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USER GUIDE

UGC044-1114

MVP

Material Vision Proofing

Please record your equipment's model and serial number(s) and the date you received it in the spaces provided.

It's a good idea to record the model and serial number(s) of your equipment and the date you received it in the User Guide. Our service department uses this information, along with the manual number, to provide help for the specific equipment you installed.

Please keep this User Guide and all manuals, engineering prints and parts lists together for documentation of your equipment.

Date:

Manual Number: UGC044-1114

Serial Number(s):

Model Number(s):

DISCLAIMER: Conair shall not be liable for errors contained in this User Guide or for incidental, consequential damages in connection with the furnishing, performance or use of this information. Conair makes no warranty of any kind with regard to this information, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose.

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A Appendix

✎ **Note**: Manufacturers instructions for DM3-i Drying Monitor components can be found in the Appendix or within the instruction packet that was shipped with this machine.

Introduction

Purpose of the User Guide

This user guide describes the MVP Material Vision Proofing system and explains step-by-step how to install, operate, and maintain this equipment.

Before installing this product, please take a few moments to read the user guide and review the diagrams and safety information in the instruction packet. You should also review manuals covering associated equipment in your system. This review won't take long, and it could save you valuable installation and operating time later.

How the Guide is Organized

Symbols have been used to help organize the User Guide and call your attention to important information regarding safe installation and operation.

⚠ Symbols within triangles warn of conditions that could be hazardous to users or could damage equipment. Read and take precautions before proceeding.

1 Numbers indicate tasks or steps to be performed by the user.

◆ A diamond indicates the equipment's response to an action performed by the user.

❒ An open box marks items in a checklist.

• A circle marks items in a list.

Indicates a tip. A tip is used to provide you with a suggestion that will help you with the maintenance and the operation of this equipment.

✎ Indicates a note. A note is used to provide additional information about the steps you are following throughout the manual.

Your Responsibility as a User

You must be familiar with all safety procedures concerning installation, operation, and maintenance of this equipment. Responsible safety procedures include:

- Thorough review of this User Guide, paying particular attention to hazard warnings, appendices, and related diagrams.
- Thorough review of the equipment itself, with careful attention to voltage sources, intended use and warning labels.
- Thorough review of instruction manuals for associated equipment.
- Step-by-step adherence to instructions outlined in this User Guide.

ATTENTION:
Read This So No One Gets Hurt

We design equipment with the user's safety in mind. You can avoid the potential hazards identified on this machine by following the procedures outlined below and elsewhere in the User Guide.

⚠ WARNING: Improper installation, operation, or servicing may result in equipment damage or personal injury.

This equipment should be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation, and potential hazards of this type of machine.

All wiring, disconnects, and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

⚠ WARNING: Voltage hazard

This equipment is powered by single-phase current, as specified on the machine serial tag.

A properly sized conductive ground wire from the incoming power supply must be connected to the chassis ground terminal inside the electrical enclosure. This ground connection is supplied with the MVP panel and must not be removed or must be replaced if damaged. Improper grounding can result in severe personal injury and erratic device operation.

Always disconnect and lock out the incoming main power source before opening the electrical enclosure or performing non-standard operating procedures, such as routine maintenance. Only qualified personnel should perform troubleshooting procedures that require access to the electrical enclosure while power is on.

Zero Mechanical State (ZMS)

⚠ **CAUTION:** Before performing maintenance or repairs on this product, you should disconnect and lockout electrical power sources to prevent injury from unexpected energizing or start-up.

During maintenance, it is essential that the system be put into a state which eliminates the possibility of components making an unexpected and dangerous movement. This procedure is typically referred to as lockout. After all energy sources have been neutralized, the system is in the zero mechanical state (ZMS). This provides maximum protection against unexpected mechanical movement.

The lockout procedure must include all energy sources:

- Electrical power supply
- Compressed air supply
- Hydraulic fluids under pressure
- Potential energy from suspended parts
- Energy in springs
- Any other source that might cause unexpected mechanical movement

The following is a recommended Zero Mechanical State procedure which must be followed prior to any inspection, or maintenance of the MVP.

1 Turn off the all loading devices attached to the MVP to assure that it does not attempt to move material.

2 Perform the proper shutdown sequence to the connected dryer or drying system and allow all hopper components (internally and externally) to adequately cool.

3 Disconnect and lock out the primary electrical supply feeding the dryer and conveying conponents.

⚠ **WARNING:** Before removing lockout devices and returning switches to the ON position, make sure that all personnel are clear of the machine, tools have been removed, and all safety guards reinstalled.

SECTION
2

Description

What is the MVP?

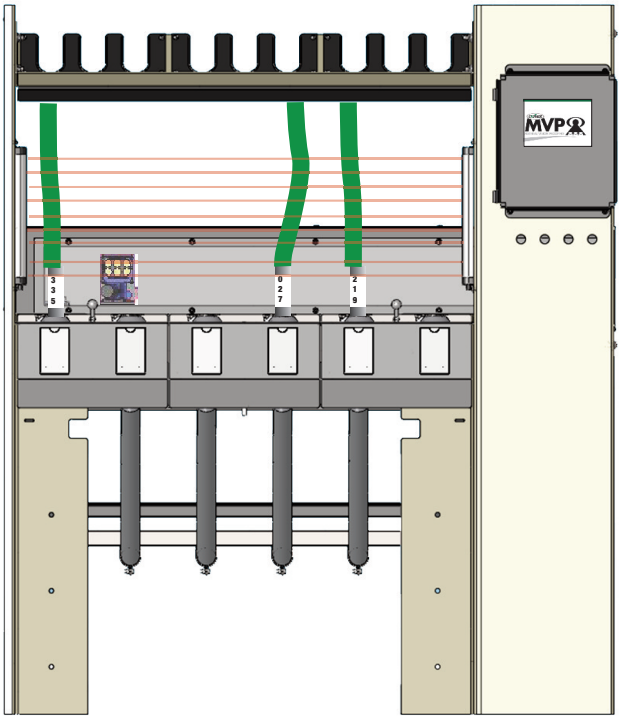
✎ **Note**: Even when equipped with the optional 4-inch display, the MVP operation requires connection to Conair's FLX-128 or ELS control platform.

The Material Vision Proofing system (MVP) is a validation system that verifies that the correct material is being conveyed to the correct destination. The MVP is a combination of a Resin Selection System (RSS), the MVP table and special camera equipment, the MVP electrical enclosure (with optional 4-inch display), and tubes connections for the RSS with labels engineered to be read by the MVP camera. The MVP is controlled by a Conair control, either the FLX-128 or the ELS.

Typical Applications

✎ **Note**: At line size 2.25 and smaller, up to 36 connections are available on a 6-manifold system. At line size 2.25 and smaller, up to 72 connections are available on a 12-manifold system.

Designed for use with resin conveying systems, the MVP comes in two variations. The six-manifold system monitors 30 connections and provides 100% validation for those 30 connections. The 12-manifold MVP system monitors 60 connections.



Limitations

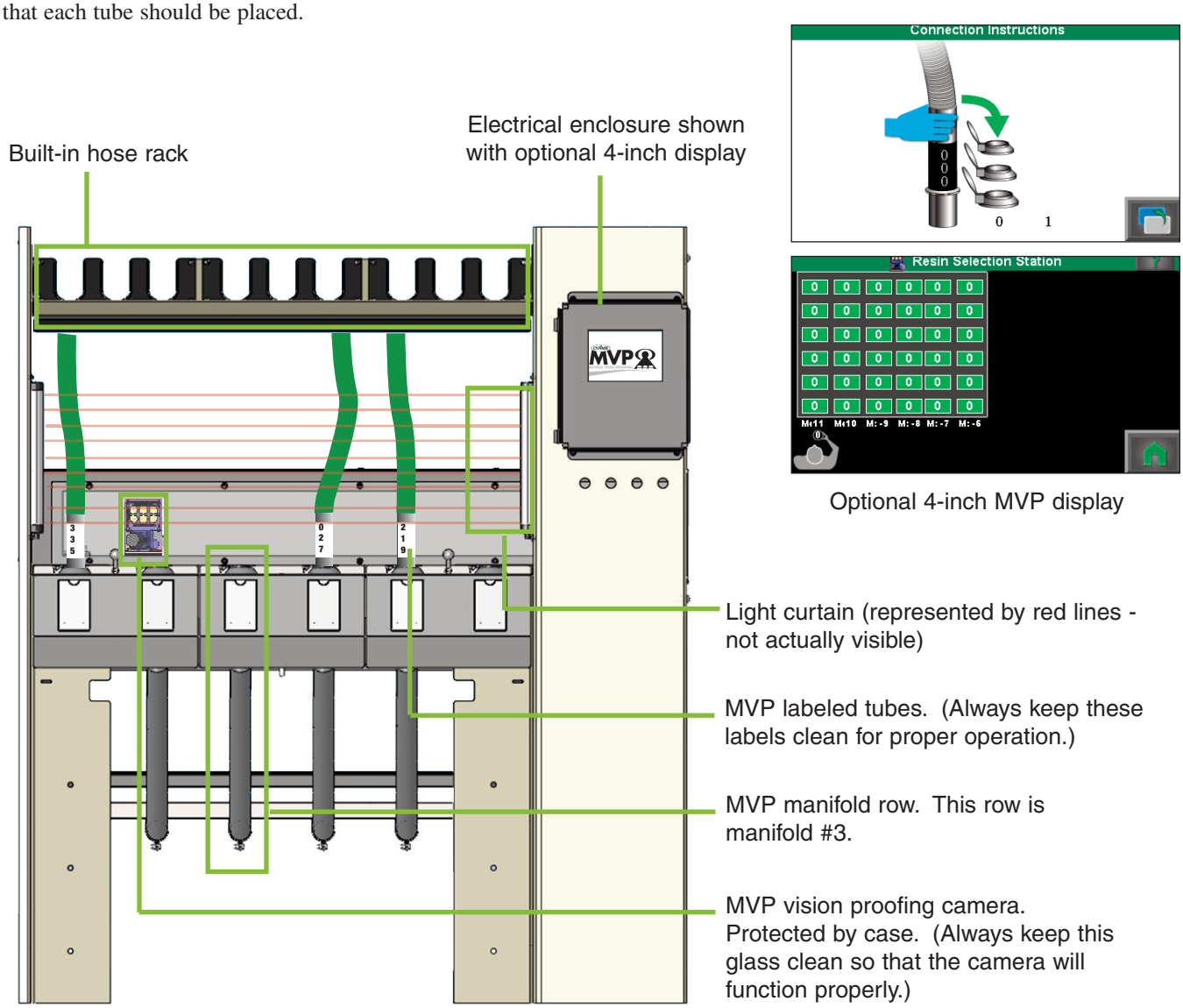
Extensive testing has shown that the MVP operation is negatively affected by direct sunlight. This unit should not be used outdoors, or in locations where direct, bright sunlight may affect the camera's ability to read the tube labels. In normal, inside applications, the camera's operation is unaffected by various light types.

How the MVP Works

The Material Vision Proofing (MVP) system uses tube labels on the RSS (Resin Selection Station) in coordination with software and a special camera to verify that the correct tube is in the correct location in the RSS table. This ensures that the correct material will be conveyed to the desired location and eliminates cross-contamination.

The MVP is equipped with a light curtain, which when broken triggers the conveying system to stop at the end of the current cycle. Conair's FLX-128 or ELS control can be used to program a desired material change, which will notify the operator which tube should be placed in which manifold row on the RSS table. Once the operator has completed moving the tubes, the MVP begins its scan of the tube locations, verifying that each tube is in the correct manifold to convey the desired material to the desired location.

An added benefit to the optional 4-inch MVP display is that it is attached to the MVP, and allows the operator, while standing at the RSS table, to graphically see the location that each tube should be placed.



MVP System Components

The MVP system consists of:

An RSS table with either 6 or 12 manifolds.

The MVP table (bolted to the rear of the RSS)

Specially labeled tubes for use with the MVP. (Labels are shipped loose and should be applied to tubes during installation.)

The MVP camera, belt, and servo motor.

The hose rack.

The light curtain.

The MVP enclosure.

A Conair control capable of communicating with the MVP (either the FLX-128 or the ELS).

To order new tube labels, or any other part of the MVP:

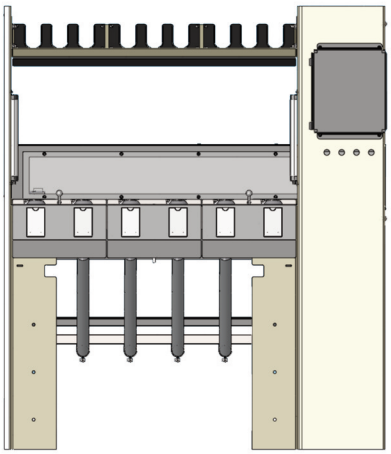
Contact Conair Parts
1 800 458 1960
From outside of the United States, call:
814 437 6861

✎ **Note**: Cables can be shortened in the field by a qualified technician. It is better to order a cable length that is too long and shorten it in the field than to have a cable that is too short.

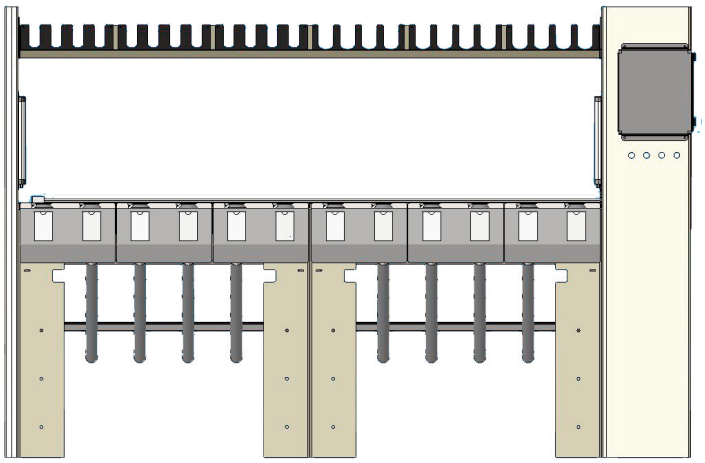
MVP 6-manifold vs MVP 12-manifold

The MVP system is designed to operate with a Resin Selection System (RSS) table. Depending on your desired configuration and application, the MVP can be ordered as part of a 6-manifold system, or a 12-manifold system.

The MVP 6-manifold system contains six (6) fantail manifolds. Each fantail manifold is attached to a material source, and can be connected to a maximum of five (5) material receivers at a time. The definition of a manifold is a row (front to back) of tube connection locations. The manifolds of your MVP system come labeled from the factory as manifolds 1 through 6 (moving left to right as standing facing the RSS table).



The MVP 12-manifold system contains twelve (12) fantail manifolds. Each fantail manifold is attached to a material source, and can be connected to a maximum of five (5) material receivers at a time. The definition of a manifold is a row (front to back) of tube connection locations. The manifolds of your MVP system come labeled from the factory as manifolds 1 through 12 (moving left to right as standing facing the RSS table).



Note: Regardless if your MVP system is a 6-manifold or a 12-manifold setup, the table tubes must be organized so that the largest diameter tubes are on the left side of the table if multiple tube sizes are used. For installation and configuration purposes, remember that tube sizes (if multiple sizes are used) should decrease as moving from left to right across the RSS table.

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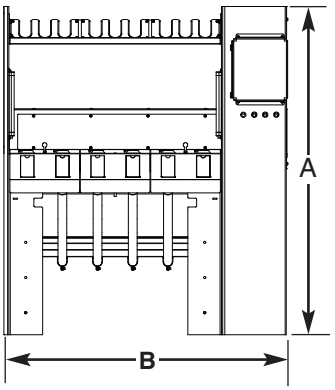
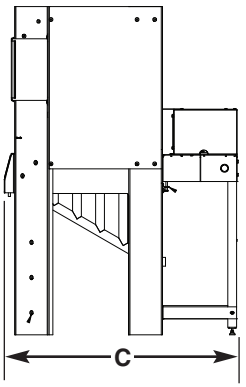
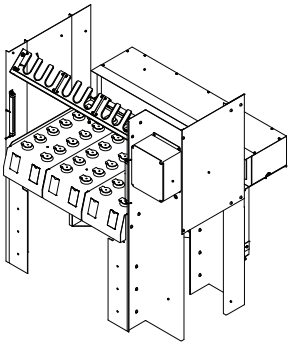
Specifications

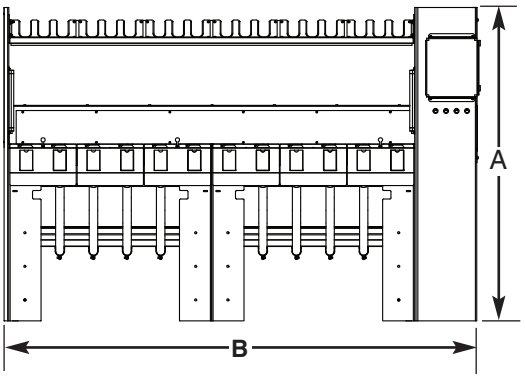
Model MVP-6

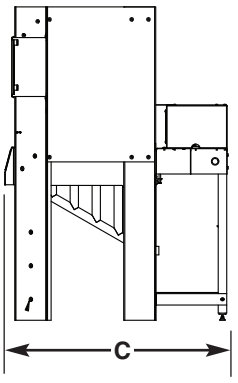


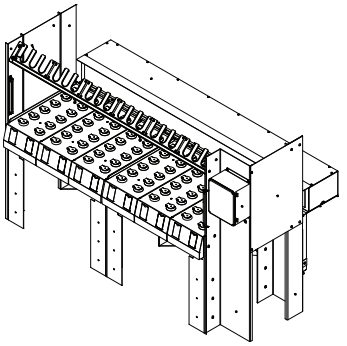




Model MVP-12







MODEL	MVP-6-S	MVP-6-L	MVP-12-S	MVP-12-L
Performance characteristics				
Maximum number materials	6	6	12	12
Dimensions inches {cm}*				
A - Height	74.63 {189.55}	74.63 {189.55}	74.63 {189.55}	74.63 {189.55}
B - Width	64.44 {163.67}	64.44 {163.67}	113.38 {287.97}	113.38 {287.97}
C - Depth	52.94 {134.47}	52.94 {134.47}	52.94 {134.47}	52.94 {134.47}
Line size† inches {cm}	1.75 {4.45} to 2.50 {6.35}			
Weight lb {kg}				
Shipping weight / lb {kg}	690 {313}	690 {313}	1100 {499}	1100 {499}
Voltage Full load amps				
120	<15	<15	<15	<15

SPECIFICATION NOTES:

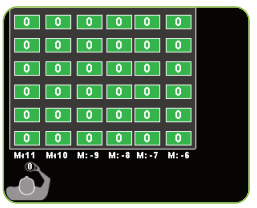
* Dimensions may vary depending on your RSS model specifics.

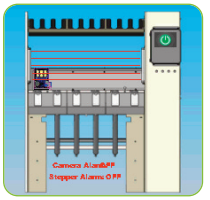
† Larger line sizes have fewer ports per fantail. S models accommodate line sizes of 2.25 inches {57 mm} and smaller with six ports in each vertical row. L models accommodate line sizes of 2.5 inches {64 mm} with five ports in each vertical row.

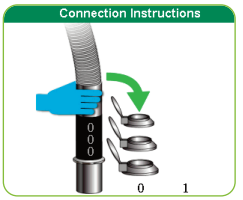
Specifications may change without notice, consult with a Conair representative for the most current information.

CONTROL

The MVP is controlled by Conair's state-of-the-art new conveying controls, the FLX-128 or the ELS. In addition to control at those platforms, the MVP features a 4-inch HMI at the machine for quick display of what connections are made and for simple visual display/ instruction when a tube needs to change position.







SECTION
3

Installation

Unpacking the Boxes

The MVP comes in one or more shipping containers, depending on the options ordered.

The MVP consists of:
- An assembled RSS (Resin Selection Station table)
- A MVP left side panel and hardware.
- An MVP right side panel and hardware.
- An MVP camera/actuator table and hardware.
- An MVP electrical and HMI enclosure.
- Two (2) light curtain sensors and hardware.
- Two (2) target balls for calibration of the MVP camera.
- A label set to be used for labeling each RSS tube that will be used on the table.

To order an extra set of labels, contact Conair and ask for part # 267-189-xx

Contact Conair Parts
1 800 458 1960
From outside of the United States, call:
814 437 6861

Packaging for the MVP can be varied depending upon what has been ordered, so carefully inventory all items.

1 **Carefully remove all components** from their shipping containers.

2 **Remove all packing material, protective paper, tape, and plastic.** Do not discard installation notice tags.

3 **Carefully inspect all components** to make sure no damage occurred during shipping, and that you have all the necessary hardware.

✎ **Note**: Conair recommends that unit is left attached to the skid for easy movement using a fork-truck. The unit should only be removed from the skid to be placed in it's final operating location.

TIP: Inspect all of the equipment in the presence of the fright carrier's representative for damage during shipment. Note any damage on the delivery receipt before signing it. If damage is evident, file a claim immediately against the carrier as it is their responsibility to pay for any damage incurred during shipping. Make sure to include a detailed report of the damage along with photos. Note that the camera and some other components are delicate and may not operate properly if damaged.

4 **Take a moment to record serial numbers.** The RSS table should have one serial number, and the MVP camera enclosure should have another. Be sure to document both numbers.

Preparing for Installation

Depending on how your MVP/RSS was shipped, you may need all or some the following tools for installation:

- ❒ **wire strain relief**
- ❒ **crane or fork truck to move RSS/MVP into position**
- ❒ **set of Allen wrenches**
- ❒ **set of metric and standard wrenches**
- ❒ **flashlight**
- ❒ **Phillips Head screw driver - Light curtain/ Actuator**
- ❒ **3mm Allen wrench - Actuator**
- ❒ **4mm Allen wrench – Actuator/ Tighten Wire chain down**
- ❒ **8mm Allen wrench - Adjust MVP table to the RSS table**
- ❒ **3/32" Allen wrench – Tighten Camera down**
- ❒ **5/32" Allen wrench – Attach Stepper motor to Actuator**
- ❒ **9/64" wrench – MVP table**
- ❒ **9/16" wrench – MVP table**
- ❒ **5/8" wrench – Adjust MVP table legs vertically**
- ❒ **3/4" wrench – MVP table**
- ❒ **10mm wrench – MVP cover**
- ❒ **11mm wrench – Actuator/ Control panel/ Hose rack**

⚠ **IMPORTANT:** The MVP should not be installed in extreme temperature locations. Ambient air temperatures below 41°F {5°C} and above 104°F {40°C} should be avoided.

Installation of the MVP in direct sunlight may affect the reliability and operation of the camera. When planning the location for the MVP, make sure that it will not be in a location with direct sunlight.

Clearance for Proper Operation

Operation of the MVP requires use access to the front and the back of the machine.

To the front of the RSS table, at least 48 inches {122 cm} of clearance is necessary for the operator to easily make resin selection changes at the table, and periodically clean and inspect the unit.

To the rear of the RSS table, at least 36 inches {92 cm} of clearance is necessary for maintenance and inspection.

Installing the Tube Labels on the RSS Table Conveying Tubes

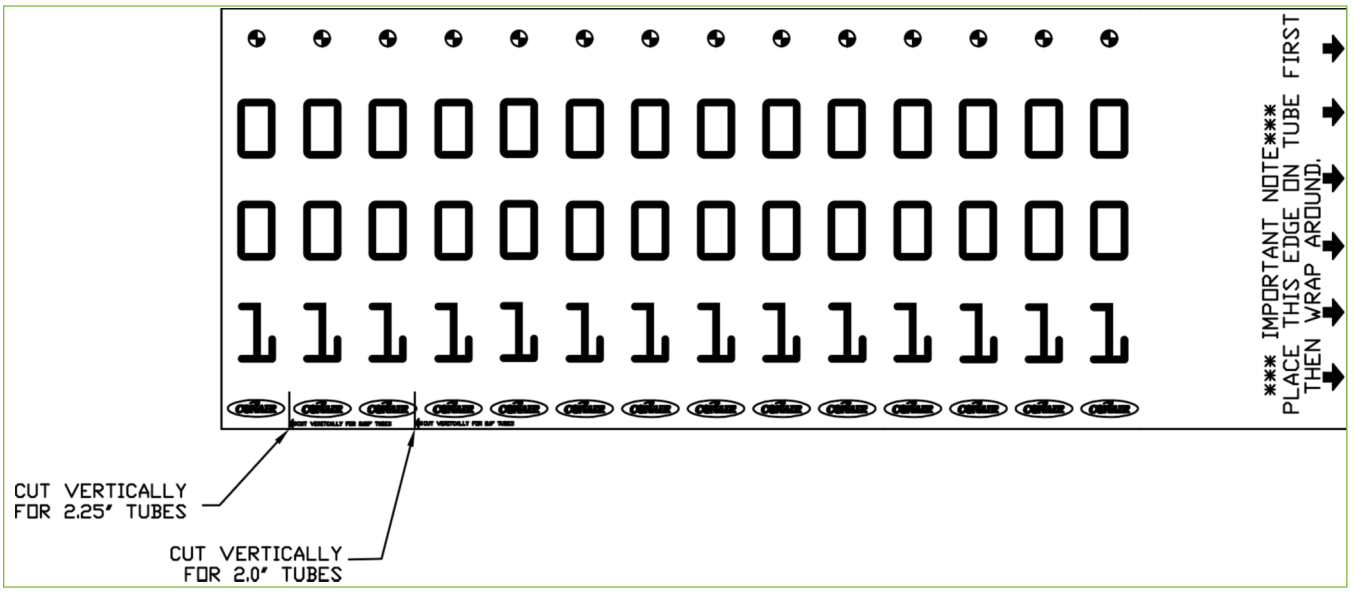
⚠ **CAUTION:** Always disconnect and lock out the main power supply before beginning the installation process.

✎ **Note**: Conair recommends that the tube label number matches the device number it is associated with on the FLX-128 control.

IMPORTANT: Tube labels must be installed correctly for proper operation of the MVP.

The MVP operation depends on the camera locating and identifying conveying connections to verify that correct material is routed to the correct location. In order for the camera to identify the material tubes, a label must be applied to the tube where it enters the RSS table.

Tube labels must be applied to the RSS tubes. Tube labels are only for 1.75, 2.0, 2.25, and 2.5 inch male adaptor tube weldments. For 1.75 and 2.5 inch applications, the tube labels can be installed without modification. For 2.0 and 2.25 inch tubes, the labels must be cut at the indicated line prior to installation.



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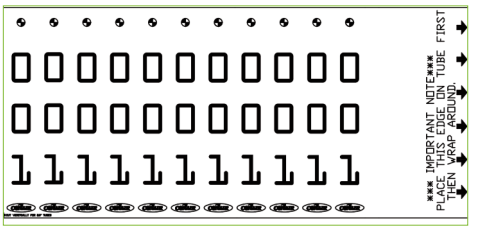
Installing the Tube Labels on the RSS Table Conveying Tubes

1 **Cut the tube labels** for applications using 2.0 and 2.5 inch tubes. See the previous page for more information.

2 **Peel the back off of the tube label to expose adhesive.**

3 **Place the label on the tube, so that the label sits above the weld on the taller end of the tube. Note that the label is marked which end should be applied first.**



The label should NOT be applied to the part of the tube below the weld that slides into the RSS table.

4 **Make sure that the label is applied with the numbers facing up.** The Conair logos are the bottom of the label.

5 **Make sure that the labels are applied evenly.** Labels that do not line up, running uphill, will not allow the camera to read the numbers properly.

6 **Repeat this process with a label for each device number used in your FLX-128 system.**

correct application

incorrect application

CAUTION: Always disconnect and lock out the main power supply before beginning the installation process.

Note: Conair recommends that the tube label number matches the device number it is associated with on the FLX-128 control.

Assembling the RSS/MVP

⚠ **CAUTION:** Always follow local and national guidelines when moving the equipment with an overhead crane or fork truck.

Depending on options ordered, and shipping distance, the RSS/MVP may arrive fully assembled, or in various stages of assembly. Each MVP is assembled and tested fully for functionality at Conair. To protect sensitive equipment, the camera and other equipment may have been removed after testing to be packaged safely for shipping.

If your MVP has arrived fully assembled, *see Moving the MVP into position later in this section of the User Guide.*

Assembling the RSS/MVP (if not fully assembled)

⚠ **IMPORTANT:** If not fully assembled, the MVP table will not stand on its own. It must be bolted to the RSS table.

✎ **NOTE:** The MVP typically ships fully assembled, and attached to the RSS table.

Tools for Installation:

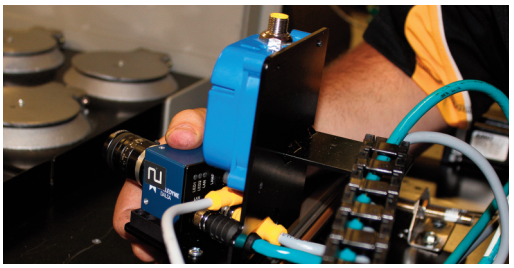
- ❒ Phillips screwdriver
- ❒ Flathead screwdriver
- ❒ Camera communication cables

✎ **NOTE:** If the angled probe is used, the bend (dog leg) in the probe must be oriented so that it is angled in toward the center of the hopper.

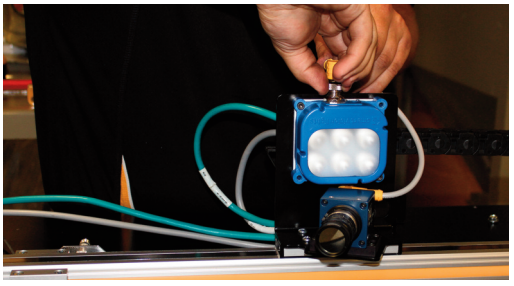
1 **Reference the drawings at the end of this user guide** and select the drawing that reflects your installation.

2 **Align the MVP table with the back of the RSS table. Using the mounting hardware, bolt the MVP to the back of the RSS table.** Typically, the MVP table is fully assembled. If the camera needs to be mounted to the table, continue to step 3. If the camera is already mounted to the table, the MVP is fully assembled.

3 **Connect the Ethernet cable, and communications cables to the camera.**



4 **Using the included hardware, mount the MVP camera and infrared light to the table**.



5 **Connect the IR light cable to the camera.** The MVP is now ready for testing.

Moving the MVP into position

It is important to have the plant layout in mind when choosing the location for the MVP/RSS table. The unit should be located where connections to conveying lines will be available and easy to access. The unit needs to be in an area where it allows the MVP/RSS table to have appropriate clearance to the back for connecting conveying lines to the manifold, and to the front for making changes to material lines at the Resin Selection Station.

1. **The MVP table has several components that are fragile. Use caution when moving the MVP/RSS table into position, that the camera, servo drive, light-curtain sensors, and all communications cables are not damaged**.

2. **Following local and national regulations, use a fork-truck to carefully move the MVP into position.** Conair recommends leaving the MVP on it's skid until movement to the final operating location. Once removed from the skid, use caution moving the unit into it's operating location. Do NOT attempt to lift the unit with the forks lifting against the manifold or the front lip of the RSS table. This could damage the unit.

Connecting the Main Power

⚠ **CAUTION:** Always disconnect and lock out the main power supply before making electrical connections. Electrical connections should be made only by qualified personnel.

The MVP is equipped with a grounded power cord that must be connected to a main power supply.

1 **Power must be provided to the MVP control panel through the 10 ft. {3 meter} 3 conductor power cable supplied with the MVP control panel.** The MVP is designed to operate at 115 VAC.

The cable must be terminated according to national, local, and industrial standards and supplied with appropriate strain relief at the termination point.

Full load amp draw for common voltages: 115 VAC= <15 amps.

The power supply cable is internationally color coded: brown=hot, blue=neutral, and green with yellow=ground.

⚠ **IMPORTANT:** Always refer to the wiring diagrams that came with your equipment to locate specific electrical components. Illustrations in the User Guide are intended to be representative only.

SECTION
4

Operation

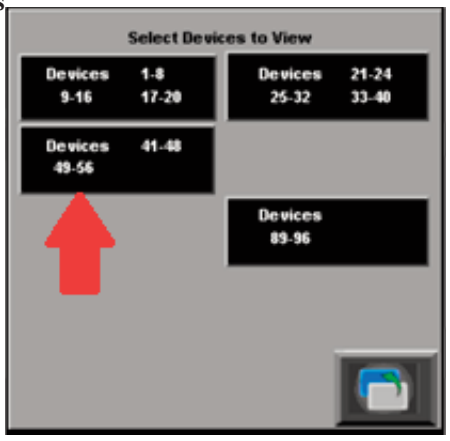
Preparing the FLX-128 for the MVP

The FLX-128 control needs to be configured to work with the MVP. The following sets of instruction will lead you through the process of setting up the FLX-128 for use with the MVP system.

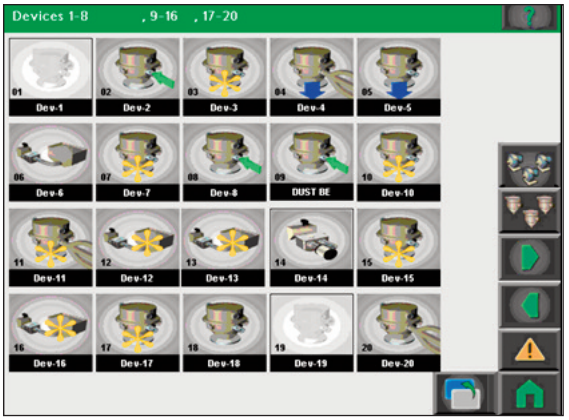
Device Settings

1 From the Home page of the FLX-128, press the "Devices" button.

2 Click on the preferred device (loader) you want to enable for use with the MVP.



3 Click on the device (loader) that you would like to modify the ID number of and enable for MVP use.



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Device Settings

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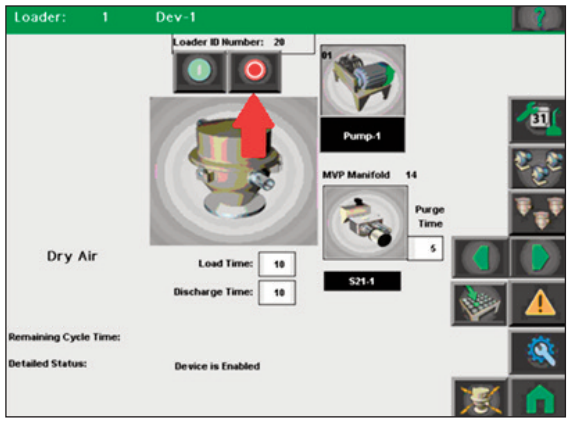
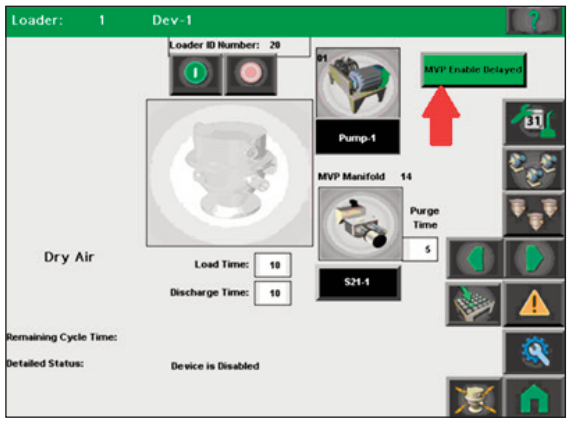
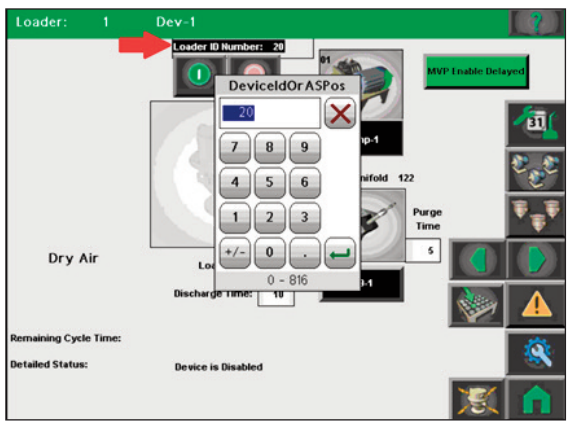
4 Click the "Disable" loader button. The device must be disabled before changes can be made to the settings.



5 Press the "MVP Enable Delayed" button. This button only enables the loader when the MVP identifies that the conveying line tube has been placed into the correct manifold on the RSS table.



6 If desired, click on the "Loader ID Number" to change the ID number. Conair recommends that the Loader ID number and the tube label number should match. this makes it easy for the operator to identify which tube is associated with device. The MVP will identify the tube label number and make sure that the loader only loads when it is at the correct manifold.

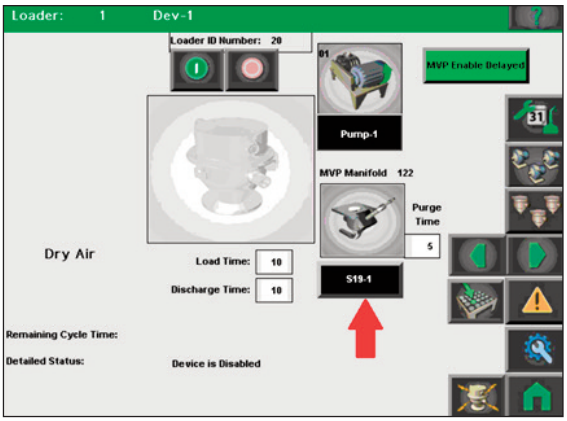


(continued)

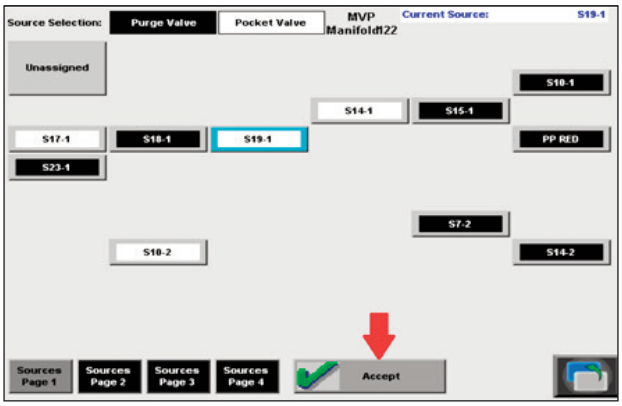
Device Settings

(continued)

7 **Click on the "Source" button to select the source that you want for this device.**

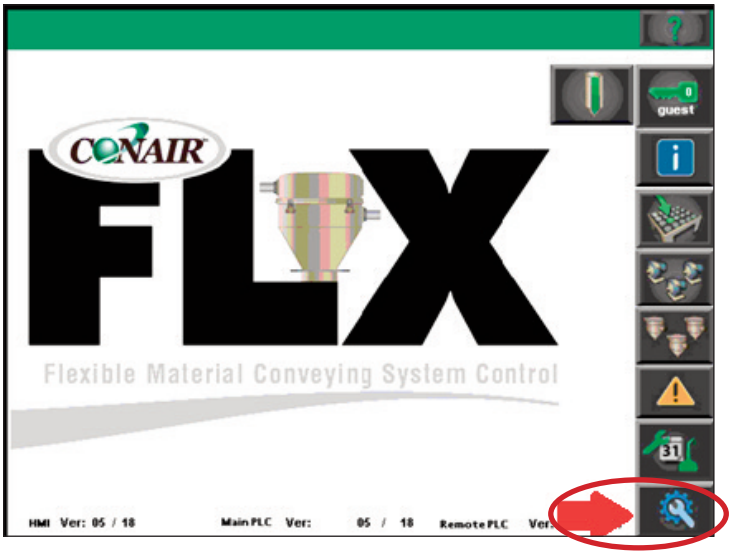


8 **Press Accept to accept the source for this device.**



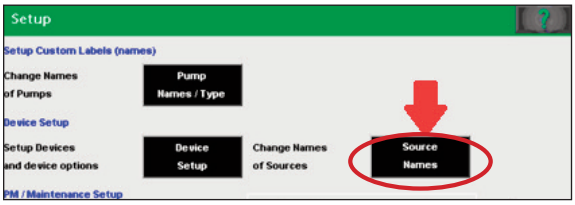
9 **Repeat this process for each device that will be used with the MVP.**

Source Settings

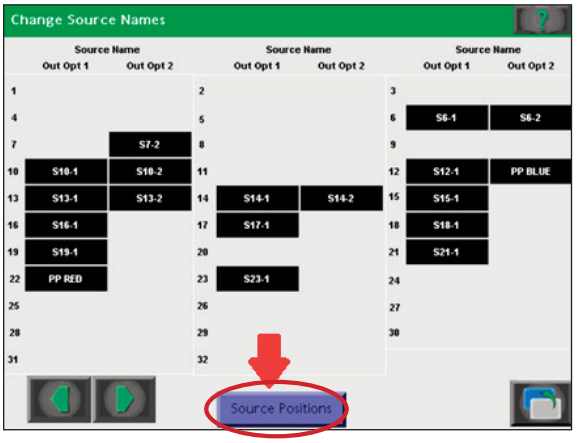


1 From the Home page of the FLX-128, press the "Settings" button.

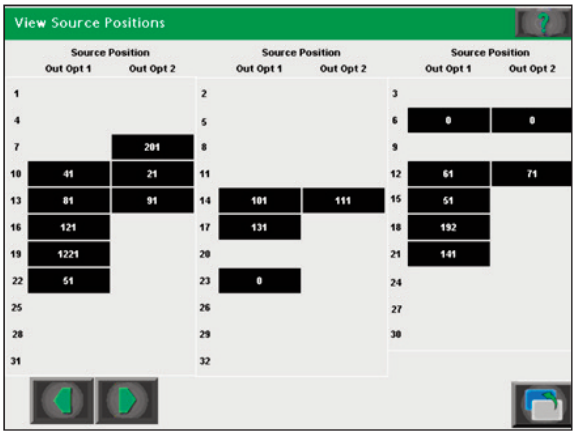
2 Press the "Source Names" button. The Source Names page displays the source ID of the different materials.



3 Select the "Source Positions" button to indicate which manifold that source is connected to. The "View Source Positions" screen will display manifold positions for sources.



4 Use the following system to understand what the positions numbers mean. The first digit(s) represent the manifold number labeled on the RSS table. The last digit indicates how many manifolds the material is in. This will always be a 1 or a 2. For example: the number 131 tells us that this material is in manifold #13. It also tells us that the material is ONLY in manifold #13. If the number is 52, that would tell us that the material is in manifold #5, as well as the next manifold, manifold #6.

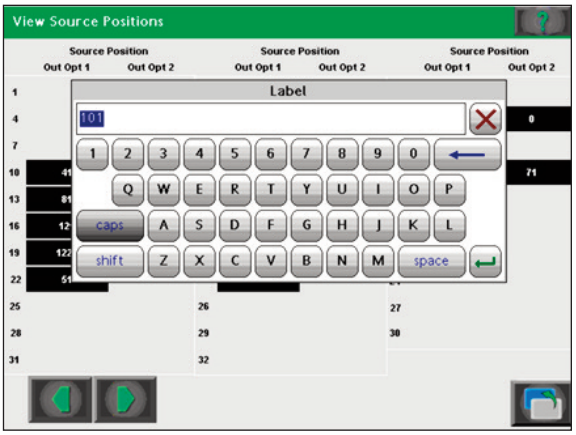


(continued)

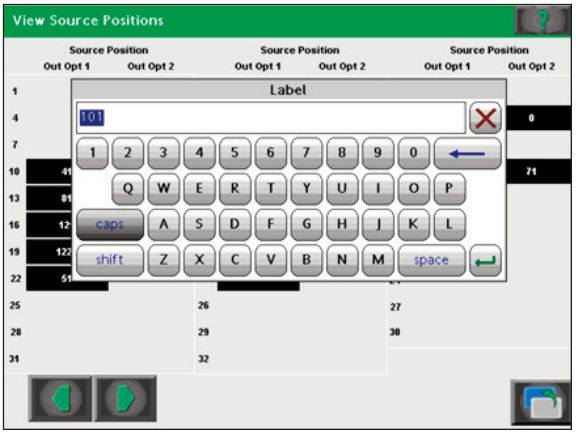
Source Settings

(continued)

5 **Press the material button to assign the manifold number that you want the device to draw from.**



6 **Repeat step 5 for each source position you would like to change.**

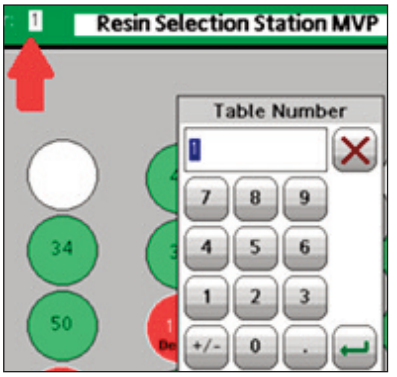


Navigating FLX-128 Screens to View MVP Information

The FLX-128 control can be used to navigate and control the MVP.

1 **From the Home page of the FLX-128, press the "RSS table" button.** The RSS MVP screen will load.

2 If your unit is a 12-manifold**, press the right arrow key to view the other six manifolds.**



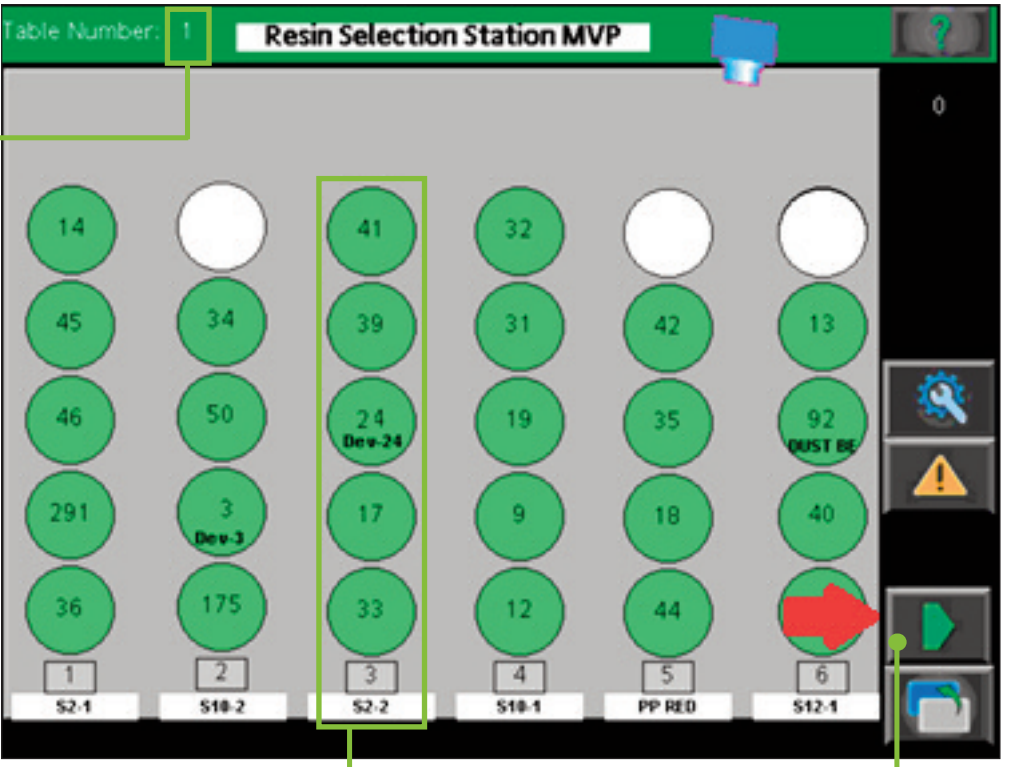
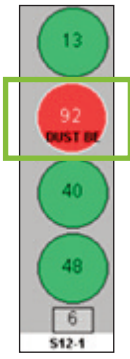


Table Number
The FLX-128 can be connected to 16 MVP tables. By pressing the number at the top left corner of the screen, a keypad can be used to select which MVP you want to view.



Tube Locations
Tubes that display as green are tubes that the MVP recognizes as being in the correct location. This means that the device is attached to the desired source correctly.

Tubes that display as red are tubes that the MVP recognizes as being in an INCORRECT location. Pressing on the red circle will display text which will indicate which manifold the tube needs to be moved to. Conveying will not start until the tube is in the correct position.

Manifold Information
Manifolds are labeled 1 through 6 across the screen. On a 12 manifold system, pressing the right arrow button will show manifolds 7 through 12.

Each manifold is connected to a source, and can have multiple devices attached to it. In this example, the source S2-2 is attached to Manifold 3. The MVP is reading that tube numbers 33, 17, 24, 39, and 41 are currently located in Manifold 3. For ease of use, Conair recommends that the tube numbers match the device numbers in your system. Devices and sources can also be labeled with text, as seen with tube #92 on the screen above. This device is labeled Dust Be, short for Conair's DustBeater. The source for Manifold 5 has been labeled as PP RED. Customizing this text for your system makes FLX-128 and MVP use much easier.

Next
Pressing the Next, or Right Arrow button will display the other six manifolds in a 12-manifold system.

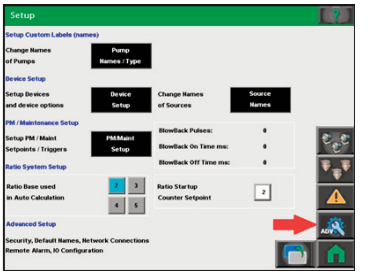
Synchronizing MVP HMI to the FLX-128 PLC.

NOTE: In order to make the changes required in this procedure, the user must be logged in at the "admin" administrator level.

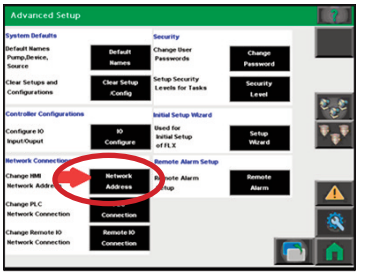
In order to view the MVP, it is necessary to choose which (one) HMI on the FLX-128 control network will view the MVP.

1 From the Home page of the FLX-128, press the "Settings" button.

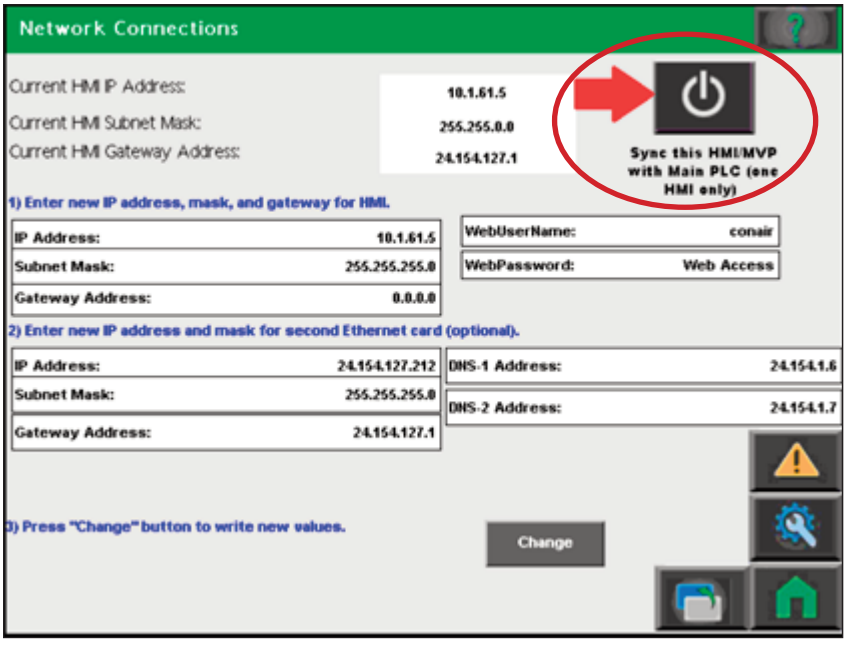
2 On the Settings screen, click on the "Advanced Settings" button.



3 On the Advanced Settings screen, click on the "Network Address" button.

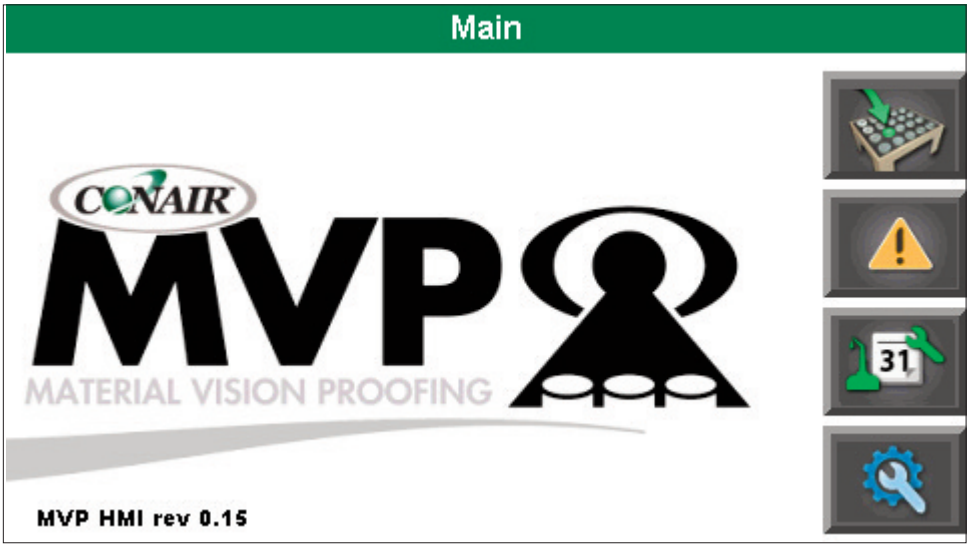


4 Click on the "Sync this HMI/MVP with Main PLC (one HMI only)" button. This HMI will now be synchronized with the MVP.



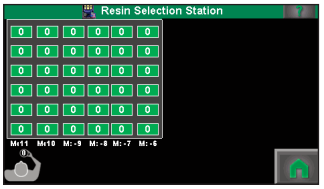
Navigating the MVP HMI- Main Screen

The MVP will be controlled from the FLX-128, but it also has its own HMI at the unit for observing current status and making easy changes.

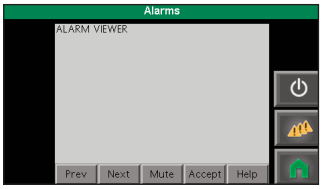


MVP Main screen

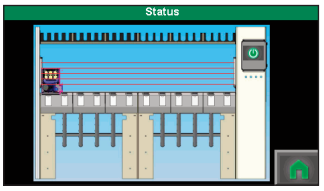
Resin Selection Station button: Pressing this button navigates to the RSS table view. There will be more information about this screen later in the Operation section of this user guide.



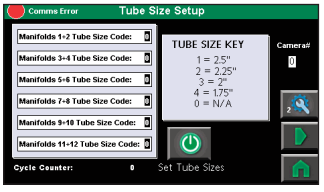
Alarm button: Pressing this button will navigate to the Alarms screen, where any active alarms will be displayed.



MVP Status button: Pressing this button navigates to the MVP Status screen. There will be more information about this screen later in the Operation section of this user guide.

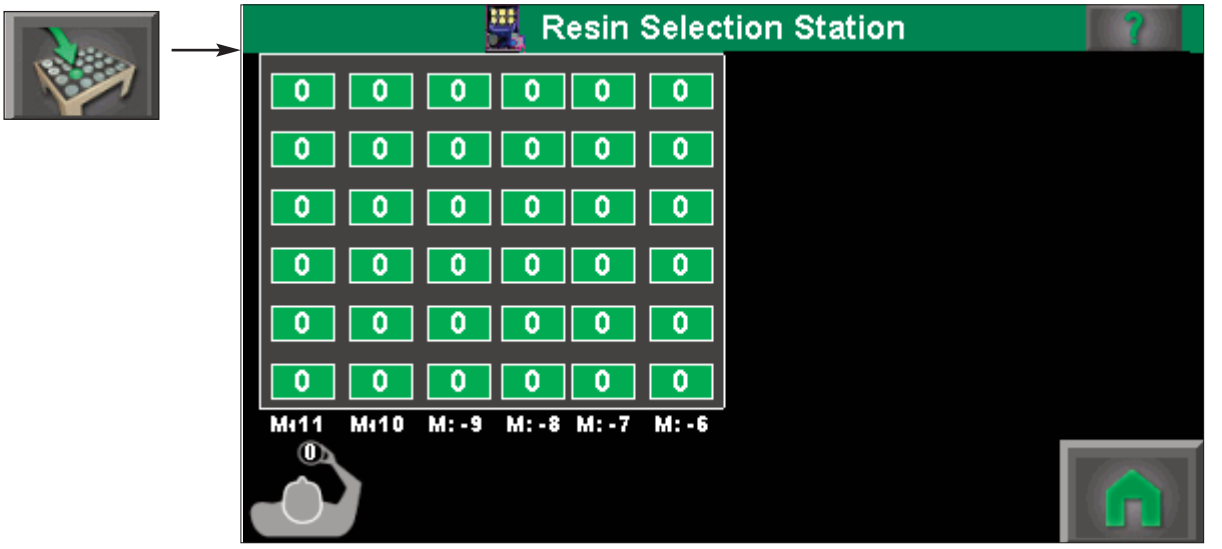


Setup button: Pressing this button will navigate to the first setup screen, which is the Tube Size Setup screen. From this screen, you can set the tube sizes, or advance to the other setup functions.



Navigating the MVP HMI- RSS Screen

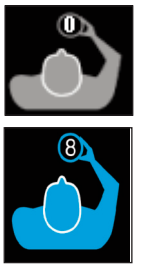
The MVP will be controlled from the FLX-128, but it also has its own HMI at the unit for observing current status and making easy changes.



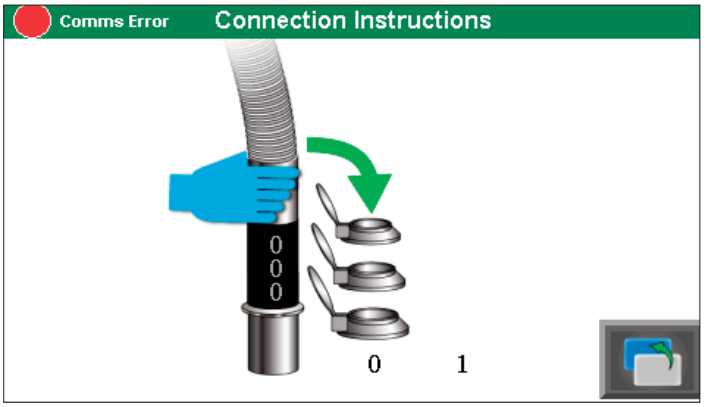
RSS Screen

On the MVP HMI, the RSS screen shows the operator which tubes are in which manifold locations, as well as if there is a change that needs made. Each box (in this example green) shows a tube location. Once a tube with a label is placed in the location, the tube number will display on the screen. All tubes displayed in green boxes are in the correct location, or are not currently in use. If a tube is displayed in a red box, that tube needs to be moved to another location. Pressing on the red button will show where the tube needs to move to.

The MVP man. The grey man shown on the screen above represents the operator of the machine. When the man is grey, as above, he is at rest, and does not need to make any changes. When the man changes to blue, a numbered tube will appear in his hand. The blue MVP man will slide to the manifold number where he needs to place that tube. This informs the operator which tube needs moved, and to which manifold.

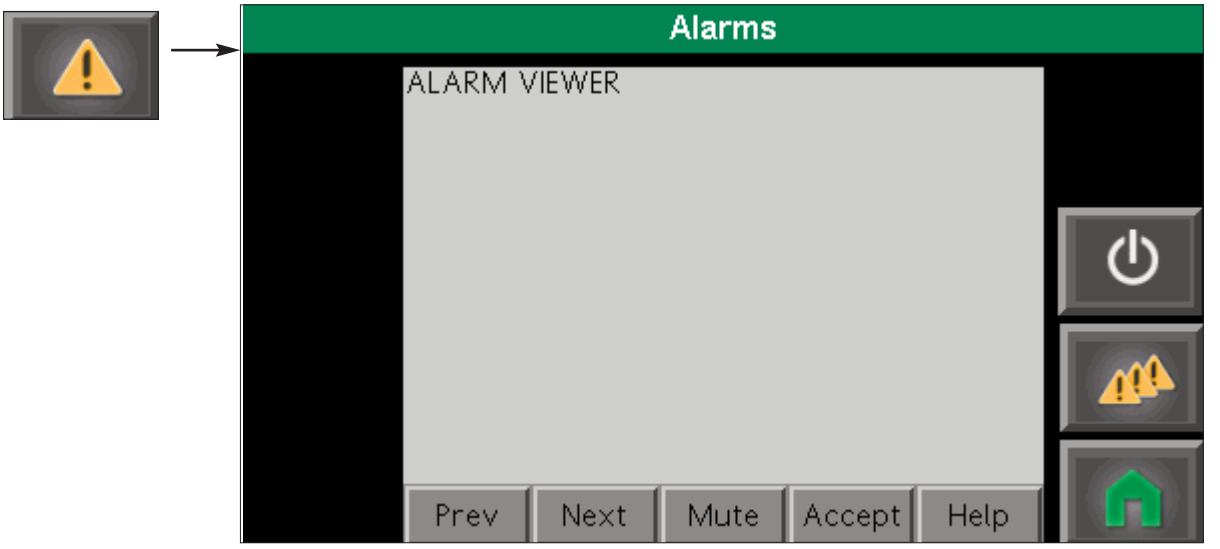


If the tube button is pressed, a new screen will appear, showing which tube needs moved to which manifold.



Navigating the MVP HMI- Alarm screen

The MVP will be controlled from the FLX-128, but it also has its own HMI at the unit for observing current status and making easy changes.



Alarm Screen

On the MVP HMI, the Alarm screen shows the operator any alarm condition of the unit. Active alarms will be displayed, and can be accepted or muted (depending on alarm severity) on this screen.

Proofing Enable: Pressing this button turns the proofing on or off. The unit comes set from the factory with proofing turned on.

Alarm history: Pressing this button will navigate to the Alarms history screen.

The most current alarm will be displayed and highlighted at the top of a list. Pressing the **Prev** or **Next** button will scroll up and down through the active alarms list.

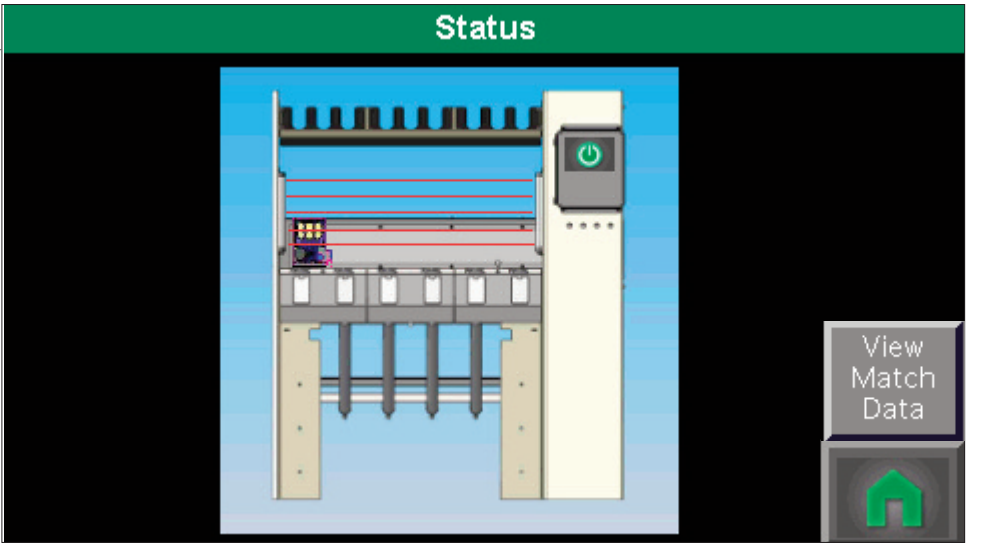
Mute: Pressing this button will mute an active alarm.

Accept: Pressing this button will accept an active alarm. If the condition is not corrected, the alarm will activate again.

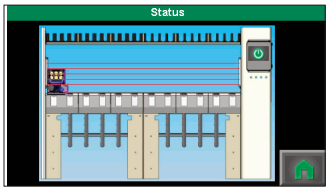
(continued)

Navigating the MVP HMI- MVP Status Screen

The MVP will be controlled from the FLX-128, but it also has its own HMI at the unit for observing current status and making easy changes.



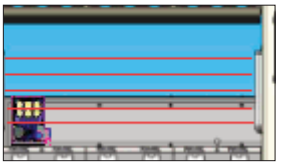
NOTE: On a 12-manifold system, the screen will appear as below.



MVP Status Screen

On the MVP HMI, the Status screen displays several valuable pieces of information.

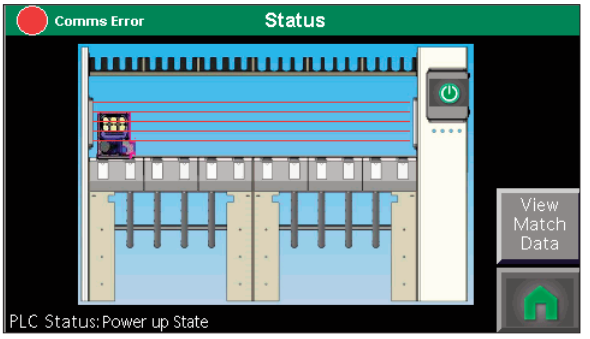
The red lines represent the light curtain. If any object breaks the light curtain, or the curtain is not operating properly, the red lines will not be visible.



The camera is visible on this status screen, and will move across the graphic as the camera scans the table.

The control enclosure visually displays that there is power getting to all the control components.

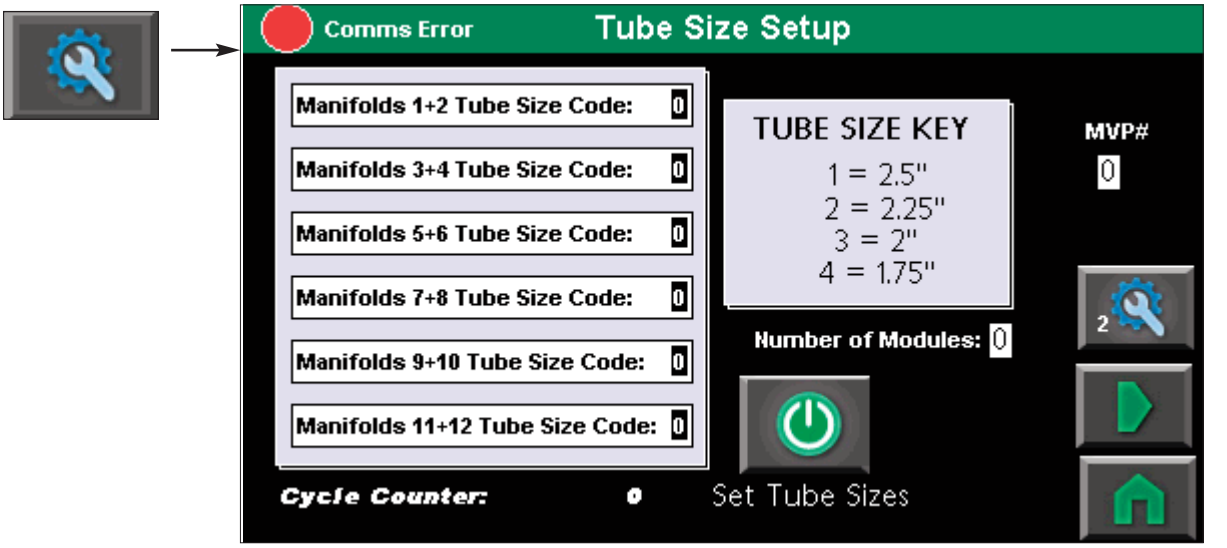
The View Match Data button will navigate to a screen that will display OCR percentage match and the target percentage match. This information is valuable for calibration of the camera, and for troubleshooting problems.



Text will display on the screen showing if there is a problem with the stepper motor or camera. Also, text of current PLC operations will display on the screen.

Navigating the MVP HMI- Setup Screen

The MVP will be controlled from the FLX-128, but it also has its own HMI at the unit for observing current status and making easy changes.



Setup Screen

On the MVP HMI, the Setup screen is used to set the tube size. The Tube Size Setup procedure will be outlined later in the Operation section of this user guide. Navigation from this screen includes:

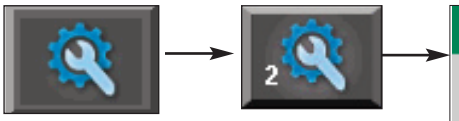
Advanced setup: This screen allows for changing the IP address.

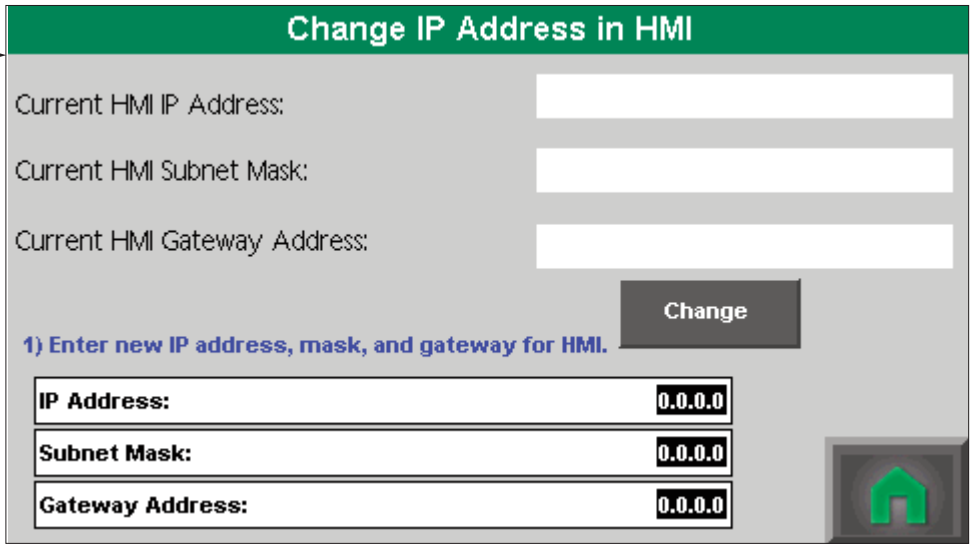
Next: Pressing this button will navigate to the Calibration setup screen.

Home: Pressing this button will return to the Home screen.

Navigating the MVP HMI- Advanced Setup Screen

The MVP will be controlled from the FLX-128, but it also has its own HMI at the unit for observing current status and making easy changes.





MVP Change IP Address screen

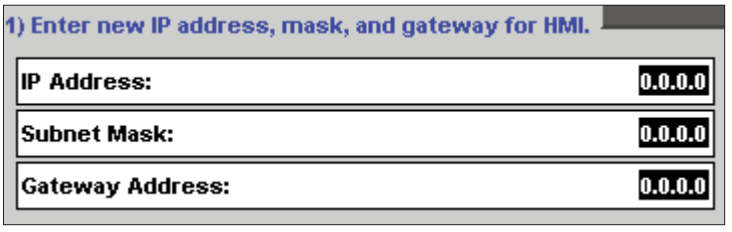
NOTE: Users must be logged in with the appropriate security level in order to make changes to this screen. Changing the IP address should only be done by qualified personnel who understand the network.

On the MVP HMI, the Change IP Address screen allows the HMI IP address to be changed. The procedure for changing the IP address is below.

1 **From the MVP Main screen, press the setup button.** The MVP setup screen will be displayed.

2 **From the MVP Setup screen, press the Advanced Setup button.** The MVP Change IP Address screen will be displayed.

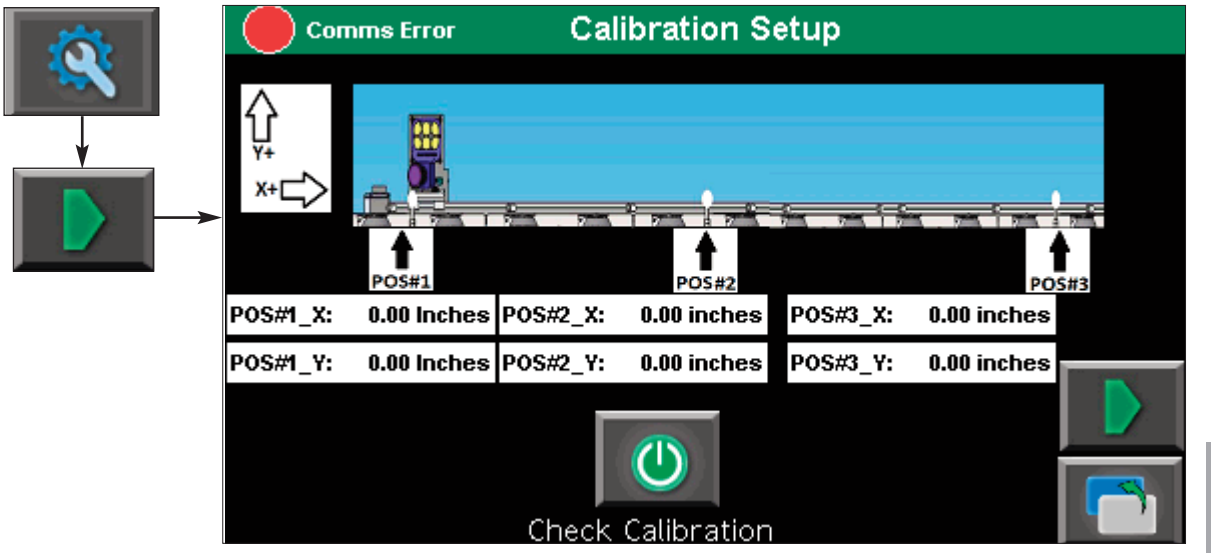
3 **Enter the IP address, Subnet mask and Gateway address on the button part of the screen.**



4 **Press the "Change" button to set the new information.**

Navigating the MVP HMI- Calibration Screen

The MVP will be controlled from the FLX-128, but it also has its own HMI at the unit for observing current status and making easy changes.



Calibration Setup Screen

On the MVP HMI, the Calibration Setup screen is used to make sure that the MVP table, RSS table, and camera are aligned appropriately for best operation of the proofing system. On a 6-manifold system, the calibration will show two (2) reference points. On a 12-manifold system, the calibration will show three (3) reference points.

1 **Make sure the camera is not moving, and is located at the home position**.

2 **Press the "Check Calibration" button**. Calibration will take between 20 and 30 seconds. Wait for calibration to complete before continuing. Position reference should populate the data boxes.

3 **Adjust the tables as necessary to get the position data to 0.07 or less for all positions.** Several adjustments and calibration steps will be necessary to reach the desired alignment. This process may take some time. Be patient. Accuracy of the alignment is extremely important to the proofing capabilities of the MVP system.

4 **Press the "Check Calibration" button after each adjustment to verify that your adjustments are improving the alignment.**

5 **Once all positions are within 0.07, press the "back" button and return to the Tube Setup screen.**

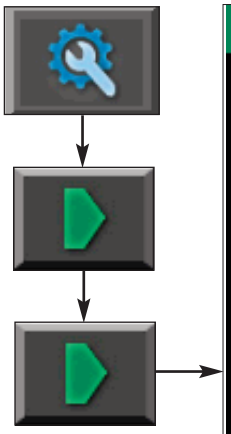
6 **Pressing the "Set Tube Sizes" button confirms to the MVP that your alignment is complete.**

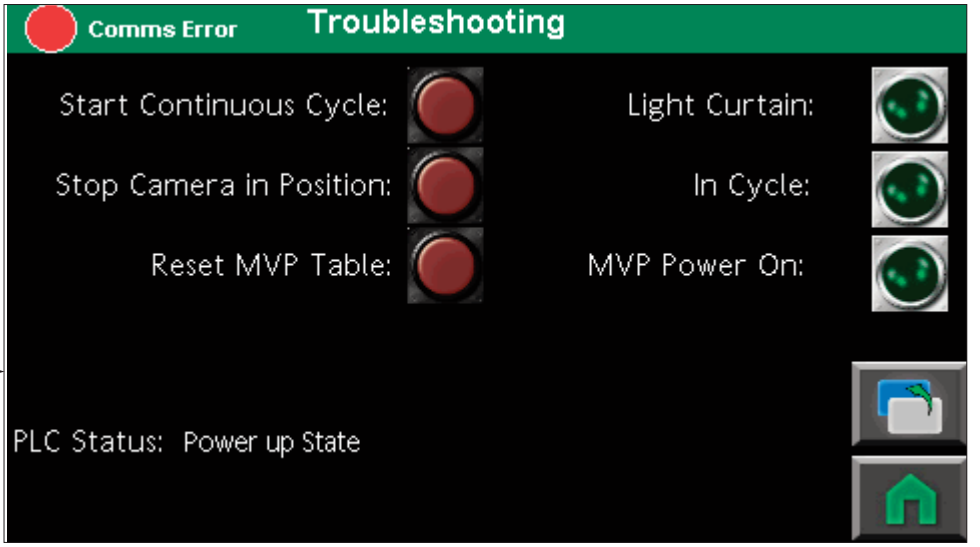
NOTE: In order for calibration to be successful, the table should be visually aligned as closely as possible. Also, there should be no vibrations or movement of the tables during the calibration process.

NOTE: Do not break the light curtain during the calibration process. This disruption will cause an incorrect calibration.

Navigating the MVP HMI- Troubleshooting Screen

The MVP will be controlled from the FLX-128, but it also has its own HMI at the unit for observing current status and making easy changes.





NOTE: Users must be logged in and have the appropriate security level to access this screen.

Troubleshooting Screen

On the MVP HMI, the Troubleshooting screen is used to troubleshoot portions of the system as necessary.

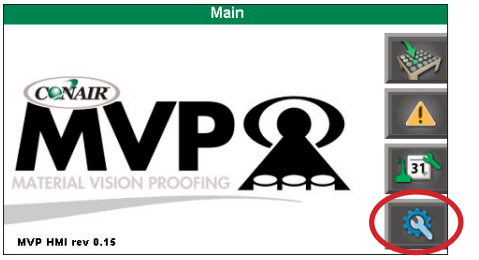
From this screen, the operator can:
- Start a continuous cycle of the camera scanning the table
- Stop the camera in a position
- Reset the MVP table

This screen will also show when:
- The light curtain is active
- The MVP camera is currently in cycle
- The MVP power is on

MVP HMI - Configuring Tube Sizes

In order for the MVP to operate correctly, the camera needs to know what tube sizes will be used on the RSS table. The MVP HMI will be used to set the tube sizes.

1 From the MVP HMI Main screen, press the Settings button.



NOTE: Do not try to perform this setup procedure until the MVP camera is done moving and has returned to the Home position.

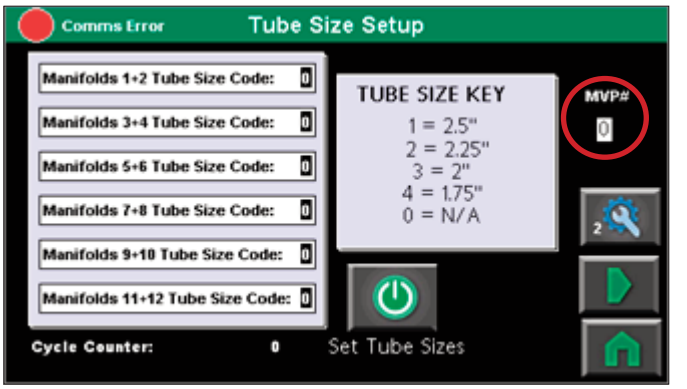
2 Enter the MVP number in the upper right-hand corner of the screen. Each MVP connected to the FLX-128 needs to be identified as a unique number.

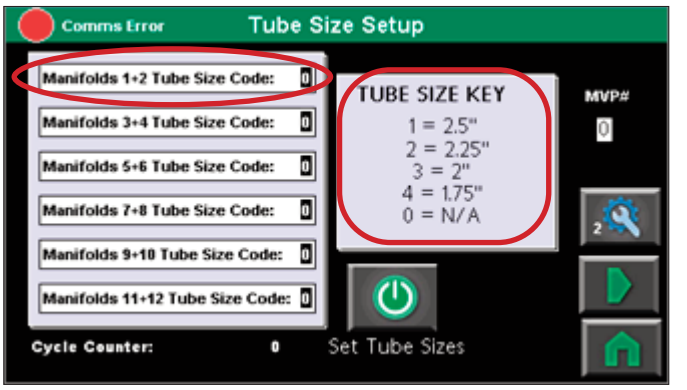
3 Make sure that the camera is not moving, and is located in the Home position.

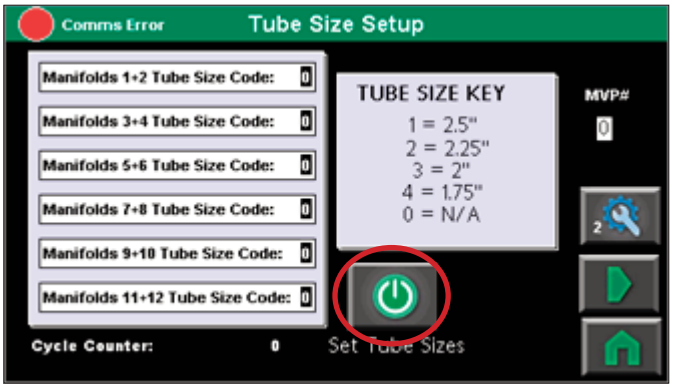
4 Press the "Manifolds 1 + 2 Tube Size Code" button and enter the tube size using the Tube Size Key to the right of the button. For example, if the tube size is 2.5 inches, enter the number 1 as the Size Code. If there are no tubes in the manifold, leave the Size Code as a zero (0).

5 Repeat the procedure in step 3 for each of the manifolds.

6 Once all manifold tube sizes are set, press the "Set Tube Sizes" button and wait approximately five seconds for the MVP system to change the values.

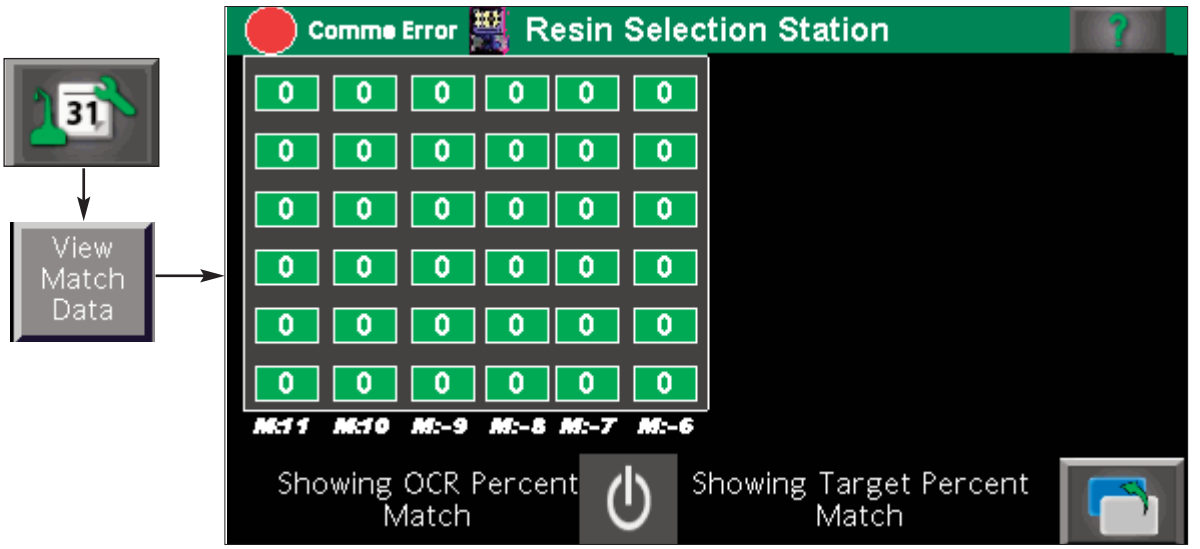






Navigating the MVP HMI- Match Data Screen

The MVP will be controlled from the FLX-128, but it also has its own HMI at the unit for observing current status and making easy changes.



MVP Match Data screen

On the MVP HMI, the Match Data screen displays several valuable pieces of information.

1 **Press the power button on this screen.** This will display the OCR percentage and the target percentage. When you notice that the OCR percentage is starting to decrease, this is an indication that the camera accuracy is starting to decrease. Possible causes of this are:

issues with the tube labels (grease, dust, or pealing),
issues with the camera (the window in front of the camera is dirty or scratched),
issues with lighting (direct sunlight is hitting the table.

2 **Take appropriate action as necessary to return the OCR percentage as close as possible to the target percentage match.** Conair recommends cleaning the tube labels and the camera window regularly.

To order new tube labels, or any other part of the MVP:

Contact Conair Parts
1 800 458 1960
From outside of the United States, call:
814 437 6861

Testing the Operation of the MVP

After initial installation, or after re-locating or adjusting the MVP, it is a good idea to test for proper operation.

NOTE: This test will be performed at the MVP HMI. Make sure that the FLX-128 and MVP HMI have been configured as described in the procedures in the Installation and Operation sections of this user guide.

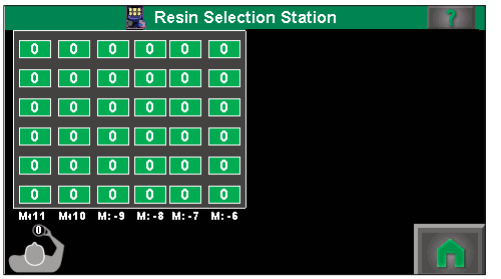
1 Make sure that the MVP and FLX-128 are powered on and ready for operation.

2 Place a labeled tube in each of the four (4) corners of the RSS table.

3 Use your hand and break the plane of the light curtain at the front of the RSS table. The camera should scan the table. If the camera does not scan, *refer to the Troubleshooting section of this user guide* for possible causes.

4 Navigate on the MVP HMI (the 4-inch screen on the MVP unit), to the RSS Table screen.

5 Verify that the MVP is showing the correct tubes in the correct locations. If the tubes do not display, *refer to the Troubleshooting section of this user guide* for possible causes.



SECTION
5

Maintenance

Preventative maintenance schedule

The MVP requires regular maintenance to ensure peak performance. Most maintenance is simple and can be performed by operators without specialized maintenance training.

- **Daily, or as often as needed**
  - ❒ **Visually inspect the light curtain, all cords, and all tube labels. Make sure that none of the tube labels are dirty, starting to peel off, scratched, or damaged in any way that would affect MVP performance.**
  - ❒ **Check all of the cables and junction boxes associated with the MVP.** Make sure all cables are intact, undamaged, out of harm's way, etc.
  - ❒ **Using a clean and dry microfiber cloth, wipe each tube label, the RSS table top, and the light curtain sensors.**
  - ❒ **Using Windex or a similar cleaner, clean the glass in front of the MVP camera.**

- **Monthly, or as often as needed**
  - ❒ **Using a clean, dry cloth wipe each tube, the RSS table top, the MVP table, the RSS table walls, and the light curtain sensors.**
  - ❒ **Using Windex or a similar cleaner, clean both sides of the glass in front of the MVP camera.** You will need to remove the camera enclosure to clean the inside of the glass.
  - ❒ **Check how well the camera is reading the labels.** Use the "View Match Data" screen in the Status area of the control. This will help determine how the camera is performing. It should be near or above 90%.

- **Yearly, or as often as needed**
  - ❒ **Cycle power to the MVP control.** If you have not powered the unit down in a year, cycle power so that the MVP can re-start**.**

SECTION
6

Troubleshooting

Before Beginning

You can avoid most problems by following the recommended installation, operation and maintenance procedures outlined in this User Guide. If you have a problem, this section will help you determine the cause and tell you how to fix it.

Before you begin troubleshooting:

- ❏ Find any wiring, parts, and assembly diagrams that were shipped with your equipment. These are the best reference for correcting a problem. The diagrams will note any custom features or options not covered in this User Guide.

- ❏ Verify that you have all instructional materials related to the MVP. Additional details about troubleshooting and repairing specific components are found in these materials.

- ❏ Check that you have the manual(s) for other equipment connected in the system. Troubleshooting may require investigating other equipment attached to, or connected with the MVP.

A Few Words of Caution

WARNING: Improper installation, operation or servicing may result in equipment damage or personal injury.

This equipment should only be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation, and potential hazards of this type of machine.

All wiring, disconnects, and fuses should be installed and adjusted by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

WARNING: Electrical hazard

Before performing maintenance or repairs on this product, disconnect and lock out electrical power sources to prevent injury from unexpected energization or start-up. A lockable device has been provided to isolate this product from potentially hazardous electricity.

What the MVP Can Tell You

The Material Vision Proofing system (MVP) is a validation system that verifies that the correct material is being conveyed to the correct destination. The MVP is a combination of a Resin Selection System (RSS), the MVP table and special camera equipment, the MVP electrical enclosure (with optional 4-inch display), and tubes connections for the RSS with labels engineered to be read by the MVP camera. The MVP is controlled by a Conair control, either the FLX-128 or the ELS.

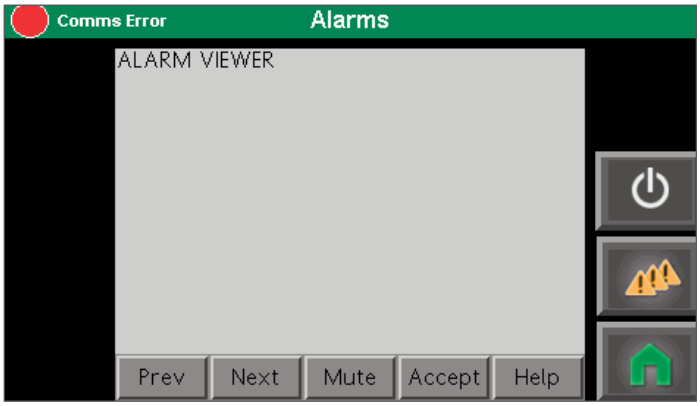
The Material Vision Proofing (MVP) system uses tube labels on the RSS (Resin Selection Station) in coordination with software and a special camera to verify that the correct tube is in the correct location in the RSS table. This ensures that the correct material will be conveyed to the desired location and eliminates cross-contamination.

The MVP is equipped with a light curtain, which when broken triggers the conveying system to stop at the end of the current cycle. Conair's FLX-128 or ELS control can be used to program a desired material change, which will notify the operator which tube should be placed in which manifold row on the RSS table. Once the operator has completed moving the tubes, the MVP begins its scan of the tube locations, verifying that each tube is in the correct manifold to convey the desired material to the desired location.

An added benefit to the optional 4-inch MVP display is that it is attached to the MVP, and allows the operator, while standing at the RSS table, to graphically see the location that each tube should be placed.

Understanding Alarms

The MVP, in conjunction with the FLX-128 or ELS monitors material sources and destinations, and prevents incorrect conveying of material.



Alarms can be viewed on the MVP 4-inch HMI on the "Status" screen or "Alarm" screen, or on the FLX-128 "Alarm" screen. These screens will indicate if the alarm is a conveying alarm, or an MVP equipment alarm such as a stepper motor malfunction, or a camera communication error. On the "Alarm" screens, you can silence an alarm by pressing the mute button.

On the FLX-128, when there is an active alarm, the square at the bottom right of the screen will change from green to red, and will display the current active alarm.

The information in the flashing red box tells you what has triggered the alarm, and at what time the alarm occurred. If a MVP stepper motor or camera alarm occurs, the FLX-128 will stop conveying entirely until the alarm condition is fixed.

If there is a camera communication alarm, a reset of the MVP power is necessary.

If there is a stepper motor alarm, it is necessary to navigate to the "Status" screen of the MVP and press "Reset MVP Table".

If you select the hopper that is causing the alarm, you will see that the temperature in the alarm location selected is below the alarm setpoint.

MVP Alarms and Problems

Symptom	Possible cause	Solution
Alarm - Communication error	**A cord or cable is unplugged or damaged.**	❒ Make sure that all cords are connected and undamaged. This includes cords to and from the MVP enclosure, to and from the camera, light curtain, stepper motor, and FLX-128.
	The MVP needs reset.	❒ Cycle power to the MVP off, then back on. Allow the MVP to restart.
Alarm- Stepper motor error	**The stepper motor needs reset.**	❒ Navigate to the MVP "Status" screen. Press "Reset MVP table." ❒ Cycle power to the MVP off, then back on. Allow the MVP to restart.
Camera not recognizing the correct tube.	**Dirty or damaged tube label.**	❒ Clean or replace tube label.
	Tube numbers not programmed into FLX-128.	❒ Refer to *Preparing the FLX-128 for the MVP in the Operation section of this User Guide.*
	MVP and RSS tables out of alignment.	❒ Loosen the bolts that connect the MVP to the RSS table. Refer to *Navigating the MVP HMI-Calibration Screen in the Operation section of this User Guide.*
Material not conveying	**The MVP light curtain is obstructed, or was obstructed.**	❒ Verify that the camera is scanning the manifold. ❒ Verify that the light curtain is not obstructed, and is operating properly. You should be able to visually see the sensor light change when you obstruct the curtain.
	There is an alarm or error outside the MVP system.	❒ Check the FLX-128 for alarms. ❒ Check all conveying equipment for faults or alarms.

We're Here to Help

Conair has made the largest investment in customer support in the plastics industry. Our service experts are available to help with any problem you might have installing and operating your equipment. Your Conair sales representative also can help analyze the nature of your problem, assuring that it did not result from misapplication or improper use.

Additional manuals and prints for your Conair equipment may be ordered through the Customer Service or Parts Department for a nominal fee. Most manuals can be downloaded free of charge from the product section of the Conair website.
www.conairgroup.com

How to Contact Customer Service

To contact Customer Service personnel, call:

NOTE: Normal operating hours are 8:00 am - 5:00 pm (EST). After hours emergency service is available at the same phone number.

From outside the United States, call: 814-437-6861
You can commission Conair service personnel to provide on-site service by contacting the Customer Service Department. Standard rates include an on-site hourly rate, with a one-day minimum plus expenses.

Before You Call...

If you do have a problem, please complete the following checklist before calling Conair:

- ❒ Make sure you have all model, control type from the serial tag, and parts list numbers for your particular equipment. Service personnel will need this information to assist you.
- ❒ Make sure power is supplied to the equipment.
- ❒ Make sure that all connectors and wires within and between control systems and related components have been installed correctly.
- ❒ Check the troubleshooting guide of this manual for a solution.
- ❒ Thoroughly examine the instruction manual(s) for associated equipment, especially controls. Each manual may have its own troubleshooting guide to help you.
- ❒ Check that the equipment has been operated as described in this manual.
- ❒ Check accompanying schematic drawings for information on special considerations.

Equipment Guarantee

Conair guarantees the machinery and equipment on this order, for a period as defined in the quotation from date of shipment, against defects in material and workmanship under the normal use and service for which it was recommended (except for parts that are typically replaced after normal usage, such as filters, liner plates, etc.). Conair's guarantee is limited to replacing, at our option, the part or parts determined by us to be defective after examination. The customer assumes the cost of transportation of the part or parts to and from the factory.

Performance Warranty

Conair warrants that this equipment will perform at or above the ratings stated in specific quotations covering the equipment or as detailed in engineering specifications, provided the equipment is applied, installed, operated and maintained in the recommended manner as outlined in our quotation or specifications.

Should performance not meet warranted levels, Conair at its discretion will exercise one of the following options:

- Inspect the equipment and perform alterations or adjustments to satisfy performance claims. (Charges for such inspections and corrections will be waived unless failure to meet warranty is due to misapplication, improper installation, poor maintenance practices or improper operation.)
- Replace the original equipment with other Conair equipment that will meet original performance claims at no extra cost to the customer.
- Refund the invoiced cost to the customer. Credit is subject to prior notice by the customer at which time a Return Goods Authorization Number (RGA) will be issued by Conair's Service Department. Returned equipment must be well crated and in proper operating condition, including all parts. Returns must be prepaid.

Purchaser must notify Conair in writing of any claim and provide a customer receipt and other evidence that a claim is being made.

Warranty Limitations

Except for the Equipment Guarantee and Performance Warranty stated above, Conair disclaims all other warranties with respect to the equipment, express or implied, arising by operation of law, course of dealing, usage of trade or otherwise, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.