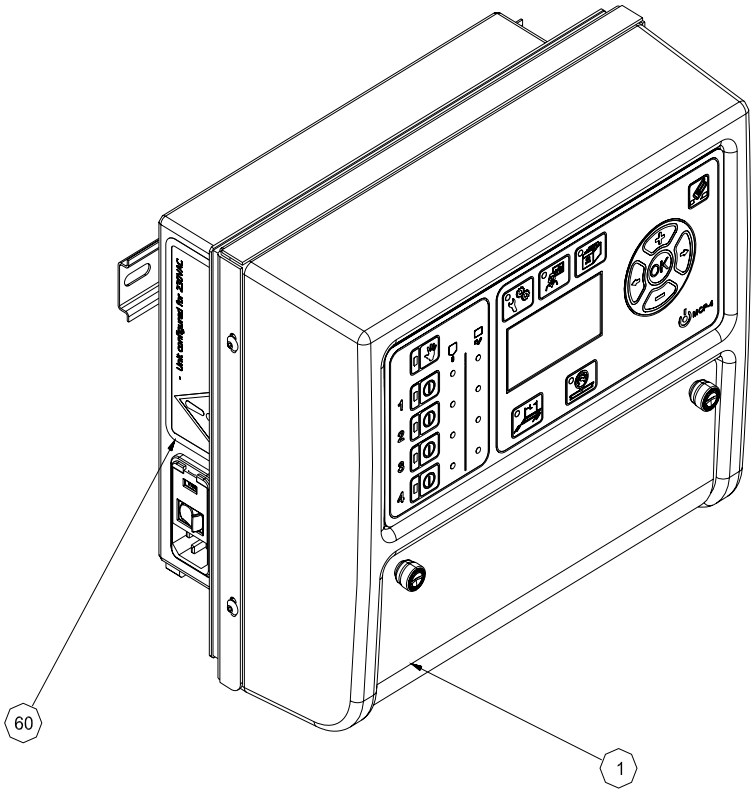
MCP-4P Unit - 24VDC (074xx041) - Continued



MCP-4P Unit - 24VDC (074xx041) - Continued

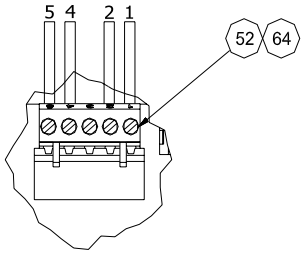
Item	Description	Part Number	Quantity
1	Access Cover	026xx178	1
2	Mounting panel	026xx177	1
4	PCB, Ext EPC, CAN	151xx625	1
5	Cord Grip	066xx160	9
7	Flat Washer	784xx435	3
8	Overlay	782xx127	1
9	Display, Yellow Graphic	137xx009	1
11	Stud	091xx519	1
12	Gasket	746xx145	1
13	Mounting Clip	782xx079	2
17	Gasket	746xx150	1
18	Gasket	746xx147	1
19	PCB assy, DC Filter	151xx599	1
20	Screw	784xx541	9
22	Screw	784xx575	4
23	Cover	026xx210	1
24	Baseplate, Mounting	026xx183	1
25	Nut	798xx489	9
28	Mounting Rail	582xx849	1
29	Plug	092xx019	2
30	Plug	092xx018	6
33	Spacer	091xx599	4
35	Screw	784xx985	3
36	Cable Assy	029xx367	1
37	Cable Assy	033xx164	1
38	Screw	784xx347	2
39	Mounting Foot	582xx848	2
40	Screw	784xx051	4
41	Connector	070xx566	8
42	Screw	784xx491	2
43	Split Lock Washer	784xx600	2
44	Installation Kit, MCP-4P 24VDC	091xx605	1
45	Cable	029xx407	1
46	Software	119xx207	1
47	Wire	540xx090	3
48	Wire Terminal	075xx073	4
49	Lock Washer	798xx774	2
50	Ferrule	075xx306	1
51	Terminal	091xx453	1
52	Wire Terminal	075xx078	1
53	Wire Terminal	075xx075	2
54	Lock Washer	784xx308	6
55	Hex Nut	798xx299	2
56	Lock Washer	784xx375	2
57	Nut	793xx491	1

MCP-4P Unit - 115/230VAC (074xx040)

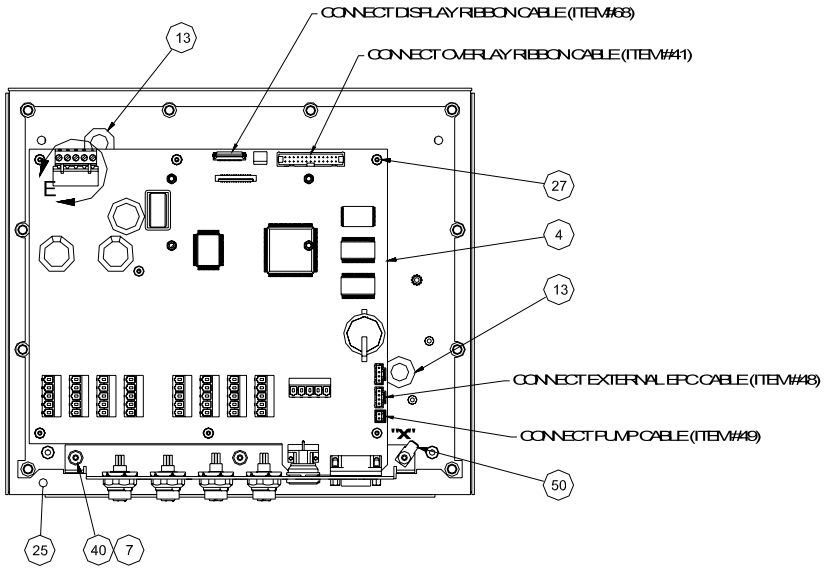


ATTACH MARKER STRIP LABEL &
CONNECT WIRES FROM TRANSFORMER (ITEM #21)

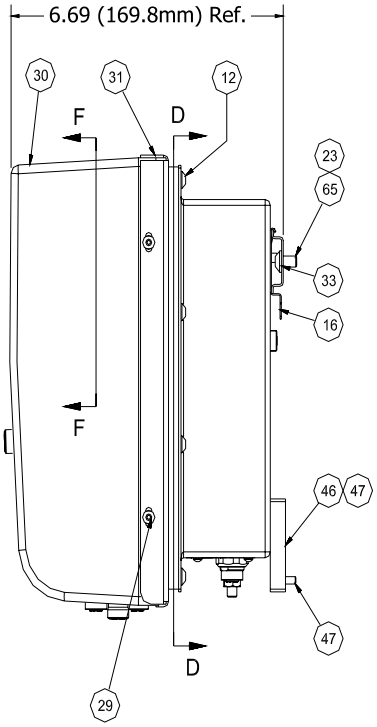
#1 = BLUE WIRE
#2 = YELLOW WIRE
#4 = GREEN WIRE
#5 = ORANGE WIRE



DETAIL E
SCALE 1 : 1

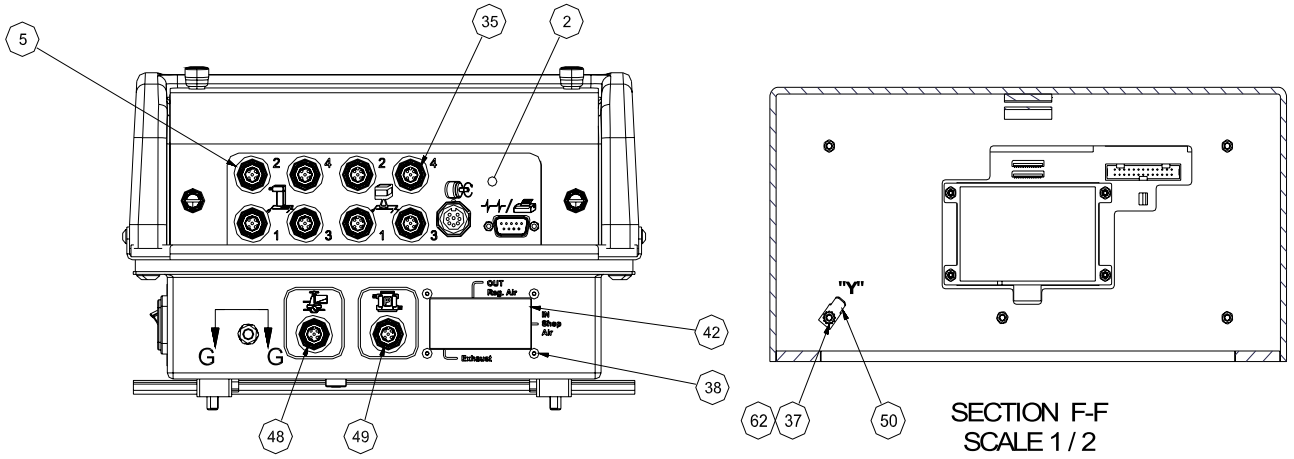


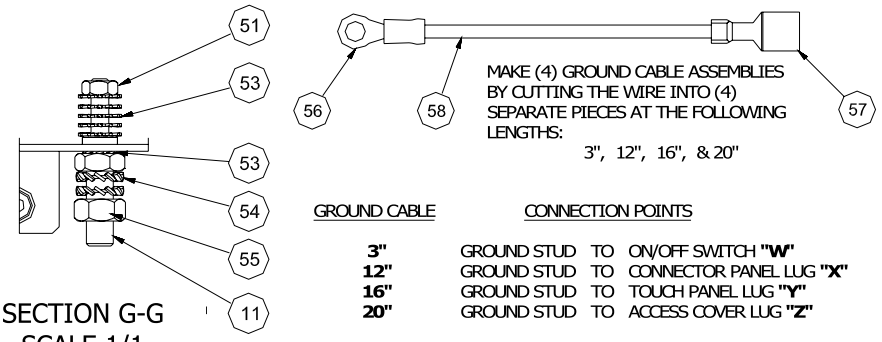
VIEW SHOWN WITHOUT COVER



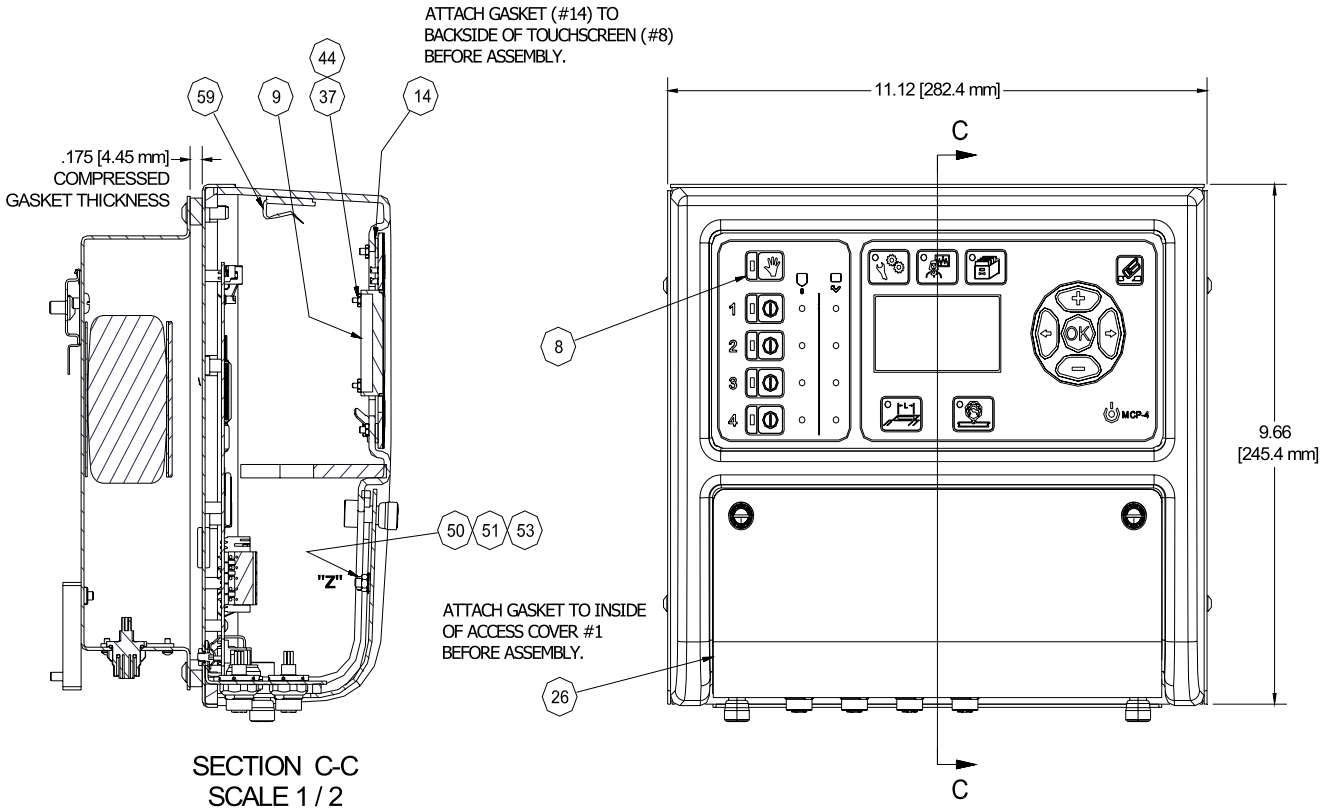
Must compress
gasket to align
mounting holes

MCP-4P Unit - 115/230VAC (074xx040) - Continued





GROUND CABLE	CONNECTION POINTS
3"	GROUND STUD TO ON/OFF SWITCH **"W"**
12"	GROUND STUD TO CONNECTOR PANEL LUG **"X"**
16"	GROUND STUD TO TOUCH PANEL LUG **"Y"**
20"	GROUND STUD TO ACCESS COVER LUG **"Z"**



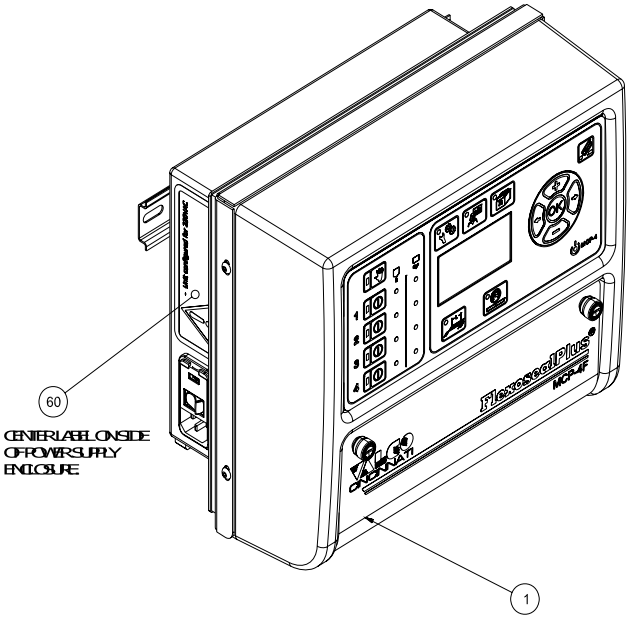
MCP-4P Unit - 115/230VAC (074xx040) - Continued

Item	Description	Part Number	Quantity
1	Access Cover Assy, MCP-4P	026xx178	1
2	Mounting Panel	026xx173	1
4	PCB Assy, MCP-4, w/ext EPC	151xx625	1
5	Cable Assy	029xx317	4
7	Flat Washer	784xx435	3
8	Overlay, MCP-4 Front Panel	782xx127	1
9	Display, LCD Yellow	137xx009	1
11	Stud, Ground	091xx519	1
12	Screw	784xx374	10
13	Grommet	092xx020	2
14	Gasket, Touchscreen	746xx145	1
15	Gasket, Power Supply Encl.	746xx149	1
16	Clip, Mounting	782xx079	2
19	Power Entry Module	086xx055	1
21	Transformer	550xx138	1
22	Screw	784xx180	1
23	Split Lock Washer	784xx600	3
25	Gasket, Enclosure Base	746xx150	1
26	Gasket, Access Cover	746xx147	1
27	Screw	784xx541	7
29	Screw	784xx575	4
30	Cover; MCP-4P Enclosure	026xx210	1
31	Baseplate, Mounting, MCP-4P	026xx183	1
32	Enclosure, Power Supply, MCP-4P	026xx184	1
33	Mounting Rail, MCP-4P	582xx849	1
35	Cable Assembly	029xx318	4
37	Hex Nut	798xx489	9
38	Screw	784xx661	4
39	Split Lock Washer	798xx772	4
40	Screw	784xx985	3
41	Cable Assembly	033xx164	1
42	Cover Plate, no EPC	781xx298	1
44	Spacer	091xx599	4
45	Screw	784xx347	2
46	Mounting Foot	582xx848	2
47	Screw	784xx051	4
48	Cable Assy	029xx385	1
49	Cable Assy	029xx321	1
50	Terminal	091xx453	3

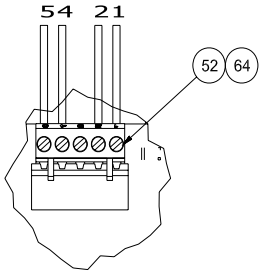
MCP-4P Unit - 115/230VAC (074xx040) - Continued

Item	Description	Part Number	Quantity
51	Hex Nut	798xx299	2
52	Conn	070xx055	1
53	Lock Washer	784xx308	7
54	Lock Washer	784xx375	2
55	Nut	793xx491	1
56	Wire Terminal, Ring	075xx075	4
57	Wire Terminal, Faston, Female	075xx078	4
58	Wire	540xx090	5
59	Ribbon Cable Clamp	067xx001	1
60	Label	782xx087	1
61	Installation Kit	091xx586	1
62	Lock Washer	784xx360	1
63	Flat Washer	784xx183	1
64	Marker Strip	070xx084	1
65	Screw	784xx491	2
66	Fuse	085xx017	2
68	Cable	029xx407	1
69	Software	119xx207	1
70	Wire Terminal	075xx073	4

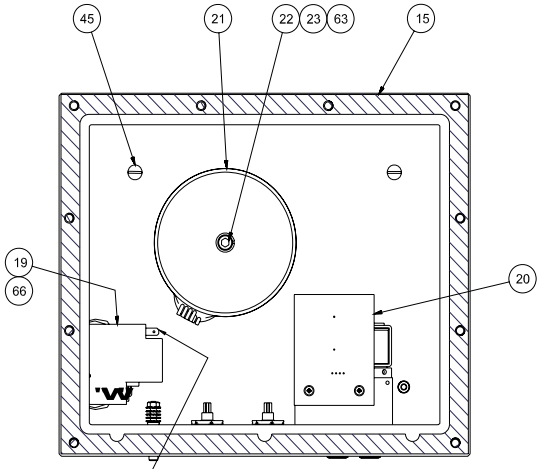
MCP-4F Unit - 115/230VAC (074xx039)



Attach marker strip label & connect wires from transformer (item #21).
#1 = Blue wire
#2 = Yellow wire
#4 = Green wire
#5 = Orange wire

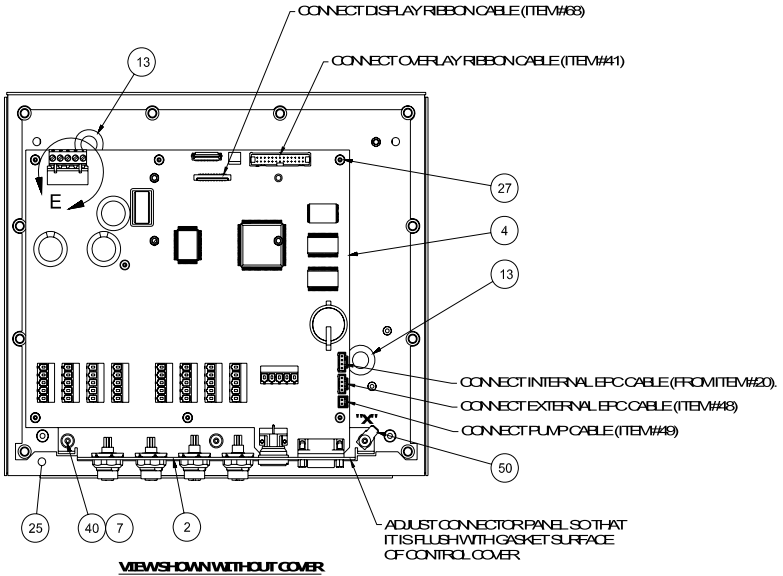


DETAIL E
SCALE 1/1



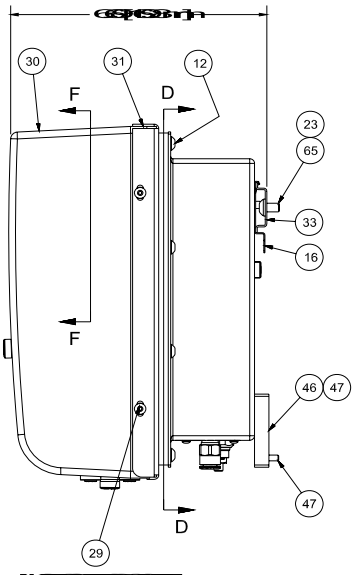
SECTION D-D
SCALE 1/2

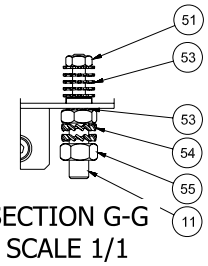
Connect transformer (item #21)



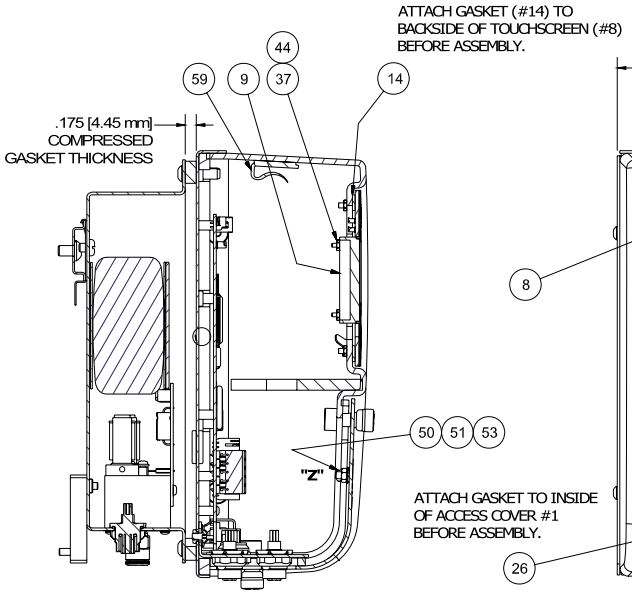
VIEW SHOWN WITHOUT COVER

MCP-4F Unit - 115/230VAC (074xx039) - Continued

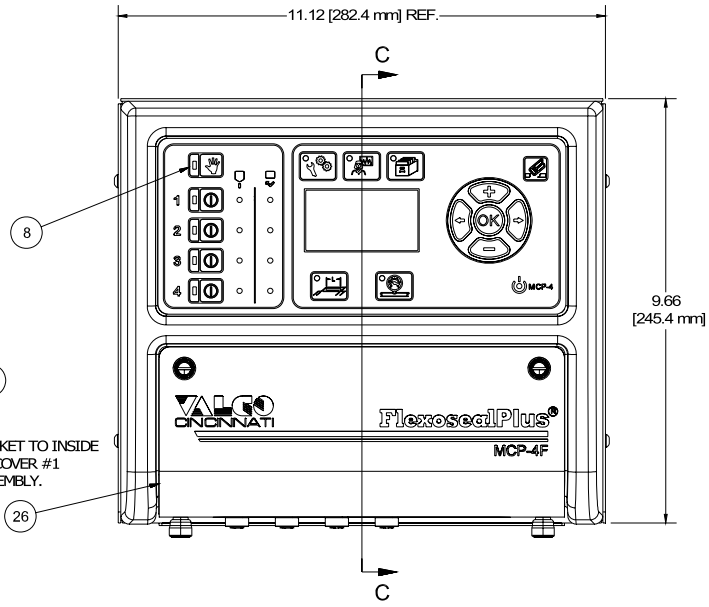


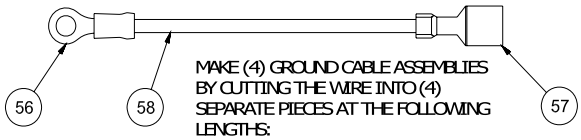


SECTION G-G
SCALE 1/1



SECTION C-C
SCALE 1 / 2





MAKE (4) GROUND CABLE ASSEMBLIES
BY CUTTING THE WIRE INTO (4)
SEPARATE PIECES AT THE FOLLOWING
LENGTHS:
3", 12", 16", & 20"

GROUND CABLE	CONNECTION POINTS
3"	GROUND STUD TO ON/OFF SWITCH **"W"**
12"	GROUND STUD TO CONNECTOR PANEL LUG **"X"**
16"	GROUND STUD TO TOUCH PANEL LUG **"Y"**
20"	GROUND STUD TO ACCESS COVER LUG **"Z"**

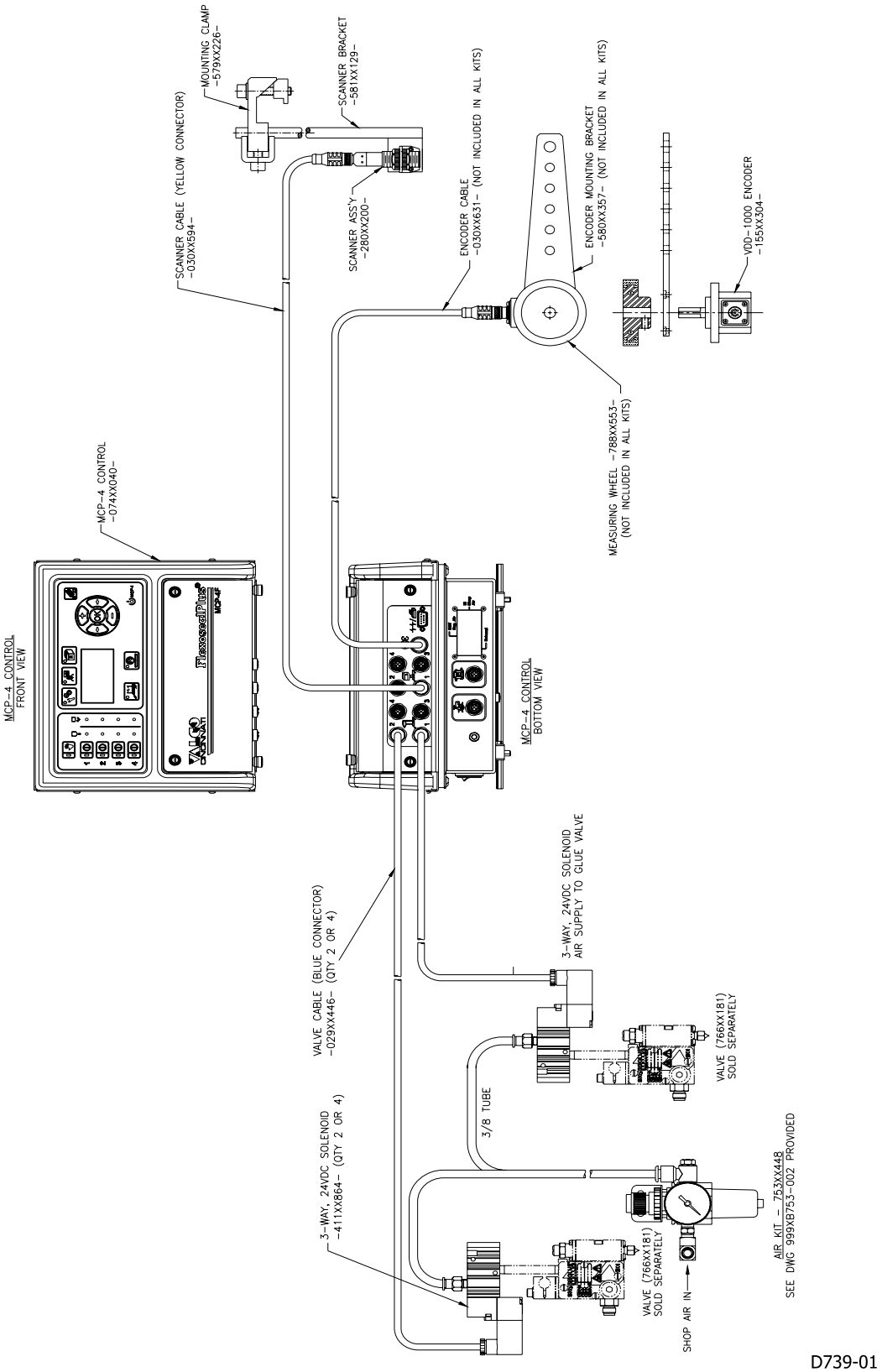
MCP-4F Unit - 115/230VAC (074xx039) - Continued

Item	Description	Part Number	Quantity
1	ACCESS COVER,MCP-4F CONTROL	026XX185	1
2	MTG PANEL TURCK CONNECTOR	026XX173	1
4	PCB,SUBASSY,MAIN CNTRL,MCP-4	152XX625	1
5	CABLE ASSY	029XX317	4
7	FLAT WASHER	784XX435	3
8	OVERLAY,MCP-4 FRONT PANEL	782XX127	1
9	DISPLAY	137XX019	1
11	STUD, GROUND	091XX519	1
12	SCREW	784XX374	10
13	GROMMET	092XX020	2
14	GASKET,TOUCHSCREEN	746XX145	1
15	GASKET,POWER SUPPLY ENCLOSURE	746XX149	1
16	CLIP,MOUNTING	782XX079	2
19	POWER ENTRY MODULE	086XX055	1
20	MANIFOLD ASSY	753XX436	1
21	TRANSFORMER	550XX138	1
22	SCREW	784XX180	1
23	WASHER	784XX600	3
25	GASKET,ENCLOSURE BASE	746XX150	1
26	GASKET,ACCESS COVER	746XX147	1
27	SCREW	784XX541	7
29	SCREW	784XX575	4
30	COVER,MCP-4P ENCLOSURE	026XX210	1
31	BASEPLATE-MOUNTING	026XX183	1
32	ENCLOSURE-POWER SUPPLY	026XX184	1
33	MOUNTING RAIL	582XX849	1
35	CABLE ASSY	029XX318	4
37	NUT	798XX489	9
40	SCREW	784XX985	3
41	CABLE ASSY	033XX164	1
44	SPACER	091XX604	4
45	SCREW	784XX347	2
46	MOUNTING FOOT	582XX848	2
47	SCREW	784XX051	4
48	CABLE ASSY	029XX385	1
49	CABLE ASSY	029XX321	1
50	TERMINAL	091XX453	2

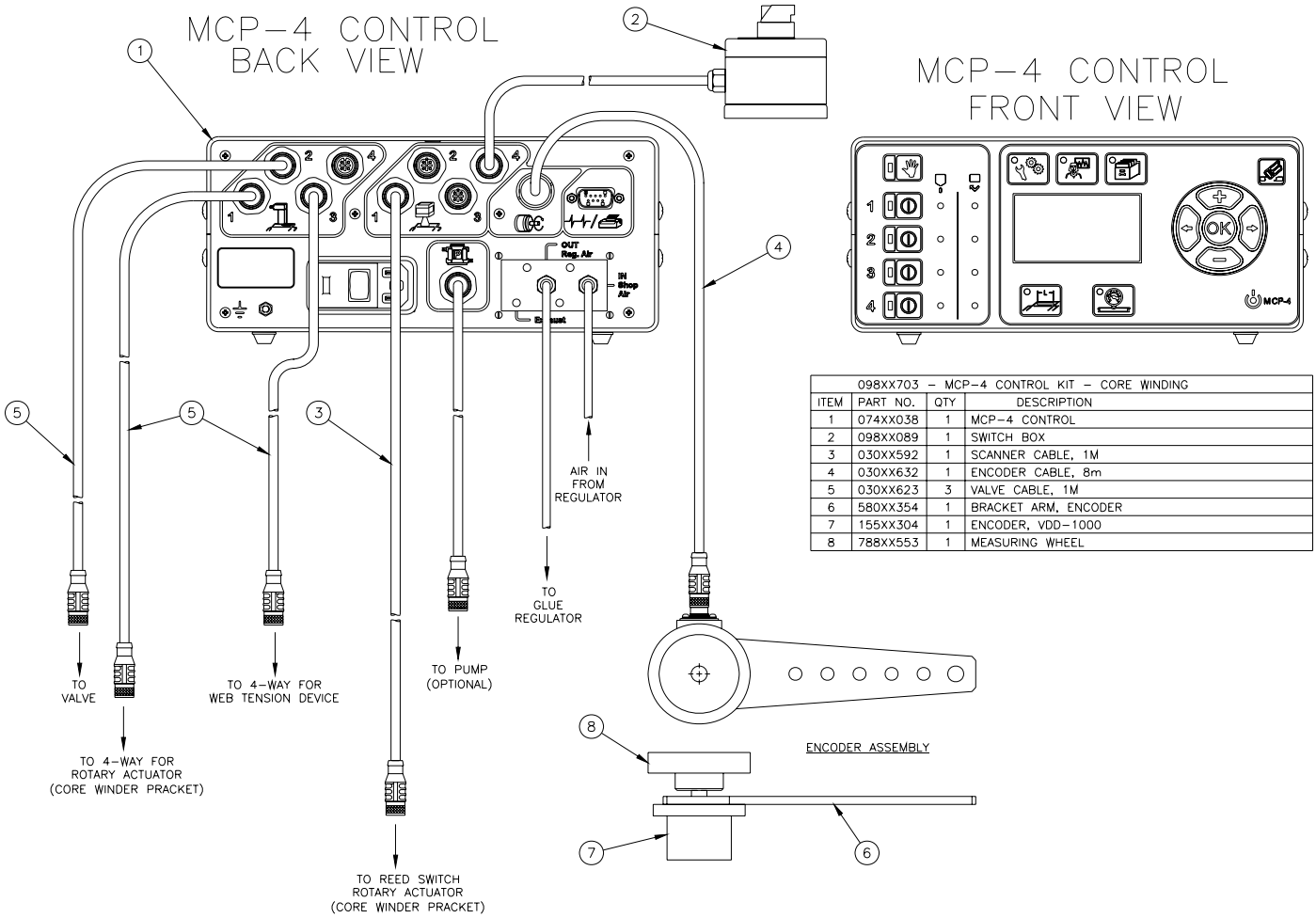
MCP-4F Unit - 115/230VAC (074xx039) - Continued

Item	Description	Part Number	Quantity
51	HEX NUT	798XX299	2
52	CONN,PLUG	070XX055	1
53	WASHER	784XX308	7
54	LOCK WASHER	784XX375	2
55	NUT	793XX491	1
56	WIRE TERMINAL	075XX075	4
57	WIRE TERMINAL	075XX078	4
58	WIRE	540XX090	5
59	RIBBON CABLE CLAMP	067XX001	1
60	LABEL,230VAC CAUTION	782XX087	1
61	INSTALLATION KIT ASSY,MCP-4	091XX586	1
62	LOCK WASHER	784XX360	7
63	FLAT WASHER	784XX183	1
64	MARKER-STRIP	070XX084	1
65	SCREW	784XX491	2
66	FUSE	085XX017	2
68	CABLE	033XX183	1
69	SOFTWARE,MCP-4 W/LG DISPLAY	119XX207	1
70	WIRE TERMINAL	075XX073	4
71	CHANGEOVER TAG	781XX591	1
72	PCB ASSY DISPLAY ADAPTER	151XX699	1
73	WASHER	784XX315	4
74	GASKET TRANSFORMER	746XX268	1
76	FOAM, FOR MCP-4/MCP-4P	730XX061	1
77	BOX, MCP-4/MCP-4P	730XX060	1
78	SOFTWARE BOOT-LOADER CAN-CPU	119XX128	1
79	HARNESS ANCHOR	067XX002	1

Glue System Layout with MCP-4



Core Winding System with MCP-4



098XX703 – MCP-4 CONTROL KIT – CORE WINDING			
ITEM	PART NO.	QTY	DESCRIPTION
1	074XX038	1	MCP-4 CONTROL
2	098XX089	1	SWITCH BOX
3	030XX592	1	SCANNER CABLE, 1M
4	030XX632	1	ENCODER CABLE, 8m
5	030XX623	3	VALVE CABLE, 1M
6	580XX354	1	BRACKET ARM, ENCODER
7	155XX304	1	ENCODER, VDD-1000
8	788XX553	1	MEASURING WHEEL

C080-146

Section 9 - Warranty

Warranty Information

Valco Cincinnati, Inc. warrants its equipment worldwide against defects in material and workmanship as outlined in this section.

Liability of the company is limited to repair of the product, or replacement of any part shown to be defective, and does not extend to defects caused by accidents, misuse, abuse, neglect, tampering or deterioration by corrosion. This warranty does not cover those items determined by Valco Cincinnati, Inc. to be normal wear items such as seals, O-rings, diaphragms, springs, etc.

Reconditioned equipment, unless specified otherwise at the time of purchase, will be warranted as described above for a period of ninety (90) days from the date of shipment by Valco Cincinnati.

Components purchased by Valco Cincinnati, Inc. from others for inclusion in its products are warranted only to the extent of the original manufacturer's warranty. In no event shall Valco Cincinnati, Inc. be liable for indirect or consequential damages arising out of the use of Valco Cincinnati products.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to Valco Cincinnati, Inc. for examination and verification. If claimed defect is verified, repairs or replacements will be made F.O.B. Cincinnati, Ohio, U.S.A. or ex-works Telford, U.K. If the inspection of the equipment does not disclose any defect of workmanship or material, any necessary repairs will be made at a reasonable charge and return transportation will be charged.

This is the only authorized Valco Cincinnati, Inc. warranty and is in lieu of all other expressed or implied warranties, representations or any other obligations on the part of Valco Cincinnati, Inc.

Cold Glue Equipment and Electronic Controls

The warranty for cold glue equipment and electronic controls for a period of one (1) year from the date of shipment by Valco Cincinnati, Inc.

Hot Melt Units, Hoses, Valves, Guns, and Related Equipment

All hot melt components except cast-in heating elements are warranted for a period of six (6) months from the date of shipment by Valco Cincinnati. Cast-in heaters carry an additional, pro-rated warranty not to exceed three (3) years from the date of shipment by ValcoMelton, a Valco Cincinnati, Inc. company.

Section 10 - Service

If a problem with your system persists, contact a ValcoMelton Technical Support representative. If your need is urgent, we encourage you to contact our corporate office in Cincinnati, Ohio, U.S.A. at (513) 874-6550. If the problem cannot be resolved, Valco Cincinnati, Inc. will promptly arrange to have a technical representative visit your facility. Any charges for a service call will be quoted at that time. Any part that fails during the warranty period shall be returned prepaid to Valco Cincinnati, Inc. by the customer for disposition.

Upon request, ValcoMelton personnel are available to repair or replace such parts at the customer's facility. Charges for this service include travel time and expenses.

If an equipment problem is the result of customer abuse, improper installation or operation, all travel time, labor, parts, and expenses will be charged to the customer.

If the responsibility for a problem cannot be absolutely determined, the customer will be charged for travel time and expenses only. No charge will be made for parts and labor.

Appendix A - Job Charts

Use the following tables to record saved jobs for quick reference and to prevent duplication/erasure of important job information. The tables may be copied for use.

Job Number	Job Name	Description

Job Number	Job Name	Description