EFI Pro 16h Wide Format Hybrid Printer

Operations Guide

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5,109,241, 5,150,454, 5,170,182, 5,212,546, 5,260,878, 5,276,490, 5,278,599, 5,335,040, 5,343,311, 5,398,107, 5,424,754, 5,442,429, 5,459,560, 5,467,446, 5,506,946, 5,517,334, 5,537,516, 5,543,940, 5,553,200, 5,563,689, 5,565,960, 5,583,623, 5,596,416, 5,615,314, 5,619,624, 5,625,712, 5,640,228, 5,666,436, 5,682,421, 5,729,665, 5,745,657, 5,760,913, 5,799,232, 5,818,645, 5,835,788, 5,859,711, 5,867,179, 5,937,153, 5,940,186, 5,959,867, 5,970,174, 5,982,937, 5,995,724, 6,002,795, 6,025,922, 6,035,103, 6,041,200, 6,065,041, 6,081,281, 6,112,665, 6,116,707, 6,122,407, 6,134,018, 6,141,120, 6,166,821, 6,173,286, 6,185,335, 6,201,614, 6,209,010, 6,215,562, 6,219,155, 6,219,659, 6,222,641, 6,224,048, 6,225,974, 6,226,419, 6,238,105, 6,239,895, 6,256,108, 6,269,190, 6,271,937, 6,278,901, 6,279,009, 6,289,122, 6,292,270, 6,299,063, 6,310,697, 6,321,133, 6,327,047, 6,327,050, 6,327,052, 6,330,071, 6,330,363, 6,331,899, 6,337,746, 6,340,975, 6,341,017, 6,341,018, 6,341,307, 6,347,256, 6,348,978, 6,356,359, 6,366,918, 6,369,895, 6,381,036, 6,400,443, 6,429,949, 6,449,393, 6,457,823, 6,476,927, 6,487,568, 6,490,696, 6,501,565, 6,519,053, 6,539,323, 6,543,871, 6,546,364, 6,549,294, 6,549,300, 6,550,991, 6,552,815, 6,559,958, 6,572,293, 6,590,676, 6,599,325, 6,606,165, 6,616,355, 6,618,157, 6,633,396, 6,636,326, 6,637,958, 6,643,317, 6,647,149, 6,657,741, 6,660,103, 6,662,199, 6,678,068, 6,679,640, 6,687,016, 6,707,563, 6,741,262, 6,748,471, 6,753,845, 6,757,436, 6,757,440, 6,778,700, 6,781,596, 6,786,578, 6,816,276, 6,825,943, 6,832,865, 6,836,342, 6,850,335, 6,856,428, 6,857,803, 6,859,832, 6,866,434, 6,874,860, 6,879,409, 6,885,477, 6,888,644, 6,905,189, 6,930,795, 6,950,110, 6,956,966, 6,962,449, 6,967,728, 6,974,269, 6,977,752, 6,978,299, 6,992,792, 7,002,700, 7,023,570, 7,027,187, 7,027,655, 7,031,015, 7,046,391, 7,054,015, 7,058,231, 7,064,153, 7,073,901, 7,081,969, 7,090,327, 7,093,046, 7,095,518, 7,095,528, 7,097,369, 7,099,027, 7,105,585, 7,116,444, 7,177,045, 7,177,049, 7,177,472, 7,204,484, 7,206,082, 7,212,312, 7,229,225, 7,233,397, 7,233,409, 7,239,403, 7,245,400, 7,248,752, 7,259,768, 7,259,893, 7,280,090, 7,296,157, 7,301,665, 7,301,667, 7,301,671, 7,302,095, 7,302,103, 7,304,753, 7,307,761, 7,342,686, 7,343,438, 7,349,124, 7,365,105, 7,367,060, 7,367,559, 7,389,452, 7,396,119, 7,396,864, 7,397,583, 7,397,961, 7,426,033, 7,431,436, 7,433,078, 7,453,596, 7,460,265, 7,460,721, 7,461,377, 7,463,374, 7,466,441, RE36,947, RE38,732, D341,131, D406,117, D416,550, D417,864, D419,185, D426,206, D426,206, D439,851, D444,793.

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1.0 Introduction

The EFI Pro 16h Operations Guide provides an overview of the features and functions of EFI's Pro 16h Wide Format Hybrid printer, an advanced digital printer designed to provide wide-format, full-color printing. The EFI Pro 16h uses environmentally-friendly UV-curable inks to ensure higher volume production and improved resolution over traditional silkscreen printing.

The EFI Pro 16h can print using roll-to-roll media as well as rigid and flexible media types, including but not limited to foam core, PVC, styrene, corrugated plastic, plywood, MDO, MDF, aluminum, plastic composite, cardboard, paper, acrylic and Plexiglas. The maximum allowable thickness for rigid media is 2 inches [4.6 cm], and maximum rigid media weight is 100 lbs [45.4 kg]. Rolled media can have a maximum diameter of 9 inches [22.9 cm]. The printer can handle media widths up to 65" [165 cm] with an image width up to 64" [162.6] for full-bleed printing.

The EFI Pro 16h has a 1.6m printer bed and frame with an updated industrial design, Ricoh Gen5 print heads, updated electronics, and usability upgrades.

- **Ricoh Gen5 Print heads:** These are variable drop print heads able to produce 7, 14, or 21 picoliter drop sizes. These heads are not dependent on water or water pumps for heating and cooling. The higher nozzle count heads are more forgiving if there is nozzle loss during higher pass-count mode prints.
- **Ink:** There are six 1-liter ink bottles: CMYK plus 2 white. The white bottles constantly recirculate. When changing white ink, recirculation must be turned off in the Parameters window. This printer provides level readings for each bottle. A warning indicates when there is +/- 10% ink remaining in the bottle.

1.1 About This Guide

This guide assists trained printer operators in completing daily tasks, including printing, start up/shut down, and operating the printer software. This guide focuses on fundamental skills and concepts vital to successful daily printer operation. It does not cover more advanced operation levels and modes, file ripping, or custom profiles.

1.2 Objectives

This guide has several objectives:

- **Learn printer components** - Users are given a physical printer description, including component locations.
- **Manage printer power options** - Users learn basic steps for powering the printer on and off, for putting the printer into sleep modes, and for managing lamp life and lamp power options.
- **Teach safe printer operation** - Users are taught basic safety principles to protect themselves from injury and to protect the printer from damage due to improper use while loading media and conducting other standard tasks.
- **Learn printer control software** - Users are taught fundamentals of the printer's control software and how to complete actions using the EFI Pro 16h Control window.

- **Printing BCO File** - Users learn basic printing procedures, including loading media, importing files, setting print options and printing BCO files using the Print Control Utility. RIP to print is discussed in the Fiery Manual.
- **Perform daily maintenance** - Users learn basic maintenance tasks, including ink loading and care, print head cleaning and maintenance, and general printer maintenance and care.

1.3 Customer Resources

EFI Inkjet Solutions provides additional resources to help personnel operate and maintain printer.

- **Customer Support Web Site** - http://inkjet.support.efi.com/index.php - Contains **Operations** and **Maintenance Guides**, technical supplements, advisory bulletins, and resources such as software updates and drivers.
- **Printer Safety Guide** - http://inkjet.support.efi.com/doc.php?doc=683 - The ***Printer Safety Guide*** contains information critical to safe printer operation for all customers.
- **Training** - http://inkjet.support.efi.com/training/index.php - Operator training is an essential part of printer installation and operation. EFI Inkjet Solutions provides an educational support system assisting new and experienced operators to develop and maintain skills.

1.4 Additional Support

If you have any questions about your printer or other EFI Inkjet Solutions products, see http://inkjet.support.efi.com/index.php for contact information.

2.0 General Safety

This chapter explains how to safely use your EFI Pro 16h printer, including the access panels, shields, and warning labels, as well as how to properly handle printer inks and fluids. Before operating the printer, all personnel must:

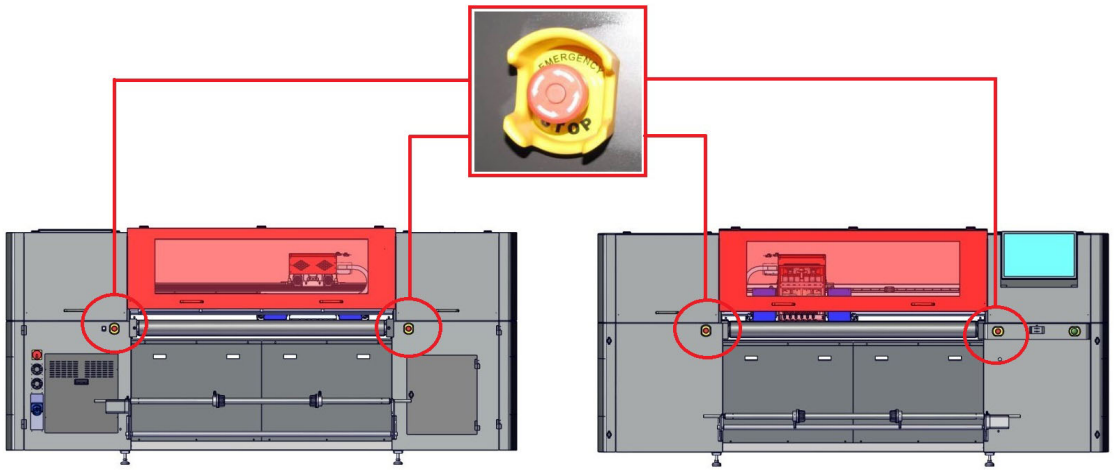
- Be a certified EFI Pro 16h operator.
- Read and understand the ***EFI Inkjet Printer Safety Guide***, http://inkjet.support.efi.com/doc.php?doc=683, and adhere to all safety precautions therein.
- Read and sign the UV Safety Acknowledgement Form.

2.1 Emergency Stop Button(s)

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

Identify locations and understand operation of emergency stop buttons before operating the EFI Pro 16h printer. Emergency stop buttons are located on both the right and left sides of the front and rear print areas. When pressed, an emergency stop button does the following:

- Shuts off UV lamps
- Stops all printer mechanical movement
- Stops unwinder and rewinder



Rear of EFI Pro 16h ***Front of EFI Pro 16h***

Figure 2-1: Emergency Stop Button Locations

Danger! Pressing an emergency stop button does not disconnect power from the printer or its electronics. Never use emergency stop buttons as an alternative to powering down the printer. The emergency stop buttons are for personal safety and to avoid printer damage during extraordinary circumstances.

2.2 Safety Interlock Override Key (Service Key)

The safety interlock override key (or "Service Key") is located under the operator keyboard tray. This key is not to be used for normal printer operation.

Warning: The Safety Access Panels and Shields should ALWAYS be closed during normal printer operations. The key should only be used by qualifed service personnel when servicing or troubleshooting the printer.

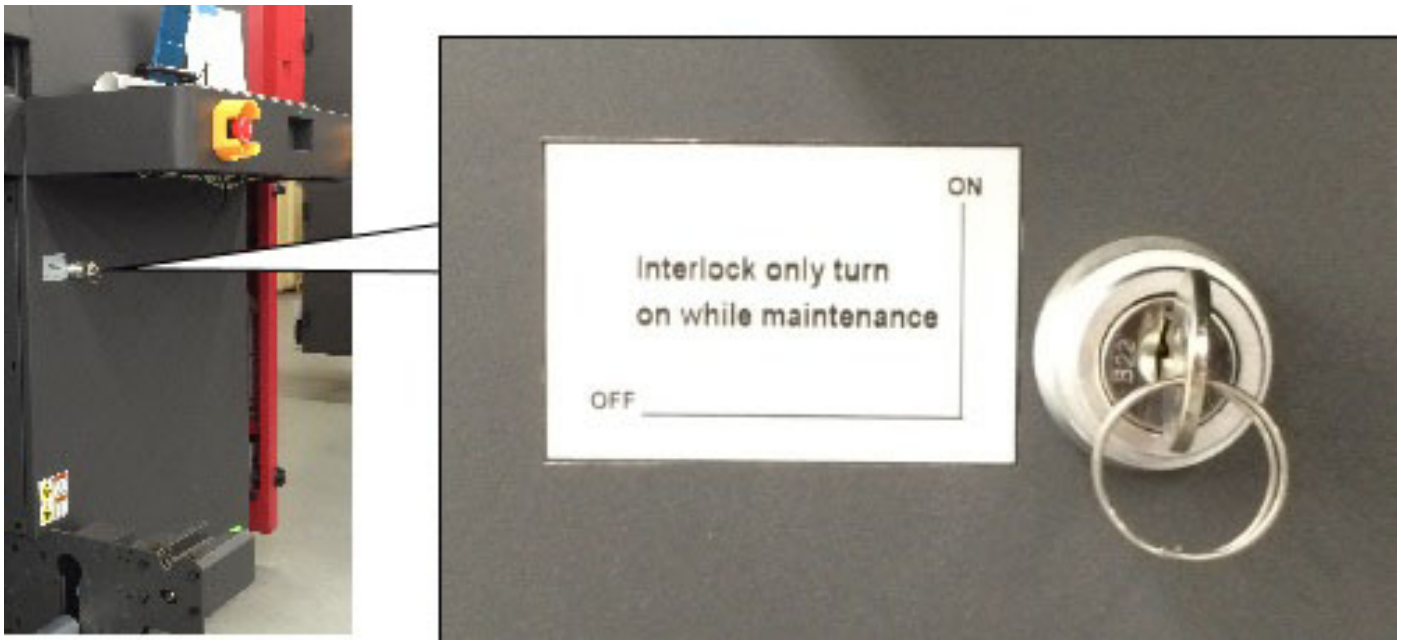


Figure 2-2: Service Key Location and Detail

2.3 Front Access Panels and Shields

This section illustrates the access panels and shields located on the front of the printer.

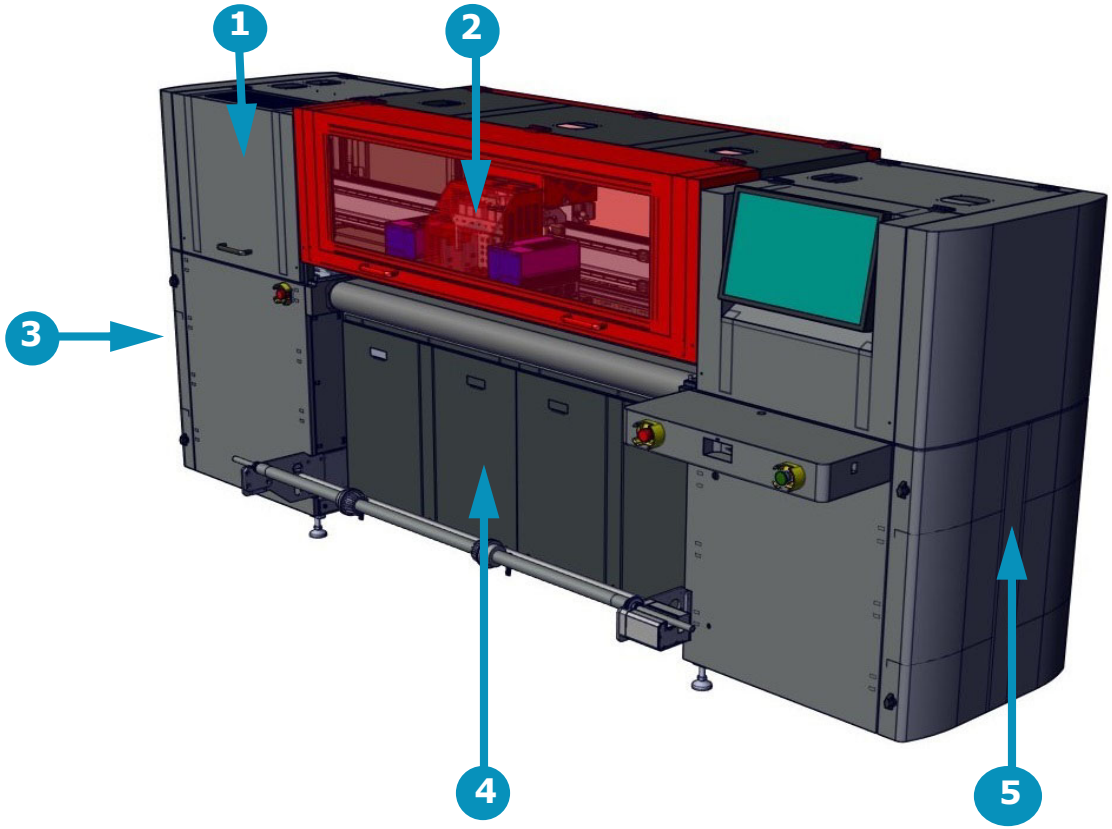


Figure 2-3: Printer Front Access Panels and Shields

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

1 Access to Carriage "Home" Compartment
2 Front Printing Shield
3 Access to Ink Supply System Compartment
4 Access to Main Vacuum Motors
5 Access to Computer Compartment

2.4 Rear Access Panels and Shields

This section illustrates the access panels and shields located on the rear of the printer.

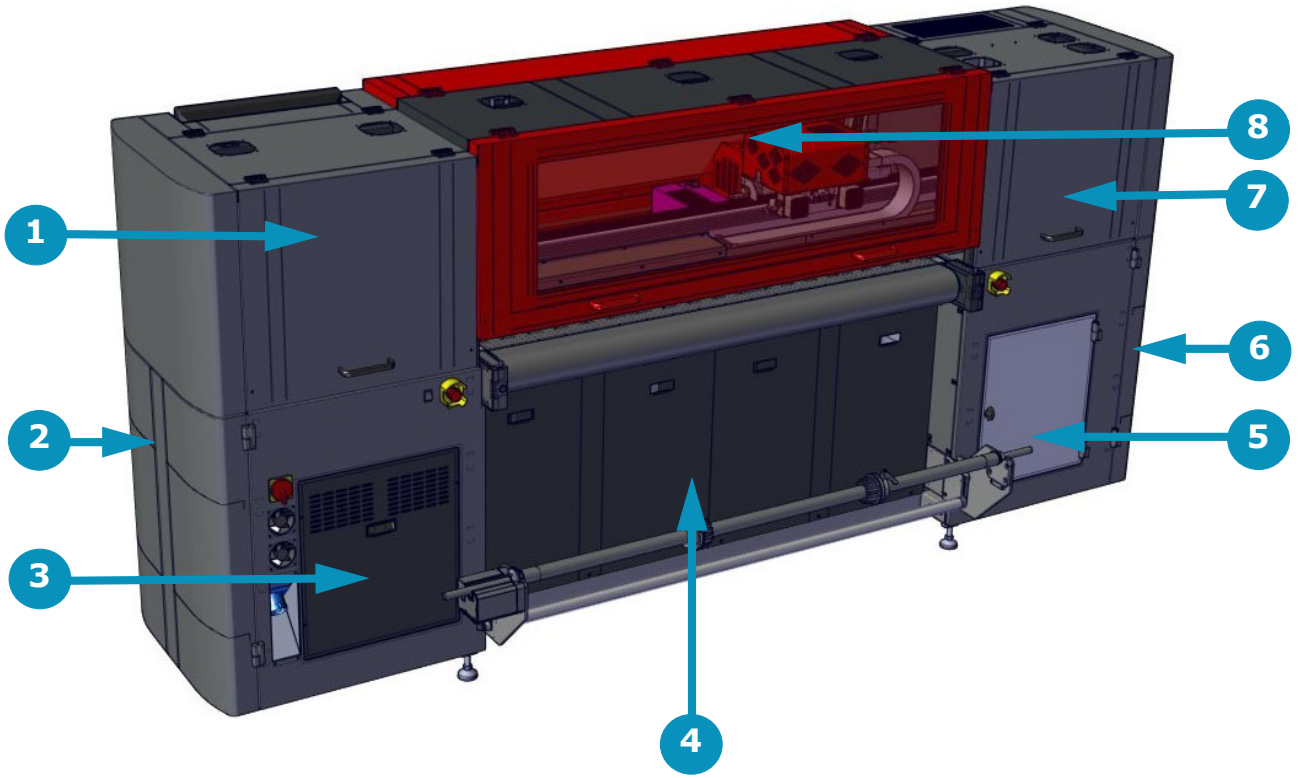


Figure 2-4: Printer Rear Access Panels and Shields

Caution! Keep all safety interlocks, covers, and guards in place and functional. Never operate printer with covers, doors, or guards removed or with malfunctioning interlocks.

1	Access to Carriage X-Axis Drive System*	5	Access to Waste Bottle
2	Access to Computer Compartment	6	Access to Ink Bottles and Pumps
3	Access to Electronic Compartment *	7	Rear Carriage Access (Cooling System)*
4	Access to Main Vacuum Motors	8	Rear Printing Shield

* Field Service ONLY

2.5 Printer Shield Support System and Locking Mechanism

The printer shields are equipped with a support system comprised of cylinders that hold the shields open. Once in the open position, the cylinder on the left side of the shield locks in place. The top section of the cylinder must be depressed to unlock the cylinder before attempting to close the shield.

Warning: Ensure that the cylinder is released prior to closing the shield. Failure to do so will damage the cylinder and render the shield support system inoperable and dangerous when shields are opened.

- Unlock the support cylinder as shown in the illustration below, while carefully lowering the printer shield with your other hand.

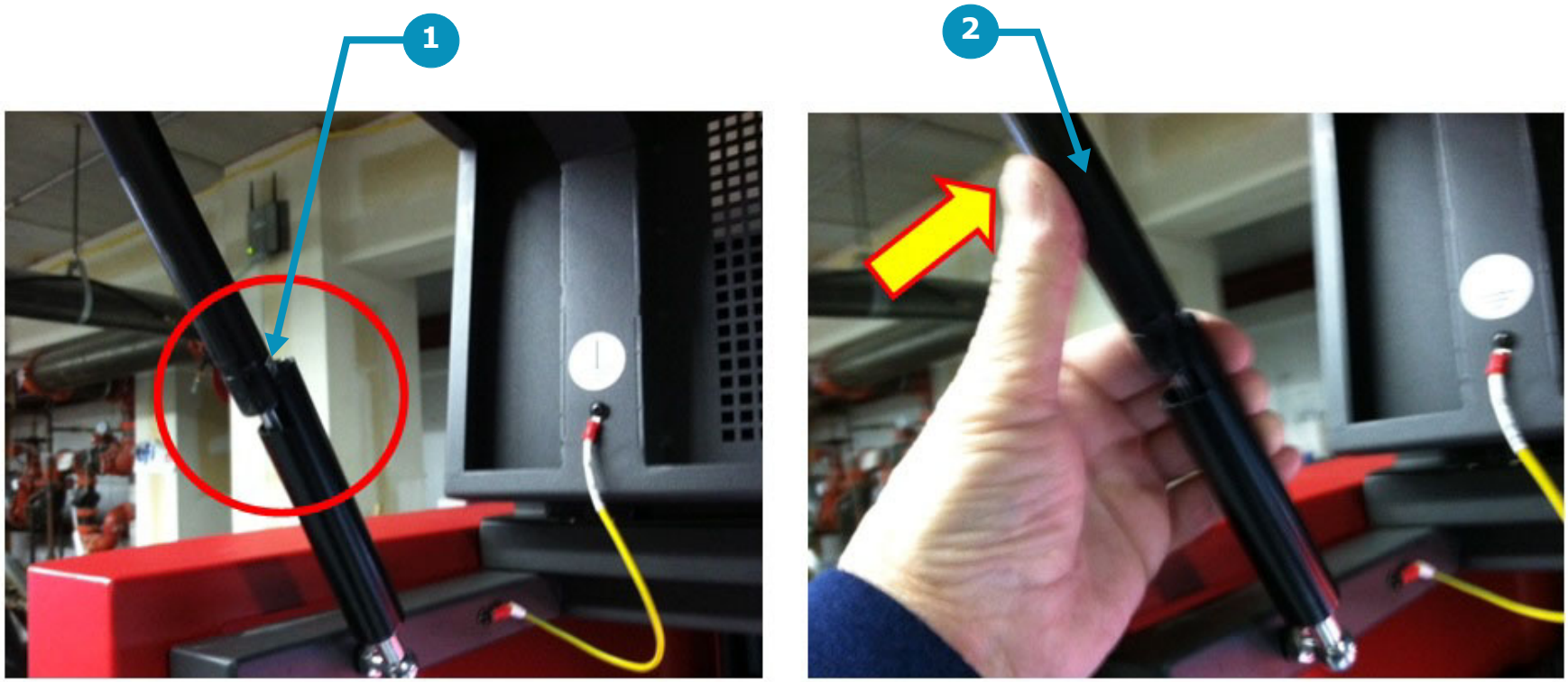


Figure 2-5: Printer Shields Cylinder Lock

1 Cylinder Locking Mechanism

2 Depress to Unlock Before Closing Shield

2.6 Printer Safety Labels (Front)

There are numerous labels located on the EFI Pro 16h printer that indicate safety warnings or cautions. It is important to become familiar with all such labels, their location, and meaning. The following provides the general location of front and rear labels.

See the ***EFI Inkjet Printer Safety Guide*** for a list of safety-related symbols used here and affixed to printer. Learn to recognize these and other symbols and the risks that they signify.

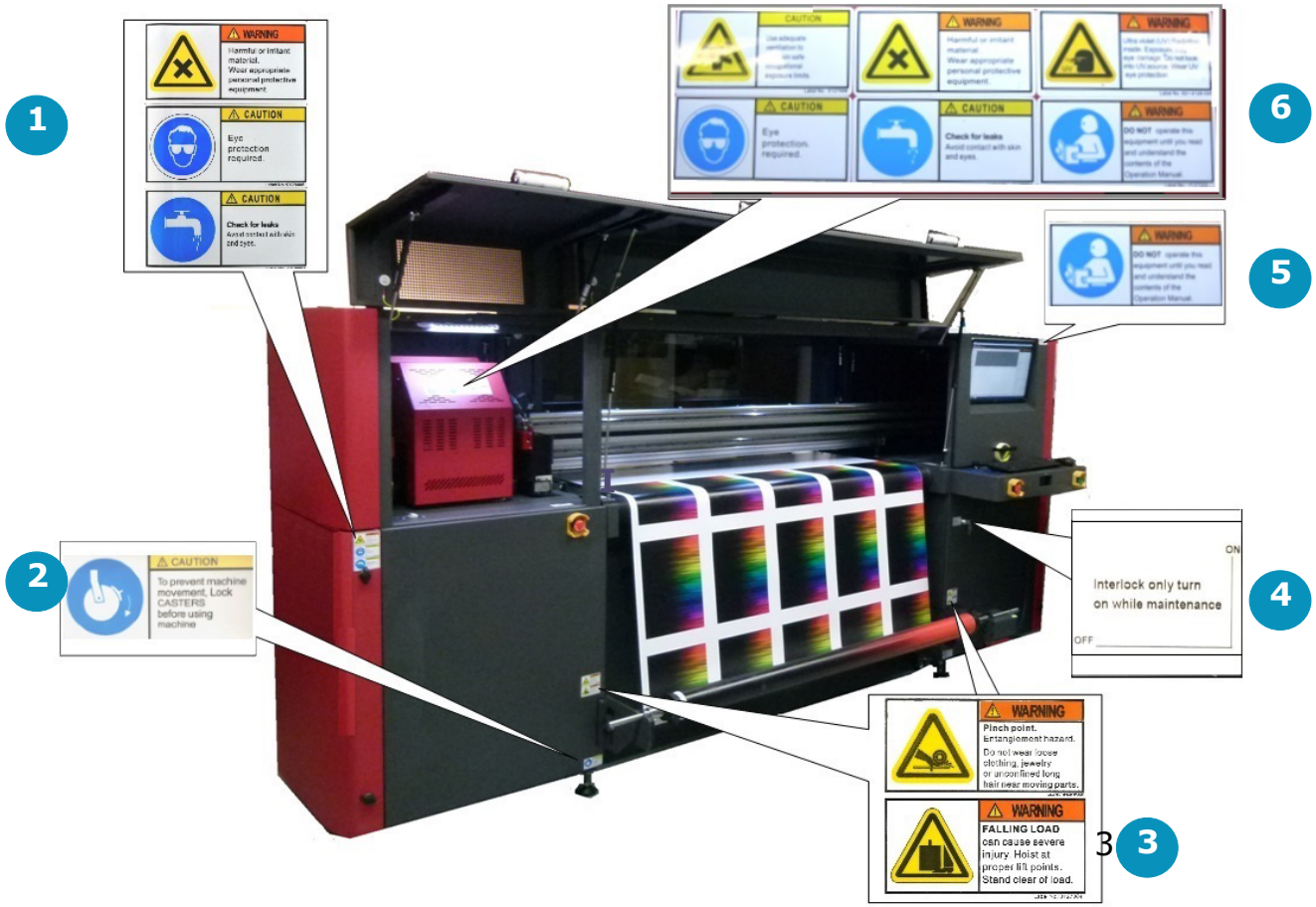


Figure 2-6: Front Safety Labels

1	Ink Compartment Labels	4	Interlock Override Key-lock
2	Wheel Lock Labels	5	Operator Station "Read Manual" Label
3	Media Take-Up System Labels	6	Carriage Labels

2.7 Printer Safety Labels (Rear)

The following provides the general location of the rear labels.

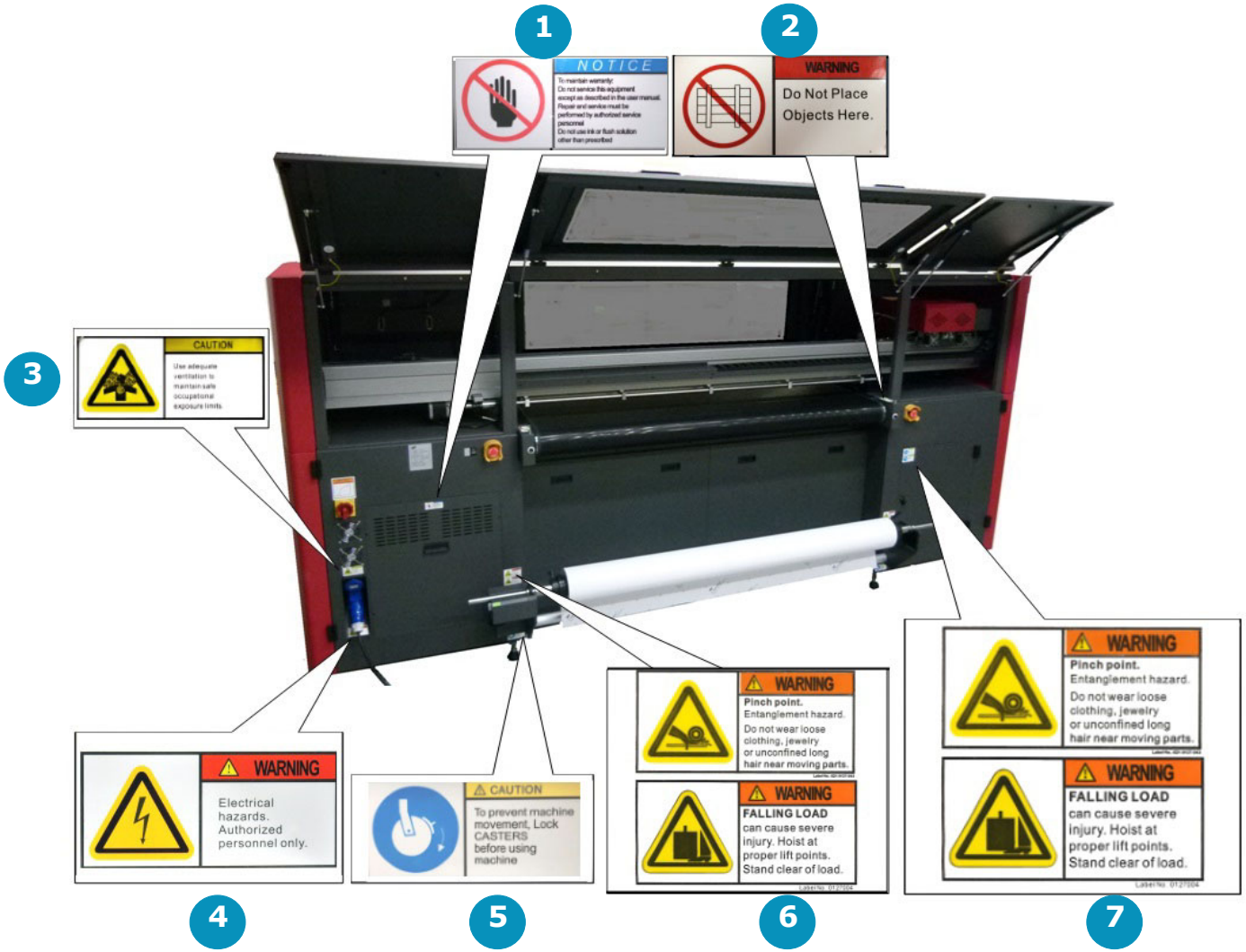


Figure 2-7: Rear Safety Labels

1 Do Not Remove Panel
2 Do Not Place Objects
3 Ventilation Warning
4 Electrical Hazard Warning
5 Wheel Lock Labels
6 Crush Hazard and Falling Loads
7 Eye Safety Cautions

2.8 Other Hazards and Precautions

Other Hazards and Precautions are outlined in the following paragraphs.

2.8.1 UV Ink and Solvent Precautions

Observe the following precautions regarding the printer, ink, and related solvents.

- Uncured UV inks and cleaning solvents are flammable.
- Uncured UV inks and cleaning solvents can cause severe eye damage.
- Operator should **not** wear contact lenses when operating the printer with insufficient ventilation.
- Operator should wear safety glasses or a face shield.
- Operator should wear Nitrile gloves when flushing print heads, ink tubes, or when working with ink containers.
- UV Inks and solvent vapor can irritate the eyes, throat, and skin.
- The yellow triangle caution symbol represents potential for personnel injury or damage to the printer.

2.8.2 UV Light Hazards

UV light exposure is hazardous to eyes and skin. Please observe all safety precautions when operating printer.

- Wear UV protective glasses when operating the printer.
- Avoid being too close to the UV lamps during printer operation.
- UV lamps must be off while completing maintenance tasks, especially when working in close proximity to the lamps.
- The printer's front door contains special glass and door flaps that filter out UV light during printing. All doors should be closed when printing to prevent operator exposure to harmful UV light.

2.8.3 Ventilation

Proper ventilation - as described in the Site Preparation Specification - is required in the printer work area. Printer operators must monitor printer settings to ensure that UV inks cure completely. Operators risk exposure to uncured UV ink and related vapors if cure times are not accurately maintained. Follow these precautions:

- The ventilation system must be on in the printer work area to ensure adequate air circulation.
- Store inks and solvent in a proper cabinet designed for flammable liquid storage.
- Keep ink and solvent containers tightly closed at all times. If a container shows signs of damage or leakage repair or replace the container immediately.
- Clean ink or solvent spillages as soon as possible.
- Only use dry powder or carbon dioxide types of fire extinguishers.

2.8.4 Storage of Combustible Materials

Inks and solvents should be clearly labeled and stored in an area designated for flammable liquids IAW local safety regulations.

- Ensure that one or more approved fire extinguishers are available near the storage area which are filled, and fully operational.
- Personnel should be trained in using fire extinguishers and techniques for extinguishing chemical fires. .

2.8.5 Fire or Explosion Risks and Precautions

Open flame, heat energy, or sparks around the printer can trigger a fire or an explosion when excessive fumes are present. Follow the precautions listed below:

- Do not smoke near the printer or ink storage area.
- Do not allow open flame near the printer or ink storage area.
- Do not use heaters or halogen lights within five meters of the printer or ink storage area.
- Do not use spark producing equipment, including devices capable of static electrical discharge, within five meters of the printer or ink storage area.
- Ensure proper use of fire extinguishers.

2.8.6 Risk of Eye and Skin Irritation

Follow these precautions:

- When ink or solvent comes in contact with your skin, thoroughly wash at once with cold water and designated soap(s).
- When ink or solvent comes in contact your eyes, thoroughly wash at once with cold water.
- Do not drink or swallow solvent, ink, or waste ink.
- Only authorized operators are allowed to handle inks and solvents.
- Keep inks, solvents, waste inks, cloths, paper, media, and other operating materials in covered fireproof containers.
- Place covered fireproof containers at least five meters away from the printer work area.
- Dispose of waste materials in accordance with local, state, province, or/and country government regulations.
- The presence of children or pets is forbidden at all times in or near the printer area.

2.8.7 Printing Media Handling and Precautions

The EFI Pro 16h printer is capable of using a wide variety of rigid media as well as roll-to-roll media. Follow these precautions:

- Wear hand and foot safety protection gear when loading, unloading and handling media to avoid bodily injury.
- Use proper heavy-duty handling equipment if available.

2.8.8 High Voltage Dangers and Precautions

The EFI Pro 16h is safe to operate in its normal operating configuration. However, with key protective covers opened or removed, electrical components carrying high voltage are exposed. The EFI Pro 16h carries high voltages that could cause serious injury or death from electrocution. Only ***qualified service technicians*** *may service the EFI Pro 16h Electrical Systems. Follow these precautions:*

- Verify provisions for emergency power off before connecting the printer to main power supply.
- When printer power is on, do not open any cover panel or touch any electrical components.
- All printer systems should be grounded in accordance with local electrical safety regulations per State, Province, Region, or Country codes. Ground voltage should be less than 3V.
- Set the printer on smooth tile or cement floor.

3.0 EFI Pro 16h Printer Overview

In this chapter we describe the major assemblies and sub-assemblies of the EFI Pro 16h Wide Format printer, to familiarize you with its most important components.

3.1 Front Printer Components

This section illustrates the major components located on the front of the printer. The front of the printer is the side with the computer, where the media comes out after printing.

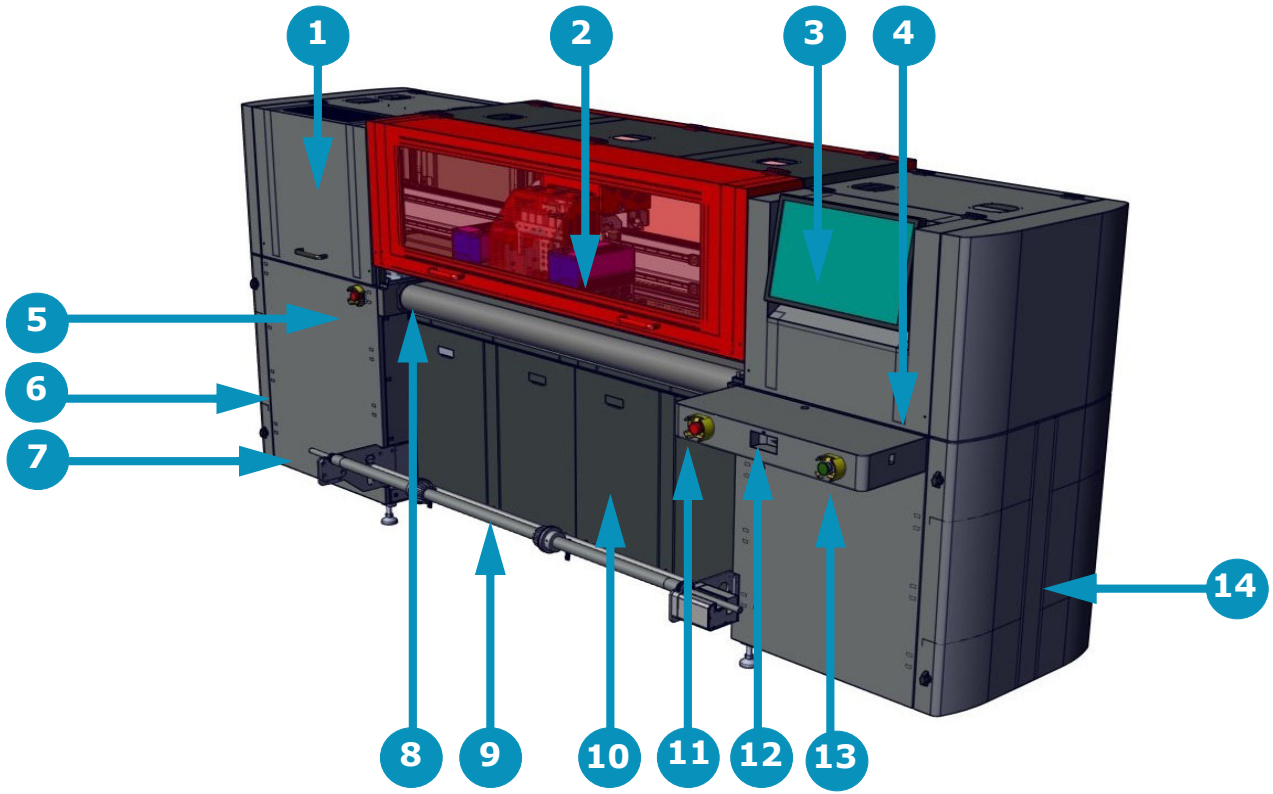


Figure 3-1: Printer Front

1	Carriage Home Compartment	2	Carriage	3	Operator Station Monitor
4	Keyboard and Mouse Tray	5	Secondary Front E-Stop Button	6	Ink Supply Compartment
7	Access to Cyclonic Vacuum Sys.	8	Vacuum Media Belt	9	Front Rolled Media Handling Sys
10	Access to Main Vacuum Motors	11	Operator Station E-Stop Button	12	USB Ports
13	Start Button	14	Computer Compartment		

3.1.1 Carriage Home Compartment

The carriage "Home" compartment contains the Ink Purge control panel, the carriage (when not printing), the overhead light, and the sweep tray and vacuum knife. Detailed information on all carriage components is provided in Section Carriage Assembly.

Figure 3-2: Carriage "Home" Compartment

1	Ink Purge Panel	2	Overhead Light	3	Carriage (Covers Shown)
4	Sweep Tray and Vacuum Knife				

The Ink Purge control panel provides the following manual purge functions:

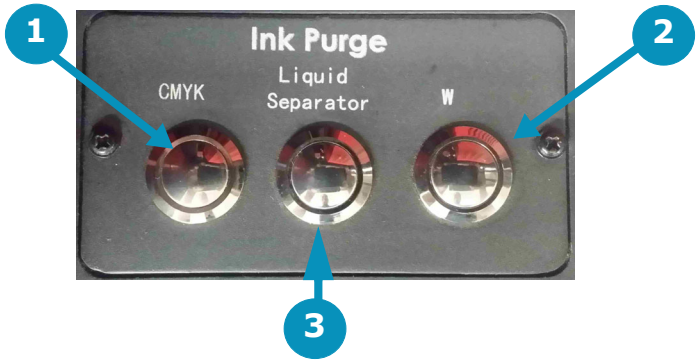


Figure 3-3: Ink Purge Panel

1. The left purge button controls the CYMK color ink manual purging.
2. The right purge button controls the manual purge for white.
3. The Liquid Separator button controls the cyclonic vacuum pump. Pressing this button drains the contents of the cyclonic vacuum system into the waste container

The Sweep Tray and Vacuum Knife system operate as follows:

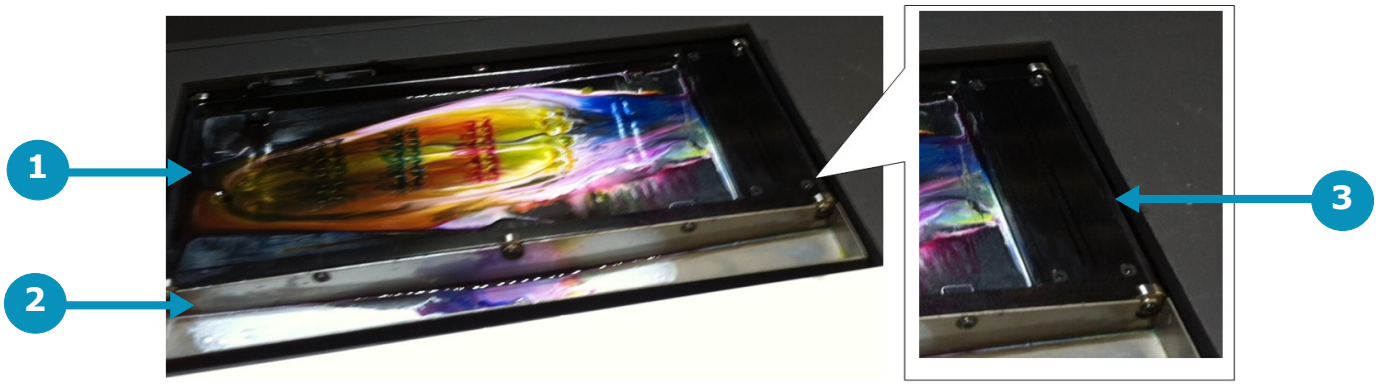


Figure 3-4: Sweep Tray and Vacuum Knife Detail

1. The sweep tray collects all ink drops that accumulate during purging operations. The ink is drained into the ink waste container.
2. The sweep tray also contains a trough to collect ink released from the bleed valves. This ink is also drained into the ink waste container.
3. The vacuum knife uses suction to extract excess ink from the bottom of the print heads during the sweep cycle either automatically via the EFI Pro 16h Control window or manually via the sweep button on the purge button panel. The ink is drawn into the cyclonic vacuum system.

3.1.2 Carriage Assembly

The carriage assembly contains many critical components required for Inkjet printing. These components include print heads and the electronics to control them, ink tanks for the print heads, lamps for curing the ink, and a negative pressure system that controls ink flow. Each system is described in the paragraphs and figures included in this section.

Front Carriage Assembly

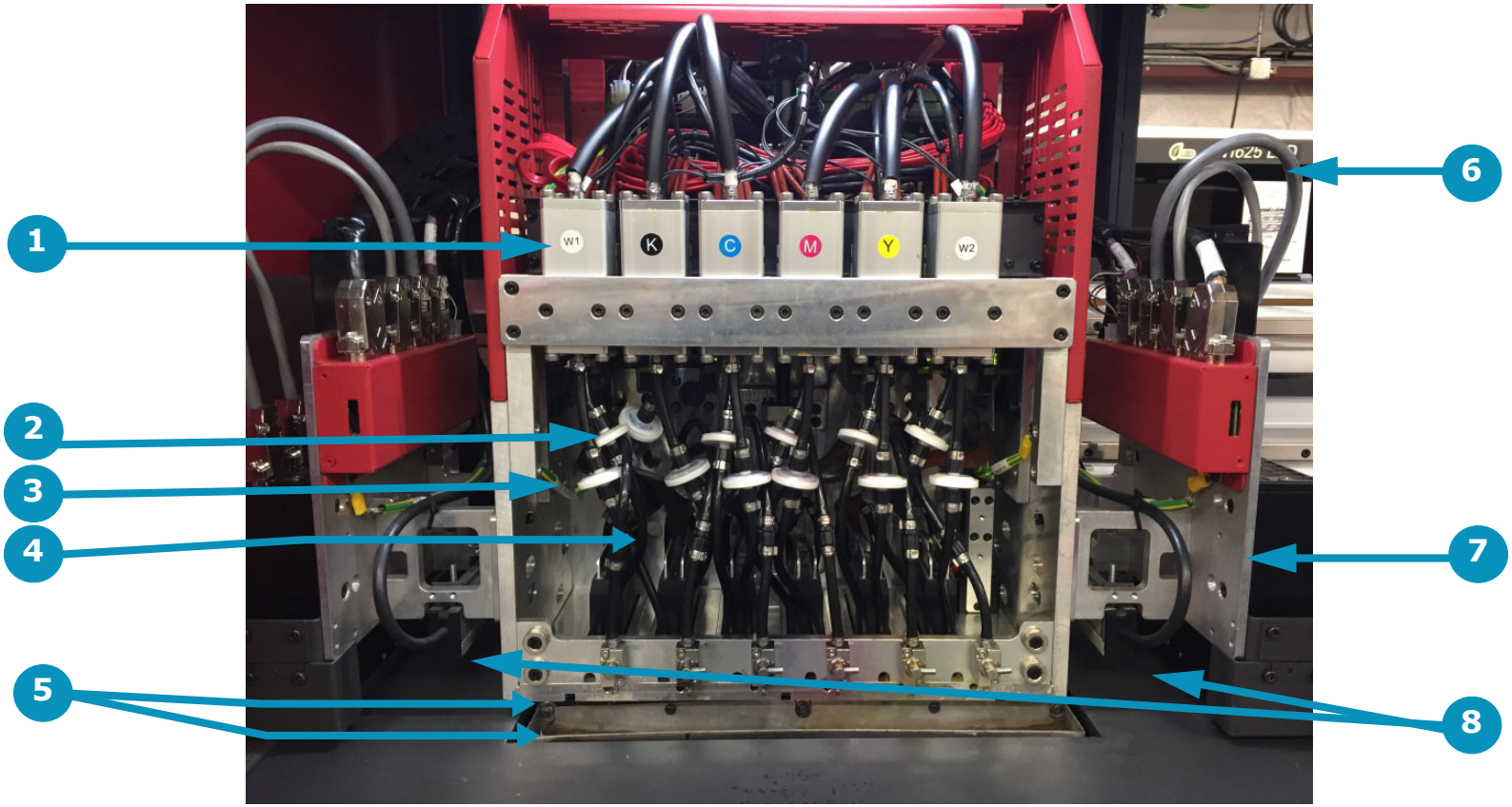


Figure 3-5: Carriage Front View (No Covers Shown)

1	Secondary Ink Tanks	2	Ink Filters	3	Ink Bleed Tubes
4	Ink Supply Tubes	5	Ink Bleed Valves and Drain Trough	6	Lamp Cables
7	LED Lamps	8	Antistatic Bars		

Rear Carriage Assembly

The Rear of the Carriage Assembly contains the following items:

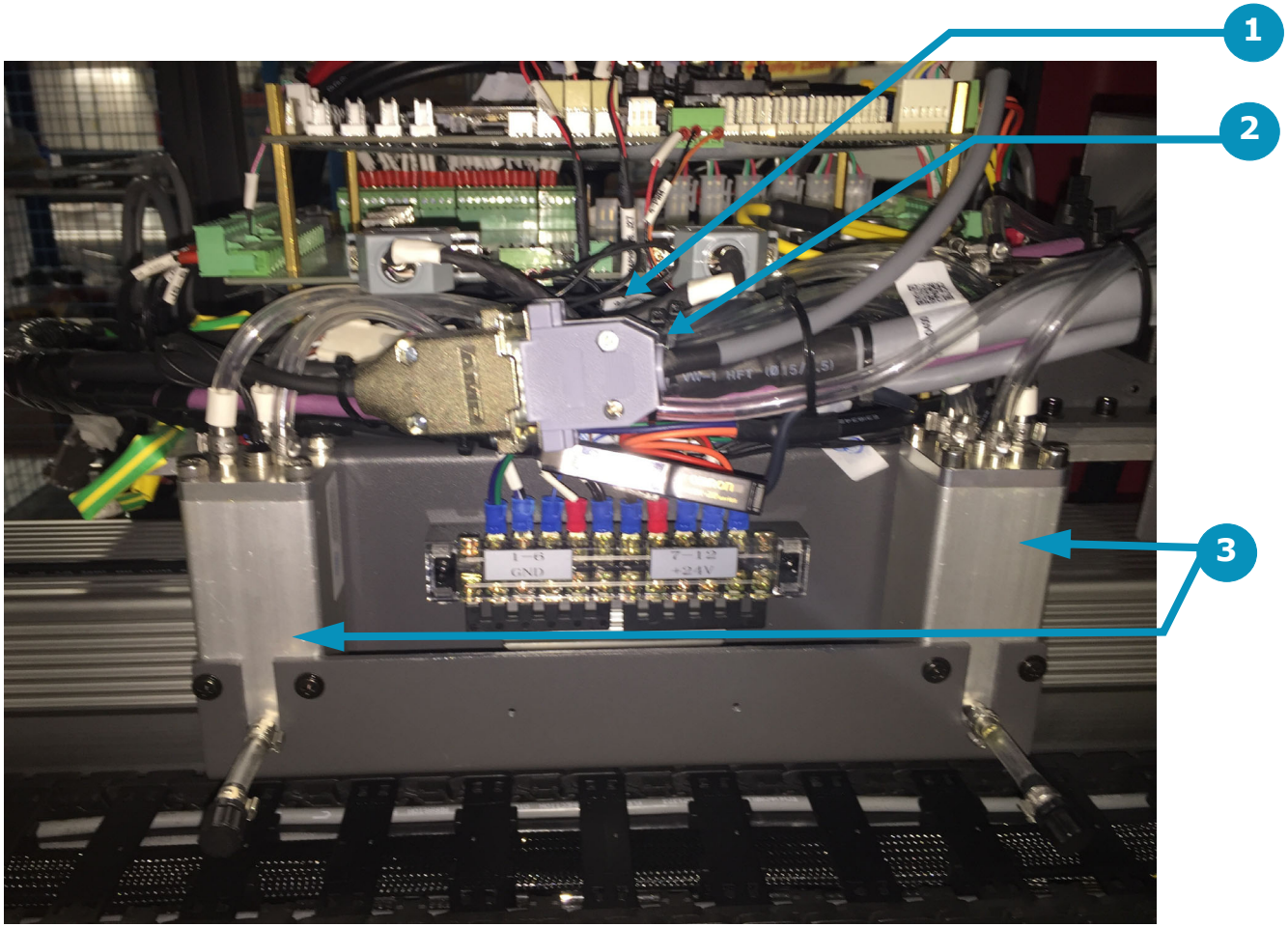


Figure 3-6: Carriage Rear View (No Covers Shown)

1 Print Head Control Board 2 Voltage Control Board 3 Overflow Tanks

3.1.3 EFI Pro 16h UV Lamps

The EFI Pro 16h is equipped with UV Lamps which provide a superior technology for ink curing.

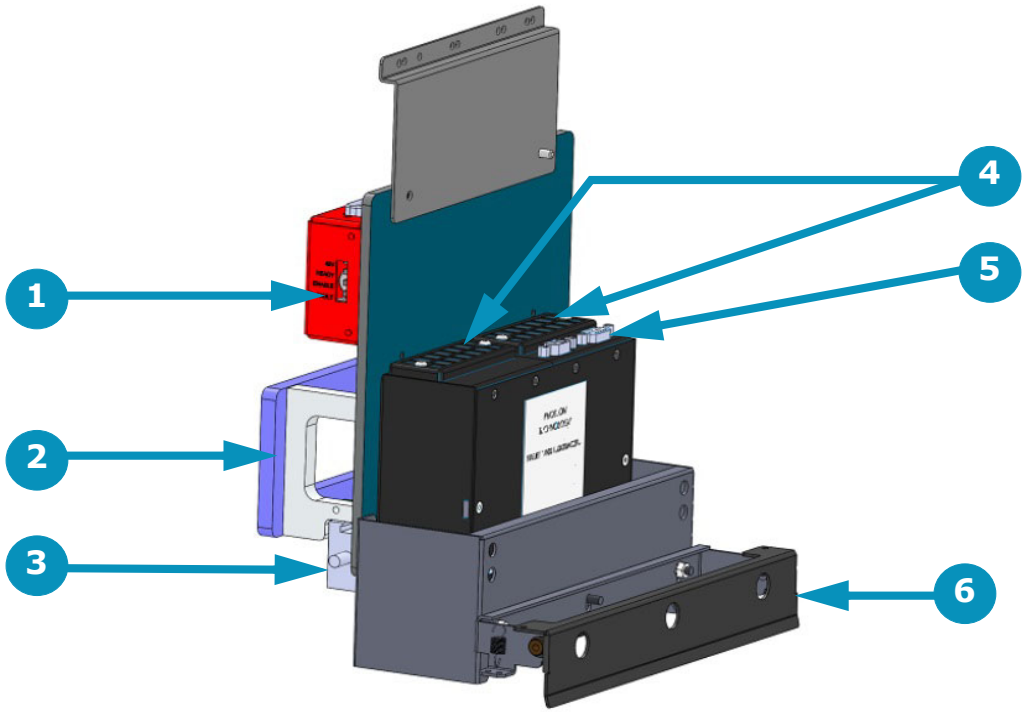


Figure 3-7: LED Lamp Detail (Right Lamp Shown)

1	Lamp Interface Board Housing	2	Lamp Mounting Bracket Assembly	3	Anti-static Bar Assembly
4	Fans & Filter Assemblies	5	Electrical/Communications Connection Point	6	Carriage Safety Stop Assembly

3.1.4 Computer Compartment

The computer and USB and board are located in the Computer Compartment. These are protected by a security cover that should not be removed except by a qualified EFI Field Service Engineer. Also in this compartment are the main breaker panel and the media vacuum controls. Operators may access and use these controls.

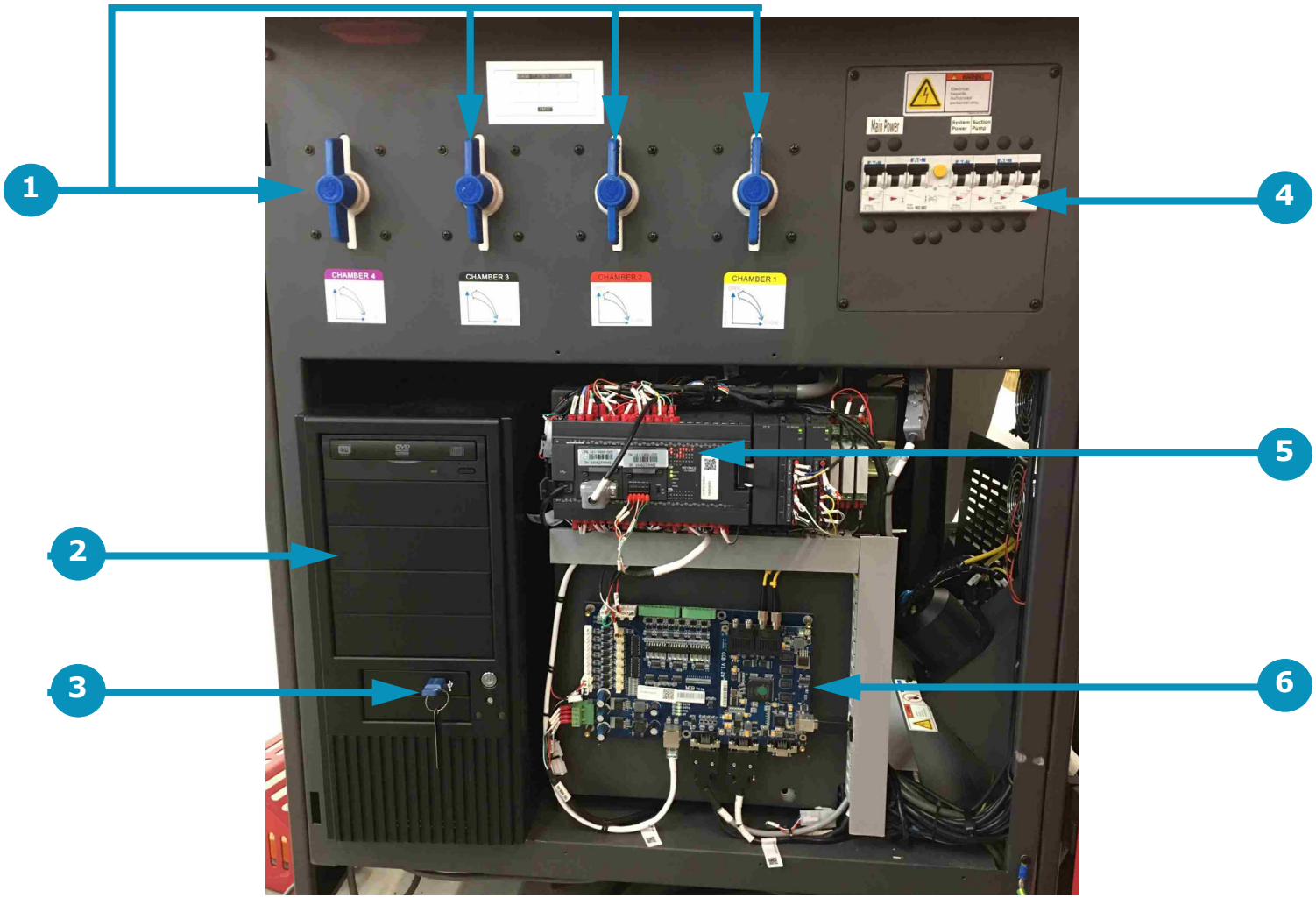


Figure 3-8: Computer Compartment

1	Media Vacuum Controls	4	Main Breaker Panel
2	Computer	5	PLC
3	Fiery XF USB Dongle	6	USB Board

3.1.5 Operator Station Components

The Operator Station Components are described in this section. Those components are as follows:

1. A 22” flat-panel display (Key # 1), a full-size keyboard, and a two-button wheel-mouse (Not Shown).
2. The Keyboard Tray is used to support the keyboard and mouse used for printer operation. In addition, this tray contains the following:

   A. The green start button is located on the right front of the keyboard tray.
   B. The USB ports are located in the center of the keyboard tray.
   C. The red and yellow E-Stop button is located on the left front of the keyboard tray.

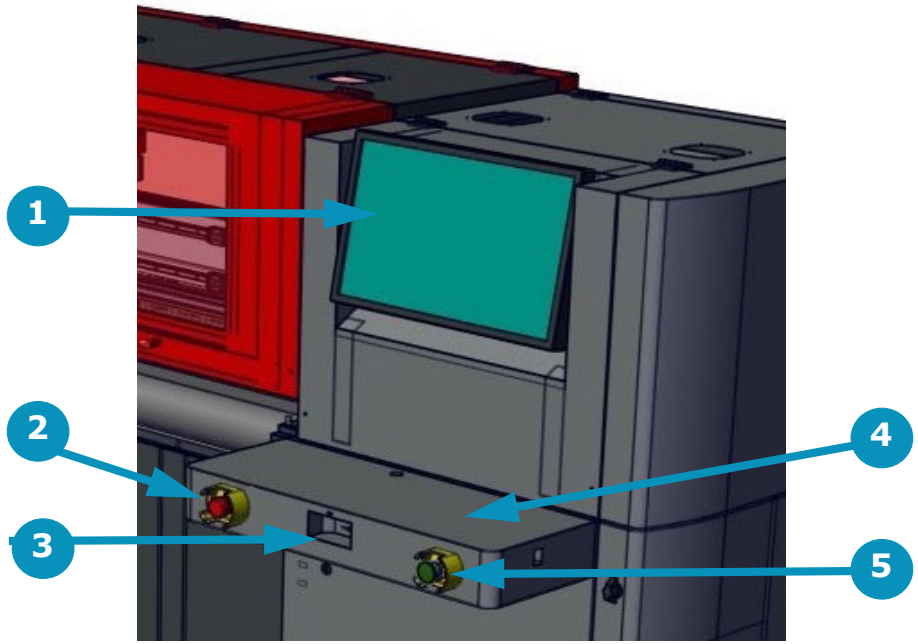


Figure 3-9: Operator Station Monitor

1	Monitor
2	E-Stop Button
3	USB Ports
4	Keyboard Tray
5	Start Button

3.1.6 Media Handling System - Front

The media handling system on the front of the printer holds the rolled media after it is printed. The media is loaded onto this take-up roll until printing operations are completed. Media direction is controlled by the switch and light on the motor (as described in section Media Direction.

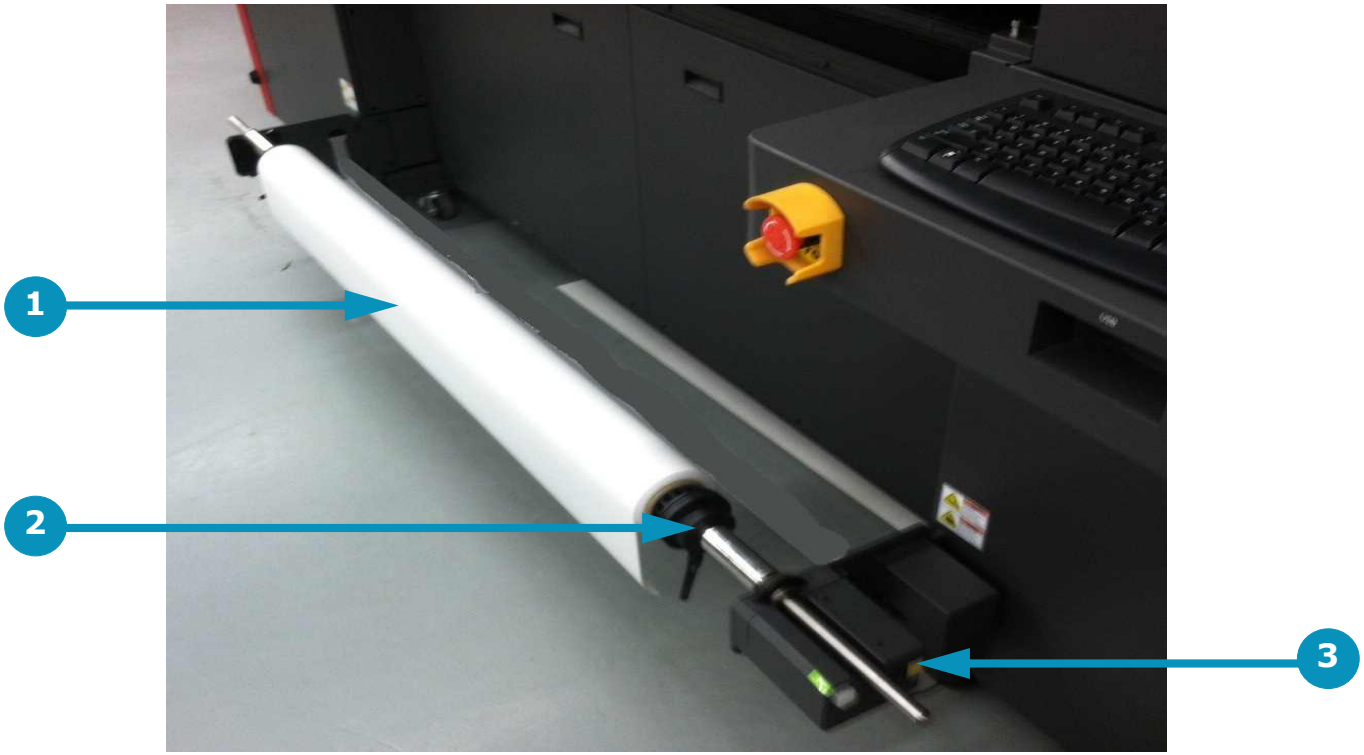


Figure 3-10: Media Handling System - Front

1 Media Roll
2 Media Chucks
3 Motor and Direction Controls

3.1.7 Vacuum Media Belt

The EFI Pro 16h uses a conveyor belt system to move media over a perforated platen (not shown). The platen is divided into 4 vacuum chambers across the width of the platen to allow for control of vacuum pressure across the width of the media belt.

The vacuum grips the media through the vacuum zones and holds the media in place during printing operations. The vacuum pressure in each zone is selectable from 25% to 100% of the media belt width (See Figure 3-12 and Figure 3-13).

As the carriage completes each pass, the media belt is stepped forward until the printed image is complete. The belt should be kept clean in accordance with the maintenance schedule.

The belt system has no user-serviceable parts and should be replaced only by a qualified service engineer.

Figure 3-11: Vacuum Media Belt and Rigid Media Fence

1	Media Belt	2	Zone 4	3	Zone 3
4	Zone 2	5	Zone 1		

The vacuum zones are shown in Figure 3-11, above. Additional information on zone location and control is shown in Figure 3-12 and Figure 3-13.

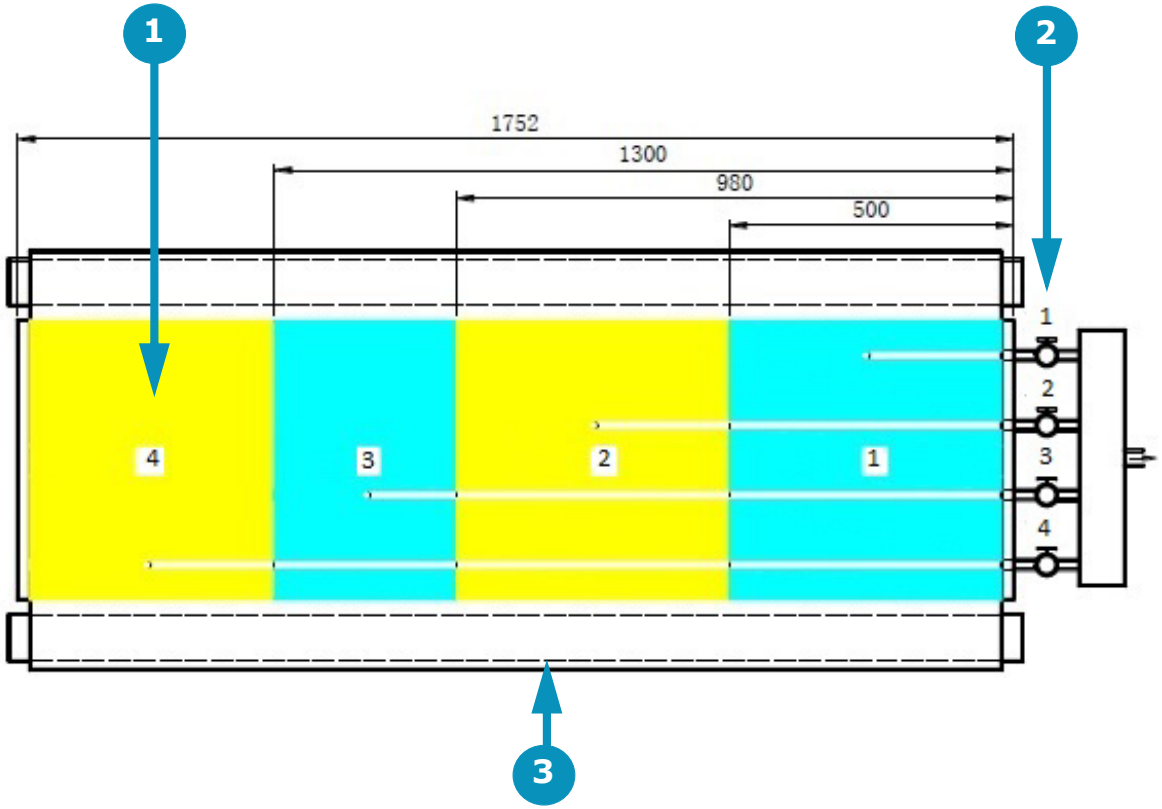


Figure 3-12: Vacuum Media Belt and Platen Vacuum Chamber Layout (Top View)

1	Chambers	2	Valves	3	Front of printer

Vacuum chambers and related control valves are numbered 1 through 4 and are identified in Figure 3-12,above. A detail of the control valve layout is provided in Figure 3-13, below.

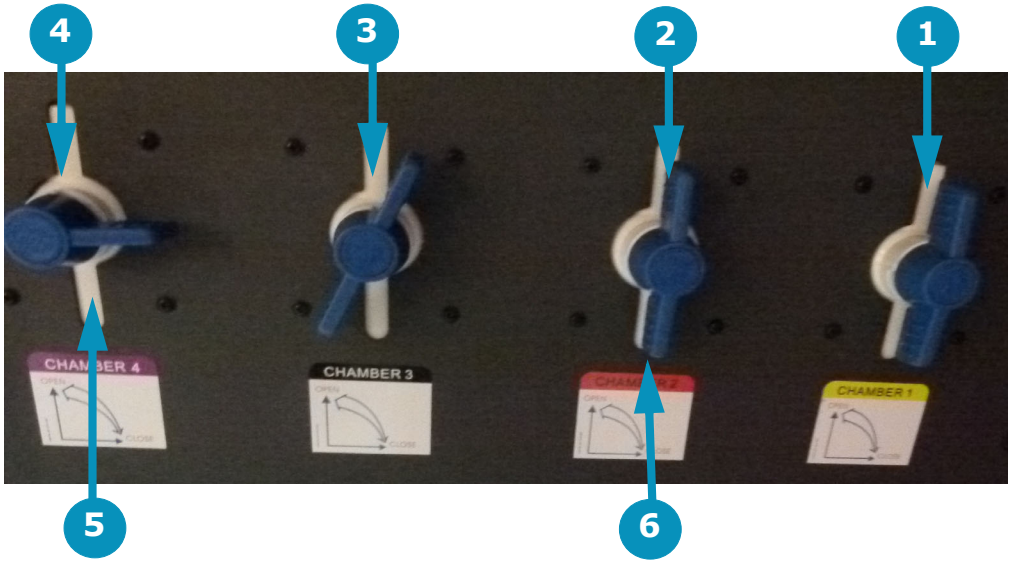


Figure 3-13: Platen Vacuum Control Knob Layout

1	Valve 1	2	Valve 2	3	Valve 3
4	Valve 4	5	Valve Closed	6	Valve Open

3.1.8 Cyclonic Vacuum System

The cyclonic vacuum system is located in the waste compartment (behind the carriage rear access panel). This compartment contains the cyclonic vacuum container, vacuum canister, and ink waste container as shown in Figure 3-14. The design allows for the removal of most of the ink from the vacuum system before it enters the vacuum canister. This function greatly decreases or eliminates the need for excessive cleaning and replacing of filters in the vacuum canister.

The cyclonic vacuum system allows the operator to empty the ink vacuum canister without having to remove the canister from the printer. This system operates so that the cyclonic vacuum container can be emptied into the ink waste container by means of the Liquid Separator button located in the carriage Home compartment. The waste container can then be removed from the ink compartment and emptied.

Figure 3-14: Waste Compartment (Cyclonic Vacuum System, Vacuum Canister and Ink Waste Container)

1 Cyclonic Vacuum Container 2 Vacuum Canister 3 Ink Waste Container

Figure 3-15: Liquid Separator - Empties Cyclonic Container

Figure 3-16: Head Sweep Button

Warning: Do NOT attempt to drain the cyclonic system (using the Liquid Separator button) and an automatic head sweep (using Head Sweep icon on the EFI Pro 16h Control window) simultaneously as this may seriously damage the printer.

3.1.9 Ink Supply and Pump Compartment

The Ink Supply and Pump Compartment contains the following components.

Figure 3-17: Ink Supply and Pump Compartment

1	Ink Filters	2	Ink Pumps	3	White Ink Bottles
4	CYMK Ink Bottles	5	Air Relief Filter	6	Ink Tubes

3.2 Printer Rear Components

This section illustrates the major components located on the rear of the printer.

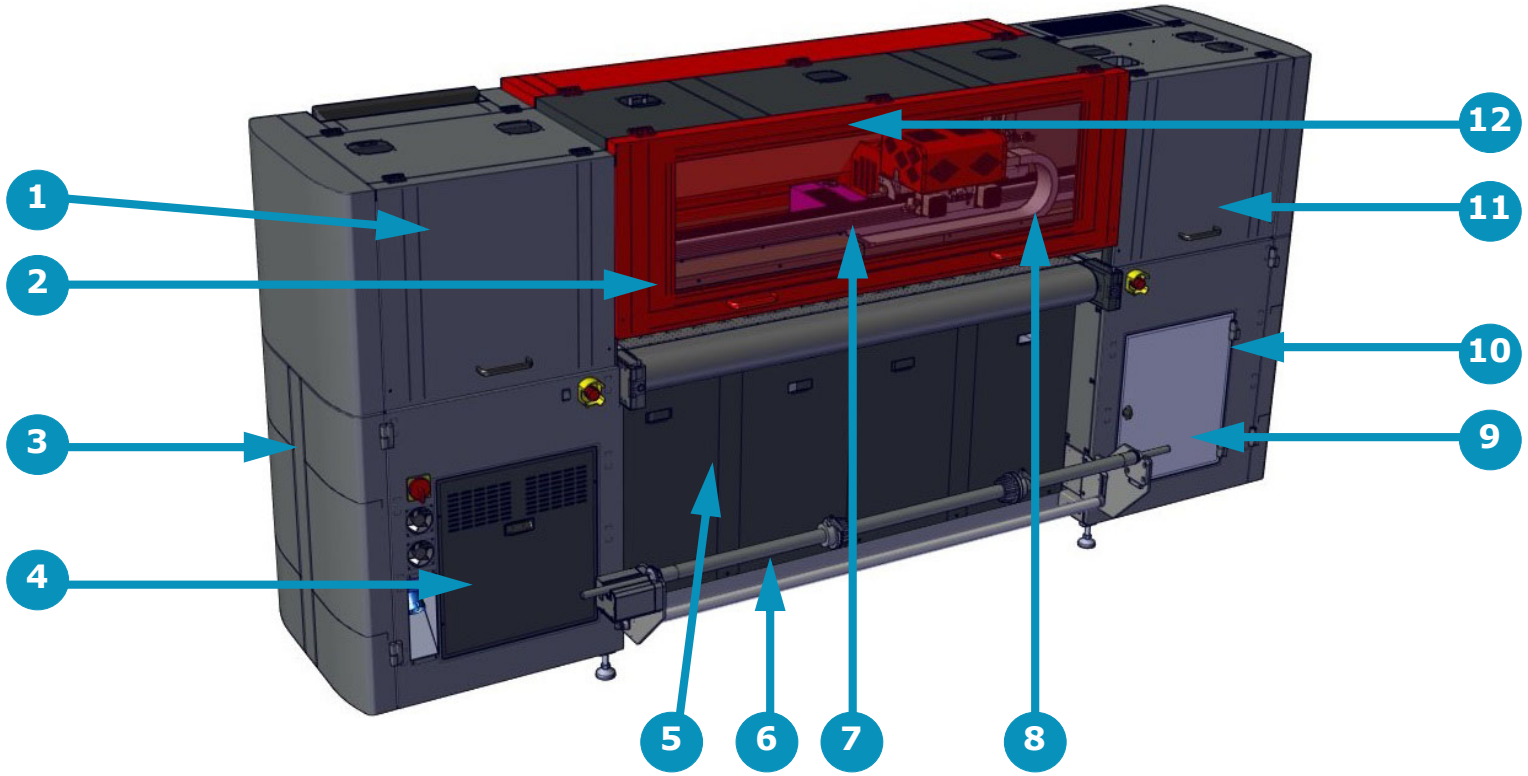


Figure 3-18: Printer Rear (Feed Side)

Caution! Keep all safety interlocks, covers, and guards in place and functional. Never operate printer with covers, doors, or guards removed or with malfunctioning interlocks.

1	Access to Carriage X-Axis Drive System	7	Main Beam (Carriage Beam)
2	Rigid Media Fence	8	Energy Chain
3	Access to Computer, USB, and MFB	9	Access to Main Vacuum Canister
4	Access to Power Supplies and Relays*	10	Access to Waste Bottle
5	Access to Vacuum Motor Compartment	11	Access to Rear Carriage Home Compartment
6	Rear (Feed) Media Handling System	12	Rear Printing Shield

* Field Service ONLY

3.2.1 Rear Printing Shield

The Printing Shields are constructed of special glass that protects against exposure to UV Light. The printer should never be operated with the front or rear printing shields open.

Figure 3-19: Rear Printing Shield

1	Carriage X-Axis Drive Motor Access Panel	2	Printing Shield	3	Home Compartment Access Panel

Note: No access panels or shields should be opened or left open at any time during printer operation.

3.2.2 Carriage X-Axis Drive Motor Access Panel

The Carriage X-Axis drive motor provides the power to move the carriage via the carriage belt. This motor is located at the left end of the carriage beam (when viewing printer from the rear) and is accessed by lifting the rear door behind the operator station.

Note: Belt tension adjustments and motor servicing should be done by qualified Field Service Engineers ONLY.

3.2.3 Rear Access Panel for Carriage "Home" Compartment

The rear access panel at the carriage "Home" compartment allows for ease of access to the carriage rear components.

3.2.4 Energy Chain

The Energy Chain (E-Chain) is attached to the back side of the carriage and moves with the carriage when it is in motion during printing operations. The E-Chain continuously supplies the moving carriage with the following:

- White Ink
- CMYK Ink
- Electrical Power
- Positive and Negative Pressure
- Communication Signals
- Printing Data

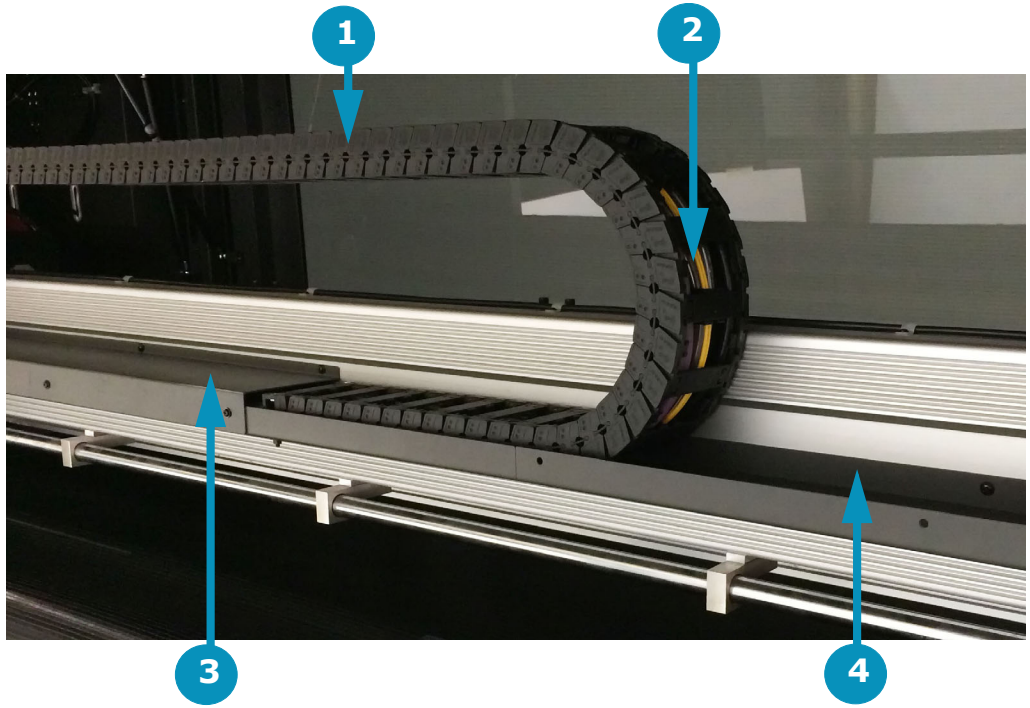


Figure 3-20: Energy Chain (E-Chain)

1	E-Chain
2	Internal Tubes and Wiring
3	E-Chain Trough Cover
4	E-Chain Trough

3.2.5 Main Carriage Beam Assembly

The main carriage beam assembly supports the carriage. The carriage travels across the media via a rail and bearing system. The carriage contains a set of bearings that ride along the rails attached to the main beam. Information about carriage position is supplied via the linear encoder strip attached to the beam.

The main component are shown in Figure 3-21 and Figure 3-22, below.

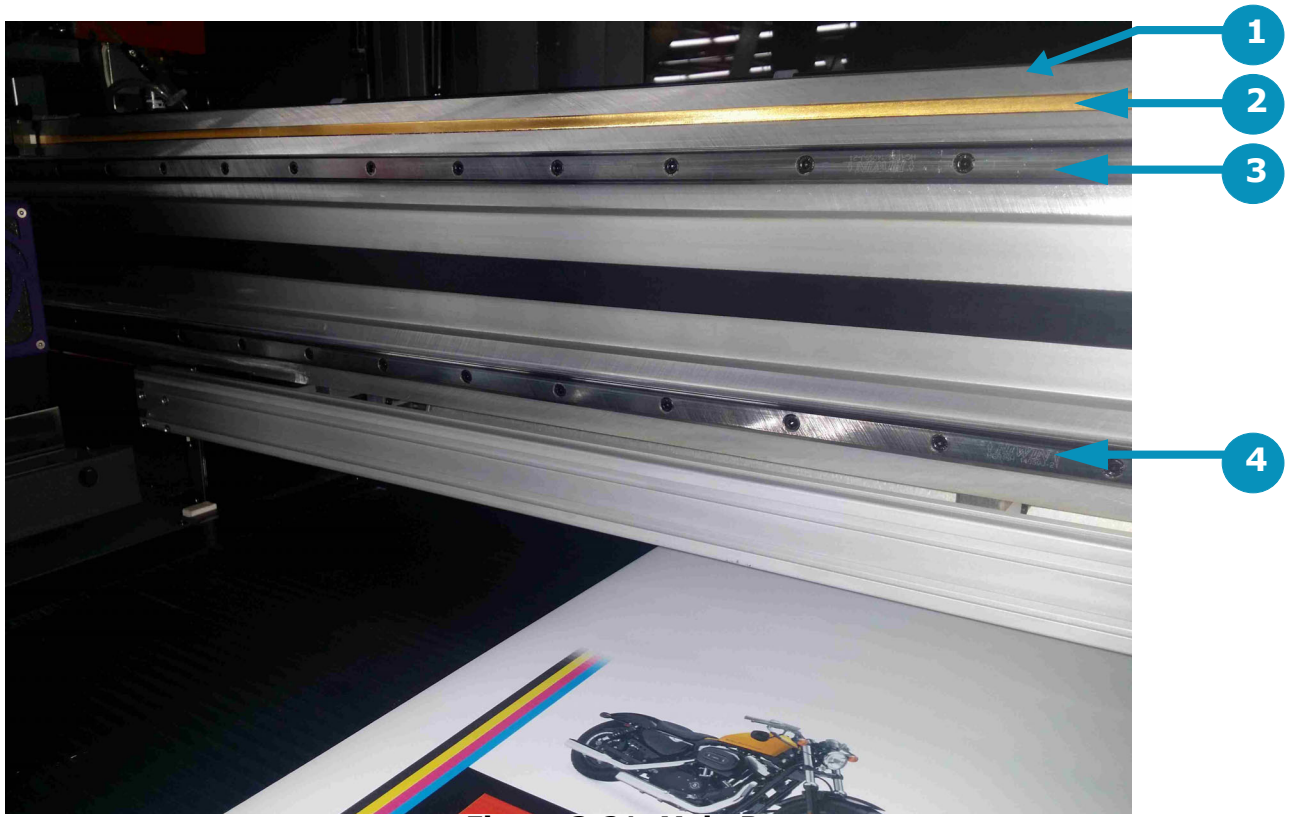


Figure 3-21: Main Beam

1	Carriage Main Beam
2	Linear Encoder Strip
3	Top Rail
4	Bottom Rail

Note: The encoder strip and rails require periodic maintenance. Refer to the Maintenance Guide (*OMM-00074, EFI Pro 16h Maintenance Guide at* https://inkjet.support.efi.com/doc.php?doc=3753) for details.

3.2.6 Media Feed System - Rear

The media feed system at the rear of the printer holds the blank media to be printed. The media is loaded such that the belt pulls the media from the rear of the printer across the belt and out the front of the printer. Media direction is controlled by the switch and light on the motor. See section Loading Rolled Media for complete instructions on the operation of this system.

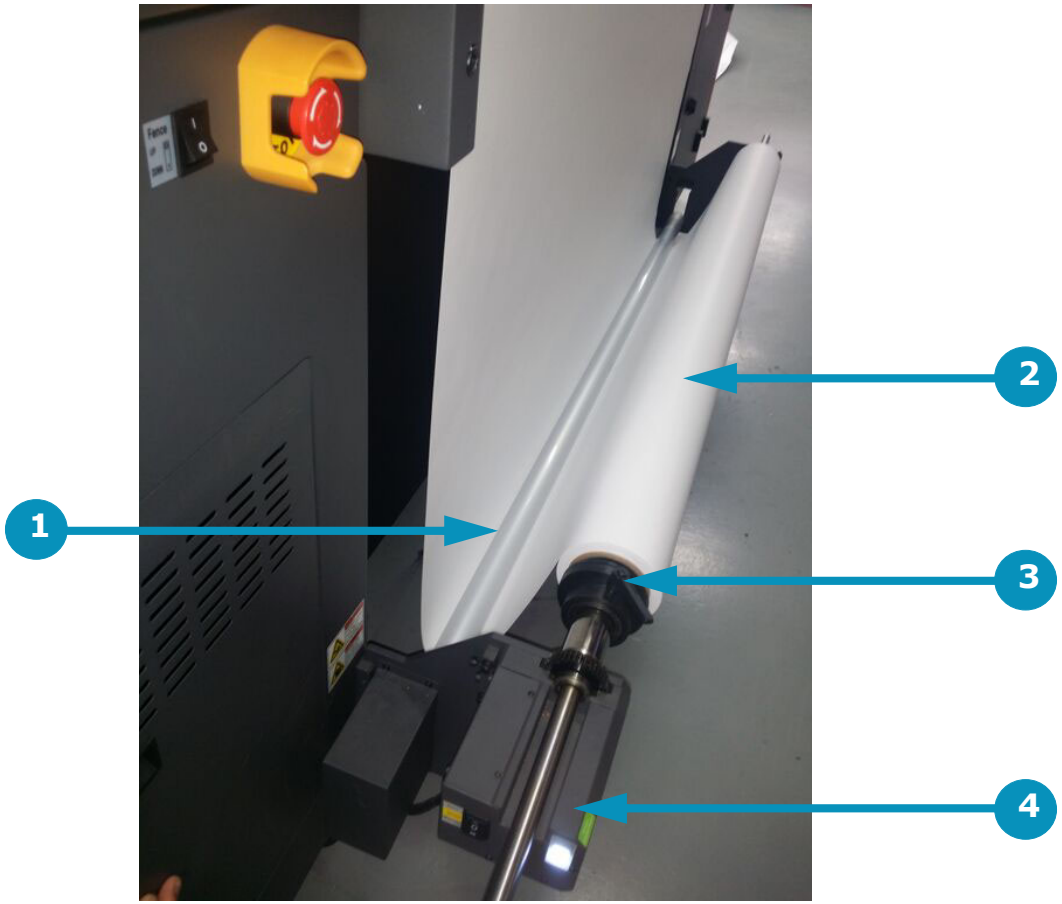


Figure 3-22: Media Feed System

1 Dancer
2 Media Roll
3 Media Chucks
4 Motor and Direction Controls

3.2.7 Rigid Media Fence

The rigid media fence is used to align rigid media so the it is square to the carriage. The fence is deployed by means of the fence up/down switch located on the feed side of the printer or by using the Fence Movement Controls on the EFI Pro 16h Control window.

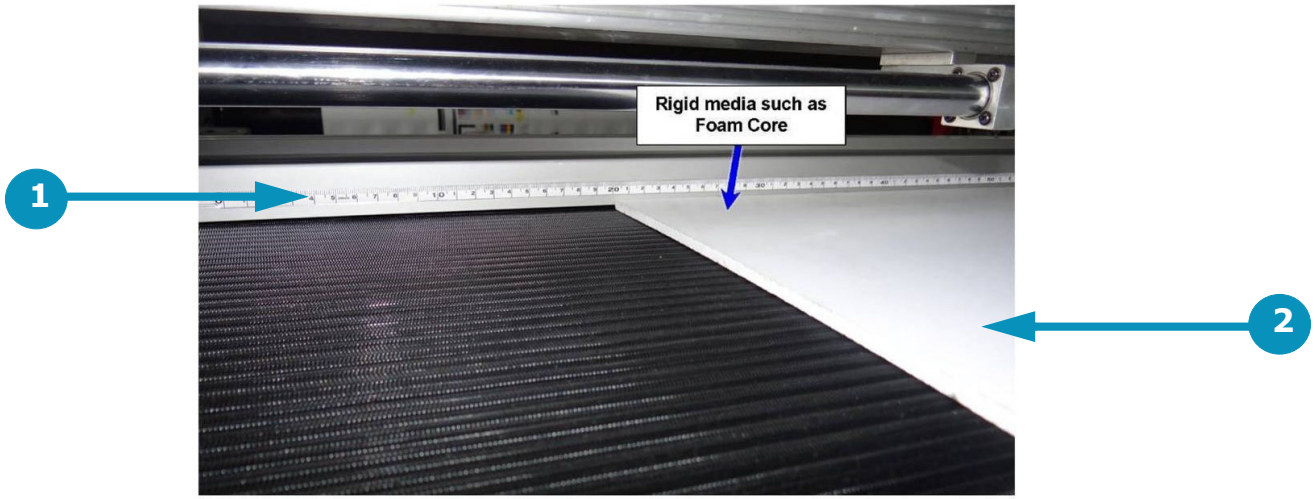


Figure 3-23: Media Feed Handling System

1 Fence
2 Rigid Media

3.2.8 Media Vacuum Foot Pedal

The media vacuum foot pedal controls the media belt vacuum. With the main vacuum breaker in the on position and the vacuum control valves open, stepping on this pedal turns the vacuum motors on and creates the vacuum in the platen that holds media in place when printing.

Figure 3-24: Media Belt Vacuum Foot Pedal

4.0 EFI Print Control Utility and EFI Pro 16h Control Window

This chapter covers the EFI Print Control Utility and the EFI Pro 16h Control window.

4.1 EFI Pro 16h Software Operational Overview

This section provides a general overview of the EFI Pro 16h's Print Control Utility software and how to use it when printing.

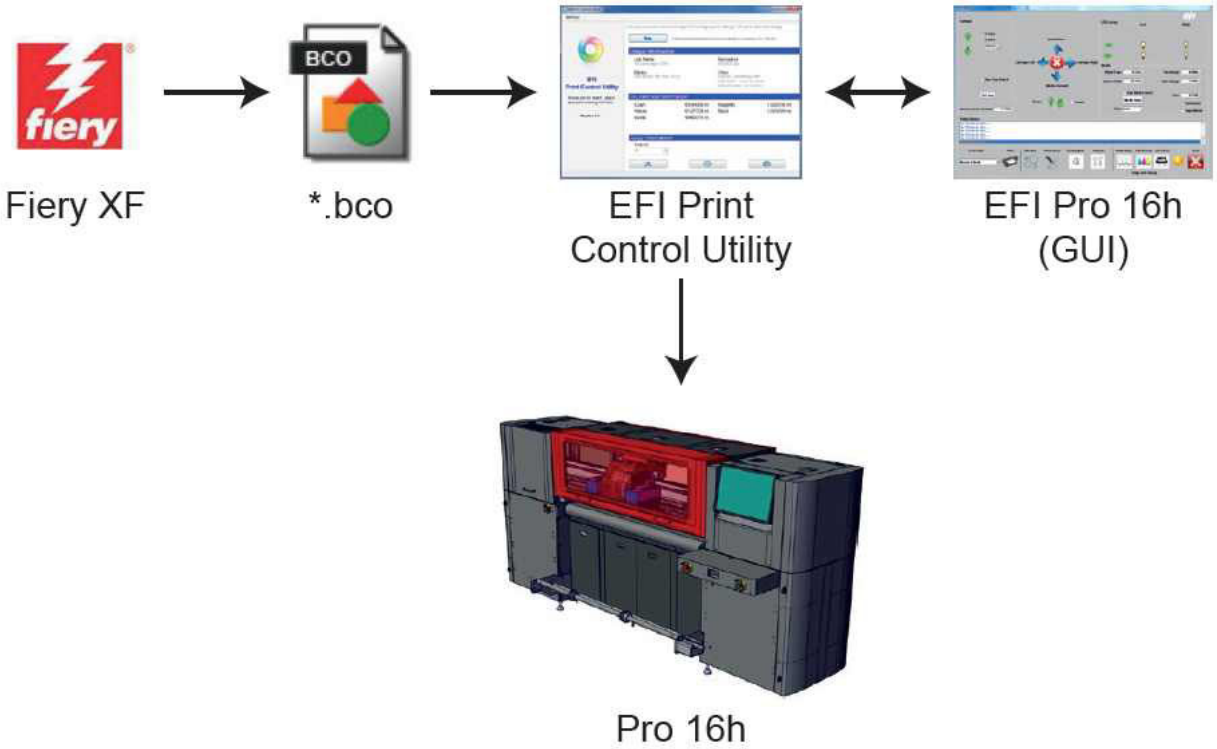


Figure 4-1: : EFI Pro 16h Printing Data Flow

The EFI Pro 16h printer is operated directly using the EFI Pro 16h Print Control Utility. The system data flows as follows:

1. Use Fiery XF to process the native art file and create a *.bco file.
2. Load the *.bco file into the EFI Print Control Utility.
3. Use the EFI Print Control Utility to open the EFI Pro 16h (GUI).
4. Use the EFI Pro 16h (GUI) to scan your media, set the carriage gap, adjust the margins, etc.
5. Set the print quantity in the EFI Print Control Utility.
6. Click **Print** in the EFI Print Control Utility to print the image on the Pro 16h Printer.

4.2 EFI Print Control Utility

The EFI Pro 16h printer is operated by using the EFI Print Control Utility. The printer operator imports the image source files to be printed to the EFI Pro 16h printer via a network connection in the appropriate file format (pdf, eps, etc.). Fiery XF RIP software is then used to process the source file and create the required bco file to be printed. The Print Control Utility is used to select the appropriate bco file, select the number of copies and initiate the printing process. Additionally, the EFI Print Control Utility can open the Pro 16h (GUI) window which can be used to access more advanced printer settings and controls.

- Click the EFI Print Control Utility icon.

The Print Control Utility (see Figure 4-2:), allows the user to select, adjust, and print existing RIP (.bco) files. The EFI Pro 16h Control window is launched from the PCU.

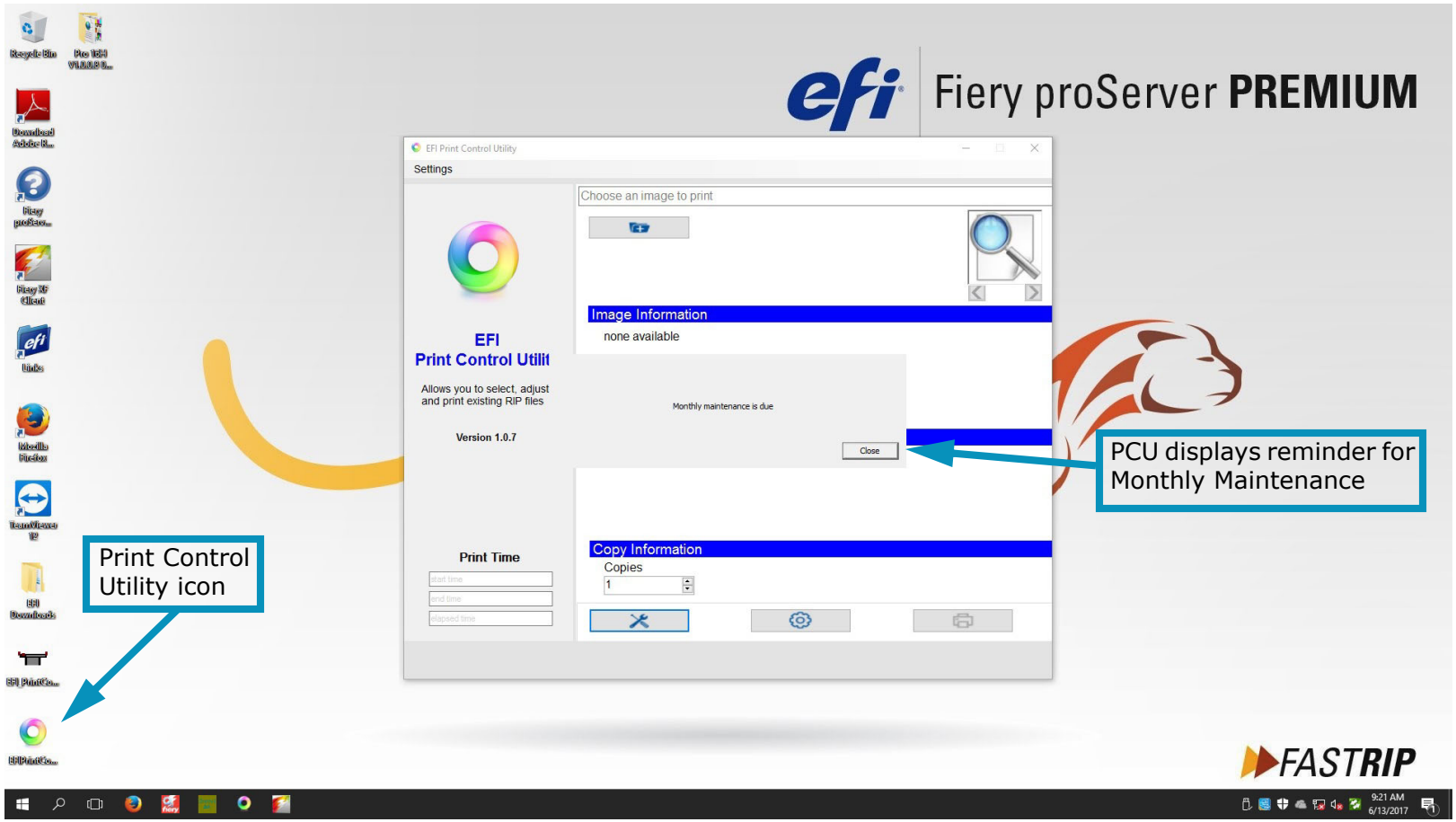


Figure 4-2: : EFI Print Control Utility

4.2.1 Print Control Utility Overview

Open and run the Print Control Utility as described in this section.

1. Click on the Print Control Utility (PCU) icon located on the desktop.
   The PCU window opens.

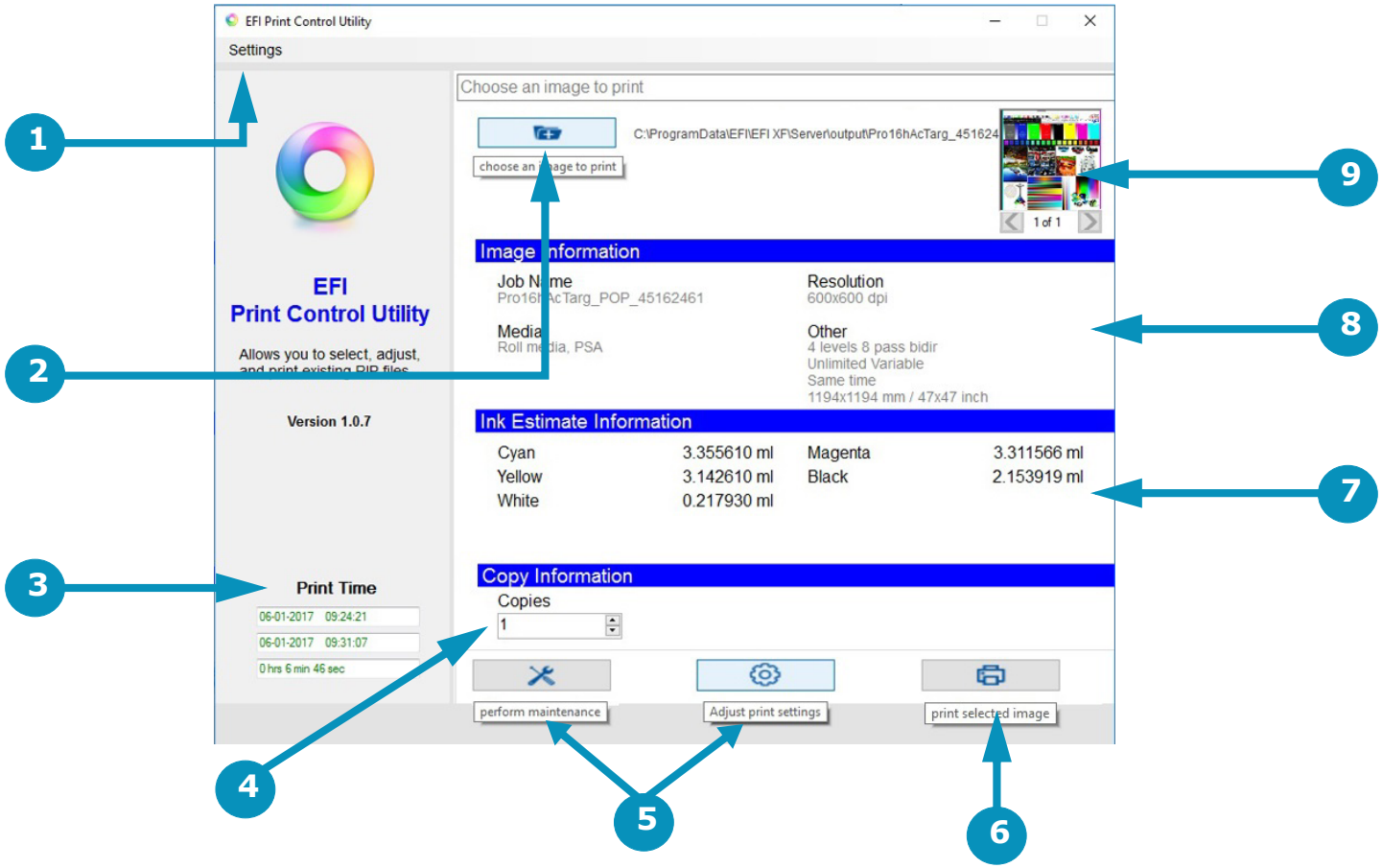


Figure 4-3: : EFI Print Control Utility Overview

1	Settings Menu	2	Select File to Print	3	Print Time calculates time from when Print button is clicked to homing of carriage after printing
4	Number of Copies	5	Opens Control window	6	Print Button prints selected file.
7	Display Ink Usage Estimates	8	Displays Image Information	9	Image Preview Thumbnail

2. Select the Settings menu in the upper left corner of the window and select the default image folder. This opens the folder containing the pre-ripped .bco files.
3. From the default image folder, select the desired file. The PCU window displays the following (if the information is contained in the file):
    - Image information
    - Ink estimate information

4. Use the Copies Control on the PCU window to adjust the number of copies to be printed.

5. Click the Print button in the lower right hand corner of the PCU window to print the selected image.

6. If printing on rolled media, the "Print Starting" notification dialog pops up, the printer makes several audible beeps, and the printing operation begins. The "Print Starting" notification appears for each copy of the print. The operator does not need to acknowledge or take any action. This is just a notification that printing is starting.

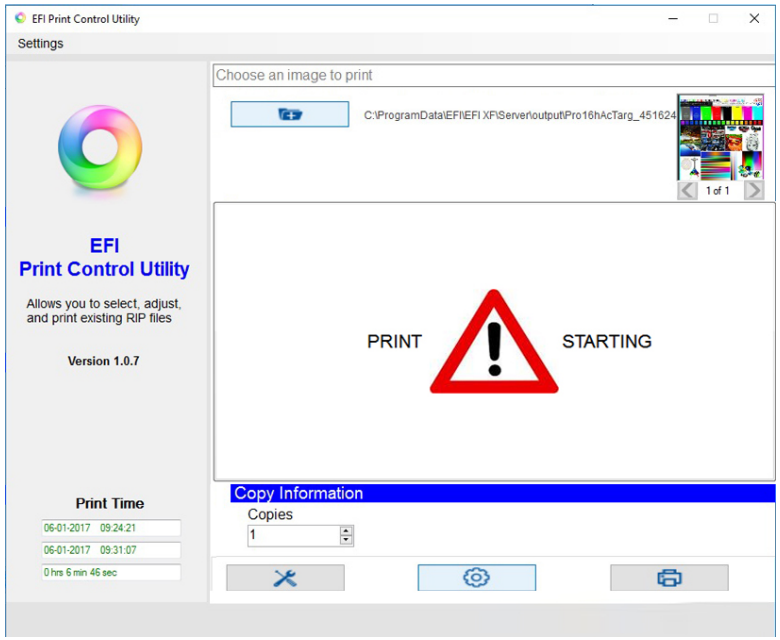


Figure 4-4: : "Print Starting" Window

7. If printing on rigid media, the Load Media prompt appears first, instructing the operator to load the media. This prompt appears for every copy of the print. The operator must acknowledge the prompt each time, signaling that the media has been loaded

.

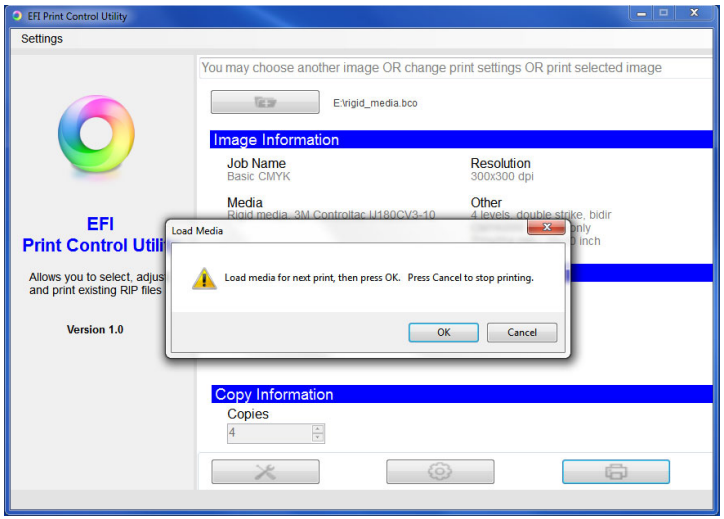


Figure 4-5: : "Load Media" Window

4.2.2 Settings Menu

The Print Control Utility Settings menu has the following options:

1. **Default Image Folder** - Allows the operator to set/change the default image folder. When the user presses the "Select Files to Print" button, the default image folder is opened. The default image folder should be set to "F\XF Output".
2. **Local Drives (C:\)** - Adds or Removes other local Drives. (Image shown below)
3. **Always Copy Non-local Files To Default Image Folder (F\XF Output)** - Sets the Utility to always copy non-local files to the default image folder (without prompting the operator) before printing.
4. **On Top** - Keeps the Print Control Utility window on top of other windows (with the exception of some EFI 16h Pro Control screens).

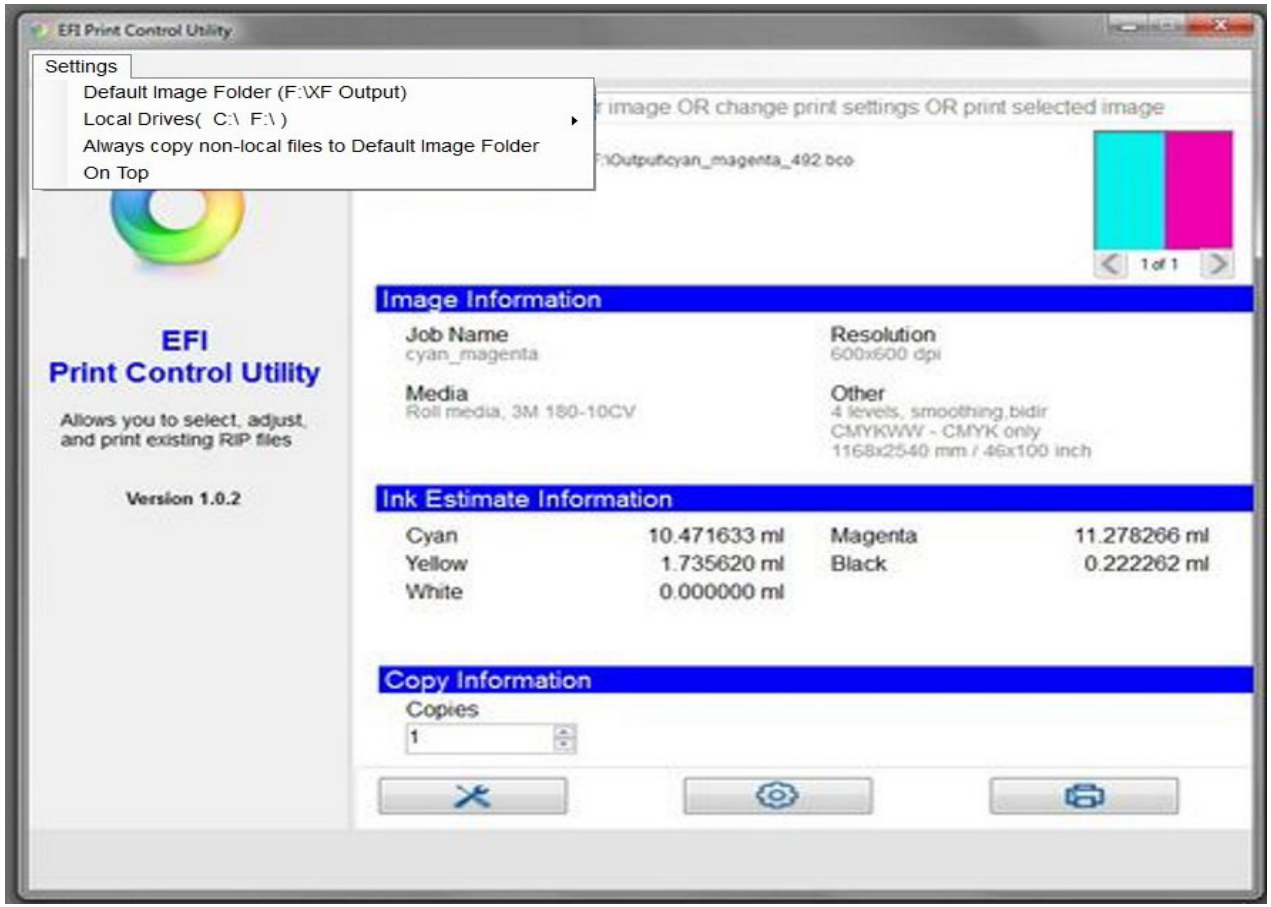


Figure 4-6: : Print Control Utility Settings Menu

4.2.3 Adding Drives

The Print Control Utility "Add Drives" function operates as follows:

1. Click on the Local Drive button.
2. Navigate to the desired drive. and select it.

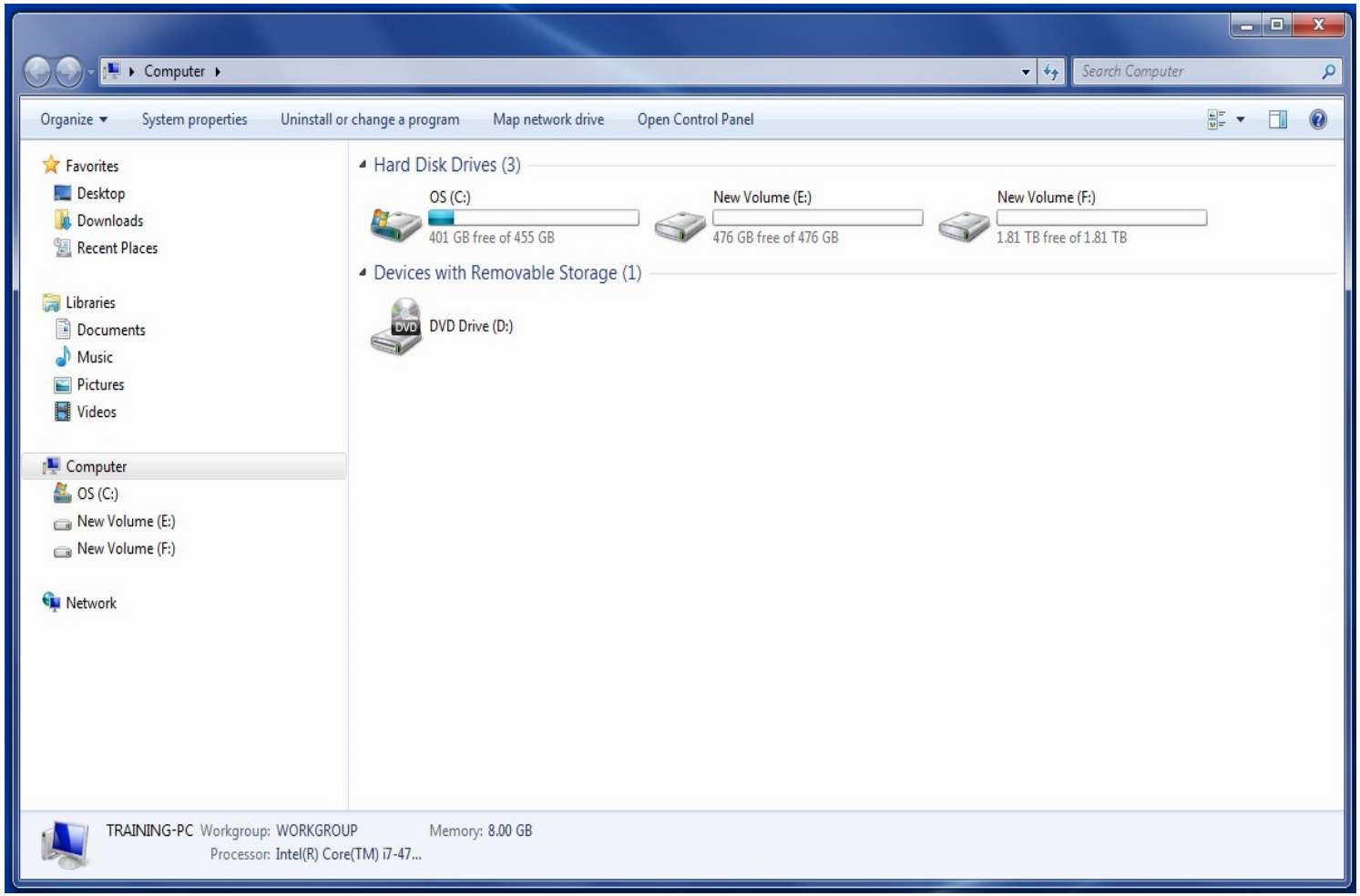


Figure 4-7: : Print Control Utility Select Drive

4.2.4 Select Files to Print Button

The Print Control Utility Select File to Print menu operates as follows:

1. Click on the button to open the file folders.
2. Navigate to the desired file.
3. Select the file to print.

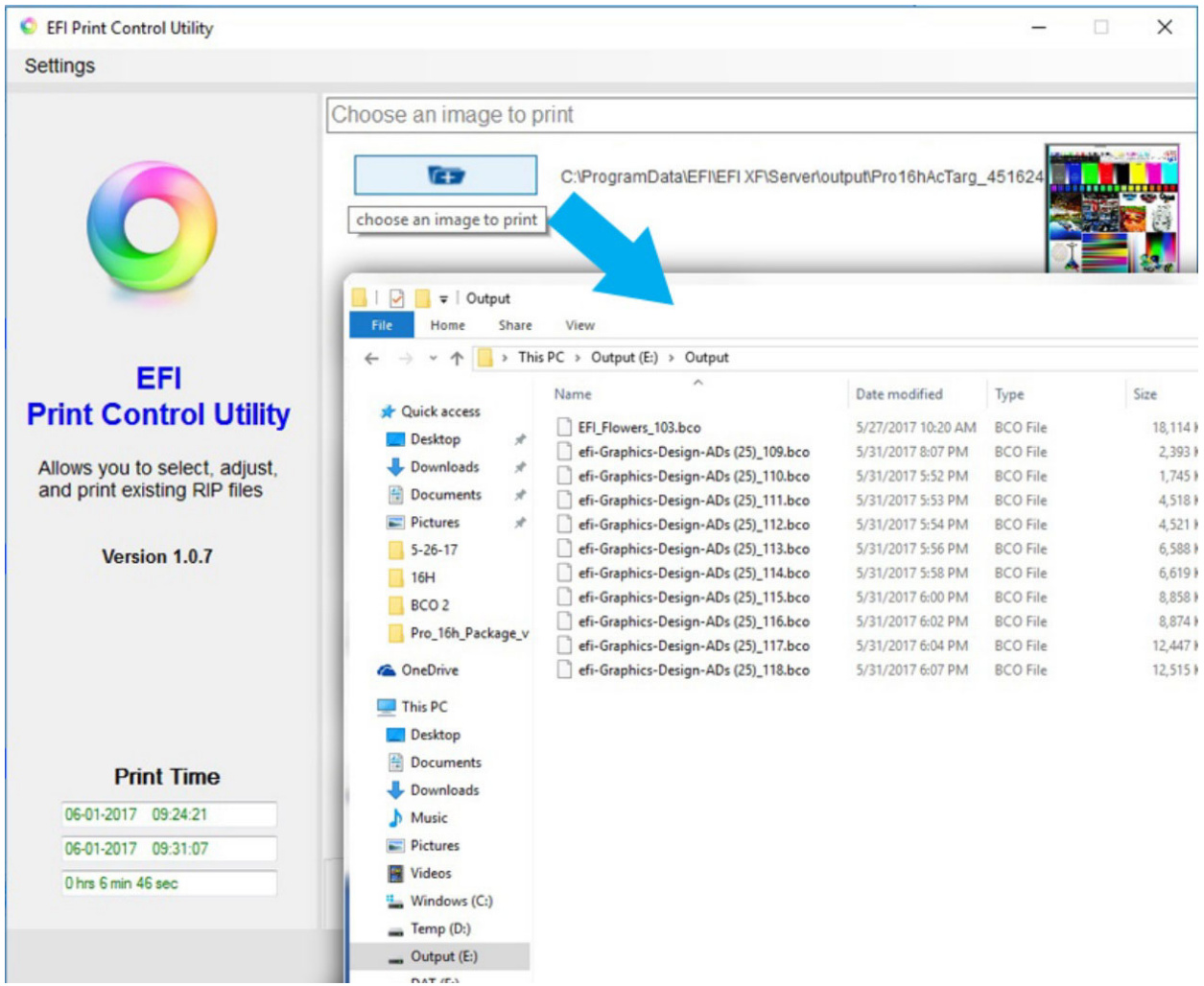


Figure 4-8: : Print Control Utility Select File to Print Button

Move Selected BCO Option

If the BCO is not in route directory, for example because you are using a USB flash drive import, the system displays a prompt asking, "Would you like to copy this file to the default image folder now?"

- Select **Yes** to move the file.

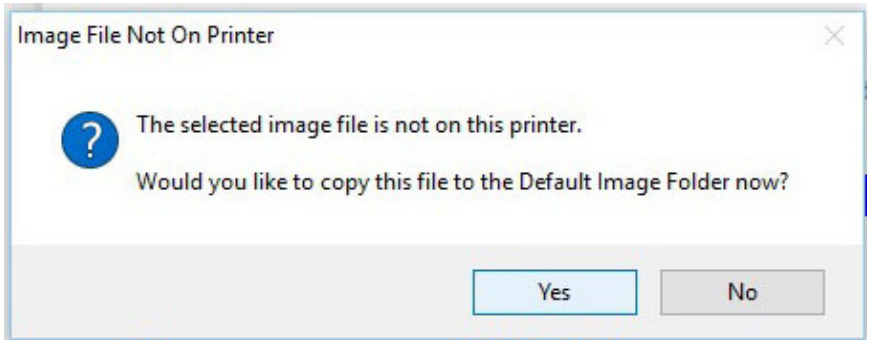


Figure 4-9: "Image File Not On Printer" Prompt

4.2.5 Image Information and Ink Use Estimates Panes

The Print Control image Information and Ink Usage Estimates panes display data as follows:

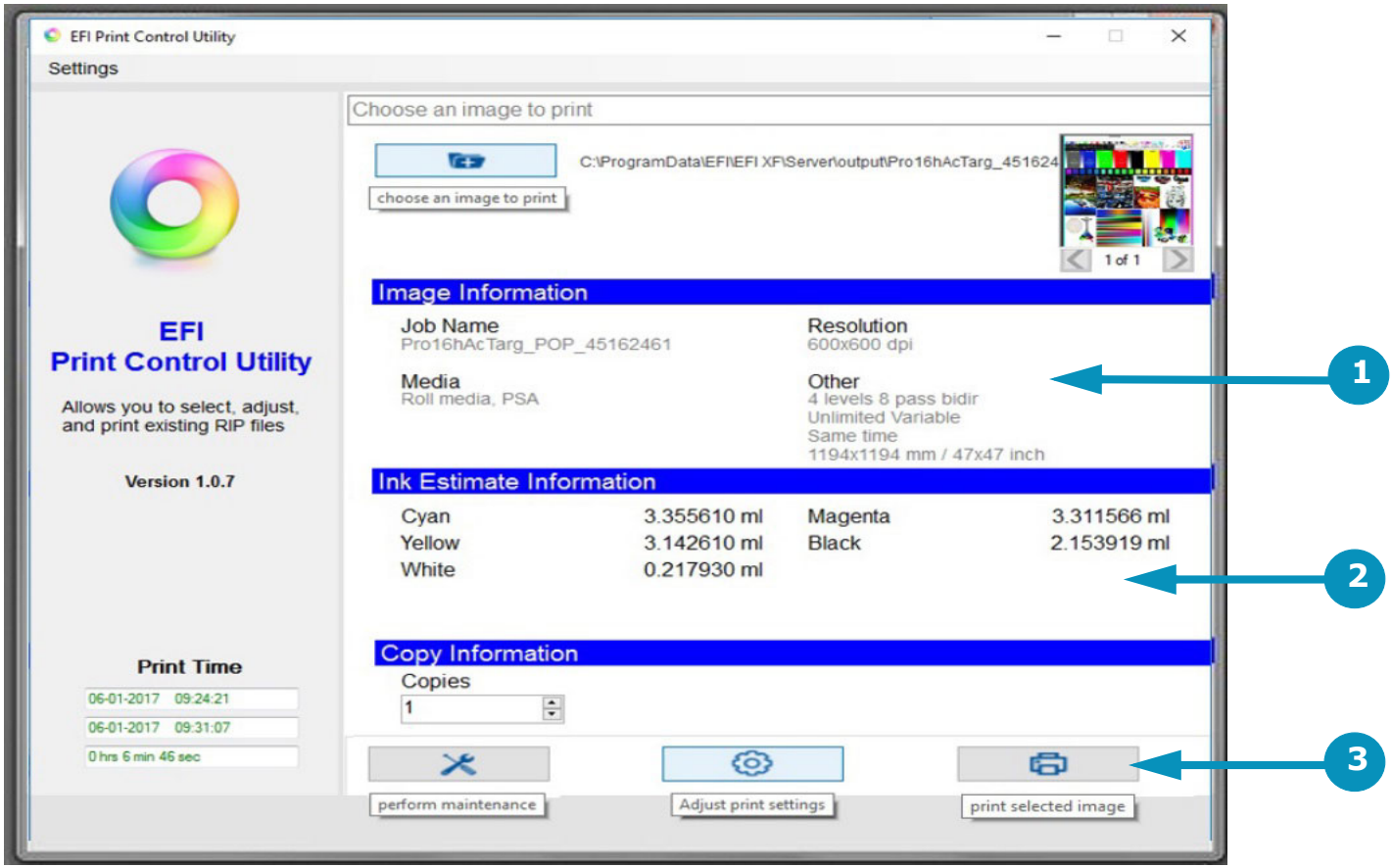


Figure 4-10: : Print Control Utility Image Information and Ink Use Estimates

1. Displays Image information to include:
   - Job Name
   - Resolution
   - Media Type and Profile
   - Other (Printing Selections including 4 level/8 level, smoothing or non-, unidirectional or bidirectional, colors used from the file, and file print dimensions.)
2. Displays Ink Usage Estimates for the job selected.
3. When finished, the "Print Completed" message will appear in the "Copy Information" section

Conflict Message

The previous Print Control and the Print Control Utility (PCU) cannot run together. If the previous Print Control is running, the error shown below appears when you start the PCU. If the error occurs, shut down the previous Print Control and reopen the PCU.

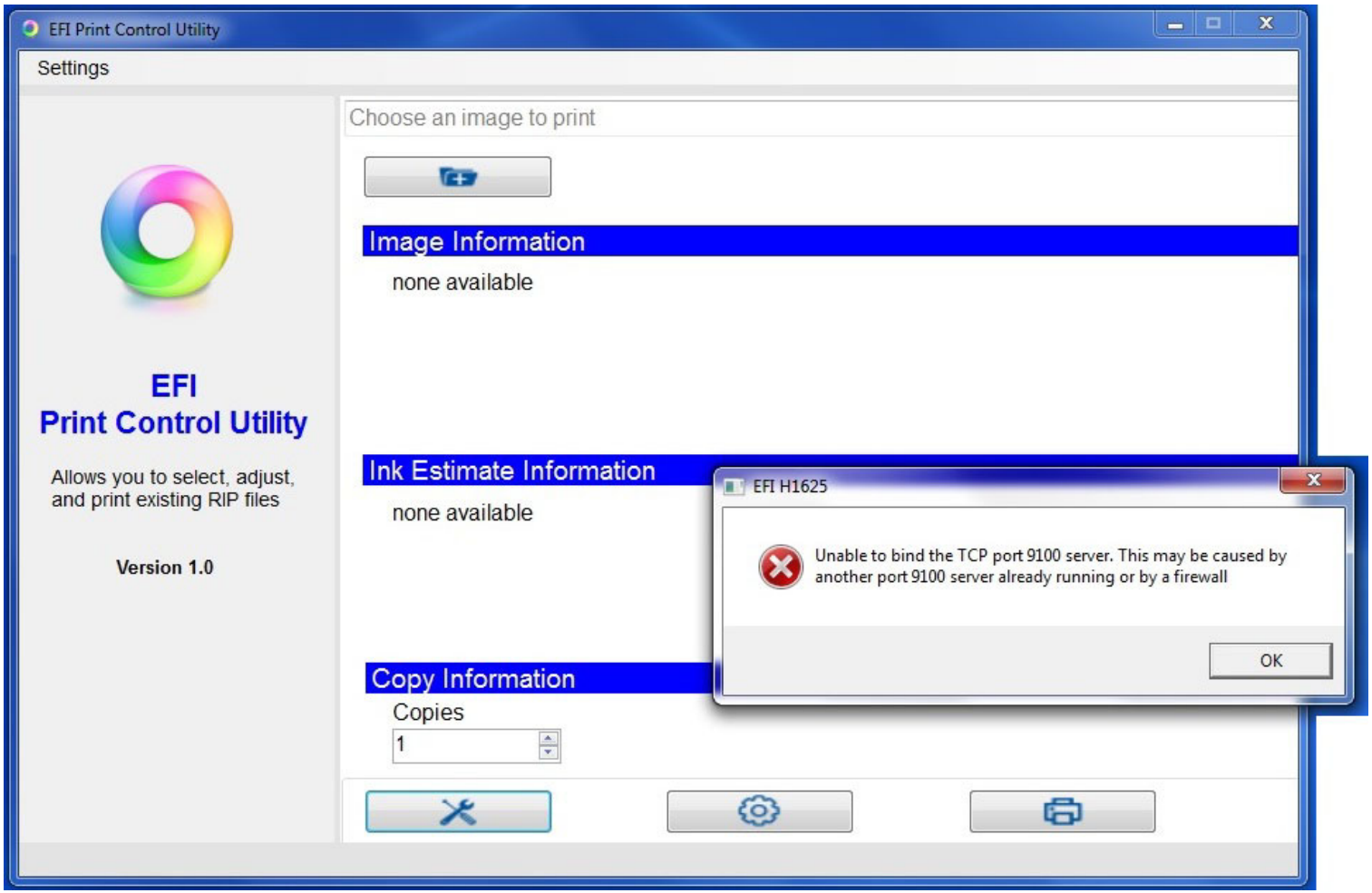


Figure 4-11: : PCU / Print Control Error Message

4.3 EFI Pro 16h Control Window

*The Print Control Utility launches the EFI Pro 16h Control window by clicking on the **Tools** button or the **Adjust Image Settings** button. The EFI Pro 16h Control window defines printing parameters, print options, and printer status information.*

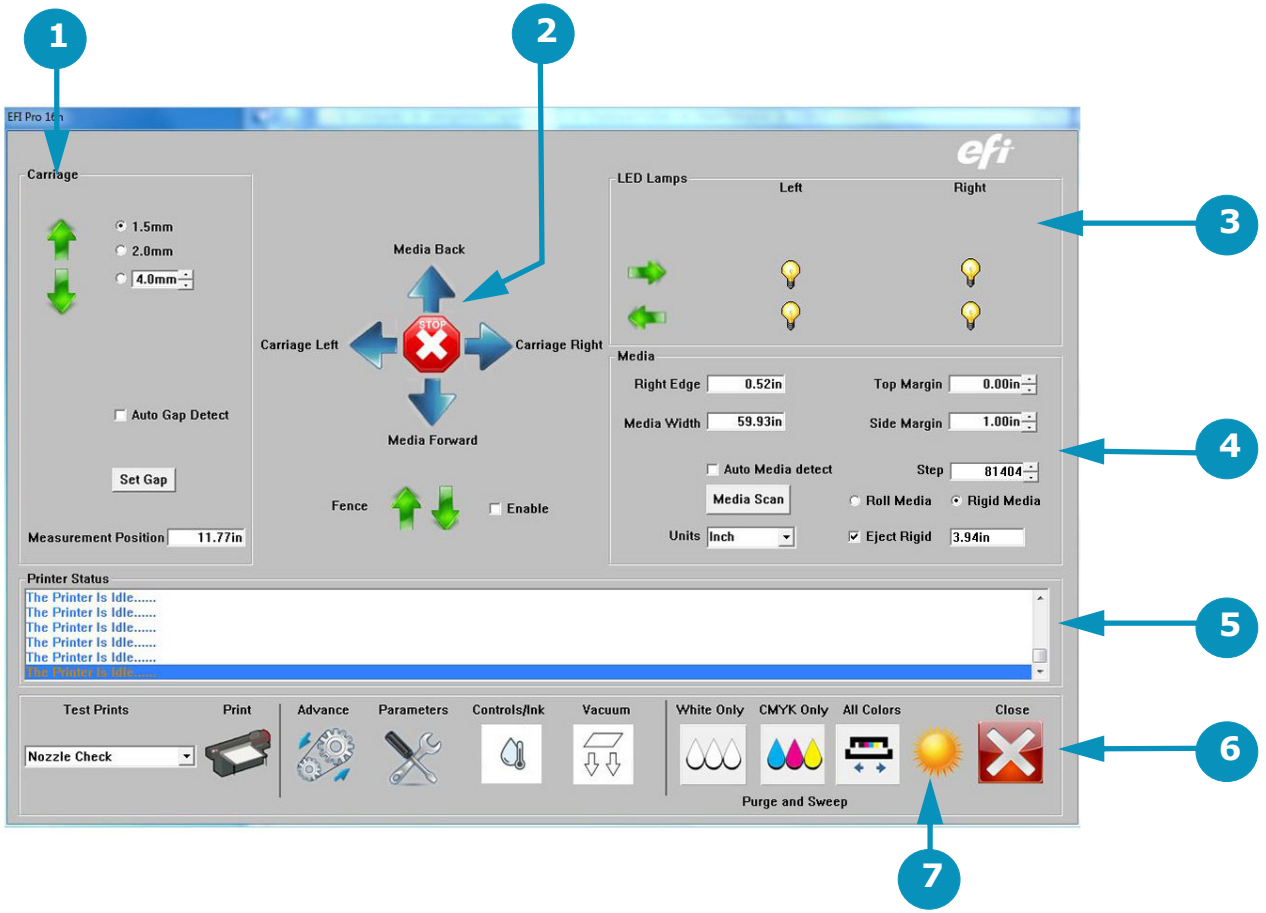


Figure 4-12: : EFI Pro 16h Control Window

1	Carriage Controls	2	X-Y Axes Movement Controls	3	Lamp Controls
4	Media Controls	5	Printer Status Bar	6	Printer Tools Bar
7	"Awake" or "Sleep" Button				

4.3.1 Carriage Controls

The Carriage controls perform the following functions:

1. Moves carriage up on the Z-Axis to the upper limit.
2. Moves carriage down on the Z-Axis to the lower limit.
3. Selectable carriage height settings.
4. Allows the carriage to automatically set the Gap.
5. Sets the carriage gap measurement positive distance from the Media Positive Value.
6. Sets Measurement Position.

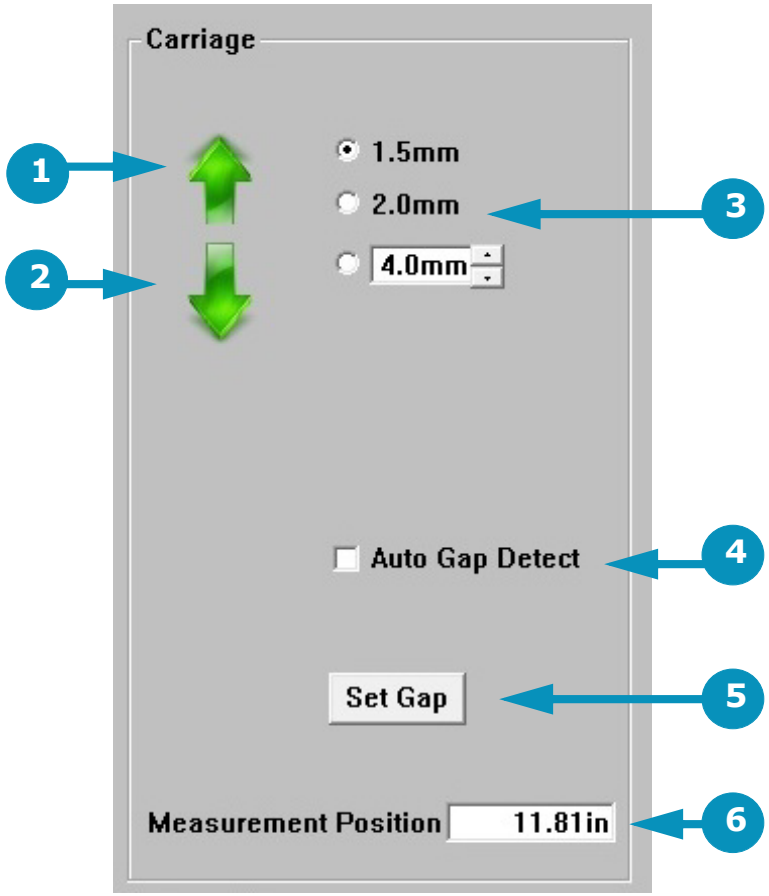


Figure 4-13: : Carriage Controls

1	Carriage UP	2	Carriage DOWN	3	Gap Settings
4	Auto Gap Detect	5	Click to set Gap	6	Sets Measurement Position

4.3.2 X, Y Axes and Fence Movement Controls

The X, Y Axis movement controls the following functions:

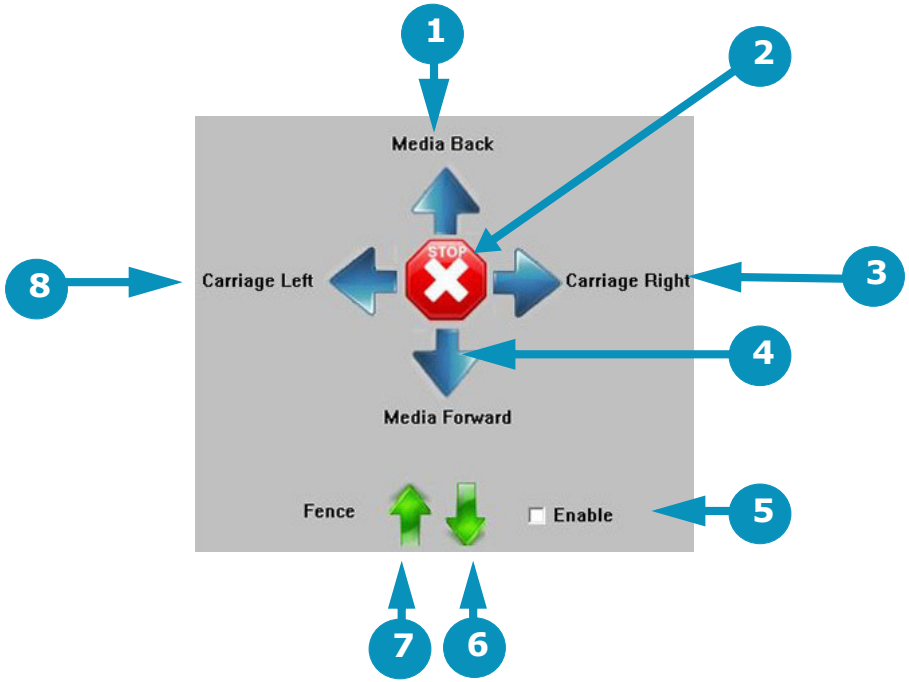


Figure 4-14: : X-Y Axes and Fence Movement Controls

1	Jogs Media Incrementally	2	STOPS all motion	3	Steps Carriage RIGHT
4	Jogs Media Incrementally	5	Enables Fence Movement	6	Fence DOWN
7	Fence UP	8	Sends Carriage HOME		

Note: Item number 5 -- the "Enable" check box -- when checked, enables fence movement via the EFI Pro 16h Control window and disables the manual fence button. When unchecked, software-controlled fence movements are disabled and the fence button is enabled.

4.3.3 Lamp Controls

The Lamp Controls provide the following functions:

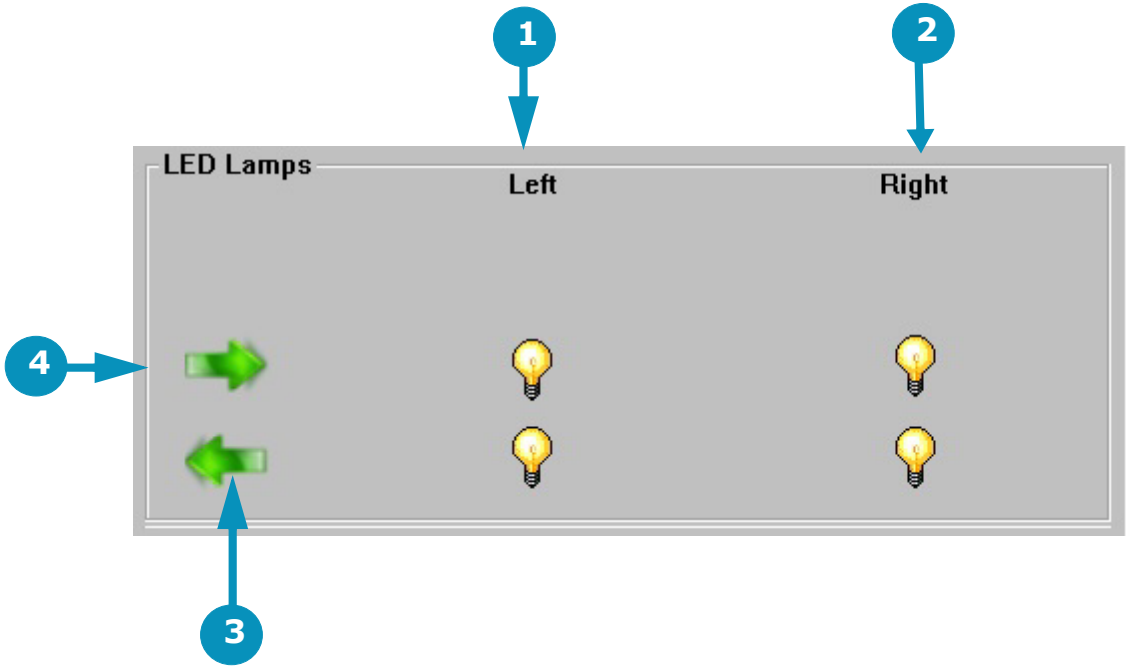


Figure 4-15: : LED Lamp Controls

1	Left Lamp Control (ON/OFF)	2	Right Lamp Control (ON/OFF)
3	Indicates LED Lamp is curing from left to right	4	Indicates LED Lamp is curing from right to left.

Note: Normally all 4 bulbs should be turned on in order to optimize curing in both directions.

4.3.4 Media Controls

Media Controls provide the following functions:

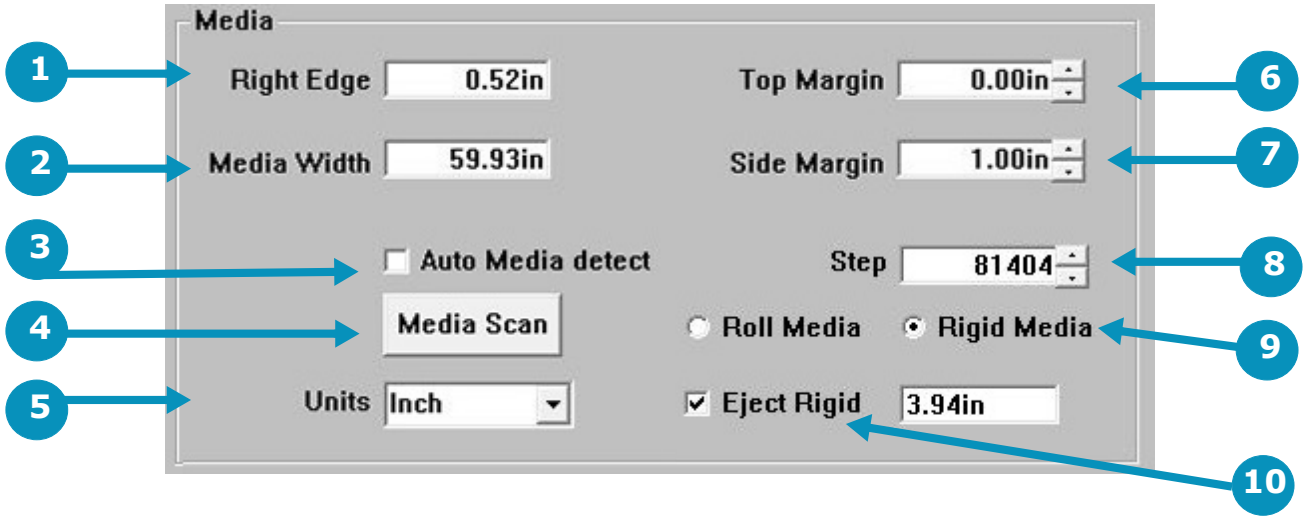


Figure 4-16: : Media Controls

1	Sets Media Right Edge	2	Sets Media Width	3	Sets Auto Media Detect (On/Off)
4	Initiates Media Scan	5	Sets Units of Measurement	6	Sets Top Margin
7	Sets Side Margin	8	Sets STEP Distance	9	Selects Rolled or Rigid Media
				10	Check Eject Rigid to activate. Belt advances by the entered value upon print completion.

4.3.5 Printer Status Bar

The printer status bar displays one-line messages that detail printer status. The messages indicate what the printer is doing at any given point in time. Some examples are provided in 4.3.6*.*

.

Figure 4-17: : Printer Status Bar

4.3.6 Printer Tools Bar

The printer tools bar contains the following tools. Description, function, and location of the tools are described below. .

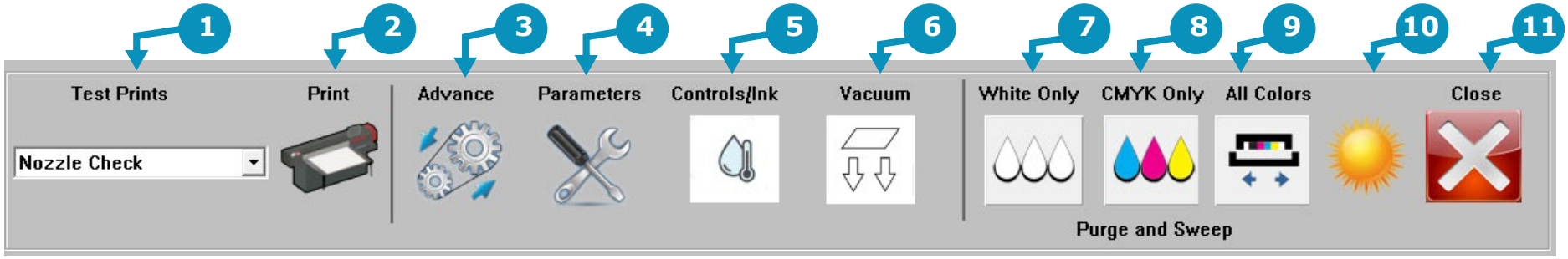


Figure 4-18: : Printer Tools Bar

1. **Test Prints -** Provides a list of all the test print types. Descriptions of operator-used test print types are provided in Section 4.3.12.
2. **Print -** Prints the test print selected in the Test Prints list.
3. **Advance-** Turns on/off continuous movement of the media belt.
4. **Parameters -** Opens the Parameters window described in Section 4.3.9.
5. **Controls/Ink** - Opens the EFI PLC Control window described in Section 4.3.10
6. **Vacuum** - Turns vacuum motor on/off.
7. **Purge White -** Purges the white print heads and conducts a head sweep.
8. **Purge Color -** Purges the CYMK color print heads and conducts a head sweep.
9. **Head Sweep -** Sends the carriage Home to perform a head sweep of all print heads.
10. **Awake/Sleep -** Indicates the printer's current sleep/wake mode.
11. **Close -** Shuts down the Control window

Note: After clicking the Media Belt Continuous Movement button, stop the belt movement by clicking either the STOP button from Figure 4-14: or clicking the Media Belt Continuous Movement button again.

4.3.7 Printer Tests

To run printer tests, open the EFI Pro 16hControl window and select a test print from the menu and choose the Print icon to conduct that test print.

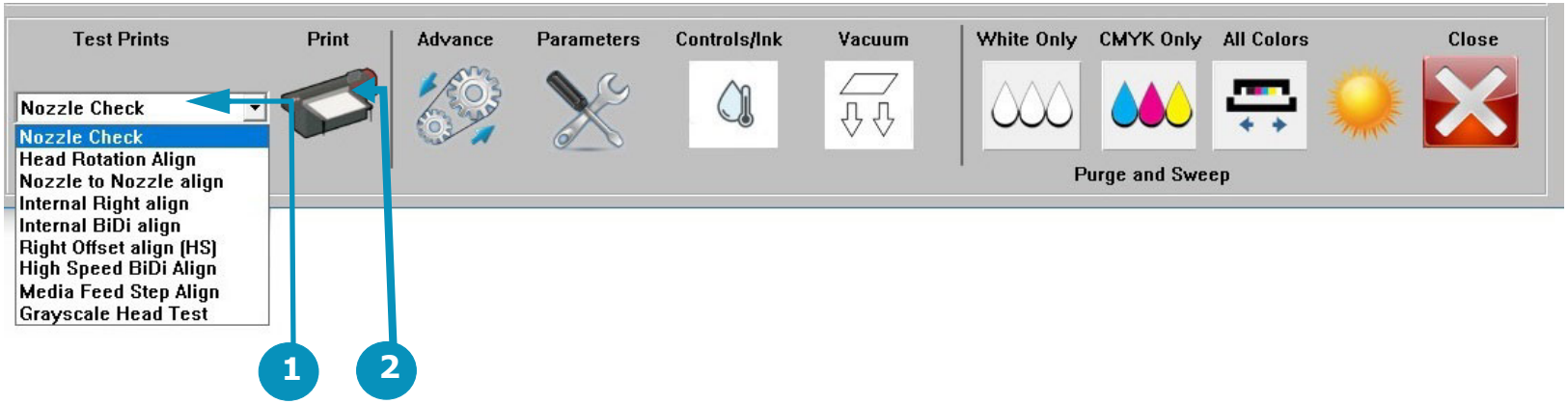


Figure 4-19: : Print Icon

1 Select test in list 2 Choose Print icon to print selected test

4.3.8 Printer Test List and Test Description

A list of tests and the related description of each test is provided below. Operators only use the Nozzle Check test. Other Print Tests are used by Field Service Engineers.

TEST NAME	TEST DESCRIPTION
Nozzle Check	The Nozzle Check test provides a test print that shows whether all print heads are working properly
Head Rotation Align	Head Rotation Alignment checks if print heads are perpendicular with the X–Axis
Nozzle to Nozzle Align	Nozzle to Nozzle Alignment checks if print heads are aligned with each other
Internal Right Align	Internal Right Align checks whether printed lines intersect at the zero position
Internal BiDi align	Internal BIDI Alignment *(BIDI = Bi-Directional)* checks whether printed lines intersect at the zero position
Right Offset Alignment (HS)	Right Offset Alignment HS (*High Speed*) checks if print heads are aligned with each other. This check also determines whether color and white print heads are aligning with black print head in a high speed mode.
High Speed Bi-Directional Alignment	High Speed BIDI Alignment *(BIDI = Bi-Directional)* checks if print heads are aligned with each other
Media Feed Step Alignment	Allows the operator to check Step Alignment checks whether the media feed is constant for lines printed at Y

4.3.9 Parameters Window

Click the Parameters button in the EFI Pro 16h Control window's tool bar to open the Parameter Settings window, including the System Tab, Page Settings Tab, Offset Tab, Head Voltage Tab,*and* Head Temperatures Tab..

Figure 4-20: : Parameters Button on Tool Bar

System Tab

The Systems Tab contains the following items:

1. Micro Drop Interval and drop times for the "misting" of print heads during sleep mode. This is not required for UV inks, so Interval and Drop Times can be set to zero.
2. Ink System Control. Check White Ink Bottle Recirculation to activate a cycle of the W1 and W2 ink pumps. Recirculating white ink reduces its viscosity, thus avoiding ink clogging on the system. Clear the check box to deactivate recirculation system.
3. Auto Clean: sets the number of passes until printer operation pauses for automatic purge and sweep, then resumes printing. This number only resets when the printer is powered down.
4. Resets Cleaner Case (Vacuum Canister)
5. If checked, printer advances media through blank/white space. See 6.7 Skip Blank Space During Prints.
6. Sets Sleep Mode Timer
7. Mists the print heads before printing. Should be set to 1.
8. Sets speed of media advancement when "Skip at blank space" is checked. Should be set to 40000 Pulse/Second.
9. **OK** to save and exit. **Cancel** to exit without saving.

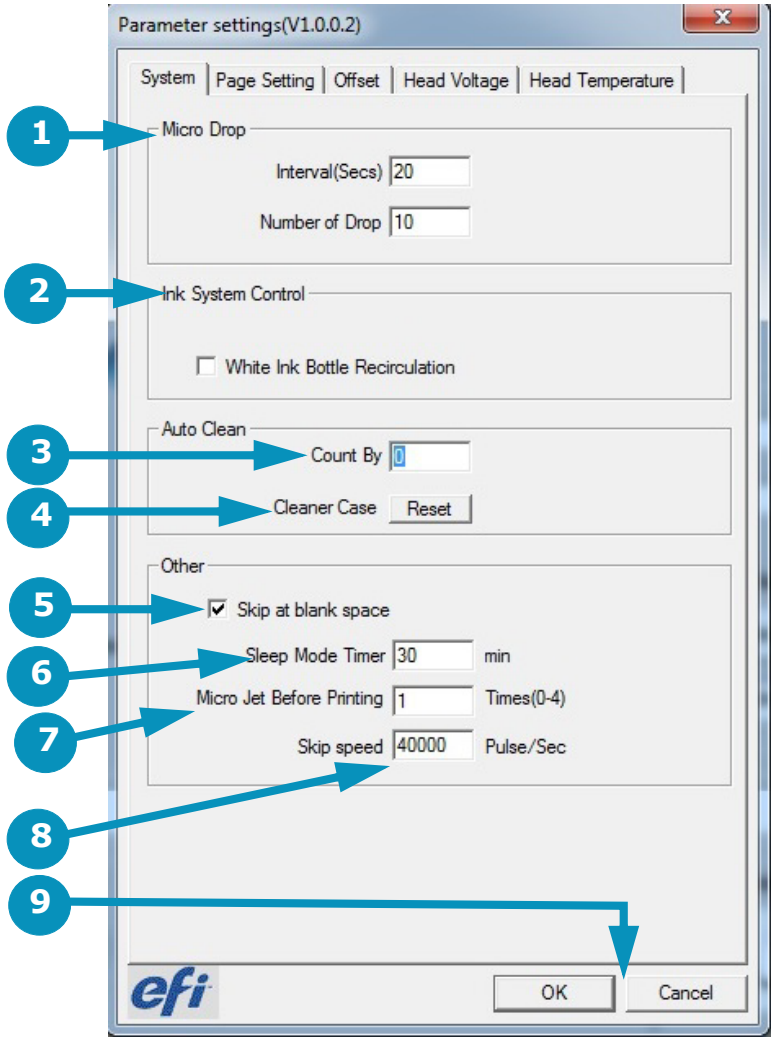


Figure 4-21: : Parameters System Tab

Page Settings Tab

The Page Settings tab is generally used only during printer set up. Operators are likely to use only the Carriage Height Calibration Tool (item 2). The full tab contains the following items:

1. Identifies Media Position.
2. Identifies Platform Origin.
3. Identifies Media Width.
4. Identifies Y Position Board Adjustment when Rigid Media is selected.
5. Carriage Height Calibration Slide Bar Adjustment
6. Sets Value in mm.
7. Adjust and Save buttons
8. Save it as home height. Click OK to save the home height as the printing height.
9. Choose **OK** to save or **Cancel** to exit.

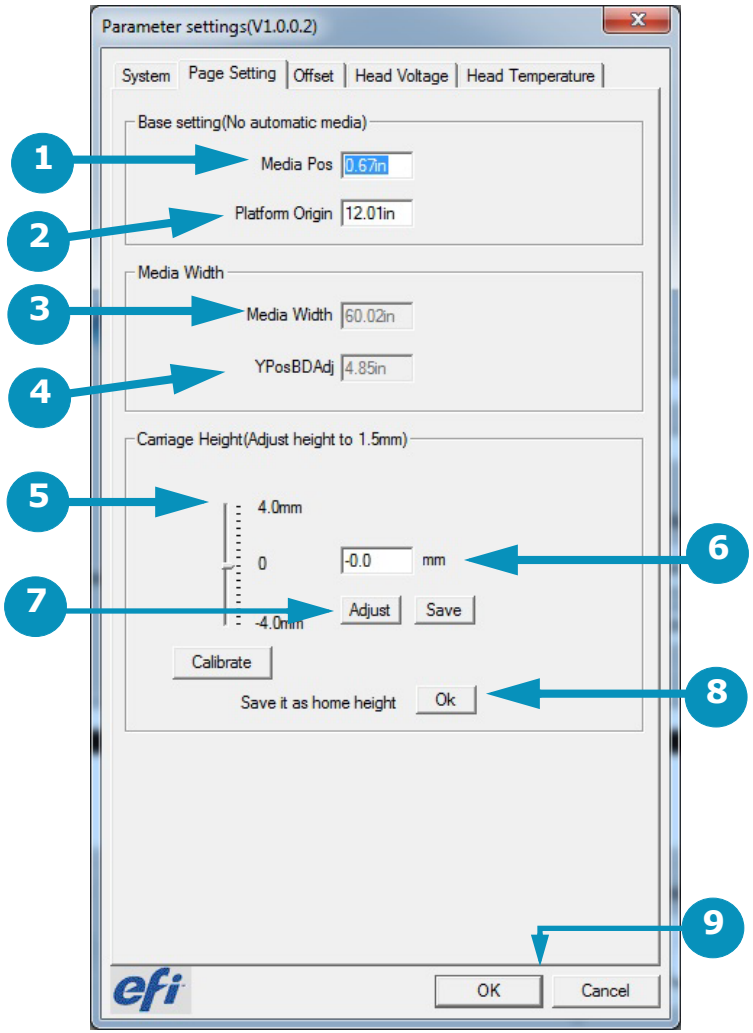


Figure 4-22: Page Settings Tab

Offset Tab

The Offset tab is generally used only by Field Service Engineers and contains the following items:

1. Determines the type of calibration to be executed. Each selection shows different values below.
2. Displays Print Head X Alignment Values.
3. Displays print head R offset values.
4. An added feature (v.1.0.1.8) that adjusts the bidirectional timing in smaller increments (microns) than the bidirectional offsets (pixels), where 1 pixel = 84 microns

   Note: This value must be set to "0" before performing bidirectional alignment procedure. After bidirectional alignment procedure is completed, adjust this value to 1 or 2 to improve fine text print quality.

5. **OK** to save or **Cancel** to exit.

Note: This tab is used only by Field Service Engineers.

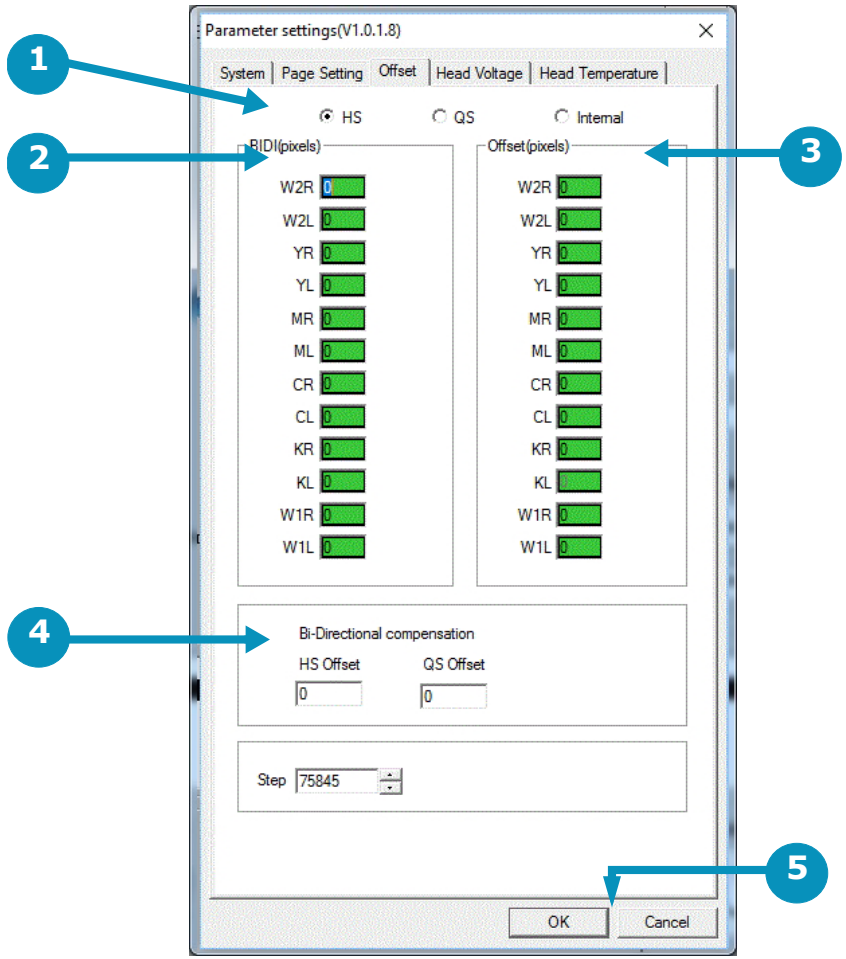


Figure 4-23: Parameters Offset Tab

Head Voltage Tab

The Head Voltages tab is used only by Field Service Engineers and displays the following:.

1. Displays and sets print head voltage for each white and CYMK print head.
2. Read button - Checks the actual voltage of the print heads and displays in the **Voltage Settings** fields.
3. Write button - Saves the values that were input in the **Voltage Settings** fields.
4. **OK** to save or **Cancel** to exit.

Note: This tab is used only by Field Service Engineers.

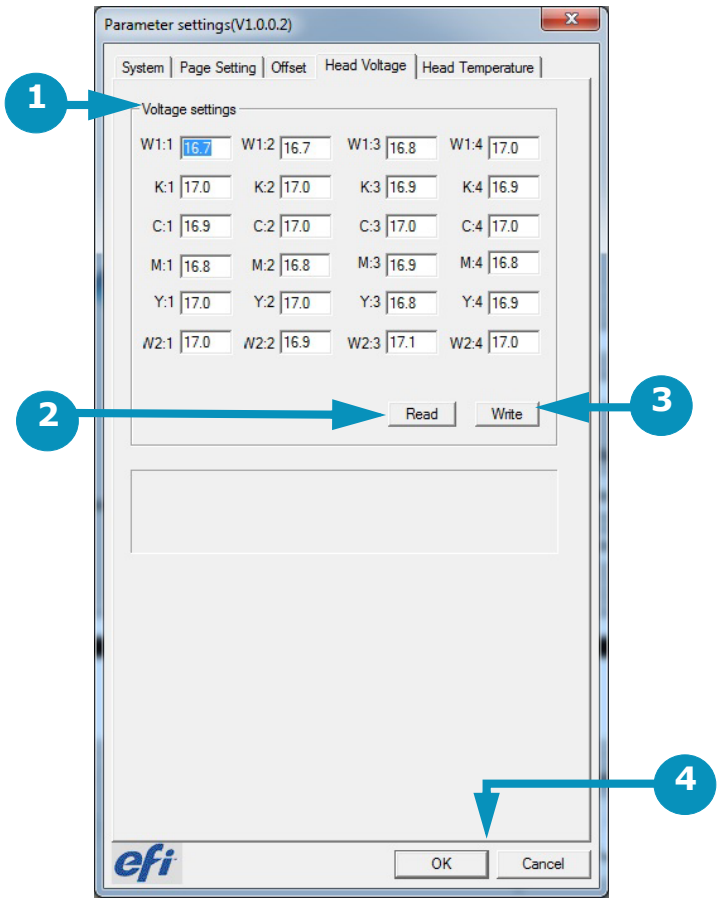


Figure 4-24: : Head Voltage Tab

Head Temperatures Tab

The Head Temperatures tab is generally used only by Field Service Engineers and contains the following items:

1. Sets head temperatures. Set the values and choose the **Set** button at the bottom of the column to save the values.
2. Displays current temperatures. Choose the **Read** button at the bottom of the column to update the temperature readings.
3. **OK** to save or **Cancel** to exit.

Note: This tab is used only by Field Service Engineers.

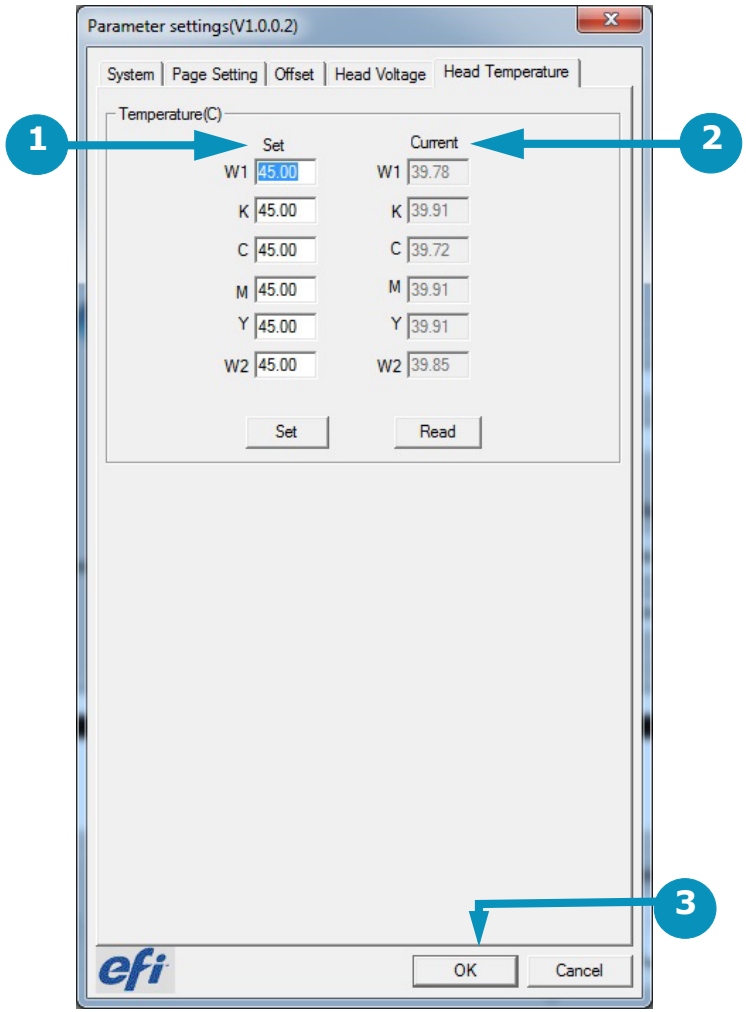


Figure 4-25: Head Temperatures Tab

4.3.10 EFI PLC Control Window

Choose the Controls/Ink button on the tool bar at the bottom of the EFI Pro 16h Control window to open the EFI PLC Control window.

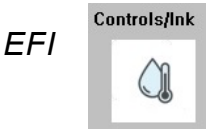


Figure 4-26: : Ink System Information

1 Restores Ink Tank Temp Factory Settings (Cyan, Magenta to 41° C; 42° C for White, Black, and Yellow)

2 Secondary Ink Tank Current Temperatures - View Only

3 Secondary Ink Tank Temperatures to be Set

4 Negative Pressure - CMYK and White

5 Ink Tank Status. Green = OK; Gray = Low/Empty

6 Level Indicator for Each Ink Tank and the Waste Bottle

7 Supply: Fills All Secondary Ink Tanks

8 Click Apply after every adjustment. System displays modification confirmation messages.

9 During initial set up, select PLC connection port.

10 Displays status and alarm messages. Alarm buzzer sounds until you choose Reset.

11 LED Lamp Power Adjustment

4.3.11 Printer Status Messages

During printing operations, the EFI Pro 16h displays Printing In Progress status updates. These messages provide data on the following:

- Job Status
- Lamp Status
- Temperature and Vacuum Status
- Printer Status
- Printer Control

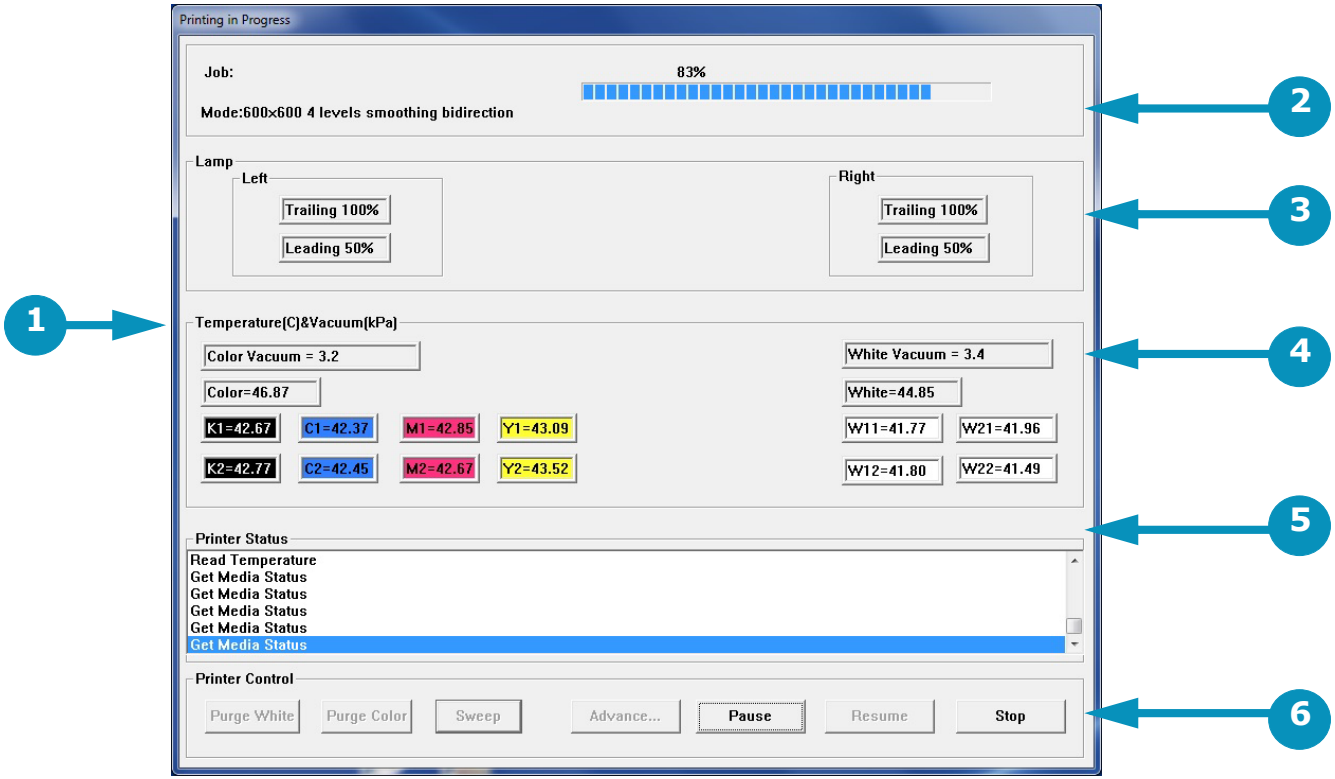


Figure 4-27: : Printing in Progress Window

1	Temperature Status	2	Job Status	3	Lamp Status
4	Vacuum Status	5	Printer Status	6	Printer Controls

4.3.12 EFI Pro 16h Control Window "Asleep"

When the printer is put into sleep mode, the EFI Pro 16h Control window becomes grayed-out. A moon icon appears in place of the normal sun icon, and the window does not operate until placed back into the "awake" mode. This is accomplished by clicking the moon icon to wake the system.

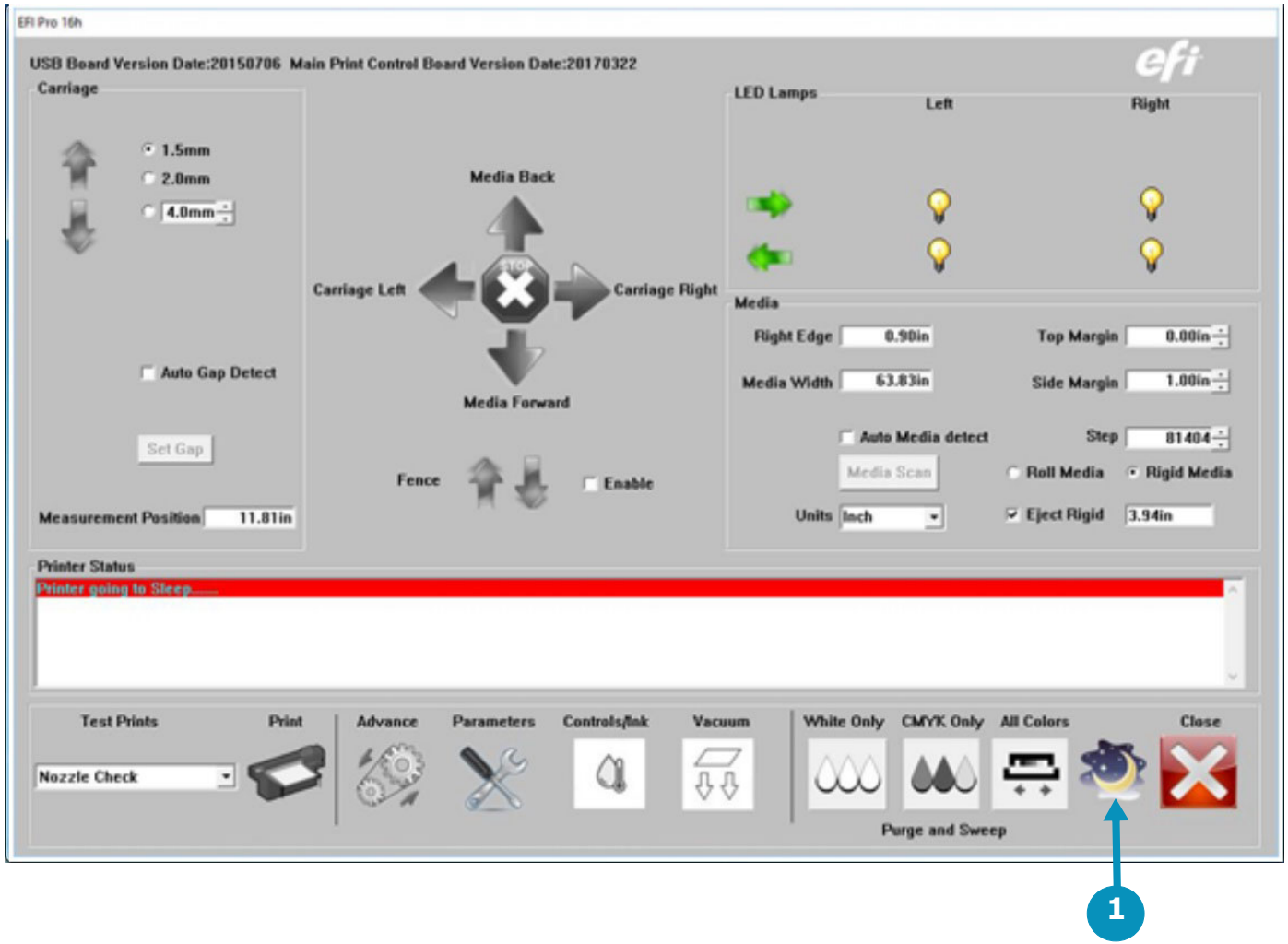


Figure 4-28: : Control Window "Asleep"

1 "Moon" icon

5.0 EFI Pro 16h Printer Setup

This chapter describes set-up procedures for the EFI Pro 16h Wide Format Printer. Perform the tasks in this chapter when setting up the EFI Pro 16h Wide Format printer for operation.

5.1 Full Printer Startup From Power Down

After a period when the printer has been completely shut down (see sections 9.2 and 9.3), perform the startup procedure as described below.

Note: When the printer is in daily use, it is left in sleep mode rather than being powered down. Use section Printer Startup from Sleep Mode to wake the printer from sleep mode.

1. Open all negative pressure valves on the carriage.

Figure 5-1: Negative Pressure Valves

2. Turn on the main power to the printer.

3. Turn on the printer's computer and monitor.

   Note: Wait for PC to finish booting before proceeding to next step (approximately 3-5 minutes).

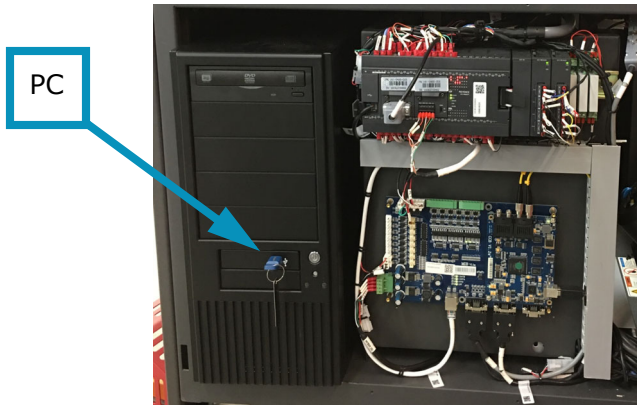


Figure 5-2: Computer Compartment

4. Switch on the main power circuit breakers.

5. Press the green start button on the operator station keyboard tray.

Figure 5-3: Main Power Breakers

6. Open the EFI Print Control Utility (PCU) on the printer's computer and choose the Tools or Gear icon to open the Pro 16h Control window.

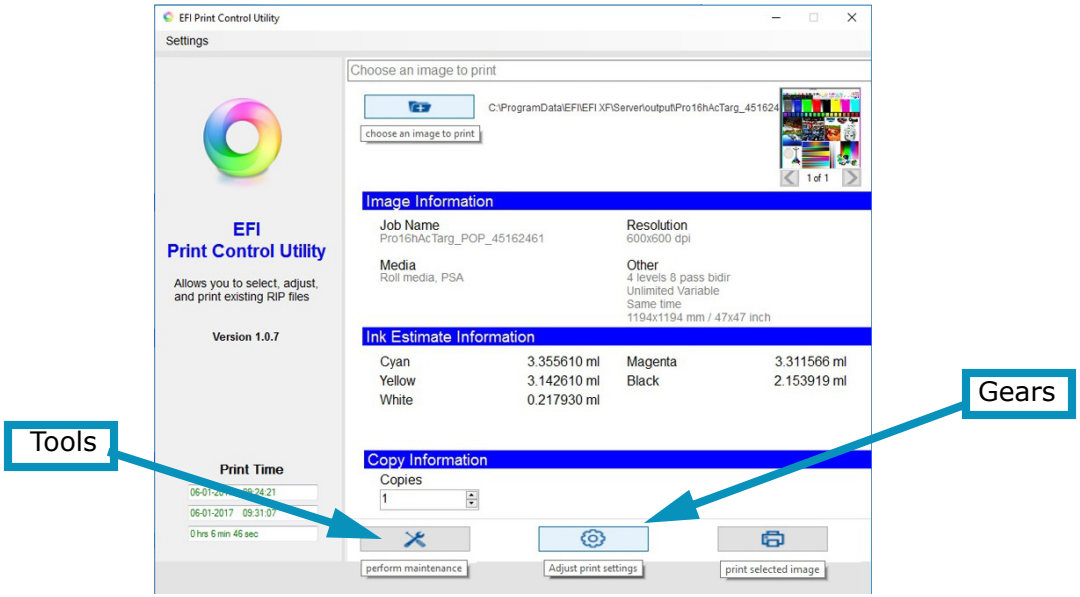


Figure 5-4: Print Control Utility

7. If a USB Error appears, perform the following steps:
   - Close the EFI Print Control Utility.
   - Switch off the main circuit breakers.
   - Wait 30 seconds.
   - Switch on the main circuit breakers.
   - Push the green reset button.
   - Start the EFI Print Control Utility.
   - Click the "Tools" or "Gear" icon.

The "Printer is initializing" window appears. The printer is now ready for normal startup steps. See section Printer Startup from Sleep Mode.

5.2 Printer Startup from Sleep Mode

When the printer is in daily use, it is not shut down, but instead is left in sleep mode between shifts. To bring the printer out of sleep mode and back to a normal operational state, follow the procedure below.

1. On the PCU window, launch the EFI Pro 16h Control window and click the "Moon" icon.

   The EFI Pro 16h Control window lights up and the "Sun" replaces the moon icon. The printer is now in "Awake" mode.

   Note: Allow 2-3 minutes for print heads to come to the required temperature and the ink pumps to fill the secondary tanks before printing.

2. Choose the Purge/Sweep All Colors icon at the bottom of the EFI Pro 16h Control window.

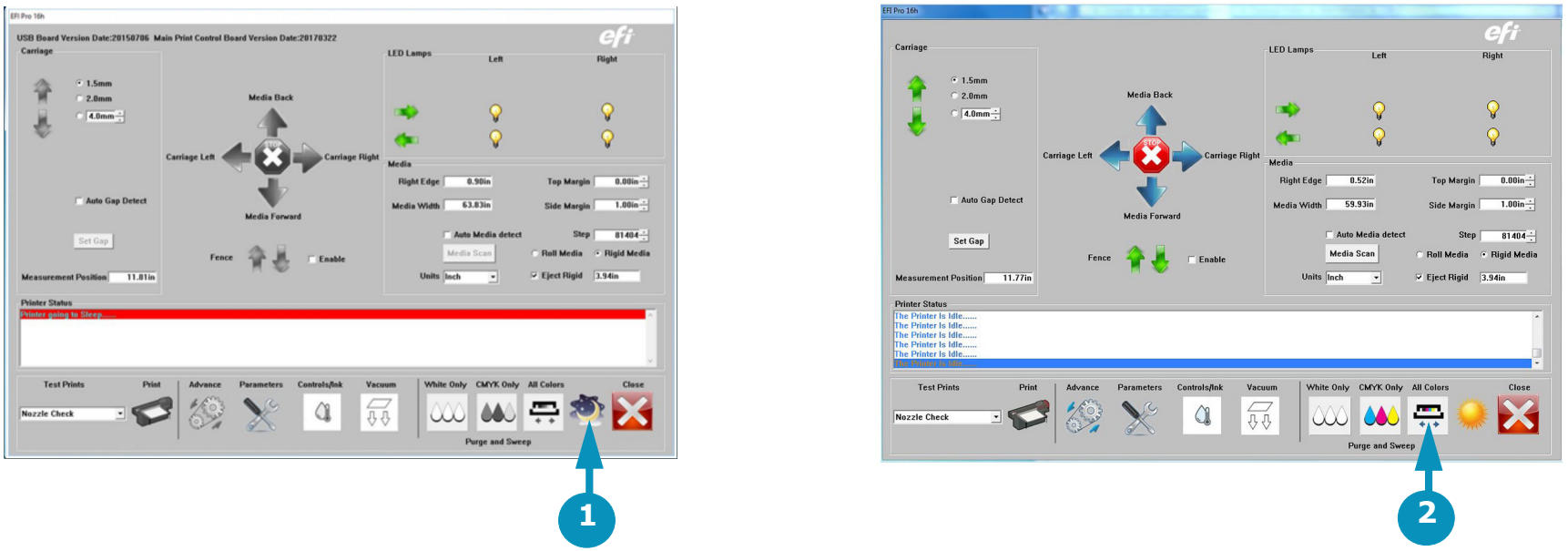


Figure 5-5: EFI Pro 16h Control Window

1 "Moon" icon = Printer is Asleep 2 Purge and Sweep All Colors

Note: This purges all print heads to the default time of four seconds (adjustable). After purging, the carriage automatically sweeps the excess ink off the heads.

3. On the EFI Pro 16h Control window,
   - Choose Roll or Rigid
   - Check Auto Gap Detect
   - Check Auto Media detect (not necessary for rigid media)

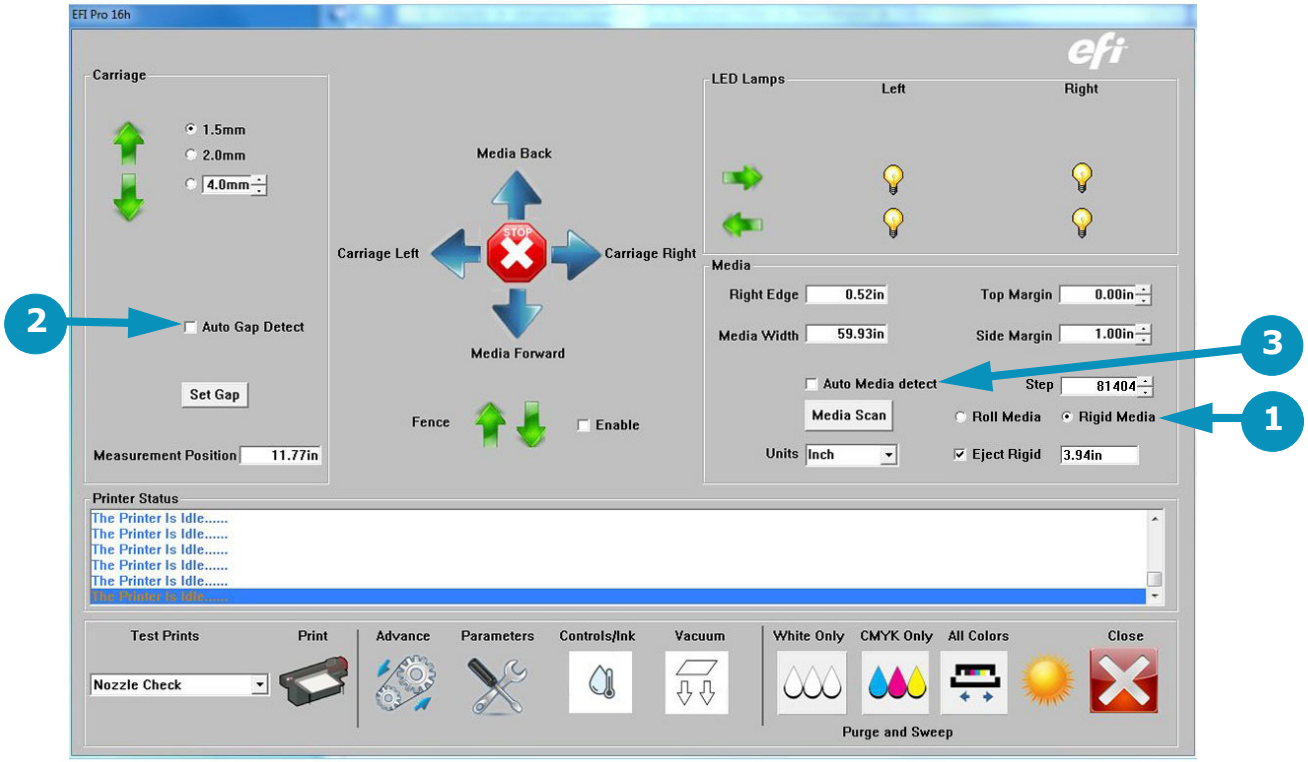


Figure 5-6: EFI Pro 16h Control Window

1 Rolled or Rigid Media 2 Auto Gap Detect 3 Auto Media Detect

4. Load test media. Load rolled media in accordance with section 5.3 or load rigid media in accordance with section 5.4.
5. Run a nozzle test on a piece of test media (see section Perform Nozzle Checks).

Note: A Nozzle Check print determines whether all of the nozzles are free, clear, and ready for production print. Use scrap media sized at least 34” wide x 4” deep, so there is no media waste involved.

6. Perform all daily maintenance tasks as outlined in the EFI Pro 16h Maintenance Guide. https://inkjet.support.efi.com/doc.php?doc=3753

After maintenance, printer is ready for operation.

5.3 Loading Rolled Media

This section illustrates the proper method for loading rolled media onto the printer. Media Path(s) Rolled Media Paths are as follows:

1. If the Image surface of the media is on the outside of the roll, load as shown in Figure 5-7.
2. If the Image surface of the media is on the inside of the roll, load as shown in Figure 5-8.

Note: For newer printers (SN 1027 and above), the front dancer bar shown below has been removed, greatly improving media tracking.

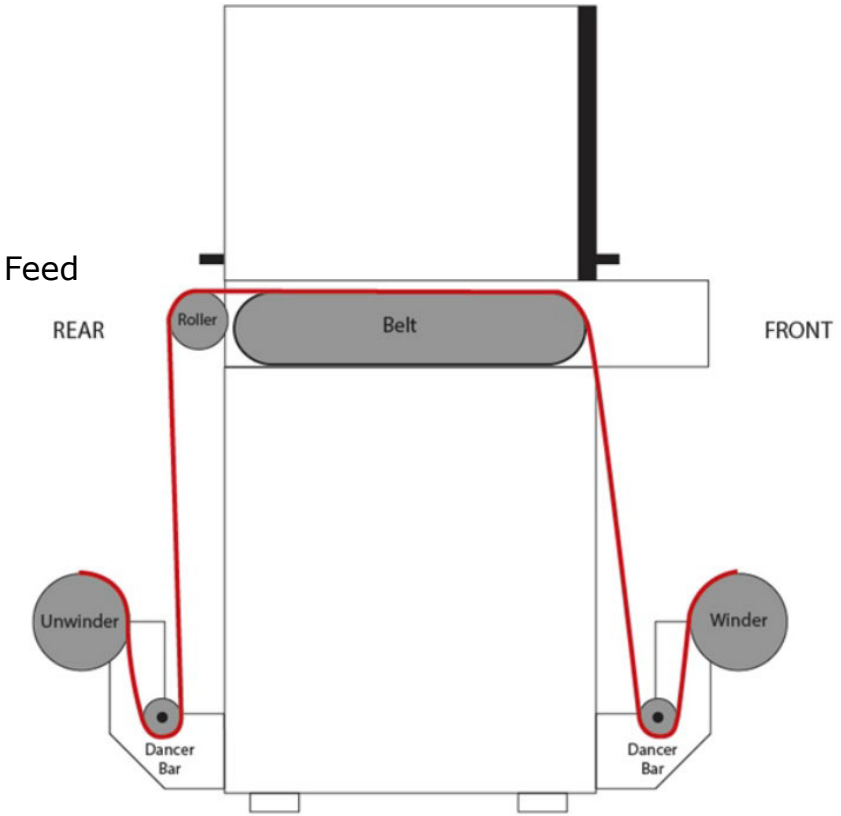


Figure 5-7: Image Surface on Outside of Media Roll

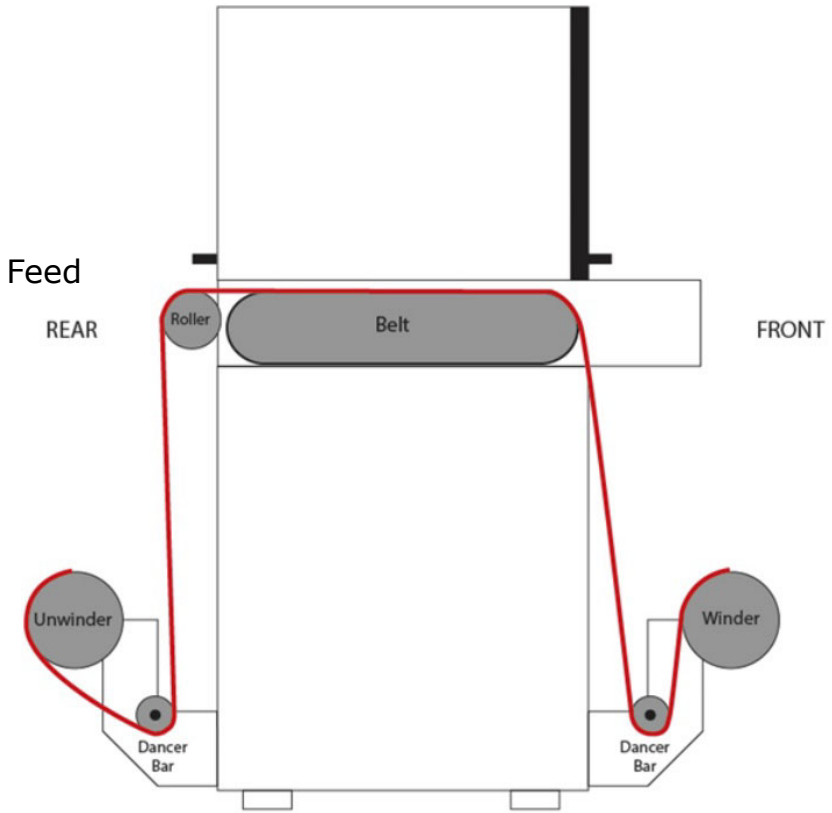


Figure 5-8: Image Surface on Inside of Media Roll

Note: The arrows indicate media direction.

5.3.1 Media Alignment

Align the media such that it is in the center of the media belt and evenly centered on both the feed and take-up rolls.

1. Place roll media onto the rear core.
2. Center the roll and lock into place with Media Chucks.
3. Feed media under the feed dancer and up through the printer so that enough is available at the front of the machine to web and secure.
4. At the front of the machine apply tension to the media while moving it slightly side to side to straighten the media.
5. Place a core onto the take-up roller and secure the core in place with Media Chucks where it will collect the media correctly.
6. At this point again apply tension to the media and move it slightly side to side to ensure it is straight.
7. Attach the media to the take-up core with tape and advance media so it wraps around media core.

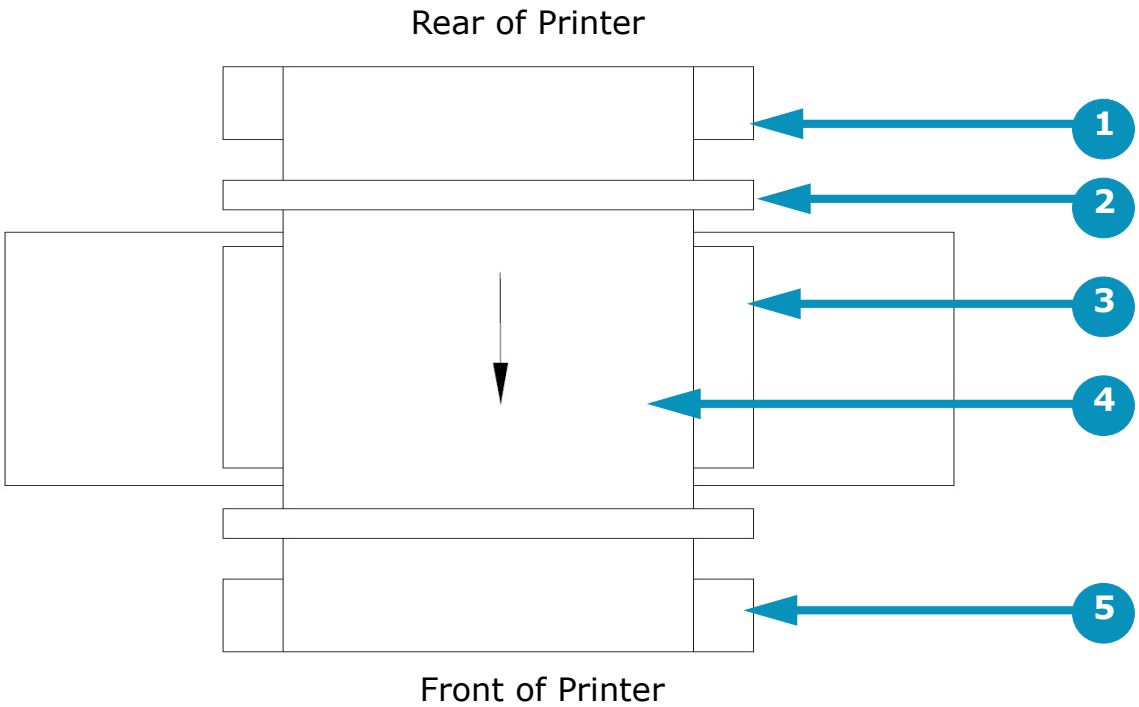


Figure 5-9: Rolled Media Loading (Top View - Printing Surface Outside of Roll)

1	Feed Media Roll	2	Feed Dancer	3	Media Belt
4	Media	5	Take-Up Media Roll		

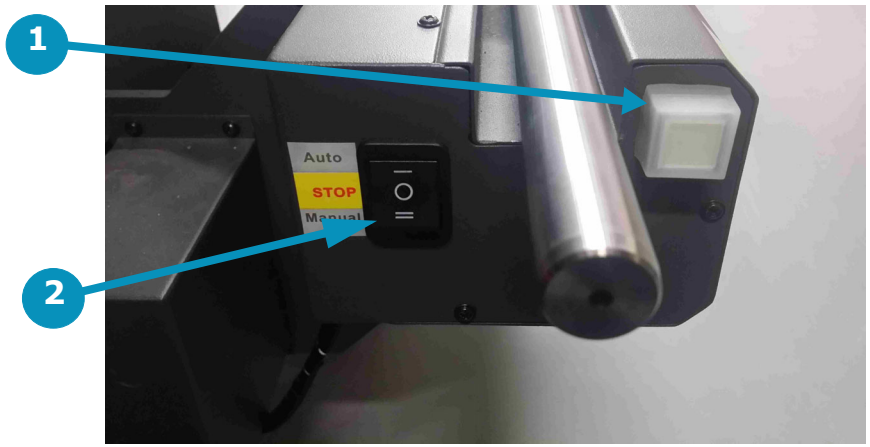
5.3.2 Media Direction

The buttons and lights on the media feed and take-up motors determine the media direction (rolling toward the front or toward the rear of the printer).

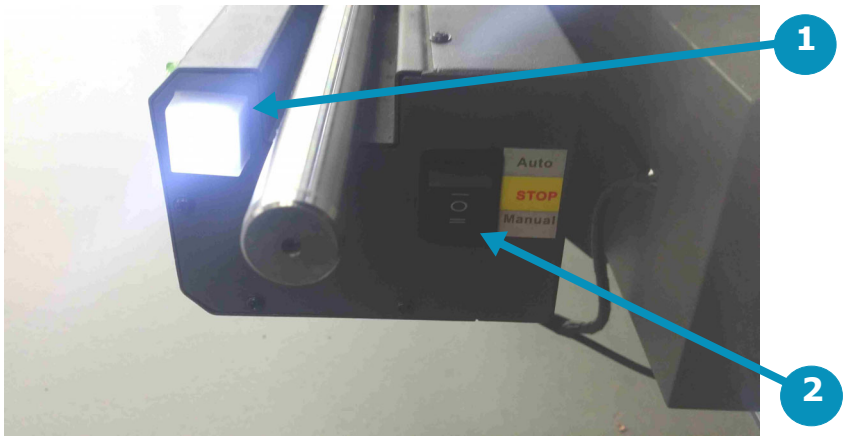
The Auto/Manual switch has three positions:

- Up - Automatic. When printer operation begins, the switch should be in the up/automatic position.
- Middle - Stopped/Off. Put the switch in the middle (Stop) position for printer set up.
- Down - Manual. Use the switch's manual position to run media through the machine.

The media direction light/button toggles the direction that the media is rolling, toward the front or toward the back of the printer. The light toggles on or off when the media direction is changed.



Rear Feed Motor



Front Take-Up Motor

Figure 5-10: Media Directional Switches

1 Media Direction Button/Light 2 Auto/Stop/Manual Switch

5.4 Loading Rigid Media

This section provides basic instruction for working with rigid media.Load the media from the rear (feed side) of the printer.

1. Set vacuum chamber controls as described in Section 5.5.
2. Ensure media vacuum is off.
3. Lower the media fence using the fence up/down switch or the fence movement controls on the EFI Pro 16h Control window.
4. Turn on vacuum.
5. Place a piece of rigid media onto the media belt and push it so that it is in contact with the fence and the left side angle bracket. This ensures that the media is parallel to the media belt.
6. Turn on media vacuum using the foot pedal.
7. Raise the fence.

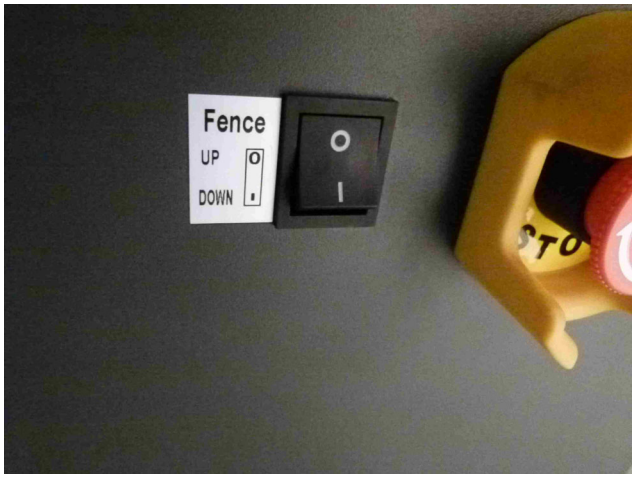


Figure 5-11: Media Fence Switch

Figure 5-12: Media Fence

5.4.1 Printing Multiple Rigid Media Boards

The revised media fence on the EFI Pro 16h can be used to align rigid boards in preparation for printing. This new fence helps to keep a common and consistent zero point, which allows for greater accuracy when guillotine-cutting and double-sided printing. Another benefit of having this solid, square fence with spacers is the ability to easily combine multiple boards across the belt. This feature results in better print speeds by utilizing the entire print zone and reducing carriage turn-around time.

5.5 Set Media Margins

In the Main Control Screen, set the desired margins as shown.

1. Set Top Margin.
2. Set Side Margin.

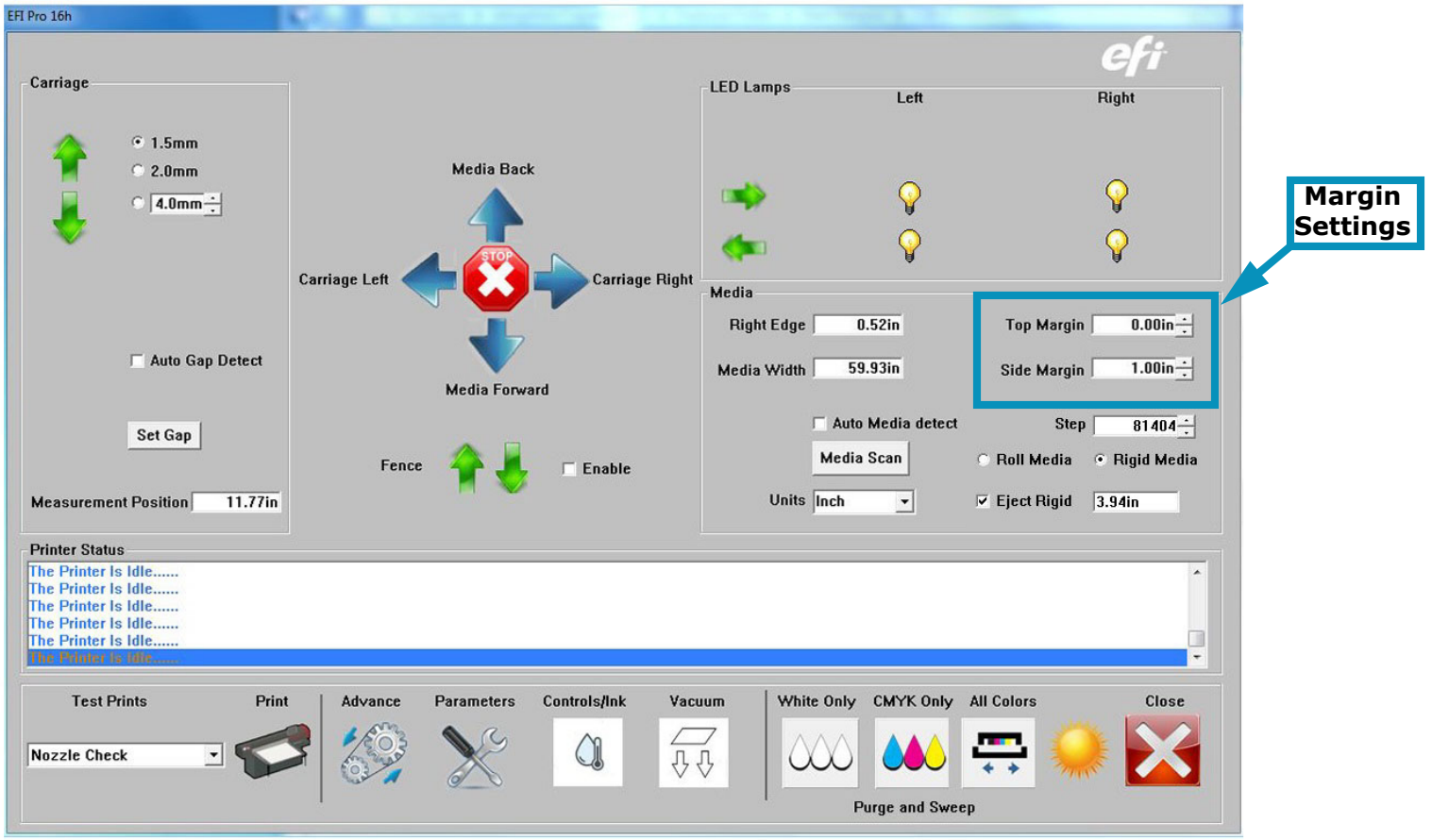


Figure 5-13: Media Margins

5.6 Setting Media Vacuum Chamber Controls

This section illustrates how to set the media vacuum chamber controls.

The vacuum zones are shown in Figure 5-14, above. Additional information on zone location and control knobs is provided in Figure 5-15 and the related paragraphs.

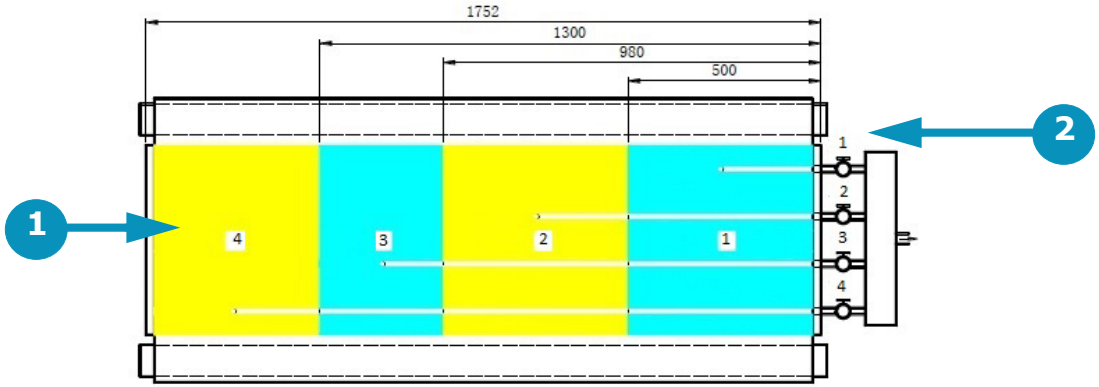


Figure 5-14: Vacuum Media Belt and Platen Vacuum Chamber Layout (Top View)

1	Chambers	2	Valves

A detail of the control valve layout is provided in Figure 5-15, below.

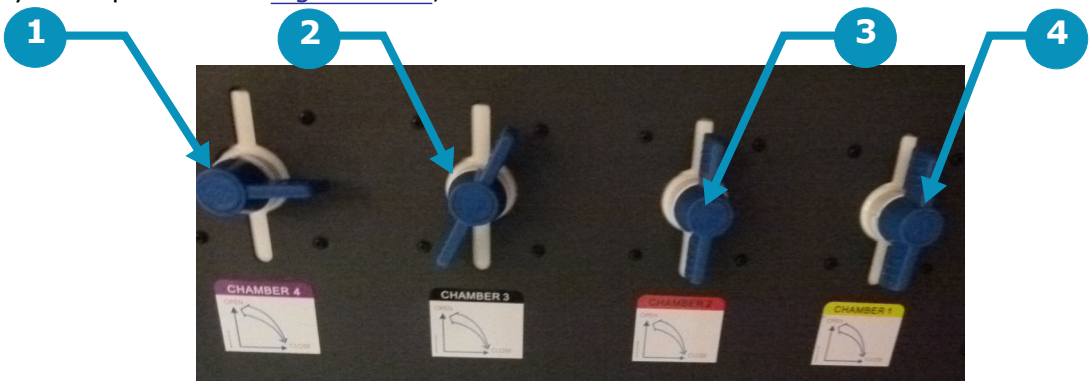


Figure 5-15: Platen Vacuum Control Knob Layout

1	Valve 4	2	Valve 3
3	Valve 2	4	Valve 1

Open the vacuum valves for the desired chambers. Use vacuum only for chambers covered by the media and close vacuum valves for all other chambers.

5.7 Calibrate the Print Gap

1. On the EFI Pro 16h Control screen,
   - Uncheck the **Auto Gap** check box.
   - Set carriage gap to 1.5mm [0.060”].
   - Choose the **Set Gap** button.
2. On the Page Setting tab of the Parameter window, press the **Calibrate** button. (See Figure 5-16.)
3. Slip blue head gap tool under carriage gap. (See Figure 5-17.)
4. Enter a **Correction Value**. (This is the amount needed + or - to achieve the 1.5mm.)
5. Choose **Adjust**.
6. Use blue head gap tool to physically check the gap on all four corners of the carriage.
7. Choose **Save** and then **OK**.
8. When satisfied with a proper gap of 1.5mm [0.060”], choose **Save**.
9. Press **Save It as Home Height**.
10. Press **OK**.
11. Send carriage to Home position with left arrow in GUI.
12. Press **Gap** again with a different media. The carriage will move to 1.5mm.

Note: You should not have to reset the carriage gap unless there is a system error or power down or the printer comes out of sleep. The standard gap size is 1.5mm. Anything larger needs a different bi-directional setting.

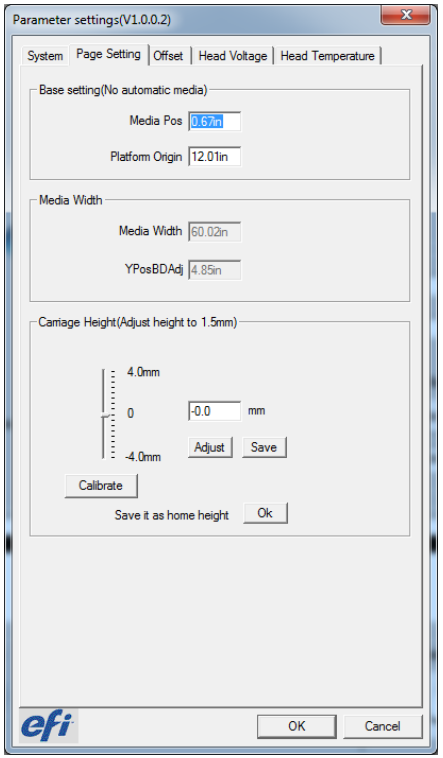


Figure 5-16: Page Settings tab

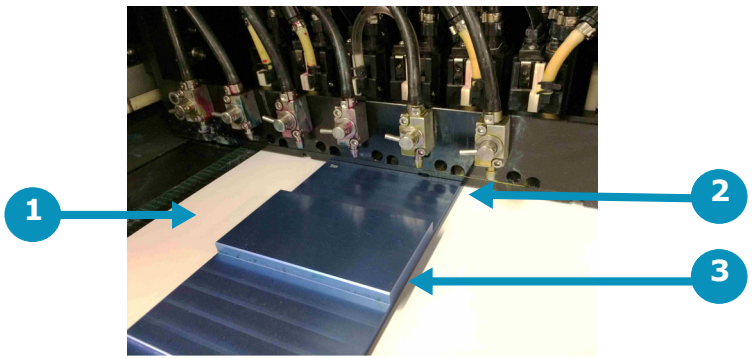


Figure 5-17 Physically Checking the Carriage Gap

1 Media on belt 2 Check the gap 3 Shim

6.0 Printing on the EFI Pro 16h

This chapter covers the process for printing on the EFI Pro 16h, including the steps for standard print jobs, conducting a daily white print, printer workflows, full-bleed printing, centering a print on the media, skipping blank space to increase print speeds, and methods for printing multiple rigid media boards.

6.1 Standard Printing Procedure

Use the following steps to conduct a standard print job on the EFI Pro 16h.

6.1.1 Start Up Printer

1. Load the media. (See section 5.3 or 5.4.)
2. Launch the EFI Print Control Utility.

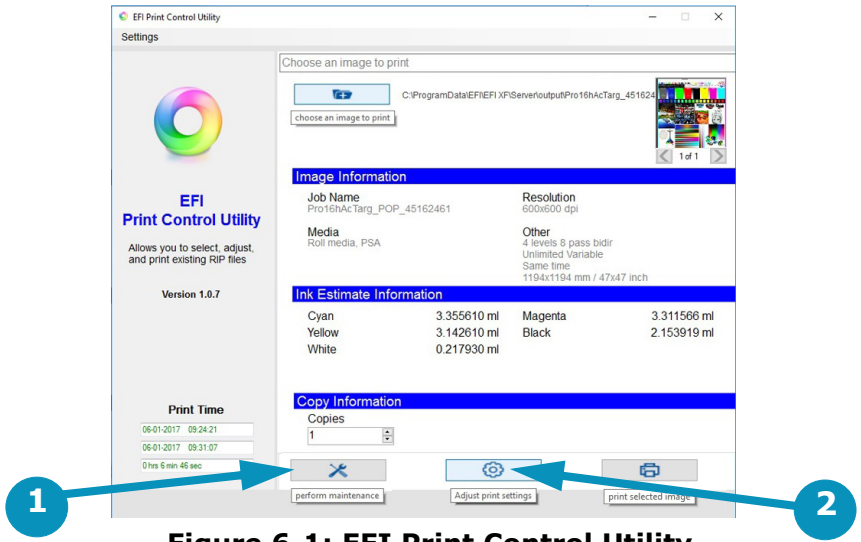


Figure 6-1: EFI Print Control Utility

1 Tools: Perform maintenance 2 Gear: Adjust print settings

3. Click the "Tools" or "Gear" button.

   Note: Either button opens the **EFI Pro 16h Control** window.

4. Click the "Moon" icon on the EFI Pro 16h Control window to bring the printer out of sleep mode.

6.1.2 Verify Lamp Settings

1. On the EFI PLC Control window (see Section 4.3.10), in the **LED Lamps** box, verify that the cure lamps are on by checking that the light bulb icons are yellow.

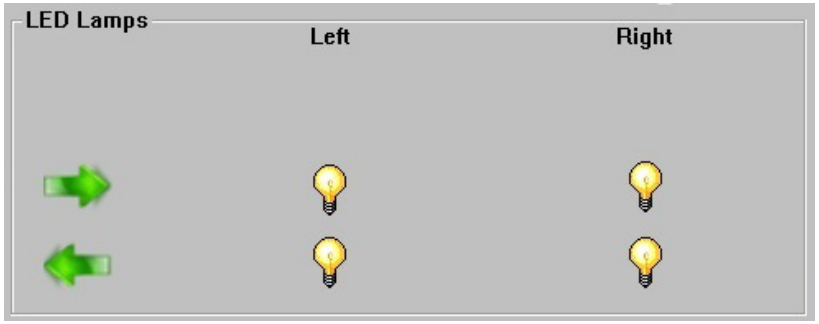


Figure 6-2: EFI PLC Control Window - LED Lamps Box

2. Click any light bulb that isn't yellow, to toggle it to yellow/on.
3. In the toolbar at the bottom of the EFI Pro 16h Control window, choose the **Controls/Ink** button to open the EFI PLC Control window.

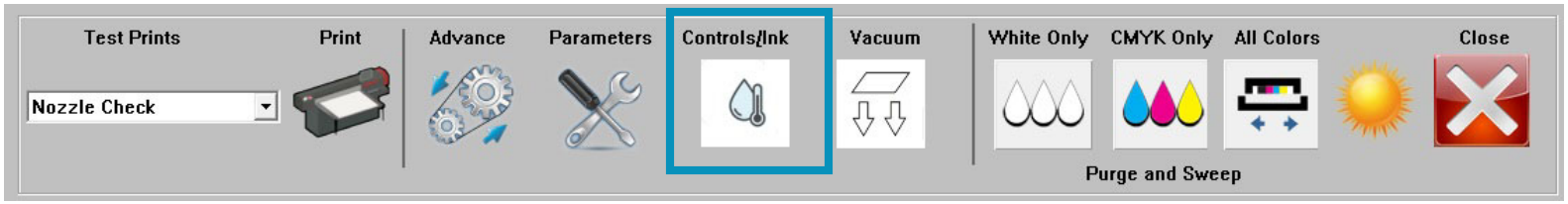


Figure 6-3: EFI Pro 16h Control Window - Controls/Ink Button

4. On the EFI PLC Control window, in the **Light Power** box, verify or set the lamp intensity at 100%.

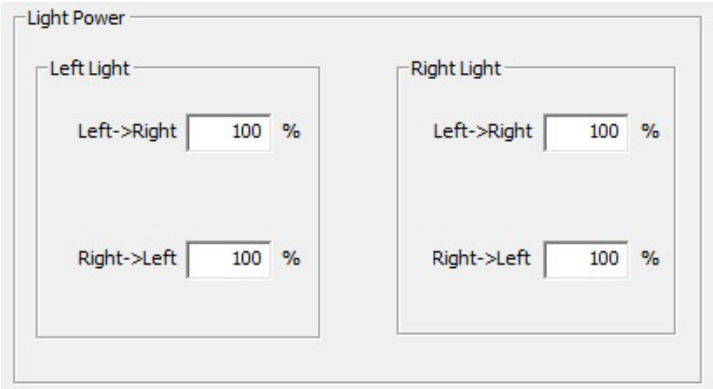


Figure 6-4: Light Power Settings

6.1.3 Set the Carriage Gap

1. In the EFI Pro 16h Control window's Carriage box, click the Set Gap button.

   The printer carriage raises in home zone, advances over the media, lowers to measure the media thickness, and then returns to the home zone.

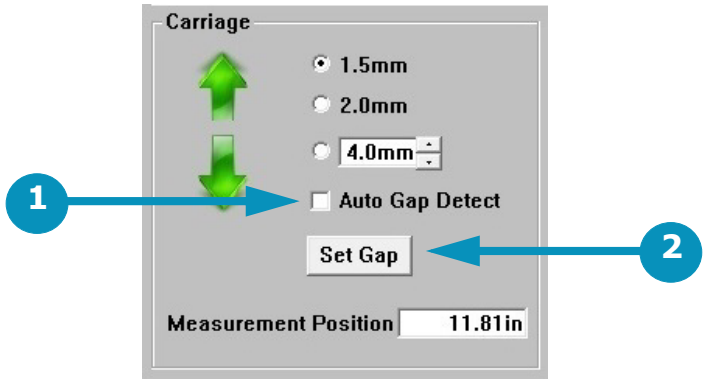


Figure 6-5: Carriage Box

1	Auto Gap Detect check box	2	Set Gap button

2. Check the Auto Gap Detect box to measure media thickness with every print

6.1.4 Scan the Media Width

1. In the EFI Pro 16h Control window's Media box (middle right), click the Media Scan button.

   Print carriage advances over the media, measuring the start point and width of the media. This process sets the Right Edge and Media Width values.

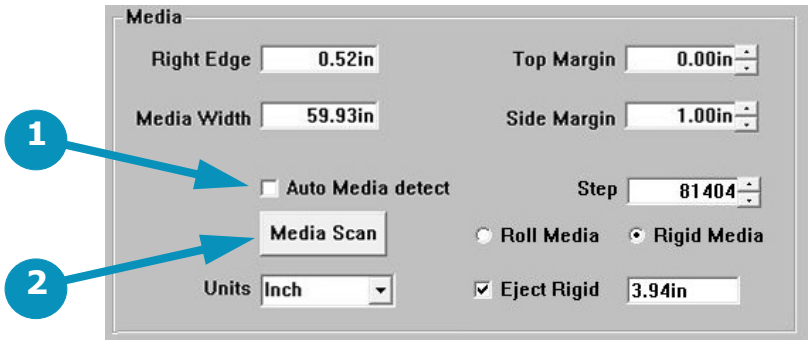


Figure 6-6: Media Box

1	Auto Media Detect check box	2	Media Scan button

2. Check the Auto Media Detect box to measure the media width before every print.
3. Examine the Nozzle Check print for quality.
4. Repeat the Head Sweep if necessary.

6.1.5 Purge and Sweep Print Heads

To ensure the best print quality, EFI recommends that operators purge and clean print heads prior to each print run. At minimum, a purge and sweep should be run at start-up and every 8 hours of operation. The print heads should be purged and a head sweep should be performed in one of two ways:

1. From the EFI Pro 16h Control screen, choose the Purge White icon to white print heads. The system automatically follows this up with a head sweep.

2. From the EFI Pro 16h Control screen, choose the Purge Color icon to purge the CMYK print heads. The system automatically follows this up with a head sweep.

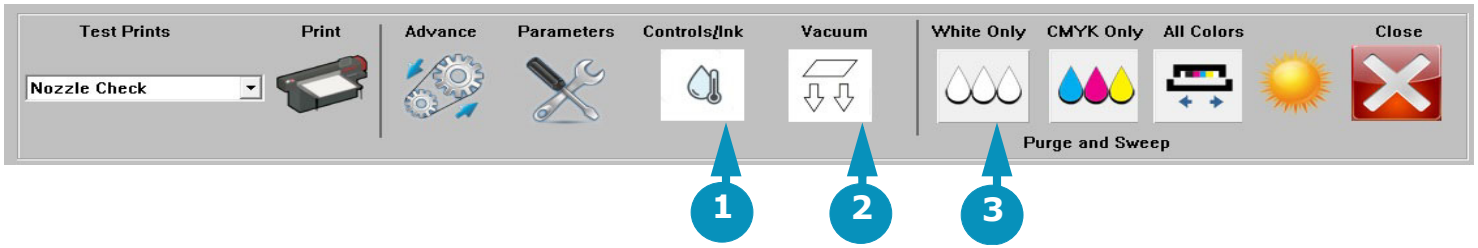


Figure 6-7: Purge and Sweep Icons on EFI Pro 16h Control Screen

1	Purges white (or other non-CYMK) ink and conducts a head sweep	2	Purges CYMK ink and conducts a head sweep	3	Conducts head sweep

3. Use the manual Ink Purge buttons located in the carriage HOME compartment (See Figure 6-8). Then follow up with a head sweep performed from the EFI Pro 16h Control screen.

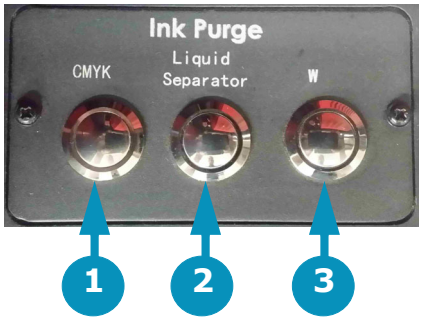


Figure 6-8: Manual Ink Purge Buttons

1	Purges CYMK ink	2	Liquid Separator: empties the cyclonic vacuum system	3	Purges white (or other non-CYMK) ink. (Label changes for non-white ink printers.)

6.1.6 Perform Nozzle Checks

The Nozzle Check test provides a test print that shows whether all print heads are firing properly. Perform a Nozzle Check prior to commencing printer operations to ensure all print heads are firing properly.

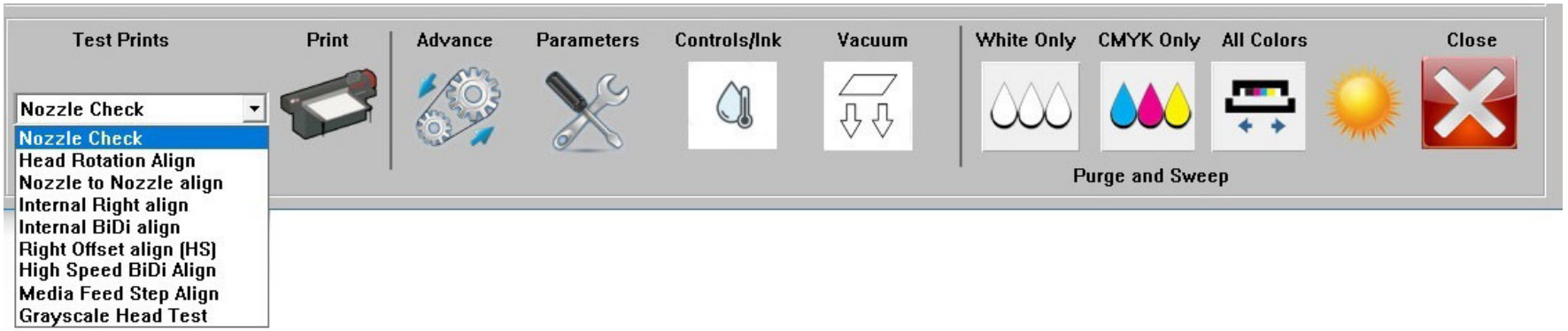


Figure 6-9: Nozzle Check Selection

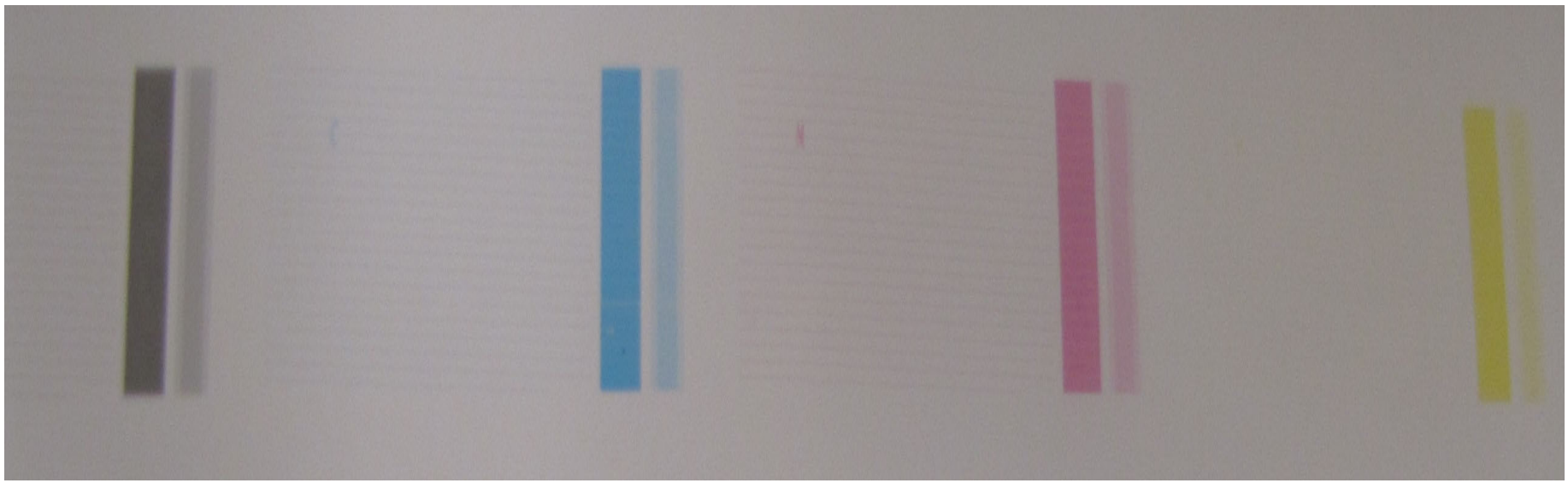


Figure 6-10: Nozzle Check Test Print

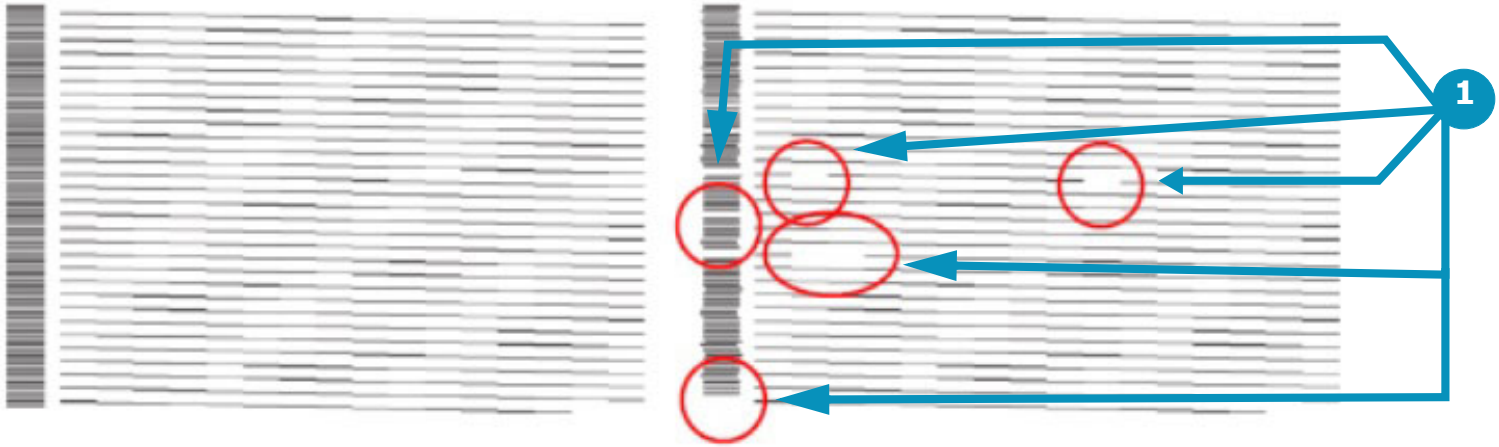


Figure 6-11: Nozzle Check Test Print Comparison

1 Indicates drop out

6.1.7 Set Margins and Choose Media Type

1. In the Media Box (middle right), set the Top Margin and the Side Margin.

   Note: Top Margin adds white space above print, advancing the media further before printing. Side Margin adds white space to the left of the print.

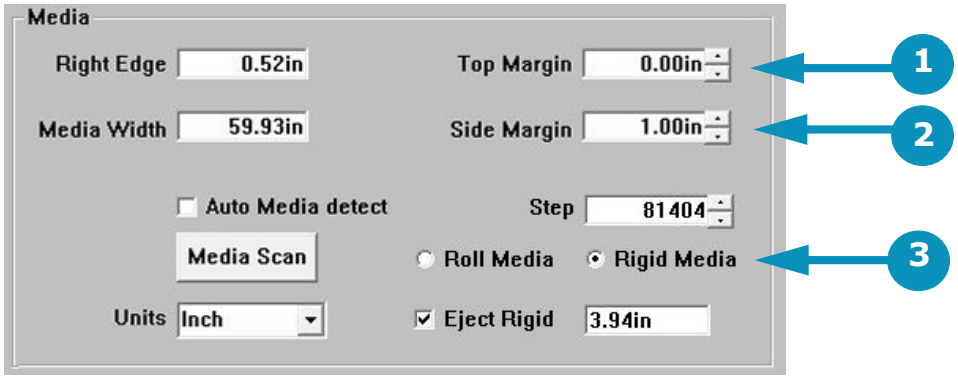


Figure 6-12: Test Prints List and Print Button

1	Top Margin Setting	2	Side Margin Setting	3	Roll/Rigid Media Options

2. Choose Roll or Rigid Media.

   Note: Roll Media advances media approximately 1 inch before printing. Rigid Media advances media approximately 5 inches before printing

6.2 Daily White Ink Print

It is important that at least an 11 x 17 white print be run daily. If the white heads are not used daily, the ink settles in the heads, causing clogged nozzles.

- Run a daily white print to keep white ink moving through the heads, prevent clogged nozzles, and increase the life of the heads.

6.3 Print File from EFI Print Control Utility

.

1. Click the Close button on the EFI Pro 16h Control window to return to the EFI Print Control Utility

2. Click the "+" (plus) folder button to load the file to print. (See Figure 6-13.)

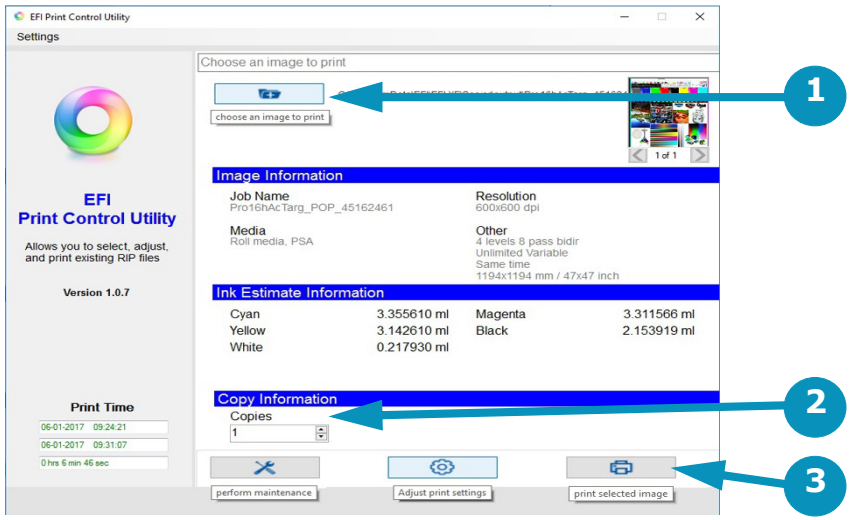


Figure 6-13: Print File from EFI Print Control Utility

1	Plus (+) Folder Button	2	Number of Copies	3	Print Button

3. Browse to and select the *.BCO file to be printed, then click OK.
4. Enter the number of copies. (See Figure 6-13.)
5. Click "Printer" button to print. (See Figure 6-13.)

6.4 Print Workflows

The EFI Pro 16h printer has many different resolutions and options for creating bco files for printing at different speeds and output qualities. With experience the selection of these options will become clearer. When selecting a work flow for file preparation in the Fiery XF software, be aware that different options result in different printer output speeds and can have different output qualities as well.

The charts below contain several work flows that EFI has found useful in day to day operation of the EFI Pro 16h printers.

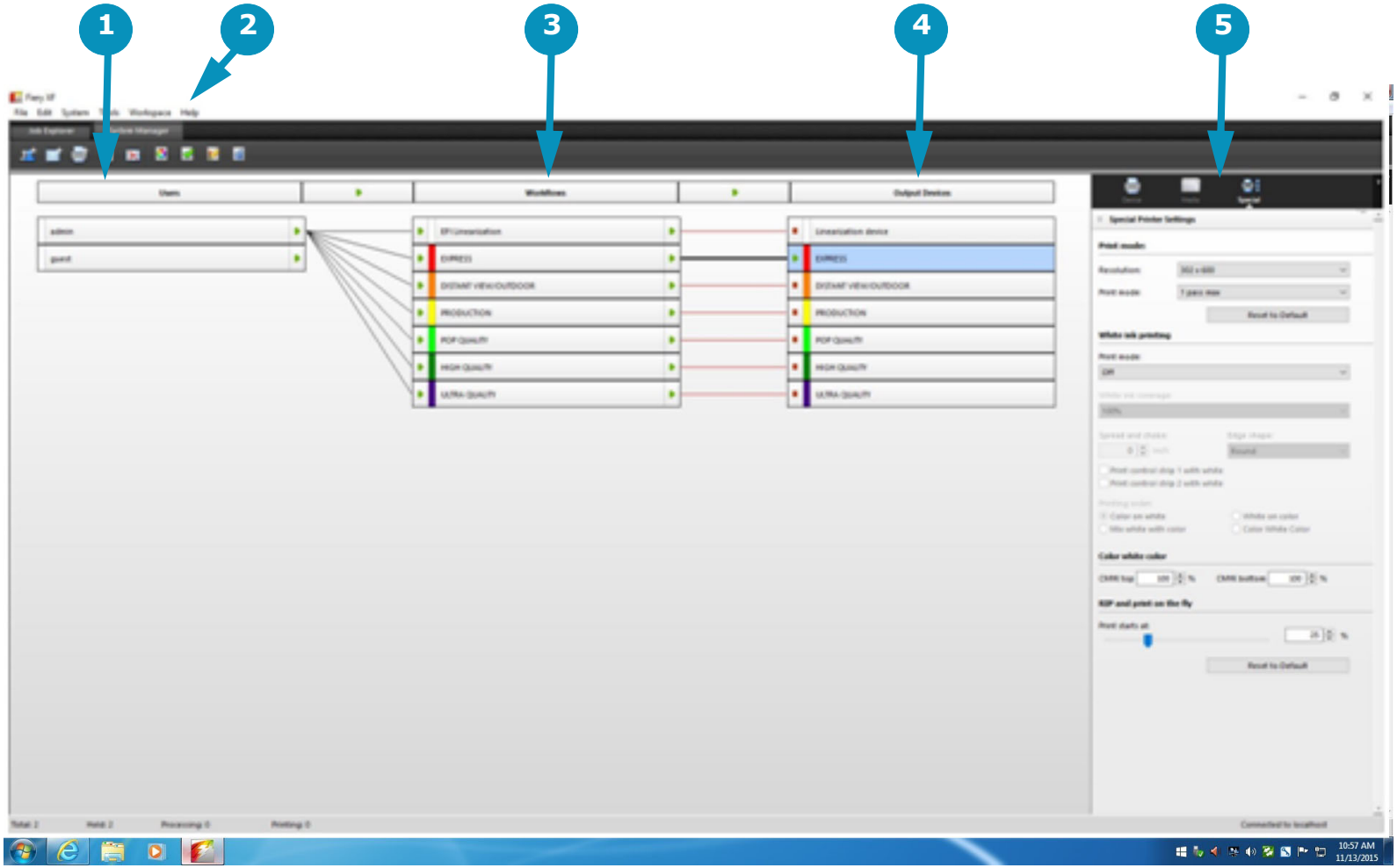
Note: Different printer modes have different intended viewing distances for the printed output. In general, the faster output speeds are intended to be used in creating prints that are viewed from larger distances.

Standard Workflows

Output Mode	Up to Sq. Ft (Sq.m)/Hr.	Printer Settings
Express	976 (91)	CMYK | 300x600 | 1 pass
Distant View/Outdoor	569 (53)	CMYK | 600x600 | 2 pass
Production	311 (29)	CMYK | 600x600 | 4 pass
POP Quality	178 (17)	CMYK | 600x600 | 8 pass
High Quality	119 (11)	CMYK | 900x600 | 12 pass
Ultra Quality	60 (6)	CMYK | 900x1200 | 24 pass

6.4.1 Workflows in Fiery XF

Workflows set up in the Fiery XF software appear as in the image below:



1	Users	3	Workflows
2	Help menu; Help docs and supplemental knowledge database can also be accessed at: http://help.efi.com/fieryxf/ http://help.efi.com/fieryxf/KnowledgeBase/index.html	4	Output Devices
		5	Output Configuration options

6.5 Printing Full Bleed

Use this process to print the full width of the media with no white space on either side edge.

1. Load media and set-up printer as described in section 6.0.
2. Ensure that the .BCO file to be printed is larger than media.

   Example: If the media is 24" x 24", create a *.BCO file that is 24.125" x 24.125".

3. After scanning the media width (see 6.1.4), subtract half of the increased size from the Right Edge value.

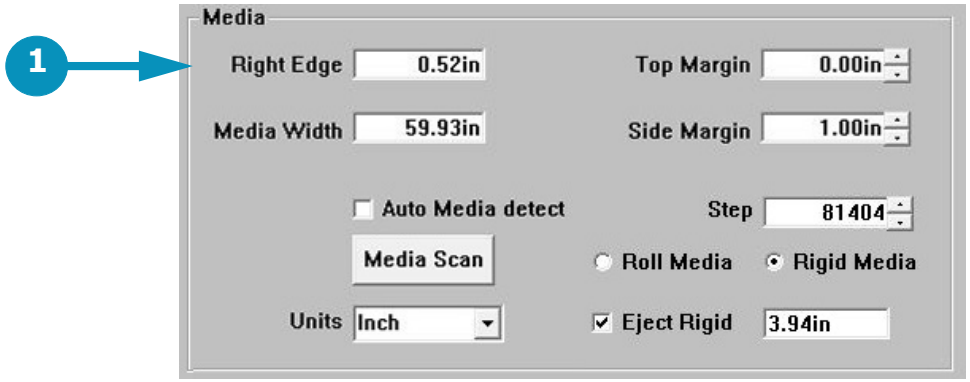


Figure 6-14: Media Box on EFI Pro 16h Control Window

1 Right Edge field

Example: If the media is 24" x 24", and the *.BCO file is 24.125" x 24.125", subtract half of .125" (or .0625") from the Right Edge value. This creates a .0625" bleed on all sides.

4. Click "Printer" button to print.

6.6 Centering a Print

Use this process to center the width of a printed image on the width of the media.

1. Load media and set-up printer as described in section 6.0.
2. After scanning the media width (see 6.1.4), check the Media Width value on the EFI Pro 16h Control window.
3. Subtract the width of the *.BCO print file from the width of the media to calculate the remainder of the media width that won't be covered by the print.

   Example: If the media width is 24" and the print file width is 23", the difference equals 1", which is the remainder of the media width that the print will not cover.

4. Divide this remainder number by 2, in order to calculate the width to leave on each side of the print.

   Example: If the remainder is 1", divided by 2 equals 0.5" on each side of the print.

5. Enter this value in the Side Margin field.

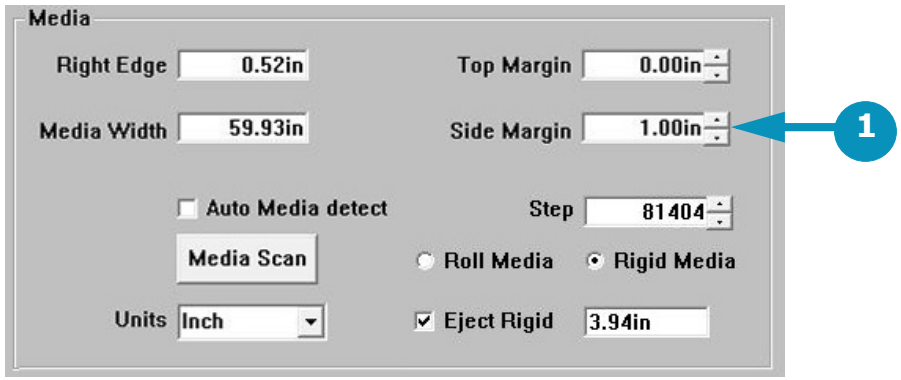


Figure 6-15: Media Box on EFI Pro 16h Control Window

1 Side Margin field

6. Click "Printer" button to print.

6.7 Skip Blank Space During Prints

The Skip Blank Space feature enables the EFI Pro 16h printer to advance media quickly through blank spaces in an image or in a group of nested or step-and-repeat images. With Skip Blank Space enabled, the printer quickly advances the media through blank spaces, in order to provide faster printing.

In order for the Skip Blank Space feature to work, the printed files must:

- Include true blank Space sometimes referred as "white space," as opposed to a white fill blank field
- Include blank space that runs all the way across the image(s)

To Enable Skip Blank Space

1. On the EFI Pro 16h Control Screen, use the Parameters icon to open the Set Parameter window, displaying the Systems Tab.
2. Ensure that the Skip at Blank Space check box is checked.

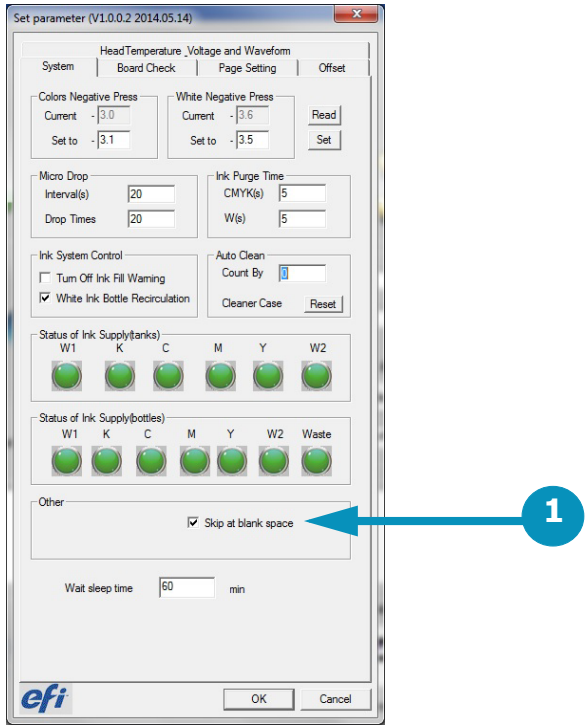


Figure 6-16: Set Parameter Window's System Tab

1 Skip at Blank Space check box

6.7.1 Sample Images

Note that the following images include one with a white fill background and one with true blank space (represented by check boxes) that runs the full width of the image.

Figure 6-17: Image With White Field/White Fill

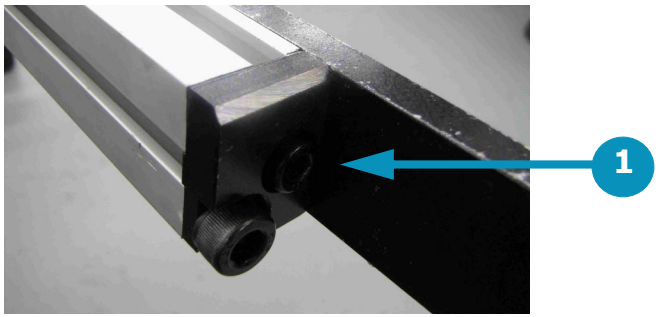
Figure 6-18Image With Blank Space/White Space

1 Rows of Blank Space Running the Width of the Image(s)

2 Check Boxes Represent True Blank Space in Image

6.8 Printing Multiple Rigid Media Boards

The EFI Pro 16h's square media fence (as opposed to the rectangular fence) can be used to align rigid boards in preparation for printing. The square fence helps to keep a common and consistent zero point, which allows for greater accuracy when guillotine-cutting and double-sided printing. Another benefit of having this solid, square fence with spacers is the ability to easily combine multiple boards across the belt. This feature results in better print speeds by utilizing the entire print zone and reducing carriage turn-around time.



1 Square-ended Fence

There are 3 similar methods of printing multiple boards with the square-ended fence. Each method works better for certain types of printing, as described in the sections below.

6.8.1 Prints with Margins or White Space on Edges

Use this technique for prints with margins or white space on the edges.

1. Align boards to the media fence.
2. Push each board up against the previous board until the print area is filled.

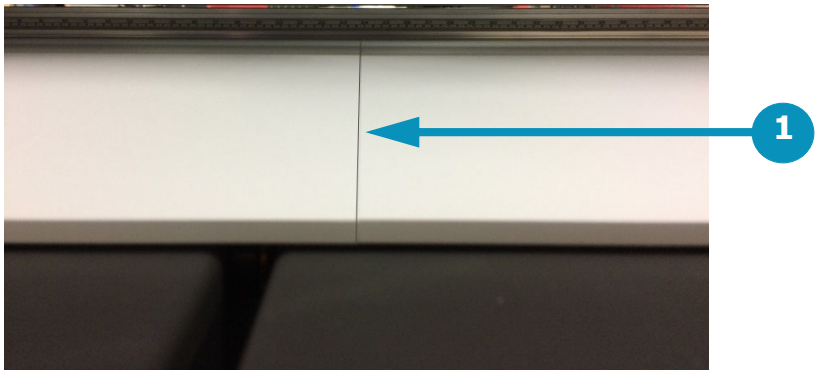


Figure 6-19: Media Boards Pushed Together

1 No Gap Between Boards

3. Determine the margin needed on each board, if any, to be set in the software (see section 6.8.4 for options to set up print files margins).

6.8.2 Print Using a Guide Block between Sheets

Use this method when setting guide blocks between media sheets.

1. Align boards to the media fence with a guide block between the boards. (The EFI Pro 16h printer arrives with 4 guide blocks for up to 4 board printing).

Figure 6-20: Loosen Screws on Guide Blocks

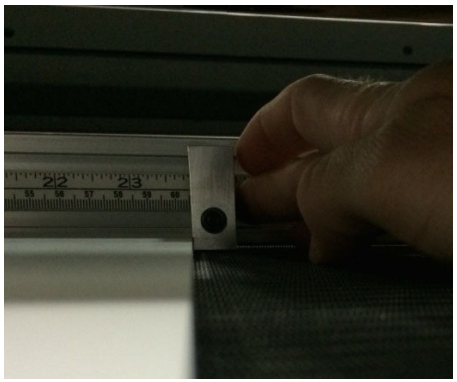


Figure 6-21: Place Guide Blocks Against Boards

2. Push each board up against the blocks until the print area is filled.

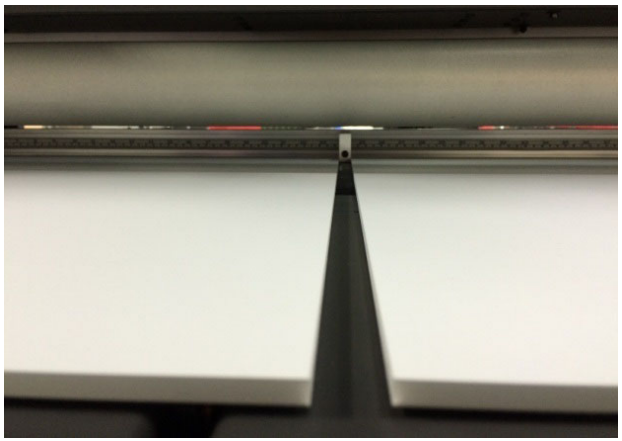


Figure 6-22: Press Each Board Against a Guide Block

3. Determine the margin needed on each board, if any, to be set in the software (see section 6.8.4 for options to set up print files margins).

6.8.3 Prints Using the Media Fence Ruler

Use this method to measure a specific distance between board using the media fence ruler.

1. Align boards to media fence using the ruler to place each edge.
2. Use the ruler until the print area is full, and determine a gap measurement between each board.
3. Determine the margin needed on each board, if any, to be set in the software (see section 6.8.4 for options to set up print files margins).

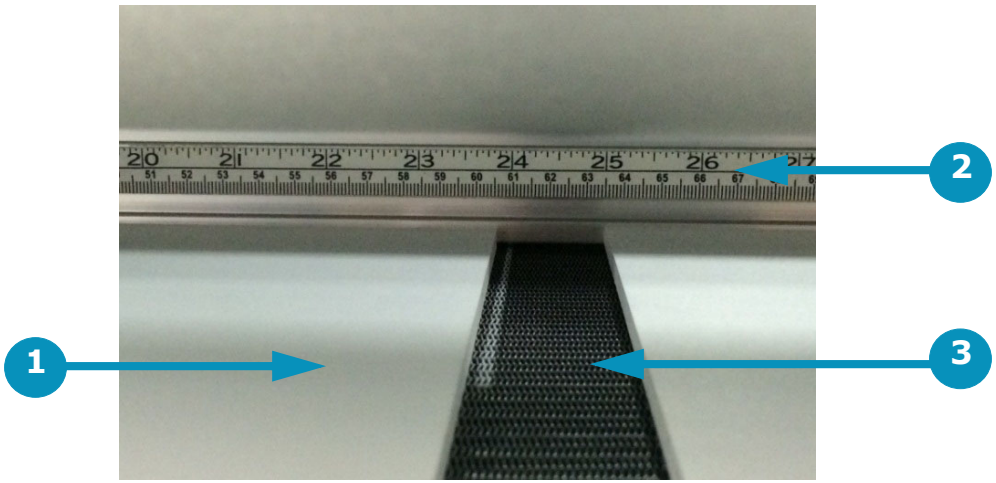


Figure 6-23: Measure the Gap Between Boards

6.8.4 Set Up Margins in Print Files

There are two ways to set up the margins in the print file, using settings in both the EFI Pro 16h Control window and in the Fiery software. See the options for print file margin set ups, as described below.

Print File Margins Setup 1

In this method of margin set up, margins are set in both the EFI Pro 16h Control window and in the Fiery software.

1. Set the needed Top and Side Margins in the EFI Pro 16h Control window. (See Figure 6-24.)

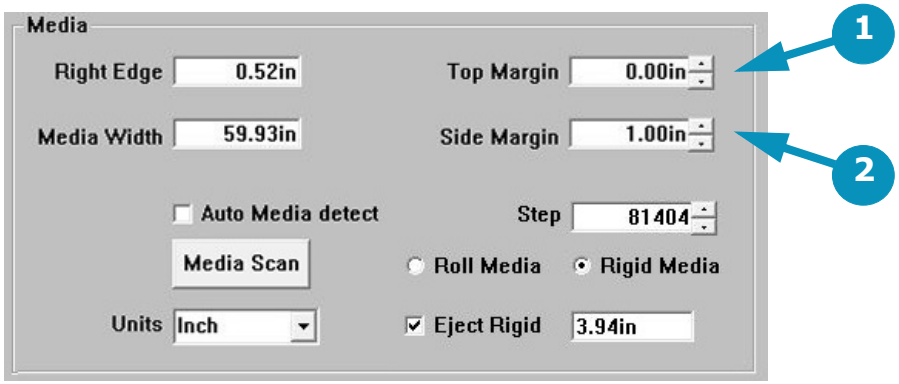


Figure 6-24: Media Box on EFI Pro 16h Control Window

1	Top Margin field	2	Side Margin field

2. Use Fiery to set the spacing needed between each image in the file.

Print File Margins Setup 2

In this method of margin set up, margins are set only in the Fiery software. The EFI Pro 16h Control margins are set to zero.

1. Set both the Top Margin and the Side margin in the EFI Pro 16h Control window to "0". (See Figure 6-24.)
2. Use Fiery to set the spacing and margins needed both around and between each image in the file.

7.0 Procedures for Replenishing Ink

This chapter describes basic ink replenishing procedures for the EFI Pro 16h Wide Format Printer.

1. Carefully remove the ink container cap and ensure that no ink spills into the ink supply compartment.

   Note: It may be necessary to clean the tubes and float connected to the cap.

   Caution! Wear protective gloves and eye protection when replenishing ink.

   Caution! When replenishing White Ink ensure that the "White Ink Bottle Recirculation" box is UNCHECKED on the Parameters system tab prior to removing the ink line from the ink container. Failure to do so will cause a quantity of white ink to spray from the recirculation line. Recheck the "White Ink Bottle Recirculation" box after replenishing white ink. (See Figure 7-1)

2. Carefully remove the empty ink container from the compartment and dispose of it in the appropriate manner.

   Note: If planning to transfer and use remainder ink in the future, tighten the cap on the old bottle and store it until there is space for the remainder ink in the newly installed ink bottle. (See 7.1 Use Remainder Ink.)

3. Open a new container and put it in place of the spent container.
4. Carefully reinstall the ink container cap and ensure it is properly secured.

Figure 7-1: Replenishing Ink

7.1 Use Remainder Ink

When an installed ink bottle level gets to half full, you can transfer remainder ink from a carefully stored bottle to refill the installed bottle.

Important! Check the expiration date on the old bottle. Do not use if it is past the expiration date.

1. Agitate the old ink bottle.
2. Pour the remaining ink from the old bottle into the ink bottle currently installed on the machine.
3. Agitate the ink bottle installed on the printer.
4. Properly dispose of the empty bottle.

Note: Do not ever pour more than one remaining bottle into an operating bottle. Any bottle with a small amount of ink that is not used for two weeks or longer should be disposed of.

8.0 EFI Pro 16h Maintenance and Print Head Care

This chapter contains descriptions of some key maintenance procedures that operators are required to perform on the EFI Pro 16h Wide Format Printer. Complete descriptions of the maintenance items are provided in the Maintenance Guide (OMM-00136, EFI Pro 16h Maintenance Guide).

8.1 Maintenance Documentation

The Maintenance Guide provides a comprehensive list and complete descriptions of the maintenance items required to properly maintain the printer.

8.1.1 Maintenance Guide

The maintenance guide contains maintenance procedures that are performed every 4 hours of operation, or are daily maintenance, weekly maintenance, monthly maintenance, quarterly maintenance, semi annual maintenance, and annual maintenance items.

8.1.2 Maintenance Log

The maintenance log provides a means for tracking the performance of each task. The log must be kept current. If a service visit is required, the field service engineer reviews the log to ensure proper maintenance has been conducted.

8.2 Print Head Care

Print head care for the EFI Pro 16h printer is limited. The print heads should function properly at all times if they are kept clean and properly bled of any air that might enter the print head. To ensure proper operation of print heads, follow the print head care procedure defined below:

8.2.1 Bleeding Print Heads

Bleed print heads only as needed.

1. Raise carriage, wipe carriage plate.
2. Wait approximately 10 minutes for heads to come to temperature.
3. Lower carriage and perform a "bleed" procedure.
4. Purge the print heads manually at the carriage home station or automatically using the printer software.
5. Run a nozzle check. If print heads function properly, bleed process is complete. If ink drop out appears in the test print, there may be air in the lines or print heads. Continue with steps 6-10, below.

Note: If printer has not been used for a day or longer, repeat above procedure, Run prints with lots of colors to exercise print heads. Repeat above process again. Print heads should then operate properly.

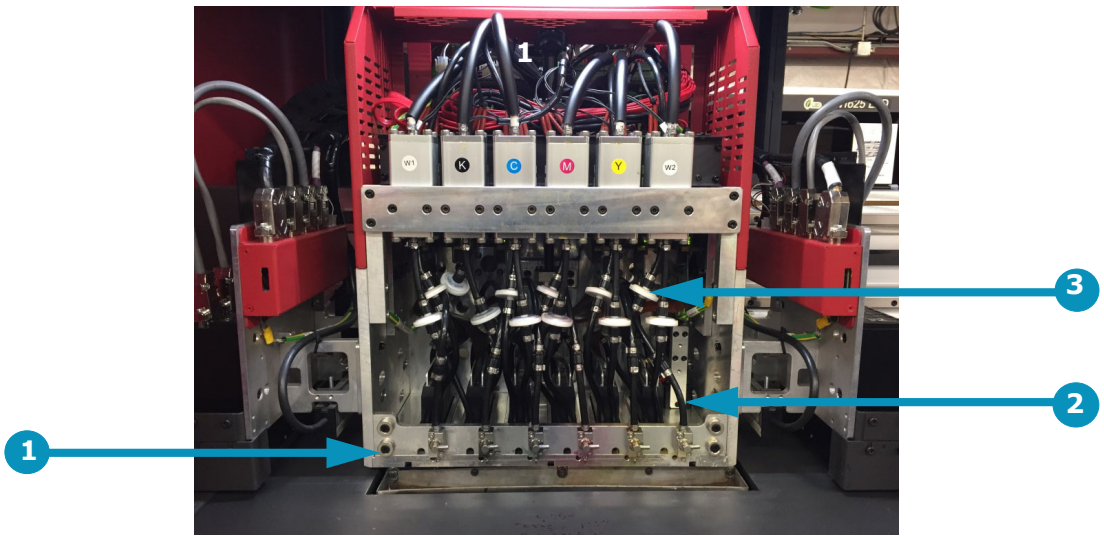


Figure 8-1: Typical Print Head Configuration

1 Ink Bleed Valves 2 Typical Print Head 3 Secondary Filter and Ink Feed

6. Using the special bleed valve tool (P/N 45117492), open the bleed valves, press the Purge button, and bleed print heads one at a time.
7. Allow the ink to run until it shows no sign of air bubbles. Ink runs into the trough and down into the cyclonic vacuum system.
8. After completion, ensure all valves are tightly closed.
9. Perform another purge and sweep the heads.
10. Re-run the Nozzle Check test print until satisfied that the print heads are firing properly.

Figure 8-2: Bleed Valve Tool (P/N 45117492)

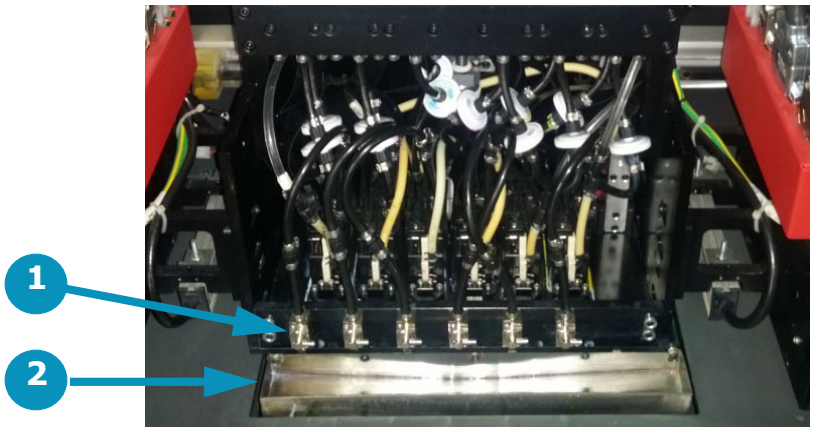


Figure 8-3: Bleed Valve and Trough

1	Bleed Valve
2	Trough

8.2.2 Ink Purge Procedures

The print heads should be purged and a head sweep should be performed in one of two ways:

1. a. From the EFI Pro 16h Control screen, choose the Purge White icon to white print heads. The system automatically follows this up with a head sweep.

   b. From the EFI Pro 16h Control screen, choose the Purge CMYK icon to purge the CMYK print heads. The system automatically follows this up with a head sweep.

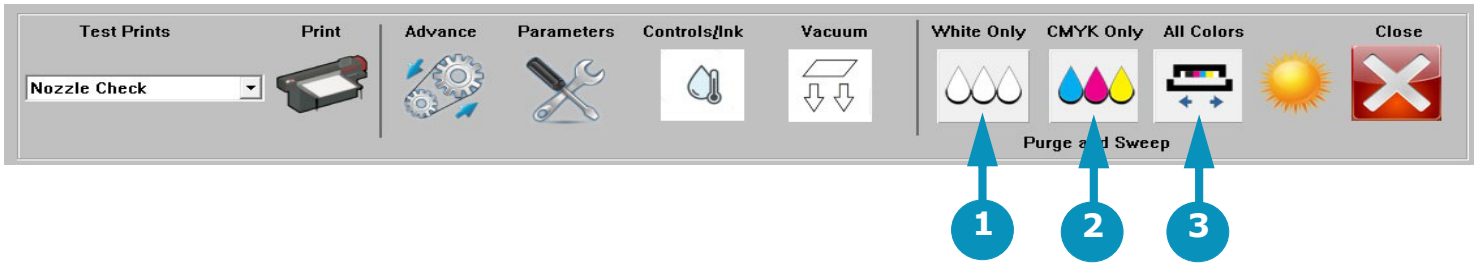


Figure 8-4: Purge and Sweep Icons on EFI Pro 16h Control Screen

1 Purges white ink. Sweeps the heads. 2 Purges CYMK ink. Sweeps the heads. 3 Sweeps all print heads.

2. Use the manual Ink Purge buttons located in the carriage HOME compartment (See Figure 8-5). Then follow up with a head sweep performed from the EFI Pro 16h Control screen.

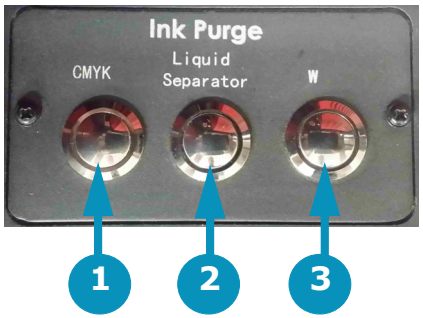


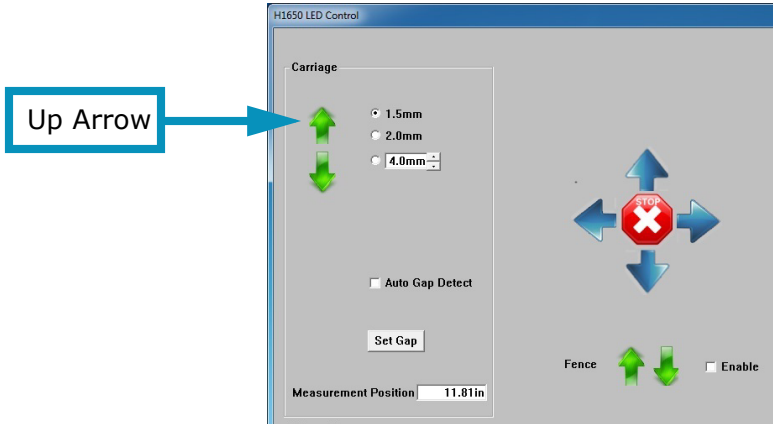
Figure 8-5: Manual Ink Purge Buttons

1 Purges CYMK ink. Sweeps heads. 2 Empties the cyclonic vacuum system 3 Purges white ink. Sweeps heads.

8.2.3 Clean Print Heads

Print Heads should be cared for and cleaned at the end of each shift or after each 8 hours of printer operation, to remove any ink that is curing on the heads.

1. Use the Up arrow on the EFI Pro 16h Control screen to raise the carriage.



2. Put on nitrile protective gloves.

   Note: Clean the print head plate prior to cleaning the print heads themselves, in order to avoid pulling ink from the plate onto the heads. Alcohol should not be applied anywhere in the vicinity of the print heads or plate as it immediately destroys heads.

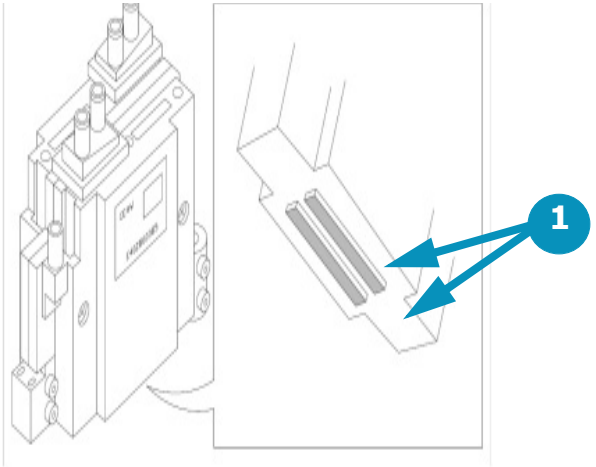
3. Prepare a set of 6 clean wipes (for 6 print heads) to use for print head cleaning.

Caution! Any contamination of wipes can damage your print heads.
When cleaning print heads, be sure to:

- Use only wipes that have been double-bagged or sealed for cleanliness.
- Use a new wipe for each print head.

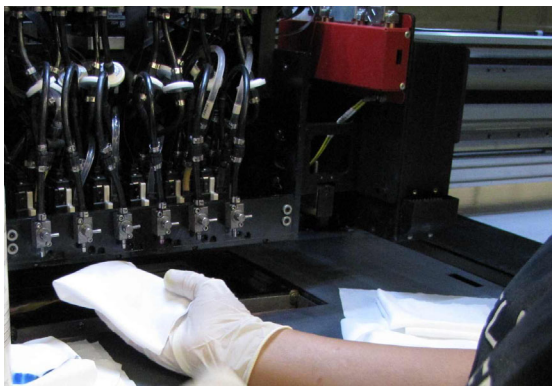
4. Fold a lint-free wipe in quarters. Then reach under the carriage print head plate to locate the back of the print head to be cleaned.

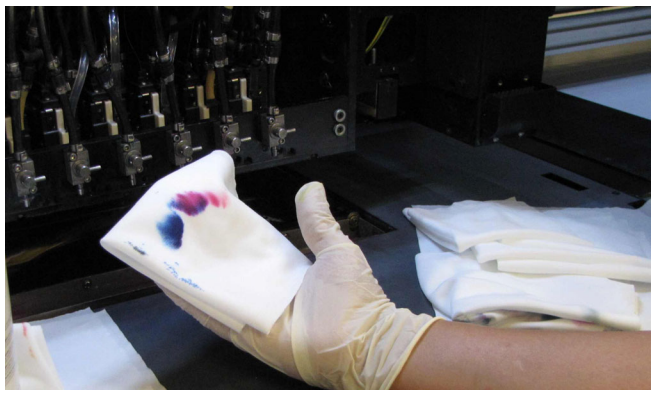
5. Align two fingers with the bottom of the print head and press gently against the head.



Item	Description
1	Print Head Surfaces to Contact

6. Pull the wipe forward across the bottom of the print heads in ONE motion, cleaning the head's surface.





Caution! Do NOT RUB the print heads. One smooth wipe forward should be all that is required. If a print head requires additional cleaning, use a new clean wipe and repeat the single-wipe process. Rubbing damages print heads.

7. Discard each used wipe and pick up a new one before continuing to the next Print Head.
8. Repeat process for each print head.

Note: Clean the print head plate again after all print heads have been wiped, to remove any ink that may have transferred to the plate during head cleaning.

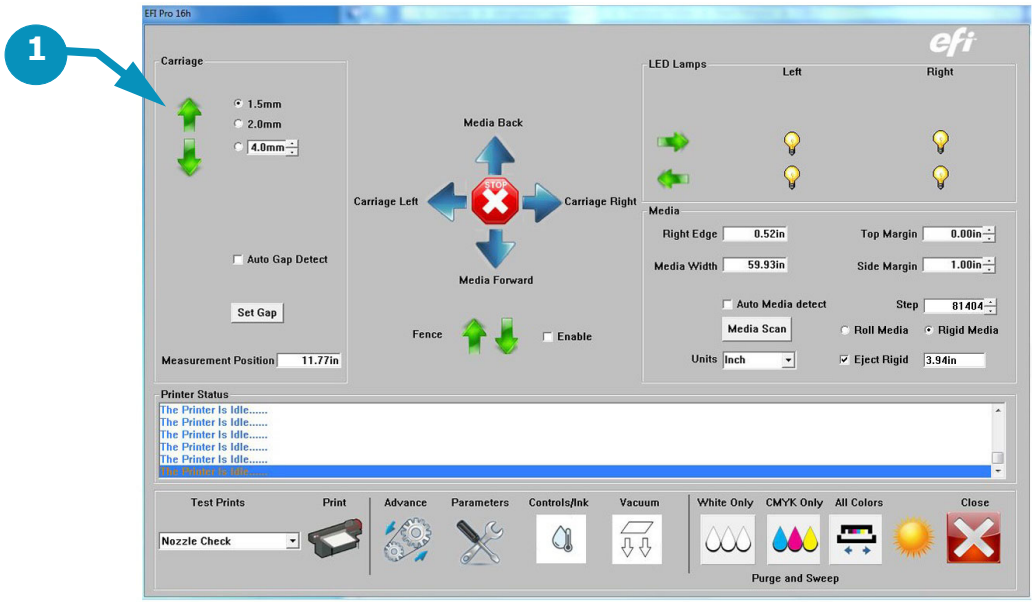
9.0 EFI Pro 16h Sleep Mode/Shutdown Procedures

This chapter describes EFI Pro 16h Wide Format Printer sleep and shutdown procedures for the overnight, short term (1 - 3 days), and long term (4+ days). Those procedures are described in the sections that follow:

9.1 Overnight Sleep Mode

EFI recommends that sleep mode be used for overnight shutdown. Set the printer into sleep mode as follows:

1. Shuttle the carriage twice so that it sits over the table.
2. Clean the bulk of the ink in the drip pan with a lint free wipe.
3. Use a lint free wipe with flush to finish cleaning the tray and wiper.
4. Return the carriage to the home position.
5. Raise the carriage.
6. Wipe each head with a clean, lint free wipe.
7. Wipe the jet plate.
8. Lower the carriage.
9. Put the printer in sleep mode.



1 Up Arrow Raises Carriage

Note: When suspending print operations for the night or the weekend, perform daily maintenance procedures prior to shutdown. See the EFI Pro 16h Maintenance Guide (*at* https://inkjet.support.efi.com/doc.php?doc=3753) for daily maintenance procedures.

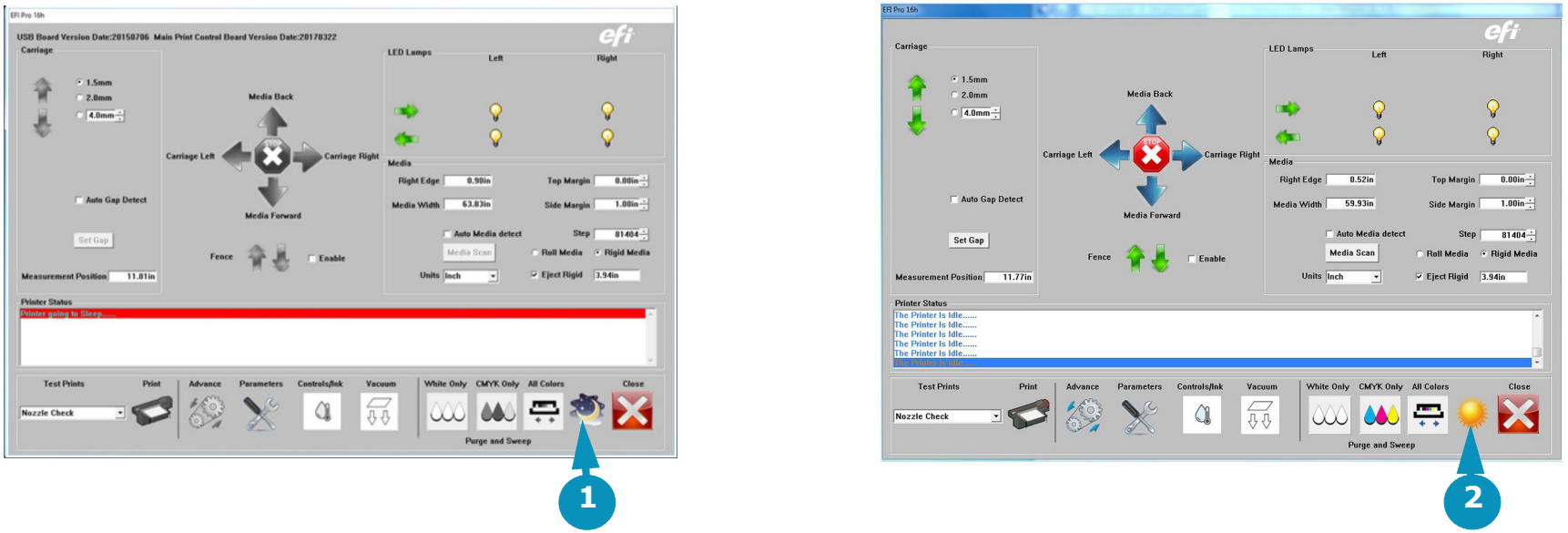


Figure 9-1: EFI Pro 16h Control Screen Printer Mode (Asleep/Awake) Icon

1 "Moon" icon = Printer is Asleep 2 "Sun" icon = Printer is Awake

9.1.1 Re-wake Printer

Use the following procedure to re-wake the printer after any shutdown:

1. Wake up printer
2. Raise carriage.
3. Manually purge all channels.
4. Wipe all heads with a clean section of dry lint free wipe.
5. Lower carriage.
6. Print a Nozzle check.

9.2 Short-Term Printer Shutdown

It may be necessary to power off the printer for short periods of time (1-3 days) to perform maintenance.

Caution! Power off the printer only when necessary.

1. Power off the media vacuum blower using the switch located in the computer compartment of the printer.
2. Ensure that the EFI Pro 16h Control screen has been closed.
3. Turn off both the CMYK and white negative pressure valves located on the top left side of the carriage. This prevents the ink from dripping from the heads while the power is off.

Figure 9-2: Negative Pressure Valves

Note: If power will be left off for longer time periods, additional startup steps will be required.

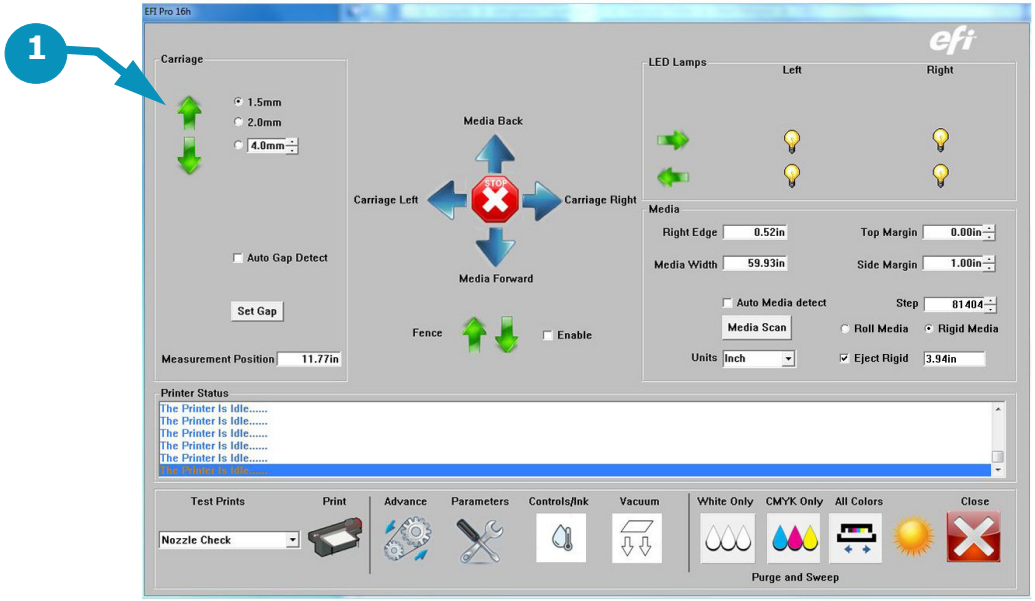
4. Power off the printer using the main breaker switch in the computer compartment of the printer.
5. Turn off the other breakers in the computer compartment of the printer.
6. The printer is now powered off.

Note: Optional- Turn off the computer and monitor or restart the computer as needed.

9.3 Long-Term Printer Shutdown

It may be necessary to power off the printer for longer periods of time when it won't be in use. Use the long-term shutdown procedure when shutting the printer down for 4 or more days.Power off the printer only when necessary.

1. Use the EFI Pro 16h Control screen to raise the carriage.



1 Up Arrow Raises Carriage

Negative Pressure

2. Shut down the printer leaving the negative pressure valves open.

3. Open the ink protect tank LUER fitting covers to release the negative pressure.

4. Allow the ink to drain completely from the secondary ink tanks.

Print Heads

5. Flush the print heads.

6. Clean the carriage plate and print heads with lint free wipes. (See 8.2.3 for the procedure.)

Coroplast

7. Cut a piece of coroplast to the size of the carriage plate.

8. Cover the piece of coroplast with lint free wipes at least 4 deep and soak with flush.

9. Place this piece under the carriage and use the manual knob to lower the carriage so the carriage contacts the wipes at all points.

Waste Container

10. Ensure that the waste bottle is empty.

9.4 E-Stop Conditions

*Emergency stops are installed at each end of the EFI Pro 16h printer. These should be used **only** when there is an emergency condition. E-Stops should not be used to shut off the machine under normal conditions.*

Figure 9-3: Typical E-Stop

9.4.1 Activating E-Stop

To activate an E-Stop, press any red E-Stop button (Figure 9-3). This shuts off power to all printer systems. Then do the following:

1. Resolve E-Stop condition.
2. Move carriage to the "Home" position.
3. Shut off main breaker.
4. Reset all E-Stops. (To reset an E-Stop, press down and rotate the knob counter-clockwise. Release the downward pressure and let the red knob spring up)
5. Turn main breaker back on.

9.4.2 Restarting After E-Stop

Perform the steps below to restart the printer after an E-Stop.

1. Ensure the condition that caused the emergency is resolved.
2. Manually return the carriage to the "Home" position if it is not there.
3. Reboot the computer and turn on the monitor.
4. Make sure the Printer Control Utility has restarted.
5. Check each E-Stop switch and release the knob if it is engaged.
6. Power on the printer main breaker.
7. Power on the system switch.

   Warning: Ensure that there is no one in the way of the printer mechanics.

9.5 Power Outages

If power outages occur frequently at the printer site, it is advisable to install a UPS system. The UPS system must be installed on the main power to the printer and must conform to Printer Power Requirements.

9.5.1 Power Outage During Printing

1. Turn the CMYK and White air valves to the **OFF** position.
2. Reposition the carriage over the maintenance station, making sure that the carriage is positioned properly at the carriage home position.
3. Turn **OFF** the media vacuum switch, the system switch and the printer main breaker.

9.5.2 Power Outage While Printer is Idle and Attended

1. Turn **OFF** both the CMYK and White air valves.
2. Power **OFF** the media vacuum switch, the system power switch, and the printer main breaker.

9.5.3 Power Outage While Printer is Idle and Unattended

If a power outage occurs while the printer is idle and unattended, the printer may drip ink into the maintenance tray. If the power is restored while the printer is unattended, the printer reboots but remains in the idle position. Refer to Initial Startup Procedures for start-up instructions (section 5.1).