IOLINE™

User Guide

IOLINE FLEXJET E & STUDIOJET PRINTERS

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Ioline FlexJet E Printers

User Guide

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GLOSSARY

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NOTES

The Ioline FlexJet E and StudioJet printers have many fast moving components. Please read and follow these safety guidelines before beginning operation of the printer:

■ *Do not try to repair the machine without factory authorization.* Only qualified service personnel should attempt any disassembly or access to internal components. If external mechanical adjustments are necessary, turn off the printer and disconnect it from all power sources (both the computer and the wall outlet).

■ *Be careful with hair, jewelry, or loose clothing near the printer.* They can become caught in the mechanical parts.

■ *Never attempt to move the carriage by hand when the power is on.* Always use the **Arrow** keys to move the carriage. To park the carriage safely in the **Service Station** and protect the print cartridges, press the **Clean** button.

Figure 1. Hold the bottom surfaces of the end covers to avoid injury to your fingers.

■ *Keep hands away from the carriage when the printer is in operation.* The carriage will automatically move to touch the left end plate then back to the right end (the **Service Station** position) when the power is turned on.

■ *Never insert hands or other objects into the* **Service Station** *area on the right side of the printer.* The carriage occasionally enters this area without warning and could collide with an obstruction, potentially causing and injury.

■ *Be careful when moving or lifting the printer.* Moving the FlexJet E printer requires at least 2 people. To avoid injury to your fingers, <u>do</u> <u>not</u> lift either model by the end plates. Hold the bottom surfaces of the end covers to lift or move them. *See Figure 1*.

■ *Keep fingers away from the drive shaft when the printer is in*

VISUAL REFERENCE GUIDE

KEY

A. Left End Cover
B. Right End Cover
C. Take-up Motor
D. Stand Leveling Foot
E. Feed Roll
F. Take-up Shaft

G. Feed Shaft
H. Dancer Bar
I. Stand
AA. Power Switch
BB. Serial Port
CC. USB Port

Rear Panel Behind Right End Cover

The Ioline FlexJet E Printer Front View.

KEY

J. Drive Shaft Marker	**Q.** Ink Cartridge Stall
K. Pinchwheel	**R.** Pinchwheel Lever
L. Traverse or Carriage Rail	**S.** Keypad
M. Carriage Assembly	**T.** Service Station
N. Platen	**U.** Take Up Sensors
P. Ink Cartridge Latch	
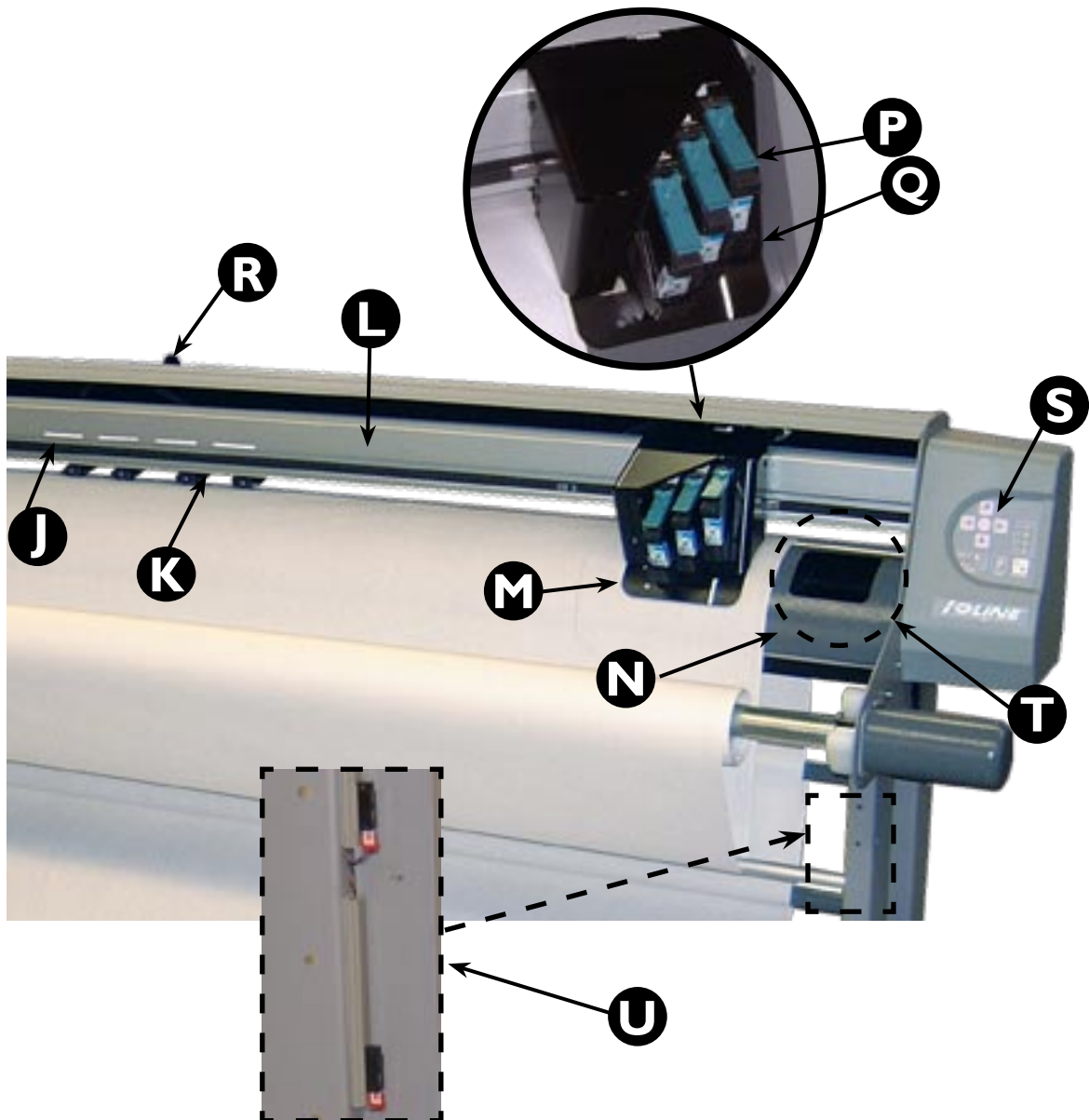
The Ioline FlexJet E Printer Front View Close-up

VISUAL REFERENCE GUIDE

KEY

A. Left End Cover
B. Drive Shaft Marker
C. Pinchwheel Lever
D. Pinchwheel
E. Drive Shaft

F. Right End Cover
G. Keypad
H. Stand Leg
I. Inkjet Cartridge
J. Carriage

K. Stand Leveling Foot
L. Feed Shaft
M. Cross-member
N. Platen
O. Traverse

Figure 5. The Ioline StudioJet Front View.

Unless otherwise noted, diagrams and descriptions depicting Ioline FlexJet E printer models also apply to the Ioline StudioJet in this manual.

Getting Started

Thank you for purchasing the Ioline FlexJet E or StudioJet printer.

This manual contains instructions and guidelines for setting up, operating and maintaining your Ioline printer. The following components are needed to create markers:

■   A FlexJet E printer assembled according to the directions outlined in the FlexJet E Printer or StudioJet *Quick Start Guide*.

■   A computer system that is properly installed and has a functioning serial or USB port.

■   Apparel design software loaded into the computer according to the installation instructions.

■   Printing media and ink cartridges that are within the guidelines stated under the *Operation* chapter.

■   Depending on the communications setup, Ioline **FlexPlot** software is required if your CAD software does not create compatible files.

ⓘ   Note

In order to output to the FlexJet E or StudioJet printer, your apparel design software must create plot files in **HPGL 7475** or **DM/PL** format. Alternatively, you can output markers using the **FlexPlot** software, included with the printer. **FlexPlot** imports and converts a variety of file formats for output to your Ioline printer.

ⓘ   Note

The Ioline **Control Center** and **FlexPlot** will only run on the Windows® 2000/XP/Vista operating systems. Most design software provides drivers for Ioline printers. Contact Ioline customer service if you need assistance with drivers.

How The Ioline FlexJet E and StudioJet printers Work

The FlexJet E and StudioJet printers create printed images through synchronized media and carriage motion. Files are sent to the printer from a computer or file server via a serial or USB* connection.

When the printer receives a file, the electronic logic system translates the vector image into X-axis (paper motion) and Y-axis (carriage motion) instructions and uses digital feedback to ensure plot accuracy.

The FlexJet E and StudioJet printers break the plot file into frame segments in order to plot long markers. The FlexJet E printer then rolls the frame segments onto a take-up shaft. The FlexJet E printer can roll up to 600 yards onto the take-up shaft at a time. The StudioJet plots to the floor.

Left side of FlexJet E printer   **Right side of FlexJet E printer**

Origin at right side of printer and lower left on plot

Figure 7. The X- and Y-axes and origin (top view).

* Note: The StudioJet has a serial port. The FlexJet E has both a serial port and a USB port.

An overview of the complete setup procedure is described in detail in the FlexJet E Printer and StudioJet **Quick Start Guides** *(provided in the* **Accessory Kit).**

Printer Assembly

Unpacking the Printer

Carefully remove the printer from the box and place it on a flat, stable surface. This procedure requires two people. Check the packing list to ensure that all of the accessories are present. (*See the FlexJet E printer or StudioJet* **Quick Start Guide** *for more information.*) Save all packing materials and the box.

Assembling the Stand

Assemble and level the stand using the hardware included in the **Accessory Kit** and directions outlined in the *See the FlexJet E printer or StudioJet* **Quick Start Guide**.

Attaching the Printer to the Stand

Attach the printer to the stand with the top bars resting in the notches in the stand legs. Use the hardware as indicated in the *See the FlexJet E or StudioJet* **Quick Start Guide**.

Connect the printer to the Computer: Overview

Connect the printer to your computer via serial cable (provided in the **Accessory Kit**). The corresponding serial port on your computer may be either a 9-pin or 25-pin male receptacle. If the computer has 25-pin serial ports, a 25- to 9-pin adapter is necessary.

Once connected, select the correct port and data rate in your apparel design software, **FlexPlot** and/or the **Control Center**. Consult the design software manual or the dealer for further information. Information on configuring **FlexPlot** and the **Control Center** follows in the **Operation** chapter.

CAUTION

Do not hold the printer head by the bottom edge of the end plates when attaching it to the stand. Fingers and hands might get pinched between the end plates and stand legs. Hold the bottom of the end covers when handling the printer. (*See* **Figure 1**.)

CAUTION

Before connecting the printer to your PC, make sure the computer and the printer both have the power turned off. Ioline recommends using a surge protector power strip for both the printer and the computer.

Cable Connections

When connecting the printer to the computer by serial cable:

1. Make sure that power to the printer is off. Power is off when the switch is in the "0" position, and is turned on when placed in the "1" position.

2. Connect the supplied serial cable and power cord to the panel on the back right end cover of the printer. Lock the serial cable to the port on the printer with the thumb screws.
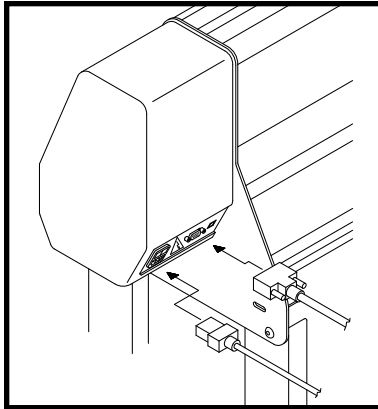
Figure 8. The serial cable and power cord plug into the sockets in the back of the right end cover.
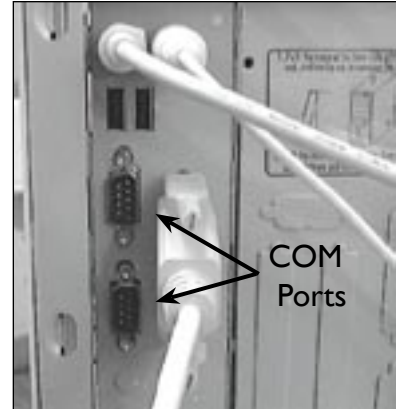
Figure 9. PCs typically have two 9-pin serial ports, **COM 1** and **COM 2**.

3. Plug the printer power cable into a wall socket or a surge protector.

4. Make sure that power is off to the computer.

5. Connect the serial cable to a 9-pin male serial port on the back of the computer. (If your computer has a 25-pin connector, acquire a 25-pin to 9-pin serial adapter to make the connection.) Tighten the thumbscrews.

Serial Configuration

It is <u>critical</u> that the **Control Center**, **FlexPlot** software, and any other software that send data to the printer use the same COM port and baud rate that the printer is using.

COM Port

A PC typically has two external 9-pin male serial connections. These ports are often listed in the system settings as **COM 1** and **COM 2**. Determine which port is connected to the printer, then select that port in all the software as instructed in the respective software user guides. (*See Figure 10*.)

Figure 10. FlexPlot Serial Port set-up window.

Baud Rate

The serial port on the printer has an adjustable baud rate. Available speeds are 9600, 19200, 38400, 57600, and 115200. The default is set at the factory to 38,400. The baud rate is adjustable in the **Control Center** in the **Communications>Settings** window.

Other Serial Port Settings

You may also need to set additional serial port settings, for instance, when you use a terminal program. The recommended configuration settings are:

Data Bits:	8
Parity:	None
Stop Bits:	1
Flow Control:	Software or Xon/Xoff

Software Setup Options

Ioline recommends using **FlexPlot** for marker making on the printer. **FlexPlot** offers the most robust and flexible workflow available for creating output. It's especially useful when many file formats are used, a common situation for service bureaus. To set-up and learn how to use the software, *see the* **FlexPlot User Guide**.

The printer is designed to work in many different production environments. The type of marker printing you do will often determine your preferred communication method. Two typical methods for sending markers are:

1. **Plot directly from the marker or design software to the printer.** *(See Figure 11.)*

    Unlike other marker printers, the FlexJet E and StudioJet printers are capable of operating as stand-alone devices with no extra software running on the computer. This method works if your CAD software includes a driver for any Ioline product, such as the Ioline 600Ae or the Summit 2200. It will also work if the CAD software can create a compatible HPGL- or DM/PL-formatted file.
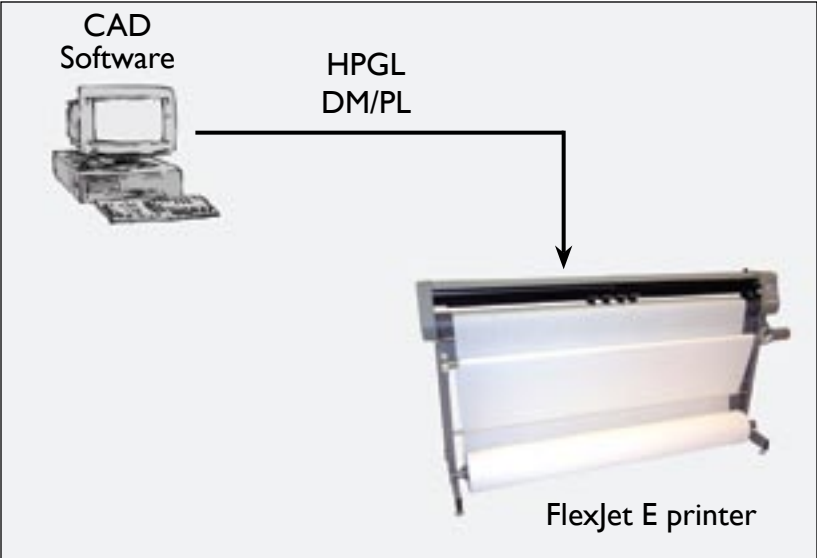
Figure 11. Workflow: output direct from CAD software (without FlexPlot).

2.   **Use FlexPlot software to convert files before sending them to the printer for output.**

   The printer includes the **FlexPlot** software which will convert many different files into a format that is compatible with the printer. It also provides an advanced marker queue management system and other tools to optimize the performance of the printer.

Figure 12. Workflow using **FlexPlot** for file conversion and output.

Power On

Turn on the computer and the printer to make sure they both work. The printer power switch is located next to the power cord on the back of the machine, behind the keypad. When the paper is properly loaded and the printer is powered up, the carriage will move toward the left side of the machine, then return to the opposite side to park in the **Service Station**. The **OK** light will turn red and the **Square** light will turn green on the front panel after the start-up process has finished.
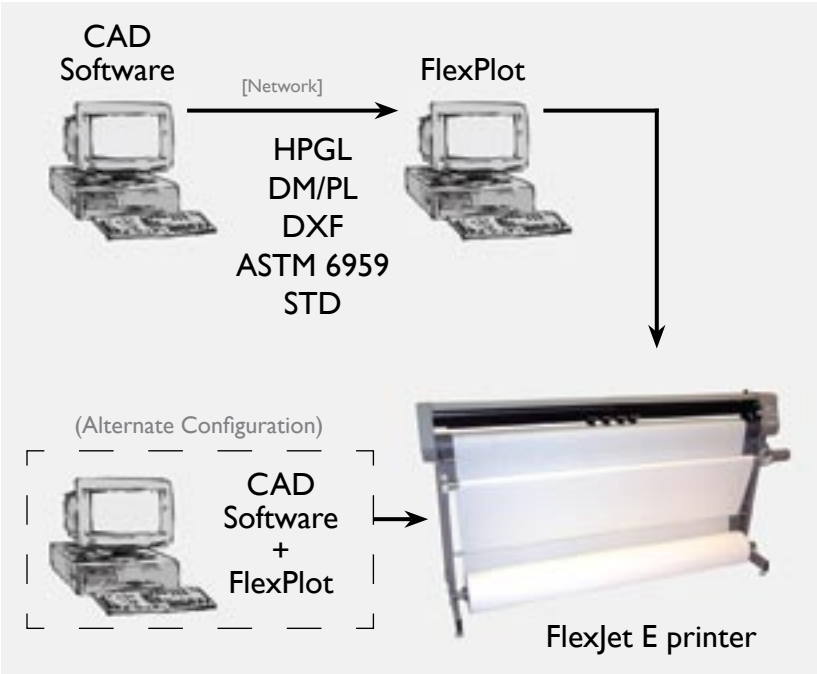
If no paper is loaded when the printer is powered up, the printer displays an error message. The **OK** light will turn red and the **Circle** light will turn orange. This combination of lights indicates a paper out error. The keypad buttons do not work unless paper is properly loaded—or a small piece of masking tape is placed over the **Paper Out** sensor on the back of the printer. Once paper is loaded or the sensor is taped over, press the **Start/Stop** button to clear the orange circle and regain use of the keypad.

Installing FlexPlot and the Control Center

The printer includes two software interfaces: **FlexPlot** and the **Control Center**. **FlexPlot** will import and queue plot files from many design programs to optimize production operations. The **Control Center** is an interface for adjusting parameters to optimize printer performance. The printer comes with a CD-ROM which has Microsoft Windows® 2000/XP/Vista versions of the programs as well as PDF user guides and the required Adobe® Acrobat® reader.

1. Power on the computer and Windows®.

2. Insert the Ioline CD-ROM into the CD-ROM drive (usually D:).

3. The installation program should start automatically. If it does not:

   a. Select the **Start** button.

   b. Choose *Run*.

   c. Type *D:\IOSETUP* (substitute the correct letter if the CD-ROM drive letter is not *D:*) and Click **OK**.

4. Follow the instructions that appear on the screen.

5. The *FlexPlot User Guide* has details on using the **FlexPlot** software. In this manual, see the section *The Control Center* for more details about the **Control Center** software.

CAUTION

Keep hands and loose clothing away from all moving parts of the printer. Make sure the **Service Station** opening in the right end plate is not obstructed and that the stall latches are lowered.

ⓘ **Note**

In this manual the right and left side refers to the right and left side of the front of the printer. Design software usually refers to the **Origin** (or Start Point) as "lower left" because it is the lower left corner of a plot. The plot is usually oriented in the printer rotated 90 degrees counter clockwise as shown in *Figure 5*. The lower left corner of the plot is physically on the right side of the printer.

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Keypad Controls

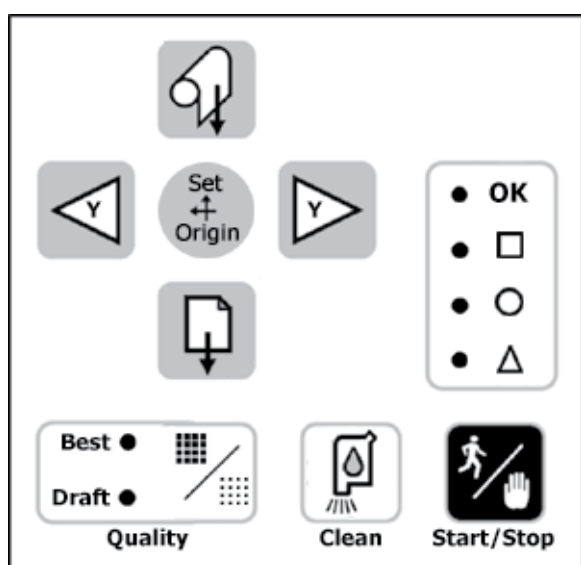The keypad provides access to the main functions of the printer.

Figure 13. The Printer Keypad.

Start/Stop

The **Start/Stop** key toggles the printer online and offline. If the **Start/ Stop** key is pressed during printing, the **OK** light turns red and the machine will stop after it finishes printing the current scan. The **Arrow**, **Unroll** and **Paper Advance** keys are active when in **STOP** mode. When the **Start/Stop** key is pressed again, the printer enters **START** mode, the **OK** light turns green and printing resumes exactly where it stopped.

|		
START mode	OK = green	**Arrow** keys inoperable, printer *online* (ready to receive instructions).
STOP mode	OK = red	**Arrow** keys operable, printer *offline* (not ready to receive instructions).

Clean

Runs the print heads through a cleaning cycle in the **Service Station**. Put the printer in **STOP** mode and wait until the **OK** light turns red. Then press the **Clean** button. If the carriage is not already parked, it will return to the **Service Station**. After auto cleaning, the printer will react differently when you put it in green light (**START**) mode, depending on what it was doing just prior to the cleaning:

Printer state before auto cleaning—e.g. what the printer is doing just before it is put in STOP (red light) mode	Printer reaction when put in **START** mode after auto cleaning
Printing in **START** mode (**OK** light is green)	Resumes printing
Idle in **START** mode (**OK** light is green)	Stays parked and capped.
Idle, in **STOP** mode (**OK** light is red)	Stays parked and capped.
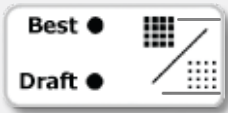
Quality

Switches between the **Best**—or dark (600 dpi)—line mode and **Draft** mode (300 dpi), which prints lighter and consumes less ink. You can change line quality while the printer is printing.

Set Origin

The **Set Origin** key sets the initial origin or starting position for the marker. It's best to always set a new origin point after cycling power. To set a new origin, press **Start/Stop** until the **OK** light turns red (**STOP** mode). Use the **Arrow** keys to move the carriage so that the white marker is positioned over the desired starting point. Press the **Set Origin** key. The **OK** light will turn green, indicating the printer is ready to accept plot files. (*See **Figure 14**.*)
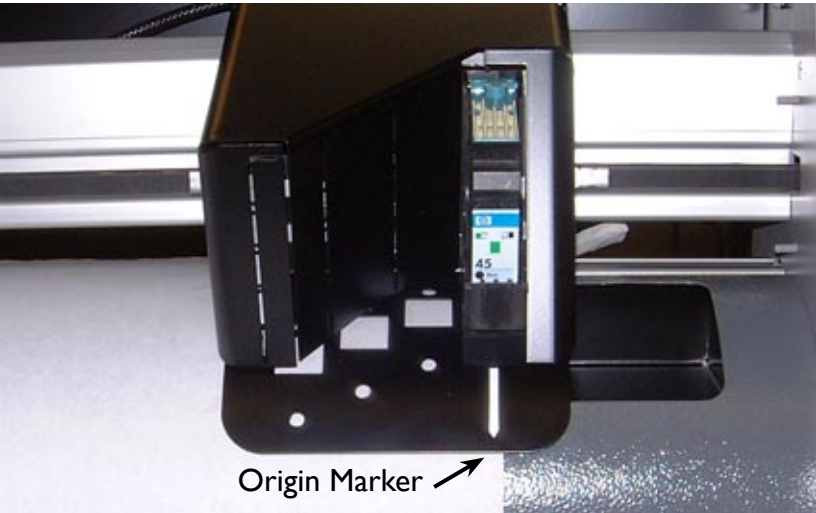

Origin Marker ↗

Figure 14. The **Set Origin** key sets the marker origin point directly below the top of the white origin marker on the carriage base—located on the right side.

> ### ⓘ Note
>
> Apparel design software usually refers to the origin as "lower left" because it is the lower left corner of a marker. Because the plot is usually oriented as shown in *Figure 5*, it is physically on the right side of the printer.

Arrow Keys

Pressing the **Arrow** keys moves the carriage left or right. The **Arrow** keys are only active in **STOP** mode (see **Start/Stop**), when the **OK** light is red.
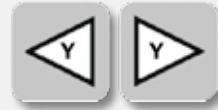
Page Advance

Pressing this button advances the paper in small increments. This is useful if a plot was removed from the printer and you need a paper leader to tape to the take-up shaft. The **Page Advance** key is only active in **STOP** mode (when the **OK** light is red).

Unroll (FlexJet E Only)

<u>Unroll Material</u> – Press the **Start/Stop** button until the **OK** light turns red. Press and release the **Unroll** button. The printer will unroll a short segment of paper from the take-up shaft.

<u>Automatic Unroll</u> – Press the **Start/Stop** button until the keypad light turns red. Press and hold the **Unroll** button. The printer will automatically unroll paper. To cancel **Automatic** mode, press the **Start/Stop** key again.

Special Key Combinations

Roll Up (FlexJet E Only)

Use this function to roll material back onto the take-up shaft. Press and hold the **Unroll** and **Right Arrow** buttons at the same time. The rolling will continue until the dancer bar reaches the optical sensor. The **Roll Up** key is only active in **STOP** mode (when the **OK** light is red).

Reset Serial Port Baud Rate

This key combination will restore the serial port baud rate to the default speed of 38,400. This is useful for diagnostic testing of the communication system. Turn power off. Press and hold the **Page Advance** key as you turn power on again. Continue holding the key down until the **OK** light turns red and the **Square** light turns green.

Restore Factory Default Settings

This function replaces settings that are not working properly and can be used when manual calibration is unsuccessful. This key combination will restore all calibration values to the factory defaults. Turn power off. Press and hold the **Unroll** key as you power up again. Continue holding the key down until the **OK** light turns red and the **Square** light turns green.

ⓘ **Note**

For more details on removing plotted markers from the take-up shaft see ***Removing Markers from the Take-Up Shaft*** later in this chapter.

> **Note**
>
> To avoid communication port conflicts, do not simultaneously run more than one application that communicates with the printer.

The Control Center

Overview

The **Control Center** is a utility program that does two things:

■ Allows you to adjust settings to tailor output (e.g. scale, line width) from the computer.

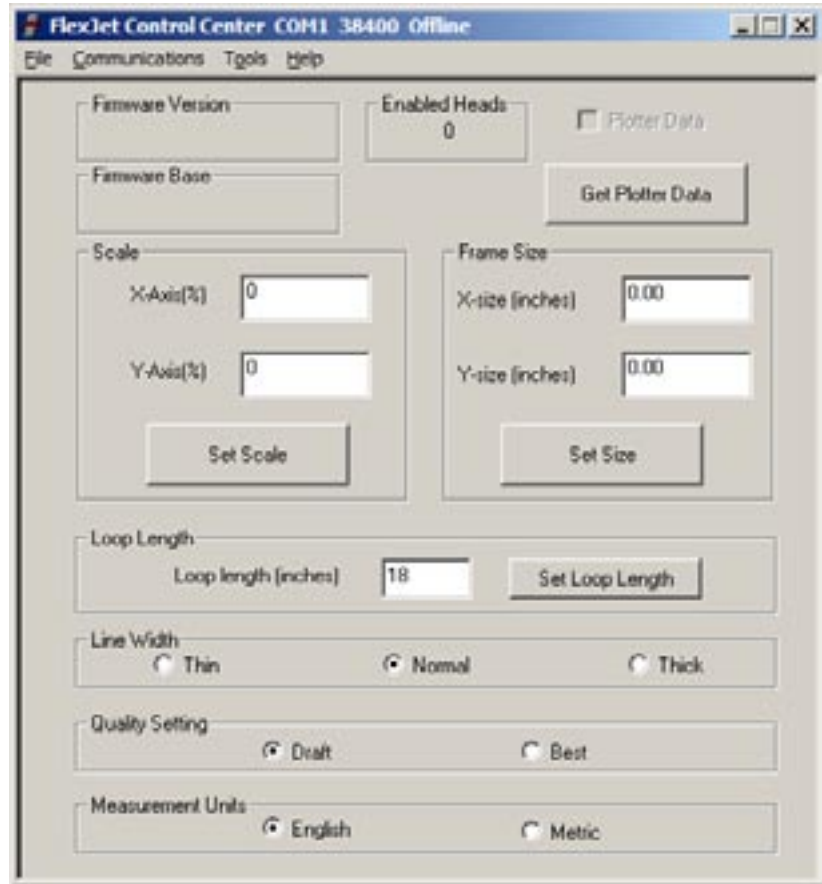■ Provides an interface to send completed files to the printer.

Figure 15. Control Center Main Menu.

Changing System Settings

A variety of settings are adjustable to fit specific needs:

■ Make sure the printer power is on and that the initialization process is complete. The carriage will park, the keypad **OK** light will turn red and the **Square** light will turn green.

■ The **Screen Menu** displays the primary settings that are adjustable. The **Menu Bar** contains utilities for setting up the **Control Center** and calibrating the printer.

■ Changes only take effect after one of the **Send** buttons is pushed.

Control Center Menu Bar Features

File

Send Plot File	Print a PLT or PLX file.
Download Firmware	Allows the user to download the latest firmware version for the printer. *See the section **Downloading Firmware** in the **Routine Maintenance** chapter for more information.*
Exit	Exit the **Control Center**.

Communications

Settings	Select the COM port and baud rate to match the printer.
Send Command	Permits advanced users to manually enter commands.
Automatic Buffer Closing	Creates an **End of Frame** command after a long communications delay. By default this is set to On. Turn off for MAC computers.
USB Info	USB Info displays hardware and driver information about the direct USB connection.

Tools

Aux Sensor	When checked, disables the **Paper Out** sensor. The default is On. (The **Paper Out** sensor is an option on the printer.)
Cartridge Calibration	Displays tools to adjust print cartridge alignment. *See **Routine Maintenance** for more details.*
Size Calibration	Allows adjustment of the size calibration settings. *See **Routine Maintenance** for more details.*
About Your FlexJet	Displays the licensing status of the machine.
FlexJet Licensing	Displays the licensing status and licensing updates.

Help

Contents	Displays the Help file.
About	Displays **Control Center** version information.

Control Center Menu Options

Firmware Version and Base

Displays the current firmware version installed in the printer.

Enabled Heads

Displays how many cartridges are in active use by the printer.

Get Plotter Data

Reads and displays the current settings stored in the printer.

Plotter Data (check box)

Indicates when the displayed settings were successfully downloaded from the printer. If this box is unchecked, the **Control Center** was unable to connect with the printer Check the connections, baud rate and COM port . Press the **Get Plotter Data** button to attempt to download settings if the process failed during startup.

Loop Length

Controls the length of the take-up paper loop in the front of the machine. Shorter loops can help reduce paper jams when using challenging material like heat seal or very thin paper.

Line Width

Controls the weight of the plotted line using line width. Three levels are available; **Thin**, **Normal**, and **Thick**. Thin lines use less ink and make fine details like Asian text and small pieces easier to see. Thick lines use more ink to produce higher contrast lines. Used in conjunction with the **Quality Setting** (*see below*), the printer provides six options to produce visible lines using the least possible amount of ink.

Scale

The printer scale ranges from 1% to 999%. The factory default **Scale** is 100%. A scale set to 50% prints at half size. Changes do not take effect until the **Set Scale** button is pressed. Note: Both X- and Y-axes are set independently.

Frame Size

Most design software sends long plots to printers by breaking them into smaller pieces called *frames*. In general, design software does this automatically and adjusts the **Frame Size** in the printer to match. The **Frame Size** setting establishes clipping limits for each data frame. If the printed size of a plot frame exceeds the frame size set in the printer, the excess is clipped or thrown away. (If the plot is clipped, try increasing the **Frame Size** manually.) The factory-set

X-axis (paper direction) frame size is 46-in (116.8-cm), maximum is 21600-in (54,864-cm). Default and maximum Y-axis (carriage direction) frame size is 72-in (182.9-cm).

Quality Setting

Choose **Draft** or **Best** to control line density. **Draft** mode uses 300 DPI. **Best** mode uses 600 DPI. A lower DPI setting uses less ink by creating a fainter line. Higher DPI uses more ink but makes a darker line. Use this setting in conjunction with the **Line Width** (*see above*) to find a balance between saving ink and making clearly visible lines.

Measurement Units

Choose between English or Metric units for settings display.

Consumables

Figure 16. The Hewlett-Packard 51645A ('45' cartridges) are widely available.

Paper

Ioline recommends 27 to 35 pound recycled or bond paper, 36- to 74-in (91- to 188-cm) wide. The feed system supports rolls up to 600 yds long.

Ink

The Ioline FlexJet E and StudioJet printers require Hewlett-Packard 51645A or '45' cartridges.

Guidelines for Installing a Cartridge[*]

1. With the printer in **STOP** mode (red **OK** light), press the left arrow key to move the carriage out onto the platen away from the right end plate.

2. Open the blue stall latch and remove the old cartridge if one is present. Squeeze the handle between your fingers and pull forward, then up.

Figure 17. Insert ink cartridge at an angle into the cartridge bay. Lock in place with the stall latch.

3.   Insert the new cartridge with the print head pointing down toward the rear of the stall and at a slight outward angle. Press firmly while rotating the top of cartridge toward the back of the stall until it stops in an upright position. (*See Figure 17.*)

4.   Close the stall latch. If the cartridge is inserted properly, the latch will snap shut and securely hold the cartridge. Do not force the latch. If the latch does not close properly, remove and reinsert the cartridge.

Printing a Marker

Overview

The basic steps required to print a marker on the printer are:

1.   Turn the printer and computer power on.

2.   Load paper.

3.   Install cartridge in the stall.

4.   Set an origin.

5.   Start **FlexPlot** or your design application.*

6.   Send marker/plot files.

These steps are outlined in the next several sections. In most cases the design files are sent to the printer from **FlexPlot** or the design application. If necessary, use the Ioline **Control Center** to send design files or adjust settings.

General Guidelines

1.   Good paper loading makes good plots. Follow loading instructions carefully.

2.   Ensure that the paper roll is properly loaded on the feed shaft. Paper width determines the roll's position on the shaft.

3.   Keep the plastic feed shaft block clean and well lubricated.

4.   Use the **FlexPlot** software for optimal file management and printing throughput.

*   Refer to the FlexPlot User Guide for information on set-up and configuration.

Loading Paper on the StudioJet

*See the **StudioJet Quick Start Guide**.*

Loading Paper on the FlexJet E

1. Before loading a new paper roll always make sure the drive shaft is clean. *See the **Routine Maintenance** section for more details*.

2. Place a paper hub in each end of the paper roll using a rubber mallet.

3. Slide the feed shaft through the paper hubs and the paper roll. If a paper hub falls out, press it firmly back into the end of the paper roll and re-seat it with a rubber mallet.

4. For paper narrower than 70-in, center the paper roll on the feed shaft. Make sure the hubs remain securely in place. For paper greater than 70-in in width, offset the paper to the left slightly to avoid covering the **Service Station** area. Also leave a minimum 1/4 inch gap between the paper edge and the edge of the fan on the left side of the rear cover of the machine.

5. Use the supplied hex wrench to tighten both screws on each paper hub.

6. Check that the right support block is clear of debris and apply a light coating of white lithium grease (found in the **Accessory Kit**.)

7. Lift the feed shaft ends, one at a time, into the support blocks.

Support Block w/ Bearings

Feed Shaft

Paper Roll (Unrolls from behind)

Paper Hub (2)

Flanged Coupling

Support Block (apply grease)
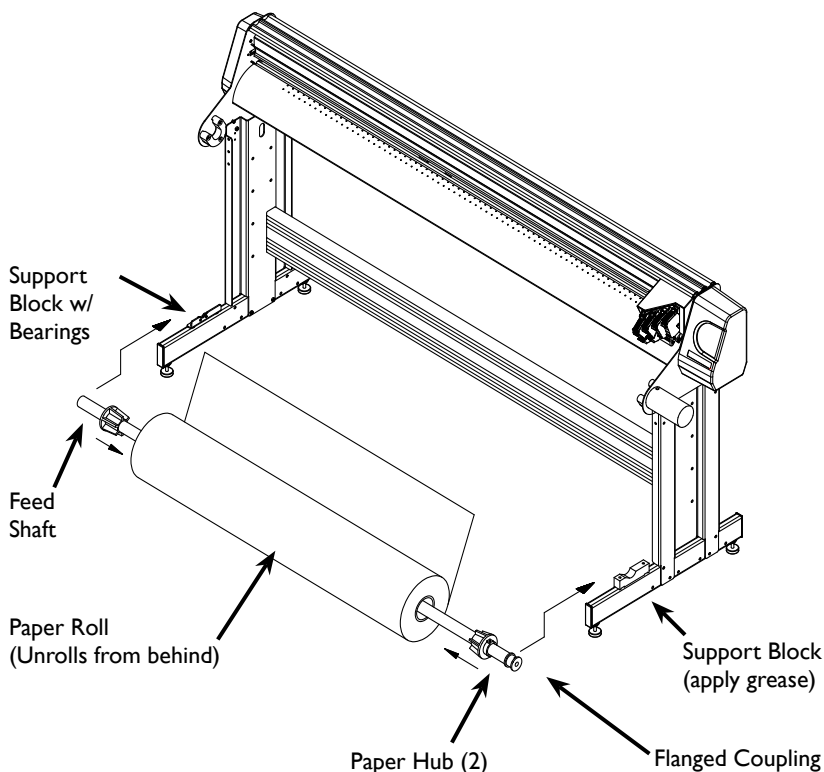
Figure 18. Installing the feed shaft. (As shown on the FlexJet E model.)

Hint

The FlexJet Set-up, Operating and Maintenance Video, provided on CD-ROM in the **Accessory Kit**, provides a helpful visual overview.

Note

Make sure the paper unrolls <u>from behind</u> and towards the printer.

CAUTION

Never touch the take-up key or flanged coupling while they are rotating. Serious personal injury could result. Turn power off first.

Installing the Take-up Shaft

(FlexJet E only)

The **Paper Out** sensor on the back of the printer detects when the paper runs out. If paper isn't loaded or if the take-up key is not positioned properly, place a small piece of masking tape over the **Paper Out** sensor before following the steps below. Remove the tape after the take-up key is properly positioned before installing paper.

1. If the take-up shaft has plotted markers on it, remove them. *See Removing Markers from the Take-up Shaft later in this chapter.*

2. Turn the printer on (the switch is on the back of the left cover.)

3. Use the keypad Unroll key to rotate the take-up key until it is oriented perpendicular to the support block opening as shown in *Figure 19*.

4. Put the take-up shaft into the front support blocks with the flanged coupling at the right (keypad) end. Rotate the shaft until the slot in the flanged coupling is aligned with the take-up key. When the shaft slot and the key are aligned, push the
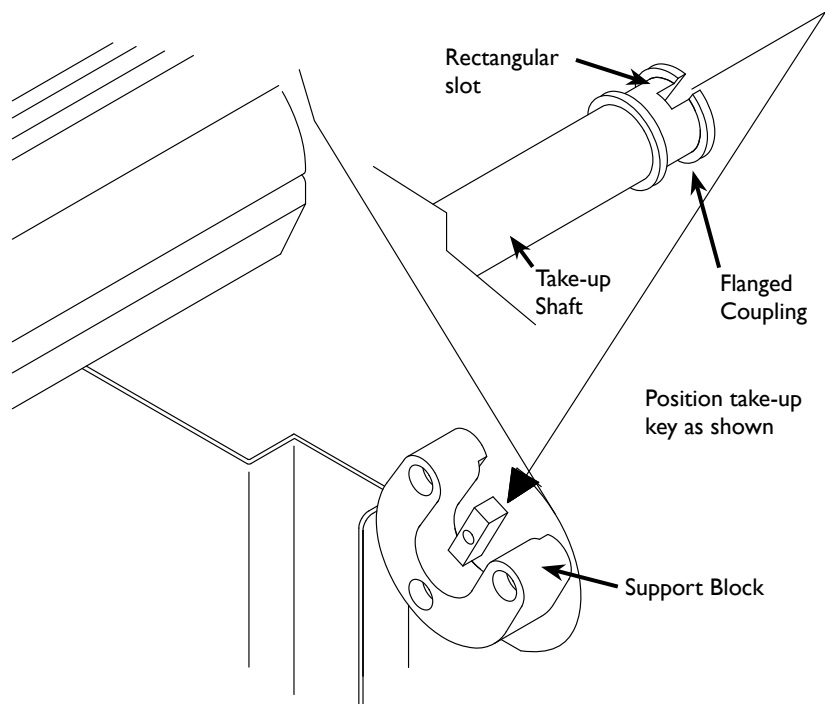
Figure 19. Installing the take-up shaft in the support blocks.

take-up shaft into place until it is seated in the support block.

Feeding Paper

(FlexJet E only)

Figure 20 represents the proper paper path. The left side of the diagram shows the paper path for a 1H FlexJet E. The right side shows the proper path for a FlexJet E with 2 or more heads.

1. Remove any printed markers from the take-up shaft and make sure the carriage is parked in the **Service Station** before feeding the paper. (To park the carriage, press **Start/Stop**. Wait for the **OK** light to turn red and press the **Clean** button.)

2. If the pinchwheels are lowered, raise them by pushing the pinchwheel lever away from the machine.

3. Pull a long leader of paper off of the paper roll and insert it through the stand, behind the plotting head between the platen and pinchwheels.

4. Temporarily lock the paper in place by pulling the pinchwheel lever toward the machine to lower the pinchwheels.
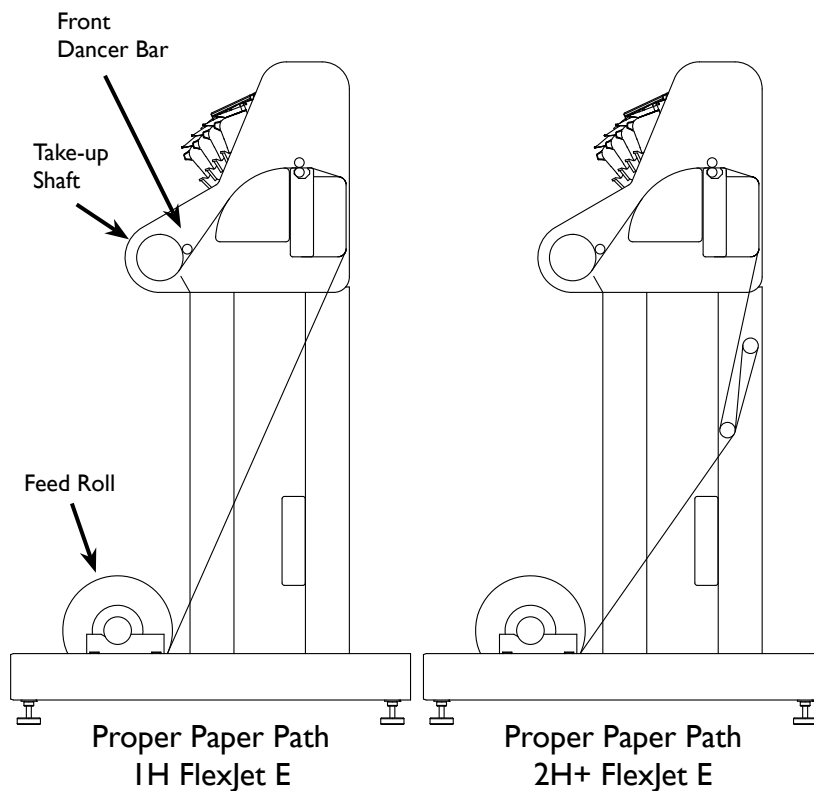
Figure 20. The correct paper feeding path on the Ioline FlexJet E printers. (See the *StudioJet Quick Start Guide* for paper path instructions for the StudioJet.)

Tape Paper to the Take-up Shaft

1. Stand in front of the machine.

2. Place 3 short pieces of masking tape within easy reach on the top cover. (*See **Figure 21**.)*

3. Holding the edge of the paper with one hand, use your free hand to lower the pinchwheel lever to raise the pinchwheels.

4. Grasp the front edge of the paper with both hands and pull 20-in (51-cm) of paper over the platen and gray top bar and under the take-up shaft. (*See **Figure 20** for the proper paper path.)*

5. Add tension to the feed roll by applying gentle pressure using the bottom of your foot.

6. To align the paper, gently pull it forward and side to side until the tension feels even.

7. Press and hold the paper on the center of the platen with your left hand, then lower the pinchwheels to lock the paper in place.

8. Attach the paper to the take-up shaft in the center and 2-in (5-cm) from each end with the tape.

Do not cover the hole in the platen with paper.

Tape the paper in 3 places
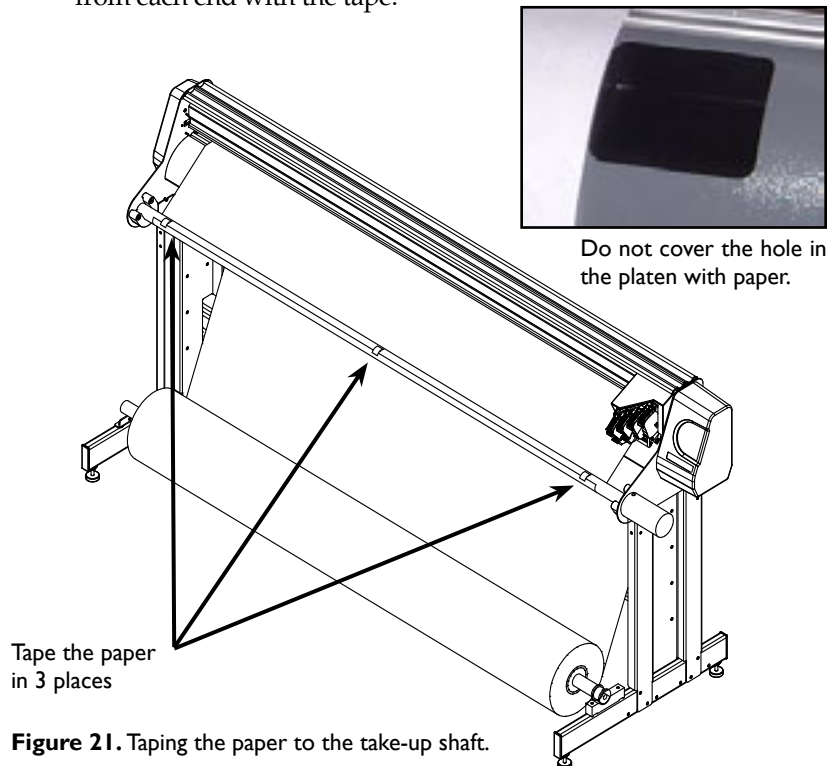
Figure 21. Taping the paper to the take-up shaft.

Positioning the Pinchwheels

Pinchwheel position does not correspond to paper size. Always place all pinchwheels at the machine center.

1. Ensure that the paper is loaded as described in the previous steps and is taped to the take-up shaft.

2. Raise the pinchwheels by pushing the pinchwheel lever away from the machine.

Pinchwheel

White Driveshaft Markers

Drive Shaft
Segment

Drive Shaft
Bearing
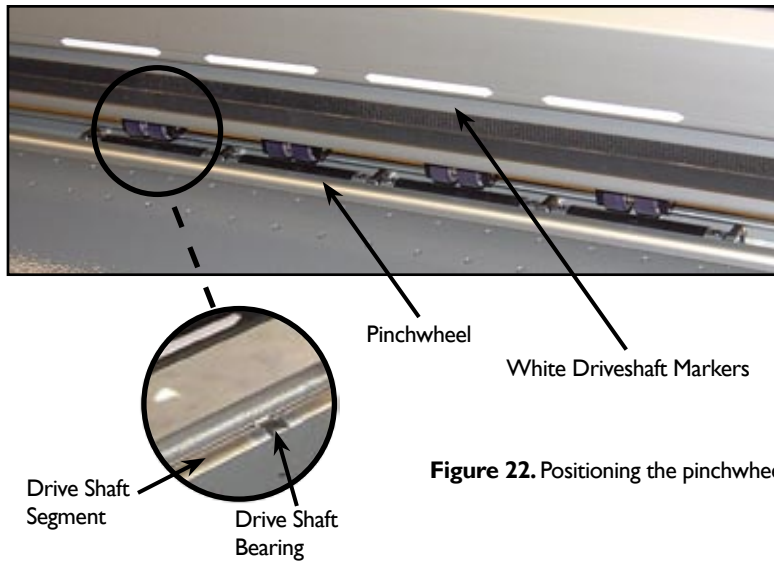
Figure 22. Positioning the pinchwheels.

3.   Make sure that the paper roll is tight on the feed shaft.

4.   Move the pinchwheels into their proper positions over a tread and under the white markers on the traverse rail. (*See Figure 22.*) **Do not place pinchwheels over drive shaft bearings.)**

5.   Lower the pinchwheels.

Insert Front Dancer Bar

(FlexJet E only)

1.   With the pinchwheels lowered, hold the paper in place over the rear top bar.

2.   Insert the front dancer bar into the dancer bar channel.

Front Dancer
Bar (Silver
light rod)
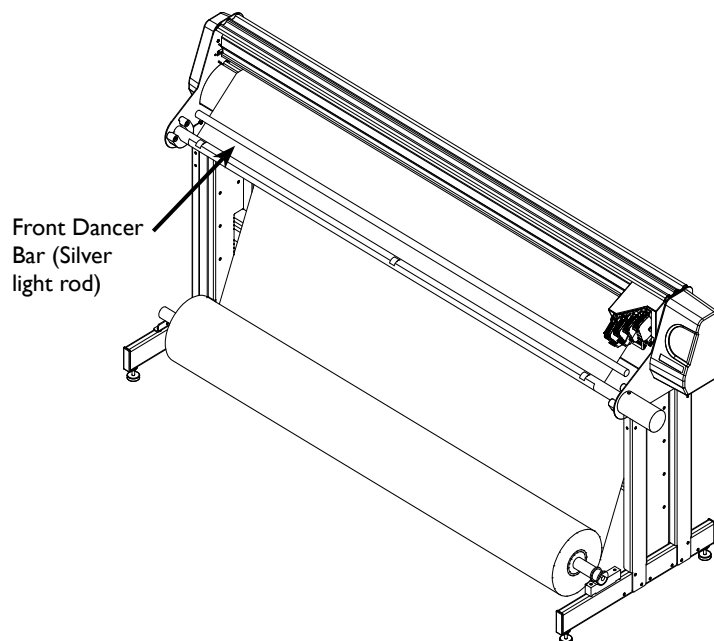
Figure 24. Inserting the dancer bar.

Insert Rear Dancer Bar (2H+ FJE Models Only)

1. FJE models with two or more printheads and the high speed printing kit require that a heavy dancer bar is inserted in the rear dancer bar channel (see paper path in *Feeding Paper*).

2. Take the heavy dancer bar (painted black on some models) and insert the ends into the notches in the stand legs on the back of the machine as shown in the image below.

3. Use a hand on the rear rolling bar to slow rotation as the dancer bar slides into the channel and forms a rear paper loop.
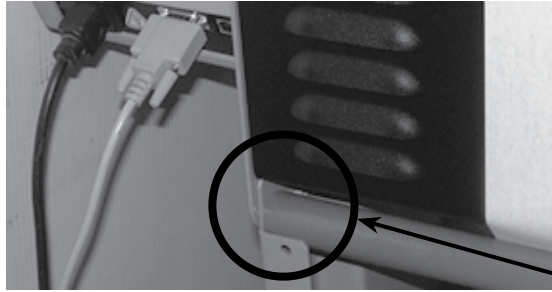
Notch in Stand Leg

Set an Origin

1. Ensure that cartridges are installed in the carriage stall(s). (*See Guidelines for Installing a Cartridge earlier in this chapter.*)

2. Turn on the power. After a brief pause, the carriage will glide to the left end plate, then return to the **Service Station**. When finished, the **OK** light turns red and the **Square** light turns green.

3. Press the **Left Arrow** key to position the carriage so that the tip of the white marker is over the desired starting point of the plot.

4. Press the **Set Origin** key. The **OK** light will turn green. The printer is ready to plot.

Sending Plot Files

Send plot files to the printer using **FlexPlot** or design software. Make sure the power is on and paper is loaded as described above. Also, be sure that a new origin is set with the **Set Origin** keypad button and that the printer is in **Start** mode (green light). From **FlexPlot***:

1. Choose input file type and location then double click on the file.

2. Conversion will occur and the **Send to Queue** button is activated. Press this button to add the file to the queue.

3. Repeat steps 1 to 2 until the all files are queued then press Send.

* See the **FlexPlot User Guide** or your design application user guide for information on how to send files to the printer.

Pausing a Marker Plot

1. Pause a plot by pressing the **Start/Stop** key.

2. The **OK** light will change from green to red. The printer will finish printing the current scan, then pause.

3. Once printing stops, use the keypad keys to move the carriage, paper, and take-up shaft. When **Start/Stop** is pressed again (**OK** light turns green) printing will start again where it left off.

CAUTION

🚫 Do not pull paper tight between the drive shaft and the take-up shaft while printing is paused. Do not turn the feed roll or take-up roll by hand while printing is paused.

Canceling a Marker Plot

1. Press the **Start/Stop** key to place the printer in **STOP** mode (red light). The printer will finish printing the current scan and pause.

2. To stop the computer from sending plot files to the printer, click the **Abort** button in **FlexPlot**.

3. Use the keypad **Arrow** keys to position the carriage for the start of a new plot file as described earlier.

4. Press the **Set Origin** key to ready the printer for the next plot file.

Removing Markers from the Take-up Shaft

(FlexJet E Only)

1. Press **Start/Stop** until the **OK** light changes to red (**STOP** mode).

2. Wait for the plotting to halt.

3. Remove the dancer bar. Rest it on the top of the cover for storage.

4. Cut the paper with the supplied cutting tool, using the groove in the front of the platen as a guide.

5. Use one of the following methods to remove completed markers:

Method 1: Unroll with the take-up shaft in place

a. With the power off, rotate the take-up shaft by hand until the rectangular opening in the flanged coupling is perpendicular to the opening in the support block (*see **Figure 19***).

b. Remove the shaft from the support blocks.

c. When unwound, the plotted image faces up, permitting markers to be unrolled onto the cutting table with the take-up shaft in place.

Method 2: Manual unroll with the *Unroll* key

a. Press the **Unroll** key to unroll full markers in short steps.

b. Cut the marker free from the take-up shaft. Reattach the paper to the take-up shaft with masking tape following the steps outlined under the section ***Reattach Paper to the Take-up Shaft*** later in this chapter before continuing printing.

Method 3: Automatic Unroll with the *Unroll* Key

a. Press and hold the **Unroll** key for 3 seconds; The take-up shaft will automatically unroll.

b. Cancel automatic unroll at any time by pressing **Start/Stop**.

Method 4: Remove the shaft and unroll away from the machine

a. Cut the marker free, wind it manually or automatically with the take-up motor, and remove the take-up shaft from the support blocks.

ⓘ Note

Except when the feed roll is changed, it is best to leave the pinchwheels down when removing completed markers from the take-up roll. Leaving the pinchwheels down will help keep the paper aligned with the feed roll and reduce the time between printing operations.

CAUTION

The take-up shaft is very heavy when many plots have been rolled up. It is recommended that two or more people remove a full take-up roll from the machine.

Hint

An alternate method to ease removal of markers is to slide a 3-in cardboard core over the take-up shaft then tape paper to it. The cardboard core will rotate slowly at first—and may not raise the front dancer bar—but will still roll up completed markers. Simply slide the core off the take up shaft when plotting is complete.

Manually Freeing the Take-up Shaft

(FlexJet E Only)

Use this method to remove the take-up shaft from the completed roll without having to unroll the markers.

1. Tape the loose end of the roll down so that it cannot flap freely.

2. Rotate the take-up shaft by hand until the rectangular opening in the flanged coupling is perpendicular to the opening in the support block (*see Figure 19*). Remove the shaft.

3. Stand the roll on end with the flanged coupling pointing up. Rotate the take-up shaft counter clockwise (opposite to the direction that the paper was rolled on the machine. (See *Figure 25.*)

4. The larger the roll, the more rotations are required to free the shaft. When the shaft freely rotates, lay the roll on the ground.

5. Continue to twist the shaft counter clockwise while pulling it out of the paper roll until it is free.
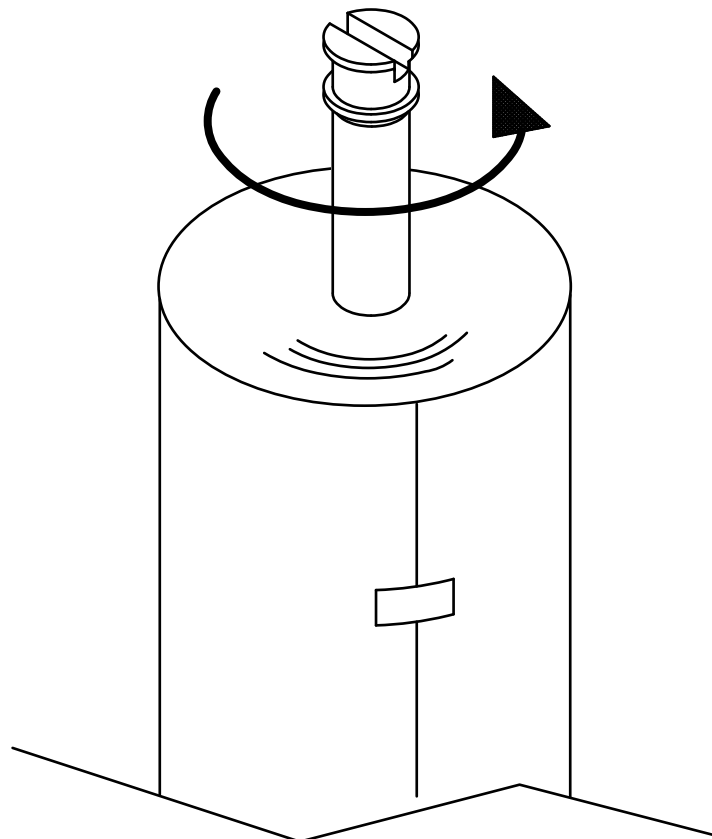
Figure 25. Manually freeing the take-up shaft.

Automatically Freeing the Take-Up Shaft

(FlexJet E Only)

Like the manual method, this method removes the take-up shaft from the completed roll without having to unroll the markers. The only difference is the use of the take-up motor.

1. Tape the loose end of the roll down so that it cannot flap free.

2. While one person lifts from the bottom and holds the paper roll still, press the **Unroll** key to rotate the take-up shaft opposite to the direction that the paper was rolled on the machine.

3. The larger the roll, the more rotations are required to free the shaft. When the shaft freely rotates in the roll, stop turning the take-up shaft. If the printer jams and the motor does not turn then do not unwind the roll with the motor. (*See Manually Freeing the Take-Up Shaft above.*)

4. Rotate the take-up shaft by hand until the rectangular opening in the flanged coupling is perpendicular to the opening in the support block (*see Figure 19*). Remove the shaft and lay it on the ground.

5. Continue to twist the shaft counter clockwise while pulling it out of the paper roll until it is free.

Reattach Paper to the Take-up Shaft

(FlexJet E Only)

1. Use the **Page Advance** key to drive enough paper forward to wrap under and around the take-up shaft.

2. Make sure the paper wraps under the take-up shaft.

3. Follow the guidelines described in *Taping Paper to the Take-Up Shaft*.

CAUTION

The take-up shaft is very heavy when many plots have been rolled up. It is recommended that two or more people remove the plotted paper roll from the machine.

Note

Except when the feed roll is changed, it is best to leave the pinchwheels down when removing completed markers from the take-up roll. Leaving the pinchwheels down will help keep the paper aligned with the feed roll and reduce the time between printing operations.

Printing to the Floor

With careful setup and constant supervision, the printer will print markers directly onto the floor. This method is NOT intended for printing long markers or unattended printing.

1. Thread the paper on the front of the machine. It should drape off the platen, over the feed roll, and onto the floor.

2. Set an origin normally and begin plotting. Make sure that the paper piles smoothly onto the floor. If it bunches up, it may catch on the moving carriage and tear.

CAUTION

If the paper bubbles or wrinkles while it flows over the platen surface, the carriage might catch the edge of the paper and tear it, causing a paper jam. Make sure that the paper is smoothly collecting on the floor to avoid paper jams.

Note

The front dancer bar should not be used when plotting to the floor.

Cleaning the Drive Shaft

Clean the drive shaft regularly to assure accurate plotting:

1. Turn off the printer and disconnect the power cord.

2. Gently remove any accumulated dust and residue with the stiff non-metal bristle brush provided in the **Accessory Kit**.

Figure 27. Cleaning the Drive Shaft.

Cleaning the Platen and Traverse

Dust and paper residue accumulate on the platen and traverse. Under regular use, clean every two weeks:

1. Turn off power to the printer.

2. Dampen a lint-free cloth with isopropyl (pharmacy) alcohol and gently wipe traverse rails until accumulated residue is removed.

3. Use a lint-free cloth dampened with de-ionized water to clean ink splatters off the platen and excess ink out of the **Service Station** waste well.

Figure 28. The Service Station

Hint

Use antistatic spray to clean platen and traverse, if desired.

Cleaning the Support Blocks

(FlexJet E Only)

When dust and paper residue will accumulate on the take-up and feed shaft support blocks, frequent feed shaft jams can occur. Perform this procedure when debris inhibits easy rotation of the shaft.

1. Turn off power to the printer.

2. Remove the feed shaft and the take-up shaft.

3. Dampen a lint-free cloth with isopropyl (pharmacy) alcohol and gently wipe the plastic support blocks until accumulated residue is removed.

4. Apply a light coating of grease to the plastic feed shaft support block. White Lithium grease is supplied with the printer. 3-in-1™ brand oil is also a very good lubricant for the feed block.

5. Wipe down both ends of the feed and take-up shafts before reinstalling them.

Size Calibration

Over time, the printer may require calibration to account for normal wear. Calibration adjusts the output to match design intent.

Prepare the Printer *(See the **Operation** chapter)*

1. Load the printer with, at minimum, 46-in wide paper.

2. Install ink cartridges.

3. Using the **Arrow** keys, move the carriage so that the carriage notch is positioned about 1 inch from the right edge of the paper.

4. Press the **Set Origin** key to put the printer in **START** (green light) mode.

Figure 29. Calibration screen in **Control Center**.

Use the Control Center to Gather the Calibration Data

1. Open the **Control Center** program.

2. Select **Tools>Size Calibration** from the **Menu Bar**. The window in *Figure 30* will appear:

3. Press the **Send Size Plot** button to print the factory stored calibration box. The printer will print a box that is 40″ (102-cm) long on the X-axis and 30-in (76-cm) wide on the Y-axis.

Y1

X1 ~40 in. X2

Y2
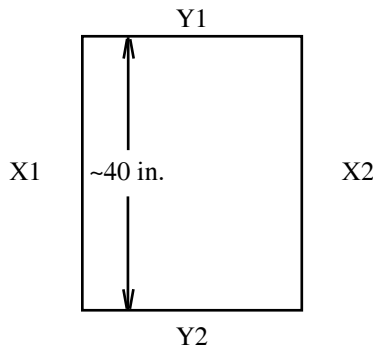
Figure 30. The Calibration box and measurements.

4. Precisely measure both sides (X) and the top and bottom (Y) of the box and record the results. Better accuracy in measurement equals better calibration.

5. Take the average of the horizontal (Y) values by adding them together and dividing by 2. Repeat this procedure for the vertical (X) values.

💡 Hint

The **Get Plotter Data** button will read the stored calibration settings from the printer and display them in the **Factor** windows.

> **Example**:
>
> If $X1$ = 39.750-in and $X2$ = 39.700-in
>
> The sum is 79.450-in (39.750-in + 39.700-in = 79.450-in)
>
> The average is 39.725-in (79.450-in / 2 = 39.725-in)
>
> The X calibration value is the average, 39.725-in

Enter the Calibration Data:

1. Enter the measured values in the boxes in the **Calibration** window. Make sure the printer is in **START** (green light) mode. Select the **Set Calibration** button.

2. The Control Center will send the calibration values to the printer and the new **Calibration Setting** will be displayed in the boxes in the window pictured in *Figure 31*.

3. Click on **Done** when finished.

💡 Hint

The factory-set calibration values are written on a small sticker on the under side of the right end cover. (*See Figure 33*.)

Cartridge Calibration

There are three types of adjustments associated with the ink cartridges. Most line quality issues are resolved by adjusting these values.

- **Cartridge Alignment** is not necessary on the FlexJet E and StudioJet printers.

- **Motion Adjustment** aligns scans in the direction of carriage travel.

- **Frame Gap** aligns scans in the direction of paper movement.

Figure 31. Cartridge calibration window.

Prepare the Printer

1. Load the printer with paper. (Follow the loading instructions under the *Operation* chapter.) Install cartridges.

2. Move the carriage using the **Arrow** keys so that the carriage notch is over the paper and roughly one inch from the right paper edge.

3. Put the printer in **START** (green light) mode by pressing the **Set Origin** key. (*See the **Operation** chapter for more details on preparing to plot*.)

4. Start the **Control Center** software. Ensure that there are no errors when the program tries to communicate with the printer. If errors occur, check the cables and ensure that the correct port number and baud rate are selected. (*See **Connect the printer to the Computer: Overview** in the **Installation** chapter for information on serial port connections.*)

Motion Adjust (Carriage Scan Alignment)

1. Press **Select Alignment Plot**.

2. Browse to the *c:\Ioline\Calibration* folder. Select the *40X8.plt* test file.

3. The **Motion Adjust** box has one number for adjustment. The default value is 0.

4. Changing the values affects the next scan, created when moving from left to right.

5. Press the **Set Motion** button after making adjustments to the values.

   Example:

   a. Lines from the second scan shift left to align with the first scan.

   b. Decrease the **Motion Adjust** value by 1.

   c. Press the **Set Motion** button.

   d. Repeat the test until alignment is correct.

6. Click on **Done** when finished.

Figure 32. The Motion Adjust Box.

Frame Gap (Paper Scan Alignment)

1. Press Select Alignment Plot.

2. Browse to the *c:\Ioline\Calibration* folder. Select the *40X8.plt* test file.

3. The **Frame Gap** box has one number for adjustment. The default value is 0.

4. Changing the values affects the next scan, created when moving paper forward through the printer.

5. Press the **Set Gap** button after making adjustments to the values.

   Example:

   a. Lines from the next scan have a small space gap between the previous scan.

   b. Decrease the **Frame Gap** value by 1.

   c. Press the **Set Gap** button.

   d. Repeat the test until alignment is correct.

6. Click on **Done** when finished.

Figure 33. The Frame Gap Box.

Cartridge Maintenance and Handling

A key to maintaining good print quality is proper print cartridge maintenance. During printing, ink-spray, paper fibers and dust can build up on the print cartridge and eventually will degrade plot quality. In addition, when print cartridges sit inactive for a period of time, ink may dry in the nozzles and create an ink plug. This results in the appearance of white streaks in the printed text or graphic.

Check Cartridges

If you experience print quality problems, first verify that the ink cartridge is undamaged and is not out of ink:

1. Press the **Start/Stop** key.

2. If the carriage is parked in the Service Station, use the **Left Arrow** key to move it out over the platen.

3. Open a blue stall latch and remove the cartridge.

4. Inspect the cartridge for damage and check the ink level indicator. If it is green, the cartridge still contains ink. If it is black, the cartridge is empty and needs replacing. (See *Figure 36*.)

6. If the cartridge is undamaged and still contains ink, move on to the **Automatic Cleaning Procedure**.

Automatic Cleaning Procedure

1. Press the **Start/Stop** key and wait until the **OK** light turns red.

2. Press the **Clean** key; The carriage will park in the **Service Station** and automatically clean the print heads.

3. When the cleaning process finishes, test the print quality again in **Best Mode** (activated with the **Quality** key.) Press the **Start/Stop** key. The **OK** light will turn green. If the printer was active when you initiated Step 1, it will resume printing. If it was idle, send a marker to the print queue.

4. If print quality remains poor, the paper fiber build-up may be such that auto cleaning alone is insufficient for removing ink plugs from the nozzles. You may need to manually clean the print head.

Manual Cleaning Procedure

To maintain optimal print quality, manually clean cartridges after they sit idle for longer than two days—or are placed in storage. Wiping the print head will clean out the nozzles and firing chambers.

A Cloth Should Be:

■ Soft, fiberless, and moistened with deionized water.

Should NOT Be:

■ Abrasive, made of small fibers, dry nor contain chemical additives.

1. Press the **Start/Stop** key.

2. Using the **Left Arrow** key, reposition the carriage over the platen.

3. Open the latch for the first cartridge and remove it.

4. Inspect the ink level indicator on the cartridge to verify the cartridge is not empty.

5. Dampen the cloth with de-ionized water.

6. Drag the surface of the cartridge print head over the surface of the cloth. Wipe slowly across the long-axis with the print cartridge facing down. Do not apply excessive force, as this could scratch the nozzle area.

7. Repeat until the print head leaves an evenly dark line of ink on the cloth.

8. When the cleaning process finishes, test the print quality again in **Best Mode** (activated with the **Quality** key.) Press the **Start/Stop** key. The **OK** light will turn green. If the printer was active when you initiated Step 1, it will resume printing. If it was idle, send another marker to the print queue.

Print Cartridge Storage

Short-term Storage (7 days or less)

■ Simply leave the print cartridge in the machine, capped in the **Service Station**.

■ If the cartridge was not in the **Service Station**, it may require manual cleaning.

Long-term Storage (greater than 7 days)

■ lace the print cartridge upside-down in an air-tight container. Lay a sponge or cloth dampened with de-ionized water next to it to help prevent the cartridge from drying out.

Figure 34. Ink cartridges should be stored in an air-tight container.

■ To return the cartridge to service, follow the manual cleaning procedure above.

Updating Firmware using the Control Center

Summary

1. Prepare the printer.
2. Check the Current Version.
3. Update the firmware.

Prepare the printer for a Firmware Update

1. Power on the PC and printer.
2. Ensure that the serial cable is connected between the PC and the printer.
3. Copy the firmware file to the folder *c:\Ioline\Firmware* (or another location that is easy to remember.)

Check the Current Firmware Version

1. Start the **Control Center**.
2. The main screen shows the current firmware version in the upper right corner.

ⓘ **Note**

If the firmware file is a ZIP archive, make sure it is decompressed before sending it to the printer. You can download a ZIP decompression utility at *http://www.winzip.com* if necessary.

3. If you do not see a firmware version displayed, please check connections to the printer. Call Ioline Customer Service for help resolving communication issues.

Update the Firmware

1. Choose *File>Download Firmware* from the menu bar.

2. Press the **Select Firmware** button.

3. Follow the on-screen directions for restarting the printer so that it will accept new firmware. Press **OK** when the printer is ready (three yellow lights on the keypad.)

4. Use the file window to browse to the location where you stored the firmware file (e.g. *c:\Ioline\Firmware.)*

5. A download progress window will appear.

6. When the download finishes, the printer will go through the initialization process. When the printer is finished, the **OK** light will turn red and the **Square** light will turn green.

7. Press the **Done** button.

8. The printer is ready for normal use. Perform test plots and verify that the calibration values are correct. If anything is not performing correctly, reset calibration values as described under the **Reset Calibration Values** section in this chapter.

ⓘ **Note**

The firmware filename usually looks like '**xxxxx.mot**', where **xxxxx** is the unique version number for your printer.

ⓘ **Note**

If the firmware file is a ZIP archive, make sure it is decompressed before sending it to the printer. You can download a ZIP decompression utility at *http://www.winzip.com* if necessary.

Reset Calibration Values

Perform the steps below if calibration values have been altered:

1. With the printer in **STOP** mode, use the arrow keys to move the carriage to the center of the traverse.

2. Turn power off on the printer.

3. Copy the factory calibration values from the white sticker inside the service station (*see **Figure 35**.*) If no sticker is present, recalibrate the machine using the procedure available in this *User Guide*.

4. Press and hold the **Unroll** key on the keypad then turn printer power on.

5. When the **OK** light turns red, release the key.

6. Use the **Control Center** software to re-enter the calibration values copied from the sticker OR perform the calibration using the directions in this chapter.

7. Turn power off then back on to ensure the new calibration values take affect. Perform test plots to verify proper calibration and operation.

8. If you have any difficulties, please contact Ioline Customer Service.

Figure 35. Factory calibration values on the sticker under the right end cover.

General Troubleshooting

If the printer is not working correctly the problem could arise from the computer, the cable, the design software or the printer.

Changes to the computer operating system or the installation of new peripherals or software might cause conflicts. If the computer or the design software are causing a problem, consult your computer and/ or software manuals, or call your manufacturer or dealer.

If the problem is with the printer, begin by making sure power is on and that the cable between the machines is connected correctly. Consult the chart at the end of this chapter for more detailed trouble-shooting techniques.

Media Tracking

Tracking is the process that controls media motion over the platen and assures accurate lines. If the paper slips under the pinchwheels or is out of alignment, printing quality will degrade. To resolve tracking difficulties try the following suggestions:

- Install paper correctly. *See the* **Operation** *chapter for more details*.

- Make sure the paper path and dancer bar is set correctly (as shown in **Figures 18** and **22**.)

- Inspect the paper for wrinkles or folds. Never use paper that is folded, wrinkled, or torn in any way. It may cause paper jams.

- Make sure the pinchwheels are located as outlined under the **Operation** chapter.

- The pinchwheels should never be positioned over bearings on the drive shaft as paper tearing and bunching will occur. Verify that the pinchwheels are positioned over treads (e.g. under the white markers affixed to the traverse.)

- Check to make sure that the printer is level. *See the FlexJet E Printer or StudioJet* **Quick Start Guide** *for more information*.

- The paper may slip when debris accumulates on the drive shaft. Inspect and clean the drive shaft. Refer to the *Routine Maintenance* chapter for further information.

- Contact an Ioline distributor or Ioline Customer Service if you are unable to resolve the problem or if the printer is damaged.

ⓘ Note

The *FlexJet E & StudioJet Printers Service Manuals,* available on request from Ioline Customer Service, provides expanded troubleshooting information.

Printing Quality

Good printing quality is dependent upon a number of different factors. The type of paper, environmental conditions, and operator habits are only a few of the variables that can affect the quality of a plot. It is important that the printer is loaded and maintained according to the guidelines under the *Operation* chapter.

If the scans (printing from a single pass) do not line up, see the sections on calibrating the printer in the *Routine Maintenance* chapter.

Line Quality

If the line quality is uneven try the following, in the order listed below:

Black means empty

Figure 36. HP cartridges have an ink level indicator.

1. Press **Start/Stop** then the **Clean** keys on the keypad to automatically clean the cartridges.

2. Inspect the ink level window on cartridge. If it is black, then the cartridge is empty. Replace it with a new one.

3. Remove the cartridge(s) and manually clean the print head with a (deionized) water-moistened, lint-free cloth. (See *Cartridge Maintenance and Handling* under the *Routine Maintenance* chapter for more information.)

4. Plot on undamaged or higher quality paper that is free of wrinkles and bubbles.

5. Use genuine HP 45 cartridges as recommended by Ioline.

6. Contact an Ioline distributor or Ioline Customer Service if you need further help.

Serial Communication

The serial port on the printer has an adjustable baud rate. Available speeds are 9600, 19200, 38400, 57600, and 115200. It is critical that the **Control Center**, **FlexPlot** or design software use the same baud rate that the printer is using.

If there is ever any doubt about what baud rate the printer is using, Ioline recommends resetting it to the default of 38400. To reset the baud rate:

1. Turn off the power to the printer.

2. Press and hold the **Page Advance** key while turning power on.

Note

Use the **Page Advance** and **Power Switch** key combination to reset baud rate:

 +

Hint

Use the Control Center to change the baud rate to match the design software.

3. Continue holding the **Page Advance** key until the **OK** light turns red and the **Square** light turns green.

4. Cycle power again (do not touch any keys this time) to ensure communications are reset.

If using a terminal program like TeraTerm™ to communicate with the printer, make sure to use *8* Data Bits, *No Parity*, *1* Stop Bit, and *Xon/Xoff* Flow Control.

Keypad Error Codes

Legend

G	=	Green light
R	=	Red light
Y	=	Yellow light
Y-Blink	=	Blinking yellow light*
OFF	=	Unlit

Figure 37. LED lights on the keypad.

OK	■	●	▲	Problem/Status
G	OFF	OFF	OFF	Ready to Print, Origin Set
R	OFF	OFF	OFF	Paused / Offline, Keypad Active
R	G	OFF	OFF	Power on reset finished.
R	Y-Blink	OFF	OFF	Cover open (obsolete)
R	OFF	Y-Blink	OFF	Paper Feed Out / Jammed
Y-Blink	R	R	OFF	X- (paper) axis jam
Y-Blink	G	R	OFF	Y- (carriage) axis jam
Y-Blink	G	G	OFF	TU (take-up) jam
Y-Blink	R	G	OFF	SS (Service Station) jam
OFF	R	Y-Blink	OFF	Buffer Overflow
Y-Blink	OFF	R	OFF	Init from EPROM failed
OFF	R	R	OFF	File syntax error
Y-Blink	Y-Blink	Y-Blink	OFF	Printer ready to receive firmware
Y-Blink	OFF	OFF	OFF	Motors off / System Stop

> **ⓘ Note**
>
> If keypad errors are not shown on the chart to the left, update the firmware. Downloads are available on Ioline's Web site or by contacting Ioline Customer Service.

Common Issues

A marker plot doesn't start at the correct point on the paper	
Cause:	**Solution:**
The origin is not set.	Position the pen where the plot should start. Press the **Set Origin** key.

The printer does not complete the marker.	
Cause:	**Solution:**
1. Outdated software.	1. Visit the Ioline Web site to download upgrades. Or, contact Ioline Customer Service.
2. The frame/panel size is mismatched between the printer and the design software.	2. Check the panel size in the software. It should be equal to or lower than the printer panel size. Send plot files from FlexPlot.

When a marker plot file is sent, nothing happens.	
Cause:	**Solution:**
A communication problem has occurred or the printer is in **STOP** (red light) mode.	Make certain the communication port is connected and configured properly. Position the marker on the carriage where the plot should start and press the **Set Origin** key to put the printer in **START** (green light) mode.

No power when printer is turned on; keypad lights stay dark.	
Cause:	**Solution:**
1. The power cord is damaged or disconnected.	1. Check the power connection.
2. The printer is damaged and needs professional service.	2. Contact an Ioline distributor or Ioline Customer Service.

Poor line quality.	
Cause:	**Solution:**
1. Ink cartridge is improperly installed.	1. Remove and reinstall ink cartridge.
2. Frame Gap setting is incorrect.	2. Use the **Control Center** to adjust frame gap as shown in the *Routine Maintenance* chapter.
3. Carriage electronics or cables are damaged.	3. Contact Ioline customer service.
4. Ink cartridge is empty.	4. Install a new ink cartridge.

Jagged scan alignment.	
Cause:	**Solution:**
1. Motion alignment is incorrect.	1. Use the Control Center to adjust motion alignment as shown in the Routine Maintenance chapter.
2. Platen or stand is not level.	2. Follow the directions in the FlexJet E Printer or StudioJet *Quick Start Guide* to level the stand and platen.
3. Loose carriage pulley causing random/uneven gaps between scans.	3. Contact Ioline customer service.

Poor paper tracking.	
Cause:	**Solution:**
1. Paper is improperly loaded.	1. Reload and align paper.
2. Bad paper roll or paper quality.	2. Replace the paper roll.
3. Pinchwheels not in correct location.	3. Reposition the pinchwheels as indicated in the *Operation* chapter.
4 Feed paper roll is centered on feed shaft.	4. Center the paper roll on feed shaft (see *Figure 16*). Make sure screws are tight on both paper hubs.
5. Paper roll not centered on feed shaft.	5. Ensure the feed roll is centered on the feed shaft.
6. Loose paper hubs.	6. Tighten screws on the paper hubs.

Gap between each scan.	
Cause:	**Solution:**
1. Frame Gap setting is incorrect.	1. Use the **Control Center** to adjust frame gap as shown in the *Routine Maintenance* chapter.
2. Ink cartridge is out of ink, dirty or the print head is plugged.	2. Check ink level indicator. Replace cartridge if indicator is black. If cartridge is not empty, see *Cartridge Maintenance and Handling* under the *Routine Maintenance* chapter.

Pauses during printing.	
Cause:	**Solution:**
1. Vector density is very high due to fine detail or the design software is not using fonts embedded in the printer.	1. Reduce vector density, use embedded printer fonts, or increase communication baud rate.
2. Communication baud rate is set very low.	2. Increase baud rate from the minimum of **9600** baud to the default of **38,400** or higher.

Regular or intermittent paper tearing.	
Cause:	**Solution:**
1. Front dancer bar is not installed. (FlexJet E models only.)	1. Install front or rear dancer bar.
2. Paper gets "yanked" by the machine during take up.	2. Remove slack from paper roll before pressing **Set Origin**.
3. Paper is improperly loaded.	3. Reload paper and verify that it is in alignment.
4. Paper buckles when plotting to floor.	4. Clear paper path.
5. Paper roll damaged.	5. Inspect the feed paper roll. Dropping the paper roll on an end can wrinkle the edge which can catch the carriage and cause a tear.
6. Paper not loaded correctly.	6. Correct paper loading is vital. Follow the steps in the *Operation* chapter to reset paper alignment. Make sure the front silver dancer bar is BELOW the front optical sensor before plotting.
7. Platen not level.	7. Make sure the distance between the print heads and platen surface is the same at both the right and left side of the printer. Adjust the platen levelers as described in the FlexJet E Printer or StudioJet *Quick Start Guide*.
8. Outdated firmware does not advance paper at startup.	8. Use the **Control Center** to check the firmware version and ensure it is 324 or greater.
9. Pinchwheels press on a drive shaft bearing.	9. With power off, raise the pinchwheels and align them with the white driveshaft markers on the traverse.

Common Issues

(FlexJet E Models only)

Take-up roll never rotates, paper loop is too long in front of machine.	
Cause:	**Solution:**
1. Take-up motor is unplugged.	1. Plug in the take-up motor.
2. Dancer bar is below the lower sensor.	2. Roll paper up by pressing and holding the **Unroll** and **Right Arrow** key.
3. Lower sensor does not work.	3. Contact Ioline customer service.

Take-up roll does not stop; paper is pulled tight in front of machine.	
Cause:	**Solution:**
1. Operator accidentally activated the lower sensor when the dancer bar was higher than the upper sensor.	1. Press **Start/Stop** 2 times, then press and hold the **Unroll** key to move the dancer bar to the Top sensor.
2. The upper sensor doesn't work.	2. Contact Ioline customer service.

Take-up roll rotates when no dancer bar is in the machine.	
Cause:	**Solution:**
1. The operator accidentally tripped the lower sensor.	1. Activate the upper sensor by touching the sensor glass face.

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Service & Support

Ioline has many years of experience working with designers, graders and marker makers. Feel free to contact us if you have questions—or to share information.

Getting Help

Ioline is committed to providing the highest quality service and support to its customers. If you need assistance with an Ioline FlexJet E or StudioJet printer, a number of resources are available:

1. First, refer to this *User Guide* for answers to your specific questions.

2. Many detailed troubleshooting and repair issues are listed in the *FlexJet E & StudioJet Printers Service Manual*, available upon request from Ioline Customer Service.

3. Consult the support section of the Ioline Web site: **www.ioline. com**. FlexJet E and StudioJet printer users must have a **User Name** and **Password** to log into the site. Please contact Ioline customer service to set up your free account.

4. For additional assistance, contact your local dealer or Ioline Customer Service. Contact information is listed under *Customer Service* in this chapter.

Any warranty servicing of this product not specifically described in this manual must be authorized in writing by Ioline Customer Service. You may obtain service by calling or faxing Ioline Customer Service. The technicians will help you determine the nature of the problem. If factory repair is necessary, you will receive a RMA (Return Material Authorization). Please gather the information indicated on the next page before contacting Ioline or your dealer.

1. When returning a machine, carefully package the equipment in its original container or packaging equivalent. You may purchase shipping containers from Ioline by contacting Ioline Customer Service. **Ioline is not responsible for any damage due to inadequate or improper packaging.**

2. Carefully wrap and secure all items in the shipping container to

---

Hint

FlexJet E & StudioJet printers service manuals, technical bulletins, software updates and other information is available to FlexJet E & StudioJet printer owners on **www.ioline.com**. Access is free. Just contact Ioline Customer Service at support@ioline.com to set up a User Name and Password.

prevent damage. Seal the container and note the RMA number near the address block.

3. Ship the container using FED-EX or another approved carrier. COD shipments **ARE NOT ACCEPTED**. An Ioline representative will contact you prior to the start of work with an estimate of repair cost. All repairs are warranted for 90 days.

Customer Service

Ioline Corporation is committed to providing quality service and support to our customers. If you need assistance with an Ioline product, contact your local dealer or Ioline authorized service center. You may also contact:

Ioline Customer Service Department
Monday through Friday
7:00 A.M. - 5:00 P.M. U.S. Pacific Time
Voice: 1.425.398.8282
Fax: 1.425.398.8383
support@ioline.com
www.ioline.com

Your Comments
Are Requested

Ioline Corporation is interested in comments on our documentation and products. Please send corrections or suggestions to:

Ioline Corporation

14140 NE 200th Street

Woodinville, WA 98072 USA

Voice: 1.425.398.8282

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www.ioline.com

This *User Guide* is provided for informational purposes only. The contents are subject to change without notice, and Ioline Corporation assumes no responsibility for any errors that are contained herein. No part of this *User Guide* may be copied, disseminated, or distributed without the express written consent of Ioline Corporation.

Before you contact Support…

Please gather the following information about your printer before contacting Ioline or your dealer for technical support:

Name:	
Company Name:	
Phone Number:	
Fax:	
E-mail:	
Model:	
Serial Number*:	
Date of purchase:	
Dealer:	
Type of media & ink used:	
Type of Computer:	
Type of design software:	
New software or peripherals:	
Service history:	

*   You'll find the serial number above the power switch on the back side of the right cover.

The FCC Wants You to Know...

This equipment generates and uses radio frequency energy and, if not installed and used properly (in strict accordance with manufacturer instructions), it may cause interference to radio and television reception. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. If this equipment does cause interference to radio or television reception - which can be determined by turning the equipment off and on - you are encouraged to try to correct the problem by one or more of the following measures:

- Use only shielded interface cables.

- Reorient the receiving antenna.

- Relocate the host computer with respect to the receiver.

- Move the host computer away from the receiver.

- Plug the host computer into a different outlet so that the host computer and receiver are on different branch circuits.

If necessary, consult the dealer or an experienced radio/television technician for additional suggestions. *How To Identify and Resolve Radio-TV Interference Problems,* a booklet published by the Federal Communications Commission, is a helpful reference. Please contact the FCC to request a copy:

www.fcc.gov

Document stock number: 004-000-00345-4

This booklet is available from:

U.S. Government Printing Office

Washington, D.C. 20402

ⓘ Note

This equipment was tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

GLOSSARY

A

Acceleration – The rate that a printer changes the velocity of the carriage or the paper. Acceleration is measured in units of g (1 g = 32.2 ft/s2).

Arc – A segment of a circle, also called a curve.

Axis – A geometric guideline used to place a coordinate.

B

Bottom Cover – Metal housing that protects the underside of the printer.

C

Control Panel – See Keypad.

Coordinate – A point that is referenced by its position on the X- or Y-axes of a printer. Vector or arc segments connect coordinates to create printing paths.

Carriage – The component that holds the ink cartridge(s). It travels along the Y-axis on the traverse.

D

Dancer Bar – Rod that holds the feed loop and take-up loop taut during printing.

DM/PL – Digital Microprocessor/Plotting Language. An instruction set used to send vector information to a machine that can represent the data as an image. DM/PL is used in software drivers for some design programs.

DPI – Dots Per Inch. Refers to the dot density or print resolution on paper.

Drive Shaft – The motor driven shaft that moves material through a friction feed printer. The printer drive shaft has a rough surface that grips the material.

F

Feed Loop – Slack material between the feed roll and the printer.

Feed Shaft – Metal rod that holds the paper roll parallel to the printer and allows it to turn during feeding.

File Name Extensions – In DOS and Windows based programs, the three letters after the period in a file name. With graphics files the three letters denote a file type such as the vector and bit map based Encapsulated Postscript (EPS) and the vector based Hewlett-Packard Graphics Language (PLT).

Font – Refers to the style and width of letters, numbers, and symbols. Examples are Helvetica Bold or Times Roman.

Frame – Segment of a plot established by the design software. Frames can be any size up to 21600-in (X axis) by 72-in (Y axis). Markers are generally plotted as a series of frames.

Frame Size – The X axis length of each part of the plot as established by the design software. Frame size is also called tile size, page size, etc.

Friction Feed – Process where the material is fed through a printer by placing it between a motor-driven drive shaft and tensioned pinchwheels.

G

Green Light Mode – *See START Mode.*

H

HPGL – Hewlett-Packard Graphics Language. Instruction set used to send vector information to a machine that can represent data as an image. HPGL 7475 is the most common plot language used for communication between a printer and design software.

K

Keypad – Panel on the right side of the printer where the user controls simple printer functions. Carriage and paper motion is accessible from here during **Stop** mode. Also called the **Control Panel**.

M

Mil – Thousandths of an inch or milli-inches. For example; 75 mils is the same as .075 inches. 1 mil is equal to .025-mm.

O

Origin – Point marking the zero (0) coordinate on the X and Y axes. Used as a starting reference by the printer. On an Ioline printer, the origin is set with the **Set Origin** key on the keypad.

P

Panel – *See Frame*.

Paper Hub – Device that holds the feed paper roll in position on the feed shaft.

Pinchwheel – Roller wheels that push the paper against the drive shaft when lowered into position by the square shaft.

Pinchwheel Lever – Lever connected to the square shaft that, when actuated, raises and lowers the pinchwheels.

Platen – Curved surface that houses the drive shaft and supports the material during printing.

Printer – A device that uses image data to produce output, usually on paper. In electronic marker making, printers create sewn good outlines on paper from a set of coordinates stored in a computer file.

R

Red Light Mode – *See STOP Mode*.

Resolution – The smallest distance that a printer can move the material or the carriage. Printer resolution affects the accuracy of plot file reproduction on the material.

Roll Feed – A method of pulling material from a roll for printing.

S

Scan – A single pass of the carriage over the platen. The printer may or may not print during a scan.

Sensor – The electronic eye that reads paper position by monitoring the dancer bar. The FlexJet E printer has top and bottom sensors. There are no sensors on the StudioJet printer.

Serial Communications – Method of sending information from a computer to a printer by sending 1 bit at a time through a cable. The serial port on a PC is a male (9- or 25-pin) connector.

Service Loop – *See Feed Loop*.

Service Station – Located underneath the right end cover (behind the keypad). When the carriage is parked, the Service Station caps the inkjet cartridges for short-term storage of 2 days or less.

Square Shaft – Shaft that raises and lowers the pinchwheels when rotated. Located behind the traverse assembly.

START Mode – OK light on the keypad is green. Printer is ready to print. See *Set Origin or Start/Stop under Keypad Controls in the Operation chapter*.

STOP Mode – OK light on the keypad is red. Printer is paused and offline (e.g. not ready to print). See *Set Origin or Start/Stop under Keypad Controls in the Operation chapter*.

Support Blocks – Plastic parts that hold the feed shaft and take-up shaft.

T

Take-up Loop – Slack material between the printer and the take-up shaft. The dancer bar holds the take-up loop taut during printing.

Take-up Motor – The motor that rotates the take-up shaft on the FlexJet E printer.

Take-up Shaft – Metal rod that the plotted markers are rolled onto. The take-up shaft is driven by the take-up motor.

Throughput – The speed at which a printer completes a job. Represents the ability to process information and produce an image.

Traverse – Structure that supports and guides the carriage and holds the pinchwheel assemblies.

U

USB – Universal Serial Bus. High speed method for transferring information from a PC to a peripheral like a printer.

V

Vector – A line segment between two coordinates.

X

X-Axis – Theoretical horizontal line providing a length reference point for the printer. Associated with paper movement over the platen.

Y

Y–Axis – Theoretical vertical line providing a width reference point for the printer. Associated with carriage movement across the traverse.

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Symbols