HP Scitex FB950 Printer

User Guide

Table of contents

Appendix A Specifications

Appendix B Troubleshooting

Appendix C Image quality tips

1 Getting started

This chapter shows you how to get started using your printer. It includes these topics:

- Operating requirements
- Connect the RIP
- Important operating notes
- Safety warnings
- Workflow overview
- Quick tour
- Special features

Operating requirements

Electrical

- Make sure the line voltage meets the requirements. See Specifications on page 92 for details.

- Use the supplied power cord. Plug it directly into a grounded electrical outlet. Do not lengthen the power cord with an extension cord; the resulting drop in voltage could damage the printer.

- To maintain vacuum to the printheads during printer power-down or unexpected power outages, use the auxiliary 24 volt power supply (included in the accessory kit with universal power adapters). Connect the 24 VDC jack on the vacuum/pressure assembly to either of two options:

  ◦ UPS — customer-supplied uninterruptable power supply, output 100-240 VAC, 50/60 Hz, minimum of 15 watts of power, provides battery backup to the vacuum system in the event of a power failure.

  ◦ Wall outlet — 100-240 VAC, 50/60 Hz, provides temporary power to the vacuum system when it is necessary to power down the printer for service. See Appendix A, Technical Specifications, for details.

- Connect printer to its own electrical circuit. Do not connect the RIP, auxiliary power supply, or UPS into the same circuit as the printer.

Environmental

- Make sure the room is well ventilated, with a temperature and relative humidity within specifications. Optimal printing occurs within these ranges. See Specifications on page 91 for details.

- The high power UV light emitted by the curing lamps reacts with oxygen and produces ozone. This formation tends to be greatest during lamp start-up. The printer should be operated in a well-ventilated area to avoid minor effects such as headaches, fatigue, and dryness of the upper respiratory tract. Normal air movement will mix the ozone with fresh air, causing it to revert back to oxygen.

- Store media and ink in an area with similar temperature and humidity conditions as the printer.

- Locate the printer so that it can be connected to the print server (RIP) with the included cable.

- Locate the printer on a flat, level floor.

- Locate the printer where its normal operating noise will not disturb quiet work areas.

- DO NOT install the printer near humidifiers, refrigerators, fans, water faucets, heaters or similar equipment.

- DO NOT install the printer in areas where the temperature changes abruptly, such as near air conditioners, in the path of direct sunlight, or near open doors or windows.

- DO NOT expose the printer to flames or dust.

Connect the RIP

The printer receives print jobs from a raster image processor (RIP), from either HP or a supported third-party manufacturer.

- To connect the printer to the HP RIP Software, refer to its User Guide for detailed instructions.

- To connect the printer to a third-party RIP, follow this procedure:

Install the VideoNet cable

1. Power off the computer you will be using to run the RIP.

2. Connect the printer to the RIP computer's Ethernet port using the included cable.

   NOTE: The included cable is 7.62 m (25 ft) in length. If necessary, you can use a crossover Category 5 (or higher) 10/100Base-T cable, up to 38.1 m (125 ft) in length.

3. Connect the user workstation(s) to the RIP.

   You can connect your workstation to the RIP via a local area network or directly using a single cable.

   - To connect to the print server via a network hub, use a standard straight-through Category 5, 10/100Base-T cable.

   - To connect a single workstation to the RIP without a network, use a Category 5, 10/100Base-T crossover cable, such as the VideoNet cable, part number 0582323.

4. Turn on the computer power.

Install the VideoNet protocol

The following procedure is for Microsoft Windows Vista (32–bit). Other operating system versions are not supported.

1. Open Network Connections by clicking the Start button > Control Panel > Network and Internet > Network and Sharing Center > Manage Network Connections.

2. Right-click the local area connection that corresponds to the VideoNet card, then click Properties. (Type the password or provide confirmation if prompted.)

3. Click Install.

4. In the Select Network Feature Type dialog box, click Protocol, and then click Add.

5. Browse to the folder on the hard drive or HP software disc that contains the VideoNet protocol (videonet.inf).

6. Follow the prompts to complete the installation of the VideoNet protocol.

   It can be difficult to determine which icon represents which connection. One way to determine this is to unplug the VideoNet cable and observe which icon shows a red "X".

   To avoid confusion in the future, rename the VideoNet icon to "VideoNet."

Install the RIP software

▲ Install and configure the RIP software as outlined in the documentation supplied with it.

Install a language file

The printer's control panel interface optionally can be switched between English and one other language. To install this option, refer to the instructions provided with the second language software files. These files can be downloaded from the HP Graphic Arts web site at http://www.hp.com/go/graphic-arts.

Important operating notes

- UV CURE INK IS PERISHABLE. Unlike other inks used in wide format printing, UV cure ink has a limited shelf life. Plan to rotate your ink stock and use it promptly by the date printed on the ink box.

△ **CAUTION:** When the UV lamps are switched off, they undergo a controlled cool-down cycle. Sudden removal of power from hot lamps, such as disconnecting the power cord or from a power outage, can result in overheating and permanent damage. The lamps should be switched off only via the printer software.

- The maximum diameter allowed on the optional takeup spool is 178 mm (7.0 in) on a 76 mm (3 in) core. The supply-takeup system can support rolls of up to approximately 56.7 kg (125 lb).

- The media supply may be wound either printed-side-out or printed-side-in, but the optional takeup, if used, must be loaded printed-side-in.

- The default head height set to 2.159 mm (0.085 in) above the media. (The space below the carriage will measure 1.778 mm (0.070 in) due to the printhead protection frame around the outside of the carriage.) The head height can be adjusted up or down at the control panel (**Printer Settings > Head Height Off Media**).

- The Media Wizard stores a set of operational parameters for predefined and user-defined media types. When you load a new media type, select an existing Media Wizard set, or create a custom set. Media Wizard parameter sets can be selected at any time from the control panel.

- Enable AutoTune during long periods of unattended printing on roll-fed media. AutoTune runs AutoJet at user-defined intervals to ensure that all jets are either working or substituted with working jets.

- Wear cotton gloves when loading media to prevent fingerprints that could show after printing. You can use isopropyl alcohol (IPA) to clean fingerprints and reduce static electricity on synthetic media.

- DO NOT reprint over any output that has not completely cured (for example, due to a UV lamp malfunction).

- DO NOT rest or store a media roll on end, or you could cause edge creases that could strike the printheads during printing. To avoid bowing, store sheet-fed media flat, not standing on end.

- DO NOT set heavy objects on the power cord or printer cable; do not bend the cables or force them into contorted positions.

- DO NOT place heavy objects anywhere on the printer.

Safety warnings

- UV light — the ultraviolet (UV) curing lamps emit high power UV light. The printer must be operated with all safety shielding installed to protect the operator from eye and skin damage. When operated according to manufacturer's instructions, safety glasses or other protective clothing are not necessary.

- Mechanical hazards — Keep fingers away from carriage and media path. Do not exceed the maximum weight load of the input or output tables, as printed on the label.

- Ink — read and practice safety guidelines as outlined in the Material Safety Data Sheet (MSDS) for the ink, and post the document in the work area as required by prevailing law. Avoid any contact with skin and eyes. Provide adequate general and local exhaust ventilation. Avoid breathing vapors. Respirator protection may be required under exceptional circumstances when excessive air contamination exists. None of the component substances have established exposure standards per OSHA, NIOSH or ACGIH. Collect waste ink in container provided. Dispose of ink according to MSDS and local regulations. Keep the waste-ink spigot closed during printing.

- Electrical — WITH THE POWER SWITCH IN THE OFF POSITION, POWER MAY STILL BE SUPPLIED TO THE PRINTER COMPONENTS. To completely cut power from the printer, you must unplug the power cord from the power outlet.

- Ozone — the high power UV light emitted by the curing lamps reacts with oxygen and produces ozone. This formation tends to be greatest during lamp start-up. The printer should be operated in a well-ventilated area to avoid minor effects such as headaches, fatigue, and dryness of the upper respiratory tract. Normal air movement will mix the ozone with fresh air, causing it to revert back to oxygen.

- Hazardous waste — THE PRINTER ELECTRONICS ASSEMBLY CONTAINS A LITHIUM BATTERY DEVICE. THERE IS A DANGER OF EXPLOSION IF THE BATTERY IS INCORRECTLY REPLACED. The battery must be replaced only by authorized service providers, and must be replaced only with the same or equivalent type. Dispose of this lithium battery device in accordance with local, state (or province), and Federal (or country) solid waste requirements.

Workflow overview

When the printer is connected to the HP RIP Software, here is how a typical print job progresses from the client workstation to the printer. If you are using a non-HP RIP, refer to the documentation that accompanies it for details.

1. The operator sends a file to be printed from a client workstation.

2. The print job is received by the print server.

   Once it reaches the print server, the print job may be reprioritized, combined with other jobs, re-routed, or otherwise manipulated. Refer to the print server online help or manual for instructions.

3. The print server RIPs the job.

   The raster image processing (RIP) process translates the PostScript language data that comprises the print job into the data required by the printer.

4. The server sends the image to the printer for printing.

   In most cases, the printer's automated jet maintenance makes manual jet recovery unnecessary, even after the printer has been idle overnight. Banding in printed output may indicate clogged jets or the need for calibration.

Since automatic head maintenance cannot occur when the printer is powered down, keep the printer powered on at all times if possible. If automatic head maintenance does not occur for an extended period, manual purging may be necessary to restore the printheads to working condition.

See Specifications on page 92 for information on using the included auxiliary power supply for the vacuum/pressure system.

The printer will automatically enter a Sleep mode when it has been idle for a user-defined period of time (see Front Page on page 37 for details).

Quick tour
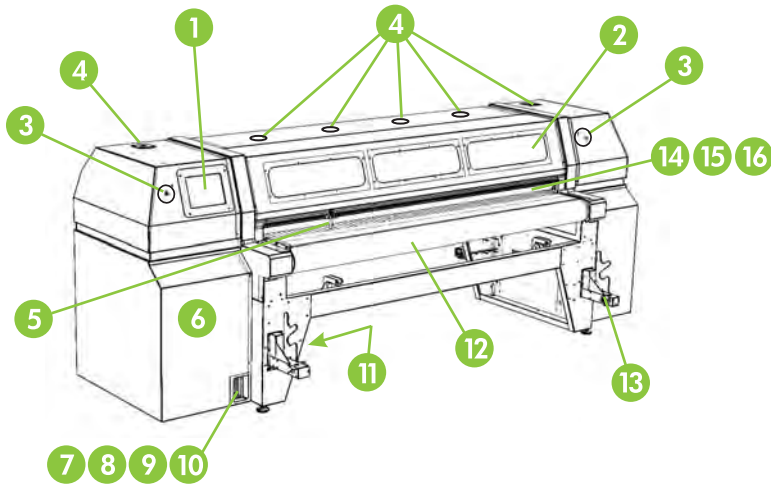
1. Touch-screen control panel

2. UV-filtered observation windows

3. Emergency stop button (2 places)

4. Exhaust vents

5. Rigid media alignment pins

6. Electronics box (inside enclosure)

7. Data ports

8. VideoNet port

9. Port for optional foot switch

10. Main power switch

11. (Under the media drive belt assembly on the electronics cabinet) Main power, supply/takeup system power inlet ports, serial number and regulatory label

12. Media drive belt

13. Media supply brackets

14. Media input roller (inside cover)

15. Media alignment bar (inside cover)

16. Media output roller (inside cover)
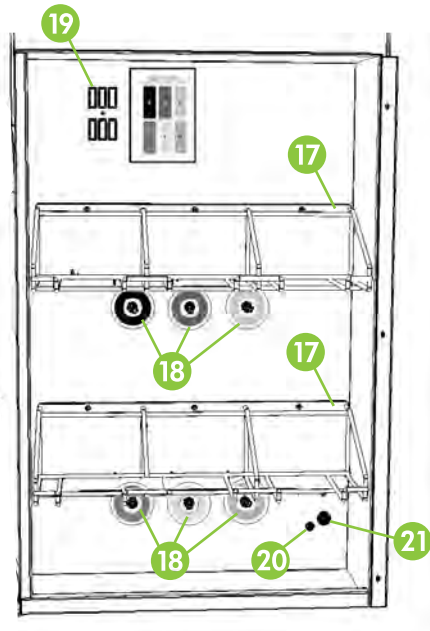
17. Ink supply rack

18. Ink connections

19. Profiler docking station

20. Vacuum/Pressure system auxiliary power inlet

21. Vacuum adjustment knob
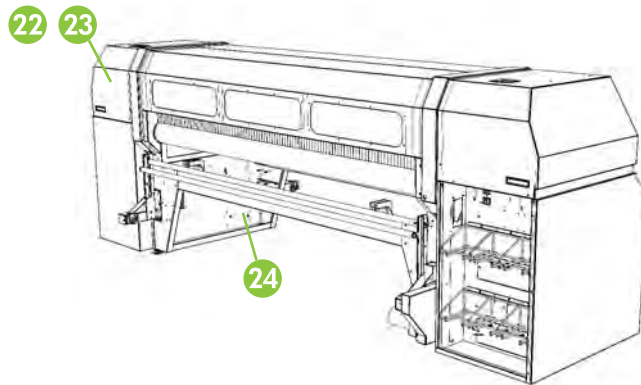
22. Service station (inside enclosure)

23. Printhead maintenance vacuum (inside enclosure)

24. Waste ink spigot

Special features

Printheads

- Printheads — variable drop size, piezoelectric printheads.

Ink system

- Off-Head System (OHS) — bulk ink boxes with integrated filters. No-drip quick connectors simplify ink box replacement.

- Onboard vacuum/pressure (VP) system — provides vacuum to maintain negative printhead pressure, and air pressure to purge the printheads or ink tubes without removing them from the printer.

- Patent-pending automated printhead service station — fully maintains the health of the printheads while idle or in service, without operator intervention.

Media handling

- Automatic head height — automatic head height adjustment and patent-pending shuttered UV lamp system allow the printer to accept rigid sheet-fed media up to 6.35 cm (2.5 in) thick.

- Automatic media width sensing — automatically detects the width and position of the media loaded, for precise image placement.

- Built-in static charge abatement — ionizer bars help dissipate static electric charge from synthetic media.

- AutoEdge — automatically aids the loading of rigid sheets by detecting the leading edge.

Calibration

The Advanced Automation Eye uses a high-resolution digital imaging sensor (camera), photodiode, and embedded software to align the printheads, detect and replace missing jets, linearize output, and characterize media (with supported RIP).

- AutoSet calibration — automatically aligns printheads bidirectionally for precise positioning of inkjet pixels, and runs AutoJet.

- AutoJet calibration— compensates for lost or misfiring jets by locating them and using substitute jets without slowing printing speed.

- Roll-feed AutoTune scheduling — runs AutoJet at user-defined intervals, for highest quality during unattended roll-fed printing. Optionally, if unsubstituted non-working jets are found, printing stops until the problem is corrected.

- Automatic color calibration — linearizes output over the entire density range (with RIP support).

- Color profiling — creates custom color profiles for third-party media (with RIP support).

Performance and ease-of-use

- Media Wizard — stores and recalls a set of operating parameters by media type and print mode, for optimal printing performance. Includes a set of predefined settings for standard media; user may add settings for other media.

- Speed/quality print modes — provided to meet speed and quality requirements.

- Edge-to-edge printing — margins on rigid media can be set to zero for edge-to-edge printing, providing "full bleed" prints without trimming.

- Fine Text — prints at half the normal head speed to improve the output quality of fine text and line art.

- Sharp Edge — reduces overspray at the edges of images and blocks of color.

- Simplified control panel interface — touch-screen control panel with graphical Front Page interface presents frequently-used functions. A menu provides access to less-frequently used functions and troubleshooting help.

- User assistance — control panel features online help, interactive procedures, and diagnostics to assist the user, reducing training and troubleshooting time.

2 Printing

This chapter shows you how to set print mode and media options, load media, and print:

-
-
-
-
-
-
-

Configure printing

The printer can print in several different modes for the combination of quality, resolution, and speed that you require.

The resolution is determined by the resolution at which the job was rasterized by the external RIP. The Print Mode is selectable at the control panel. The actual print speed is determined by the combination of output quality, print length and width, and printing delay selected at the control panel (described below).

Table 2-1 Typical print speeds by mode

	Bidirectional print mode (m^2 per hour/ft^2 per hour)		
Resolution	**High Quality**	**Production**	**Billboard**
1200 x 600	Standard: 5 / 56	Standard: 10 / 113	Standard: 21 / 229
	Plus: 5 / 53	Plus: 10 / 106	Plus: 19 / 202
600 x 600	Standard: 10 / 113	Standard: 21 / 229	Standard: 42 / 456
	Plus: 10 / 106	Plus:19 / 202	Plus: 34 / 363
600 x 300	Standard: 21 / 227	Standard:42 / 456	Standard: 80 / 858
	Plus: 19 / 203	Plus: 34 / 366	Plus: 55 / 596

Jet replacement refers to the printer's ability to locate and replace inkjets that are clogged or misfiring. High Quality mode has the best jet replacement, Billboard Quality mode has the highest speed, but without jet replacement.

The current print mode is shown in the top center of the control panel. To change the print mode, follow these instructions.

1. On the control panel, press the Print Mode key.

    The print mode menu appears, with these options:

    ●   Billboard Quality

    ●   Production Quality

    ●   High Quality

2. Press a print mode to select it.

    A menu appears with these options:

    ●   Bidirectional

    ●   Unidirectional - Print From User (1) to Service (2) Side (prints only when the carriage is moving away from the control panel)

    ●   Unidirectional - Print From Service (2) to User (1) Side (prints only when the carriage is moving toward the control panel)
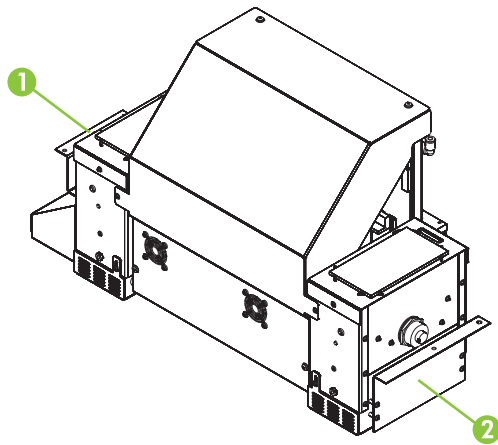
The printer can print in both directions (bidirectional) or in one direction only (unidirectional). Unidirectional printing can occur in either direction. Printing occurs at about half the speed of the corresponding bidirectional print mode. Unidirectional printing eliminates the bidirectional misalignment that occurs when printing on media that is not perfectly flat.

3. Press a direction option to select it.

   In Production and High Quality modes, a menu appears with these options:

   ● Normal — prints at full speed.

   ● Plus — provides reduced horizontal gloss banding when printing bidirectionally in large image areas or solid colors.

   ● Normal Fine Text — prints at half the normal head speed to improve the output quality of fine text and line art by eliminating overspray.

   ● Plus Fine Text — provides reduced gloss banding and improved fine text and line art.

   ● Sharp Edge — improves the appearance at the edges of larger text, colored borders, graphics, and images by directing the inkjet overspray into the printed area. This mode requires an additional print pass than Normal mode. (Not available with unidirectional printing or in Billboard or Plus mode.)

△ **CAUTION:** Printing in Fine Text mode, which prints at 50% of the speed of the "normal" Production and High Quality modes, may expose the media to excessive heat from the UV lamps, which could result in bowing of the center of the media, and possible contact with the printheads. Thinner rigid media such as fluted polypropylene (Coroplast) are susceptible. To avoid warping, set a media delay in **Printer Settings > Printing Delay,** or in a custom Media Wizard parameter set for Fine Text printing.

This could also be an issue with Sharp Edge and Plus mode printing, although these modes print at 80% speed, so they are less susceptible to excessive heat buildup.

4. Press an option to select it.

   The media settings screen appears.

5. Press the **Media Settings** button under any of the resolutions in the table to change the settings for that resolution.

A menu appears that enables you to change any of these settings:

- Printing Delay
- Lamp Mode
- Shutter Aperture

These settings are explained in the following sections.

NOTE: You can change the settings for a standard media type temporarily. To save the changes permanently, copy the standard media type into a new media type, and save its settings.

6. To set a printing delay, press the **Printing Delay** option in the Media Settings menu.

   The Printing Delay screen appears. Increase the printing delay to allow more heat to dissipate from the media between print passes. Decrease the delay to increase throughput.

7. Increase or decrease the delay by pressing the ▲ or ▼ keys.

8. Press **Proceed** (▶) to save your changes, or **Cancel** to discard them.

9. To set the lamp mode, press the **Lamp Mode** option in the Media Settings menu.

   The Lamp Mode screen appears.

10. Configure the UV lamps operation by touching the option for the leading and trailing lamps. Buttons will appear or disappear to present only valid combinations (for example, you cannot set both lamps to Shuttered).

    - For standard media listed in the Media Wizard, leave the lamp settings at their default values, then adjust as needed.
    - Faster print modes require higher lamp settings to ensure sufficient curing.
    - If the ink is not curing, increase the setting. The lamps will gradually lose curing effectiveness, so increasing the setting eventually may become necessary.
    - If the media is wrinkling or warping from the heat of the lamps, lower the setting.

11. To set the aperture settings, press the **Shutter Aperture** option in the Media Settings menu.

    The aperture settings screen appears.

12. Adjust the shutter apertures, or press **Proceed** (▶) to continue.

    You can select the aperture (opening amount) for each shutter, and/or completely close one of the shutters, during printing. This enables you to reduce the warping of rigid media by reducing the amount of light and heat emitted by the lamps. The aperture can also be set by touching the UV lamps info panel.

    The UV lamp shutters are vertical when completely opened, and rotate to change the aperture. An aperture setting of 0 degrees is completely open; 20 degrees is half open, "Closed" is completely closed. You cannot set both shutters to closed while printing. During printing, the lamp icons on the control panel are dynamically shaded to indicate the aperture setting. The icons will change as the carriage direction changes if the leading and trailing aperture settings are different from each other.

13. Press **Proceed** (▶) to save the settings and return to the Front Page, or **Cancel** to restore the previous print mode settings.

Equivalent print modes

From the standpoint of UV curing and temperature, all print modes fall into one of five print speed groups: A, B, C, D, or E. If you change the Printing Delay, Lamp Mode, or Shutter Aperture for any print mode, the changes apply to all print modes within that group. The group for each print mode is shown in the Media Settings screen.

The following table shows the print modes by print speed group.

Table 2-2 Print modes by group

Quality	Direction	Resolution	Overspray	Group
High Quality	BiDi	600 x 600	FineText	A
High Quality	BiDi	1200 x 600	FineText	A
High Quality	BiDi	1200 x 600	Normal	A
High Quality	BiDi	1200 x 600	Sharp Edge	A
High Quality	Uni	600 x 600	FineText	A
High Quality	Uni	1200 x 600	FineText	A
High Quality	Uni	600 x 600	Normal	A
High Quality	Uni	1200 x 600	Normal	A
High Quality Plus	BiDi	600 x 600	FineText	A
High Quality Plus	BiDi	1200 x 600	Normal	A
High Quality Plus	BiDi	1200 x 600	FineText	A
Production	BiDi	1200 x 600	FineText	A
Production	Uni	1200 x 600	FineText	A
Production	Uni	1200 x 600	Normal	A
Production Plus	BiDi	1200 x 600	FineText	A
High Quality	BiDi	600 x 300	FineText	B
High Quality	BiDi	600 x 600	Normal	B
High Quality	BiDi	600 x 600	Sharp Edge	B
High Quality	Uni	600 x 300	FineText	B
High Quality	Uni	600 x 300	Normal	B
High Quality Plus	BiDi	600 x 600	Normal	B
High Quality Plus	BiDi	600 X 300	FineText	B
Production	BiDi	600 x 600	FineText	B
Production	BiDi	1200 x 600	Normal	B
Production	BiDi	1200 x 600	Sharp Edge	B
Production	Uni	600 x 600	FineText	B
Production	Uni	600 x 600	Normal	B
Production Plus	BiDi	1200 x 600	Normal	B

Table 2-2 Print modes by group (continued)

Quality	Direction	Resolution	Overspray	Group
Production Plus	BiDi	600 x 600	FineText	B
Billboard	Uni	1200 x 600	Normal	B
High Quality	BiDi	600 x 300	Normal	C
High Quality	BiDi	600 x 300	Sharp Edge	C
High Quality Plus	BiDi	600 x 300	Normal	C
Production	BiDi	600 x 300	FineText	C
Production	BiDi	600 x 600	Normal	C
Production	BiDi	600 x 600	Sharp Edge	C
Production	Uni	600 x 300	FineText	C
Production	Uni	600 x 300	Normal	C
Production Plus	BiDi	600 x 600	Normal	C
Production Plus	BiDi	600 x 300	FineText	C
Billboard Plus	BiDi	1200 x 600	Normal	C
Billboard	BiDi	1200 x 600	Normal	C
Billboard	Uni	600 x 600	Normal	C
Billboard Plus	BiDi	1200 x 600	Normal	C
Production	BiDi	600 x 300	Normal	D
Production	BiDi	600 x 300	Sharp Edge	D
Production Plus	BiDi	600 x 300	Normal	D
Billboard	BiDi	600 x 600	Normal	D
Billboard	Uni	600 x 300	Normal	D
Billboard Plus	BiDi	600 x 600	Normal	D
Billboard	BiDi	600 x 300	Normal	E
Billboard Plus	BiDi	600 x 300	Normal	E

Configure media

Before the printer will accept a print job, it must be configured for a specific media type. The currently-configured media type, if any, is displayed in the upper left corner of the control panel.

1. If the control panel displays the media type you intend to print, press the **Load** key and go to Load and print on rigid media on page 21. Otherwise, continue to the next step.

2. From the Front Page screen, press the **Configure** key.

    The **Select Media to Load** menu appears. The list of media ends with the option **Create Media Type.**

    ☼ **TIP:** Start by using one of the standard media types. If you are not using a standard media type, select the standard media type that most closely matches the media you are using. Then only if necessary, create a new media type using the standard type you selected as a starting point, and adjust it as needed.

3. Press a media name, or **Create Media Type.**

    *   If you pressed a media name, a list of settings appears.

    *   Next, if you pressed **Create Media Type,** the control panel displays a list of settings for you to configure.

    For each media type, the Media Wizard stores the following settings (as indicated, some settings apply to either roll-fed or cut sheet media only):

    *   Media Name — for user-defined media, use the alphabetic keyboard displayed on the control panel to enter the media name. (Standard media names cannot be changed.)

    *   Feed Method — Rollfed (with optional media handler installed) or Cut Sheet.

    *   Rollers — sets whether the Input and Output media rollers are used (yes) or not used (no) with the Flat Media setting (see Load and print on rigid media on page 21). When set to Yes, the rollers will move up or down as needed to be just above the surface of the media. When set to No, the rollers will move to their highest point and remain there.

    *   Weight — sets the media belt drive motor and media advance amount to handle Light (up to 22 kg (50 lb)) or Heavy (22-113 kg (50-250 lb)) media.

    △ **CAUTION:** The input and output tables are rated at a maximum load of 56.7 kg (125 lb). Do not exceed this maximum load.

    ✐ **NOTE:** The printer senses the weight of the media before printing begins. If a heavy board is detected while the printer is set to Light, the printer automatically switches to the Heavy setting. This cannot be changed during printing. Printing in Heavy mode is slower than in Light mode due to the slower belt and carriage speeds, but reduces the chance of damage to the media belt drive motor.

    *   Visible to Printer — if Yes, the media sensor and image sensor will be used. If No, the media sensor and image sensor will not be used (with clear films, for example).

    *   Print Mode — quality and direction settings (see Configure printing on page 14).

    *   UV Lamps — the intensity and shutters for each lamp can be changed to accommodate different media requirements and bulb life.

- Vacuum — this option turns on the vacuum fans, and displays ▲ and ▼ arrow keys on the control panel. Press the ▲ and ▼ arrow keys to raise or lower the fan speed for each zone (input zone, between the pinch rollers, and print zone). Observe the media as the fan speed changes. If the media is lifting off the belt, increase the fan speed. If the media advance seems impeded by the vacuum, decrease the fan speed.

- Printing Delay — press the ▲ and ▼ arrow keys on the control panel to increase or decrease the delay (seconds per print swath). To increase throughput, decrease the delay.

4. Press **Proceed** to load the media, or press **Cancel** to discard your changes.

Media Wizard

To view or delete settings for an existing media type, press the **Media Wizard** key. The Media Wizard also lets you create a media type without configuring it as the currently-loaded media.

Load and print on rigid media

📝 **NOTE:** The minimum length of rigid media that can be loaded and printed by the printer is 33 cm (13 in).

1. At the end of the Configure Media process (see Configure media on page 19), press the **Proceed** key on the control panel:

   OR

   from the Front Page screen, press the **Load Media** key.

   Before you can load, you must configure the media as explained in Configure media on page 19.

2. On the control panel menu, press one of the following media rollers options:

   ● Flat Media — if the rollers were set to "Yes" in the media configuration (see Configure media on page 19), the rollers will move up or down as needed to be just above the surface of the media. If the rollers were set to "No", the rollers will remain at their highest point and will not be used. In either case, the full imageable length of the sheet is available for printing.

   ● Warped Media, Hold Down — when a sheet is loaded, the leading edge is advanced so that it is underneath the output roller. Printing is allowed only until the trailing edge of the sheet has reached the input roller. The imageable area of the sheet is reduced by 65.4 cm (25.76 in) from both the leading and trailing edges.

   ● Short Media — enables printing on sheets that are not long enough to reach the output roller and thickness sensor at the same time. The media length can be less than 33 cm (13 in) but at least 11 cm (4 in).

   📝 **NOTE:** The media rollers are not lowered onto the media with any force or pressure, other than their own weight. They are designed to hold down lighter weight media with at most a moderate amount of warping. They may have no effect on heavier, badly warped media. For best results, use the flattest available media.

3. On the control panel, enter the approximate thickness of the media you are loading.

4. Load the sheet of media onto the input table, sliding it forward against the media alignment bar (under the printhead carriage rail), then left along the media alignment bar until the media touches the media fence.

5. Press the **Sheet Ready** foot pedal or button on the control panel, or **Cancel** to cancel the media load process.

   At this point you can also adjust the vacuum fans in each zone, and the printhead height clearance from the media. If the sheet is warped or not being held down, you may want to increase the vacuum or raise the head height. A lower head height reduces overspray, but increases the chance of the carriage or printheads striking the media.

   💡 **TIP:** To begin printing faster, initiate the UV lamps startup cycle by pressing the **Turn On Lamps** key on the control panel Front Page screen.

6. Select the media length from the list.

   The control panel asks for the number of sheets to feed.

7. Enter the number of sheets:

   ● Single sheet

   ● N-UP — for two or more sheets loaded at once across the width of the printer

   The control panel displays a summary screen of the settings you specified.

8. Press the **Proceed** (►) key.

   The control panel displays a confirmation message.

9. Press the **Proceed** (►) key.

   The Front Page screen appears.

10. Press the **Go Online** key.

11. Send a print job from the RIP.

    For multiple copy jobs ejected to the output side of the printer, the printer control panel will prompt for the next sheet a short time before the previous sheet is done printing. Load the subsequent sheet against the media alignment bar, and press the Sheet Ready foot pedal or control panel button. The printer prints on the next sheet and will use the same option settings on all of the copies in the print job.

Quick Load

If printing completes and the Front Page screen is displayed, you can still reload a sheet of the same media type and dimensions without reconfiguring the media. Use Quick Load or Load:

1. Press the **Load** key on the Front Page screen.

   The control panel displays a menu with a Quick Load and Load option.

   ● To load a sheet of media with the same media type with the same dimensions as the previous job, press the **Quick Load** key.

   ● To load a sheet of media with the same media type with the same dimensions as the previous job, but different flatness, thickness, or number of N-UP sheets, press the **Load** key. The control panel allows you to respecify these options.

2. Place the media onto the media drive belt, and push it flush against the media alignment bar, then left along the media alignment bar until it touches the media fence.

   At this point, the control panel allows you to adjust the vacuum fans and head height off the media.

3. Press the Sheet Ready foot pedal or **Sheet Ready** button on the control panel.

   The printer is ready to receive the next job from the RIP.

To load a new type of media, or a sheet with different dimensions, number of N-UP sheets, or other parameters, press the **Configure & Load** key on the Front Page screen.

Multi-sheet N-UP

Multi-sheet N-UP allows you to print a multiple-copy job on multiple sheets across the belt, and multiple rows of sheets, until the job is complete.

To print multi-sheet N-UP, load multiple sheets on the printer, then send a print job from the RIP with a quantity greater than or equal to the number of sheets you loaded. The printer will prompt you to load more sheets until the number of copies you specified has been printed. You can also print Stored Jobs as multi-sheet N-UP (see for details).

This type of printing works best with an image that has wide margins on all four edges, but edge-to-edge printing is also possible with the appropriate printer settings, and by carefully matching the dimensions of the image to the dimensions of the media sheets.

Margins

When printing a multi-sheet N-UP job, the image is positioned horizontally (left-right) as defined under the menu option: **Printer Settings > Margin Settings> Margins.**

Using the camera to locate the sheets

The on-carriage camera (digital imaging sensor) is used to locate the position of each sheet as part of the load process. To specify load options:

1. On the Front Page screen, press the **Settings** key.

2. From the Settings menu, press the **Measure Media** option.

   The Measure Media Frequency menu appears:

   - Measure only on first load — only the first row is measured, and those measurements are used for all subsequent rows. Use the alignment pins to locate the sheets in subsequent rows. This speeds throughput by eliminating the measurement step for each row.

   - Measure on all loads — each sheet in every row of sheets will be measured, and reported to the server. This aids in accurate placement of edge-to-edge images. In this mode, use of the alignment pins is unnecessary.

   - Don't measure media — does not measure the sheets, for fastest throughput. Use only if there are wide margins on all four sides. Use the alignment pins to locate the sheets.

3. Press a Measure Media option.

   When you select a Measure Media option, the **Measure Media Type** menu appears. This enables you to select a trade-off between image placement accuracy and throughput.

   - Minimal — measures the media width once, locates leading edge near the user side on subsequent loads.

   - Standard — measures the media width once, estimates skew by locating the leading edge near the user rand service sides on subsequent loads.

   - One Edge — measures the media width once, locates the left edge on subsequent loads.

   - Maximal — on every load, measures the media width at two points to estimate skew, finds the leading edge near the user side.

   If the print job has wide margins, you can increase throughput with Minimal or One Edge. For edge-to-edge printing, increase accuracy by selecting Standard or Maximal.

4. Press a **Measure Media Type** option.

   After you select a Measure Media Type option, the Printer Settings menu reappears.

"Incomplete" rows

You can print any number of copies in a multi-sheet N-UP job, even if the total number does not divide evenly into the number of sheets per row. Only the last row may have a different number of sheets.

For example: in a twenty-sheet job, you might be able to fit three sheets in each row, so you might print six rows of three sheets, plus one row of two sheets (6x3=18, 1x2=2, 18+2=20). If the last row is a partial row, load the sheets from the user end toward the service end.

Load and print on roll-fed media

Figure 2-1 Roll-fed media path
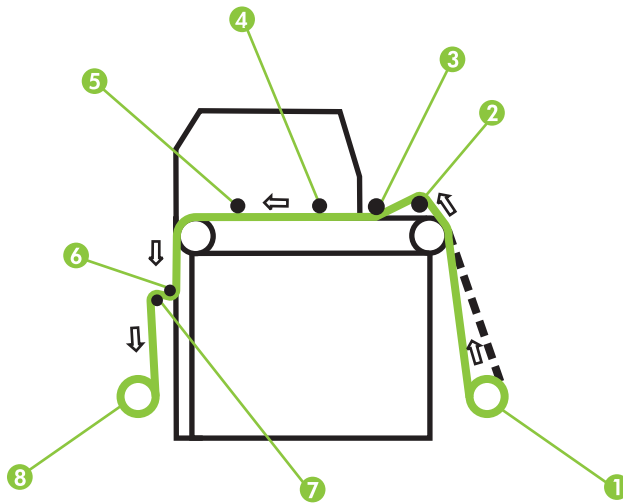
If the optional roll-fed media supply and takeup system is installed on the printer, you can print on roll-fed media.

NOTE: The first time that the roll-fed system is used, it must be enabled on the control panel menu. Select **Settings > Support Rollfed** to enable the roll-fed system.

1. If installed, detach the rigid media input and output tables from the printer, and set them aside.

2. If you will be using the takeup system, install the takeup spool, see (8).

3. Load the media centered onto the supply spool (1).

   NOTE: To prevent fingerprints from showing on printed output, wear gloves while handling the media.

4. Load the supply spool onto the supply system bracket.

   You can print on either side of the media by loading the spool so the media spools off the bottom of the roll or the top of the roll.

5. Configure the media as explained in . At the end of the Configure Media process, press the **Proceed** key on the control panel.

   OR

   If the media is already configured, from the Front Page screen of the control panel, press the **Load** key.

   The printer displays a menu with the following options:

   - New Load — loads a new media, discards previous settings.

   - Restore Loaded State — loads media using the previously-used settings when roll-fed media is already loaded in the printer but the printer is not in a loaded state. This can happen if the

printer goes to sleep or is rebooted, or if you press the Unload key on the front panel, but not physically remove the media from the printer.

Follow the procedure in the next sections that corresponds to the load option you choose.

New load

1. On the Select Thickness Units screen, press the option that corresponds to the units you will use.

2. On the Enter Media Thickness screen, enter the media thickness, or press the **Esc** key to use the default thickness.

3. As prompted by the control panel, remove the foam press roller (3), then press the **Proceed** (▶) key.

4. Pull the media from the roll, pull it over the foam lift roller (2) (the foam press roller (3) should not be in position yet) and lay it on the belt up to the input media roller (4).

5. On the control panel, press the upper (forward) **Advance Media** arrow key to advance the media, with the vacuum fans on.

    You may need to hold the media down on the belt until the vacuum grabs it.

    ● If using the takeup system, advance the media until it hangs on exit side down to the takeup roller. Do not tape the media to the core at this time.

    ● If not using the takeup system, advance the media at least past the output media roller (5). During printing, make sure that the media does not fall behind takeup rollers (6) (7) and (8).

6. On the control panel, press the **Turn Off Fans** key.

7. Hold the upper (forward) **Advance Media** key down for about five seconds.

    This will help smooth out wrinkles and equalize the tension of the media across the belt.

    Since the fans are off, the media should not advance. If the media moves, hold onto the media with your right hand while pressing the **Advance Media** key with your left hand.

8. On the control panel, press the **Turn On Fans** key.

9. Lower the input (4) and output media rollers (5) to their lowest positions.

10. Check for wrinkles in the media across the full length and width of the belt.

    If you see any wrinkles, turn off the fans and smooth out the wrinkles with your hand. Repeat steps 7 through 9, and optionally steps 4 and 5, until no wrinkles are visible.

11. Place the foam press roller (3) into operating position.

12. If you are not using the takeup system, go to step 19.

13. Align the cardboard takeup core to the media and tighten the collets to lock the core in place.

14. Lift the first dancer bar (6) (with the gears), and lock in the upper position.

15. Pull the media under the first dancer bar, over second dancer bar (7), and down to the printer side of takeup roller (8).

16. Looking down the length of the takeup roller from the user end, the roller rotates clockwise. Ensure that the media is wrapped as shown in Figure 2-1 Roll-fed media path on page 25.

17. Tape the end of the media to printer side of takeup roller, starting in the middle and working out to both ends.

    Be sure to maintain even tension across the width of the media.

18. Release the dancer bar locking lever.

19. Press the **Proceed** (►) key.

20. Enter the media length or press the **Esc** key for an undefined length.

    The printer measures the media width.

21. On the Front Page screen, press the **Proceed** (►) key.

    The Front Page screen appears on the control panel.

22. Press the **Go Online** key.

    The printer is now ready to receive a print job from the RIP.

Restore loaded state

1. As prompted by the control panel, remove the foam press roller, then press the **Proceed** (►) key.

2. Press the upper (forward) **Advance Media** key to advance the media to the takeup spool and/or past any printed area of the media.

3. On the control panel, press the **Turn Off Fans** key.

4. Hold the upper (forward) **Advance Media** key down for about five seconds.

5. On the control panel, press the **Turn On Fans** key.

6. Press the **Proceed** (►) key.

7. Check for wrinkles in the media across the full length and width of the belt.

    If you see any wrinkles, turn off the fans and smooth them out with your hand. Repeat steps 3 through 7 until no wrinkles are visible.

8. Place the foam press roller (3) into operating position.

9. If you are not using the takeup system, or if the media is already loaded in the takeup, go to step 15.

10. Align the cardboard takeup core to the media and tighten the collets to lock the core in place.

11. Lift the first dancer bar (6) (with the gears), and lock in the upper position.

12. Pull the media under the first dancer bar, over second dancer bar (7), and down to the printer side of takeup roller (8).

    Looking down the length of the takeup roller from the user end, the roller rotates clockwise. Ensure that the media is wrapped as shown in .

13. Tape the end of the media to printer side of takeup roller, starting in the middle and working out to both ends.

    Be sure to maintain even tension across the width of the media.

14. Release the dancer bar locking lever.

15. Press the **Proceed** key (▶).

16. Enter the media length or press the **Esc** key for an undefined length.

The printer measures the media width.

17. Press the **Proceed** key (▶).

The Front Page screen appears on the control panel.

18. On the Front Page screen, press the **Go Online** key.

The printer is now ready to receive a print job from the RIP.

Measure media options

Measure media (roll-fed) — for roll-fed media, you can choose between two levels of precision for finding the left (user end), and right (service end) edges of the media.

- When loading — locates the left and right edges only when loading a roll of media.

- Before each copy — locates the left and right edges of the media before each print. This enables the printer to compensate for any "drifting" of the media, and print the image at the correct location.

Stored jobs

When you send a print job to the printer, you can save the job automatically on the printer's hard disk drive, on a rotating first-in-first-out (FIFO) basis. You can "lock" a job to prevent it from being rotated out, but this reduces the amount of space available for subsequent jobs to be saved. You can also save a stored job without printing it until you print it from the control panel, or only print the job without saving it.

The printer can store up to ten sheet-fed or roll-fed jobs, with a total area of approximately 2.5 x 2.5 m (98.4 x 98.4 in). These jobs are retained on the printer's disk, even when the printer power is cycled on and off. When the number of stored jobs reaches ten, subsequent print jobs will be printed but not stored.

If a job is too large to be saved, it is simply discarded from memory after printing. If a complete print job has been received from the RIP and you pause or cancel the print, it will still appear in the Stored Jobs listing.

Stored Jobs can be viewed and managed from the control panel. The Front Page screen shows the stored jobs mode and the number of jobs stored and locked (protected from automatic deletion).

To print or manage Stored Jobs, press the **Jobs** key on the Front Page screen. This screen shows a thumbnail image of up to ten stored jobs, and four function buttons. Locked jobs are identified by a padlock icon on the thumbnail image.

- To view the properties of a Stored Job, or to print a Stored Job, press the job's thumbnail image. From the Stored Job property page, you can print, lock or unlock, or delete a print job:

    ◦ To print the job, press the **Print Job** key. The printer will prompt you for the number of copies to print. If you have multiple sheets loaded, each copy will print on a separate sheet, and the printer will prompt for additional sheets until the number of copies requested have been printed.

    ◦ To lock or unlock the job, press the appropriate key. Locking a job prevents it from being deleted, but subtracts from the available memory for Stored Jobs.

    ◦ To delete the job, press the **Delete Job** key.

- Press the **Job Status** key to view a log of stored jobs activity (up to the most recent 50 jobs).

- Press the **Job Storage Settings** key to specify how jobs are stored and printed. This setting is saved even when the printer is restarted.

    ◦ Print & Save — prints the job and saves it to disk.

    ◦ Save Only — saves the job to disk without printing it. In this mode, the background color of the Stored Jobs section on the Front Page screen turns green.

    ◦ Print Only — prints without saving the job to disk.

- Press the **Print Two Sides** key to set up a two-sided print job using Stored Jobs, The printer will prompt you to select a Stored Job for the front and back of the sheet. After printing, side one of the sheet will be ejected to the input side of the printer, and you will be prompted to flip over and reload the sheet for printing side two. After printing, the sheet will be ejected to the output side of the printer.

- Press the **View Storage Memory Status** key to view the image area that can be stored at various resolutions.

☀ **TIP:** If you want to print on a media type that is different from the media specified in a Stored Job, or if you will re-linearize the printer, do not reprint the Stored Job. For the best color, re-send the job from the RIP instead.

When printing a job, the printer checks that the currently loaded media matches the media type that was loaded when the job was stored. If different, a warning is raised. You can choose to not print the job, or ignore the warning and print anyway. Printing on a media type that is different from the original media may result in a color shift.

Load ink

The amount of ink in the ink supply box is tracked by the printer software and recorded on its corresponding profiler. The control panel displays a bar graph with the ink levels in each ink box. When the control panel shows that the ink is low, replace the ink box with a full ink box of the same color, and replace the profiler.

NOTE: You may want to wear gloves (latex or nitrile) and have a paper towel handy to catch the drops of ink that may fall from the ink tube connection during this procedure.

Unload an empty ink box

1. Remove the profiler.

2. Lift the box out of its holder and turn the box upside down so the ink tube is pointing up.

3. Grasp the metal connector where the ink tube enters the printer, and push it up to release the ink supply tube.

4. Remove and dispose of the ink box (refer to the MSDS for proper disposal procedures).

Load a full ink box

1. Open the new ink box and locate the supply connector.

2. Locate and remove the profiler, and set aside until step 5.

3. Vigorously shake the ink box for one minute, invert and install the ink box into position in the holder, so the ink supply tube is at the bottom of the box.

   NOTE: The pigments in the inks settle to the bottom of the ink box during storage. To avoid inaccurate color in prints, invert and vigorously shake the ink box for at least one minute before installing it into the printer.

4. Insert the ink tube connector into the metal connector on the printer.

   The position for each ink color is shown on a label below each ink box and next to the profiler docking station.

5. Install the profiler in the corresponding docking station slot.

NOTE: The printer's ink filters will eventually become clogged and need to be replaced. You can view the volume of ink that has passed through each filter by going to **Menu > Tools > Maintenance > Ink Filter Counts**. The service technician will reset these counts after replacing the ink filters.

Printing tips

- Rigid cut-sheet media — use only flat, unwarped, undamaged sheets, with parallel opposite edges and 90° corners.

- Curing continues for 24-48 hours — the UV ink will continue to cure for a day or two after printing. Maximum durability and adhesion is achieved when the ink is fully cured.

- Pausing printing — to pause printing, press the **Pause** key. While printing is paused, you can:

  - Change media settings (vacuum, print delay).

  - Pause-swap inks (see "Pause-swapping Ink," below).

- Do not attempt to adjust the vacuum/pressure system for the printheads. It has been factory adjusted for best performance.

△ **CAUTION:** Synthetic media commonly used for inkjet printing can build up a static charge, especially in environments with low relative humidity. This charge can pose an electrostatic discharge (ESD) hazard to persons, the printer, and other equipment. It can be safely discharged by draping a grounded chain or tinsel over the top of the media, or by wiping the media with a lint-free cloth moistened with isopropyl alcohol.

- Printing roll-fed media without the takeup — cured output is dry to the touch immediately, so roll-fed output can be allowed to collect on the floor (for example, during unattended printing) without using the takeup system, with no damage to the output. Output may also be trimmed as it is printed and advances past the media drive belt.

- Lighter, smaller media rolls — for lighter, smaller rolls of media, you can use the rigid media tables and media rollers to feed the media like rigid media. If you attempt this, use extreme caution to prevent the media from striking the moving printhead carriage.

Pause-swapping ink

You can replace one or more ink boxes during a print by pausing the printer:

1. On the printer control panel, press the **Pause** key.

2. Remove the old profiler.

   This signals to the printer that the ink box is being replaced.

3. Disconnect and remove the old ink box.

4. Install and connect the new ink box.

5. Install the profiler that was included with the new ink box.

6. Repeat steps 2 through 5 for any other ink boxes you want to replace.

7. On the printer control panel, press the **Resume** key.

3 Control panel

This chapter describes the functions of the control panel.

- <u>Overview</u>
- <u>Front Page</u>
- <u>Menu Tree</u>
- <u>Menus</u>

Overview

The touch-screen control panel shows you the printer's current status, and enables you to interact with the printer when changing media and ink, respond to an error condition, or configure options.

The control panel provides various forms of online user assistance:

The **?** button provides an explanation of the current function, with some guidance for what to do next.

Front Page
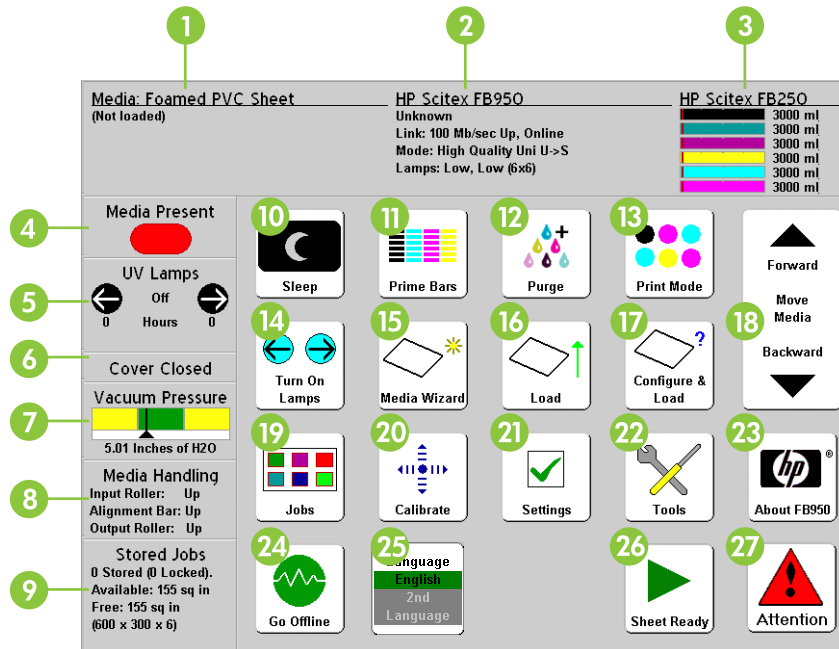
The Front Page is the primary control panel interface. The most common operations can be initiated from this screen.

1. **Media information** — media name, size, print area, printable length (press here for the Media Wizard)

2. **System information** (press here for the About screen)

   - Printer model

   - Printer name — the name of the printer as defined on the print server or under the menu at Printer Settings > Printer Name

   - Network status

   - Current print mode

3. **Ink levels** — numeric and graphic ink levels; line marks "low ink" level (press here for a detailed status screen)

4. **Media detector** (red=media out, green=media detected) — the detector can only detect the presence of white or light-colored media. Clear or reflective media cannot be detected.

5. **UV lamps status** (◄=user side, ►=service side) — black=off, yellow=on, blinking=warming up (press here for detailed lamp status)

6. **Cover status** (open or closed) — monitors the hinged top cover and reports whether it is open or closed.

7. **Vacuum Pressure** — graphical and numeric indication of vacuum pressure; green region is the nominal value.

8. Media Handling

    ● Input media roller up or down

    ● Media alignment bar up or down

    ● Output media roller up or down

9. Stored Jobs — displays status information for the Stored Jobs area in the printer's memory: number of Stored Jobs, amount of available and free memory. (Press here detailed memory available by resolution.) See Stored jobs on page 29 for details.

10. Sleep/Wake mode — Sleep powers down the UV lamps, ionizer bar, printheads, carriage, ink pumps, and media drive motors, but maintains vacuum to the printheads to prevent ink leakage. Wake powers up the printer components. The printer goes into sleep mode automatically after a user-defined period of time, and "wakes" automatically when a print job is received or a printer operation is performed from the control panel.

    NOTE: If printhead vacuum is ever lost, the ink in the printheads will seep onto the service station.

    To prevent ink leakage during an unexpected power outage, use the vacuum/pressure system's 24 volt auxiliary power supply and connect it to an uninterruptable power supply (UPS). See Appendix A for specifications. It is not necessary to connect the entire printer to a UPS, only the vacuum/pressure system needs to be connected to avoid ink seepage.

11. Print prime bars — fires all jets by drawing a set of lines called prime bars. This is a good way to inspect and prepare the jets for printing after they have been idle (see Front Page on page 37). You can also print a similar pattern called Print Jet-Out Lines, which shows which jets have been detected and replaced by AutoJet (see Print Jet-Out Lines on page 61).

12. Purge printheads — purges the printheads to help recover missing jets.

13. Print mode — sets print quality mode. See Configure printing on page 14 for instructions.

14. Turn On Lamps/Turn Off Lamps — enables you to manually switch the lamps on and off.

15. Media Wizard — displays the Media Wizard.

16. Load (visible when media is not loaded) — loads media. See Load and print on rigid media on page 21, or Load and print on roll-fed media on page 25 for instructions.

17. Configure & Load — configures the printer for a media type. See Configure media on page 19 for instructions.

18. Move media forward/backward — press the ▼ key to advance the media forward. Press the ▲ key to reverse the media back onto the supply spool.

19. Jobs — print and managed Stored Jobs. See Stored jobs on page 29 for instructions.

20. Calibrate — displays the Calibrate Printer menu.

21. Settings — displays the Printer Settings menu.

22. Tools — displays the Tools menu.

23. About — displays the embedded software version, and buttons to display detailed system information, the job log with ink usage, and software license agreement.

24. Online/offline switch — switches network communications on and off between the printer and RIP.

25. Language selector — if installed, switches the control panel language between English and the alternate language.

26. Context specific buttons — the control panel buttons displayed change as required by the current state of the printer or process.

27. Attention messages — blinks on the control panel when the printer detects an error condition, potential error condition, or when you make a change that requires recalibration or other action to ensure best print quality.

The **ATTN** (Attention) key blinks on the control panel when the printer detects an error condition, potential error condition, or when you make a change that suggests recalibration or other action to ensure best print quality. There are two types of ATTN messages:

- Actions — the printer has detected an error condition that stopped printing or will prevent printing from starting. You must correct the error before the printer will be ready to print.

- Warnings — the printer has detected a condition that, if left unaddressed, could result in substandard prints or a condition that will require an action before printing can continue. Any action on your part is optional. Printing is not interrupted for a Warning message.

When the printer issues one of these messages, the ATTN key will blink. Press the ATTN key to display a list of message titles, and select a title to display a detailed cause-and-recovery screen.

If you choose to not correct a Warning condition and resume printing, the ATTN key will remain displayed, but will not blink until the printer issues a new Warning or Action message. The messages can be dismissed by correcting the condition, or by pressing the applicable key on the detail screen.

☼ **TIP:** The ATTN key is displayed in Novice Mode. To disable the ATTN key, switch to Expert Mode. Expert mode routes most messages to an Actions & Warnings menu option. In this case, it is your responsibility to monitor these messages via the menu, since the ATTN key will not appear. See Warnings & Actions on page 48.

Menu Tree

This menu tree reflects version 4.30 of the embedded printer software. Refer to the Release Notes for more recent versions. Options marked with (*) are dynamically hidden depending on the printer mode.

Calibrate Printer

- Auto Calibrations

  - AutoBidi Calibration

  - AutoH2H Calibration

  - AutoJet Calibration

  - Full AutoSet

  - AutoSet Summary

- Manual Calibrations

  - Manual Bidi Registration

  - Printhead X Calibration

  - Manual Jet Mapping

  - Jet Status Lines

  - Media Feed Calibration

  - Print Jet-Out Lines

  - Default Registration Data

- *AutoTune (Rollfed printing only)

Printer Settings

- *Special Modes (sheetfed printing)

  - Edge-To-Edge (Sides Only)

  - Edge-To-Edge (All 4 Edges)

- Margins

- *Space Between Prints (Rollfed)

- Print Position

- *Measure Media

- Print White Space

- Head Height off Media

- *Eject Sheets to Input Side (Sheetfed)

- Purge Type

- Top Gutters

- Quality Check

- Sleep Wait Time

- Expert/Novice Messages

- Localization

    - Units of Measure

    - Time Format

    - Date Format

    - Vacuum Pressure Units

    - *Language (if second language present)

    - *Delete Language (if second language present)

- Use Thickness Sensor

- Use Ionizer Bar

- Low Ink Warning

- UV Lamps Idle Time

- Support Rollfed

- *Rollfed Media Control (if roll-fed is enabled)

- Use Service Station Float

- Printer Name

- Restore All Defaults

Tools

- System Information

- Maintenance

    - Access Printheads

    - Perform An Air Purge

    - Print Recover Jets Pattern

    - Manually Clean Heads

    - Print Jet-Out Lines

    - Print Media Skew Lines

    - Change UV Lamp Bulb

    - Ink Filter Counts

- ◦ Clean Bottom of Carriage

- ◦ Printheads Procedures — Load Ink In All Heads, Fill Heads with Ink, Empty Heads (Fill with Air)

- ● User Diagnostics

  - ◦ Printhead Jet Statistics

  - ◦ VideoNet Status

  - ◦ VideoNet Connection

  - ◦ Carriage Motion

  - ◦ Calibration

  - ◦ Verify H2H Y Alignment

  - ◦ Vacuum Pressure

  - ◦ Open Loop Actuator Test

  - ◦ Open Loop Service Station Test

  - ◦ Hard Drive

  - ◦ Warnings and Actions List

  - ◦ Error History

  - ◦ Log Error History

  - ◦ Log System Info

*Warnings & Actions (In Expert Mode only)

Service Printer (for service provider use only)

Print Menus

Menus

The printer's less-often used functions are accessed via the menus. The printer has these menus and functions:

- [Calibrate Printer](#)
- [Printer Settings](#)
- [Tools](#)
- [Warnings & Actions](#)
- [Service Printer](#)
- [Print Menus](#)

Calibrate Printer

To display this menu, press the **Calibrate** button on the Front Page screen. For instructions on using these options, see Chapter 4, [Calibration on page 49](#) .

- Auto Calibrations — see [Auto calibrations on page 53](#) for instructions.
    - Auto Bidi Calibration — ensures that every working jet fires a pixel at precisely the same location, in both directions of travel
    - Auto H2H Calibration — aligns the printheads relative to each other
    - AutoJet Calibration — locates and substitutes missing jets for working jets
    - Full AutoSet — runs AutoJet, AutoBiDi, and AutoH2H in sequence
    - AutoSet Summary — when enabled, a table of the results of the Full AutoSet calibration is printed after the AutoSet test patterns. When you enable the AutoSet Summary, you can show or hide the detailed calibration data.
- Manual Calibrations — allows you to calibrate the printer visually, without the printer's digital imaging sensor. Inaccurate judgments by the operator during these tests could result in substandard output. See [Manual calibrations on page 54](#) for instructions.
    - Manual Bidi Registration
    - Printhead X Calibration
    - Manual Jet Mapping — the manual version of AutoJet
    - Jet Status Lines — prints the Manual Jet Mapping pattern without running the calibration
    - Media Feed Calibration

- Print Jet-Out Lines — prints a version of the prime bars, in which missing jets that are replaced are marked with a black square.

- Default Registration Data — resets all registration data. Since there is no registration data after running this option, all printhead calibration values must be reestablished by running the calibrations.

- AutoTune (roll-fed media only) — schedules jet maintenance to run automatically after a certain number of prints have printed. See for instructions.

Printer Settings

To display this menu, press the **Settings** button on the Front Page screen. Printer Settings enables you to set many options that control how the printer operates. Settings saved by the Media Wizard are indicated by an asterisk (*).

- Special Modes (sheet-fed) — with one keypress, sets multiple parameters necessary to print in one of two Edge-to-Edge modes:

  - Edge-to-Edge (Sides Only)

  - Edge-to-Edge (All 4 Edges)

- *Margins:

  - Right and Left Margin — sets the amount of blank space for the right and left margins, between 6-127 mm (0.25–5 in) for roll-fed media, and between 0-127 mm (0–5 in) for rigid cut-sheet media.

  - Leading Margin — defines the margin on the leading edge of cut-sheet media, between 0-38 cm (0–15 in).

  - Trailing Margin — defines the margins on the trailing edge of cut-sheet media, between 0-38 cm (0–15 in).

  - Overprint — the distance beyond the edge of the media to print, to help avoid a blank strip if the sheet is slightly skewed, not perfectly rectangular, or other error is present. You can specify a separate value for the left and right margins, and leading and trailing edges.

NOTE: If you load roll-fed media after printing on cut-sheet media, the printer automatically resets the margins to 6 mm (0.25 in). You can still change them at any time.

TIP: You can position an image anywhere on the media by setting the right margin (horizontal or x distance from the right edge) and leading margin (vertical or y distance from the leading edge). Since the image appears upside down as it emerges from the printer, the upper left corner of the image will appear at this point.

- Space Between Prints (roll-fed) — sets the blank space between print jobs, between 0–25 cm (0–10 in).

- Print Position — when the printed image does not span the entire width of the media, positions the printed image flush left (nearest the control panel or user side), flush right, or centered on the media.

- Measure Media (sheet-fed) — for cut-sheet media, you can choose various levels of precision for finding the left (user end), right (service end), and front edges of the media. First, the printer prompts you to select a measurement frequency (trade-off between precision and speed):

    ◦ Measure only on first load — measure only once, after you configure the media; best for fast throughput when precise image placement is not required or when using the media alignment pins

    ◦ Measure on all loads — best for precise image placement, such as for N-UP and edge-to-edge printing

    ◦ Don't measure media — best for fast throughput when precise image placement is not required and there are very wide margins around the image

  After you select one of these options, the printer prompts you to select a measurement type:

    ◦ Minimal — measures the width of the media once and finds the front right edge; no skew detection

    ◦ Standard — measures the width of the media once, and finds the front edge in two places to estimate skew

    ◦ One Edge — measures the user- and service-end edges on the first sheet, user-end edge only on subsequent sheets, and the front right edge (no skew detection). For single-sheet jobs only, not available for multi-sheet N-UP. Works best on jobs with wider margins.

    ◦ Maximal — measures the width of the media in two places to estimate skew

    Choose Minimal for fastest throughput, Maximal for greatest precision and skew detection when printing edge-to-edge.

- Measure media (roll-fed) — for roll-fed media, you can choose various levels of precision for finding the left (user end), and right (service end) edges of the media.

    ◦ When loading — locates the left and right edges only when loading a roll of media.

    ◦ Before each copy — locates the left and right edges of the media before each print. This enables the printer to compensate for any "drifting" of the media, and print the image at the correct location.

- Print White Space — provides the option of causing the printer to advance the media past white space in the document file without the usual "printing" carriage motion. The printer will finish curing any printed areas before skipping white space. Skipping the white space increases the printer's effective speed.

- Head Height off Media — automatically raises the rail to set the printhead clearance from the media, at the height you specify. A lower height reduces overspray, but increases the chances for a head strike on the media. Bidi calibration is automatically adjusted for changes in this value.

- Purge Type — sets the purge type used when the Purge key is pressed from the Front Page screen, Standard or Performance. Performance is more effective, but uses more ink compared to Standard.

- Eject Sheets to Input Side (sheetfed) — after printing, reverses the media feed and ejects the printed sheet out the input side. This makes it possible for the operator to perform all operations on the input side of the printer, and makes the workflow for two-sided printing more efficient. (Two-sided printing of Stored Jobs always ejects out the output side. See for details.)

- Top Gutters — allows you to turn On or Off the gutter data at the top edge of the print, which shows the job name, ink, media, date and time printed, print mode, lamps setting, printer, embedded software version, plus write-in blanks for other data.

- Quality Check — determines how AutoTune errors are handled (see AutoTune on page 52).

- Sleep Wait Time — sets the period of time to wait for a print job before going into Sleep mode.

- Expert/Novice Messages — Novice mode presents an ATTN (Attention) key with Warnings (alerts that do not prohibit printing) and Actions (conditions that require user intervention before printing can proceed). Expert mode presents Actions only, presents fewer "press Proceed" prompts after an Action has been addressed. The default is Novice mode.

  When in Expert mode, active Warnings and Actions can be displayed by selecting Warnings & Actions from the menu, since Warnings will not cause the ATTN key to appear in Expert mode.

- Localization — sets English or Metric units of measure, Time and Date formats, and Vacuum Pressure Units, for data displayed by the control panel. User interface Language options (select, delete) are available if the second language option is installed.

- Use Thickness Sensor — sets whether to use the automatic media thickness sensor, or to prompt you to manually enter the thickness.

- Use Ionizer Bar — sets whether to use the ionizer bar to reduce the electrostatic charge on synthetic medias (the default setting is on or enabled). You may want to disable the ionizer in humid environments where electrostatic charge is not present on the media, or to reduce the wear on the ionizer's discharge electrodes. The ionizer bar is powered on only during media load, printing, and when the lamps are on.

- Low Ink Warning — defines the amount of ink remaining in the ink box supply at which the printer will display a "low ink" message on the control panel.

- UV Lamps Idle Time — sets the amount of time the lamps will stay on after printing before they are automatically turned off by the printer. The idle time can be set from 1 to 15 minutes. Increase the idle time if you are printing several jobs and waiting for the lamps to warm up between prints. Decrease the idle time if printing single jobs.

- Support Rollfed — sets whether the printer supports cut sheet media only, or cut sheet and roll-fed media.

- Rollfed Media Control — if media feed errors occur during roll-fed printing, you can now switch between Method A (standard media feed parameters) and Method B (alternate parameters) to correct the media feed.

- Use Service Station Float — when enabled, the printer checks the float switch inside the waste ink reservoir to determine when it needs to be emptied and display a control panel message for the operator to empty it. When disabled, the printer tracks the amount of ink used during printhead servicing (purges and primes) to determine when the reservoir should be emptied. This setting is enabled by default.

- Printer Name — displays a keypad to change the printer name displayed on the control panel and RIP.

- Restore All Defaults — restores all Printer Configuration settings to their factory default values. Printhead calibration values are not reset by this option.

Tools

To display this menu, press the **Tools** button on the Front Page screen.

- System Information — displays current status information for the printer.

Maintenance menu:

- Access Printheads — moves the printhead carriage to the center of the rail for inspection.

- Perform An Air Purge — purges the printheads with air to clear ink clogs. You can select the printheads to purge, and whether to perform a Standard or Performance purge (the Performance purge is more effective but expels more ink).

- Print Recover Jets Pattern — prints a special pattern designed to recover missing inkjets. After printing this pattern, the prime bars are printed.

- Manually Clean Heads — positions the printhead carriage to enable you to manually wipe the printheads with a lint-free cloth soaked with printhead flush solution. See Manually clean the printheads (bi-weekly) on page 71.

- Print Jet-Out Lines — prints a version of the prime bars in which missing jets that are replaced are marked with a black square.

- Change UV Lamp Bulb — moves the carriage to the center of the printer and raises output roller to allow you to change the bulbs, and allows you to reset the lamp's elapsed operating time clock to zero. The printer displays a warning message when the UV lamps have been in service for a certain period. They should be replaced when they are no longer curing the ink. To view the total operating time for each lamp, press the **Status** key on the Front Page, and advance to the page where this is listed.

- Clean Bottom of Carriage — cleans the bottom of the carriage between the printheads, where ink and debris builds up over time.

  After the bottom of the carriage is cleaned, the printer repositions the carriage and prompts the operator to clean the service station wipers. Doing so will help ensure that the wipers will effectively clean the printheads and avoid pushing debris from cleaning the bottom of the carriage into the ink jets. See Clean bottom of carriage (monthly) on page 78 for instructions.

- Printheads Procedures

  ◦ Load Ink in All Heads — fills all printheads with ink (used during installation).

  ◦ Fill Heads with Ink — fills the printheads that you choose with ink.

  ◦ Empty Heads (Fill With Air) — fills the printheads with air.

User Diagnostics menu:

User Diagnostics presents an interactive troubleshooting program to diagnose problems before calling technical support. It walks you through a series of tests and checks for certain printer functions. The printer asks you to make observations or run simple tests to help it diagnose problems and suggest corrective actions. It has the following sections:

- Printhead Jet Statistics

- VideoNet Status

- VideoNet Connection

- Carriage Motion

- Calibration

- Verify H2H Y Alignment — verifies whether the print heads are aligned with each other (in the horizontal or Y-axis dimension) in-line or staggered, by printing a test pattern. If the lines print on top of each other, the heads are in-line; if they print interleaved with each other, the heads are staggered. The current Y alignment is shown in the About screen (to access it, press the printer name in the top center of the Front Page screen).

- Vacuum Pressure

- Open Loop Actuator Test

- Warnings and Actions List — table of all actions and warnings with cause and recovery

- Error History — displays a list of errors that have occurred since the printer was last powered up.

- Log Error History — writes a file containing all of the errors that have occurred on the printer since the printer was put into service, for troubleshooting by technical support personnel. The file is saved on the computer running the HP RIP Software at:

  C:\PROGRAM FILES\HP-RIPSW\LOGS\C3.TXT

- Log System Info — general system events, including head motion failures and printhead purges, are now saved to a log file for troubleshooting by technical support personnel. The file is saved on the computer running the HP RIP Software at:

  C:\PROGRAM FILES\HP-RIPSW\LOGS\C3.TXT

  Alternatively, the log can be printed (**Service Printer > Print Info Pages**) and mailed or faxed.

Warnings & Actions

When in Expert mode, any current Warning, Change, and Action messages can be displayed by selecting Warnings & Actions from the menu. When in Novice mode, press the ATTN icon on the Front Page screen to view these messages.

Service Printer

These functions are primarily for factory, service, and technical support use.

- Set Head Vacuum — enables you to reset the printhead vacuum level. Not recommended without guidance from HP technical support.

Print Menus

This option prints all of the menu options in a hierarchical tree format for reference.

4 Calibration

This chapter explains how to calibrate the printer for the best possible output:

- When to calibrate

- AutoJet

- AutoTune

- Auto calibrations

- Manual calibrations

- Linearization

When to calibrate

When to run	Calibration	Function
When printing a large group of roll-fed print jobs	AutoTune	Automatic jet maintenance during extended printing of roll-fed print jobs.
When loading a new media (but not when loading a new roll of the same media)	Linearization (see HP RIP Software documentation)	Linearization of colors.
Horizontal Banding	Media Feed	Calibrates the media advance.
Poor output quality (apparent misregistration of colors, banding)	Auto Calibrations	Calibrates the position of ink droplets in relationship to each other and corrects for individual jets not operating properly.. You can also run the Manual Calibrations if necessary.
When printheads have been moved or replaced (by an authorized service provider)	Auto Bidirectional or Manual Bidirectional, and Head-to-Head	Head calibrations. Run Manual when calibrating transparent or other media that the onboard digital image sensor cannot calibrate.
If Auto Calibrations do not improve print quality, or if printing on transparent or other media that cannot be detected by the printer	Manual Calibrations	Aligns printheads, allows you to map out specific inkjets. Not normally needed except when printing on "invisible" media.

AutoJet

AutoJet detects individual inkjets that are misfiring or not firing at all. During subsequent printing, the printer compensates for these jets by using other jets in their place, ensuring maximum print quality without reducing print speed.

You can also identify and map missing jets manually from the Manual Calibrations menu (see Manual Jet Mapping on page 58). You may want to manually map weak or misdirected jets that AutoJet does not detect and substitute.

Jet replacement is not available in Billboard mode.

To run AutoJet:

● Select AutoJet Calibration from the Auto Calibrations menu (see Auto calibrations on page 53), or

● Run AutoJet automatically with the AutoTune scheduler (see AutoTune on page 52")

☼ **TIP:** AutoJet does not work with transparent media, nor with many translucent media. In this case, run Manual Jet Mapping, or map jets on opaque media before loading transparent/translucent media for printing.

1. Press the **Calibrate** key from the Front Page screen, then press **Auto Calibrations > AutoJet Calibration** in the menu.

2. The printer prints the AutoJet test pattern.

3. The printer reads the AutoJet test pattern and maps any missing jets to available working jets.

   The control panel shows the progress of this operation as the percentage completed.

4. The printer prints an AutoJet report.

AutoTune

AutoTune runs AutoJet maintenance automatically at intervals you specify. You can use the Quality Check Mode feature to handle AutoJet errors (with or without user intervention). AutoTune is shown on the menu only when roll-fed media is loaded.

1. On the Front Page screen, **Calibrate** key, then press **AutoTune** on the menu.

   The control panel displays the AutoTune status (off or current interval).

2. Press ▲ or ▼ to set the AutoTune interval.

3. Press the **Proceed** (►) key.

   The control panel displays a confirmation message:

   Setting completed.

4. Press the **Menu Out** key repeatedly until the Front Page screen appears. Press the **Online/ Offline** button to return the printer to the Ready state.

📝 **NOTE:** When AutoTune is enabled, it will be executed as scheduled regardless of whether you initiate it manually from the control panel.

Quality Check

When you run AutoJet manually, the software notifies you if there are any jet or alignment problems so that they can be addressed. When AutoTune runs AutoJet at scheduled intervals, you can use the Quality Check feature to handle AutoJet errors.

When Quality Check is enabled, if any missing jets are found that are not substituted by a working jet, or if the BiDi calibration has not been performed, the operator can be alerted by the control panel or the job can be routed to the Attention queue on the HP RIP Software.

1. On the Front Page screen, press the Settings key, then press Quality Check from the menu.

   The control panel displays the Quality Check options.

   ● Attended Mode — user must press **Proceed** (►) to acknowledge the error and print the job (if one is pending), or **Cancel** to cancel printing.

   ● Unattended Mode — no user acknowledgment of errors is required. When a job fails the Quality Check, a Warning message containing the reason that the job was canceled will appear in the Warnings and Actions queue.

   ● OFF — no quality check is performed, all jobs will print.

2. Select a Quality Check option.

3. Press the **Menu Out** key repeatedly until the Front Page screen is displayed. Press the **Online/ Offline** button to return the printer to the Ready state.

Auto calibrations

The printer's piezo printheads are aligned by the installer. Head and bidirectional calibrations should be necessary only rarely (for example, when the heads have been moved within the carriage or replaced).

The automatic calibrations apply X offsets (in the direction of carriage motion) to individual jets. The manual calibrations apply X offsets to the entire printhead. Because of this, the automatic calibrations are much more precise and yield better print quality than the manual calibrations.

1. Press the **Calibrate** key from the Front Page screen, then press **Auto Calibrations** in the menu.

2. Select one of the Auto Calibrations.

   ● AutoBiDi (bidirectional) Calibration — ensures that every working jet fires at precisely the same location (regardless of the carriage direction of travel).

   ● AutoH2H (head-to-head) Calibration — ensures that the printheads are in alignment relative to each other.

   ● AutoJet Calibration — locates and substitutes missing jets for working jets. This is the same calibration performed as when you press the AutoJet button on the Front Page screen (see AutoJet on page 51).

   ● Full AutoSet — runs all three calibrations in sequence. The printer prints a test pattern then reads it and makes the necessary adjustments or jet substitutions. After completing the calibrations, a report is printed that shows:

     ◦ Calibration results — a summary such as SUCCESSFUL CALIBRATION or an error message

     ◦ Header showing the date and time, software version, and printer type

     ◦ Calibration detail — the calibration data for each head. The AutoJet detail reports how many jets were mapped out by AutoJet, how many are permanently mapped out by the operator, and whether the head is usable (from a jetout standpoint) in the various print modes. The higher quality modes (Production and High Quality) use jet replacement, so they can print successfully with a greater number of jets out than can Billboard mode.

   ● AutoSet Summary — when enabled, a table of the results of the Full AutoSet calibration is printed after the AutoSet test patterns. When you enable the AutoSet Summary, you can show or hide the detailed calibration data.

Manual calibrations

When you run the calibrations from this menu, you evaluate the calibration test patterns visually and enter the calibration values via the control panel.

▲ Press the Calibrate key from the Front Page screen, then press Manual Calibrations in the menu.

The Manual Calibration menu consists of these options:

- Media Feed Calibration — calibrates the media advance accuracy for band-free printing. Visual and (for rigid media only) camera-assisted calibrations are available.

- Manual BiDi Registration — the manual version of AutoBiDi Calibration.

- Printhead X Calibration — the manual version of AutoH2H Calibration.

- Manual Jet Mapping — the manual version of AutoJet.

- Print Jet-Out Lines — prints a version of the Prime Bars in which missing jets that are replaced are marked with a black square.

- Default Registration Data — sets all registration data to zero.

After calibration and jet mapping, perform a linearization or color calibration (as supported by the RIP). See Linearization on page 63.

📝 **NOTE:** The manual BiDi and X head calibrations are time-consuming and can be error-prone, but is necessary when calibrating transparent media or other media that the printer's digital image sensor cannot calibrate.

Media Feed Calibration

This calibration allows you to calibrate the accuracy of the media advance. Inaccurate media advance can result in blank spaces between print swaths (too much advance) or overlapping swaths (too little advance). The Media Wizard stores this value by media type, and displays a media feed number (MFN), which you can record for subsequent entry.

The media feed number enables you to quickly specify a known good media feed setting without recalibration. For example, you could keep a list of media feed numbers by media type, or by media type and full, half, and nearly empty supply rolls.

1. On the Manual Calibrations menu, highlight **Media Feed.**

2. Press the **Menu In** key to select the option.

You can calibrate the media feed using the printer's image sensor or a metal ruler. The image-sensor based calibrations (sheet-fed media only) print a reference pattern, eject the media, and prompt you to rotate and reload the media so the pattern can be measured. To account for the slight variability in the media feed mechanism, repeat these calibrations three to five times to obtain the best calibration. The software allows you to position the patterns anywhere on the sheet so you can print multiple iterations on the same sheet. The ruler-based calibrations are recommended only for gross adjustments before using the image sensor.

990 mm (39 in) calibration — sheet fed only, uses the printer's onboard image sensor for precise adjustments. If the media feed needs larger adjustments, use the ruler-measured calibrations first. Use for maximum accuracy.

510 mm (20 in) calibration — sheet fed only, uses the printer's onboard image sensor for precise adjustments. If the media feed needs larger adjustments, use the ruler-measured calibrations first. Use to conserve media.

900 mm (34 in) calibration — prints a 900 mm (34 in) test pattern so you can verify its length with an accurate metal ruler. Cut the pattern from the media web, then measure and adjust the media advance as needed until the pattern is exactly 900 mm (34 in) long.

250 mm (10 in) calibration — prints a 250 mm (10 in) test pattern so you can verify its length with an accurate metal ruler. This is not as precise as the 900 mm (34 in) calibration, but it uses less media. Measure and adjust the media advance as needed until the pattern is exactly 250 mm (10 in) long.

Input MFN — enter the Media Feed Number that was displayed after a previous media feed calibration, to return to that setting without performing the calibration again.

Figure 4-1 Media feed calibration pattern
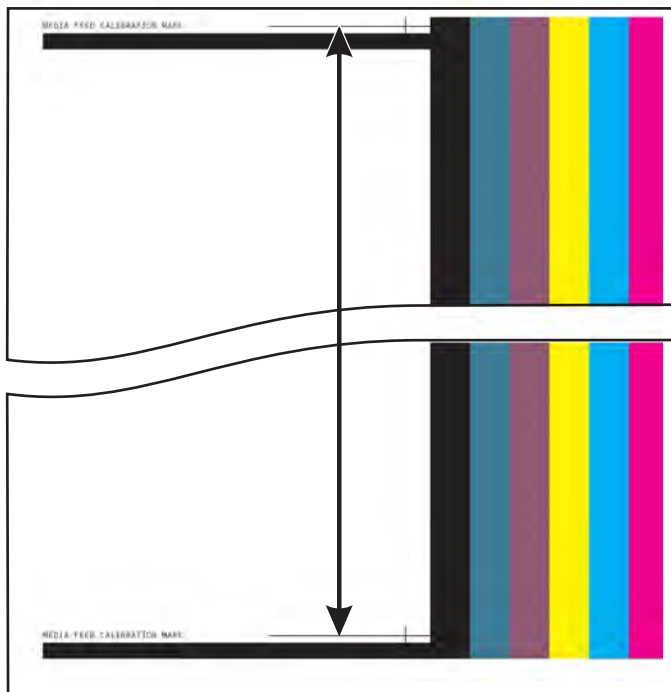
☼ **TIP:** To avoid cutting the 250 mm (10 in) pattern from the media web, copy the marks from the printed pattern to the long edge of a letter-size (or A4) sheet of paper. Then measure the transferred marks and adjust the media advance as needed until the marks are exactly 250 mm (10 in) apart.

Manual BiDi Registration

Bidirectional registration is a method to align each of the printheads so that dot placement is accurate in both directions along the X axis (along the direction of printhead carriage travel).

The bidirectional registration pattern consists of a series of vertical lines. Half the pixels in this pattern are printed in one direction, half of them in the other direction. When the pixels are accurately aligned, the pattern is clear. When the dots are not aligned, the pattern appears fuzzy and ill-defined.

NOTE: AutoBiDi Calibration is the automatic version of this calibration. Try AutoBiDi first before running this manual calibration (see Auto calibrations on page 53).

1. Press the **Calibrate** key from the Front Page screen, then press **Manual Calibrations** in the menu.

2. Press **Manual BiDi Registration** on the menu.

   The control panel displays this prompt:

   Print a manual bidi registration page?

3. Press the **Proceed** (►) key.

   The printer prints the calibration pattern you selected.

4. When the calibration page has printed, the control panel displays this prompt:

   Bidi registration Head 1: 0

5. Examine the BiDi Registration pattern for the current head, and determine which pattern is the closest to perfectly aligned.

   Use a printer's loupe (10x magnification or higher) to select the pattern, since the lines in the patterns may be difficult to see.

   Figure 4-2 Manual bidi calibration patterns
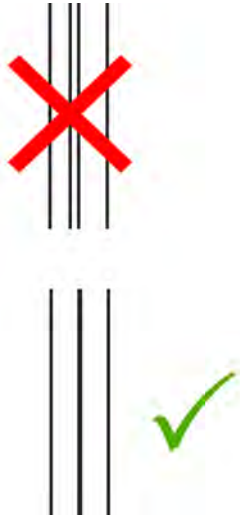
6. Press the ▲ or ▼ control panel keys repeatedly until the number next to the pattern that is closest to aligned perfectly is displayed.

   For example, if pattern +2.0 is the closest aligned, press the ▲ key to change the display to:

   Bidi registration Head 1: +2

   If a printhead is extremely out of alignment, there may be no pattern in alignment. Since the bars are nominally five pixels apart, you can add +5 or -5 to a pattern number to shift the colored bars right or left by one bar. Alternatively, you can perform the BiDi Registration repeatedly, which will move the head in smaller increments, until the head is aligned.

7. Press the ▲ key.

The control panel message increments the head number by one.

8. Repeat steps 4 through 6 for each of the heads.

   When you have entered registration values for all heads, the control panel displays this message:

   Registration Successful

Printhead X Calibration

Precise positioning of each drop of ink is essential for optimal print quality. This is possible only if you register all printheads in the printhead assembly to each other in the X direction (along the direction of printhead carriage travel).

This is a two-part process:

● Print a registration pattern.

● Enter the X registration data for each head.

📝 **NOTE:** This is the manual version of AutoH2H Calibration (see Auto calibrations on page 53).

1. Press the **Calibrate** key from the Front Page screen, then press **Manual Calibrations** in the menu.

2. Press **Printhead X Calibration** in the menu.

   The control panel asks whether you want to print a manual head-to-head calibration page.

   ● If you need to print a new calibration pattern, press the **Proceed** (▶) key. The printer prints a calibration page.

      When the calibration page has printed, the control panel displays this prompt:

      Take readings from left side of pattern.

   ● If you have a calibration pattern from a recent print, you can use it to calibrate the heads. Press the **Cancel** key and go to the next step. (For best results, do not use a previously-printed pattern, print a new pattern.)

3. Press the **Proceed** (▶) key.

   The control panel displays this message:

   X Direction Registration Head 2: +0

4. Examine the X direction pattern (in the left-hand group of patterns) for the current head, and determine which pattern of colored and black lines are the closest to perfectly aligned.

Use a printer's loupe or magnifying glass (10x magnification or higher) if the patterns are difficult to see.

Figure 4-3 Printhead X calibration patterns
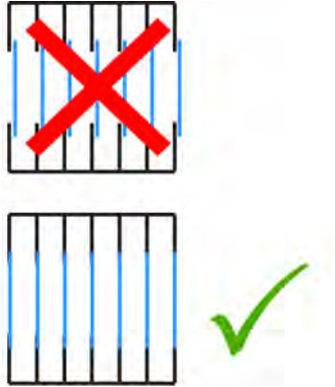
5. Press the ▲ or ▼ control panel keys repeatedly until the number next to the pattern that is closest to aligned perfectly is displayed.

For example, if pattern -1 is the closest aligned, press the ▼ key to change the display to:

X Direction Registration Head 2: -1

If a printhead is extremely out of alignment, there may be no pattern in alignment. Since the black vertical bars are five pixels apart, you can add +5 or -5 to a pattern number to shift the colored bars up or down by one black bar. Alternatively, you can repeatedly perform the X calibration, which will move the head in smaller increments, until the head is aligned.

6. Press the **Proceed** (►) key.

The control panel message increments the head number by one.

7. Repeat steps 4 through 6 for each of the heads.

When you have entered registration values for all of the patterns, the control panel displays this message:

Registration successful.

Manual Jet Mapping

Jets that are missing or misfiring are usually detected by the AutoJet calibration. Alternatively, you can map out jets manually using the Manual Jet Mapping function. You may want to manually map weak or misdirected jets that AutoJet does not substitute.

💡 **TIP:** AutoJet is the automatic version of this calibration (see AutoJet on page 51).

TIP: For best results, print the prime bars and purge the printheads as necessary to ensure the maximum number of working jets. See Check jet health on page 104 for instructions.

1. Press the **Calibrate** key from the Front Page screen, then press **Manual Calibrations** in the menu.

2. Press **Manual Jet Mapping** in the menu.

The control panel displays this message:

Print Jet Map?

If you have a calibration pattern from a recent print, you can use it to calibrate the heads. Press **Cancel** and go to the next step. Otherwise, press the **Proceed** (▶) key.

The printer prints a jet map test pattern.

If a line segment is missing or broken, the jet number shown next to it is out. A code letter if present provides further information:

- R — no replacement
- S — user disqualified "soft" jetout
- H — user disqualified "hard" jetout
- D — disqualified (and replaced) by AutoJet

3. When the calibration pattern has printed, the control panel displays a menu with the following options:

- Report individual soft bad jets — enables you to report a "soft" bad jet, which can be automatically reenabled if AutoJet finds it working.
- Report individual hard bad jets — enables you to report a "hard" bad jet, which will not be checked or reenabled by AutoJet.
- Clear individual bad jets — enables you to clear (mark as good) a jet.
- View current bad jets — lists the bad jets on a given printhead.
- Clear all bad jets for a head — clears (marks as good) all jets on a selected head currently marked as unusable.
- Clear all bad jets — clears (marks as good) all jets currently marked as unusable.

A "soft" bad jet is a jet that you believe is temporarily out, based on past performance. A "hard" bad jet is a jet that you believe is permanently out.

Select an option and follow the corresponding procedure below.

Report Individual Bad Jets

When you select Report Individual Bad Jets, the control panel displays the following prompt:

Head 1: Press Proceed to report a bad jet.

1. Press ▲ and ▼ to select a head number, then press **Proceed** (▶).

The control panel displays a numeric keyboard that you can use to enter the number of the bad jet.

2. Enter the jet number, then press the **Enter** key.

3. When you are finished entering jet numbers, press the **Esc** key.

The control panel displays the head selection message again.

4. Press ▲ and ▼ to select the next head number, then press **Proceed** (▶).

5. Repeat steps 2 through 4 for each head containing bad jets you want to report.

6. When you are finished reporting bad jets, press **Cancel**.

The control panel displays the previous menu.

Clear Individual Bad Jets

When you select Clear Individual Bad Jets, the control panel displays the following prompt:

Head 1: Press **Proceed** (►) to clear a bad jet.

1. Press ▲ and ▼ to select a head number, then press **Proceed** (►).

The control panel displays a numeric keyboard that you can use to enter the number of the bad jet.

2. Enter the jet number, then press the **Enter** key.

3. When you are finished entering jet numbers, press the **Esc** key.

The control panel displays the head selection message again.

4. Press ▲ and ▼ to select the next head number, then press **Proceed.**

5. Repeat steps 2 through 4 for each head containing bad jets you want to clear.

6. When you are finished clearing bad jets, press **Cancel**.

The control panel displays the previous menu.

View Current Bad Jets

When you select View Current Bad Jets, the control panel displays the following prompt:

Head 1: Press Proceed to view bad jets.

1. Press ▲ and ▼ to select a head number, then press **Proceed** (►).

The control panel displays a message that lists the bad jets by number.

2. Press **Proceed** (►) to return to the head selection screen.

3. Repeat steps 1 and 2 for each head you want to check for bad jets.

4. When you are finished viewing bad jets, press **Cancel**.

The control panel displays the previous menu.

Clear All Bad Jets for a Head

When you select Clear All Bad Jets for a Head, the control panel displays the following prompt:

Head 1: Press Proceed to clear all bad jets.

1. Press ▲ and ▼ to select a head number, then press ► (Proceed).

   The control panel asks you to confirm your selection.

2. Press ►.

   The control panel asks whether you want to clear the hard bad jets as well as the soft bad jets. A "soft" bad jet is a jet that you believe is temporarily out, based on past performance. A "hard" bad jet is a jet that you believe is permanently out.

3. Press ► to clear the hard and soft jets. Press X to clear the soft jets only.

   The control panel reports the number of jets that were cleared on the selected printhead.

4. Press ►.

   The head selection screen appears.

5. Repeat steps 1 through 4 for any other printhead, or press n to return to the menu.

Clear All Bad Jets

When you select Clear All Bad Jets, the control panel displays the following prompt:

Are you sure you want to clear ALL reported bad jets?

- Press **Cancel** to cancel this function, or

- Press **Proceed.** The control panel displays this message:

  Do you want to clear the hard bad jets?

- Press **No** to clear the soft bad jets only, or

- Press **Yes** to clear both the hard and soft jets.

The control panel displays this message:

All reported bad jets have been cleared.

▲ Press **Proceed** (►).

   When you have finished mapping jets, the following summary appears on the control panel:

   x soft jets currently reported bad. x hard jets currently reported bad. x new soft bad jets reported. x new hard bad jets reported. x previous soft bad jets cleared. x previous hard bad jets cleared.

   where x is the number of jets.

Print Jet-Out Lines

This option prints a version of the Prime Bars in which missing jets that are replaced are marked with a black square (1). This pattern is useful after performing Manual Jet Mapping, as it confirms both that all

missing jets have been mapped out and that all mapped-out jets have been successfully replaced. If a mapped-out jet has not been replaced, there will be no colored line through the black square (2).

Figure 4-4 Jet-out lines
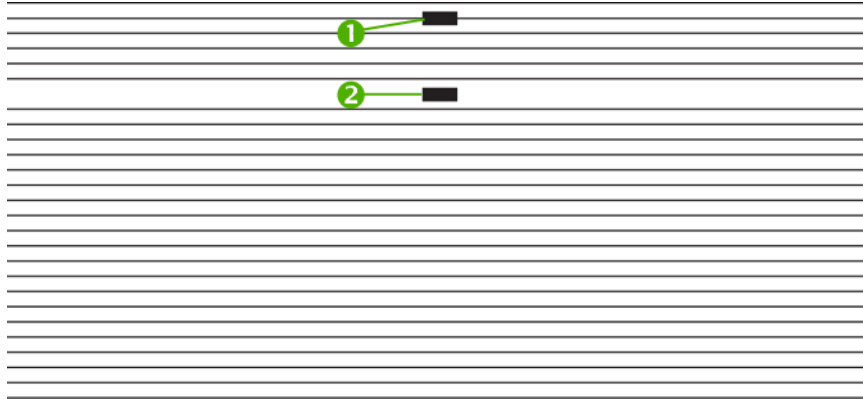
Default Registration Data

This option enables you to reset bidi, head–to–head, or jet mapping registration data. Since there is no registration data after running this option, all calibration values must be reestablished by running the calibrations.

Linearization

As the density of an image varies from highlights to shadows, or from lighter tints to darker tints, the printer should accurately reproduce these areas in a predictable, or linear, fashion. The process of linearization (or color calibration) involves printing and reading color test patches, and calibrating the printer to ensure that the expected and printed densities will match. This in turn will ensure optimal color matching.

You should perform a color calibration when:

- You notice a shift (change) in color output

- Changing media types

- Changing print mode (only if the most precise color matching is required)

- You are about to begin a long run of many copies of the same print

- You are about to print a job that you may have to print again at some point in the future and match the original color

Color calibration is a feature of the RIP connected to the printer. Refer to the documentation that accompanies the RIP for further information.

For maximum accuracy, the photodiode must be cooled by its fan before reading color patches. The control panel displays a countdown timer while the photodiode is being cooled by the fans.

5   User cleaning

This chapter explains user scheduled cleaning tasks.

Schedule of tasks

The parts and supplies required for these procedures may be purchased separately or in part number CQ168A, HP Scitex FB950 User Cleaning Kit. This will enable the best possible performance and minimize down time due to maintenance-related issues. The kit is designed for quarterly (every three months) use, but maintenance may be required more often with heavy printer usage (refer to the instructions for details). To order, see your HP reseller or representative.

The table below presents the user's cleaning tasks and a log form for you to track when each task is performed. The printer also displays maintenance reminders on the control panel according to this schedule.

Table 5-1 Schedule of cleaning tasks

Task and Frequency	Required supplies	Log (month/week)					
			1		2		3
		2	4	6	8	10	12
Clean and oil rail carriage-wheel strips (bi-weekly) on page 68	Oiled cloth Lint-free cloths						
Clean the rail encoder strip (bi-weekly) on page 70	Lint-free cloths						
Manually clean the printheads (bi-weekly) on page 71	Three lint-free cleaning cloths						
Clean and grease the service station wiper slide rails (monthly) on page 73	HP grease (packet)						
Clean service station wiper (monthly) on page 75	Lint-free cloths						
Clean carriage wheels (monthly) on page 76	N/A						
Clean bottom of carriage (monthly) on page 78	N/A						
Clean the home sensor (monthly) on page 79	Long cotton swab, isopropyl alcohol						
Replace the UV lamp filters (quarterly) on page 81	Lamp filter kit						
Replace the carriage-cover fan filters (quarterly) on page 82	Carriage fan filter						
Clean the electronics box fan filter (quarterly) on page 84	Electronics box fan filter						
Replace the service station wipers (quarterly) on page 86	Wiper blade						
Clean ionizer needles (quarterly) on page 87	N/A						
Drain waste ink from service station (quarterly) on page 88	N/A						
Clean media thickness sensor roller (quarterly) on page 89	Lint-free cloths						

NOTE: The maintenance schedules are approximate. Maintenance may be required sooner if printer use is more frequent than average or the environment is more dusty than average.

Clean and oil rail carriage-wheel strips (bi-weekly)

Ink dust and debris can accumulate on the carriage-wheel strips. These particles become obstacles and friction for the carriage wheels, which can appear as repeating output anomalies on the printed media.

1. Clean the three carriage-wheel strips well with Isopropyl alcohol.

2. Lubricate the top carriage-wheel strip from end to end on the rail (moving the carriage to clean the full length of the rail).

    The included oiled rags can be reused until there is no clear surface remaining on the rag (rags should be replaced quarterly). Clean these surfaces weekly or more frequently, depending on the amount of debris in the environment.

    △ **CAUTION:** Do not add additional oil to the lubrication cloths. The cloths are created to distribute a very thin film of oil. If too much oil is deposited, oil pockets can cause friction with the carriage wheels, which will produce output anomalies.

3. Lubricate behind the top area of the rail where the carriage wheels contact.

4. Lubricate the lower carriage-wheel strip from end to end on the rail (moving the carriage to clean the full length of the rail).

📝 **NOTE:** Even if the oiled cloth appears clean, it should be discarded quarterly so that the oil does not become sticky.
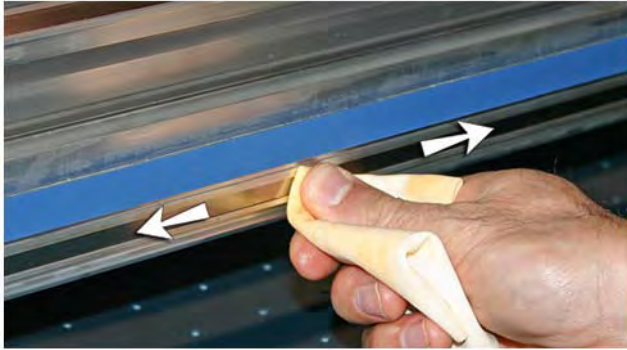
Clean the rail encoder strip (bi-weekly)

Ink dust and debris can accumulate on the encoder strip and block accurate reading of the encoder marks by the carriage encoder reader.

1. Using a lint-free cloth moistened with IPA (Isopropyl alcohol), wipe the top and bottom of the encoder strip, cleaning the entire length of strip.

    Use common rubbing alcohol, which is 70% isopropyl alcohol and 30% water.
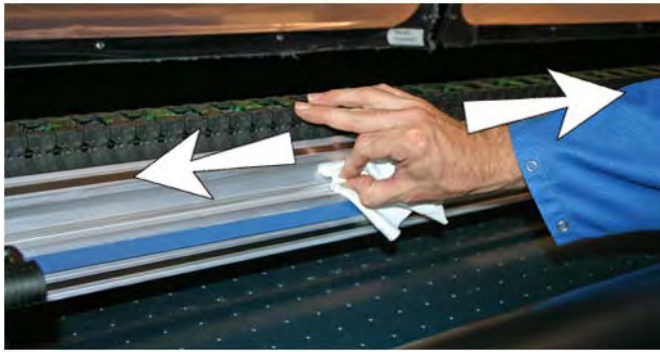
2. After cleaning most of the encoder strip, move the carriage to clean the remainder of the encoder strip.

Manually clean the printheads (bi-weekly)

1. Move the output-side table away from the printer.

2. From the control panel, select the following:

   Tools > Maintenance > Manually Clean Printheads

   This will cause the rail and output roller to raise to their highest positions and move the carriage out over the belt.

3. Open the output-side door to access the carriage.

   △ **CAUTION:** Wear protective gloves, such as latex, to protect your hands from being stained with ink.

   CAUTION: Wear safety glasses to protect your eyes from ink and head flush that may splash into your eyes.

4. Place a piece of scrap vinyl under the carriage (see A in the photo below). You can use any media that will protect the belt from dripping ink and/or head flush.

5. Fully saturate a lint-free cloth with head flush solution.

6. For each printhead, use a single finger on a clean area of the saturated lint-free cloth to wipe the printhead orifice from the input-side to the output-side of the carriage.

   To avoid pushing debris into the printhead orifice, make sure each wipe is done with a clean area of the cloth. The cloth should be fully saturated with head flush.
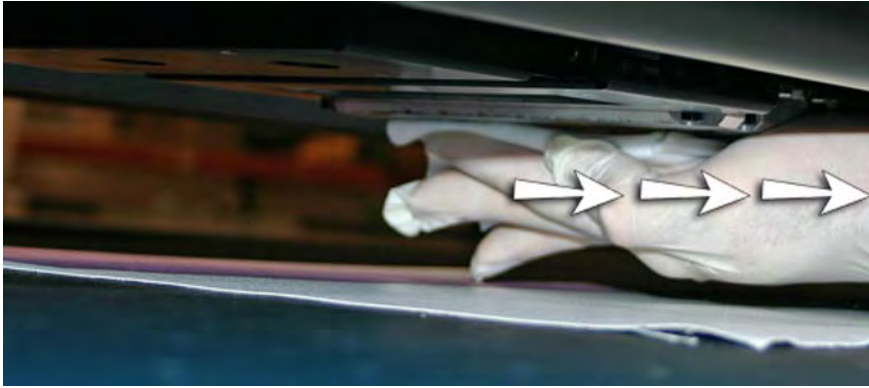
7. From the control panel, select PURGE.

8. When the purge completes, selecting PRIME BARS from the control panel.

9. Examine the prime bars for missing jets. If a printhead has missing jet, repeat steps 6 through 8.

Clean and grease the service station wiper slide rails (monthly)

Cleaning and lubricating the wiper rails keeps the wiper motion moving smoothly for best cleaning performance.

1. To access the service station, move the table away from the input side of the printer and access the wiper and wiper rails from the user-end as shown in the photo below.

2. Using a lint-free cloth, clean both of the wiper rails (A and B in the photo below) on both sides of the wiper carriage (C).

NOTE: For clarity, the service is shown without the end enclosure installed. However, the cleaning and lubrication can be done easily without removing the enclosure.

3. Apply a dab of grease (supplied) onto a cotton swab.

4. Apply the grease to both rails (A and B in photo below), making sure to grease the entire surface of the rail (top, bottom and sides).
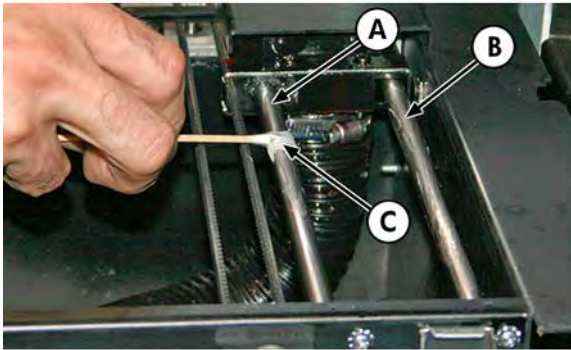
5. Move the wiper carriage (C in photo below) out to lubricate the rail surfaces on the other side of the wiper carriage (A and B).
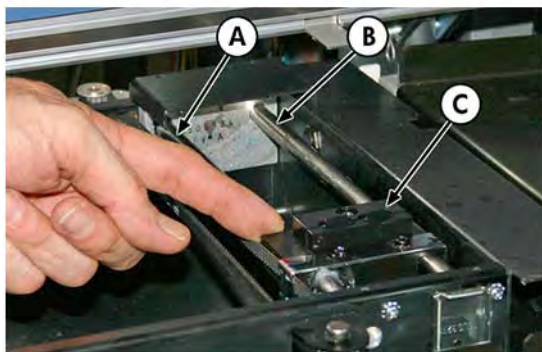
6. Move the wiper carriage back and forth on the rails to spread the lubricant evenly.

Clean service station wiper (monthly)

Clumps of ink can accumulate around the wiper blades. If not cleaned off, the wipers can press the clumps of ink into the printhead orifices, which can clog the printhead jets.

1. Wear cloves, such as latex, to protect your hands from ink.

2. Using a lint-free cloth saturated with head flush (do not use IPA) wipe both sides of the rubber wiper.
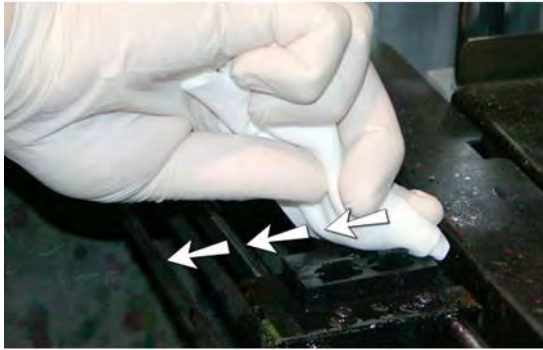
NOTE: For clarity, this procedure is shown with the end enclosure removed. However, it is not necessary to remove the enclosure for this cleaning.

Clean carriage wheels (monthly)

Ink dust and debris can accumulate on the carriage wheels. These particles become obstacles and friction for the carriage wheels, which can appear as repeating output anomalies on the printed media.

There are four carriage wheels to clean (A, B, C, D in the figure below). The lower pair of wheels (E, F) are not accessible.
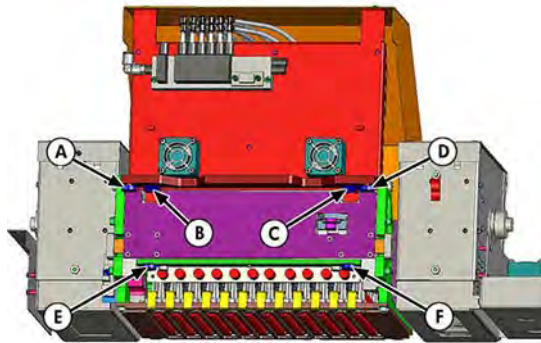
1. Raise the rail by selecting the following from the printer's menu: **Tools > Service Printer > Reset Home Positions > Reset Rail Home Position**.

2. Clean the top service-end wheel by placing an IPA (Isopropyl alcohol) moistened cotton swab against the side of the wheel (A in photo below) and moving the carriage back and forth about 10 cm (4 in).
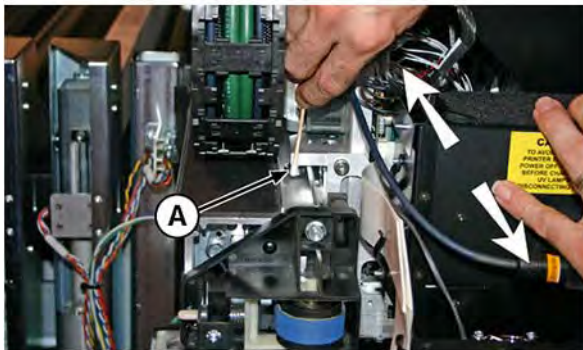
3. Clean the top user-end carriage wheel with an IPA moistened cotton swab.

4. Clean the top slanted wheels (B & C in the figure below) by inserting an IPA moistened cotton swab into the opening above the wheels (A) and moving the carriage back and forth.
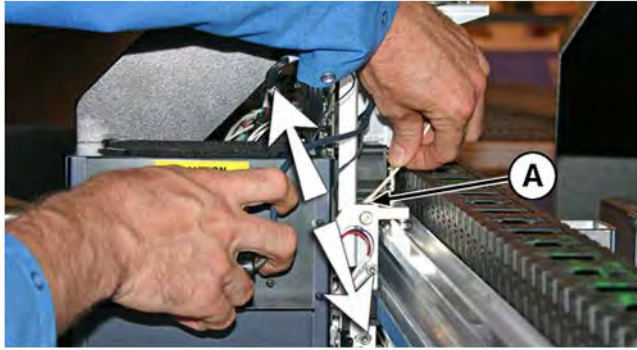
Clean bottom of carriage (monthly)

Clumps of ink and debris can accumulate around the printheads. This routine cleans as much of this surface area as possible. This reduces the possibility of ink debris being moved from the edge of the printhead orifice area onto the printhead, which can clog jets.

1. From the printer's menu, select **Tools> Maintenance > Clean Bottom Of Carriage**.

2. When the procedure completes, clean the wipers as shown in the section .

Clean the home sensor (monthly)

The home sensor is located on the user-end of the carriage between the lamp assembly and the carriage side plate (on the input-side of the carriage). Ink dust and debris can accumulate in the thin slits of the optical sensor and cause errors.

1. Open the output-side door.

   Opening the output-side door will disable the carriage servo, allowing the carriage to be moved manually.

2. Pull the carriage out from the end of the rail to access the home sensor more easily.

3. Locate the home sensor (A in photo below).

4. Locate the upper and lower slits of the optical sensor.
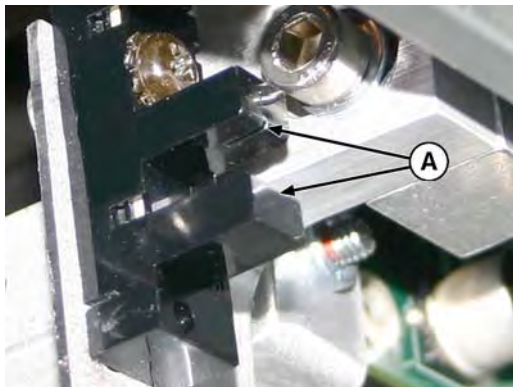
5. Using a long cotton swap that is saturated in isopropyl alcohol, clean the top and bottom slit by inserting the swap into the opening from the input-side of the sensor (versus inserting from the user-end of the sensor).

△ **CAUTION:** Inserting the swap from the user-end toward the service-end may push debris into the slits. Insert the swap moving from the input-side toward the output-side direction. Do not wipe across the slits, as this will force debris down into the openings.
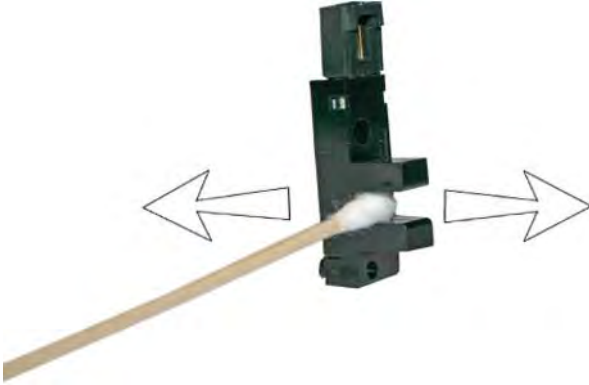
Replace the UV lamp filters (quarterly)

Lamp filters keep ink dust and other debris from entering the air-cooled lamp area. If the filters become clogged, the lamps may over heat, reducing the life of the bulbs. Over heating causes printing to stop, which can ruin a print job.

1. Remove the original air filters for both carriage lamps (B in photo below).
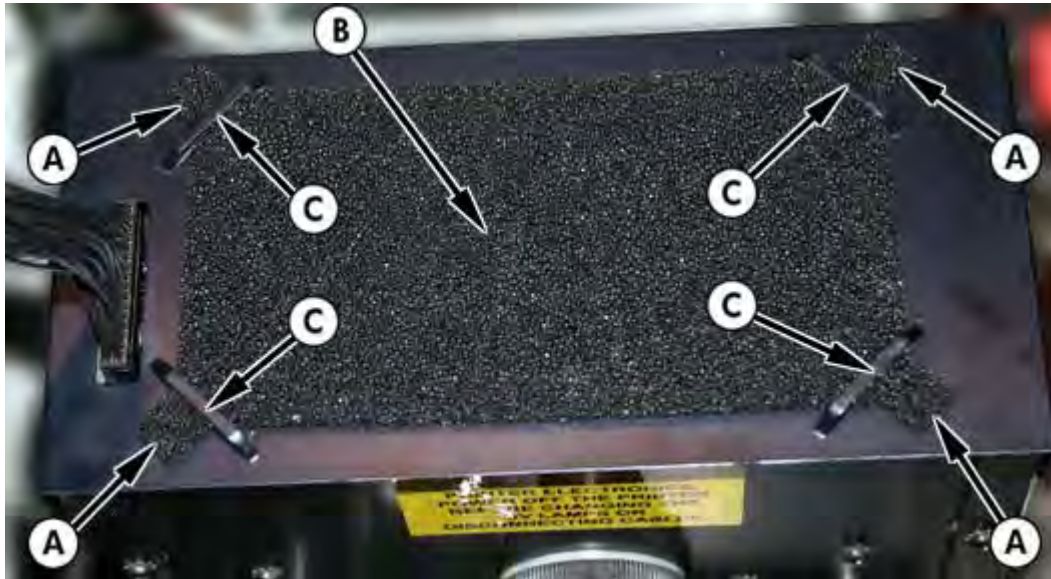
2. Install the new air filters by insert the corner tabs (A in photo in previous step) under the corner slots (C in photo in previous step) on top of the lamps.

Replace the carriage-cover fan filters (quarterly)

Carriage fan filters keep ink dust and other debris from entering the air-cooled area of the carriage. If the filters become clogged, the carriage headboard and printheads may over heat, causing performance errors.

1. Locate the fan filter covers (A in drawing below).
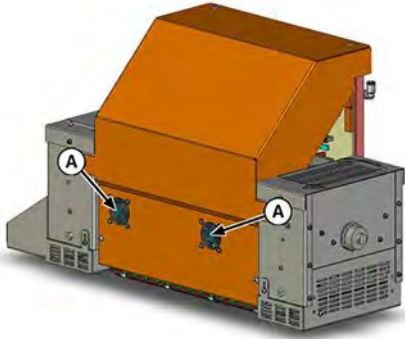
2. Using a flat-blade screwdriver, pry off the fan filter cover.
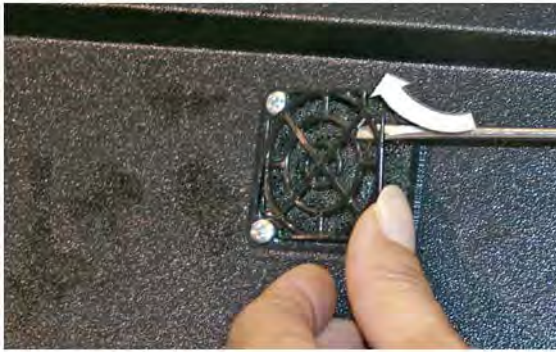
3. Remove the original fan filter (A in the photo below).

4. Insert the new filter over the fan.

5. Snap the filter cover back over the fan filter.

# Clean the electronics box fan filter (quarterly)

Electronics box fan filter keeps dust and other debris from entering the air-cooled area of the electronics box. If the filter becomes clogged, the electronics may over heat, causing performance errors.

1. Vacuum the dust and debris from the front of the fan on the input-side of the electronics box (located behind the user-end enclosure in the area indicated by (C) in the drawing below.

    If necessary to reach the fan filter area, remove all screws (A) for the user-end enclosure except the two top screws (B).
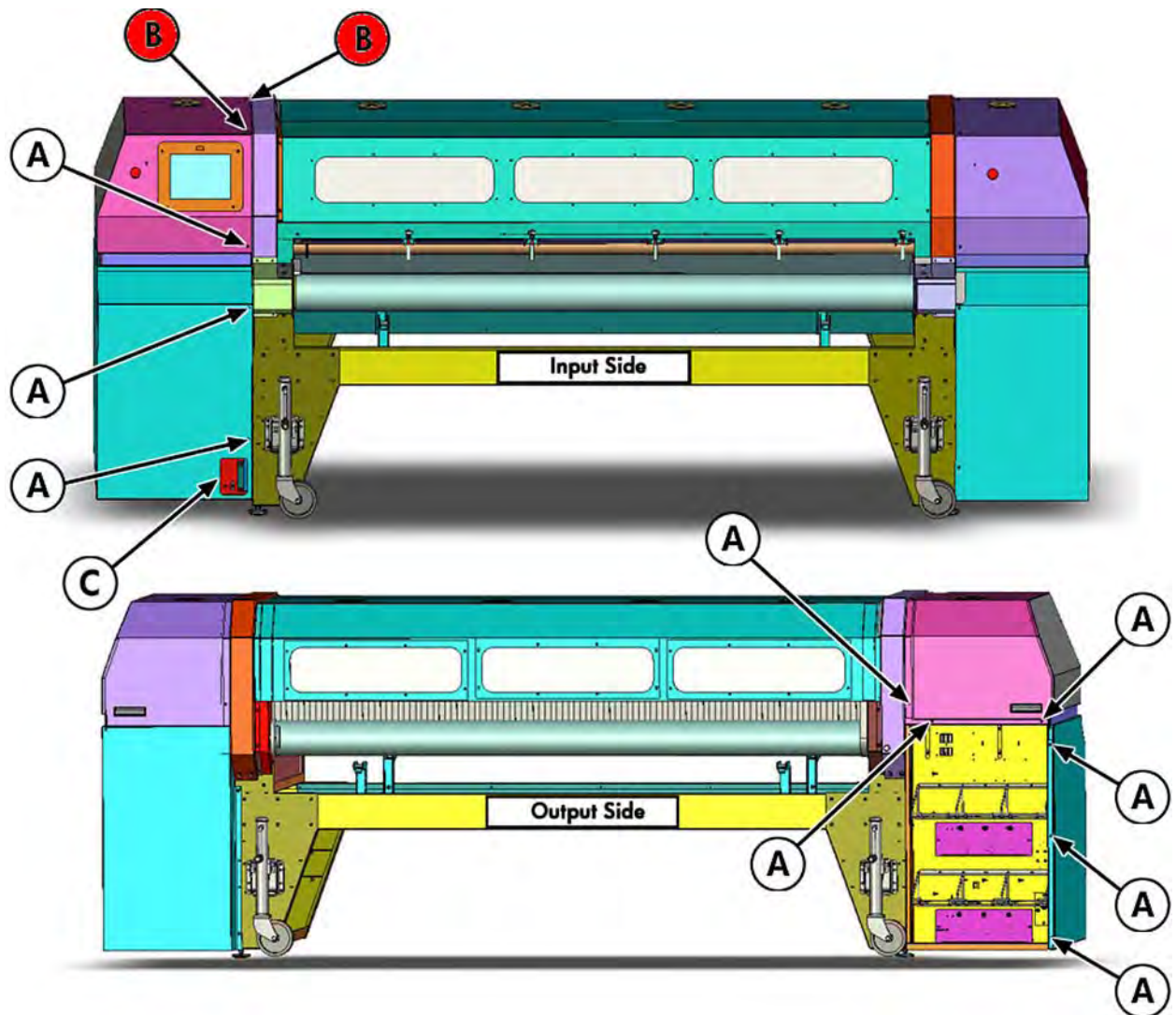
**2.** Vacuum the filter (A in photo below.) and remove dust from the surrounding cabinet area.
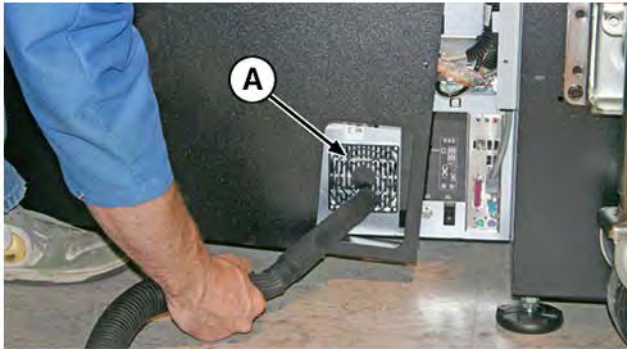
Replace the service station wipers (quarterly)

The wiper blades deteriorate with use. Replacing the wiper blades periodically restores the wiping to optimal performance and wiper height.

📝 **NOTE:** Replace the wipers according to the schedule in . The wiper replacement schedule is calculated to be frequent enough to avoid the need for wiper-height calibrations between replacements. If the wipers are not making adequate contact with the printheads, contact your service provider to calibrate the wiper height.

1. Remove the screw (A in the photo below) that secures the wiper clamp to the wiper assembly.
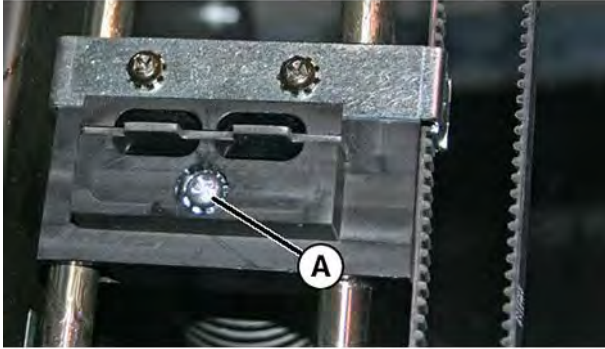
2. Separate the two wiper clamp halves and remove the original wiper blade.

3. Install the replacement wiper blade in the orientation shown below.

4. Secure the wiper blade clamp to the wiper assembly using the original screw.

Clean ionizer needles (quarterly)

Ink dust and debris can collect on the ionizer needles which degrades its ability to eliminate static. Cleaning the ionizer needles keeps the ionizer bar in optimal performance.

▲ Using the brass brush (A in the photo below) - supplied with the printer), clean the ionizer needles (A in the photo below) located beneath the ionizer bar (B).

The needles (A in the photo below) run the length of the ionizer bar.
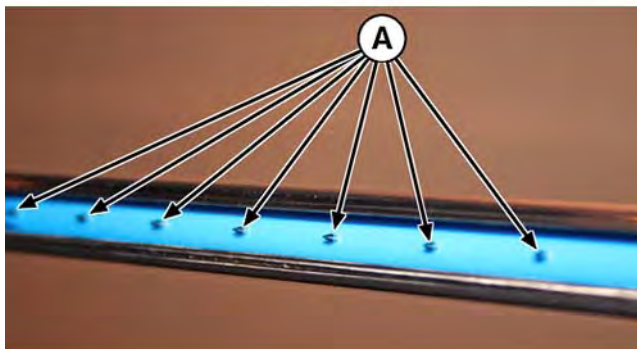
Drain waste ink from service station (quarterly)

Waste ink accumulates in the service station until drained. Dispose of the collected ink according to local regulations.

1.   Place the waste ink jug (included with the printer) beneath the waste ink spigot, under the media drive belt at the service end of the printer.

2.   Turn the spigot (A in the photo below) to the open position

3.   After the waste ink has drained, turn the spigot to the closed position

△ **CAUTION:**   The drain spigot must remain closed during printing and service station use. An open spigot affects the vacuum level in the service station and will degrade service station performance if left open.

Clean media thickness sensor roller (quarterly)

Debris on the media thickness sensor can result in inaccurate measurements. Clean the roller to keep the sensor operating correctly.

▲ Using a lint-free cloth that is saturated with IPA (isopropyl alcohol), clean the media thickness sensor roller by manually turning the roller with your finger while applying the cloth to the roller surface.

A   Specifications

Specifications

Dimensions (assembled)	Width: 406.4 cm (160 in)
	Height: 154.9 cm (61 in)
	Depth without tables: 121.9 cm (48 in)
	Depth with tables: 325.1 cm (128 in)
Weight (assembled)	Printer without tables: 684 kg (1507 lb)
	Tables only: 68 kg (150 lb)
Operating conditions	Temperature: 20–30° C (68–85° F)
	Relative Humidity: 20–80%, non-condensing
Storage conditions	Temperature: -34–49° C (-30–120° F)
	Relative Humidity: 10–80%, non-condensing
Agency compliance	Safety: CE, UL, c-UL
	Emissions: FCC-A, CE, MIC
	Immunity: CE
Electrical power	Power used: 200-240 VAC, three phase (3Φ), 50/60 Hz, 12 Amps maximum.
Required electrical circuit (North America/ Japan)	NEMA L21-20R NEMA L15-20R With utility-supplied 3–phase power: 200-240 VAC, 20 Amps, 3Φ, with NEMA L21-20R locking wall receptacle With 60 Hz 1–phase power: 200-240 VAC, 20 Amps, 3Φ, 60 Hz, with NEMA L15-20R locking wall receptacle and "Phase Perfect" Digital Phase Converter Model DPC-A10
Required electrical circuit (Europe)	 200-240 VAC, 16 Amps, 3Φ, 50 Hz, with 5-pin IEC 60309 wall receptacle
Required power cord	• Part No. 0506213 North America (UL/CSA approved), length 4 m (13 ft), requires FRM part number 0901565 if using phase converter (see Site Preparation Guide, part number 0706456); OR • Part No. CH109–50001 Europe (Harmonized), length 6 m (20 ft)

Table A-1 Specifications (continued)

Optional auxiliary power for vacuum system	Supplied 24 volt DC power supply with universal adapters, connected from the auxiliary power jack on the vacuum/pressure assembly to one of the following: ● Wall outlet — 100-240 VAC, 50/60 Hz, provides temporary power to the vacuum system when it is necessary to remove power from the printer for service. ● UPS — customer-supplied uninterruptable power supply, output 100-240 VAC, 50/60 Hz, minimum of 15 watts of power, provides battery backup to the vacuum system in the event of a power failure. UPS is connected to the electric wall outlet.
Energy consumed per hour of operation	● Sleep/idle (lamps off): 0.74 kWh ● Printing 6x6, Production Mode, low lamps: 3.31 kWh ● Printing 6x3 Billboard Mode, high lamps: 4.67 kWh
Printing technology	12 piezo-electric inkjet printheads, variable drop size, 192 nozzles per printhead
Resolutions	1200 x 600 dpi, 600 x 600 dpi, 600x300 dpi (as supported by the RIP)
Ink	HP Scitex FB250 Ink, 6-color (CMYKlclm) flexible UV cure inks, off-head ink system.
Curing system	Dual carriage-mounted 550-watt shuttered UV lamps.
Vacuum/pressure system	Nominal relative vacuum: 9.3 mm Hg (5.0 in H_2O) Maintains negative relative pressure at the printheads and provides air pressure for purging. Since relative pressure is maintained, the printer can be operated at various altitudes above or below sea level without adjustments to the system.
Media handling	Vacuum belt media drive for easy loading and accurate media feeding. Front and rear roller tables support rigid materials up to 250 cm (98.4) in wide and 203 cm (80 in) long, 56.7 kg (125 lb) in weight. A second set of roller tables (optional) extends the support of rigid materials up to 381 cm (150 in) long. Optional Supply & Take-up system supports up to 2.5 m (98.5 in) wide roll-fed media on 7.6 cm (3.0 in) cores, with a maximum diameter of 19 cm (7.5 in).
Maximum media thickness	64 mm (2.5 in)
Maximum print width	250 cm (98.4 inches) Edge-to-edge printing capable in the width and length of rigid media.
Maximum print length (rigid media)	1016 cm (400 inches)
Minimum printable rigid sheet size	Width: 15 cm (6 in) Length: 23 cm (9 in)
Software features	Touch screen with graphical interface. Automatic calibration and detection/substitution of missing jets. Media Wizard stores operational parameter sets by media type for subsequent recall. Automatic edge detection and media positioning. Automatic head clearance above media. Stored Jobs feature stores print jobs on the printer for reprinting.

Table A-2 Print speeds by group

Speed Group	Minimum Speed	Maximum Speed
A	2 m^2/hr (19 ft^2/hr)	6 m^2/hr (62 ft^2/hr
B	7 m^2/hr (80 ft^2/hr)	12 m^2/hr (126 ft^2/hr)
C	14 m^2/hr (152 ft^2/hr)	23 m^2/hr (251 ft^2/hr)
D	28 m^2/hr (304 ft^2/hr)	42 m^2/hr (456 ft^2/hr)
E	55 m^2/hr (596 ft^2/hr)	80 m^2/hr (858 ft^2/hr)

B Troubleshooting

This appendix explains how to prevent and diagnose printing problems and provides information about getting help from Hewlett-Packard.

For other software-specific troubleshooting procedures, refer to your application software documentation or the other documentation listed on page iv of this manual.

- Troubleshooting checklist
- Warranty claims
- HP Customer Care

Troubleshooting checklist

Before you troubleshoot your printer, make sure that it is properly installed as described in Getting started on page 1.

Follow the steps in this checklist to isolate and resolve printing problems.

1. Does the printer's power come ON?

    YES: Go to question 2.NO: Check the following:

    ● The power cable may not be plugged into an electrical outlet.

    ● If the printer is plugged into a surge protector, the surge protector may not be connected to power, or it may be switched off.

    ● The circuit into which the printer is connected may be switched off at the circuit breaker.

2. Did the start-up sequence of the control panel end by displaying the Front Page screen similar to the one shown in Front Page on page 37?

    YES: Go to question 3.NO: Check the following:

    ● There may be a hardware problem with the printer's internal components. Follow the diagnostic routine on the control panel to determine the problem. Write down any error codes and call technical services as directed by the control panel.

3. Can you send a file from the RIP to the printer?

    YES: Go to question 4.NO: Check the following:

    ● The VideoNet cable may not be securely connected between the RIP computer and the printer. Refer to the server's documentation for more information.

    ● The VideoNet cable may be connected to the wrong port on the computer. Be sure that it is connected to the VideoNet adapter and not another networking adapter.

4. Can you send (print or download) a document from a client computer to the server?

    YES: Go to question 5.NO: Check the following:

    ● The connection from the client to the local area network may not be configured correctly. See your system administrator for assistance.

    ● The cable between your computer or network and the RIP computer may not be securely connected at both ends.

    ● Your computer may not be working properly. Run an application that you know works correctly and print to be sure.

    ● The computer's port may not be working properly. Print to another output device that you know works correctly (and is not connected to the print server) to check this.

5. Is the print quality good?

YES: Then the problem is not covered in this checklist. Contact Technical Services.NO: Check the following:

- See Image quality tips on page 101 for detailed tips on getting the best output quality.

- Banding or general poor image quality — the printheads may need to be calibrated (see Calibration on page 49). One or more inkjets may be clogged or not firing (see Check jet health on page 104). The media advance may need to be recalibrated (see Media Feed Calibration on page 54).

- Inaccurate color or under- or over-saturated output — the wrong color profile may be selected at the print server or RIP. Refer to the documentation that accompanies the print server or RIP.

- Inaccurate color or lack of detail — one or more inkjets may be clogged or not firing (see Check jet health on page 104).

  Since automatic head maintenance cannot occur when the printer is powered down, keep the printer powered on at all times if possible. If automatic head maintenance does not occur for an extended period, manual purging may be necessary to restore the printheads to working condition.

- Noisy carriage motion or repeating print artifacts — if the carriage develop flat spots due to non-use, use the Carriage Motion Troubleshooter to restore their shape (see **Tools > User Diagnostics> Carriage Motion**).

- Media buckling or media feed problems — the wrong media could be selected in the Media Wizard (see Configure media on page 19). The media may not have been loaded squarely (see Load and print on roll-fed media on page 25).

- Head strike — if the printhead is striking the media, check how the media is tracking from the supply spool. The sides of the media should be parallel to the sides of the printer, with no wrinkling or buckling. If necessary, reload the media. See Load and print on rigid media on page 21 or Load and print on roll-fed media on page 25 for instructions. Also check the Media Wizard to see whether the correct media is selected (see Configure media on page 19).

Warranty claims

The printer is covered by a manufacturer's limited warranty, which includes the printheads.

For more information about warranty claims, contact HP (see next page for contact information).

HP Customer Care

In case of any question or problem, you should approach your local HP Authorized Representative for consultancy and support. However, if required, you can contact HP directly by using the following methods.

> **NOTE:** For up-to-date contact information, please visit http://www.hp.com/go/graphicarts.

North America

Tel: 800 925 0563

Fax: 952 943 3695

E-mail: cs.custsup@hp.com

Europe, Middle East, and Africa

Tel: +32 2 7283444

Fax: +31 207157536

E-mail: LF.MV.Support@hp.com

Asia and Pacific

Tel: +852 8103 2666

Tel: 00 801 85 5945 (Taiwan only, toll-free)

Fax: +852 2187 2218

E-mail: hsap.carecenter@hp.com

Latin America

Please dial Option 2/Option 6 from the selection menu.

Argentina: 5411 470 816 00

Brasil: 52 55 5258-9922

Chile: 562 436-2610 / 800 360 999

Colombia: 571 602 9191 / 01 8000 51 4746 8368

Costa Rica: 0 800 011 0524

Dominican Republic: 1 800 711 2884

Guatemala: 1 800 999 5105

Honduras: 800 0 123 / 1 800 711 2884

Mexico: 52 55 5258-9922

Nicaragua: 1 800 0164 / 800 711 2884

Panama: 001 800 711 2884

Peru: 511 411 2443 / 0 800 10111

El Salvador: 800 6160

Venezuela: 58 212 278 8666 / 0 800 474 68368

CC LAR Nextel: (5255) 1088 0884; ID 52*20115*51

CC LAR e-Mail: carecenter.ipglf.lar@hp.com

CC LAR Fax: +52 55 5258 6377

C Image quality tips

Overview

This chapter provides general tips and tricks for getting the best printed output from your printer. It consists of the following sections:

- Startup and check jet health — daily startup tips, calibrations, ensuring that inkjets are operating well.

- Printer settings — how to select the appropriate print mode, printing direction, speed, and UV lamp settings for the job

- RIP settings — how to select the best color profile and RIP settings for the print job

- Troubleshoot image quality problems — examples of typical image quality problems, their causes, and how to address them

- Sample print jobs — example applications of the tips and tricks in this document to typical print jobs

For best results, follow these sections in the order they appear in this guide. Refer to the flowcharts at the end of this guide for quick reference.

This guide assumes that the media you are using is in good condition and the recommendations in the HP Tech Notes are followed.

For detailed operating and maintenance instructions and other information about the printer, refer to the documentation disc that accompanies it.

Startup and check jet health

This section shows you how to configure your printer for best quality printing.

Start with the printer in good working order

These techniques will be much less likely to work if you are not using a printer that is in good working order:

● The printer was properly installed by an HP-authorized service technician, in a facility and environment that meets HP specifications as published in the Site Preparation Guide.

● The printer has the latest version of the embedded software (firmware) installed.

● The printer hardware is working, and has been properly maintained as outlined during operator training.

● The printheads are calibrated (bidirectional, head-to-head, head height, printhead X calibration); see Calibration on page 49 for instructions.

● The media feed is calibrated with the media on which you will be printing. See Media Feed Calibration on page 54 for instructions.

● There is sufficient ink installed and available for resupply. The expiration date marked on the ink packaging has not passed.

● The number of service hours for the leading and trailing lamps are within 20% of each other. If one lamp has significantly more hours than the other lamp, the appearance of prints may change unexpectedly, To correct this, the lamps can be exchanged with each other or replaced.

● The external RIP is installed and communicating with the printer, and the operator is familiar with its use.

● Avoid touching the media during printing.

Load media correctly

Follow these guidelines when loading media:

● Use only media that is clean, flat, and undamaged.

● Keep the printer's environment within the specifications published in the Site Preparation Guide. In particular, an environment with a relative humidity below 40% can result in high levels of static electricity, while a relative humidity above 60% can cause some medias to absorb moisture and develop an uneven (non-flat) shape. Both conditions can cause printing problems.

● In low-humidity environments, use static charge abatement measures when handling synthetic media (vinyl banner, plastic boards), such as grounded copper tinsel, isopropyl wipes, or anitstatic spray.

● Select the Media Wizard settings that match the media you will use. The Media Wizard entry you select may not be named with the exact media name, but one that has similar characteristics allowing use of the same Media Wizard settings (including vacuum fans, lamp intensity and swath delay). If possible, select a default Media Wizard set that has been tested and validated; these are indicated by an asterisk (*). All other Media Wizard entries are user-generated and can be modified when needed.

- Configure and load media as described in [Configure media on page 19](#).

- Wipe down synthetic media with isopropyl alcohol (IPA) before printing to reduce static charge, and remove fingerprints and dust, which could become visible in the print.

Check jet health

At the beginning of the day's printing, verify that all of the inkjets are either firing or have been substituted by another working jet.

1. Print the Prime Bars pattern.

   Load media, then press the Prime Bars button on the control panel's Front Page screen.

2. Run a Purge & Wipe.

3. Print the Prime Bars pattern again.

4. Compare the print with the previous day's (or most recent good) Prime Bars print

   - If today's Prime Bars print is comparable to the previous day's print, you may want to verify jet replacement by printing a Jet Out Lines pattern (Menu> Tools > Maintenance > Print Jet Out Lines). If all jets are working or replaced, you are ready to select printer settings.

   - If today's Prime Bars print shows noticeably more broken or missing lines than the previous day's print, run the AutoJet calibration (Menu > Calibrate > Auto Calibrations > AutoJet Calibration). Then run a Jet Out Lines pattern once or twice until the missing lines have printed or are replaced.

     If the Jet Out Lines pattern does not improve after performing these steps two or three times, or if a large number of adjacent jets cannot be recovered, one of the following may be necessary:

     - Inkjets may need to be manually mapped out (Menu > Calibrate> Manual Calibrations > Manual Jet Mapping)

     - Printheads may be damaged

     - Service station may need to be calibrated

     - Contact your service representative for further assistance.

Printer settings

This section shows you how to adjust the printer's media and print mode settings for the best output.
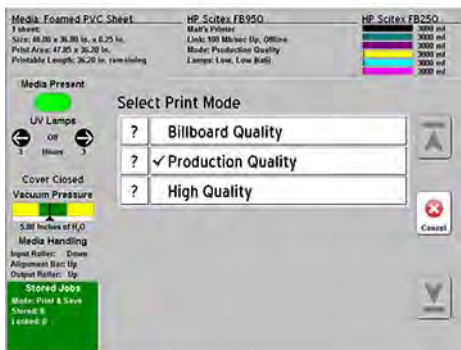
Select print mode

Figure C-1 Front Page screen
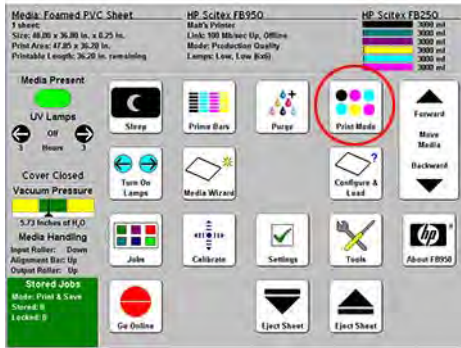
The printer has three print modes that are designed to balance printing speed and output quality, based on the distance from which the print will typically be viewed.

Figure C-2 Print Mode screen (quality options)

- If the print will be viewed at a distance of greater than 5 m (16 ft), the recommended mode is Billboard mode.

- If the print will be viewed at a distance of 1–5 m (3–16 ft), the recommended mode is Production mode.

- If the print will be viewed at a distance of less than 1 m (3 ft), the recommended mode is High Quality mode.

Select Plus or normal mode
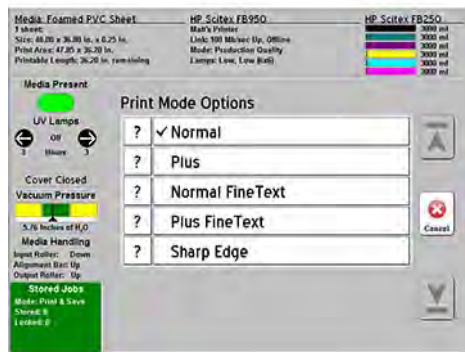
- If the print will require heavy ink coverage (large blocks of solid color or continuous tone photographic images), use Bidirectional, Plus mode. This mode reduces the "gloss banding" effect in bidirectional printing.

- If the print will require light ink coverage (signage with lettering and large unprinted areas), select Bidirectional printing without Plus mode. This mode provides faster print speeds.

Select detail and edge quality options

These options provide increased fine detail and sharp edge imaging, but slower print speeds.

- If the print contains fine detail such as text at smaller point sizes, select Fine Text mode.

- If the print requires sharp edge definition, for example with large text or color blocks that will be viewed closely, select Sharp Edge mode.

- If the print contains large solid or image areas that show gloss banding and fine detail, select Plus Fine Text mode.

- If supported by your RIP and document application, you can also increase the sharpness of black text by setting the RIP to print Pure Black in text, rather than Rich Black or Process Black which prints all of the process colors to create black.

Adjust gloss

You can increase the gloss level of printed output by shuttering the trailing UV curing lamp. This allows the drop of jetted ink to spread out more before it is cured, which gives the print a glossier look.

📝 **NOTE:** The leading or trailing lamp is shuttered by default in print speed groups A and B to provide optimal gloss (see Equivalent print modes on page 17). You can adjust the default settings as needed. You cannot shutter both lamps, because at least one lamp is needed to cure the ink.
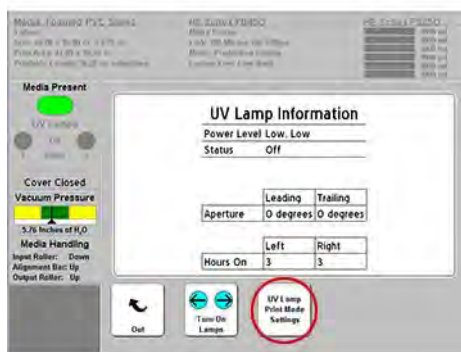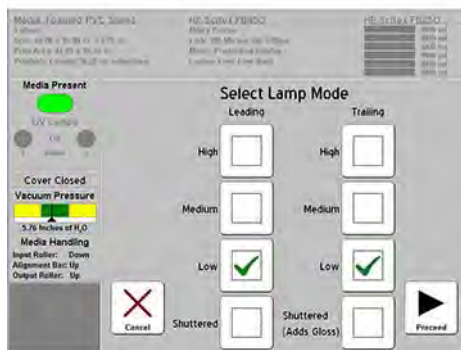
To shutter a lamp:

1. On the printer's Front Page screen, press the lamp status panel:
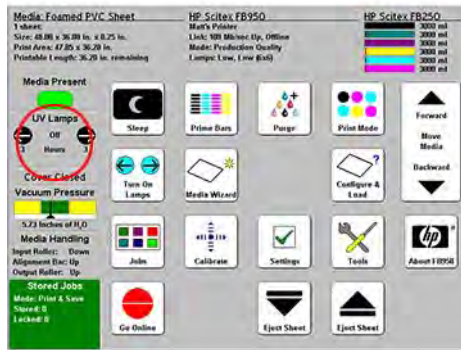
2. On the lamps information screen, press the Lamp Print Settings button:

3. On the lamp modes screen, press Shuttered, Low, Medium, High for the Leading and Trailing lamps:

4. On the shutter aperture screen, press the up arrow for the trailing lamp repeatedly to change the angle of the shutter from 0 degrees (fully open) to closed. The greater the angle, the glossier the appearance of the print. Closed will provide the maximum gloss.
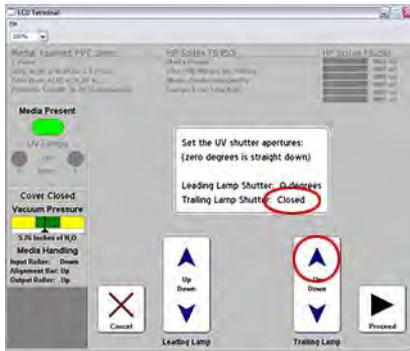
RIP settings

For detailed operating instructions, refer to the RIP user guide.

Choose a resolution

The print resolution is determined by the RIP. There is no resolution setting on the printer.

- For most images, use 600x600 dpi.

- If a grainy image is acceptable (when viewed from a longer distance or as a draft, for example) and faster print speeds are desired, use 600x300 dpi.

- For more saturated colors or printing on clear or backlit media, use 1200x600 dpi.

Choose a color profile

- Select the profile that matches the media name, or most closely matches the material, you are using.

- For accurate color matching, perform a color calibration (linearization) at least once for each media.

- To reduce ink usage, select an Ink Saver profile. or create a custom profile that uses less ink. Ink Saver profiles are available for the Onyx and Caldera RIPs to their registered users. For download instructions,see the manufacturer's web site (Onyx, http://www.onyxgfx.com; Caldera, http://www.caldera.eu). Users of the HP RIP Software can create a custom profile to reduce ink usage. Refer to the HP RIP Software User Guide for instructions on creating a custom profile.

Troubleshoot image quality problems

This chapter explains how to address typical image quality problems.

Ensuring high-quality documents and images

- Ensure that all text is converted to outlines (not bitmaps) or the fonts are included with the artwork files.

- All line art should be in vector form (not bitmap) for good scalability and reproduction.

- Large blocks of solid colors can show banding more obviously than smaller areas of color or photographic images.

- Ensure that photographic images are sized appropriately for the final output resolution. For example, don't try to scale a 300x200 pixel image copied from a web site to fit a 1 x 2 m (4 x 8 ft) poster.

- Select photographic images with evenly-balanced contrast and color saturation. Subtle shadow areas or "blown-out" highlights are difficult to print well).

- In the application program or the RIP, use the ICC color profiles provided by your RIP manufacturer that are tuned for the ink set and media you will be using. Color must be managed in either the application or RIP, never in both.

Wide banding

Wide horizontal banding, sometimes referred to as "directional gloss banding" or "lawnmower banding," which may be caused by light reflecting differently off adjacent printed areas. Ink that is laid down when the printhead carriage is moving in one direction will have a different reflectance characteristic than ink laid down in the opposite direction. This effect varies with the viewing angle, and is more pronounced in darker images with higher ink saturation. To reduce or eliminate gloss banding, try these measures:

1. Use Plus mode — a special print mode designed to reduce the banding effect. Prints at a slightly reduced speed relative to printing without Plus mode.

2. Use a reduced gamut color profile — these color profiles restrict the gamut used, which reduces the color saturation in the printed image. If available, they can be downloaded from the RIP manufacturer's web site (see Choose a color profile on page 109).

3. Print with 4 colors instead of 6 to reduce the ink load and saturation.

4. Print in a higher quality mode — do not use Billboard mode; if printing in Production mode, try High Quality mode instead. This will reduce the print speed, which will reduce the visible difference between adjacent bands.

5. Print unidirectionally — this eliminates adjacent bands printed in opposite directions, but reduces throughput by 50 percent, since the printer is printing in one direction instead of both directions.

6. Laminate — applying an overlaminate to the print will reduce the banding effect and provide extra protection against damage.

Thin banding

Thin horizontal banding or stripes may indicate clogged inkjets or miscalibrated media feed.

- If you see a white (missing color) line in only some colors, check jet health using the procedure at the beginning of this guide.

- If a white (missing) or dark line appears across the entire width of the print, check media feed calibration from the printer's control panel (Menu > Manual Calibrations > Media Feed Calibration).

- If used, Plus mode could have the effect of producing thin horizontal banding that resembles a media feed error. In this case, try printing without Plus mode.

- Having a shuttered trailing lamp (as with the gloss-enhancing configurations) in any print mode, but especially in a fast Plus mode, can also emphasize a thin dark line in some colors at the print swath boundary. In this case, try changing the shutter setting.

Grainy

In a "grainy" appearing image, the individual dots of ink are noticeable, instead of a photographic, continuous tone image. This may occur if the image is being viewed at a closer distance than recommended, given how the image was printed.

- Print at a higher resolution (600x600 or 600x1200 dpi).

- Print with 6 colors instead of 4 colors (if available).

- Print in a higher quality mode (Production or High Quality).

- Perform a bidirectional calibration (see Auto calibrations on page 53).

- Perform a head height calibration (the head height may be too high). See **Printer Settings > Head Height off Media.**

Note that sometimes changing one setting or condition to address one problem may at the same time exacerbate a different problem. For example, printing with 4 colors may reduce ink load and saturation and reduce banding, but may increase a grainy appearance in images. Experience will help you decide which of several factors to adjust to improve overall image quality.

Not enough saturation or contrast

- Use High Quality mode.

- Start with a good image, and apply the correct ICC color profiles in the application program or RIP.

- Check for missing jets. See Check jet health on page 104 for instructions.

- Do not use an Ink Saver profile.

Inaccurate or unexpected colors

- UV inks have a limited shelf life. Expired inks may under go a color shift. Ensure that the expiration date marked on the ink packaging has not passed. Replace any expired ink.

- Shaking the ink can compensate for settling of the ink components, and gradually correct a color shift (after several prints, depending on the amount of settling that has occurred).

- Verify that you are using the color profile that matches the media, or most closely matches the media type, you are using.

- Perform a color calibration (linearization). See Linearization on page 63 for details.

- Check for missing jets. See Check jet health on page 104 for instructions.

- If the problem consists of color differences between your computer monitor and printed output, consider calibrating your monitor according to manufacturer's instructions, and viewing prints in natural sunlight or under full-spectrum lighting.

- Ensure that all of the images and the document itself have been saved in the same color space. Refer to your application user documentation for instructions.

- Operating the printer outside the stated specifications for temperature (see Specifications on page 92) can cause the printheads to fail to refill predictably, resulting in shifted colors.

Examples

This section presents some examples of applying the tips and tricks in this guide to typical print jobs.

Saturated photograph with dark areas

Factor	Recommended techniques
Viewing distance: less than 1 m (3 ft)	Print in High Quality mode
Image content: saturated and dark colors	RIP at 600x600 or 1200x600 dpi
Ink coverage: high	To prevent wide banding, print in Plus mode or unidirectionally.

Event signage

Factor	Recommended techniques
Viewing distance: over 5 m (16 ft)	Print in Production mode
Image content: text and line art with large unprinted areas	RIP at 600x300 dpi
Ink coverage: low	Print in any bidirectional mode

Flexible banner

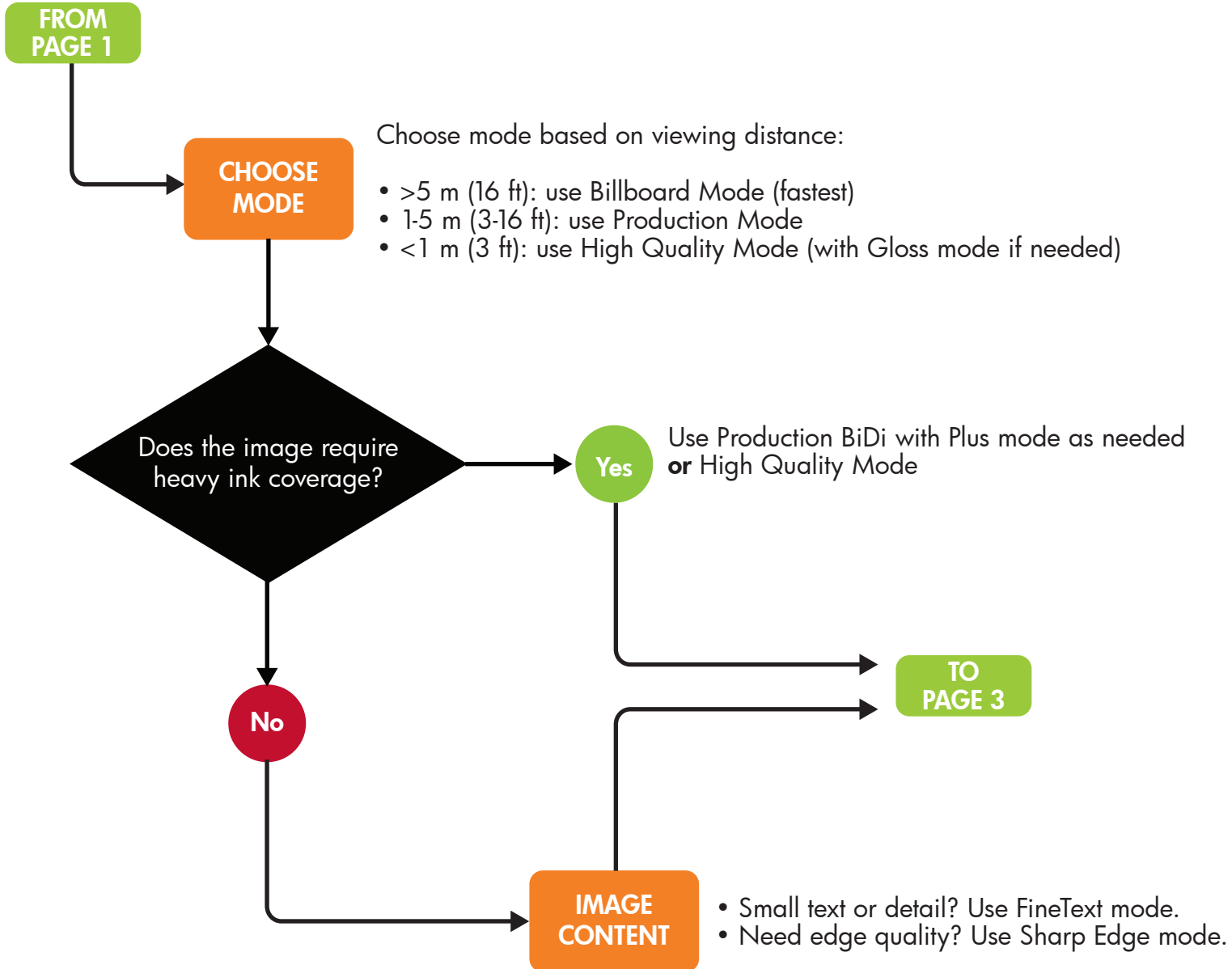| Factor	Recommended techniques
Viewing distance: 1–5 m (3–16 ft)	Print in Production mode
Image content: large blocks of solid colors, some images and text	RIP at 600x600 dpi
Ink coverage: high	To prevent wide banding, print in Plus mode.

Image quality flow chart

The image quality flow charts provide a high-level summary of the tips and tricks in this guide. You can print out the chart for reference and follow the recommended steps to optimal print quality, from start to finish.

HP Scitex FB950 Printer
Image Quality Flowchart

1. STARTUP AND CHECK JET HEALTH

START

DAILY STARTUP

LOAD MEDIA

- Clean media, check for damage.
- Configure media (User Guide, Chapter 2).
- Load media (User Guide, Chapter 2).

CHECK JET HEALTH

Prime Bars — 1. Print Prime Bars

Purge — 2. Purge and Wipe the heads

Prime Bars — 3. Print Prime Bars, compare to previous day's print.

Is today's Prime Bars print comparable to yesterday's best Prime Bars print?

Yes → **TO PAGE 2**

Verify jet replacement with Jet Out Lines.
If all jets working or replaced, go to next page; else run AutoJet (see below).
(Menu > Tools > Maintenance > Print Jet Out Lines)
(User Guide, Chapter 4)

No

Run AutoJet.
(Menu > Calibrate > Auto Calibrations > AutoJet Calibration)
(User Guide, Chapter 4)
Repeat Print Prime Bars and check quality again.
✓ **If OK,** go to next page.
✗ **If not OK,** check calibrations and troubleshooting. Repeat Print Jet Out Lines and check quality again.
(Calibrations: User Guide, Chapter 4)
(Troubleshooting: page 110)

2. PRINTER SETTINGS

FROM PAGE 1

CHOOSE MODE

Choose mode based on viewing distance:

- >5 m (16 ft): use Billboard Mode (fastest)
- 1-5 m (3-16 ft): use Production Mode
- <1 m (3 ft): use High Quality Mode (with Gloss mode if needed)

Does the image require heavy ink coverage?

Yes → Use Production BiDi with Plus mode as needed **or** High Quality Mode

No

TO PAGE 3

IMAGE CONTENT

- Small text or detail? Use FineText mode.
- Need edge quality? Use Sharp Edge mode.

3. RIP SETTINGS

FROM PAGE 2

CHOOSE RESOLUTION
- Standard images: use 600 x 600
- Draft/grainy OK, need speed: use 600 x 300
- Need saturated colors or clear/backlit: use 1200x600

CHOOSE PROFILE
- Select the profile that matches the media you are using.
- Reduce ink usage? Select Ink Saver profile.
- If needed, perform a color calibration (see RIP user guide for instructions)

4. CHECK QUALITY

Problem	What to do
Wide (gloss) horizontal banding	1. Select Plus mode 2. Select High Quality bidirectional mode 3. Select High Quality unidirectional mode (slowest) 4. Laminate
Thin horizontal banding	1. Check jet health 2. Check media feed calibration 3. Try printing without Plus mode
Grainy	Print with 6 colors rather than 4 colors. Print at higher resolution (600x600 or 1200x600).
Colors not saturated enough, or not enough contrast	Use High Quality mode.
Unexpected color shift	Inks expired? Use fresh ink or try shaking the ink box. Perform a color calibration (linearization)

Index

Production Quality 14