

efi® *VUTEk® LX3 Pro/HS/h Series*
Digital Hybrid Printers



Automated Media Loading

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Revision History

Ver.	Date	Description	Request #
E	04/12/2023	Updated for h Series.	DR 7354

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Reference Guide

1.0 Introduction

1.0 Introduction

This guide describes the operation and maintenance of the Automated Media Loading System peripherals. This chapter contains links to documentation, training, and support materials. This guide has these objectives:

- **Learn media delivery system components** - Users are given a physical description, including component locations.
- **Teach safe operation** - Users are taught basic safety principles to protect themselves from injury and to protect components from damage due to improper use.
- **Setup components** - Users learn basic setup procedures, including setting offsets, loading media and completing print jobs.
- **Learn control panel** - Users are taught fundamentals of the Automated Media Loading System and how to complete actions using any of the available Control Panels.

NOTE: The Output Transition Table is only configured as an Output Transition table. There is no 3/4 Output Transition table.

1.1 Training

Operator training is an essential part of printer installation and operation. EFI Inkjet provides an educational support system that assists new and experienced operators to develop and maintain skills. Go to <http://inkjet.support.efi.com/training/> for training information.

1.2 Customer Resources

The EFI Inkjet customer support website contains technical supplements, advisory bulletins, operations and maintenance guides, software, and Safety Data Sheets (SDS) available at <http://inkjet.support.efi.com/index.php>. Customers should log onto the EFI Inkjet Support site regularly to get current information or advisories affecting their printer or accessories.

	North & South Americas		Europe, Middle East, Africa	Asian Pacific (APAC)
	Customer Care			
	U.S	855-EFI-4HLP (855-334-4457)	+31 20 658 8070	+1 650 357 4790
			EuroSupport@efi.com	
	Canada Mexico South America	+1 650 357 4790		
	Technical Support site: https://inkjet.support.efi.com Technical Support email: inkjet.support@efi.com			
	US Canada	855-EFI-4HLP (855-334-4457)	+32 2 749 94 50	+65 6221 2765
	Mexico South America	+1 412 690 4321	DE +49 2102 745 4500 NL +31 20 658 8080/8069 UK +44 12462 98085	
	Order Parts			
	US	Inkjet.Orders@efi.com	EMEA.inkjetorders@efi.com	InternationalOrders@efi.com
	Canada Mexico South America	InternationalOrders@efi.com		

Operations Guide

2.0 Safety

2.0 Safety

This chapter describes how to safely use your EFI Inkjet Solutions equipment. Before operating transition tables, personnel must:

- Read and understand the *EFI Ink Jet Printer Safety Guide*, <http://inkjet.support.efi.com/doc.php?doc=683>, and adhere to all safety precautions therein.
- Attend a training class.
- Read and sign the *UV Safety Acknowledgement Form*.

2.1 Emergency Stop Push Buttons

In case of emergency, immediately press any **Emergency Stop** push-button to stop printer.

Identify location and understand operation of emergency stop push-buttons before operating printer and peripherals; see . There are four emergency stop push buttons.

When pressed, any of the Emergency Stop Push Buttons does the following:

- Lights up
- Shuts off lamps
- Stops all printer and peripheral movement
- Stops elevated unwinder and winder, if present
- Displays an error message in the printer VUI.



Figure 2-1 E-Stop Push-button

NOTE: Pressing an emergency stop buttons does not disconnect power from printer or its electronics..



Caution: Never use emergency stop push-buttons as an alternative to powering down printer. The emergency stop push buttons are for your personal safety, and to avoid printer damage during extraordinary circumstances.

2.2 E-Stop Button Locations

The Emergency Stop System consists of all printer and peripheral emergency stop push buttons. The system uses an interlock system that disables motion when an Emergency Stop push button is pressed (enabled). Emergency stops are also located on either side of each peripheral and the host printer.

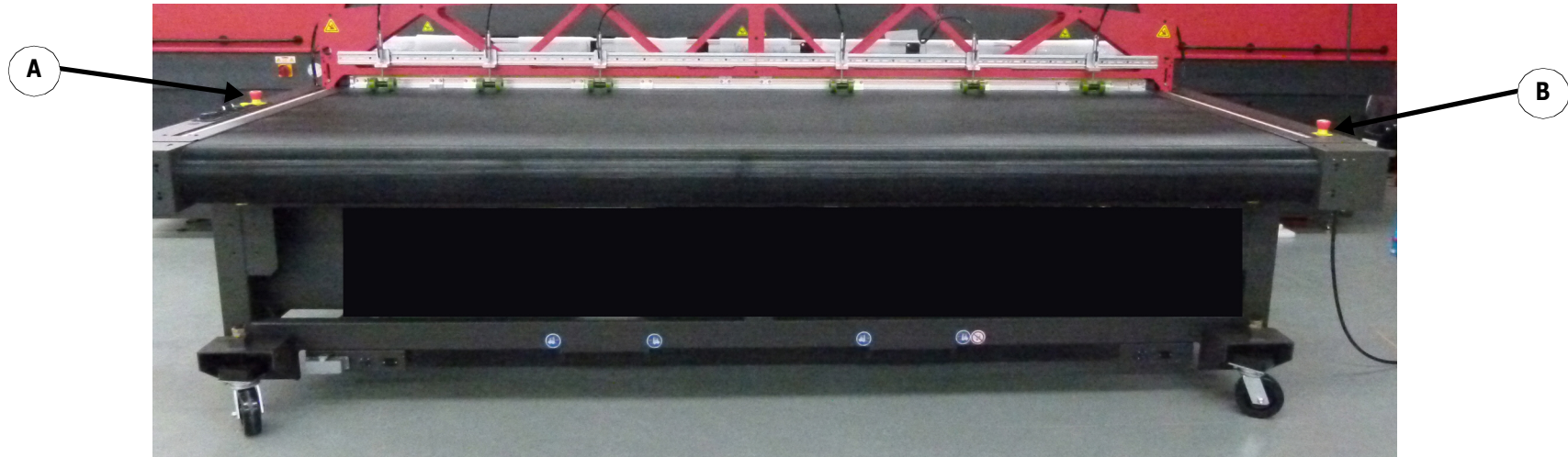


Figure 2-2 Emergency Stop Push Buttons, Front (L) and Rear (R)

A	Left side Table Emergency Stop	B	Right side Table Emergency Stop
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2.3 Safety Interlocks, Covers, Guards, Doors

This section illustrates the Safety Interlocks, Covers, and Guards for the peripherals.



Figure 2-3 Electrical Box cover and handle

Type	Description	Location
Interlocks	A door or sensor that triggers when open. The printer will not operate with a tripped interlock.	Electrical box cover handle
Covers	Protection against moving or rotating parts, or electrical components.	E-stop covers, fan covers, side covers, top cover
Guards	Eliminates access to a hazard.	Finger guards
Doors	A door with screws or a lock that limits access to hazardous areas, such as electrical compartments.	Electrical panel, PLC compartment



Caution: Keep all safety interlocks, covers, and guards in place and in working order. Do not operate printer with covers or guards removed or malfunctioning interlocks.

2.3.1 Printer and Peripheral Connection Residual Risks

There are residual risks for the peripherals when connecting to and disconnecting from printer.

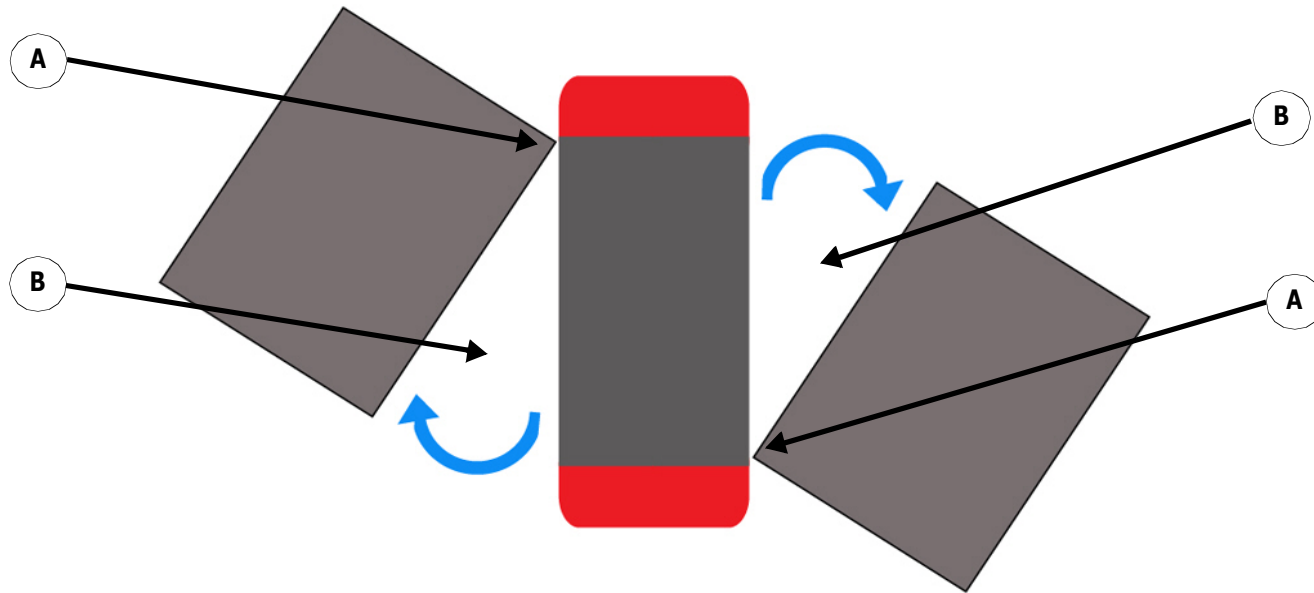


Figure 2-4 : Printer and Peripheral Connection Residual Risks

A	Peripheral pivot points	Pinch hazard	
B	Area between Peripheral and the printer	Crush hazard	

NOTE: Support for Peripheral configurations vary by printer model; [Figure 2-4](#) is an example.

3.0 Overview - 3/4 Loader

This section details the main 3/4 Loader components.

3.1 Elevated Winder and 3/4 Loader, Media Input

The printer rear is the media input side.



Figure 3-1 3/4 Loader, configured for manual sheet input (with optional web media input)

A	Host Printer
B	Operator Console
C	Main Electronics Compartment
D	Interface Cable connection block to additional automation components*
E	Media Fence assembly
F	Air actuated adjustable media hold down rollers
G	Elevated Unwinder

*If there are no additional automation components connected to the printer, the Interface Lockout plug, P/N 45131004, must be inserted into the connector.

3.2 Output Table and 3/4 Loader Configuration

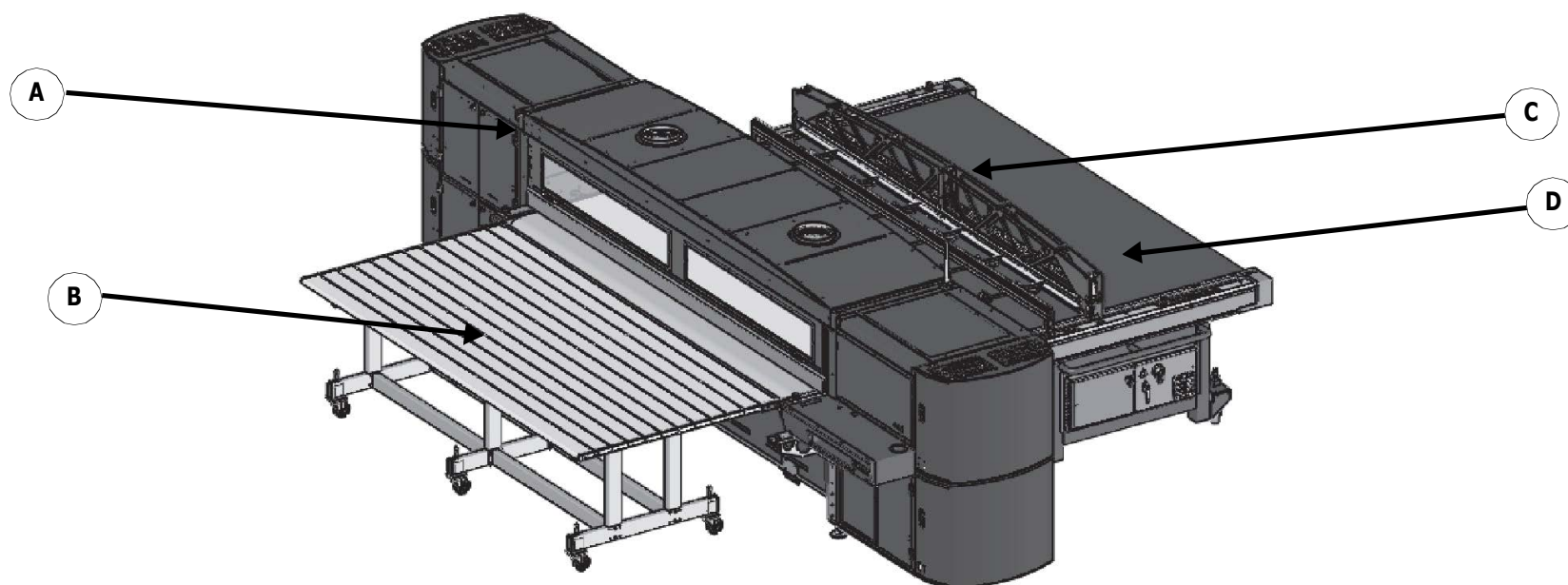


Figure 3-2 LX3 Printer and 3/4 Loader

A	Host Printer
B	Output Media table
C	Media Fence assembly
D	Automated Media Loading peripheral

Each host printer contains an interface connection point.

3.3 Interface Connection Block - Printer Side



Figure 3-3 Peripheral Interface Cable Connection block

A	Interface Cable connection block
B	220v Plug - future functionality
C	Peripheral Main Power receptacle

3.4 Interface Cable Connection Block - Additional Automation

Each peripheral contains an interface connection block to connect additional automation components.

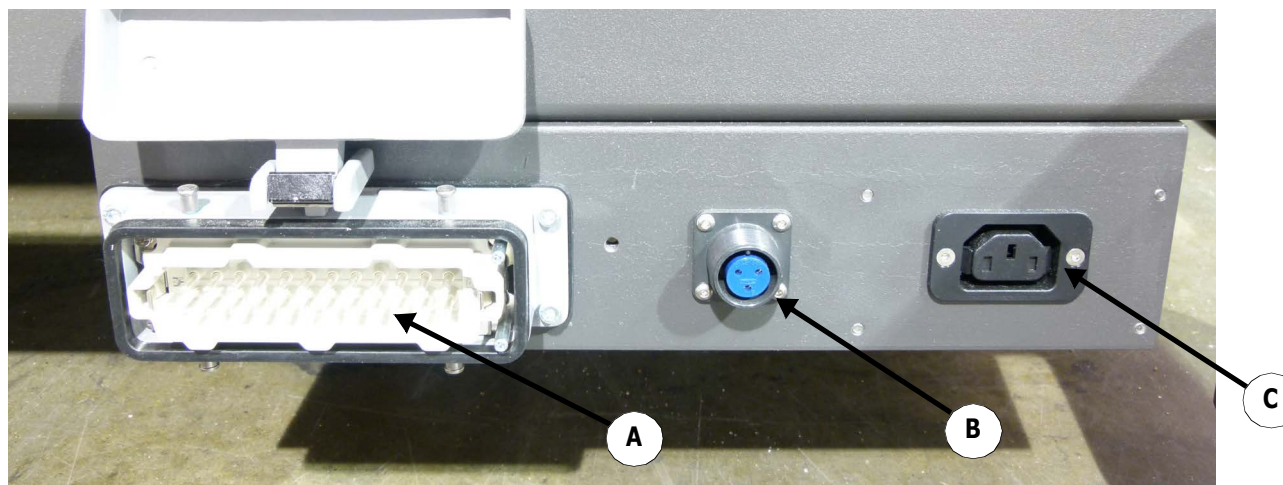


Figure 3-4 Interface Cable Connection Block

A	Communication cable connection port
B	Foot pedal connector
C	Power for Elevated Unwinder/Rewinder

3.4.1 Interface Lockout Plug

If there is no feeder connected to the printer, the interface lockout plug, P/N 45131004, must be inserted into the connector.



Figure 3-5 Interface Lockout Plug

3.5 3/4 Automated Input Table, Rear

The media input side is the printer rear.

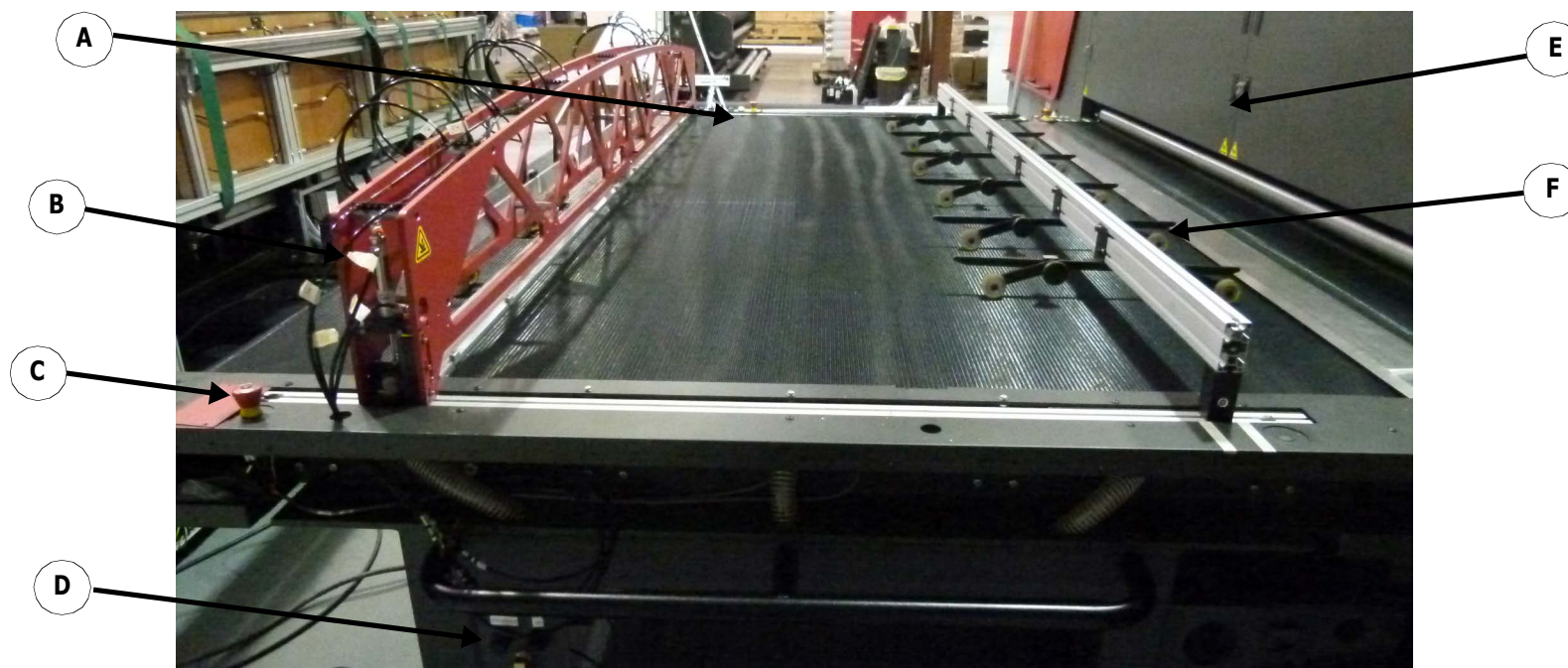


Figure 3-6 Automated Input Table, configured for automated sheet input

A	Operator console
B	-
C	-
D	Air regulator panel
E	Host printer
F	Spring-loaded adjustable media hold down wheels

3.6 Operator Console

The operator console is the main control interface for each peripheral.

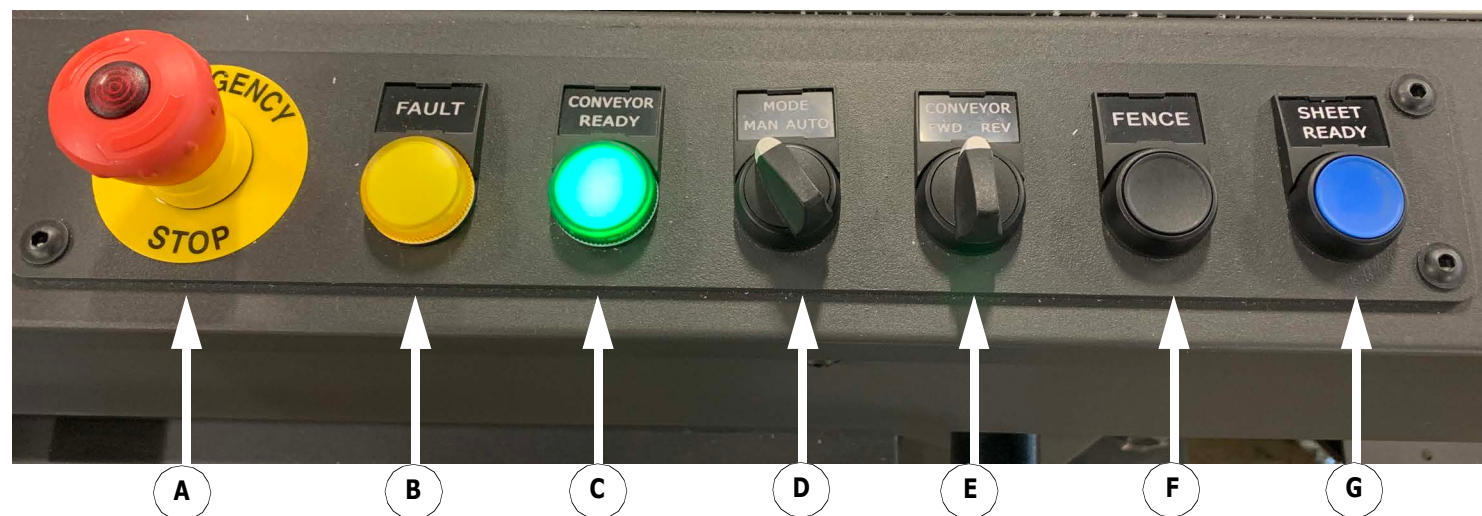


Figure 3-7 Operator Console

A	EMERGENCY STOP	Press push button in case of emergency, such as media jams.
B	FAULT	LED indicates an error. Check for Errors and Warnings in the printer VUI.
C	CONVEYOR READY	LED indicates printer is ready to accept media.
D	MODE MAN/AUTO switch	Set Loader mode. • MAN = Bypasses loader functions and print jobs with media loaded at printer media fence or unwinder. • AUTO = Utilize loader functions and print jobs with media loaded at Loader media fence.
E	CONVEYOR FWD/REV switch	Turn and hold to advance belt (manual mode only). • FWD advances belt toward printer. • REV advances belt away from printer.
F	FENCE button	Press to toggle fence up/down (manual mode only).
G	SHEET READY button	Press to begin printing ready-to-print jobs in GUI.

3.7 Output Transition Table Front View

The output side is the printer front.



Figure 3-8 Printer Front View

A	Host printer
B	Emergency Stop button
C	Media Hold down wheel assembly
D	Main Electronics Compartment

3.8 Table Connecting Pins

There are two pins on each side of the printer that connect the peripherals to the printer.

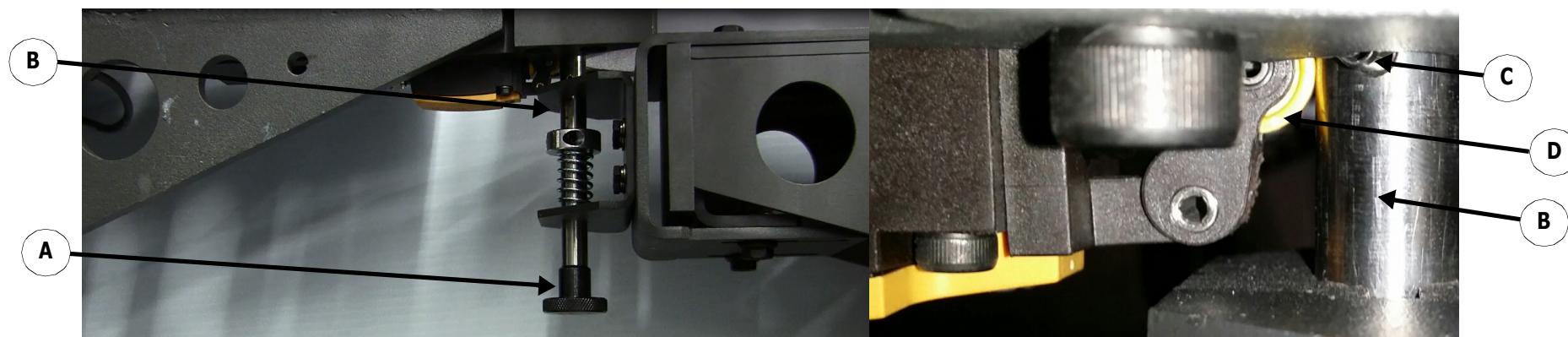


Figure 3-9 Connector pins and "Presence" switch

A	Connecting pin head	C	Connecting pin key
B	Connecting pin shaft	D	Transition Tables "Presence" switch

NOTE: The tables use a presence switch, indicating to printer that the input and output transition tables are present and connected to printer.

3.8.1 Engaging Connecting Pins

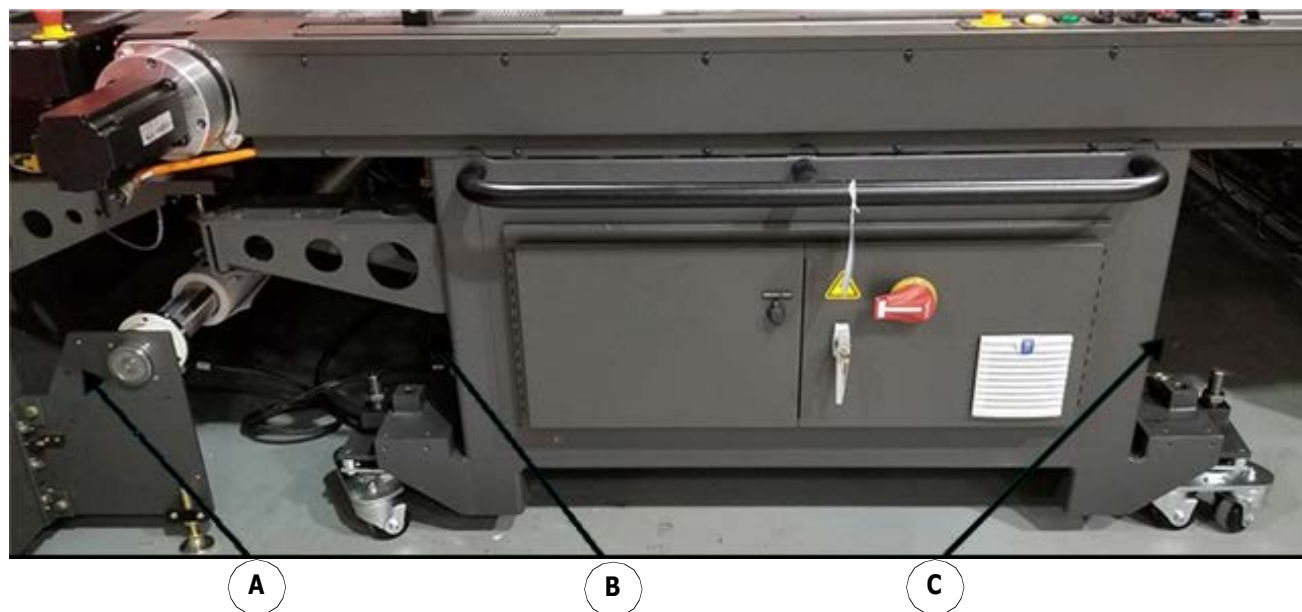
1. Push the Transition Table toward the printer until the Table pin holes are aligned with pin.
2. Rotate the pin 90° in either direction to align the connecting pin key with the key slot, releasing the pin.
3. Push pin head up into position, connecting the two units.
4. Verify that the yellow **Presence** Switch on the underside of the carriage home end connecting bracket is engaged.
5. Also refer to and .

3.8.2 Releasing Connecting Pins

1. Rotate the pin 90° in either direction to align connecting pin key with connecting pin slot.
2. Pull down on the pin head with steady pressure.
3. If the pin does not easily come out, push the Table back and forth while pulling down on the pin.
4. Once connecting pin is released from the locked position, pull pin head all the way down and turn pin 90° in either direction so connecting pin key is perpendicular to connecting pin slot (Open position).

3.9 Printer - 3/4 Loader Connectivity

This section details the main 3/4 Loader connections to the interconnect communication port.



A	Printer Automation Interconnect connection port
B	3/4 Loader Output Interface Cable Connection block
C	LX3 Series Automation connection port

3.10 Main Electronics Compartment

The main electronics compartment contains the power supplies, AC Disconnect switch and PLC assemblies.



Caution: Electric Shock Hazard! Access to this compartment is limited to trained technicians or Field Service Engineers.

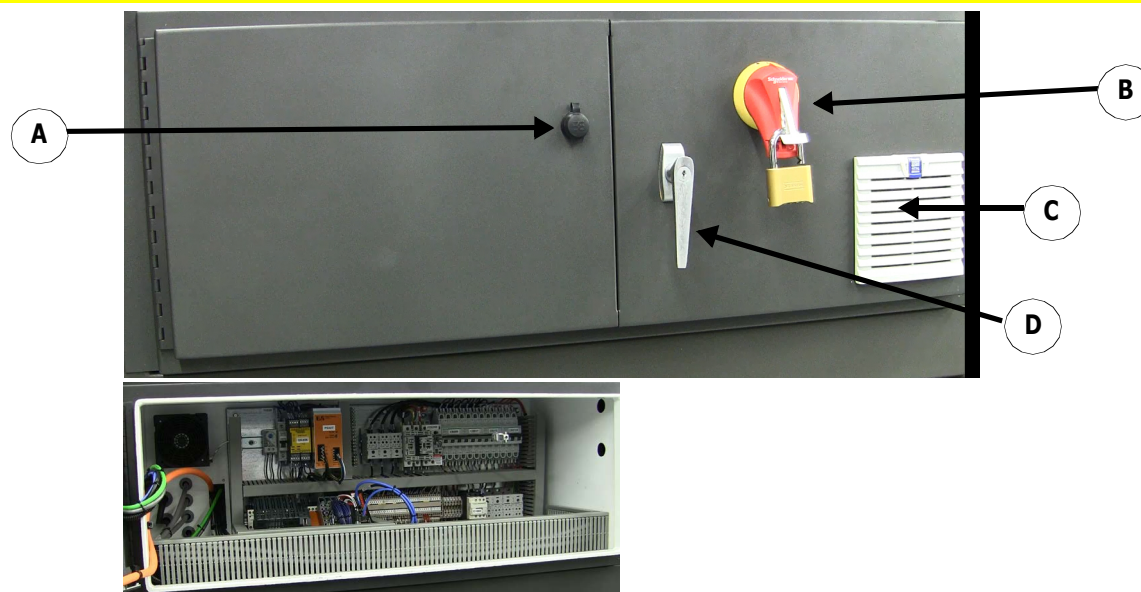


Figure 3-10 Main Peripheral Electronics Compartment

A	Data port	C	Cabinet Filter
B	Main AC Disconnect	D	Interlocked handle



Warning: Switch must be in OFF position to open cover. Never attempt to open the main AC disconnect panel unless the main AC disconnect is in the OFF position.

3.11 Air Regulator Panel

The air regulator panel contains the main Fence and Vacuum Table regulators.

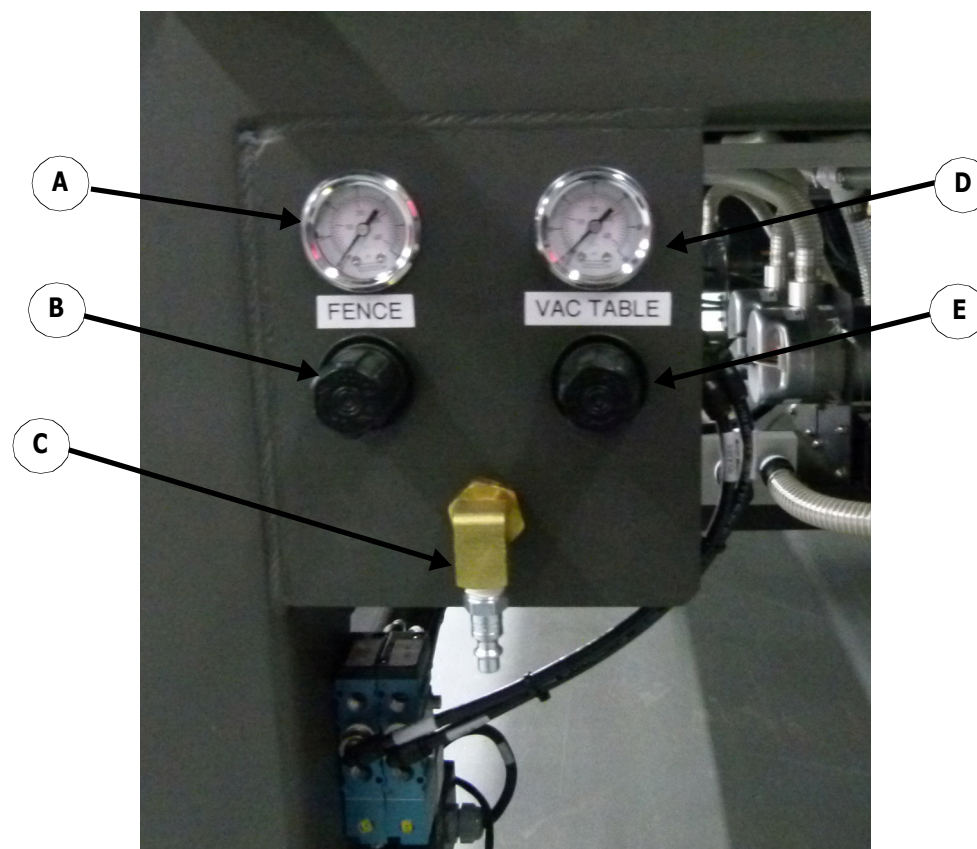


Figure 3-11 Air Regulator panel

A	Media Fence pressure gauge
B	Fence Regulator adjustment knob
C	Main air input fitting
D	Vacuum Table pressure gauge
E	Vacuum Table Regulator adjustment knob

3.12 Input Table Media Fence Assembly

The input table peripherals contain a media fence for staging and aligning media.



Figure 3-12 Peripheral Media Fence

A	Fence support assembly
B	Air line bundle
C	Air actuated Media Hold-down rollers
D	RH Media Alignment block

3.13 Table Media Hold-down Rollers

The media rollers hold down media as it transitions from the Media fence or from the printer.

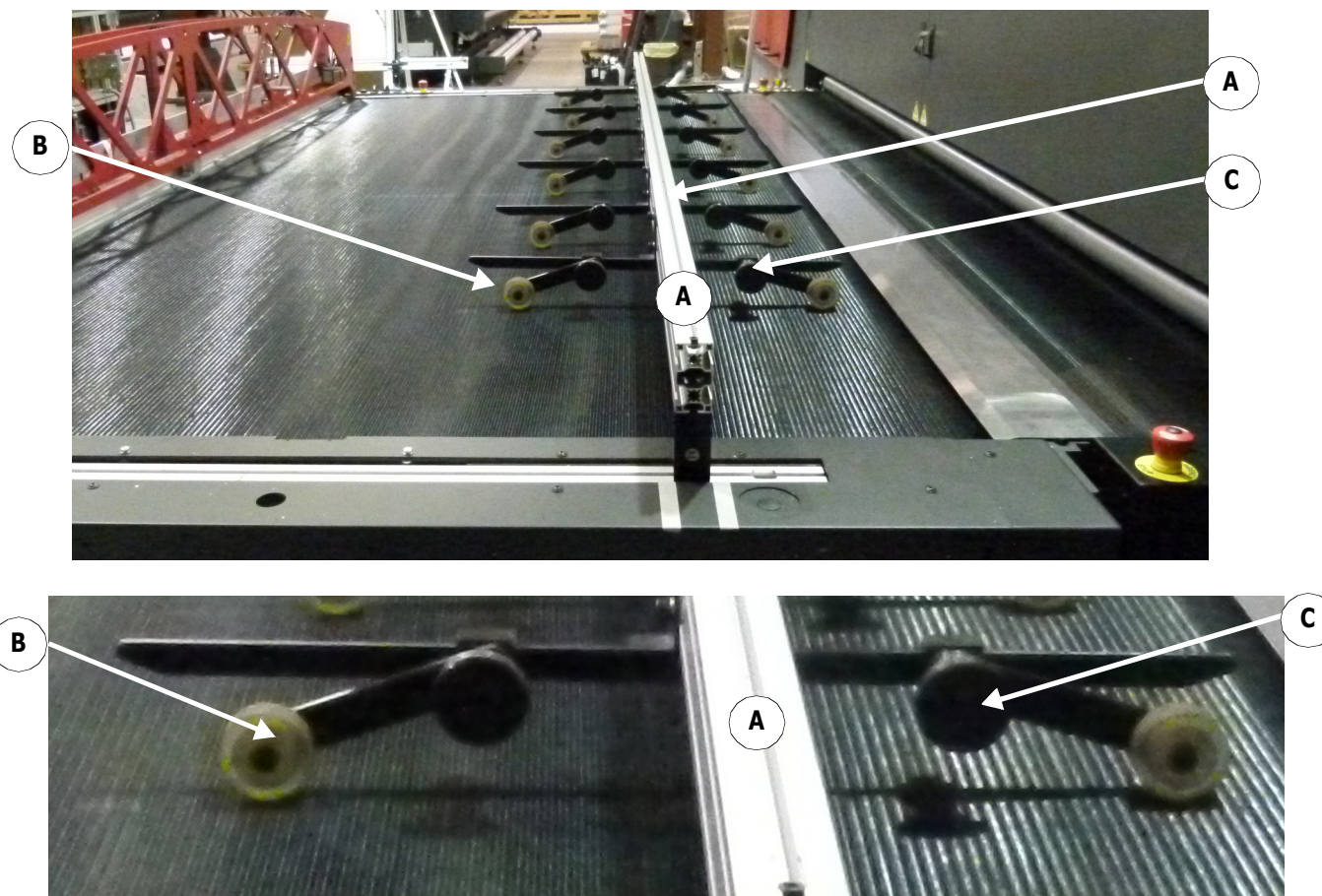


Figure 3-13 Example Media Hold Down wheels

A	Roller bridge assembly
B	Individual roller
C	Metal spring assembly and tension adjustment knob

3.14 Operating Printer without Tables

Follow these instructions to operate printer without Tables attached.

1. Shut down the printer.
2. Turn the Table Main A/C Disconnect switch to **Off** position.
3. Remove the [Interface Cable Connection Block - Additional Automation](#).
4. Disengage the Table Connecting Pins.
5. Move the Table out of the way, as required.
6. Restart the printer and resume printing activities.

3.15 Connecting Tables

Follow these instructions to reconnect the Tables to the printer.

1. Shut down the printer.
2. Attach the [Interface Cable Connection Block - Additional Automation](#).
3. Move the Table into position.
4. Engage the Table Connecting Pins.
5. Turn the Table Main A/C Disconnect switch to **On** position.
6. Restart the printer and resume printing activities.

Reference Guide

4.0 Printing

4.0 Printing

This chapter covers basic printing concepts with connected peripherals.

4.1 Table Operations - Printing

1. Perform the **Media Roll Calibration** procedure. This ensures the media roll is calibrated.
2. Determine the amount of vacuum required for the next printing job and enter into the **Vacuum Levels** field.

NOTE: For best printing results, review <https://inkjet.support.efi.com/doc.php?doc=3486>, Media Handling Best Practices. Review Printer Vacuum Levels section.

3. Choose **Print Options** and **Print Parameters**.
4. Click the **Print** button in the printer VUI. The peripheral stages for printing: the Fence drops and the hold down rollers raise.
5. Load media against the Fence/Fence Stops according to the current layout.
6. Press the **Sheet Ready** ready button. Printing begins.
7. Collect the printed media at the end of the print job. The following occurs:
 - If the printer is in **Continuous** mode, the peripheral stages for printing and continues at step [5](#). (loading media) until the jobs are complete.
 - If this is a single print job, the operation is complete.

4.2 Offsets

4.2.1 Calculate Offsets for LX3/HS Series

1. On the **Setup** menu, select **Auxiliaries**. The **Offsets** dialog opens..

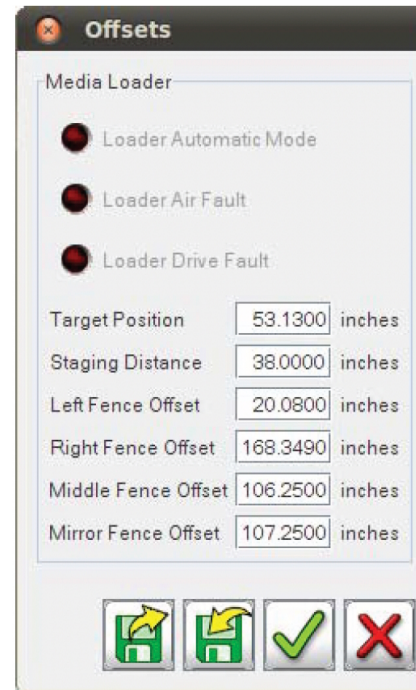


Figure 4-1 Media Loader Offsets Dialog - LX3/HS Series

2. Adjust the **Target Position** value based on these guidelines:
 - To move the grid toward the top, increase the Staging Distance by the amount measured.
 - To move the grid away from the top, decrease the Staging Distance by the amount measured.
3. Use the following table for starting values for offset calculations.

Automation	Printer to Loader Values	LX3	HS100	HS125	HS100 F4	HS125F4	h3	h3
Gen2_34 Loader	Starter Loader Input Offset	12.43	53.33-53.4	53.33-53.4	53.33-53.4	53.33-53.4	52.688	52.688
Gen2_34 Loader	Starter Loader Staging Distance	38.0-39	38.0-39.5	38.0-39.5	38.0-39.5	38.0-39.5	38.0-39.5	38.0-39.5

4.2.2 Calculate Offsets for h Series

1. Lower the printer media fence.
2. Measure the distance from the printer media fence to the loader media fence.
3. On the **Device Settings > Auxiliaries** tab, enter the value into the **Loader Input Offset** field.

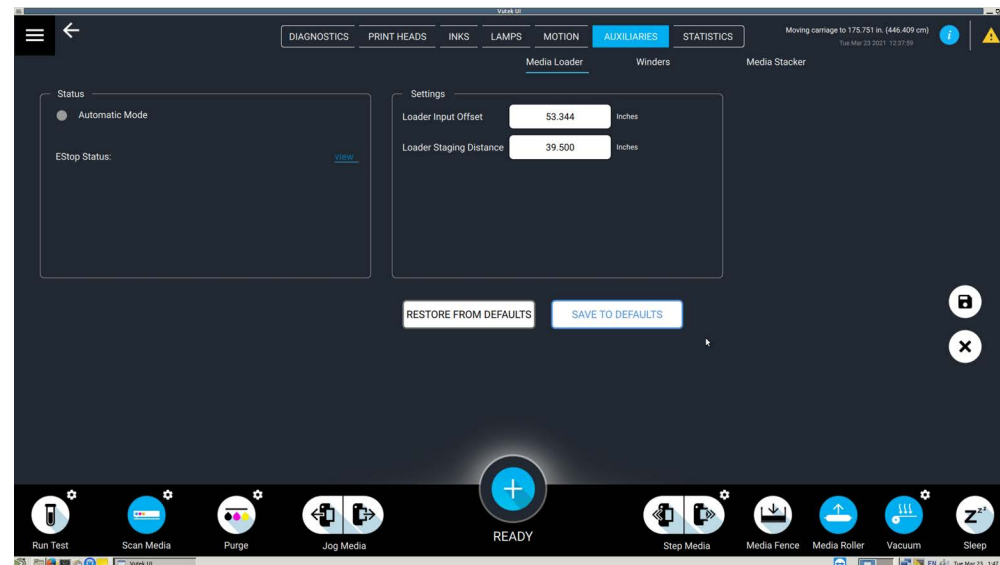


Figure 4-2 Media Loader Fields on Auxiliaries Tab - h Series

4. Measure from the edge of the 3/4 loader frame to the edge of the staging unit ([Figure 4-3](#)).
5. On the **Device Settings > Auxiliaries** tab, enter the value into the **Loader Staging Distance** field.
6. Print a job to confirm the offset values. Adjust them as needed.

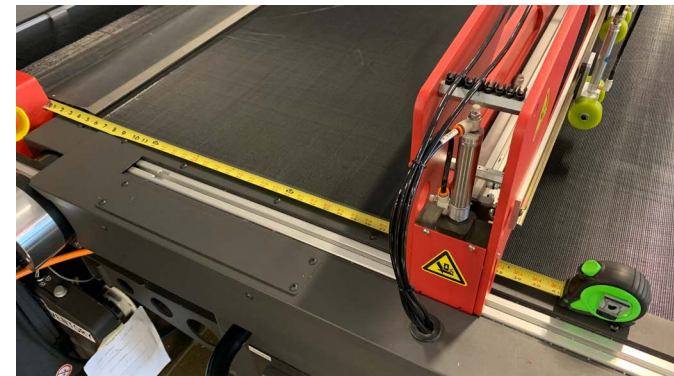


Figure 4-3 Measure to Staging Unit

4.3 Accelerated Print Modes

When printing with accelerated print modes like maximum carriage speed and Fast4 /X4 print speeds, operational print windows and operational timing can be key. If the queue time runs out, a printline error appears in the VUE. Clear the error and resume printing.

4.4 Printing in Manual Mode

Using the loader in manual mode allows for sheet/board setup:

- Prior to the start of an Auto mode print run
- For "one offs" and short runs were boards that are too small for the loader. The loader minimum sheet size is 36x36" but the printer is 24x24'

In this setup the table of the loader can be used for non-automated sheet loading, board to MEG setup during MEG installations, and fence block adjustments for single and multi-up configurations of varying media sizes.

4.5 Software Settings - Vacuum - LX3 Pro Series

1. Perform the **Media Roll Calibration** procedure. This ensures the media roll is calibrated.
2. Determine the amount of vacuum required for the next printing job.
3. Calculate the required vacuum: (Example - For illustrative purposes only).
 - **Total Width of Media Vacuum Table** 126"
 - **Total Width of Media** 96" (2 - 48" foam core boards)
 - **Amount of Media Vacuum Table covered by media:** $128 - 32 = 96"$
 - **% Total Vacuum Table covered/Total Vacuum Table Width:** $96 / 128 = 75\%$
 - Front Vacuum Setting 75
4. Calculate the required **Rear** vacuum: (Example - For illustrative purposes only).
 - **Total Width of Media Vacuum Table, HS Pro** 128"
 - **Total Width of Media** 96" (2 - 48" foam core boards)
 - **Amount of Media Vacuum Table *not* covered by media:** $128 - 96 = 32"$
 - **% Total Vacuum Table not covered/Total Vacuum Table Width:** $32 / 128 = 25\%$
 - Rear Vacuum Setting 25
5. Click the **Vacuum Options** drop down. The **Set Media Vacuum** pop up displays.

Reference Guide

5.0 Maintenance

This chapter covers the peripheral maintenance procedures.

5.1 Every 40 Hours of Production

Perform the following tasks at printer start up and every 40 hours of peripheral operation.

1. With a clean wipe and isopropyl alcohol, wipe down the operator console, the sheet metal, and any other components that require cleaning.
2. With a clean wipe dampened with isopropyl alcohol, wipe down the wheels and rollers to remove dirt and debris.
3. Test the E-stops for functionality by pressing them during printing.
 - Verify the printer stops printing, error messages appear in the printer VUI and that the alarm functions.

5.2 Monthly Maintenance

Perform the following tasks every month of peripheral operation.

1. Clean the main electronics compartment, air regulator panel, and under the units.
 - Shut down the Peripheral.
 - Turn off Peripheral main power.
 - Turn off the main AC disconnect.
 - Open the main AC disconnect to access cabinet interiors.
 - Using a brush attachment, gently vacuum dust and debris from components, fans, boards, and any other location where dust and debris collects, such as cabinet corners and under unit.



Caution: After performing these steps, ensure that all cabling is still connected securely. Reconnect any connections that may have come loose during vacuuming.

2. Replace all cabinet filters with new filters.

Reference Guide

Maintenance Log

Maintenance Log

The maintenance guidelines are based on a production schedule of eight hours of printing, five days/week. Adjust your maintenance intervals if your operating shifts are longer than eight hours of printing.

Every 40 Hours of Production					Date				Initials							
<u>1. With a clean wipe and isopropyl alcohol, wipe down the operator console, the sheet metal, and any other components that require cleaning.</u>																
<u>2. With a clean wipe dampened with isopropyl alcohol, wipe down the wheels and rollers to remove dirt and debris.</u>																
<u>3. Test the E-stops for functionality by pressing them during printing.</u>																
Monthly					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
<u>1. Clean the main electronics compartment, air regulator panel, and under the units.</u>																
<u>2. Replace all cabinet filters with new filters.</u>																

Common Maintenance Items	
Description	EFI Part Number
Cabinet Filters	45106299
Clean Room Wipes 9x9	45077321
Isopropyl alcohol	N/A