efi | **VUTEk**

Basic Operator's Guide

QS2000 & QS3200

efi print to win.

QS Series Basic Operator's Guide

This product may be covered by one or more of the following U.S. Patents5,109,241, 5,150,454, 5,170,182, 5,212,546, 5,260,878, 5,276,490, 5,278,599, 5,335,040, 5,343,311, 5,398,107, 5,424,754, 5,442,429, 5,459,560, 5,467,446, 5,506,946, 5,517,334, 5,537,516, 5,543,940, 5,553,200, 5,563,689, 5,565,960, 5,583,623, 5,596,416, 5,615,314, 5,619,624, 5,625,712, 5,640,228, 5,666,436, 5,682,421, 5,729,665, 5,745,657, 5,760,913, 5,799,232, 5,818,645, 5,835,788, 5,859,711, 5,867,179, 5,937,153, 5,940,186, 5,959,867, 5,970,174, 5,982,937, 5,995,724, 6,002,795, 6,025,922, 6,035,103, 6,041,200, 6,065,041, 6,081,281, 6,112,665, 6,116,707, 6,122,407, 6,134,018, 6,141,120, 6,166,821, 6,173,286, 6,185,335, 6,201,614, 6,209,010, 6,215,562, 6,219,155, 6,219,659, 6,222,641, 6,224,048, 6,225,974, 6,226,419, 6,238,105, 6,239,895, 6,256,108, 6,269,190, 6,271,937, 6,278,901, 6,279,009, 6,289,122, 6,292,270, 6,299,063, 6,310,697, 6,321,133, 6,327,047, 6,327,050, 6,327,052, 6,330,071, 6,330,363, 6,331,899, 6,337,746, 6,340,975, 6,341,017, 6,341,018, 6,341,307, 6,347,256, 6,348,978, 6,356,359, 6,366,918, 6,369,895, 6,381,036, 6,400,443, 6,429,949, 6,449,393, 6,457,823, 6,476,927, 6,487,568, 6,490,696, 6,501,565, 6,519,053, 6,539,323, 6,543,871, 6,546,364, 6,549,294, 6,549,300, 6,550,991, 6,552,815, 6,559,958, 6,572,293, 6,590,676, 6,599,325, 6,606,165, 6,616,355, 6,618,157, 6,633,396, 6,636,326, 6,637,958, 6,643,317, 6,647,149, 6,657,741, 6,660,103, 6,662,199, 6,678,068, 6,679,640, 6,687,016, 6,707,563, 6,741,262, 6,748,471, 6,753,845, 6,757,436, 6,757,440, 6,778,700, 6,781,596, 6,786,578, 6,816,276, 6,825,943, 6,832,865, 6,836,342, 6,850,335, 6,856,428, 6,857,803, 6,859,832, 6,866,434, 6,874,860, 6,879,409, 6,885,477, 6,888,644, 6,905,189, 6,930,795, 6,950,110, 6,956,966, 6,962,449, 6,967,728, 6,974,269, 6,977,752, 6,978,299, 6,992,792, 7,002,700, 7,023,570, 7,027,187, 7,027,655, 7,031,015, 7,046,391, 7,054,015, 7,058,231, 7,064,153, 7,073,901, 7,081,969, 7,090,327, 7,093,046, 7,095,518, 7,095,528, 7,097,369, 7,099,027, 7,105,585, 7,116,444, 7,177,045, 7,177,049, 7,177,472, 7,204,484, 7,206,082, 7,212,312, 7,229,225, 7,233,397, 7,233,409, 7,239,403, 7,245,400, 7,248,752, 7,259,768, 7,259,893, 7,280,090, 7,296,157, 7,301,665, 7,301,667, 7,301,671, 7,302,095, 7,302,103, 7,304,753, 7,307,761, 7,342,686, 7,343,438, 7,349,124, 7,365,105, 7,367,060, 7,367,559, 7,389,452, 7,396,119, 7,396,864, 7,397,583, 7,397,961, 7,426,033, 7,431,436, 7,433,078, 7,453,596, 7,460,265, 7,460,721, 7,461,377, 7,463,374, 7,466,441, RE36,947, RE38,732, D341,131, D406,117, D416,550, D417,864, D419,185, D426,206, D426,206, D439,851, D444,793.

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This document is published online at the EFI-VUTEk support website at

http://www.vuteksupport.com/doc.php?doc=969

Applications Support

http://www.SuperwideFormatResource.com.

Application tips, material database, white papers, industry contacts, and more.

Contents

Welcome

Congratulations! You have purchased the finest super-wide format digital ink jet printing system in the world. EFI wants to work with you to make sure that you always get the best possible images from your printer, and that your printing experience is as safe — and as profitable — as possible.

QS Series printers are premium output digital ink jet printers that deliver vivid full color printing on a wide variety of both rigid and flexible media.

This guide describes how your printer operates and provides detailed information about daily printing procedures and preventive maintenance requirements.

Additional information

EFI provides a number of valuable resources to help you use and maintain your printer.

Documentation

Additional information about your VUTEk printer is available in the following documents:

VIP Guide, VUTEk Family of Products (D9031-A)

Printer Safety Guide, VUTEk Family of Products (D9111-A)

Service Guide, QS Series (D9089-A)

Maintenance Log, QS Series (D9090-A)

Training

Operator training is an essential part of preparing for the installation of your printer.

Along with each printer it sells, EFI provides an educational support system that helps both new and experienced operators develop and maintain their skills.

Course descriptions, class schedules, registration, and other details are available on EFI's web site.

Customer support web site

EFI's customer support web site contains technical supplements, advisory bulletins, user and service manuals, software, and material safety data sheets that are available for download.

http://www.vuteksupport.com

Customers are encouraged to log onto the EFI customer support site regularly to stay current with any new information or advisories that may affect their EFI printer and its accessories.

Additional support

If you have any questions about your printer, other EFI or VUTEk products, or this manual please contact EFI's customer support staff at (603) 677-3111.

Safety

Before working with any VUTEk printer, be sure that you have read, and understand, the safety precautions and procedures in your *Printer Safety Guide* (D1111-A).

> **Because there are significant safety issues involved, and printing skills required, EFI requires customers to have at least one trained and certified employee in attendance at all times during printing.**
>
> **Without the immediate intervention of a trained operator, small problems and failures during printing can cause significant damage to your printer.**

EFI cannot be held responsible for injuries, printer damage, lost productivity, or other damage caused by personnel using or approaching the QS Series printer without adequate training and without first reading and understanding your *Printer Safety Guide*, *VIP Guide*, and this *User's Guide*.

Ultraviolet light (UV) safety

Ultraviolet light and UV-curable ink can be hazardous to your eyes and skin. Always observe all applicable safety precautions when working on and near the QS Series printer.

UV shields protect operators from exposure to harmful ultraviolet light and ink overspray. If a UV shield is opened during the printing operation, the printer will close the lamp shutters and stop the carriage, preventing the operator from being exposed to the harmful UV lamps.

Each person working on or near the QS Series printer should complete and sign a copy of the UV Safety Acknowledgement Form available on the EFI-VUTEk website.

Components

The following figures show the location of the basic printer components referenced in this guide.

Front
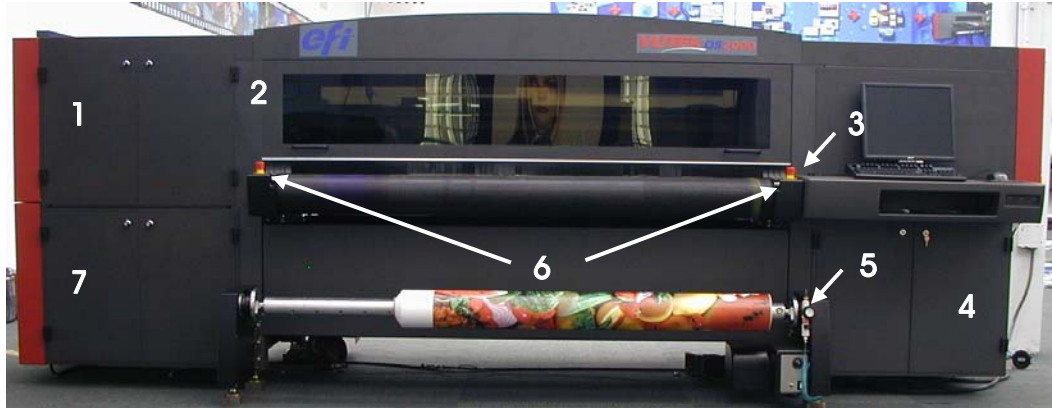
Key (front view)

1	Carriage cabinet
2	Front UV shield
3	Power switch
4	Electronics cabinet
5	Rewinder
6	Emergency stop switches
7	Ink cabinet

Rear
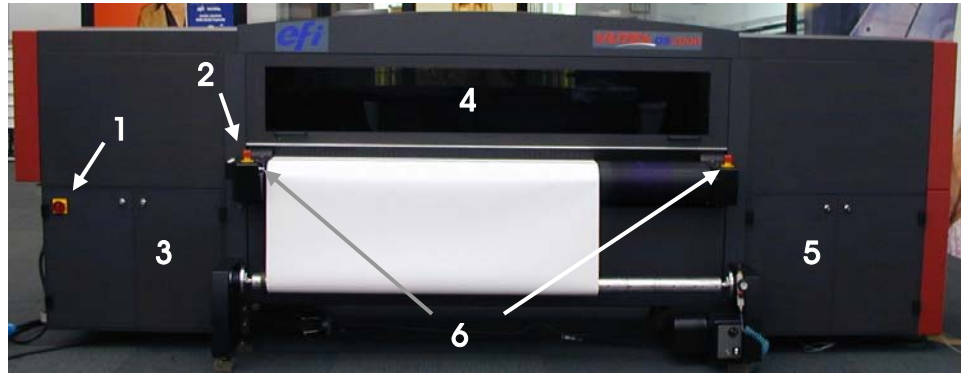
Key (rear view)

1	Main disconnect switch
2	Rear control panel
3	AC power cabinet
4	Rear UV shield
5	Solvent and waste cabinet
6	Emergency stop switches

Internal
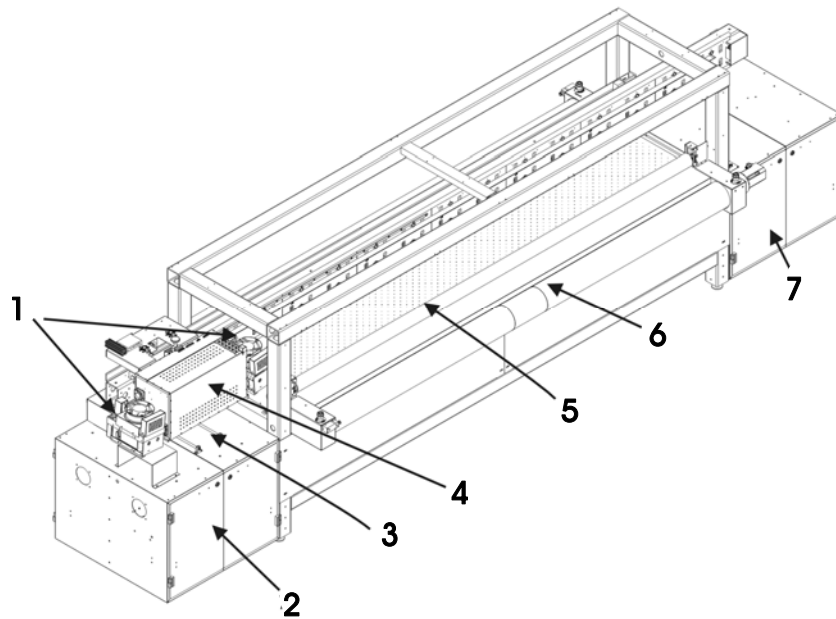
Key (internal view)

1	UV lamp assembly (2x)
2	Ink cabinet
3	Vacuum purge wiper
4	Carriage
5	Outfeed media hold down assembly
6	Media conveyor belt
7	Electronics cabinet

Rear control panel

Your QS Series printer has a rear control panel to increase productivity by allowing you to control printer functions from the rear of the printer.

Use the rear control panel to move the fence up and down, move the media roller up and down, advance the media, and start printing.

Rear control panel

Fence   Press to move the fence up. Press again to move the fence down.

Pinch   Press to move the media roller up. Press

again to move the media roller down.

Advance   Press and hold to move the media conveyor belt forward and feed media into the printer. Release to stop.

Print   In sheet mode, press to begin printing the next sheet.

Fence +   Press both buttons to toggle the media
Pinch   vacuum on and off.

Advance   Press and hold both buttons to move the
+ Pinch   media conveyor belt backwards and move the media out of the printer. Release to stop.

Passwords

Your QS Series printer has different passwords that allow you access to the printer's different features. Typically your printer will have,

▸ A security password

▸ An ink override password

Security password

Periodically, your printer will prompt you to enter a security password. The interval at which you will be prompted for a security password is based on your payment schedule.

Passwords are typically distributed on a monthly basis and should be entered *before* they expire at the end of each period.

To enter your security password, click on the **Service** tab to open the **Passwords** dialog box. Enter your password (passwords are case sensitive) in the **Password** box and click **Apply** (✔).

Above the **Password** box are your printer's serial number, identification codes, and the security password's expiration date. The security password expiration date is updated each time you enter a new security password.

If you ever have an issue with a password and your printer becomes inoperable, contact EFI support for a new password.

Ink override password

The ink override password allows you to print in the event that there is an issue with your ink system. The ink override password lasts for 100 hours from the time it was created.

To enter your ink override password, click on the **Service** tab to open the **Passwords** dialog box. Enter your ink ID override password (passwords are case sensitive) in the **Ink ID Override** box and click **Apply** (✔).

Startup

Before getting started each day, you will want to spend some time preparing your printer in order to achieve the best possible print quality.

1. Power-up the printer.

2. Perform your daily printer maintenance.

3. Ink purge all colors to remove the head conditioner.

4. Wet wipe the jet packs with maintenance fluid.

5. Print a sample jet test.

Information about shutting down and restarting your printer can be found on page 62.

Powering up the printer

1. Ensure that all the emergency stop buttons are reset (twist the button counter-clockwise until it pops fully out).

2. Press the power button (located to left of the operator interface panel).

   The power button lights up green, indicating that the power is on.

3. As the printer powers up, the VUTEk User Interface (VUI) will start.

   If the VUTEk User Interface fails to start, see page **Error! Bookmark not defined.** for instructions on how to start it manually.

Key

1   Emergency stop button (two front, two rear)

2   Power button

Perform your daily maintenance

The printer maintenance tasks are described in the *Preventive Maintenance* section of this guide.

The daily maintenance procedures are on page 48.

If there are any other regularly scheduled maintenance procedures (weekly, monthly, quarterly, semi-annual, or annual) you may want to do them now so they do not interrupt or interfere with your production schedule.

Be sure to mark the maintenance procedures as completed in your *Maintenance Log*.

Ink purge

Ink purge all colors to remove the head conditioner.

▶ After the VUI opens, from the task list choose **Startup Purge** and then click **Purge All** (⬛).

The printer will perform an ink purge of all colors and the capper will wipe the jets.

Wet wipe the jet packs

Wet wipe the jet pack faces with SCAQMD maintenance fluid and a VUTEk-approved wipe.

Print a sample jet test

1. From the VUTEk User Interface, right-click **Test** (⬚), on the popup menu, click **Check Jets**.

2. Click **Test** (⬚).

   For more information on printing the jet test, as well as instructions on how to interpret the test, see page 32.

   ▸ If the jet test is acceptable, begin printing.

   ▸ If the jet test is not acceptable, do another ink purge, wet wipe the jet packs again, and repeat the jet test.

3. Label the jet test with the date and time. Save the jet test for your records.

Stopping in an emergency

In case of an emergency, immediately press any of the emergency stop buttons to stop the printer.

⚠️ Before operating the printer, familiarize yourself with the location and operation of the emergency stop buttons.

You will find emergency stop buttons to the right and left side of the print area on both the front and rear of the printer.

An emergency stop button

When pressed, the emergency stop buttons,

- ▶ Shut off the UV lamps,
- ▶ Stop all mechanical movement within the printer,
- ▶ Stop the unwinder and rewinder.

The emergency stop buttons do *not* remove power from the printer or its electronics.

Never use the emergency stop buttons as an alternative to powering down the printer when instructed to do so. The emergency stop buttons are for your personal safety and help avoid printer damage during extraordinary circumstances.

Restarting the printer after an emergency stop

After eliminating the danger or resolving the problem that required the emergency stop, you can restart the printer.

1. Ensure that all the emergency stop buttons are reset (twist the button counter-clockwise until it pops fully out).

2. Press the power button on the back left corner of the monitor shelf to power down the printer.

3. Press the power button a second time to power up the printer. The power button lights up green, indicating that the power is on.

Printing

> ⚠️ A trained operator must be present at all times during printing.
>
> Without the immediate intervention of a trained operator, small problems and failures during printing can cause significant damage to your printer.

Using the media conveyor belt

The media conveyor belt moves the media to be printed into, and out of, the printer.

The step size setting and print mode control the media conveyor belt's movement during printing. Loading and unloading media requires direct control of the media conveyor belt's movement.

Stepping the media conveyor belt

Stepping moves the media conveyor belt a preset distance.

Set the step size to a negative value to reverse the media conveyor belt's direction.

1   From the VUTEk User Interface, right-click **Step Media** (⬛).

2   In the **Set Media Step** dialog box, enter the distance you want the media conveyor belt to move in the **Step Amount** box.

   ▶ A positive number moves the media conveyor belt forward.

   ▶ A negative number, using a minus sign (–), moves the media conveyor belt backwards.

3   Click **Apply** (✅).

4   Click **Step Media** (⬛) or **Step Media Reverse** (⬛) to move the media conveyor belt (and the media).

Jogging the media conveyor belt forward

Jogging moves the media conveyor belt continuously forward (and into the printer). The media continues to move until you stop it.

1. From the VUTEk User Interface, click **Advance Media** (⊟) to move the media forward.

2. Click **Advance Media** again to stop the media.

Jogging the media conveyor belt backward

You can also use jogging to move the media conveyor belt continuously backward (this moves the media out of the printer). The media continues to move until you stop it.

1. From the VUTEk User Interface, right-click **Advance Media** (⊟) to move the media backward.

2. Right-click **Advance Media** again to stop the media.

Controlling the media conveyor vacuum

Vacuum pumps beneath the media conveyor belt create a vacuum that holds the media in place as it passes under the jet packs.

At the beginning of a print, the vacuum will start before the carriage begins to move.

You'll need to adjust the media conveyor vacuum as you change to different width media.

Adjusting the vacuum level

1. From the VUTEk User Interface, right-click **Media Vacuum** (⊞).

2. In the **Vacuum Percentage** dialog box, enter a vacuum percentage.

   The vacuum percentage is the percentage of available vacuum delivered. The higher the percentage the stronger the vacuum.

3. Click **Apply** (✔).

4. Click **Media Vacuum** (⊞) to turn on, or start, the vacuum.

   Click **Media Vacuum** again to turn off the vacuum.

Winder attachments

QS Series printers can be equipped with unwinder (rear of the printer) and rewinder (front of the printer) attachments.

The unwinder and rewinder attachments are identical in design and function.

Unwinder/rewinder

The unwinder provides a means of continuously feeding rolled media into the printer while applying a small amount of tension to the media via the air core shaft. This tension helps keep the media feed constant and minimizes media wrinkling.

The rewinder provides accurate winding of printed images onto a removable core mounted on an air core shaft.

⚠️ **The winders only have power when printing or moving the conveyor belt and while the vacuum is on.**

An air nozzle supplies air to fill the aircore to prevent the media roll from spinning on the aircore shaft.

Winder control panel

The winder control panel supplies power and feed direction independent of the printer's controls.
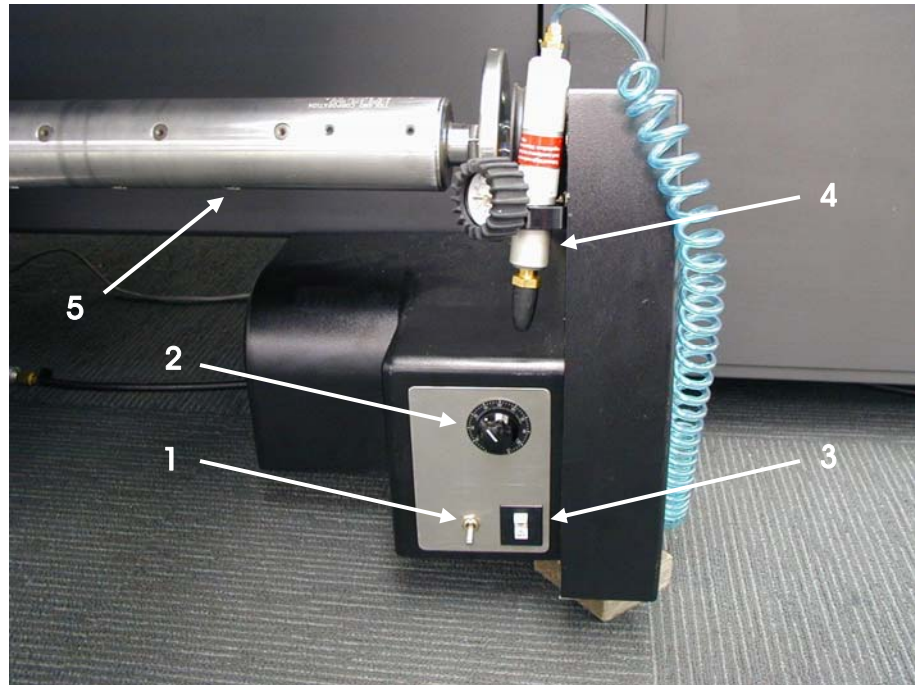
Key

1	Directional toggle switch
2	Tension/speed knob
3	Power switch
4	Air nozzle
5	Air core shaft

The directional toggle switch determines the direction in which the air core shaft turns (and the direction from which the media feeds off the air core shaft). The switch's center position is "off," allowing the air core shaft to spin freely.

The tension knob adjusts the amount of tension on the rolled end of the media. Adjust the speed at which the air core shaft turns to control the tension.

Slower	Reduces tension	Counter clockwise
Faster	Increases tension	Clockwise

The power switch turns power to the winder attachment on and off.

Loading continuous media

Continuous media moves through the printer on the media conveyor belt. Load the roll of continuous media on the unwinder's air core shaft; feed over the media conveyor belt and onto the rewinder's take-up roll. The air core shaft locks the roll in place to ensure consistent tracking of the media.
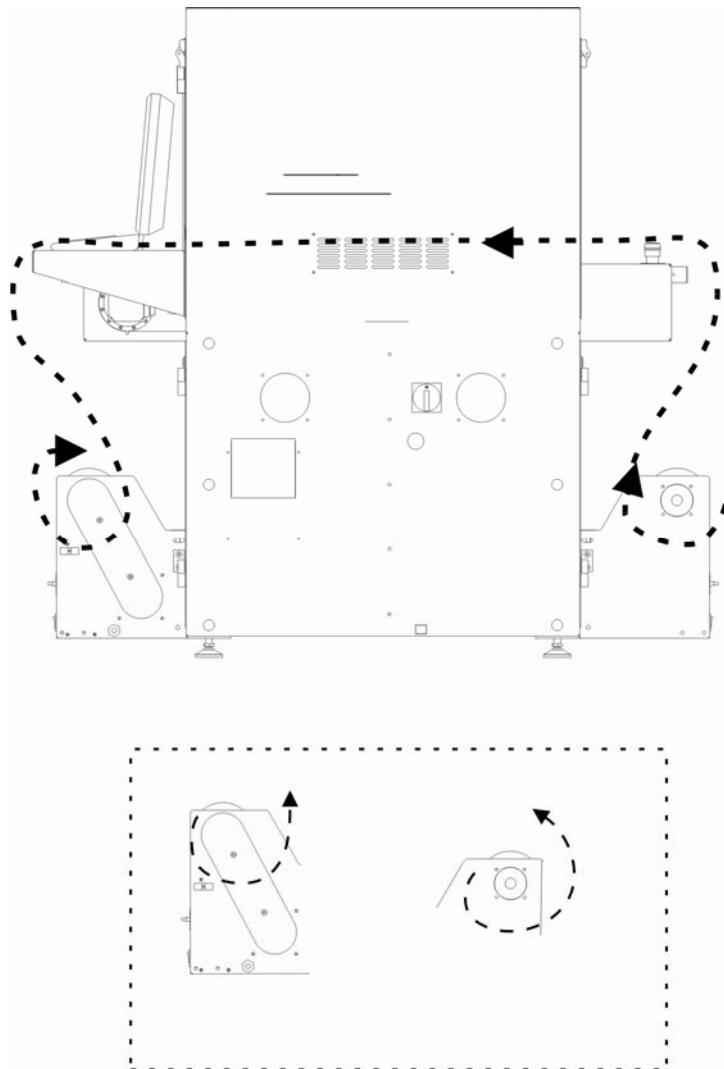
Media path

Loading rolled media onto the winder

1. Rotate the air core shaft until the square slot in the shaft is facing up.

2. Unlock the safety chuck by pushing the top of the flange outward and away from the center of air core shaft.

If the safety chuck will not unlock, the air core shaft is not in the correct position.

3. Carefully lift the air core shaft out of the cradle and place the air core shaft on the floor.
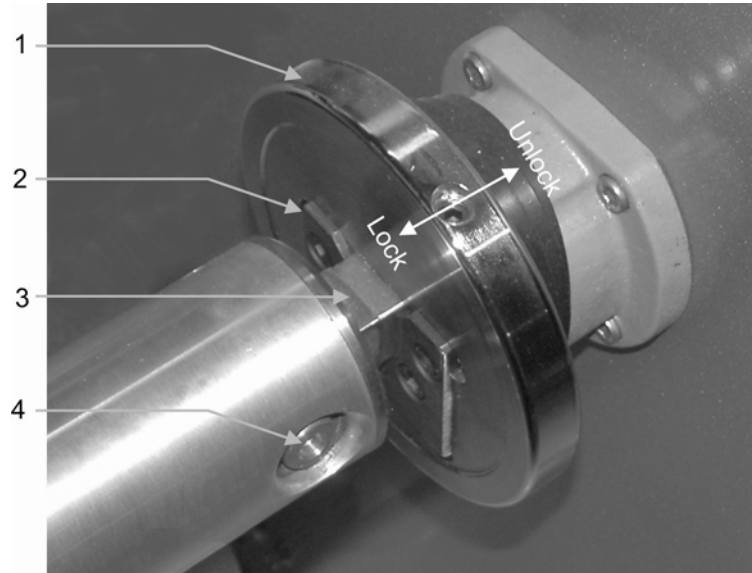
Key

1   Safety chuck

2   Shaft cradle

3   Shaft end

4   Air core inlet

⚠️ To prevent injury or back strain, use two people when removing or installing a loaded air core shaft.

4. Remove the old media roll from the air core shaft.

5. Slide the air core shaft into the new media roll.

6. Lift the air core shaft and media roll and insert the air core shaft's ends into the square slot in the shaft cradle.

7. Lock the air core shaft in place by pulling the top of each safety chuck inward towards the center of the air core shaft.

8. Align the collar on the air core shaft to the left media fence stop.

9. Push the media up to the collar on the air core shaft.
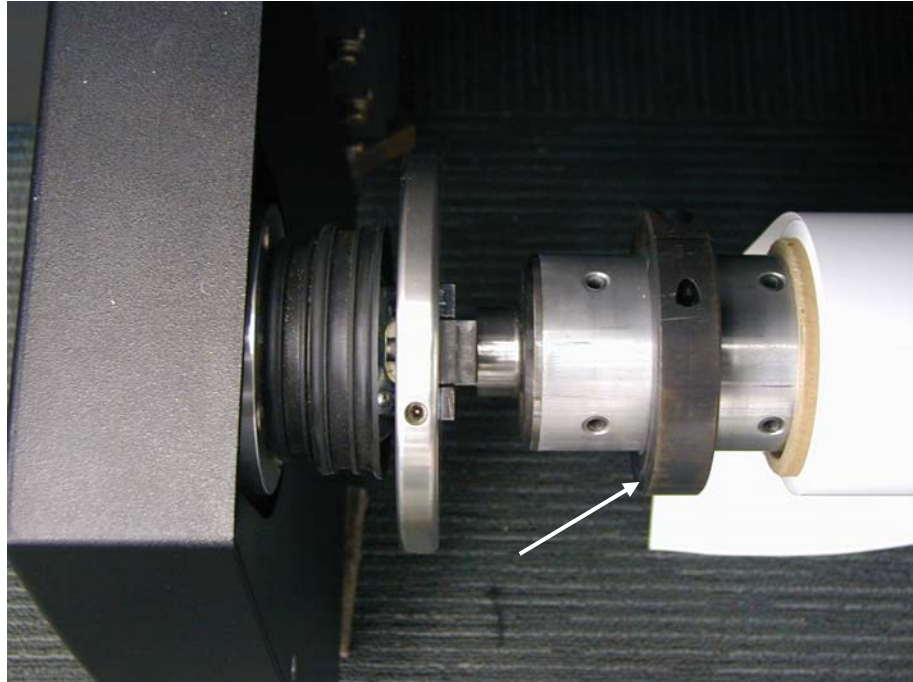
Collar

9   Click **Load Web** (⬚) to lift the rear media hold down assembly.

10 Continue loading the media through the printer by feeding the media across the conveyor belt. Lift the outfeed media hold down assembly if necessary.

11 Move the leading edge of the media through the printer. Pull on the media to make sure it is straight and smooth. Remove any wrinkles before printing.

12 Using the air nozzle, charge, or pressurize, the rear air core shaft until the core is secure.

The air core shaft holds the rolled media. Charging the air core shaft secures the media roll to the shaft.

If you don't charge the air core shaft, the media roll can spin freely (and independently of the air core shaft and the winder). This may be useful in some applications.

⚠️ Switch off the winder when printing if the air core shaft is not charged. This prevents the media from accidentally unwinding.

13 Place an empty roll on the rewinder air core shaft.

14 Install the air core shaft (with the empty roll) on the rewinder (front), and apply air.

15 Tape the media to the empty media roll.

Begin taping in the center of the media roll and work toward both edges.

16 Click **Print** ( ).

The media roller will lower, the vacuum will switch on, and the carriage will move to the print position.

17 Set the directional switches on both the unwinder and rewinder as required.

18 Adjust the tension/speed knobs on the unwinder and rewinder to provide a light tension to the media.

| Slower | Reduces tension | Counter clockwise |
| Faster | Increases tension | Clockwise |

⚠️ **Too much tension will damage the unwinder/ rewinder.**

Media hold down assembly

The media hold down rollers apply pressure to the media as it passes through the printer. This allows the media conveyor belt to transport the media under the UV lamps and jet packs while remaining as flat as possible and without any wrinkles.

On thicker materials, it is necessary to raise the outfeed hold down roller slightly to allow a smooth transition over the edge of the thicker media.

Infeed media fence and hold down roller

Media fence

The media fence controls input registration along with the VUTEk User Interface for placement of the printed image. The margins position the image in relationship to the edge of the media fence. The image prints straight on the media within the selected margins by aligning the media against the fence edge.

Your printer may have an adjustable fence. Media placement tabs can be adjusted along the length of the fence allowing the user to position the media in a desired location. The tabs can also be used to load multiple sheets at the same time. There are three end tabs and multiple center tabs.

Adjusting the media tab

1. Unscrew the knob to loosen the media tab.

2. Slide the media tab to the desire location using the measurement lines on the fence.

3. Tighten the knob to secure the media tab.

Loading sheet media

Feed individual sheets of rigid or flexible media into the printer from the input table as shown below.
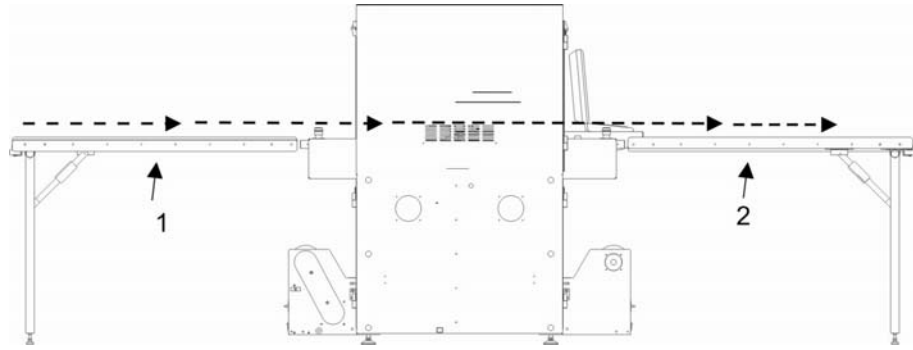
Sheet media feed path

Installing the tables

The input and output tables can be installed without removing the unwinder or rewinder accessories. The input and output tables are installed over the winder assemblies.

1   Remove any continuous media from the rewinder and conveyor belt. Roll the excess media back onto the air core shaft on the unwinder.

2   Position the table between the mounting brackets on the printer.

3   Engage the table bracket with the mounting brackets on the printer.
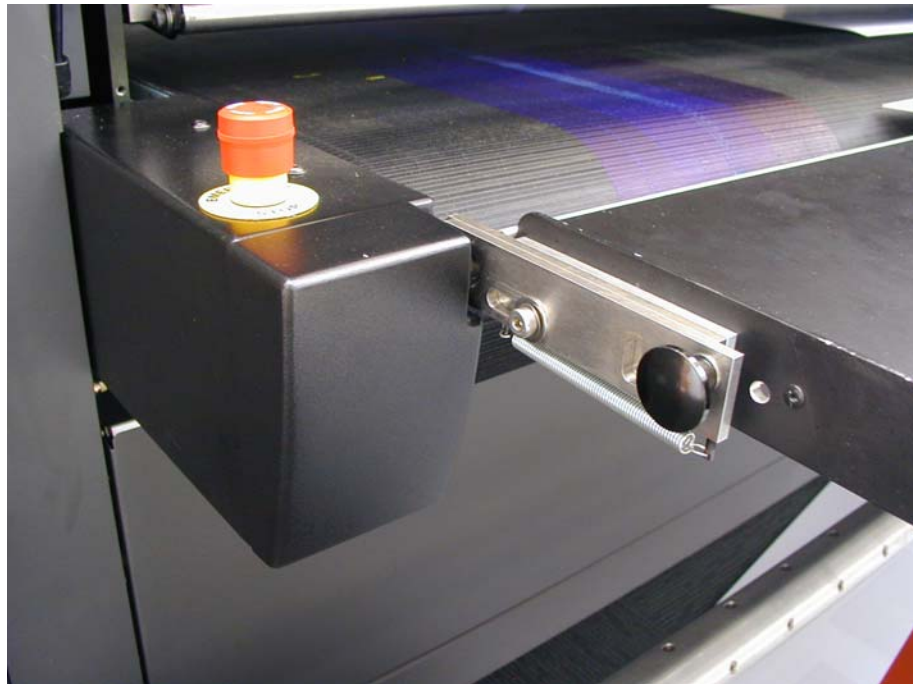
Table bracket

Using the input table

1   If the fence is not already down, click **Load Sheet** (⬚) to lift the rear media hold down assembly and lower the fence.

2   Push the edge of the sheet up against the fence and against the edge guide on the media fence.

3   Click **Print** (⬚).

As the media conveyor belt starts, the media roller will lower and the media fence will raise. The media will then advance into the printer and the carriage will move to the print position.

Printing

Each print job consists of a prepress phase and a printing phase. During prepress, the RIP software prepares the customer-supplied input file for the specified output size and media. The resulting file is loaded on the printer. For more information about preparing an input file using the RIP software, refer to your RIP manual.

The printing phase of the job can begin when the RIP (.RTL) input file is transferred to the printer's Import folder.

1   Use your RIP software to create an .RTL file.

2   Transfer the .RTL file to the printer.

Copy the .RTL file over your network or write the .RTL file to a CD or DVD and then transfer it to the printer.

3   Open the RTL file in the active image window.

4   Load your media (sheet or web).

5   Perform a startup and run a jet test.

6   Choose your print options.

7   Choose a media type or create a new media type.

8   Create a layout or queue.

9   Start the print job and observe print quality.

10 Make print option adjustments.

Using RIP software to create an .RTL file

Refer to your RIP manual for instructions on how to prepare an image file as an .RTL file for printing.

Transferring a file

There are two methods to transfer .RTL files from the RIP station to your QS Series printer.

▶ Network transfer (this is usually the most straightforward and productive method).

▶ Copy the file to a CD or DVD and then copy the file from the disk to the printer.

Network transfer

1 Copy the .RTL file from the RIP station to the printer's Import folder.

   This puts a copy of the RTL file in the printer's Import folder.

2 In the VUTEk User Interface, click **Disk Management** ( ).

3 In the **Disk Management** dialog box, browse to the Import folder and choose the file you want to print.

   The full path to the Import folder is **/java/Data/Import**.

4 Double-click on the file to open it in the active image window.

CD or DVD transfer

1 From the RIP station, copy the .RTL file to a CD or DVD.

2 Insert the CD or DVD into the printer's DVD player.

3 From the VUTEk User Interface's **File** menu, point to **Import**, and then click **DVD-CDRom**.

4 Choose the .RTL file that you want to import.

5 Click **Open** to send the .RTL file to the active image window.

6 To remove the CD/DVD from the drive, double-click **Eject CDROM.**

Choosing your print options

After loading the .RTL file into the active image window you can begin setting your print options.

In the VUTEk User Interface, click on the image in the active image window. This opens the **Print Options** dialog box.

For detailed information about setting the individual print options, click **Help** (![?]).
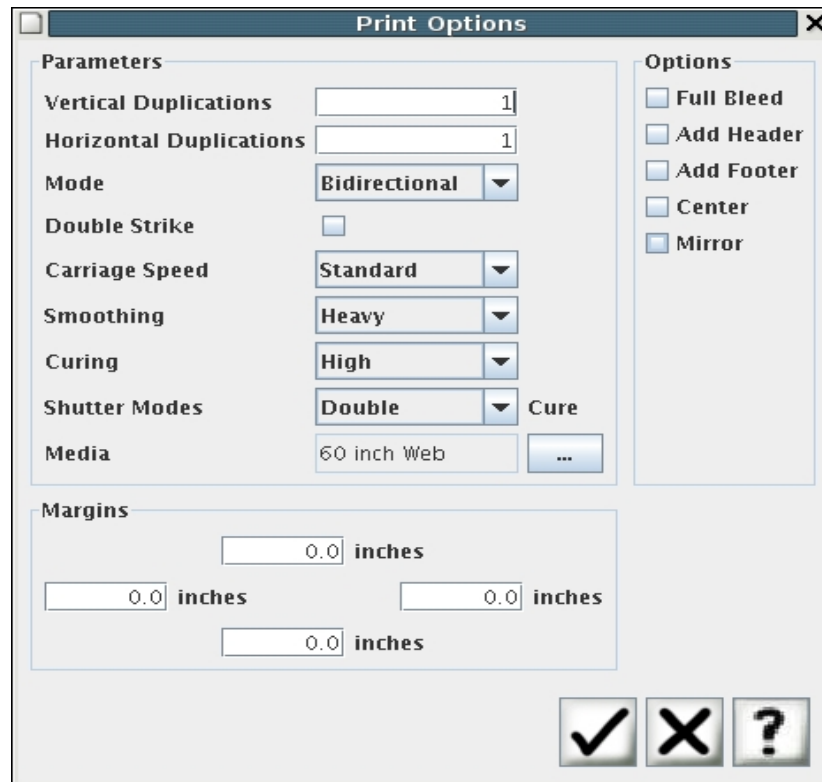
Choosing a media type or creating a new media type

You can choose an existing media type or create a new media type by,

▶ Clicking on the image to open the **Print Options** dialog box.

▶ On the **Setup** menu, click **Media Database**.
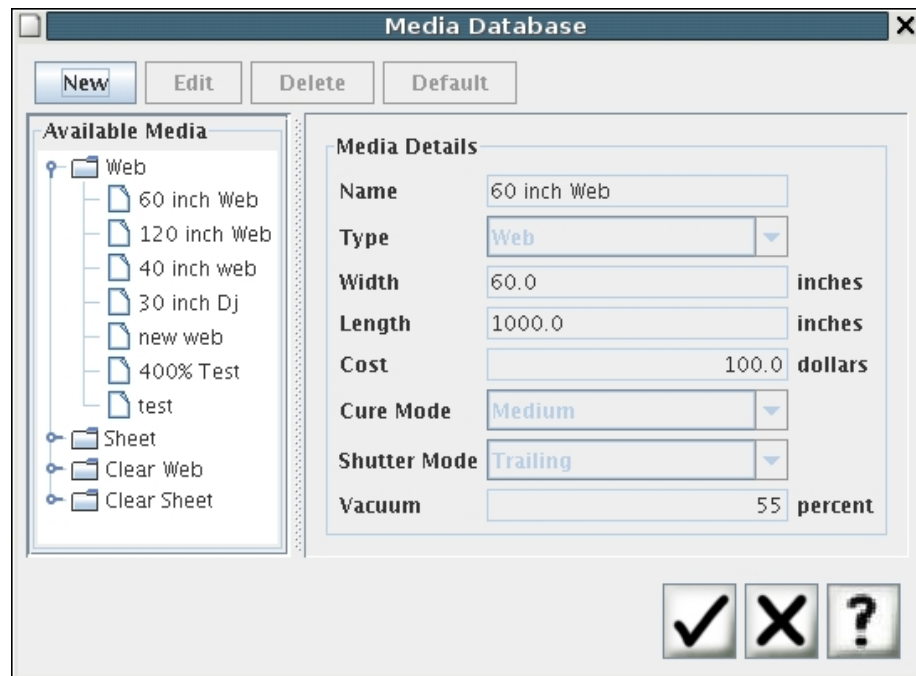
Creating a layout

Creating a layout lets you position one or more images in the active window onto a selected media and create an .RTL file without having to return to the RIP station.

EFI recommends using the RIP station to create very large or very complex layouts. Use this procedure only for smaller, simpler layouts.

Layouts are shown as pink in the active image window.

1   Right-click on an image in the active image window, on the popup menu click **Add to Layout**.

2   Enter a name for the layout

3   Click **Browse** ( ) to open the media database where you can choose the media that you want to use for the layout.

4   Enter the layout's left, right, top, and bottom margins.

5   When you're finished defining the layout's parameters, click **Compile**. A progress indicator will show the compilation's progress and then the importing status.

6   When the compilation finishes, click **OK** ( ).

7   Make print option adjustments.

8   Print the image as you would print any other image.

Creating a queue

Creating a queue lets you print the files, or images, in the active window while assigning different print settings or options to each image.

A queue uses the print settings and options from each image in the active window. You can change the images' print settings and options as necessary before printing the queue.

This is useful when printing large tiled jobs: You can set up each tile in the active window and then insert the tiles into the queue to be printed one after another.

Queues are shown as green in the active image window.

1   Right-click on an image in the active image window, on the popup menu, click **Add to Queue**.

2   Enter a name for the queue.

3   Enter the number of runs (this is how many times the queue will be printed).

4   Click **Add** (⊞) to add another image to the queue.

5   Click (✕) to delete an image from the queue.

6   Click **Apply** (✓) when you're done.

Full bleed

The QS Series printer will print up to a maximum of 0.25" (0.635 cm) larger than the chosen media. Any files larger than the maximum allowable area are truncated. Consider this when RIPping the file.

Printing long runs with full bleed can allow ink to build up on the media conveyor belt. Please refer to your *Service Guide* for media convey belt cleaning procedures.

1.   From the VUTEK User Interface, click on the image in the active image window to open the **Print Options** dialog box.

2.   Check **Full Bleed.**

3.   Click **Apply** (✓).

4.   Choose the media type.

5.   Choose any print options you want use.

6.   Load the media.

7.   Click **Print** (◈).

Day/night backlit

The QS Series printer lets you print on the back of media.

The back image — the image to be viewed through the media — is mirrored. This is done by printing on the opposite side of the printer with the software manipulating the image.

1. From the VUTEk User Interface main window, click the image in the active image window to open the **Print Options** dialog box.

2. Check **Mirror**.

3. Choose the media type.

4. Choose any options you want to use.

5. Click **Apply** (✔).

6. Load the media on the *right* side of the fence as you face the *rear* of the printer. Align the media as you would on the left side.

7. Click **Print** (◈).

Adjustments and Calibrations

Setting the head gap

The printer automatically adjusts the carriage height at the start of each print. The total carriage height is the sum of the assigned print gap plus the media thickness as measured by the printer.

During installation, the print gap is set to 0.060" (0.1524 mm) with the carriage height adjustment knob turned fully clockwise.
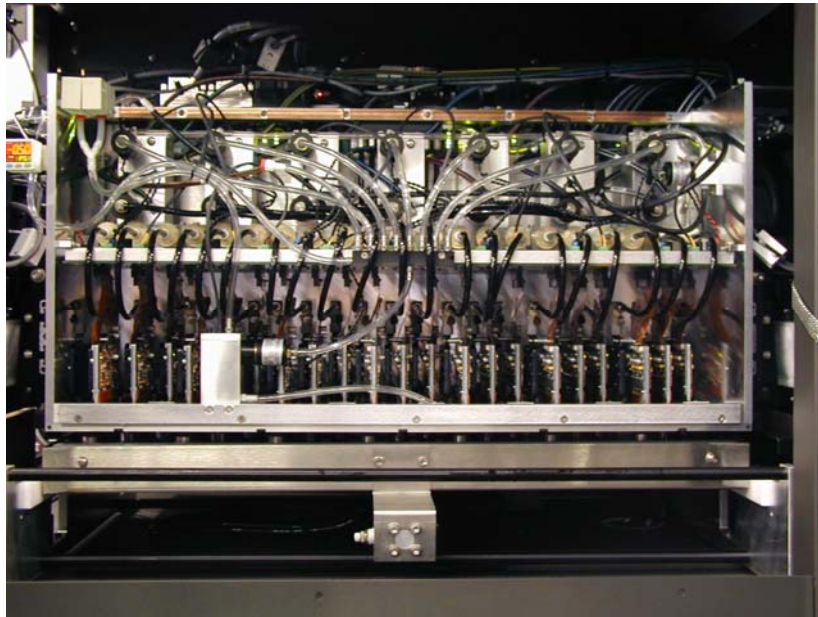
Carriage

Adjusting the head gap

1 Load the media you want to check the head gap for.

2 From the VUTEk User Interface **Service** menu, click **Service Aids**.

3 In the **Service Aids** dialog box **Carriage Maintenance Positions** section, click **Set Carriage Height** (⊟).

The carriage moves to the right side of the print area, drops onto the media and locks in place.

4   Open the front door and raise the media hold down roller using the adjustment knob on either side of the roller. Slide the 0.060" shim under the left and right sides of the carriage.

The shim should touch the media and the bottom of the carriage plate, and there should be a slight resistance when the shim is moved (the shim should *not* bind).

5   If necessary, turn the carriage height adjustment knob. Turning the knob clockwise will decrease the gap and turning the knob counter clockwise will increase the gap.

Turn the knob in small increments to increase or decrease the gap, click **Carriage Height** (⬆) to re-set the carriage height after each adjustment.

6   Repeat steps 3 through 5 until you achieve the correct alignment.

Managing jet packs

The QS Series printer has three print heads for each color. Each jet pack has 510 nozzles that deposit tiny droplets of ink onto the media in precisely controlled combinations and patterns.

The jet packs must be handled and maintained properly to ensure that your printer continues to produce high-quality output. Dried ink and dirt particles can cause the jets to fire erratically or can completely block the jets' nozzles — both of which will result in poor print quality. Mechanical damage caused by improper handling or media contact will also cause print quality issues.

> ⚠️ Material contact with the jet packs (head hits or head strikes) is the major cause of failure of jet packs. Head hits force partially cured ink into the nozzles. When left in the jet nozzles, the ink continues to cure, causing permanent nozzle blockage.
>
> Your jet pack warranty does *not* cover damage caused by head hits or strikes.

Proper solvent purging and jet pack face wiping (with SCAQMD- [South Coast Air Quality Management District] compliant maintenance fluid) can help recover blocked nozzles and prevent permanent damage. If blocked jet

nozzles can not be recovered in the printer, remove and clean the jet pack in the jet recovery station. Follow the instructions provided with the jet recovery station.

When working with the jet packs, keep the following points in mind:

▶ To avoid ink flow blockage, replace the carriage ink filters semi annually.

▶ Debris and dried ink on the exterior of the jet pack can cause droplets to scatter or fire in the wrong direction. Follow the jet pack cleaning instructions to keep the jet packs clean and free of contaminants.

▶ Keep the jet plate and the surrounding area clean. Dust and debris can migrate to the jet surface during cleaning.

▶ Any kind of mechanical damage done to the surface of the jets will cause degraded print quality and lead to premature jet failure. Use only EFI-approved, clean room cloths for wiping the surface of the jet packs. You can purchase these wipes directly from EFI.

▶ An air bubble in a jet pack will cause jets to lose their prime. If this occurs, purge and wipe the jet pack as described in the jet pack clearing procedure.

▶ Oils, salts, or acids from the skin can cause damage to the jet packs. Do *not* touch the surface of the jet packs with your bare hands at any time; always wear nitrile gloves when working around jets and UV-curable inks.

▶ If the printer is going to be idle for an extended period — such as overnight — perform the sleep or shutdown procedure (see page **Error! Reference source not found.Error! Bookmark not defined.**). These procedures will help protect the longevity of your printer's jet packs.

▶ Always store jet packs in their original packaging.

Cleaning the jet packs

The UV curing system is an "always on" system. As a result, a small amount of stray UV radiation may escape from the lamp housings causing ink to cure in or on the jet packs. EFI has taken steps to minimize the amount of stray UV radiation reflecting back to the jet packs. However, it may occasionally be necessary to clean cured ink residue from the jet packs.

1 Inspect the face of the jet packs regularly using a low-intensity (non-UV) flashlight.

Do *not* use fluorescent lights near the jet packs. Fluorescent light contains UV light which will cure the ink.

2 Using a clean, EFI-approved clean room free wipe soaked in SCAQMD maintenance fluid, remove the ink residue by gently wiping the face of each jet pack on a regular basis (every two to three hours).

When wiping the jet packs' faces, be gentle and wipe in one direction only. Do *not* rub the jet too vigorously.

Keeping the jet's edges clean will help prevent debris from contaminating the jet pack's nozzles.

Jet test patterns

The jet test is an easy way to verify that all jets and all the jets' nozzles are operating. A test pattern prints one segment for each of the jet packs, in the order the jet packs are in the carriage plate. This helps identify which, if any, jet packs are missing nozzles.

Jet test properties

If a job is selected when a jet test is performed, the jet test will take on the properties of the selected job. When no job is selected, the jet test uses the default properties. For example, if you have a job selected that uses the post shutter mode, the jet test will also use the post shutter mode.
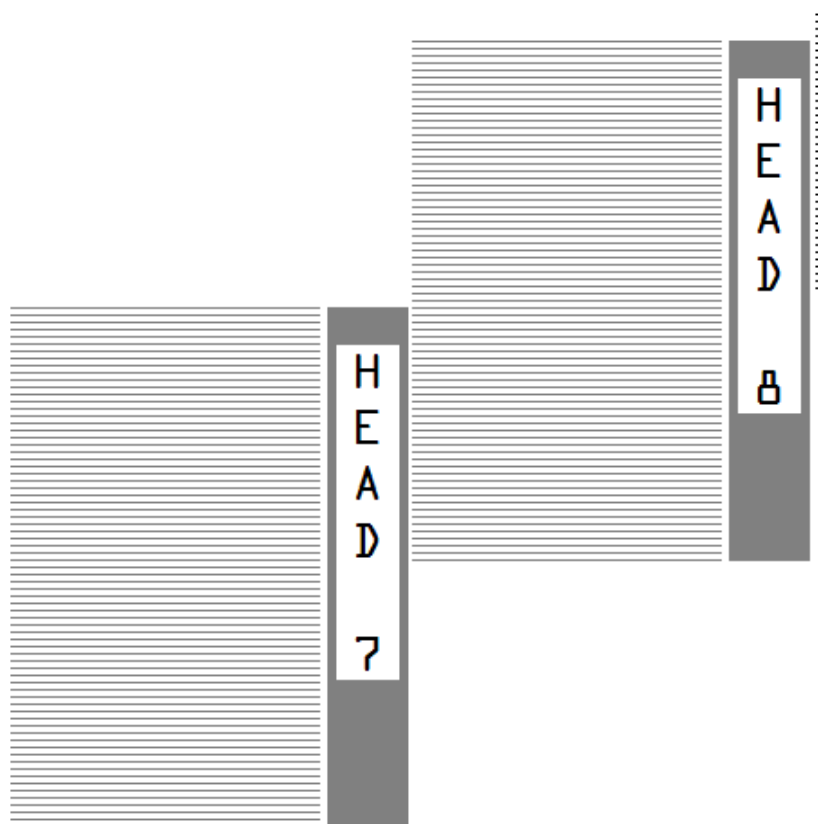
A sample of the jet test pattern (partial)

The test pattern creates solid and lined areas that correspond to each nozzle in the jet pack for the color being tested. Missing line segments or faded blocks indicate that the jet pack's nozzles are not firing properly. Because each line segment corresponds to a single nozzle, you can easily identify which jet packs are missing nozzles.

Printing a jet test pattern

1. Load media into the printer.

2. From the VUTEk User Interface, right-click **Test** (⊙), on the popup menu, click **Check Jets**.

3. Click **Test** (⊙).

4. If any line segments are missing, use the jet pack clearing procedure, below, to recover the missing nozzles.

Quick purge

If you detect a missing line segment in the test pattern, begin by using the following procedure to recover the nozzle.

1. From the VUTEk User Interface, choose **Quick Purge** from the **Service** list and then click **Purge All** (⊞).

2. Print another jet test pattern.

Nozzle clearing procedure

If you detected a missing line segment in the test pattern, if the quick purge does not recover the nozzle, use the following procedure to recover the nozzle.

1. Wipe the jet pack with a EFI-approved wipe saturated in maintenance fluid.

2. From the VUTEk User Interface, choose **Ink Purge** from the **Service** list. Enter a purge time of 12 seconds.

   ▶ Click **Purge All** () to purge all colors.

   ▶ Click on the color that you want to purge.

3. Print a jet test pattern.

4. Repeat this procedure up to three times.

Jet pack recovery procedure

If you were unable to recover the missing nozzles using the nozzle clearing procedure (above), and you suspect that the nozzles are missing due to contact between the jet pack and the media, use this procedure to clear the nozzles.

1. From the VUTEk User Interface, set the purge time to 40.

2. Choose **Solvent Purge** from the service list.

3. Perform a 40-second solvent purge for each color with missing jets by clicking the **Ink Channel** button () for the corresponding color.

4. Hand wipe the jet packs with the missing nozzle using a VUTEk-approved wipe and maintenance fluid.

5. Perform a 15-second ink purge for the colors with the missing nozzle.

6. Run a jet test.

7. Repeat steps 4 through 6. If necessary, repeat these steps up to three times.

8. If the jet pack still has missing nozzles, purge solvent through the jet pack to remove any ink from the jet pack.

   From the service list, choose **Solvent Purge**; click **Ink Channel** () to begin the purge.

9. Power off the printer.

> Always switch the power off *before* removing jet packs.

10. Remove the jet pack and use the jet recovery station to recover the missing nozzles.

    Refer to your *Service Guide* for instructions on how to remove the jet packs and how to use the jet recovery station.

11. Re-install the jet pack, perform an ink purge, and print a jet test. Save a copy of the test print for your records.

Bidirectional (horizontal) alignment test

The bidirectional alignment test is an easy way to verify horizontal print alignment. If you detect a misalignment in a test pattern, you will need to adjust the bidirectional alignment setting.

The bidirectional alignment test prints a series of evenly spaced vertical lines in one direction and then overlays the pattern in the opposite direction. The test pattern labels the speed and incremental value of the line. The printer will repeat this process, incrementing the alignment value by approximately 0.002" (0.0508 mm) each time. When the series of vertical lines appear to be one line (printed directly over one another or vertically aligned), enter the value shown above the best bidirectional alignment test pattern into the **Bidirectional Calibration** dialog box. The value can be adjusted to within 0.0001" (0.00254 mm) based on image quality.

Bidirectional alignment test

1. From the VUTEk User Interface right-click **Test** (⊘), from the popup menu, click **Bidirectional Alignment**.

2. Click **Test** (⊘).

3. After printing the test, use a magnifying loupe or glass to examine the grid carefully for alignment errors.

Misaligned   Correct

0.0300   +0.0350   +0.0400   +0.0450   +0.0500   +0
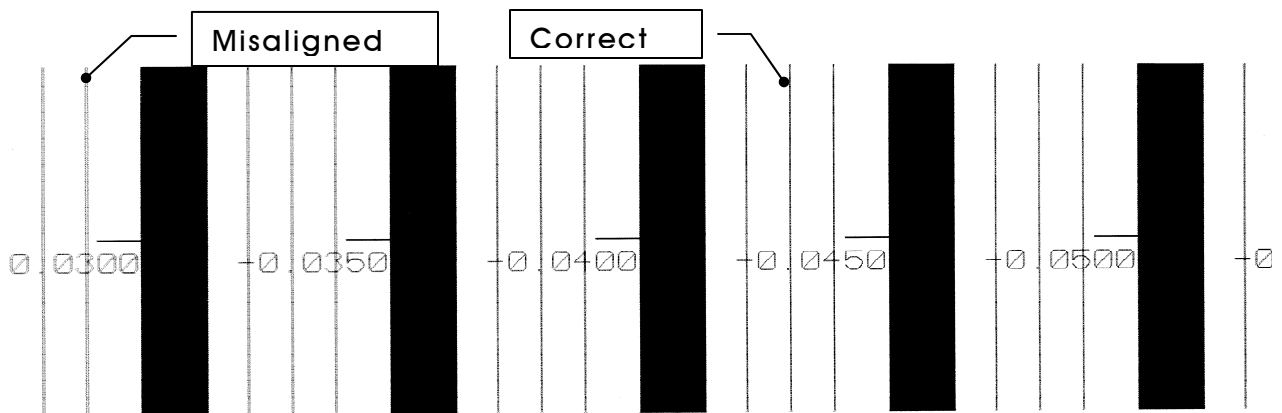
Sample bidirectional alignment test

Modifying the bidirectional alignment

1. Choose the bidirectional alignment pattern that appears to be one line (printed directly over one another) and the text is crisp and clear.

2. From the VUTEk User Interface **Setup** menu, click **Bidirectional Settings**.

3. In the **Bidirectional Settings** dialog box, enter the bidirectional value for the print speed shown on the bidirectional alignment test.

   For example, using the bidirectional alignment test above as a reference, you would enter **1.168** in the **Maximum Alignment** box. Please note that the value from your bidirectional alignment test will probably be different from this example.

4. Click **Apply** (✔).

5. Run another bidirectional alignment test (see above for instructions).

   ▸ If the vertical lines overlap (appear as one line), the bidirectional alignment is correct.

   ▸ If the vertical lines do *not* overlap, choose a value that looks like the best and enter that value in **Bidirectional Calibration** dialog box.

6. When you have found the correct value, click **Save as Default** (⊟).

Step calibration (vertical) test

The step calibration test is an easy way to verify vertical print alignment. Improper step size will create horizontal bands between each carriage pass. If banding is present, adjust the step alignment.

The step calibration test prints a series of evenly spaced horizontal dashes on the first pass and then repeats the pattern in the opposite direction. The step size value prints above each pattern segment. The printer will repeat this process, incrementing the alignment value by approximately 0.005" (0.127 mm) each time. When the series of horizontal lines appear to form a single solid line (printed directly over one another or horizontally aligned), and enter the value above the best step adjustment test pattern into the **Step Settings** dialog box. The system allows adjustments to within 0.0001" (0.00254 mm).

1. From the VUTEk User Interface right-click on **Test** (⟲), from the popup menu, click **Step Alignment**.

2. Click **Test**.

3. After printing the test, carefully examine the pattern for alignment errors.

2.8400   2.8350   2.8300   2.8250   2.8200

Misaligned   Correct

Sample step alignment test

Modifying the step calibration

1. Choose the step pattern that appears to be one line (printed directly over one another) and with crisp clear text.

2. From the VUTEk User Interface **Setup** menu, click **Step Settings**.

3. In the **Step Settings** dialog box, enter the step distance chosen from the pattern from step 1.

    For example, using the step alignment test above as a reference, you would enter **2.594**. Please note that the value from your step alignment test will probably be different from this example.
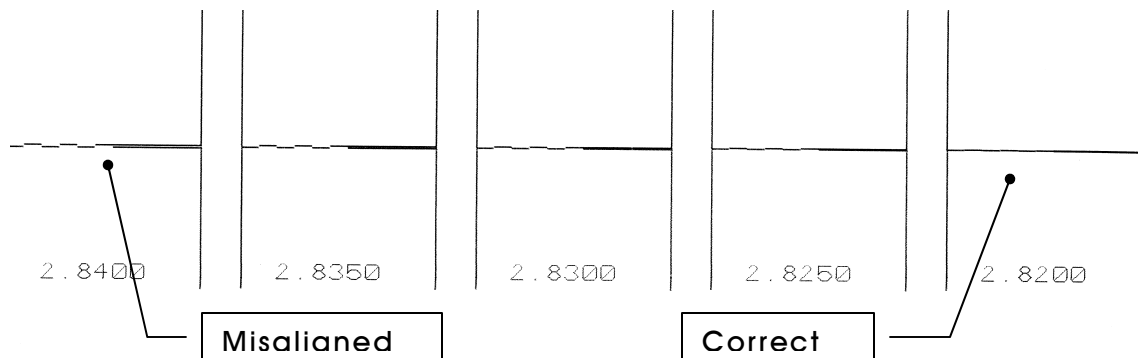
4. Click **Apply** (✔).

5. Run another step alignment test (see above for instructions).

    If the horizontal lines overlap (appear as one line or as a continuous line), the step alignment is correct.

7. When you have found the correct value, click **Save as Default** (⬛).

Setting the step size

This procedure describes how to find the step setting that works best for your printer.

1. Create a 48" wide by 12" high (122 x 30 cm) rectangular box, made up of 100% cyan and 50% magenta.

2. RIP the file and transfer it to the printer.

3. Use the following settings:

Head Height	0.060"
Carriage Speed	40 IPS
Bi-Directional Setting	Optimal value
Step Size	2.603
Shutter Mode	Double shutter
Smoothing Override	On (from **Overrides** menu)
Media Vacuum	Optimal value

    The media vacuum should be set for the width of whatever material you choose. For example, use the 30-inch sheet vacuum setting for a 30-inch sheet.

4. Print the blue square. Allow it to complete the file.

5. Repeat steps three and four, above, changing the step size by 0.001" each time.

6. Write the step size next to each print as it comes off the printer. Work your way up and down, 2.604, 2.605, 2.602, 2.601, and so on.

7. After you have printed a few of the squares with different step sizes, lay them on the floor and choose the one that looks the best.

8. Take the step size from the best-looking square, and enter it in as your step.

9. Repeat the process, making smaller adjustments to the step.

   For example, if your best-looking step value was 2.603, you should print the square with step values of 2.6031, 2.6032, 2.6033, 2.6034, and so on.

   Continue printing until you reach 2.6039.

10. Lay these prints out and choose the step that looks best. This is your step size.

⚠ **Because you are not using smoothing, the print will not be perfect! Choose the print that looks the best (has the most even and consistent step with the least noticeable dark or light lines).**

11. Enter this step size into the VUI and click **Save as Default** (⏚).

⚠ **Do *not* change this step size setting unless you repeat all the steps in this procedure.**

Using the curing lamps

Your QS Series printer uses UV light to cure the ink to the substrate during each carriage pass. There are two lamps, one on each side of the carriage, that apply UV energy. These lamps can be adjusted for optimal ink curing for the substrate you are printing on.

The printer's carriage speed affects the duration of light exposure, and therefore the dosage applied to any portion of the image. Different media may require adjusting the shutter mode and the lamp power setting.

Lamp shutter mode settings

The shutter mode setting can be set at single cure, post cure, or double cure.

1. From the VUTEk User Interface, click on the image.

2. In the **Print Options** dialog box, chose the shutter mode that you want to use.

Single	Cures with the trailing lamp only
Post	Cures with the leading lamp only
Double	Cures with both lamps

3. Click **Apply** (☑).

Adjusting lamp cure energy

The lamp cure energy setting adjusts the amount of curing used during the printing process and can be set at high, medium, low, or minimum.

To help minimize head strikes, on substrates that you are unfamiliar with, start with a low curing energy and observe the material's response to the heat and energy.

1. From the VUTEk User Interface, click on the image.

2. In the **Print Options** dialog box, chose the cure mode that you want to use.

High	Full power (100%)
Medium	Three-quarter power (75%)
Low	Half power (50%)
Minimum	Quarter power (25%)

3. Click **Apply** (☑).

Ink and Waste System

The QS Series printer's UV-curable ink comes in sealed 3.25-liter containers. This special, "bag-in-a-box" ink supply system provides the maximum possible protection from exposure to light while keeping the ink adequately contained during handling.

⚠ Always wear protective goggles, nitrile gloves, and an apron when working with UV-curable ink.

Storing ink

UV-curable ink has a typical shelf life of approximately 12 months. Rotate the UV-curable ink stock to use the oldest stock first to avoid ink loss due to expiration. The ink's expiration date is on the outside of each ink box. The printer detects expired ink dates and does not allow printing. Treat expired inks as hazardous waste and dispose in a manner consistent with your local regulations regarding the disposal of hazardous waste.

UV-curable ink boxes must be stored in an environmentally controlled area that is both dark and well ventilated. Extended exposure to light and/or intense heat can cause the ink to cure.

Do *not* store UV-curable ink boxes in close proximity to oxidizing agents.

Replacing ink boxes

The quick-connect fittings used to attach the ink box let you remove old ink boxes and install new boxes with minimal exposure to UV-curable ink. For your personal safety, always observe the appropriate precautions when replacing any ink box.

⚠ Always wear protective goggles, nitrile gloves, and an apron when working with UV-curable ink

Ink cabinet

1. Open the ink compartment doors.

2. Remove the ink support bracket from the box of ink by gently sliding the bracket off the coupler and off the bottom of the ink box.

3. Remove the old ink box from the ink support bar and set the box on the bottom of the ink compartment.

4. Press and hold the button in the center of the quick-connect fitting, pull the fitting gently away from the top of the ink box.

5. Remove the empty ink box from the ink compartment and discard appropriately.

6. Set a new ink box of the appropriate color on the bottom of the ink compartment.

7. Remove the ink box cutout to expose the ink coupler. Pull up on the coupler to straighten the tube inside the bag.

8. Install the support bracket by sliding the cutout portion around the ink coupler and under the bottom of the ink box.

9. Press the quick-connect fitting onto the ink box opening. Pull up on the coupler to straighten the tube inside the bag.

10. Set the ink box onto the ink support bar.

11. On the **Diagnostics** menu, click **Ink Status** to verify that the new ink box has been initialized.

    If the ink status is red (not initialized), open the firmware, choose **Ink Status**, and then click **Read Ink Data** (in the lower right-hand corner)

12. Close the ink compartment doors.

13. See your *Service Guide* for information about ink calibration.

Preventive Maintenance

Perform all daily, weekly, and periodic maintenance procedures on schedule to keep your printer running at its best.

Your printer's *Maintenance Log* contains checklists for all your printer's maintenance functions. These checklists can help you track the date and time each procedure is performed. After performing each maintenance task, be sure to record the date and time in your *Maintenance Log*.

A properly maintained *Maintenance Log* can be a valuable diagnostic resource to help EFI's technical support representatives should they need to help you.

Maintenance materials

The following materials should be available to complete the required maintenance procedures:

▶ UV safety glasses

▶ Standard safety glasses

▶ Nitrile gloves

▶ Sleeve protectors

▶ General purpose cleaning cloths

▶ VUTEk-approved clean room wipes

▶ Light oil (5-weight, non-detergent — such as 3-In-One brand, or similar)

▶ Isopropyl (rubbing) alcohol

▶ SCAQMD maintenance fluid

Lockout/tagout

The lockout/tagout procedure prevents anyone from inadvertently restoring power to the printer while you are working on it.

> ⚠️ **Always perform the lockout/tagout procedure before performing any maintenance or repair procedure (unless the written procedure specifically states otherwise).**

1. Rotate the main disconnect switch to the **Off** position.

2. Install a lock (keyed or combination) in the space provided on the main disconnect switch.

   To restore power to the printer, remove the lock and rotate the main disconnect switch to the **On** position.

Main disconnect switch in the Off position

> ⚠️ **Setting the main disconnect switch to Off does *not* remove power to the switch. If work must be done on the main disconnect switch, the printer must be removed from facility power or full line voltage will be present.**

Every two hours

1. Wipe the jet pack faces with SCAQMD maintenance fluid and an EFI-approved wipe.

2. When you're done, enter the date, time and your initials in the *Maintenance Log.* This procedure should take about five minutes to complete.

Every eight hours

At least once every eight hours, verify that the printer is operating under optimal conditions by performing the procedures described below.

These procedures should take about 10 minutes to complete.

1. Clean and lubricate the carriage rails using a light petroleum-based oil (such as 3-In-One, or similar).

> ⚠ To prevent damage to the carriage bearings, use only light petroleum-based oil. Do *not* use synthetic oil or spray lubricants.

2. Check the ink levels. On the **Diagnostics** menu, click **Ink Status**. Use the ink level percentages to estimate the amount of ink available for the current print job. Replace as necessary.

3. When you're done, enter the date, time and your initials in the *Maintenance Log*.

Cleaning and lubricating the carriage rails

Lubricate the carriage rails on your printer every eight hours with light petroleum-based oil (such as 3-In-One, or similar). In some cases, it may be necessary to perform this task more frequently, depending on the print mode and speed.

> ⚠ To prevent damage to the carriage bearings, use only light petroleum-based oil. Do *not* use synthetic oil or spray lubricants.

Carriage rails
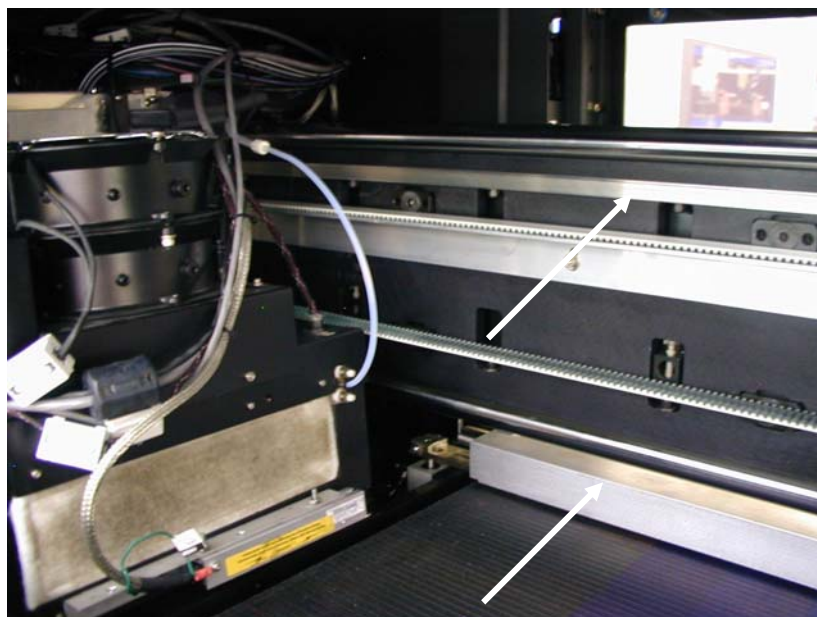
1 Clean the surface of the carriage rails using a clean lint-free cloth.

2 With the carriage positioned to the far left end, apply light oil (such as 3-In-One) to a lint free cloth and wipe evenly over the surfaces of the upper and lower carriage rails.

3 From the VUTEk User Interface **Service** menu, click **Service Aids**.

4 From the **Service Aids** dialog box **Carriage Maintenance Positions** section, click **Maintenance** (⊕) to move the carriage to the maintenance position.

5 Apply light oil to a lint-free cloth and wipe evenly over the surface of the home position.

⚠ Do not apply oil directly onto rails. Oil may drip onto the media or encoder strip and can result in print defects.

6 Wipe off the dust rings on both ends of the carriage rail. Before returning the printer to operation, wipe any excess oil from the rails. If any oil is on the encoder strip, clean the encoder strip with isopropyl alcohol.

7 From the VUTEk User Interface **Service Aids** dialog box **Carriage Maintenance Positions** section, click **Home** (⊞) to move the carriage to the home position.

Daily

To keep your printer performing at its best, it must be cleaned and calibrated at least once a day. EFI recommends performing these tasks at the beginning of each day.

These procedures should take about 30 minutes to complete.

1. Clean the front and rear media hold down rollers with isopropyl alcohol.

2. Check the filter and water trap on the incoming air supply system. Empty or replace as necessary.

3. Check the waste tank fluid level. Empty or replace as necessary.

4. Check the solvent tank fluid level. Fill as necessary.

5. Clean the purge wiper and vacuum pads using SCAQMD maintenance fluid.

6. When you're done, enter the date, time and your initials in the *Maintenance Log.*

Cleaning procedures

Your QS Series printer contains static-sensitive electronic components and a precision ink-delivery system. Take great care when cleaning the printer. Specific considerations for cleaning your printer include,

1. Always perform the lockout/tagout procedure before cleaning the electronics or opening the carriage enclosure.

2. Use only EFI-approved, lint-free, clean room-quality cloths when cleaning the jet pack surfaces.

3. Do *not* use water. Water can short-circuit the electrical components and cause corrosion to mechanical parts.

4. Do *not* use acid or abrasive products.

Weekly

These procedures should take about 60 minutes to complete.

1. Clean ink residue off the UV lens with an EFI-approved clean room wipe and isopropyl alcohol.

2. Clean ink residue off the light shield trays with isopropyl alcohol.

3. Inspect the filters on the outside of the lamp housing on the carriage assembly. Replace as necessary.

4. Measure the head gap and verify the carriage height. Adjust as necessary.

5. Clean and lubricate the purge wiper rails using a light oil (such as 3-In-One).

6. Clean ink spatter from the encoder strip with an EFI-approved clean room wipe and alcohol.

7. Clean the material detector lens with a clean lint-free cloth or wipe and isopropyl alcohol.

8. When you're done, enter the date, time and your initials in the *Maintenance Log.*

Inspecting the lamp housing air filters

Each lamp housing has two air inlet filters, one on either side, that filter the cooling air before it enters the lamp housing. The lamp housings draw air in from the enclosed printer. Regular inspection and replacement of the filters prevent the lamp housings from overheating.

1. From the **Service Aids** dialog box **Carriage Maintenance Positions** section, click **Maintenance** (![icon]) to move the carriage to the maintenance position.

2. Lower the front media hold down roller.

3. Visually inspect both air filters on each UV lamp housing (four filters total).

   Gently slide each filter toward you and out of the lamp housing. Hold the filter up to the light and visually inspect it to determine the amount of ink saturation. When you cannot see light through the filter or if the filter seems saturated, replace the filter.

   The inside filters may need to be replaced more frequently than the outside filters.
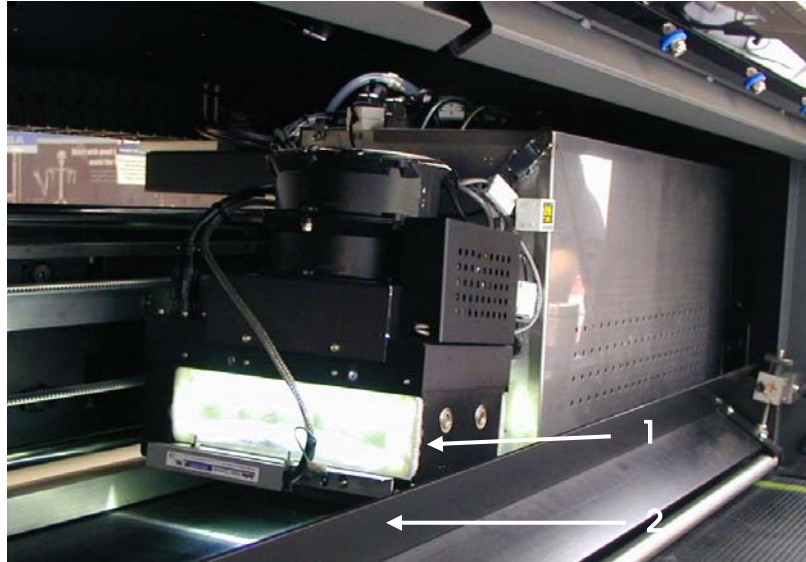
Key

1	Air filter
2	Static bar

Cleaning and lubricating the purge wiper rails

The purge-wiper unit can stall if the left and right rails are not clean and lubricated. After several days of use, the oil on the rails begins to wear off and ink begins to build up. If you encounter errors with the motion of the purge wiper unit, you may need to perform this task more frequently.

⚠️ To prevent damage to the capper bearings, use only light petroleum-based oil. Do *not* use synthetic oil or spray lubricants.

1. From the **Service Aids** dialog box **Carriage Maintenance Positions** section, click **Maintenance** (⟲) to move the carriage to the maintenance position.

2. Click **Uncap** (🖨) to move the purge wiper into the purge wiper cover.

3. Clean ink residue off the purge-wiper rails with a clean, dry cloth. Be sure to clean the side of the rails.

   If necessary, you can use alcohol or maintenance fluid to clean the rails or you can gently scrape off any cured ink with a razor blade.

4. Apply a small amount of light oil (such as 3-In-One, or similar) to a clean, lint-free cloth. Wipe the cloth evenly

over the top surface of the right inner and left outer rails in order to apply a thin film of oil evenly to the rails.
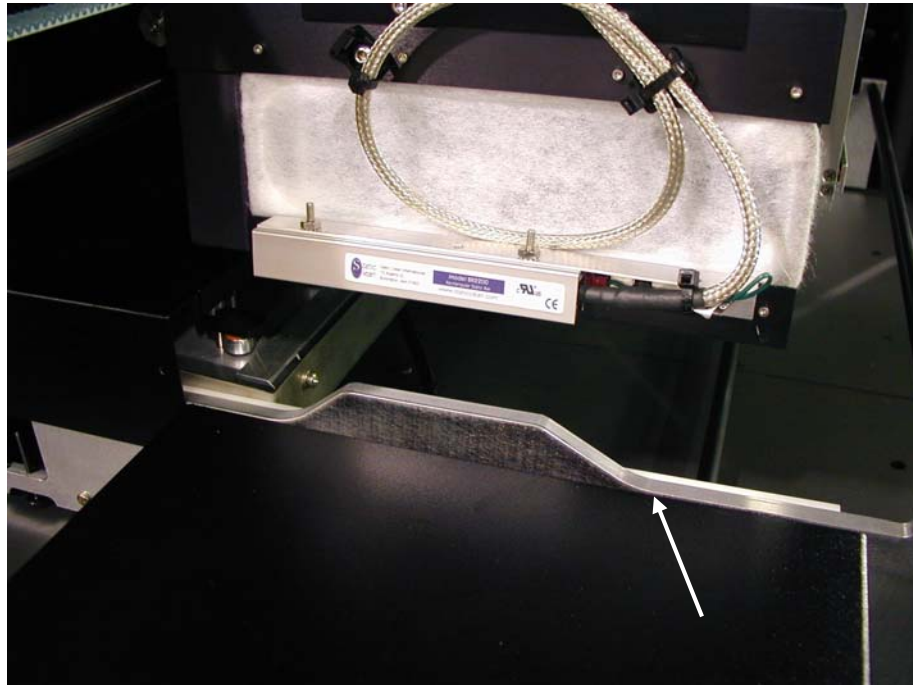
Purge wiper rail

Cleaning the material detector lens

Apply a small amount of isopropyl (rubbing) alcohol to a lint-free cloth and wipe the lens of the material detector.

Material detector

Monthly

Additional cleaning and lubrication tasks must be performed every month.

These procedures should take about 90 minutes to complete.

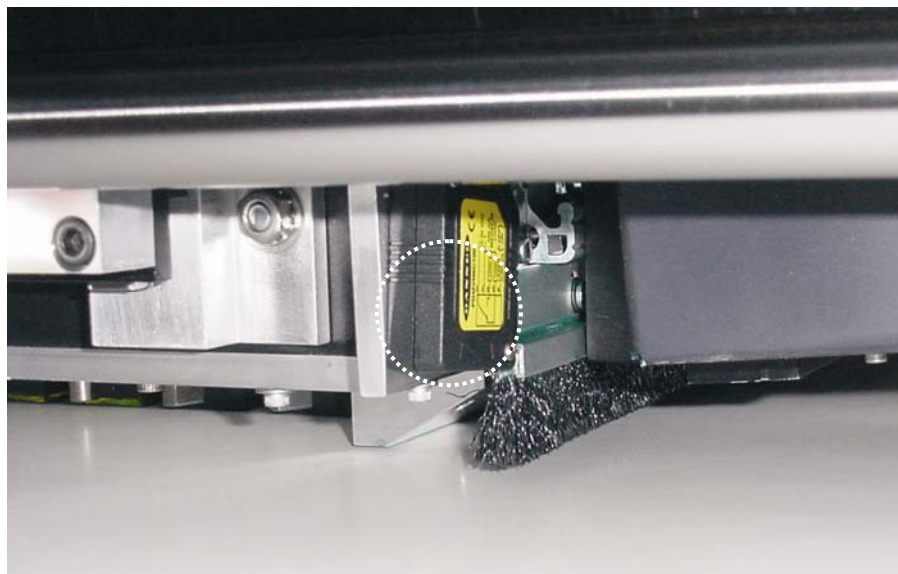1. Replace the waste tank.

2. Inspect the filters on the outside of the lamp housings.

3. Clean the static eliminating bars.

4. Check the carriage light-blocking brushes for ink buildup and clean or replace as necessary.

5. Wipe the light-blocking flaps on the output door with SCAQMD maintenance fluid to remove dust and debris.

6. Clean the umbilical assembly and shelf.

7. When you're done, enter the date, time and your initials in the *Maintenance Log*.

Replacing the waste tank

The QS Series printer has a built-in waste tank that holds up to three gallons of waste ink and solvent. Purging the jet packs accumulates waste in the purge wiper tray; this waste drains into the waste tank. To prevent the waste tank from overflowing, the printer disables purging when the waste tank is full.

The waste tank must be emptied or replaced whenever you receive a "waste tank full" message.

As a guideline, check the waste tank on a daily basis and empty or replace it as necessary. Empty the waste tank at least once a month to prevent waste from hardening in the tank.

> ⚠️ Always wear protective goggles, nitrile gloves, and an apron when handling UV-curable ink. Do *not* open the waste tank or remove the cap from the waste drain tube while purging ink or solvent.

1 Unscrew the waste tank's cap and remove the float switch assembly from the waste tank.

2 Remove the cap from the new waste tank and use it to seal the old waste tank.

3 Remove the old waste tank.

4   Dispose of the old waste tank and its contents in a manner consistent with your local safety and environmental regulations.

5   Ensure the waste tank's vent hole cap is removed and the hole is open.

6   Insert the float switch assembly into the new waste tank and screw the cap on.

Cleaning the static eliminator bars

In order for the static eliminator bars to operate at optimum efficiency, they must be cleaned on a monthly basis to remove dust and debris. The static eliminators may need to be cleaned more regularly, depending upon the operating environment and types of media used.

1. From the VUTEk User Interface **Service** menu, click **Service Aid**s. From the **Service Aids** dialog box **Carriage Maintenance Positions** section, click **Maintenance** to move the carriage to the maintenance position.

2. Turn off the UV lamp system.

    In the **UV Lamp Control Diagnostics** dialog box, click **Stop Lamps** ().

3. Turn off the static bar power supply located at the back and on top of the carriage.

    The switch lights up red when it is on.

4. Using a small brass bristled brush, lightly brush along the slot containing the sharp pins (underneath the bar), until the slot and the pins are free from dust and dirt.

5. Vacuum the slot to remove any remaining debris.

6. Use an inspection mirror to inspect the pins, they should be sharply pointed and free of debris.

7. Repeat steps 3 through 6 for the static bar on second lamp housing.
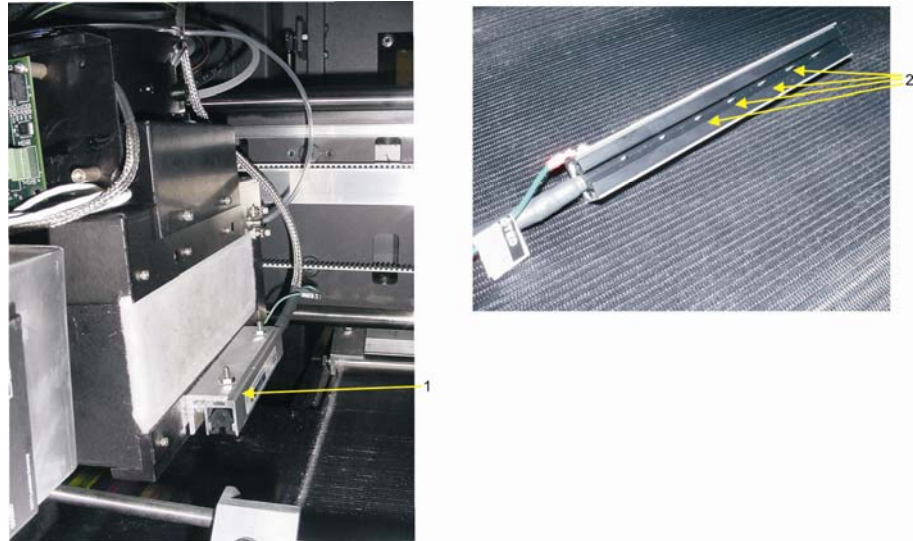
Key

1	Static bars
2	Pins

Umbilical assembly and shelf maintenance

As part of the monthly maintenance, the umbilical assembly and shelf must be cleaned using a vacuum cleaner. This will aid in keeping the umbilical assembly clean and ink debris to a minimum, both of which will limit print surface contamination.

1. Power off the printer.

2. Remove the top rear access panels to allow access to the umbilical assembly and shelf.

3. Gently push the carriage to the right side of the media conveyor belt.

4. Using a vacuum cleaner, vacuum the entire length of the umbilical assembly.

5. Starting at one end of the umbilical shelf, carefully lift the umbilical assembly off of the shelf and vacuum the entire shelf.

⚠️ Do not use compressed air to blow out the umbilical assembly and shelf. Doing so will make the debris airborne which could be harmful if inhaled, as well as contaminate other areas of the printer.
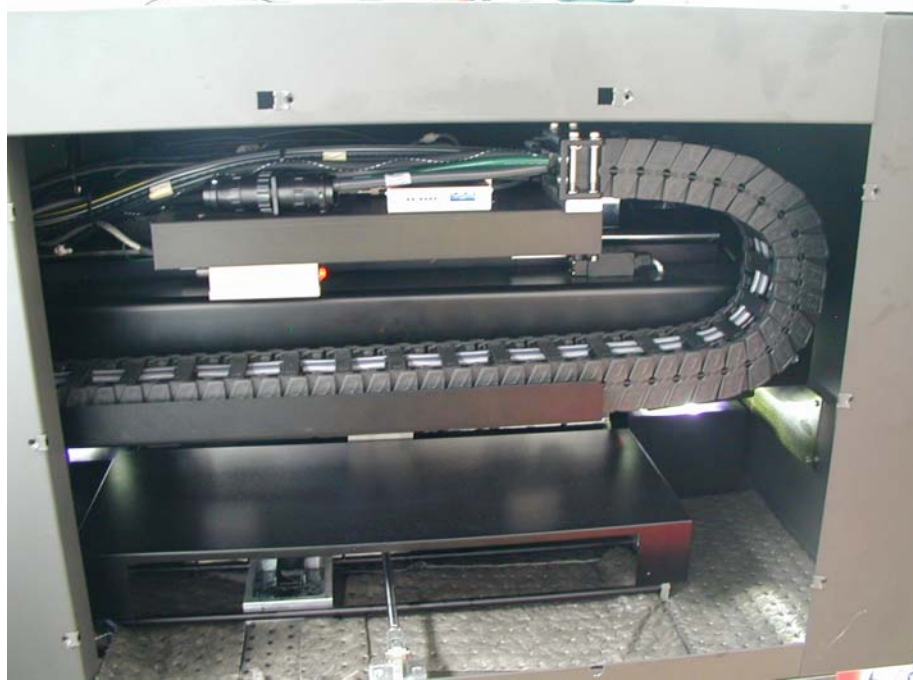
Umbilical assembly

Quarterly

Additional cleaning tasks must be performed every three months (quarterly).

These procedures should take about 90 minutes to complete.

⚠️ Always wear protective goggles, nitrile gloves, and an apron when handling UV-curable ink. Do *not* open the waste tank or remove the cap from the waste drain tube while purging ink or solvent.

1. Remove dust from the power supplies, servo controllers, and the enclosure fans.

2. Clean ink residue off the lens, reflector, and bulb on the UV lamp housings.

3. When you're done, enter the date, time and your initials in the *Maintenance Log*.

Dust removal

Dust accumulation on the printer electronics can cause intermittent problems which may result in print defects or printer downtime. Because dust accumulates naturally over time, it is important to clean the electrical compartment on a

quarterly basis. If significant dust buildup is encountered during cleaning, it may be necessary to perform this task more frequently.

To prevent inhalation of airborne particles, a dust mask and safety goggles with side protection must be worn while removing dust from the printer.

1. Perform lockout/tagout procedure.

2. Open the electrical compartment and the AC/Power Compartment.

3. Using a vacuum or clean, dry compressed air, remove dust from the components in the electrical compartment, starting at the top and working down.

4. Clean each cabinet's two incoming vent filters. Replace the filters as necessary.

5. Check that all electrical connectors are securely attached.

6. Close the electrical compartment access doors.

7. Power up the printer and verify all systems are operational.

Cleaning the lamp housing

Over time, ink residue may buildup on the inside of the lens and on the faces of the lamp shutters. To ensure the adequate curing energy is being applied to the print, periodic cleaning to remove the buildup of ink must be performed.

1. From the VUTEk User Interface **Service** menu, click **Service Aids**. From the **Service Aids** dialog box **Carriage Maintenance Positions** section, click **Maintenance** to move the carriage to the maintenance position.

2. Place a piece of scrap media under the carriage to catch any ink that may drip from the jet packs.

3. Shut down the printer and perform the lockout/tagout procedure.

4. Allow the lamp assembly to cool to room temperature.

5. Wearing lint-free cotton gloves, remove the quartz lens. Clean the lens, bulb and reflector with alcohol. Any cured ink on the quartz lens should be soaked in hot soapy

water and removed. Be careful not to scratch the coating on the quartz lens.

> ⚠️ Use only isopropyl alcohol to clean the lamp lens. Do *not* use head-cleaning solvent to clean the curing lamp lens (doing so will damage the lamps' diachroic coating).

6. Clean remaining ink residue from the lens using a clean, lint-free cleaning cloth moistened with rubbing alcohol.

7. Clean the bulb and the reflector with rubbing alcohol.

8. Repeat steps 2 through 7 to clean the lens on the other lamp housing.

Semi-annually

Additional cleaning and lubrication tasks must be performed every six months (semi-annually).

These procedures should take about three hours to complete.

> ⚠️ Always wear protective goggles, nitrile gloves, and an apron when handling UV-curable ink. Do *not* open the waste tank or remove the cap from the waste drain tube while purging ink or solvent.

1. Replace the in-line ink filters every six months or more frequently if you begin receiving numerous "Ink Fill Error" messages and the ink box is not empty.

2. Apply high temperature grease to the lamp shutter mechanism.

3. Replace the in-line solvent filter on the jet recovery station.

4. Replace the purge ink trap.

5. When you're done, enter the date, time and your initials in the *Maintenance Log.*

Replacing the in-line ink filters

The in-line ink filters in the ink compartment need to be replaced once every six months.

Only use EFI-approved ink filters in the QS Series. Using another type of filter may lead to serious damage to the jet packs and termination of all warranties.

> ⚠️ Contaminated fluid will significantly reduce the efficiency of the cleaning station and may damage the jet packs.

1. Perform the lockout/tagout procedure.

2. Open the ink compartment access doors.

> ⚠️ You must wear protective gloves made of nitrile rubber, protective sleeve coverings, protective apron, and safety goggles with side protection while working inside the ink compartment.

3. Remove the filter from its retaining clip.

4. Place a rag under the in-line ink filter that you are going to change.

   The filter will be full of ink; the purpose of this rag is to catch any drips.

5. On the existing in-line ink filter, disconnect one of the ink lines from the old filter and connect it to the new filter. The line should be attached to the new filter exactly as it was attached to the old filter.

6. Disconnect the second ink line from the old filter and connect it to the new filter.

7. Discard the old filter properly.

   Careful! The old ink filter will be full of ink that, if spilled, can contaminate the ink cabinet.

8. Place the new filter in the retaining clip.

9. Replace the remaining ink filters.

10. Turn on the printer.

11. As the filter is primed the system may display a fill time out or ink fill error. Clear the error until the filter is primed.

Applying high temperature grease

1. From the VUTEk User Interface **Service** menu, click **Service Aids**. From the **Service Aids** dialog box **Carriage Maintenance Positions** section, click **Maintenance** to move the carriage to the maintenance position.

2. Place a piece of scrap media under the carriage to catch any ink that may drip from the jet packs.

3. Every six months apply high temperature grease to the lamp shutter mechanism.

4. Remove the lamp housing from the carriage.

5. Remove the end cover from the lamp housing.

6. Apply high-temperature grease to the screws attaching the actuator lever to the lamp shutters.
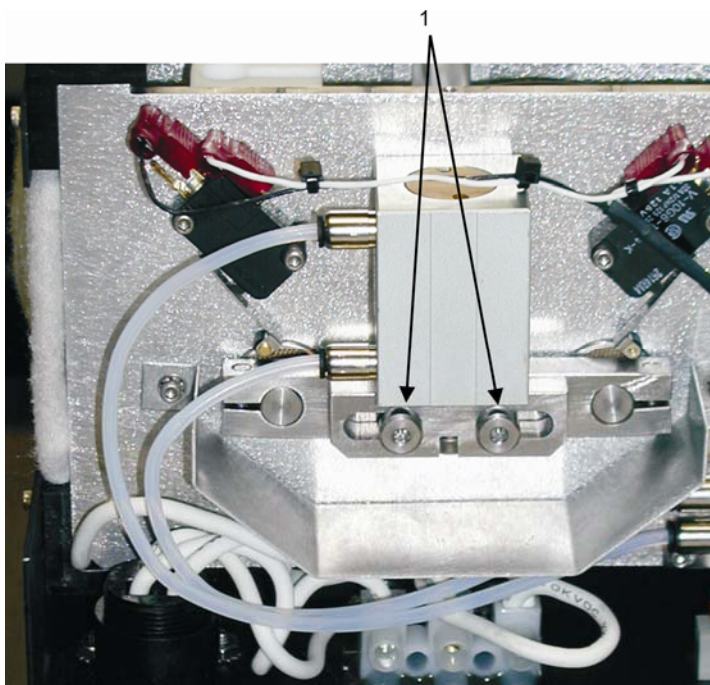
Actuator level screws

Replacing the purge ink trap

1   Perform the lockout/tagout procedure.

2   Open the waste compartment doors.

3   Remove the purge ink trap.

Unscrew the cover retaining ring and gently pull the cover and the tubing from the purge ink trap.

4   Dispose of in accordance with your local regulations.

5   Place the new purge ink trap in the waste compartment and gently feed the tubing into the purge trap.

Be careful not to allow the tubing to kink as you feed it into the purge trap.

6   Screw the retaining ring onto the new purge trap.

Annually

Additional cleaning and lubrication tasks must be performed every 12 months (annually).

These procedures should take about one hour to complete.

⚠️ Always wear protective goggles, nitrile gloves, and an apron when handling UV-curable ink. Do *not* open the waste tank or remove the cap from the waste drain tube while purging ink or solvent.

1. Replace the carriage final ink filter.

2. When you're done, enter the date, time and your initials in the *Maintenance Log.*

Replacing the final filter

1. Click **Shutdown** (🔴). When the shutdown is complete, power off the printer.

2. Perform the lockout/tagout procedure.

3. Remove the carriage cover to gain access to the final filters on the bottom of each of the secondary ink tanks (there is a filter for each color).

4. Place a cloth under the filter to be removed.

5. Pess the metal tab on the filter and gently pull the filter from the secondary ink tank.

6. Rotate the twist lock fitting to disconnect the filter from the tubing.

7. Remove the old filter and dispose of it properly.

8. Install a new filter.

   Rotate the twist lock fitting to lock the new filter to the tubing.

9. Press the filter onto the coupler on the secondary ink tank until the metal tab clicks and locks the filter into place.

10. Repeat steps 5 through 9 as required to replace each final filter.

11. Start the printer and check for leaks.

12. Do a 5-second solvent purge on all colors and check for leaks.

13. Replace the carriage cover.

14. Perform the startup procedure.

Shutting Down and Restarting

Refer to **FTP-00235 Printer Inactivity Guidelines** for shutdown and restarting instructions. This document is located on the EFI Customer Support Website: http://www.vuteksupport.com/doc.php?doc=1531.

Managing Media

Your QS Series printer is capable of printing on a wide variety of media. As with any printer, there are some extremes you should be aware of when choosing print media.

	QS 2000	QS 3200
Maximum width	80.0" (203.2 cm)	126.0" (320.0 cm)
Maximum thickness	2.0" (5.0 cm)	2.0" (5.0 cm)
Maximum sheet weight	200.0 lbs. (90.7 kg)	200.0 lbs. (90.7 kg)
Maximum roll weight	170 lbs. (77.1 kg)	267.0 lbs. (121.1 kg)
(see note, below)		300.0 lbs. (136.1 kg)*
Maximum roll diameter	18.0" (45.7 cm)	18.0" (45.7 cm)

Note: The lower maximum QS 3200 roll weight number is for a 54" (132.2 cm) roll, the higher maximum weight is for full-width 126" (320 cm) roll. The wider roll can be heavier since the greater weight is distributed over the full length of the air core shaft.

> **Lifting hazard!**
>
> Rolls of media are heavy! Lift with care, get help lifting, or use a mechanical lifter.

Media storage

You will need to allocate additional space for storing ink and media materials for the printer. Both the ink and media materials should be stored in a controlled environment, with room temperature between 68° F and 85° F (20° C and 30° C) and relative humidity between 30% and 80%. Keep the storage area clean and dry at all times.

> If rigid media is not flat, the jet packs may strike the media and damage the jet heads.

Rigid sheet materials should be stored as flat as possible. Even cement floors will introduce bumps into flat stock and flatten areas of roll stock. Store flat stock on specially constructed hardwood pallets or plywood. To store rolled

materials on racks, lay the rolls into half of the cardboard shipping tube.

Corona or plasma treated materials should be stored fully wrapped, in their original packaging. Contact with air will degrade their surface qualities. The storage area should be free from extremes of temperature, dirt, and moisture.

Handling media

Many media materials can gain improved adhesion after cleaning with isopropyl alcohol and a lint free cloth.

For example, use isopropyl alcohol to clean materials with release liners. The material used to adhere the liners leaves residue on the material and further degrades adhesion. Grease and oils from handling and some manufacturing processes can act in a similar fashion. Cotton gloves may be necessary in some conditions to prevent fingerprints and oils from transferring to the media.

For sheet materials that do not remain flat during the printing process reduce the cure intensity until the media lays flat. Heat may cause very thin sheet stock (under 0.030" [0.762 mm]) to lift from the vacuum table. Slowly reduce the cure energy level until it stops. Once this has been determined, recheck curing and adhesion.

As heavy ink densities amplify the heat on the material briefly, keeping ink back from the edge can be helpful.

Roll stock of thin plastics and films is also an alternative to sheets. Roll stock provides a "built-in" leader between each print, and more surface of the material in contact with the vacuum table hold-down.

Media flatness

Rigid materials used on your QS Series printer must be inherently flat. The thickness and flatness characteristics of these types of materials must not exceed 75% of the intended print gap.

For example, a typical print gap of 0.060" (1.524 mm) requires that the rigid material flatness/thickness tolerance not exceed 0.045" (1.143 mm) — or about 5% of the print gap.

High-quality substrates are a major factor in obtaining a high quality print. While it is important to start with a good

material, the storage and handling of the materials prior to printing can also affect print quality.

Keep materials clean and dry. Surface contamination can lessen ink adhesion, so surfaces should be clean and individual sheets handled with gloves. Remove fingerprints and other surface contamination with a clean, dry rag.

Rigid and flexible material guidelines

Most plastic materials are available in either sheet form or as roll stock. In order to distinguish between flexible and rigid for use on your QS Series printer, use the guidelines below.

Rigid media

Materials 0.050" (1.270 mm) or thicker are assumed rigid stock in all cases.

Stock 0.050" (1.270 mm) and thicker is not suitable to be used in roll form, as it generally has too small of a bend radius and would retain memory from the roll, causing head strikes.

Flexible media

Materials 0.030" (0.762 mm) or thinner are flexible. While available in sheet form, roll stock is best.

Rigid/flexible media

Materials between 0.050" and 0.030" (1.270 and 0.762 mm) thick are in a transitional area between flexible and rigid. Materials 0.040" (1.016 mm) thick fall in this area. You will need to test whether a particular material is suitable for use based on their circumstances. Consider productivity and image quality when deciding on the correct feed mechanism.

— end —