ALFAMAQ

Continuous Inkjet Printing System

User Guide

jetstream
BY SQUID INK

jetstream SONIC
BY SQUID INK

SQUID INK

Distribuido por ALFAMAQ

JetStream

Continuous Inkjet Printing System

User Guide

For use with:

- ## JetStream CIJ System

- ## JetStream Sonic CIJ System

Table of Contents

> ## Required Training Levels:
>
> The JetStream is a rugged but complex piece of equipment. Information in this document has been assigned different required training levels to indicate minimal requirements for performing a given task. These required training levels can be used to reduce the amount of information that a user needs to read and understand to operate the JetStream.
>
> △ **User:**
> These tasks can be performed by a user and should also be understood by in-house technicians.
>
> ▲ **Trained Technician:**
> These tasks can potentially be performed by in-house staff who have a professional level of training in electronics, mechanics, engineering, or IT (depending on the task) and who have access to this JetStream User Guide. The goal is to ensure as little downtime as possible.
>
> If in doubt, in-house technicians should refer these procedures (or procedures not described) to a Squid Ink Distributor or Squid Ink Service Technician.

Abbreviations & Terminology

The following abbreviations are used throughout this User Guide:

Abbreviation	Meaning	Abbreviation	Meaning
AC	Alternating Current	NC	No Connection
Amp	Amperes	NPN	Negative-Positive-Negative
BCD	Binary-Coded Decimal	I/O	Input/Output
BMP	Bitmap	PLC	Programmable Logic Controller
C	Celsius	PN	Part Number
CIJ	Continuous Inkjet	PPE	Personal Protective Equipment
cm	Centimeters	PPR	Pulses per Revolution
CONN	Connector	PVC	Polyvinyl Chloride
CPLD	Complex Programmable Logic Device	RPM	Revolutions per Minute
F	Fahrenheit	RS	Recommended Standard
GB	Gigabyte	SDS	Safety Data Sheet
GND	Ground	stat.	Status
H	Hours	temp.	Temperature
HV	High-Voltage	USB	Universal Serial Bus
Kg	Kilograms	V	Volts
LCD	Liquid Crystal Display	VAC	Volts Alternating Current
lb	Pounds	VDC	Volts Direct Current
m	Meters	w/	With
max	Maximum	w/o	Without
MEK	Methyl Ethyl Ketone	µm	Micron or Micrometer (a millionth of a meter)
ml	Milliliters	'	Feet
m/min	Meters per Minute	'/min	Feet per Minute
mm	Millimeters	"	Inches

Safety

When installing, operating, and maintaining the JetStream, follow these safety practices.

Warnings

- Read this User Guide in its entirety before attempting to install, use or maintain the system.

- When unpacking and setting up the JetStream, use proper lifting techniques. Avoid overreaching and leaning over while handling the printer and accessories. If necessary, use more than one person to lift and move the printing system.

- While installing, maintaining and operating the JetStream, always wear safety glasses, latex gloves, and protective clothing such as a laboratory smock.

- Ensure that the electrical power source is properly wired and grounded. The power source should comply with all safety regulations and codes applicable to the installation location.

- Turn off and unplug the JetStream while servicing and performing maintenance.

  > **NOTE:** Some service and maintenance procedures require the power to be left on. During such procedures, carefully follow the safety instructions.

- Use only Squid Ink Manufacturing inks and fluids. Failure to follow this directive can damage the unit and void the warranty.

- The JetStream uses capped Ink and Makeup Containers. Do not open or puncture these containers in any way other than for normal installation. Failure to follow this directive will void the warranty.

- Keep all fluids away from open flame and excessive heat. Methyl Ethyl Ketone (MEK), Ethanol, and Acetone are flammable and can cause health issues. Consult SDS sheet accompanying fluids and inks purchased for product.

- Avoid prolonged fluid contact with skin. Wash contacted skin with soap and water. Refer to the SDS sheet accompanying the fluid.

- Do not look directly into the Printhead. If fluids make eye contact, flush immediately with water and seek medical attention.

- Never pour fluids into a sink, sewer, or drain. Dispose of fluids in accordance with all ordinances and regulations pertaining to hazardous fluid disposal.

- Check Ink and Solvent Containers regularly and replace empty ones in a timely manner.

- When cleaning, use only an approved wash that is compatible with the component. Failure to do so will result in damage to vital components and void the warranty.

Understanding Safety Notifications

⚠	**DANGER** Indicates a hazardous situation which, if not avoided, **will** result in death or serious injury.
⚠	**WARNING** Indicates a hazardous situation which, if not avoided, **could** result in death or serious injury.
⚠	**CAUTION** Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
⚠	**ATTENTION** Indicates a hazardous situation which, if not avoided, could result in property damage only.

Cautions

When installing, operating, and maintaining the JetStream, observe these cautions.

⚠	**Electrical Hazard** Do not use equipment in any way other than as instructed in this manual. No user-serviceable parts are inside. Dedicated circuit is recommended. Check polarity.
⚠	**Electrical Ground Hazard** Ensure that JetStream system is properly grounded.
⚠	**Fire Hazard** Inks and makeup fluids may be flammable. Use caution and keep away from flame. Have a fire extinguisher nearby.
⚠	**Keep Dry** Keep the equipment dry and indoors.
⚠	**Health Hazard** With prolonged exposure, some inks and makeup fluids may be a health hazard. Ensure that the area has adequate ventilation. JetStream printers are not classified for use in explosive areas.
⚠	**Wear Safety Equipment** Wear necessary Personal Protective Equipment (PPE) when using the JetStream printer.
⚠	**Environmental Hazard** Inks and fluids may be harmful to the environment. Dispose of these properly.

Required Training Levels

The JetStream is a rugged but complex piece of equipment. Information in this document has been assigned different required training levels to indicate minimal requirements for performing a given task. These required training levels can be used to reduce the amount of information that a user needs to read and understand to operate the JetStream.

⚠️	**WARNING:** Performing a procedure that one is not qualified to perform can result in impaired system performance, damage to the equipment, or even serious injury (depending on the procedure), and will void the warranty. If in doubt, contact your trained and authorized Squid Ink Distributor.

△ **User:**
These tasks can be performed by a user and should also be understood by in-house technicians.

▲ **Trained Technician:**
These tasks can potentially be performed by in-house staff who have a professional level of training in electronics, mechanics, engineering, or IT (depending on the task) and who have access to the JetStream User Guide. The goal is to ensure as little downtime as possible.

If in doubt, in-house technicians should refer these procedures (or procedures not described) to a Squid Ink Distributor or Squid Ink Service Technician.

■ **Squid Ink Distributor/Squid Ink Service Technician:**
Squid Ink Distributors are trained and authorized to service JetStream systems, and are equipped with a Service Manual that covers procedures beyond the scope of the JetStream User Guide.
If a Squid Ink Distributor is unable to resolve the issue, it should be referred to a Squid Ink Service Technician.

Sections without any notation of "Required Training Level" should be assumed to be relevant and important to all users.

JetStream Equipment

△ Standard Equipment

Each JetStream is shipped with the following items:

JetStream
Console

Umbilical Tube

JetStream
User Guide
on USB

SQ-JETSTREAM-00019-02

Power Supply
Cord

Cleaning
Tray

Printhead

Drying
Bulb

Cleaning
Bottle
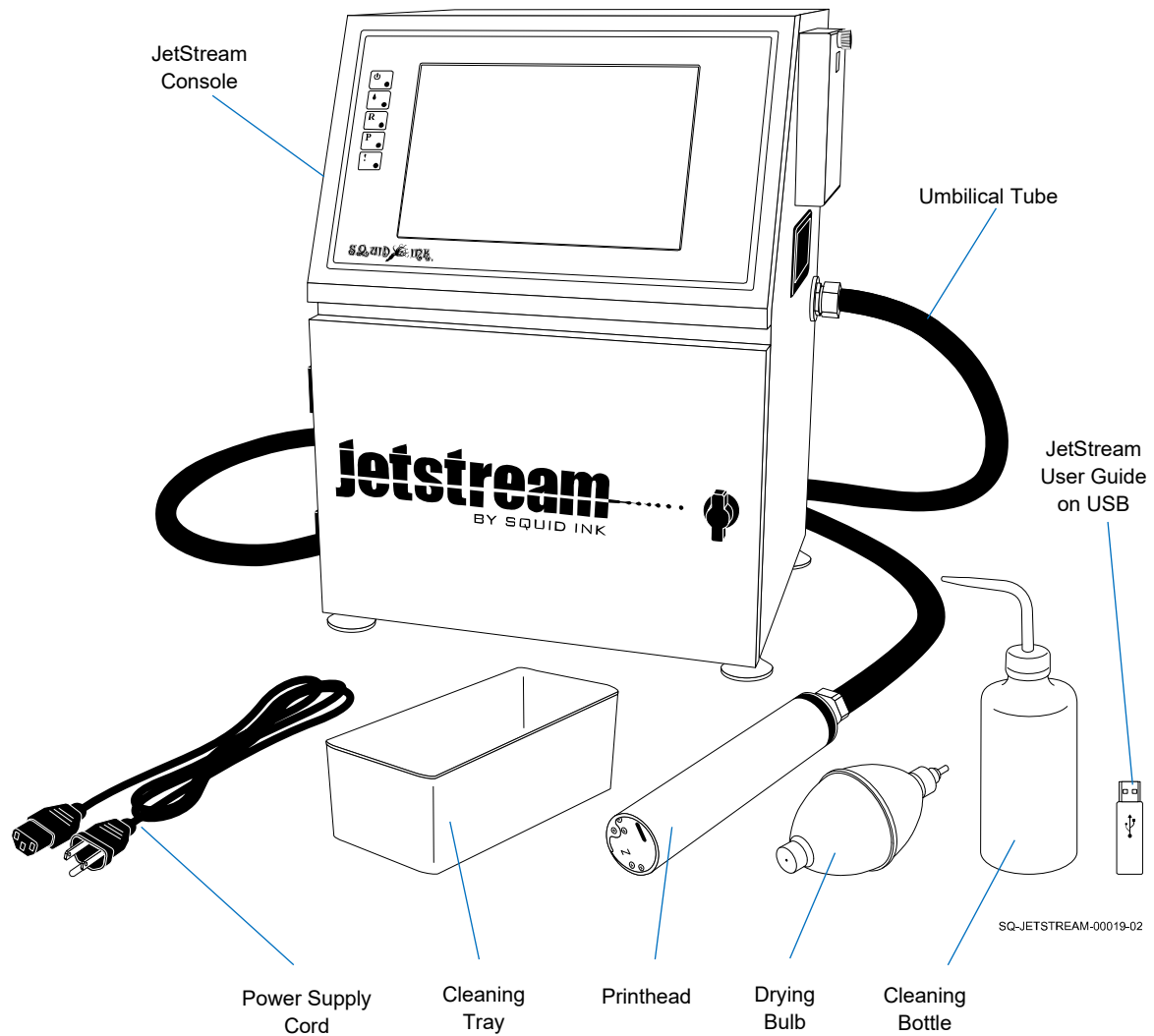
The JetStream printing system is shipped assembled and tested. When unpacking the shipping carton, verify that the contents are complete and in proper condition. If items are missing or damaged, contact your Squid Ink Distributor immediately.

△ Fluids (not included)

△ Ink

Squid Ink offers many ink types, including eco-friendly plant-based inks, which are specifically tailored for superior performance on different substrates.
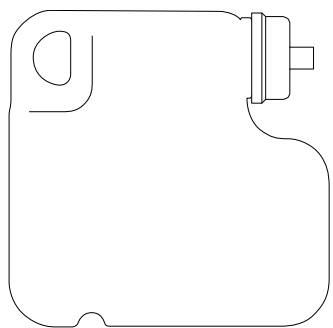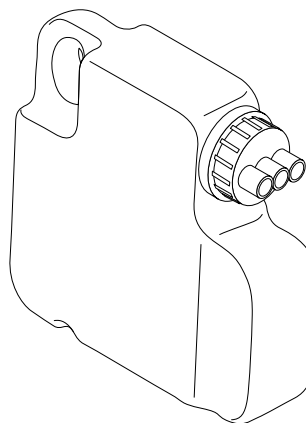
△ Makeup Fluid

Makeup fluid is used as a solvent to dilute ink to the proper viscosity. It is also used as a cleaner for the Printhead and other components. The correct makeup fluid to use will depend on the type of ink used.
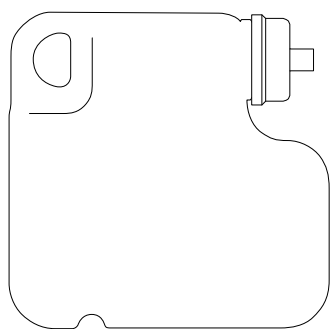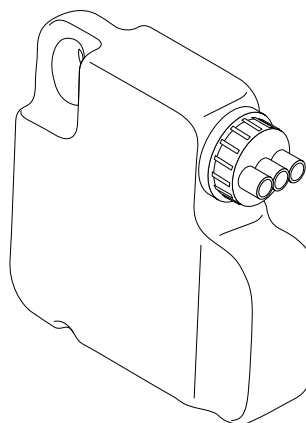
△ Optional Equipment

Squid Ink offers more than one choice for many of the items listed below. The best option(s) will depend on your specific needs. Please contact Squid Ink Sales Support at (800) 877-5658 for assistance and to order equipment.

- Photocell
- Encoder
- Mounting Equipment
- Console Mounting Stand

- Sliding Table With Encoder
- Pressurization Kit
- Cleaning Kit
- Low-Ink Light Warning Device

△ Photocell

A Photocell is often an essential part of a JetStream printing system. It detects the edge of the passing substrate/product and triggers the JetStream to print. It can be mounted directly to an optional CIJ Printhead Mounting Bracket (Part Number 2006696), or mounted separately. Mounting the Photocell upstream from the Printhead allows it to detect the leading edge of the product/substrate and trigger printing.
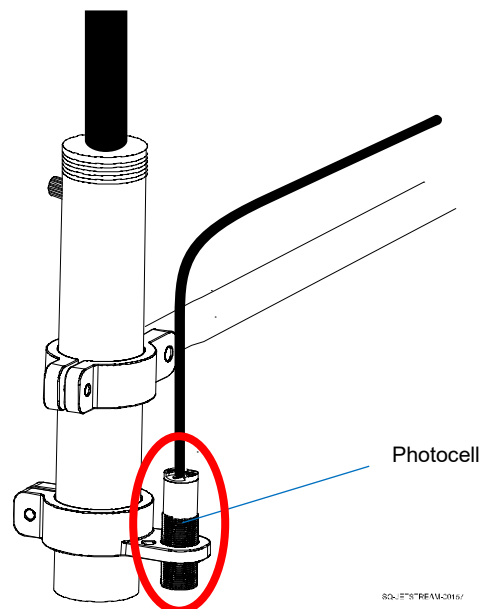
Photocell

(Part Number: Varies based on substrate and other factors)

△ Selecting the Right Photocell

Due to issues such as surface reflectiveness, different Photocells are appropriate for different situations. Squid Ink offers optical, fiber optic, ultrasonic, laser, metal proximity, and capacitive proximity Photocells. Choosing the right Photocell for the application is essential to getting optimal results. Below are the options available.

Part Number	Photocell, Bracket, or Connector	Application	Detailed Description	Typical Sensing Range
2006910	Cable - Photocell	• All applications requiring a Squid ink supplied Photocell	• Connects the Photocell to the JetStream printer	N/A
2006911	Cable – Photocell Pigtail	• JetStream only	Sensor Cable with Connector, flying leads (plugs into Sensor Port) Cable Length: 15' (4.57 m)	N/A
2006916	Photoeye: Retroreflective with Cable, 18mm	• JetStream only • Cases • Large products	Self-contained fixed field Sensors are small, powerful, infrared diffuse mode Sensors with far-limit (a type of background suppression). Their high excess gain and fixed field technology allow them to detect objects of low contrast while ignoring background surfaces. Cable Length: 15' (4.57 m)	1 – 200 mm
2006917	Photoeye: Bifurcated Fiber Optic with Cable	• Bottles • Small containers • Blister packs • Eyemark sensing	Glass fiber optic Sensor. Bifurcated fiber used in retroreflective mode. Single fibers available for though bean sensing. Small field size allows sensing of relatively small objects. Fiber can be mounted in tight area to get proper position. Cable Length: 15' (4.57 m)	1 – 30 mm
2006918	Photoeye: Laser Sensor, Adjustable with Cable	• Small parts sensing • Eyemark sensing • Low contrast detection	The versatile, rugged laser contrast Sensor provides reliable, high-speed detection and fixed background suppression models allow for contrast detection in a fixed range while ignoring a background. Cable Length: 15' (4.57 m)	1 – 50 mm
2006919	Photoeye: Ultrasonic Sensor with Cable	• Pouches • Bags • Bottles • Glossy objects	Ultrasonic Sensors use sound waves, not light, and this makes them ideal for problematic clear material sensing applications. Use	1-100 mm

Part Number	Photocell, Bracket, or Connector	Application	Detailed Description	Typical Sensing Range
		• Dusty and wet environments	ultrasonics to effectively and accurately sense liquids, clear objects and targets in dirty environments. Ultrasonics are inherently impervious to color differences, high reflectivity and glare, all of which are application challenges for photoelectrics. Cable Length: 15' (4.57 m)	
2006920	Sensor Metal Proximity with Cable 18mm	• Metal cans • Other metal products	Inductive metal proximity Sensors are non-contact detectors. Cable Length: 15' (4.57 m)	1 – 8 mm

△ Encoder

An Encoder sends the JetStream continuous information about the speed of the Conveyor. When using a variable speed Conveyor, an Encoder is needed to coordinate the timing of printing with the timing of the passing products. An Encoder is essentially a wheel that touches the Conveyor Belt and sends electronic pulses to the JetStream with real time information on the distance that the Conveyor has moved at any given instant, regardless of changes in Conveyor speed. Squid Ink offers a high-resolution Encoder that sends 4,000 pulses per revolution to the JetStream and is highly recommended for this application.

Encoder

(Part Number 2006921)
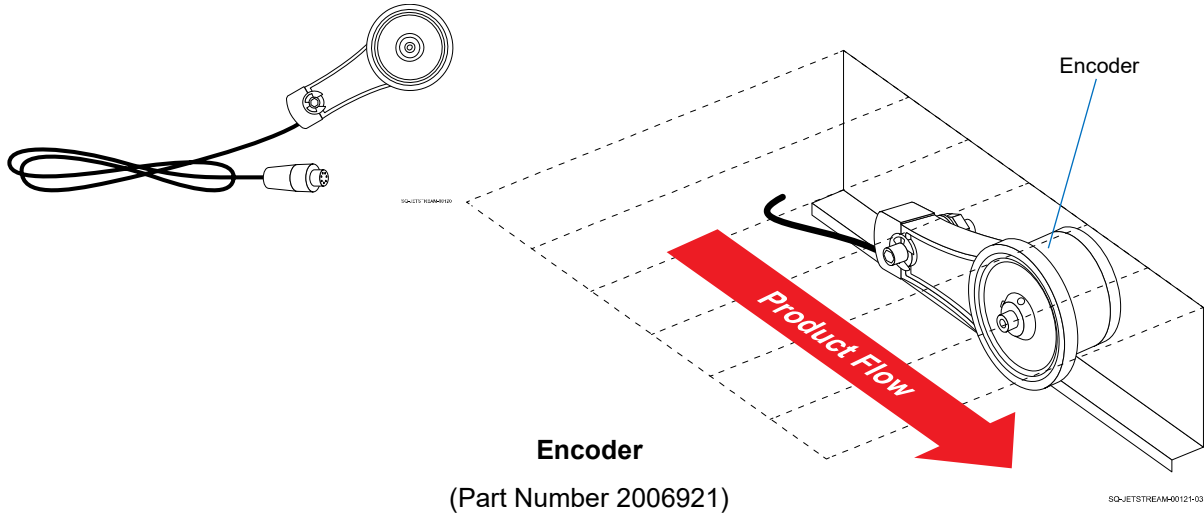
△ Mounting Equipment

Used for mounting the Printhead in a consistent position relative to the product/substrate. Options include a Printhead Mounting Stand or a CIJ Printhead Mounting Bracket.
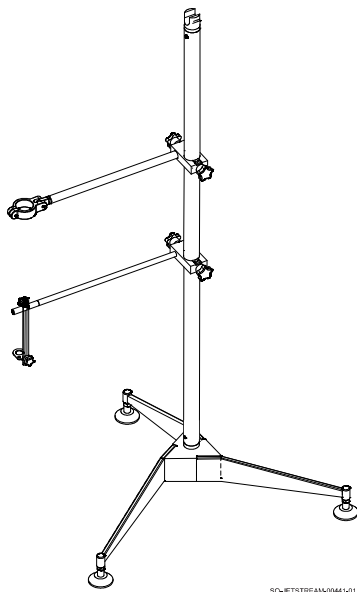
Printhead Mounting Stand

(Part Number 2006650)
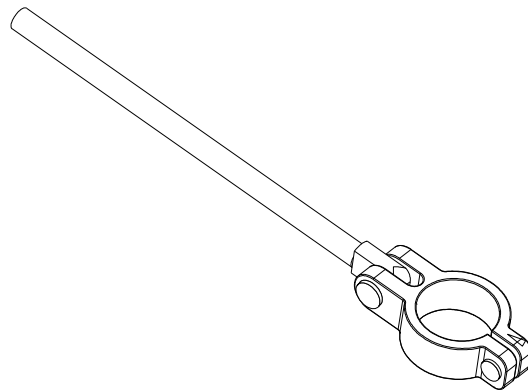
CIJ Printhead Mounting Bracket

(Part Number 2006696)

△ Console Mounting Stand

Squid Ink offers a portable stainless-steel Stand with two shelves. The top shelf can hold a single JetStream unit. The bottom shelf can store ink, makeup fluid, and supplies, or it can hold a second JetStream unit. The casters make the stand particularly useful if a single JetStream Console must be moved to different production lines. Squid Ink also offers an alternative Base Assembly for the Console Mounting Stand, allowing a Printhead Mounting Bracket to be directly attached to Base Assembly.
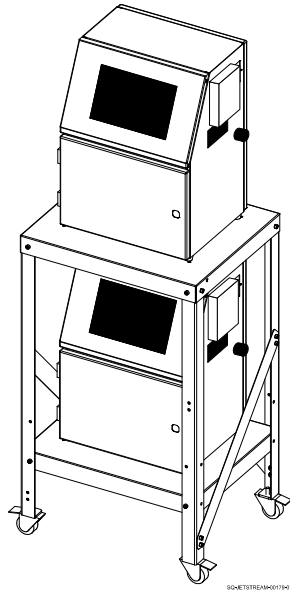
Console Mounting Stand

(Part Number 2006655)
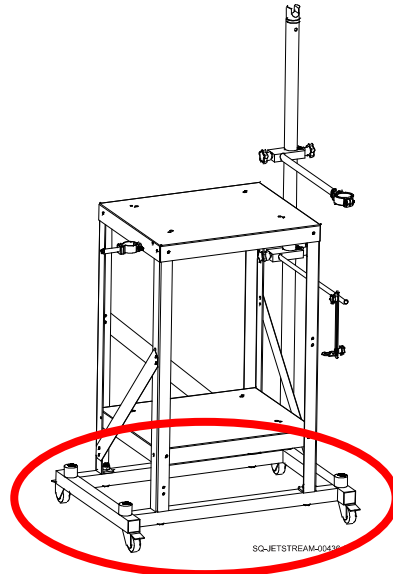
**Alternative Base Assembly for
Console Mounting Stand**

(Part Number 2006663)

△ Sliding Table with Encoder

A Sliding Table with Encoder can be used for testing and troubleshooting the JetStream away from the Conveyor.
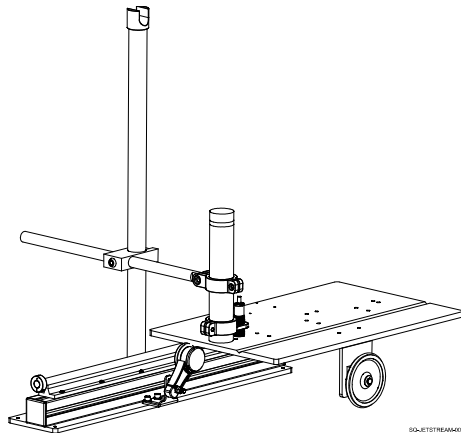
Sliding Table with Encoder

(Part Number 2006653)

△ Pressurization Kit

A Pressurization Kit is recommended for dirty, dusty, or otherwise contaminated environments and/or for upshooting (printing upward) applications. It keeps the Printhead pressurized to prevent dust, debris and moisture from getting into the Printhead. A Pressurization Kit requires pressurized air supplied by the end-user.

SQ-JETSTREAM-00163-01
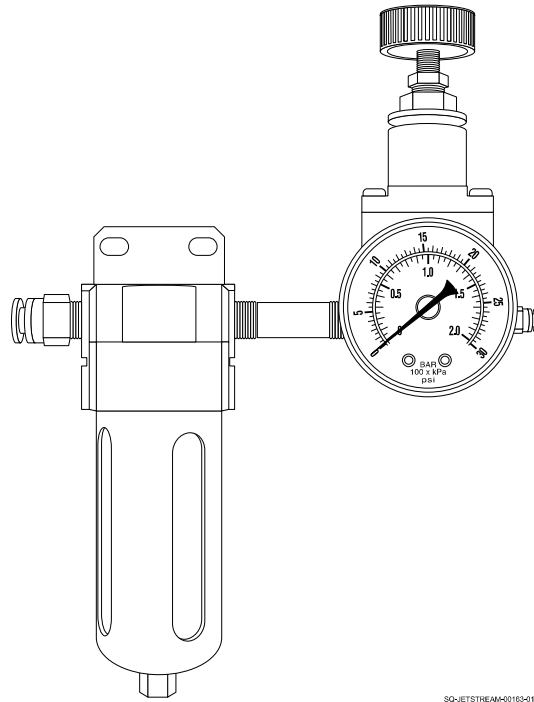
Pressurization Kit

(Part Number 2006645)

△ Cleaning Kit

The Cleaning Kit includes a Cleaning Bottle, Cleaning Tray, and Drying Bulb, used for cleaning the Printhead.

SQ-JETSTREAM-00162-01
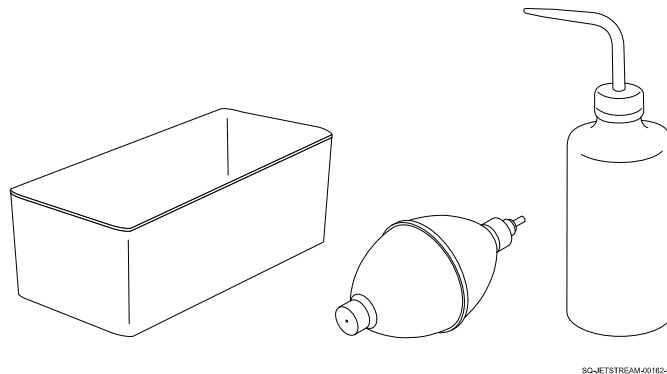
Cleaning Kit

(Part Number 2006971)

△ Low-Ink Warning Device

The JetStream provides on-screen notifications to the operator when a problem occurs. Issues that trigger an on-screen warning include: the ink stream is missing the Ink Return Gutter, ambient temperature is too high or too low, Mixing Tank is overflowing, and high-voltage faults. These alarms may not be noticed if the operator is not continuously watching the screen. Squid Ink offers a Warning Low-Ink Light Beacon that can be connected to the JetStream to assist with operator awareness.
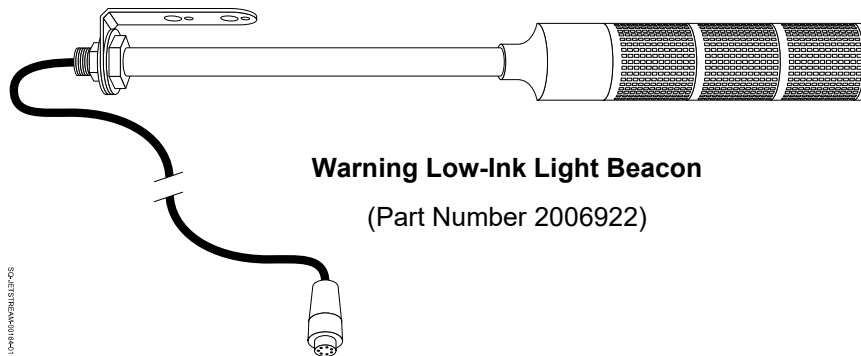
Warning Low-Ink Light Beacon

(Part Number 2006922)

△ CIJ Wash Station Assembly

A CIJ Wash Station simplifies the Printhead cleaning process. It allows the user to slide the Printhead into a sleeve and lock it in place, while exposing the critical hardware components. A funnel/quart container underneath catches cleaning fluid as the Printhead is being manually washed off.

SQ-JETSTREAM-00375-01

SQ-JETSTREAM-00396-01

SQ-JETSTREAM-00397-01
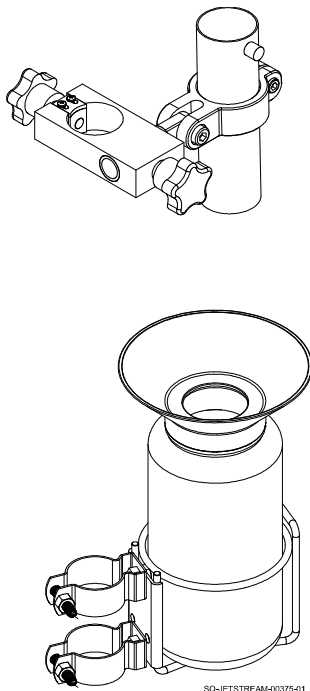
CIJ Wash Station Assembly

(Part Number 2006982)

△ Customer-Supplied Equipment

In addition to the items listed above, Squid Ink recommends the following equipment (not included) for use with the JetStream:

- Table
- Latex Gloves
- Protective Eyewear

- Laboratory Smock or equivalent protective clothing
- Fire Extinguisher
- Covered Container for flammable liquid waste

Introduction

△ JetStream System Description

The JetStream is a Continuous Inkjet (CIJ) printing system that is designed to print superior quality small dot-matrix characters on a variety of porous, non-porous, smooth, textured, and concave surfaces. This document covers both the JetStream and the JetStream Sonic.

△ How the JetStream Works

The JetStream forces a stream of ink from the Console through the Umbilical Tube to the Printhead, where the ink stream is broken into tiny drops. Some drops are diverted out of the Printhead Orifice to print on the passing product/substrate, while other drops go directly into the Ink Return Gutter inside the Printhead. This ink is brought back through the Umbilical Tube to the Mixi Tank to be reused.

JetStream Ink Flow

Viscometer

Diaphragm Pump (Ink)

Diaphragm Pump (Makeup)

Pressure Pump

Ink Container

Makeup Container

Mix Tank

Umbilical Tube

Printhead Orifice

Printhead

SQ-JETSTREAM-00013-02
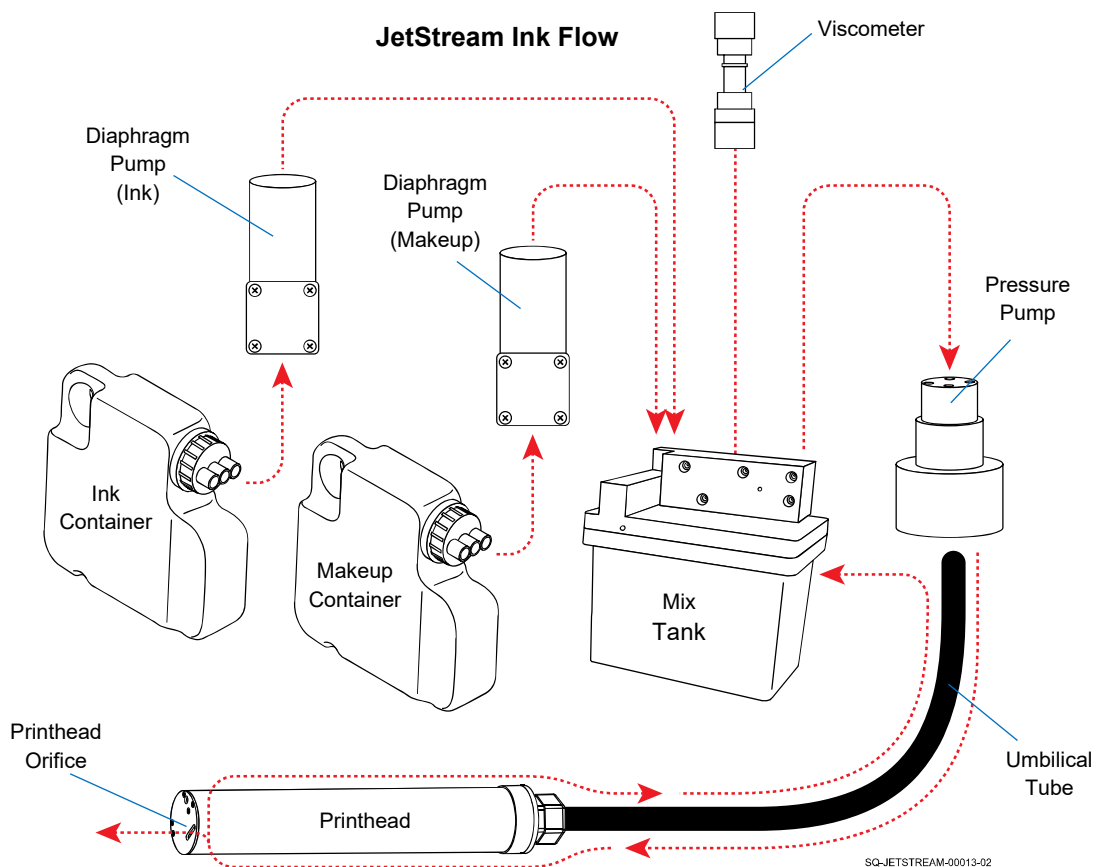
A more detailed description is as follows. A dedicated Diaphragm Pump draws ink from the Ink Container into the Mixing Tank. A Viscometer monitors the viscosity of the ink in the Mixing Tank. Pure ink is too thick (viscous) to use and must be diluted with makeup fluid. The ink also becomes thicker when exposed to air inside the Printhead, so small amounts of makeup fluid (solvent) are occasionally added to the Mixing Tank automatically – based on continuous feedback from the Viscometer – to keep the ink at the required viscosity for printing.

After the ink is mixed with makeup fluid in the Mixing Tank, a Pressure Pump delivers it to a Hydraulic Manifold and out to the (two-way) Umbilical Tube. The Umbilical Tube carries the ink to the Printhead. Inside the Printhead, ink is channeled to the Gun Body, which ejects the pressurized ink out through its 60-micron orifice (50-micron orifice in the case of the JetStream Sonic). An AC sine wave is delivered to two (brownish) Piezo ceramic electric rings on the back of the Gun Body. These two rings have opposite polarity. As a result, the sine wave causes the rings to move rapidly up and down in unison, creating an ultrasonic vibration/oscillation. This vibrates the Gun Body, breaking the steady ink stream into droplets (approximately 76,800 droplets per second for the JetStream, and approximately 94,000 droplets per second for the JetStream Sonic). The amplitude of the electric sine wave dictates where the ink stream breaks into droplets. That is, the higher the voltage/amplitude, the earlier along the Charge Electrode Tunnel the ink jet breaks up, and, conversely, the lower the voltage/amplitude, the further downstream the ink jet breaks up.

Inside the Printhead

Phase Detector

Charge Electrode Tunnel

Positive Deflector Plate

Gun Body

Ink Return Gutter

Ink Stream

Negative Deflector Plate

SQ-JETSTREAM-00005-02
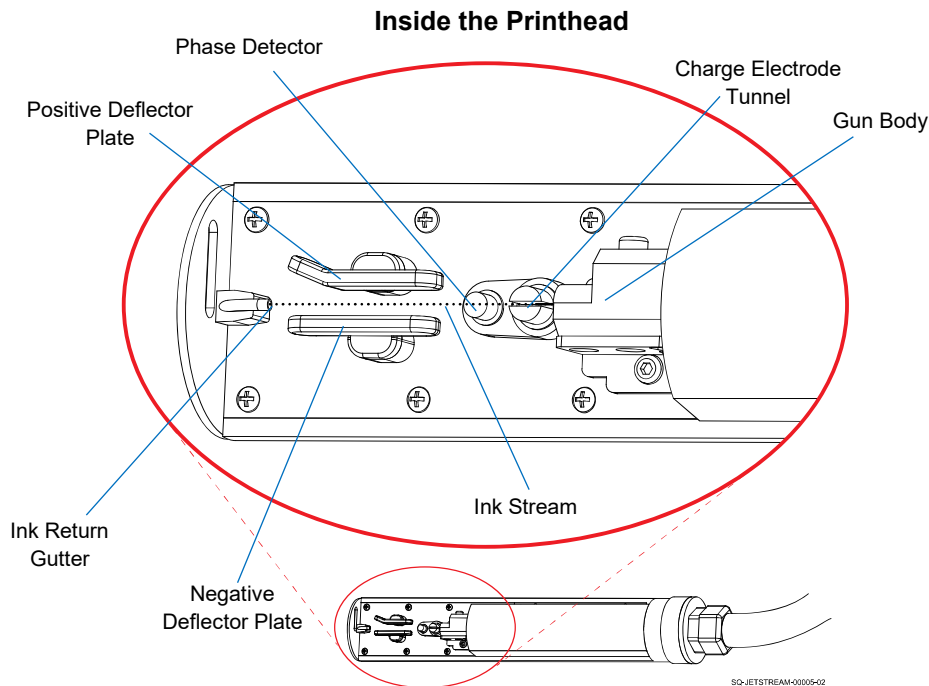
The ink jet needs to break up into droplets within the Charge Electrode Tunnel in order for the Printhead to print properly. As the droplets pass through the Charge Electrode Tunnel, some droplets are given a negative electric charge in an amount corresponding to the information received from the JetStream software about the pattern of dots to be printed.

Once charged, the droplets pass a Phase Detector, which ensures that droplets are being charged at the same rate as they are being produced.

The droplets then pass between two Deflector Plates. One plate is negatively charged, and the other is positively charged (typically ±6.5 kV). The negative Deflector Plate slightly repels the negatively charged ink droplets, and the positive Deflector Plate attracts these droplets. The higher the negative charge that a droplet has been assigned in the Charge Electrode Tunnel, the more the droplet will be pulled toward the positive Deflector Plate and diverted out through the Printhead Orifice. As these ejected droplets hit the passing print surface of the product, they land in a vertical column, depending on the degree of charge that they were assigned.

Printing Columns of Dots

Positive Deflector Plate

Nozzle
Orifice

Ink Return
Gutter

Negative Deflector Plate

SQ-JETSTREAM-00009
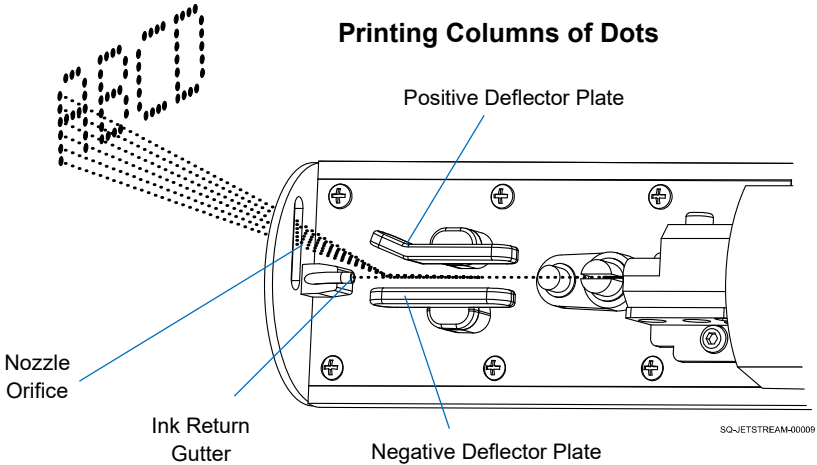
The vast majority of droplets have a low (or no) negative charge and do not exit the Printhead Orifice. Instead, they go straight into an Ink Return Gutter, where they are pulled back through the Umbilical Tube to the Mixing Tank to be recirculated and reused.

The high number of droplets passing through the Printhead each second means that the JetStream can print at incredibly high speeds: a single-line 5x5 dot image can be printed at up to 1,000 feet per minute. The solvent-based inks generally used with the JetStream result in drying times of about a second, all of which makes the JetStream an ideal choice for fast production lines.

JetStream in Action

JetStream
Console

Printhead
Mounting Stand

Umbilical Tube

Printhead

Photocell

Product on
Conveyor

jetstream
BY SQUID INK

SQ-JETSTREAM-00018-02
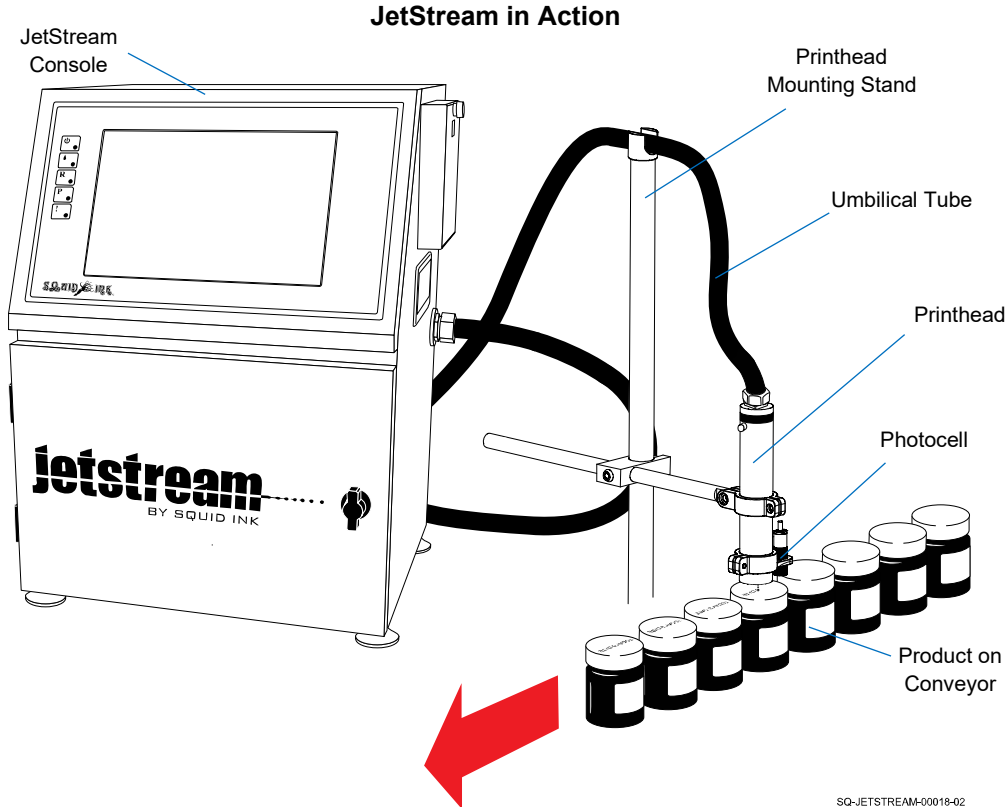
△ JetStream Specifications

Print Technology	Continuous Inkjet (CIJ)	
Nozzle Size	JetStream	60 µm
	JetStream Sonic	50 µm
Print Speed	JetStream	Up to 1000'/min (304.8 m/min)
	JetStream Sonic	Up to 1200'/min (365.8 m/min)
Character Height	0.10" – 0.50" (2.5 mm – 12.7 mm) Up to 32-dot high font with single line of text	
Throw Distance	Up to 1.2" (30 mm) distance from Printhead to substrate	
Message Storage	8 GB	
Communication Inputs	Photocell/Trigger, Encoder, Reverse Print, BCD Select, RS232, Reset Counter	
Outputs	Alarm Red/Yellow/Green (discreet)	
Communication Ports	I/O, RS232. Sensor, Encoder, USB (FAT or FAT32 only), Ethernet	
Product Sensor	NPN photocell sensor	
Printhead Dimensions	Diameter: 1.77" (45 mm) Length: 9.25" (235 mm)	
Umbilical Tube Length	Vinyl-covered armored conduit 118.11" (3 m) standard	
Console Construction	Stainless steel	
Console Dimensions	Height: 19.3" (490 mm) Width: 14.57" (370 mm) Depth: 12.1" (307 mm)	
Electrical Requirements	100–240 VAC, 50/60 Hz, Max current 1.8 Amps Properly wired and grounded	
Operating Environment	41° F – 113° F (5° C – 45° C)	
Humidity Range	30%–95% relative humidity, non-condensing	
Altitude Range	Within 1000 meters above sea level	
Weight	53 lbs (24 kg)	
Inks	Comprehensive range including MEK, Acetone, and Ethanol-based	

△ Ink Consumption

On a JetStream (60 micron nozzle), a 750ml Ink Container will yield 1,275,000,000 droplets, which translates to:

Font	Character Print Matrix	Average Drops per Character	Average Characters per Ink Container
5x5	5x5	12.5	102,000,000
7x5	7x5	15	85,000,000
9x7	9x7	22	57,954,545
12x12	12x10	60	21,250,000
16x16	16x12	80	15,937,500
24x24	24x18	190	6,710,526
32x32	32x34	306	4,166,667

On a JetStream Sonic (50 micron nozzle), a 750ml Ink Container will yield 1,500,000,000 droplets, which translates to:

Font	Character Print Matrix	Average Drops per Character	Average Characters per Ink Container
5x5	5x5	12.5	120,000,000
7x5	7x5	15	100,000,000
9x7	9x7	22	68,181,818
12x12	12x10	60	25,000,000
16x16	16x12	80	18,750,000
24x24	24x18	190	7,894,737
32x32	32x34	306	4,901,961

△ Solvent Consumption

JetStream Model	Nozzle Size	Solvent Consumption (Milliliters per Hour)
JetStream	60 micron	3.5 ml/hr*
JetStream Sonic	50 micron	3.3 ml/hr*

*   Rate of solvent consumption is based on an ambient temperature of 68 °F (20 °C) using standard black ink.

△ Printing Speed

As shown in the chart below, the JetStream's print speed is affected by character size and number of rows/lines of text:

Character Size	Print Speed (Spacing = 0.4 mm)							
	Standard Speed Mode				High Speed Mode			
	JetStream 76.8 kHz		JetStream Sonic 94 kHz		JetStream 76.8 kHz		JetStream Sonic 94 kHz	
	'/min	m/min	'/min	m/min	'/min	m/min	'/min	m/min
5x5A (1 line)	1,003.9	306.0	1,204.1	367.0	1,003.9	306.0	1,204.1	367.0
5x5B (2 lines)	183.1	55.8	219.8	67.0	241.1	73.5	288.7	88.0
5x5C (3 lines)	104.0	31.7	125.0	38.1	133.2	40.6	157.5	48.0
5x5D (4 lines)	68.6	20.9	82.3	25.1	75.8	23.1	88.6	27.0
7x5A (1 line)	754.6	230.0	905.5	276.0	754.6	230.0	905.5	276.0
7x5B (2 lines)	120.7	36.8	144.4	44.0	236.2	72.0	282.2	86.0
7x5C (3 lines)	72.8	22.2	87.3	26.6	124.0	37.8	147.6	45.0
7x5D (4 lines)	47.2	14.4	56.4	17.2	67.9	20.7	82	25.0
9x7A (1 line)	252.0	76.8	302.5	92.2	603.7	184.0	725.1	221.0
9x7B (2 lines)	97.4	29.7	116.8	35.6	104.7	31.9	124.7	38.0
12x12A (1 line)	183.1	55.8	219.8	67.0	244.4	74.5	295.3	90.0
12x12B (2 lines)	68.6	20.9	82.3	25.1	79.1	24.1	91.9	28.0
16x16A (1 line)	131.2	40.0	157.5	48.0	179.8	54.8	213.3	65.0
16x16B (2 lines)	47.2	14.4	56.4	17.2	64.0	19.5	75.5	23.0
24x24 (1 line)	77.4	23.6	92.8	28.3	106.6	32.5	128.0	39.0
32x32 (1 line)	51.2	15.6	61.4	18.7	66.2	20.2	78.7	24.0

△ Software Specifications

Software Features	Text, Barcodes, Graphics, Counters, Shift Code, Time & Date, Expiration Date
Print Lines	Up to 5 lines
Font Matrix Configuration	5x5, 7x5, 9x7, 12x10, 16x12, 24x18, 32x24
Font	Vector and dot matrix fonts available Dynamic message printing for various fonts
Character Height	0.10" – 0.50" (2.5 mm – 12.7 mm) Up to 32-dot high font with single line of text
Message Length	Up to 6000 columns in each block
Barcode	140 type one- and two-dimensional barcodes (Datamatrix)

△ System Dimensions

Front View

15.47"
(393 mm)

19.96"
(507 mm)

0.91"
(23 mm)

Rear View

0.91"
(23 mm)

14.57"
(370 mm)

5.04"
(128 mm)

6.69"
(170 mm)

5.28"
(134 mm)

4.53"
(115 mm)

SQ-JETSTREAM-00167-03

Left Side View

12.95"
(329 mm)

0.91"
(23 mm)

8.54"
(217 mm)

3.5"
(89 mm)

19.96"
(507 mm)

19.29"
(490 mm)

12.05"
(306 mm)

Right Side View

0.65"
(16.5 mm)

6.89"
(175 mm)

0.65"
(16.5 mm)

4.45"
(113 mm)

5.24"
(133 mm)

SQ-JETSTREAM-00166-03
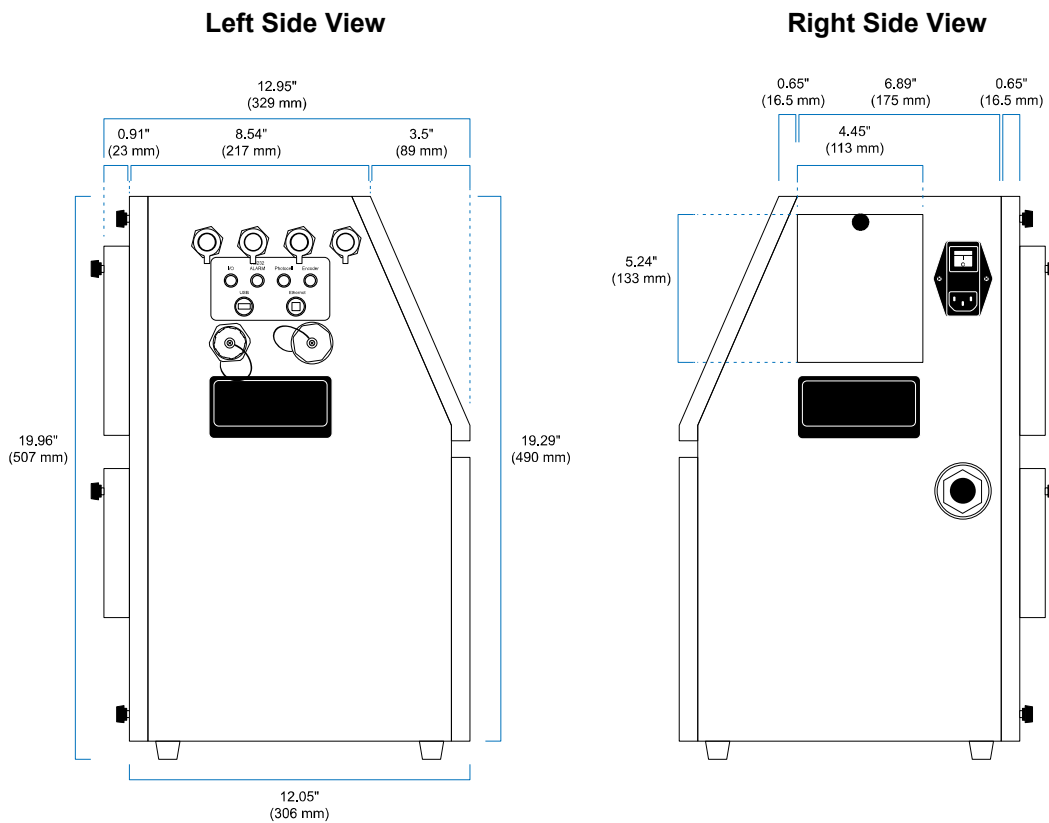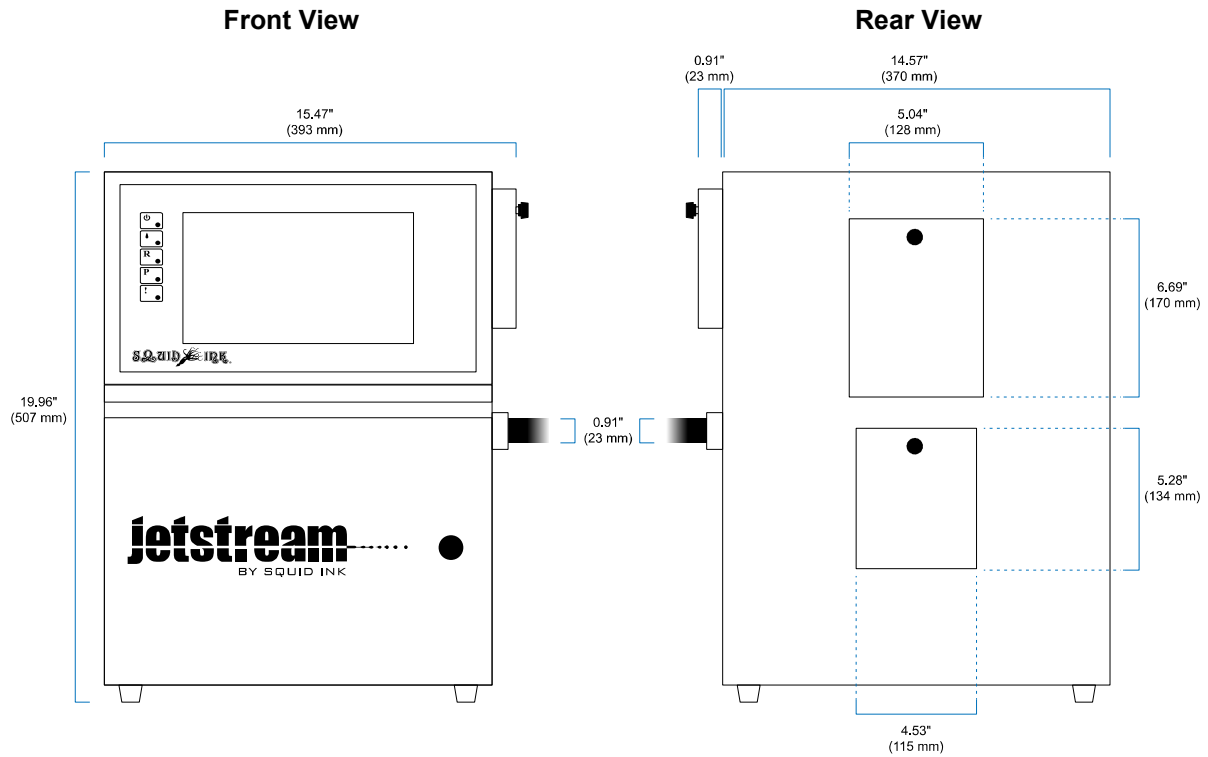
Touchscreen Dimensions

14.57"
(370 mm)

8.66"
(220 mm)

8.66"
(220 mm)

5.51"
(140 mm)

7.87"
(200 mm)

8.98"
(228 mm)
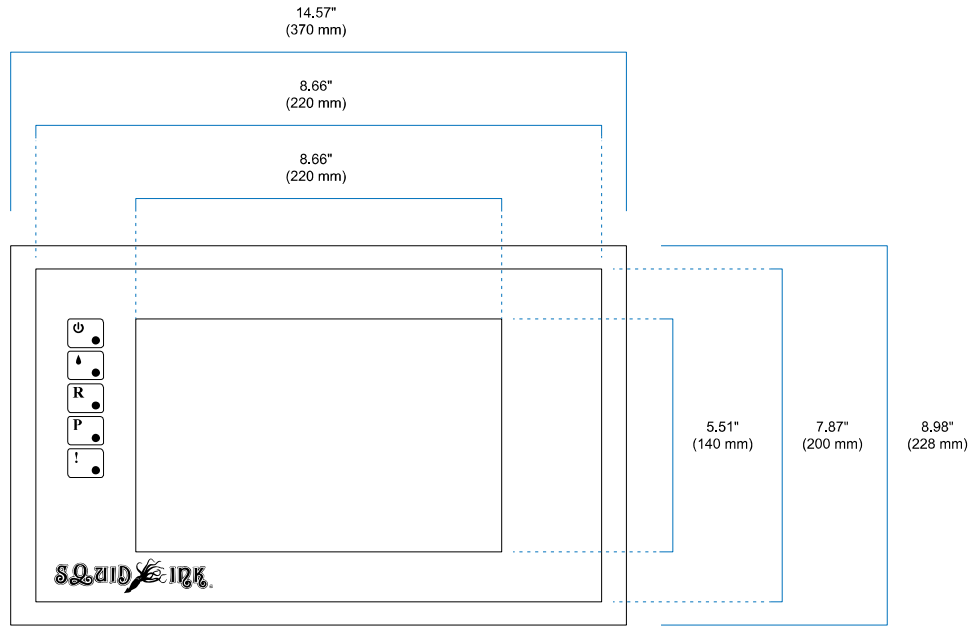
SQ-JETSTREAM-00168-02

Printhead Dimensions

10.24"
(260 mm)

8.66"
(220 mm)

0.59"
(15 mm)

1.77"
(45 mm)

0.91"
(23 mm)

9.25"
(235 mm)
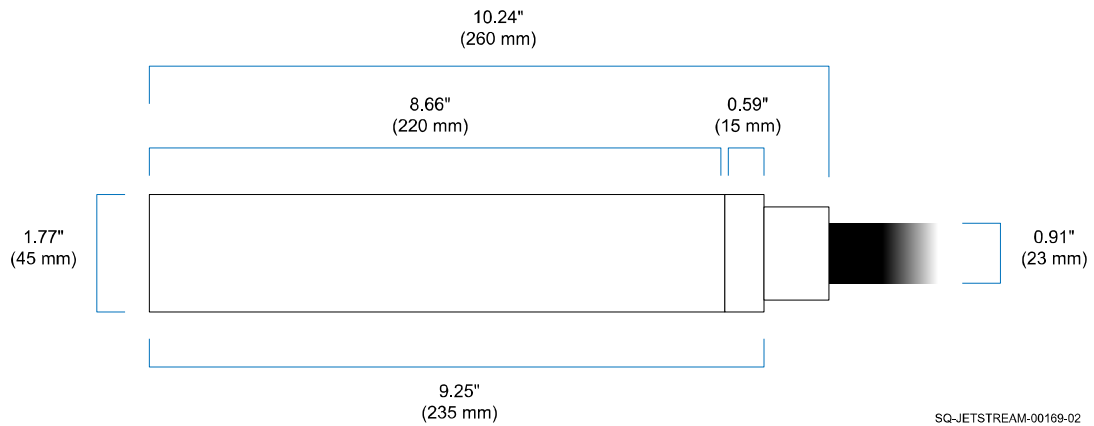
SQ-JETSTREAM-00169-02

System Components in Detail

The JetStream consists of a Console, Umbilical Tube, and Printhead. The Umbilical Tube contains wires and ink tubes that convey information and fluids back and forth between the Console and the Printhead.

△ Console Overview

Front View

LCD Touchscreen

Electronics Compartment

Ink Compartment

SQ-JETSTREAM-00002

Rear View

Power Switch and Power Input

Rear Compartment

SQ-JETSTREAM-00025d2
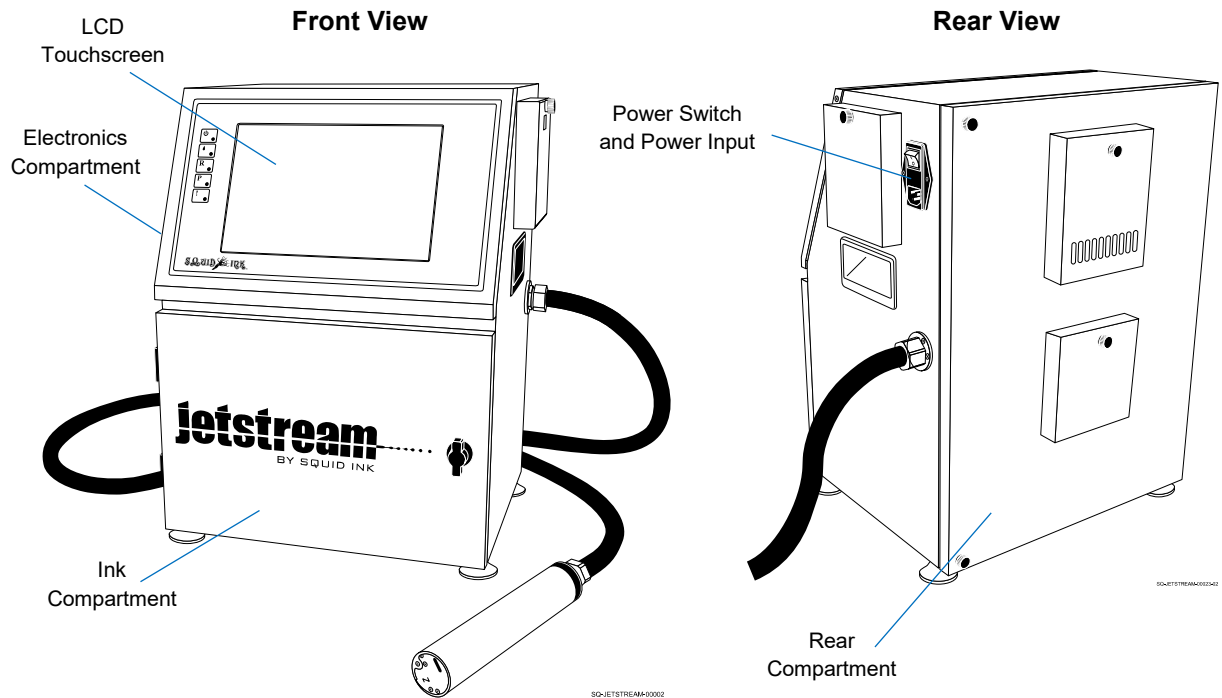
⚠ **Electronics Compartment**

The Electronics Compartment is located behind the Touchscreen, and can be accessed by removing the two Screws on either side of the top of the Touchscreen, and folding the Touchscreen down.

> ⚠ **CAUTION:** The Electronics Compartment of the JetStream should only be accessed by an authorized and qualified technician or Squid Ink Distributor.

The main feature of the Electronics compartment is the Motherboard, which controls the entire JetStream system, including the interaction between fluid levels in the Ink Container, Makeup Container, and Mixing Tank, fluid viscosity, feedback from the Printhead, and information input into the Touchscreen.

⚠ **Ink Compartment**

The Ink Compartment can be accessed by turning the knob on the front of the JetStream and pulling open the door. The Ink and Makeup Fluid Containers are placed into the Ink Bay Assembly on the left side of this compartment. On the right side, on the front of the Manifold Assembly, is the Mixing Tank, where ink and makeup fluid are mixed to the required viscosity for printing. Keep this compartment closed when printing.

Ink Compartment

LCD Touchscreen

Ink Container (not included)

Makeup Container (not included)

Mixing Tank

SQ-JETSTREAM-00003
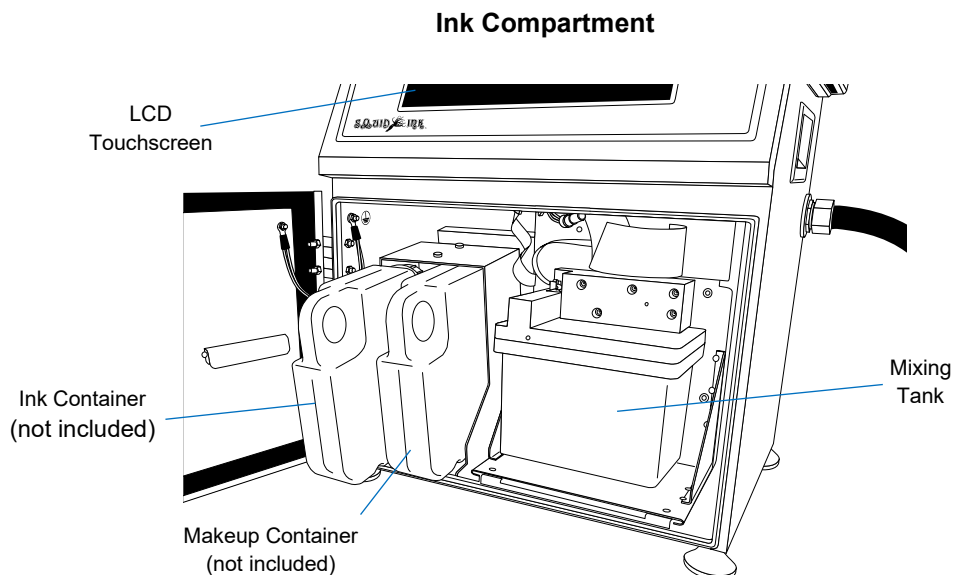
△ Rear Compartment

The Rear Compartment can be accessed by unscrewing the Fasteners at the top and bottom of the JetStream's Rear Door and pulling the door open. Keep this compartment closed when printing.

⚠	**ATTENTION:** The Rear Compartment contains complex hydraulics. If accessing the Rear Compartment, take care not to disrupt or disconnect any tubes or wires inside. Repairs, replacements, or modifications to any components should only be performed by a trained and authorized Squid Ink Distributor.

Opening the Rear Compartment provides access to the Viscometer, Buffer, most components of the Manifold, and the rear of the Ink Bay Assembly.

Rear Compartment

SQ-JETSTREAM-00453-01
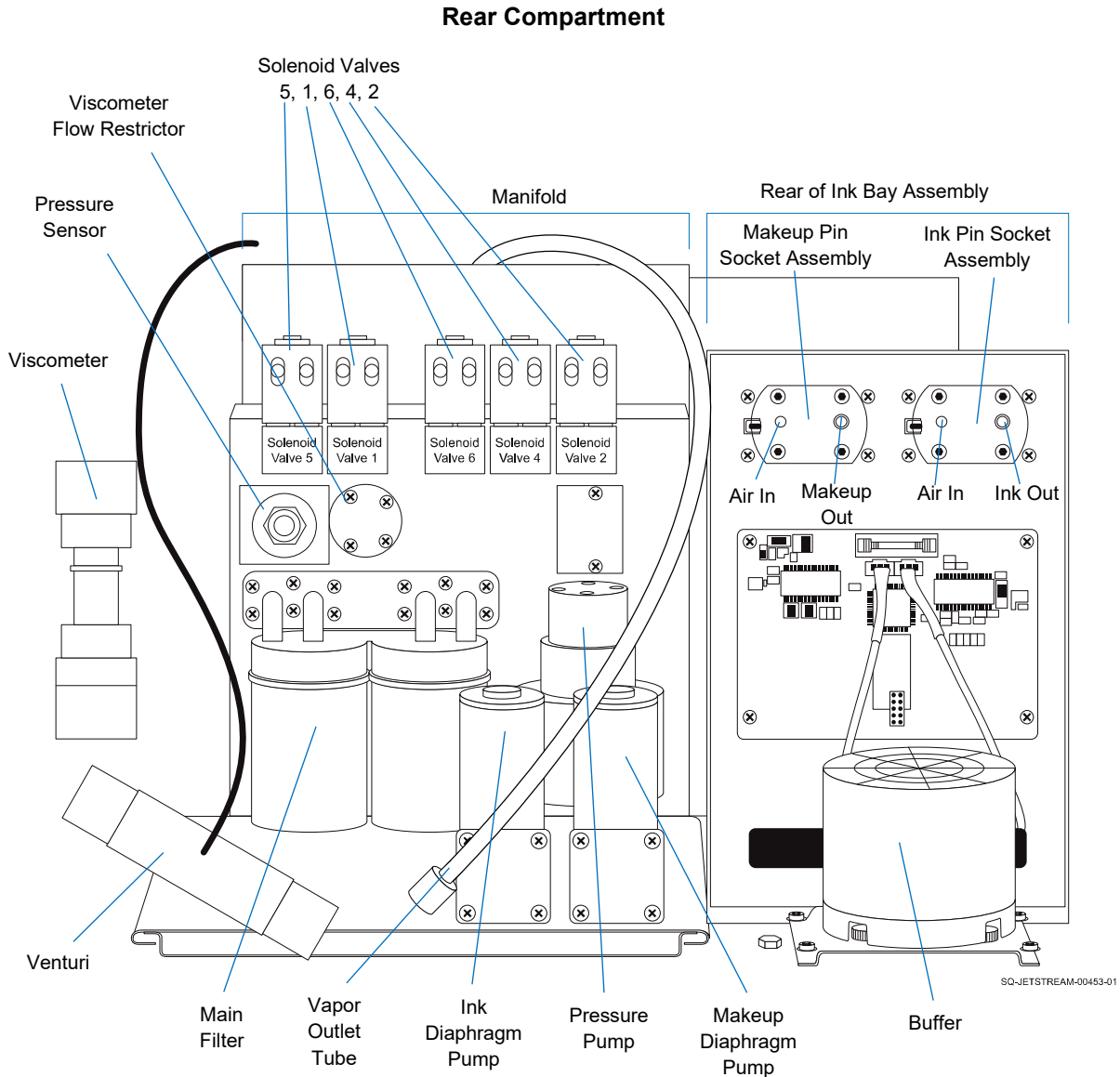
▲ Manifold Assembly

(Relevant Training Level: *Trained Technician***)**

(Part #: 2006953)

The Manifold manages fluid pressure and viscosity for the system. Its components include Solenoid Valves 1, 2, 4, 5, and 6, the Pressure Sensor, Viscometer Flow Restrictor, Main Filter, Pressure Pump, Ink Diaphragm Pump, Makeup Diaphragm Pump, and Venturi Assembly, all of which are accessed through the Rear Compartment of the Console. An additional component of the Manifold is the Mixing Tank, which is accessible in the (front) Ink Compartment.

Manifold Assembly (Front)
(Part# 2006953)

Cable Mixing Tank – Valve Conn PCB (Part #2006959)

Valve Connector PCB (Part #2006957)

Mixing Tank (Part #2006954)

Diaphragm Pumps (Part# 2006567)
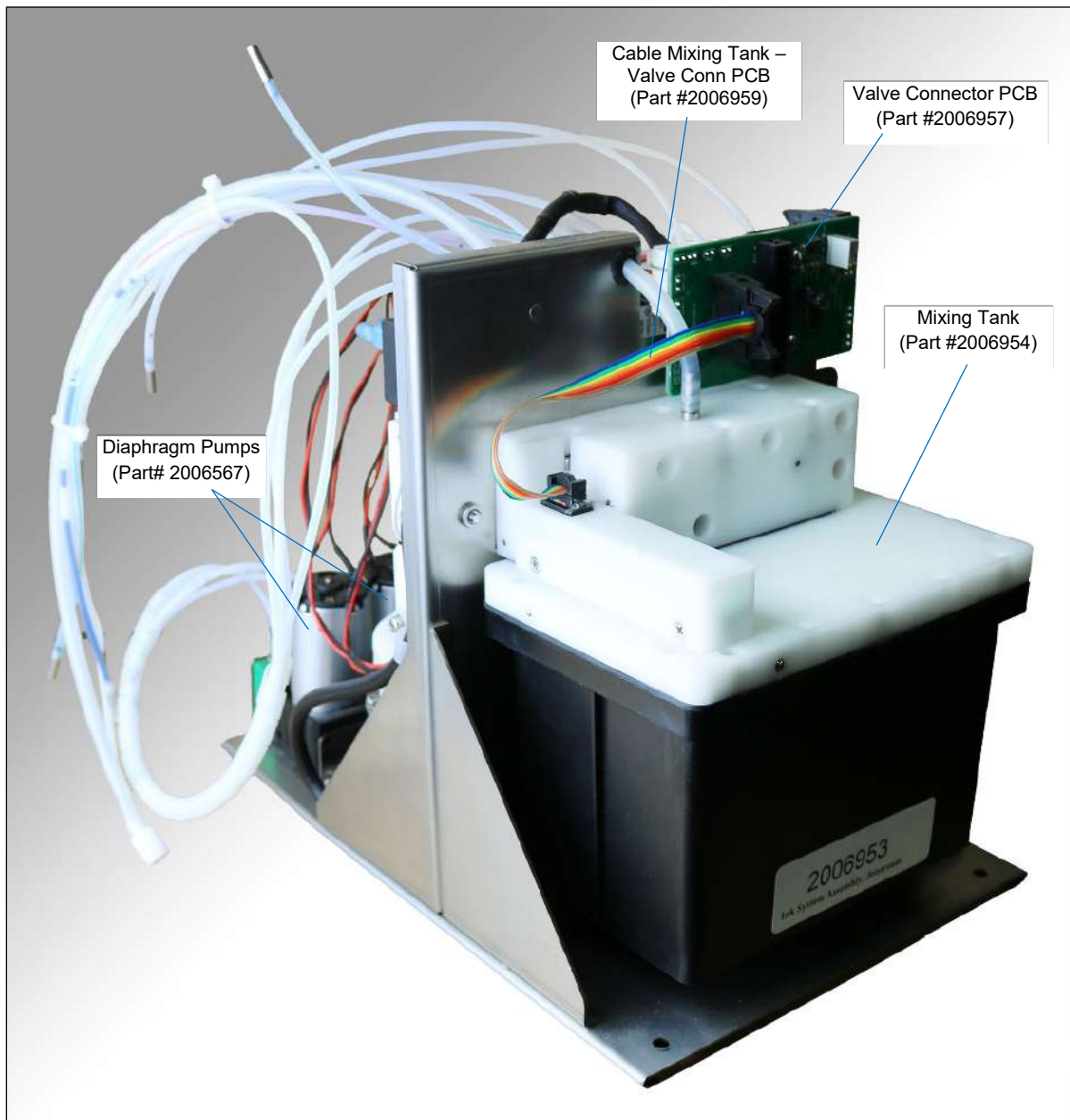
SQ-JETSTREAM-00228-01

Manifold Assembly (Rear)
(Part# 2006953)

2W3T Solenoid Valves
(Part# 2006582)

2W2T Solenoid Valves
(Part# 2006581)

Pressure Sensor
(Part #2006565)

Viscometer Flow
Restrictor
(Part #2006595)

Pressure Pump
(Part #2006962)

Main Filter
(Part# 2006592)

Makeup
Diaphragm Pump
(Part# 2006983)

Venturi Assembly B
(Part# 2006956)

Ink Diaphragm Pump
(Part# 2006983)

SQ-JETSTREAM-00229-01
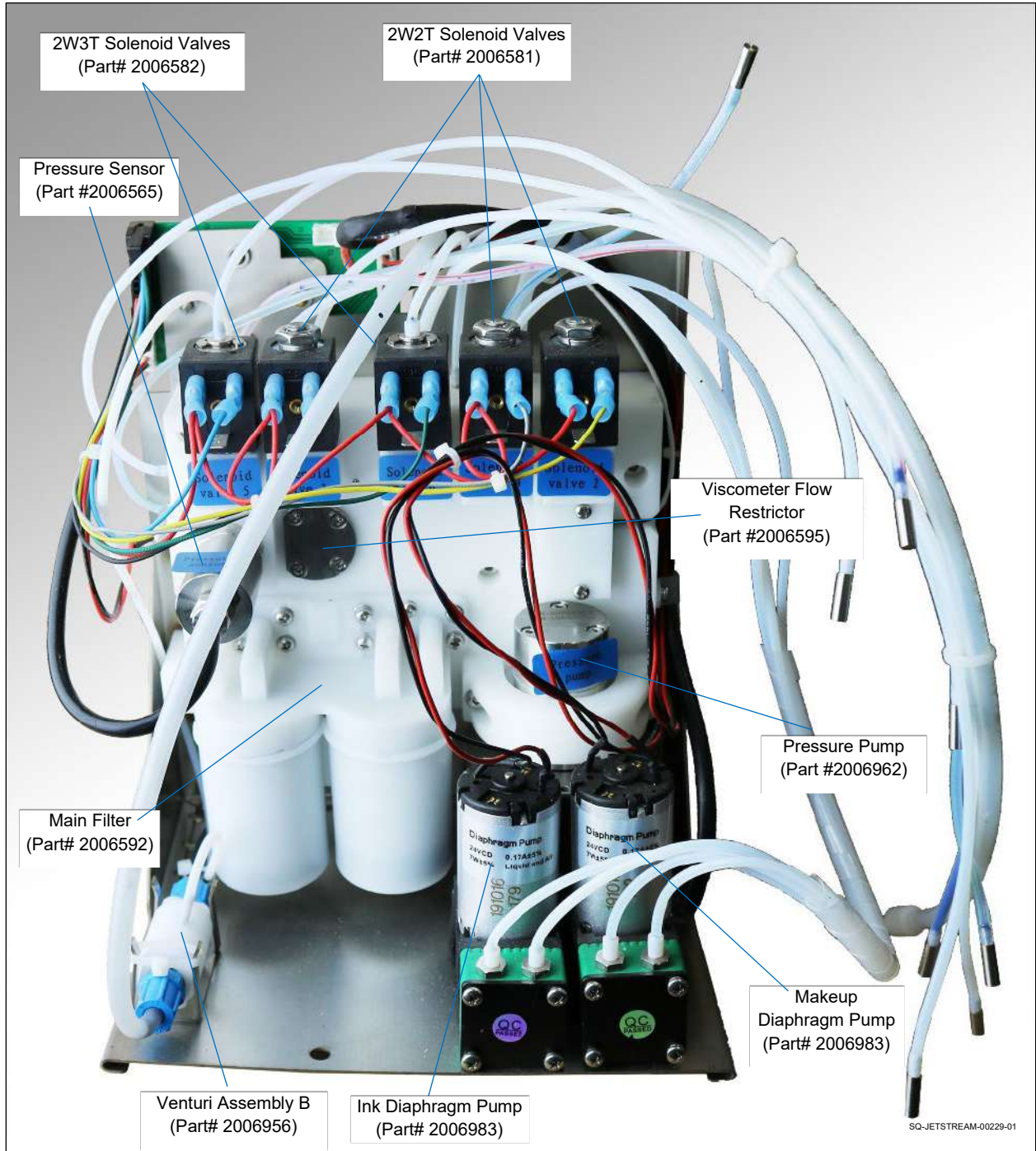
▲ Mixing Tank

(Relevant Training Level: *Trained Technician)*

(Part #: 2006954)

The Mixing Tank is where ink and makeup fluid are combined to give the ink the proper viscosity before being jetted out the Printhead. Pure ink directly from the Ink Container is too thick for printing, so the Printhead instead draws from the Mixing Tank when printing.

Inside of the Mixing Tank are four Level Detection Probes that sense when fluid is low, normal, high, or about to overflow. A fifth "probe," extending to the bottom of the Mixing Tank, serves as an electrical ground.

Information about fluid levels is continuously sent to the Motherboard, potentially triggering more ink to be sent into the Mixing Tank, or a warning if levels are too high or low. Information from the Viscometer triggers more makeup fluid to be sent to the Mixing Tank when the ink/makeup mix becomes too viscous (thick).

Mixing Tank

Level Detection Assembly Cap

2006953

SQ-JETSTREAM-00228-01

Level Detection Probes

Overflow   High   Ground   Normal   Low
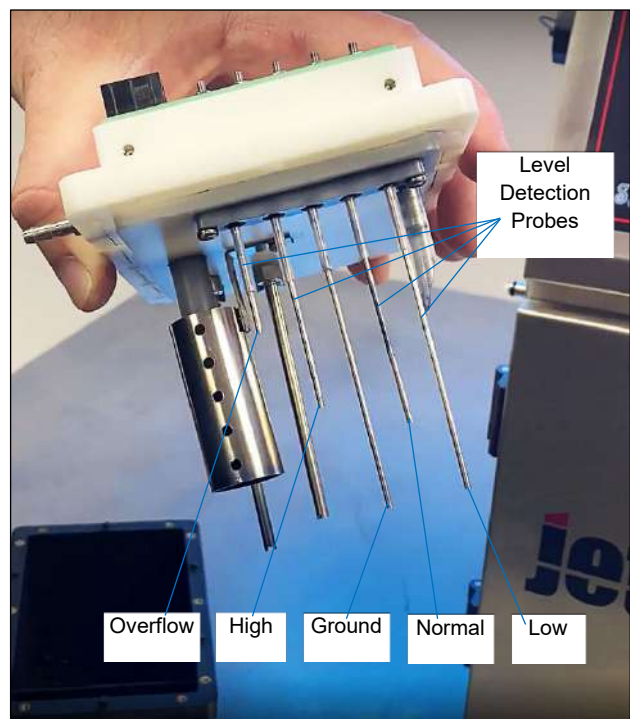
SQ-JETSTREAM-00230-01

▲ Ink Diaphragm Pump

(Relevant Training Level: Trained Technician)

(Part #: 2006983)

Looking at the Rear Compartment of the JetStream, the Ink Diaphragm Pump is the one on the left. The Ink Diaphragm Pump pulls ink from the Ink Container and sends it through the Ink-Add Valve (YV5) into the Mixing Tank.

Ink Diaphragm Pump

Ink Diaphragm Pump
(Part# 2006983)
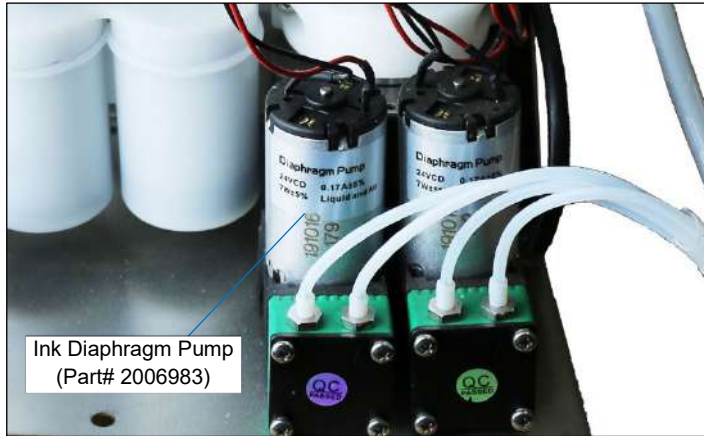
SQ-JETSTREAM-00229-01

SQ-JETSTREAM-00232-01

▲ Makeup Diaphragm Pump

***(Relevant Training Level:** Trained Technician)*

(Part #: 2006983)

Looking at the Rear Compartment of the JetStream, the Makeup Diaphragm Pump is on the right. The Makeup Diaphragm Pump pulls makeup fluid from the Makeup Container and sends it a) through the Makeup-Add Valve (YV2) into the Mixing Tank to thin the ink or b) through the Cleaning Valve 4 (YV4) and into the system to clean out the ink lines, Printhead, or other components.

Makeup Diaphragm Pump

Makeup Diaphragm Pump (Part# 2006983)
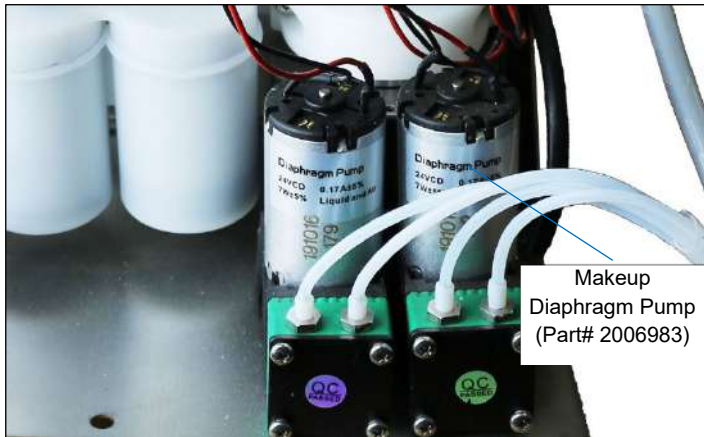
SQ-JETSTREAM-00229-01

SQ-JETSTREAM-00232-01

▲ Pressure Pump

(Relevant Training Level: Trained Technician)

(Part #: 2006962)

Looking at the Rear Compartment of the JetStream, the Pressure Pump is located behind the Ink and Makeup Diaphragm Pumps. The Pressure Pump pulls the ink/makeup mix from the Mixing Tank through the Main Filter and pushes it through the system. It is activated for printing, jetting, and viscosity checks.

Pressure Pump

SQ-JETSTREAM-00236-01

▲ Main Filter

(Relevant Training Level: Trained Technician)

(Part #: 2006592)

Looking at the Rear Compartment of the JetStream, the Main Filter is on the left. The Main Filter removes impurities and dried ink from the ink/makeup mix immediately after it leaves the Mixing Tank, before the mix is sent through the system. The Main Filter is used for virtually every function of the JetStream except adding ink or makeup to the Mixing Tank.

Main Filter

SQ-JETSTREAM-00235-01

▲ Pre-Head Filter (10µ)

(Relevant Training Level: Trained Technician)

(Part #: 2006593)

Looking at the Rear Compartment of the JetStream, the Pre-Head Filter is connected to the green-striped tube that is attached to the left side of the Buffer, and has a yellow "Ink Drain Tube" label right before it. The Pre-Head Filter removes any final impurities or dried ink from the ink/makeup mix before the mix is sent to the Printhead. The Pre-Head Filter is used for virtually every function of the JetStream except adding ink or makeup to the Mixing Tank. When draining the fluid from the Mixing Tank, such as before long-term shutdown or shipping, the yellow label side of the Pre-Head Filter is unscrewed to allow the fluid to be removed from the system.

Pre-Head Filter
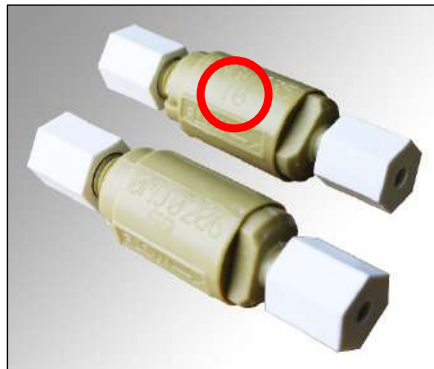
SQ-JETSTREAM-00234-01

▲ Cleansing Filter (10μ)

***(Relevant Training Level:** Trained Technician)*

(Part #: 2006593)

Looking at the Rear Compartment of the JetStream, the Cleansing Filter is connected to a blue-striped tube, and is located between Cleaning Valve (YV4) and the Printhead. The Cleansing Filter is removes any impurities from makeup fluid (pulled from the Makeup Container) before the makeup fluid is sent through the Printhead. The Cleansing Filter is only used in functions where the Printhead is being cleaned ("Start Jetting with Cleaning," "Stop Jetting with Cleaning").

Cleansing Filter
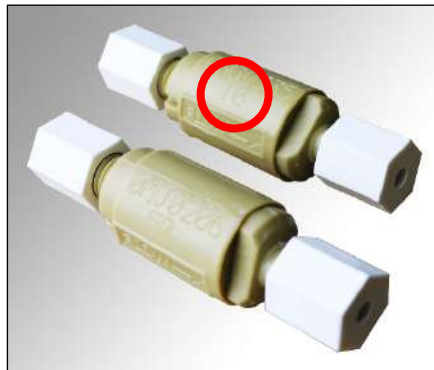
SQ-JETSTREAM-00234-01

▲ Ink Return Filter (50µ)

***(Relevant Training Level:** Trained Technician)*

(Part #: 2006709)

Looking at the Rear Compartment of the JetStream, the Ink Return Filter is located between the Printhead and the Gutter Valve (YV5), and is connected to a red-striped tube. It removes impurities and dried ink from the fluids as they return to the Mixing Tank from the Printhead. The Ink Return Filter is used for virtually every function of the JetStream except adding pure ink or makeup to the Mixing Tank.

Ink Return Filter
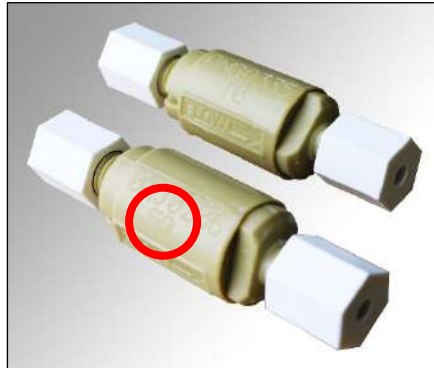
SQ-JETSTREAM-00234-01

▲ Venturi Assembly B

(Relevant Training Level: Trained Technician)

(Part #: 2006956)

The Venturi Assembly is essentially a pump with no moving parts. Instead, it constricts pressured liquid coming into it from one end, which creates a vacuum to pull in liquid from the side input before the mixed liquid from both inputs is expelled from the other end of the Venturi Assembly.

Venturi Assembly B

SQ-JETSTREAM-00237-01

Pressurized Incoming Fluid

Compression

Mixer

Vacuum Suction

SQ-JETSTREAM-00408-01
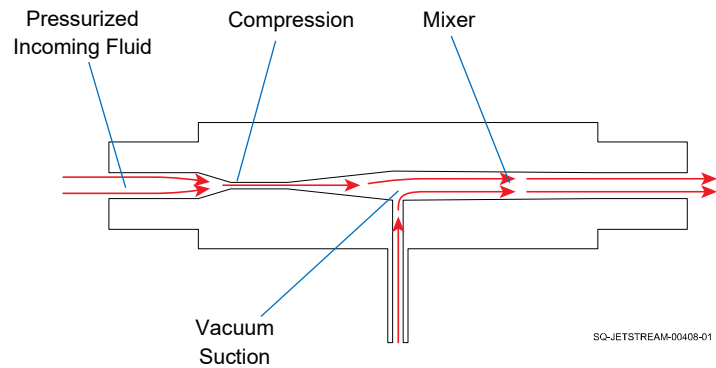
▲ Viscometer

***(Relevant Training Level:** Trained Technician)*

(Part #: 2006561)

Looking at the Rear Compartment of the JetStream, the Viscometer is mounted to the left inner wall. It is at an angle by necessity so that it can function properly. The Viscometer measures how thick (viscous) or thin the ink/makeup fluid mixture coming out of the Mixing Tank is. The JetStream uses this information to determine when to add more makeup fluid to the Mixing Tank to thin the mixture, or to add more ink to the Mixing Tank when the fluid level is low. The system relies on natural evaporation of makeup fluid over time to thicken the contents of the Mixing Tank.

Viscometer
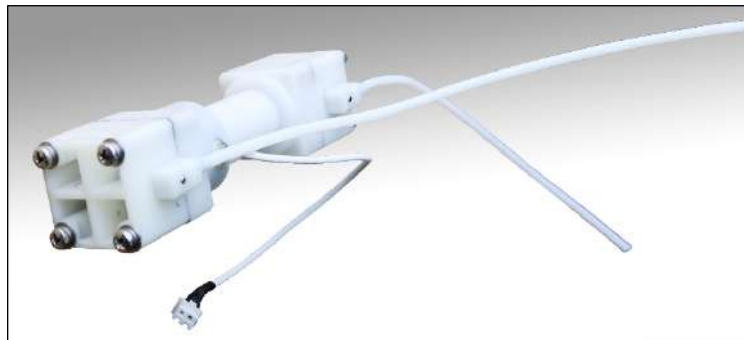
SQ-JETSTREAM-00238-01

| **VIDEO: Troubleshooting the Viscometer**	
To see a video of this procedure, click this link: https://www.youtube.com/watch?v=o5YZUs-SsJU Or scan the QR code at right using the camera app on your mobile device. **View:** 00:00 – 03:18	SQ-JETSTREAM-00243-01 Troubleshooting the Viscometer https://www.youtube.com/watch?v=o5YZUs-SsJU
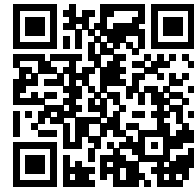
Starting about three or four minutes after the system is in "Ready" mode ("R" button to the left of the Touchscreen is illuminated), the Viscometer begins taking regular readings of the fluid coming from the Mixing Tank. Every three minutes, a timer starts and the Viscometer Valve (YV1) opens to release a small amount of pressurized fluid from the Mixing Tank into the lower portion of the Viscometer.

Inside the cylindrical portion of the Viscometer is a steel ball. The incoming fluid pushes the ball up to the top of the cylinder. Some fluid passes out through the line at the top of the Viscometer, and the Viscometer Valve (YV1) closes, stopping the pressurized fluid from pushing the ball up. The ball drops through the remaining fluid back to the bottom of the cylinder, entering an Inductive Sensor Coil and triggering the timer to stop.

The time that it takes for this cycle provides information about how viscous the ink/makeup fluid mixture from the Mixing Tank is. A longer-than-normal time means that the mix is thicker than it should be (too much ink), and perhaps a small amount of makeup fluid needs

to be added. A shorter-than-normal time means that the mix is thinner than it should be (too much makeup fluid), so no makeup fluid should be added until enough makeup evaporates to thicken the mix again.

Solenoid Valve 5   Solenoid Valve 1

Viscometer Valve (YV1) opens,
Timer starts,
ink enters Viscometer

Ink pushes Ball up,
Solenoid Valve 1 closes,
excess ink flows out of
Viscometer

Ball sinks,
Ball touches Sensor Coil,
Timer stops

SQ-JETSTREAM-00347-02

SQ-JETSTREAM-00349-02

SQ-JETSTREAM-00351-02
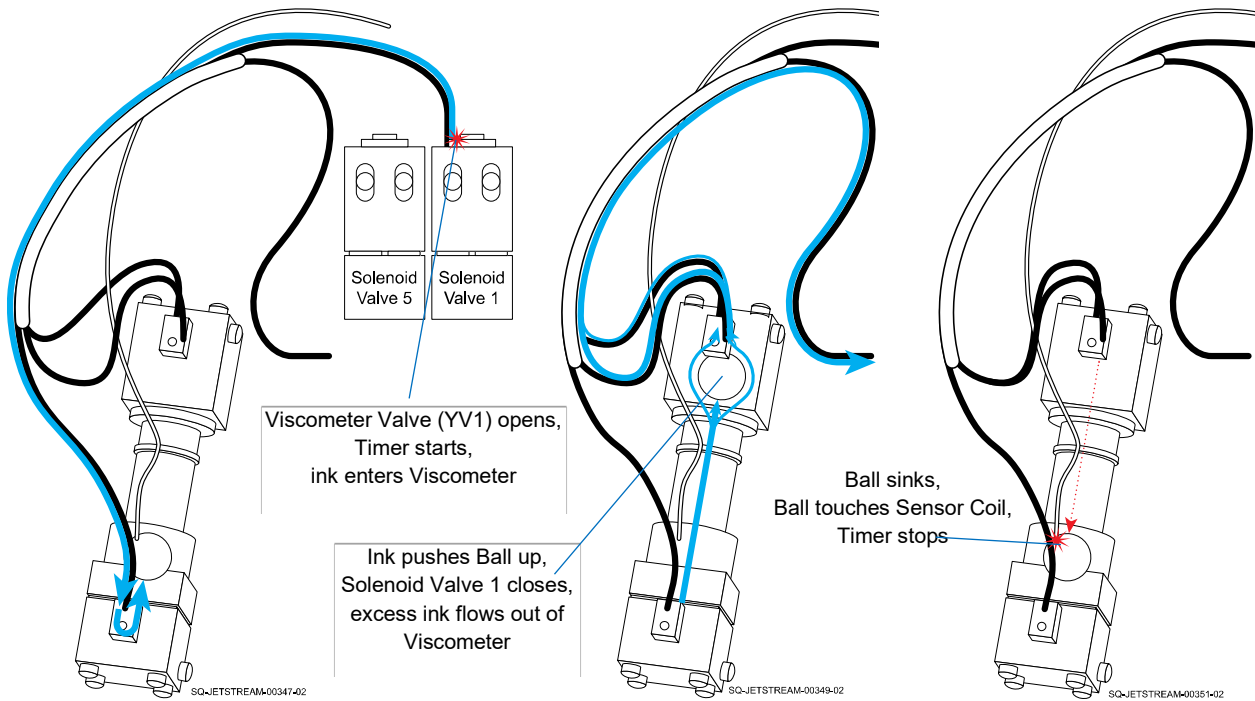
▲ Solenoid Valves

(Relevant Training Level: Trained Technician)

(Part #: 2006581 or 2006582)

There are five Solenoid Valves, located inside the back of the JetStream. All are triggered electronically during various operations of the JetStream, either holding back fluids or allowing the fluids to circulate to another part of the system. While the Solenoid Valves should generally be maintained with the assistance of a trained and authorized Squid Ink Distributor, it is useful to know what they are and the general roles that they play in the operation of the JetStream, particularly if a Tube becomes detached. The roles of the Solenoid Valves are described in the "Hydraulic Operations" section, starting on page).
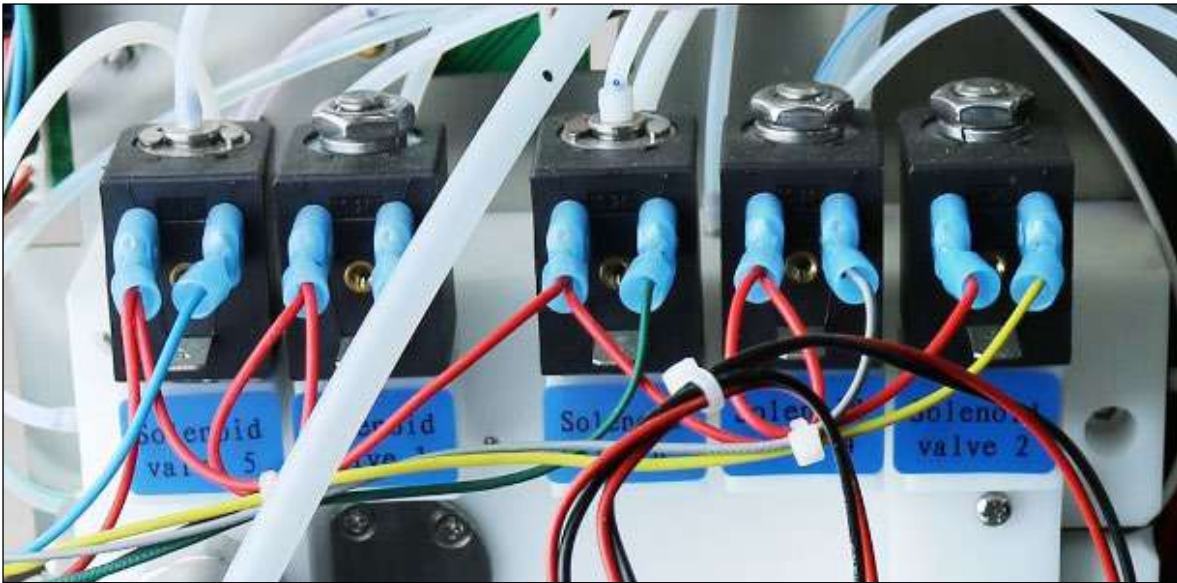
SQ-JETSTREAM-00229-01

▲ Ink Bay Assembly

***(Relevant Training Level:** Trained Technician)*

Ink Bay Assembly (Front)

Pin Socket Assembly
(Part # 2006556)

SQ-JETSTREAM-00241-01

Cartridge Level Sense
Assembly, CIJ
(Part #2006557)

RF Detect PCB, CIJ
(Part #2006558)

Cable, RF Board, CIJ
(Part #2006591)
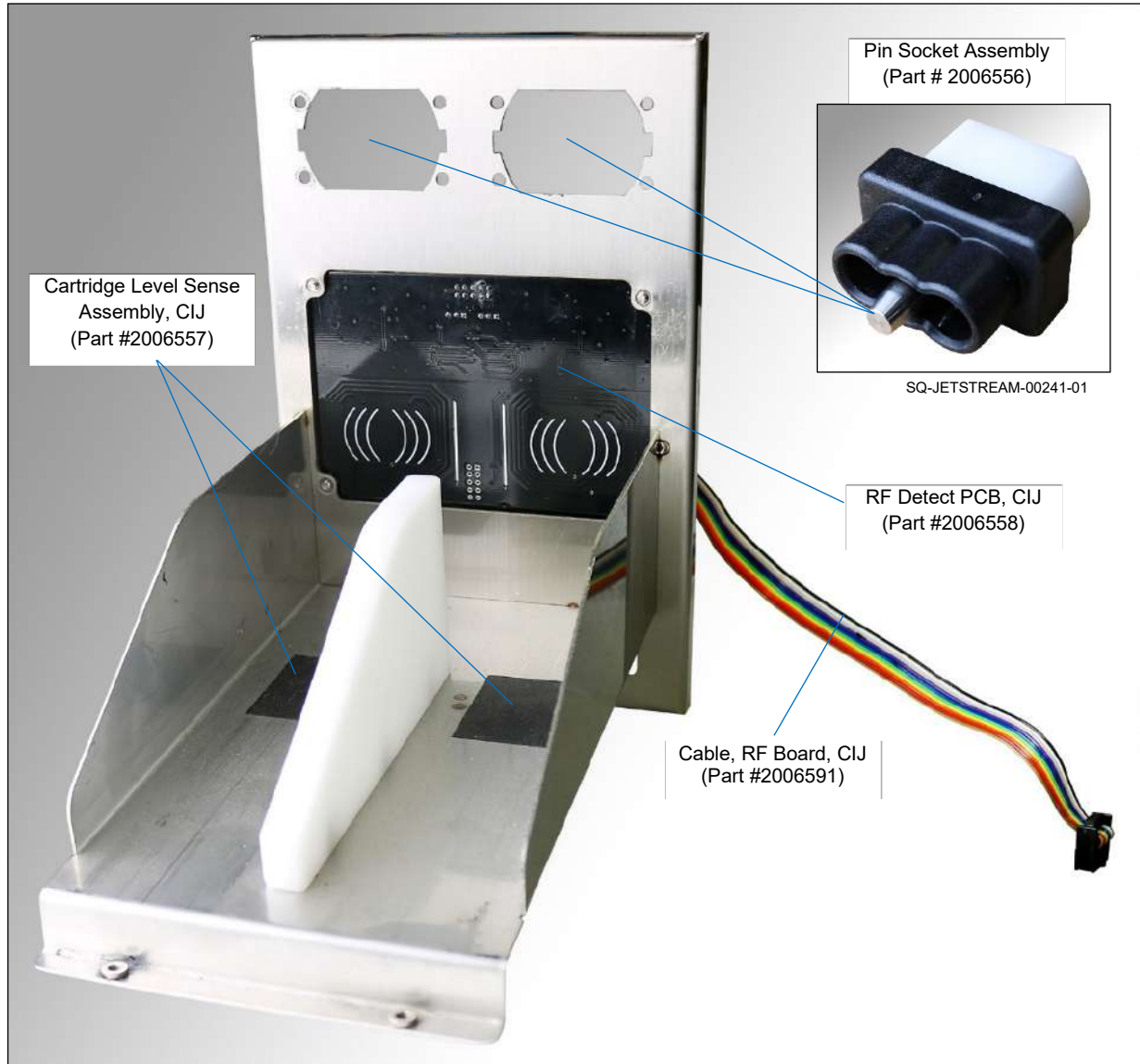
SQ-JETSTREAM-00239-01

Ink Bay Assembly (Rear)

RF Detect PCB, CIJ
(Part #2006558)

Cable, RF Board, CIJ
(Part #2006591)

Cartridge Level Sense
Assembly, CIJ
(Part #2006557)
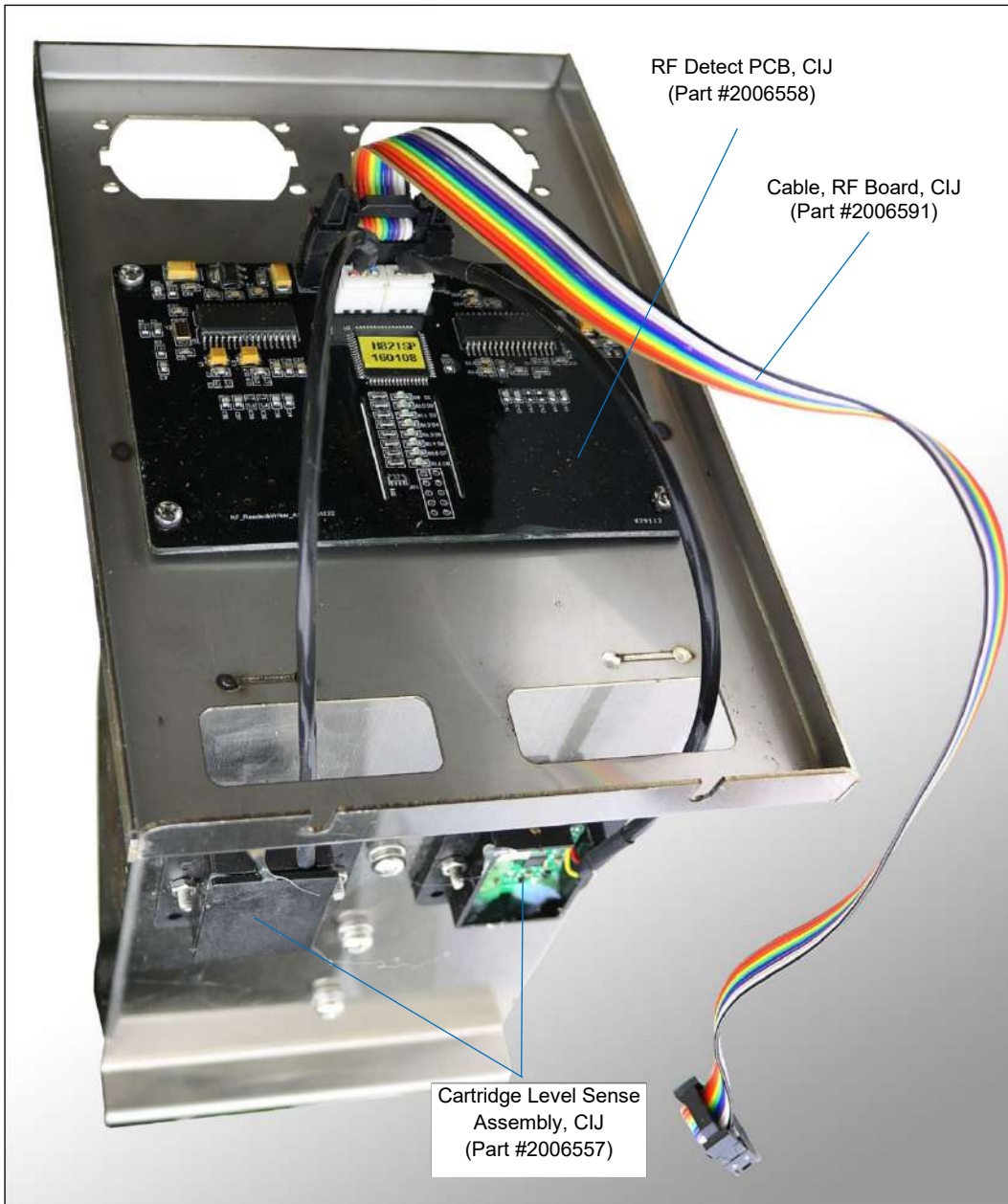
SQ-JETSTREAM-00240-01

▲ Buffer Assembly

(Relevant Training Level: Trained Technician)

(Part #: 2006594)

Located in the back of the JetStream by the Ink Bay Assembly, the Buffer Assembly evens out pressure in the ink that is coming from the Pressure Pump, so that the ink is at a stable, consistent pressure when it goes to the Printhead.

Buffer Assembly

SQ-JETSTREAM-00233-01

△ Data Input Connections: Left Side Panel

(Relevant Training Level: User)

All data input ports for the JetStream are on the left side of the Console.

⚠	**ATTENTION:** Only plug the correct type of device with the correct type of connection into a given port. Failure to do so can damage the JetStream and void the warranty.

Data Input Connections

I/O Cover   Alarm Input Cover   Photocell Input Cover   Encoder Input Cover

USB Cover   Ethernet Cover

I/O Port   Alarm Input Port   Photocell Input Port   Encoder Input Port

USB Port (FAT or FAT32 only)   Ethernet Port
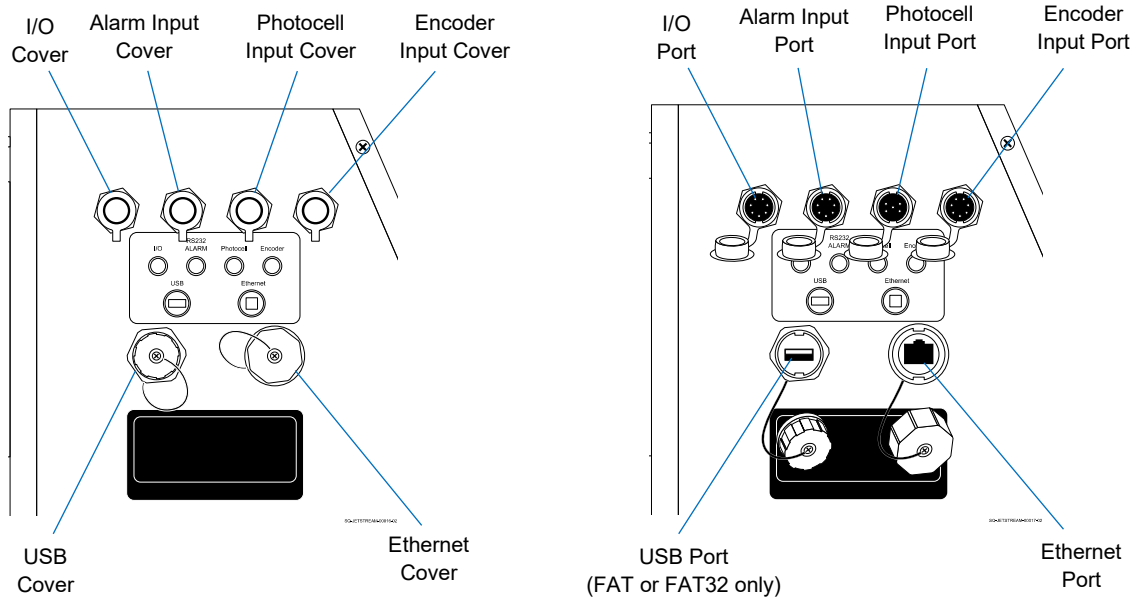
Connection Notes

- Encoder operation is automatically enabled when the Encoder Cable is connected. To disable Encoder operation, the Encoder Cable must be physically disconnected from the JetStream.

- This output is current-limited and short-circuit-protected. The maximum load current on this supply should not exceed 250 mA.

△ Power Input and Power Switch: Right Side Panel

(Relevant Training Level: User)

The Power Input and Power Switch for the JetStream are on the right side of the Console.

⚠	**WARNING:** Only plug the Jetstream into a standard grounded electrical outlet. Failure to do so can result in serious injury or death, and can damage the JetStream and void the warranty.

Power Supply

Power Switch

Power Input

Umbilical Tube Output
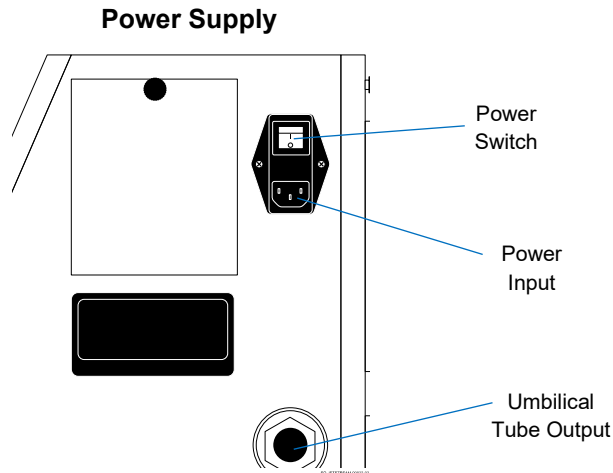
△ Cooling and Ventilation System

(Relevant Training Level: User)

The JetStream Console has three vents for cooling the system. An Air Intake Vent is located on the back of the unit, toward the top. The unit has two Exhaust Vents – one located on the side, toward the top, and one on the back, toward the bottom.

Side Exhaust Vent Cover

Cooling and Ventilation

Rear Air Intake Vent Cover

Rear Exhaust Vent Cover
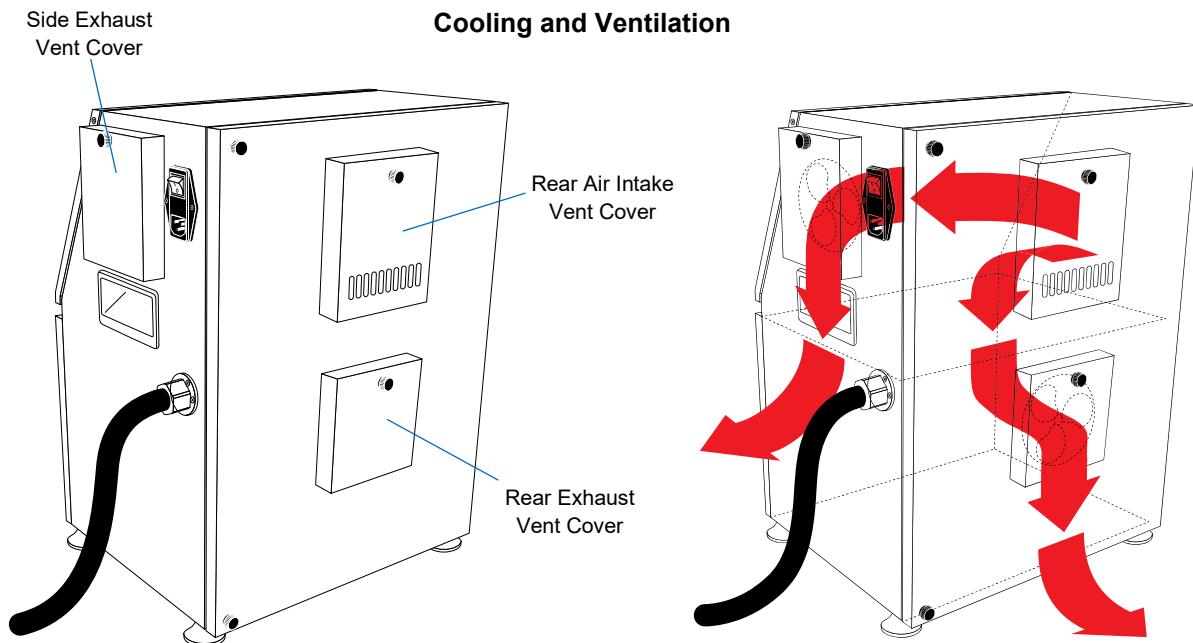
△ Printhead

(Relevant Training Level: User)

The Printhead has an outer Printhead Cover which should be left in place when printing.

⚠	**WARNING:** Do not remove the Printhead Cover while printing. The Printhead Cover is an important safety feature, protecting users from electric shock from the high voltage passing through components inside the Printhead during operation. If the Printhead Cover is removed while the system is printing, a "Printhead cover open" fault will appear, and printing will be immediately deactivated to protect the user.

For cleaning, maintenance or troubleshooting of the Printhead, the cover can be removed by unscrewing the Cover Fastener and pulling the Printhead Cover toward the nozzle end of the Printhead (see "△ Removing the Printhead Cover" on page 215).

Inside the Printhead, the Inner Printhead Shield covers wires and tubes that carry ink, makeup fluid, and electronic signals to and from the Printhead. Visible Printhead components include the Gun Body, Charge Electrode Tunnel, Phase Detector, Deflector Plates, and Ink Return Gutter.

Visible Printhead Components
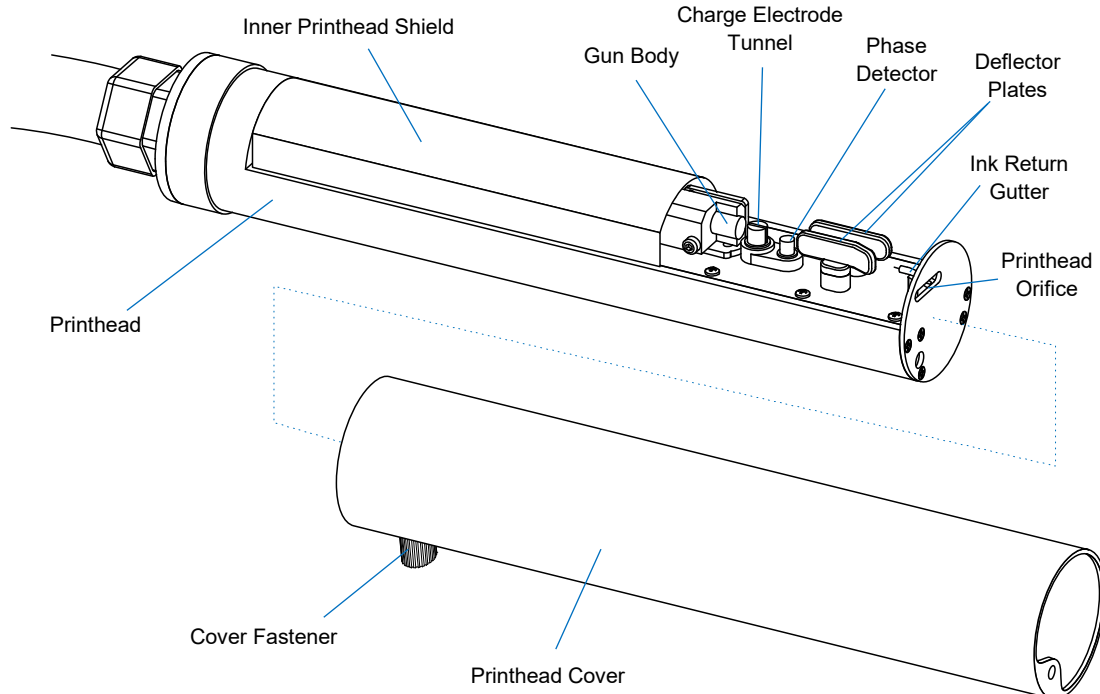
SQ-JETSTREAM-00021-02

Hydraulic Operations

▲ Flow Diagrams and Order of Operations

(Relevant Training Level: Trained Technician)

This section contains flow diagrams for the more common functions of the JetStream, as well as an order of operations for pumps turning on and off and valves opening and closing.

▲ Add Ink

(Relevant Training Level: Trained Technician)
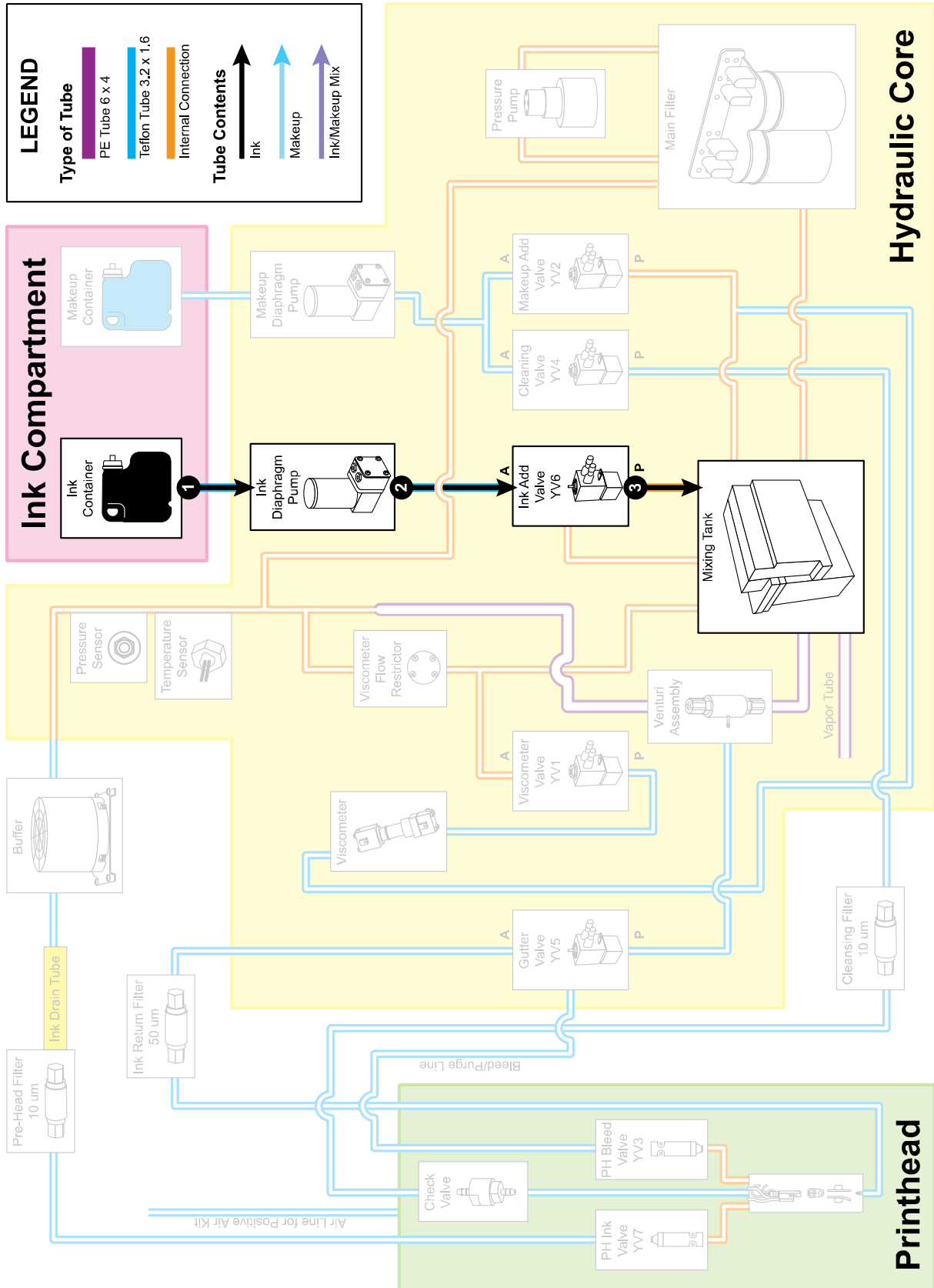
SQ-JETSTREAM-00380-03

Steps in Adding Ink:

1. Whenever the level of ink in the Mixing Tank falls below the "Low Level" Probe, the Ink Diaphragm Pump pulls ink from the Ink Cartridge.

2. The Ink-Add Valve (YV6) opens at the same time that the Ink Diaphragm Pump is activated.

3. The Ink-Add Valve (YV6) stays open long enough for the Mixing Tank to fill to the High Level Probe. Once fluid contacts this Probe, the Ink-Add Valve (YV6) closes and the Ink Diaphragm Pump shuts off.

Order of Operations:
Pumps and Valves When Adding Ink

SQ-JETSTREAM-00387-01
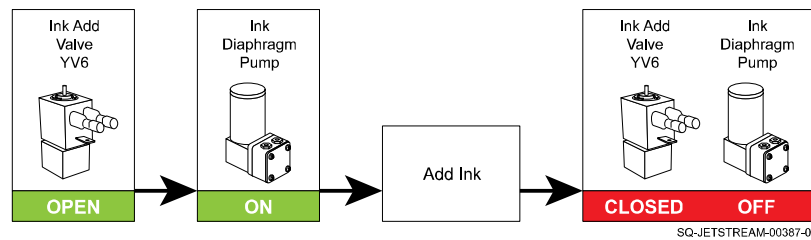
▲ Add Makeup

(Relevant Training Level: Trained Technician)

LEGEND

Type of Tube

- PE Tube 6 x 4
- Teflon Tube 3.2 x 1.6
- Internal Connection

Tube Contents

- Ink
- Makeup
- Ink/Makeup Mix

Ink Compartment

- Makeup Container — 1
- Ink Container
- Ink Diaphragm Pump

Hydraulic Core

- Pressure Pump
- Main Filter
- Makeup Diaphragm Pump — 2
- Makeup Add Valve YV2 — 3
- Cleaning Valve YV4
- Ink Add Valve YV6
- Mixing Tank
- Pressure Sensor
- Temperature Sensor
- Viscometer Flow Restrictor
- Venturi Assembly
- Viscometer Valve YV1
- Viscometer
- Vapor Tube
- Buffer
- Gutter Valve YV5
- Cleansing Filter 10 um
- Ink Drain Tube
- Ink Return Filter 50 um
- Pre-Head Filter 10 um
- Bleed/Purge Line

Printhead

- PH Bleed Valve YV3
- Check Valve
- PH Ink Valve YV7
- Air Line for Positive Air Kit

SQ-JETSTREAM-00381-03

Steps in Adding Makeup:

1. Whenever the Viscometer determines that the viscosity of the fluid in the Mixing Tank has become higher than the target viscosity range, the Makeup Diaphragm Pump pulls ink from the Makeup Cartridge.

2. The Makeup-Add Valve (YV2) opens at the same time that the Makeup Diaphragm Pump is activated.

3. For each automatic or manual "add," the Makeup-Add Valve (YV2) stays open long enough for a set amount (roughly 3 ml) of makeup fluid to flow through it. From there, the makeup fluid goes through the Manifold and into the Mixing Tank. The Makeup-Add Valve (YV2) closes and the Makeup Diaphragm Pump shuts off.

Order of Operations:
Pumps and Valves When Adding Makeup

SQ-JETSTREAM-00388-01
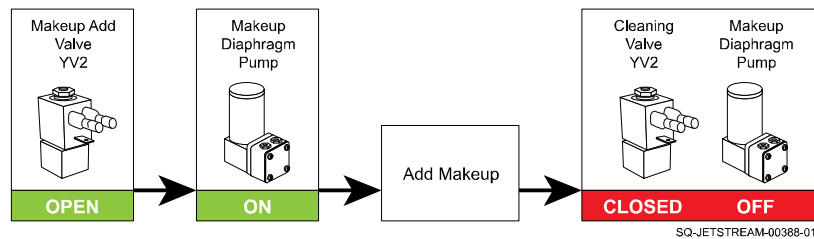
▲ Jetting

(Relevant Training Level: Trained Technician)
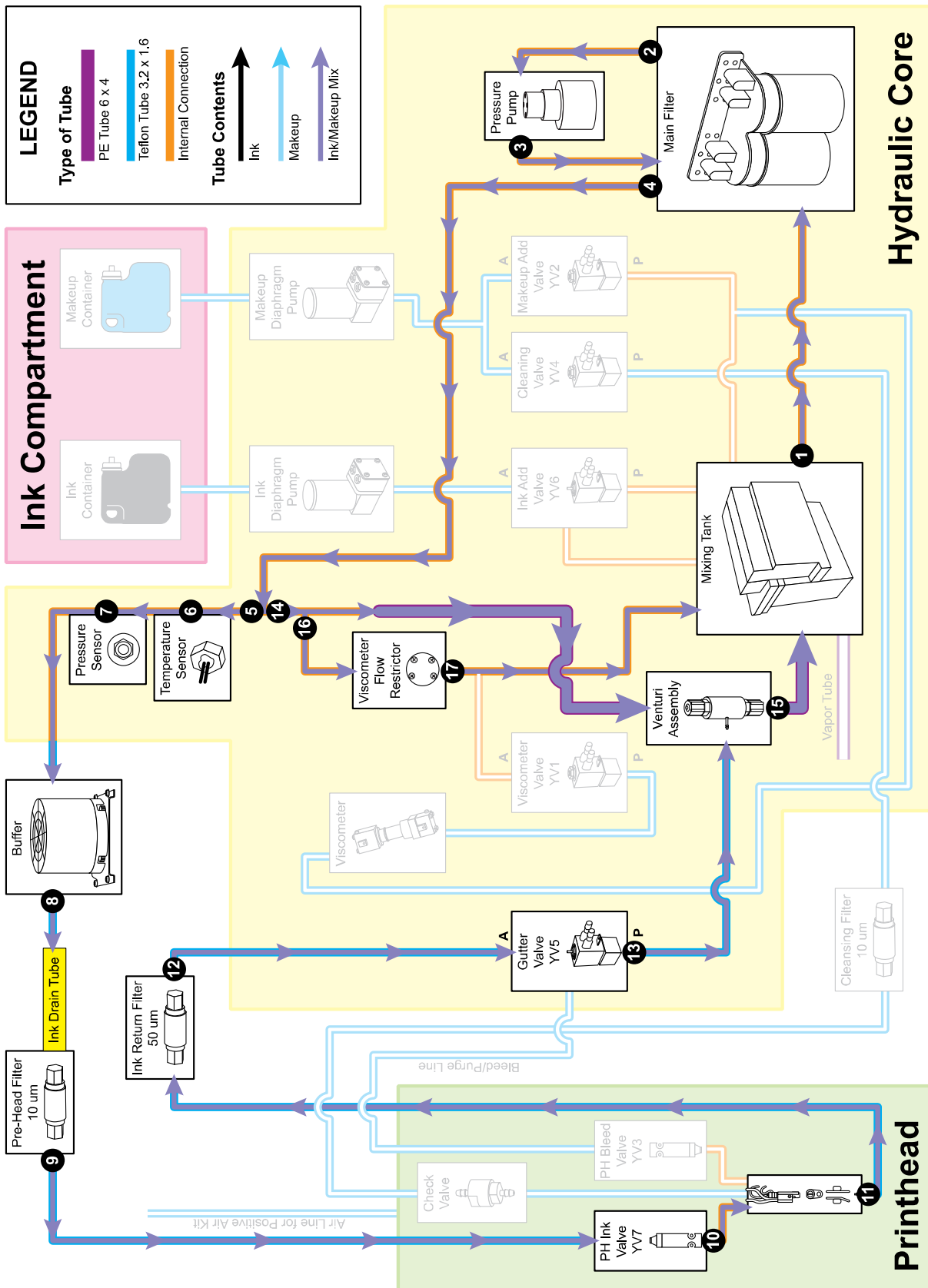
Steps in Jetting:

1. The Pressure Pump pulls the ink/makeup mixture from the Mixing Tank into the first chamber of the Main Filter.

2. After the Main Filter removes impurities from the in/makeup mixture, the fluid goes into the Pressure Pump.

3. Ink passes through the Pressure Pump and into the second chamber of the Main Filter.

4. Ink passes through second chamber of Main Filter to further ensure that there are no impurities in the fluid.

5. Ink enters the Pressure Circuit to be sent to the Printhead. The Printhead is one of three primary directions that pressurized ink flows in the Manifold.

6. The Temperature Sensor, adjacent to the internal ink line between the Main Filter and the Buffer, monitors the temperature of the pressurized ink in the Manifold at all times.

7. The Pressure Sensor monitors the pressure of fluid. Feedback from the Pressure Sensor dictates Pressure Pump speed. If readings from the Pressure Sensor indicate that actual pressure is lower than target, the Pressure Pump is sped up. If readings from the Pressure Sensor indicate that actual pressure is higher than target, the Pressure Pump is slowed down. After passing the Pressure Sensor, the fluid enters the Buffer.

8. The Buffer helps to stabilize the fluid by removing/evening out any vibrations or pressure inconsistencies coming from the Pressure Pump.

9. The Pre-Head Filter performs one final filtration for impurities before the fluid enters the Printhead.

10. The Ink Microvalve YV7 inside the Printhead opens, allowing the pressurized ink to enter the Gun Body.

11. Inside the Printhead, an ink jet shoots from the Gun Body Nozzle to Ink Return Gutter, where any ink that is not used for printing is reclaimed and returned to the Mixing Tank.

12. Pressurized ink is pulled from the Ink Return Gutter to the Ink Return Filter (50 micron), which catches larger particulates/impurities that may have contaminated the fluid during its exposure to air in the Printhead. The ink/makeup mixture it then pulled to the Gutter Valve (YV5).

13. Pressurized ink passed through the Gutter Valve (YV5) to the vacuum input (used by both the Gutter and Backflush Circuits) of the Venturi.

14. Pressurized ink from the Pressure Pump is forced into the input side of the Venturi. This helps to generate the vacuum necessary for the Gutter and Backflush Circuits in the system.

15. Ink exits the Venturi and is returned to the Mixing Tank.

16. Pressurized ink enters the Viscometer Circuit in the Manifold.

17. The Viscometer Flow Restrictor reduces pressure to approximately 1 psi for viscosity measurements. If a viscosity measurement is not taking place, this fluid simply returns to the Mixing Tank.

Order of Operations:
Pumps and Valves for Start Jetting Without Cleaning

Pressure Pump	Gutter Valve YV5	Printhead Bleed Valve YV3	Printhead Bleed Valve YV3	Printhead Ink Valve YV7
ON	OPEN	OPEN	CLOSED	OPEN

SQ-JETSTREAM-00383-01

Order of Operations:
Pumps and Valves for Stop Jetting Without Cleaning

Printhead Ink Valve YV7	Printhead Bleed Valve YV3	Gutter Valve YV5	Printhead Bleed Valve YV3	Gutter Valve YV5	Gutter Valve YV5	Pressure Pump
CLOSED	OPEN	CLOSED	CLOSED	OPEN	CLOSED	OFF

SQ-JETSTREAM-00385-02
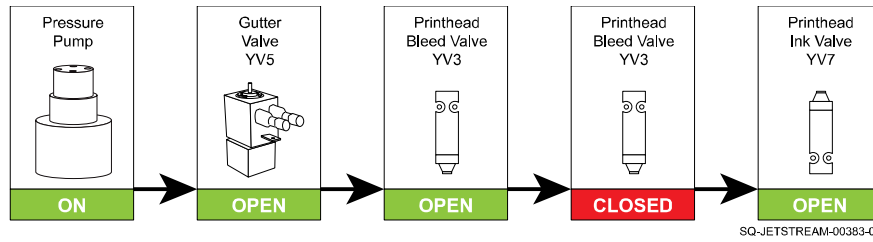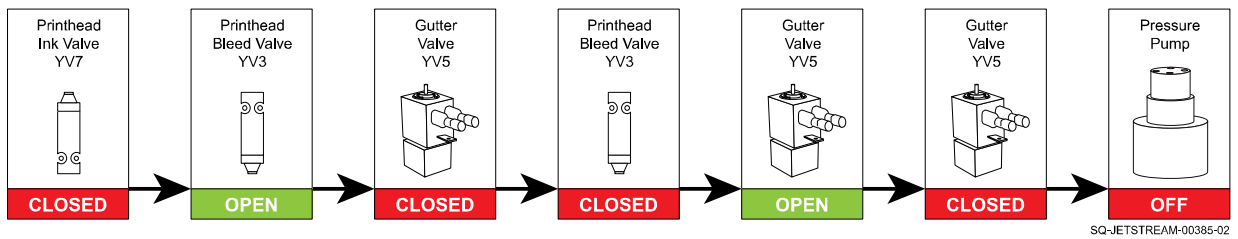
▲ Cleaning

(Relevant Training Level: Trained Technician)

This operation is performed whenever "Start Jetting With Cleaning" or "Stop Jetting With Cleaning" is selected.
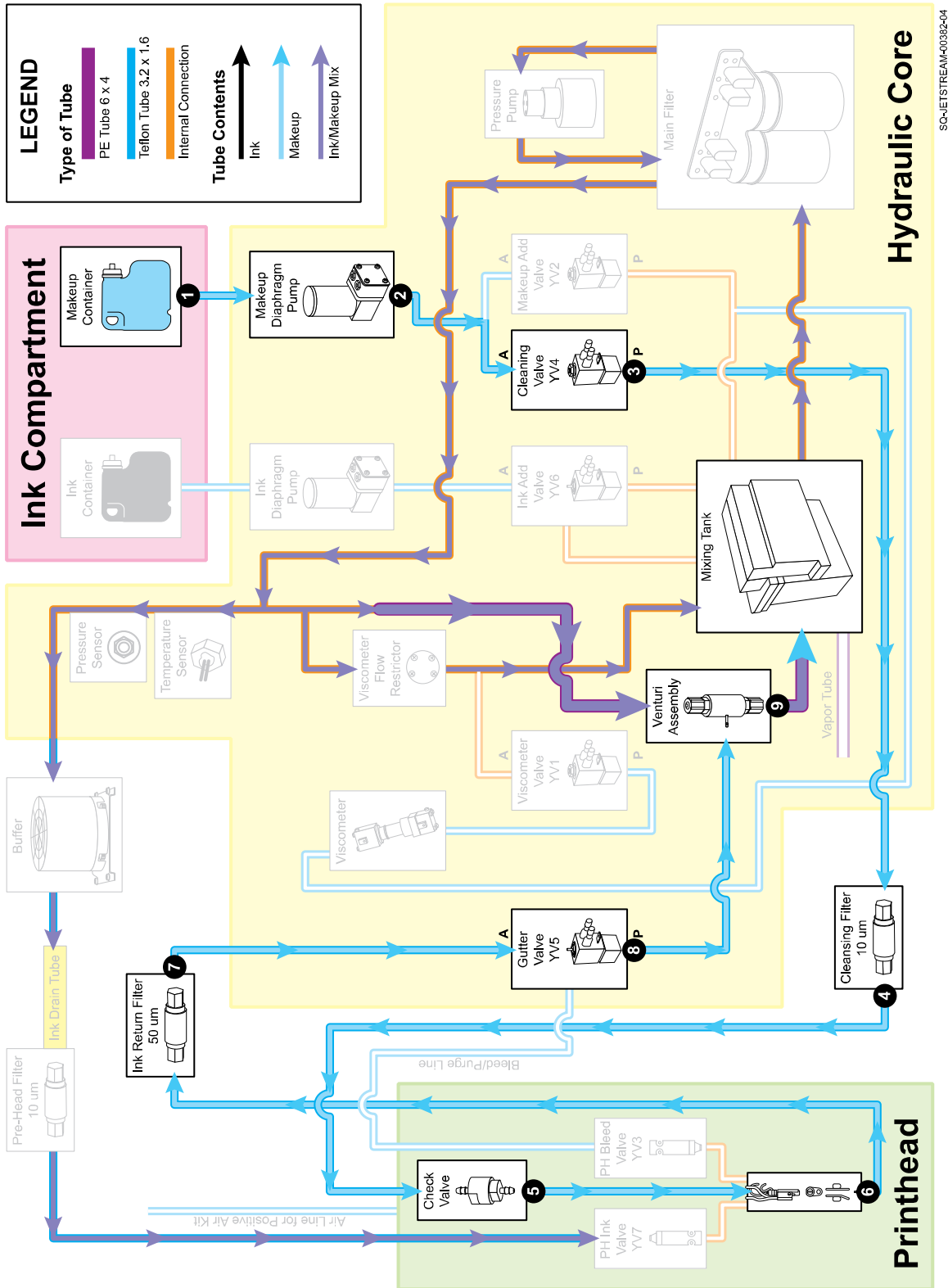
Steps in Cleaning:

1. The Makeup Diaphragm Pump pulls makeup fluid from the Makeup Container.

2. The Makeup Diaphragm Pump pushes the makeup fluid to the Cleaning Valve (YV4)

3. The Cleaning Valve (YV4) opens and closes to allow small amounts of makeup fluid to flow through.

4. Makeup fluid goes through the Cleaning Valve (YV4) and on to the Cleansing Filter, which removes any potential impurities from the makeup fluid.

5. The Check Valve allows the makeup fluid to enter the Gun Body and out into the Ink Return Gutter.

6. Suction pulls the makeup fluid from the Ink Return Gutter to the Ink Return Filter.

7. Makeup fluid washes through the Gutter Valve (YV5).

8. Makeup fluid flows from the Gutter Valve (YV5) to the Venturi Assembly.

9. In the Venturi Assembly, makeup fluid combines with ink from the Mixing Tank, and is returned to the Mixing Tank.

Order of Operations:
Pumps and Valves for Start Jetting With Cleaning

Pressure Pump	Printhead Bleed Valve YV3	Cleaning Valve YV4	Printhead Bleed Valve YV3	Cleaning Valve YV4	Makeup Diaphragm Pump	Cleaning Valve YV4
ON	OPEN	OPEN	CLOSED	CLOSED	ON	OPEN

Gun Body Cleaning Started	Gun Body Cleaning Done	Makeup Diaphragm Pump	Cleaning Valve YV4	Printhead Bleed Valve YV3	Printhead Bleed Valve YV3	Printhead Ink Valve YV7
		OFF	CLOSED	OPEN	CLOSED	OPEN

SQ-JETSTREAM-00384-02

Order of Operations:
Pumps and Valves for Stop Jetting With Cleaning

Gutter Valve YV5	Printhead Ink Valve YV7	Printhead Bleed Valve YV3	Cleaning Valve YV4	YV4	YV4	YV4	YV4	YV4
CLOSED	CLOSED	OPEN	OPEN	CLOSED	OPEN	CLOSED	OPEN	CLOSED

Printhead Bleed Valve YV3	Cleaning Valve YV4	Gutter Valve YV5	Makeup Diaphragm Pump	Gun Body Cleaning Started	Gun Body Cleaning Done
CLOSED	OPEN	OPEN	ON		

Cleaning Valve YV4	Makeup Diaphragm Pump	Printhead Bleed Valve YV3	Gutter Valve YV5	Printhead Bleed Valve YV3	Gutter Valve YV5
CLOSED	OFF	OPEN	CLOSED	CLOSED	OPEN

Gutter Valve YV5	Pressure Pump
CLOSED	OFF

SQ-JETSTREAM-00386-01

▲ Viscosity Check

*(**Relevant Training Level:** Trained Technician)*
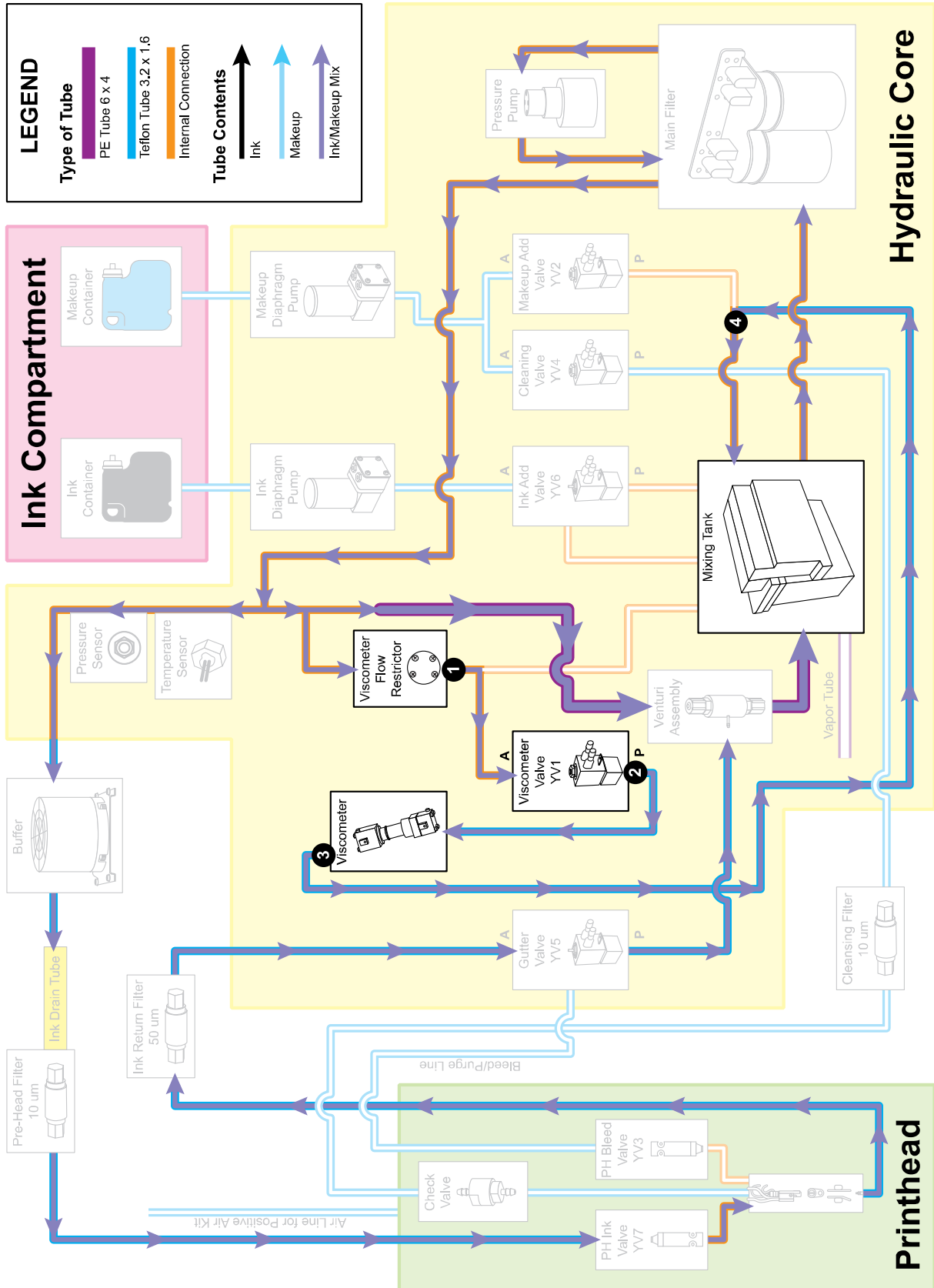
Steps in a Viscosity Check:

(System is jetting)

1. The Viscometer Flow Restrictor reduces pressure to roughly 1 psi for fluids entering the viscosity circuit.

2. The Viscometer Valve (YV1) opens, allowing pressurized fluid to pass through to Viscometer. YV1 is left open for a set period of time, and then closes, triggering an internal timer to start.

3. Pressurized fluid passes through the Viscometer. The fluid helps push an internal steel ball inside the Viscometer to the top. When YV1 closes and no more pressurized fluid is flowing into the Viscometer, the steel ball rolls down through the remaining fluid inside the Viscometer. When the ball reaches the bottom, it hits an Inductive Sensor that triggers the internal timer to stop. The time between YV1 closing and the Inductive Sensor being triggered is displayed in the JetStream's ink system readings as the real-time viscosity of fluid in the system.
The JetStream performs viscosity checks every three minutes. If the actual viscosity is higher than the desired (target) viscosity, the system adds makeup (see add makeup diagram) to the Mixing Tank to thin the fluid If the viscosity is too low, the printer does not add any fluid to the Mixing Tank, and instead relies on natural evaporation of excess makeup to thicken the fluid.

4. All fluid from the viscosity circuit returns to the Mixing Tank.

Order of Operations:
Pumps and Valves During Viscosity Check

SQ-JETSTREAM-00389-01
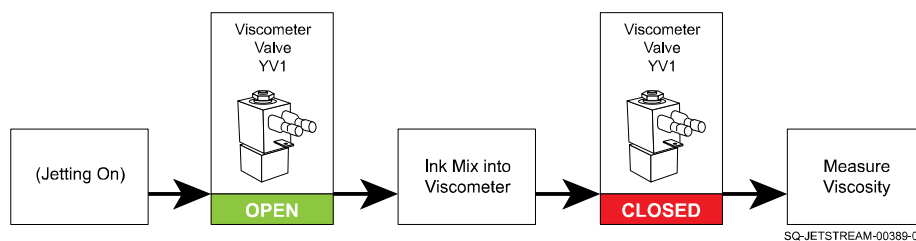
▲ Backflushing the Gun Body

(Relevant Training Level: Trained Technician)

LEGEND

Type of Tube
- PE Tube 6 x 4
- Teflon Tube 3.2 x 1.6
- Internal Connection

Tube Contents
- Ink
- Makeup
- Ink/Makeup Mix

Ink Compartment

Makeup Container

Ink Container

Makeup Diaphragm Pump

Ink Diaphragm Pump

Hydraulic Core

SQ-JETSTREAM-00399-03

Pressure Pump

Main Filter

Makeup Add Valve YV2

Cleaning Valve YV4

Ink Add Valve YV6

Mixing Tank

Pressure Sensor

Temperature Sensor

Viscometer Flow Restrictor

Venturi Assembly

Viscometer Valve YV1

Viscometer

Vapor Tube

Buffer

Ink Drain Tube

Ink Return Filter 50 um

Gutter Valve YV5

Cleansing Filter 10 um

Pre-Head Filter 10 um

Bleed/Purge Line

PH Bleed Valve YV3

Check Valve

Printhead

Air Line for Positive Air Kit

PH Ink Valve YV7

Cleaning Bottle

Steps in Backflushing the Gun Body:

(System is jetting, Purge function is accessed through Settings >> Ink System)

1. After a 10 second pause, jetting stops for 20 seconds, during which time, the user uses the Cleaning Bottle to shoot makeup fluid up into the Gun Body Nozzle.

2. Suction in the Gun Body pulls the makeup into the Gun Body and out to the (temporarily open) Printhead Bleed Valve (YV3).

3. Makeup washes through the Printhead Bleed Valve (YV3) and on to the Gutter Valve (YV5).

4. Makeup washes through the Gutter Valve (YV5) and on to the Venturi Assembly.

5. Makeup and ink flow through the Venturi Assembly and into the Mixing Tank.

Order of Operations:
Pumps and Valves During Gun Body Backflushing
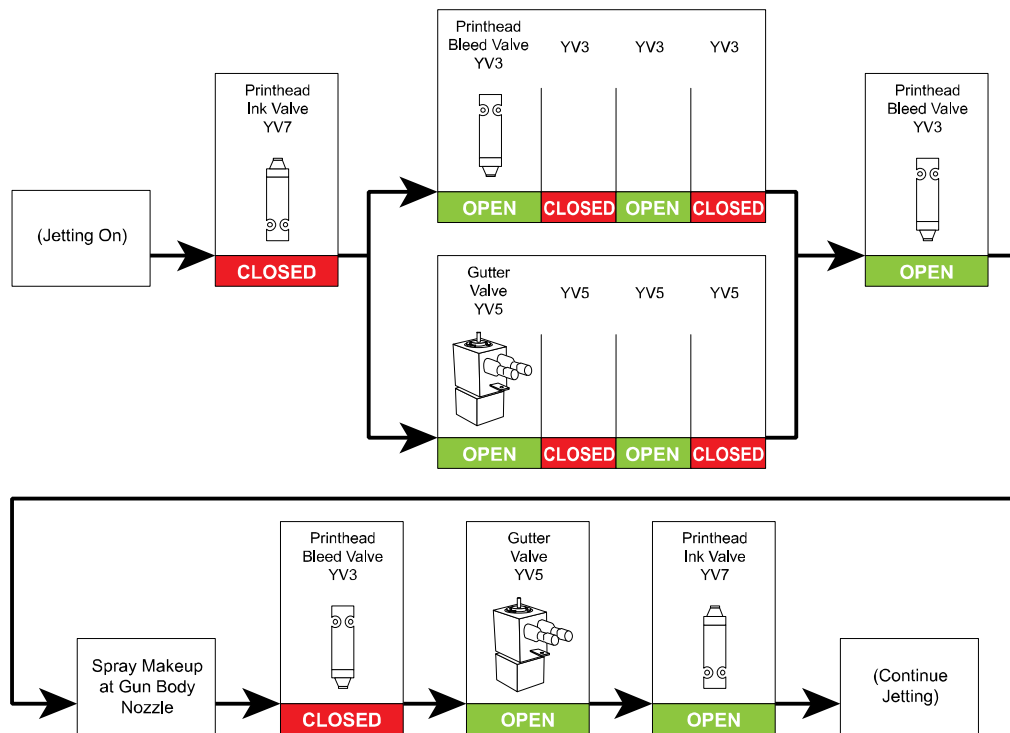
SQ-JETSTREAM-00391-02

▲ Draining the Mixing Tank

(Relevant Training Level: *Trained Technician***)**

SQ-JETSTREAM-00398-03

LEGEND

Type of Tube

PE Tube 6 x 4
Teflon Tube 3,2 x 1,6
Internal Connection

Tube Contents

Ink
Makeup
Ink/Makeup Mix

Hydraulic Core

Pressure Pump

Main Filter

Ink Compartment

Makeup Container

Ink Container

Makeup Diaphragm Pump

Ink Diaphragm Pump

Makeup Add Valve YV2

Cleaning Valve YV4

Ink Add Valve YV6

Mixing Tank

Pressure Sensor

Temperature Sensor

Viscometer Flow Restrictor

Venturi Assembly

Vapor Tube

Viscometer Valve YV1

Viscometer

Buffer

Gutter Valve YV5

Cleansing Filter 10 um

Ink Drain Tube

Waste Ink Container

Ink Return Filter 50 um

Bleed/Purge Line

Pre-Head Filter 10 um

Air Line for Positive Air Kit

Check Valve

PH Bleed Valve YV3

PH Ink Valve YV7

Printhead

Steps in Draining the Mixing Tank:

(Jetting has been turned off, and Ink Drain Tube is then disconnected from the Pre-Head Filter and is placed over a large waste ink receptacle)

1. The Pressure Pump turns on, pulling the ink/makeup mixture from the Mixing Tank and into the Main Filter.

2. The mixture flows through the Main Filter to the Pressure Pump.

3. The Pressure Pump pushes the the mixture back into the Main Filter and ultimately on to the Buffer.

4. After leaving the Buffer, the mixture flows out of the Ink Drain Tube and into the waste ink receptacle. When the Mixing Tank is completely empty, the Pressure Pump shuts off.

Order of Operations:
Pumps and Valves During Draining the Mixing Tank

SQ-JETSTREAM-00400-01
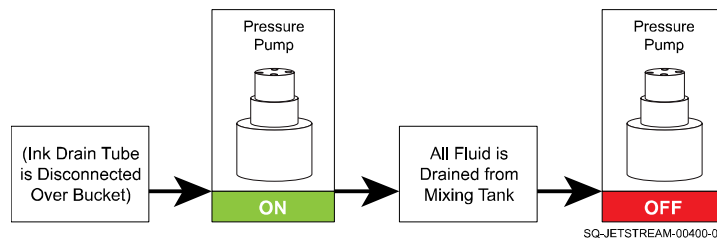
▲ Components Used by Function

(Relevant Training Level: Trained Technician)

The chart below summarizes which components are active/open or inactive/closed during various functions of the JetStream.

Function	Component									
	Visco Valve YV1	Makeup Add Valve YV2	PH Bleed Valve YV3	Cleaning Valve YV4	Gutter Valve YV5	Ink Add Valve YV6	PH Ink Valve YV7	Ink Diaph Pump	Makeup Diaph Pump	Pressure Pump
Printing	X	X	X	X	O	X	O	X	X	O
Start Jetting w/o Cleaning	X	X	O	X	O	X	O	X	X	O
Stop Jetting w/o Cleaning	X	X	O	X	O	X	X	X	X	O
Start Jetting w/ Cleaning	X	X	O	O	O	X	O	X	O	O
Stop Jetting with Cleaning	X	X	O	O	O	X	X	X	O	O
Add Ink to Mix Tank	X	X	X	X	O	O	O	O	X	O
Add Makeup to Mix Tank	X	O	X	X	O	X	O	X	O	O
Measure Viscosity	O	X	X	X	O	X	O	X	X	O
Purging	X	X	O	X	X	X	X	X	X	O
Draining the Mixing Tank	X	X	X	X	X	X	X	X	X	O

O = Open or On
X = Closed or Off

▲ Pressure Circuits

(Relevant Training Level: Trained Technician)

To better understand the operations of the JetStream, it can be helpful to think of its operations isolated into different circuits based on function and the pressures pushing or pulling the fluid through them.
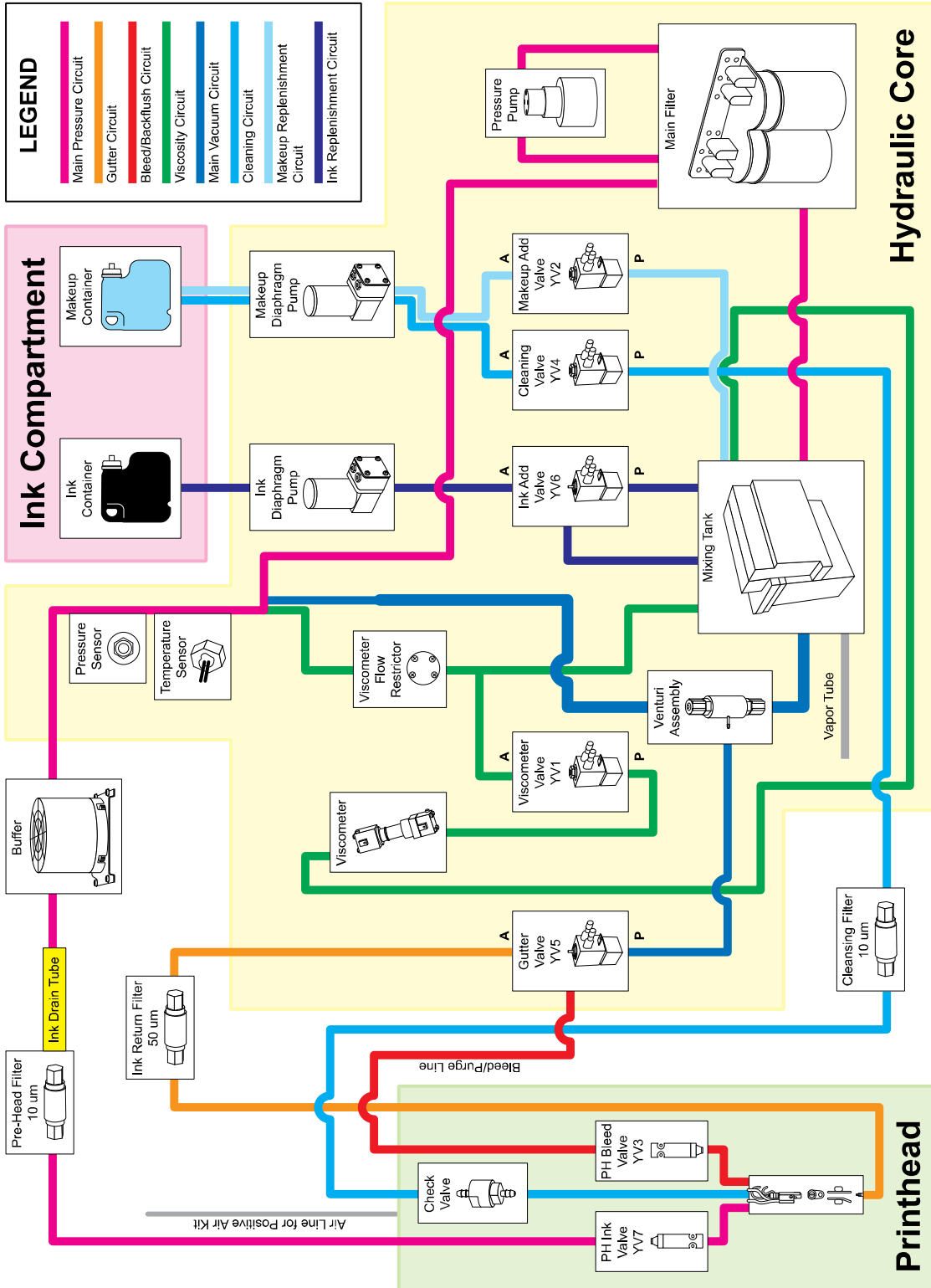
▲ Main Pressure Circuit

Pulls fluid from the Mixing Tank and pushes it to the Printhead.

Pressurizing Force: Pressure Pump
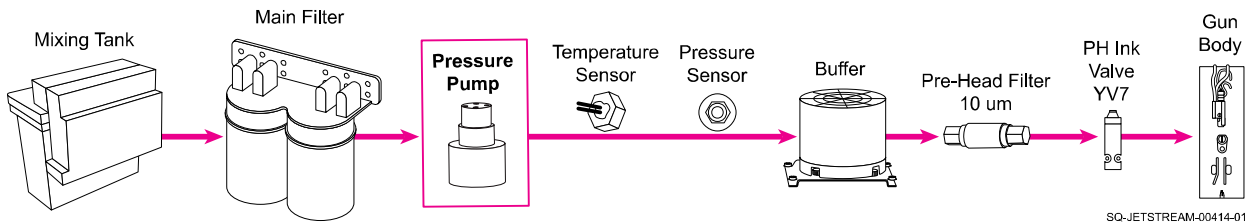
▲ Gutter Circuit

Pulls fluid from the Printhead during jetting and connects with the Main Vacuum Circuit to bring the fluid back to the Mixing Tank for reuse.

Pressurizing Force: Vacuum from Venturi Assembly
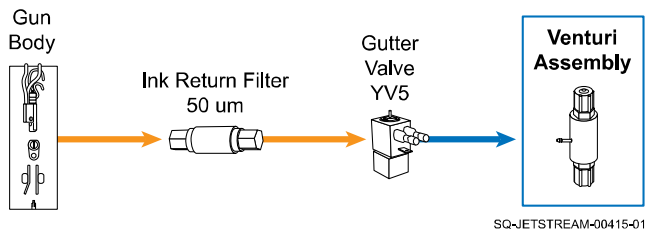
▲ Bleed/Backflush Circuit

Pulls fluid from the Printhead during bleeding and backflushing the Gun Body, and connects with the Main Vacuum Circuit to bring the fluid back to the Mixing Tank for reuse.

Pressurizing Force: Vacuum from Venturi Assembly
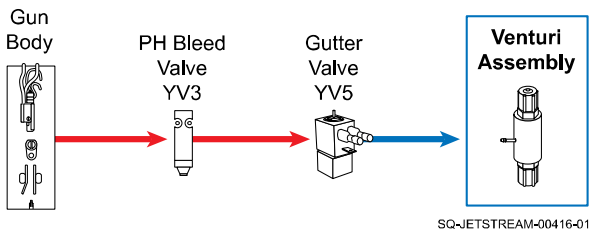
▲ Viscosity Circuit

Diverts a small amount of pressurized ink-makeup mixture from the Main Pressure Circuit every three minutes to test the viscosity of the fluid, and then allows the fluid to flow back to the Mixing Tank for reuse.

Pressurizing Force: Pressure Pump

SQ-JETSTREAM-00417-01
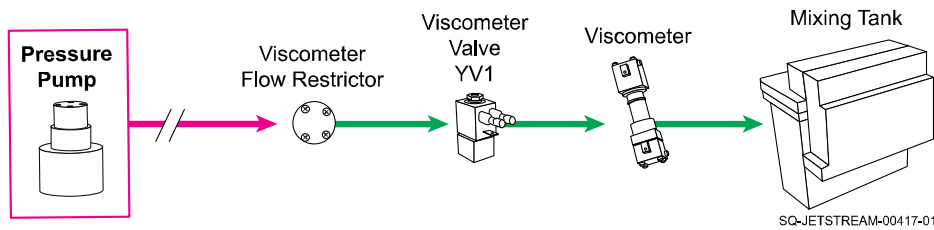
▲ Main Vacuum Circuit

The pressure of fluid from the Main Pressure Circuit creates a vacuum within the Venturi Assembly. The vacuum pulls in fluid from the Gutter Circuit during jetting and/or cleaning, or from the Bleed/Backflush Circuit during backflushing. From the Venturi Assembly, fluid is pushed back to the Mixing Tank for reuse.

Pressurizing Force: Vacuum from Venturi Assembly ultimately created by the force of fluid from the Pressure Pump

SQ-JETSTREAM-00418-01
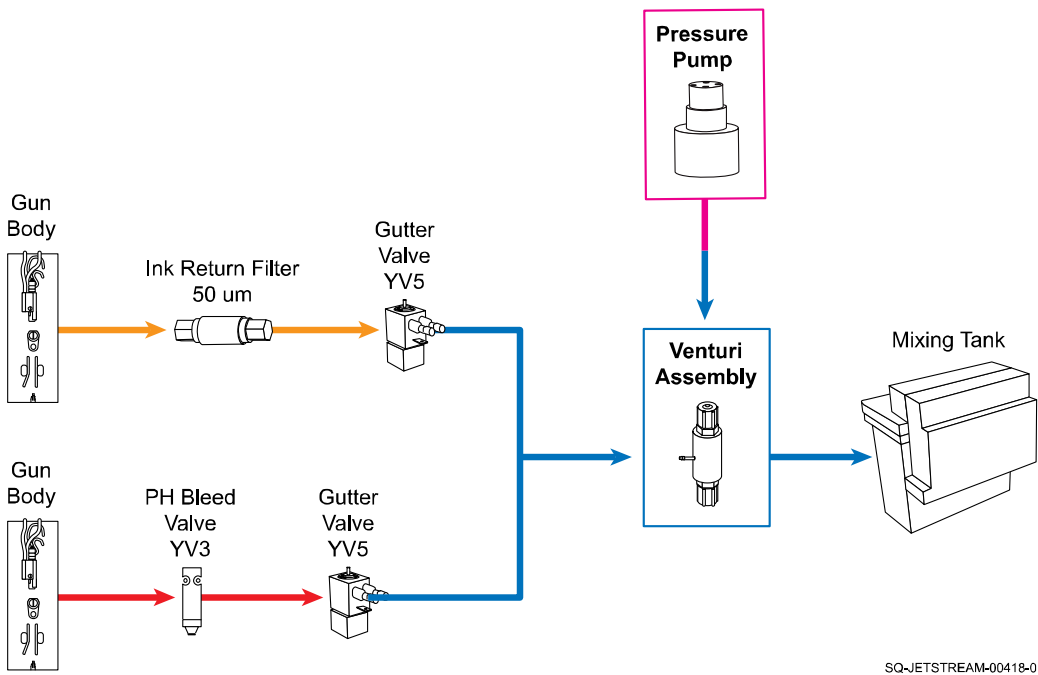
▲ Cleaning Circuit

Pulls fluid from the Makeup Container during cleaning and pushes it through the Gun Body to clean out any dried ink/contaminants.

Pressurizing Force: Makeup Diaphragm Pump

SQ-JETSTREAM-00419-01
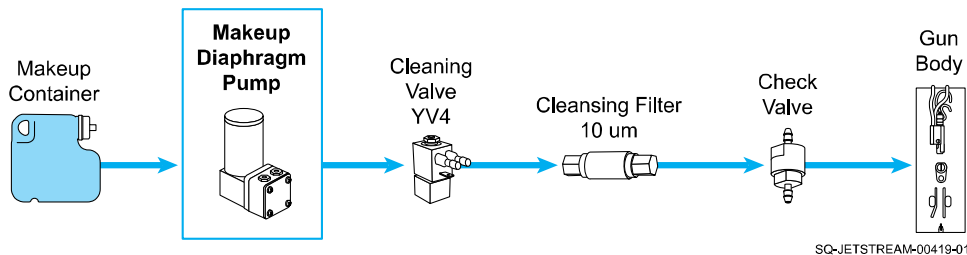
▲ Makeup Replenishment Circuit

Pulls fluid from the Makeup Container and sends it to the Mixing Tank when the Viscometer indicates that ink viscosity is too high (ink/makeup mixture is too thick)

Pressurizing Force: Makeup Diaphragm Pump

SQ-JETSTREAM-00420-01
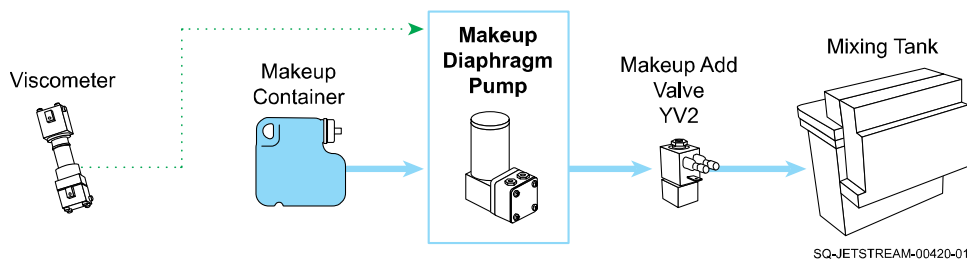
▲ Ink Replenishment Circuit

Pulls ink from the Ink Container and sends it to the Mixing Tank when the Fluid Level Probes in the Mixing Tank indicate that fluid is low. Also recirculates ink through the Ink-Add Valve (YV6) periodically to prevent ink from drying in the Ink Add Valve. During this recirculation, the Add Ink Valve also allows fluid to flow to the Ink Diaphragm Pump output duct to similarly prevent ink from drying there.

Pressurizing Force: Ink Diaphragm Pump

SQ-JETSTREAM-00421-01
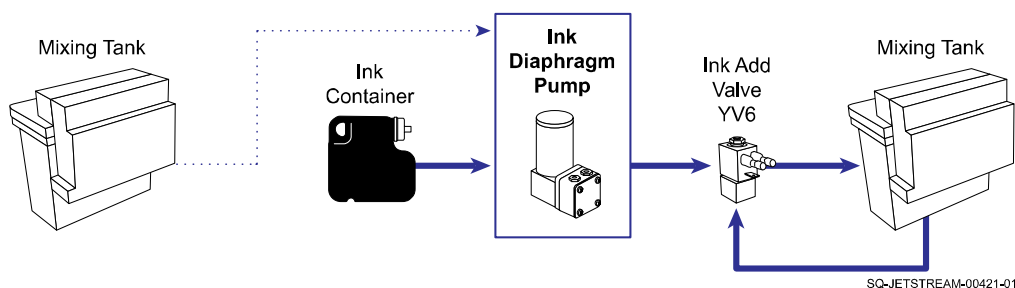
Installation and Setup

Installation of the JetStream should only be performed by trained and qualified personnel. If in doubt, contact your trained and authorized Squid Ink Distributor.

△ General Setup Considerations

(Required Training Level: User)

△ Material Handling

The most critical factor for consistently achieving superior quality printing is material handling. Adequate Conveyor Product Guides must be provided, correctly installed, and properly maintained, so that the product consistently passes by at the correct throw distance from the Printhead Orifice, and unpredictable movements are minimized. Incorrect or inconsistent product handling will cause print quality problems, maintenance problems, and could lead to Printhead damage. The customer is responsible for maintaining proper material handling equipment.

Product Guides on Conveyor
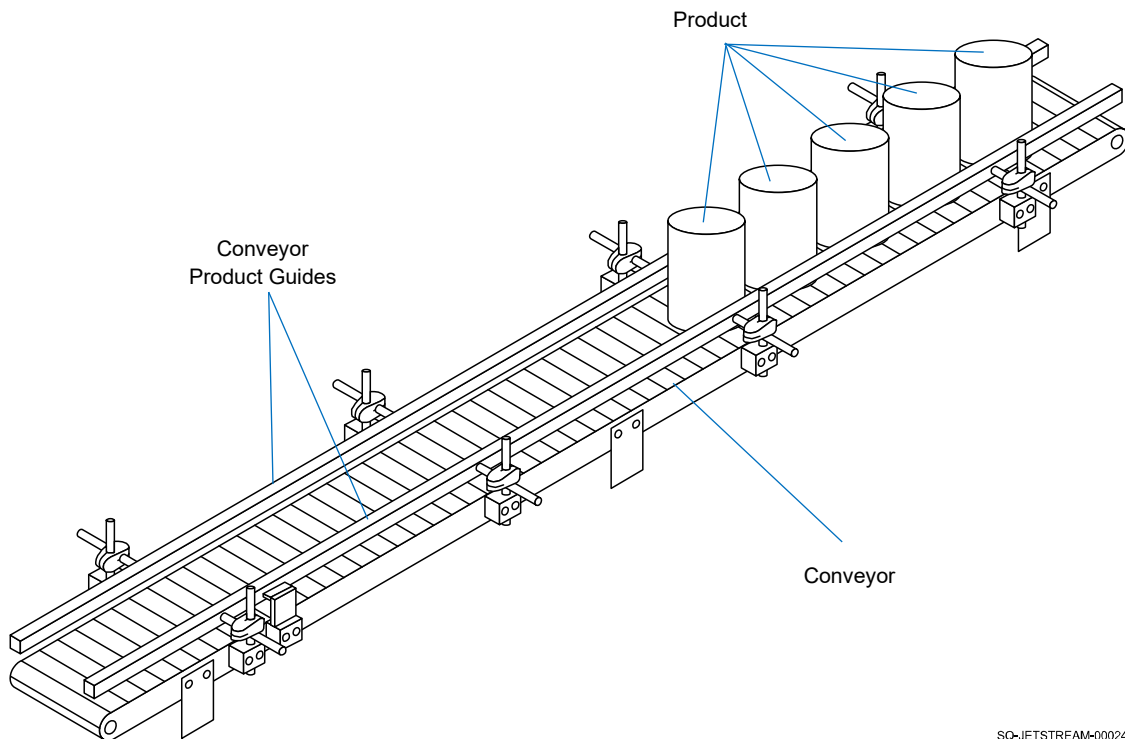
SQ-JETSTREAM-00024

△ AC Power

Experience has shown that the AC power in locations where the JetStream is installed can be subject to line noise, brownouts, and blackouts. If line noise, brownouts, or blackouts occur on a regular basis, install a good-quality line conditioner to ensure data integrity. In many cases, these devices may not be necessary; it is acceptable to start an installation without them. However, if system lockups or occasional distorted print occurs, the first corrective measure should be to isolate and clean up the AC power.

△ Work Area

The JetStream may occasionally require cleaning, purging, or flushing due to environmental contaminants and operating conditions. These processes require a Cleaning Bottle (containing makeup fluid), a Drying Bulb, and a Cleaning Tray. For safety, the work area should also have a fire extinguisher, a hazardous liquids disposal container, and an eye flushing station in the event of eye contact with ink or makeup fluid.

⚠	**CAUTION:** Waste ink and solvent should be emptied into an approved container and disposed of properly.

Proper Work Area
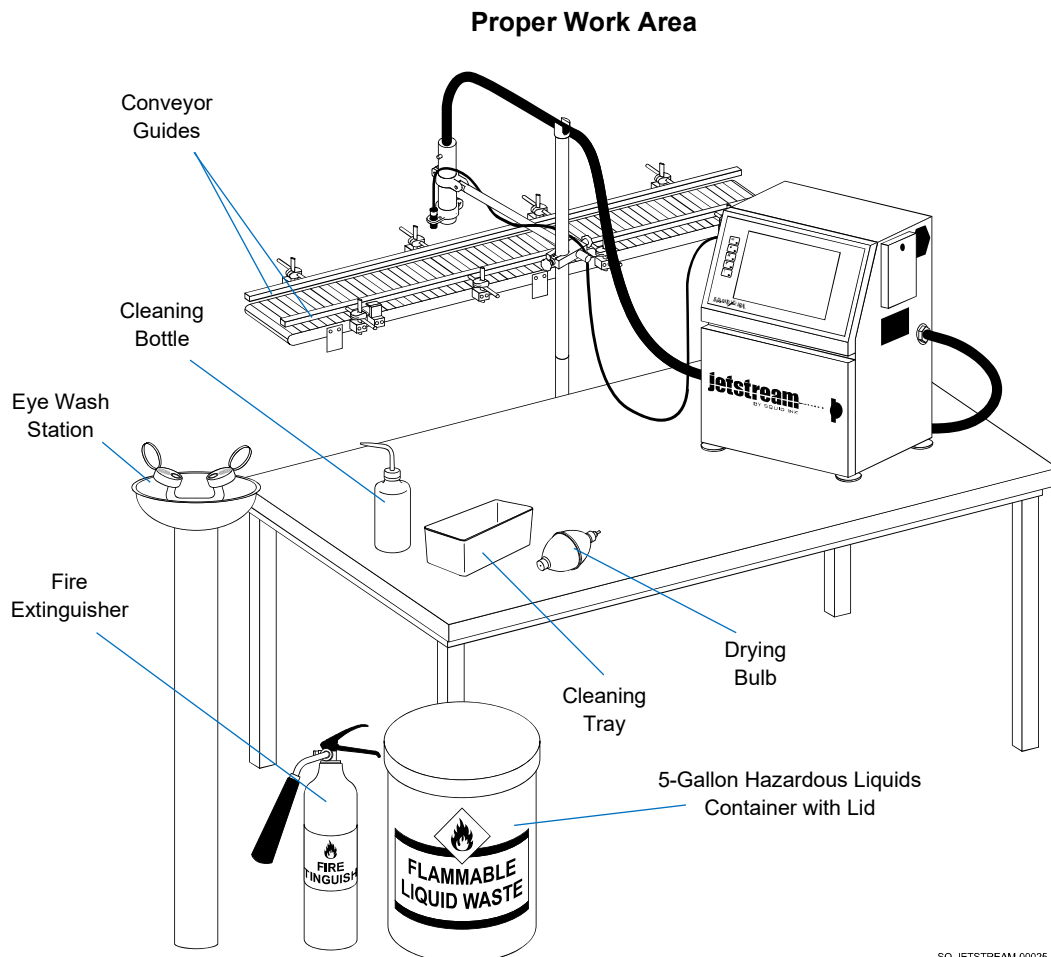
SQ-JETSTREAM-00025-02

△ Vibration

The JetStream and Printhead should be isolated from the movements of the conveyor system.

⚠	**ATTENTION:** Being bumped by passing products, normal conveyor vibrations, and similar adverse operating conditions can negatively affect print quality and can potentially damage the Printhead.

△ Maintenance Access

When planning the installation, allow for easy access to the Control Panel, Ink Compartment, Rear Compartment, side inputs, and Printhead so that setup, operation, and maintenance can be done conveniently.

△ Ventilation

Ensure that the rear and right (Power Input) sides of the JetStream Console have at least 6" (154 mm) of clearance from walls or other objects to provide proper ventilation.

△ Mounting

Each installation is unique. Squid Ink Manufacturing cannot anticipate customer requirements for mounting the JetStream to the customer's production line. Squid Ink Manufacturing offers two mounting options: a Printhead Mount Stand and a CIJ Printhead Mounting Bracket (see "△ Mounting Equipment" on page 24). Follow the instructions for the specific mounting system ordered for your printer.

△ System Portability

If a single JetStream unit needs to be moved to different production lines, Squid Ink's wheeled Stand (see "△ Console Mounting Stand" on page 25) make for easy portability of the system, tools, and supplies.

△ Printhead Position

The JetStream can print in any direction, including straight up, so there is almost no limitation on Printhead orientation. However, the slot of the Printhead Orifice must be perpendicular to the product/substrate flow to ensure proper printing.

The Printhead Orifice should be approximately 0.5 inches (12.7 mm) from the surface of the passing substrate/product. Larger throw distances are possible, depending on font size, air currents, and other factors, but print quality will be sacrificed. Larger throw distances also affect printed character size and distance between dots.

Throw Distance

SQ-JETSTREAM-00077-02
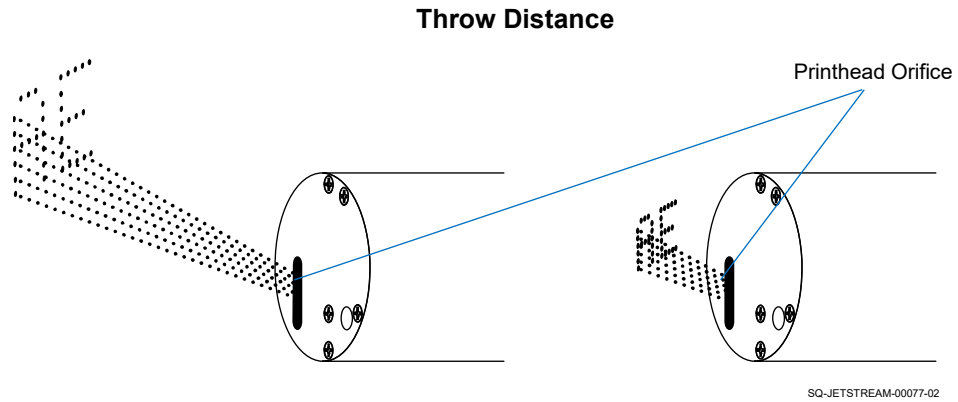
△ Traffic Patterns

Careless positioning can result in damage to the JetStream. Examples are setting up the JetStream with the Umbilical Tube on the floor where it can be stepped on or tripped over, locating the JetStream where it can be knocked by a forklift, or similar placement of the system in an area of predictable traffic. Keep the JetStream away from known traffic paths.

△ Unpacking the JetStream

(Required Training Level: User)

Follow the instructions below to unpack the JetStream.

⚠	**CAUTION:** Use care when unpacking the JetStream. Mishandling can damage the equipment and cause injury.

Needed to Unpack the JetStream:

- Two or three people

To Unpack the JetStream:

1. Remove and discard the carton banding.
2. Use two or three people to remove the JetStream from the carton, and save the carton.
3. Remove and save the top foam packing piece.
4. Remove and discard the inner plastic wrapper around the JetStream.
5. Clear an area for the JetStream on a sturdy, level table that meets the requirements listed in "△ General Setup Considerations," starting on page 85.
6. Use two or three people to lift the JetStream Console out of the bottom foam packing piece, and move the JetStream to the clear area on the table.
7. Remove and set aside the Printhead and Umbilical Tube from the bottom foam packing piece. Save the bottom foam packing piece.
8. Discard any remaining plastic wrapping.

△ Assembling the Stand

(Required Training Level: User)

If using the portable Stand for the JetStream system, begin setup by assembling the Stand.

Items Needed to Assemble the Stand Include:

- M6 Nut (8)
- M6 Lock Washer (8)
- M6-12 Screw (24)

To Assemble the Stand:

1. **Find an appropriate location for the Stand and JetStream(s):**

    a. Away from normal traffic patterns.

    b. With adequate spacing around the JetStream for operation and maintenance.

Stand Dimensions with JetStream

Top View

16.70"
(42.42 cm)

20.20"
(51.3 cm)

Front View   **Side View**

54.39"
(138.15 cm)

24.57"
(62.4 cm)

32.07"
(81.45 cm)

34.43"
(87.45 cm)
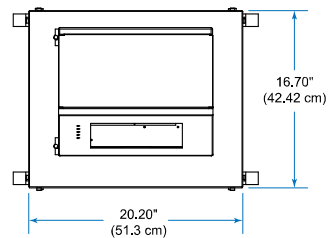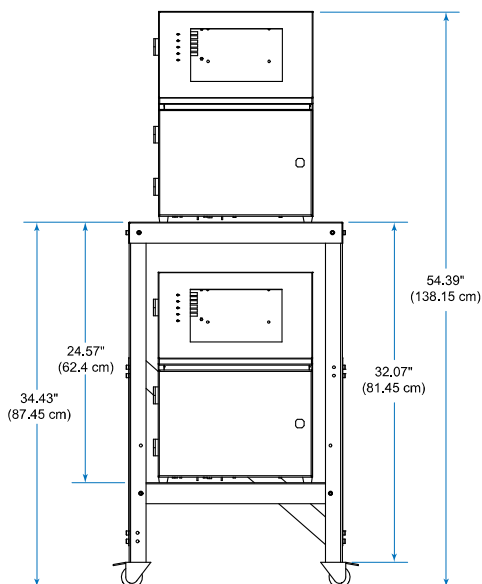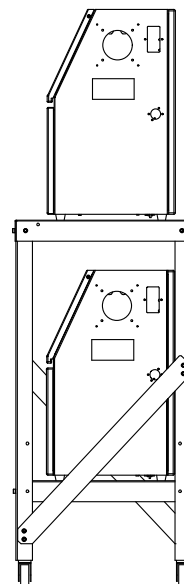
SQ-JETSTREAM-00180-02

2. Connect the legs to the platforms:

a. Paying attention to the locations of the Reinforcement Bracket holes in the Legs, use 8 of the M6-12 Screws to attach the Legs to the fronts and backs of the Shelves.

Reinforcement Bracket Holes

Reinforcement Bracket Holes

M6-12 Screws

SQ-JETSTREAM-00186-02
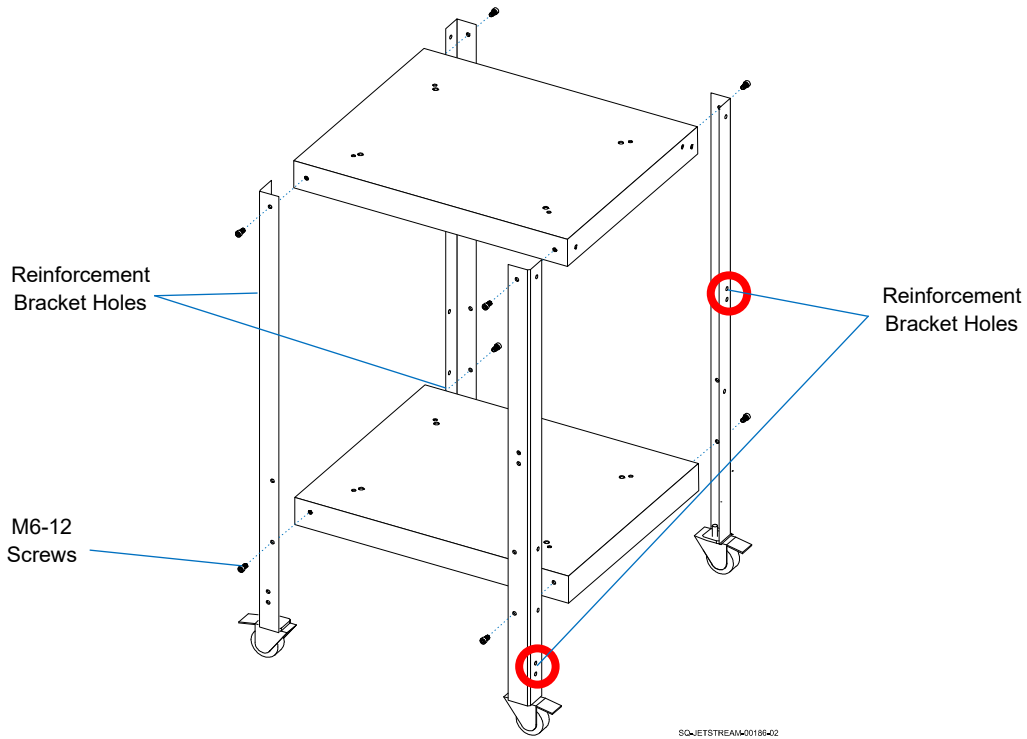
3. Add the side Screws:

a. Use 8 of the M6-12 Screws to attach the sides of the Legs to the sides of the Shelves.

M6-12 Screws

SQ-JETSTREAM-00187-02
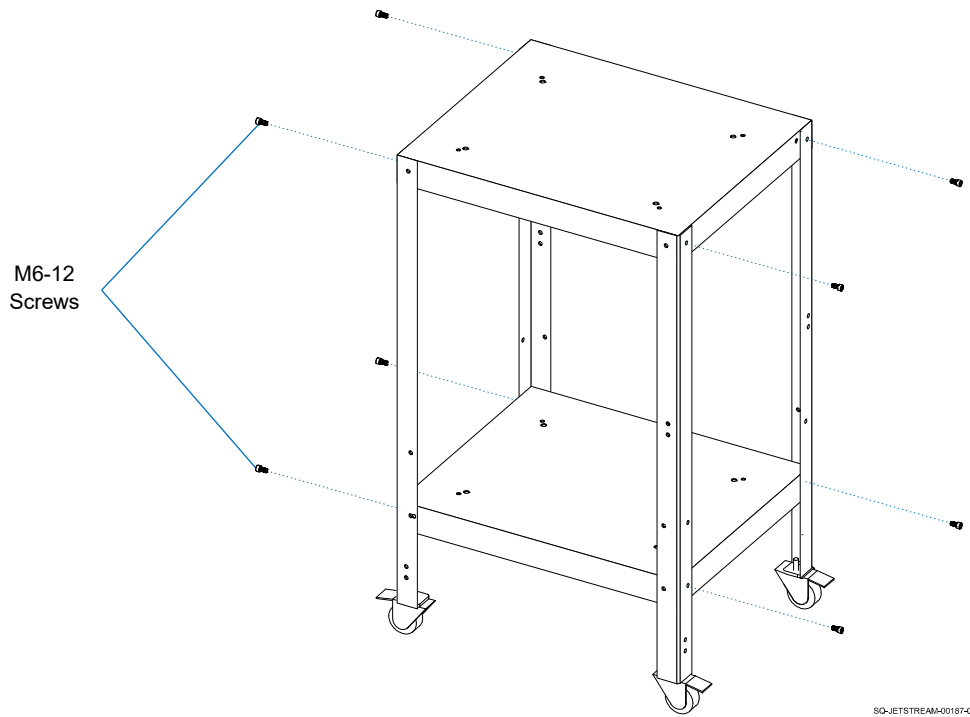
4. Add the Reinforcement Brackets:

a. Use 8 of the M6-12 Screws to attach the Reinforcement Brackets to the sides of the Legs.

b. Use 8 of the M-6 Nuts and 8 of the M-6 Lock Washers to secure the Reinforcement Bracket Screws in place.

SQ-JETSTREAM-00188-02
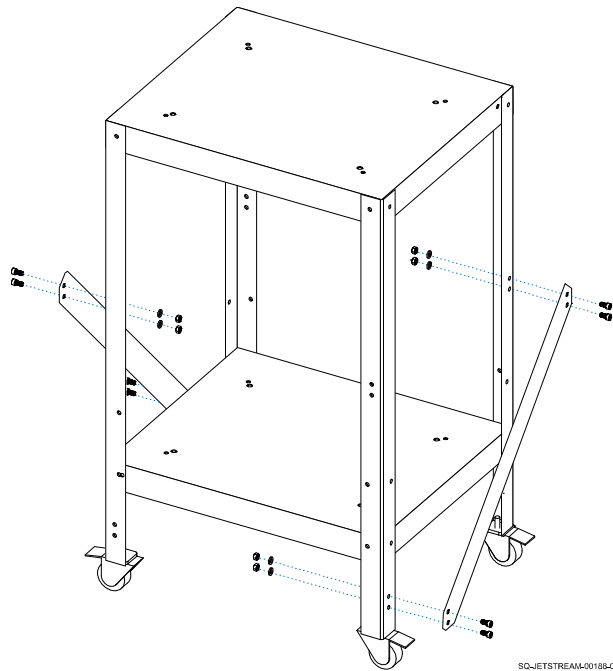
△ Alternative Stand Assembly

(Required Training Level: User)

To attach a Printhead Stand directly to the Console Stand, the Base Assembly builds on the standard assembly described previously.

Items Needed to Perform Alternative Stand Assembly:

- Fully Assembled Console Mounting Stand (Part Number 2006655)
- Printhead Stand Assembly (Part Number 2006650)
- Base Assembly (Part Number 2006663)

To Perform Alternative Stand Assembly:

1. **Assemble the Stand as described above:**

   a. (see "△ Assembling the Stand" on page 90).

2. **Remove the four Casters from the bottoms of the Stand Legs and attach them securely to the underside of the Base Assembly:**

SQ-JETSTREAM-00437-01
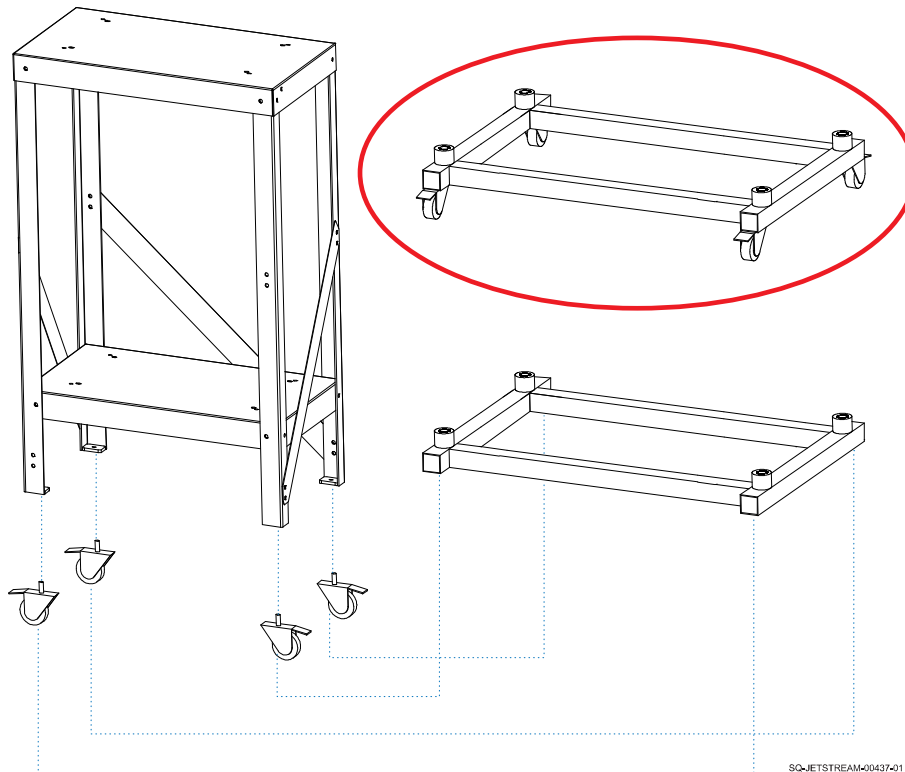
3. **Use the Bolts, Washers, and Nuts to attach all four Stand Legs to the Base Assembly.**

4. Remove the Legs from the bottom of the Printhead Stand:

SQ-JETSTREAM-00439-01

SQ-JETSTREAM-00437-01
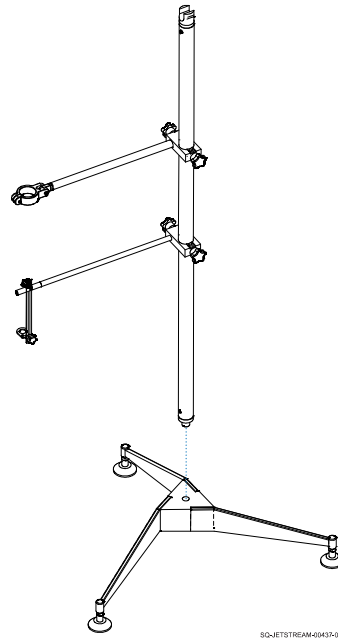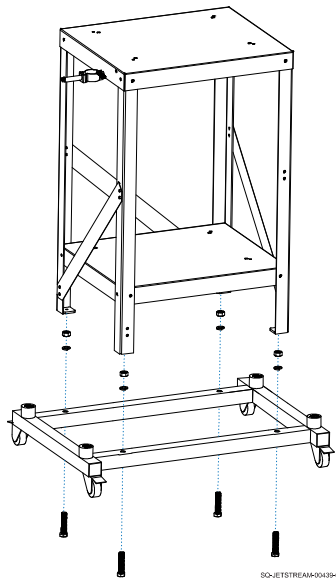
5. Screw in the Printhead Stand to the Base Assembly above one of the Casters.

a. If the Console Stand will be holding two JetStreams, a second Printhead Stand can be attached to another corner of the Base Assembly.

SQ-JETSTREAM-00440-01

SQ-JETSTREAM-00436-01
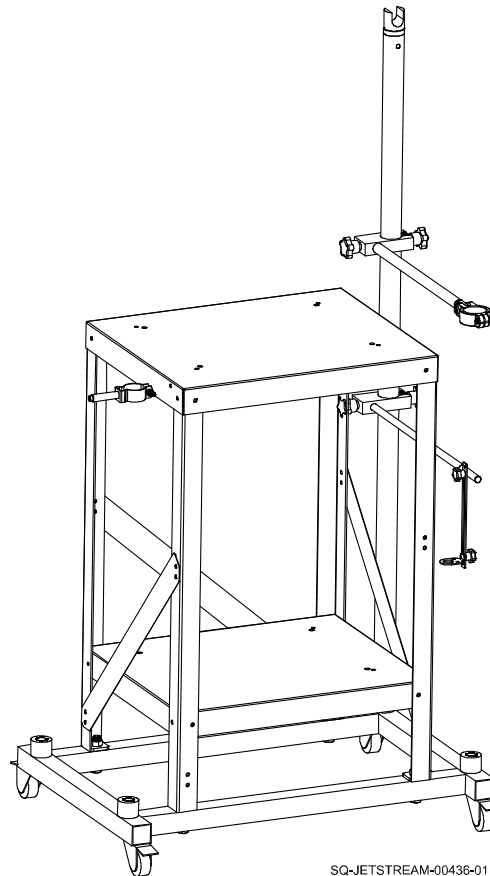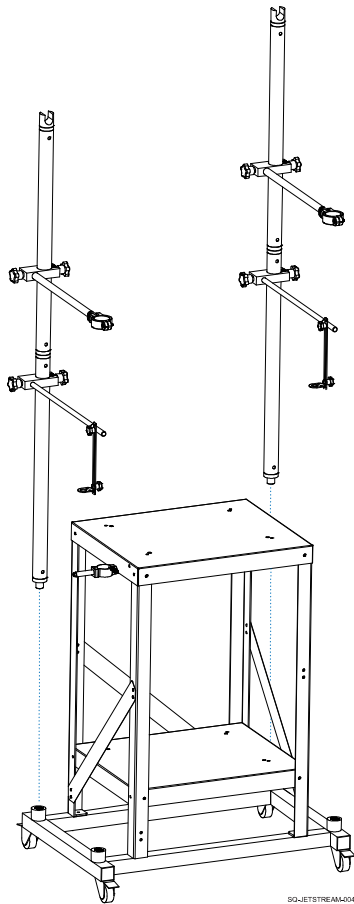
△ Mounting the JetStream(s) to the Stand

(Required Training Level: User)

The JetStream(s) can simply sit on the Stand shelves, or can be mounted to them.

Items Needed to Mount the JetStream(s) to the Stand Include:

- M6 Nut (4)
- M6 Lock Washer (4)
- M6-12 Screw (4)
- M5 Washer (8)
- M5-25 Screw (8)

To Mount the JetStream(s) to the Stand:

1. **Screw the JetStream(s) onto the Stand:**

   a. Remove the Screws that hold the Feet onto the bottom of the JetStream(s).

   b. Screw an M5-25 Screw through an M5 Washer, up though the holes in the Stand Shelf, up through the Feet of the JetStream(s), and through the hole/Nut in each corner in the floor of the JetStream(s).

   c. Tighten the Screws securely.

SQ-JETSTREAM-00182-01
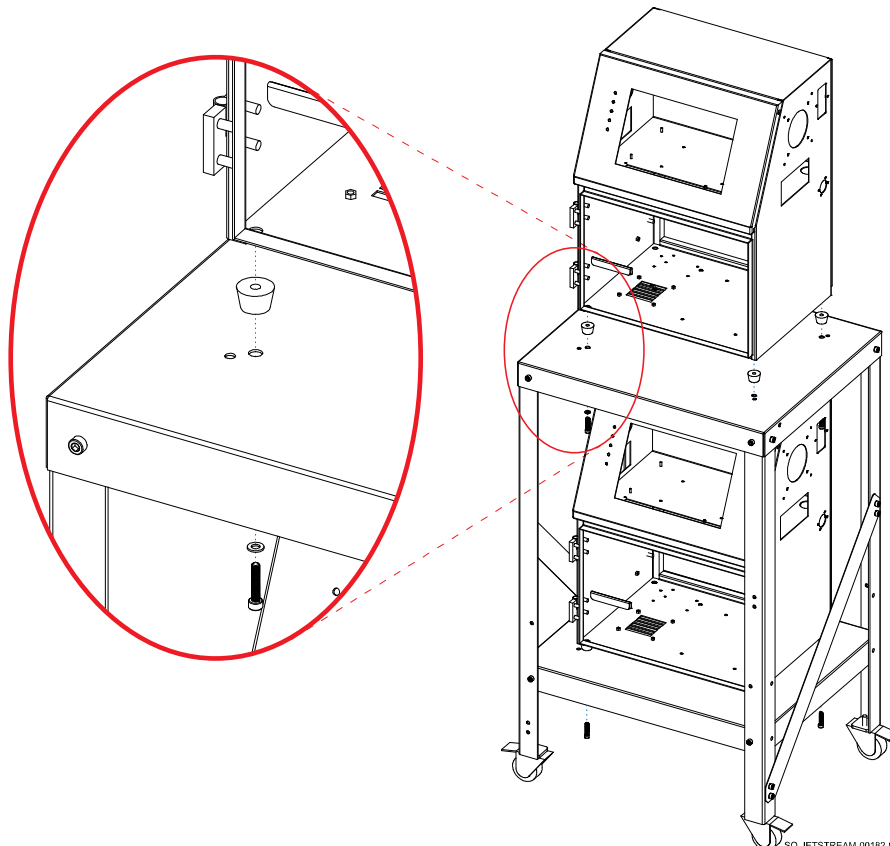
2. Attach the rear Reinforcement Bracket:

a. Use the M6-12 Screws to attach the rear Reinforcement Bracket to the back Legs of the Stand.

b. Use the M-6 Nuts and M-6 Lock Washers to secure the Screws in place.
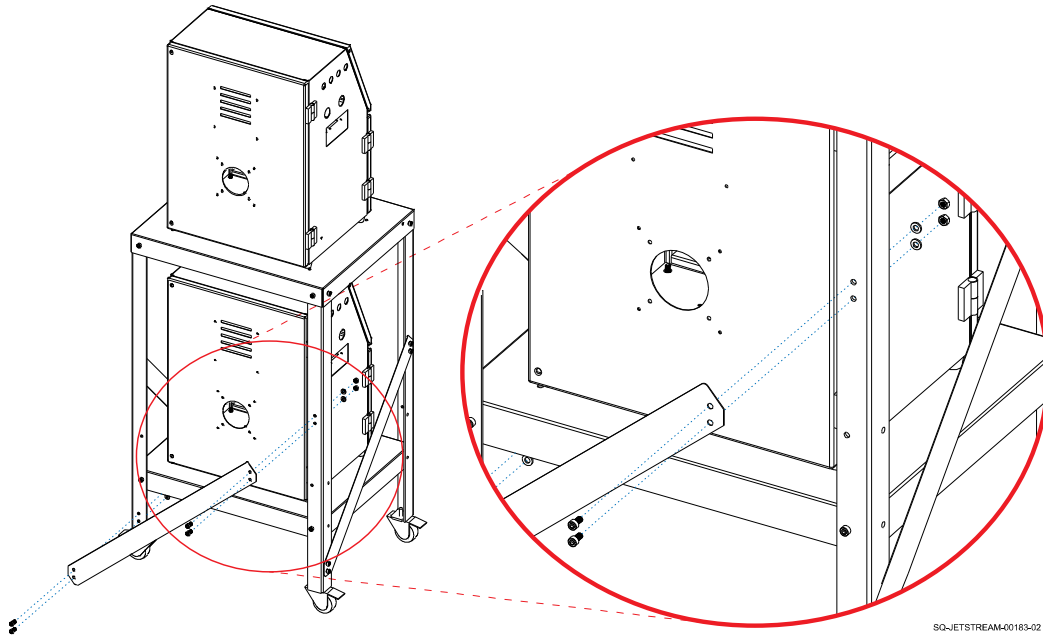
SQ-JETSTREAM-00183-02

NOTE: Adding the rear Reinforcement Bracket will result in the Rear Door of the lower JetStream being inaccessible. However, any maintenance that requires opening the Rear Door of the JetStream should be performed by an authorized service technician.

△ Mounting the Printhead

(Required Training Level: *User)*

The Printhead must be mounted in position so that it will consistently print in the same location on passing products. Squid Ink's Printhead Mounting Stand (Part Number 2006650) provides stable and sturdy positioning of the Printhead, isolating it from the movement and vibration of the conveyor (see "△ Mounting Equipment" on page 24).

Mounting Printhead to Stand
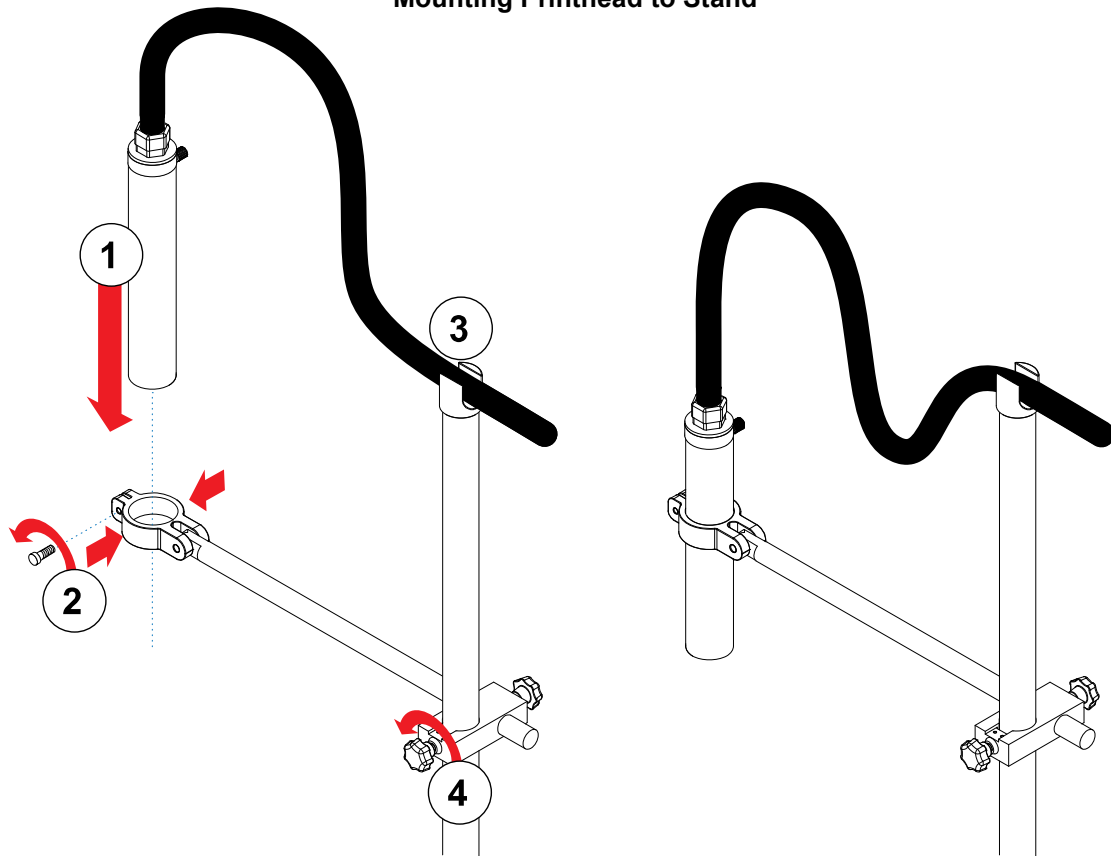
SQ-JETSTREAM-00119-02

To Mount the Printhead to the Printhead Mounting Stand:

1. With the Printhead Mounting Stand in the desired location and its Arm in the desired position, insert the Printhead through the Clamps at the end of the Arm.

2. When the Clamps are halfway up the length of the Printhead, secure them around the Printhead by tightening the Bolt at the end of the Clamps.

3. Rest the Umbilical Tube securely in the cradle at the top of the Printhead Mounting Stand.

4. Make any minor adjustments to the Arm position to ensure that the Printhead Orifice will be 1.2" (30 mm) or less from the passing product. Be sure that the Printhead will not be bumped by passing product.

⚠ Installing or Changing the Ink and Makeup Fluid

(Required Training Level: User)

Ink and Makeup Containers need to be installed inside the Ink Compartment in the front of the Console. The Ink and Makeup Containers are almost identical. The Ink Container has colored fluid in it; the Makeup Container has transparent fluid.

> ⚠ **ATTENTION:** Ink and makeup fluids are NOT interchangeable. Ensure that the Ink and Makeup Containers are placed in the proper positions.

> ⚠ **CAUTION:** Use only authorized Ink and Makeup Containers from Squid Ink Manufacturing. Use of unauthorized fluids may damage the equipment, cause a safety hazard, and void the warranty.

> **NOTE:** Ink and Makeup Containers do not need to be changed at the same time. A container only needs to be changed when it is empty.

- Full Ink or Makeup Container

To Install or Change the Ink and Makeup Containers:

a. Open the Front Door of the JetStream by turning the Knob and pulling the Door open.
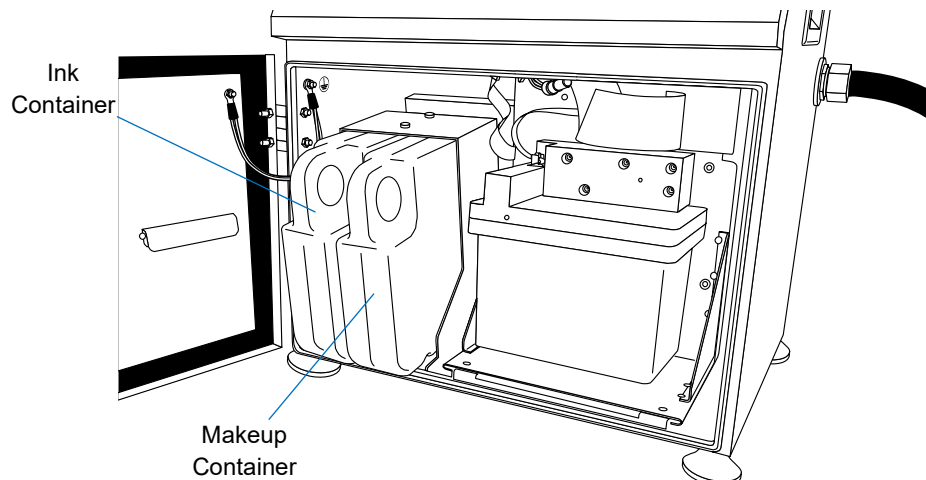
SQ-JETSTREAM-00123

> **NOTE:** There is no Cap to remove from new Ink and Makeup Container nozzles before use. The Nozzles are sealed by a thin membrane which is punctured during installation.

2. **Remove the old Container:**

    a. If changing out an empty Ink or Makeup Container, remove the empty container by pulling it directly outward. The Ink Container is in the leftmost Bay, and the Makeup Container is in the right Bay. Skip this step if installing Ink or Makeup Containers into an empty Console.
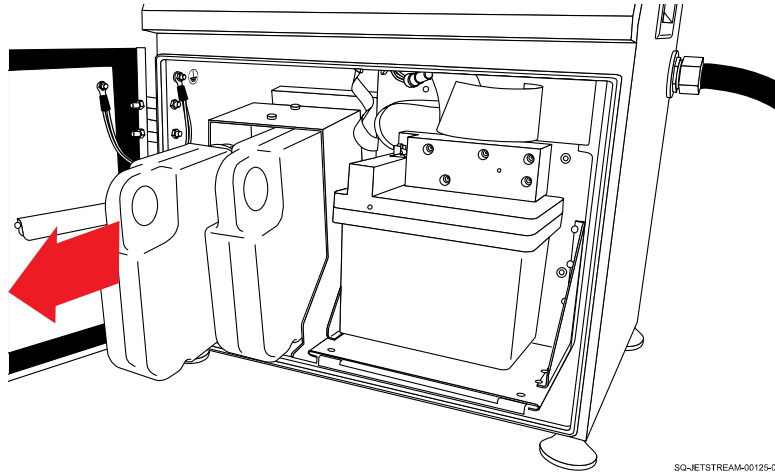
SQ-JETSTREAM-00125-02

3. **Install the new Container:**

    a. Slide the Nozzle end of the new Ink Container into the Ink Container Bay (leftmost) until the container Nozzle fits snugly into the Bay's Intake Valve.

Ink Container
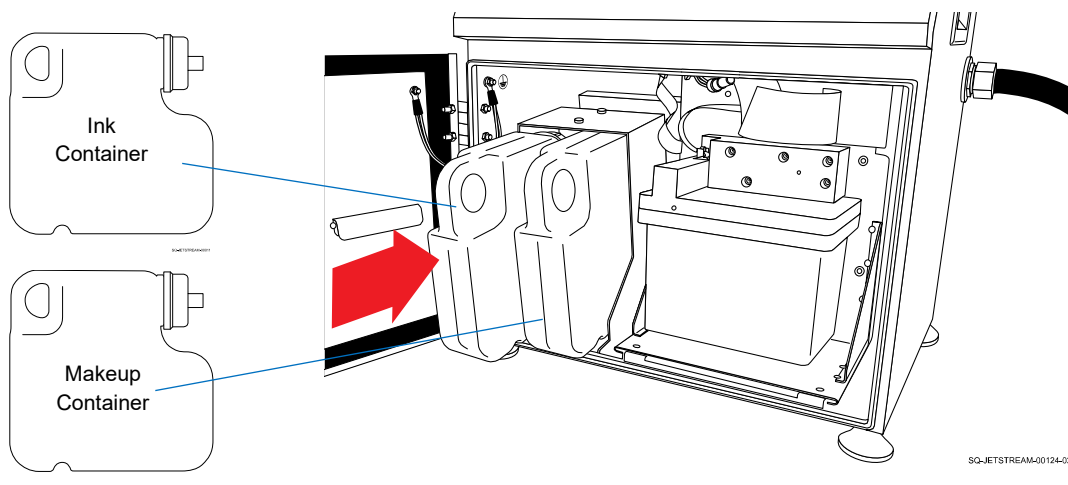
Makeup Container

SQ-JETSTREAM-00124-02

    b. Slide the nozzle end of the new Makeup Container into the Makeup Container Bay (to the right of the Ink Container Bay) until the container nozzle fits snugly into the bay's intake valve.

    c. Close the Front Door of the Console.

▲ I/O Connection

(Required Training Level: Trained Technician)

I/O functionality allows users to connect an external device, such as a Programmable Logic Controller (PLC) to remotely control the JetStream rather than controlling it from the Touchscreen.

I/O Connection Schematic
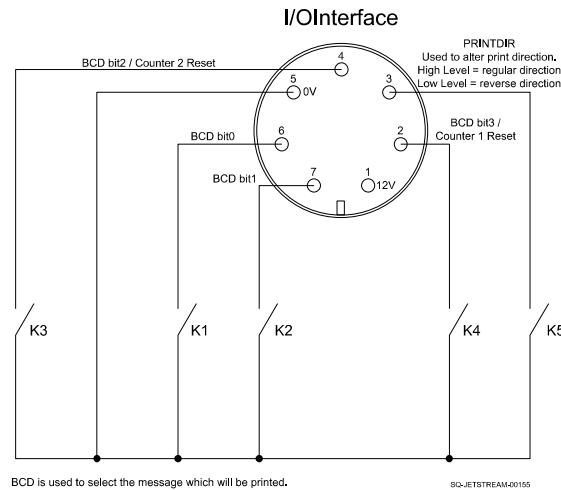
▲ I/O Connection Notes:

Mating Connector: 7-Pin Female (Part Number 2006915)

Pin #	Name	Description
1	12 V+	Isolated 12 VDC voltage supply for encoder circuit. 300 mA maximum current available.
2	BCD 3 /Counter 1 reset	Counter 1 reset or else BCD Bit 3 when in BCD mode. Note 5. Note 6.
3	PRINTDIR	Input to control the print direction. "High" input for normal direction, "Low" input for reverse direction. Note 7.
4	BCD 2 /Counter 2 reset	Counter 2 reset or else BCD Bit 2 when in BCD mode. Note 5. Note 6.
5	0 V	Ground signal for 12 V+ voltage supply and BCD input circuitry.
6	BCD 0	BCD Bit 0 when in BCD mode. Note 5.
7	BCD 1	BCD Bit 1 when in BCD mode. Note 5.

Note 5: For BCD mode, Maximum "Low" input resistance is 10 Ω and Minimum "High" input resistance is 1 MΩ.

Note 6: For Counter reset input control, the Minimum "High" input voltage is 10 VDC and the maximum "Low" input voltage is 2 VDC.

Note 7: Minimum "High" input voltage is 10 VDC and maximum "Low" input voltage is 2 VDC.

Note 8: Opto-isolated inputs are pulled up to +12 V by a 4.7 K ohm resistor in series with the opto-coupler's diode. They are active when pulled down to the COMMON signal with an NPN open-collector sinking transistor or switch.

> ⚠️ **ATTENTION:** Attempting to drive these inputs from standard logic circuits will result in damage to the circuits and may void the warranty.

▲ Installing a Photocell

(Required Training Level: Trained Technician)

After determining the right Photocell for the desired application (see "△ Selecting the Right Photocell" on page 21), the Photocell can be installed.

To Install a Photocell:

1. Plug the Photocell connector into the Photocell Input Port (left side of Console, upper row, third input from left).

Photocell Input

SQ-JETSTREAM-00172-01
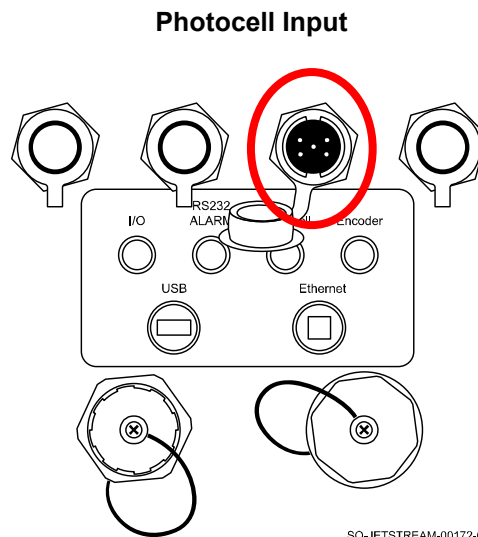
2. Place the Photocell upstream from Printhead.

3. Screw the Photocell into the Bracket. Adjust the distance from the substrate as required. The ideal throw distance is 1.2" (30 mm) or less.

Mounting Photocell to Printhead

Photocell

Bracket

SQ-JETSTREAM-00029-02
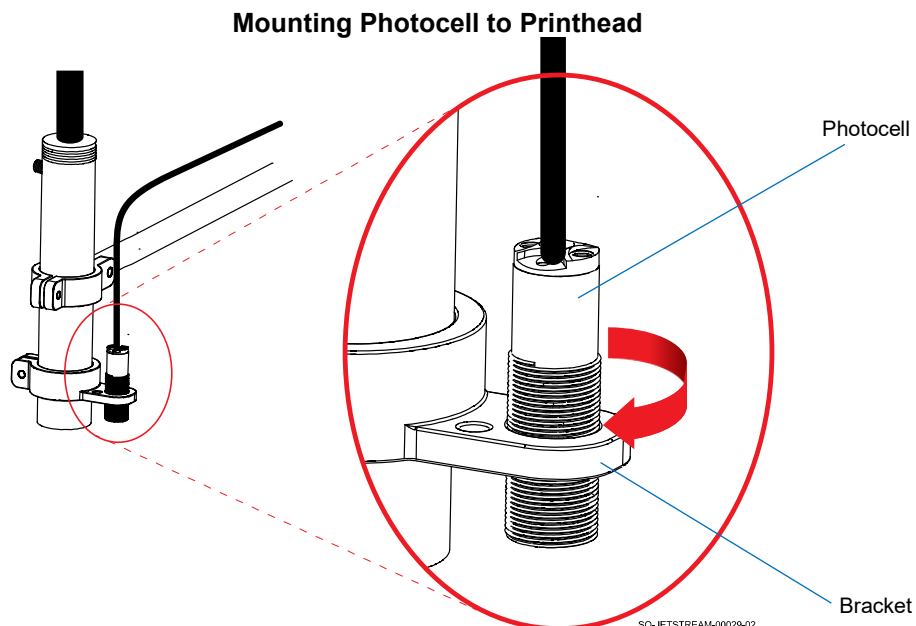
4. Position the Photocell and Printhead Orifice as shown below.

Proper Orientation of Photocell to Printhead
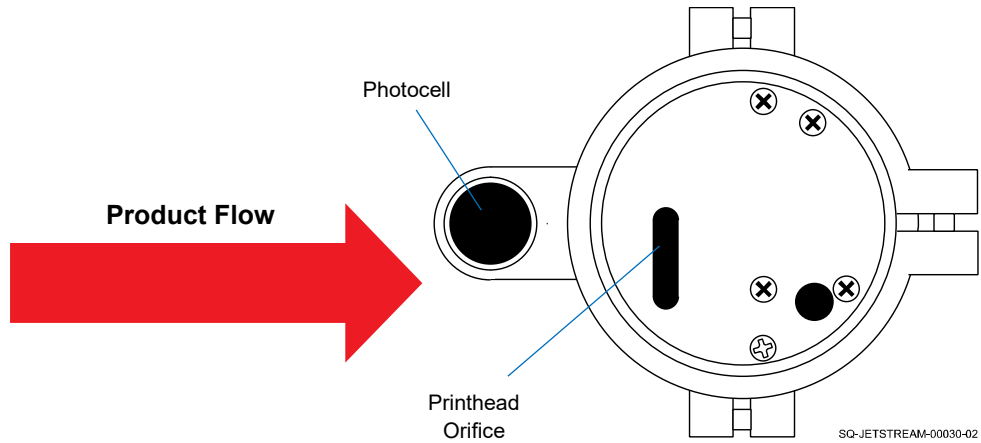
5. With physical installation of the Photocell now completed, additional setup will need to be performed within the JetStream's software before printing (see "Software Setup" on page 121).

Sensor (Photocell) Connection Schematic:
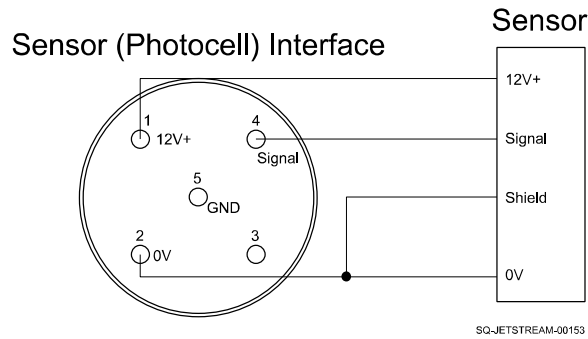
▲ Sensor Interface Notes:

Mating Connector: 5-Pin Female (Part Number 2006914)

Pin #	Name	Description
1	12 V+	Isolated 12 VDC voltage supply for Photocell circuit. 300 mA maximum current available.
2	0 V	Ground signal for 12 V+ photocell supply.
3	NC	No connection.
4	Signal	Photocell or trigger input signal. Note 3.
5	GND	Cable shield ground.

Note 3: Minimum "High" input voltage is 10 VDC and maximum "Low" input voltage is 2 VDC.

▲ Photocell Cables

Two types of Cables can potentially be used to connect a Photocell to a JetStream. They are shown in the Diagrams below.

Photocell Cable 1 (Part Number 2006910):

Female Pin (Left)	Female Pin (Right)	Signal	Color
1	1	+12 VDC	Red
2	3	Ground	Blue
3			
4	4	Photocell Input	Green
5			

Female Connector (Left) (Front View)

PIN 4   PIN 1

PIN 3   PIN 2

PIN 5
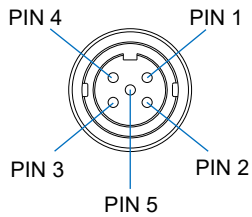
Photocell Cable (Part #: 2006910)
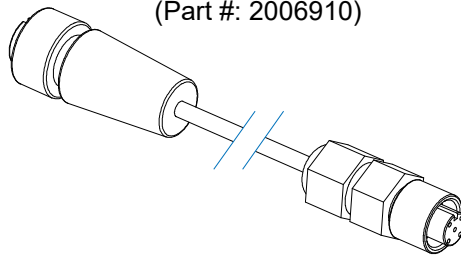
Female M12 Connector (Front View)

PIN 1   PIN 2

PIN 4   PIN 3

PIN 5

Cable Length:
15 [±0.3]'
(457.2 [±9.1] cm)
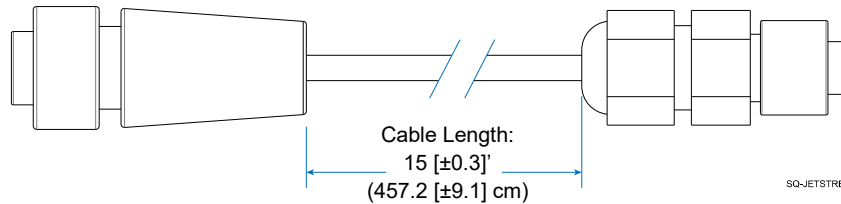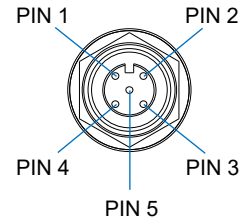
SQ-JETSTREAM-00394-01

Photocell Cable - Pigtail (Part Number 2006911):

This can be used to tie into an existing Photocell or Relay, for example.

Connector Pin (Left)	Signal	Color
1	+12 VDC	Red
2	Ground	Blue
3		
4	Photocell Input	Green
5		

Photocell Cable - Pigtail
(Part #: 2006911)

**Female Connector
(Front View)**

PIN 4   PIN 1

PIN 3   PIN 2

PIN 5

1.5 [±0.25]"
(3.8 [±0.6] cm)

SQ-JETSTREAM-00395-01

Cable Length:
15 [±0.3]'
(457.2 [±9.1] cm)
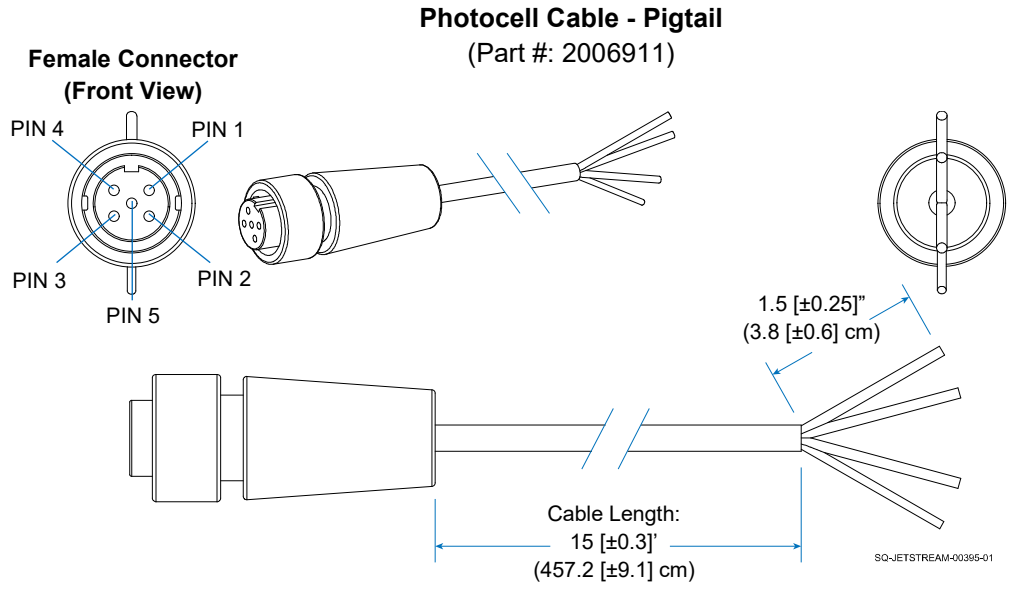
▲ Software Setup for a Photocell

(Required Training Level: Trained Technician)

In most applications, a Photocell will be used to trigger printing. This requires setup within the JetStream software.

To Perform Software Setup for a Photocell:

1. **Set up Printing Parameters:**

   a. Load the print message to be printed (see "△ Creating and Editing New Messages" on page 204 or "△ Retrieving Existing Messages" on page 208).

   b. After physically setting up the Photocell, complete the setup of the Photocell by first selecting **Settings** >> **Printing Setting** >> **Basic** on the Touchscreen.

   c. *Selecting the Photocell and/or Repeat Printing:*
   Under "Trigger Mode," select "Photocell," or if continuous printing is desired (such as when a PVC pipe is to be printed on repeatedly as long as the Photocell detects its presence), select "Photocell Repeat."

   d. *Distance Between Multiple Prints on One Product:*
   If printing multiple times on each passing product and not using an Encoder, "Delay Between Prints" can be used to specify a distance between each marking, and "Delay Multiplier" can be used to increase that distance by a factor of x2, x4, or x8.

   e. *Width of Marking:*
   If not using an Encoder, "Printing Speed" can be used to specify how quickly the marking is printed onto the surface. When combined with the actual speed of the Conveyor, this number translates to how wide or narrow the marking appears: a lower number will widen the marking, and a higher number will narrow it.

   f. Select **Settings** >> **Printing Setting** >> **Photocell** and go to the "Photocell Settings" panel.

      i. *When to Trigger:*
      "Trigger Edge" defines what input from the Photocell triggers the JetStream to start printing. If "Leading" is selected (as is the case for most applications), the trigger signal is sent when the Photocell sees the leading edge of the product. If "Trailing" is selected, the trigger signal is sent when the Photocell sees the trailing edge of the product.

      ii. *Number of Prints per Trigger:*
      "Prints Per Trigger" defines how many times the JetStream should print for each signal from the Photocell.

      iii. *Where to Print:*
      "Initial Print Delay" does not correspond to a specific unit of time, but defines the length of time for the JetStream to wait to print after getting a signal from the Photocell. For example, if the signal is triggered by the leading edge of the product, and the "Initial Print Delay" is set to the distance from the Photocell to the leading edge of the product, printing will begin at the leading

edge of the product. The larger the value for "Initial Print Delay,' the further away the printed message will be from that leading edge. Setting "Initial Print Delay" to "0" incorrectly causes printing to begin before the leading edge reaches the Printhead.

2. Complete Software Setup for the Photocell:

a. Once all desired settings have been entered, select the "Close" button.

b. A dialog will appear asking "Save Print Parameters to File?" Select "Yes."

c. Run some test prints and readjust if needed (see "▲ Running a Test Print and Readjusting if Needed" on page 123).

▲ Installing an Encoder

(Required Training Level: Trained Technician)

To install an Encoder:

1. Plug the Encoder connector into the Encoder Input Port (left side of Console, upper row, farthest right input).

Encoder Input

SQ-JETSTREAM-00171-01
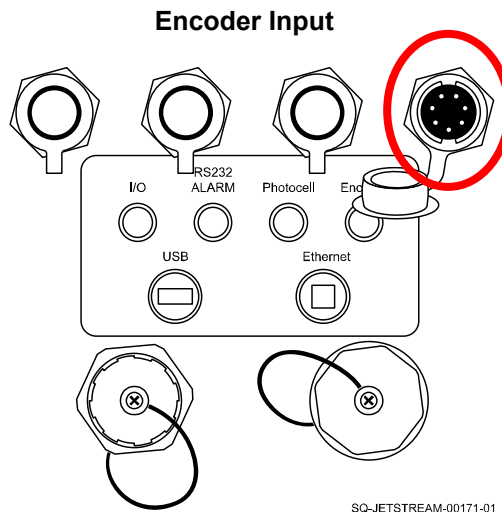
2. Mount the Encoder underneath the Conveyor Belt at an angle so that the Wheel of the Encoder is touching the underside of the Belt. The Encoder Wheel should be facing the direction from which the products will flow.

Mounting the Encoder to the Conveyor

Conveyor/Product Flow

Bottom Surface of Conveyor Belt

Encoder

SQ-JETSTREAM-00122-02
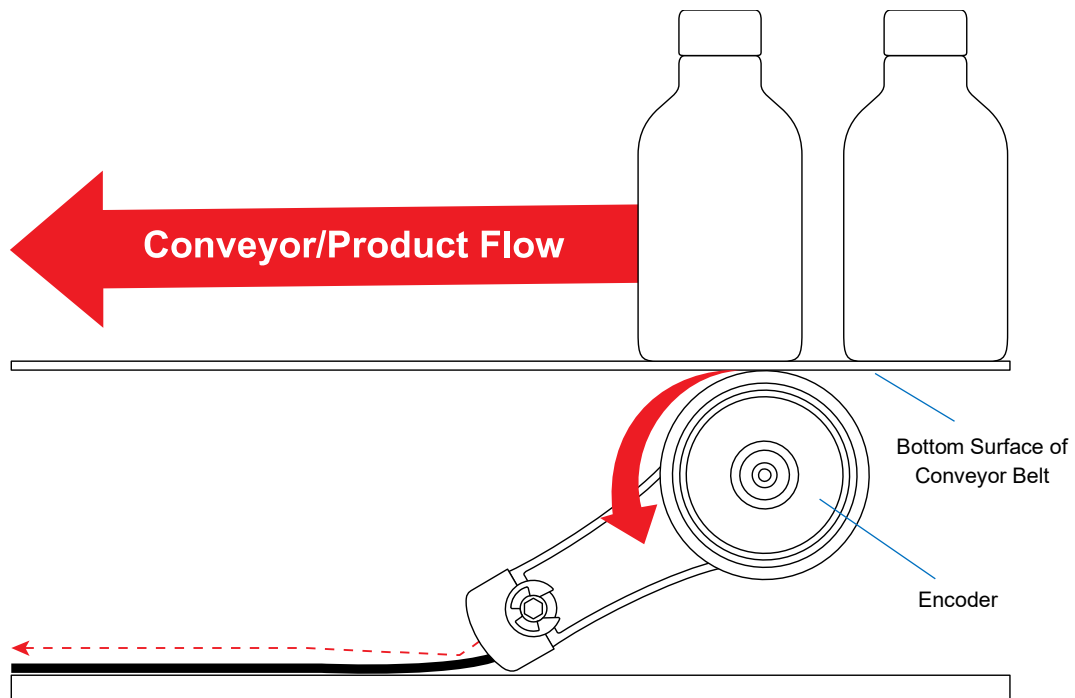
3. With physical installation of the Encoder now completed, additional setup will need to be performed within the JetStream's software before printing (see "Software Setup" on page).

Encoder Connection Schematic

SQ-JETSTREAM-00152
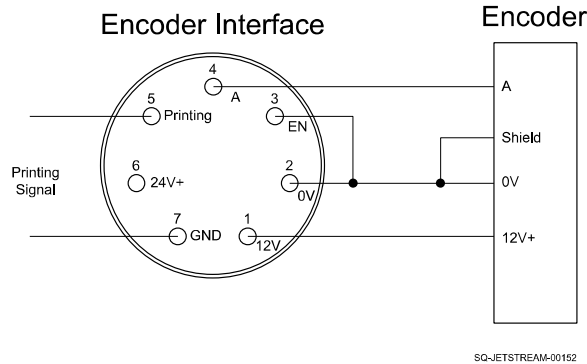
▲ Encoder Interface Notes:

Mating Connector: 7-Pin Female (Part Number 2006915)

Pin #	Name	Description
1	12 V+	Isolated 12 VDC voltage supply for encoder circuit. 300 mA maximum current available.
2	0 V	Ground signal for 12 V+ encoder supply.
3	EN	Encoder Enable. Must be connected to Pin #2 or Ground.
4	A	Encoder input signal. Note 1.
5	Printing	Printing output. High when a message is being printed. Note 2.
6	24 V+	Isolated 24 VDC voltage supply for Encoder circuit. 500 mA maximum current available.
7	GND	Ground signal for 24 V+ Encoder supply.

Note 1: Minimum "High" input voltage is 10 VDC and maximum "Low" input voltage is 2 VDC.

Note 2: Minimum "High" output voltage is 24V and maximum "Low" output voltage is 1 VDC.

▲ Software Setup for an Encoder

(Required Training Level: Trained Technician)

Once the Encoder is connected to the JetStream, the JetStream will automatically read from it, whether or not the Encoder is used in conjunction with a Photocell. However, additional setup for the Encoder must be performed within the JetStream software.

> **NOTE:** If information from the Encoder is not desired, the Encoder must be physically disconnected from the system.

To Perform Software Setup for an Encoder:

1. **Set up printing parameters for using an Encoder:**

   a. Load the print message to be printed (see "△ Creating and Editing New Messages" on page 204 or "△ Retrieving Existing Messages" on page 208).

   b. After physically setting up the Encoder, complete the setup of the Encoder by first selecting **Settings** >> **Print Setting** >> **Basic** on the Touchscreen.

   c. *Selecting the Encoder or Encoder + Photocell:*
   If using an Encoder without a Photocell, under "Trigger Mode," select "Encoder." If using a Photocell in addition to the Encoder, select "Photocell."

   d. *Width of Marking (part 1):*
   Under "Print Speed," set the value to "1000." The actual print speed for an Encoder is set up elsewhere (see below).

   e. Select **Settings** >> **Print Setting** >> **Encoder**.

      i. *Distance Between Multiple Prints on One Product:*
      Under "Encoder Setting," "Encoder Repeat Distance" is used when printing multiple times onto one product (for example, a PVC pipe that is printed every 2'). "Encoder Repeat Distance," measured in pulses from the Encoder, is the distance between the one printing of the message and the next printing. For example, a value of 2000 means that once the JetStream prints a message, it will wait for 2,000 pulses from the Encoder before printing the next message onto the same product.

      ii. *Width of Marking (part 2):*
      "Encoder Divider" defines the speed of printing, measured in number of pulses per individual column of ink. This translates into the horizontal stretch of the printed message. A lower value (columns of ink printing rapidly) results in a narrower print marking, while a higher value (columns of ink printing more slowly) results in a wider print marking. Each increment in the value doubles the number of pulses per ink column (1 = 1 pulse per column, 2 = 2 pulses per column, 3 = 4 pulses per column, 4 = 8 pulses per column, and so on).

2. Complete software setup for an Encoder:

    a. Once all desired settings have been entered, select the "Close" button.

    b. A dialog will appear asking "Save Print Parameters to File?" Select "Yes."

    c. Run some test prints and readjust if needed (see "▲ Running a Test Print and Readjusting if Needed" on page 123).

▲ Installing a Warning Device

*(Required Training Level: Trained Technician)*

To Install an Alarm Beacon:

1. Plug the Alarm Beacon connector into the Alarm Input Port (left side of Console, upper row, second input from left).

2. The Alarm Beacon can be mounted directly to the Exhaust Vent on the right side of the Console. Unscrew the Fastener on the Exhaust Vent, place the Alarm Beacon with the mounting slot over the Fastener hole in the Exhaust Vent, and screw in the Fastener to hold the Alarm Beacon in position. The Alarm Beacon can also be mounted to the Conveyor, or anywhere that allows it to remain connected to the JetStream.

Mounting the Alarm Beacon to the Console

SQ-JETSTREAM-00173-01

SQ-JETSTREAM-00170-02
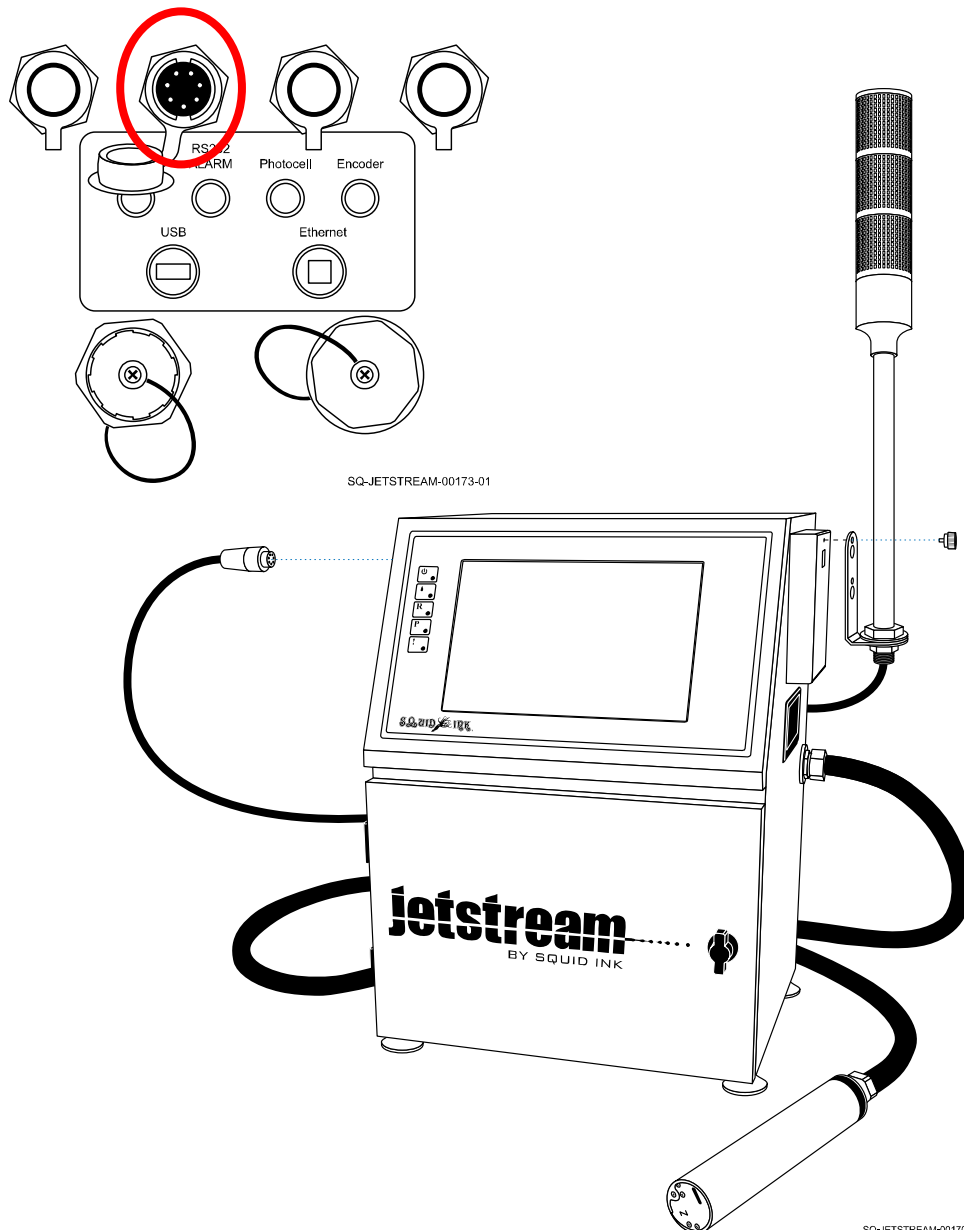
Alarm Connection Schematic

Alarm Interface

SQ-JETSTREAM-00154
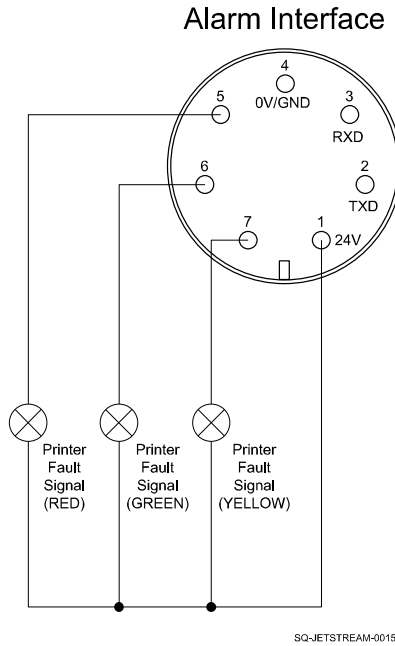
▲ Alarm Interface Notes:

Mating Connector: 7-Pin Female (Part Number 2006915)

Pin #	Name	Description
1	24 V	Isolated 24 VDC voltage supply for alarm signals. 1 amp maximum current available.
5	Fault	Low active Fault signal. Note 4.
6	Ready	Low active Ready signal. Note 4.
7	Warning	Low active Warning signal. Note 4.

Note 4: Maximum current available: 300 mA

■ Commissioning the JetStream

(Required Training Level: Squid Ink Distributor/Squid Ink Service Technician)

If the JetStream has not yet been used, or has been decommissioned due to seasonal use, it will need to be commissioned before use. Commissioning should be performed by a trained and authorized Squid Ink Distributor.

⚠️	**ATTENTION:** Commissioning is an essential part of preparing the JetStream for operation after extended periods of lack of use. Failure to commission the JetStream under such circumstances will result in poor print quality.

VIDEO: Commissioning the Printer To see a video of this procedure, click this link: https://www.youtube.com/watch?v=62p79PQ0txk Or scan the QR code at right using the camera app on your mobile device.	[QR code] SQ-JETSTREAM-00245-01 Commissioning the Printer https://www.youtube.com/watch?v=62p79PQ0txk
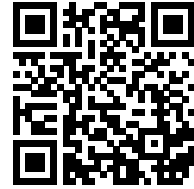
Items Needed to Commission the JetStream are:

- Resealable Plastic Bag
- Ink Container
- Makeup Container

To Commission the JetStream:

1. **Remove Ink and Makeup Plugs:**

   a. Open the JetStream's Front Door by turning the Knob and pulling the Door open.

   b. Locate the black rubber Nozzle Plugs in the Ink and Makeup Container Bays.

Locating the Ink and Makeup Nozzle Plugs
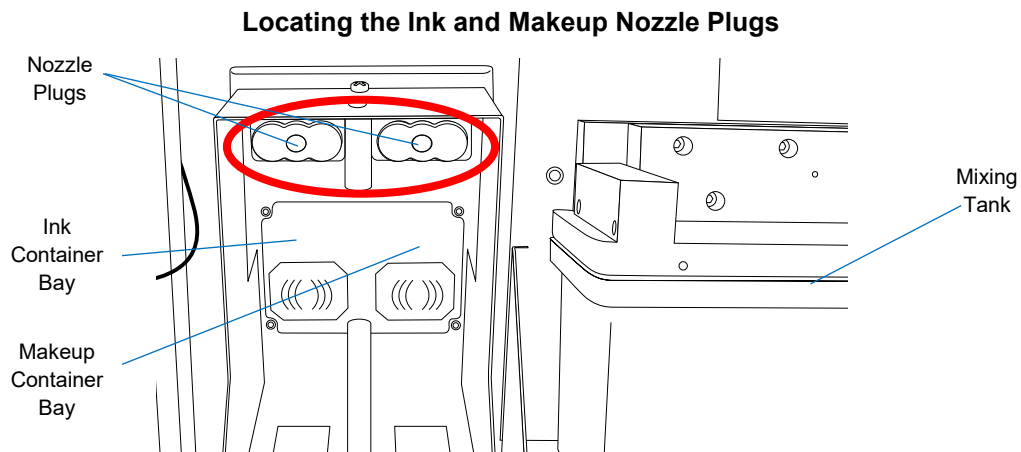
c. Remove the Nozzle Plugs by gently pulling them directly out.

Removing the Ink and Makeup Nozzle Plugs

Rubber Nozzle Plug

Removed Rubber Nozzle Plug

SQ-JETSTREAM-00146-02
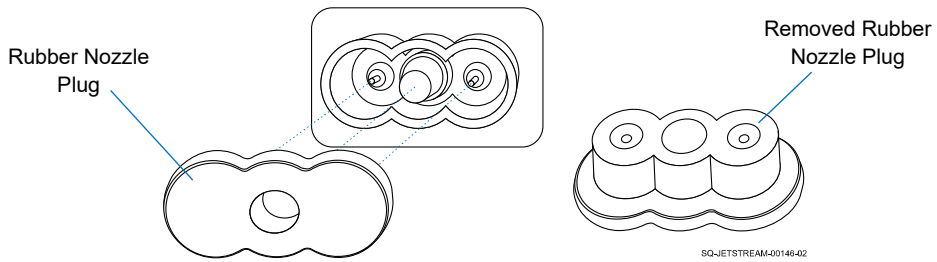
d. Do NOT throw away these Plugs.

e. Close the Front Door and secure it by turning the Knob.

2. **Remove the Vapor Outlet Tube Plug:**

a. Open the JetStream's Rear Door by unscrewing the top and bottom Fasteners and pulling the Door open.

Opening the Rear Door

Fasteners
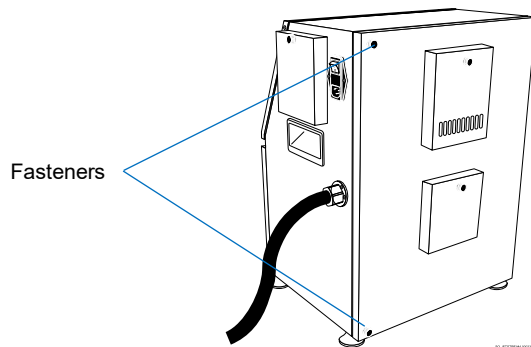
b. Locate the Vapor Outlet Tube, which is the largest unconnected plastic tube extending from the top of the Mixing Tank.

c. The Vapor Outlet Tube has a plug on the end. Remove this plug.

Locating the Vapor Outlet Tube Plug

Vapor Outlet Tube

Plug

Solenoid Valve 5 Solenoid Valve 1 Solenoid Valve 6 Solenoid Valve 4 Solenoid Valve 2

SQ-JETSTREAM-00451-01
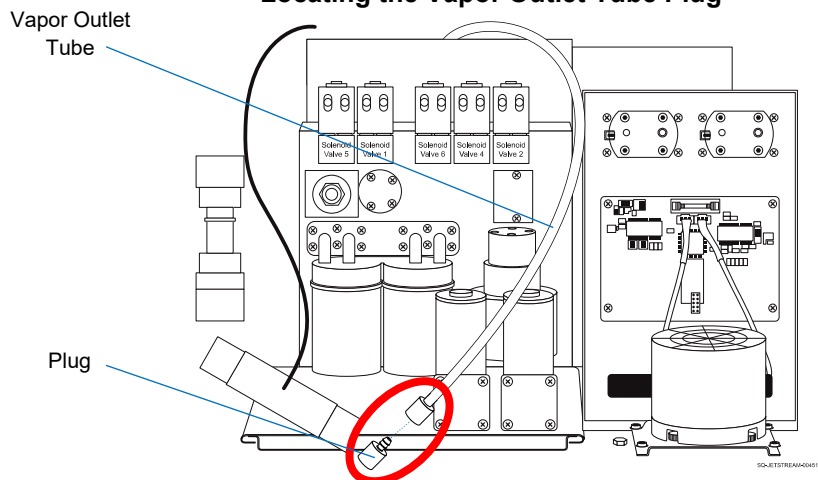
d.   Do NOT throw away this plug.

e.   Set the end of the Vapor Outlet Tube in the lower right corner of the rear of the JetStream, to the side of the Buffer.

f.   Close the JetStream's Rear Door and screw the Fasteners back into place.

3. **Remove the Gun Body Nozzle Plug and the Gutter Nozzle Plug:**

a.   Remove the Printhead Cover (see "△ Removing the Printhead Cover" on page 215).

Gun Body Nozzle Plug and Gutter Nozzle Plug

SQ-JETSTREAM-00014-02
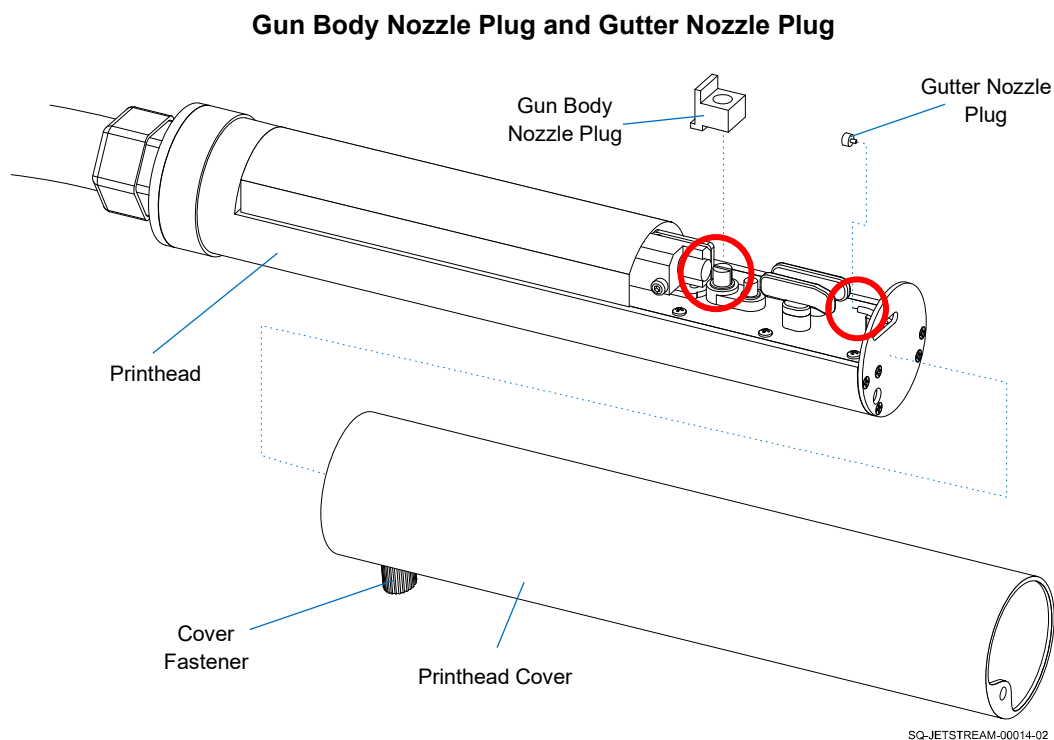
b.   Inside the Printhead, remove the black rubber Gun Body Nozzle Plug (blocking the Gun Body Nozzle) by gently rocking it side to side and pulling it upward (perpendicular to the Printhead).

c.   Do NOT throw away this plug.

d.   Inside the Printhead, remove the black rubber Ink Return Gutter Nozzle Plug from the Ink Return Gutter by pulling it toward the base of the Printhead.

e.   Do NOT throw away this plug.

f.   Replace the Printhead Cover (see "△ Replacing the Printhead Cover" on page 216).

4. **Save and store all of the Plugs:**

a.   For future convenience for shipping or long-term storage of the JetStream, Squid Ink recommends putting all five plugs into a single Resealable Plastic Bag, sealing it, and storing it inside of the JetStream unit, to the right of the Mixing Tank, or in

another clean, dry place where the plugs can be easily located when needed.

Storing the Plugs

SQ-JETSTREAM-00148-02
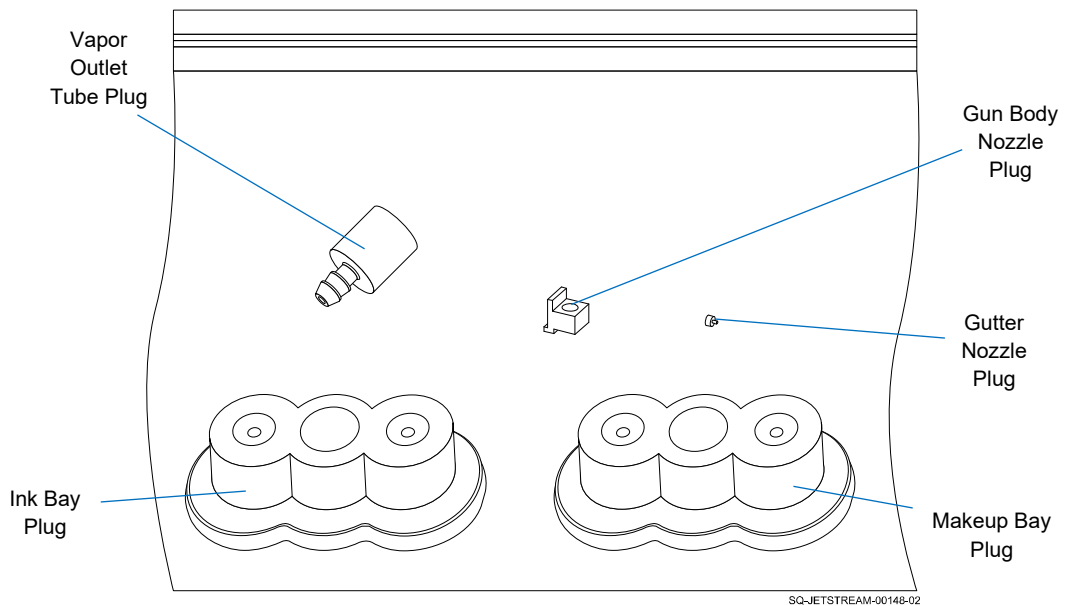
5. **Install the Ink and Makeup Containers:**

   a. Install the Ink and Makeup Containers (see "△ Installing or Changing the Ink and Makeup Fluid" on page 98).

6. **Turn the system on:**

   a. Be sure that the Power Cord is securely connected on the right side of the JetStream, and that the other end of the Power Cord is plugged into a standard grounded electrical outlet.

Locating the Power Switch
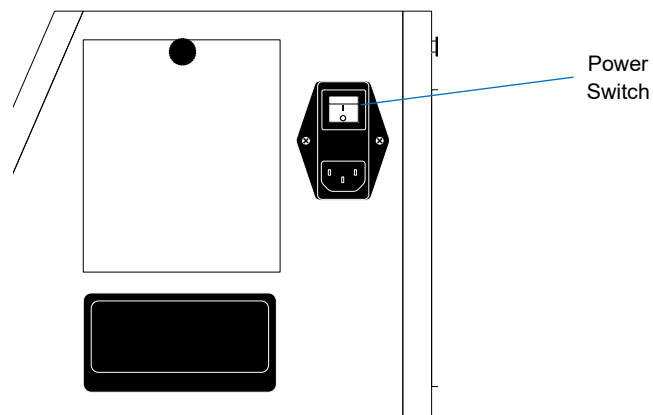
   b. Just above the Power Input is the Power Switch. Turn the Power Switch on. It will light up green.

7. **Get ink into the Mixing Tank:**

    If the Mixing Tank is empty, a notification will display saying "Ink mixing tank is empty, please confirm if adding ink." Be sure that the Ink and Makeup Containers are properly installed and click "yes" to begin the filling process.

    a. On the Touchscreen's **Main** screen, select **Start Jetting** >> "Start Jetting With Cleaning" (see "△ Precautions for Jetting With Cleaning" on page 201). A box will appear saying "Filling mixing tank with ink." Do not interrupt this process.

    b. If a "Mixing Tank Fill Failed" message appears on the Touchscreen, follow the procedure for "Ink is not getting into the Mixing Tank" in the "Troubleshooting" section starting on page 313.

8. **Prime the system:**

    a. Once the Mixing Tank is full, there will be a prompt to bring ink further into the system. Select "OK" to prime the Pressure Pump and Manifold with ink. This removes air from the system to ensure a steady flow of ink.

9. **Jet ink through the Printhead:**

    a. Once the system is primed, on the **Main** screen, select **Start Jetting** >> "Start Jetting With Cleaning" (see "△ Precautions for Jetting With Cleaning" on page 201). This will send makeup fluid through the Printhead and then send ink through it.

    > **NOTE:** When ink is sent to the Printhead, most or all of the ink does NOT come out of the Printhead. Instead, inside the Printhead, most of the constant stream of ink coming out of the Gun Body Nozzle goes directly into the Ink Return Gutter, which sends it back to the Mixing Tank unused (hence the term "Continuous inkjet" or "CIJ"). The JetStream can be left running like this for hours on end without ink coming out of the Printhead. The CIJ system actually benefits from running as much as possible.

10. **Bring the ink to the correct viscosity:**
    The JetStream will now begin automatically calibrating the ink/makeup mixture to stabilize it at the proper viscosity for printing.

    a. To monitor the progress of this ink/makeup stabilization, on the **Main** screen," select **Settings** >> **Ink System**.

    b. The upper right corner of the screen shows "Operational Information" (see below).
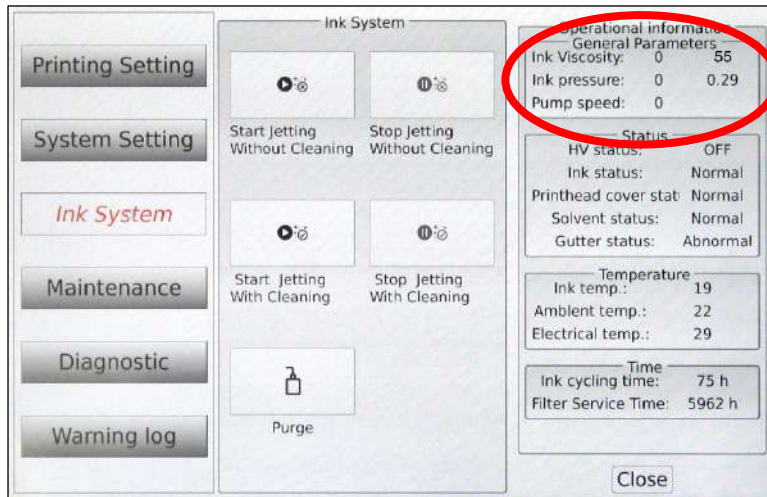
The Ink Viscosity reading on the left is the current ink viscosity, updated every 3 minutes. The Ink Viscosity reading on the right is the target ink viscosity, which remains constant. Current viscosity must be within ± 10% of the target viscosity in order for the system to print properly. The viscosity is programmed at the factory based on the specific ink to be used. The most common target viscosity is 55, but can vary slightly from ink to ink. When the ink reaches proper viscosity, the JetStream can generally be considered to be commissioned.

> **IMPORTANT:** Viscosity can take several hours to stabilize with a new JetStream, please allow the Printer to jet until viscosity is within tolerance. It is not necessary to print during this time.

11. During initial setup by a qualified technician, proper alignment of the ink stream should be checked and adjusted if needed.

> ⚠️ **ATTENTION:** Alignment of the ink stream is set at the factory, and is therefore rarely incorrect. Exercise good judgment before attempting to ralign the ink stream, as doing so incorrectly can result in more problems than it solves.

a. To check and adjust the ink stream, follow the steps in "▲ Adjusting the Ink Stream Position" starting on page .

Software Setup

The correct parameters need to be set in the JetStream's software to achieve the desired results. This will require having a print message available for test printing. Setup will vary to some degree based on whether a Photocell, Encoder, or both are used.

▲ General Setup

(Required Training Level: Trained Technician)

To Perform General Print Setup:

1. **Set up general printing parameters:**

   a. Load the print message to be printed (see "△ Creating and Editing New Messages" on page 204 or "△ Retrieving Existing Messages" on page 208).

   b. Once the system is ready to be powered on, complete the setup by selecting **Settings >> Printing Setting >> Direction** on the Touchscreen.

   c. *Print Orientation:*
   Make note of whether the Printhead's Cover Fastener is pointed upstream or downstream. This, combined with the "Orientation" setting, will determine how the marking is oriented on the product. Under the "Orientation" panel, choose whether the marking will print normally, backwards, upside down, or both backwards and upside down.

   d. *Print Boldness and Height:*
   Make note of the distance between the Printhead Nozzle and the passing product. This, combined with the "Message Bold/Height" setting, will help determine the height and boldness of the printed message. Under "Settings," select "Message Bold/Height."

      i. The "Character Height Adjustment" panel defines the height of the print message. The slider at the top of the panel reflects 0-100% of the possible print height. The default is 100%.

      ii. Each value entered into "Bold Factor Setting" increases the base number of ink drops used to create the print message by a factor of 2, making the print message darker and potentially slightly bolder. A value of 1 doubles the base number of drops, a value of 2 quadruples it, and so on.

   e. *General Print Speed/Quality:*
   Select **Settings >> Printing Setting >> Charging Mode**. Selecting "Standard" results in a high quality print mark. Selecting "High-speed" will increase the print speed, but will reduce the print quality.

2. Complete software setup:

a. Once all desired settings have been entered, select the "Close" button.

b. A dialog will appear asking "Save Print Parameters to File?" Select "Yes."

c. Run some test prints and readjust if needed (see "▲ Running a Test Print and Readjusting if Needed" on page 123).

▲ Running a Test Print and Readjusting if Needed

(Required Training Level: Trained Technician)

With all settings input, run a test print to ensure that everything prints as desired.

To Run a Test Print:

1. Place some test products on the Conveyor.

2. With the Printhead properly positioned to print on the passing product – throw distance of 1.2" (30 mm) or less – run the conveyor.

3. Follow the steps in "△ Printing a Message" on page 210.

4. If the print message prints as desired, the message is ready to be printed.

5. If the message does not print as desired (too compressed, too close to one edge of the product, too faint, printing backwards, etc.), review the previous steps in this section to determine what needs to be adjusted, make the adjustment, and perform another test print until the desired results are achieved.

   a. If using both an Encoder and Photocell, make any needed adjustments to the message width. (**Settings** >> **Print Setting** >> **Encoder** >> "Encoder Divider." Then make adjustments to the location of the print on the product (**Settings** >> **Printing Setting** >> **Photocell** >> "Initial Print Delay"). "Encoder Divider" also impacts "Initial Print Delay" exponentially, so it creates less confusion to determine the desired "Encoder Divider" value first.

▲ Activating Advanced Features on a JetStream

***(Required Training Level:** Trained Technician)*

If advanced software features have been purchased for the JetStream but they are not yet accessible, they can be enabled by entering the activation codes provided with purchase of the advanced features.

To Activate Advanced Features on a JetStream:

1. **Stop Jetting** >> "Stop Jetting Without Cleaning."

2. **Make the appropriate upgrade:**

    a. Go to **Settings** >> **System Setting** >> **System Upgrade**.

    b. In the "Advanced Features" group on the "System Upgrade" panel, select "Activate."

    c. Enter the activation code (including the dashes) and then select "OK." The activation code is not case-sensitive.

    d. A dialog will appear saying "Activation was successful. Please power cycle the printer." Select "OK."

    e. Once the JetStream has restarted, advanced feature activation can be verified on the "System Upgrade" page.

To Deactivate Advanced Features on a JetStream:

1. **Stop Jetting** >> "Stop Jetting Without Cleaning."

2. **Remove the upgrade:**

    a. Go to **Settings** >> **System Setting** >> **System Upgrade**.

    b. In the "Advanced Features" group on the "System Upgrade" panel, select "Activate."

    c. Enter the code 0000-0000-0000-0000-0000 and then select "OK" to clear the activation status.

    d. A dialog will appear saying "Activation was successful. Please power cycle the printer." Select "OK."

    e. Once the JetStream has restarted, all advanced features will be disabled.

▲ Activating Autodata Features

(Required Training Level: *Trained Technician***)**

If Autodata features have been purchased for the JetStream, they can be activated by following the "Advanced Features" instructions above, using the Autodata codes provided with purchase of the Autodata features. Contact your authorized Squid Ink Distributor for Autodata protocol assistance.

Controlling the JetStream from a PC or Network

The JetStream can be controlled remotely from a PC or network. To do this, the PC/network must be physically connected to the JetStream and the controlling PC must have the JetStream's software installed on it.

⚠️	**ATTENTION:** Establishing a connection between the JetStream and a PC/network should never be performed when the printer is jetting.

▲ Connecting the JetStream to a PC

(Required Training Level: Trained Technician)

To physically connect the JetStream to a PC:

To Upgrade the System Software:

1. **Stop printing:**

    a. If currently printing, on the **Main** screen, select **Stop Printing**.

2. **Stop Jetting** >> "Stop Jetting Without Cleaning."

3. **Connect the JetStream and a PC/Network with an Ethernet Cable:**

    a. Unscrew the Ethernet Cover on the left side of the Console.
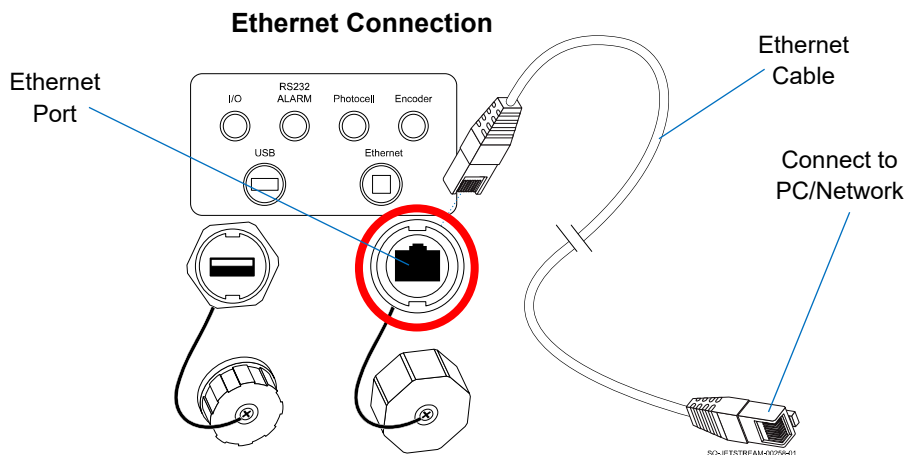
    b. Insert the plug at one end of an Ethernet Cable into the Ethernet Port.

    c. Insert the plug at the other end of the Ethernet Cable into the Ethernet Port of the controlling PC/network.

PC Connected to a JetStream
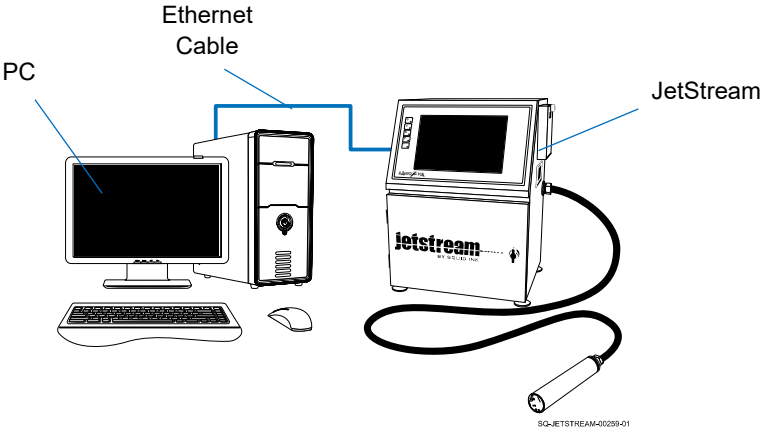
d. To connect multiple JetStreams, follow the same steps, connecting each of them with an Ethernet Cable to a network.

One or More JetStreams Connected to a Network

▲ Installing JetStream Software on a PC

(Required Training Level: Trained Technician)
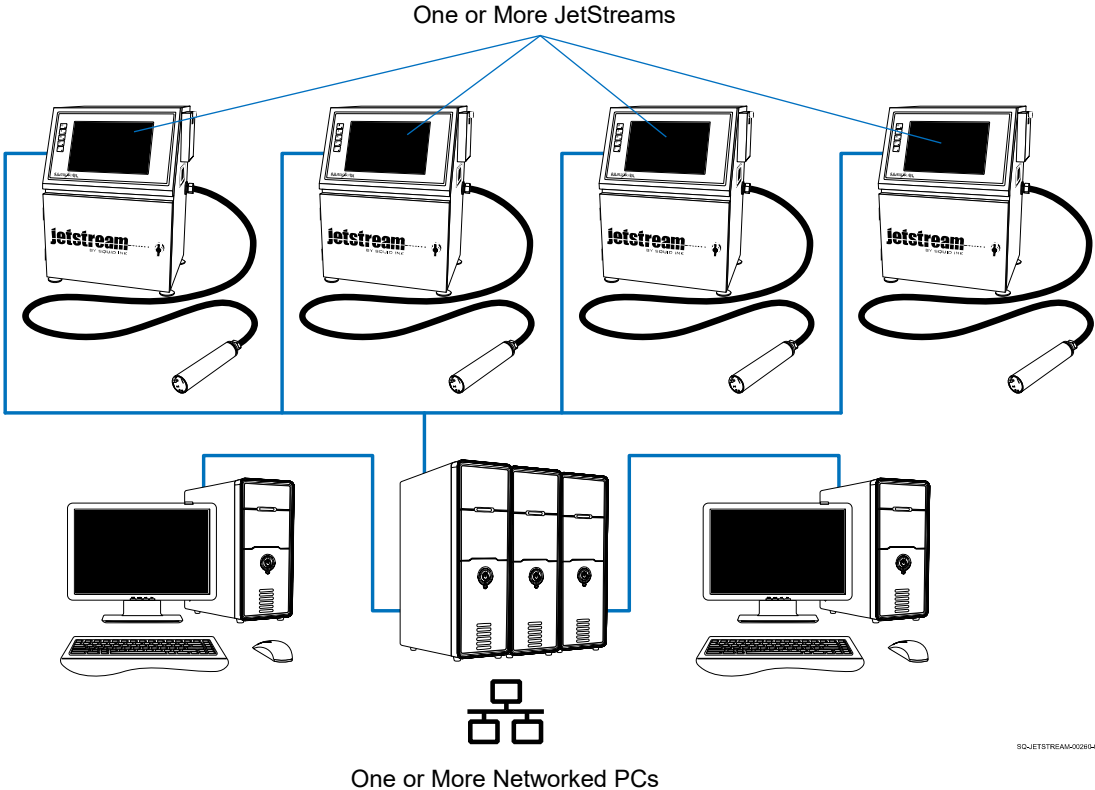
A separate version of the JetStream software (Part Number 2007227 – not included with system) can be installed on a PC, enabling the user to operate any connected JetStream remotely from the PC.

Items Needed to Install the JetStream Software on a PC are:

- One unique activation code for each JetStream to be controlled
- The MB SN serial number for each JetStream to be controlled

Install the JetStream Software on a PC:

1. **Find the JetStream's MB SN Serial Number:**

   a. On the JetStream's Touchscreen, select **Settings** >> **System Setting** >> **System Info**.

   b. Make note of the MB SN number.

Finding the MB SN Number
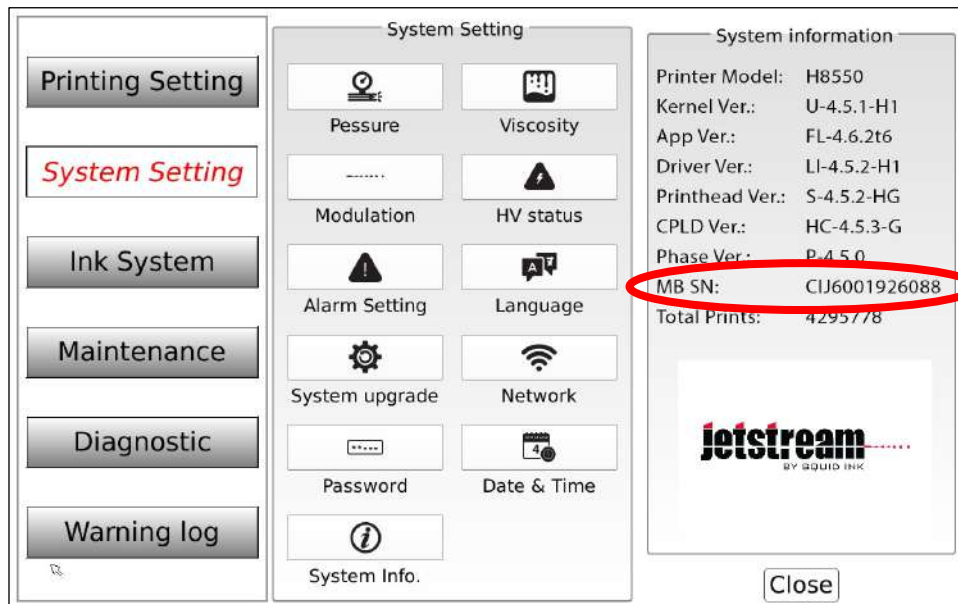
   c. When finished, select Close to close the System Info panel.

2. **Enter and apply the Activation Code on the JetStream's Touchscreen:**

   a. This step only applies if the JetStream software and activation code were purchased after the JetStream was purchased. In such a situation, the activation code should have been emailed to the purchaser, and will need to be entered into the JetStream.

Each activation code unlocks a specific function (in this case, PC software) for one JetStream unit. The code is tied to the specific JetStream's MB SN serial number.

b. Select **Settings** >> **System Setting** >> **System Upgrade**, and select "Activate" under "Advanced Features."
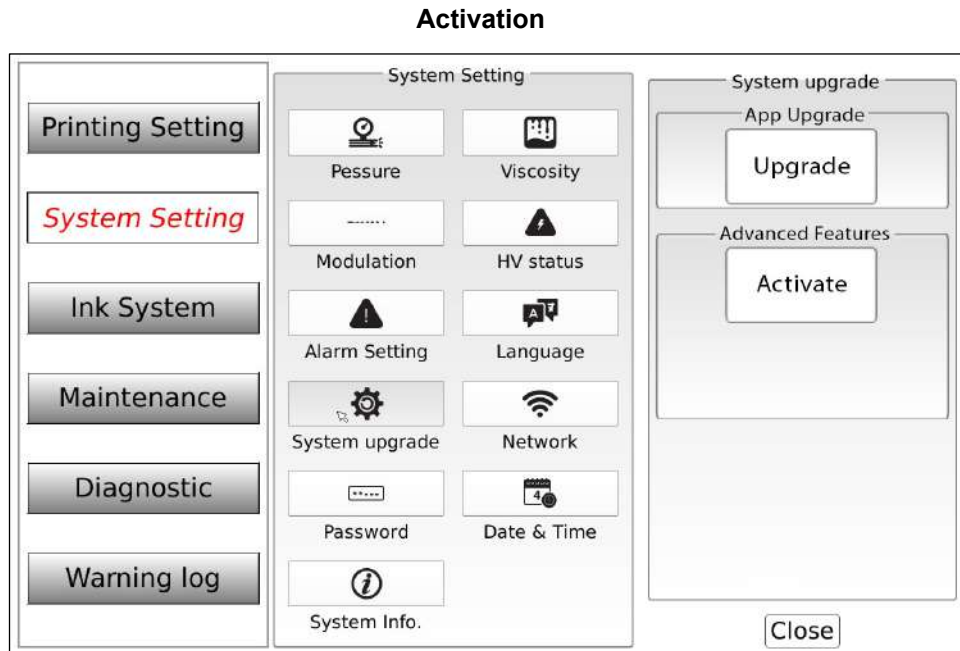
Activation

c. Enter the activation code (including the dashes) for the JetStream. and then select "OK." The activation code is not case sensitive.

Entering Activation Codes
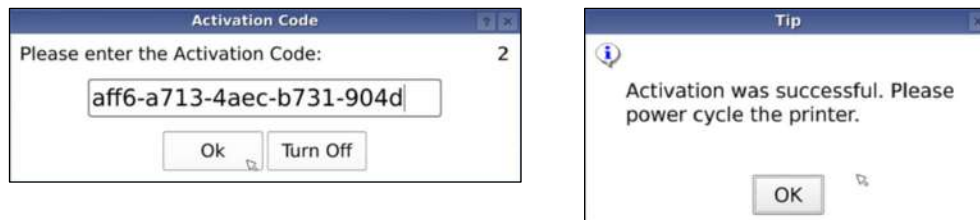
d. A dialog will appear saying "Activation was successful. Please power cycle the printer." Select "OK."

e. Once the JetStream is restarted, PC Software Connection activation can be verified on the "System Upgrade" page on the Touchscreen.

3. **Download the JetStream software/installer to the PC:**

a. On the controller PC, go to www.squidink.com/products/cij-small-character-coders/jetstream/ and select "CLICK HERE TO DOWNLOAD THE JETSTREAM SOFTWARE INSTALLER."

b. Once the installer is downloaded, open the folder, double-click the "Squid Ink Jetstream Setup" icon, and select "Install" on the bottom right corner of the pop-up.

Installing the Software
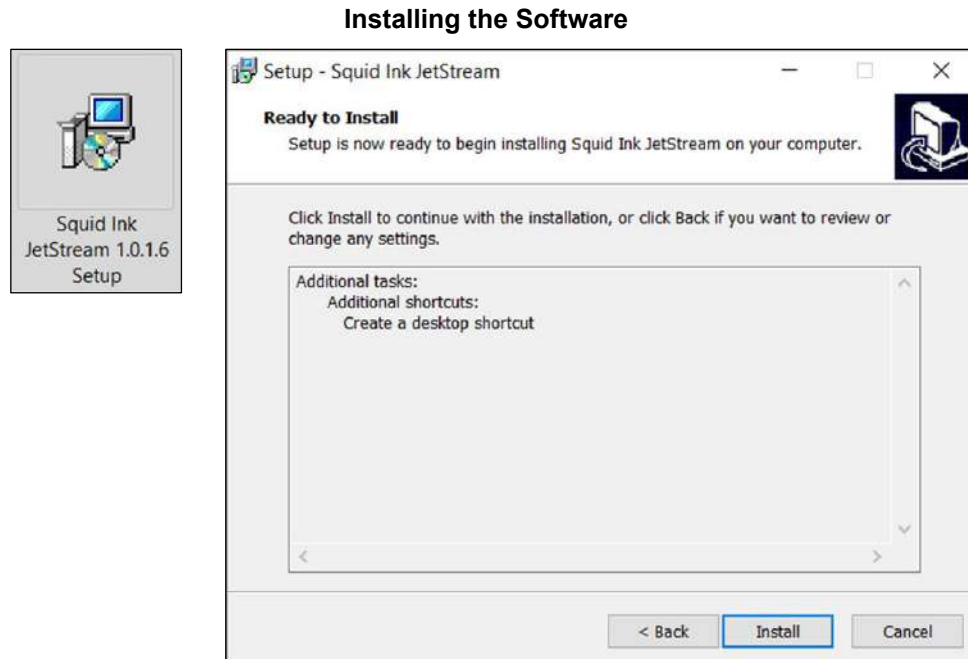
c. Follow the prompts on the installer until you reach the "Completing the Squid Ink Jetstream Setup Wizard," and then select "Finish" in the bottom right corner of the pop-up.

JetStream Setup Wizard
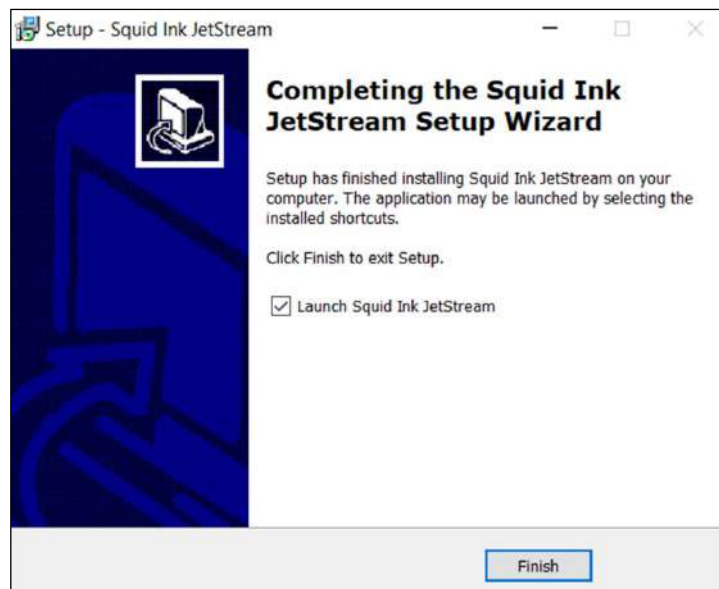
d. Two desktop shortcuts will be created and the Editor will automatically launch. The Editor can be closed for now in order to proceed with configuring the JetStream printer(s) and PC network settings.

4. **Configure the JetStream's network settings:**

a. On the Touchscreen, locate the JetStream's Network Settings by going to "System Setting" and selecting the "Network" icon. This will display the current settings for the printer, which can also be changed for networking purposes. If you are ultimately communicating with multiple printers, the IP Address for each system must be different. For example, if the first printer connected has an IP address of 192.168.1.123, the IP address of the next printer added to the network should be changed to 192.168.1.124, and so on. If needed, have an IT professional do this.

Configuring the JetStream's Network Settings
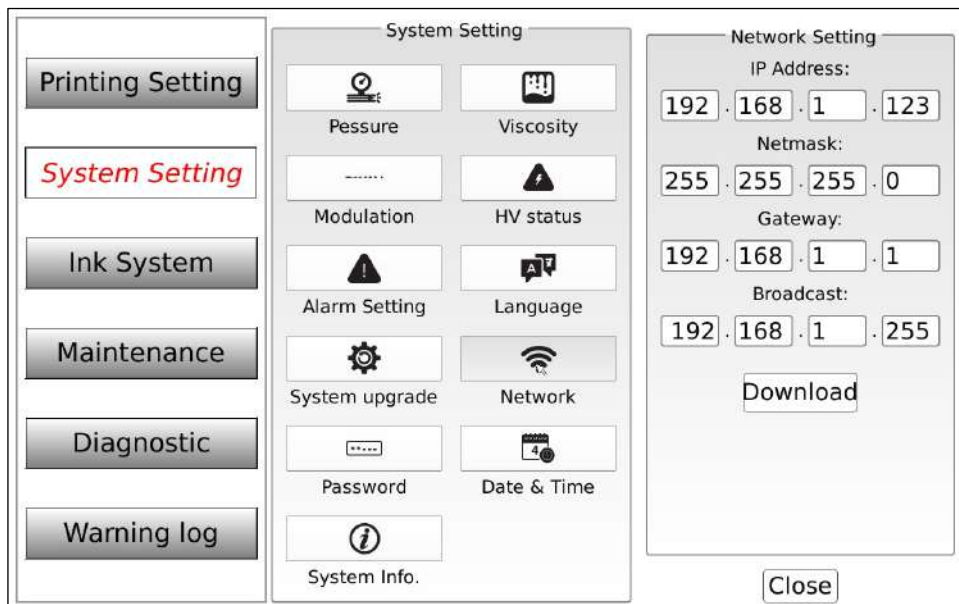
b. Once the printer's network settings are updated, select "Download."

5. **Configure the PC's network settings:**

Ensure that the PC's network settings are updated by having an IT professional perform the steps below:

a. In Windows on the PC, got to "Settings" >> "Network and Internet" >> "Ethernet" >> "Change Adapter Options."

b. Select the appropriate Ethernet network and access Ethernet Properties.

c. Select "Internet Protocol Version 4 (TCP/IPv4)."

d. Select "Properties" to access TCP/IPv4 properties.

e. Select "Use the following IP address" in order to manually specify an IP address for the PC. Be sure that this IP address is different from the IP address(es) of the JetStream(s).

f. Ensure that the Subnet mask also matches the JetStream(s).

g. Once the PC is configured, select "OK."

6. Establish communication between the PC/Network and the JetStream(s):

a. Double-click on the "Jetstream Message Editor" icon or "Jetstream Remote Screen" icon on the PC desktop.

b. To establish a connection with a JetStream printer first, select the "Connect" tab in the top menu, and then select "New".

c. Enter the IP address of the desired JetStream printer, and then select "OK". If using multiple JetStream printers, repeat this to add additional IPs.

d. If "Remote Screen" is selected, the screen of the desired JetStream will display on the PC, providing complete remote access to all of that JetStream's functions.

e. To similarly control an additional JetStream from the PC, double-click the "Jetstream Remote Screen" icon, enter or select the IP of the desired JetStream printer, and then select "Connect."

f. To resize the display of a JetStream to better fit the PC screen, select the "House" icon in the top left corner, and in the dropdown, select "Size."
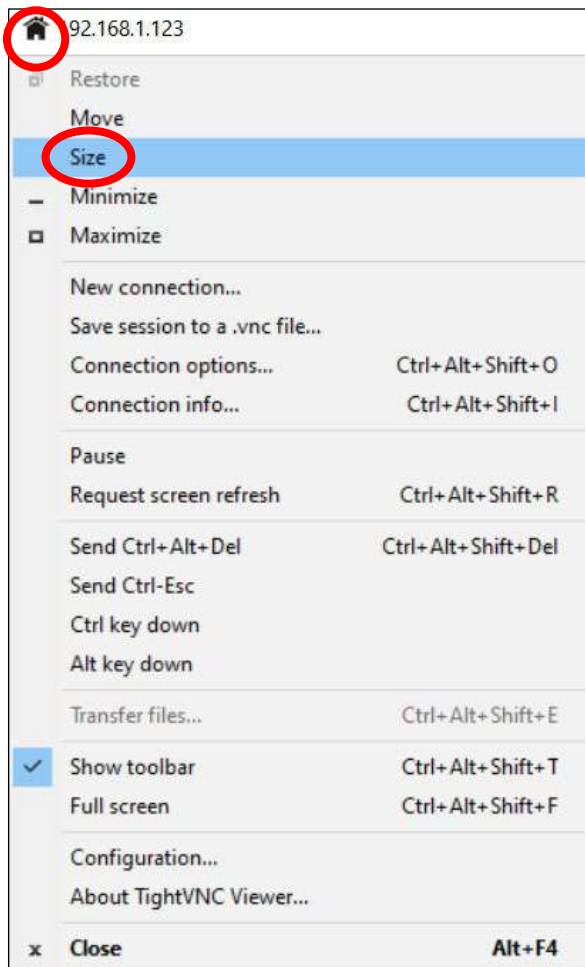
User Interface

△ Indicator Lights

(Required Training Level: User)

The JetStream has five Indicator Lights to the left of the Touchscreen that provide general information about the current system status. They are:

⏻ ● SQ-JETSTREAM-00035	**Power** Green light means that the JetStream is on.
⬤ ● SQ-JETSTREAM-00036	**Jetting** Green light means that the system is jetting, ie, ink is being sent to the Printhead.
R ● SQ-JETSTREAM-00037	**Ready** Green light means that ink drops in the Printhead are being charged at the same rate that they are being produced, and the system is ready to begin printing.
P ● SQ-JETSTREAM-00038	**Printing** Green light means that the system is printing.
! ● SQ-JETSTREAM-00039	**Alarm** Flashing red light means that there is a problem with the system that requires attention.

Software

△ Software Map

(Required Training Level: User)

The map below provides a guide to the different functions within the JetStream's software. All functions are accessed through the Main Screen, Message Screen, or Settings Screen.
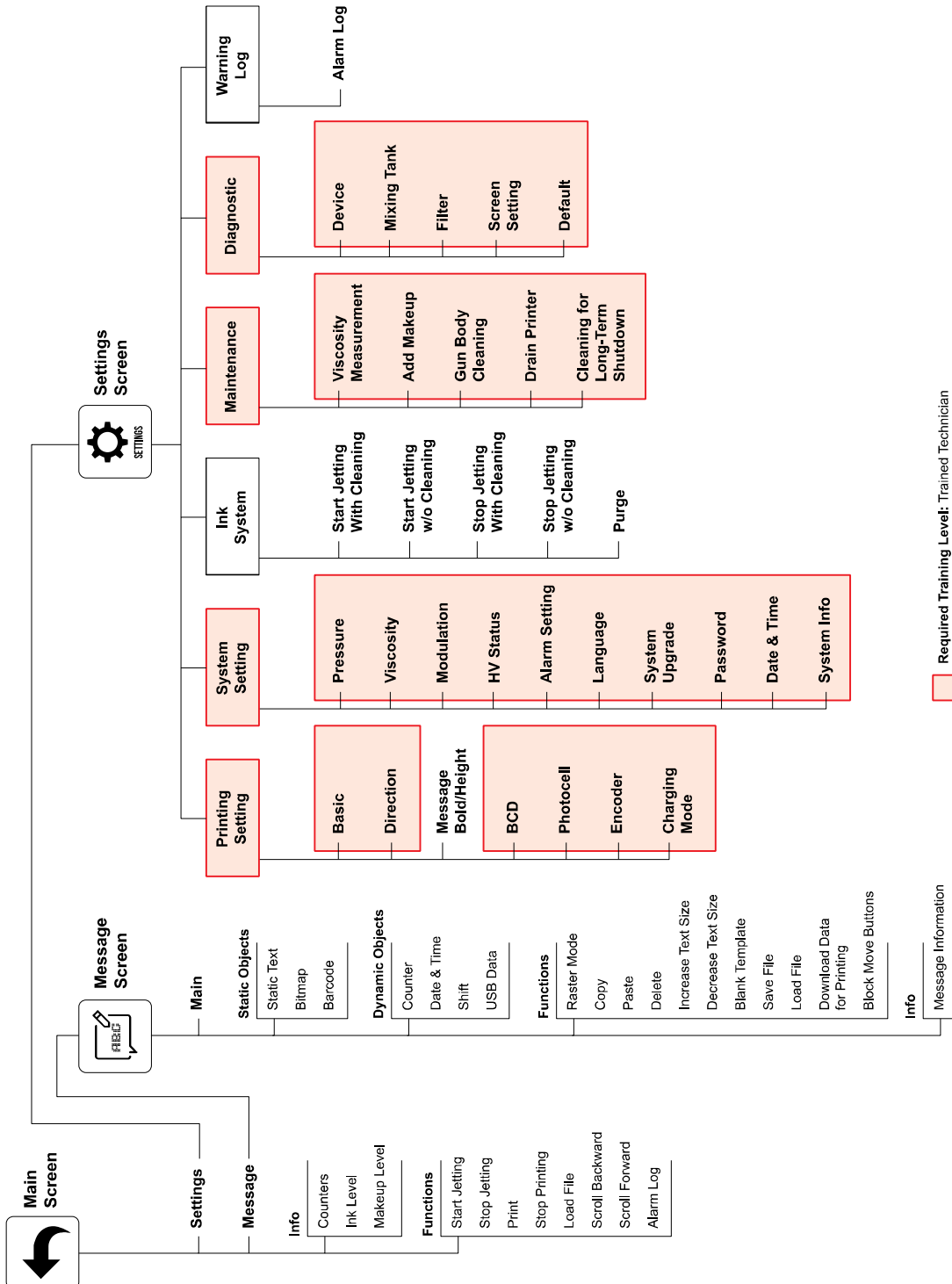
SQ-JETSTREAM-0017T-Q4

△ The Main Screen

(Required Training Level: User)
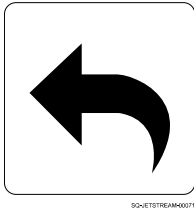
The **Main** screen gives general information and provides access to all of the functions within the JetStream's software.

Main Screen
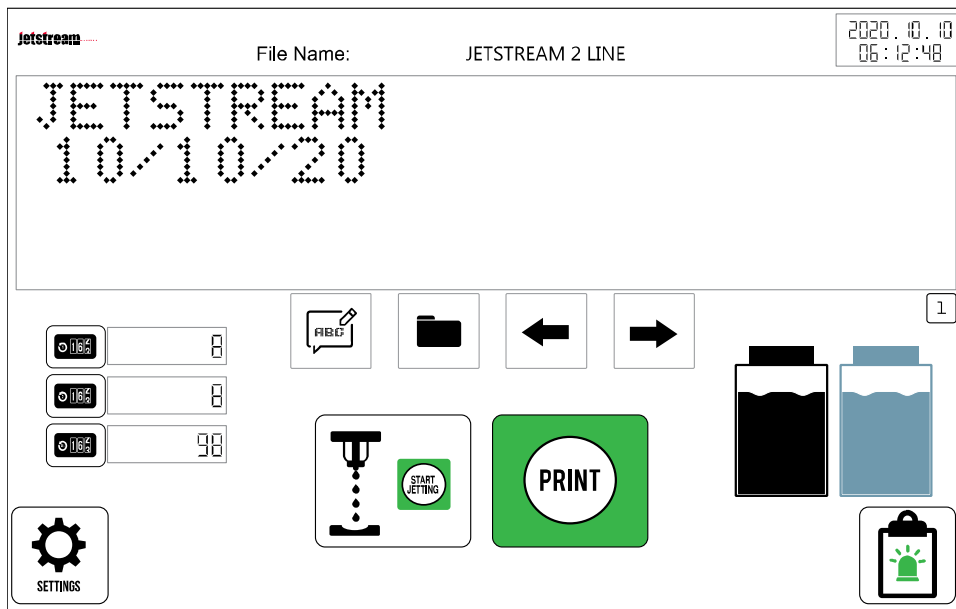
△ Information on the Main Screen

The top of the **Main** screen shows the name of the current file being used, the current date and time, and a visual representation of the text message to be printed.

Additional information on the **Main** screen includes:

△ Counters

SQ-JETSTREAM-00085
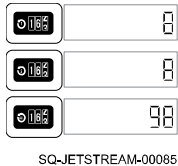
Each counter shows a print count.

The top two counters (Counter 1 and Counter 2) are the first two counters that can be inserted in a message. They can be used to track information such as number of prints during a work shift (See "▲ I/O Connection" on page 100 for external control of these two counters). The bottom counter always tracks the total number of prints.

The format for the counters is set in the **Message** screen using the "Counter" function.

SQ-JETSTREAM-00054

The **Counter** buttons on the Main screen allow resetting a counter on the fly.

Any of the counter information can be used for internal company tracking, printed as part of the message text, or both.

△ Ink Level

SQ-JETSTREAM-00051

Shows if the Ink Container has ink or no ink.

△ Makeup Level

SQ-JETSTREAM-00052

Shows if the Makeup Container has makeup fluid or no makeup fluid.

△ Buttons on the Main Screen

The functional buttons on the **Main** screen include:

△ Start Jetting

Starts sending ink and/or makeup fluid from the Mixing Tank through the Umbilical Tube to the Printhead, and circulates most or all of it back to the Mixing Tank. A dialog box will appear to select "Start Jetting With Cleaning" or "Start Jetting Without Cleaning."

> **ATTENTION:** Never select "Start Jetting **With** Cleaning" if the Makeup Container is empty. The JetStream will shoot air instead of makeup fluid through the system, which can increase the likelihood of a clog.

> **ATTENTION:** "Start Jetting With Cleaning" should be used sparingly. It briefly shoots pure makeup fluid through the system before the ink begins to flow. Frequent use of this function can dilute the ink, resulting in poor print quality, wasted ink, and the potential to overflow the Mixing Tank.

Start Jetting With Cleaning:
Sends a jet of pure makeup through the system, and then sends a steady stream of ink from the Mixing Tank.

Start Jetting Without Cleaning:
Sends a steady stream of ink from the Mixing Tank.

△ Stop Jetting

Stops the flow of ink and/or makeup fluid through the Umbilical Tube and Printhead. A dialog box will appear to select "Stop Jetting With Cleaning" or "Stop Jetting Without Cleaning."

⚠	**ATTENTION:** Never select "Stop Jetting *With* Cleaning" if the Makeup Container is empty. The JetStream will shoot air instead of makeup through the system, which can increase the likelihood of a clog.

⚠	**ATTENTION:** "Stop Jetting With" Cleaning should be used sparingly. It briefly shoots pure makeup fluid through the system. Frequent use of this function can dilute the ink, resulting in poor print quality, wasted ink, and the potential to overflow the Mixing Tank.

Stop Jetting With Cleaning:
Stops the steady stream of ink from the Mixing Tank, then sends a jet of pure makeup through the system.

Stop Jetting Without Cleaning:
Stops the steady stream on ink from the Mixing Tank.

△ Print

Starts printing. The message to be printed is sent to the Printhead, causing a small percentage of drops to be given an electric charge and exit the Printhead Orifice.

△ Stop Printing

Stops printing. Does not stop the flow of ink circulating through the system (jetting).

△ Message

Navigates to the **Message** screen for creating and editing messages.

△ Load File

SQ-JETSTREAM-00044

Loads an existing message from the JetStream's own internal storage, a USB drive, or an external device.

△ Scroll Backward

SQ-JETSTREAM-00045
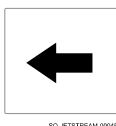
Scrolls backward through the message at the top of the screen (for messages longer than 135 dots).

△ Scroll Forward

SQ-JETSTREAM-00046
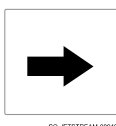
Scrolls forward through the message at the top of the screen (for messages longer than 135 dots).

△ Settings

SETTINGS

SQ-JETSTREAM-00047

Navigates to the **Settings** screen to view and adjust settings.

△ Alarm Log

SQ-JETSTREAM-00048

Displays the history of the warnings that have taken place on the JetStream.

△ The Message Screen

SQ-JETSTREAM-00043

(Required Training Level: User)

The **Message** screen provides a wide range of flexibility for creating or importing messages and images for printing, including the ability to combine static (unchanging) and dynamic (continuously updating) data. New messages can be created in the **Message** screen at the same time as other messages are printing.

Access the **Message** screen from the **Main** screen by selecting **Message**:

SQ-JETSTREAM-00043

△ Message Area

Messages are built in the "Message Area," which allows for text, numbers, or images that are up to 32 "dots" high and an unlimited number of dots long (for printing down the length of a PVC pipe, for example). The Message Area displays 135 dots wide at any given time. When a message is longer than 135 dots, a scroll bar appears at the bottom of the Message Area, giving access to different sections of the message.

Message Screen

SQ-JETSTREAM-00073

△ **Message Screen Buttons**

The functional buttons on the **Message** screen include:

△ **Static Text**

Static text is text that remains constant from print to print. For example, the word "EXPIRES:" on a milk carton is static text. Upon selection of this button, a keyboard appears to create a message in the Message Area.

SQ-JETSTREAM-00459-01

Once the message has been created, the menu at the top of the screen can be used to set other parameters for the text:

SQ-JETSTREAM-00078

Font:
Selects the font. CIJ is the most commonly used font for English characters. Because of the "dot x dot" constructions of the fonts, significant visible variations from font to font are limited, especially at smaller font sizes. Computer system fonts may be copied to the JetStream.

Style:
Selects the font style for static message text.

Size:
Selects the font size for static message text. The most common font size (eg, for

expiration dates on egg cartons) is 7x5. The JetStream offers numerous size options.

> **NOTE:** Entering a font larger than the assigned **Raster Mode** for a line will result in text being cut off at the top, bottom, or both.

Sample Font Sizes

7x5

9x7

16x12
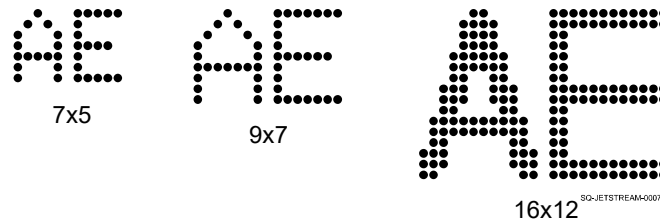
Width:

Selects the bold multiplication factor for message text. Generally, this would only be used when one text element is to be bolder than the rest of the text elements.

Spacing:

Selects the number of blank dot spaces between characters for message text.

△ User Data

The "User Data" button, located on the right just below the Message Area, enables users to enter unique data into an existing message without having to reenter the message editing page. The function is similar to dynamic functions like "Date and Time" objects, but is intended for types of data that do not fall into the categories of the other dynamic objects. For example, there may be a desire to have users enter a lot number into a message. Nothing else about the message ever changes except the lot number. To accomplish this, the creator of the message would select the "User Data" button.

SQ-JETSTREAM-00459-01

A dialog box will open, allowing the message creator to add a User Data field.
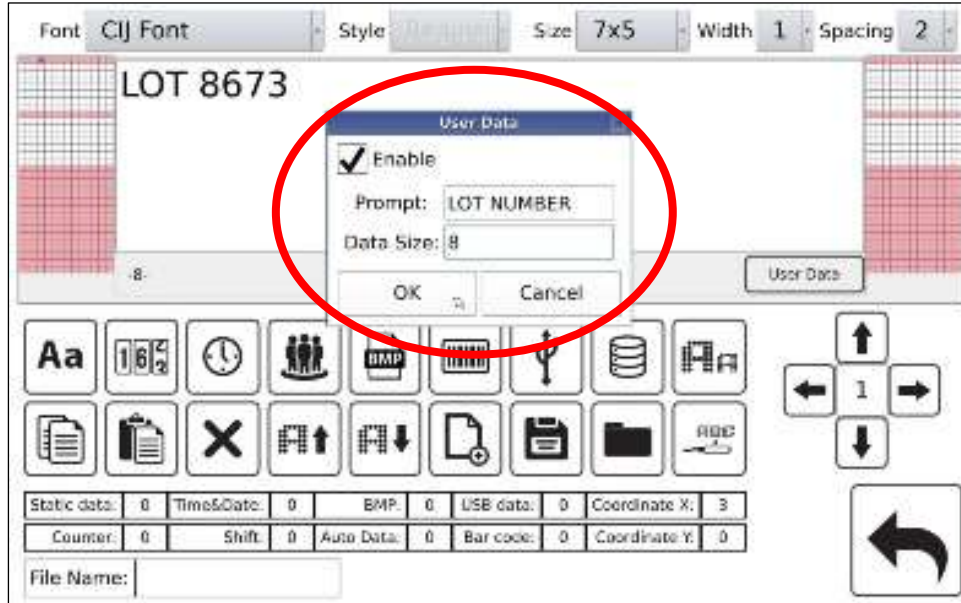
SQ-JETSTREAM-00460-01

In this example, the message creator gives the User Data field a prompt asking for the lot number, limits the size of the field to 8 characters (this includes the word "LOT" and the space after it, so the lot number itself will be only 4 characters), and selects the "Enable" box to save this as part of the message.

After saving the message and returning to the Main Screen, a "User Data" button now appears.
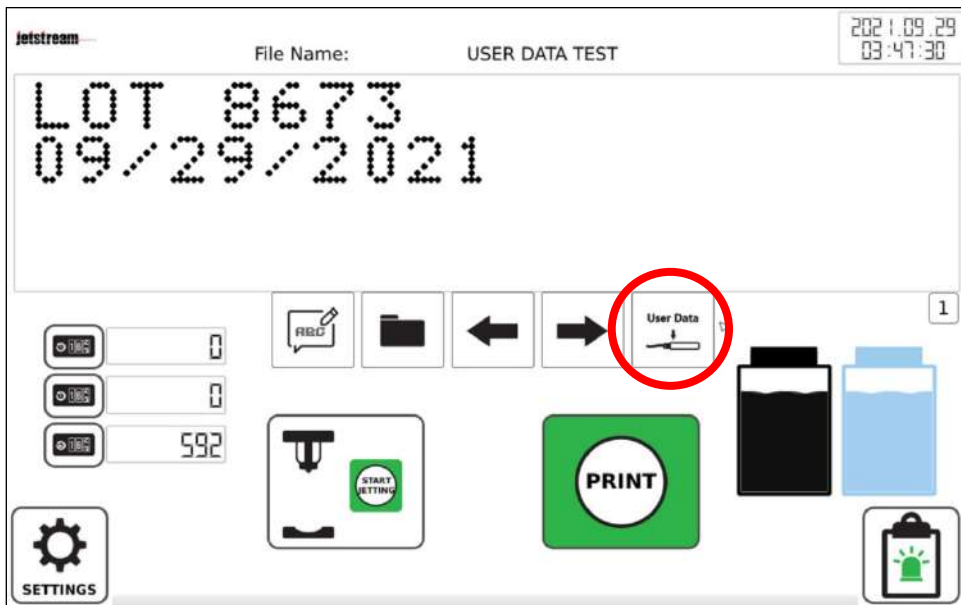
SQ-JETSTREAM-00461-01

With the message open, the user can select the "User Data" button on the Main Screen and get a prompt to enter a different lot number from what is in the current message.

SQ-JETSTREAM-00462-01

Once the user selects "OK," the newly entered lot number displays and can be printed.

SQ-JETSTREAM-00463-01

△ Counter

SQ-JETSTREAM-00054
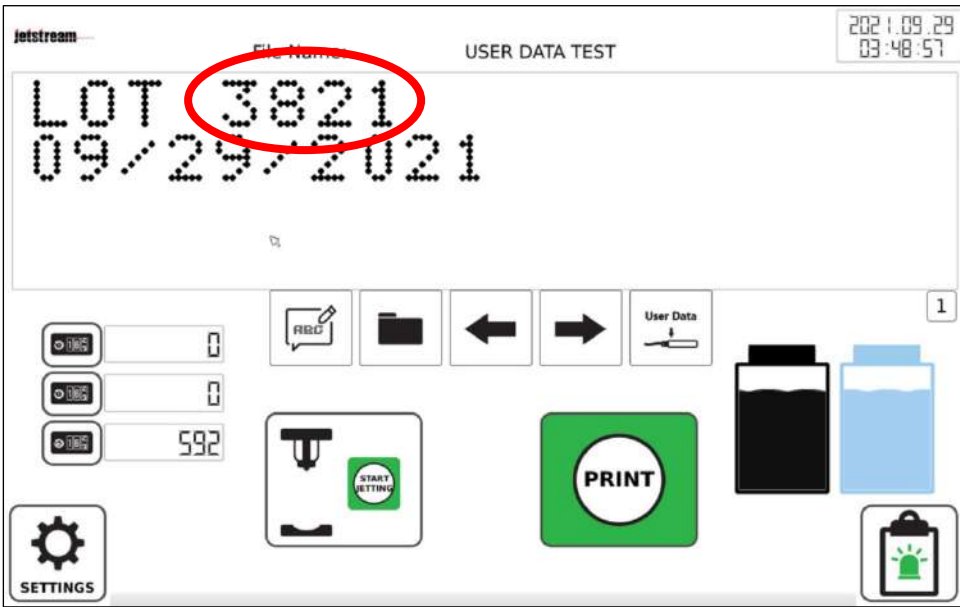
Creates a "Counter" object. A "Counter" object is a dynamic (constantly updating) count of the number of products printed. The counter can be specific to products printed on a given date, products printed during a given shift, or some other factor. Up to two counters can be inserted in one message and set separately.

Trigger:
> The only option available is "Print Trigger," meaning that the only thing that triggers an increase in the count is an item being printed.

Start:
> Number at which the Counter starts counting. The default is **0**.

Stop:
> Number at which the Counter stops counting. Generally, this should be a very high number. However, when placing the Counter object in the Message Area, space in the message will need to accommodate the highest count number.

Current:
> Sets the current Counter value.

Step:
> Number of "steps" per print. For example, setting "Step" to 5 increases the count by 5 digits for each print trigger. The default is **1** (1 count per print).

Direction:
> Sets the direction that the Counter counts. "Up" would count forward (eg, first item printed is 1, second item is 2, etc.). "Down" would count backward (eg, first item printed is 999999, second item is 999998, etc.). For "Down" counting, the "Start" number needs to be higher than the "Stop" number.

Padding:
> Sets whether to add zeros before the count number. For example, if printing 999,999 items, the first item could be printed as 000001. If "Padding is set to "None," the first item would be printed as 1.

Align:
> If padding is added, this sets where the count number should be within that padding. For example, left alignment could make the first item print as 100000, and right alignment could make the first item printed as 000001.

Recall:

Resumes counting from where the count left off the last time the JetStream was in use. For example, 5,823 items were printed on Monday, and the JetStream was shut down for the night. On Tuesday morning, the count would begin at 5,824.

Do Not Print:

Counts the items printed, but does not print that information.

Reset Time:

Sets a time of day at which the Counter should automatically reset to its "Start" number. For example, if the first shift ends at noon, the Counter can be made to reset at noon to begin tracking the count for the second shift.

△ Date and Time
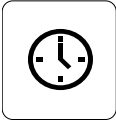
This button sets a time and date to be printed. This is a dynamic object, automatically updating as time passes, and can be set to a specified future time that is also dynamic (for example, an expiration date that is always 30 days in the future).
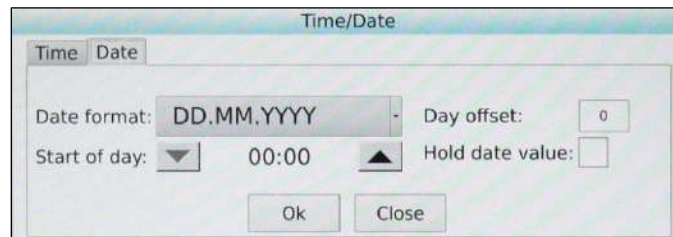
Date Format:
Shows how the date will appear when printed.

Day Offset:
Number of days that the desired date should be from the print date. For example, if an item expires in 30 days from when it is printed, the "Day Offset" would be 30.

Start of Day:
Time at which the system should consider a new "day" to have started.

Hold Date Value:
Will continue to print the current date value, rather than automatically updating it. For example, if a massive number of items were all produced on the same day, and all of them will expire in 30 days, they can be printed on over a period of several days with the "Day Offset" at 30 and the **Hold Date Value** box checked on the first day of printing, so that they all have the same expiration date.

Time Format:
Shows how the time will appear when printed.

Time Offset:
Number of hours that the desired time should be from the print time. For example, if an item expires in 30 days and 6 hours, the "Day Offset" would be 30 and the "Time Offset" would be 6 hours.
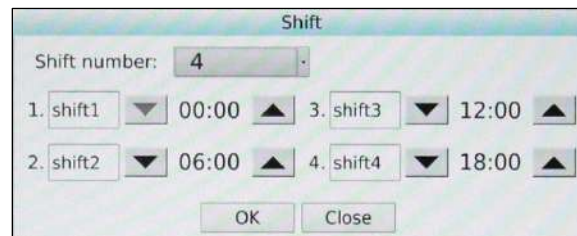
Hold Time Value:
Will continue to print the current time value, rather than automatically updating it constantly.

△ **Shift**

SQ-JETSTREAM-00058

A "Shift" object is a dynamic (updates automatically) object that indicates during which work shift the printing is taking place. This can be useful for quality-tracking and efficiency-tracking purposes. Inputting start times for each shift and then adding a Shift object to the Message Area makes the JetStream automatically update the shift number when a new shift starts. Up to 4 shifts can be programmed.

Shift Number:

Selects the total number of work shifts.

1:

Allows input of a name for the first shift. This name will be printed. The same is true for 2, 3. and 4.

00:00:

Allows input of the start time for a given work shift. Use the arrows to select the correct start times.

△ Bitmap

A "Bitmap" object can be any graphic image, such as a logo or design, up to a maximum size of 32 dots high and 40 dots wide. To create a graphic from within the JetStream software, select **Bitmap** and touch the screen to interactively draw the image.
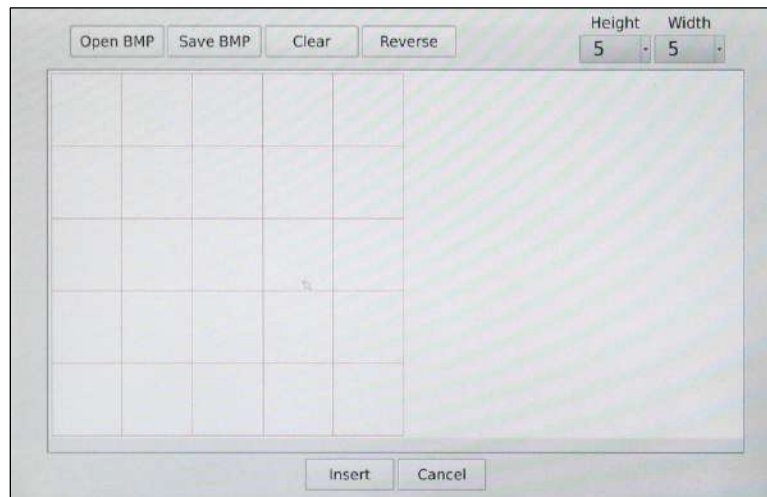
To save the graphic in the JetStream or to a USB drive, select **Save BMP**.

To open a saved graphic, select **Open BMP**.

△ Barcode

SQ-JETSTREAM-00058

This button inserts a barcode into the Message Area. The letters or numbers to create the barcode can be input directly on the screen. Several barcode formats are available. For the barcode detail to print properly, the Raster Mode should be 16 dots high or higher.
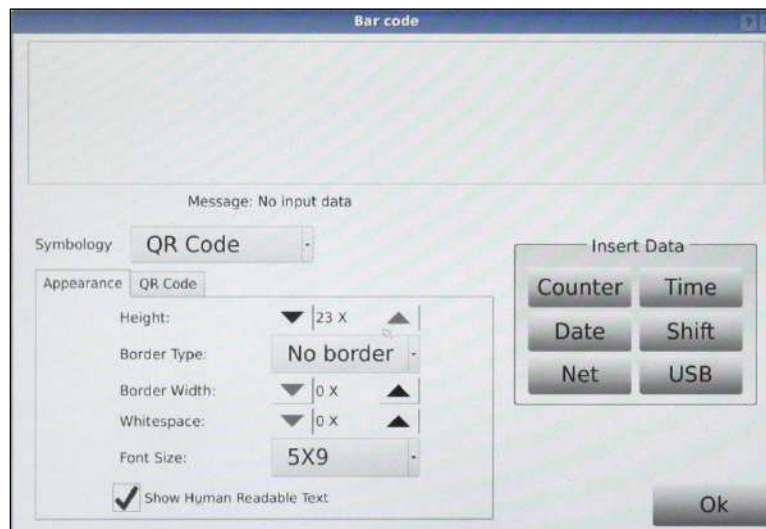
Message (top of dialog box):
Tap this area to access a keyboard and input the barcode number. If there are spaces between some of the numbers, those spaces need to be input as well.

Symbology:
Selects the format for the barcode.

Height:
Barcode height in number of dots.

Border:
Selects whether or not the barcode should have a border around it.

Whitespace:
Whitespace between each barcode "bar."

Font Size:
Size of human-readable text/numbers in the barcode.

Show Human Readable Text:
Check to add text/numbers to the barcode.

Data Input:
Allows additional elements to be embedded in the barcode, including counter information, date, time, and work shift. Information can also be loaded from a network or USB drive.

△ USB Data
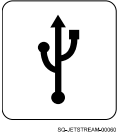
Allows importing of external data (.txt files) from a USB drive to print. For example, importing a list as a .txt file would result in the JetStream printing each new item on the list with each print trigger.

To import .txt data, unscrew the USB Cover on the left side of the Console, insert a USB drive into the USB Port, and select **USB Data**. The USB Drive must be FAT or FAT32.

USB Data Input

SQ-JETSTREAM-00174-01
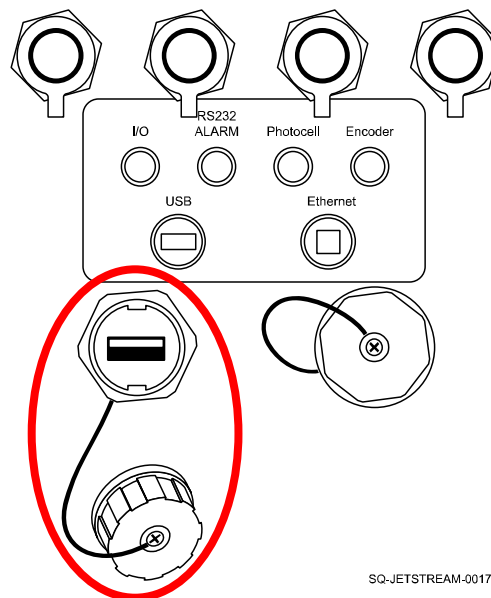
Select "Browse" to select and import .txt files.

△ Raster Mode

SQ-JETSTREAM-00061
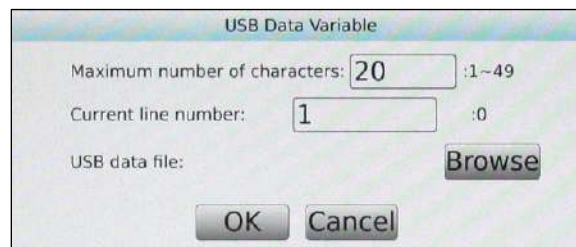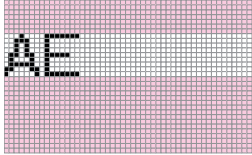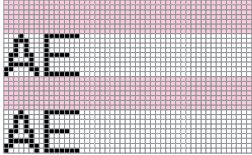
The **Raster Mode** sets the size of the space in which text characters and other elements are to be placed. In general, this also specifies the number of dots that will make up each character, measured in [number of dots high] X [number of dots wide] per character. It also specifies the number of lines of text: "A" is one line, "B" is 2 lines, and so on.
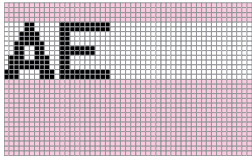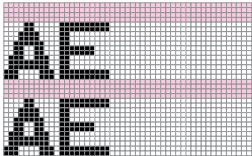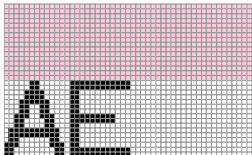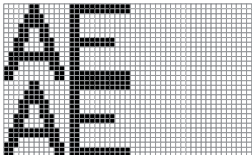
Larger raster modes require taller vertical columns of dots, and therefore result in slower print times.
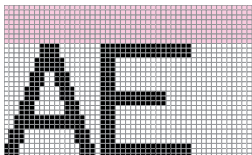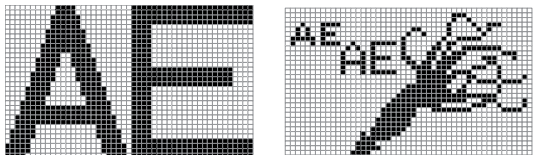
5x5-Dot Messages				
5x5A (1 line)	**5x5B** (2 lines)	**5x5C** (3 lines)	**5x5D** (4 lines)	**32x24A** (5 lines)
SQ-JETSTREAM-00092	SQ-JETSTREAM-00091	SQ-JETSTREAM-00090	SQ-JETSTREAM-00089	SQ-JETSTREAM-00088

7x5-Dot Messages			
7x5A (1 line)	**7x5B** (2 lines)	**7x5C** (3 lines)	**7x5D** (4 lines)
SQ-JETSTREAM-00093	SQ-JETSTREAM-00094	SQ-JETSTREAM-00095	SQ-JETSTREAM-00096

9x7-Dot Messages	
9x7A (1 line)	**9x7B** (2 lines)
 SQ-JETSTREAM-00097	 SQ-JETSTREAM-00098

12x10-Dot Messages	
12x10A (1 line)	**12x10B** (2 lines)
 SQ-JETSTREAM-00099	 SQ-JETSTREAM-00100

16x12-Dot Messages	
16x12A (1 line)	**16x12B** (2 lines)
 SQ-JETSTREAM-00101	 SQ-JETSTREAM-00102

Large and Freeform Messages	
24x18A (1 line)	**32x24A** (1 line or freeform)
 SQ-JETSTREAM-00103	 SQ-JETSTREAM-00087　　 SQ-JETSTREAM-00110

Neither **Font Size** nor **Raster Mode** precisely define the dimensions of characters when printed. Because the Printhead is spraying out droplets of ink at different angles, the printed dimensions of the characters will also be affected by the distance of the Printhead Orifice from the printed surface (throw distance). When the printed surface is farther away, the same font size in the same sized raster mode will print larger, with dots spaced farther apart.

Throw Distance

Printhead Orifice

SQ-JETSTREAM-00077-02

△ Copy

SQ-JETSTREAM-00062
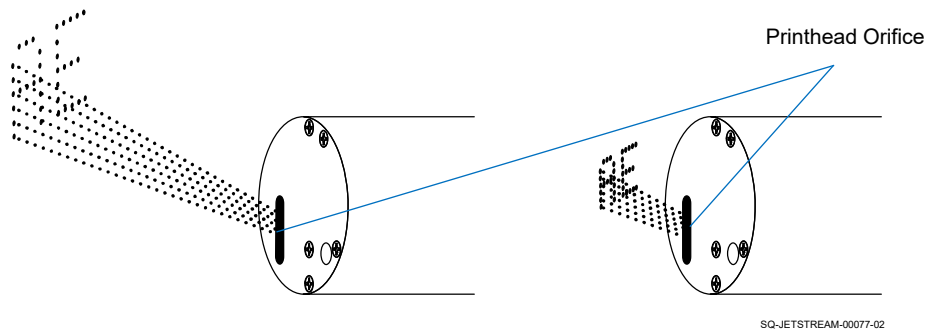
Copies the selected item and holds it in the JetStream's cache.

△ Paste

SQ-JETSTREAM-00063

Pastes the most recently copied item from the JetStream's cache into the Message Area. Paste location is down and to the right of whatever pixel in the Message Area has been touched just prior to pasting.

△ Delete

SQ-JETSTREAM-00064

Deletes the selected item from the Message Area.

△ Increase Text Size
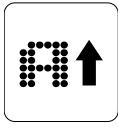
Increases the character size of selected text in the Message Area.

△ Decrease Text Size
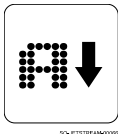
Decreases the character size of selected text in the Message Area.

△ Blank Template
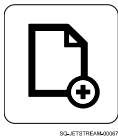
Creates a blank template for creating a new message.

SQ-JETSTREAM-00079
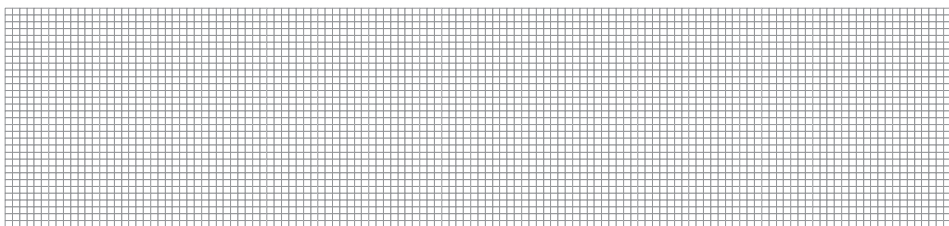
The **Raster Mode** (size and number of lines for text) of the new template defaults to the most recent setting, but can be changed in **Raster Mode**.

△ Save File

Saves the current message from the Message Area. The message can be saved within the JetStream's own internal storage, to a USB drive, or to an external device.
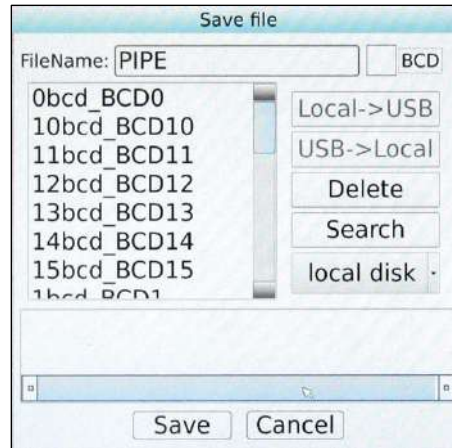
△ Load File

Loads an existing message from the JetStream's own internal storage, a USB drive, or an external device into the Message Area.
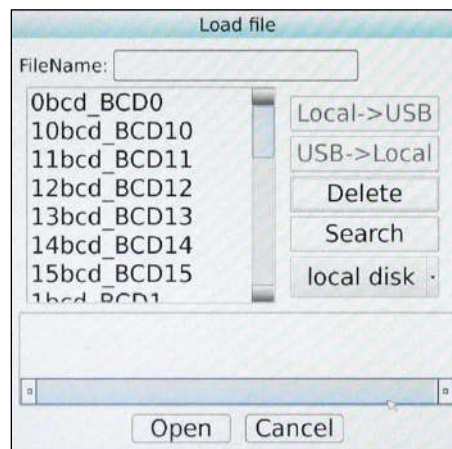
△ Download Data For Printing
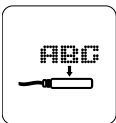
Prints the message that is currently in the Message Area directly from the **Message** screen.

△ Block Move Buttons
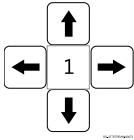
Moves message blocks (text, graphics etc.) around inside the Message Area when arrows are tapped.

1. In the Message Area, select a text object or graphic object.

2. In the square in the center of the **Block Move Buttons**, enter the number of dot spaces that a single press of an arrow button should move the selected object. The maximum number is 140. The default number of dot spaces per press is **1**.

3. Select a **Block Move** arrow button to move the selected block the specified number of dot spaces in that direction.

Objects can also be moved around the Message Area by directly selecting them and dragging them by hand.

△ Return to Main Screen

Returns to the **Main** screen.

△ Message Information

The boxes at the bottom of the screen show information about the number and kind of objects that are in the current message. "Coordinate X" and "Coordinate Y" are the coordinates of the uppermost, leftmost dot in the selected element.

Static data:	1	Time&Date:	0	BMP:	0	USB data:	0	Coordinate X:	78
Counter:	0	Shift:	0	Net data:	0	Bar code:	0	Coordinate Y:	32

△ The Settings Screen
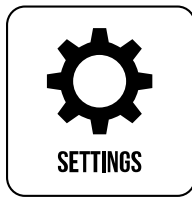
SQ-JETSTREAM-00047

The **Settings** screen allows adjustment of the JetStream's settings, including **Printing Setting, System Setting, Ink System, Maintenance, Diagnostic,** and **Warning Log,** all of which are described below.

▲ Printing Setting

(Required Training Level: Trained Technician)

Access **Printing Setting** from the **Main** screen by selecting the **Settings** button.

SQ-JETSTREAM-00047

Printing Setting selects variables that affect how the JetStream prints and what triggers it to print. The buttons in the middle panel give access to the right panel for adjustment or viewing.
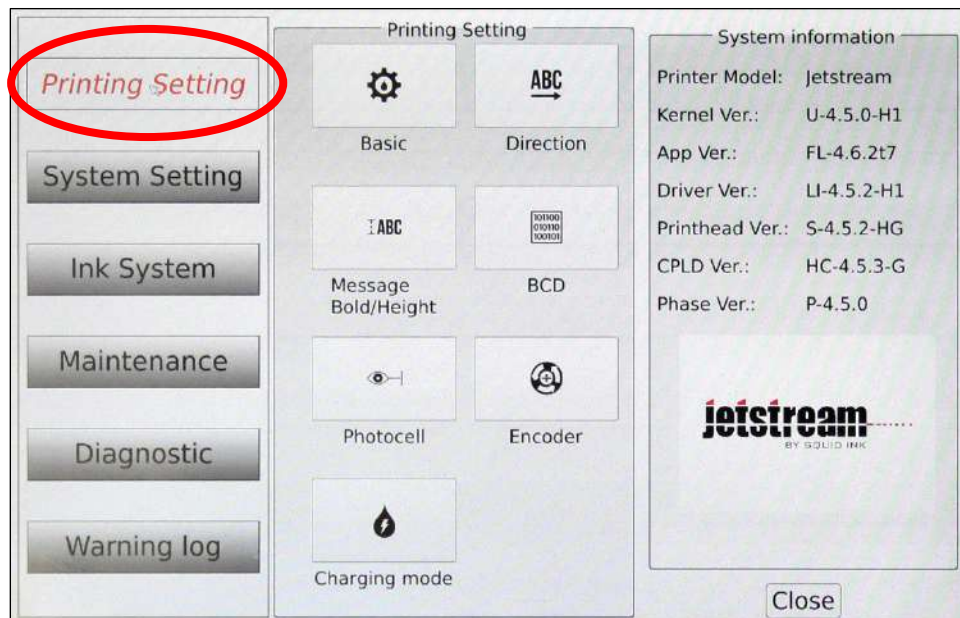
▲ Basic

☼

(Required Training Level: Trained Technician)

Selects settings related to what triggers the JetStream to print.

Trigger Mode:
  Selects the input to trigger printing. Options include:

Trigger Mode	Description
Photocell	A Photocell triggers printing. This is the most common setting, even when using an Encoder.
Encoder	Printing happens at regular intervals based on pulses from the Encoder. The Photocell is ignored. This can be useful on an extrusion line where an extruder is pushing PVC pipe under the Printhead, and the JetStream is printing the same thing over and over every several inches for the entire length of the pipe.
Photocell Auto	Photocell signal will trigger nonstop printing as long as the product is under (seen by) the Photocell sensor. An example is continuously printing on an electrical wire as the wire is being fed through under the Photocell/Printhead.
Photocell USB Data	Each Photocell trigger causes the JetStream to print a different piece of data from a USB drive.
Auto Print	The Photocell is ignored. Selecting Print on the Main screen will trigger nonstop printing. The main application for this setting is during troubleshooting.

Delay Multiplier:
  Increases the value of the "Initial Print Delay" (time between trigger and printing) and "Delay Between Prints." The default is **2**.

Delay Between Prints:
  When printing multiple times on a single item, sets the amount of time between prints.

Printing Speed:
  Sets how fast the printer prints. This number does not correspond to any specific unit of time: it merely represents an increase or decrease in how fast the columns of dots are printed. The range is 0–1000. The default setting is **1000**.

When finished editing **Basic** settings, select **Save**.

Select **Close** to close the **Basic** settings.

▲ Direction

ABC →
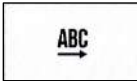
(Required Training Level: Trained Technician)

Selects the orientation of printing as the product flows past the Printhead.

Orientation:

The orientation describes the order in which ink droplets exit the Printhead to create the desired message. If the product flow is left-to-right, the message will require a different orientation than if product flow is right-to-left. Under **Mode**, select one of the following options:

Orientation Mode	Order of Dots Printed	Application
Regular (default)	PRINT ➡ PRINT	
Reverse	PRINT ➡ TNIЯ9	
Inverse	PRINT ➡ bⱤIИT	
Inverse ... Reverse	PRINT ➡ ⱢNIⱤ9	

Traverse Print:

Select this option if the Printhead is mounted on a linear actuator or traversing arm that sweeps back and forth or side to side over the product. This option prints one orientation during forward pass of the Printhead, and prints the opposite orientation during the backward pass. This is useful when multiple rows of products are passing by at once. An example of this would be a multipack of yogurt cups that are fastened together, where the Printhead needs to print on the top of each individual yogurt cup.

Printhead moving side to side over product

Product moving forward on Conveyor
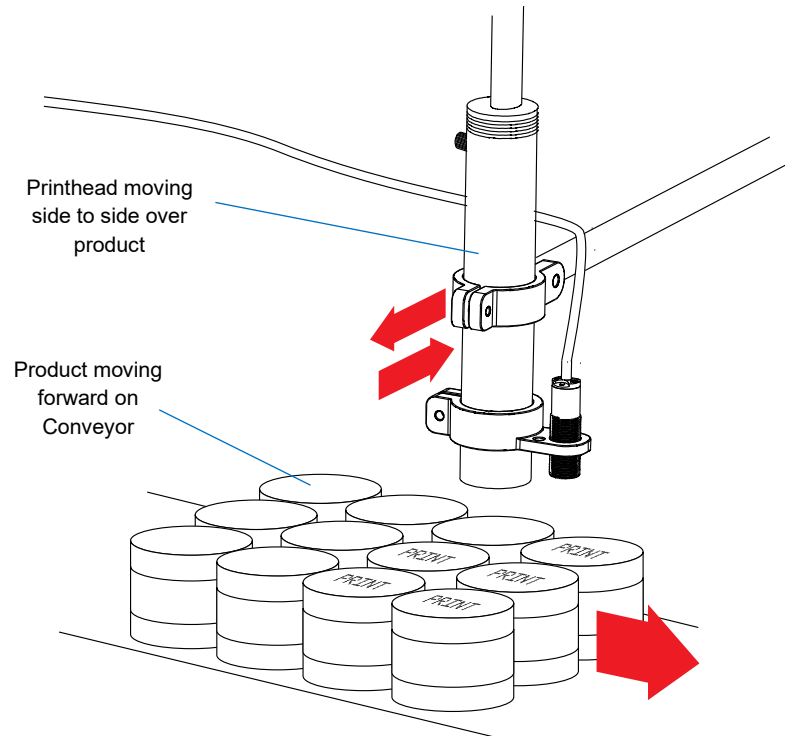
SQ-JETSTREAM-00109-02

In "Traverse Print Mode," choose the trigger for the change in orientation:

External Trigger:

If selected, printing orientation is controlled remotely by an external signal through the I/O port. If a high-level signal is received, messages are printed with the selected "Orientation" mode. If a low-level signal is received, messages are printed with the orientation selected in the "Traverse Print Mode" list.

In the **Reverse Repeat** box, select the number of prints 0-100. The default is **0**. This function is available if **Software Trigger** and **Reverse & Invert Printing** are selected.

When finished editing **Direction** settings, select **Save**.

Select **Close** to close the **Direction** settings.

△ Message Bold/Height
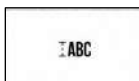
(Required Training Level: User)

Selects the boldness and height of the text.

Character Height Adjustment:

Adjusts the height of the text (distance apart of the dots in each column). This can be used to slightly increase throw distance or to reduce the dot matrix appearance of the text. The default height is **100**%. Height can be adjusted using the slider or using the four number boxes below it, which correspond to:

Button	Description
+10	Increase character height by 10%
+1	Increase character height by 1%
-1	Decrease character height by 1%
-10	Decrease character height by 10%

Bold Factor Setting:

Adjusts the bolding of the text. The default bolding is **0** (no bolding). For each number increase in the Boldness Factor, the number of droplets in each column of ink is doubled, resulting in a darker appearance. Increasing this value also uses more ink and slows print time.

When finished editing **Message Bold/Height** settings, select **Save**.

Select **Close** to close the **Message Bold/Height** settings.

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▲ BCD

(Required Training Level: Trained Technician)

Selects the BCD (Binary-Coded Decimal) Code function. BCD allows users to use an external device (such as a Programmable Logic Controller/PLC) to remotely toggle between messages saved in the JetStream's memory. The external control device must be connected to the JetStream's I/O Port.

I/O Data Input
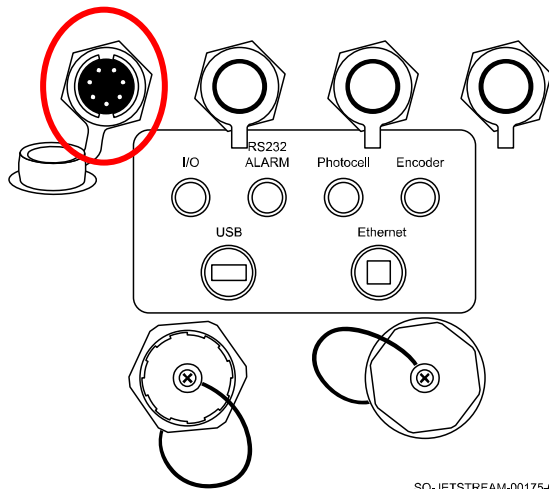
SQ-JETSTREAM-00175-01

In the **BCD Setting** area, **Started/Stopped** starts and stops the BCD Code function.

In the list to the right, the number of bits corresponds to the number of messages selected.

Bits Number	Description
2bits(4)	Select between 4 messages
3bits(8)	Select between 8 messages
4bits(16)	Select between 16 messages

When finished viewing or editing **BCD** settings, select **Save**.

Select **Close** to close the **BCD** settings.

▲ Photocell

***(Required Training Level:** Trained Technician)*

Opens and edits the Photocell settings.

Trigger Edge:
    Selects which edge of the passing product will trigger printing.

        Leading: If selected, printing is triggered when the product enters the detection area. This is the default option.

        Trailing: If selected, printing is triggered when the product exits the detection area.

Prints per Trigger:
    Sets the number of times to print on a product after the photocell is triggered. The range is 1–255. The default is 1.

Initial Print Delay:
    Sets the delay time between when the Photocell is initially triggered (sees the product) and when the printer actually prints. This number does not correspond to any specific unit of time: it merely represents an increase or decrease in time from trigger to print. The range is 0–59999. The default is 1000.

When finished editing **Photocell** settings, select **Save**.

Select **Close** to close the **Photocell** settings.

▲ Encoder

***(Required Training Level:** Trained Technician)*

Opens and edits the Encoder settings. Once the Encoder is connected to the JetStream, the JetStream will automatically read from it, and will not stop reading from it until the Encoder is physically disconnected.

An Encoder is used for variable-speed conveyors (ie, conveyors that do not move at a constant speed), so that print timing is not thrown off by the changes in speed. The Encoder sends pulses to the JetStream based on how far the conveyor has moved (eg, one full rotation of the Encoder wheel). The number of pulses, rather than an increment of time, is what triggers a vertical column of dots to be printed. As the conveyor speeds up, the pulses speed up, and columns are printed more quickly. When the conveyor slows down, the pulses slow down and columns are printed more slowly, so that print speed constantly matches conveyor speed even when the conveyor speed is changing.

> **NOTE:** When using an Encoder, "Printing Speed" under **Basic** should be set to **1000**.

Meter Factor

This setting is only used when printing multiple times on a single item, "Meter Factor" tells the JetStream how many Encoder pulses to wait between prints. This affects the distance between prints. The range is 0–60000. The default value is 2000. On a 4000 PPR (pulse per revolution) Encoder, 2000 would equate to half a rotation of the Encoder wheel between each print on the item. The number of times to print on each item is set in Photocell under "Prints per Trigger." If "Prints per Trigger" is set to 1, the JetStream ignores the "Meter Factor" value.

Encoder Divider

The "Encoder Divider" adjusts the width of the text. The encoder divider range is 0-15. The default is 0. Each number increase in the "Encoder Divider" value doubles the distance that the conveyor must travel to trigger a column of ink to print, and thereby impacts the width of the text as follows:

Encoder Divider Value	Conveyor Distance That Triggers Print	Width of Message When Printed (Same Conveyor Speed)
0	1x	TEXT SQ-JETSTREAM-00113
1	2x	TEXT SQ-JETSTREAM-00114
2	4x	TEXT SQ-JETSTREAM-00115
3	8x	TEXT SQ-JETSTREAM-00116
4	16x	TEXT SQ-JETSTREAM-00117

When finished editing **Encoder** settings, select **Save**.

Select **Close** to close the **Encoder** Settings.

▲ Charging Mode

(Required Training Level: Trained Technician)

Selects the charging mode for the ink droplets. **Standard** yields higher quality printing but is slower, while **High Speed** increases speed with some reduction in print quality.

▲ System Setting

(Required Training Level: Trained Technician)

Provides access to the JetStream's system settings, allowing adjustment of the user interface, how the JetStream hardware functions, and setting of passwords. The buttons in the middle panel give access to the right panel for adjustment or viewing.

Access **System Setting** from the **Main** screen by selecting the **Settings** button.

▲ Pressure

(Required Training Level: Trained Technician)

Select to view the ink pressure setpoint (target ink pressure). The ink pressure setpoint is specific to the ink being used and the Nozzle size.

⚠️	**ATTENTION:** This setting is typically input in the factory, based on customer needs, and generally should only be changed by qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.

The JetStream automatically adjusts the ink pressure based on the setpoint. Ink pressure is measured in kPa (kilopascals) rather than Psi (pounds per square inch).

> The conversion formula from Psi to kPa is:
>
> **Psi x 6.89475729 = kPa**
>
> The conversion formula from kPa to Psi is:
>
> **kPa x 0.144503774 = Psi**

The ink pressure range is 0–450. The default is dependent on ink type, but is typically **300**.

If the **Pressure** settings have been changed by qualified personnel, select **Save**.

When finished viewing **Pressure** settings, select **Close**.

▲ Viscosity

[icon]

(Required Training Level: Trained Technician)

Select to view the ink viscosity setpoint (target ink viscosity). The ink viscosity setpoint is specific to the ink being used.

⚠	**ATTENTION:** This setting is typically input in the factory, based on customer needs, and generally should only be changed by qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.

The viscosity setpoint is the ideal thickness balance of ink and makeup fluid to produce quality printing while minimizing equipment clogs. The JetStream measures and displays the viscosity of the ink in the Mixing Tank every 3 minutes, and automatically adjusts ink viscosity based on the setpoint.

The viscosity range is 30–100. The default is dependent on ink type, but is typically **55**.

If the **Viscosity** settings have been changed by qualified personnel, select **Save**.

When finished viewing **Viscosity** settings, select **Close**.

▲ Modulation

(Required Training Level: Trained Technician)

Select to view the modulation value for the Gun Body.

⚠️	**ATTENTION:** This setting is typically input in the factory, based on customer needs, and generally should only be changed by qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.

The modulation setting is a percentage (0-100) of the amplitude of a sine wave being delivered to the Gun Body (0-250VAC). The frequency of this waveform is fixed at either 76.8 kHz or 94.0 kHz depending on model type. Adjustment of modulation dictates where the steady ink stream separates into individual droplets.

When modulation is too high or too low, the print quality is reduced. The ideal modulation results in the ink flow breaking up into droplets after entering the Charge Electrode Tunnel, but before exiting it. This produces a flow of clearly differentiated ink droplets, resulting in crisp, clean printing.

Modulation and Ink Drop Break-off
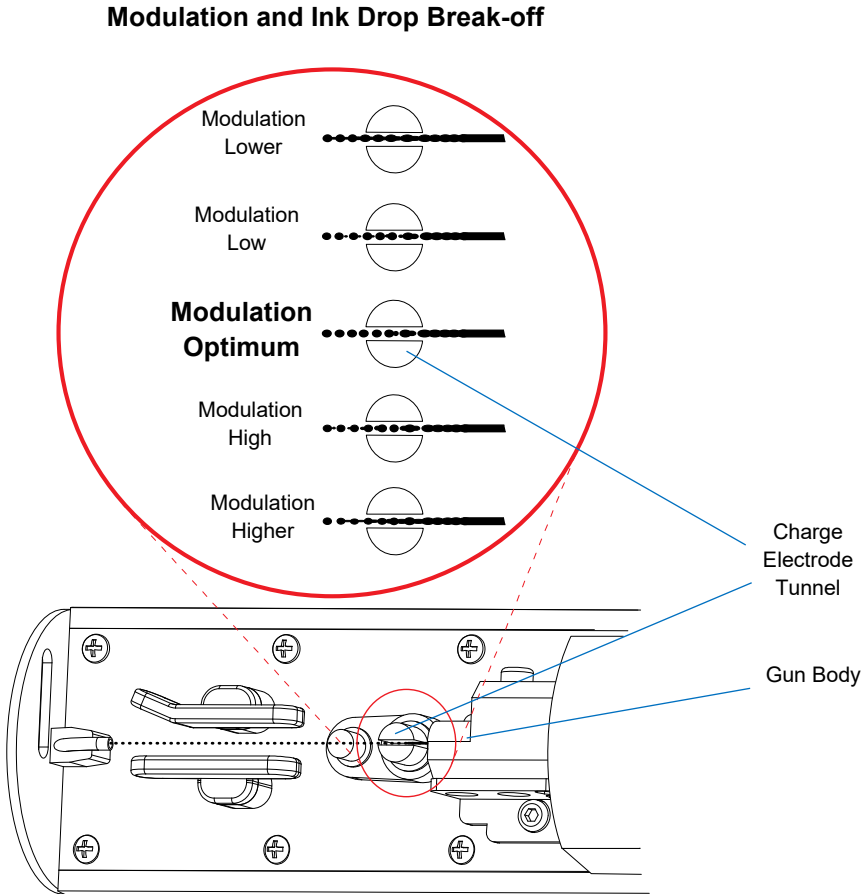
The modulation value can be adjusted either by using the slider or selecting the number buttons.

Button	Description
+10	Increase modulation value by 10%
+1	Increase modulation value by 1%
-1	Decrease modulation value by 1%
-10	Decrease modulation value by 10%

If the **Modulation** settings have been changed by qualified personnel, select Save.

When finished viewing Modulation settings, select **Close**.

▲ HV Status

(Required Training Level: *Trained Technician)*

Select to view or set the high voltage settings. This merely indicates whether or not the JetStream is currently printing (ie, the Deflector Plates inside the Printhead are active and charged with electricity).

Started means that the JetStream is printing.

Stopped means that the JetStream is not printing.

When finished viewing the **HV Status** select **Close**.

▲ Alarm Setting

⚠

(Required Training Level: Trained Technician)

Select to view and edit fault warning settings.

Select **ON** or **OFF** to turn each fault warning on and off.

⚠	**WARNING:** The alarm settings are set up by trained and qualified personnel. Unauthorized tampering with these settings can result in unsafe conditions, damage to the equipment, and voiding of the warranty.

Warning	Description
Gutter	"On" displays a warning message on the screen when the Ink stream misses the Ink Return Gutter tube for more than 3 seconds. If this problem persists for more than 10 seconds, the printer stops jetting automatically.
Temperature Too Low	"On" displays a warning message on the screen when the ambient temperature falls below 33.8°F (1°C).
Temperature Too High	"On" displays a warning message on the screen when the ambient temperature rises above 140°F (60 C).
Mixing Tank Overflow Status	"On" displays a warning message on the screen when the Mixing Tank overflows. The printer stops printing and jetting automatically.
High Voltage Leakages	"On" displays a warning message on the screen when a high voltage fault occurs.

If the **Alarm Settings** have been changed by authorized and qualified personnel, select **Save**.

When finished viewing **Alarm Setting**, select **Close**.

▲ Language

(Required Training Level: Trained Technician)

Select to view the language to be used by the system. Selecting a language will affect both the language used on the interface and the characters available for creating print messages.

IMPORTANT: The "Language" setting is set up by trained and qualified personnel. Changing the interface language may make it difficult to navigate back to the desired language.

Available languages are:

Arabic	Italian	Spanish
Bengali	Korean	Turkish
Chinese	Persian	Vietnamese
English	Portuguese	
French	Russian	

If the **Language** settings have been changed by authorized and qualified personnel, select **Save**.

When finished viewing **Language** settings, select **Close**.

▲ System Upgrade

(Required Training Level: Trained Technician)

Select to install a JetStream software update or immediately after installing a new Main Filter Assembly.
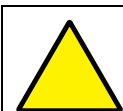
	ATTENTION: Software and Filter changes should only be performed by qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.

Software Upgrade

Installs a software upgrade onto the JetStream from a software upgrade USB (see "▲ Software Updates" on page).

If a software upgrade has been performed by authorized and qualified personnel, select **Save**.

When finished viewing the **System Upgrade** settings, select **Close**.

▲ Password

(Required Training Level: Trained Technician)

Sets passwords for up to two different preset levels of system security and access. This can be helpful to prevent unauthorized users from modifying settings that can damage the equipment, produce inferior print results, or endanger workers. To learn exactly what is blocked for users who do not have a Level 1 password or a Level 2 password, see the JetStream Service Manual.

ATTENTION: Passwords are set by authorized personnel. Do not change or disable the password settings without authorization.

To set a Level 1 password, go to the "Level 1 Password" section:

1. Under "Switch Status," select **Disabled.** A dialog box appears asking for the current Level 1 password.
2. Enter the current Level 1 password. "Switch Status" displays as **Enabled**.
3. Under "Update," enter a new password in both the "New Password" and "Confirm Password" boxes.
4. Select **Save** to save the new Level 1 password. A dialog box will appear asking for the previous Level 1 password.
5. Enter the previous Level 1 password to save the new password.

   NOTE: Make note of the new Level 1 password and keep it in a secure location where others will not have access to it.

To set a Level 2 password, go to the "Level 2 Password" section and perform the same steps as for setting a Level 1 password.

NOTE: Make note of the new Level 2 password and keep it in a secure location where others will not have access to it.

If changes to the **Password** have been performed by authorized and qualified personnel, select **Save**.

Select **Close** to close the **Password** settings.

▲ Date & Time

(Required Training Level: Trained Technician)

Select to view or set the current date and time within the system.

⚠	**ATTENTION:** Changing the date or time should only be performed by qualified and authorized personnel. Changing the date and time to anything other than the actual date and time can impact some aspects of print functionality and result in costly printing mistakes.

To change the date, use the up and down arrows on either side of the upper box to scroll to the current date.

To change the time, use the up and down arrows on either side of the lower box to scroll to the current time.

If **Date & Time** changes have been made by authorized and qualified personnel, select **Save**.

Select **Close** to close the **Date & Time** settings.

▲ System Info

(Required Training Level: Trained Technician)

Select to view current information about the JetStream being used.

Information includes:

Printer Model:
Model number of this JetStream.

Kernel Version:
(Software/firmware info for Distributors or Squid Support).

App Version:
Version of the JetStream software currently in use on this JetStream.

Driver Version:
(Software/firmware info for Distributors or Squid Support).

Printhead Version:
Version of the Printhead currently in use on this JetStream.

CPLD Version:
(Software/firmware info for Distributors or Squid Support).

Select **Close** to close System Info.

△ Ink System

(Required Training Level: User)

Provides access to the JetStream's jetting and purging functions. Access **Ink System** from the **Main** screen by selecting the **Settings** button.

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Use the buttons in the middle panel to activate the functions.
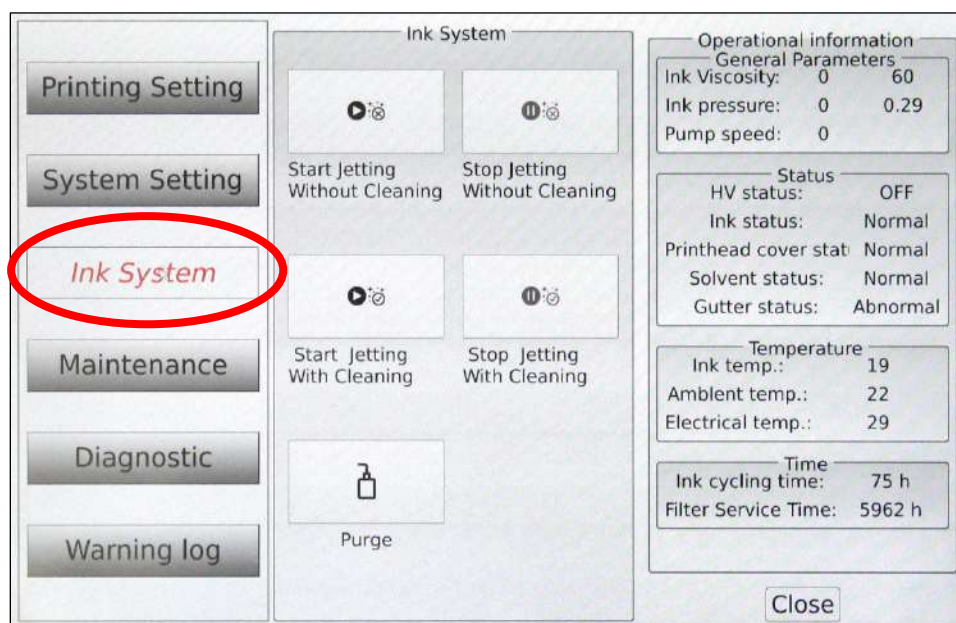
△ The Right Panel

(Required Training Level: User)

When no button in the middle panel has been activated, the right panel shows general "Operational Information." That information is:

Heading	Subheading	Description
General Parameters	**Ink Viscosity**	Shows the viscosity (thickness) or fluidity (thinness) of the ink/makeup mixture in the Mixing Tank. The right value is the target viscosity, or setpoint. The left value is a live viscosity reading, measured every 3 minutes. The live viscosity must be within ±10% of the setpoint for proper system function.
	Ink Pressure	Shows the ink pressure, measured in kilopascals. The right value is the target pressure, or setpoint. The left value is a live pressure reading.
	Pump speed	Shows the speed of the Gear Pump, measured in revolutions per minute (RPMs).
Status	**HV Status**	Indicates if the system is currently printing. "OFF" means that the system is not printing. "ON" means that it is currently printing.
	Ink Status	Indicates if there is ink in the Ink Container.
	Printhead Cover Status	Indicates if the Printhead Cover is on the Printhead. If the Printhead Cover is not on, the system will not allow Printing to be turned on.
	Solvent Status	Indicates if there is makeup fluid in the Makeup Container.
	Gutter Status	Indicates if ink is going into the Ink Return Gutter. If the system is jetting and the Gutter Status reads "Abnormal," there may be a blockage in the Printhead that should be addressed immediately.
Temperature	**Ink Temp**	Shows the temperature of the ink, measured in degrees Celsius.
	Ambient Temp	Shows the temperature in the JetStream's immediate environment, measured in degrees Celsius. The acceptable ambient temperature range is 41° F – 113° F (5° C – 45° C).
	Electrical temp	Shows the temperature of the electronics in the system, measured in degrees Celsius.
Time	**Ink Cycling Time**	Shows the number of hours that the hydraulic system of the JetStream has been running.
	Filter Service Time	Shows the number of hours remaining before the Main Filter Assembly needs to be changed.

△ Start Jetting Without Cleaning

(Required Training Level: User)

This function is also accessible on the **Main** screen by selecting **Start Jetting**.

Starts sending ink from the Mixing Tank through the Umbilical Tube to the Printhead, and circulates most or all of it back to the Mixing Tank.

"Start Jetting Without Cleaning" should be used when resuming printing after a brief break.

△ Stop Jetting Without Cleaning

(Required Training Level: User)

This function is also accessible on the **Main** screen by selecting **Stop Jetting**.

Stops the flow of ink through the Umbilical Tube and Printhead.

"Stop Jetting Without Cleaning" should be used when stopping printing for a brief break.

△ Start Jetting With Cleaning

(Required Training Level: User)

This function is also accessible on the **Main** screen by selecting **Start Jetting**.

Briefly sends pure makeup fluid from the Makeup Container through the Umbilical Tube to the Printhead, and circulating most or all of it back to the Mixing Tank. The system then begins sending a steady flow of ink from the Mixing Tank through the Umbilical Tube to the Printhead, and circulating most or all of it back to the Mixing Tank.

"Start Jetting With Cleaning" should be used when the system has not been in use for 8 hours or more. (see "△ Precautions for Jetting With Cleaning" on page 201).

△ Stop Jetting With Cleaning

(Required Training Level: User)

This function is also accessible on the **Main** screen by selecting **Stop Jetting**.

Stops the flow of ink and/or makeup through the Umbilical Tube and Printhead.

"Stop Jetting With Cleaning" should be used when the system will not be in use for 8 hours or more (see "△ Precautions for Jetting With Cleaning" on page 201).

△ Backflush

(Required Training Level: User)

This function is only accessible through the **Ink System** screen, and is mainly used to clear a minor blockage in the Printhead by backflushing the Gun Body (see "△ Backflushing the Gun Body" on page 219).

Once **Backflush** has been selected, there will be a 10 second delay, after which the Printhead Ink Valve (YV7) will deactivate the ink jet for about 20 seconds. During this 20 seconds, the user must shoot makeup fluid at the Gun Body Nozzle using the Cleaning Bottle. A suction will also be created at the Gun Body Nozzle via the Printhead Bleed Valve (YV3) and Gutter Valve (YV5). At the end of the 20 seconds, the ink stream resumes coming out of the Gun Body.

▲ Maintenance

(Required Training Level: Trained Technician)

Provides access to maintenance functions that can be performed on the JetStream. Access **Maintenance** from the **Main** screen by selecting the **Settings** button.

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Buttons in the middle panel activate the functions they describe.

⚠	**ATTENTION:** Most functions in this section should only be activated by a trained and qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.
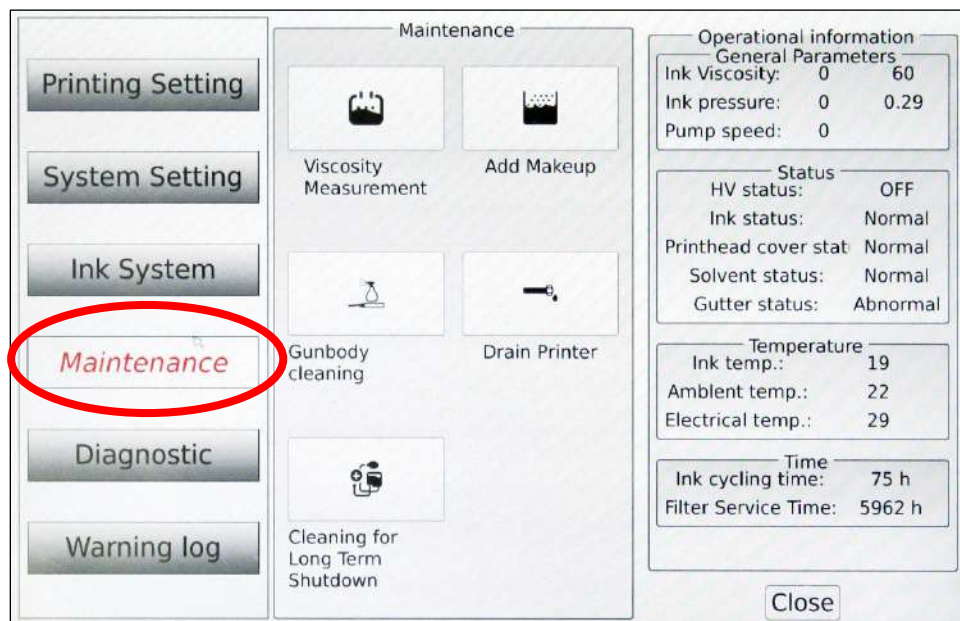
The Right Panel

When no button in the middle panel has been activated, the right panel shows general operational information. This is the same information displayed on the right panel of the **Ink System** screen (see "△ The Right Panel" on page 183).

▲ Viscosity Measurement

(Required Training Level: Trained Technician)

Measures the viscosity of the ink/makeup mixture in the Mixing Tank. The **Viscosity Measurement** button triggers an instantaneous measurement of ink viscosity. This function is generally only used during troubleshooting,

	ATTENTION: This function should only be activated by trained, qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.

IMPORTANT: If not timed properly within the JetStream's normal 3 minute viscosity measurement cycle, activating this function can trigger an inaccurately high reading that results in a system fault.

▲ Add Makeup

(Required Training Level: Trained Technician)

Manually adds makeup (approximately 2 ml) to the Mixing Tank.

	ATTENTION: This function should only be activated by trained, qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.

Add Makeup is generally only used when commissioning the JetStream to speed up the process of bringing the ink in the Mixing Tank to the proper viscosity (see "■ Commissioning the JetStream" on page).

	ATTENTION: Add Makeup should rarely be used. It adds pure makeup fluid to the Mixing Tank. Frequent use of this function can dilute the ink, resulting in poor print quality, wasted ink, and the potential to overflow the Mixing Tank.

▲ Gun Body Cleaning

(Required Training Level: Trained Technician)

Shoots a jet of pure makeup through the Gun Body and recirculates the makeup back into the Mixing Tank through a tube before it reaches the Ink Return Gutter. This is similar to "Start Jetting With Cleaning," but provides a more thorough cleaning of the Gun Body and may be useful if there is an obstruction in the Printhead. After running makeup through the system, **Gun Body Cleaning** shuts the JetStream down.

⚠	**ATTENTION: Gun Body Cleaning** should be used sparingly. It briefly shoots pure makeup fluid through the system. Frequent use of this function can dilute the ink, resulting in poor print quality, wasted ink, and the potential to overflow the Mixing Tank.

▲ Drain Printer
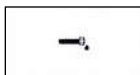

(Required Training Level: Trained Technician)

Drains the Mixing Tank. Potential uses for this function are before preventative maintenance done by a technician, if the system is going to be shut down for a long period of time, or if the viscosity in the Mixing Tank is extremely low and the user cannot wait days for enough makeup to evaporate to bring the ink viscosity back into acceptable range.

⚠	**WARNING:** Stop jetting before activating this function. If the drain line is opened, it is possible for ink to spray into the room, onto people, or into people's eyes.

⚠	**WARNING:** This function should only be activated by trained, qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.

Items Needed to Drain the Printer are:

- Paper towels
- 5-gallon hazardous liquids container

To Drain the Printer (Mixing Tank):

1. **Stop Jetting** >> "Stop Jetting With Cleaning" (see "△ Precautions for Jetting With Cleaning" on page 201).

2. **Prepare to drain the Mixing Tank:**

   a. Open the back door of the Console by unscrewing the 2 Fasteners and pulling the door open.

   b. Locate the Drain Tube inside the back of the Console. The Drain Tube has a yellow label that reads "Ink Drain Tube," and connects to the (green striped) ink line at the Pre-Head Filter.
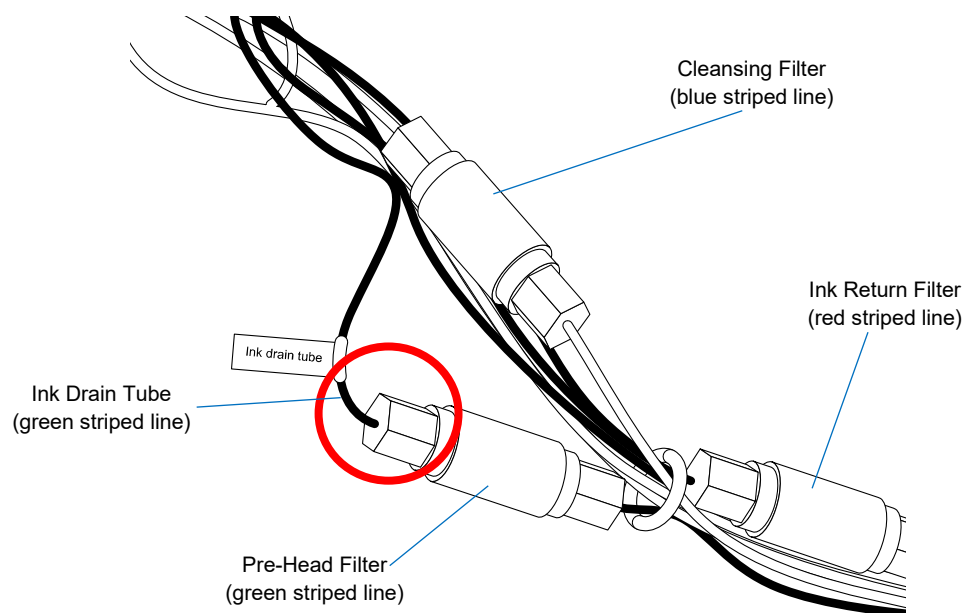
▲ Cleaning for Long-Term Shutdown

(Required Training Level: Trained Technician)

Use this option when the JetStream is going to be idle for 3 months or more, or if it needs to be shipped or for preventative maintenance (see "▲ Preparing the JetStream for More than 3 Months Idle" on page 298).

⚠	**ATTENTION:** This function should generally only be activated by trained and qualified personnel. If in doubt, contact your trained and authorized Squid Ink Distributor.

Select **Close** to close the Maintenance Settings.

▲ Diagnostic

***(Required Training Level:** Trained Technician)*

Provides access to diagnostic information about the JetStream's various systems. The buttons in the middle panel give access to the right panel for adjustment or viewing.

Access **Diagnostic** from the **Main** screen by selecting the **Settings** button.

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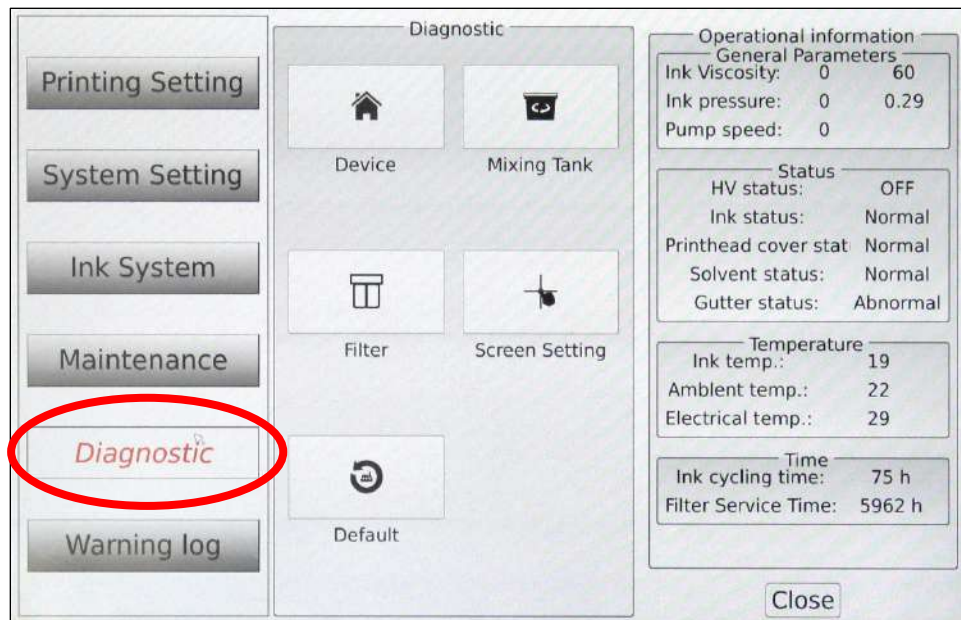
▲ Device

(Required Training Level: Trained Technician)

Opens the **Device Debug** functions.

NOTE: Shut off jetting before starting debugging routines.

| ⚠️	**ATTENTION:** This function should only be activated by trained, qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.
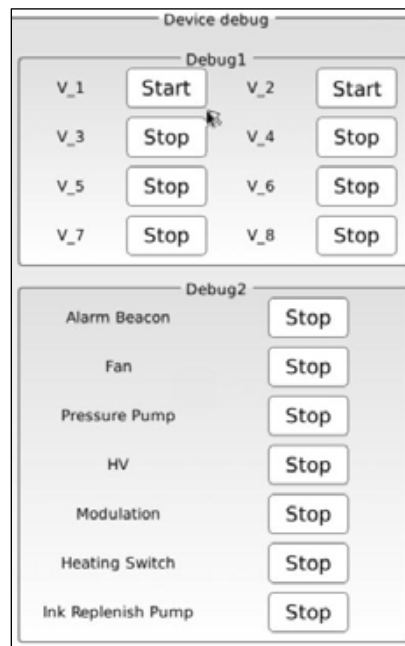
In the **Debug 1** area, selecting **Start** opens the given valve, and selecting **Stop** closes it. The valves are:

Valve	Location/Description	Valve	Location/Description
V_1	Viscometer Valve	V_5	Gutter Valve
V_2	Makeup Add Valve	V_6	Ink Add Valve
V_3	Printhead Bleed Valve	V_7	Printhead Ink Valve
V_4	Cleaning Valve		

In the **Debug 2** area, selecting **Start** activates the given part, and selecting **Stop** deactivates it.

Select **Close** to close the **Device** settings.

▲ Mixing Tank

(Required Training Level: Trained Technician)

Select to view an approximation of current ink levels in the Mixing Tank. There are four ink level sensors inside the Mixing Tank, represented by the graphic. The highest circle filled with green indicates the current ink level.
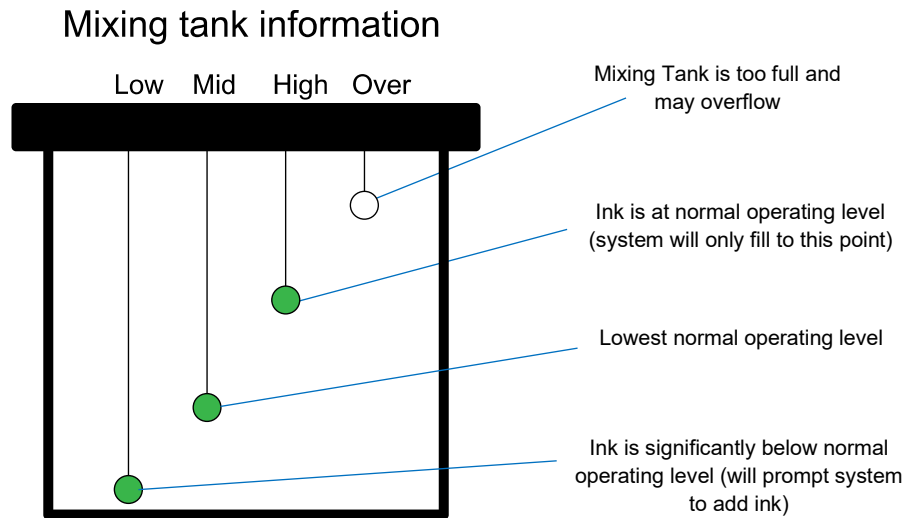
Mixing tank information

Select **Close** to close the **Mixing Tank** settings.

▲ Filter

```
┬┬
```

(Required Training Level: *Trained Technician)*

Select to view details about the current condition of the JetStream's Main Filter.

```
┌──────────── Information ────────────┐
│  ┌──────── Filter parameter ───────┐ │
│  │   Model:            F1001        │ │
│  │ Production date:   18--12--5     │ │
│  │  Cycling time:      6100         │ │
│  │ Time remaining:     5962         │ │
│  │   Status:           0--0         │ │
│  │    Mode:             3           │ │
│  └──────────────────────────────────┘ │
│                                       │
│                                       │
│                                       │
└───────────────────────────────────────┘
```

Information displayed includes:

Model:
Model number of the filter being used by the JetStream.

Production date:
Date that the filter was made (Year-Month-Day).

Cycling time:
Lifespan of the current filter (hours).

Time remaining:
Number of hours left before the filter needs to be replaced.

Status:
(for Squid Ink reference).

Mode:
(for Squid Ink reference).

Select **Close** to close the **Date & Time** settings.

▲ Screen Setting

(Required Training Level: Trained Technician)

Select to view and set Touchscreen settings.

Screen Saver:

    Adjusts the screen saver settings and allows the screen saver to be enabled or disabled:

Delay Time:

    Number of milliseconds of screen inactivity before the screen saver should be displayed.

Screen Calibration:

    Pressing **Start** begins the process of calibrating/recalibrating the Touchscreen. Another screen will display showing "+" images in various places on the screen. The system takes you through touching each one to recalibrate the Touchscreen so that it responds more accurately.

Select **Close** to close the **Screen Settings**.

▲ Default

(Required Training Level: Trained Technician)

Resets the system to factory default settings.

⚠️	**ATTENTION:** This function should only be activated by trained, qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.

△ Warning Log

(Required Training Level: User)

Provides access to the JetStream's alarm history.

Access **Warning Log** from the **Main** screen by selecting the **Settings** button.
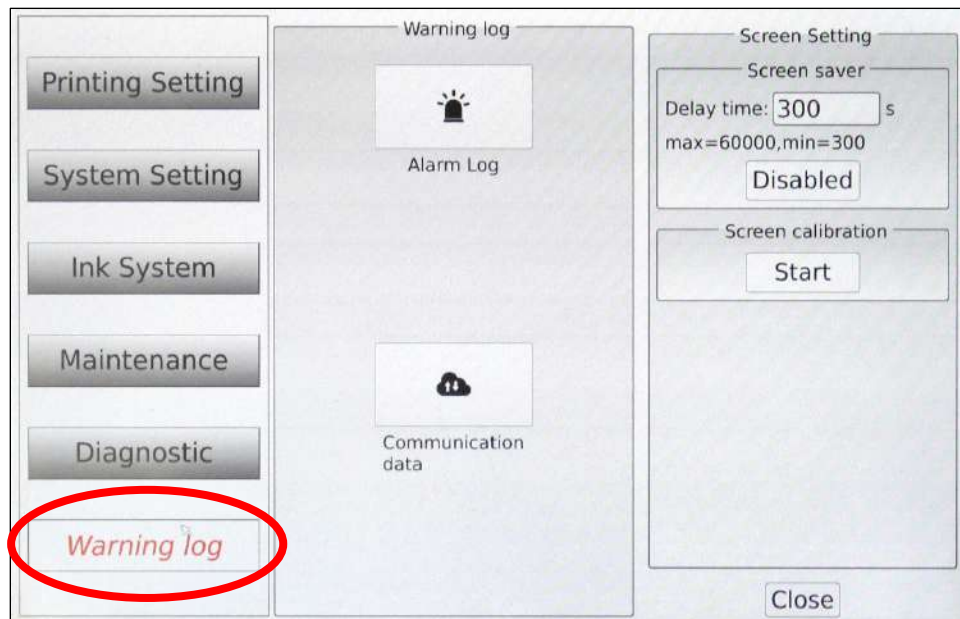
SQ-JETSTREAM-00047

△ Alarm Log

(Relevant Training Level: User)

This information is also accessible on the **Main** screen by selecting **Alarm Log** in the lower right corner.

SQ-JETSTREAM-00048

Select to display the history of the alarms that have taken place on the JetStream.

▲ Software Updates and Advanced Features

Occasionally updates for the JetStream software become available. Additionally, advanced software features may be purchased to enhance the system's capabilities.

▲ Software Updates

(Required Training Level: Trained Technician)

Squid Ink will periodically make software upgrades available for the JetStream.

⚠️	**ATTENTION:** A software upgrade should never be performed when fluid is flowing through the system.

To Upgrade the System Software:

1. **Stop printing.**

2. **Stop Jetting** >> "Stop Jetting Without Cleaning."

3. **Plug in the software upgrade USB:**

   a. Unscrew the USB Cover on the left side of the Console.

USB Data Input

SQ-JETSTREAM-00174-01
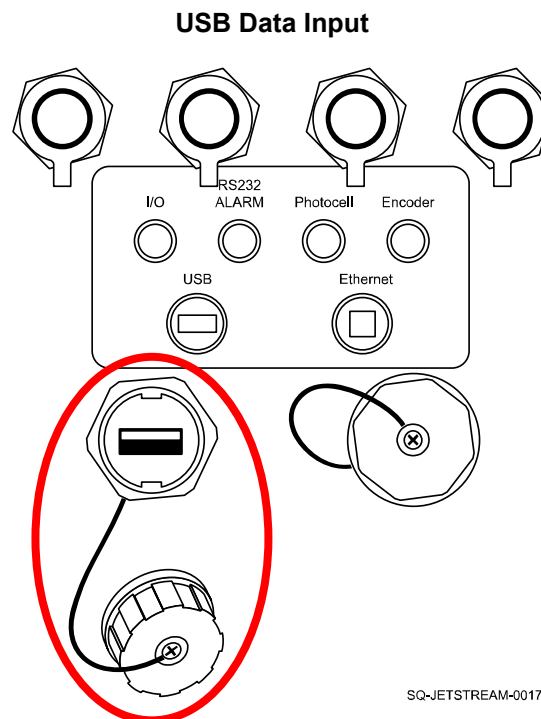
   b. Insert the software upgrade USB drive into the USB Port.

4. **Install the upgrade:**

    a. On the Touchscreen, select **Settings** >> **System Setting** >> **System Upgrade**. The JetStream automatically finds the USB and installs the upgrade.

    b. When finished upgrading the software, select **Close** to close the **System Upgrade** settings.

Operation

(Required Training Level: User)

With the exception of "▲ Entering a JetStream's Touchscreen Remotely" on page , all procedures in the "Operation" section can be performed by users.

⚠	**WARNING:** When working with inks and fluids, always wear gloves, safety glasses, and protective clothing. Avoid skin contact with inks and fluids. Never look directly into the Printhead Nozzle. Ensure proper ventilation to minimize fumes.

△ Precautions for Jetting With Cleaning

⚠	**ATTENTION:** "Start Jetting With Cleaning" or "Stop Jetting With Cleaning" should be used sparingly. It briefly shoots pure makeup fluid through the system. Frequent use of this function can dilute the ink, resulting in poor print quality, wasted ink, and the potential to overflow the Mixing Tank.

⚠	**ATTENTION:** Never select "Start Jetting With Cleaning" or "Stop Jetting With Cleaning" if the Makeup Container is empty. The JetStream will shoot air instead of makeup fluid through the system, which can increase the likelihood of a clog.

△ Startup and Shutdown

Once all of the necessary installation and setup steps have been taken (see the "Installation and Setup" on page), including installation of Ink and Makeup Containers, the JetStream is ready to operate.

VIDEO: Startup and Shutdown Procedures	
To see a video of this procedure, click this link: https://www.youtube.com/watch?v=zCYiP6iO4i8 Or scan the QR code at right using the camera app on your mobile device.	
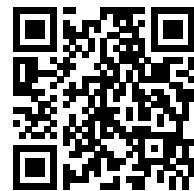
△ Powering On

On the right side of the JetStream, just above the Power Input, is the Power Switch. Turn Power Switch to the "ON" position. It will light up green.

△ Startup Procedure

This section describes standard startup during normal ongoing use once the JetStream has commissioned.

△ *Startup: Beginning of the Day*

If the JetStream has not been in use for 8 hours or more, on the **Main** screen, select **Start Jetting** >> "Start Jetting With Cleaning" (see "△ Precautions for Jetting With Cleaning" on page). The system has now been started up and is ready to begin creating messages or printing.

OR

△ *Startup: After a Short Break*

If using the JetStream after a short break, on the **Main** screen, select **Start Jetting** >> "Start Jetting Without Cleaning." The system has now been started up and is ready to begin creating messages or printing.

△ Shutdown Procedure

Proper shutdown of the JetStream is an important part of operation.

⚠️	**ATTENTION:** Never simply turn off the Power Switch to shut down the JetStream. Following any procedures other than those described below can clog or damage the system. If proper shutdown procedures have not been followed, contact your trained and authorized Squid ink Distributor.

NOTE: The JetStream benefits from being left jetting during brief breaks, rather than being shut down. If possible, simply leave the system on.

△ *Shutdown: End of the Day*

If the JetStream will not be in use for 8 hours or more, such as at the end of the day, and it cannot simply be left jetting, on the **Main** screen, select **Stop Jetting** >> "Stop Jetting With Cleaning" (see "△ Precautions for Jetting With Cleaning" on page 201).

If desired, turn the Power Switch on the right side of the Console to the "OFF" position.

OR

△ *Shutdown: Before a Short Break*

NOTE: The JetStream benefits from being left jetting during brief breaks, rather than being shut down. If possible, simply leave the system on.

If shutting down to perform maintenance, or if the system cannot simply be left jetting during a brief break, on the **Main** screen, select **Stop Jetting** >> "Stop Jetting Without Cleaning."

△ Creating and Editing New Messages

(Required Training Level: User)

VIDEO: Message Creation

To see a video of this procedure, click this link:
https://www.youtube.com/watch?v=bIW2rPz-Nnw
Or scan the QR code at right using the camera app on your mobile device.

SQ-JETSTREAM-00244-01
Message Creation
https://www.youtube.com/watch?v=bIW2rPz-Nnw

To Create a Message on the JetStream:

1. **Go to the Message Page:**

   a. If not already on the **Message** screen, navigate to it by going to the **Main** screen and selecting **Message**.

2. **Create a blank template:**
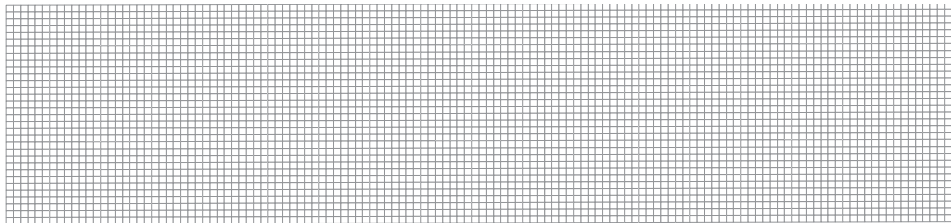
   SQ-JETSTREAM-00079

3. **Set the desired Raster Mode:**

   The example below shows a **Raster Mode** setting of 7x5B. The Message Area shows white in the areas that will print, and pink in the areas that will not print.
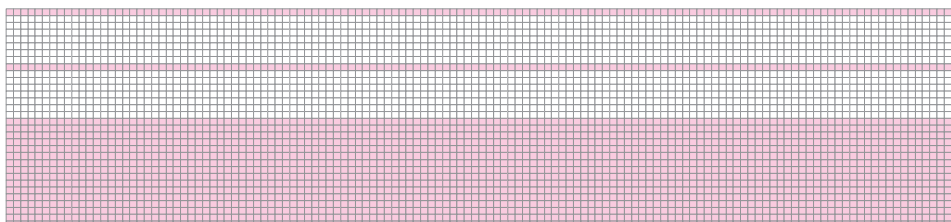
   SQ-JETSTREAM-00080

4. **Create the desired message:**

Add any combination of static and/or dynamic objects to create the message. Touch the Message Area where the upper left corner of an object is to be placed, then select the button for the kind of object to add.

Static objects include:

△ **Static** Text

Aa

△ **Bitmap**

BMP

△ **Barcode**

||||||

Dynamic objects include:

△ **Counter**

162

△ **Date and** Time

🕐

△ **Shift**

👥

△ **USB** Data

⇒

5. **Move the objects into the desired positions using the Arrow buttons:**

a. Select the desired object to move.

b. Use the arrow buttons to move the object into the desired position.

6. **Make adjustments as needed:**

a. To edit the text in a text block, double-tap the text block. The text becomes red to indicate that it can be edited. Tapping the Message Area outside of the text block turns the text black to indicate that it is no longer editable.

b. If the text is too tall for the line (raster mode) into which it is supposed to fit, either:

- Reduce the text size to fit inside the line by changing the font size at the top of the screen, or

- Enlarge the line height by selecting **Raster Mode**.

c. Fine tune the positioning of the objects using the arrow buttons.

d. Use the Copy, Paste, Delete, and Enlarge/Reduce Text Size functions as desired.

| △ Copy | △ Paste | △ Delete | △ **Increase Text** Size | △ **Decrease Text** Size |

7. Save the message:

a. Select the **Save** button.

b. On the right side of the dialog box, select the desired location for the file to be stored.

Local Disk saves the message to the JetStream's hard drive.
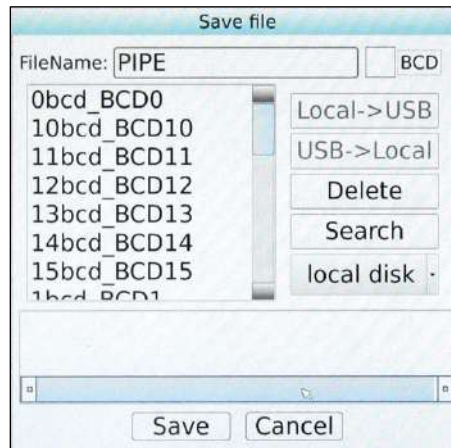
If a USB drive has been inserted into the JetStream's USB Port (left side of Console), **Local > USB** will allow the file to be saved to the USB drive (see diagram below).

USB Data Input
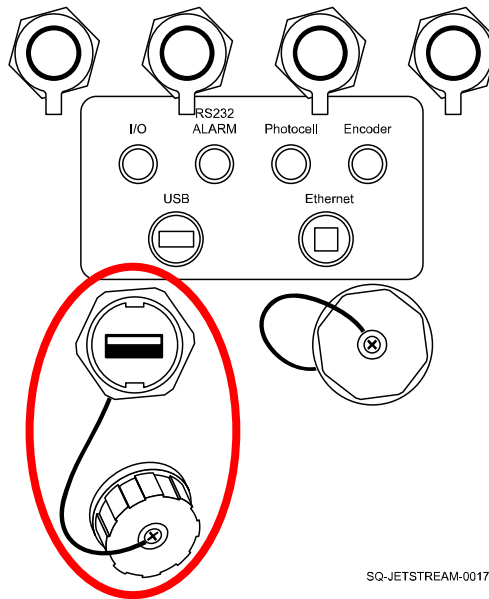
SQ-JETSTREAM-00174-01

c.   In "Filename" (upper left), input a name for the file.

d.   Select **Save** to save the file to the desired location.

△ Retrieving Existing Messages

(Required Training Level: User)

To Retrieve a Message for Printing:

1. **Go to the Main screen or the Message screen:**

   a. If not editing the file, go to the **Main** screen by selecting:

    or

   b. If editing the file, go to the **Message** screen by selecting:

2. **Load a message:**

   a. Select **Load File**.

   b. On the right side of the dialog box, select the location of the desired file.

   Local Disk retrieves the message from the JetStream's hard drive.
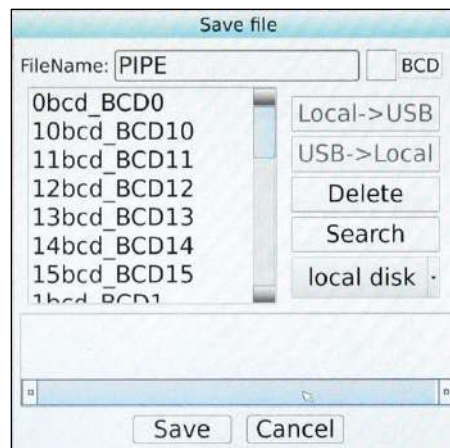
   If a USB drive has been inserted into the JetStream's USB Port (left side of Console), **Local > USB** will allow the file to be retrieved from the USB drive. The USB drive must be FAT or FTA32.

USB Data Input
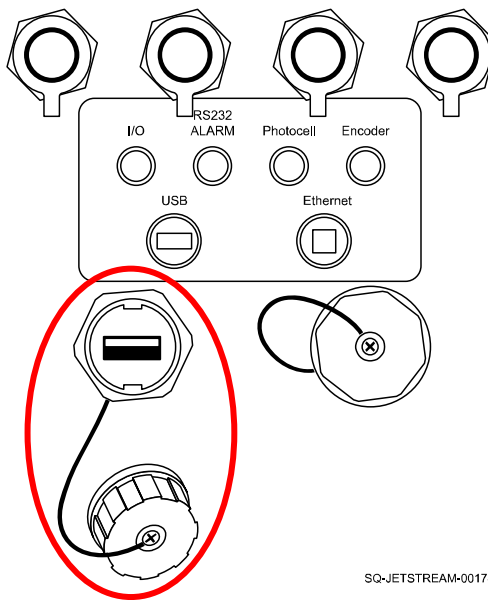
SQ-JETSTREAM-00174-01

   c. Select the desired file from the list on the left side of the dialog box, scrolling if necessary. The message opens at the top of the screen.

3. Print or edit the file:

   a. If printing, begin the printing process via the **Main Screen** (see "△ Printing a Message" on page 210).

   b. If modifying the file on the **Message** screen, make the desired changes, select **Save File**, and choose whether to save the new message over the existing file or save the new message with a new name.

△ Printing a Message

(Required Training Level: User)

If a print message has been created and all JetStream setup has been completed, including coordinating the speed of the Printer and Conveyor, a message can be printed.

1. **Load the message:**

   a. Go to the **Main** screen.

   b. If the message is not already loaded, load the desired message by selecting **Load File**.

2. **Start Jetting:**

   a. Select **Start Jetting.**

   b. In the dialog box, select "Start Jetting With Cleaning" or "Start Jetting Without Cleaning" (See "△ Startup Procedure" on page 202 to determine correct "Start Jetting" procedure).

3. **Start the Conveyor/product flow.**

4. **Start printing:**

   a. Select **Print.** The JetStream will now print on the passing product.

5. **Stop printing:**

   a. When finished printing, select **Stop Printing.** The JetStream will now stop printing, but ink will continue to jet through the system.

△ Printing a Message from a PC/Network:

(Required Training Level: User)

If a print message has been created and all connections and communications have been properly established between a PC/Network and the JetStream(s), including coordinating the speed of the Printer and Conveyor, a message can be printed.

1. **Load the message:**

   a. On the PC, open the JetStream software.

   b. Select the **Download Data to Print** button.

2. **Choose the desired Printers:**

   a. Select the IP addresses of each JetStream to send the print message to. When a JetStream's IP address is selected, it will move to the "Currently Selected" field.

   b. Once all target IP addresses have been selected, select the **Download** button to send the print message to the printer(s).

   > **NOTE:** If the "Remember My Selection" checkbox is not selected, there will be a "Download" prompt for each individual printer IP. Selecting "Remember My Selection" enables printing to all selected printers with a single click of the **Download** button

   Selecting the Desired Printers
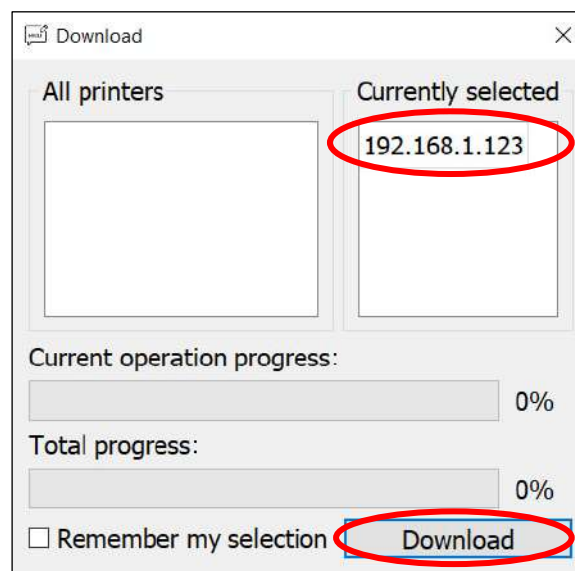
   c. When downloading to all desired JetStreams is complete, the download menu can be closed.

▲ Entering a JetStream's Touchscreen Remotely

***(Required Training Level:** Trained Technician)*

A JetStream's Touchscreen can be accessed and controlled remotely from a PC that is connected to it via Ethernet.

To Enter a JetStream's Touchscreen Remotely:

1. Double-click the "Jetstream Remote Screen" icon on the PC's desktop.
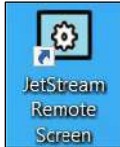
2. After opening "JetStream Remote Screen," enter or select the IP of the desired JetStream printer to connect to.

3. After entering the IP address, select "Connect." The screen of the desired JetStream will display on the PC, providing complete remote access to all of that JetStream's functions.

4. To similarly control an additional JetStream from the PC, double-click the "Jetstream Remote Screen" icon, enter or select the IP of the desired JetStream printer, and then select "Connect."

5. To resize the display of a JetStream to better fit the PC screen, select the "House" icon in the top left corner, and in the dropdown, select "Size."

Resizing the JetStream Display on the PC
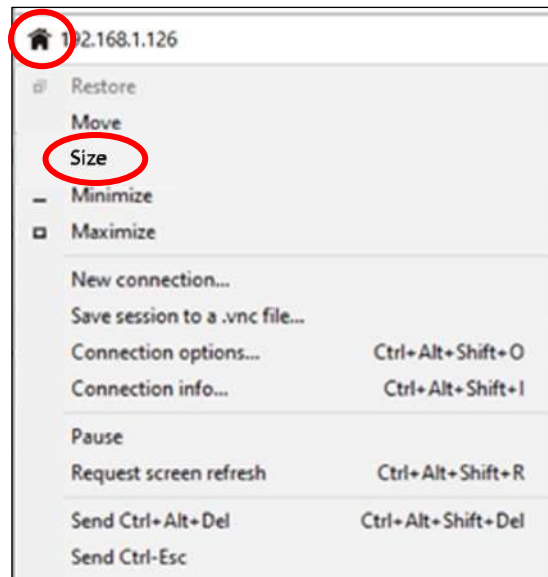
Maintenance and Repairs

The JetStream requires regular maintenance in order to function properly. This section describes procedures for maintenance and common repairs to the JetStream.

IMPORTANT: For guidance on the appropriate times and situations to perform any procedures described in this section, please consult the "△ Maintenance Schedule" below, the "Warnings and Alarms" section on page 303, or the "Troubleshooting" section on page 313.	

⚠	**WARNING:** The procedures described in this section should not be performed randomly in an uninformed attempt to solve a problem. If done incorrectly, too frequently, or at the wrong time, some of these procedures can result in poor print performance, can damage the system, or can even create a hazardous situation.

⚠	**WARNING:** When working with inks and fluids, always wear gloves, safety glasses, and protective clothing. Avoid skin contact with inks and fluids. Never look directly into the Printhead Nozzle. Ensure proper ventilation to minimize fumes.

△ Maintenance Schedule

Minimal Required Training Levels:

- **USER:** User

- **TECH:** Trained Technician

- **SQD:** Squid Ink Distributor/Squid Ink Service Technician

Frequency	Task	Req'd Training Level	When	Described on Page
Daily	Start Jetting With Cleaning	USER	Beginning of day	215
	Stop Jetting With Cleaning	USER	End of day	215
	Check inside Printhead for ink build-up, clean if needed	USER	End of day	217
Every 3 days	Clean the Printhead	USER	Beginning or end of day, and as needed	217
As needed	Install new Ink Container	USER	When current Ink Container is empty – "Ink Shortage" is displayed on screen	98
	Install new Makeup Container	USER	When current Makeup Container is empty – "Solvent Shortage" is displayed on screen	98
	Clean the Air Filters	USER		278
Every 6000 hours of run time	Replace the Main Filter Assembly	TECH		274
	Replace the Inline Filters (PN: 2006750):	TECH		288
As available	Upgrade JetStream system software	TECH		199

△ Daily Maintenance

△ Clean the System of Ink

(Required Training Level: User)

At the end of each workday, perform the **Stop Jetting** >> "Stop Jetting With Cleaning" (see "△ Precautions for Jetting With Cleaning" on page).

△ Common Procedures

There are a few basic procedures that are common to a number of maintenance and troubleshooting processes. To prevent redundancy, those procedures are described below.

△ Removing the Printhead Cover

(Required Training Level: User)

⚠	**WARNING:** Do not remove the Printhead Cover while printing. The Printhead Cover is an important safety feature, protecting users from electric shock from the high voltage passing through components inside the Printhead during operation. If the Printhead Cover is removed while the system is printing, a "Printhead cover open" fault will appear, and printing will be immediately deactivated to protect the user.

To Remove the Printhead Cover:

1. At the base of the Printhead, near the Umbilical Tube, unscrew the Cover Fastener.

2. Pull the Printhead Cover off by pulling it toward the Nozzle end of the Printhead.

Removing the Printhead Cover

SQ-JETSTREAM-00206-01
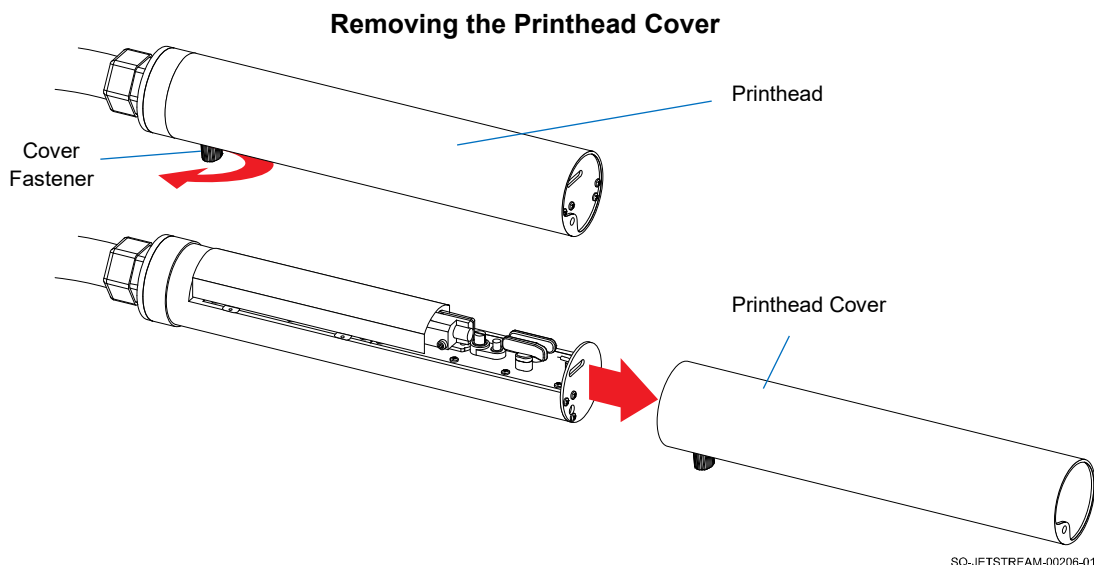
3. Set the Printhead Cover on a flat surface.
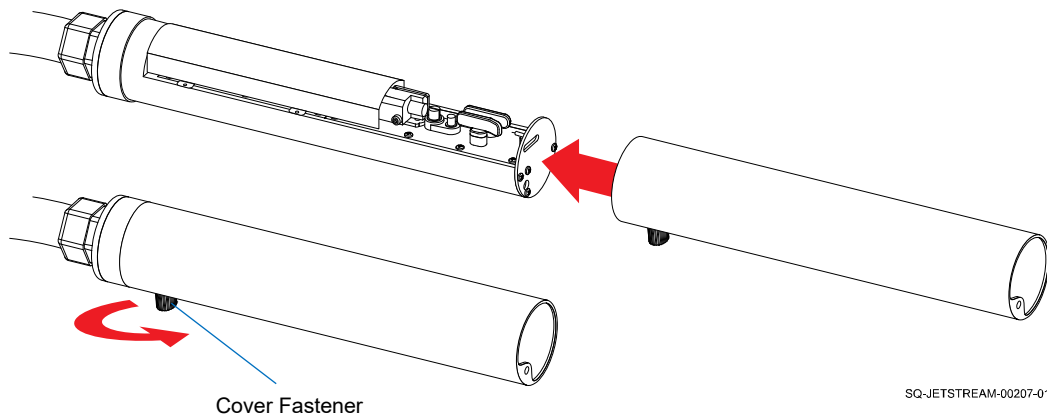
△ Replacing the Printhead Cover

***(Required Training Level:** User)*

To Replace the Printhead Cover:

1. Slide the Printhead Cover back over the Printhead.

2. Secure the Printhead Cover in place by tightening the Cover Fastener. The Fastener should be perpendicular to the Printhead Orifice.

Replacing the Printhead Cover

Cover Fastener

SQ-JETSTREAM-00207-01

△ Cleaning the Printhead

(Required Training Level: User)

Check inside the Printhead daily for any bulild-up of ink. The following procedure should be performed whenever the ink noticeably builds up within the Printhead or if the system has been shut down incorrectly. It should also be done as preventative maintenance every 3 days, either before starting up the system at the beginning of the day or after shutdown at the end of the day. Ink should not be jetting through the Printhead while it is being cleaned.

Items Needed to Clean the Printhead:

- Cleaning Bottle with makeup fluid inside
- Cleaning Tray
- Drying Bulb
- Container with lid for waste ink/makeup fluid

To Clean the Printhead:

1. **Stop Jetting** >> "Stop Jetting Without Cleaning."

2. **Remove the Printhead Cover** (see "△ Removing the Printhead Cover" on page 215).

3. **Clean the inside of the Printhead:**

   a. Hold the Printhead over the Cleaning Tray with the Nozzle end facing down.

   b. Holding the nozzle of the Cleaning Bottle about 1" (25.4 mm) from the internal components of the Printhead, squirt makeup fluid up and down the path from the Gun Body to the Ink Return Gutter.

   c. Allow the makeup fluid and ink to drain into the Cleaning Tray.

   > **NOTE:** Do not pour cleaning solution directly into the Ink Return Gutter. Doing so may reduce ink viscosity.

   d. Repeat until path is clean.

Cleaning and Drying the Printhead
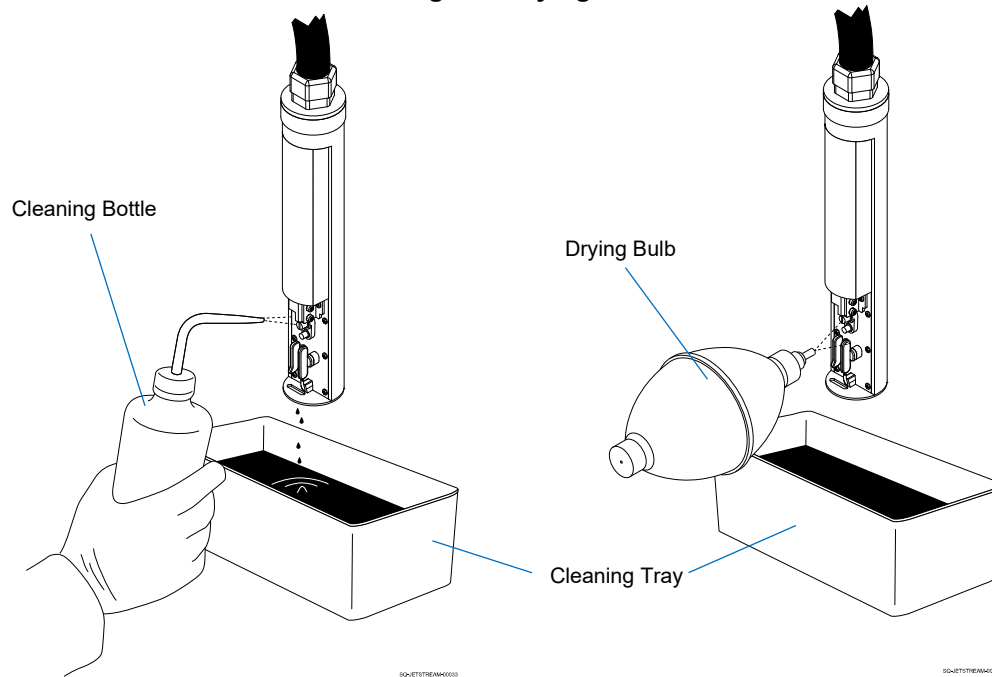
4. **Dry the inside of the Printhead:**

   a. Hold the Drying Bulb about 1" (25.4 mm) from the internal components of the Printhead.

   b. Starting from the Gun Body and working down, dry the inside of the Printhead thoroughly by squeezing the bulb repeatedly.

5. **Replace the Printhead Cover** (see "△ Replacing the Printhead Cover" on page 216).

△ Backflushing the Gun Body

(Required Training Level: User)

If the ink jet is not going into the Ink Return Gutter, it is likely the result of a minor blockage (particles/debris) inside the Printhead, unless the Printhead has been dropped, tampered with or otherwise damaged. The ink stream position is preset at the factory and should not require adjustment. One way to address a minor blockage in the Printhead is to backflush the Gun Body.

If there is a blockage inside the Printhead, the ink stream will miss the Ink Return Gutter inside the Printhead, and any of the following will happen:

- The full ink stream will spray out of the Printhead, resulting in a very noticeable excess of ink spraying out onto the product or;

- Ink spatters will appear around the printing and/or;

- Printing will be cut off at the top or bottom and/or;

- The Printhead will fill with excess ink.

No Blockage in Printhead

Possible Blockage in Printhead
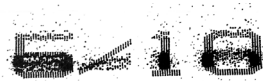
| Excess ink spraying onto product | Ink spatters around printing | Printing cut off at top | Printing cut off at bottom |
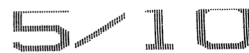
VIDEO: Backflush Procedure

To see a video of this procedure, click this link:
https://www.youtube.com/watch?v=3TqceZorxFY
Or scan the QR code at right using the camera app on your mobile device.

SQ-JETSTREAM-00247-01
Backflush Procedure
https://www.youtube.com/watch?v=3TqceZorxFY
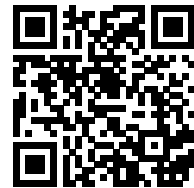
Items Needed to Backflush the Gun Body:

- Cleaning Tray

- Cleaning Bottle full of makeup fluid

- Drying Bulb

To Backflush the Gun Body:

1. **With Jetting on, remove the Printhead Cover** (see "△ Removing the Printhead Cover" on page).

2. **Prepare to clean the Printhead:**

   a. Hold the Printhead over the Cleaning Tray with the Nozzle end facing down.

Preparing to Clean the Printhead

Printhead

Cleaning Tray

SQ-JETSTREAM-00134
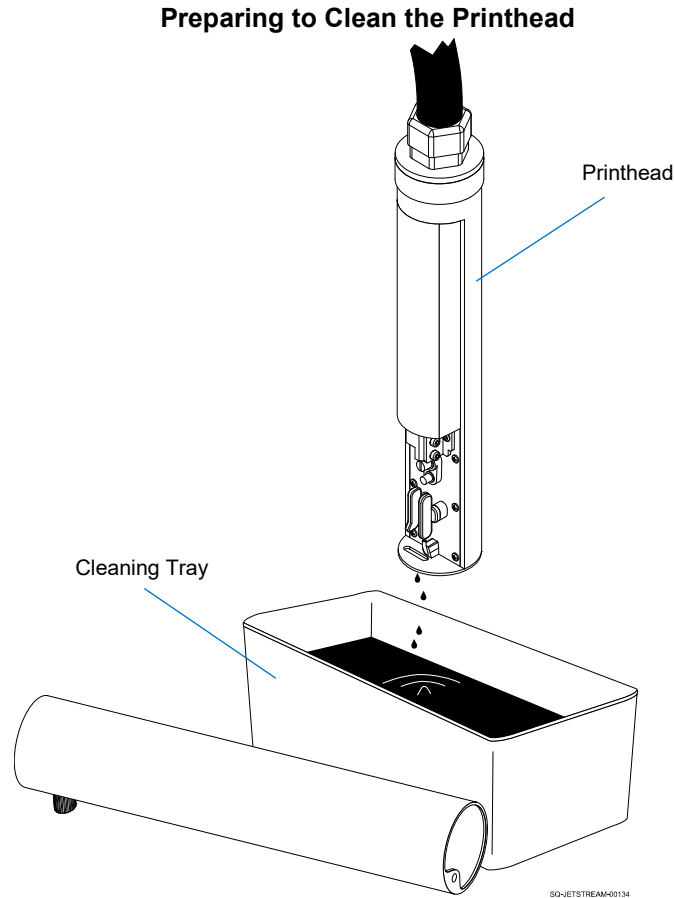
3. **Purge debris from the Printhead:**

   a. On the Touchscreen, select **Settings** >> **Ink System** >> **Backflush**. After a 10 second delay, there will be a click to indicate that the JetStream has shut off the ink stream and has opened a different valve that creates a suction into the Gun Body. This suction will only last for about 20 seconds. During that 20 seconds, the following two tasks must be performed:

   • *Squirt makeup into the Gun Body Nozzle:*
     Holding the nozzle of the Cleaning Bottle about 0.25" (6.35 mm) from the Gun Body Nozzle, squirt makeup fluid directly up into the Gun Body Nozzle for about 10 seconds, allowing excess ink and makeup fluid to drain into the Cleaning Tray.

- *Dry the Gun Body Nozzle and Charge Electrode Tunnel:*
  Hold the Drying Bulb about 1" (25.4 mm) from the internal components of the Printhead. Focusing mainly on the Gun Body Nozzle and the Charge Electrode Tunnel, dry the inside of the Printhead thoroughly by squeezing the Drying Bulb repeatedly until the ink stream comes back on.

Shooting Makeup into the Gun Body Nozzle

Drying Bulb

Gun Body Nozzle

Cleaning Bottle

Cleaning Tray

SQ-JETSTREAM-00135

SQ-JETSTREAM-00034-02
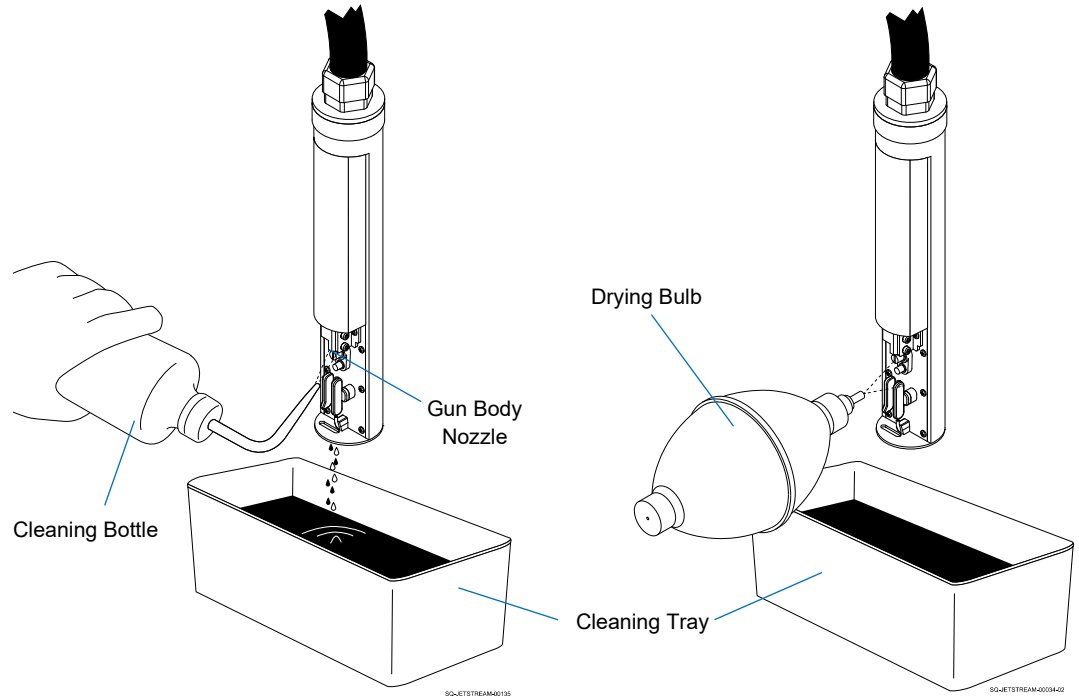
b. Repeat 2 to 3 times until blockage is cleared.

> ⚠ **ATTENTION**: Excessive purging can significantly dilute ink in the Mixing Tank, resulting in down time, ink being wasted and poor print performance. If the blockage has not been cleared and the ink jet is still not going into the Ink Return Gutter after 3 purges, contact your trained and authorized Squid ink Distributor.

4. Replace the Printhead Cover (see "△ Replacing the Printhead Cover" on page 216).

△ Sliding the Manifold Out the Rear

(Required Training Level: User)

To more easily access parts int the rear of the JetStream, such as the Solenoid Valves, the entire Manifold can be loosened and slid along a track toward the back of the machine.

Items Needed to Slide the Manifold Out the Rear:

* Phillips Head Screwdriver

To Slide the Manifold Out the Rear:

1. Open the Front Door of the JetStream.

2. In the front of the JetStream, remove the two Phillips Head Screws that hold the Manifold in place.

Removing the Front Screws

SQ-JETSTREAM-00305-01   SQ-JETSTREAM-00306-01

3. Open the Rear Door of the JetStream.

4. Remove the two additional Phillips Head Screws (to the left of the Ink Diaphragm Pump) that hold the Manifold in place.

Removing the Rear Screws

SQ-JETSTREAM-00376-01
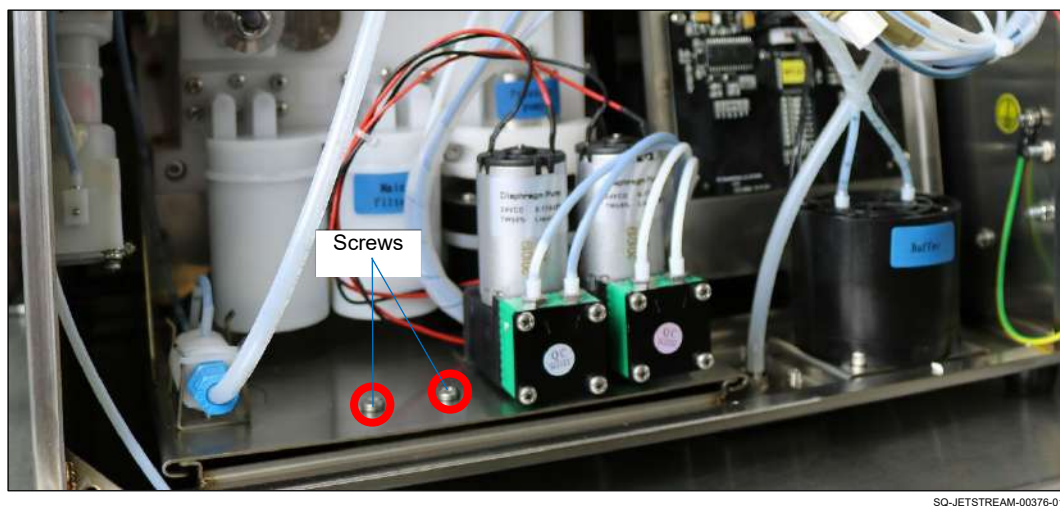
5. Gently slide the Manifold on its track toward the rear of the JetStream, paying close attention not to dislodge any cables, tubes or wires in the process.

Pulling the Manifold Out the Rear of the JetStream
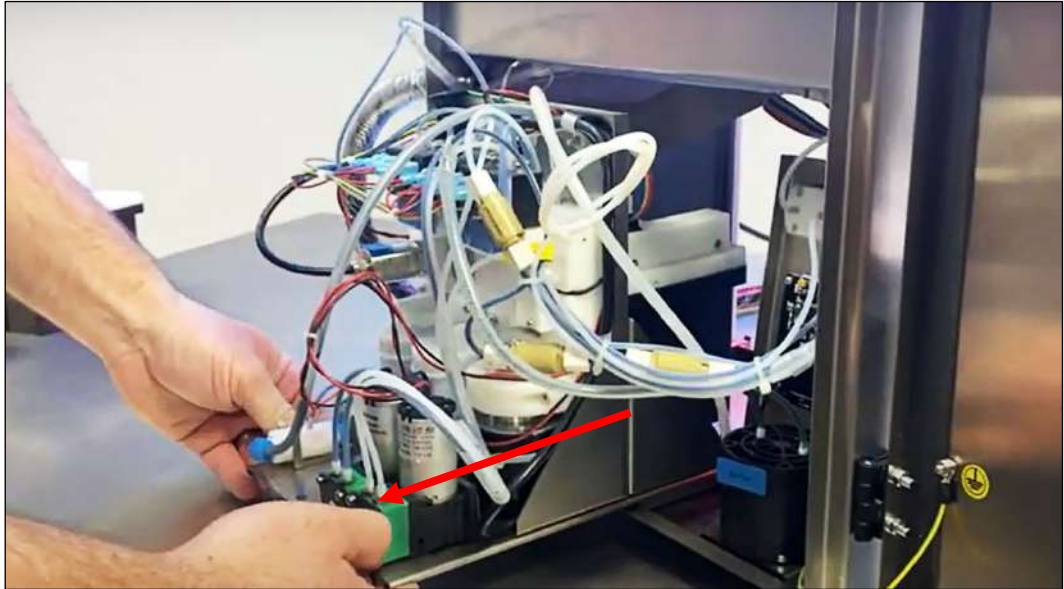
SQ-JETSTREAM-00333-01

△ Moving the Manifold Back into Place

(Required Training Level: User)

Items Needed to Slide the Manifold Out the Back:

- Phillips Head Screwdriver

To Move the Manifold Back into Place:

1. Gently slide the Manifold on its track toward the front of the JetStream, paying close attention not to dislodge any cables, tubes or wires in the process.

Sliding the Manifold Back into Position

SQ-JETSTREAM-00333-01
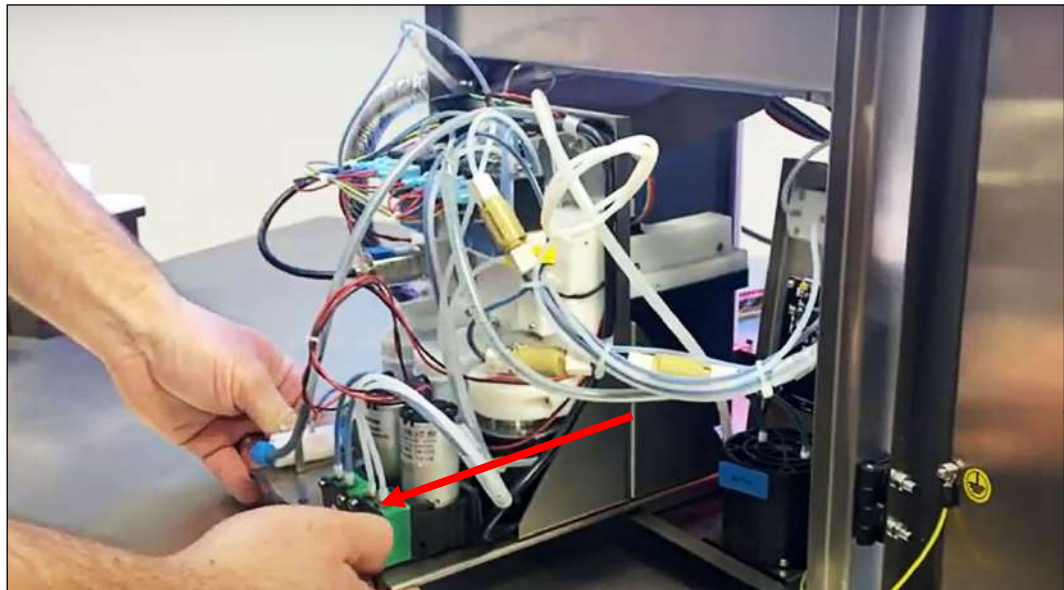
2. Using a Phillips Head Screwdriver, replace and tighten the two Screws (to the left of the Ink Diaphragm Pump) that hold the Manifold in place.

Replacing the Rear Screws
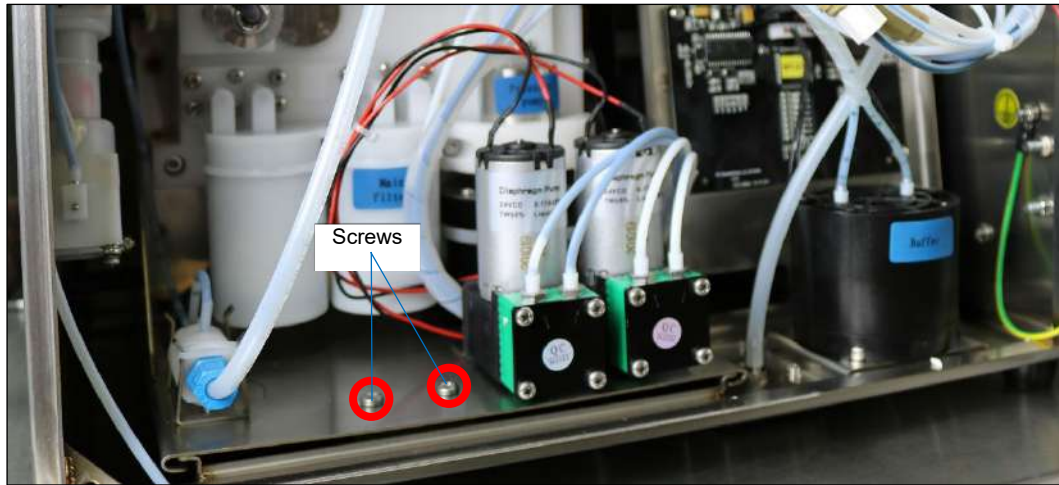
Screws

SQ-JETSTREAM-00376-01

3. In the front of the JetStream, replace and tighten the two Phillips Head Screws that hold the Manifold in place.

Removing the Front Screws

Screws
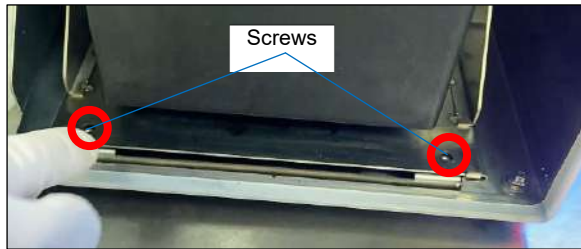
SQ-JETSTREAM-00305-01

SQ-JETSTREAM-00306-01

▲ Printhead

This section covers maintenance and repairs of the Printhead and the parts inside of it.

▲ Adjusting the Ink Stream Position

(Required Training Level: Trained Technician)

The ink stream position is preset at the factory and should not require adjustment. If the ink stream is diverting from its correct path, the cause is most likely a blockage in the Printhead. The first way to fix a misdirected ink stream should therefore always be to remove any blockages from the Printhead (see "△ Cleaning the Printhead" on page 217 and "△ Backflushing the Gun Body" on page 219). Removing the blockage will make adjusting the ink stream position unnecessary.

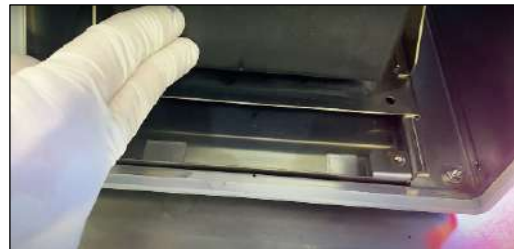|	
⚠	**ATTENTION**: Adjusting the ink stream position before first removing any blockage from the Printhead can make the situation worse, because when the blockage does clear, the Gun Body will be misaligned.

⚠	**ATTENTION**: Ink stream adjustments should only be performed by trained, qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.

VIDEO: Manual Ink Stream Adjustment To see a video of this procedure, click this link: https://www.youtube.com/watch?v=7IB9591fAXQ Or scan the QR code at right using the camera app on your mobile device.	QR code SQ-JETSTREAM-00248-01 Manual Ink Stream Adjustment https://www.youtube.com/watch?v=7IB9591fAXQ

If the ink stream is not in the correct position, it will miss the Ink Return Gutter inside the Printhead, and one or two things will happen:

- The full ink stream will spray out of the Printhead, resulting in a very noticeable excess of ink spraying out onto the product or;

- Printing will be cut off at the top or bottom and/or;

- The Printhead will fill with excess ink.

Correct Ink Stream Position

Incorrect Ink Stream Position

Excess ink spraying
onto product

Printing cut off at top

Printing cut off at bottom

Items Needed to Adjust the Ink Stream Position:

- Small Phillips Head Screwdriver
- Small Hex Wrench (2mm)

To Adjust the Ink Stream Position:

1. **Check ink pressure and viscosity:**

   a. Verify that the ink pressure and viscosity are at or near their set points (see "▲ Pressure" on page 171 and "▲ Viscosity" on page 172).

2. **With jetting on, remove the Printhead Cover** (see "△ Removing the Printhead Cover" on page 215).

3. **Observe the ink flow:**

   a. Notice where the ink droplets are landing around the Ink Return Gutter. The diagram below shows the correct location for the ink droplets to land.

   > **NOTE:** On the JetStream Sonic, the Gun Body orientation is flipped, but the principles are the same as described below.

Ink Stream Alignment

Ink Return Gutter

Gutter Viewed from inside Gun Body

Gutter Horizontal Alignment

Ink Stream

Ink Return Gutter

Gutter Vertical Alignment

Correct Location for Ink Droplets to Land

SQ-JETSTREAM-00392-01
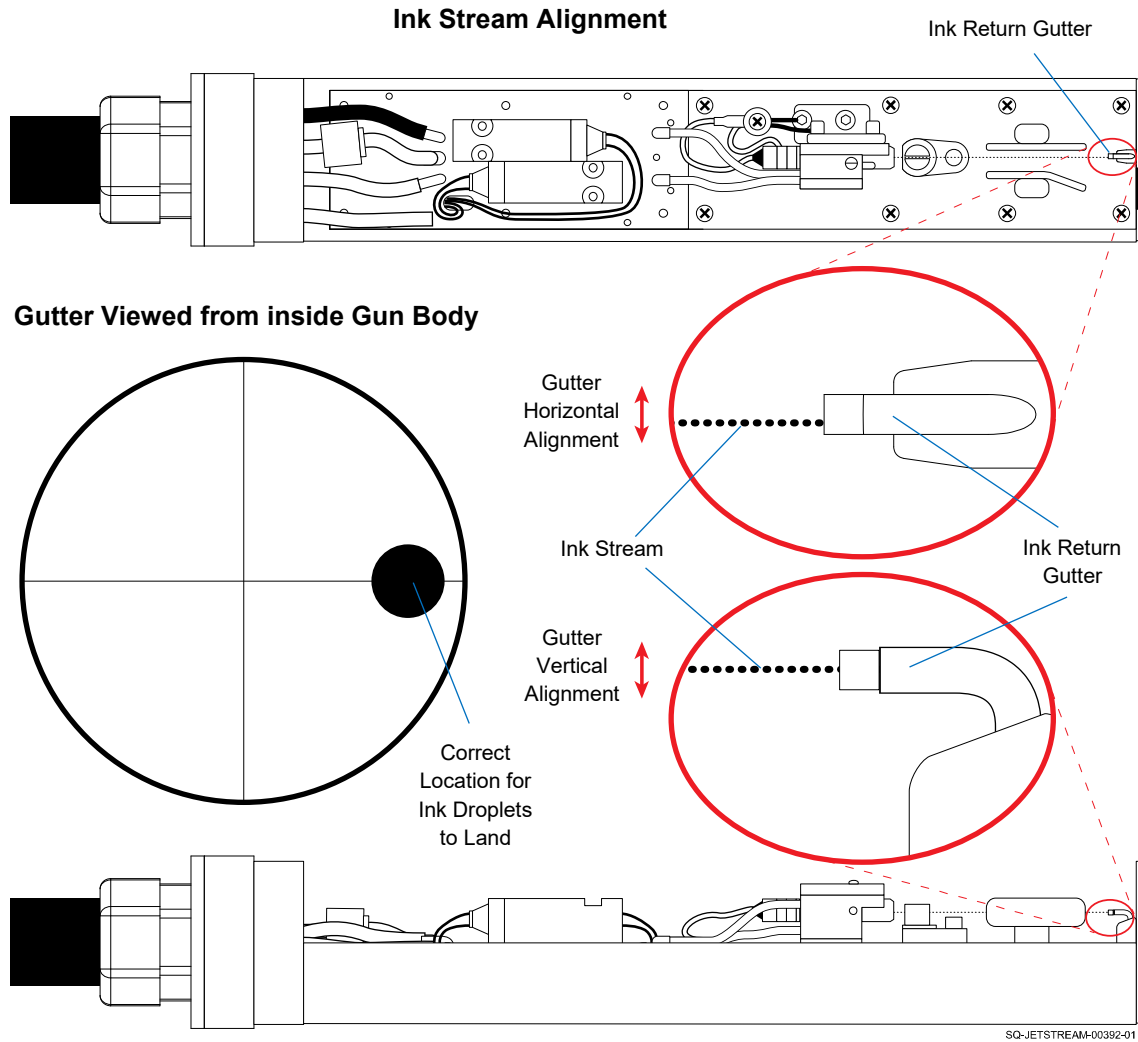
b. An effective way to determine exactly where the ink droplets are landing is to "sight down" the end of the Printhead while jetting.

Ink Stream Alignment

Ink Return Gutter

Correct Location for Ink Droplets to Land

Ink Stream
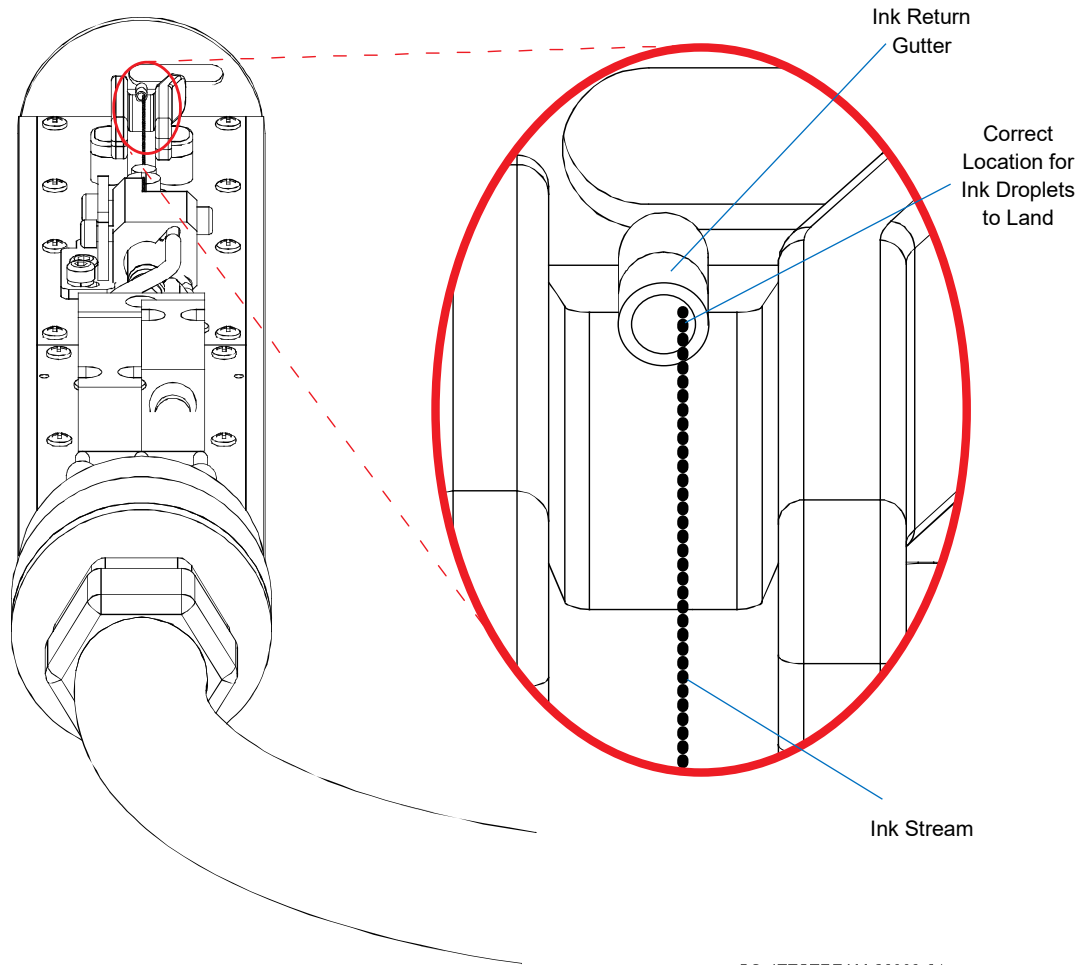
SQ-JETSTREAM-00393-01

4. **Become oriented with the parts to be adjusted:**

    a. Locate the Gun Body:

Locating the Gun Body
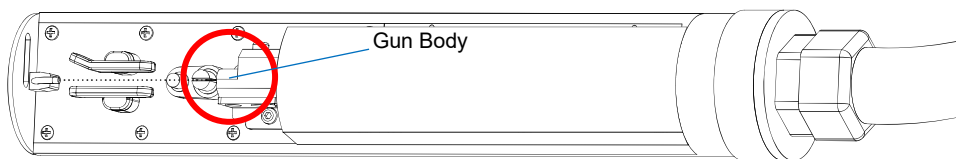
Gun Body

SQ-JETSTREAM-00004

    b. On the Gun Body, become familiar with the Adjustment Set Screws and Eccentric Wheels.

Adjustment Set Screws and Eccentric Wheels
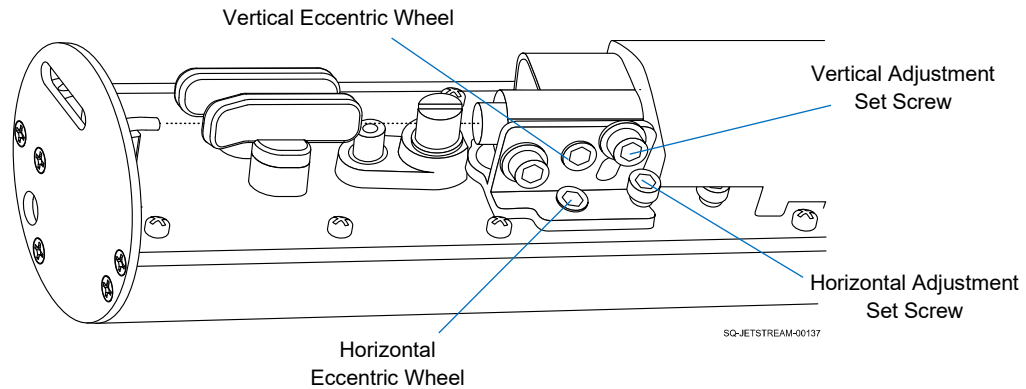
Vertical adjustment refers to the flow of ink droplets into the Ink Return Gutter. If the droplets are landing above or below the Gutter, the vertical ink flow needs to be adjusted. Similarly, if the droplets are landing to one side or the other of the Gutter, the horizontal ink flow needs to be adjusted.

Vertical and Horizontal Adjustments
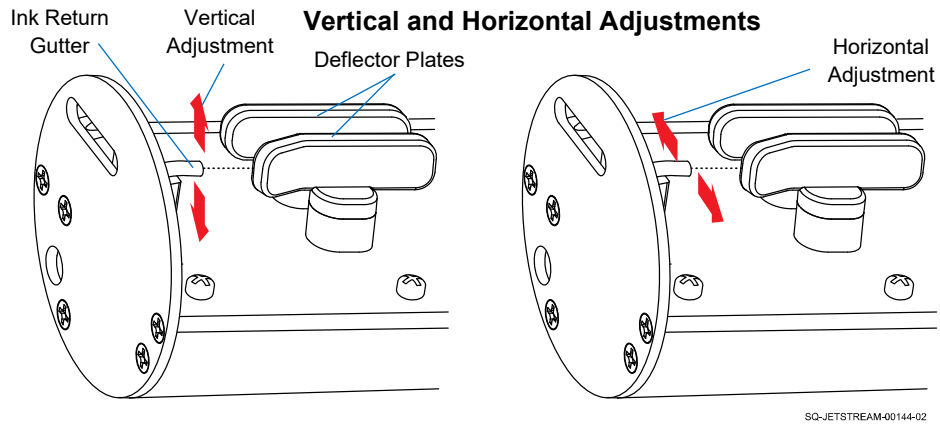
5. **If needed, adjust the ink flow vertically:**

    a. Using a small Hex Wrench, slightly loosen the Vertical Adjustment Set Screw.

Vertical Ink Stream Adjustment
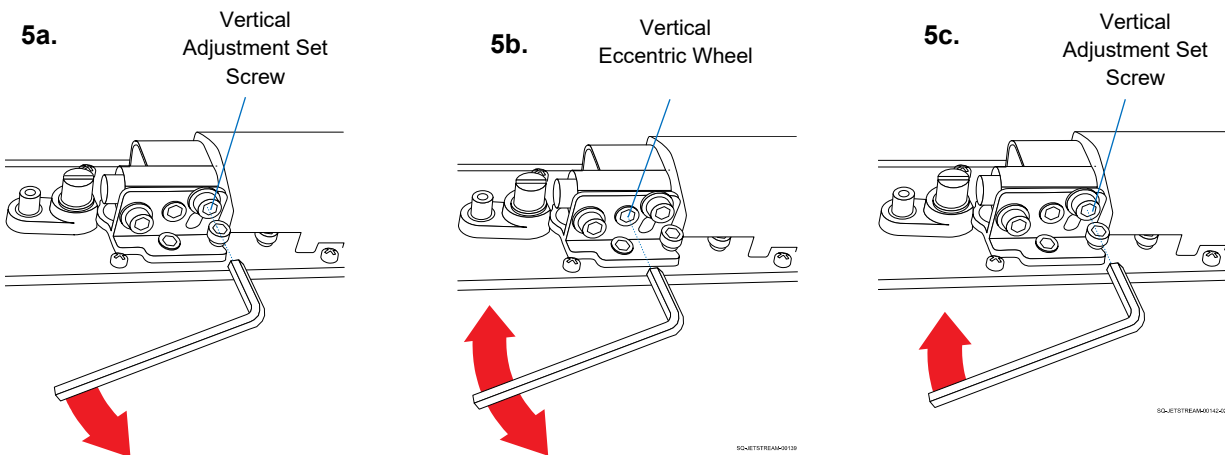
    b. Observing the ink stream, use the Hex Wrench to slightly adjust the Vertical Eccentric Wheel until the ink stream is vertically aligned with the Ink Return Gutter.

    c. Retighten the Vertical Adjustment Set Screw to lock the new adjustment in place.

6. If needed, adjust the ink flow horizontally:

    a. Using a small Hex Wrench, slightly loosen the Horizontal Adjustment Set Screw.

Horizontal Ink Stream Adjustment

6a.

6b.

6c.

Horizontal Adjustment Set Screw

Eccentric Wheel

Horizontal Adjustment Set Screw
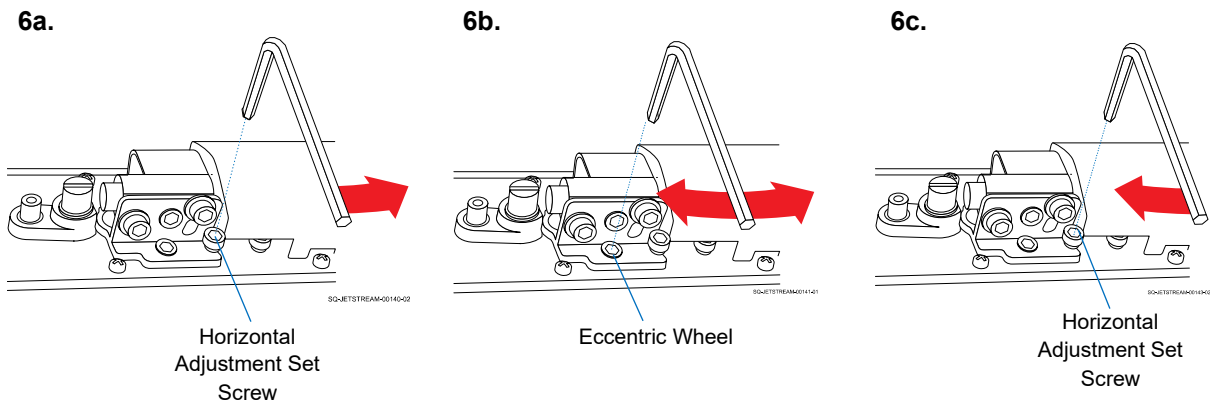
    b. Observing the ink stream, use the Hex Wrench to slightly adjust the Horizontal Eccentric Wheel until the ink stream is horizontally aligned with the Ink Return Gutter.

    c. Retighten the Horizontal Adjustment Set Screw to lock the new adjustment in place.

7. If needed, clean the inside of the Printhead:
If ink has been missing the Ink Return Gutter, there is likely ink inside of the Printhead that needs to be cleaned to ensure unobstructed ink flow and prevent a potentially dangerous situation.

    a. Clean the Printhead (see "△ Cleaning the Printhead" on page 217).

8. Replace the Printhead Cover:

    a. When the ink stream is again going directly into the Ink Return Gutter and any residual ink inside the Printhead has been cleaned, replace the Printhead Cover (see "△ Replacing the Printhead Cover" on page 216).

▲ Adjusting the Ink Drop Break-Off

(Required Training Level: Trained Technician)

The correct modulation to attain the ideal ink drop break-off point is preset at the factory and should not require adjustment.

⚠	**CAUTION**: Ink drop break-off adjustments should only be performed by trained, qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.

A correctly set ink drop break-off is essential to good quality printing. The optimum ink drop break-off point is in the middle of the Charge Electrode Tunnel. The ink drop break-off point is impacted by:

- Ink viscosity
- Ink pressure
- Blockages inside the Printhead Nozzle
- Obstructions in the hydraulic system
- Contaminants in the ink

If the ink drop break-off point is not in the correct location, ink spatters will appear around the printing:

Correct Modulation

Droplet rows evenly spaced

Modulation Too Low

Droplet rows clumped together

Modulation Too High

Droplet rows tightly clustered with spatters
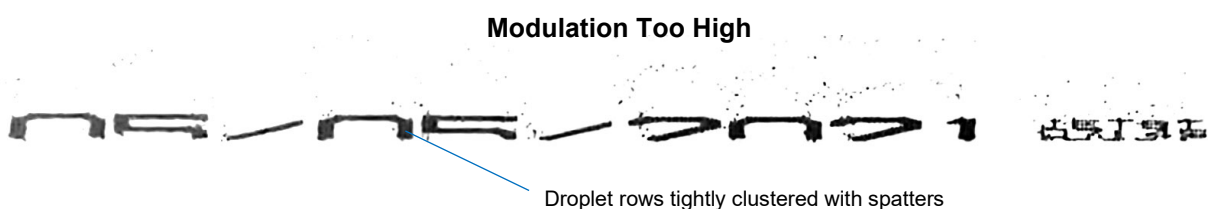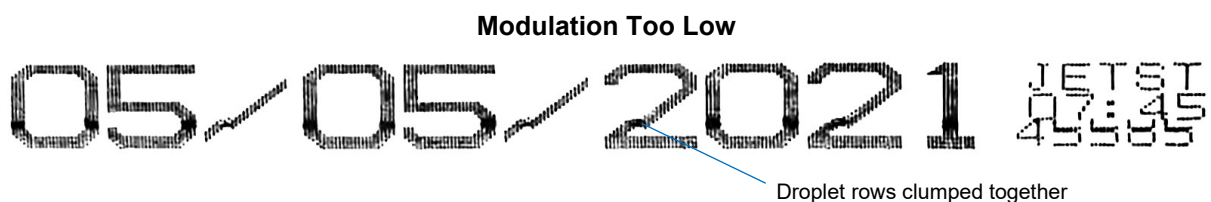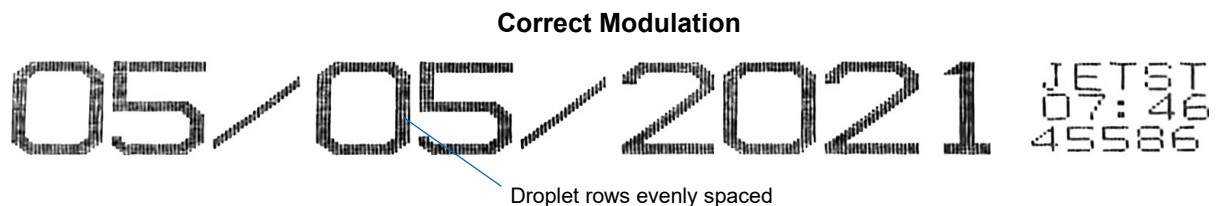
Before Adjusting the Ink Drop Break-off Point:

1. **Verify proper Printhead placement:**
   Ensure that the Printhead Nozzle is 1.2" (30 mm) or less from the passing product and that no strong air currents exist.

2. **Verify proper ink viscosity** (see "△ Verifying Proper Viscosity" on page 261).

3. **Verify proper ink pressure** (see "△ Verifying Proper Ink Pressure" on page 251).

4. **Verify that there is no blockage in the Printhead:**
   Check inside the Printhead for blockages, and if there is a blockage, remove it by cleaning the Printhead (see "△ Cleaning the Printhead" on page 217).

5. **Verify that the ink stream is properly aligned** (see "△ Backflushing the Gun Body" on page 219 and "▲ Adjusting the Ink Stream Position" on page 226).

6. **Verify that there are no obstructions in the Hydraulic System and that there are no contaminants in the ink:**
   Inspect and clean all three Inline Filters (see "▲ Cleaning an Inline Filter" on page 283).

If all of the above conditions have been resolved and the printing is still poor, the ink drop break-off can be adjusted by calibrating the modulation settings.

VIDEO: Calibrating the Modulation Settings

To see a video of this procedure, click this link:
https://youtu.be/_DnOS_tQnwM
Or scan the QR code at right using the camera app on your mobile device.
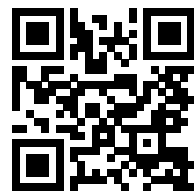
SQ-JETSTREAM-0044201
Calibrating Modulation Settings
https://youtu.be/_DnOS_tQnwM

Items Needed to Adjust the Ink Drop Breakoff:

- Cleaning Tray
- Paper or cardboard to print on
- Pen or pencil

To Adjust the Ink Drop Breakoff:

The ink drop break-off is adjusted by changing the Modulation value. The ideal Modulation value results in the solid ink stream breaking up into separate droplets in the middle of the

Charge Electrode Tunnel. The diagram below shows the relationship between Modulation value and ink drop break-off point:

> **NOTE:** On the JetStream Sonic, the Gun Body orientation is flipped, but the principles are the same as described below.

Modulation and Ink Drop Break-off

SQ-JETSTREAM-00111-02
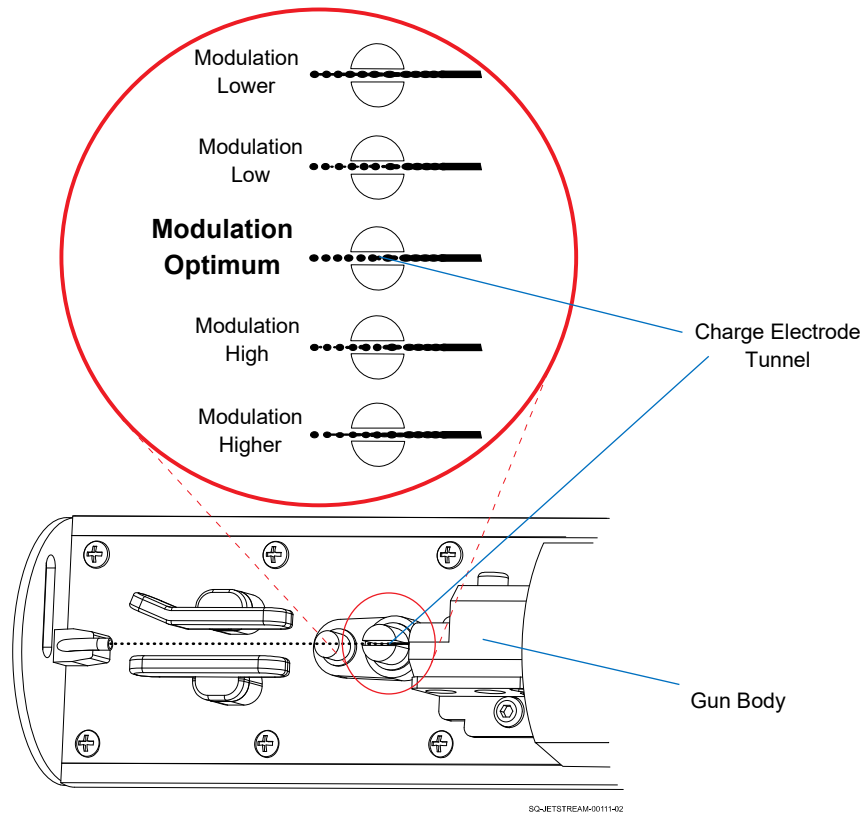
1. Place the Cleaning Tray underneath the Printhead Nozzle to catch excess ink.

Clean Tray Under the Printhead

SQ-JETSTREAM-00443-01
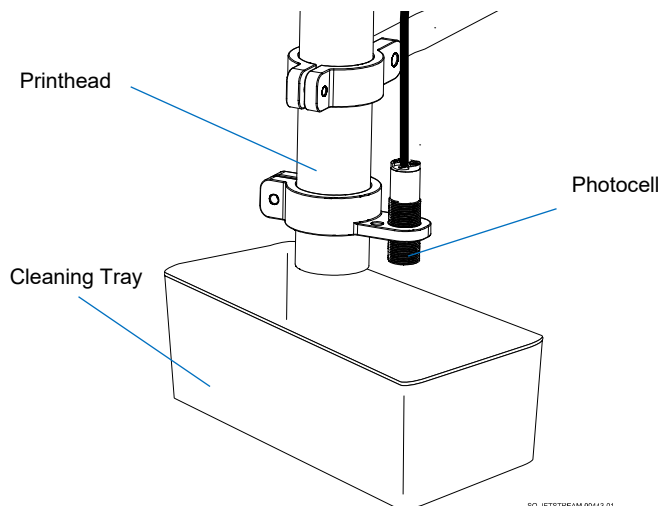
2. **If using an Encoder, temporarily unplug it from the JetStream.**

3. **Load the JetStream test message:**

   a. Each JetStream comes with a message that is specifically designed for testing because it shows every possible droplet position. It can be loaded from the JetStream file folder, and is called "JETSTREAM TEST MESSAGE" (see "△ Retrieving Existing Messages" on page).

   b. The message should already be set to autoprint, but if it is not, set it to autoprint (continuously print).

4. **Pass the paper under the Printhead:**

   a. The paper should be about 0.75" (19 mm) from the Printhead Nozzle.

   b. The Printhead will print the test message on the paper.

5. **Incrementally test different Modulation values:**

   a. Select **Settings** >> **System Setting** >> **Modulation**.

   b. Use the number keys to set the Modulation value at 10.

   c. Pass the paper under the Printhead again, and use the pen to mark the current modulation value ("10") next to the print.

   d. Use the number keys to set the Modulation value at 15.

   e. Pass the paper under the Printhead again, and use the pen to mark the current modulation value ("15") next to the print.

   f. Continue to adjust the modulation value in increments of 5 and running test prints on the paper, marking the modulation value by each print.

Adjusting Modulation Incrementally
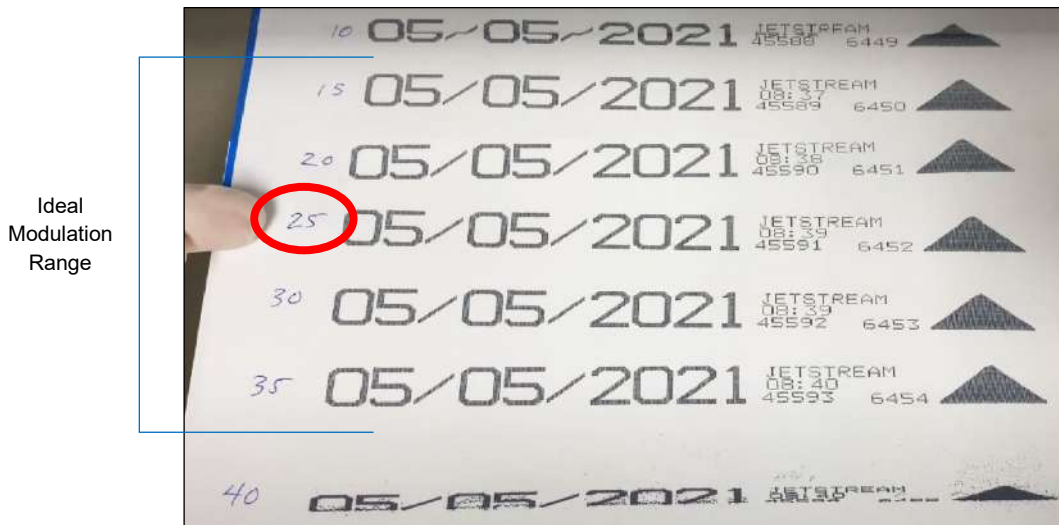
SQ-JETSTREAM-00447-01

g. Stop after multiple good quality prints have been made and at least 3 bad quality prints have followed.

6. **Determine the ideal Modulation value:**

a. Look at the prints and make note of the lowest Modulation value that produced a good print.

b. Make note of the highest Modulation value that produced a good print.

c. The midpoint between them is the ideal Modulation value. For example, if the first good print is at 20, and the last good print is at 40, the ideal modulation value would be 30.

7. **Enter the ideal Modulation value:**

a. Use the number keys to enter the ideal modulation value.

8. **Exit the Modulation Screen.**

▲ Cleaning the Deflector Plates

(Required Training Level: Trained Technician)

If ink accumulates inside the Printhead between the Deflector Plates, it can create a hazardous electrical situation that should be addressed immediately.

⚠️	**WARNING:** If a "High-Voltage Leakage" warning is displayed, it is possible that a heavy buildup of ink has developed on the Deflector Plates inside the Printhead. If this has occurred, it is possible for electrical arcing to take place between the two Deflector Plates.

Items Needed to Clean the Deflector Plates:

- Cleaning Bottle with Makeup Fluid

- Cleaning Tray

- Drying Bulb

- Empty Hazardous Liquids Container with Lid (for waste ink/makeup fluid)

To Clean the Deflector Plates:

1. **Shut the system down immediately:**

   a. **Stop Jetting** >> "Stop Jetting Without Cleaning."

   b. Once jetting is off, turn the Power Switch on the right side of the Console to the "OFF" position.

2. **Remove the Printhead Cover** (see "△ Removing the Printhead Cover" on page 215).

3. **Inspect the Deflector Plates:**

   a. Look to see if there is ink buildup on the Deflector Plates (as shown below).

Inspecting the Deflector Plates

Ink Buildup on
the Deflector
Plates

SQ-JETSTREAM-00412-01
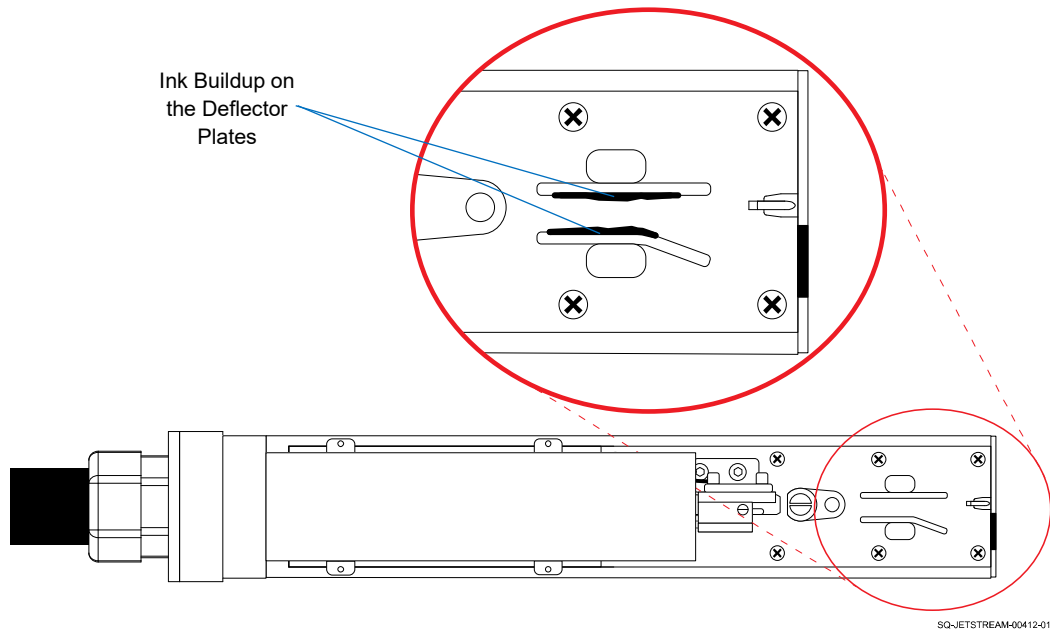
b.   If there is ink buildup, proceed with the following steps:

4.   Clean the Deflector Plates:

a.   Follow the procedures for cleaning the Printhead (see "△ Cleaning the Printhead" on page 217), focusing particular attention on thoroughly cleaning the Deflector Plates. They should be completely free of ink before using the system again.

5.   Replace the Printhead Cover (see "△ Replacing the Printhead Cover" on page 216).

△ Ink Bay Assembly

The Ink Bay Assembly holds the Ink Container and Makeup Container and connects them to the Hydraulic System. This section covers maintenance and repair issues relating to the Ink Bay Assembly as well as the Containers.

Ink Bay Assembly
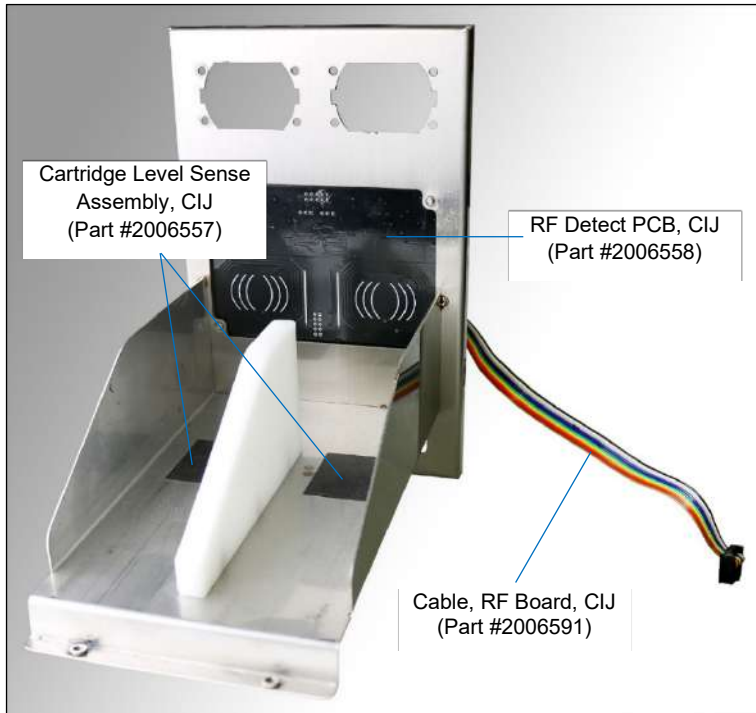
Pin Socket Assembly
(Part # 2006556)

SQ-JETSTREAM-00241-01

Cartridge Level Sense Assembly, CIJ
(Part #2006557)

RF Detect PCB, CIJ
(Part #2006558)

Cable, RF Board, CIJ
(Part #2006591)

SQ-JETSTREAM-00239-01

SQ-JETSTREAM-00411-01

△ Checking the Container Nozzles

(Required Training Level: User)

If there is fluid in the Container but it is not getting into the Mixing Tank, the first thing to check is the Container Nozzles. One Nozzle supplies fluid to the Mixing Tank, and the other Nozzle is for Air Displacement. The Nozzles must be oriented correctly and properly punctured.

VIDEO: Troubleshooting Ink and Makeup Delivery
To see a video of this procedure, click this link: https://www.youtube.com/watch?v=M_GzQUugcps Or scan the QR code at right using the camera app on your mobile device. **View:** 08:14 – 10:27

To Check the Container Nozzles:

1. **Remove the Container from the Cartridge Bay:**

    a. Open the Front Door of the JetStream.

    b. Pull the Ink Container straight out.

2. **Check the orientation of the Nozzles on the Container Cap:**

    a. Examine the Nozzles on the Container Cap.

Checking Container Nozzle Orientation
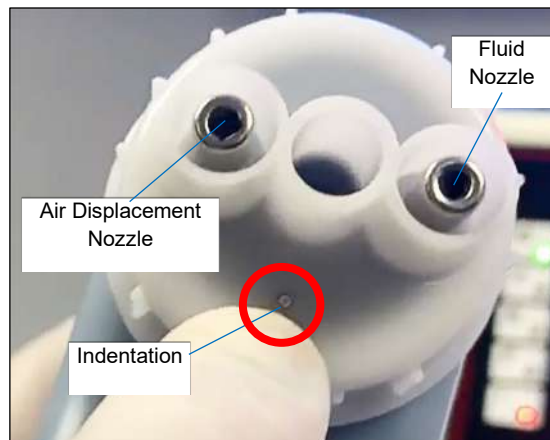
SQ-JETSTREAM-00267-01

    b. Locate the small indentation on the Cap. If it is below the Nozzles, the Cap is correctly oriented. If it is above the Nozzles, the Cap is not oriented correctly and needs to be rotated 180°.

3. **Check the membrane in the Nozzles on the Container Cap:**

    a. Look inside the Nozzles on the Container Cap. There is a thin membrane inside the Nozzles. This membrane for both the Fluid Nozzle and the Air Displacement Nozzle is punctured by the Pin Socket Assembly when the Container is installed.

    b. If both membranes are punctured, the Container is likely not the source of the fluid supply problem.

    c. If either membrane has not been punctured after installation, try reinstalling the Container, removing it, and then re-examining the membranes. If the membrane is still not punctured, check the Pin Socket Assembly.

▲ Checking the Pin Socket Assembly

(Required Training Level: Trained Technician)

If either membrane is not being punctured in the Container Cap Nozzles, the Pin Socket Assembly may be damaged or obstructed.

| |
|---|
| **VIDEO: Troubleshooting Ink and Makeup Delivery**

To see a video of this procedure, click this link:
https://www.youtube.com/watch?v=M_GzQUugcps
Or scan the QR code at right using the camera app on your mobile device.

View: 10:28 – 13:34 |

Items Needed to Check the Pin Socket Assembly:

- Small Phillips Head Screwdriver

To Check the Pin Socket Assembly:

1. **Look for obvious damage:**

   a. Open the Front Door of the JetStream.

   b. Remove the Container by pulling it straight out.

   c. Look at the Pin Socket Assembly in the Container Bay and check for obvious damage to the two pins. If any is discovered, replace the Pin Socket Assembly with a new one.

Checking the Pin Socket Assembly
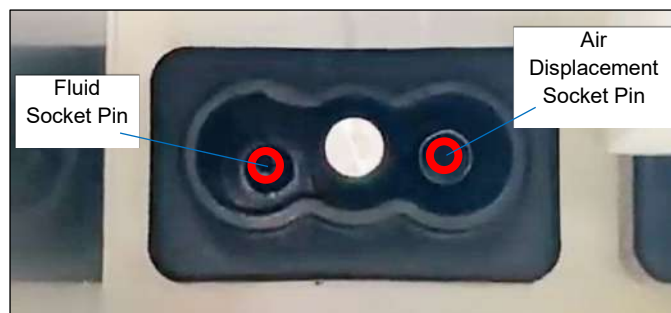
SQ-JETSTREAM-00268-01

2. **Remove the Pin Socket Assembly for closer inspection:**
   If no damage to the pins is visible from simply looking at them in the Container Bay, remove the entire Pin Socket Assembly for closer inspection.

   a. Open the Rear Door of the JetStream.

   b. Locate the rear of the Pin Socket Assembly for the desired Container.

Locating the Pin Socket Assembly
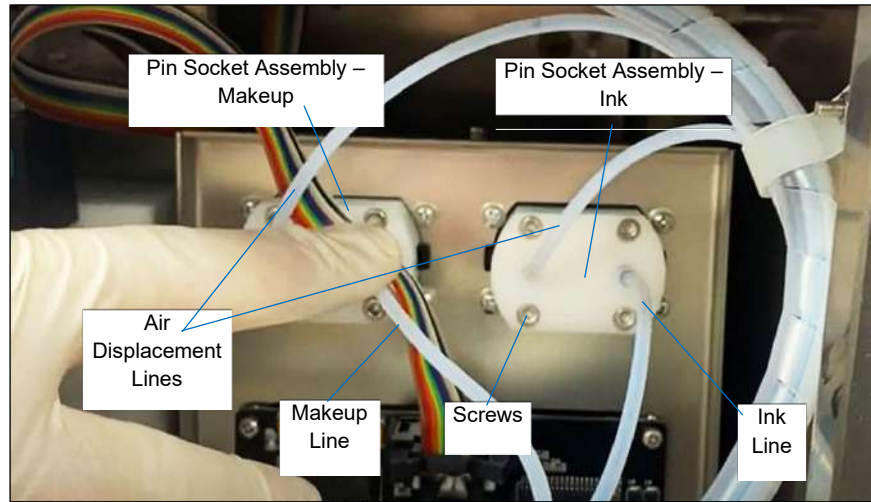
SQ-JETSTREAM-00269-01

c. Determine which line is the Fluid Line and which is the Air Displacement Line. The other end of the Air Displacement Line is on the left and not connected to anything, and the Fluid Line is on the right. The Ink Line is likely darker due to the ink inside.

d. Disconnect the Fluid Line by unplugging it from the back of the Pin Socket Assembly.

e. Use a Phillips Head Screwdriver to unscrew the four Screws holding the Pin Socket Assembly in place.

f. From the front of the JetStream, pull the Pin Socket Assembly out of the Container Bay.

Looking for Pin Damage

SQ-JETSTREAM-00270-01

g. If damage to either pin is discovered, replace the Pin Socket Assembly with a new one.

▲ Cleaning/Unclogging the Pin Socket Assembly

(Required Training Level: Trained Technician)

If there is no damage to the Pins, the Pin Socket Assembly may be clogged or otherwise obstructed.
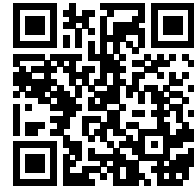
VIDEO: Troubleshooting Ink and Makeup Delivery To see a video of this procedure, click this link: https://www.youtube.com/watch?v=M_GzQUugcps Or scan the QR code at right using the camera app on your mobile device. **View:** 13:35 – 16:31	SQ-JETSTREAM-00250-02 Troubleshooting Ink and Makeup Delivery https://www.youtube.com/watch?v=M_GzQUugcps
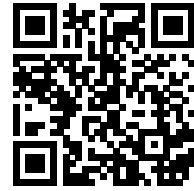
Items Needed to Clean the Pin Socket Assembly:

- Small Phillips Head Screwdriver
- 2.5 mm Hex Wrench
- Cleaning Bottle filled with makeup fluid
- Cleaning Tray

To Clean the Pin Socket Assembly:

1. **Disassemble the Pin Socket Assembly:**

   a. Use the Hex Wrench to loosen the four Hex Screws on the back of the Pin Socket Assembly. They do not need to be removed completely.

Disassembling the Pin Socket Assembly
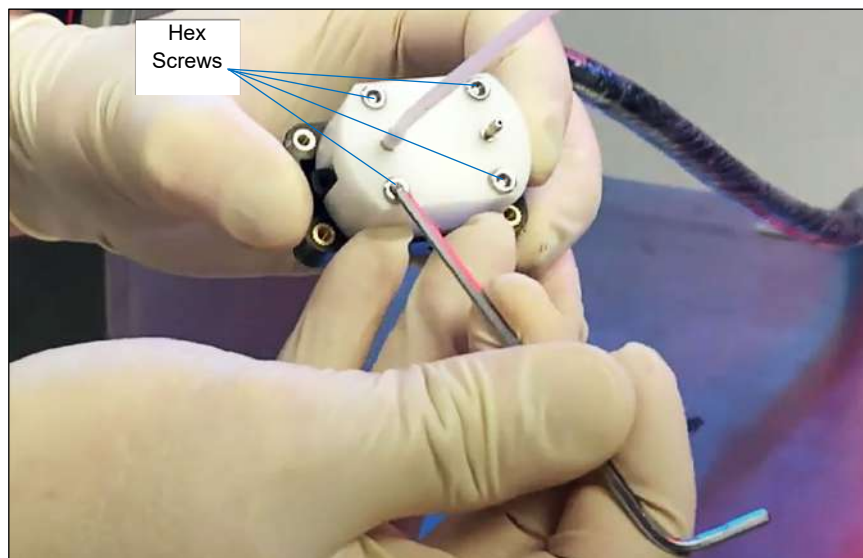
SQ-JETSTREAM-00271-01

b. Pull the two halves of the Pin Socket Assembly apart.

⚠	**ATTENTION:** When pulling the two halves apart, pay close attention to the two black O-Rings for the Nozzles, which will be on one half or the other. Remove the O-Rings and set them aside for later.

⚠	**ATTENTION:** Make note of which Nozzle is for ink and which is for air displacement. If needed, place a small piece of tape on the ink side of each half, which can be used as a reminder later.

Front Half of the Pin Socket Assembly
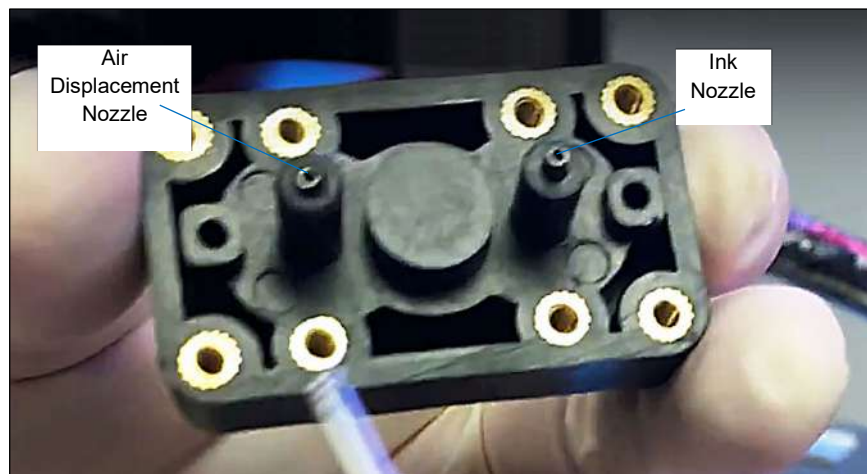
SQ-JETSTREAM-00272-01

2. **Backflush the Pin Socket Assembly:**

a. With the Cleaning Tray underneath the front (black) half if the Pin Socket Assembly, put the tip of the Cleaning Bottle Spout gently against each inside nozzle of the Pin Socket Assembly and flush them out with makeup fluid.

Backflush the Nozzles

SQ-JETSTREAM-00273-01

b. With the Cleaning Tray underneath the rear (white) half if the Pin Socket Assembly, put the tip of the Cleaning Bottle Spout gently against each outside nozzle and flush them out with makeup fluid. Temporarily remove the line from the Air Displacement Nozzle to flush out that side.

Backflush the Nozzles

Cleaning Bottle Spout

Outside Nozzles on rear half of Pin Socket Assembly

SQ-JETSTREAM-00274-01
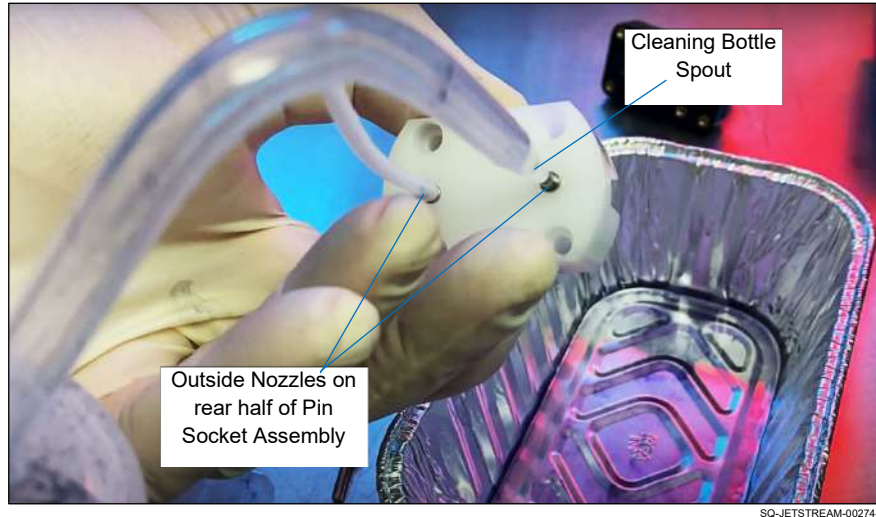
This process should have removed any blockage from within the Pin Socket Assembly, and if a blockage was the problem, ink should again be able to flow freely.

3. **Reassemble the Pin Socket Assembly:**

a. Replace the Air Displacement Line solidly over the Air Displacement Nozzle on the rear (white) half of the Pin Socket Assembly.

b. Place the two O-Rings back over both inner Nozzles of the front (black) half of the Pin Socket Assembly.

c. Verifying the original orientation of the Fluid Nozzle and Air Displacement Nozzle, put the front and rear halves of the Pin Socket Assembly together again.

d. Use the Hex Wrench to tighten the four screws again.

4. **Put the Pin Socket Assembly back in place:**

a. From the front of the Container Bay, slide the Pin Socket Assembly (white side first) back into its proper slot. Looking into the Container Bay, the Fluid Nozzle should be on the left and the Air Displacement Nozzle should be on the right.

Putting the Pin Socket Assembly Back in Position

SQ-JETSTREAM-00275-01

SQ-JETSTREAM-00269-01
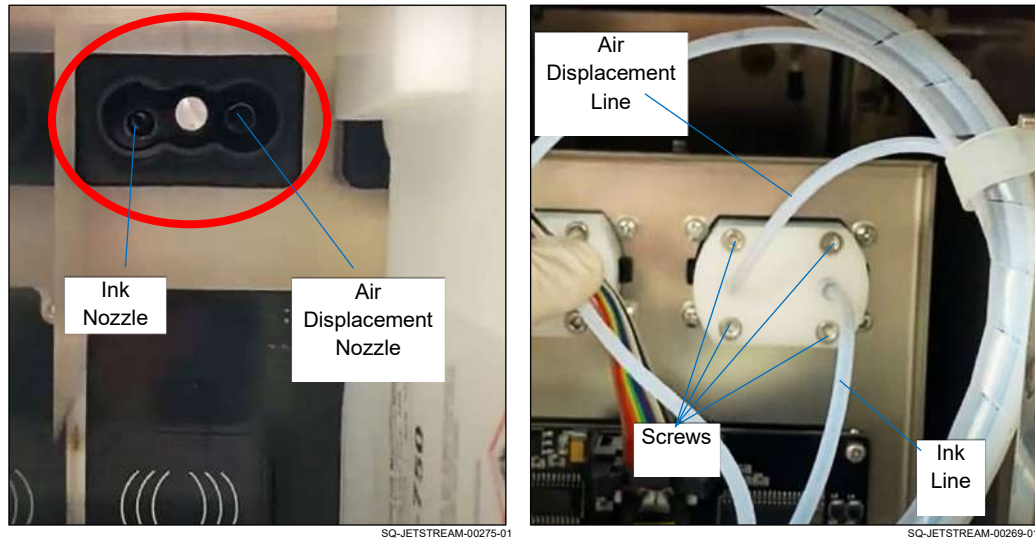
b. From the rear of the JetStream, the Pin Socket Assembly should now be loosely in place with the Air Displacement Lin on the left, and the Nozzle for the Ink Line on the right.

c. Use a Phillips Head Screwdriver to secure the Pin Socket Assembly in place using the four screws.

d. Firmly reconnect the Ink Line to the Ink Line Nozzle on the Pin Socket Assembly.

e. Once the system is powered up again, it should be ready to try some test prints to see if the problem has been solved.

▲ Checking Sensor Function

(Required Training Level: Trained Technician)

If there is fluid in the Container, but the fluid is not getting into the Mixing Tank, there may be a problem with the Fluid Sensor. One Fluid Sensor is located in each Container Bay underneath where the Container sits. It verifies that a Container is present and is sending fluid to the Mixing Tank. If either the Ink Sensor or Makeup Sensor does not detect fluid, it displays on the Touchscreen as an empty container.

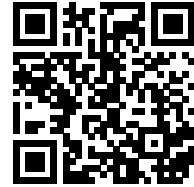**VIDEO: Troubleshooting Ink and Makeup Delivery**

To see a video of this procedure, click this link:
https://www.youtube.com/watch?v=M_GzQUugcps
Or scan the QR code at right using the camera app on your mobile device.

View: 00:00 – 08:13

Locating the Sensor

SQ-JETSTREAM-00145
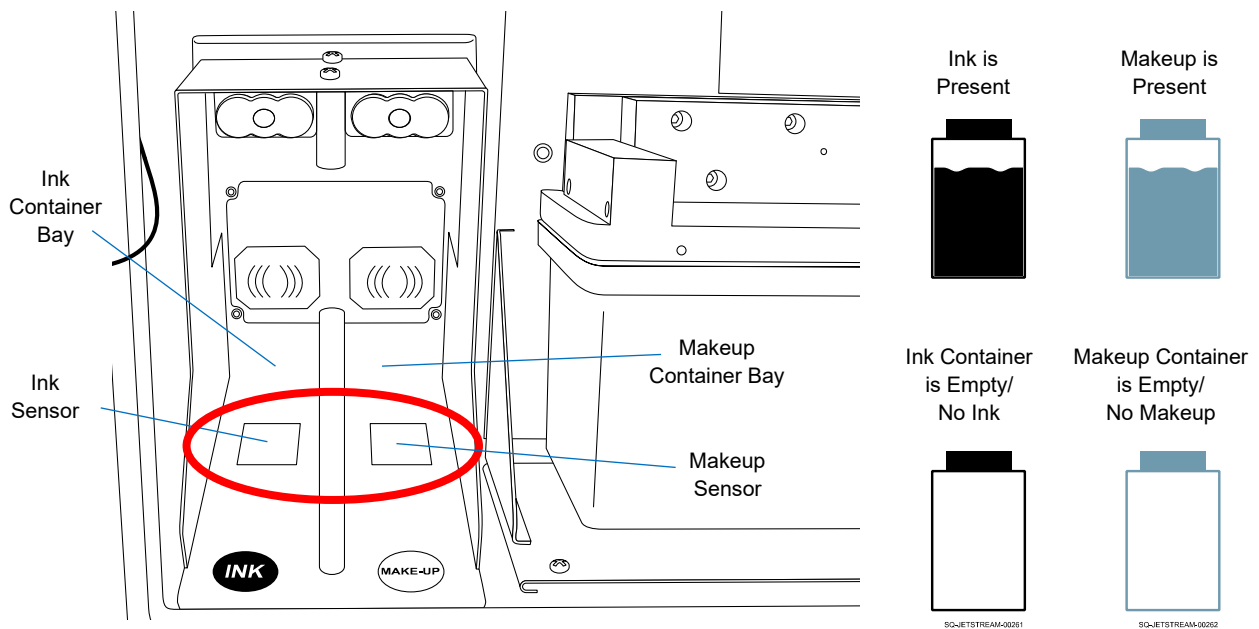
Items Needed to Check the Sensor:

- Phillips Head Screwdriver

- Long Flathead Screwdriver

- Digital Multimeter

To Check the Sensor:

Behind the Buffer in the back of the JetStream are two observation holes for viewing and accessing the Ink Sensor and Makeup Sensor.

1. **View the Sensor LED**

   a. Open the Rear Door of the JetStream.

   b. Locate the Buffer and look through the Ink and Makeup Sensor observation holes to see if the red LEDs are illuminated. An illuminated LED indicates the presence of a Container with fluid. If an LED is not illuminated, there is either no Container with fluid, or the Fluid Sensor is not reading properly.

Viewing Ink and Makeup Sensor Function
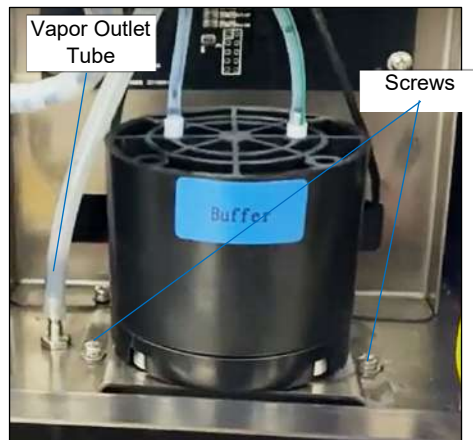
SQ-JETSTREAM-00263-01
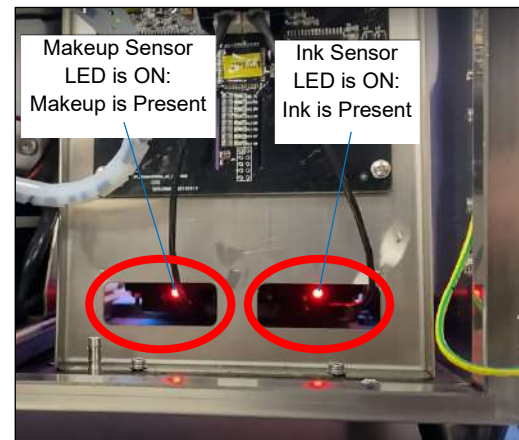
SQ-JETSTREAM-00264-01

2. **Adjust the Sensor's sensitivity:**

   a. If a Container with fluid is present but the LED is not lighting, the LED will need to be accessed more directly for adjustment. To do this, disconnect the Vapor Tube, remove the two Screws holding the Buffer Assembly in place, and move the Vapor Tube and Buffer Assembly out of the way.

   b. To left of each red LED is a Potentiometer, which can be adjusted to increase or decrease the sensitivity of the Fluid Sensor. To increase the sensitivity, use a long flathead screwdriver to rotate the Potentiometer clockwise until light comes on. If the light does not come on despite the presence of a container with fluid, the Fluid Sensor may be faulty and need to be replaced. The next step is to check the signal from the Fluid Sensor. (If the LED is always on whether fluid is present or not, rotate the Potentiometer counterclockwise to decrease the sensitivity).

3. **Check the signal from the Fluid Sensor:**
   If adjusting the Fluid Sensor's Potentiometer does not enable it to sense the presence of a full Container, check the Fluid Sensor's signal and power supply by doing the following:

a. Turn the dial on the Digital Multimeter to "DC Voltage."

b. Locate where the wire from the Fluid Sensor plugs into the RF Read-Write Detect Board.

c. With the Digital Multimeter's black Probe touching the "Common" Wire (far right), touch the red Probe to the "Power to Sensor" Wire (far left). If the Fluid Sensor is properly receiving power, the Digital Multimeter should read around 5.0 VDC.

Testing the Sensor Signal and Power Supply

Wire from Makeup Sensor

Wire from Ink Sensor

RF Read-Write Detect Board

SQ-JETSTREAM-00265-01

Power to Fluid Sensor

Signal from Fluid Sensor
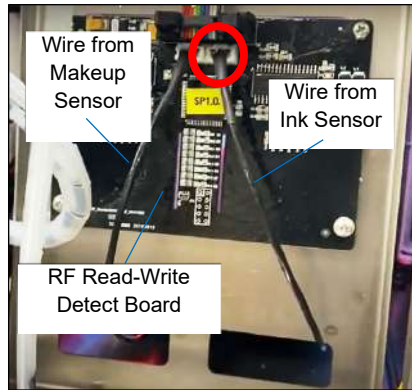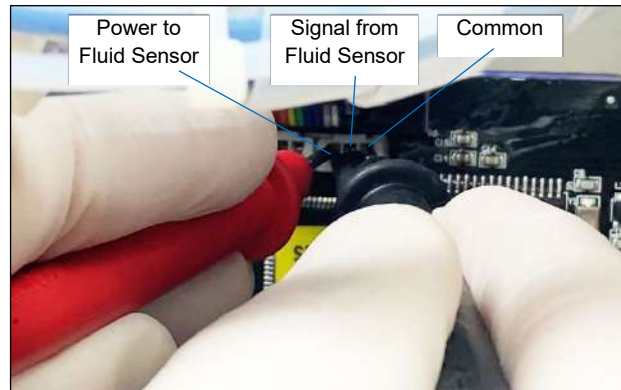
Common

SQ-JETSTREAM-00266-01

Power   Signal   Common
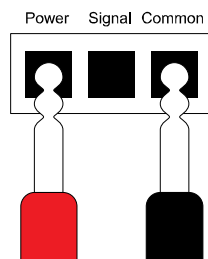
Receiving Power: 5.0 VDC

SQ-JETSTREAM-00409-01

Power   Signal   Common
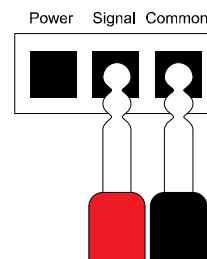
Full Container: ≤2.0 VDC
No Container: 5.0 VDC

SQ-JETSTREAM-00410-01

d. With the Digital Multimeter's black Probe touching the "Common" Wire (far right), touch the red Probe to the "Signal from Sensor" Wire (center). If the Fluid Sensor is properly sending its signal and a full Container is correctly seated in the Container Bay, the Digital Multimeter should read ≤2.0 VDC. With the Container removed, the Digital Multimeter should read around 5.0 VDC.

e. If the Power or Signal Wire are not registering the correct voltage, the Fluid Sensor Assembly must be replaced.

△ Pressure Pump

This section covers maintenance and repairs of the Pressure Pump which pulls fluid from the Mixing Tank and sends it through the system. If fluids are not flowing properly through the system, the Pressure Pump may be one possible cause.

△ Verifying Proper Ink Pressure

(Required Training Level: User)

If ink pressure seems high or low, it can be checked using the JetStream's software.

To Verify Proper Ink Pressure:

1. Go to **Settings** >> **Ink System**. The upper right corner shows information about the ink pressure (just below viscosity). Check that the ink pressure is suitable for printing. The current ink pressure (left), should match the target ink pressure (right).

2. If the ink pressure is 10 or more points above or below the correct level, contact your trained and authorized Squid Ink Distributor.

▲ Ink and Makeup Diaphragm Pumps

This section covers maintenance and repairs of the Diaphragm Pumps. The Ink Diaphragm Pump pulls pure ink from the Ink Container and delivers it to the Mixing Tank. The Makeup Diaphragm Pump pulls makeup fluid from the Makeup Container and either sends it to the Mixing Tank to dilute the ink to the proper viscosity, or sends it through the system for cleaning purposes.

▲ Checking Ink Diaphragm Pump Functionality

(Required Training Level: Trained Technician)

The Ink Diaphragm Pump makes an audible humming sound when it is activated, and can be turned on and off by the user through the JetStream's system diagnostic functions. This feature can be used to easily test functionality of the Ink Diaphragm Pump.

VIDEO: Troubleshooting Ink and Makeup Delivery
To see a video of this procedure, click this link: https://www.youtube.com/watch?v=M_GzQUugcps Or scan the QR code at right using the camera app on your mobile device. **View:** 16:32 – 22:09

To Check Ink Diaphragm Pump Functionality:

1. **Verify that the JetStream is powered on but not jetting.**

2. **Open the rear of the JetStream.**

3. **Audibly check if the Ink Diaphragm Pump is functioning:**

    a. On the Touchscreen, select **Settings** >> **Diagnostic** >> **Device**.

    b. Enter the correct password (if in doubt, contact Squid Ink Technical Support).

    c. Locate the button to activate the Ink Diaphragm Pump, listed under "Debug2" as "Ink Replenish Pump."

Locating the Solenoid Valve
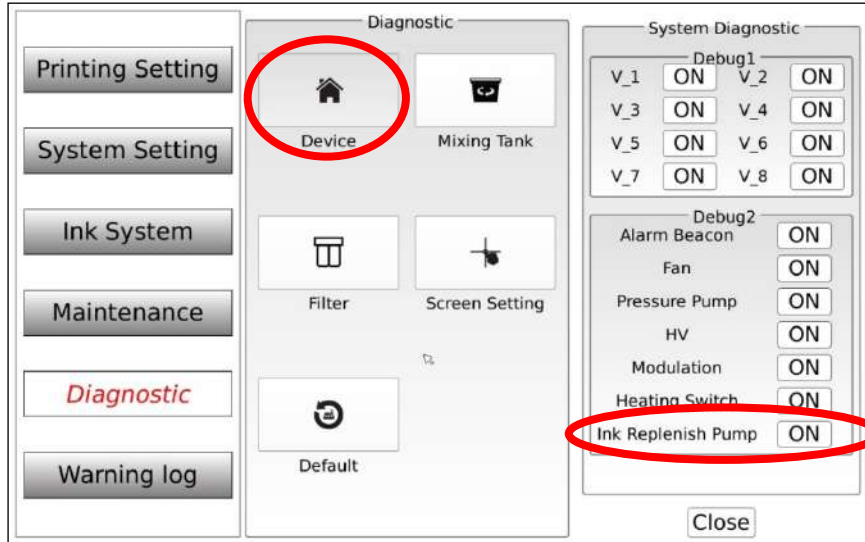
d. Select "ON" next to "Ink Replenishment Pump" to turn the Ink Diaphragm Pump on. There should be a humming noise, indicating that the pump is able to activate. If there is no humming sound, the pump may be seized up. However, even if there is a hum, the input or output flaps within the pump may be stuck.

e. Select "OFF" to turn the pump off again.

▲ Cleaning a Diaphragm Pump

(Required Training Level: Trained Technician)

If there is a problem with fluid being pulled from the Ink or Makeup Container, the Diaphragm Pump for that Container may need to be cleaned out. The description below is for the Ink Diaphragm Pump, but the process for cleaning either Diaphragm Pump is the same. Cleaning the Makeup Diaphragm Pump is less messy and is generally required less often, because the makeup tends to clean the Pump during operation.
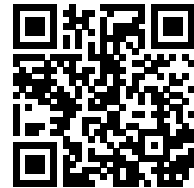
| VIDEO: Troubleshooting Ink and Makeup Delivery	
To see a video of this procedure, click this link: https://www.youtube.com/watch?v=M_GzQUugcps Or scan the QR code at right using the camera app on your mobile device. **View:** 33:51 – 40:32	SQ-JETSTREAM-00250-02 Troubleshooting Ink and Makeup Delivery https://www.youtube.com/watch?v=M_GzQUugcps
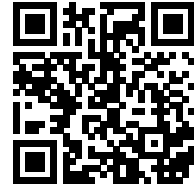
Items Needed to Clean a Diaphragm Pump:

- Small Phillips Head Screwdriver
- Paper Towel or Rag

To Clean a Diaphragm Pump:

1. **Remove the Cap from the Diaphragm Pump:**

   a. Holding a paper towel or rag underneath the Diaphragm Pump (left) to catch any fluid, use the Phillips Head Screwdriver to remove the four screws holding the black Cap on the lower part of the Pump.

Removing the Screws from the Diaphragm Pump
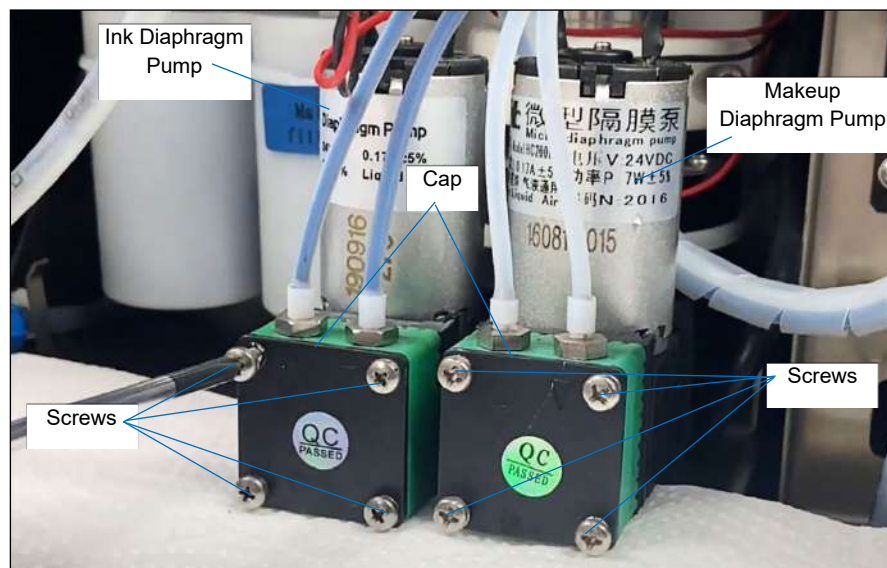
SQ-JETSTREAM-00308-01

2. **Access the Input and Output Flaps:**

   a. Pull the two conjoined green Blocks away from the base of the Diaphragm Pump. Between these two Blocks are the Pump's Input and Output Flaps.

   b. Pull the two green Blocks apart to access to the Flaps.

Accessing Input and Output Flaps

SQ-JETSTREAM-00309-01
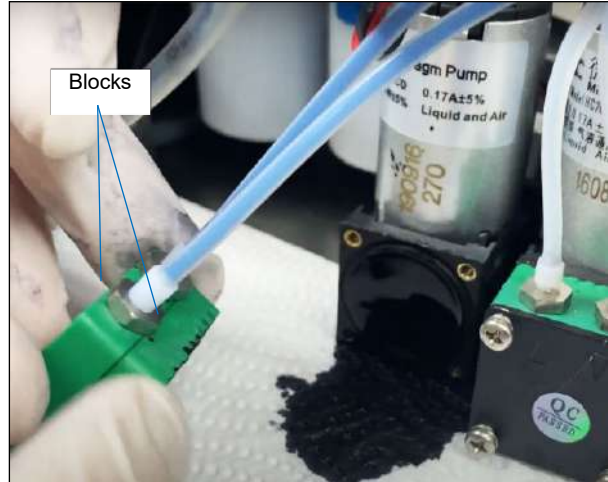
SQ-JETSTREAM-00310-01

SQ-JETSTREAM-00311-01
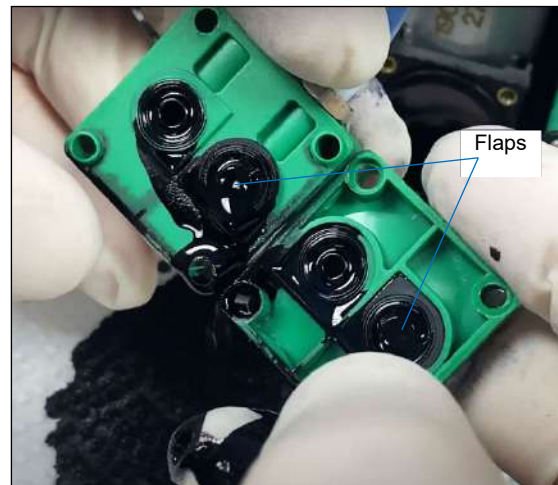
SQ-JETSTREAM-00312-01

3. **Clean the Input and Output Flaps:**

   If ink or impurities have dried in the Input or Output Flaps, they will be stuck in place, which could be causing the problem.

   a. Holding each green Block over the Cleaning Tray, use the Cleaning Bottle to wash away any ink or contaminants.

   > **NOTE:** Use care not to loosen the Flaps from the Blocks, which can result in them falling into the Cleaning Tray.

b. With the Block thoroughly clean, use the tip of a Screwdriver to gently lift each flap to see if it is stiff or stuck in place.

c. If any stiffness or stickiness is detected, remove the Flaps from the Block to more easily access their entire surface, and use the Cleaning Bottle to further wash them.

Checking if Flaps are Stuck

SQ-JETSTREAM-00314-01

SQ-JETSTREAM-00315-01

4. **Check and clean the Diaphragm:**

The Diaphragm is a flexible membrane located on the part of the Pump against which the green Blocks are mounted. If ink or contaminants have dried on the Diaphragm, the membrane will be stiff, which may be causing the problem of fluid not being adequately pulled from the Ink or Makeup Conatiner. This can be checked by gently touching the Diaphragm. For the Ink Diaphragm Pump, it can also be checked by performing the Ink Diaphragm Pump diagnostic steps in "▲ Checking Ink Diaphragm Pump Functionality" on page to see if the Diaphragm moves. Whether or not there is dried ink or contaminants on the Diaphragm, the opportunity of having the Pump open should be used to clean off the Diaphragm.

a. Hold a paper towel or rag placed underneath the Diaphragm Pump to catch excess fluid.

b. Use the Cleaning Bottle to wash away any ink and contaminants from the Diaphragm.

c. Use the paper towel to gently dab the Diaphragm dry.

Checking and Cleaning the Diaphragm

SQ-JETSTREAM-00317-01
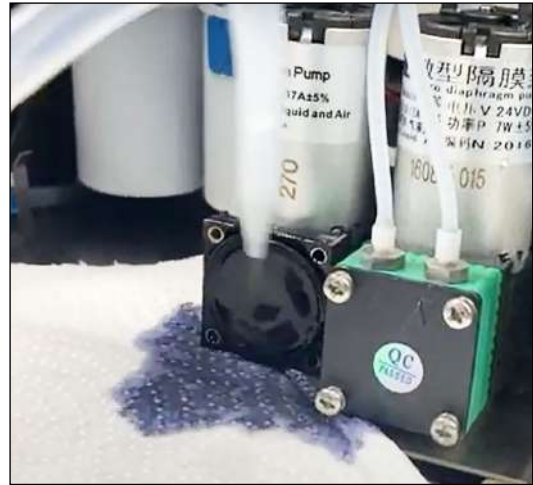
SQ-JETSTREAM-00318-01

5. **Reassemble the Blocks and reinstall them:**

   a. Place the Flaps back in their original positions/orientations on the Blocks. The Flaps can be placed on either Block. What is important is that the grooved side of the Flap matches up with the grooved side of its seat in the Block.

Correct Orientation of Flaps and Reinstalling the Blocks

Smooth sides match up

Grooved sides match up
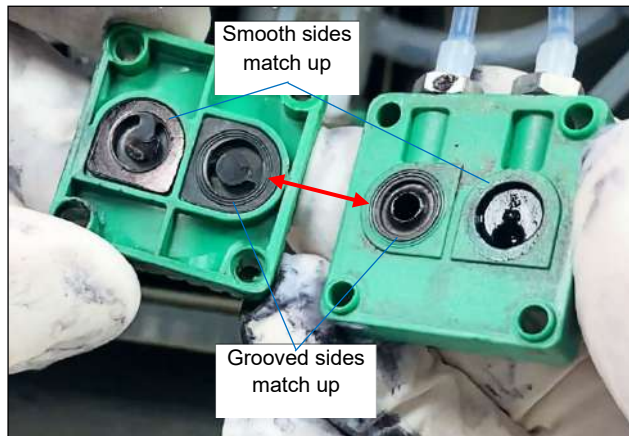
SQ-JETSTREAM-00320-01

SQ-JETSTREAM-00321-01

   b. With the Flaps properly seated in the Blocks, place the Blocks back together.

   c. Put the Blocks back against the Diaphragm in their original position.

   > ⚠️ **ATTENTION:** Be sure that the Diaphragm is centered, rather than pushed off to one side.

   d. Place the black Cap over the green Blocks.

e. Insert the four screws back into the screw holes, and use the Phillips Head Screwdriver to tighten them and secure the Cap and Blocks firmly in place again on the Diaphragm Pump.

Securing the Cap and Blocks

SQ-JETSTREAM-00322-01   SQ-JETSTREAM-00323-01

After closing the Front and Rear Doors of the JetStream, the system should be ready to restart. When restarting the system, the clean jet can be observed to determine that makeup fluid is being adequately pulled from the Makeup Container. A test print run can then be performed to verify that the issue has been resolved.

▲ Solenoid Valves

This section covers maintenance and repairs of the five Solenoid Valves that are attached to the Manifold. From left to right looking at the back of the Manifold, they are the Gutter Valve (YV5), the Viscometer Valve (YV1), the Ink-Add Valve (YV6), the Cleaning Valve (YV4), and the Makeup-Add Valve (YV2). While the two Microvalves inside the Printhead are technically also Solenoid Valves, they are covered in the Printhead section (see "▲ Printhead" on page). If fluids are not flowing properly, one possible reason may be a problem with one of the Solenoid Valves.

▲ Checking Solenoid Valve Functionality

(Required Training Level: *Trained Technician****)***

Occasionally a Solenoid Valve may stop functioning properly. Most often, this is the result of a stuck Plunger inside the Valve, typically because of dried ink or contaminants inside the Valve. Another possible reason for lack of function is that the Solenoid Valve is not receiving power.

▲ Checking Power to a Solenoid Valve

(Required Training Level: Trained Technician)

The example below shows the Viscometer Valve (YV1) being checked, but the procedure is the same for any of the Solenoid Valves on the Manifold.

Items Needed to Check the Power to a Solenoid Valve:

- Digital Multimeter

To Check the Power to a Solenoid Valve:

1. **Disconnect the Wires:**

    a. Disconnect the two wires that plug into Solenoid Valve 1 by pulling them gently but firmly outward by the plugs.

    > ⚠️ **ATTENTION:** Do not pull the wires themselves. Doing so can damage them.

Disconnecting the Wires
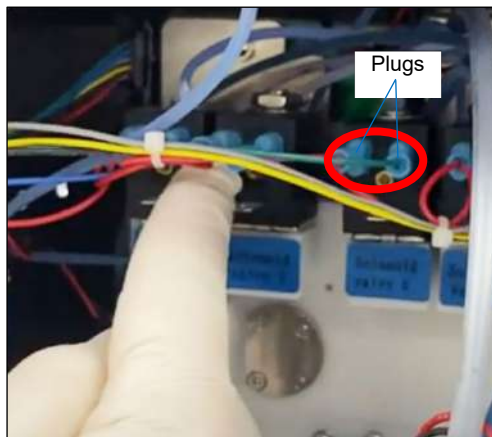
SQ-JETSTREAM-00364-01
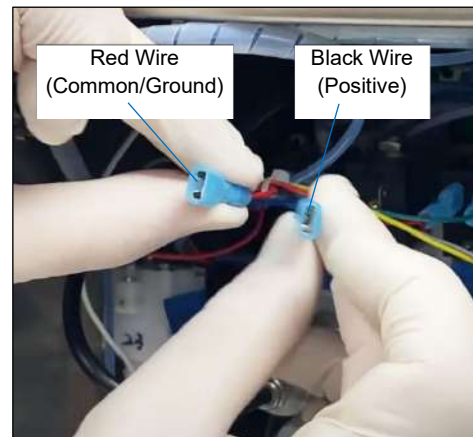
SQ-JETSTREAM-00365-01

2. **Start up the system without jetting:**

    a. See "△ Powering On" on page 202 and "△ *Startup: After a Short Break*" on page 202.

3. **Test the voltage:**

    a. Turn the dial on the Digital Multimeter to "DC Voltage."

    b. With the Digital Multimeter's black probe inside the Plug for the "Common" wire (red), insert the red probe into the Plug for the positive wire (black). If the Solenoid Valve is receiving proper voltage, the Digital Multimeter should read around 24.0 VDC. If the Solenoid Valve is not receiving proper voltage, contact your trained and authorized Squid ink Distributor.

△ Viscometer

This section covers maintenance and repairs related to the Viscometer (Part Number 2006561), which monitors how thin or thick the ink-makeup mixture is at any given time.

△ Verifying Proper Viscosity

(Required Training Level: User)

It is important to maintain the proper ratio of ink to makeup fluid in the Mixing Tank.

VIDEO: Troubleshooting Ink and Makeup Delivery	
To see a video of this procedure, click this link: https://www.youtube.com/watch?v=M_GzQUugcps Or scan the QR code at right using the camera app on your mobile device. **View:** 43:35 – 46:08	
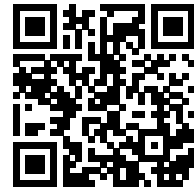
To Verify Proper Viscosity:

1. **Determine the target viscosity level (reference viscosity):**

   The correct viscosity, or target viscosity, for the contents of the Mixing Tank can be found through the JetStream software.

   a. On the Touchscreen, select **Settings** >> **Ink System**.

   b. In the upper right panel under "General Parameters," look at "Ink Viscosity." The number on the right is the target viscosity.

Checking Viscosity
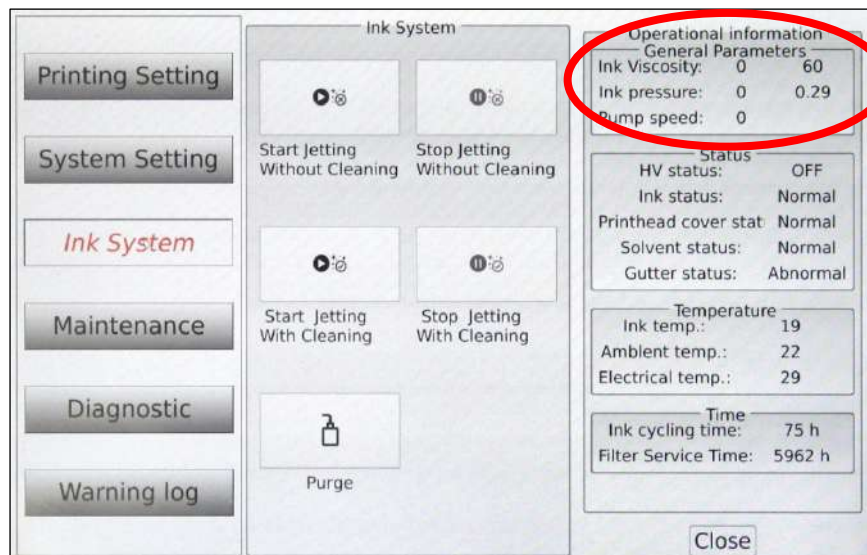
2. **Determine the actual viscosity level:**

a. On the **Main Screen**, select **Start Jetting** >> "Start Jetting Without Cleaning."

b. Under "General Parameters," look at "Ink Viscosity." The number on the left is the actual viscosity. A deviation of 10% or higher from the target viscosity will trigger a viscosity error message. In the example above, where the reference viscosity is 60, the target range is (60 minus 6) – (60 plus 6), or 54 – 66. The actual viscosity of "0" is outside of that range. When the viscosity

△ Checking the Viscosity Log

(Required Training Level: User)
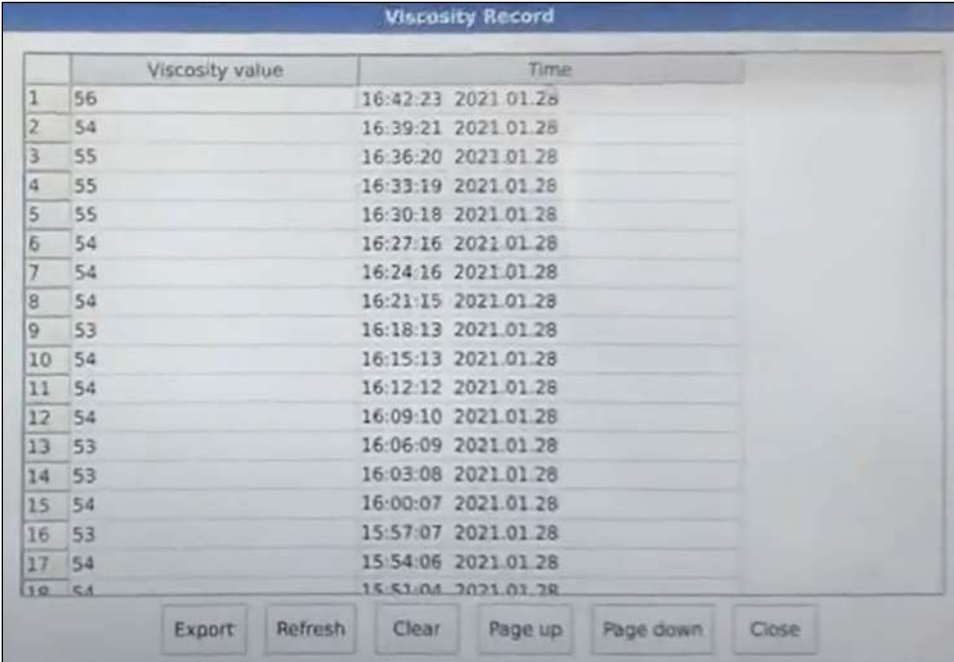
The JetStream keeps a log of its viscosity readings over time. This can be viewed to see if there is a noticeable trend in the viscosity readings.

To Check the Viscosity Log:

1. **Open the Viscosity Log:**

   a. Select **Settings** >> **Maintenance** >> **Viscosity Record**.

Viewing the Viscosity Record

	Viscosity value	Time
1	56	16:42:23 2021.01.28
2	54	16:39:21 2021.01.28
3	55	16:36:20 2021.01.28
4	55	16:33:19 2021.01.28
5	55	16:30:18 2021.01.28
6	54	16:27:16 2021.01.28
7	54	16:24:16 2021.01.28
8	54	16:21:15 2021.01.28
9	53	16:18:13 2021.01.28
10	54	16:15:13 2021.01.28
11	54	16:12:12 2021.01.28
12	54	16:09:10 2021.01.28
13	53	16:06:09 2021.01.28
14	53	16:03:08 2021.01.28
15	54	16:00:07 2021.01.28
16	53	15:57:07 2021.01.28
17	54	15:54:06 2021.01.28
18	54	15:51:04 2021.01.28

Export   Refresh   Clear   Page up   Page down   Close

SQ-JETSTREAM-00357-01

   b. Observe any trends in viscosity over time.

▲ Forcing a Viscosity Check:

(Required Training Level: *Trained Technician)*

If desired, it is possible to bypass the every-three-minute schedule for viscosity checks and do a viscosity check on demand using the JetStream's software. While usually unnecessary, this can provide the most current information.

To Force a Viscosity Check:

1. **Use the software to force a viscosity check:**

   a. Select **Settings** >> **Maintenance** >> **Viscosity Measurement**. If the system is already in the process of taking a measurement, it will provide notification of that. Otherwise, it will take the measurement as requested. When the processing status indicator finishes, the new actual viscosity measurement will be visible to the left of the reference viscosity under "Operational Information," "General Parameters."

▲ Analyzing Viscosity Trends

(Required Training Level: Trained Technician)

VIDEO: Troubleshooting the Viscometer   To see a video of this procedure, click this link: https://www.youtube.com/watch?v=o5YZUs-SsJU   Or scan the QR code at right using the camera app on your mobile device.   **View:** 06:41 – 10:43
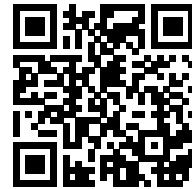
After viewing the system's recent trends in viscosity (see "△ Checking the Viscosity Log" on page 263), the next likely course of action can be determined as follows:

1. **Within Target Range:**

    If the viscosity is consistently within the target range (10% above or below target viscosity), there is no viscosity problem.

2. **Too High:**

    If the viscosity reading is above the target viscosity level (too thick) and is getting higher over time, it is likely that there is not enough makeup fluid getting into the Mixing Tank. This may indicate a problem with:

    - Makeup Diaphragm Pump
    - Makeup-Add Valve (YV2)
    - Viscometer

    For further assistance, see "Frequent clogs in the Printhead because the ink/makeup mix is consistently too thick" or "Inaccurate Viscometer readings: Consistently high Viscometer readings," both in the "Troubleshooting" section starting on page 313.

3. **Too Low:**

    If the viscosity reading is below the target viscosity level (too thin), allowing some time for the JetStream to jet without cleaning will tyipcally result in evaporation of enough makeup fluid to bring the viscosity back into the target range.

    If the problem continues, refer to "Printing is faded due to low viscosity" or "Inaccurate Viscometer readings: Viscosity reading remains at '0' beyond the first four minutes that the JetStream is in 'Ready' mode," both in the "Troubleshooting" section starting on page 313, for possible solutions.

▲ Removing the Viscometer

(Required Training Level: Trained Technician)

VIDEO: Troubleshooting the Viscometer

VIDEO: Troubleshooting the Viscometer

To see a video of this procedure, click this link:
https://www.youtube.com/watch?v=o5YZUs-SsJU
Or scan the QR code at right using the camera app on your mobile device.

View: 12:26 – 15:56
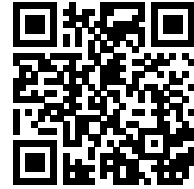
SQ-JETSTREAM-00243-01
Troubleshooting the Viscometer
https://www.youtube.com/watch?v=o5YZUs-SsJU

Items Needed to Check the Level Detection Probes:

- 7/32 Nut Driver
- Phillip Head Screwdriver
- Needle-nose Pliers
- Masking Tape
- Non-abrasive Lint-free Wipes (Part Number 2005470)

To Remove the Viscometer:

1. **Power off the system:**

   a. On the **Main** screen, select **Stop Jetting** >> "Stop Jetting Without Cleaning."

   b. Turn the Power Switch on the right side of the Console to the "OFF" position.

2. **Remove the Mounting Nuts:**

   The Viscometer is mounted to the left wall of the JetStream inside the rear compartment.

   a. Toward the top and bottom of the Viscometer are two Nuts. Use the 7/23 Nut Driver to remove these, which will detach the Viscometer from the wall of the JetStream.

   b. Accompanying the Nuts are two Locking Washers and Flat Washers. Set these aside with the Nuts.

3. **Detach the Viscometer from the JetStream:**

   a. Slide the Viscometer off of the two Standoffs.

Detaching the Viscometer
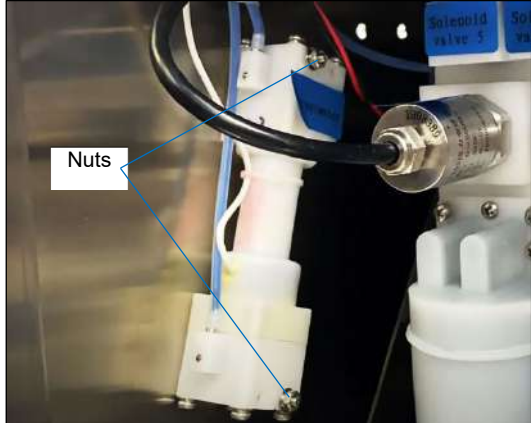
SQ-JETSTREAM-00358-01
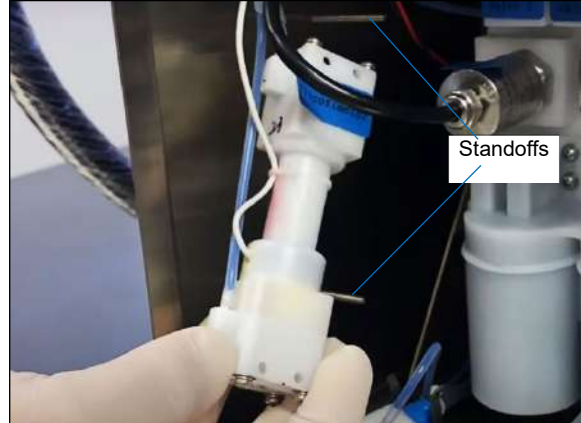
SQ-JETSTREAM-00359-01

4. **Slide the Manifold out the rear of the JetStream** (see "△ Sliding the Manifold Out the Rear" on page 222).

5. **Detach the Viscometer's Wire and Tubes:**

   a. Disconnect the wire from the PCB Board by gently pulling it straight out.

   b. Holding a Non-abrasive, Lint-free Wipe in place to catch any ink that may spill out, use the Needle-nose Pliers to disconnect the two tubes from the Manifold Assembly by pulling the end of the tube away from the Manifold.

   c. Make note of which tube is which. It may be helpful to temporarily label one tube with a piece of masking tape.

   > **NOTE:** Reconnecting the tubes incorrectly can damage the system and will void the warranty.

Disconnecting the Viscometer
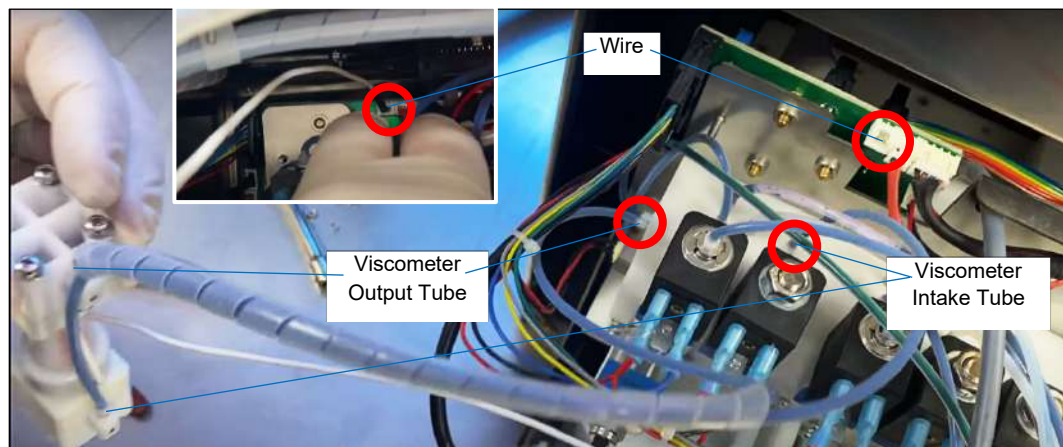
SQ-JETSTREAM-00360-01

SQ-JETSTREAM-00361-01

6. **Move the Manifold back into place** (see "△ Moving the Manifold Back into Place" on page 224).

▲ Cleaning the Viscometer

(Required Training Level: Trained Technician)

VIDEO: Troubleshooting the Viscometer To see a video of this procedure, click this link: https://www.youtube.com/watch?v=o5YZUs-SsJU Or scan the QR code at right using the camera app on your mobile device. **View:** 15:57 – 20:05	SQ-JETSTREAM-00243-01 Troubleshooting the Viscometer https://www.youtube.com/watch?v=o5YZUs-SsJU
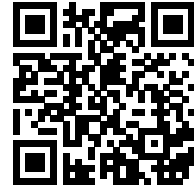
⚠️	**ATTENTION:** It is important to use the same makeup fluid for cleaning as is used by the JetStream itself. Confirm this by checking the number on the source bottle of makeup fluid to the numeric part of the name on the Makeup Container (for example, "SI-CIJ**9090**-Q").

Items Needed to Check the Level Detection Probes:

- Cleaning Bottle filled with makeup fluid
- Cleaning Tray

To Clean the Viscometer:

1. **Remove the Viscometer** (see '▲ Removing the Viscometer" on page 266).

2. **Flush the Viscometer with makeup fluid:**

   a. Place the tip of the Cleaning Bottle flush against the end of the "out" tube that sends fluid out of the Viscometer (top of Viscometer).

   b. Spray makeup fluid into the "out" tube and allow fluid to drain out of the "in" tube into the Cleaning Tray.

Jetting Makeup Through the Viscometer
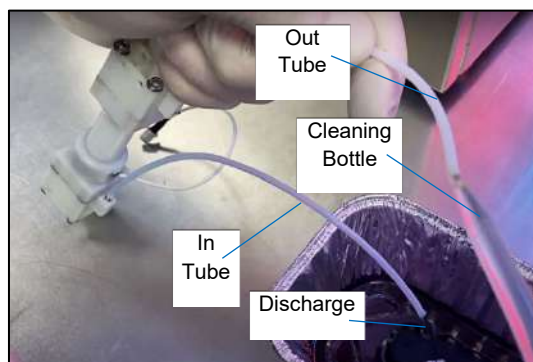
SQ-JETSTREAM-00363-01   SQ-JETSTREAM-00362-01
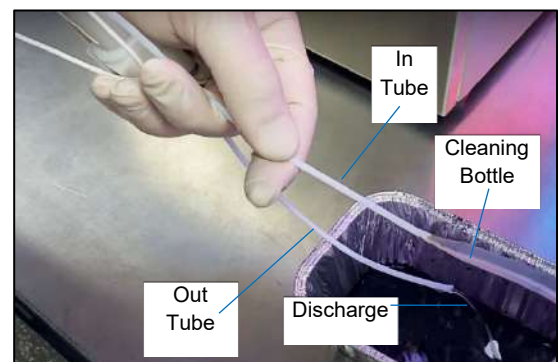
c. Flush in the opposite direction: place the tip of the Cleaning Bottle flush against the end of the "in" tube that brings fluid into the Viscometer (bottom of Viscometer).

d. Spray makeup fluid into the "in" tube and allow fluid to drain out of the "out" tube into the Cleaning Tray.

e. Repeat this process until the fluid coming out of the Viscometer is clear and the ball inside the Viscometer moves freely.

f. If unable to get the ball moving freely, replace the Viscometer with a new one (Part Number: 2006561).

▲ Installing a Viscometer

(Required Training Level: Trained Technician)

After cleaning the Viscometer or obtaining a new one, the Viscometer needs to be put in place and reconnected.

VIDEO: Troubleshooting the Viscometer
To see a video of this procedure, click this link: https://www.youtube.com/watch?v=o5YZUs-SsJU Or scan the QR code at right using the camera app on your mobile device. **View:** 20:06 – 21:26

SQ-JETSTREAM-00243-01
Troubleshooting the Viscometer
https://www.youtube.com/watch?v=o5YZUs-SsJU
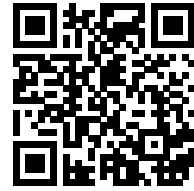
⚠	**ATTENTION:** It is important to use the same makeup fluid for cleaning as is used by the JetStream itself. Confirm this by checking the number on the source bottle of makeup fluid to the numeric part of the name on the Makeup Container (for example, "SI-CIJ**9090**-Q").

Items Needed to Reinstall the Viscometer:

- 7/32 Nut Driver
- Phillip Head Screwdriver
- Needle-nose Pliers
- Non-abrasive Lint-free Wipes (Part Number 2005470)
- Viscometer (Part Number 2006561)

To Reinstall the Viscometer:

1. **Slide the Manifold out the rear of the JetStream** (see "△ Sliding the Manifold Out the Rear" on page 222).

2. **Reconnect the Viscometers Wires and Tubes:**
   a. Use the Needle-nose Pliers to reconnect the Viscometer Intake Tube to the top of the Manifold Assembly.
   b. Use the Needle-nose Pliers to reconnect the Viscometer Output Tube to the side of the Manifold Assembly.

   > **NOTE:** Reconnecting the tubes incorrectly can damage the system and will void the warranty.

Reconnecting the Viscometer

SQ-JETSTREAM-00360-01   SQ-JETSTREAM-00361-01
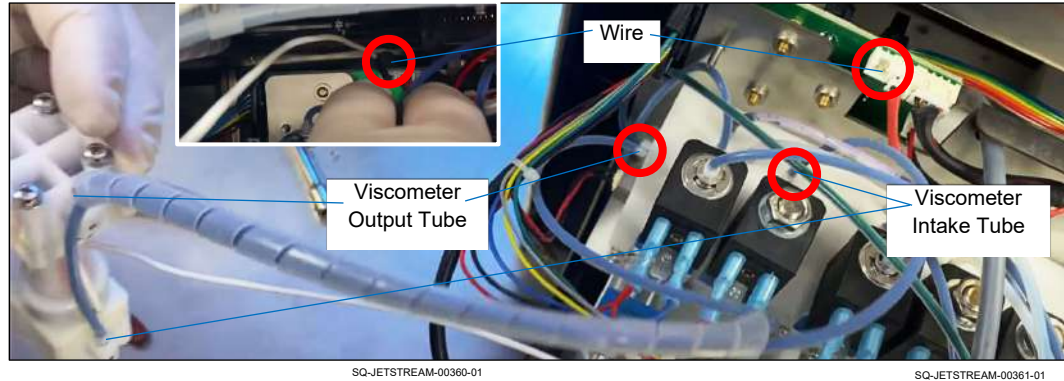
c. Reconnect the wire to the PCB Board by plugging it back in.

4. **Move the Manifold Assembly back into place** (see "△ Moving the Manifold Back into Place" on page 224).

5. **Mount the Viscometer:**

   a. Confirming that the Intake Tube is oriented toward the bottom of the Viscometer, slide the Viscometer back over the two Standoffs inside the back of the JetStream.

   b. Place the Locking Washer and Flat Washer back over the ends of the Standoffs.

   c. Put the Nuts over the ends of the Standoffs, and tighten gently but firmly with the 7/32 Nut Driver.

Mounting the Viscometer

SQ-JETSTREAM-00359-01   SQ-JETSTREAM-00358-01
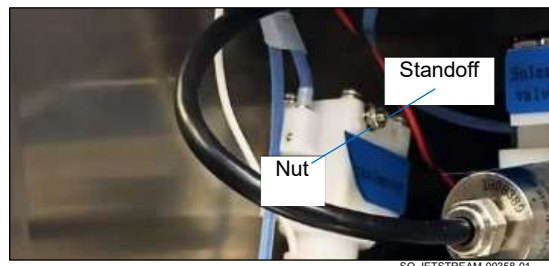
▲ Mixing Tank

This section covers maintenance and repairs related to the Mixing Tank and the ink-makeup mixture. The function of the Viscometer and the Mixing Tank are closely connected, so if the issue is not with the Mixing Tank there may be a problem with the Viscometer.

▲ Checking Fluid Levels in the Mixing Tank

(Required Training Level: Trained Technician)

While it is usually unnecessary to open the Mixing Tank to diagnose problems with it, it is useful to understand the mechanisms inside the Mixing Tank. The Mixing Tank has five Probes that continuously monitor the levels of fluid in the Mixing Tank. The fluid level in the Mixing Tank can be checked via a visual display on the Touchscreen at any time by selecting **Settings** >> **Diagnostic** >> **Mix Tank**.

Understanding Fluid Levels in the Mix Tank

Overflow   High   Ground   Normal   Low

SQ-JETSTREAM-00230-01

Mixing tank information

Low   Mid   High   Over
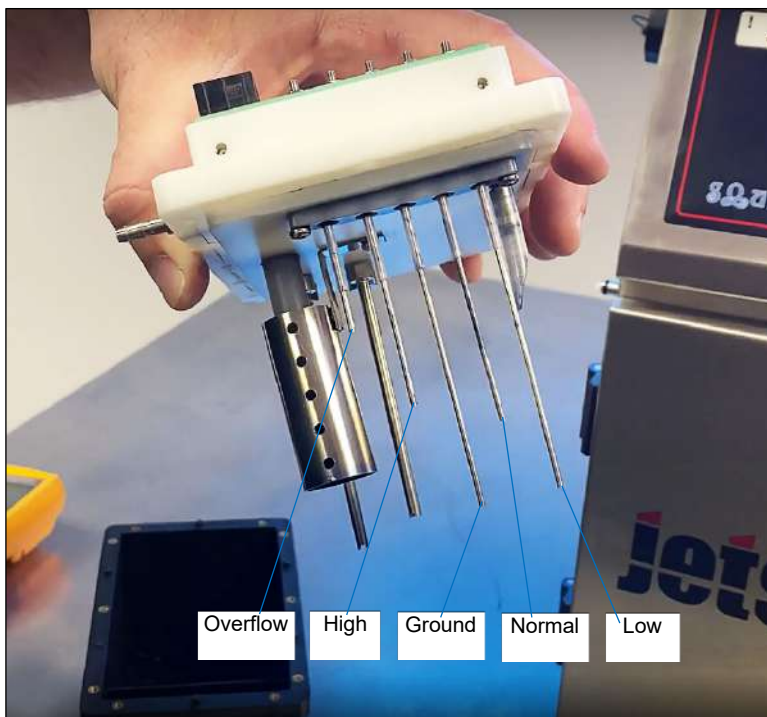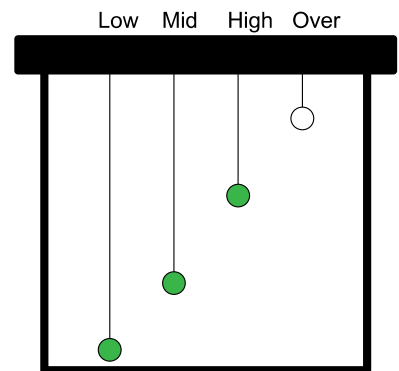
△ Main Filter

The JetStream has several filters which will need to be changed from time to time. The filter replacement schedule below should be followed under normal operating conditions. Excessive heat, dust, and humidity may reduce filter life and require more frequent replacements.

△ Monitoring the Main Filter Assembly

(Required Training Level: User)

To Monitor the Main Filter Assembly:

1. **View to the current filter status:**

    a. On the Touchscreen, select **Settings** >> **Ink System** >> **Right Panel**.

    b. Under "Filter Parameter," look at "Time Remaining." This indicates the number of hours until the Filter Assembly needs to be replaced. When the estimated remaining service life falls below 200 hours, a replacement warning is displayed.

    The JetStream will continue to run, but there will always be a "Service Recommended" alarm once 6,000 hours have passed.

▲ Replacing the Main Filter Assembly

(Required Training Level: Trained Technician)

⚠️	**ATTENTION:** Replacing the Main Filter Assembly should only be performed by trained and qualified personnel. If in doubt, contact your trained and authorized Squid Ink Distributor.

Items Needed to Replace the Main Filter Assembly:

- Paper Towels
- Small Phillips Head Screwdriver
- New Main Filter Assembly (Part Number 2006963)

To Replace the Main Filter Assembly:

1. **Turn off the JetStream:**

   a. **Stop Jetting** >> "Stop Jetting Without Cleaning."

   b. On the right side of the Console, turn the Power Switch to the "OFF" position.

   c. Disconnect the Power Cord.

2. **Open the Rear Door of the JetStream.**

3. **Locate the Filter Assembly:**

Main Filter Assembly

SQ-JETSTREAM-00435-01
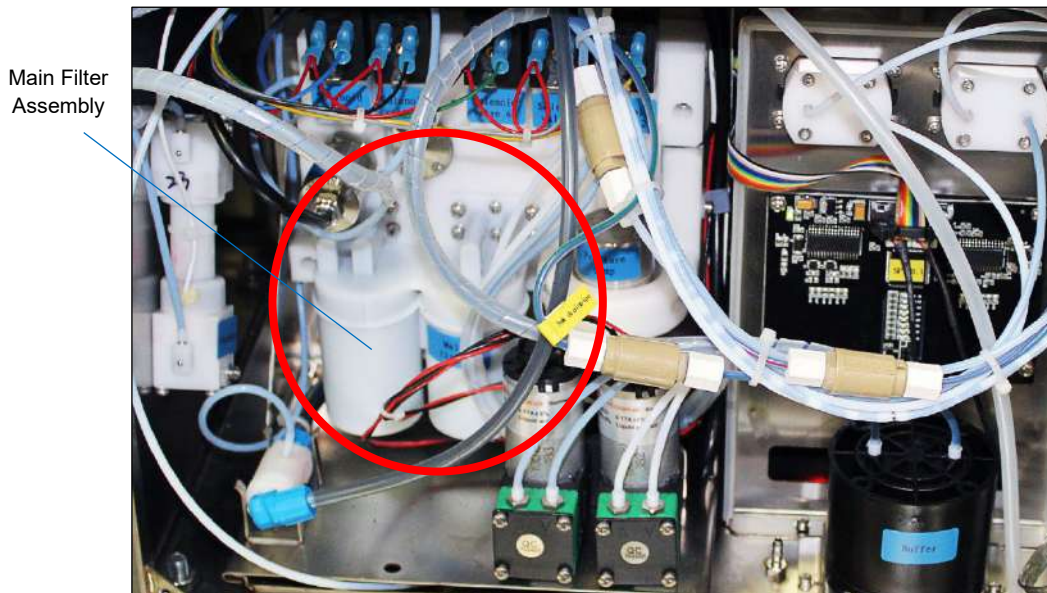
4. **Prepare the area:**

   a. Place some paper towels under the Filter Assembly to absorb any ink leakage.

5. Remove the old Filter Assembly:

a. Remove the eight M3 x 12 Screws (circled in red) and the four M3 x 10 Screws (circled in blue) as shown:
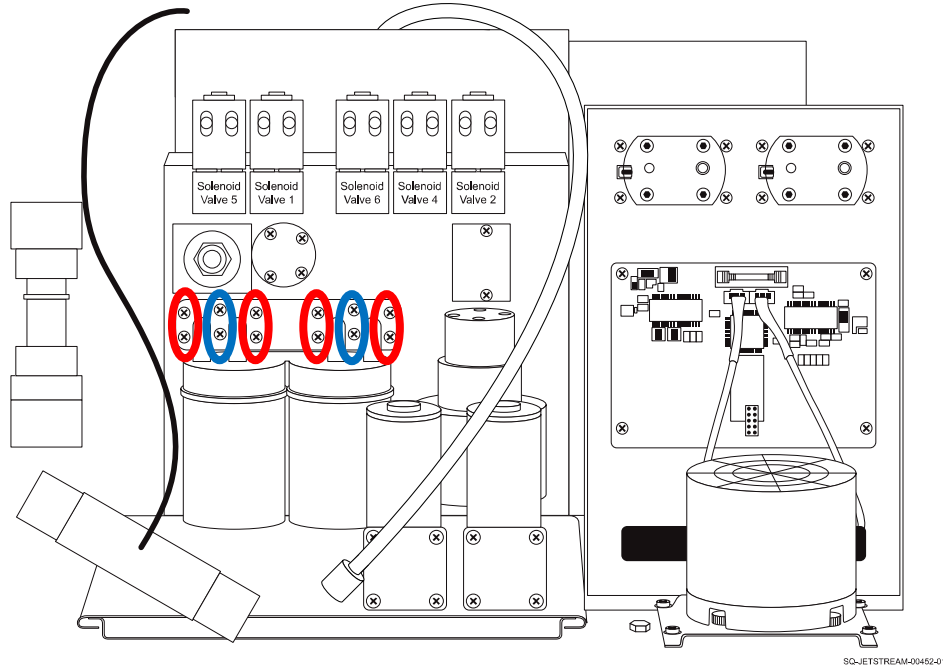
b. Set the Screws aside in separate piles to avoid confusion about which Screws are which.

c. Being careful not to disrupt or disconnect surrounding tubes or wires, gently pull out the old Filter Assembly.

Filter Assembly
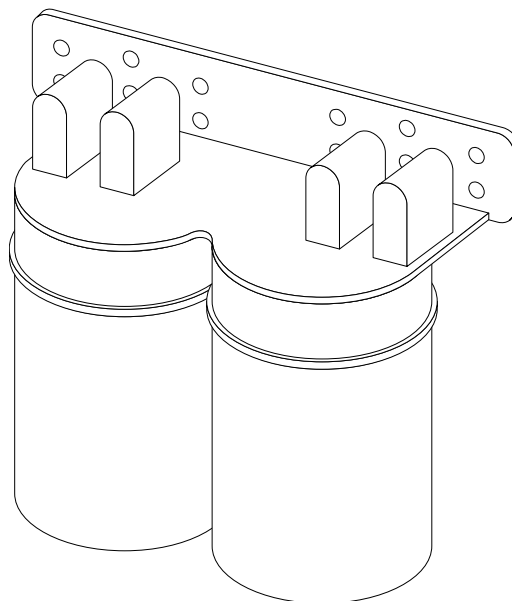
6. Install the new Main Filter Assembly:

a. Place the four new 9.6 x 1.8 O-rings (included with the new Filter) snugly on the nozzles of the new Filter Assembly.

Adding O-Rings to the Filter Assembly
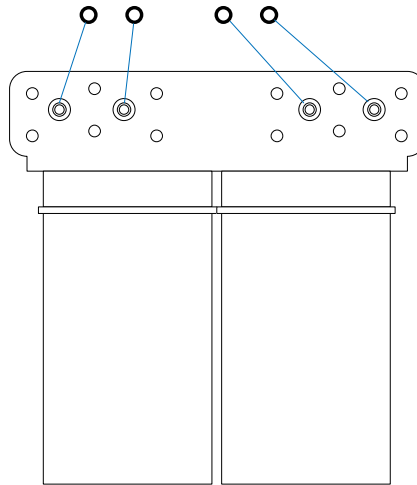
b. Being careful not to disrupt or disconnect surrounding tubes or wires, move the new Filter Assembly into position.

c. Make sure that the Filter Nozzles are all seated in their corresponding ports.

d. Replace the eight M3 x 12 Screws and the four M3 x 10 Screws in their proper locations to secure the Main Filter Assembly in position.

7. Install the Chip for the new Main Filter Assembly:

a. Locate the Chip Cover.
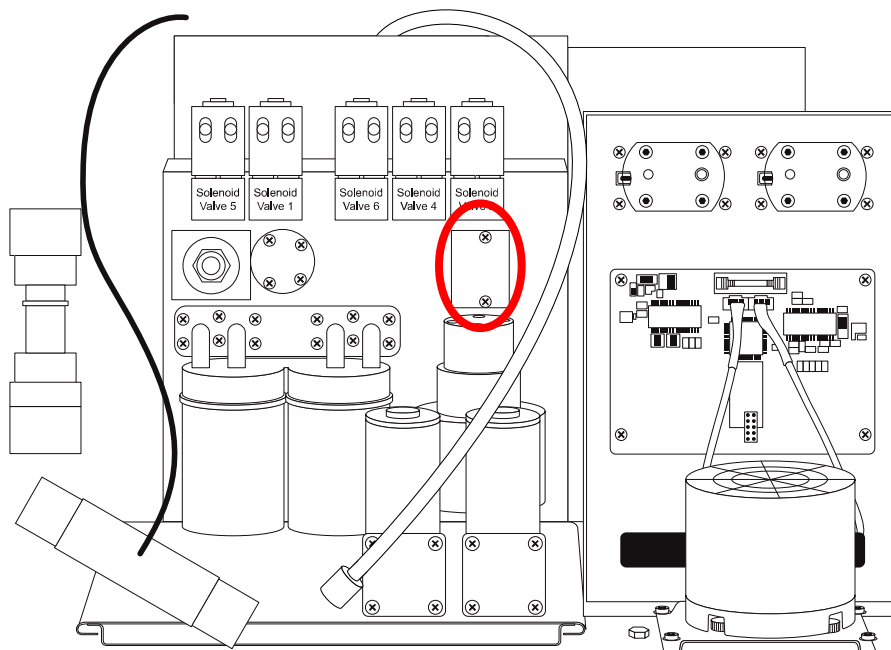
   b. Remove the Chip Cover by unscrewing the two Screws holding it in place and pulling the Chip Cover back.

   c. Remove the old Chip and insert the new one (included with the new Main Filter Assembly) in the same position. When the new Filter Chip is installed, filter life automatically resets to 6,000 hours.

   d. Put the Chip Cover in place again and use the Screws to secure it back in place.

8. Close the Rear Door of the JetStream.

9. Restart the JetStream:

   a. Reconnect the Power Cord.

   b. On the right side of the Console, turn the Power Switch to the "ON" position.

△ Air Filters

△ Replacing or Cleaning the Air Filters

(Required Training Level: User)

The JetStream has an Air Filter inside the air intake vent and the two exhaust vents. Maintenance on these is minimal, but they will occasionally become dusty and require cleaning. They should be checked every 3 months and cleaned if needed.

Air Filters
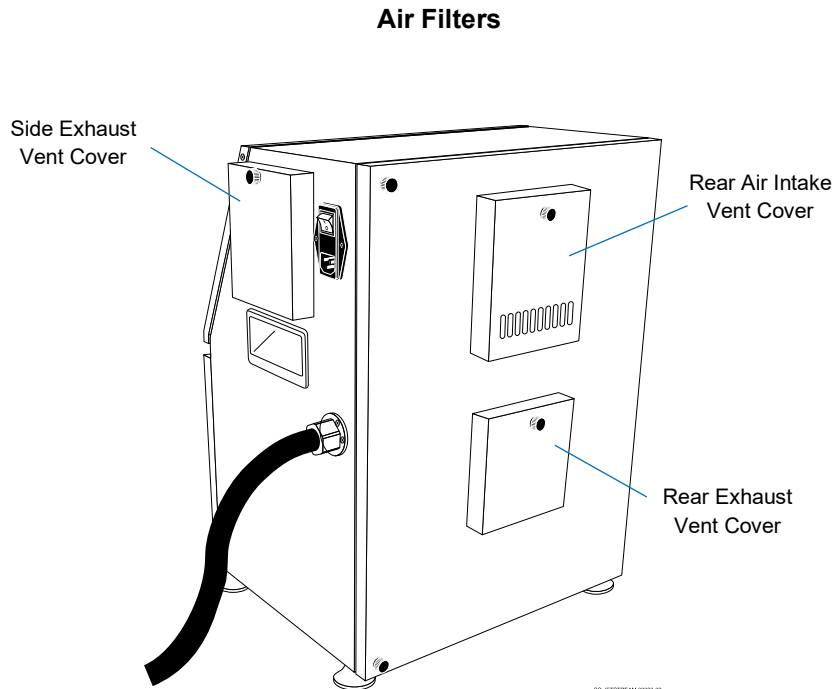
To Check Any Filter:

There is no need to shut the system down when checking the Filters as long as they are put back in place within 20 minutes.

1. Unscrew the Fastener at the top of the Vent Cover.
2. Inspect the condition of the Filter.
3. Put the Filter back in position.
4. Put the Vent Cover back into position
5. Secure the Vent Cover in place by screwing the Fastener back in.

To Clean Either Filter:

There is no need to shut the system down when cleaning the Filters as long as they are put back in place within 20 minutes.

1. Unscrew the Fastener at the top of the Vent Cover.
2. Remove the Filter.

3. Soak the Filter in a bowl of warm, clean water for 5 minutes, gently touching it to help remove dust and impurities that have collected.

4. Place the clean Filter on a clean, dry paper towel.

5. Place another clean, dry paper towel on top and gently press down, repeating until all water has been removed from the Filter.

Drying the Air Filter

Paper Towel

Filter

Paper Towel

SQ-JETSTREAM-00129
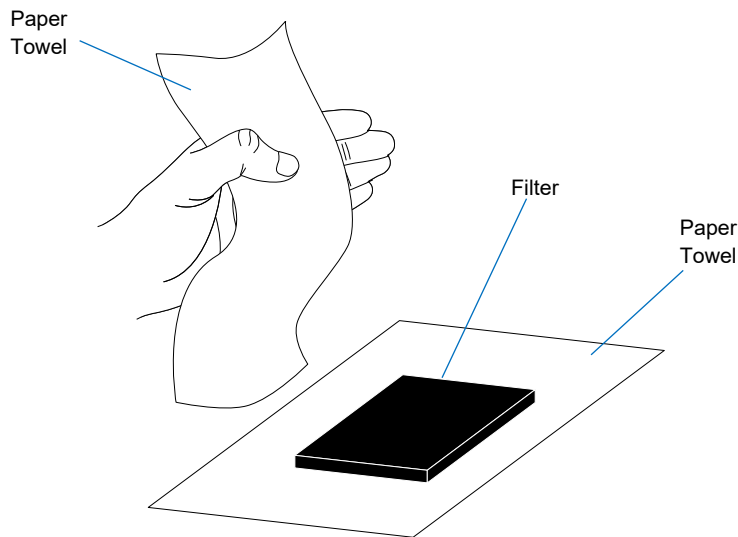
6. Place the Filter on another clean, dry paper towel and allow to air dry for 5 minutes.

7. Put the clean Filter back in position.

8. Put the Vent Cover back into position

9. Secure the Vent Cover in place by screwing the Fastener back in.

▲ Inline Filters

(Required Training Level: Trained Technician)

The JetStream has three Inline filters. All three generally look the same, but one is a 50 micron filter and the other two are 10 micron. They can be differentiated visually by a faint "50" or "10" etched into the plastic. When in place, they can also be differentiated by the color of the stripe on the HydraulicLine to which they are attached.

- **Pre-Head Filter** (10 micron): on green-striped Hydraulic Line (Part Number 2006593)

- **Cleansing Filter** (10 micron): on blur-striped Hydraulic Line (Part Number 2006593)

- **Ink-Return Filter** (50 micron): on red-striped Hydraulic Line (Part Number 2006709)

Inline Filters

Pre-Head Filter (10 micron) or Cleansing Filter (10 micron)

Ink Return Filter (50 micron)

SQ-JETSTREAM-00234-01
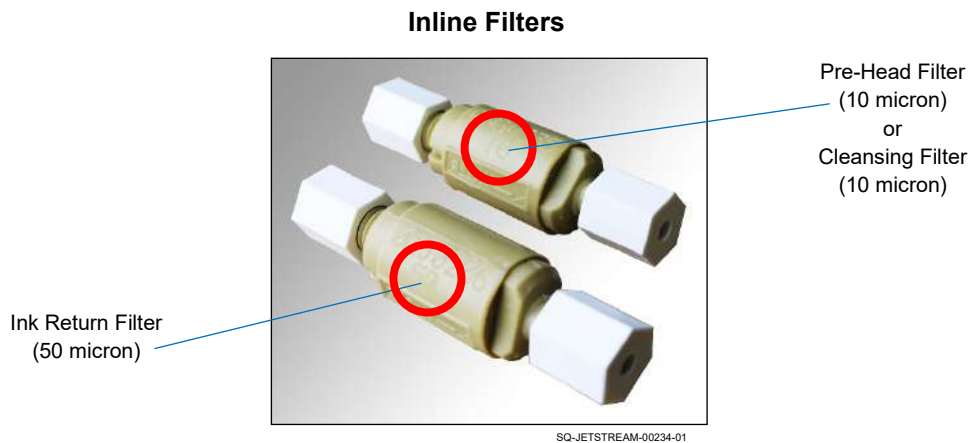
All three Inline Filters are also available together as a kit (Part Number 2006750).

▲ Locating the Inline Filters

(Required Training Level: Trained Technician)

To Locate the Inline Filters:

1. **Turn off the JetStream:**

   a. **Stop Jetting** >> "Stop Jetting Without Cleaning."

   b. On the right side of the Console, turn the Power Switch to the "OFF" position.

   c. Disconnect the Power Cord.

2. **Open the Rear Door of the JetStream.**

3. **Locate the Inline Filters:**
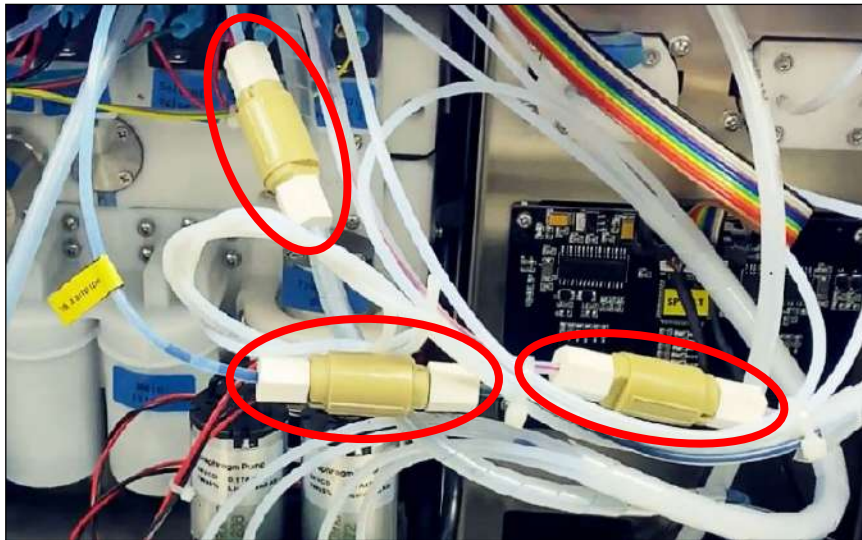
SQ-JETSTREAM-00427-01

▲ Inspecting an Inline Filter

(Required Training Level: Trained Technician)

If there is a problem with the flow of fluids in the system, there may be a blockage in one of the Inline Filters. To inspect of clean an Inline Filter, it must be disassembled.

Items Needed to Inspect an Inline Filter:

- Paper Towels

To Inspect an Inline Filter:

1. **Turn off the JetStream and locate the Inline Filters:**

   a. (see "▲ Locating the Inline Filters" on page 281).

2. **Remove the End Caps from the desired Inline Filter:**

   a. Hold a folded paper towel under the desired Inline Filter to absorb any ink leakage.

   b. Make note of which End Cap is downstream (the "FLOW" arrow on the Filter Body points to the downstream End Cap).

   c. Gently unscrew both white End Caps from the Inline Filter Assembly.

Downstream End Cap

SQ-JETSTREAM-00426-01

3. **Closely Inspect the Inline Filter Assembly:**

   a. Look for any signs of impurities inside the End Caps and inside the Nozzles of the Filter Assembly.

   b. Whether impurities are observed or not, it is good practice to clean an Inline Filter while it is disassembled (see "▲ Cleaning an Inline Filter" on page 283).

▲ Cleaning an Inline Filter

(Required Training Level: Trained Technician)

The Inline Filters may periodically need to be cleaned to remove impurities or other blockages that are affecting fluid flow through the system.

Items Needed to Clean an Inline Filter:

- Paper Towels
- Cleaning Bottle with makeup fluid
- Cleaning Tray
- Non-abrasive, Lint-free Wipes

To Clean an Inline Filter:

1. **Turn off the JetStream and partially disassemble the Inline Filter:**

   a. (see "▲ Inspecting an Inline Filter" on page).

2. **Clean out the End Caps:**

   a. Hold the Cleaning Tray underneath one End Cap.

   b. Being careful not to get makeup fluid on any other parts, use the Cleaning Bottle to squirt makeup fluid into the inside of the End Cap, allowing the makeup fluid to drip into the Cleaning Tray.

SQ-JETSTREAM-00431-01
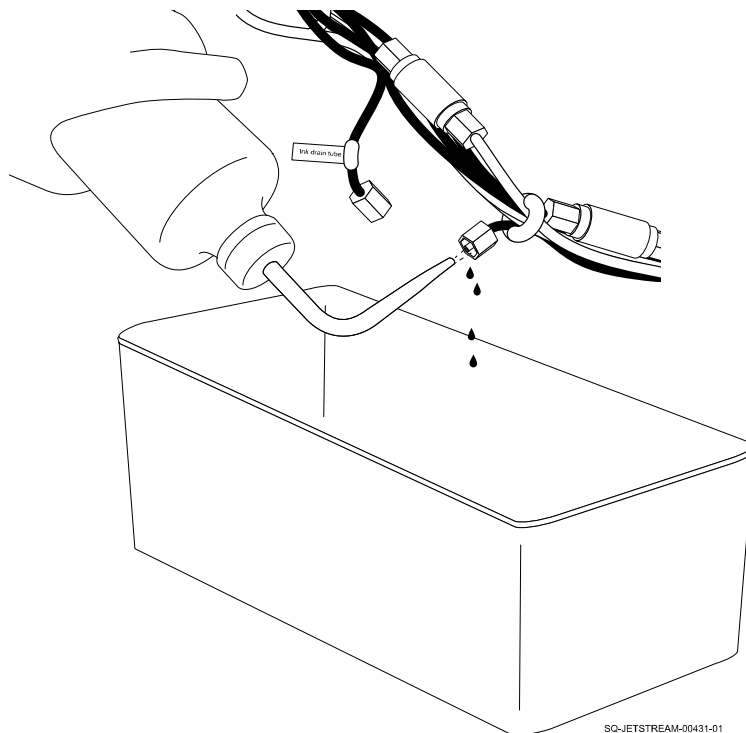
    c. Wipe away any residual ink or makeup fluid from the outside of the End Cap with a Non-abrasive, Lint-free Wipe.

    d. Repeat this process for the other End Cap.

3. Dismantle the Inline Filter Assembly:

    a. Unscrew the End Nozzle from the end of the Inline Filter Assembly to which the "FLOW" arrow points. (The Nozzle at the other end cannot be removed).

    b. Gently pull the mesh Filter Trap off the detached End Nozzle.

Inline Filter Assembly

SQ-JETSTREAM-00457-01

End Nozzle

Filter Trap

Filter Body

SQ-JETSTREAM-00454-01

SQ-JETSTREAM-00455-01

Filter Trap

SQ-JETSTREAM-00456-01
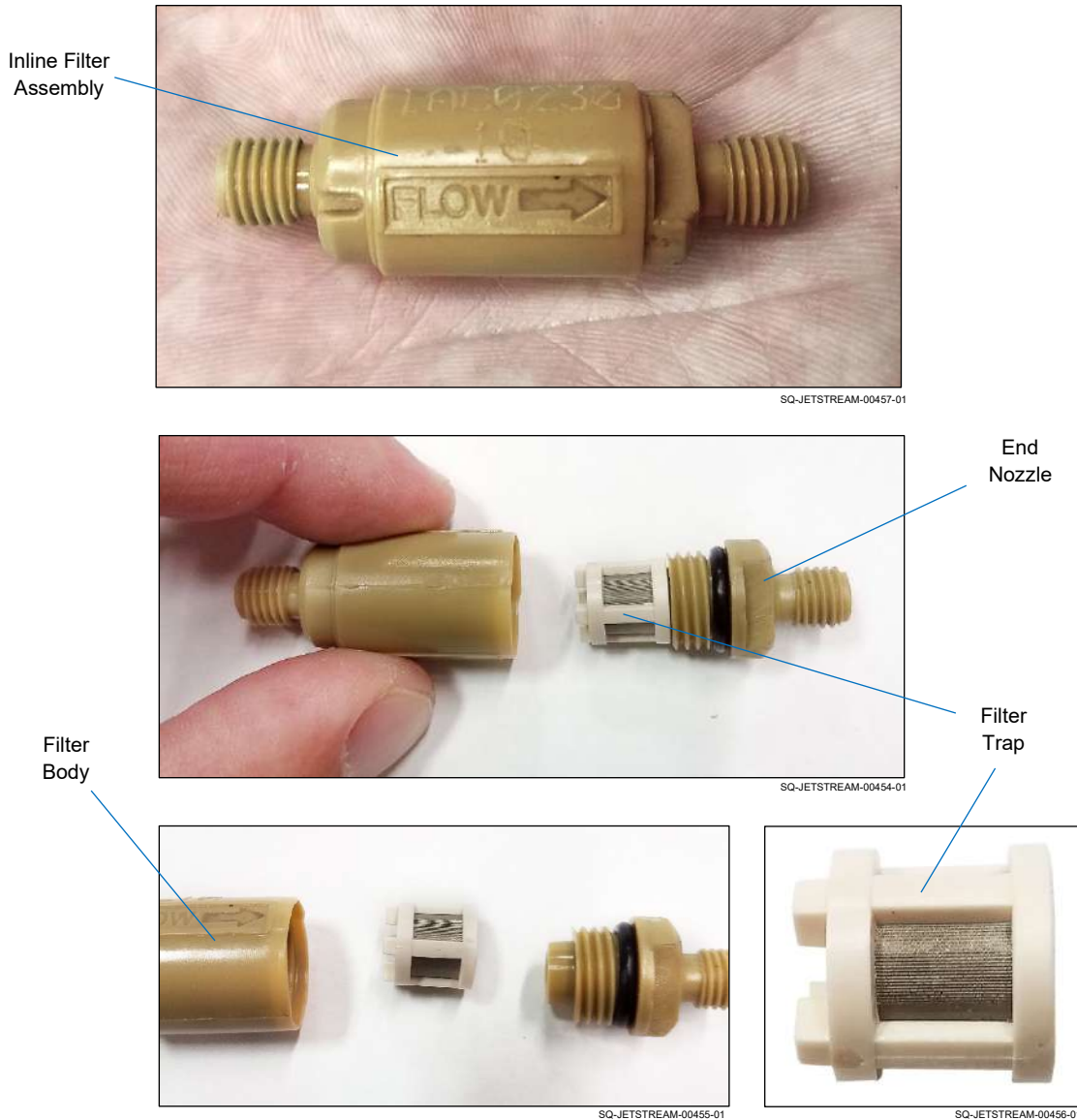
4. Flush out all components thoroughly:

    a. Holding each piece individually over the Cleaning Tray, gently squirt makeup fluid into it until the fluid coming out into the Cleaning Tray is free of ink and impurities.

SQ-JETSTREAM-00432-03
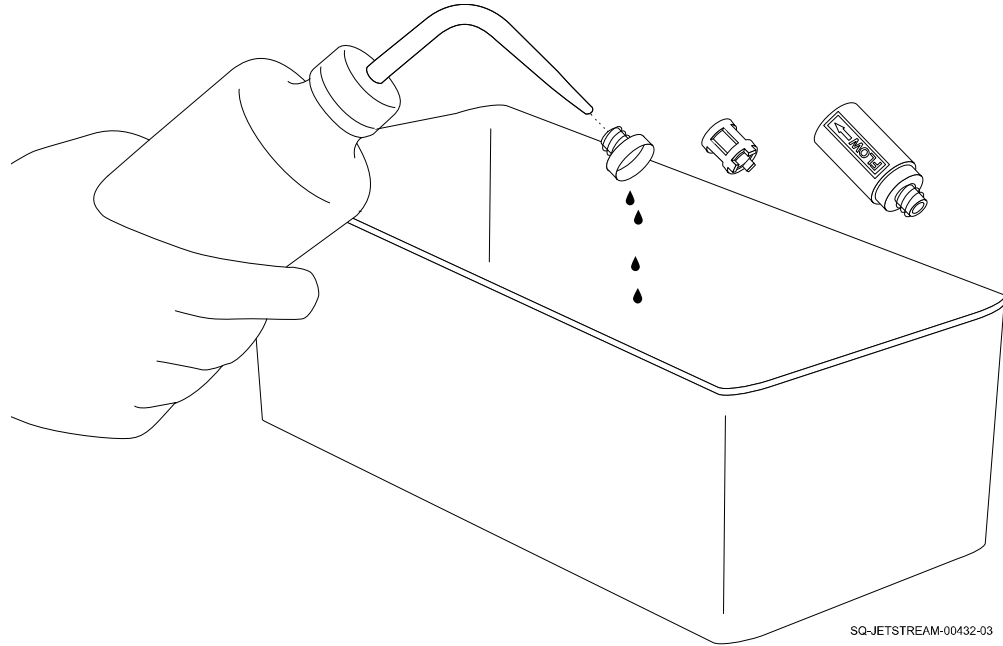
    b. Wipe away any residual ink or makeup fluid from the outside of each piece with a Non-abrasive, Lint-free Wipe.

5. Reassemble the Inline Filter:

    a. (see "▲ Reassembling an Inline Filter" on page 286).

▲ Reassembling an Inline Filter

(Required Training Level: Trained Technician)

If any Inline Filters have been disassembled, the need to be reassembled before the JetStream can be restarted.

To Reassemble an Inline Filter:

1. **Reassemble the End Nozzle:**

    a. Slide the Filter Trap gently but firmly back onto the inside part of the End Nozzle.

    Filter Trap
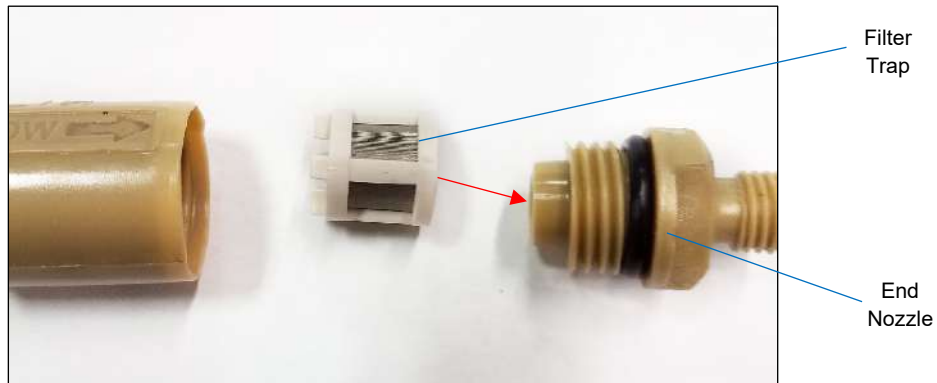
    End Nozzle

    SQ-JETSTREAM-00455-01

2. **Reattach the End Nozzle to the Filter Body:**

    a. Slide the Filter Trap gently but firmly back onto the inside part of the End Nozzle.

    End Nozzle

    Filter Body

    SQ-JETSTREAM-00454-01

    Reassembled Inline Filter

    FLOW

    SQ-JETSTREAM-00457-01

3. **Screw the End Caps back onto the Filter Assembly:**

   a. Verify that the "FLOW" arrow on the Filter Assembly is pointing to the downstream End Cap.

⚠️	**ATTENTION:** The Inline Filter must be oriented correctly with the "FLOW" arrow pointing to the downstream End Cap. Orienting the Inline Filter incorrectly can impact the performance of the machine, damage the system, and will void the warranty.

Downstream End Cap

SQ-JETSTREAM-00426-01

   b. Screw each End Cap back onto the Filter Body.

4. **Check the connection:**

   a. Holding the newly reassembled Inline Filter, gently tug at the Hydraulic Lines at either end to make sure that they are secure.

▲ Replacing Inline Filters

(Required Training Level: Trained Technician)

Blockages in the Inline Filters are rare, and the Filters are inexpensive. The Filters can be cleaned (see "▲ Cleaning an Inline Filter" on page 283), but they can and should simply be replaced as part of standard maintenance every 6,000 hours of run time. The process for replacing each of the three Inline Filters is exactly the same.

VIDEO: Long-Term Shutdown and System Cleaning To see a video of this procedure, click this link: https://youtu.be/kPMUZnLRH9c Or scan the QR code at right using the camera app on your mobile device. **View:** 20:01 – 23:39	[QR code] SQ-JETSTREAM-20430-01 Long-Term Shutdown and System Cleaning https://youtu.be/kPMUZnLRH9c
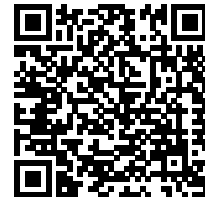
Items Needed to Replace an Inline Filter:

- Paper Towels
- CIJ Filter Kit (Part Number 2006750)

To Replace the Main Filter Assembly:

1. **Turn off the JetStream and locate the Inline Filters:**

   a. (see "▲ Locating the Inline Filters" on page 281)

2. **Prepare the area:**

   a. Hold a folded paper towel under the desired Inline Filter to absorb any ink leakage.

3. **Switch the old Inline Filter with a corresponding new one:**

   a. Select a new Inline Filter whose size (etched into the plastic) matches the one to be replaced. The size will either be 10 or 50.

   b. Make note of which End Cap is downstream (the "FLOW" arrow on the Filter Body points to the downstream End Cap).

   c. Unscrew the white End Caps from the old Filter.

   > **NOTE:** The End Caps can generally be reused, so to simplify replacement, the End Caps on the New Filters can be removed and discarded.
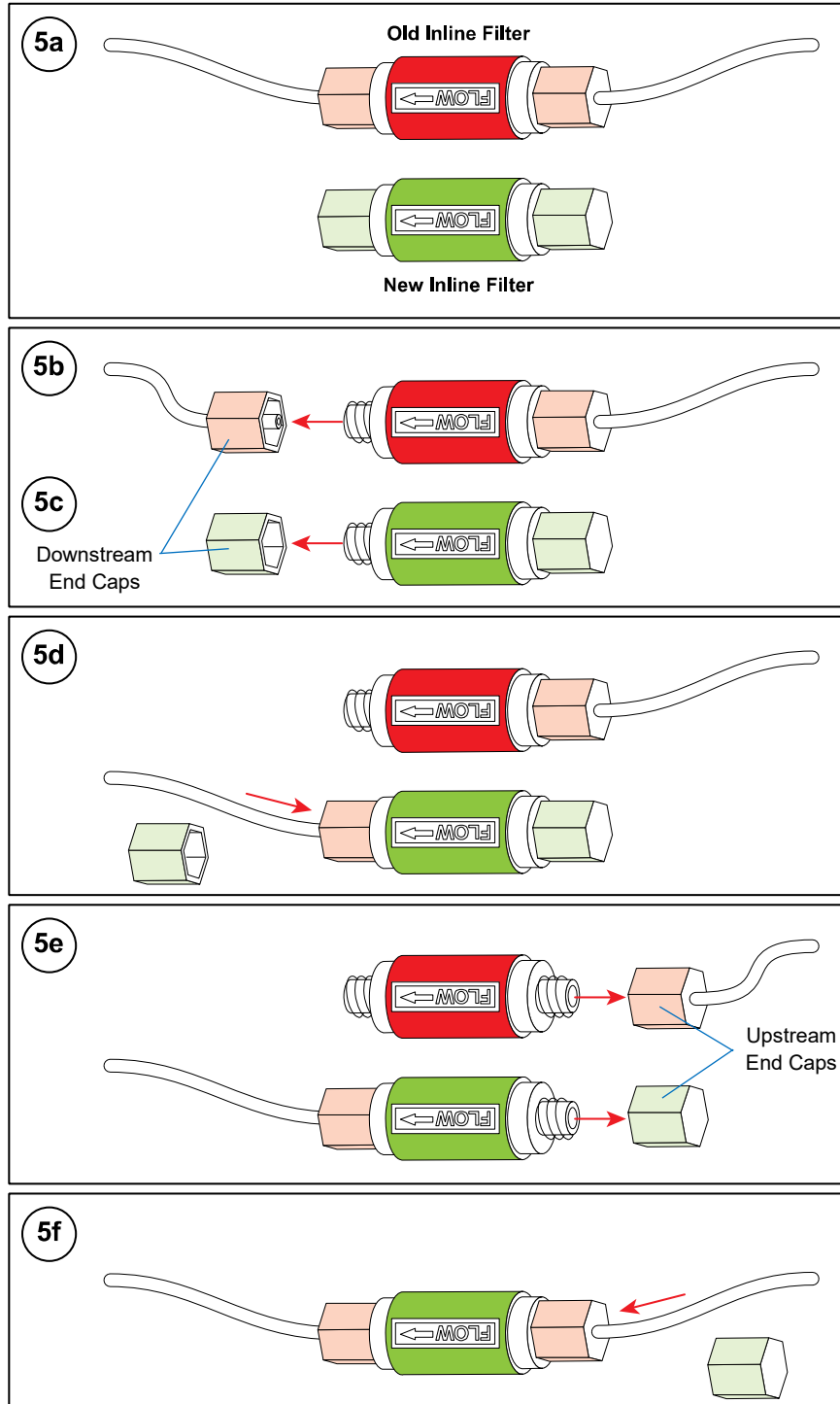
SQ-JETSTREAM-00429-01

d. Aligning the "FLOW" arrow on the new Inline Filter to point in the same direction as on the old Inline Filter, remove the downstream End Caps from each Inline Filter.

⚠	**ATTENTION:** The Inline Filter must be oriented correctly with the "FLOW" arrow pointing to the downstream End Cap. Orienting the Inline Filter incorrectly can impact the performance of the machine, damage the system, and will void the warranty.

   e.   Screw the old downstream End Cap onto the downstream Nozzle of the new
        Filter.

   f.   Remove the upstream End Caps from each Inline Filter.

   g.   Screw the old upstream End Cap onto the downstream Nozzle of the new Filter.

4. **Check the connection:**

   a.   Holding the newly installed Inline Filter, gently tug at the Hydraulic Lines at either
        end to make sure that they are secure.

This process should be repeated for all three Inline Filters at the same time.

▲ Tubes and Fluid Lines

▲ Visually Inspecting Fluid Flow

(Required Training Level: Trained Technician)

Visually inspecting the flow of fluid can be done through the dialog box on the Touchscreen (see below). Ink flow can also be monitored using the JetStream's Diagnostic functions as described below.

VIDEO: Troubleshooting Ink and Makeup Delivery
To see a video of this procedure, click this link: https://www.youtube.com/watch?v=M_GzQUugcps Or scan the QR code at right using the camera app on your mobile device.
View: 40:33 – 43:34
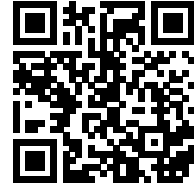
To Visually Inspect Flow of Ink or Makeup Fluid:

1. **Install the Fluid Container:**

   a. If not already in place, insert a full Container into its Bay in the front of the JetStream. If the fluid is not reaching the Mixing Tank, the dialog below will display on the Touchscreen.

Dialog: Fluid Not Reaching Mixing Tank
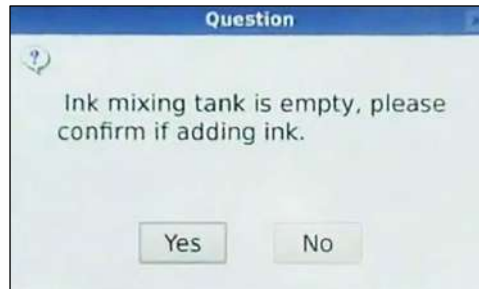
SQ-JETSTREAM-00324-01

2. **Trigger flow of the fluid using the Dialog Box:**

   a. With the Rear Door of the Jetstream open, locate the Lines for the fluid to be observed. The diagrams below may be helpful.

   b. Select "Yes" in the dialog box (above) on the Touchscreen. The Fluid Lines should now fill, indicating that the fluid is flowing properly.

Locating and Observing the Ink Lines

SQ-JETSTREAM-00325-01

SQ-JETSTREAM-00327-01

SQ-JETSTREAM-00326-01

Ink Lines filled with ink

Ink Line:
Ink Container to
Ink Diaphragm Pump

Ink Line:
Ink Diaphragm Pump
to Mix Tank

Locating and Observing the Makeup Lines

🟦	**Makeup Line:** Makeup Container to Makeup Diaphragm Pump	🟩	**Makeup Line:** Makeup Diaphragm Pump to Mix Tank

▲ Checking Tube Connections – Viscometer

(Required Training Level: Trained Technician)

If the Viscometer is providing inaccurate readings, the Ink Tubes between the Hydraulic Manifold and the Viscometer may have bad connections that are allowing air leakage into the Viscometer.

To Check the Viscometer's Ink Tube Connections:

1. **Stop Jetting** >> "Stop Jetting Without Cleaning."

> ⚠️ **WARNING:** Jetting must be stopped before proceeding further. If a tube has come completely disconnected and the system is jetting, ink at a high pressure will spray inside the rear of the JetStream.

2. **Check the connections.**
   Being careful not to disrupt other tubes and wires, check the Viscometer connections to ensure that they are properly sealed. If any are loose, secure them gently but firmly.

Checking Viscometer Connections
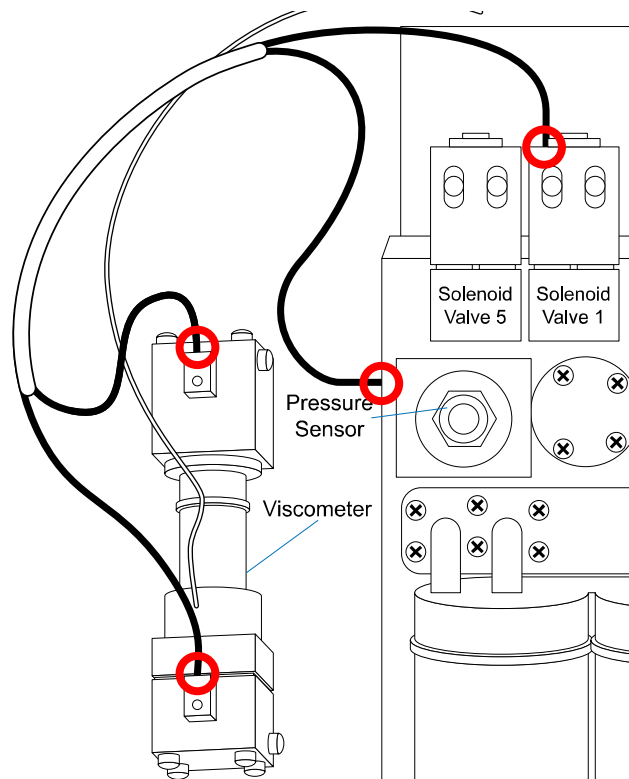
SQ-JETSTREAM-00150-02

▲ Addressing Burst or Leaking Tubes

(Required Training Level: Trained Technician)

A burst Tube inside the rear Console is an issue that must be addressed immediately. Indications that a Tube may be burst or leaking include:

- Low fluid pressure
- A High Pump Speed Warning
- Ink around the base of the JetStream Console

To Address a Burst or Leaking Tube:

1. **Turn off the JetStream immediately:**

   a. **Stop Jetting** >> "Stop Jetting Without Cleaning."

   b. On the right side of the Console, turn the Power Switch to the "OFF" position.

   c. Disconnect the Power Cord.

2. **Locate the source of the leak:**

   a. Open the Rear Door of the JetStream.

   b. Try to trace the pooling of ink to its source.

   c. Look for disconnected tubes. The Vapor Outlet Tube and the Printhead Air Line (for optional positive air flow) are the only Tubes that should possibly be disconnected at one end, or it should be connected to the floor of the Chassis, between the Makeup Diaphragm Pump and the Buffer. If any other Tube has come disconnected, reconnect it and confirm that the connection is secure.
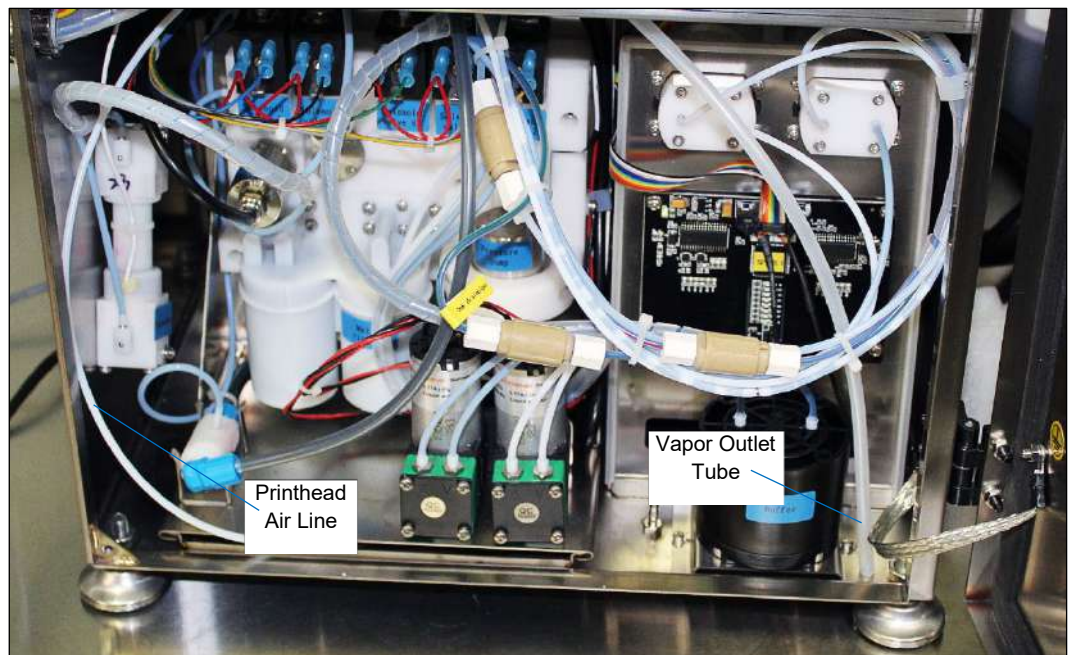
SQ-JETSTREAM-00435-01

d. Examine the locations where each Tube is connected to something, look for any buildup of ink, and verify that the connections are secure.

3. **Clean off the excess ink:**

a. Use Non-Abrasive, Lint-free Wipes carefully clean the components that have been sprayed with ink. Wipes slightly dampened with makeup fluid can be used on any non-electronic components.

4. **If the leak source cannot be identified, or if a Tube has actually burst open:**

a. Contact Squid Ink Technical Support.

b. Do not attempt to operate the JetStream until the problem has been fixed.

△ Preparing the JetStream for Fewer than 3 Months Idle

(Required Training Level: User)

To Prepare the JetStream for Fewer Than 3 Months Idle:

1. **Shut down:**

    a. Perform the normal shutdown for the end of a workday (see "△ Shutdown: End of the *Day*" on page 203).

2. **Run the system once a week:**

    a. Once a week, start up the system (see "△ Startup: Beginning of the *Day*" on page 202).

    b. On the Touchscreen's **Main** screen, select **Start Jetting** >> "Start Jetting With Cleaning" (see "△ Precautions for Jetting With Cleaning" on page 201).

    c. Allow the system to jet for at least 2 hours.

3. **Perform the normal shutdown for the end of a workday** (see "△ Shutdown: End of the *Day*" on page 203).

▲ Preparing the JetStream for More than 3 Months Idle

(Required Training Level: *Trained Technician*)

If the JetStream will be idle for 3 months or more, or if it is going to be shipped, a thorough shutdown procedure must be followed to flush the hydraulic system and ensure that the JetStream does not become clogged with dried ink during the dormant period. Flushing cleans the Mixing Tank, pumps, tubes, and Gun Body.

⚠️	**ATTENTION:** The long-term shutdown procedure should be performed by trained and qualified personnel. If in doubt, contact your trained and authorized Squid Ink Distributor.

VIDEO: Long-Term Shutdown and System Cleaning	
To see a video of this procedure, click this link: https://www.youtube.com/watch?v=kPMUZnLRH9c Or scan the QR code at right using the camera app on your mobile device.	SQ-JETSTREAM-00246-01 Long-Term Shutdown and System Cleaning https://www.youtube.com/watch?v=kPMUZnLRH9c
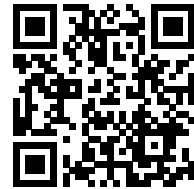
Items Needed to Prepare the JetStream for More than 3 Months Idle:

- Paper towels
- 5-gallon hazardous liquids container
- Full Makeup Container
- Storage Plugs that were removed during commissioning process

To Prepare the JetStream for More than 3 Months Idle:

1. **Stop jetting and drain the Mixing Tank:**

   a. Follow the steps to drain the printer (see "▲ Drain Printer" on page 189).

2. **Prepare to clean the JetStream's hydraulic system:**

   a. Open the Front Door of the JetStream by turning the knob and pulling the door open.

   b. Remove the Ink Container from the Ink Bay (left) by gently pulling the Ink Container directly outward.

c. Install a full Makeup Container in the Ink Bay by sliding the new Makeup Container forward into the Ink Bay. There should now be one Makeup Container in each bay.

Installing Makeup in Both Bays

Makeup Container

Makeup Container
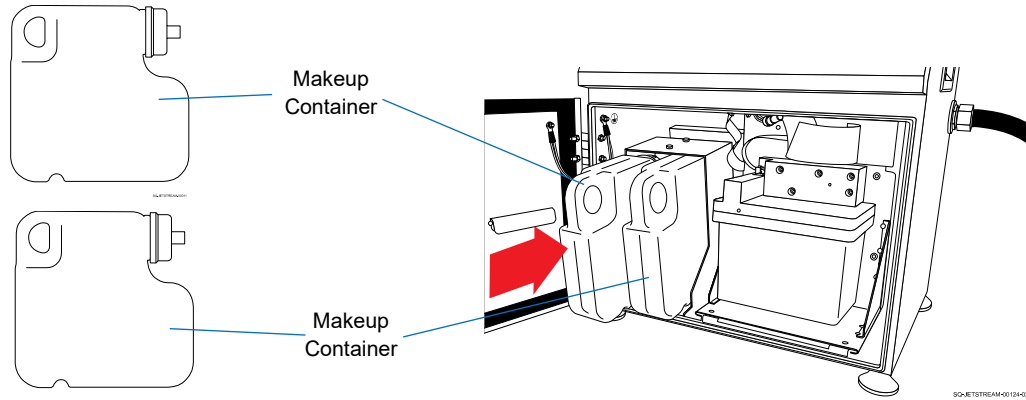
3. **Clean for long term shutdown:**

a. On the Main screen, select **Settings** >> **Maintenance** >> **Cleaning for Long Term Shutdown**.
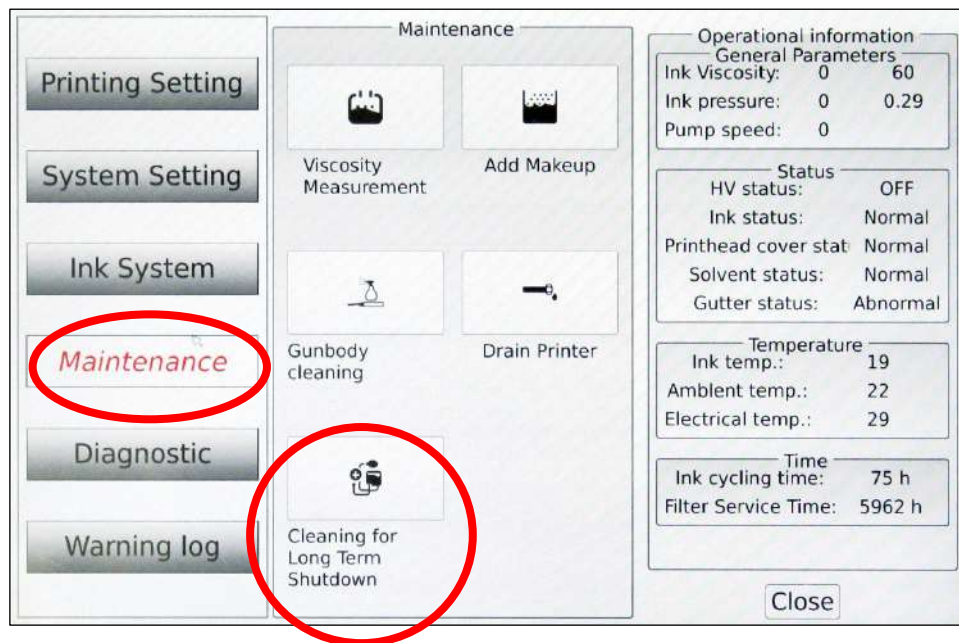
b. Follow the instructions on the screen.

4. **Prepare to replace the Storage Plugs:**

During commissioning of the JetStream, plugs were removed from several components of the system. These should have been stored in a clean, dry location where they could be easily found. This manual suggested storing them in a ziploc plastic bag inside the front of the JetStream Console, on the right side.

a. Retrieve the Storage Plugs.

Vapor Outlet
Tube Plug

Gun Body
Nozzle Plug

Gutter
Nozzle
Plug

Ink Bay Plug

Makeup Bay
Plug

SQ-JETSTREAM-00146-02
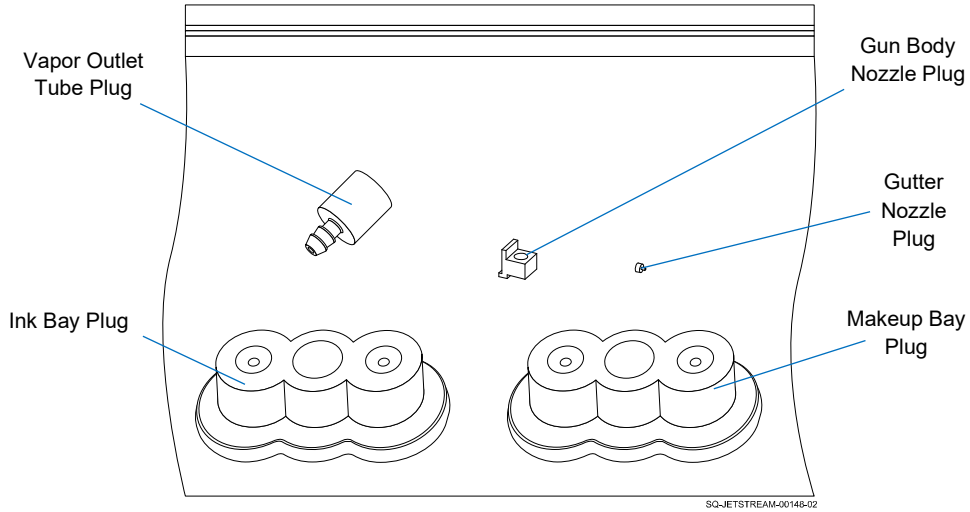
5. Replace Ink and Makeup Plugs:

a. Open the Front Door of the JetStream by turning the knob and pulling the door open.

b. Locate the Ink and Makeup Nozzles inside the Ink and Makeup Container Bays, toward the top.

Ink and Makeup Nozzles

Ink and
Makeup
Nozzles

Ink
Container
Bay

Makeup
Container
Bay

Mixing Tank

INK

MAKE-UP

SQ-JETSTREAM-00149
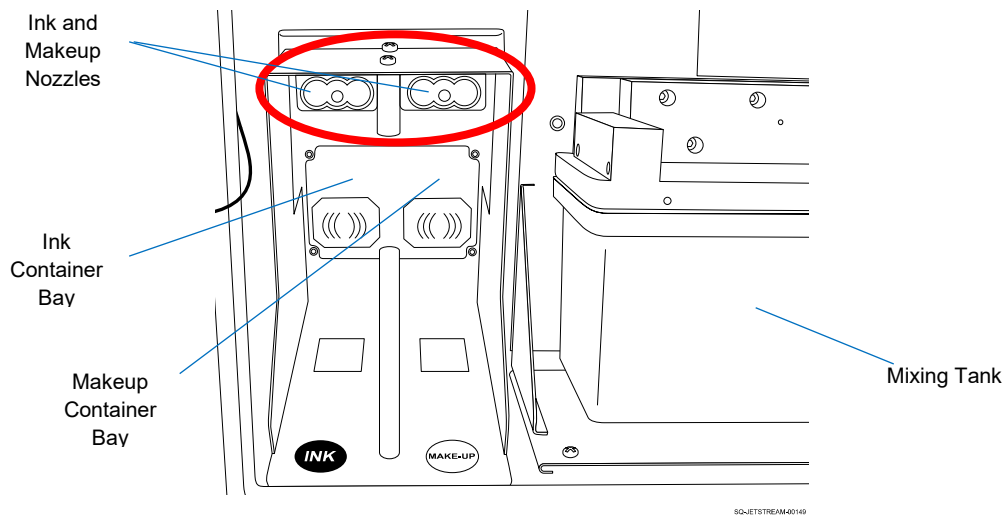
c. Replace the Nozzle Plugs over the Ink and Makeup Nozzles by gently sliding the plugs into place until they are snug.

Replacing the Ink and Makeup Nozzle Plugs

Rubber Nozzle
Plug

SQ-JETSTREAM-00146-02
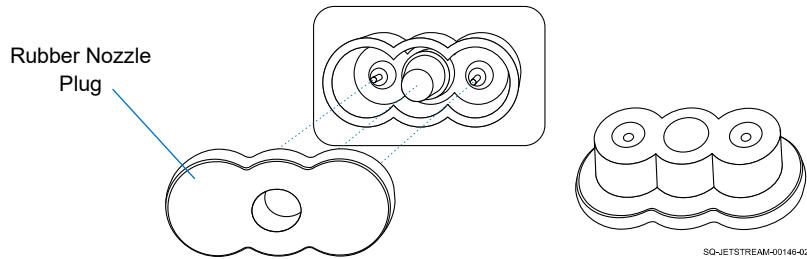
d.   Close the Front Door and secure it by turning the knob.

6.   **Replace the Vapor Outlet Tube Plug:**

a.   Open the Rear Door of the JetStream by unscrewing the top and bottom Fasteners and pulling the door open.

b.   Locate the Vapor Outlet Tube, which is the largest diameter unconnected plastic tube extending from the top of the Mixing Tank.

Replacing the Vapor Outlet Tube Plug

Vapor Outlet
Tube

Solenoid Valve 5   Solenoid Valve 1   Solenoid Valve 6   Solenoid Valve 4   Solenoid Valve 2

Plug

SQ-JETSTREAM-00451-01
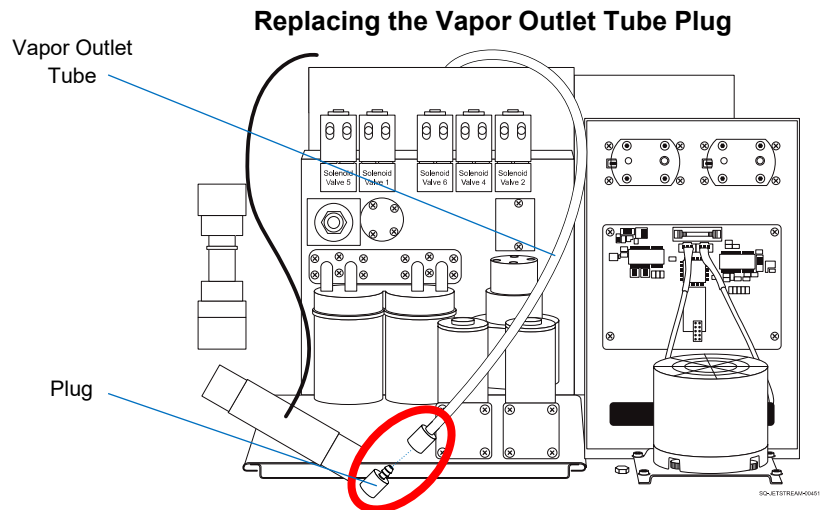
c.   Replace the plug on the loose end of the Vapor Outlet Tube by sliding it on until it is snug.

d.   Close the JetStream's Rear Door and screw the Fasteners back into place.

7.   **Replace the two plugs inside the Printhead:**

a.   Remove the Printhead Cover (see "△ Removing the Printhead Cover" on page 215).

b.   Inside the Printhead, replace the black rubber plug on the Gun Body Nozzle by sliding it downward (perpendicular to the Printhead) and gently rocking it side to side until it is snug.

Replacing the Gun Body Nozzle Plug and Gutter Nozzle Plug

SQ-JETSTREAM-00014-02
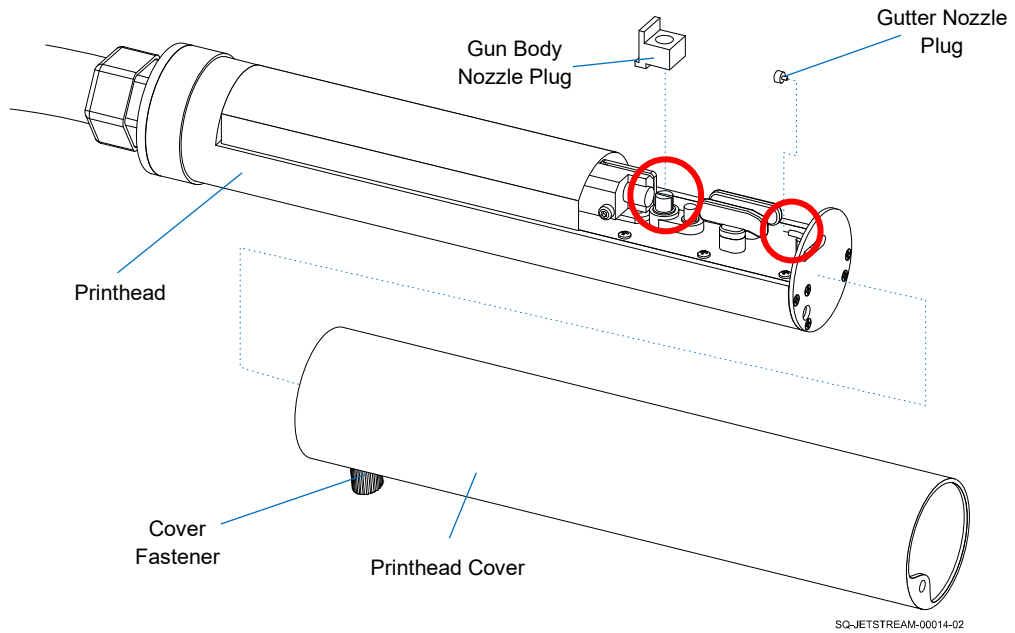
c. Replace the black rubber plug on the Gutter Nozzle by sliding it on and gently pushing toward the nozzle end of the Printhead until it is snug.

8. Replace the Printhead Cover (see "△ Replacing the Printhead Cover" on page).

The JetStream is now ready for shipping or long-term storage.

Warnings and Alarms

⚠️ **WARNING:** When working with inks and fluids, always wear gloves, safety glasses, and protective clothing. Avoid skin contact with inks and fluids. Never look directly into the Printhead Nozzle. Ensure proper ventilation to minimize fumes.

△ Alarm Log

(Required Training Level: User)

VIDEO: Troubleshooting the Viscometer

To see a video of this procedure, click this link:
https://www.youtube.com/watch?v=o5YZUs-SsJU
Or scan the QR code at right using the camera app on your mobile device.

View: 09:53 – 10:43

SQ-JETSTREAM-00243-01
Troubleshooting the Viscometer
https://www.youtube.com/watch?v=o5YZUs-SsJU
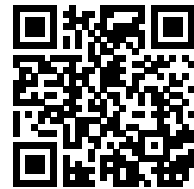
The Alarm Log provides a historic record of all system alarms, warnings, and errors, and their level of severity (yellow being moderate, and red being severe). To access the Alarm Log, from the **Main Screen**, select **Alarm Log**.

SQ-JETSTREAM-00040

Viewing the Alarm Log

	Name	Error code	Severity	Time
69	Viscosity is too low.	43		03:44:26 2019.08.06
70	HV fault	1		05:51:21 2019.08.05
71	Make-up cartridge is empty.	1		02:45:11 2019.07.14
72	HV fault	1		02:17:09 2019.07.14
73	Jet Off- Gutter fault	1		23:58:13 2019.07.02
74	Gutter fault	1		23:58:11 2019.07.02
75	Viscosity is too low.	43		02:58:22 2019.07.02
76	Ink mixer tank level low	1		13:08:23 2020.09.28
77	Cabinet temp. too high	255		13:08:23 2020.09.28
78	Make-up cartridge is empty.	1		13:08:18 2020.09.28
	dge is empty.	1		13:08:18 2020.09.28
	ge is empty.	1		11:43:03 2020.09.28
	nk level low	1		09:49:31 2019.12.11
83				
84				
85				

Export   Refresh   Clear   Page up   Page down   Close

SQ-JETSTREAM-00357-01

304   Warnings and Alarms

△ Viscometer Failure

When this warning occurs, the Viscometer may be clogged or may have air in it that prevents it from accurately measuring ink viscosity.

⚠️	**ATTENTION:** Addressing a Viscometer Failure should be performed by trained and qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.

To Address a Viscometer Failure:

1. **Stop Jetting** >> "Stop Jetting Without Cleaning."
   (Required Training Level: User)

2. **Check the viscosity** (see "△ Verifying Proper Viscosity" on page 261).
   (Required Training Level: User)

3. **Check the Viscosity Log** (see "△ Checking the Viscosity Log" on page 263).
   (Required Training Level: User)

4. **Check the Alarm Log** (see "△ Alarm Log" on page 303).
   (Required Training Level: User)

5. **Check the Ink Lines** (see "▲ Checking Tube Connections – Viscometer" on page 294).
   (Required Training Level: Trained Technician)

6. **Determine the proper course of action:**
   (Required Training Level: Tasks range from Trained Technician to Squid Ink Distributor/Squid Ink Service Technician)

   a. If Viscometer readings are consistently too high, perform the tasks under "Inaccurate Viscometer readings: Consistently high Viscometer readings" in the "Troubleshooting" section starting on page 313.

   b. If Viscometer readings are consistently too low, perform the tasks under "Inaccurate Viscometer readings: Viscosity reading remains at '0' beyond the first four minutes that the JetStream is in 'Ready' mode" in the "Troubleshooting" section starting on page 313.

SQ-2006792 – G – 1/4/22

△ Filter Assembly Warning

When the Filter Assembly countdown reaches 0 hours, "Filter Assembly 0 Hours" is displayed. "Filter Assembly Not Detected" is displayed three seconds later. "Filter Assembly Fault" is displayed in the Alarm Log (see "△ Alarm Log" on page).

The Main Filter Assembly needs to be replaced.

The JetStream will continue to run, but there will always be a "Service Recommended" alarm once 6,000 hours have passed.

> **IMPORTANT:** The possible causes and solutions in this section are listed in the order in which they should be explored when attempting to solve a problem.

To Address a Filter Assembly Warning:

1. **Stop Jetting** >> "Stop Jetting Without Cleaning."
   (Required Training Level: User)

2. **Replace the Main Filter Assembly** (see "▲ Replacing the Main Filter Assembly" on page).
   (Required Training Level: Trained Technician)

> **ATTENTION:** Addressing a Filter Assembly Warning should be performed by trained and qualified personnel. If in doubt, contact your trained and authorized Squid ink Distributor.

△ Low Ink Warning

When ink is low and the Ink Container Sensor no longer detects ink, "Ink Shortage" is displayed and the warning indicator light is lit. "Ink Shortage" is displayed in the Alarm Log (see "△ Alarm Log" on page 142).

To Address a Low Ink Warning:

1. **Stop Jetting** >> "Stop Jetting Without Cleaning."
   (Required Training Level: User)

2. **Replace the Ink Container:**
   (Required Training Level: User)

   a. Replace the Ink Container with a full one (see "△ Installing or Changing the Ink and Makeup Fluid" on page 98).

   > **NOTE:** The JetStream will continue to function for another 18 hours after the Low Ink Warning. The system will then turn jetting off automatically, and jetting will not resume until the warning is cleared by changing the Ink Container.

3. **If the problem persists with a full Ink Container installed:**

   a. Contact your trained and authorized Squid Ink Distributor.

△ Low Makeup Warning

When makeup fluid is low and the Makeup Container Sensor cannot detect makeup fluid, "Solvent Shortage" is displayed on screen and the warning indicator light is lit. "Solvent shortage" is displayed in the Alarm Log (see "△ Alarm Log" on page 142).

To address a Low Makeup Warning:

1. **Stop Jetting** >> "Stop Jetting Without Cleaning."
   (Required Training Level: User)

2. **Replace the Makeup Container**
   (Required Training Level: User)

   a. Replace the Makeup Container with a full one (see "△ Installing or Changing the Ink and Makeup Fluid" on page 98).

   > **NOTE:** The JetStream will continue to function for another 3 hours after the Low Makeup Warning. The system will then turn jetting off automatically, and jetting will not resume until the warning is cleared by changing the Makeup Container.

3. **If the problem persists with a full Makeup Container installed:**
   (Required Training Level: Tasks range from Trained Technician to Squid Ink Distributor/Squid Ink Service Technician)

   a. Refer to "Frequent clogs in the Printhead because the ink/makeup mix is consistently too thick" in the "Troubleshooting" section, starting on page 313.

△ High Pressure Warning

When the current ink pressure exceeds 45 KPa, the warning indicator light illuminates, and jetting turns off automatically. "Pressure Too High" is displayed in the Alarm Log (see "△ Alarm Log" on page 142).

A High Pressure warning may indicate a blockage in the system or other critical issue.

To address a High Pressure Warning:

1. **Shut the system down immediately:**

    a. **Stop Jetting** >> "Stop Jetting Without Cleaning."

    b. Once jetting is off, turn the Power Switch on the right side of the Console to the "OFF" position.

2. **Check that the Vapor Outlet is not obstructed or plugged:**
    (Required Training Level: Trained Technician)

    a. Shut the system down

    b. Locate the Vapor Outlet Tube.

    c. Visually inspect it for any blockages.

Locating the Vapor Outlet Tube

SQ-JETSTREAM-00464-01
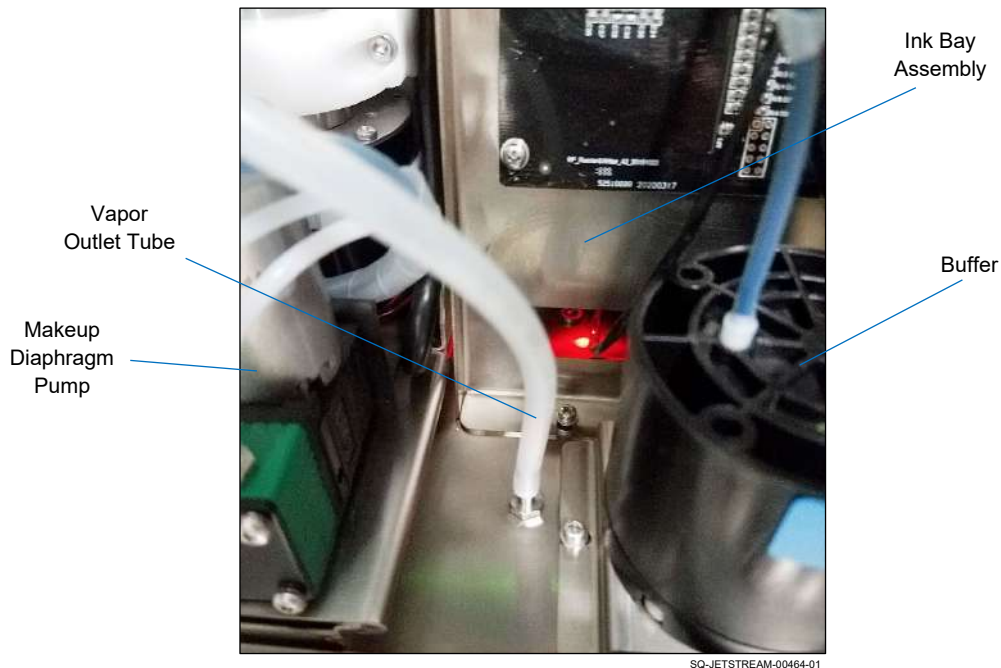
3. **If there are no blockages in the Vapor Outlet Tube:**

    a. Contact your trained and authorized Squid ink Distributor.

△ High Pump Speed Warning

When the Pressure Pump rate exceeds 3500 RPM, "Pump Speed Too High" is displayed on the Alarm Log (see "△ Alarm Log" on page 142). A High Pump Speed warning may indicate that the Pump is struggling to get ink, possibly because of a plugged Main Filter.

To address a High Pump Speed Warning:

1. **Stop Jetting** >> "Stop Jetting Without Cleaning."
   (Required Training Level: User)

2. **Check for leaking Ink Tubes:**
   (Required Training Level: Trained Technician)

   a. (see "▲ Addressing Burst or Leaking Tubes" on page 295).

   > ⚠️ **WARNING:** Jetting must be stopped before performing this step. If a tube has come completely disconnected and the system is jetting, ink at a high pressure may be spraying inside the rear of the JetStream. If the JetStream's Front or Rear Door is opened while this is happening, it is possible for ink to spray into the room, onto people, or into people's eyes.

3. **Replace the Main Filter:**
   (Required Training Level: Trained Technician)

   a. (see "▲ Replacing the Main Filter Assembly" on page 274).

4. **If the problem persists:**

   a. Contact your trained and authorized Squid ink Distributor.

△ Mixing Tank Low Warning

When the Low Level Sensor inside the Mixing Tank is activated and the Ink Container is empty, "Mixing Tank Level Low" is displayed on screen. "Mixing Tank Level Low" is displayed on the screen and in the Alarm Log (See "△ Alarm Log" on page 142). This is a serious condition and sign of improper maintenance that should be addressed immediately.

To address a Mixing Tank Low Warning:

1. **Stop Jetting** >> "Stop Jetting Without Cleaning."
   (Required Training Level: User)

2. **Replace the Ink Container** (see "△ Installing or Changing the Ink and Makeup Fluid" on page 98).
   (Required Training Level: User)

3. **Refill the Mixing Tank**:
   (Required Training Level: Trained Technician)

   a. Follow all steps after "Turn the system on" in the commissioning process (see "■ Commissioning the JetStream" on page 114) to clear the warning and continue operation.

4. **If the Mixing Tank does not refill:**

   a. Contact your trained and authorized Squid Ink Distributor.

5. **If the problem persists after refilling the Mixing Tank**:

   a. Contact your trained and authorized Squid ink Distributor.

△ Mixing Tank Fill Failure Warning

When the Mixing Tank needs more ink, a signal is sent to the Motherboard to provide it. The Motherboard then activates the Ink Diaphragm Pump and the Ink-Add Valve (YV6), allowing fluid to be pulled from the Ink Cartridge and placed into the Mixing Tank.

Sometimes during commissioning or regular operation, a "Mixing Tank Filled Failed" error message appears on the Touchscreen, indicating that the Mixing Tank is not receiving the ink that it requires. There are a variety of scenarios that can result in this error. If "Mixing Tank Filled Failed" appears after the JetStream has been commissioned and running for an extended period of time, it could be a sign of improper usage or maintenance and should be addressed immediately.

To Address a "Mixing Tank Fill Failure" Warning:

1. **Stop Jetting** >> "Stop Jetting Without Cleaning."
   (Required Training Level: User)

2. **Troubleshoot the problem:**
   (Required Training Level: Tasks range from User to Trained Technician to Squid Ink Distributor/Squid Ink Service Technician)

   a. Refer to "Ink is not getting into the Mixing Tank" in the "Troubleshooting" section starting on page 313.

△ High-Voltage Leakage Warning

If ink accumulates inside the Printhead between the Deflector Plates, or if an electrical arc occurs between the Deflector Plates during printing, the system stops printing immediately. "High-Voltage Leakage" is displayed on the screen and in the Alarm Log (see "△ Alarm Log" on page 142). This is a condition that should be addressed immediately.

⚠	**WARNING:** If a "High-Voltage Leakage" warning is displayed, it is possible that a heavy buildup of ink has developed on the Deflector Plates inside the Printhead. If this has occurred, it is possible for electrical arcing to take place between the two Deflector Plates.

To address a High-Voltage Leakage Warning, do the following:

1. **Shut the system down immediately:**

    a. **Stop Jetting** >> "Stop Jetting Without Cleaning."

    b. Once jetting is off, turn the Power Switch on the right side of the Console to the "OFF" position.

2. **Thoroughly clean the Deflector Plates** (see "▲ Cleaning the Deflector Plates" on page 237).
    (Required Training Level: Trained Technician)

Troubleshooting

This section describes possible solutions to some simple and common problems that may be encountered during the lifetime of the JetStream. For any other problems, or if the solutions provided below do not resolve the problem, contact your trained and authorized Squid Ink Distributor.
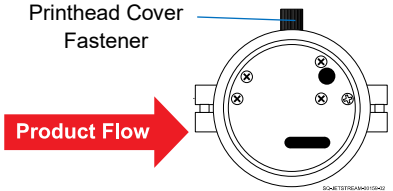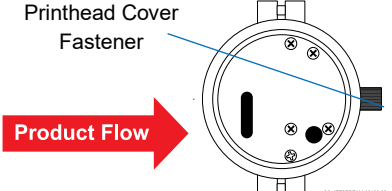
⚠	**WARNING:** When working with inks and fluids, always wear gloves, safety glasses, and protective clothing. Avoid skin contact with inks and fluids. Never look directly into the Printhead Nozzle. Ensure proper ventilation to minimize fumes.

⚠	**WARNING:** Do not attempt to perform troubleshooting or repairs beyond what is described below. Doing so can result in serious injury, damage the system, and void the warranty.
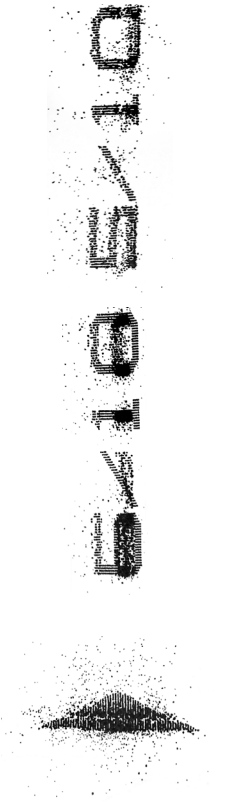
IMPORTANT: The possible causes and solutions in this section are listed in the order in which they should be explored when attempting to solve a problem.

Minimal Required Training Levels:

- **USER:** User
- **TECH:** Trained Technician
- **SQD:** Squid Ink Distributor/Squid Ink Service Technician

Problem	Possible Cause	Req'd Training Level	Solution
Printhead prints a straight line instead of printing desired message.	Printhead is incorrectly oriented. Printhead Cover Fastener Product Flow SQ-JETSTREAM-0159-02	USER	Turn the Printhead 90° clockwise or counter-clockwise so that slot of Printhead Orifice is perpendicular to the direction of product flow. The Printhead Cover Fastener should be parallel to the product flow. Printhead Cover Fastener Product Flow SQ-JETSTREAM-0158-02

Problem	Possible Cause	Req'd Training Level	Solution
Touchscreen buttons are not responding or not responding correctly.	Touchscreen needs to be recalibrated.	USER	Recalibrate the Touchscreen (see "△ The Settings Screen" on page 161).
Keyboard in Message screen is inputting different characters than the ones selected.		USER	
Photocell is not triggering printing.	Photocell is not properly connected.	TECH	Verify that Photocell printing mode is enabled. Turn jetting off. Turn the power off. Reconnect the Photocell.
No ink jet.	Fully blocked nozzle or hardware failure.	SQD	Contact your trained and authorized Squid Ink Distributor or Squid Ink Technical Support.
System is not recognizing USB Drive.	Incorrect USB format.	USER	Use a FAT or FAT32 USB Drive.
Printhead has excessive ink buildup inside.	JetStream may have been incorrectly shut down.	USER	Clean the Printhead (see "△ Cleaning the Printhead" on page 217).
	Ink stream is missing the Ink Return Gutter.	USER	Backflush the Gun Body (see "△ Backflushing the Gun Body" on page 219).
		TECH	Adjust the ink stream to direct it into the Ink Return Gutter (see "▲ Adjusting the Ink Stream Position" on page 226).
Poor print quality – spatters:	Printhead Orifice is too far from substrate/product and/or strong air currents passing between Printhead and substrate.	USER	Ensure that the Printhead Nozzle is 1.2" (30 mm) or less from the passing product and that no strong air currents exist.
	Ink viscosity is too high or too low.	USER	Check the ink viscosity (see "△ Verifying Proper Viscosity" on page 261). If the viscosity is too low or two high, keep the system jetting and wait until the ink

Problem	Possible Cause	Req'd Training Level	Solution
			viscosity comes within 10% of the viscosity set point.
	Ink pressure is too high or too low.	USER	Check the ink pressure (see "△ Verifying Proper Ink Pressure" on page 251).
	Blockage inside the Printhead.	USER	Check inside the Printhead for blockages, and if there is a blockage, remove it by cleaning the Printhead and/or backflushing the Gun Body (see "△ Cleaning the Printhead" on page 217 and "△ Backflushing the Gun Body" on page 219).
	Obstructions in the hydraulic system.	SQD	Contact your trained and authorized Squid Ink Distributor or Squid Ink Technical Support.
	Contaminants in the ink.	SQD	Contact your trained and authorized Squid Ink Distributor or Squid Ink Technical Support.
	The ink drop break-off point is outside the Charge Electrode Tunnel.	TECH	Adjust the modulation (see "▲ Adjusting the Ink Drop Break-Off" on page 232).
Poor print quality – Excess ink spraying onto product, or printing is cut off at top or bottom:	Ink stream is missing the Ink Return Gutter.	USER	Backflush the Gun Body (see "△ Backflushing the Gun Body" on page 219).
		TECH	Adjust the ink stream to direct it into the Ink Return Gutter (see "▲ Adjusting the Ink Stream Position" on page 226).
Ink is leaking into the Console, leaking from the Console, or the "Mixing Tank Overflow" warning	The Mixing Tank is overflowing.	TECH	Partially drain the Mixing Tank (see "▲ Drain Printer" on page 189) for approximately one minute and then select **Start Jetting.**

Problem	Possible Cause	Req'd Training Level	Solution
appears on the screen.			
Printing is faded due to low viscosity.	Viscosity is low.	USER	Check the viscosity (see "△ Verifying Proper Viscosity" on page 261), check the Viscosity Log (see "△ Checking the Viscosity Log" on page 263), and analyze the viscosity (see "▲ Analyzing Viscosity Trends" on page 265).
	"Start Jetting With Cleaning" or "Stop Jetting With Cleaning" is being used too frequently.	USER	Use the "With Cleaning" functions less frequently, and allow the JetStream to jet ink through the system until viscosity gets within target range.
	Ink is not getting into the Mixing Tank.	USER TECH SQD	Follow the procedures listed under "Ink is not getting into the Mixing Tank" in this chart.
	Too much makeup in the Mixing Tank.	USER	Check the viscosity (see "△ Verifying Proper Viscosity" on page 261), check the Viscosity Log (see "△ Checking the Viscosity Log" on page 263), and analyze the viscosity (see "▲ Analyzing Viscosity Trends" on page 265).
Frequent clogs in the Printhead because the ink/makeup mix is consistently too thick.	Confirm that the ink viscosity (thickness) is the problem.	USER	Check the viscosity (see "△ Verifying Proper Viscosity" on page 261), check the Viscosity Log (see "△ Checking the Viscosity Log" on page 263), and analyze the viscosity (see "▲ Analyzing Viscosity Trends" on page 265).
	Insufficient makeup reaching the Mixing Tank due to a problem with the Makeup Container Nozzles.	USER	Check the Makeup Container Nozzles (see "△ Checking the Container Nozzles" on page 240).
	Insufficient makeup reaching the Mixing Tank due to a problem with the Pin Socket Assembly in the Makeup Bay.	TECH	Check the Pin Socket Assembly in the Makeup Bay (see "▲ Checking the Pin Socket Assembly" on page 242) and, if needed, clean/unclog the Pin Socket Assembly (see "▲

Problem	Possible Cause	Req'd Training Level	Solution
			Cleaning/Unclogging the Pin Socket Assembly" on page 244).
	Insufficient makeup reaching the Mixing Tank due to a problem with the Makeup Sensor.	TECH	Check the Makeup Sensor (see "▲ Checking Sensor Function" on page 248).
	Insufficient makeup reaching the Mixing Tank due to a problem with the Makeup-Add Valve (YV2).	SQD	Contact your trained and authorized Squid Ink Distributor or Squid Ink Technical Support.
	Insufficient makeup reaching the Mixing Tank due to a problem with the Makeup Diaphragm Pump.	TECH	Clean the Makeup Diaphragm Pump (see "▲ Cleaning a Diaphragm Pump" on page 254).
	Insufficient makeup reaching the Mixing Tank due to a problem with the Makeup Lines.	TECH	Visually inspect makeup flow (see "▲ Visually Inspecting Fluid Flow" on page 291).
	Problem with the Viscometer.	TECH SQD	See "Inaccurate Viscometer Readings" below in this chart.
Fluid level readings from the Mixing Tank appear inaccurate.	Disconnected Cable.	TECH	Check the Cable connections between the Mixing Tank and the Valve Connector Plate Control Board.
	Malfunctioning Fluid Level Probe.	SQD	Contact your trained and authorized Squid Ink Distributor or Squid Ink Technical Support.
	Incorrect reference voltage.	SQD	Contact your trained and authorized Squid Ink Distributor or Squid Ink Technical Support.
Inaccurate Viscometer readings: Consistently high Viscometer readings	Improper Tube connections allowing air to leak into the Viscometer.	TECH	Check the Ink Tube connections (see "▲ Checking Tube Connections – Viscometer" on page 294).
	The ball inside the Viscometer is stuck at the top of the Viscometer.	TECH	Remove the Viscometer (see "▲ Removing the Viscometer" on page 266), clean it out (see "▲ Cleaning the Viscometer" on page 268), and put it back in position

Problem	Possible Cause	Req'd Training Level	Solution
			(see "▲ Installing a Viscometer" on page 270).
	The Viscometer Valve (YV1) is stuck open.	TECH	Check that the Viscometer Valve (YV1) is receiving power (see "▲ Checking Power to a Solenoid Valve" on page 260).
		SQD	Contact your trained and authorized Squid Ink Distributor or Squid Ink Technical Support.
Inaccurate Viscometer readings: Viscosity reading remains at "0" beyond the first four minutes that the JetStream is in "Ready" mode.	Improper Tube connections allowing air to leak into the Viscometer.	TECH	Check the Ink Tube connections (see "▲ Checking Tube Connections – Viscometer" on page 294).
	The ball inside the Viscometer is not moving.	TECH	Remove the Viscometer (see "▲ Removing the Viscometer" on page 266), clean it out (see "▲ Cleaning the Viscometer" on page 268), and put it back in position (see "▲ Installing a Viscometer" on page 270).
	The Viscometer Valve (YV1) is stuck shut.	TECH	Check that the Viscometer Valve (YV1) is receiving power (see "▲ Checking Power to a Solenoid Valve" on page 260).
		SQD	Contact your trained and authorized Squid Ink Distributor or Squid Ink Technical Support.
Ink is not getting into the Mixing Tank.	Ink Container is not properly seated.	USER	Remove the Ink Container from the Ink Cartridge Bay and the put it gently but firmly back in place, ensuring that it is in the proper position.
	Problem with the Ink Container Nozzles.	USER	Check the Ink Container Nozzles (see "△ Checking the Container Nozzles" on page 240).
	Problem with the Pin Socket Assembly in the Ink Bay.	TECH	Check the Pin Socket Assembly in the Ink Bay (see "▲ Checking the

Problem	Possible Cause	Req'd Training Level	Solution
			Pin Socket Assembly" on page 242) and, if needed, clean/unclog the Pin Socket Assembly (see "▲ Cleaning/Unclogging the Pin Socket Assembly" on page 244).
	Problem with the Ink Sensor.	TECH	Check the Ink Sensor (see "▲ Checking Sensor Function" on page 248).
	Problem with the Ink-Add Valve (YV6).	TECH SQD	Check the Ink-Add Valve (YV6) for functionality (see "▲ Checking Solenoid Valve Functionality" on page 259), following the procedures for a 2W3T Solenoid Valve. If needed, remove and clean the Ink-Add Valve (YV6).
	Problem with the Ink Diaphragm Pump.	TECH	Check the Ink Diaphragm Pump (see "▲ Checking Ink Diaphragm Pump Functionality" on page 252) and, if it does not activate, clean it out (see "▲ Cleaning a Diaphragm Pump" on page 254).
	Problem with the Ink Lines	TECH	Visually inspect ink flow (see "▲ Visually Inspecting Fluid Flow" on page 291).

Video Library

Many of the videos below are referenced throughout this document. They can be watched in their entirety by clicking the link, inputting the text of the link into a browser, or scanning the QR code with a mobile device.

△ User Videos

VIDEO: Startup and Shutdown Procedures https://www.youtube.com/watch?v=zCYiP6iO4i8 **TRT:** 3:39	
VIDEO: Message Creation https://www.youtube.com/watch?v=bIW2rPz-Nnw **TRT:** 33;31	
VIDEO: Backflush Procedure https://www.youtube.com/watch?v=3TqceZorxFY **TRT:** 19:35	

▲ Trained Technician Videos

VIDEO: Manual Ink Stream Adjustment https://www.youtube.com/watch?v=7IB9591fAXQ **TRT:** 11:41	(QR code)
VIDEO: Troubleshooting the Viscometer https://www.youtube.com/watch?v=o5YZUs-SsJU **TRT:** 35:52	(QR code)
VIDEO: Long-Term Shutdown and System Cleaning https://www.youtube.com/watch?v=kPMUZnLRH9c **TRT:** 31:07	(QR code)
VIDEO: Calibrating the Modulation Settings https://youtu.be/_DnOS_tQnwM **TRT:** 18:22	(QR code)

Parts List

Part Number	Description
2006550	PRINTHEAD NOZZLE – 50 MICRON – JETSTREAM SONIC
2006551	PRINTHEAD NOZZLE – 60 MICRON – JETSTREAM
2006561	VISCOMETER
2006571	FRONT PRINTHEAD PLATE
2006583	INK VALVE, VALVE 7 "yv7", MICROVALVE 2W2T, CIJ
2006609	RESISTOR, PRINTHEAD, HV
2006616	PHASING PCB
2006618	GUTTER SENSOR
2006620	GUN BODY BLOCK
2006621	PRINTHEAD COVER SENSOR
2006622	PRINTHEAD BOTTOM PLATE, CIJ
2006645	PRESSURIZATION KIT (page 26)
2006650	PRINTHEAD MOUNTING STAND (page 24)
2006653	SLIDING TABLE WITH ENCODER (page 25)
2006655	CONSOLE MOUNTING STAND (page 25)
2006982	CIJ WASH STATION ASSY
2006676	PRINTHEAD COVER SLEEVE, CIJ WASH STATION
2006696	CIJ PRINTHEAD MOUNTING BRACKET (page 24)
2006702	GUTTER TUBING 3.2 WITH RED STRIPE
2006715	GUN BODY, CIJ, W/76.8 KhZ
2006749	SCREW – GUN BODY BLOCK FIXING, M2 5X5 CIJ
2006755	PRINTHEAD METAL PLATE WITH WELDED TUBE CONNECTORS
2006756	GUN BODY BLOCK MOUNTING PLATE
2006770	1-WAY MAKEUP LINE CHECK VALVE IN PRINTHEAD, CIJ
2006791	GUN BODY TUBING, 2.0/1.0
2006792	JETSTREAM – USER GUIDE
2006793	JETSTREAM – QUICK START GUIDE
2006804	JETSTREAM PRINTER, HIGH SPEED, 94.0 KHZ - HP01-JETSTREAM-H
2006899	PACKAGING – JETSTREAM CIJ PRINTER
2006900	JETSTREAM CIJ PRINT SYSTEM, 60uM
2006901	JETSTREAM PRINTER
2006910	CABLE – PHOTOCELL, JETSTREAM
2006911	CABLE – PHOTOCELL, PIGTAIL
2006912	CABLE – ENCODER, AUTORECOGNIZE
2006913	CABLE – ENCODER, ALARM & DATA, PIGTAIL

Part Number	Description
2006914	CONNECTOR – 5-PIN FEMALE
2006915	CONNECTOR – 7-PIN FEMALE
2006916	PHOTOCELL – 18 mm BARREL, RETRO W/ CABLE
2006917	PHOTOCELL – FIBER OPTIC
2006918	PHOTOCELL – LASER W/ CABLE
2006919	PHOTOCELL – ULTRASONIC W/ CABLE
2006920	SENSOR – METAL PROXIMITY W/ CABLE
2006921	ENCODER – TR1-U2R6 W/ CABLE (pages 24 and 104)
2006922	WARNING LOW INK LIGHT BEACON (pages 27 and 112)
2006926	CHASSIS ASSEMBLY
2006927	MOTHERBOARD MOUNTING PLATE
2006928	MOTHERBOARD
2006929	COREBOARD JETSTREAM
2006930	LCD SCREEN MOUNTING PLATE
2006931	LCD SCREEN JETSTREAM
2006932	LCD SCREEN CONTROLLER PCB
2006933	CABLE, LCD SCREEN 8550
2006934	LED PCB 8550
2006935	INTERFACE BOARD A9
2006936	BULKHEAD CONN BOARD
2006937	FAN JETSTREAM
2006938	USB ADAPTER PCB
2006939	CABLE, MAIN-LED
2006940	CABLE, MAIN-LCD CONTROLLER PCB
2006941	CABLE, BULKHEAD CONN-MIX TANK JETSTREAM
2006942	CABLE, MAINBOARD
2006943	CABLE, MAINBOARD JETSTREAM
2006944	CABLE, MAIN-BULKHEAD CONN
2006945	CABLE, BULKHEAD CONN-INK JETSTREAM
2006946	CABLE, USB-I/O
2006947	CABLE, ETHERNET-I/O
2006948	FAN CONNECTOR CABLE JETSTREAM
2006949	CABLE, HV PS-BULKHEAD CONN
2006950	CABLE, SWITCHING POWER SUPPLY JETSTREAM
2006951	GROUND CONNECT WIRE
2006952	CABLE, POWER SUPPLY TO SWITCH
2006953	INK SYSTEM ASSEMBLY JETSTREAM

Part Number	Description
2006954	MIXING TANK ASSEMBLY JETSTREAM
2006955	VALVE/MANIFOLD JETSTREAM
2006956	VENTURI ASSEMBLY B
2006957	VALVE CONN PCB B
2006958	CABLE, VALVE
2006959	CABLE, MIXING TANK-VALVE CONN PCB
2006960	VALVE BOARD JETSTREAM
2006961	VISCOMETER FLOW RESTRICTOR
2006962	PRESSURE PUMP ASSEMBLY
2006963	FILTER ASSEMBLY B
2006964	FILTER PCB
2006965	PH UMBILICAL ASSEMBLY JETSTREAM
2006967	PHASING PCB H8BSH
2006969	PH UMBILICAL ASSEMBLY JETSTREAM
2006970	JETSTREAM USER GUIDE
2006971	JETSTREAM CLEANING KIT (page 26)
2006978	GUN BODY, 94.0 KHZ, JETSTREAM SONIC – HP01-H850036HC
2007227	JETSTREAM PC SOFTWARE
2007229	MOTHERBOARD, 94.0 KHZ, JETSTREAM SONIC CIJ
2007230	PH BLOCK GUN BODY, 94.0 KHZ, JETSTREAM SONIC
2007231	PH BLOCK MOUNTING PLATE, 94.0 KHZ
2007232	ECCENTRIC WHEEL FOR INK JET ADHUSTMENT
TCJET	TARIFF - JETSTREAM

Warranty Statement

Squid Ink Manufacturing, Inc. warrants that all of the CIJ printer products it ships will be in good working order and free from defects in material and workmanship and will conform to the published specifications for that product.

Warranty Period

For hardware and software products the warranty period is 12 months from the date of shipment from Squid Ink.

Printheads

Use of Inks, flush fluids, and cleaning fluids that are not obtained from Squid Ink, or which do not meet Squid Ink's manufacturing specifications and have written approval of Squid Ink void the warranty on Printheads. Do not use Wipes on Printheads.

Repairs

All repairs are rigorously tested for optimum operation and print performance and warranted to be, under normal and proper use, free from defects in material and workmanship for a period of 90 days from the date of service.

Print Quality

Print quality achieved in a given application is dependent on the installation, the material handling, and the maintenance provided. Squid Ink makes no warranty that the print quality achieved in an application will be the same as that achieved during a printer demonstration or on a test piece in our print laboratory.

Shipping Policy

Customer pays all incoming shipping charges. If the item is defective and under warranty, Squid Ink will pay all return shipping charges via the least costly method. If expedited shipping is desired, the customer must furnish their shipping account number and shipping fees will be charged to that account.

Exclusions

Damage due to tampering, abuse, improper adjustment, electrical interference, or the use of non-approved components will void any and all warranties by Squid Ink and its Distributors. Use of Inks, flush fluids, and cleaning fluids that are not obtained from Squid Ink, or which do not meet Squid Ink's manufacturing specifications and have written approval of Squid Ink void the warranty on Printheads. Use of a Printhead Wipe voids the warranty on Printheads.

Warranty Procedures

If you believe that a product may be defective and may be covered by warranty, call your local Squid Ink Distributor. Your local Distributor will provide support and information regarding warranty claims.

Warranty Eligibility

The warranty provided by Squid Ink Manufacturing, Inc. is only to the original buyer.

Limited Warranty

THE ABOVE WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.

Disclaimer of Damages

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Technical Support

For help installing, operating, and maintaining the JetStream, contact your authorized Squid Ink reseller or Squid Ink Technical Support.

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Fax: 763-795-8867

Email: info@squidInk.com

Web: **www.squidInk.com**

Thank you for your purchase of Squid Ink products. We are pleased to be a part of your marking and coding needs.

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