Videojet 1580

Service Manual

P/N 463171-01
Revision AA, August 2018

Videojet Technologies Inc.

1500 Mittel Boulevard
Wood Dale, IL
60191-1073 USA
www.videojet.com

Phone: 1-800-843-3610
Fax: 1-800-582-1343
Int'l Fax: 630-616-3629

Offices - USA: Atlanta, Chicago, Los Angeles, Philadelphia
INT'L: Canada, France, Germany, Ireland, Japan, Spain, Singapore, The Netherlands, The United Kingdom
Distributors Worldwide

Table of Contents

Compliance Information

For Customers in the European Union

This equipment displays the CE mark to indicate conformance to the following legislation:

EU EMC Directive 2014/30/EU:

Essential health and safety requirements relating to electromagnetic compatibility.

EN 61000-6-4	Generic Emissions Standard for Heavy Industrial Environments
EN 61000-3-2	Harmonic Current Fluctuations
EN 61000-3-3	Voltage Fluctuation and Flicker
EN 61000-6-2	Generic standards - Immunity for industrial environments

EC Low Voltage Directive 2014/35/EU

Essential health and safety requirements relating to electrical equipment designed for use within certain voltage limits.

EN 60950-1	Safety requirements for information technology equipment including electrical business equipment.

For Customers in the USA

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

⚠WARNING

PERSONAL INJURY.
Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

Shielded cables must be used with this unit to ensure compliance with Class A FCC limits.

This equipment has been tested and certified for compliance with U.S. regulations regarding safety and electrical emissions.

This equipment has been investigated in accordance with the standard for safety:
UL 60950-1: Safety of information technology equipment.

For Customers in Canada

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This equipment has been tested and certified for compliance with Canadian regulations regarding safety and electrical emissions.

This equipment has been investigated in accordance with the standard for safety: CAN/CSA C22.2 No. 60950-1-03. Safety of information technology equipment.

Pour la clientèle du Canada

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicales aux appareils numerique de las class A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

Cet équipement est certifié CSA.

This equipment has been investigated in accordance with the standard for safety: CAN/CSA C22.2 No. 60950-1-03. Safety of information technology equipment.

⚠WARNING

PERSONAL INJURY.

This product is not intended for use in the immediate/direct visual field of the display work place. To avoid disturbing reflections on the display work place, this product shall not be placed in the immediate/direct field of vision.

Support and Training

Contact Information

If you have any questions or need assistance, please contact at 1-800-843-3610 (for all customers within the United States). Outside the U.S.,customers should contact their distributor or subsidiary for assistance.

Videojet Technologies Inc.
1500 Mittel Boulevard
Wood Dale, IL 60191-1073 U.S.A.
Phone: 1-800-843-3610
Fax: 1-800-582-1343
International Fax: 630-616-3629
Web: www.videojet.com

Service Program

Videojet service and support programs are designed to protect your investment in Videojet printers and deliver the lowest total cost of ownership to your operations.

Videojet offers comprehensive service programs, spare parts and training - all designed to help you keep your lines up and running.

- A complete array of customer services and offerings tailored to meet your operational needs
- A program designed to maximize your equipment uptime, allowing you to focus on your most important mission - your company's productivity
- A product and service program to support and deliver your ultimate purchase: a high quality, reliable printed code on your finished product.

Customer Training

If you wish to perform your own service and maintenance on the printer, Videojet Technologies Inc. recommends you complete a Customer Training Course on the printer.

Note: *The manuals are intended to be supplements to (and not replacements for) Videojet Technologies Inc. Customer Training.*

For more information on Videojet Technologies Inc. Customer Training Courses, call 1-800-843-3610 (within the United States only). Outside the U.S., customer should contact a Videojet subsidiary office or the local Videojet distributor for further information.

Section 1 Introduction

This chapter contains the following informations:

1.1 Videojet 1580 Printer

The Videojet 1580 printer is a continuous ink jet printer that can print fixed and variable codes at high line speeds on consumer and industrial products. The printer delivers superior uptime, print quality, and ease of use to the operators. The Videojet 1580 printer is as shown in the Figure 1-1.

Figure 1-1: Videojet 1580 Printer

1.2 About the Manual

The Videojet 1580 Service Manual is written for the service technician of the printer. The Service Manual contains the installation, service, and troubleshooting procedures.

1.3 Related Publications

The Videojet 1580 Operator Manual (Part Number: 463170) is available for reference.

1.3.1 Language Codes

When you order these manuals, make sure that you add the 2-digit language code at the end of the part number. For example, the part number of the Spanish version of the service manual is 463171-04. Use the list of language codes shown in Table 1-1 to identify the translated versions of the manual.

Note: *Availability of the operator manual is indicated by an asterisk (*). Availability of the service manual is indicated by a plus sign (+). Contact the Videojet distributor or subsidiary for more information.*

Code	Language	Availability (see Note:)	
01	English (US)	*	+
02	French	*	+
03	German	*	+
04	Spanish	*	+
05	Portuguese (Brazilian)	*	
06	Japanese	*	+
07	Russian	*	
08	Italian	*	
09	Dutch	*	
10	Chinese (Simplified)	*	+
11	Arabic	*	
12	Korean	*	+
13	Thai	*	
15	Norwegian	*	
16	Finnish	*	
17	Swedish	*	
18	Danish	*	
19	Greek	*	
20	Hebrew	*	
21	English (UK)	*	+
23	Polish	*	
24	Turkish	*	+
25	Czech	*	

Table 1-1: Language Codes

Code	Language	Availability (see Note:)	
26	Hungarian	*	
33	Vietnamese	*	
34	Bulgarian	*	
36	Chinese (Traditional)	*	
55	Romanian	*	

Table 1-1: Language Codes (Continued)

1.4 Content Presentation

This manual contains different types of information like safety guidelines, additional notes, User Interface (UI) terminology and so on. To help you to identify the different types of information, different writing styles are used. This section describes these writing styles.

1.4.1 The Word 'Printer'

The word 'printer' indicates the Videojet 1580 printer, from this point onwards, in this manual.

1.4.2 Positional References

Unless stated to the contrary, positions and directions such as left, right, front, rear, to the right and to the left are given with respect to the printer when viewed from the front.

1.4.3 Units of Measurement

This manual uses metric units of measurement. The equivalent English measures are included in parenthesis. For example, 240 mm (9.44 inches).

Note: *The default date display format is UK (day/month/year) for Videojet 1580 UI.*

1.4.4 Safety Information

The safety information includes warning and caution statements.

1.4.4.1 Warning

The warning statements indicate hazards or unsafe practices that can result in personal injury or death.

For example:

⚠WARNING

PERSONAL INJURY.
The cleaning agent is poisonous if taken internally. Do not drink. Seek medical attention immediately if ingested.

1.4.4.2 Caution

The caution statements indicate hazards or unsafe practices that can result in damage to the equipment.

For example:

⚠CAUTION

EQUIPMENT DAMAGE.
Do not fit or remove any connector on the printer when the power is on, otherwise the printer may get damaged.

1.4.4.3 Notes

Notes provide additional information about a particular topic.

For example:

Note: *This button is displayed on the status bar when Start Jets is selected.*

1.5 User Interface Terminology

For more information on operating system, refer Chapter 6, "User Interface".

Figure 1-2: Menu Screen

1.6 Abbreviations and Acronyms

Table 1-2 describes the abbreviations and acronyms included in this manual.

Abbreviation/Acronym	Description
UI	User Interface
PCB	Printed Circuit Board
MSDS	Material Safety Data Sheet
MCB	Main Control Board
AC	Alternating Current
EHT	Extra High Tension
GUI	Graphic User Interface
IMB	Ink Management Board
LCD	Liquid Crystal Display
LED	Light Emitting Diode
PSU	Power Supply Unit
UI	User Interface
PPI	Pulses Per Inch

Table 1-2: Abbreviations and Acronyms

1.7 Chapters in this Manual

Table 1-3 provides the list of chapters in this service manual.

Chapter No.	Chapter Name	Description
1.	Introduction	Contains the information about this manual, related publications, and writing styles used in this manual.
2.	Safety	Contains the safety and hazard information.
3.	Main Parts	Contains the description the main parts of the printer.
4.	Installation	Explains the installation procedures of different parts of the printer.
5.	Printer Operation	Contains the information on how to use the UI to setup and operate the printer.
6.	User Interface	Explains how to use the UI to create and save jobs.
7.	Replacement Instructions	Explains the procedures to remove and replace the parts of the printer.
8.	Maintenance	Provides the maintenance and cleaning procedures of the printer.

Table 1-3: Chapters in the Manual

Chapter No.	Chapter Name	Description
9.	Troubleshooting	Contains diagnostic and troubleshooting procedures.
10.	Appendix A	Describes the clean start and clean stop procedures.
11.	Appendix B	Contains the encoder setup information.
12.	Appendix C	Describes the MCB Test Points.

Table 1-3: Chapters in the Manual

Section 2 Safety

This chapter contains the following informations:

2.1 Introduction

The policy of Videojet Technologies Inc. is to manufacture non-contact printing/coding systems and ink supplies that meet high standards of performance and reliability. We enforce strict quality control techniques to eliminate the potential for defects and hazards in our products.

The intended use of the Videojet 1580 printer is to print information directly onto a product. Use of this equipment in any other fashion may lead to serious personal injury.

The safety guidelines provided in this chapter are intended to educate the technicians on all safety issues, so that the printer is serviced and operated in a safe manner.

2.2 General Safety Guidelines

- Always refer to the correct service manuals as per the specific Videojet printer model.
- Only Videojet-trained personnel must carry out installation and maintenance work. Any such work undertaken by unauthorized personnel may damage the printer and will invalidate the warranty.
- To avoid damage to the printer components, use only soft brushes and lint-free cloth for cleaning. Do not use high pressure air, cotton waste, or abrasive materials.
- The printhead must be completely dry before attempting to start the printer, otherwise the printhead may get damaged.
- Do not fit or remove any connector on the printer when the power is turned on, otherwise the printer may get damaged.

2.3 Electrical Safety Guidelines

This section explains the safety guidelines related to electrical power supply, electrical cables, fuses, bonding, and grounding.

2.3.1 Electrical Power Supply

⚠WARNING

PERSONAL INJURY.

Lethal voltages are present within this equipment when it is connected to the mains electrical supply. Only trained and authorized personnel must carry out the maintenance work.

⚠WARNING

PERSONAL INJURY.

Observe all statutory electrical safety codes and practices. Unless it is necessary to run the printer, disconnect the printer from the mains electrical supply before removing the covers or attempting any service or repair activity. Non-adherence to this warning can result in death or personal injury.

⚠WARNING

PERSONAL INJURY.

A high AC voltage is present at the inverter and backlight. Extreme caution is required when diagnosing failure in these areas.

2.3.2 Electrical Cables

⚠WARNING

PERSONAL INJURY.

Use only the mains power cable supplied with the printer. The end of this cable must have an approved, three-pole, mains plug that has a protective ground conductor.

- The electrical power cables, sockets and plugs must be kept clean and dry.
- For pluggable equipment, the socket-outlet must be installed near the equipment and must be easily accessible.

⚠WARNING

PERSONAL INJURY.

Always inspect the cables for damage, wear, corrosion, and deterioration. Make all grounding/bonding connections void of areas of paint, ink build-up, and corrosion.

2.3.3 Bonding and Grounding

⚠WARNING

PERSONAL INJURY.

The printer must be connected only to an AC power supply that has a protective ground conductor and must be according to IEC requirements or applicable local regulations.

⚠WARNING

PERSONAL INJURY.

Do not use the printer if there is any interruption in the protective ground conductor or if the protective ground conductor is disconnected. The failure to follow this warning can cause an electrical shock.

⚠WARNING

PERSONAL INJURY.

Always ground conductive equipment to an earthing electrode or to the building grounding system with approved cables as per NEC standards in order to drain all potential static discharge. For example, a metal service tray to earth ground.

⚠WARNING

PERSONAL INJURY.

A resistance reading from the grounded service tray to the equipment chassis or mounting bracket should be 0 to less than 1 ohm. A resistance check should be made using a safe and reliable ohmmeter and should be done on a frequent basis.

⚠WARNING

PERSONAL INJURY.

The PCBs contain static sensitive devices. A suitably grounded, antistatic wrist strap must be worn when working on or handling PCBs.

⚠WARNING

PERSONAL INJURY.

Always prevent static discharge from occurring. Use proper Grounding and Bonding methods. Only use Videojet approved metallic service trays and ground cables.

⚠WARNING

PERSONAL INJURY.

Always bond conductive equipment together with approved cables to maintain them at the same potential and minimize static discharge. For example, printhead to metal service tray.

⚠WARNING

PERSONAL INJURY.

The Optional Wash Station has been solely designed for the cleaning of the printhead.

- Do not use it for purging or printing operations or for any other purposes.
- Always ensure that the jet is stopped and that any hazardous voltages are switched off prior to the commencement of the printhead wash down.

⚠CAUTION

EQUIPMENT DAMAGE.

Always empty the service trays frequently. Some inks and cleaning solutions are flammable. Make sure that the waste fluids are disposed according to HAZMAT.

2.3.4 Fuses

⚠WARNING

PERSONAL INJURY.

To ensure continued protection against fire hazards, replace fuses only with the specified type and rating.

2.4 Fluid Safety Guidelines

This section describes the hazards that may occur while handling ink, make-up fluid, cleaning solutions, and the safety precautions that a user must take to prevent hazards.

2.4.1 Read the Material Safety Data Sheets

Read and understand the Material Safety Data Sheet (MSDS) before using any ink, make-up fluid, or cleaning solution. An MSDS exists for each type of ink, make-up fluid, and cleaning solution. For more information, visit *www.videojet.com* and navigate to *Documentation* > *Material Safety Data Sheets*.

2.4.2 Ink/Make-up/Cleaning Solution

⚠WARNING

PERSONAL INJURY.

The ink, make-up fluid and cleaning solution are irritating to the eyes and respiratory system. To prevent personal injury when handling these substances:

- Always wear protective clothing and rubber gloves.
- Always wear goggles with side-shields or a face mask. It is also advisable to wear safety glasses when carrying out maintenance.
- Apply barrier hand cream before handling ink.
- If ink or make-up or cleaning solution contaminates the skin, wash immediately with soap water. DO NOT use washdown or solvent to clean ink stains from the skin.
- If cleaning solution contaminates the skin, rinse off with running water for at least 15 minutes.

⚠WARNING

PERSONAL INJURY.

The ink, make-up fluid and cleaning solution are volatile and highly flammable. They must be stored and handled in accordance with local regulations.

- Do not smoke or use a naked flame in the vicinity of these substances.
- Immediately after use, remove any tissue or cloth that becomes saturated with these substances. Dispose all such items in accordance with the local regulations.
- In the event that any ink or make-up or cleaning solution container is not completely empty after use, it should be resealed. Only full bottles are recommended for use when replenishing ink or make-up or cleaning solution; partially filled bottles must be disposed in accordance with the local regulations.

⚠WARNING

PERSONAL INJURY.

When setting up the nozzle, direct the ink stream into a beaker or suitable container. To avoid the contamination of the ink, do not re-use any ink collected in this way. Dispose all waste ink in accordance with the local regulations.

⚠WARNING

PERSONAL INJURY.

Prolonged breathing of make-up fluid or cleaning fluid vapor may cause drowsiness and/or effects similar to alcoholic intoxication. Use only in open, well-ventilated areas.

⚠WARNING

PERSONAL INJURY.

The cleaning agent is poisonous if taken internally. Do not drink. Seek medical attention immediately if ingested.

⚠CAUTION

EQUIPMENT DAMAGE.

Make sure that the cleaning agent is compatible with the ink used before carrying out printhead cleaning otherwise the printhead may get damaged.

⚠CAUTION

EQUIPMENT DAMAGE.

Any cleaning solutions containing either chloride, including hypochlorite bleaches or hydrochloric acid, can cause unacceptable surface pitting and staining. These should not be used in contact with stainless steels. If wire brushes or wire scouring pads are used, these should be made of stainless steel. Make sure that any abrasive media used is free from sources of contamination, especially iron and chlorides.

2.5 Compressed Air Safety Guidelines

⚠WARNING

PERSONAL INJURY.

Airborne particles and substances are a health hazard. Do not use high pressure compressed air for cleaning purposes.

2.6 UI Related Safety Guidelines

⚠CAUTION

RISK OF DATA LOSS.

Ensure that the required job is loaded each time before entering the print mode especially after printer power off.

⚠CAUTION

DATA SECURITY.

To prevent unauthorized access to the software, ensure that *Logout* button is selected when exiting from the current user level.

2.7 Other Important Guidelines

⚠WARNING

PERSONAL INJURY.

If the battery is replaced by an incorrect type, it will lead to an explosion. Always dispose off the used batteries according to the instructions and local regulations.

⚠WARNING

PERSONAL INJURY.

In a fault condition, heater can reach 70 ºC. Do not touch the plate on which the heater is mounted. The failure to follow this warning can cause personal injury.

⚠WARNING

PERSONAL INJURY.

The ink system operates under pressure. Only trained and authorized personnel must carry out the maintenance work.

⚠CAUTION

EQUIPMENT DAMAGE.

After a Quick Stop, the machine should not be left in this state for any length of time as drying ink may make restarting difficult. Perform a nozzle backflush.

⚠CAUTION

EQUIPMENT DAMAGE.

The printhead must be completely dry before attempting to start the printer otherwise the EHT will trip.

⚠CAUTION

EQUIPMENT DAMAGE.

The printer should be placed directly on a flat or solid surface, or bolted to a Videojet supplied stand. In either case the printer must not be operated when tilted. Always keep the printer upright on flat surface.

⚠CAUTION

EQUIPMENT DAMAGE.

To perform removal and installation procedure, make sure that the printer is placed on a level surface or on a bench otherwise the printer may get damaged.

Section 3 Main Parts

Introduction

This section contains the following information:

- Printer Overview
- Main Parts of the Videojet 1580 Printer

3.1 Printer Overview

Videojet 1580 printer is a continuous ink jet printer that can print fixed and variable codes at high line speeds on consumer and industrial products.

Figure 3-1 shows the schematic diagram of the printer.

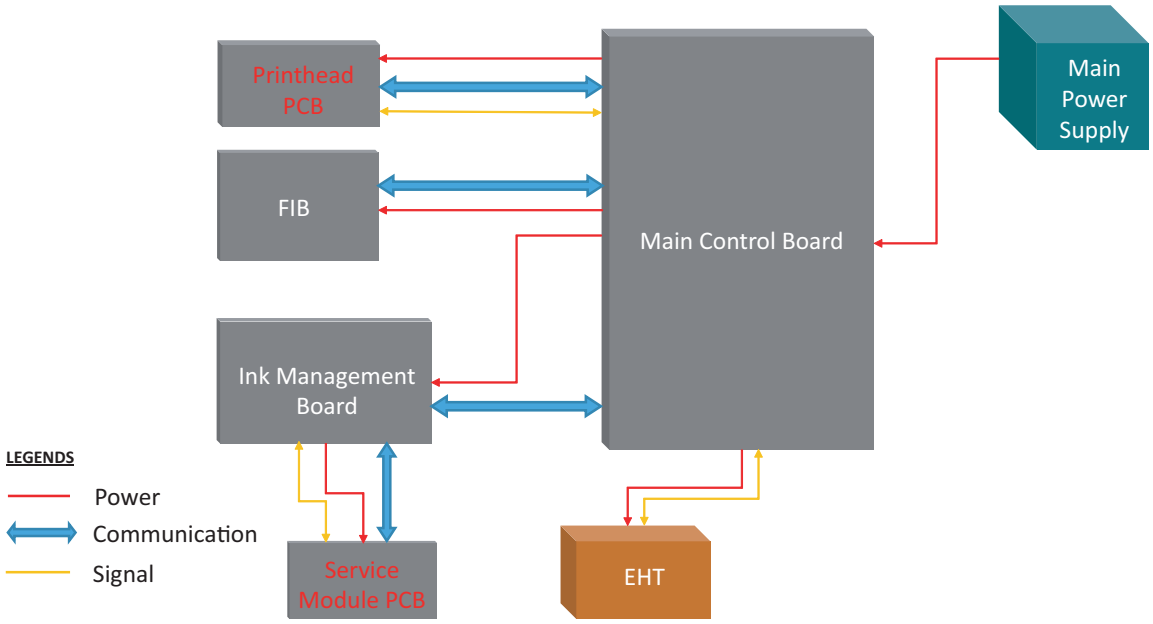
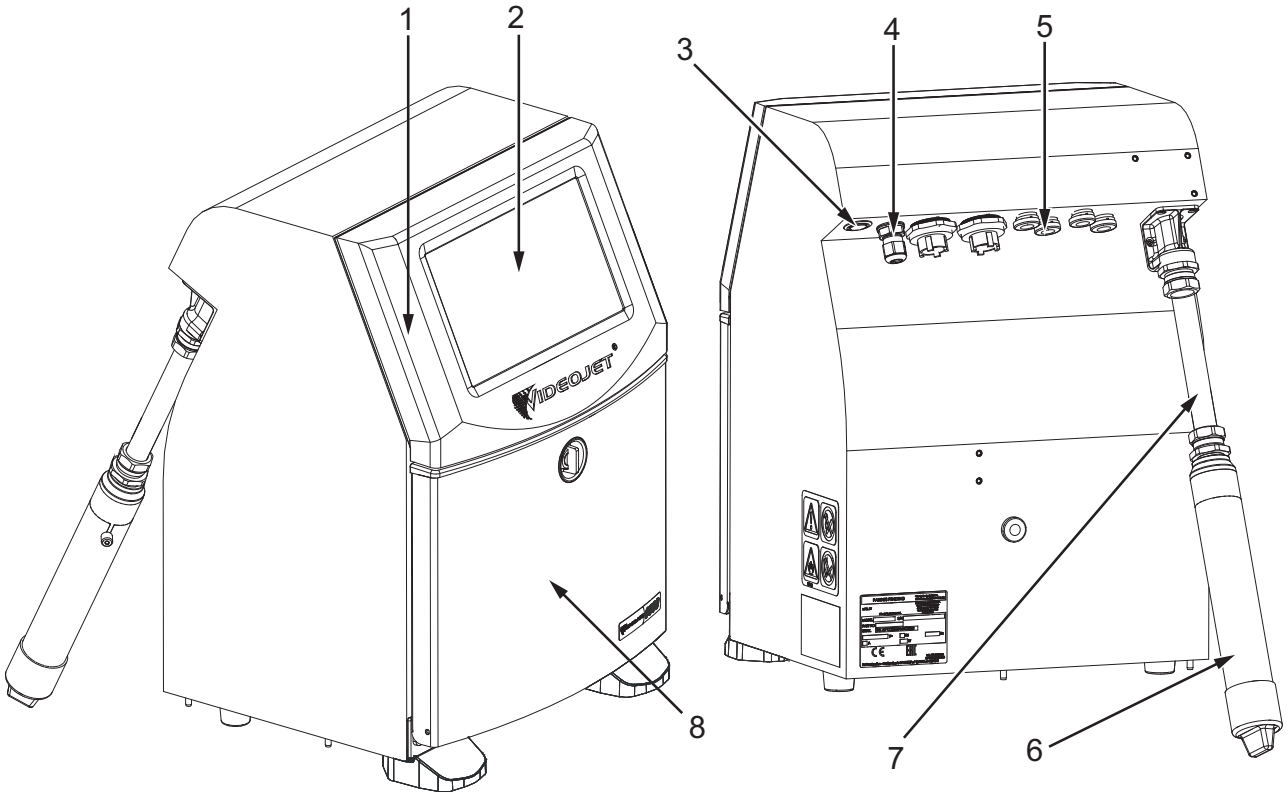


Figure 3-1: System Overview

3.2 Main Parts of the Videojet 1580 Printer

The printer includes the following major parts as shown in Figure 3-2.

- Touch Screen Display
- Electronics Compartment
- Main Power Switch
- Ink Compartment
- Standard IO
- Mains Lead
- Umbilical
- Printhead



1. Electronics Compartment
2. Touch Screen Display
3. Main Power Switch
4. Mains Lead
5. Standard IO
6. Printhead
7. Umbilical
8. Ink Compartment

Figure 3-2: Main Parts of the Printer

3.2.1 Home Page

Figure 3-3 shows the Home Screen of the operator control system. Refer to User Interface chapter for more information.

1. Printer Status Bar
2. Message Preview
3. Consumables Information
4. Performance Information
5. Control Bar

Figure 3-3: Home Screen

3.2.2 Touch Screen Display

The touch screen display (see Figure 3-4) is mounted on the electronics compartment opening of the cabinet.

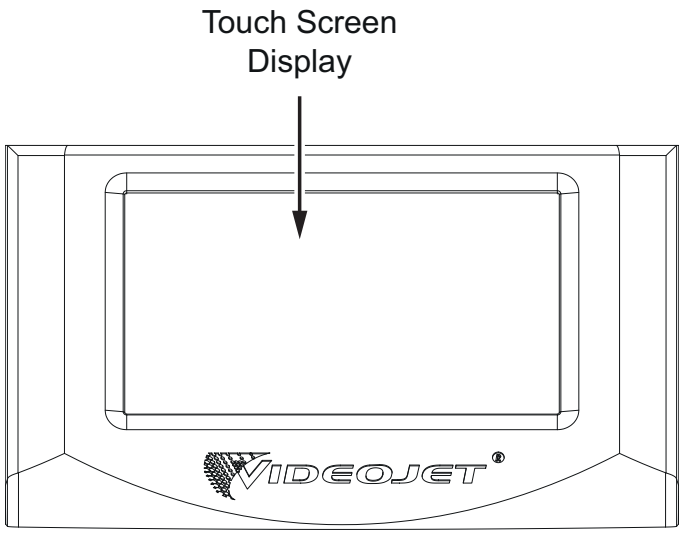
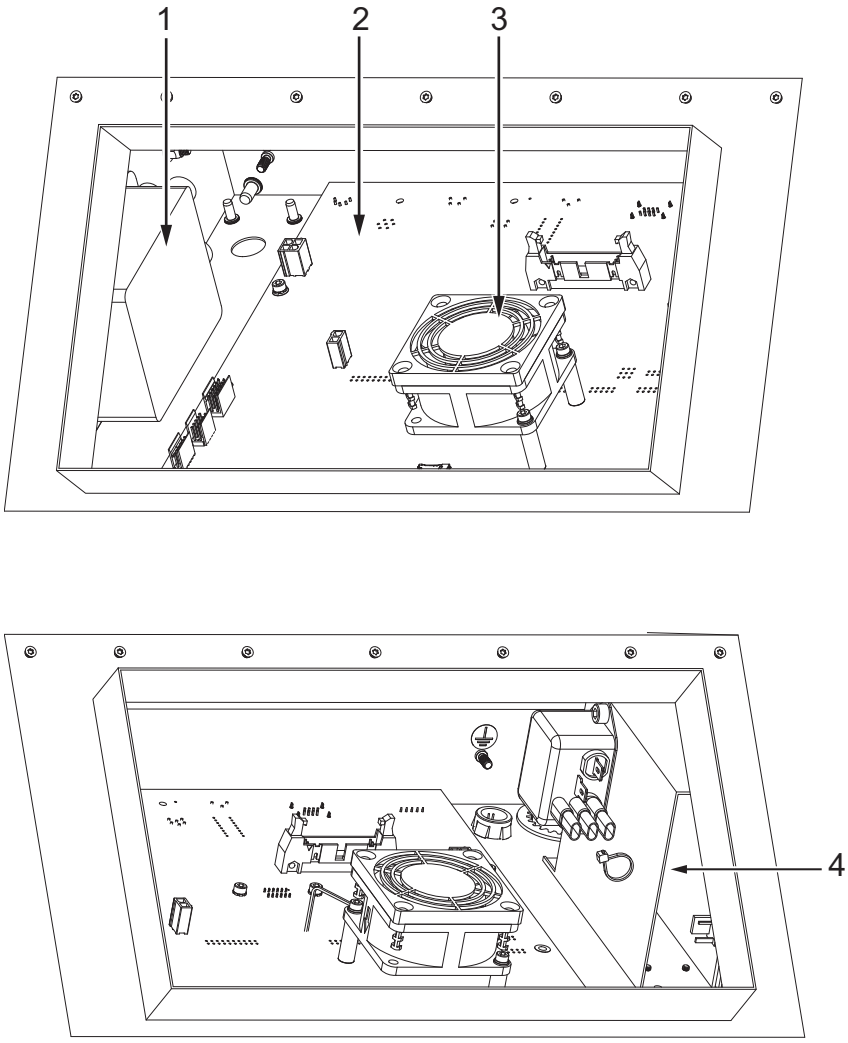


Figure 3-4: Display Unit

3.2.3 Electronics Compartment

Electronics compartment is located behind the touch screen display as shown in Figure 3-5, it consists of the following parts:

- Main Control Board (MCB)
- Electronics Compartment Fan
- Power Supply Unit
- Main Power Switch

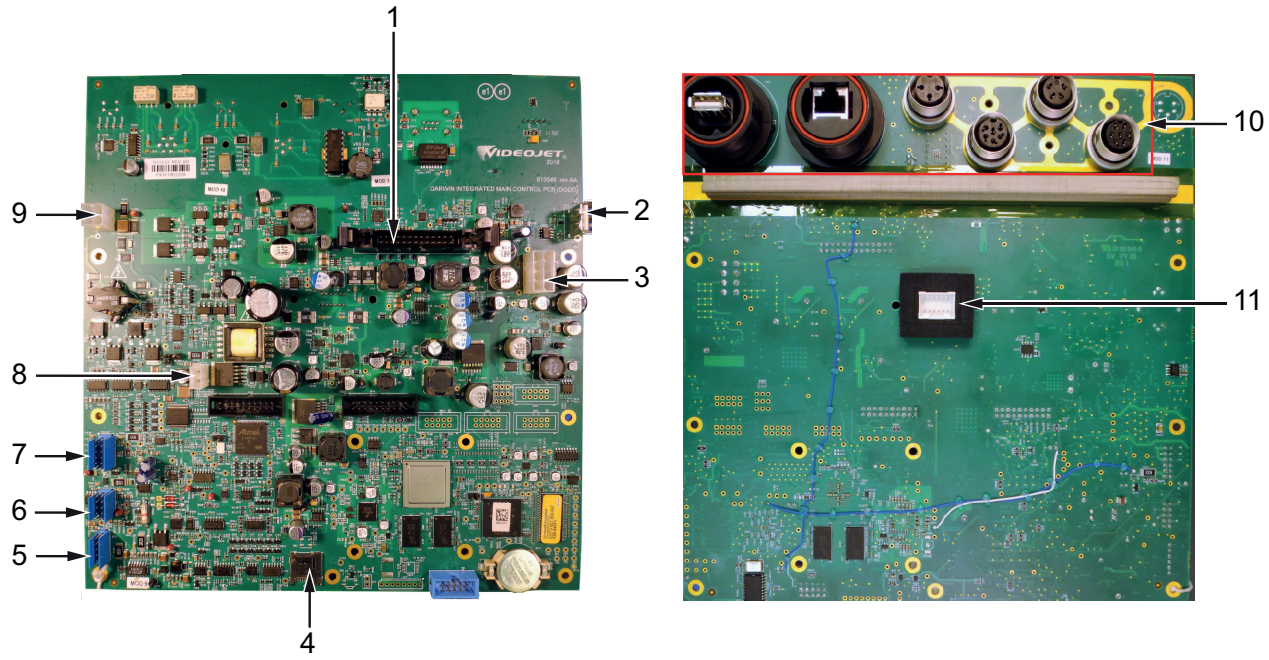


1. EHT Module
2. Main Control Board
3. Electronics Compartment Fan
4. Power Supply Unit

Figure 3-5: Electronics Compartment

3.2.3.1 Main Control Board (MCB)

The Main Control Board (MCB) (see Figure 3-6) is located behind the display unit in the electronics compartment.



1. LCD
2. USB
3. PSU
4. SD Card
5. EHT
6. Printhead Connector 1
7. Printhead Connector 2
8. Electronics Compartment Fan
9. Modulation and Charge Output
10. IO Connectors
11. IMB Connector

Figure 3-6: Main Control Board (MCB) Connections

3.2.3.2 Electronics Compartment Fan

The electronics compartment fan (see Figure 3-7) is attached to the MCB.

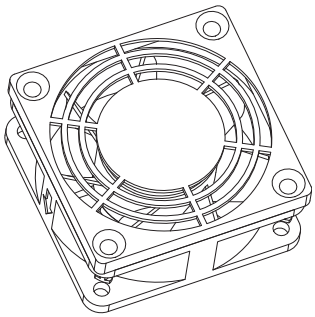


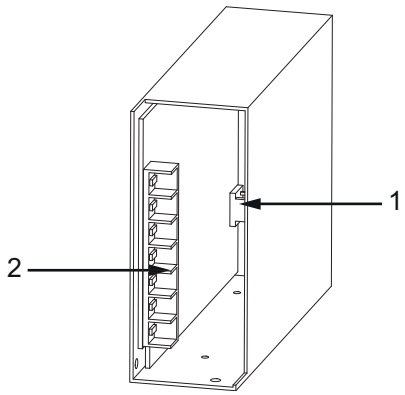
Figure 3-7: Electronics Compartment Fan Assembly

3.2.3.3 Power Supply Unit

The mains Power Supply Unit (PSU) is located on the right hand side wall of the electronics cabinet. This PSU is the main source of power to the printer and switched power supply, adjusting automatically for the acceptable range.

The PSU features are as follows:

- The input power to the PSU (ranges from 80 to 270 VAC, 50 – 60 Hz) automatically adjusts as required.
- The PSU provides 24 VDC voltage to the MCB.



1. TB1 Connector
2. Connector

Figure 3-8: Power Supply Unit

3.2.4 EHT Module

The EHT module (see Figure 3-9) is located on the left hand side wall of the electronics compartment.

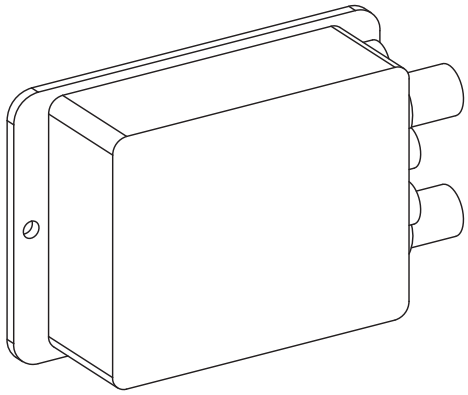


Figure 3-9: EHT Module

3.2.5 Main Power Switch

The main power switch is located on the rear of the printer.

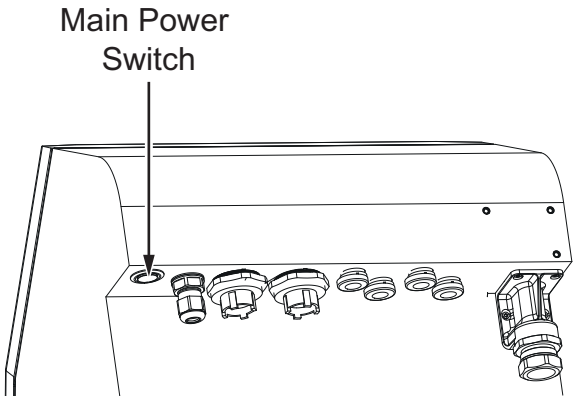
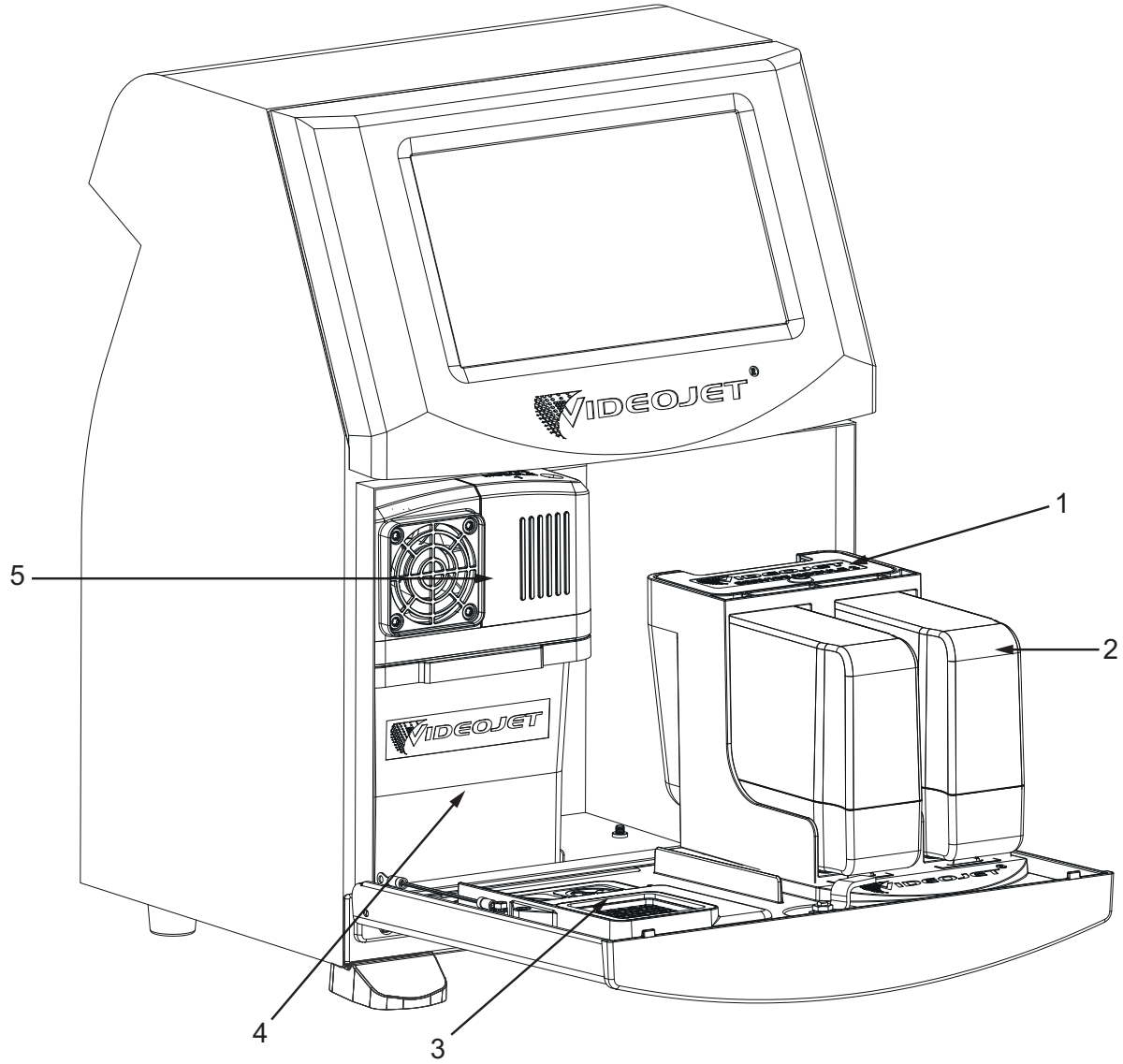


Figure 3-10: Main Power Switch

3.2.6 Ink Compartment

The ink compartment is as shown in Figure 3-11. The major parts in the ink compartment are:

- Fluid Cartridges
- Air Filter
- Service Module 1
- Solvent Control Module
- Ink System
- Gutter Pump
- Positive Air Pump (IP65 only)



1. Solvent Control Module
2. Fluid Cartridge
3. Air Filter Assembly
4. Ink System

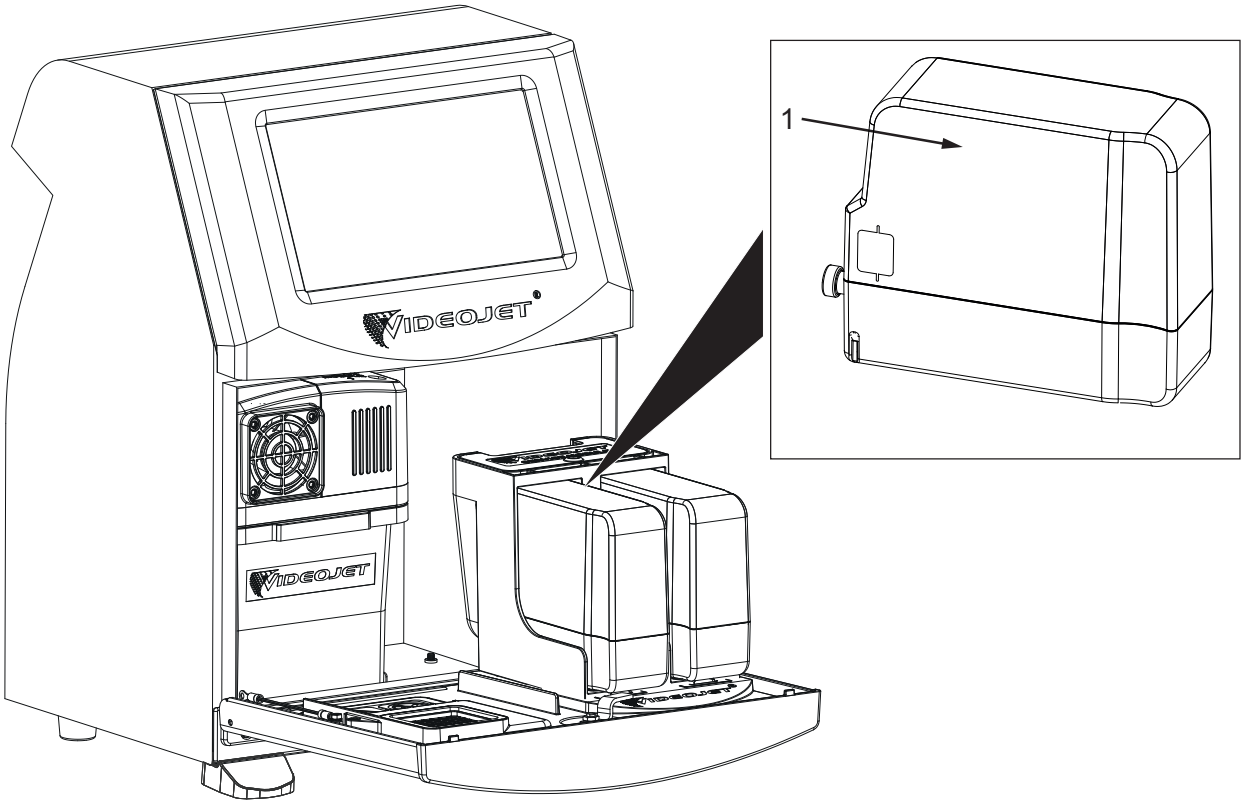
5. Service Module 1
6. Positive Air Pump Assembly (IP65 only)*
7. Gutter Pump*

*** Item not shown in figure**

Figure 3-11: Ink Compartment

3.2.6.1 Fluid Cartridges

The fluid cartridges are located inside the ink compartment.



1. Fluid Cartridge

Figure 3-12: Fluid Cartridges

3.2.6.2 Air Filter

The air filter (see Figure 3-13) is mounted on the door of the ink compartment.

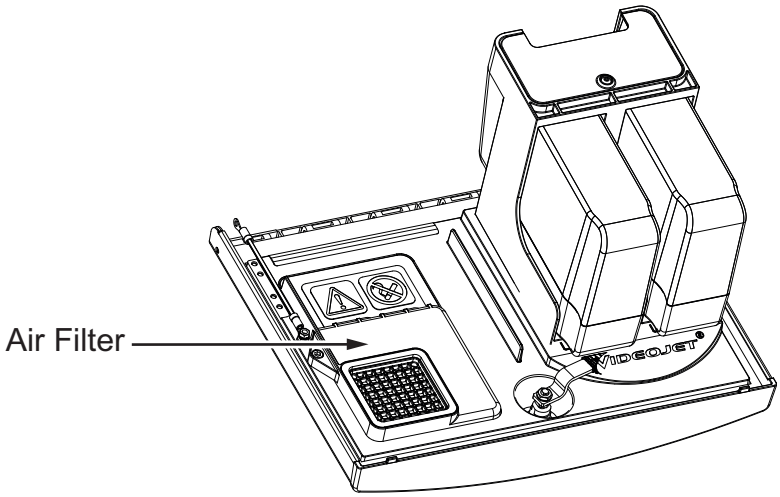


Figure 3-13: Air Filter

3.2.6.3 Service Module 1

The Service Module 1 (see Figure 3-14) is located on the ink system.

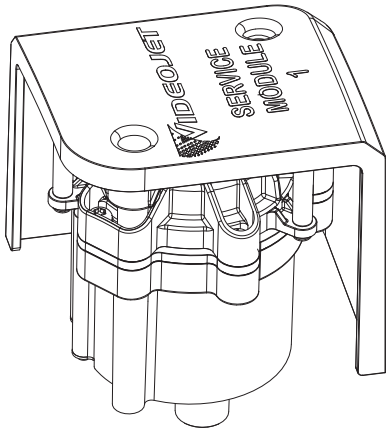


Figure 3-14: Service Module 1 Assembly

3.2.6.4 Solvent Control Module

The Solvent Control Module (see Figure 3-15) is located below the fluid cartridges.

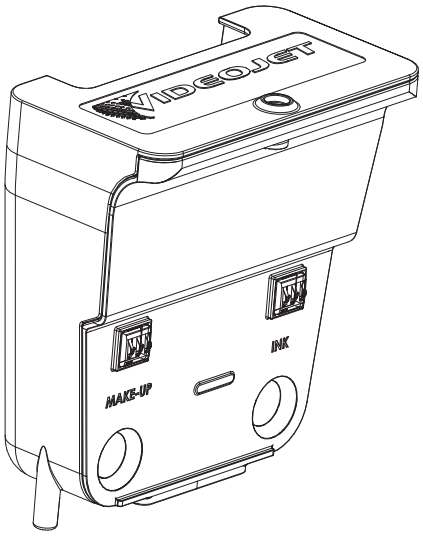


Figure 3-15: Solvent Control Module

3.2.6.5 Gutter Pump

The gutter pump (see Figure 3-16) is located in the ink compartment behind the ink system.

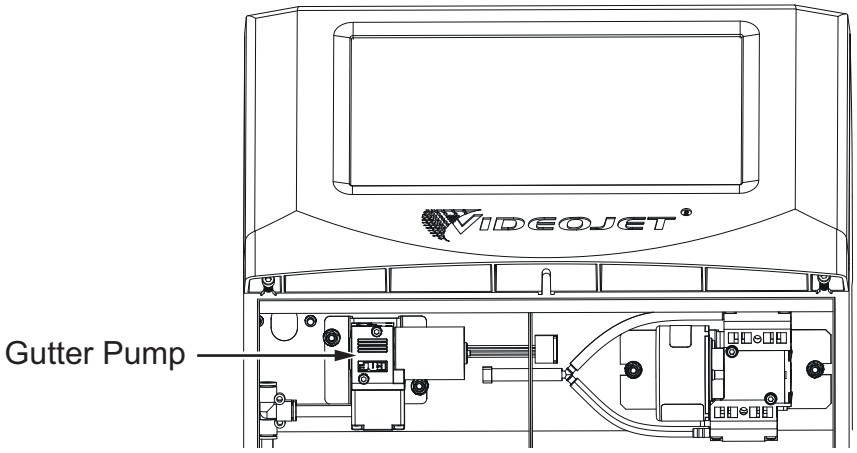


Figure 3-16: Gutter Pump

3.2.6.6 Positive Air Pump (IP65 only)

The positive air pump (see Figure 3-17) is located in the ink compartment behind the ink cartridges. The positive air pump supplies pressurised air to the printhead for printing operation.

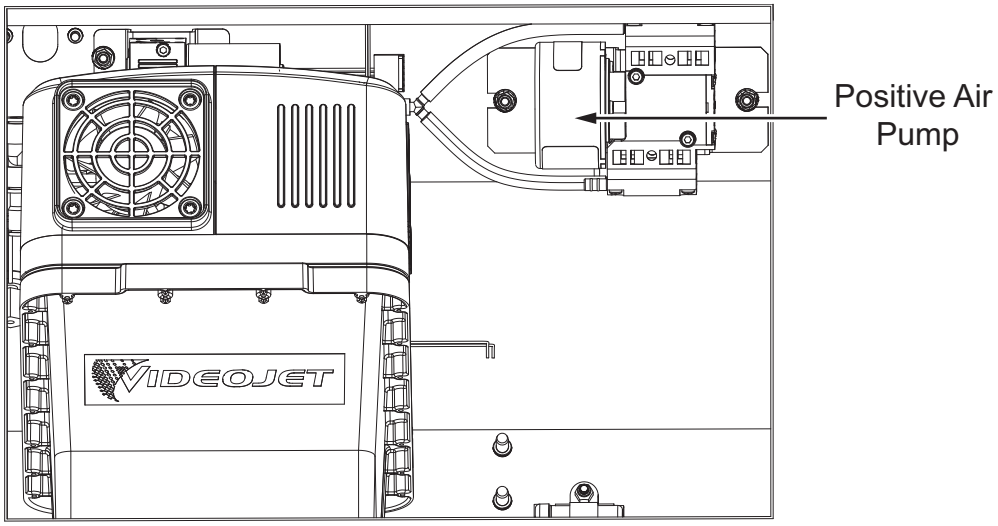


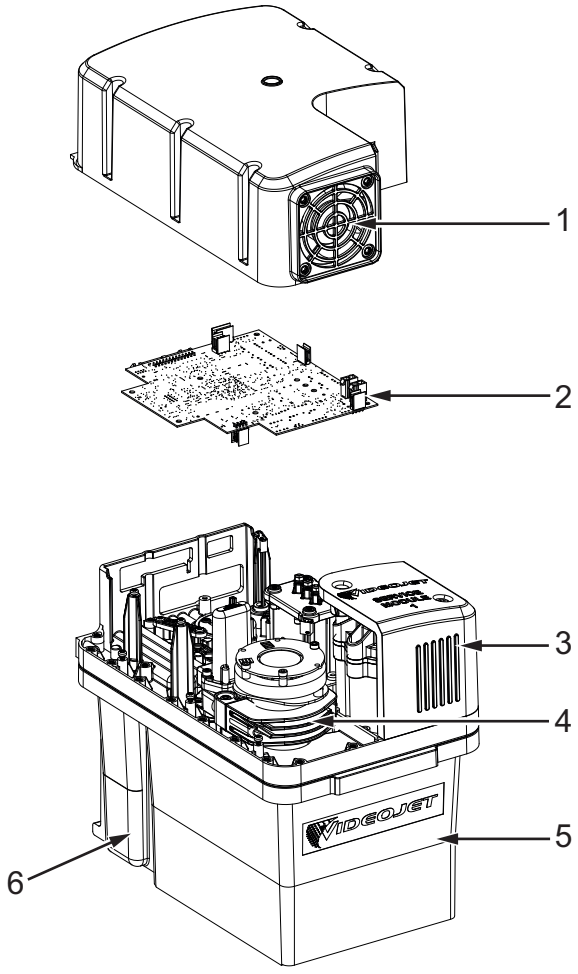
Figure 3-17: Positive Air Pump

Note: *When a customer orders an air dryer kit, the positive air pump is fitted to the printer and the air dryer kit must be installed as per provided instructions. The air dryer supplies positive air to the printhead from an external air source. Air dryers are required when the printer is operated in an environment with elevated humidity or where certain water sensitive inks are used. Please contact Videojet Technologies Inc. Customer Service Department at 1-800-843-3610 (United States only), or contact the local Videojet Technologies Inc. representative for more information.*

3.2.6.7 Ink System

The Ink system has various sub-systems as shown in the Figure 3-18. The major parts of the ink system are:

- Make-up Tank
- Mixer Tank
- Ink Pump
- VMS Chamber With Temperature Sensor
- Ink Management Board (IMB)
- VMS Valve Assembly
- Pre Venturi Filter
- Ink System Cover with Fan Assembly



1. Ink System Cover with Fan
2. Ink Management Board
3. Service Module 1
4. Ink Pump
5. Mixer Tank
6. Make-up Tank

Figure 3-18: Ink System

1. Make-up Tank

The make-up tank has a maximum capacity of 0.5 L (0.13 gal) and a nominal working capacity of 0.25 L (0.07 gal). The make-up tank has a continuous level detection system allowing measurement of fluid level to within +/- 1 mm (0.04 inches).

The make-up tank performs a clean stop and provides appropriate warning upon completion of the fluid.

2. Mixer Tank

The mixer tank has a maximum capacity of 2 L (0.53 gal) and a nominal working capacity of 1.0 - 1.3 L (0.26 gal - 0.34 gal). The mixer tank has a continuous level detection system allowing measurement of fluid level to within +/- 1 mm (0.04 inches).

The mixer tank contains drain ports to facilitate quick removal of ink from the tank. The inner portion of the mixer tank is tapered to avoid settling of ink particulars at the bottom of the tank.

3. Ink Pump

The ink pump is a positive displacement pump driven by a 24 VDC motor as shown in Figure 3-19.

The pump provides stable ink pressure to the nozzle during printing and also provides a flow of ink to other components inside the ink system.

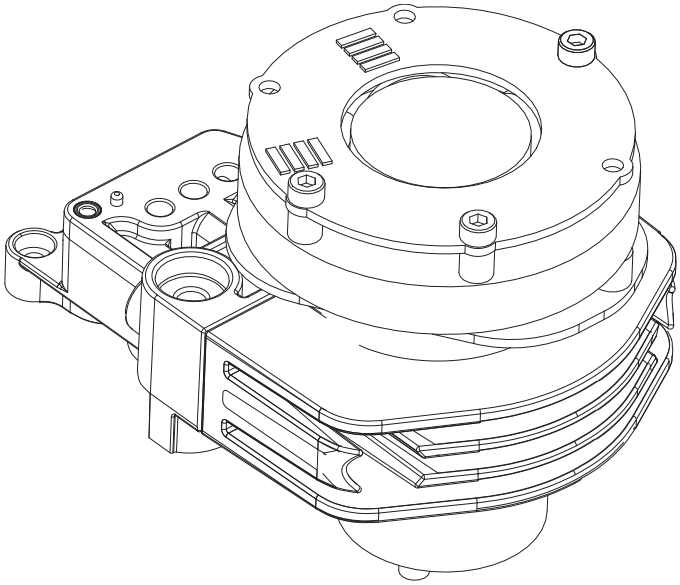


Figure 3-19: Ink Pump

4. VMS Chamber With Temperature Sensor

The VMS chamber with temperature sensor is as shown in the Figure 3-20. The VMS chamber with temperature sensor connects to the valves of the printhead. The VMS chamber with temperature sensor is used to measure the ink viscosity in the mixer tank. Each Viscometer has a unique restrictor diameter which is marked on the VMS Chamber body.

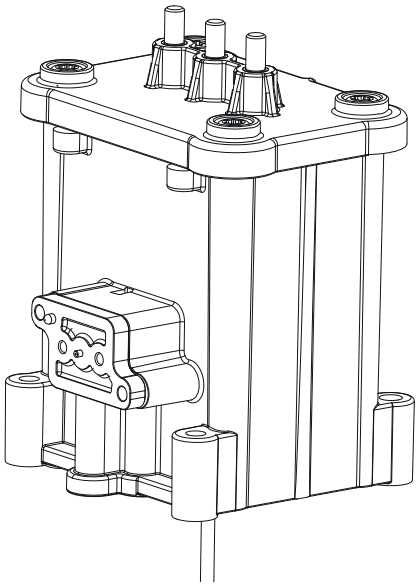
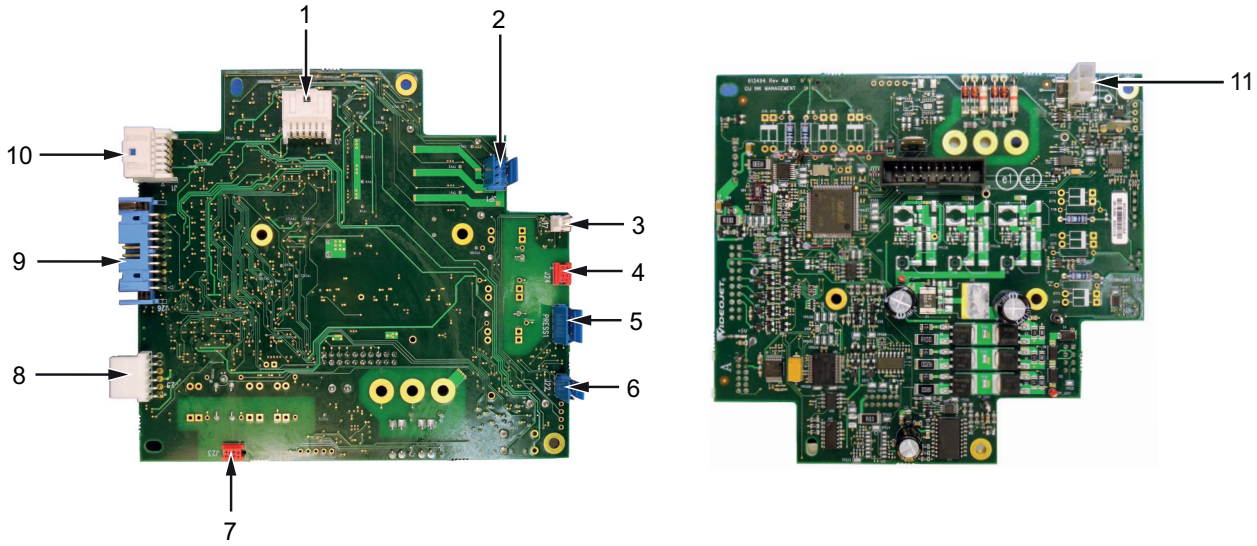


Figure 3-20: VMS Chamber With Temperature Sensor

5. Ink Management Board (IMB)

The IMB is as shown in the Figure 3-21. The IMB communicates with main control board through serial communication links. This provides local control for print operations.



1. VMS Valve
2. Ink Pump
3. VMS Heater
4. Ink Level Sensor
5. Pressure Transducer
6. Service Module 1 PCB
7. Make-up Level sensor
8. Gutter Pump and Positive Air Pump (IP65 only)
9. Ink Pump Harness Cable
10. MCB to IMB Cable
11. Fan Connector

Figure 3-21: Ink Management Board (IMB) Connections

6. VMS Valve Assembly

VMS valve is a non return valve connected to the VMS chamber with temperature sensor as shown in the Figure 3-22.

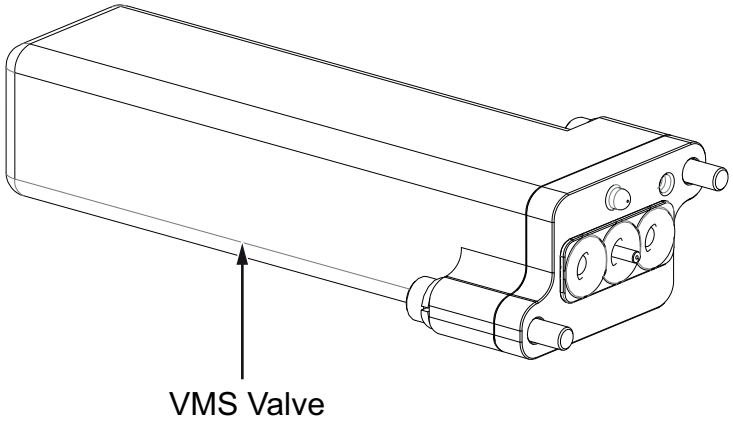


Figure 3-22: VMS Valve Assembly

7. Pre Venturi Filter

The pre venturi filter as shown in the Figure 3-23 is connected to the ink pump.

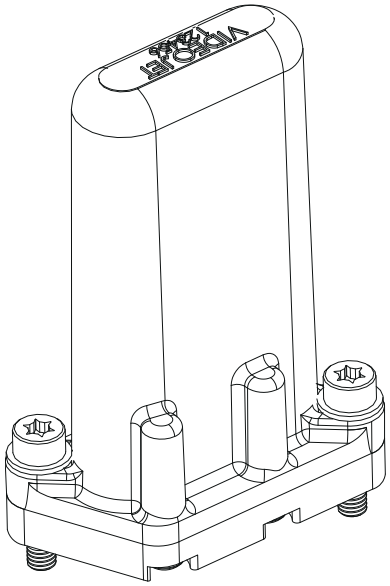


Figure 3-23: Pre Venturi Filter

8. Ink System Cover with Fan Assembly

The fan assembly as shown in the Figure 3-24 is located in the ink system cover. A cooling fan circulates the air inside the ink compartment.

Note: *If ink system cover is not secure or the required air filters are not changed, there may be a degradation of performance due to insufficient air flow causing heat build up in the ink compartment.*

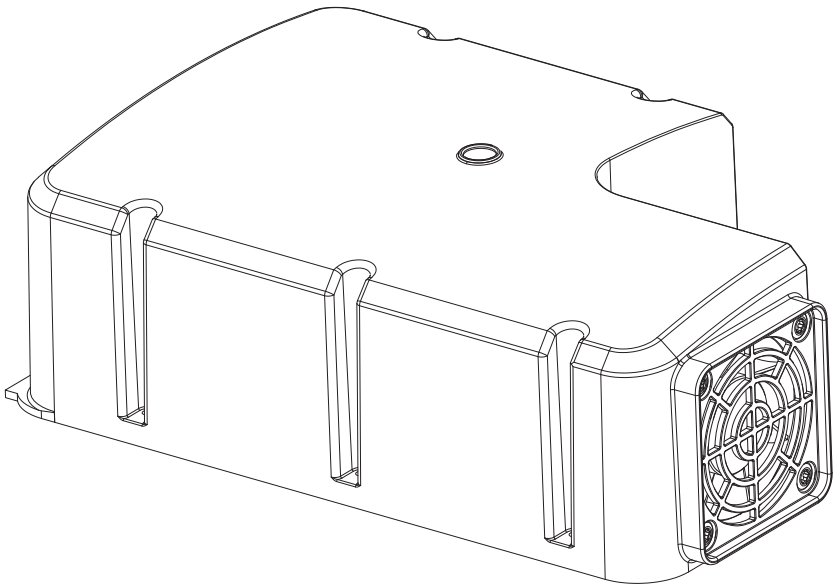


Figure 3-24: Ink System Cover with Fan Assembly

3.2.7 Standard IO

The Standard IO provides inputs for several types of external devices. The various connections are shown in Figure 3-25.

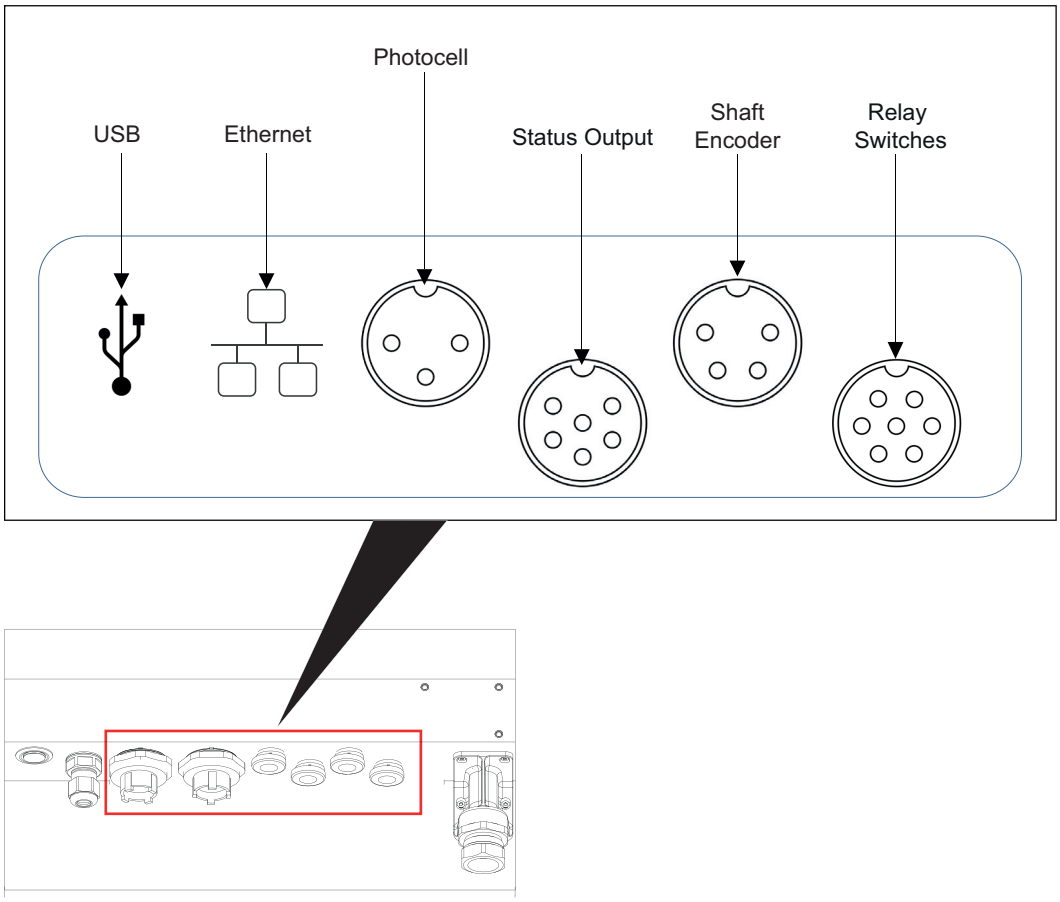


Figure 3-25: Standard IO

3.2.7.1 USB Connector

The USB Connector is used to connect a USB device to the printer to do the following:

- Message importing and exporting
- Data logging
- To update printers software
- To provide RS232 connection

.

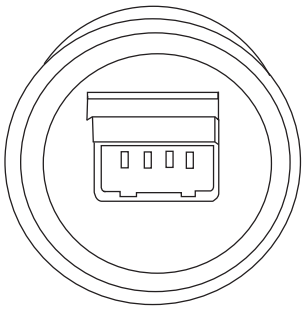


Figure 3-26: USB Connector

Note: *Figure 3-26 represents the view of the connector from the back of the printer*

3.2.7.2 Ethernet Connector

The Ethernet connector is used to connect the printer to a remote computer or network to import data or control the printer remotely.

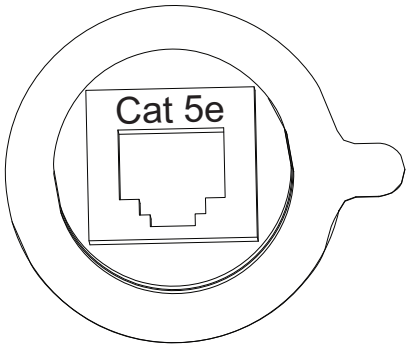


Figure 3-27: Ethernet Connector

Note: *Figure 3-26 represents the view of the connector from the back of the printer.*

3.2.7.3 Product Detector (Print Trigger) 1 Connector

The product detector connector, detects the product and informs the printer when to print on the product. The printer provides a +15 VDC, 200 mA output for use by a photoelectric cell (PEC), inductive proximity detector. The print trigger connector is a 3 way DIN connector. The pin functions are shown in Table 3-1.

Note: *Photoelectric cell (PEC) is also called as inductive proximity detector or product detector.*

The default configuration is NPN (current sinking input). This input can be changed to PNP (sourcing input) with the movement of a jumper located on the back of the touch screen display. If the input is configured for PNP the maximum input voltage will be +24 VDC and the maximum current is 60 mA.

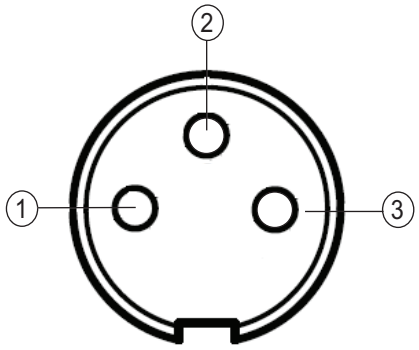


Figure 3-28: Print Trigger 1 Connector Pin Diagram

Note: *Figure 3-28 represents the view of the connector from the back of the printer.*

Pin	Function
DIN Pin 1	+15 VDC supply to sensor
DIN Pin 2	Sensor output
DIN Pin 3	0 VDC common

Table 3-1: Print Trigger 1 Connector Pinouts

Note: *The mating cable (male, 3 pin DIN connector -P/N: 500-0036-578) is used to interface other product detectors to the printer.*

3.2.7.4 Shaft Encoder Connector

The printer provides a nominal +15 VDC, 200 mA output for use by a shaft encoder with a maximum frequency of 100 kHz. The printer looks for NPN open collector input for the encoder signals. The printer uses pulses (leading and trailing edges) from both channels (Channel A and Channel B) of the shaft encoder. For more information, refer Line Speed. The shaft encoder connector is a 4 way DIN connector. The pin allocation is shown in Table 3-2 on page 3-20.

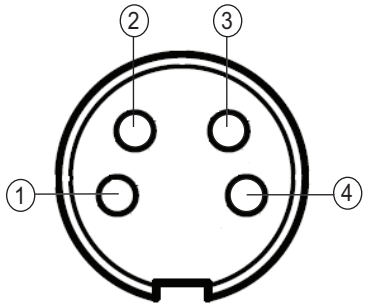


Figure 3-29: Shaft Encoder Connector Pin

Note: *Figure 3-29 represents the view of the connector from the back of the printer.*

Pin	Function
DIN Pin 1	+15 VDC supply to shaft encoder
DIN Pin 2	Shaft encoder input 'A'
DIN Pin 3	Shaft encoder input 'B'
DIN Pin 4	0 VDC common

Table 3-2: Shaft Encoder Connector Pinouts

Note: *The shaft encoder output must be of the PUSH/PULL type.*

Note: *The mating cable (male, 4 pin DIN connector - P/N: 500-0036-581) is used to interface other shaft encoders to the printer.*

3.2.7.5 Status Output Connector

The printer provides an output for a set of status lights through the status output connector. This provides +24 VDC output, the printer will switch in a ground to turn on the light. This is a 6- way DIN connector. The pin allocation is shown in Table 3-3 on page 3-21 and Figure 3-30.

Lamp color	Function
Green	Print Ready Output
Yellow	Warning Output
Red	Fault Output

Note: *For 24 VDC, the maximum current rating is 900 mA.*

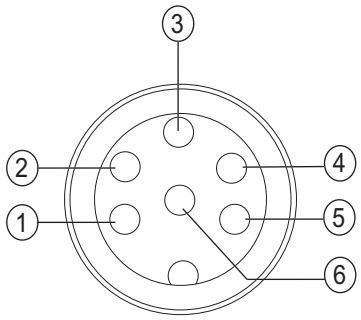


Figure 3-30: Status Output Connector Pin Diagram

Note: *Figure 3-30 represents the view of the connector from the back of the printer.*

Pin	Function
DIN Pin 1	Red lamp negative supply
DIN Pin 2	Amber lamp negative supply
DIN Pin 3	Green lamp negative supply
DIN Pin 4	+24 VDC supply to the strobe/siren
DIN Pin 5	Strobe/siren negative supply
DIN Pin 6	+24 VDC common to the traffic lights

Table 3-3: Status Output Connector Pinouts

Note: *The mating cable (male, 6 pin DIN connector - P/N: 500-0036-577).*

3.2.7.6 Relay Switches

The relay switches connector is a 7 way DIN connector. This connector supports the following relays:

- Relay 'A', you can use the relay to provide a 'Print Ready' output.
- Relay 'B', you can use the relay to provide a 'Warning' output.

These relays have electrical ratings of 1 - 30 VDC, 500 mA maximum. It is suggested to use +24 VDC. For example, if the printer is in a print ready state, the normally open (N.O.) contacts closes and informs the host that the printer is in a print ready state. If the printer is removed from the print mode for any reason (removed from print), printer faults out, thus opens the contacts. The pin allocation is shown in Table 3-4.

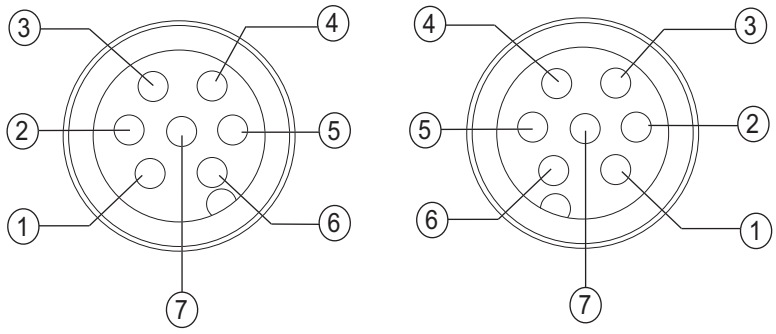


Figure 3-31: Relay Switches Connector Pin Diagram

Note: *Female connector (see Figure 3-31) represents the view of the connector from the back of the printer.*

Connector Pin		Function	Wire Color
Female Pin	Male Pin		
DIN Pin 1	DIN Pin 6	Relay A - Normally open contact	White
DIN Pin 2	DIN Pin 5	Relay A - Normally closed contact	Red
DIN Pin 3	DIN Pin 4	Relay A - Common contact	Black
DIN Pin 4	DIN Pin 3	Relay B - Normally open contact	Green
DIN Pin 5	DIN Pin 2	Relay B - Normally closed contact	Blue
DIN Pin 6	DIN Pin 1	Relay B - Common contact	Brown
DIN Pin 7	DIN Pin 7	Not used	-

Table 3-4: Relay Switches Connector Pinouts

Note: *The mating cable - P/N SP378810 (male, 7 pin DIN connector - P/N: 500-0036-583).*

Note: *These outputs are cold contact relays. It will not supply control voltage to the host system. If the host is going to send a control voltage through these contacts, it is suggested to use +24 VDC.*

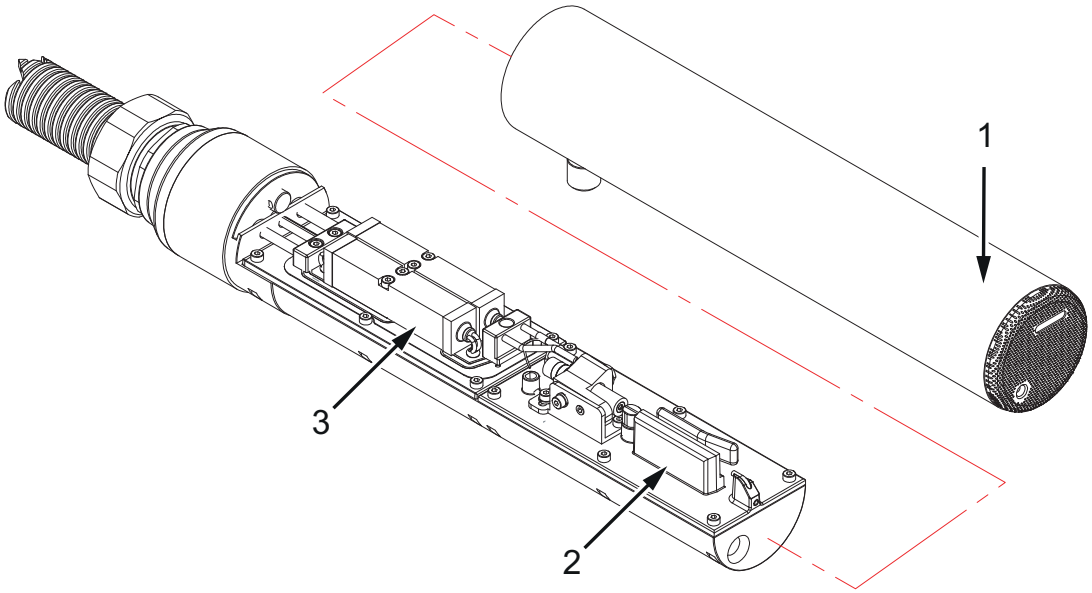
3.2.8 Umbilical

The umbilical contains electrical wiring and ink system tubing from the printer to the printhead. The standard length of the umbilical is 3 m (9.84 ft).

3.2.9 Printhead

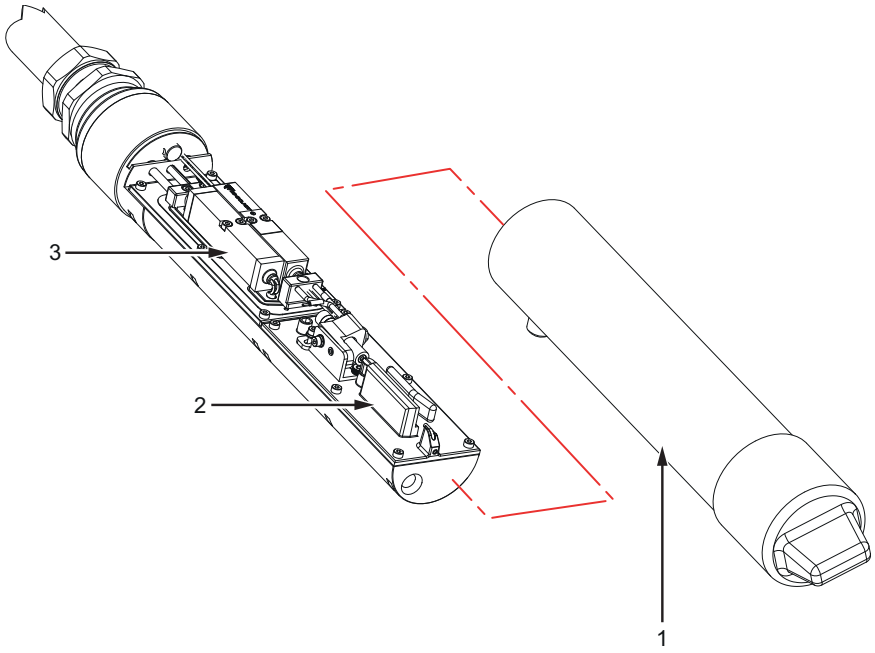
The printhead is as shown in Figure 3-32. The printhead consists of the following parts:

- Printhead Cover
- Valve Module
- Print Module



1. Printhead Cover
2. Print Module
3. Valve Module

Figure 3-32: Printhead Overview (IP65)



1. Printhead Cover
2. Print Module
3. Valve Module

Figure 3-33: Printhead Overview (IP55)

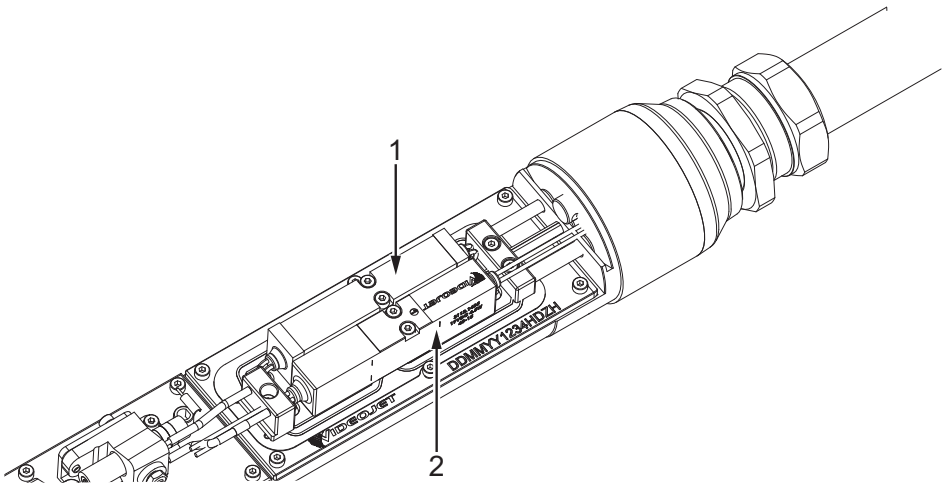
3.2.9.1 Printhead Cover

The printhead cover is attached to the printhead with a screw.

3.2.9.2 Valve Module

The valve module contains 4 valves to perform the function of:

- Ink Feed
- Solvent Flush
- Nozzle Purge
- Gutter



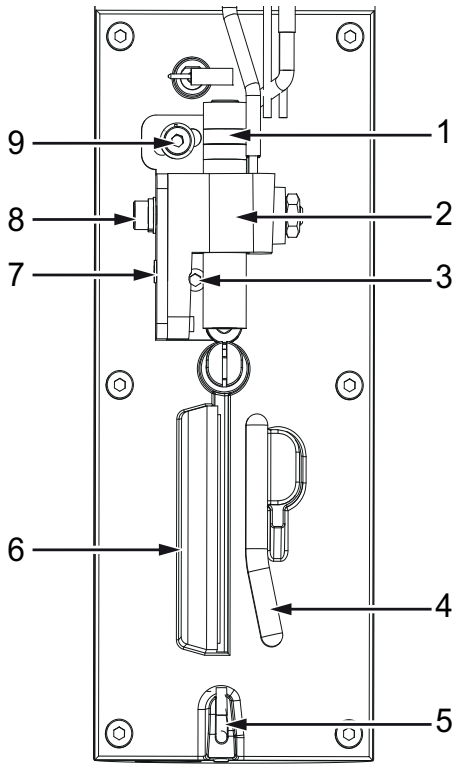
1. Ink/Solvent Feed Valve **2. Bleed/Gutter Valve**

Figure 3-34: Valve Module

3.2.9.3 Print Module

The print module is as shown in Figure 3-35 on page 3-26. The print module can be easily detached from head control module. The print module consists of the following parts:

- Nozzle
- Charge Electrode
- Deflection Plate
- Phase Detectors (Electrodes)
- Gutter tube



1. Nozzle
2. Nozzle Holder
3. Vertical Adjustment Screw
4. Deflection Plate
5. Gutter Tube
6. Phase Detectors (electrodes)
7. Horizontal Adjustment Screw
8. Horizontal Locking Screw
9. Vertical Locking Screw

Figure 3-35: Print Module

1. Nozzle:

The nozzle creates the ink droplets.

2. Charge Electrode:

The charge electrode applies an electrical charge to each ink droplet. The charge applied to the droplet is variable and affects the position of the droplet on the substrate.

3. Deflection Plate:

The deflection plate is supplied with a fixed positive DC voltage (typically 7000-8000VDC) from the EHT Module. This voltage deflects the charged drops over the top of the gutter, through the printhead slot, and onto the substrate.

4. Phase Detectors:

The phase detectors measure the ink drop velocity and perform phasing.

5. Gutter Tube:

The gutter tube is the return path for the uncharged ink droplets that are not used for printing. The gutter delivers the ink back into the ink mixer tank.

The gutter detects when ink is present in the gutter.

3.2.9.4 Printhead Functions

The phasing and velocity fly-by sensors and supporting circuitry contribute directly or indirectly to the performance of six critical control functions during steady-state operation:

- Phasing
- Modulation control
- TOF measurement
- Pump speed control
- Target pressure control
- Viscosity control

The functions of the ink system are provided in Table 3-5.

Name	Function	Frequency
Phasing	Between prints, charge transfer to test drops is measured by the LEAD fly-by sensor (phase detector) in order to synchronize drop charging to drop break-off, thereby optimizing print quality.	Performed approximately 25 times per second
Modulation Control	Between prints, modulation amplitude is validated by performing an abbreviated auto-modulation test using the LEAD fly-by sensor (phase detector). The amplitude is changed in small increments whilst measuring the rate of change of the phase angle in order to verify that the amplitude setting remains at or near the "appropriate setting".	Performed continuously
TOF Measurement	Between prints, drop velocity is monitored by measuring the TIME OF FLIGHT of the test drops from the LEAD (phase) sensor to the TRAILING (velocity) sensor. The measured result is referred to as the "actual velocity".	Performed every TENTH phasing test
Pump Speed Control	A pressure transducer inside of the ink system measures "actual pressure". This pressure is compared to the "target pressure". The resultant error is used to increase or decrease the pump speed.	Performed once per second
Target Pressure Control	The "target pressure" represents the nominal pressure the printer determines that it must operate at in order for the actual velocity to be equal to the "velocity set point". The printer makes modifications to the target pressure by reviewing the "history" of the velocity error parameter ("PID" control). "Velocity error" refers to the difference between the actual velocity and the set point.	Occur every 10 seconds

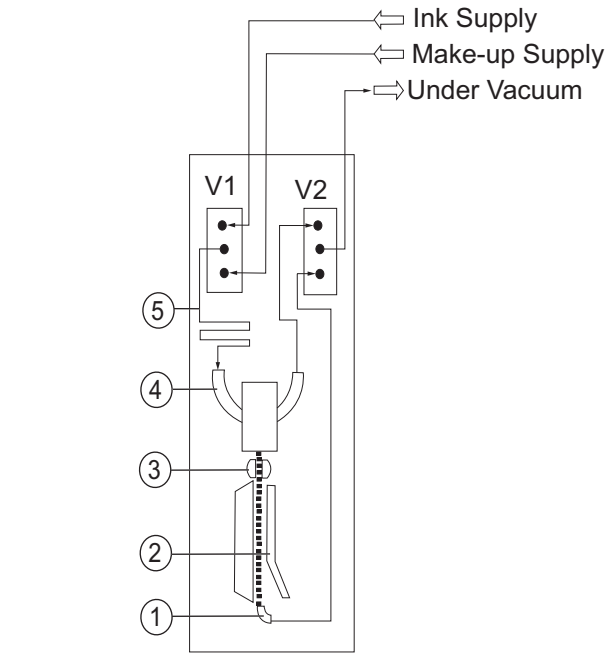
Table 3-5: Ink System Functions

Name	Function	Frequency
Viscosity Control	Once the printer has determined its "target pressure", it has the means to perform viscosity adjustments. Determination concerning viscosity is made by comparing the empirically-determined "target pressure" to a reference pressure known as the "temperature-compensated target pressure". This value is acquired indirectly from data encoded on the ink cartridge Smart Chip. This reference pressure is mathematically determined and represents the pressure required to acquire the correct "actual velocity" under ideal viscosity conditions. If the target pressure deviates from the reference pressure, the printer attributes this to viscosity variation and responds accordingly.	Pressure is constantly measured. The printer adds make-up if the pressure goes outside the given range for a set time period.

Table 3-5: Ink System Functions (Continued)

3.2.9.5 Printhead Operation

The printhead operation principle is as shown in Figure 3-36. The flush supply and ink supply lines merge at valve V1. The ink is heated as it flows through the manifold assembly to the nozzle. The nozzle is outfitted with both the feed and the bleed ports. The nozzle bleed port provides a source of vacuum, used during manual irrigation/backflushing.



1. Gutter Tube
2. EHT Plate
3. Charge Electrode
4. Nozzle
5. Heater

Figure 3-36: Printhead Operation

The flow of ink is as follows:

1. The ink and solvent mixture flows through the feed line into the printhead.

2. The ink enters the feed valve.

3. The valves open or close as per the print requirements.

Note: *The bleed valve opens and closes as needed during flushing the nozzle and supplying ink to the nozzle.*

4. The ink flows into the nozzle.

Note: *To adjust the nozzle, refer to "Nozzle Adjustment" on page 4-23.*

5. The piezoelectric crystal vibrate the nozzle at a frequency value in the range of 60 KHz to 100 KHz in the longitudinal direction. This vibration enables the nozzle to breakup the stream of ink into droplets.

6. The ink drops enter the charge electrode where they are charged at different voltage levels based on the character to be generated.

7. The charged ink drops then pass through the EHT Field and over the phase detectors.

8. The EHT plate deflects the charged drops of ink at various angles depending on the charge placed on the drop at the moment of breakoff.

9. An electrically conductive ink is supplied under pressure by the ink system to the nozzle assembly through the ink feed pipe.

10. An ink stream is formed as the ink is forced out of the nozzle jet orifice (see Figure 3-37).

A modulation signal is applied to a ceramic transducer which is clamped to the nozzle assembly. The transducer crystals cause the nozzle assembly to vibrate longitudinally, breaking up the ink stream into droplets, a small distance away (the break up point) from the nozzle jet orifice.

The ink droplets are produced at the same rate as the modulation frequency. The ink droplets are uniform in size and separated by equal distances. The nozzle orifice diameter is 60 or 70 microns.

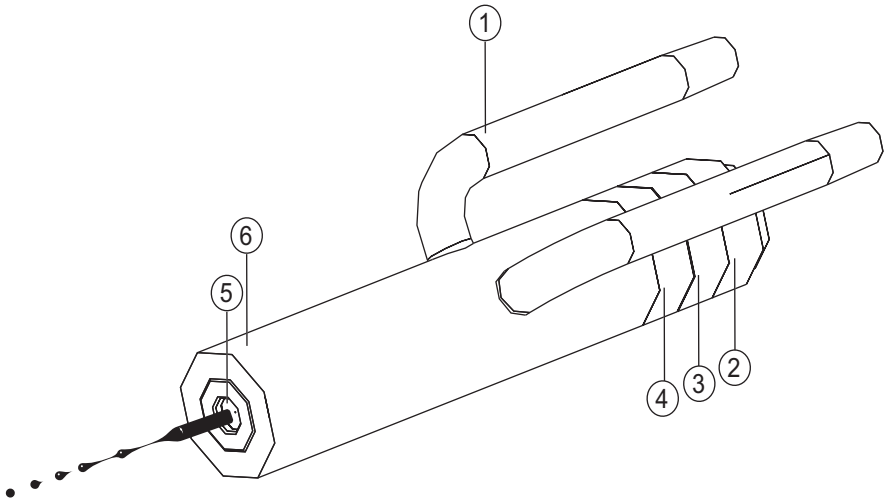


Figure 3-37: Ink Jet Formation

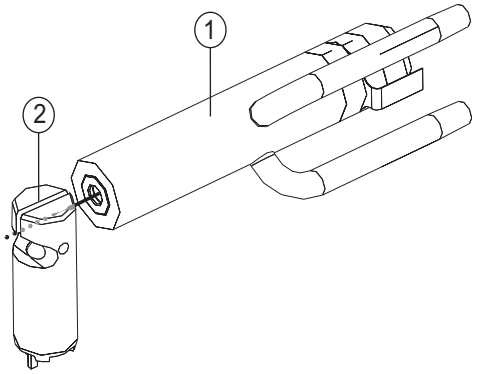
Droplet Charging

11. The charge electrode is positioned at the break up point of the ink stream and extends for several drops either side of it.

Note: *This allows a tolerance for break up position and shields the ink stream from the influence of the other electrostatic fields.*

The ink stream and the charge electrode can be considered as the two electrodes of a capacitor. By raising the charge electrode to a specific positive voltage (with a charge pulse) the section of the ink system within the charge electrode will have a negative charge induced on it. When a drop of ink then breaks from the jet it will have trapped on it a charge directly proportional to that on the charge electrode.

If the positive voltage is then removed from the charge electrode, the negative charge on the jet will discharge through the ink jet and nozzle assembly to ground. However, the drop of ink which has become detached from the jet cannot discharge as it no longer has a conductive path to ground.



1. Nozzle Assembly
2. Charge Electrode

Figure 3-38: Charge Electrode

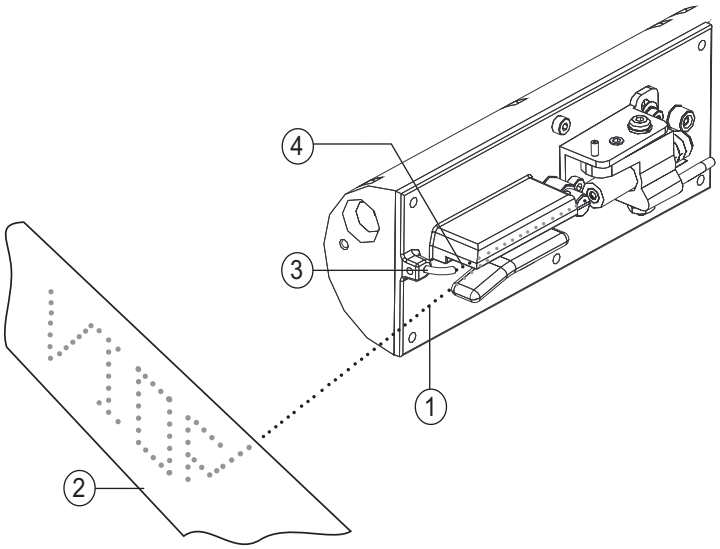
Droplet Charging

12. The droplet stream passes through an electrostatic field maintained by the deflector electrodes that are connected to a high tension supply.

13. The negatively charged droplets are deflected by the field towards the high voltage deflector electrode.

The distance a drop is deflected is proportional to the charge carried. The charge carried is proportional to the voltage applied to the charge electrode when the drop became detached from the ink jet.

The charged droplets once deflected leave the printhead to form characters in a dot matrix format on the substrate. Droplets which are not required for printing are not charged and are therefore not deflected.



1. Deflected Droplet Path
2. Substrate
3. Gutter
4. Droplet Path to Gutter

Figure 3-39: Droplet Deflection

Section 4 Installation

Introduction

This section describes the procedures to install and commission the printer.

⚠CAUTION

EQUIPMENT DAMAGE. Only Videojet-trained personnel must carry out the installation and maintenance work. Any such work undertaken by unauthorized personnel can damage the printer and invalidate the warranty.

⚠WARNING

PERSONAL INJURY. Make sure that the mains electrical supply is within the range indicated by the label adjacent to the mains inlet of the printer. If the voltage ratings differ, do not use the printer until you consult your Videojet supplier. Use only the mains power cable supplied with the printer. This cable must terminate in an approved, three-pole, mains plug which has a protective ground conductor. Keep electrical power cables, sockets and plugs clean and dry at all times.

⚠WARNING

PERSONAL INJURY. The printer must be connected to an AC power supply, which has a protective ground conductor in accordance with IEC requirements or applicable local regulations. Any interruption of the protective ground conductor or disconnection to the protective ground terminal may render the apparatus dangerous.

⚠WARNING

PERSONAL INJURY. Lethal voltages are present within this equipment when it is connected to the mains electrical supply. Observe all statutory electrical safety codes and practices. Unless it is necessary to run the printer, disconnect the printer from the mains electrical supply before removing the covers, or attempting any service or repair activity. The failure to follow this warning can cause death or personal injury.

⚠WARNING

PERSONAL INJURY.

The ink, make-up fluid and cleaning solution are irritating to the eyes and respiratory system. To prevent personal injury when handling these substances:

- Always wear protective clothing and rubber gloves.
- Always wear goggles with side-shields or a face mask. It is also advisable to wear safety glasses when carrying out maintenance.
- Apply barrier hand cream before handling ink.
- If ink or make-up or cleaning solution contaminates the skin, wash immediately with soap water. DO NOT use washdown or solvent to clean ink stains from the skin.
- If cleaning solution contaminates the skin, rinse off with running water for at least 15 minutes.

4.1 Tools and Supplies

Tools

Part Number	Description
239534	Torx Screwdriver T6
239540	Hex Screwdriver 1.27mm
239543	Hex Screwdriver 3mm
5260001112	Tubing Cutters
5260001115	Tubing Pliers
234710	Tool Bag
234632	USB Stick

Table 4-1: Service Tool Kit

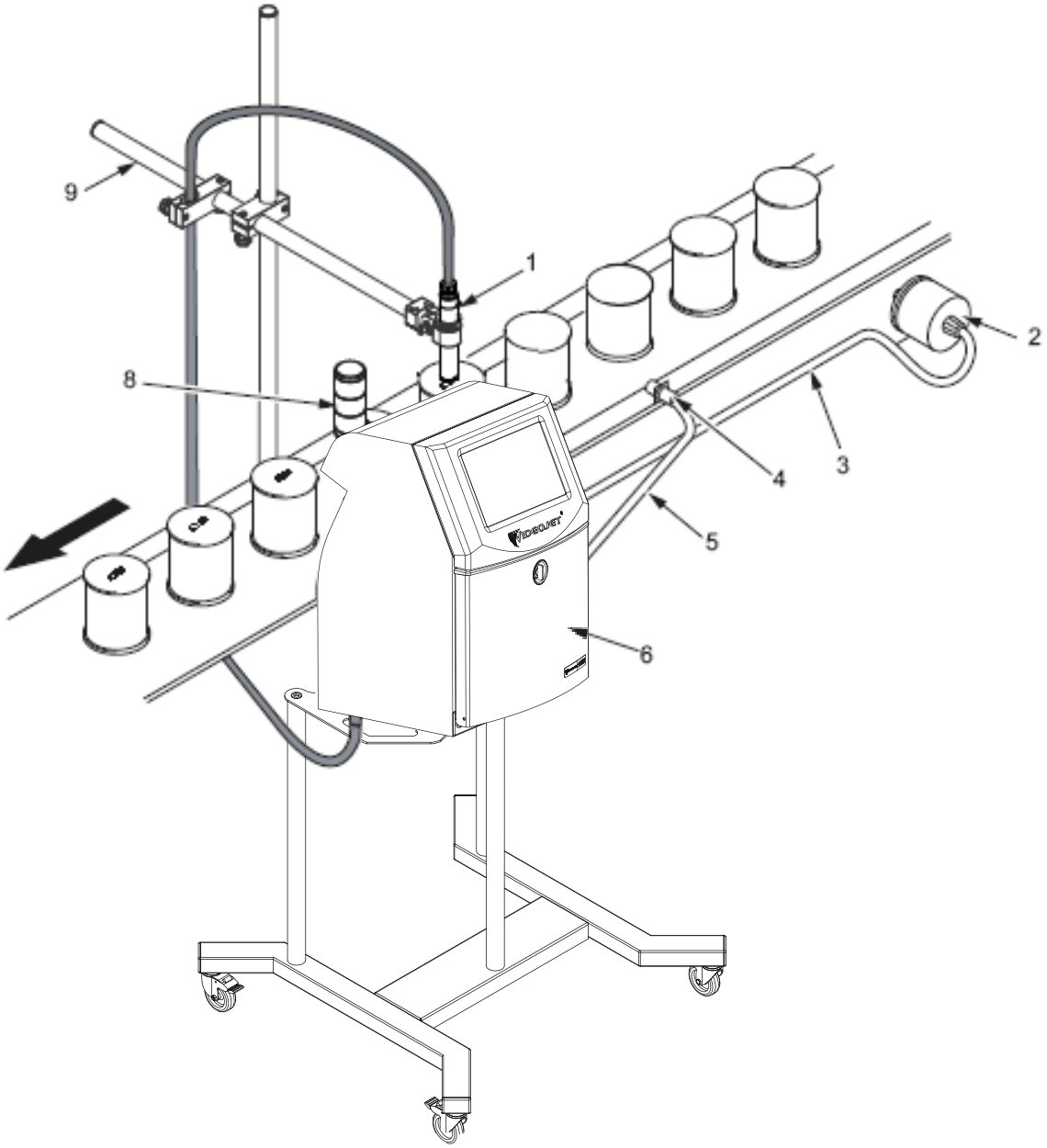
Supplies

Supplies Description	Quantity
Ink Cartridge	2
Make-up fluid cartridge	2
Wash bottle	1
Wash solution	1
Gloves	
Tissue	

Table 4-2: Supplies

4.2 Typical Production Line

A typical printer installation is shown in Figure 4-1, where the printer (item 6) is mounted on a printer stand (item 7). The printhead (item 1) is configured to print vertically with the help of a clamp and bracket assembly. A stack light (item 8) is fitted to the printer.



1. Printhead
2. Shaft Encoder
3. Shaft Encoder Cable
4. Print Trigger
5. Print Trigger Cable
6. Printer
7. Printer Stand
8. Stack light
9. Printhead Stand

Figure 4-1: Typical Production Line Installation

4.3 Unpack and Inspect the Printer

1. Make sure that the packaging is not damaged. If the packaging is damaged, contact Videojet Technologies Inc.
2. Remove the printer from the shipping box and place it on a flat surface or on a bench. Make sure that all the parts listed in the packing list are present in the box. If any part is missing, contact Videojet Technologies Inc.
3. Make sure that there are no damaged parts. If any part is damaged, contact Videojet Technologies Inc. to order a new part.

4.4 Commission the Printer

This section describes the tasks that a user must perform to commission the printer.

4.4.1 Inspect the Ink System

1. Place the printer on a level surface or on a bench.

   Note: *The printer can be mounted on two types of stands: mobile printer stand or the wall-mounting assembly. Refer to the respective installation instructions to install the printer on a stand.*

⚠ CAUTION

EQUIPMENT DAMAGE.
To perform the inspection procedure, make sure that the printer is placed on a level surface or on a bench otherwise the printer may get damaged.

⚠ CAUTION

EQUIPMENT DAMAGE.
The printer should be placed directly on a flat or solid surface, or bolted to a Videojet supplied stand. In either case the printer must not be operated when tilted. Always keep the printer upright on flat surface.

2. Rotate the vertical position knob in the counter-clockwise direction and unlock the door. Open the ink compartment door (see Figure 4-2).

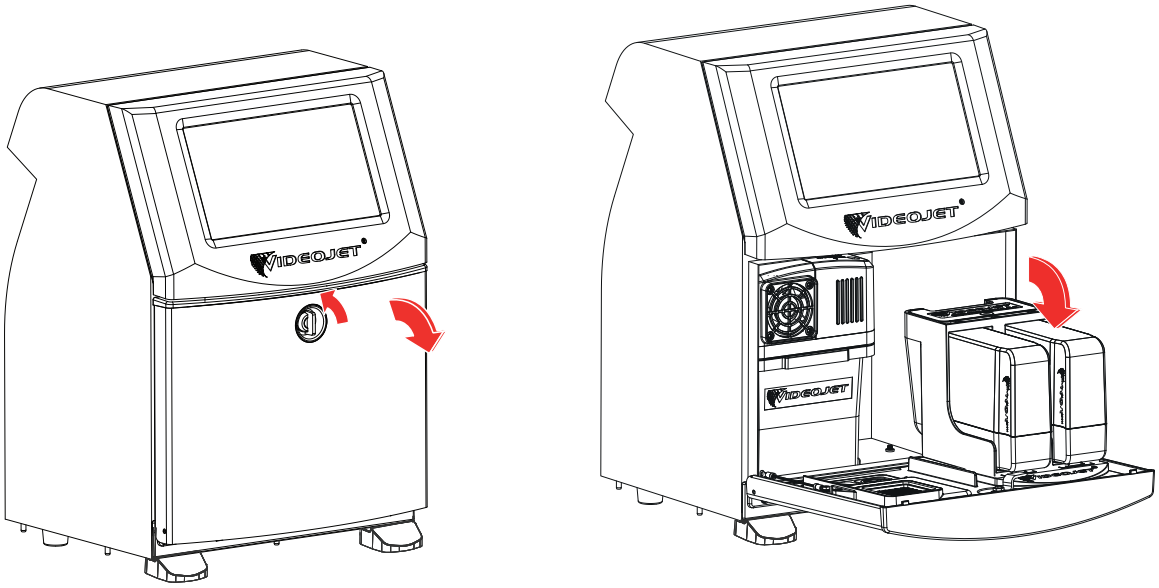
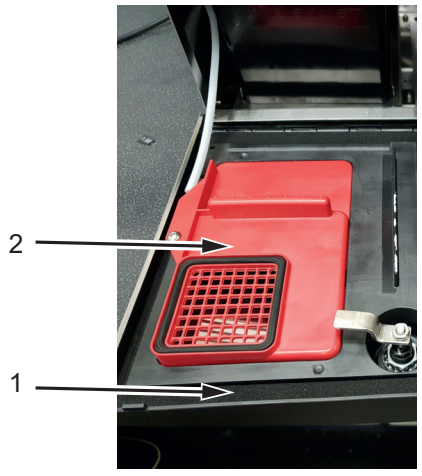


Figure 4-2: Ink Compartment Door

3. Remove and discard the internal packaging materials.
4. Make sure that the air filter casing is intact and mounted correctly within the frame on the ink compartment door as shown in Figure 4-3.



1. Ink Compartment Door
2. Air Filter Cover

Figure 4-3: Air Filter Cover

5. Remove the screw that secures the filter cover to the ink compartment door. Carefully remove the filter cover. Retain the screw and filter cover for later use.
6. Carefully pull and lift the ink system from the ink compartment and place it on a flat surface beside the printer.

7. Inspect the ink system for any disconnected tubes or cables. Make sure all the tubes are connected to the ink system manifold. Refer to Table 4-3 for the connection.

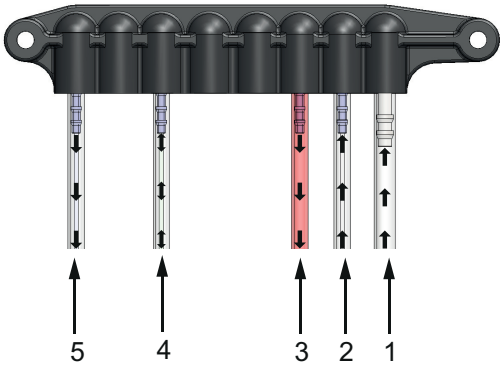
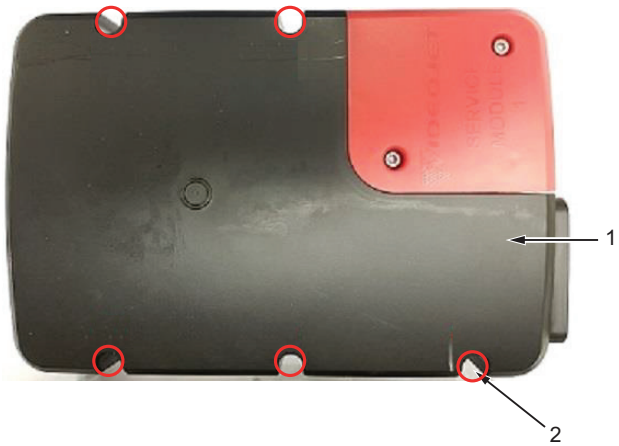


Figure 4-4: Ink System Manifold Connections

Item No.	Connections	Tube	Description
1	Ink Return	Clear Large	Ink flows into the mixer tank from printhead.
2	Ink Addition	Black Stripe	Ink flows into the mixer tank from cartridge.
3	Ink Feed	Red Stripe	Fluid flows from mixer tank to printhead.
4	Make-up Feed/Return	Green Stripe	Make-up fluid flows between make-up cartridge and make-up tank.
5	Vent to cabinet	Blue Stripe	Breather tube to cabinet

Table 4-3: Ink System Connections

8. Remove the five screws that secure the ink system cover (item 1, Figure 4-5) to the ink system.



1. Ink System Cover
2. Screws (x5)

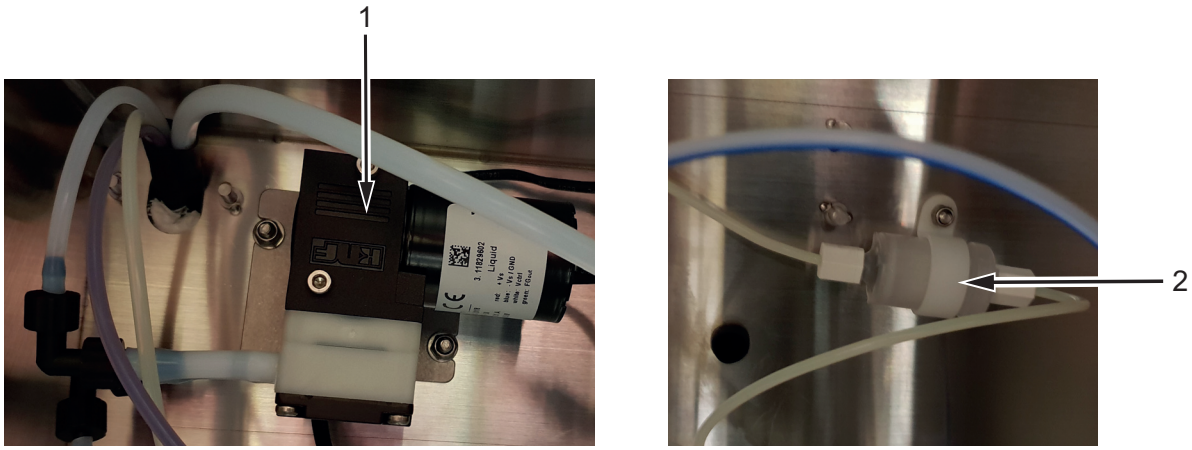
Figure 4-5: Ink System Cover Removal

9. Carefully lift the ink system cover and disconnect the fan cable (item 3, Figure 4-6) connected between ink system fan and IMB. Remove the ink system cover.

1. Ink System Cover
2. IMB
3. Fan Cable

Figure 4-6: Ink System Fan Cable Removal

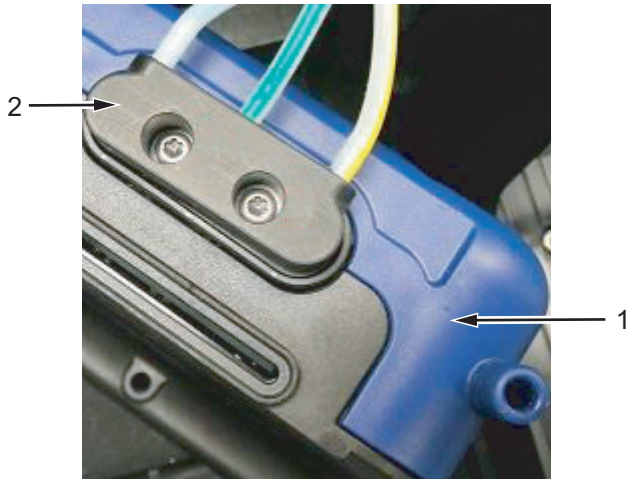
10. Access the viscometer in the ink system and record the number on the viscometer assembly.
11. Reconnect the cable to the IMB and secure the ink system cover to the ink system.
12. Verify that tubing, gutter pump (item 1, Figure 4-7) and the flush filter (item 2) are clear of ink.



1. Gutter Pump
2. Flush Filter

Figure 4-7: Ink Compartment Components

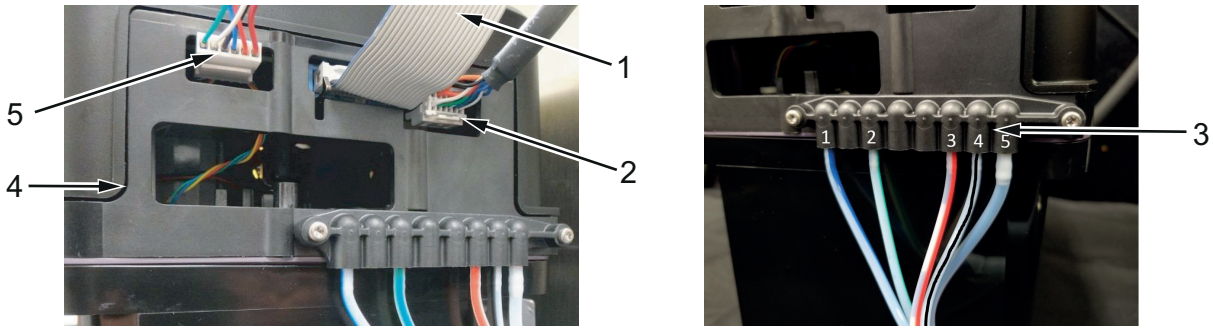
13. Make sure all the tubes are connected to the tube manifold at the bottom of the solvent control module.



1. Solvent Control Module
2. Tube Manifold

Figure 4-8: Solvent Control Module - Tube Manifold

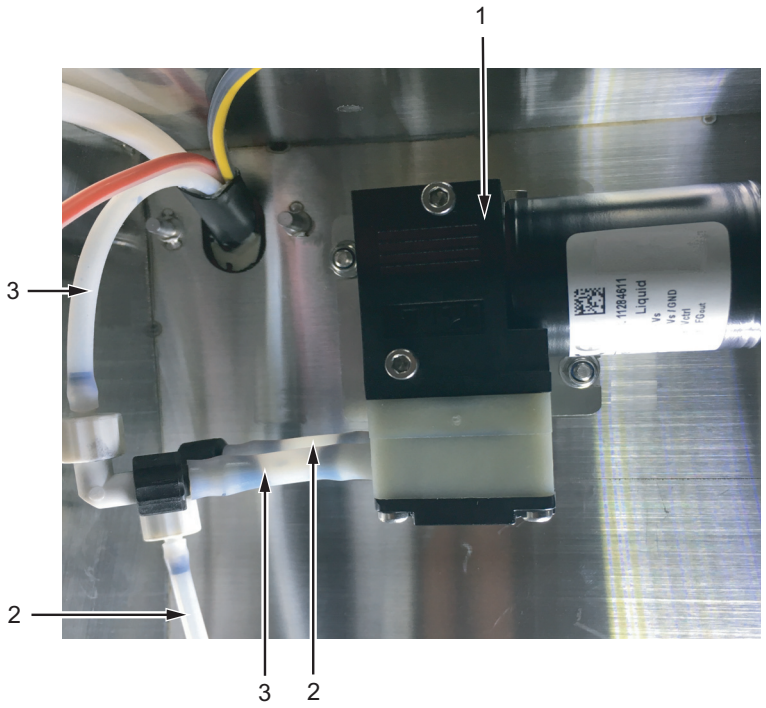
14. Make sure all the cables and tubes are connected to the ink system (see Figure 4-9).



1. Ribbon Cable
2. IMB to MCB Cable
3. Ink System Tubing
4. Ink System
5. Positive Air Pump Harness

Figure 4-9: Ink System Cable Connections

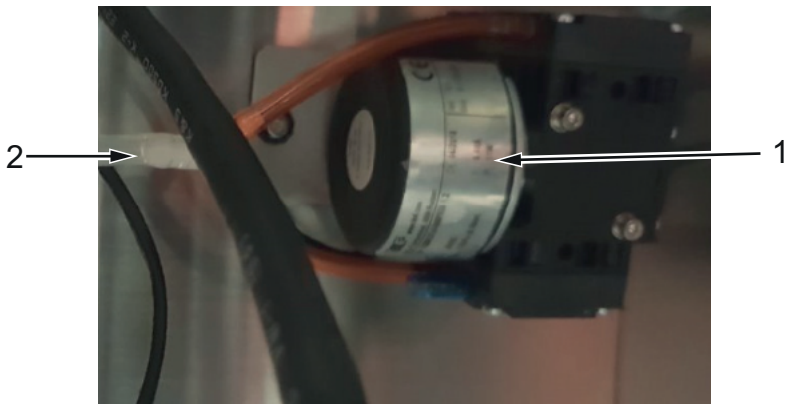
15. Make sure that the inlet and outlet pipes are connected to the gutter pump (see Figure 4-10).



1. Gutter Pump
2. Outlet Pipe (to Ink System)
3. Inlet Pipe (from Umbilical)

Figure 4-10: Gutter Pump Connections

16. For IP65 only: Make sure the positive air pump is properly mounted in the ink compartment and the tubes are connected and plugged in properly.



1. Positive Air Pump
2. Silicon Tube

Figure 4-11: Positive Air Pump

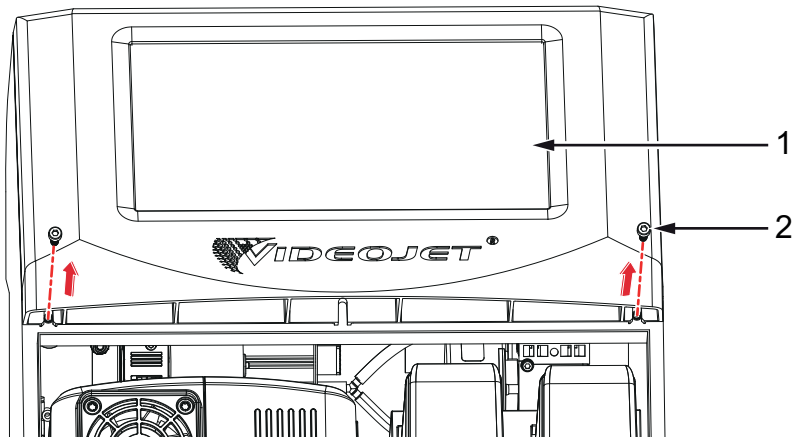
17. Carefully place the ink system into the ink compartment.

18. Replace the retained filter cover on the ink compartment door and secure it using the screw.

19. Make sure the gasket on the ink compartment door is fitted correctly. Check the alignment of the gasket while opening and closing the door. Make sure the gasket is compressed evenly between the door and the cabinet while closing the door.

4.4.2 Inspect the Electronics System

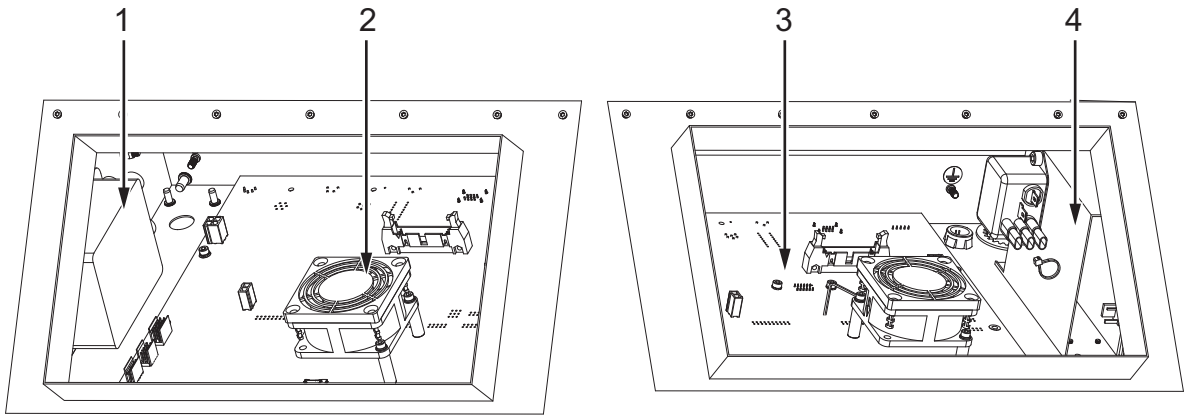
20. Remove the two screws at the bottom of the touch screen display assembly that secure the touch screen display to the cabinet (Figure 4-12).



1. Touch Screen Display Assembly
2. M4 Screws (x2)

Figure 4-12: Touch Screen Display

21. Raise the touch screen display to access the electronics compartment. Make sure that all the electrical cables are fitted and routed correctly.



1. Electric High Tension (EHT)
2. Electronic Compartment Fan Assembly
3. Main Control Board (MCB)
4. Power Supply Unit

Figure 4-13: Electronics Compartment

22. Record the MCB revision number printed on the MCB.

23. Lower the touch screen display and secure it to the cabinet using the two screws. Insert the two display sealing plugs in its position on the touch screen display.

24. Close the ink compartment door and rotate the knob in the clockwise direction to lock the ink compartment door.

4.4.3 Log into UI

25. Connect the printer to the AC power supply and turn on the printer. Do the following tasks to turn on the printer:

    a. Make sure that the mains power supply cable is connected.

    b. Press the main power switch on the back side of the printer.

    c. The printer will start up and upon completion the Home screen is displayed. The status bar of the printer displays SHUTDOWN.

26. The Home screen appears on the display as shown in Figure 4-14.

1. Printer Status Bar
2. Start /Stop Jets Button
3. Message Preview
4. Consumables Information
5. Performance Information
6. Login/Logout Button
7. Tools Button
8. Adjust Button
9. Jobs Button
10. Home Button

Figure 4-14: Home Screen

27. Log into the printer by selecting the required role and the password.

28. Open the ink compartment door to confirm the ink fan is running.

29. Navigate to *Tools* > *Printer Settings* > *System Information* and record the following:

- Product Name
- Product Version
- Application
- Common Library
- Qt Build
- Qt Runtime
- OS Version
- Build System
- Boot Loader
- Serial Number
- FPGA (MCB)
- µC (IMB)
- µC (Printhead PCB)
- IMB
- Service Module 1
- Solvent Control Module

30. Navigate to *Tools* > *Printer Settings* > *Printhead Control* and record the following:

- Print Height Adjust
- Charge Scale
- Phase Charge

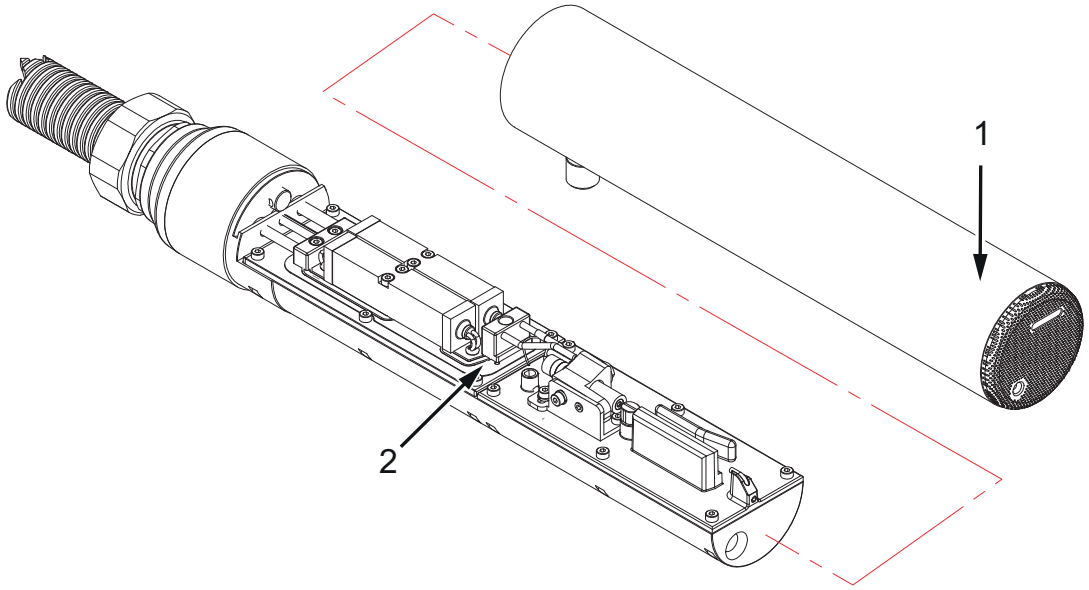
31. Navigate to *Tools* > *Diagnostics* > *Ink System* > *Ink* and confirm that Mixer Tank (ml) is less than 20 ml.

32. Navigate to *Tools* > *Diagnostics* > *Ink System* > *Make-up* and confirm that Make-up Tank (ml) is less than 20 ml.

33. Navigate to *Tools* > *Diagnostics* > *Temperature* > *Ink* and confirm that Ink Temp (°C) is equal to Ambient Temp (°C).

4.4.4 Inspect the Printhead

34. Remove the printhead cover (see Figure 4-15) and inspect for any loose fittings or tubing. Verify that the printhead is clean and dry.



1. Printhead Cover
2. Printhead Control Module

Figure 4-15: Printhead Cover Removed (IP65)

35. Remove the nozzle orifice protector.

36. Check the distance between the nozzle and the charge electrode.

Microns	Description
60 Microns	1 mm
70 Microns	2.3 mm

Table 4-4: Ink System Connections

37. Visually check the charge electrode gap and ensure that the gap ranges from 0.575 mm to 0.675 mm.

38. Replace the printhead cover and position the printhead over the service tray.

⚠WARNING

PERSONAL INJURY.
Always bond conductive equipment together with approved cables to maintain them at the same potential and minimize static discharge. For example, printhead to metal service tray.

39. Fit the Ink cartridge and the Make-up cartridge into the slots. Navigate to *Tools* > *Diagnostics* > *Ink System* > *Ink* and press *Update* button to program the Service Module 1 and IMB with the required ink data.

4.4.5 Production Setup

Note: *Elevated login is required to access Production Setup screen.*

40. Touch the  button from the Tools screen to access the Engineering screen.

41. Navigate to *Production Setup* (Figure 4-16) and set the required information.

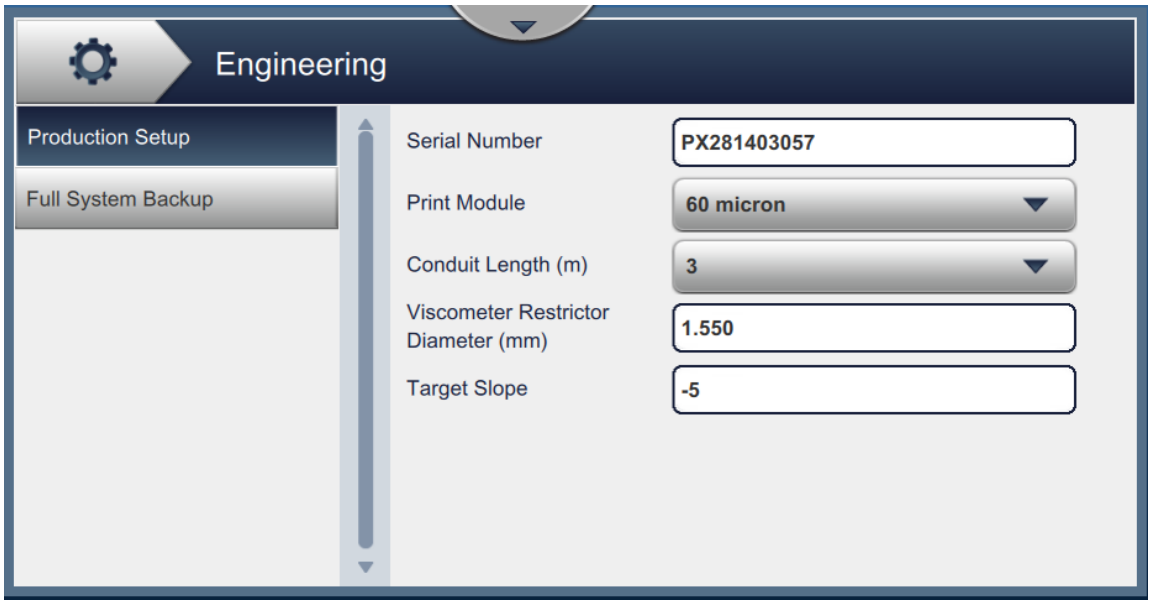


Figure 4-16: Production Setup

42. Ensure that the Serial Number entered is correct.

43. Ensure that the Print Module is correctly set. The nozzle sizes available are:

- 60 micron
- 70 micron

44. Ensure that the Conduit Length is correctly set. The conduit length options available are:

- 3 m
- 6 m

45. Ensure that the Viscometer Restrictor Diameter matches the number on the viscometer assembly in the ink system.

4.4.6 Installation User Interface

Start the operation and follow each step as required until complete.

46. Touch the  button from the Tools screen. The Installation screen opens up in the *Phase 1* (Figure 4-17). Set the required information as shown in Table 4-5.

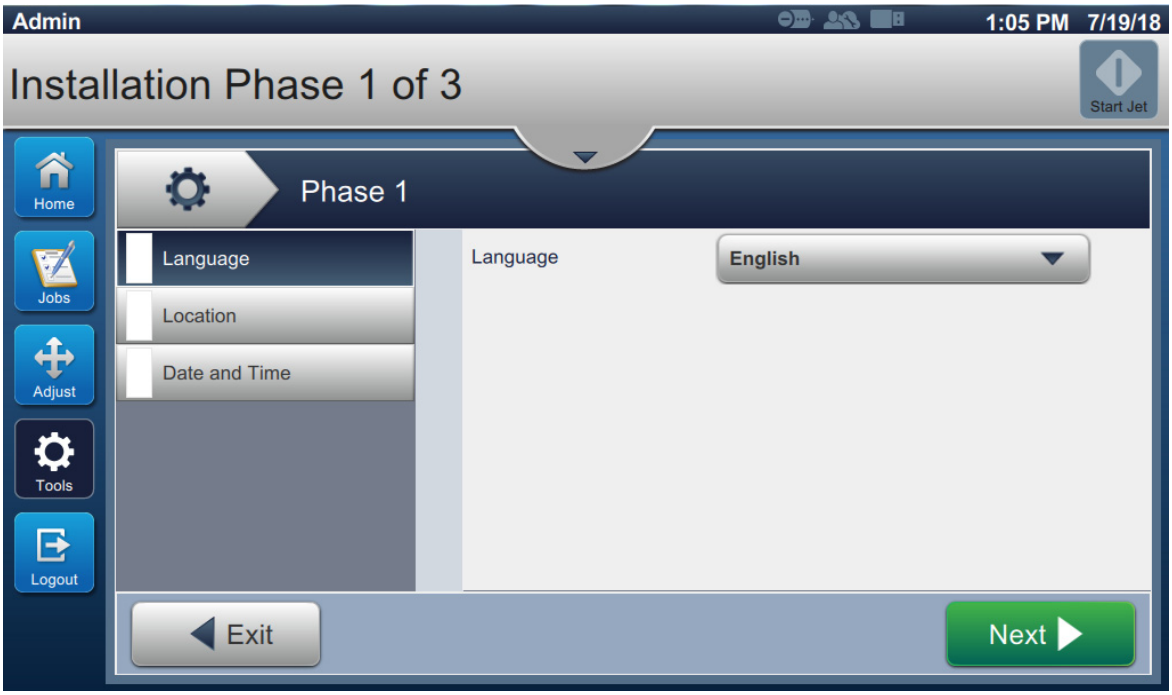


Figure 4-17: Installation phase 1

Sub Menu	Functions
Language 	• Language - Touch the drop down list to select the language. Once complete, touch the *Next* button to continue.

Table 4-5: Installation Phase 1

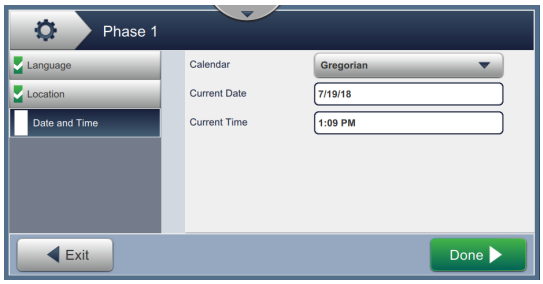
Sub Menu	Functions
Location 	• Country - Touch the drop down list to select the country. • Unit of Measure - Touch either *Metric* or *Imperial* to set measurement unit. • Keypad Configuration - Touch the Keypad Configuration to select the default keypad from available keypads (Languages). Touch the *Next* button to save the changes and continue.
Date and Time 	• Calendar - Touch the drop down list to select the Gregorian or Hijra type of calendar. • Current Date - Displays the current date. • Current Time - Displays the current time. Touch the *Done* button to save the changes and continue.

Table 4-5: Installation Phase 1

47. The installation procedure will move to phase 2 on the completion of phase 1.

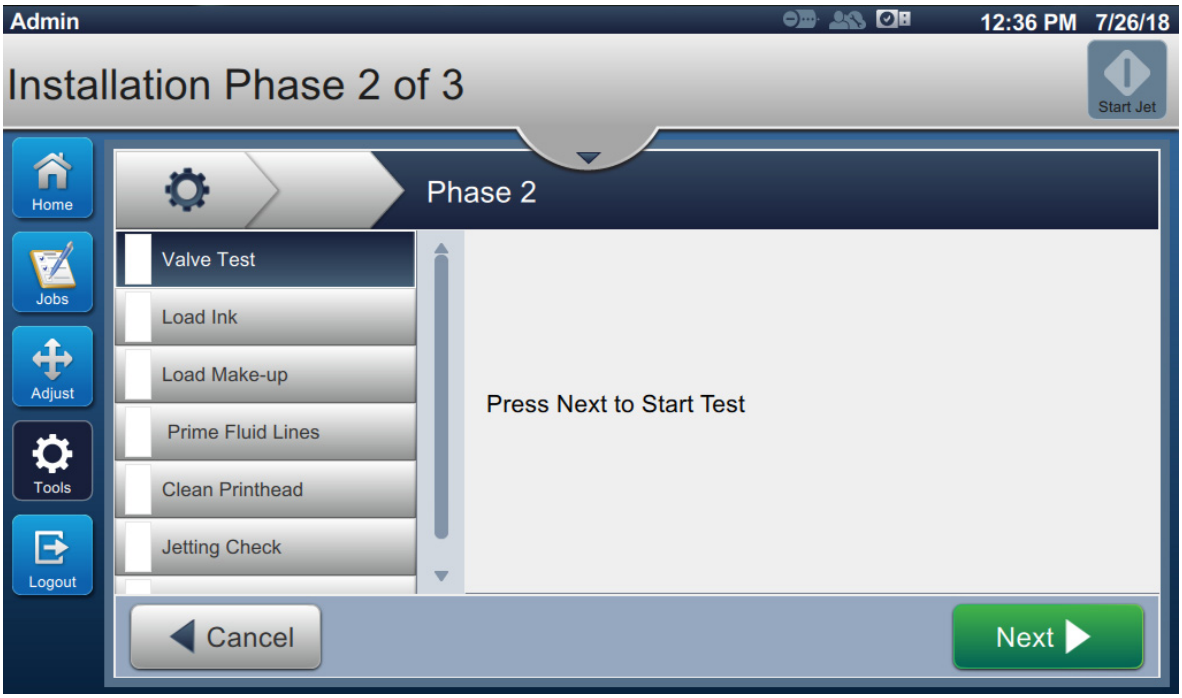


Figure 4-18: Installation-Phase 2

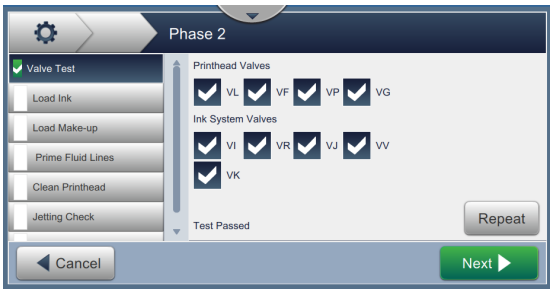
Sub Menu	Functions
Valve Test 	Touch the *Next* button to initiate the valve test. All the valves are tested for their functionality and check box selected against each valve when test is completed. Touch the *Next* button to continue. ***Note**: Touch the Repeat button if the test needs to be re-run.*

Table 4-6: Installation Phase 2

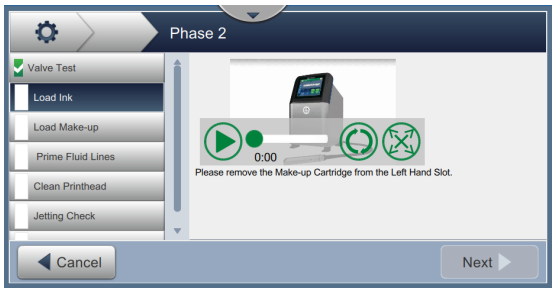
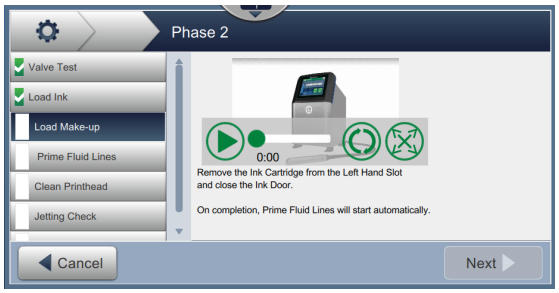
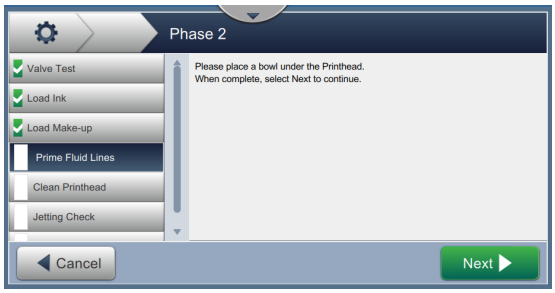
Sub Menu	Functions
Load Ink 	Remove the make-up cartridge from left hand slot and install the ink cartridge. ***Note:*** *Load Make-up will be automatically initiated upon completion of Load Ink.*
Load Make-up 	Remove the ink cartridge from left hand slot and install the make-up cartridge.
Prime Fluid Lines 	The Prime Fluid Lines operation is ready to start, please ensure the bowl is under the printhead and touch *Next* to continue.

Table 4-6: Installation Phase 2

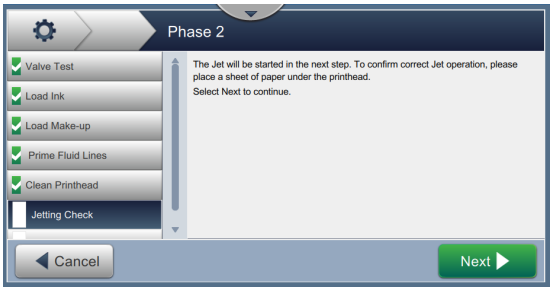
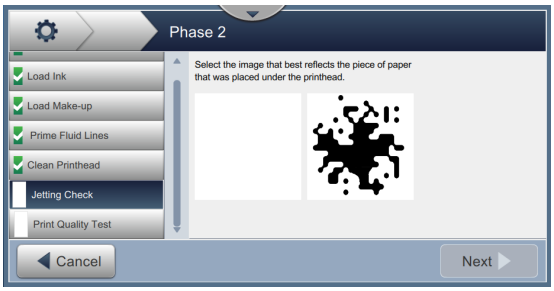
Sub Menu	Functions
Clean Printhead 	Clean the printhead following the video instructions and touch the *Next* button to continue.
Jetting Check 	Jet is started to confirm correct jet operation, a sheet of paper is required to be placed under the printhead. Touch the *Next* button when in place.
Jetting Check 	Select the image on the UI that most closely reflects the image on the sheet of paper.

Table 4-6: Installation Phase 2

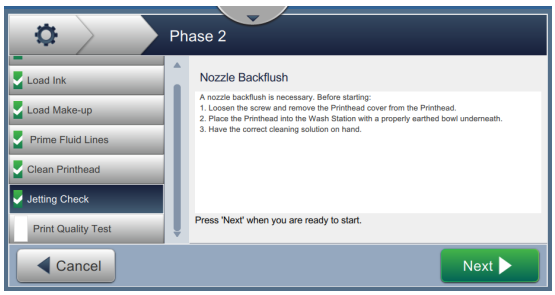
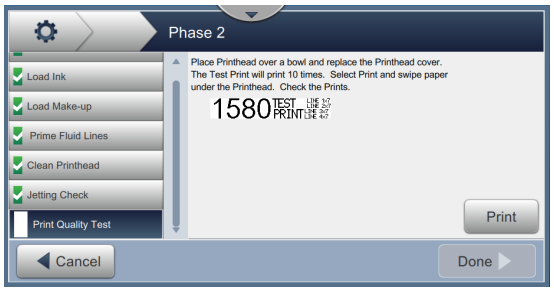
Sub Menu	Functions
Jetting Check 	If the selected image is not acceptable, a Nozzle Backflush needs to be performed. Follow the instructions to perform Nozzle Backflush. After the Nozzle Backflush is complete, the check will be repeated. Once the jetting check is successful, the operation will continue.
Print Quality Test 	Touch the *Print* button to start the test print. Follow the instructions to complete the test print. Review the prints for errors. Once complete, touch the *Done* button to continue to phase 3 installation.

Table 4-6: Installation Phase 2

48. After completing the installation phase 2, user interface proceeds to phase 3 as shown in Figure 4-19. Set the required information as shown in Table 4-7.

Figure 4-19: Installation-Phase 3

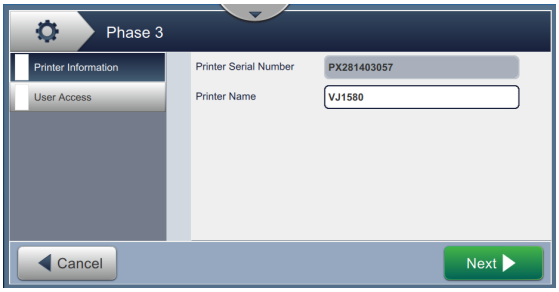
Sub Menu	Functions
Printer Information 	Confirm the Printer Information shown is correct. The Printer Serial Number is displayed along with the default Printer Name. To enter a unique printer name, touch the textbox to enter the required name and touch *Accept* button to save. Touch the *Next* button to continue.

Table 4-7: Installation Phase 3

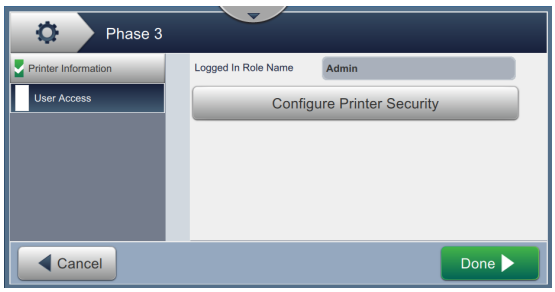
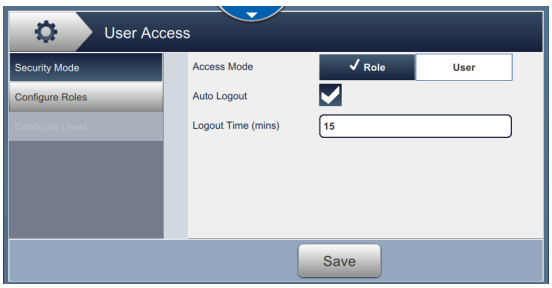
Sub Menu	Functions
	Displays the logged in role name. Touch the *Configure Printer Security* button to set the user access settings. For more information on creating a new user/role, refer to "Configuring User Access Mode" on page 4-40. Touch the *Done* button to complete the installation.
	

Table 4-7: Installation Phase 3

4.4.7 Nozzle Adjustment

49. Check the position of the ink stream in the gutter. The ink stream should be horizontally centered, and 2 to 3 stream widths below the top rim of the gutter (vertically).

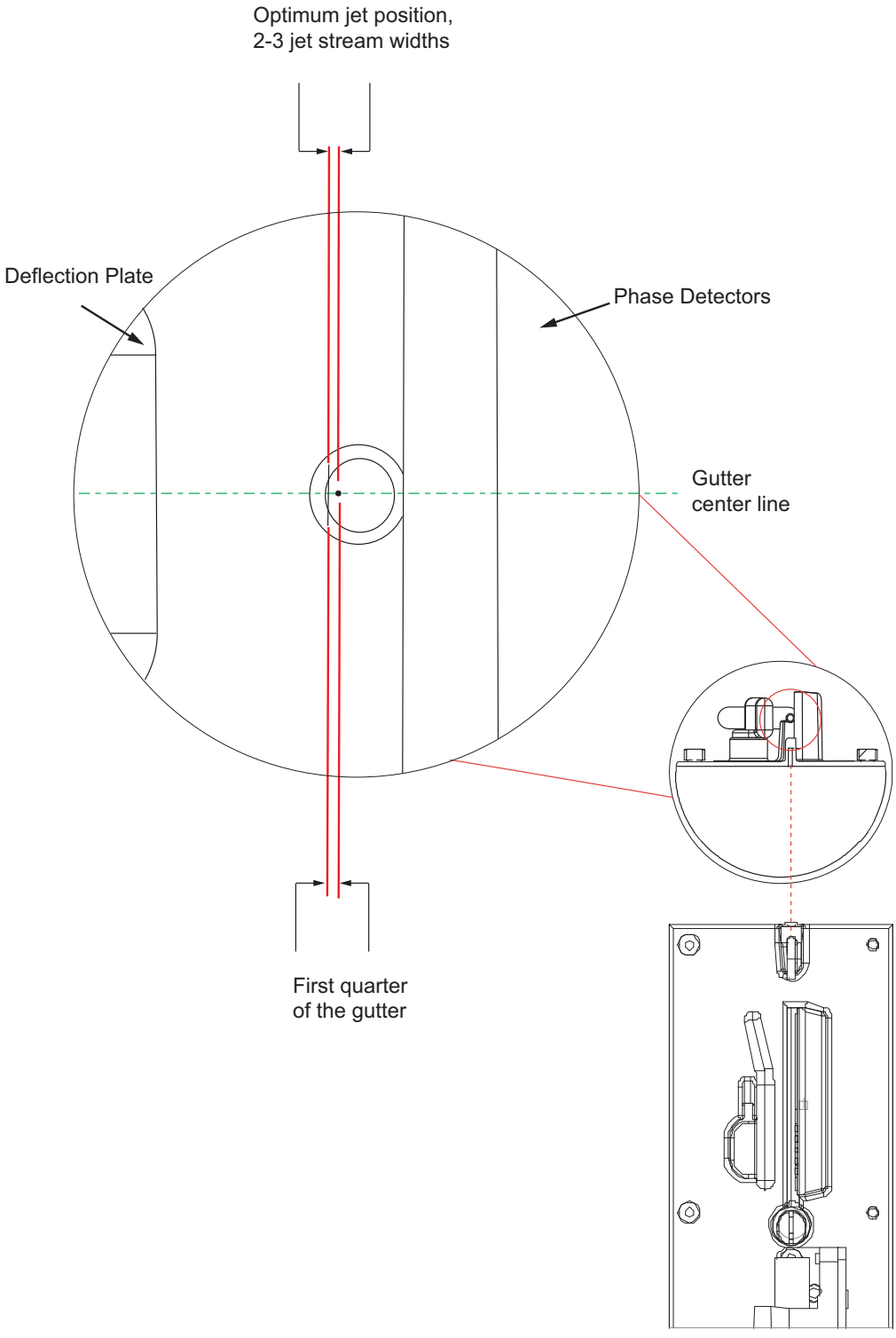
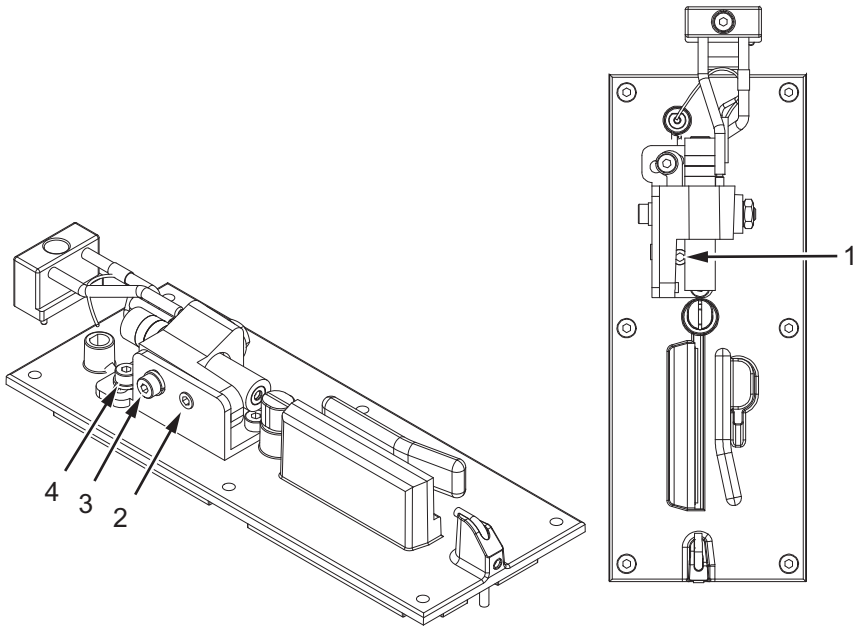


Figure 4-20: Ink Stream Alignment



1. Vertical Adjustment Screw
2. Horizontal Adjustment Screw
3. Horizontal Locking Screw
4. Vertical Locking Screw

Figure 4-21: Adjustment

50. If the jet alignment is incorrect, then stop the jet and perform a nozzle backflush (Refer to "Maintenance User Interface" on page 8-2).

51. If jet alignment remains incorrect following flushing, then perform an ink stream alignment. Do the following tasks to perform the ink stream alignment:

a. Wait 10 minutes to allow the ink jet to stabilize.

b. Use an eye loupe to check that the stream is centered in the Charge Tunnel.

c. Check the drop break-off. A good break-off is within the Charge Tunnel with teardrop-shaped drops with tails pointing toward the nozzle, few if any satellites.

d. If break-off is marginal, then Navigate to *Tools* > *Printer Settings* > *Printhead Control* and confirm that Automatic Modulation is enabled.

52. Navigate to *Tools* > *Diagnostics* > *Diagnostics Data*. The Diagnostics Data screen opens as shown in Figure 4-22.

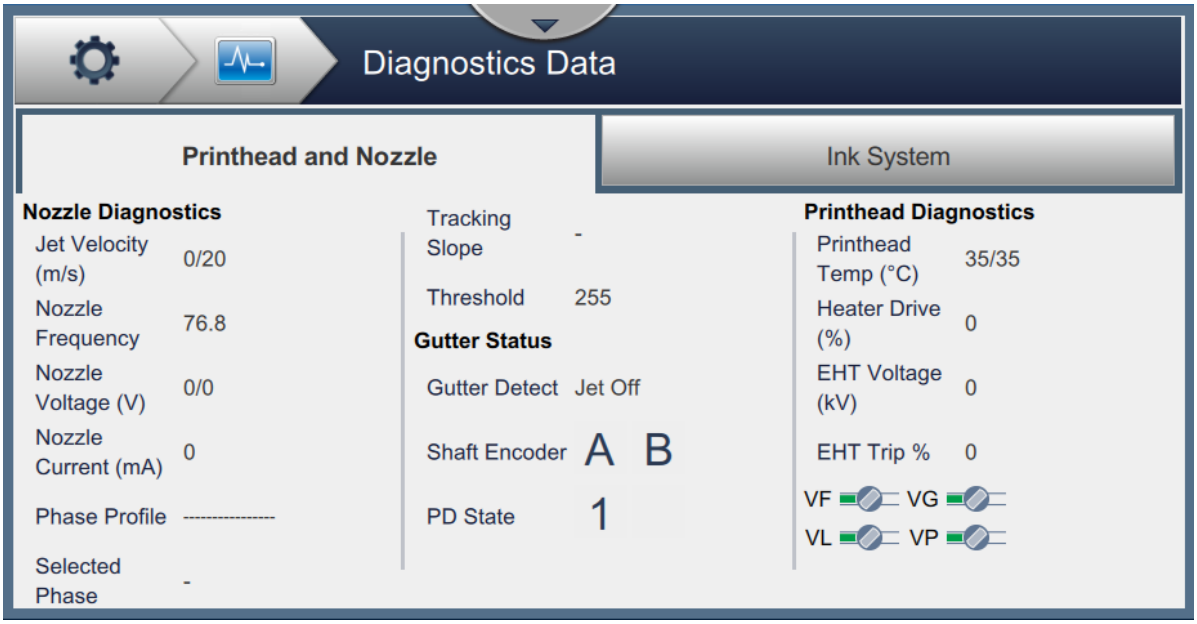


Figure 4-22: Diagnostics Data Screen

53. Record the following data:

Printhead and Nozzle:

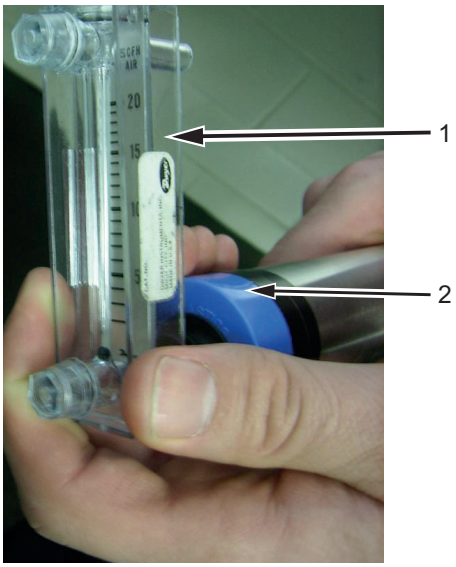
- Phase Profile
- Jet velocity
- Nozzle Voltage
- Printhead Temperature

Ink System:

- Ink Viscosity
- Ink Temperature

54. Verify that all error conditions have now been cleared.

55. Install the printhead cover. Use the positive air flow meter and cap and verify that the positive air flow rates out of the printhead slot is between 12 and 16 scfh. Record the measured positive air flow rate.



1. Airflow Meter
2. Printhead Cap

Figure 4-23: Air Flow Meter

56. Take a print sample by performing the following steps:

Note: *Ensure that the hydraulics and electronics compartments are closed and sealed.*

Note: *Ensure that the printhead is properly grounded to a service tray.*

a. Create a 5x7 twin-line message.

b. Create a new line setup for continuous printing (Navigate to *Tools* > *Line Setup*) with the following parameters:

Print Mode	Continuous
Print Interval	Time
Interval Value (ms)	100
Product Detector Triggered	NO
Line Speed	Manual Setup

Table 4-8: Continuous Line Setup

c. Load the message and select Print Start. Take a print sample.

The commission procedure of the printer is complete.

4.5 Create a Line Setup

Refer to Chapter "User Interface" in the Operator Manual for more information.

1. Touch the  button from the Tools screen. The Line Setup screen opens.
2. Set the Product Direction, Printhead Orientation and Print Mode as required by the production line.
3. Navigate to Print Trigger option. Set the Printhead throw distance (mm) from 5 mm to 15 mm. The optimum throw distance is 12 mm.

   Note: *When the throw distance is increased, the print delay may also need to be increased in order to account for the additional time for ink to reach product.*

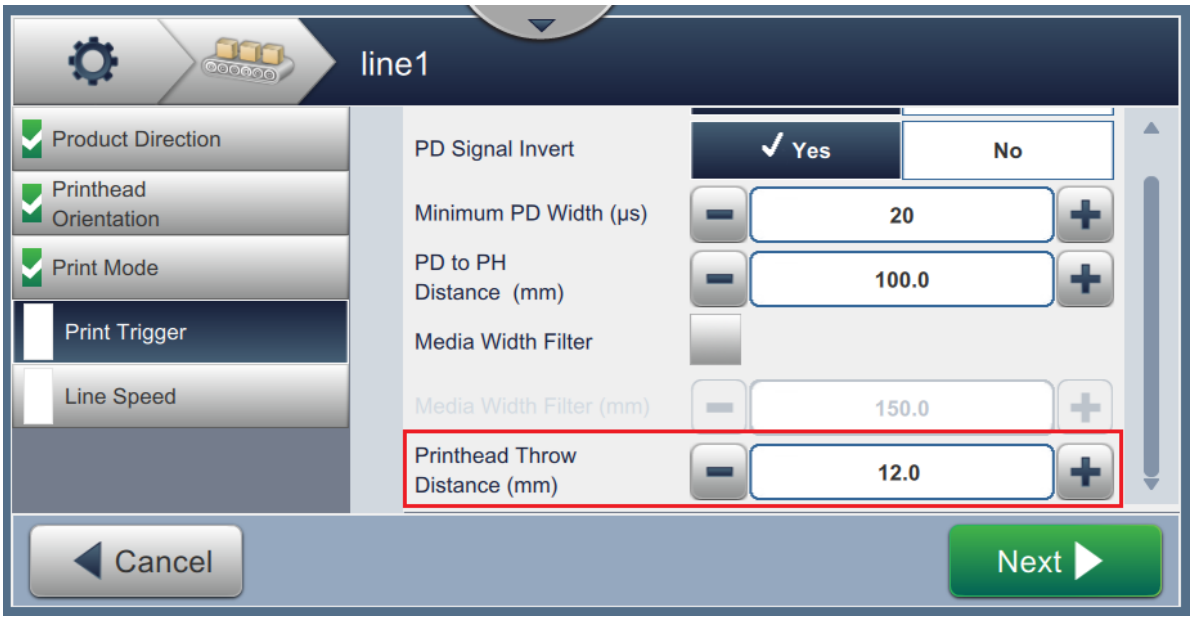


Figure 4-24: Printhead Throw Distance

4.5.1 Line Speed

There are three options available for the line speed:

- Manual Setup - This is used when the line speed is constant.
- Measured by Shaft Encoder - This is used when the product is transported on a conveyor or transport. The shaft encoder must move directly in relation to the movement of the conveyor to work properly.
- Measured by Product Size/Time - This is used when there is no way of tracking the production line movement. This option uses a very accurate detector to sense the leading and trail edge of each product and adjust the width of the code for every product.

4.5.1.1 Manual Setup (Internal Encoding)

An internal clock sets the stroke rate to a constant pace.

Do the following tasks to set Line Speed to Manual Setup:

1. Select the Manual Setup option and touch the Next button. Enter the line speed in m/min and touch the Done button as shown in Figure 4-25.

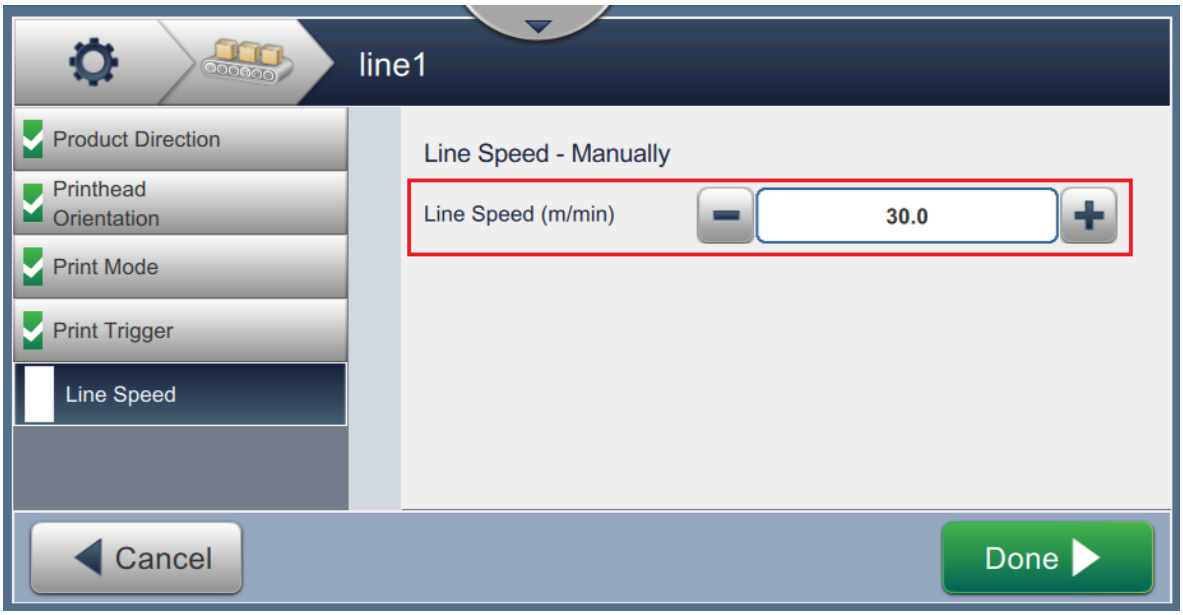


Figure 4-25: Line Speed - Manual

2. Ensure the following information is set for Print Trigger option:
   - Minimum PD Width (µs)
   - Media Width Filter (mm)

   Note: *Media width filtering sets the product length in the printer and allows the printer to ignore the product detect signal whilst the product is in front of the printer. To enable media width filtering, navigate to Tools > Line Setup > Print Trigger> Media Width Filter.*

4.5.1.2 Measured by Shaft Encoder (External Encoding)

If the conveyor speed varies, an external shaft encoder must be fitted in order to maintain constant message width. If the product moves, the encoder turns and if the product stops, the encoder stops.

Note: *Make sure that the movement of the product is directly related to the movement of the conveyor.*

Do the following tasks to setup an external shaft encoder:

1. Turn off the printer.
2. Connect the shaft encoder cable to the shaft encoder connector. Figure 4-26 shows the shaft encoder connector on the Standard IO.

   Note: *The user can configure the printer to accept a two-phased encoder input (quadrature).*

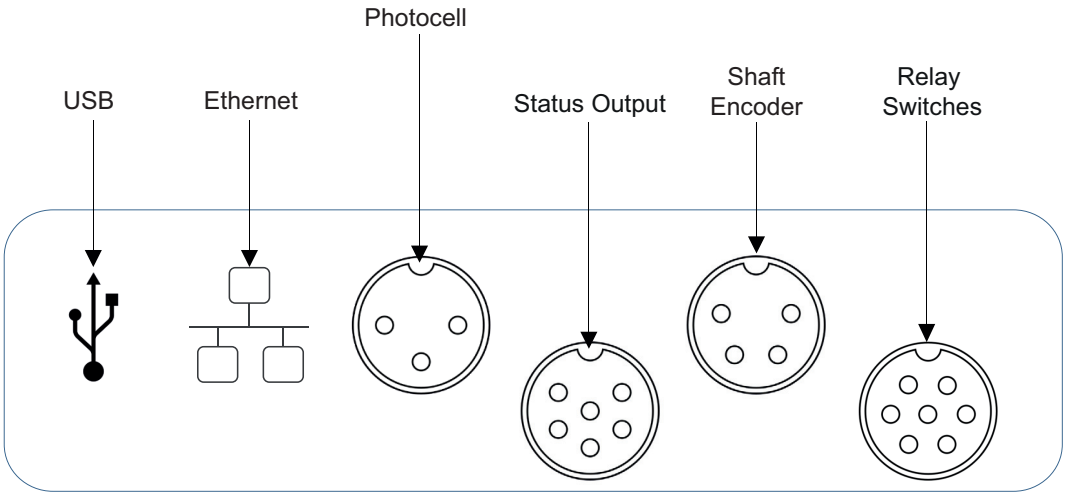


Figure 4-26: Standard IO

3. Turn on the printer and navigate to *Tools* > *Line Setup* > *Line Speed*.

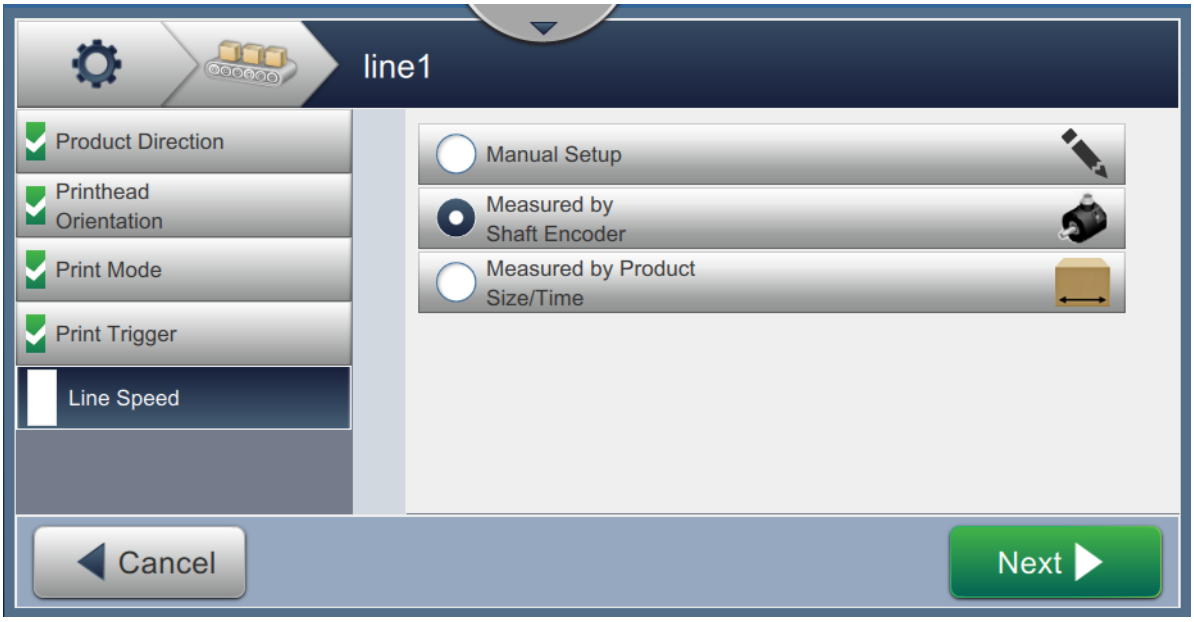


Figure 4-27: Measured by Shaft Encoder

4. Select the Measured by Shaft Encoder option and touch the *Next* button. The shaft encoder setup screen is displayed shown in Figure 4-28.

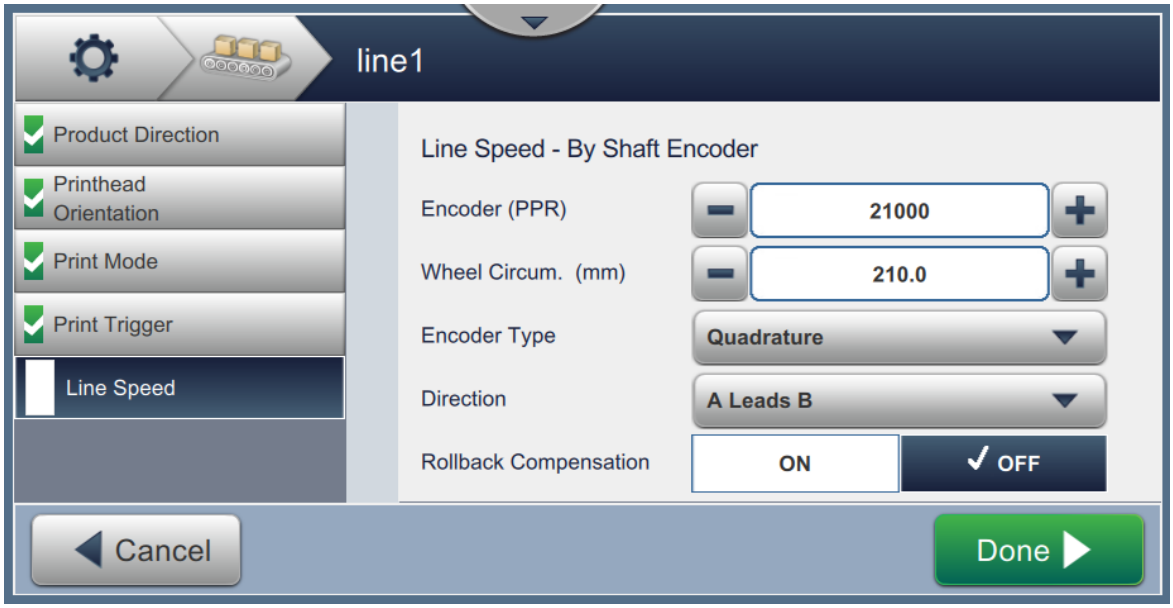


Figure 4-28: Encoder Signal Type

5. Enter the Encoder (PPR) and Wheel Circumference (mm) as shown in Figure 4-28.

6. Select the *Encoder Type* and touch the OK button. Refer Figure 4-29 and Table 4-9 on page 4-31.

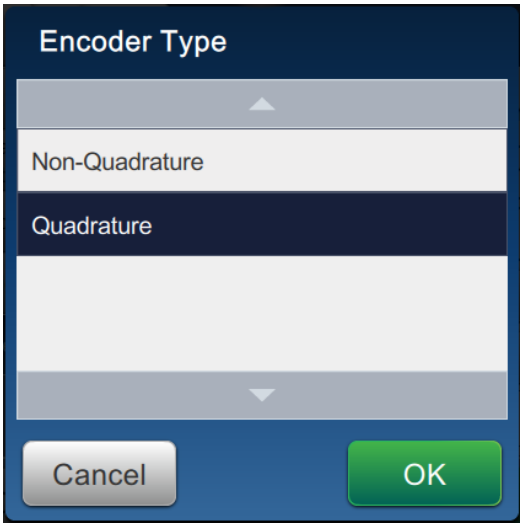


Figure 4-29: Encoder Type

Encoder Type	Description
Non-Quadrature Mode	Single direction No directional monitoring of product Can use single or dual channel encoder
Quadrature Mode	Select Direction of print Monitors direction of product Must use dual channel encoder

Table 4-9: Encoder Type

7. Select the *Direction* and touch the OK button. Refer Figure 4-30 and Table 4-10.

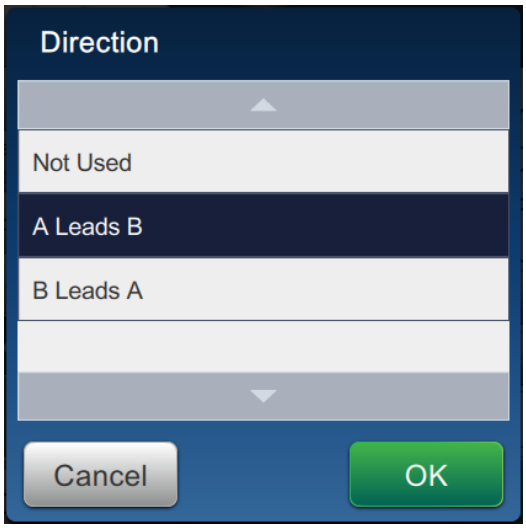


Figure 4-30: Direction

Not Used	No direction
A leads B	Dual channel encoder
B leads A	Dual channel encoder

Table 4-10: Direction Type

8. Make sure the encoder movement is in direct relation to the movement of the product being printed on.
9. Touch the *ON* button to enable the rollback compensation option as shown in Figure 4-28 on page 4-30.
10. Touch the *Done* button.

Refer to "Measured by Shaft Encoder (External Encoding)" on page B-2 for example on setting up shaft encoder.

4.5.1.3 Measured by Product Size/Time (Auto Encoding)

When Measured by Product Size/Time is selected, the signal from the product detector is used to determine the product speed, and code the product at a set stroke rate.

Do the following tasks to set Line Speed to Measured by Product Size/Time:

1. Navigate to *Tools* > *Line Setup* > *Line Speed* > *Measured by Product Size/Time.*

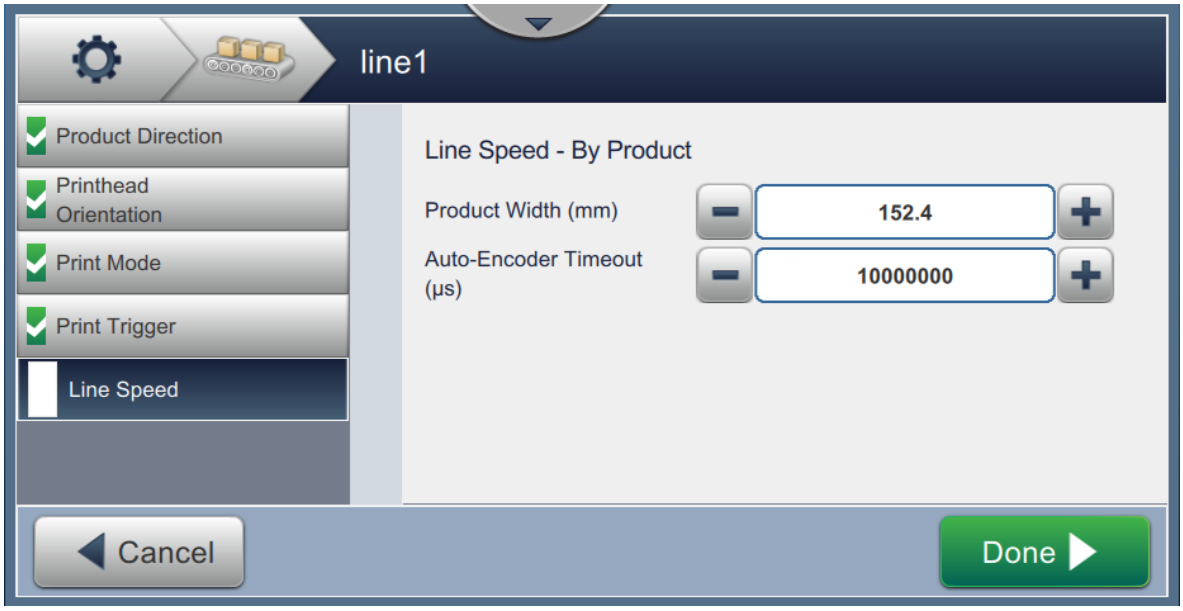


Figure 4-31: Encoder Signal Type

Note: *Measured by Product Size/Time is not viewable if the Print Mode (Tools > Line Setup > Print Mode) is selected as Continuous or Media Width Filtering (Tools > Line Setup > Print Trigger) is enabled.*

2. Enter the Product Width and the Auto Encoder timeout.
3. Touch the *Done* button.

4.6 Install the Print Trigger

Connect the print trigger (item 4, Figure 4-1 on page 4-3) to the standard IO. Print trigger connector pin details are shown in Figure 3-28 on page 3-19.

Do the following tasks to install a print trigger:

1. Turn on the printer.
2. Navigate to *Tools* > *Line Setup* > *Print Trigger* and set the required PD Trigger Edge (see Figure 4-24 on page 4-27).

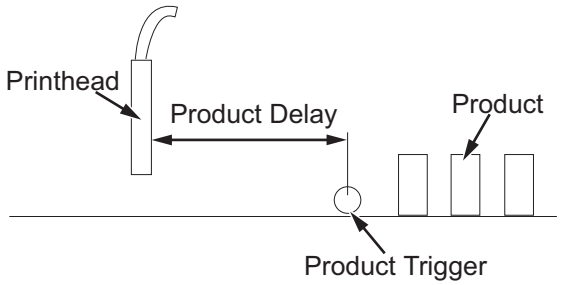


Figure 4-32: Product Delay

Note: *The minimum distance between product detector and printhead must be 44.4 mm (1.75 inches).*

4.7 User Access

The User Access provides options to create, edit and delete different levels of access to the printer.

The functions for each user can be configured as per customers requirements through user interface.

Note: *When Access Mode is selected as Role, the user is not allowed to access the Configure Users tab.*

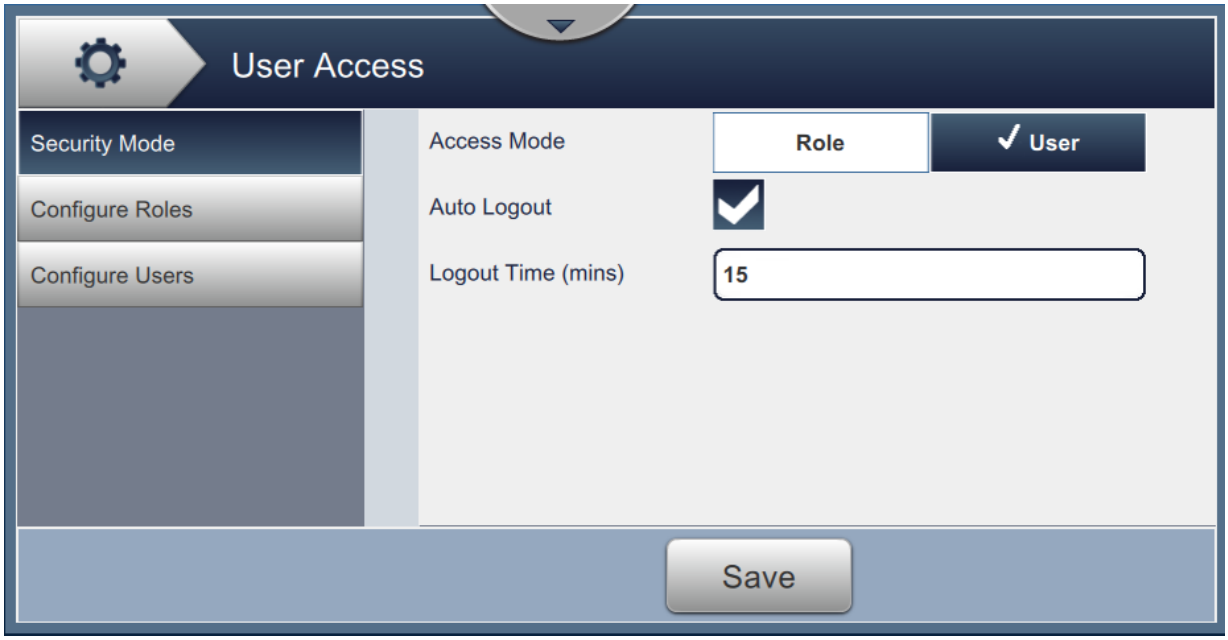


Figure 4-33: User Access Home Screen

Types of access mode provided to the user:

- Role
- User

4.7.1 Configuring Role access mode

Role access mode is provided to different levels of user modes on the roles performed by the user for operating the printer. The user can enable automatic logout option and set the time limit for automatic logout as shown in Figure 4-33 on page 4-34.

1. Touch the *Configure Roles* option to create a new role based access.
2. Touch the + New button to create a new role, the Settings screen for configure roles opens as shown in the Figure 4-34.

Figure 4-34: Role Mode Access Settings

3. Touch the Name text box to enter the name for the new role. The Enter Name screen opens.
4. Enter the required name using utility keypad and touch the Accept button.
5. Touch the Password text box to enter the password for the new role. The Enter Password screen opens.
6. Enter the required password using utility keypad and touch the Accept button.
7. Select the required option for the selected role as shown in Figure 4-34.

Sub Menu	Functions
Communications	Touch the *Communications* button on the Function List screen to enable access to user and touch the *OK* button to save.

Table 4-11: Configure Roles

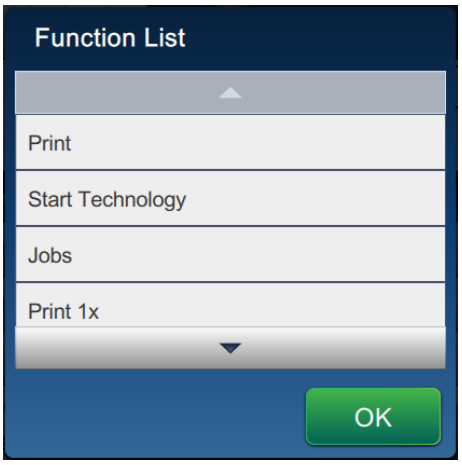
Sub Menu	Functions
Configure Home Screen	Touch the *Configure Home Screen* button on the Function List screen to enable access to Configure Home screen information and touch the *OK* button to save.
Consumables	Touch the *Consumables* button on the Function List screen to enable access to consumable details and touch the *OK* button to save.
Custom Reference Builder	Touch the *Custom Reference Builder* button on the Function List screen to enable access to user and touch the *OK* button to save.
Diagnostics	Touch the *Diagnostics* button on the Function List screen to enable access to view the diagnostic data and touch the *OK* button to save.
Faults and Warnings	Touch the *Faults and Warnings* button on the Function List screen to enable access to clear the alarms and touch the *OK* button to save.
File Manager	Touch the *File Manager* button on the Function List screen to enable access to file manager option and touch the *OK* button to save.
Firmware	Touch the *Firmware* button on the Function List screen to enable access to firmware option and touch the *OK* button to save.
Global Job Settings	Touch the *Global Job Settings* button on the Function List screen to enable access to user and touch the *OK* button to save.
High Speed Imaging*	Touch the *High Speed Imaging* button on the Function List screen to enable access to High Speed Imaging and touch the *OK* button to save.
Home 	Touch the required options on the Function List screen to enable access for the user. • Print • Start Technology • Jobs • Print 1x • Adjust Select the required option and touch the *OK* button to save.

Table 4-11: Configure Roles (Continued)

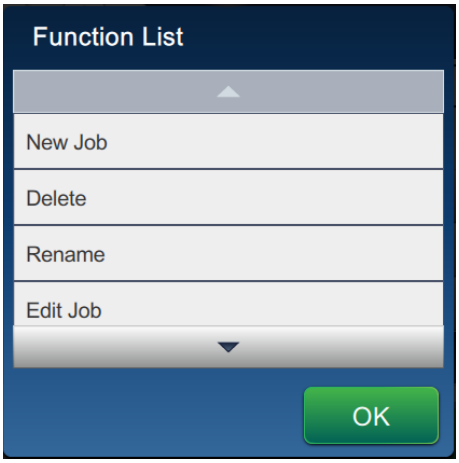
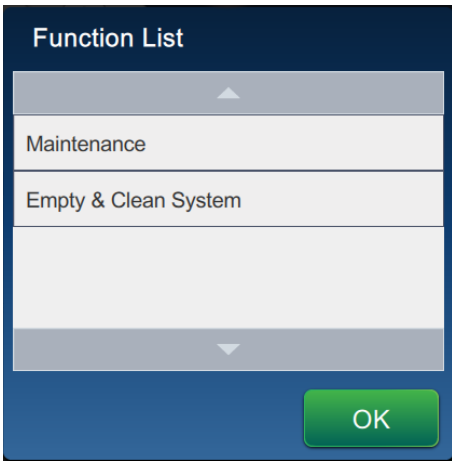
Sub Menu	Functions
Installation	Touch the *Installation* button on the Function List screen to enable access for the user and touch the *OK* button to save.
Jobs 	Touch the required options on the Function List screen to enable access for the user. • New Job • Delete • Rename • Edit Job • Run Job • Select Select the required option and touch the *OK* button to save.
Line Setup	Touch the *Line Setup* button on the Function List screen to enable access for the user and touch the *OK* button to save.
Maintenance 	Touch the required options on the Function List screen to enable access for the user. • Maintenance • Empty & Clean System Select the required option and touch the *OK* button to save.
OPTIMiZE	Touch the OPTIMiZE button on the Function List screen to enable access for the user and touch the OK button to save.

Table 4-11: Configure Roles (Continued)

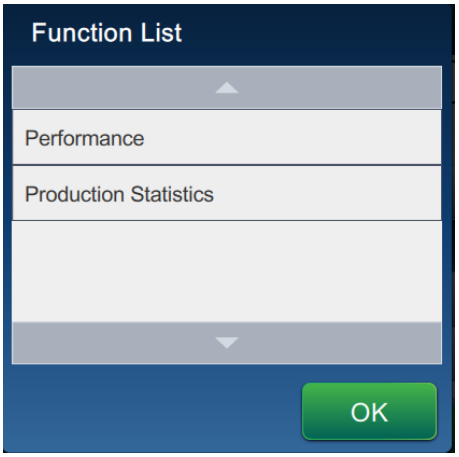
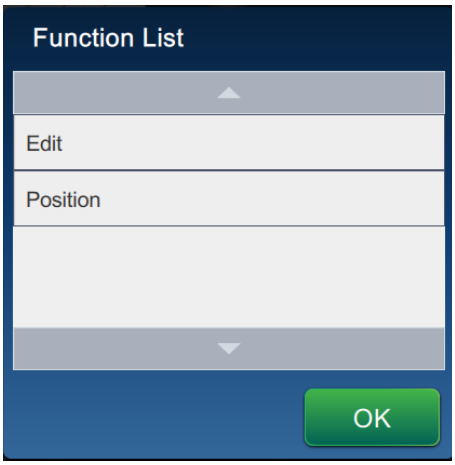
Sub Menu	Functions
Performance 	Touch the required options on the Function List screen to enable access for the user. • Performance • Production Statistics Select the required option and touch the *OK* button to save.
Preview 	Touch the required options on the Function List screen to enable access for the user. • Edit • Position Select the required option and touch the *OK* button to save.
Printer Settings	Touch the *Printer Settings* button on the Function List screen to enable access for the user and touch the *OK* button to save.
Software Download	Touch the *Software Download* button on the Function List screen to enable access for the user and touch the *OK* button to save.
User Access	Touch the *User Access* button on the Function List screen to enable access control and touch *OK* button to save.

Table 4-11: Configure Roles (Continued)

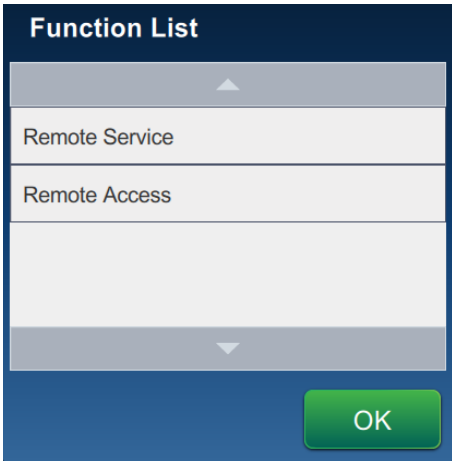
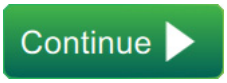
Sub Menu	Functions
VideojetConnect Remote Service 	Touch the required options on the Function List screen to enable access for the user. • Remote Service • Remote Access Select the required option and touch the *OK* button to save. ***Note:*** *Ethernet/IP is an optional setting available as a workflow module.*

Table 4-11: Configure Roles (Continued)

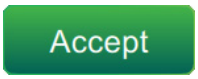
*Refers to Optional Workflow Modules

8. Touch the  button to save the settings made.

To Enable the User to Access through Role Based

9. Touch the  button on the User Access Home screen as shown in the Figure 4-33 on page 4-34.

10. Touch the check box to activate Automatic logout option, touch the logout time text box to enter the time interval for automatic logout.

11. Enter the required time interval in mins using utility keypad and touch the  button.

12. Touch the  button as shown in Figure 4-34 on page 4-35 to save the settings and activate the role based access to the printer.

4.7.2 Configuring User Access Mode

User access mode provides options to the user to create, clear, edit and delete the user access by selecting the role.

1. Touch the *Configure Users* button to create a new user access mode.
2. Touch the + New button to create a new role, the Settings screen for configure roles opens as shown in the Figure 4-35.

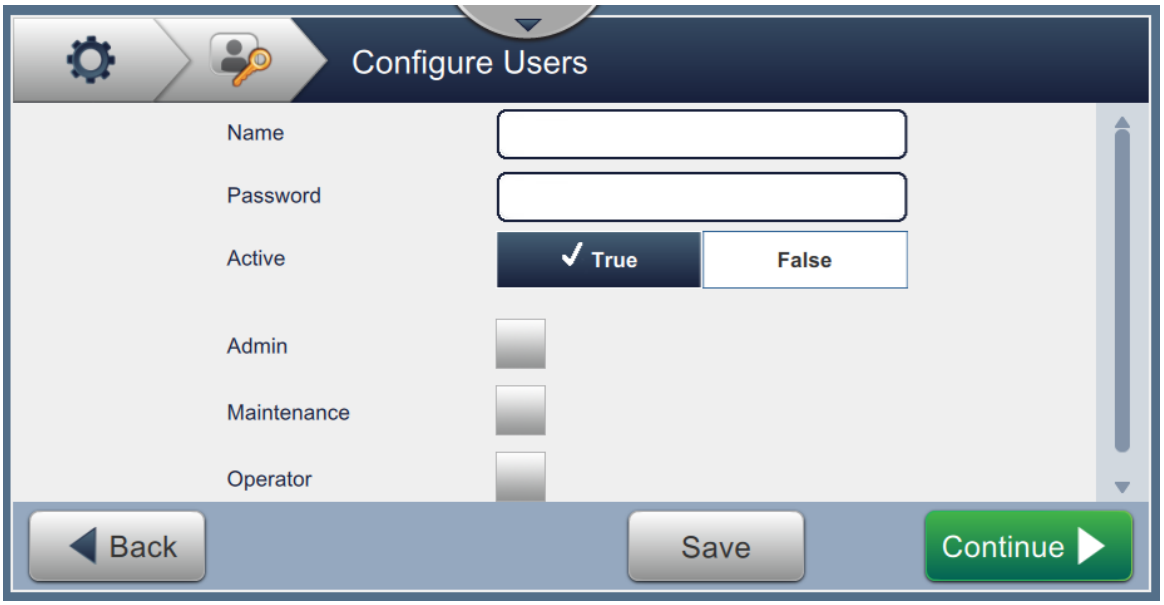


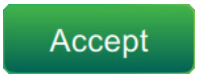
Figure 4-35: User Access Mode Settings

3. Touch the Name text box to enter the name for the new user. The Enter Name screen opens.
4. Enter the required name using utility keypad and touch the Accept button.
5. Touch the Password text box to enter the password for the new role. The Enter Password screen opens.
6. Enter the required password using utility keypad and touch the Accept button.
7. Touch the ✓ True button to activate the user name.
8. Select the required role for the user can be enabled to access.
9. Touch the Continue button to save the new user name for user based access.

To Enable the User to Access through User Mode

10. Touch the  button on the User Access Home screen as shown in the Figure 4-33 on page 4-34.

11. Touch the check box to activate Automatic logout option, touch the logout time text box to enter the time interval for automatic logout.

12. Enter the required time interval in mins using utility keypad and touch the 

button.

13. Touch the 

button as shown in Figure 4-35 on page 4-40 to save the settings and activate user access mode to the printer.

Table 4-11 on page 4-35 displays the options available for role based user access.

Section 5 Printer Operation

Introduction

This chapter provides the service level operations that can be performed on the printer and contains information on the Diagnostics screen.

5.1 Diagnostics

The Diagnostics screen displays the current values of various parameters that helps in troubleshooting the printer.

1. Touch the  button from the Tools screen. The Diagnostics screen opens as shown in the Figure 5-1.

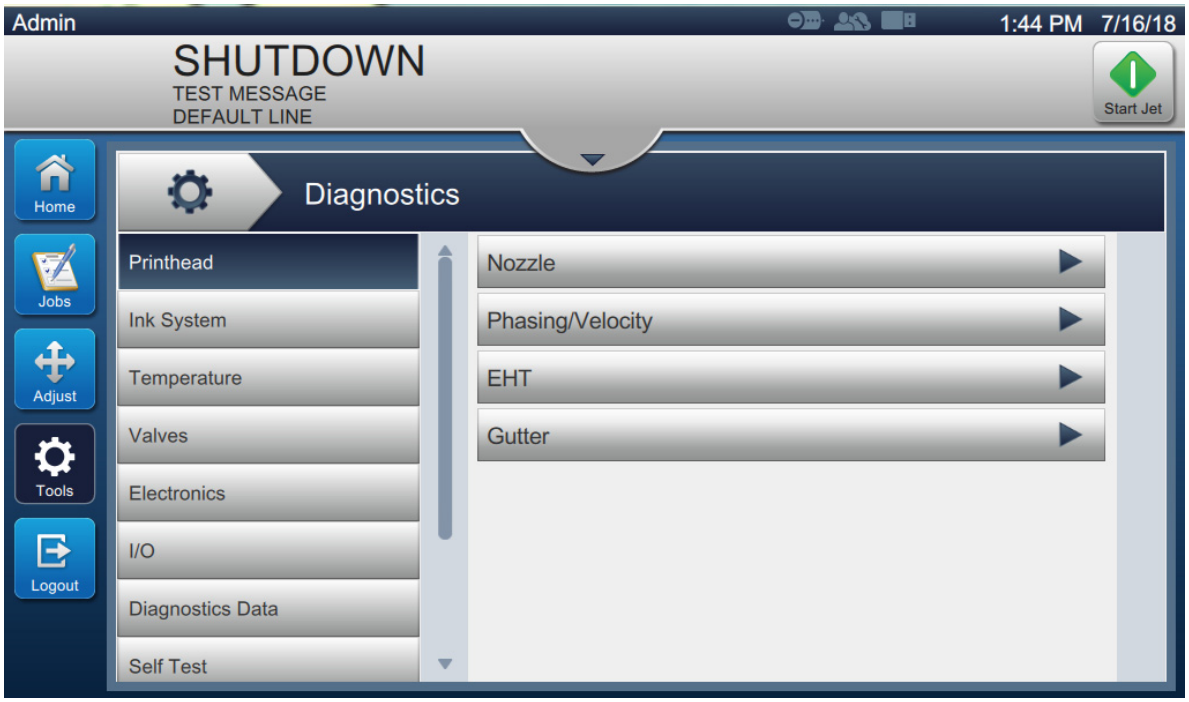


Figure 5-1: Diagnostics

5.1.1 System State Parameters

The system state parameters provide the current status of the major components of the printer such as printhead, ink system, temperature, valves, electronics and IO.

1. Touch the  button from the Tools screen. The Diagnostics screen opens as shown in the Figure 5-2.

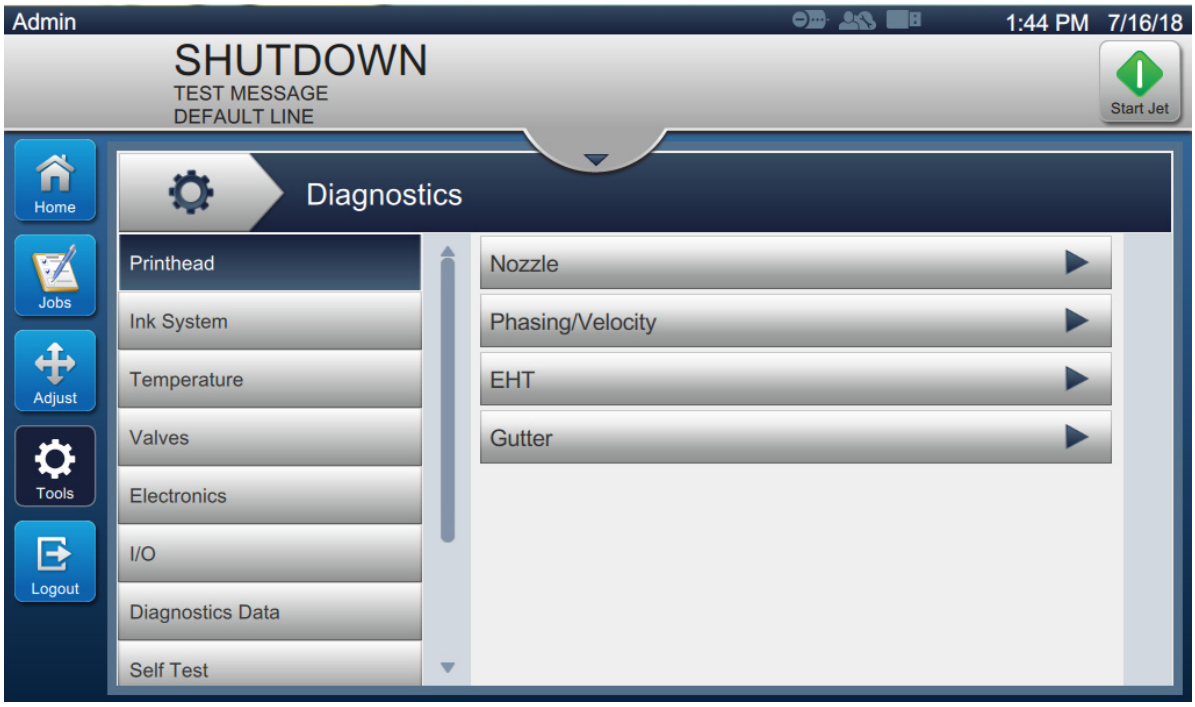


Figure 5-2: System State Screen

The system state parameters displays the information for following components as shown in Table 5-1.

Sub Menu	Functions
Printhead 	Touch the following options to view the values for various parameters: • Nozzle • Phasing/Velocity • EHT • Gutter

Table 5-1: System State Parameters

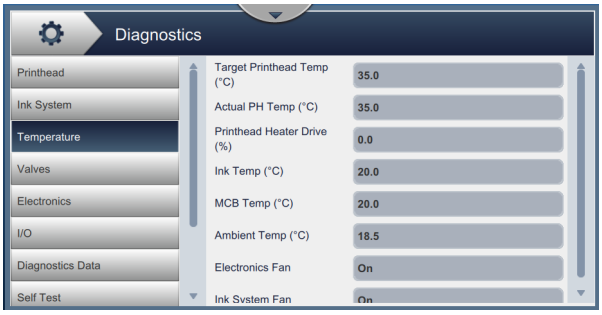
Sub Menu	Functions
Ink System 	Touch the following options to view the values for ink system parameters: • Ink Pump • Make-up Pump • Viscosity • Ink • Make-up • Gutter Pump
Temperature 	Displays the temperature values for various parameters like Printhead, Ink, MCB etc,.
Valves 	Displays the status (opened or closed) of all the valves.

Table 5-1: System State Parameters (Continued)

Sub Menu	Functions
Electronics 	Touch the following options to view the values for various parameters: • MCB Voltages • IMB Voltages • Printhead PCB Voltages
I/O 	Displays the status of input/output connected devices.

Table 5-1: System State Parameters (Continued)

5.1.2 Diagnostics Data

The Diagnostic Data screen provides current information on printer parameters like pressure, temperature, velocity, phase, valve states etc.

1. Touch the  button from the Tools screen. The Diagnostics screen opens. Select the option *Diagnostics Data* as shown in Figure 5-3.

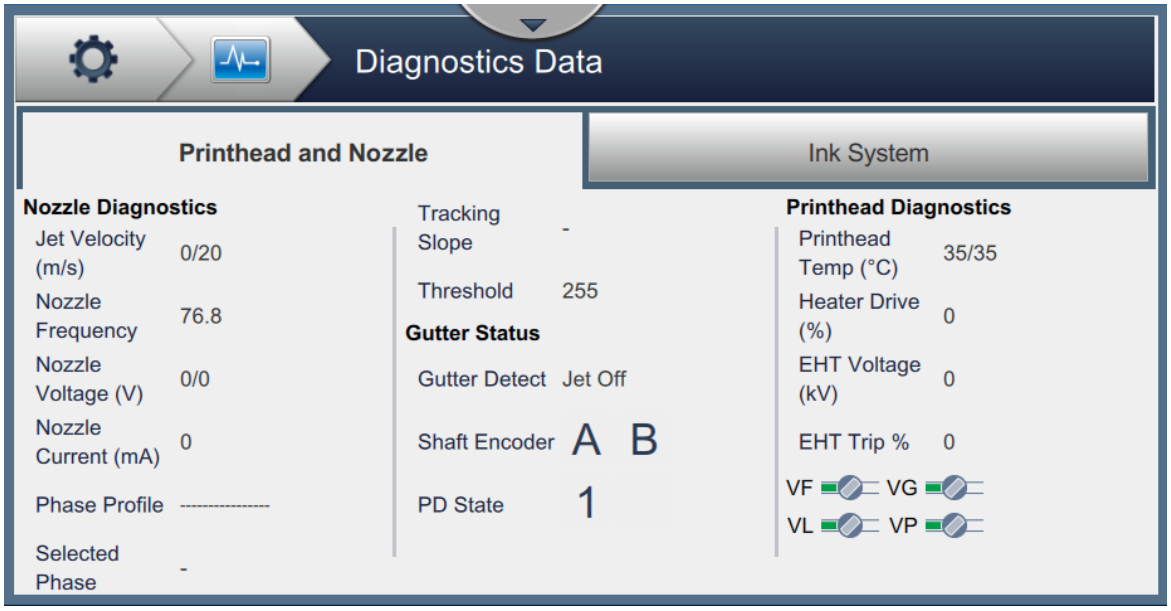


Figure 5-3: Diagnostics Data Screen

The Diagnostics Data screen displays the key information for printhead, nozzle and ink system for quick and easy diagnostics.

5.1.3 Self Test

The Self Test screen provides diagnostic information on hardware components installed in the printer.

1. Touch the  button from the Tools screen. The Diagnostics screen opens. Select the option *Self Test* as shown in Figure 5-4.

2. Touch the Run Test button to start the test.

   Note: *Do not leave the Self Test screen otherwise the results will be lost.*

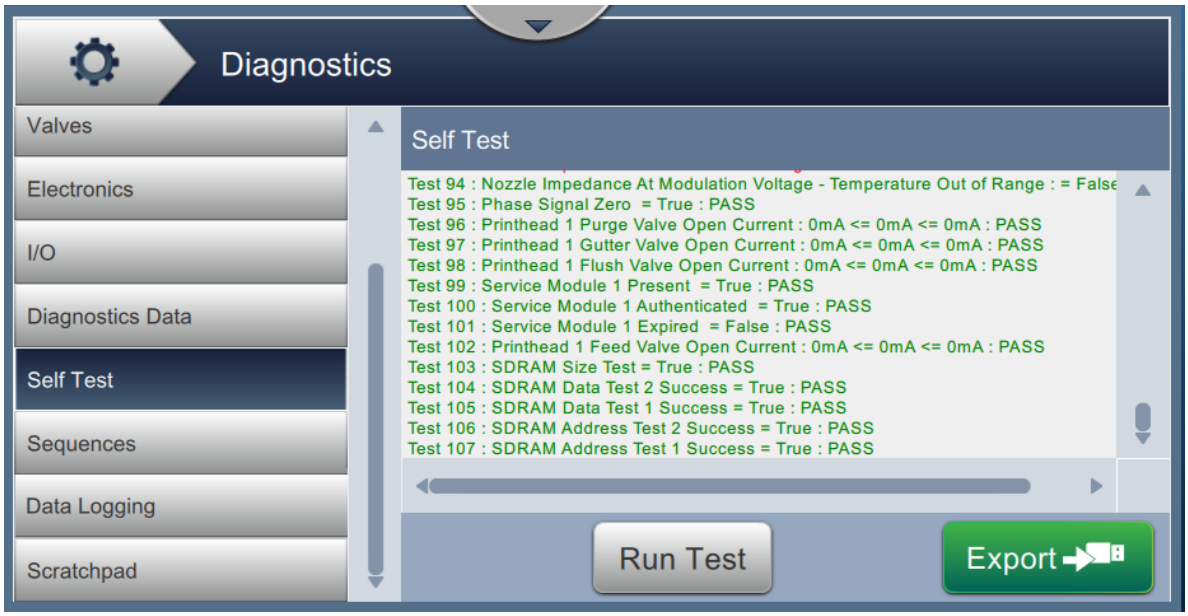


Figure 5-4: Run Test Screen

3. A test log is generated on completion of the tests. Use the scroll bar to view the results of the tests.

   Note: *Failed test results are displayed in red. Tests that did not run are displayed in black.*

4. Touch the Export button to save the tests to the USB.

5. A confirmation message is displayed and touch the OK button.

   Note: *The Self Test assumes fluids are present, running the Self Test without fluids will report additional failed tests.*

5.1.4 Sequences

The Sequences screen provides the list of available operations for the printer.

1. Touch the  button from the Tools screen. The Diagnostics screen opens. Select the option *Sequences* as shown in Figure 5-5.

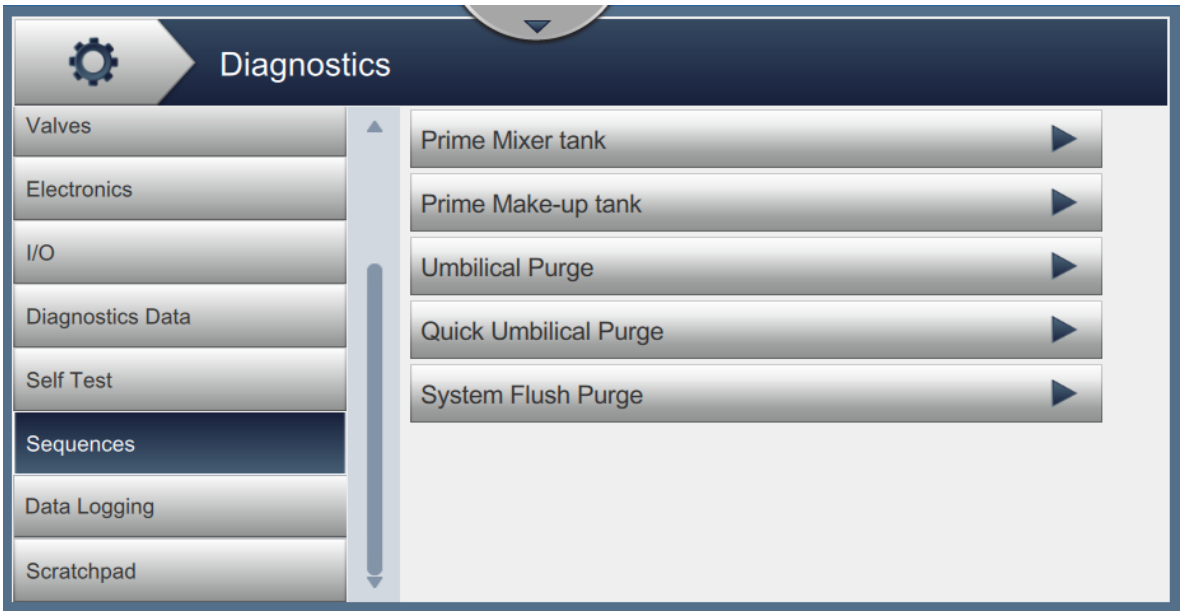


Figure 5-5: Sequences Screen

2. Touch the required operation from the sequences list. This will open the System Operation screen.

3. Touch the Start button to start the operation.

   Note: *The screen displays OK upon completion.*

Table 5-2 shows the various system operations available on the Sequences screen:

Sequence	Description
Prime Mixer Tank	Performs prime mixing operation to increase the viscosity of ink flow for a quality print.
Prime Make-up Tank	Performs make-up priming operation to obtain proper mixture.
Umbilical Purge	Performs umbilical purge operation to prevent debris from blocking the nozzle if the printer has not been used for a longtime.
Quick Umbilical Purge	Performs umbilical purge operation and finishes automatically after a short period of time.
System Flush Purge	Removes air from the flush system during the commissioning or when air has been introduced to the flush system during a part replacement.

Table 5-2: Sequences

5.1.5 Data Logging

The Data Logging screen allows the Data Log USB, when available, to collect data at a specific time intervals. This provides the service team with additional information to support trouble shooting and diagnostics.

Note: *The Data Log USB contains a specific xml file to support the collection of the printer data. A log is recorded every 2 sec.*

1. Touch the  button from the Tools screen. The Diagnostics screen opens.

   Select the option *Data Logging* as shown in Figure 5-6.

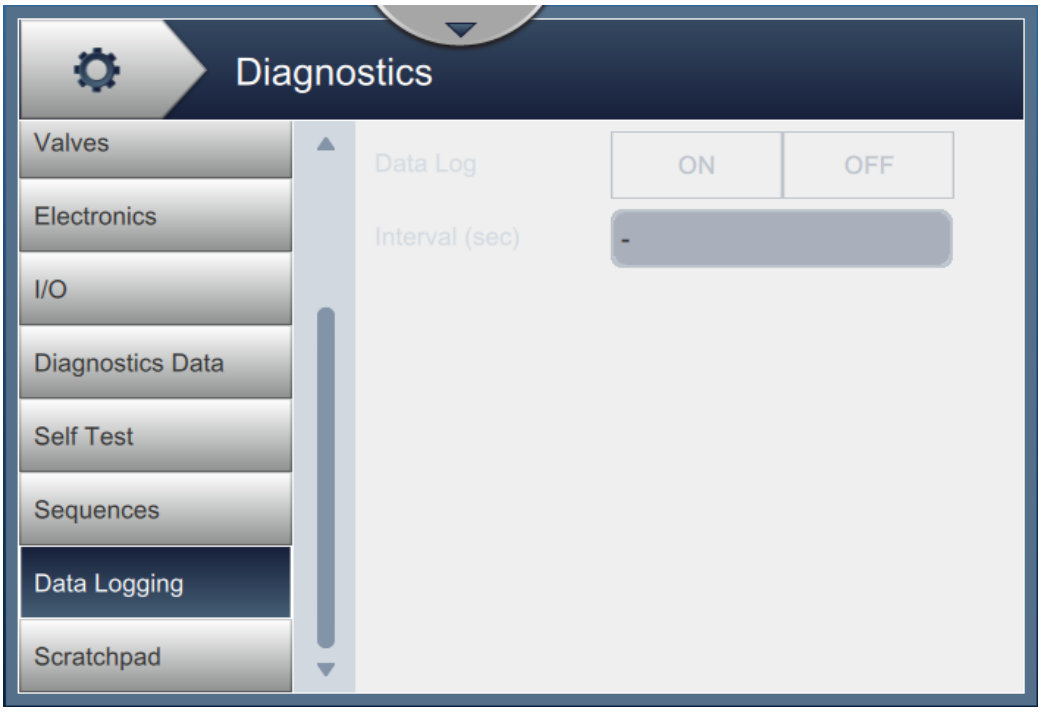


Figure 5-6: Data Logging Screen

2. Touch the ON/OFF button to enable/disable the data log option.

   Note: *If enabled, touch the Interval text box to set the required time interval for log data information.*

Contact Videojet Technical Support or your local Service Representative for the Data Logging USB.

5.1.6 Scratchpad

The Scratchpad screen allows the user to load customized sequences for specific tasks.

1. Touch the  button from the Tools screen. The Diagnostics screen opens. Select the option *Scratchpad* as shown in Figure 5-7.

Figure 5-7: Scratchpad Screen

Sequences need to be located in a specific folder location on the USB.

Note: *Sequences can be built by Videojet Technical support - contact Videojet Technical Support for additional information. It is important that the sequences are correctly built to ensure continued safe operation of the printer.*

Introduction

This chapter provides the service level operations that can be performed on the printer and contains the following topics:

- Home Screen Description
- Using the Tools Screen

6.1 Home Screen Description

Figure 6-1 shows the Home screen of the Videojet 1580 printer.

1. Printer Status Bar
2. Start /Stop Jets Button
3. Message Preview
4. Consumables Information
5. Performance Information
6. Login/Logout Button
7. Tools Button
8. Adjust Button
9. Jobs Button
10. Home Button

Figure 6-1: Home Screen

6.1.1 Control Bar

These buttons are available on all menu screens

Button	Description
 	Starts or stops the jet.
 	Starts or stops the print. ***Note:*** *This button is displayed on the status bar only when the jets are started.*
	Returns to the Home screen.
	Shows the list of jobs available, including the current job and the preview of the highlighted job. Once a job is selected, the job can be loaded for printing. If the fields are user enabled, the user can confirm before printing. The user can also create a new job.
	Opens the Tools screen.
 	Login or Logout the user from an access level.
	Adjusts the print position and scale of the print.

Table 6-1: Control Bar Buttons

6.1.2 Printer Status

The status bar of the printer displays current status of the printer on the top of the screen. The different status of the printer is described in the Table 6-2.

Status Bar	Description
	Power to the printhead is disabled and printer is not ready to print.
	Printer is switched on and ready to print when the proper print trigger is received.
	Printer is switched on but not ready to print.
	Warnings are available that the operator should be aware of, before the printer is not prevented from operating.
	Faults are available that the printer should rectify, before the printer can start.

Table 6-2: Printer Status

6.1.3 Home Screen

The Home screen displays the print details.

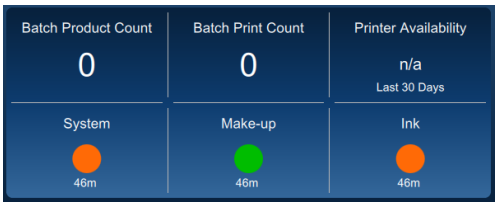
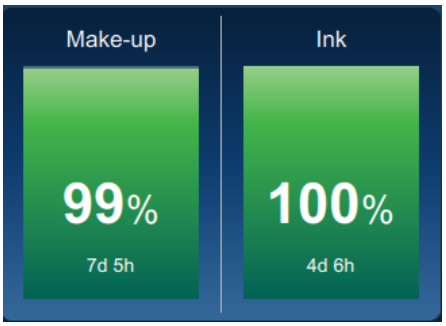
Button	Description
	Shows the preview of the job loaded.
	User can customize this setion as per their requirement (*Tools* > *Configure Home Screen*). Touch in this area to view further details. Shows the Batch Product Count, Batch Print Count and Printer Availability along with Ink, Make-up and System OPTIMiZE status.
	Shows the fluid levels (in %) and the calculated run time remaining. Touch in this area to open the consumable menu.

Table 6-3: Home Screen Display Functions

Refer to Operator Manual for more information on Home screen.

6.2 Using the Tools Screen

Displays the tools available for the printer.

Figure 6-2: Tools Screen

Refer to Operator Manual for more information on Tools.

6.2.1 Printer Settings

The Printer Settings screen allows user to view and modify printer parameters.

Do the following tasks to view the Printer Settings screen:

1. Touch the  button from the Tools screen. The Printer Settings screen is displayed as shown in Figure 6-3.

Figure 6-3: Printer Settings Screen

6.2.1.1 Printhead Control

Printhead Control parameters are setup during printer installation and should not normally be adjusted (see Figure 6-4).

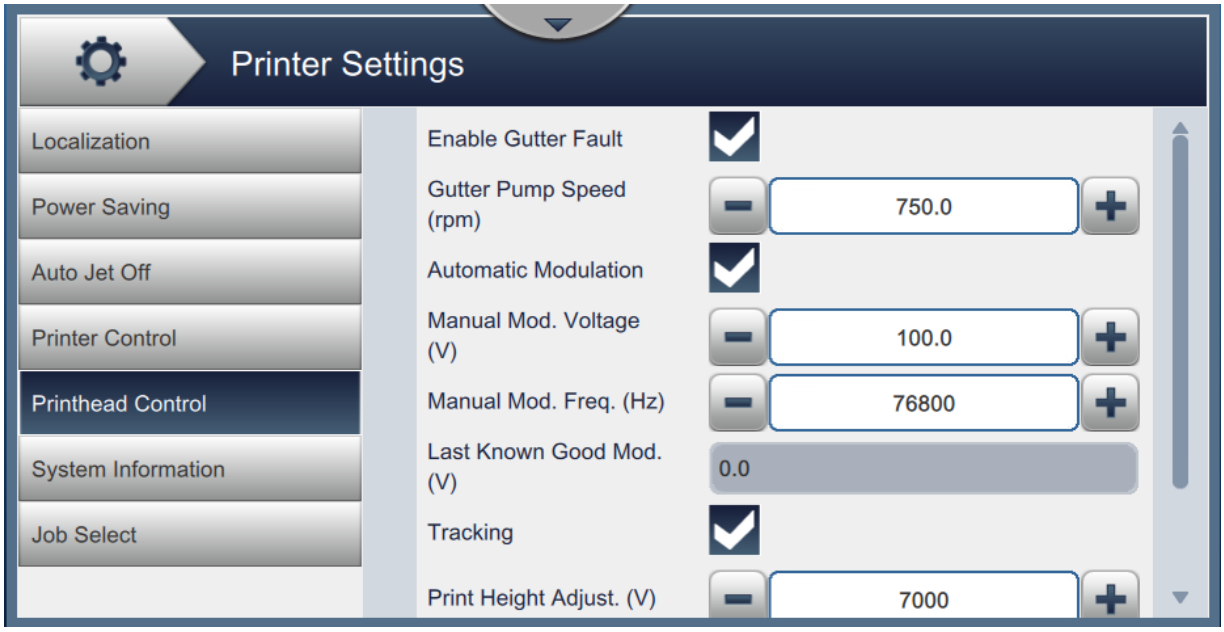


Figure 6-4: Printhead Control

Following are the parameters available for Printhead Control:

Controls	Description
Enable Gutter Fault	The printer will raise a fault when a gutter fault is detected.
Gutter Pump Speed (rpm)	Displays the gutter pump speed.
Automatic Modulation	Automatic Modulation can be enabled or disabled. ***Note:*** *Not recommended to disable.*
Manual Mod. Voltage (V)	Displays the manual mod. voltage value.
Manual Mod. Frequency	Displays the manual mod. frequency value.
Last Known Good Mod. (V)	Displays the voltage of last "known good configuration".
Tracking	User can enable/disable the tracking only when Automatic Modulation option is enabled.
Print Height Adjust. (V)	Changes the maximum achievable print height.
Charge Scale	Select the required value.
Phase Charge (V)	Set the voltage to optimize the print quality.

Table 6-4: Printhead Control

6.2.2 Software Download

The Software Download screen allows the user to upgrade system software, install and uninstall workflow modules.

1. Touch the  button from the Tools screen. The Software Download screen opens as shown in the Figure 6-5.

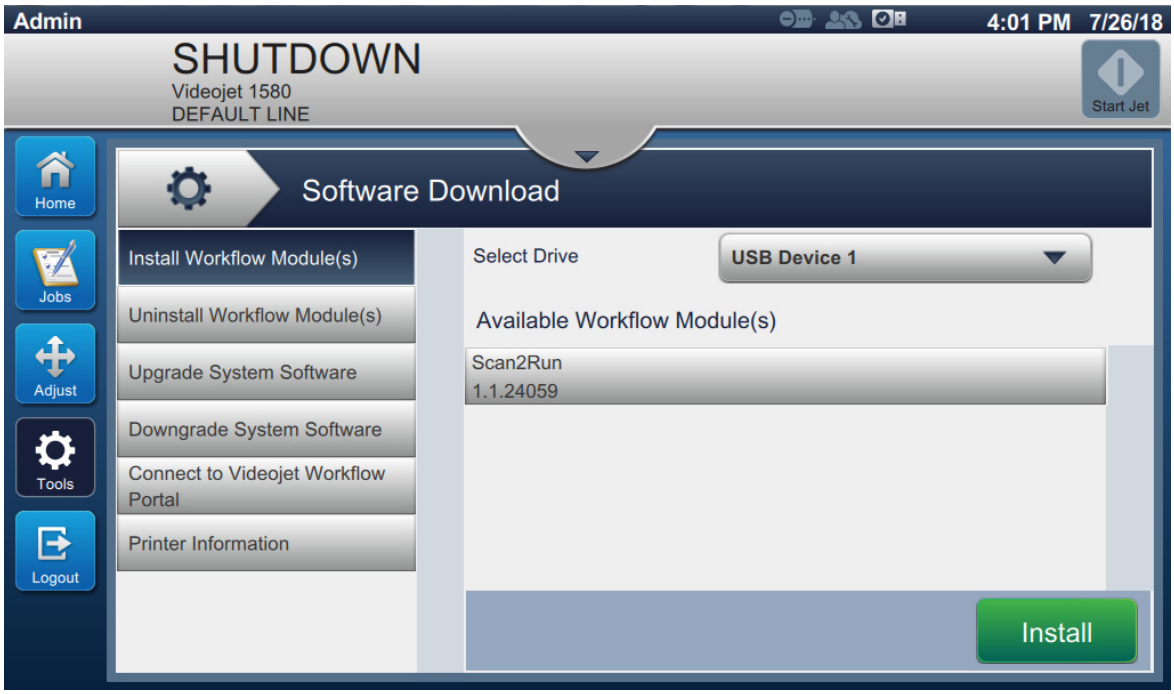


Figure 6-5: Software Download Screen

2. Touch the Install Workflow Module and select the drive to install if the Workflow Module is available.

Figure 6-6: Software Download-Install

3. Touch the Uninstall Workflow Module and select to uninstall if a Workflow Module is no longer required.

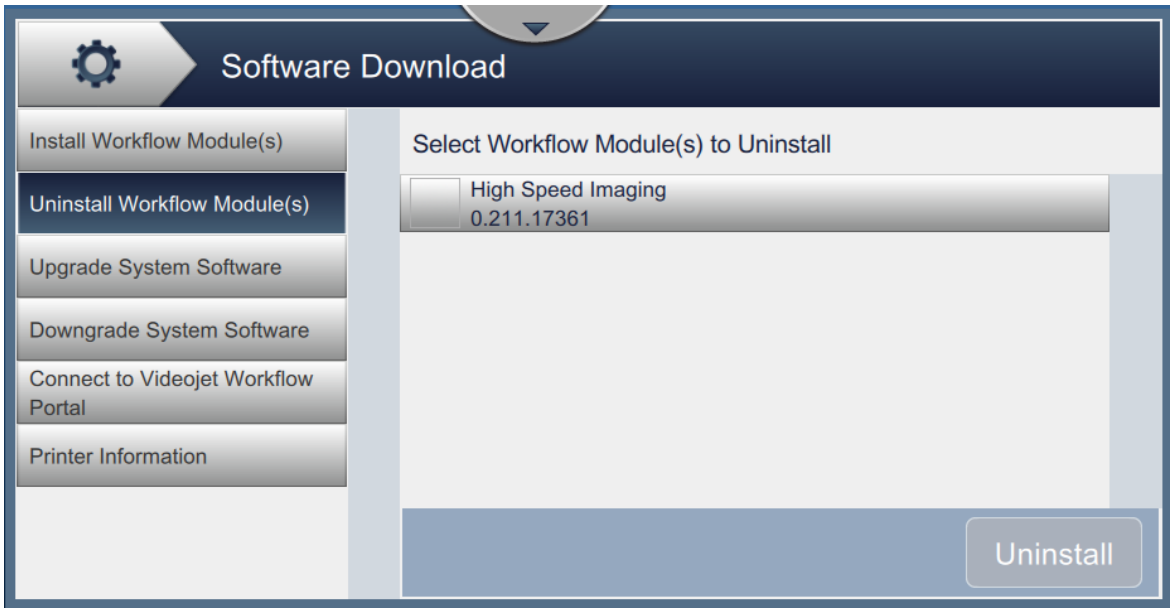


Figure 6-7: Software Download-Uninstall

4. Touch the Upgrade System Software to upgrade the system software, select the drive where the upgrade is available, select the required software package and select Upgrade.

Figure 6-8: Software Download-Upgrade

5. Touch the Downgrade System Software to downgrade the system software, select the drive where the downgrade is available, select the required software package and select Downgrade.

Figure 6-9: Software Download-Downgrade

6. Touch the Connect to Videojet Workflow Portal to allow the printer to connect directly to the Workflow Portal. This enables download of system software packages and Workflow Module(s) and upload of printer files. For more information contact Videojet customer service or your local distributor.

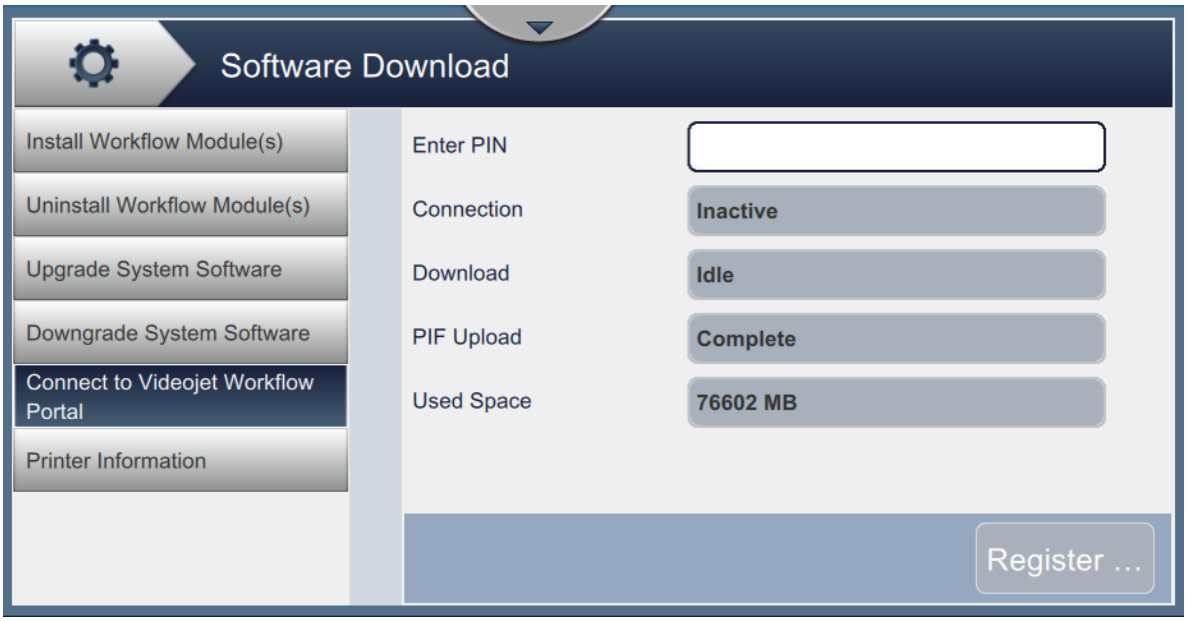


Figure 6-10: Videojet Workflow Portal

7. Touch the Printer Information to display the Software information related to the printer. The software version can be exported to a USB file or via Network to allow the unique printer file to be uploaded to the Workflow Portal.

Figure 6-11: Software Download-Printer Information

6.2.3 Communications

The Communications screen allows the user to display the connections of printer.

1. Touch the  button from the Tools screen. The Communication screen opens as shown in the Figure 6-12.

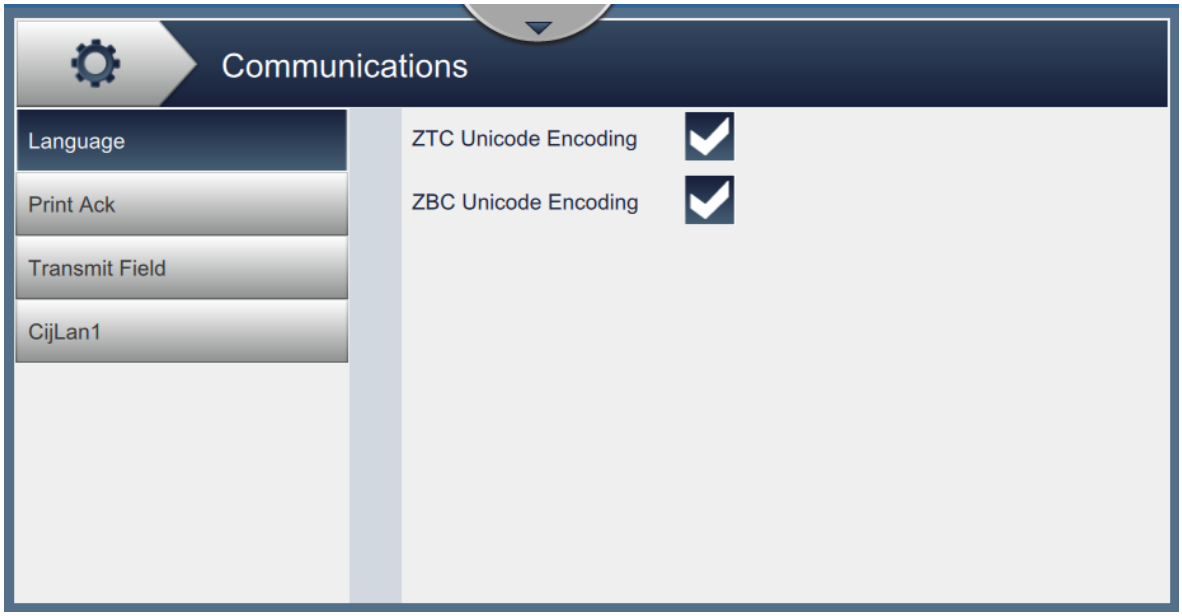


Figure 6-12: Communications Screen

Refer to Chapter "User Interface" in the Operator Manual for more information on Language, Print Ack, Transmit Field and CijLan 1 setup.

6.2.3.1 Communication Classifications

The following Table 6-5 shows the available Communications and its Connections:

Communications	Connections
CijLan 1	LAN 1

Table 6-5: Communications

6.2.4 Configure Warnings

Note: *Elevated login is required to access Configure Warnings screen.*

The Configure Warnings screen allows user to suppress the selected warnings.

Do the following tasks to view the Configure Warnings screen:

1. Touch the  button from the Tools screen. The Configure Warnings screen is displayed as shown in Figure 6-13.

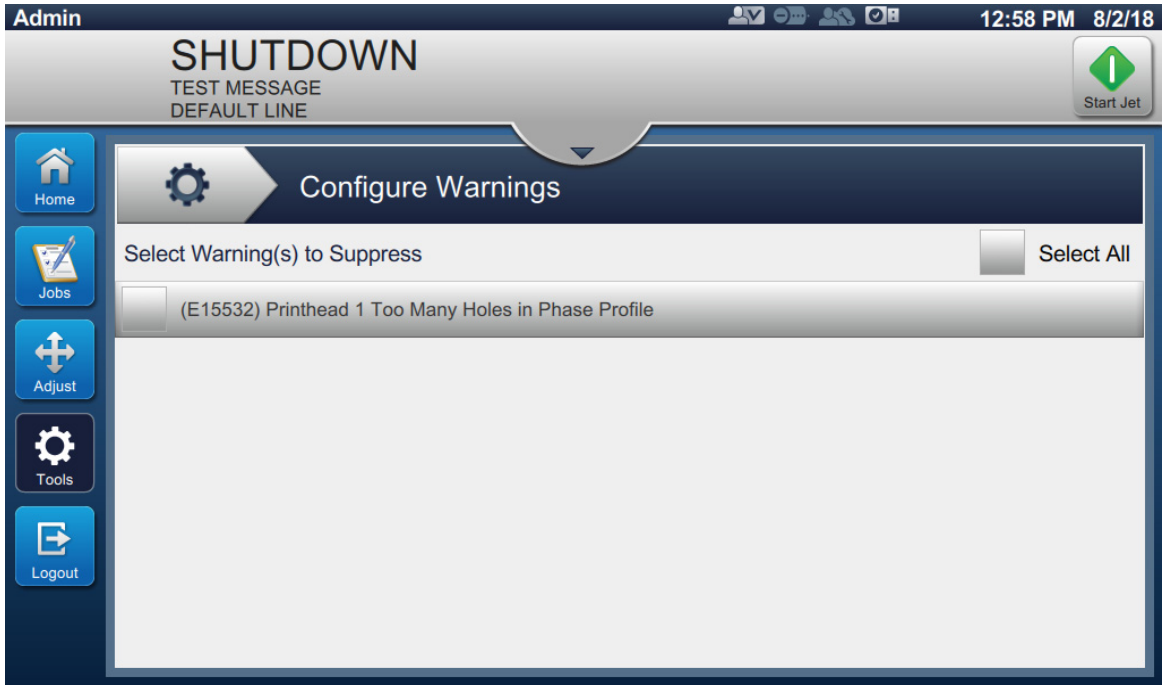


Figure 6-13: Configure Warnings Screen

2. Select the required warning(s) to suppress.

6.2.5 Engineering

Note: *Elevated login is required to access Engineering screen.*

The Engineering tool allows access to key engineering functions such as:

- Production Setup
- Full System Backup

Do the following tasks to view the Engineering screen:

1. Touch the  button from the Tools screen. The Engineering screen is displayed.

6.2.5.1 Production Setup

Production Setup parameters are setup during printer installation or when printhead, umbilical, viscometer and ink system are replaced and should not normally be adjusted (see Figure 6-14).

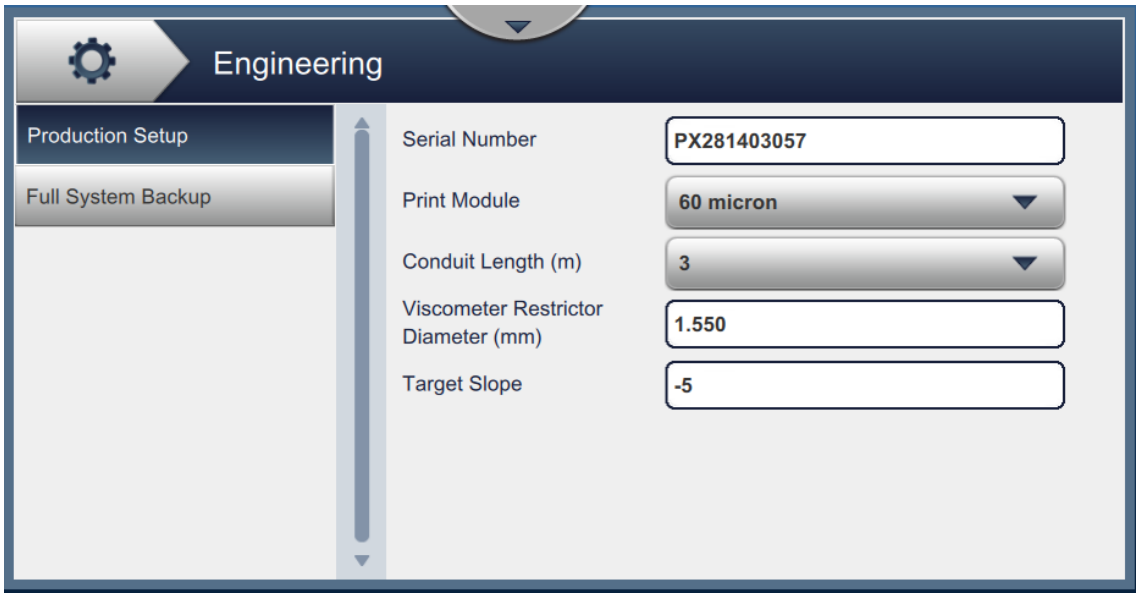


Figure 6-14: Production Setup

Following are the parameters available for Production Setup:

Controls	Description
Serial Number	Displays the printer serial number. Select the text box to change the serial number.
Print Module	Select the required nozzle size (60 or 70 micron).
Conduit Length (m)	Select the required umbilical length (3m or 6m).
Viscometer Restrictor Diameter (mm)	Set the required viscometer restrictor diameter in mm. ***Note:*** *The viscometer restrictor diameter should match the number on the viscometer assembly in the ink system.*
Target Slope	Indicates the target slope. The target slope should not normally be adjusted.

Table 6-6: Production Setup

6.2.5.2 Full System Backup

Touch the *Full System Backup* button and follow the steps to perform a full system backup. (see Figure 6-15 and Table 6-7).

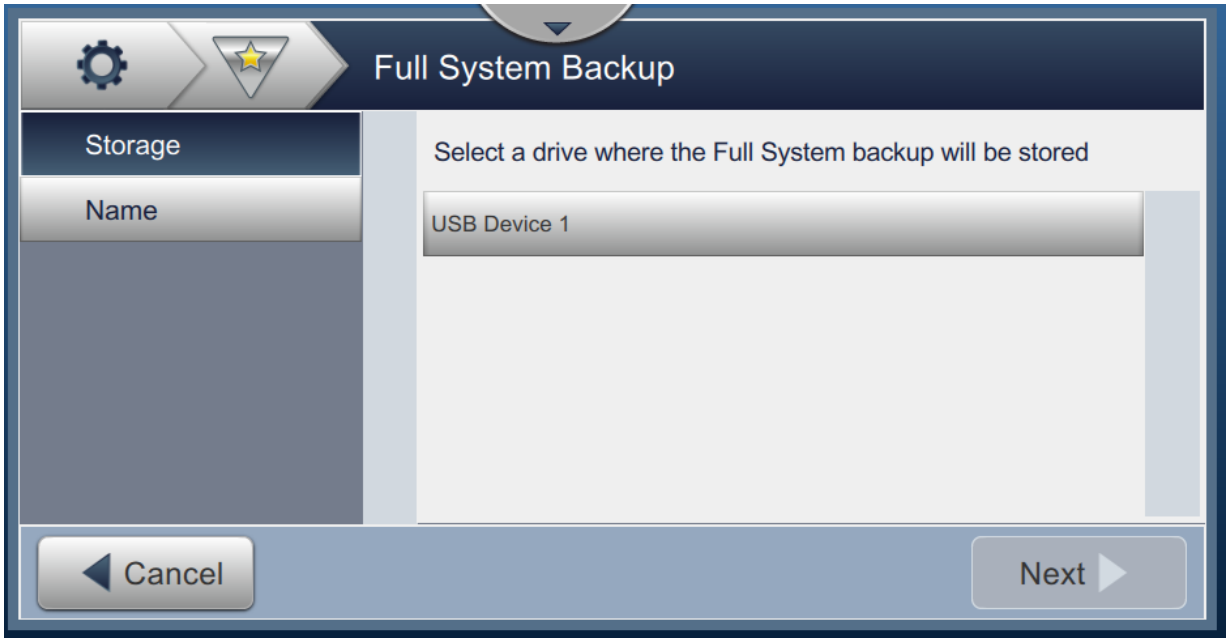


Figure 6-15: Full System Backup

Controls	Description
Storage	Select the required location for the backup to be stored from the available options.
Name	The backup name will be automatically populated but if required a new name can be entered by selecting the text. Touch the *Backup* button to start the full system backup process.

Table 6-7: Full System Backup

Section 7 Replacement Instructions

Introduction

When you order a spare part kit, the replacement instructions of the respective spare part are provided along with the kit. For more information, contact Videojet Technologies Inc. Refer to Chapter, “Support and Training” for the contact information.

The replacement instructions are available for the parts included in the following table.

Spare Part
Air Dryer
Beacon
Display Door
EHT Module
Gutter Pump
Ink Door Assembly
Ink Management Board
Ink Pump
Ink System
Ink System Components
Mains Cable
MCB and SD Card
Positive Air Pump
Power Supply Unit
Power Supply Unit Cables
Power Switch
Print Module Assembly
Printer Mobile Stand Installation
Service Module 1
Solvent Control Module
Solvent Control Module Components*
Umbilical Assembly
Valve Module Assembly

Table 7-1: Available Instructions

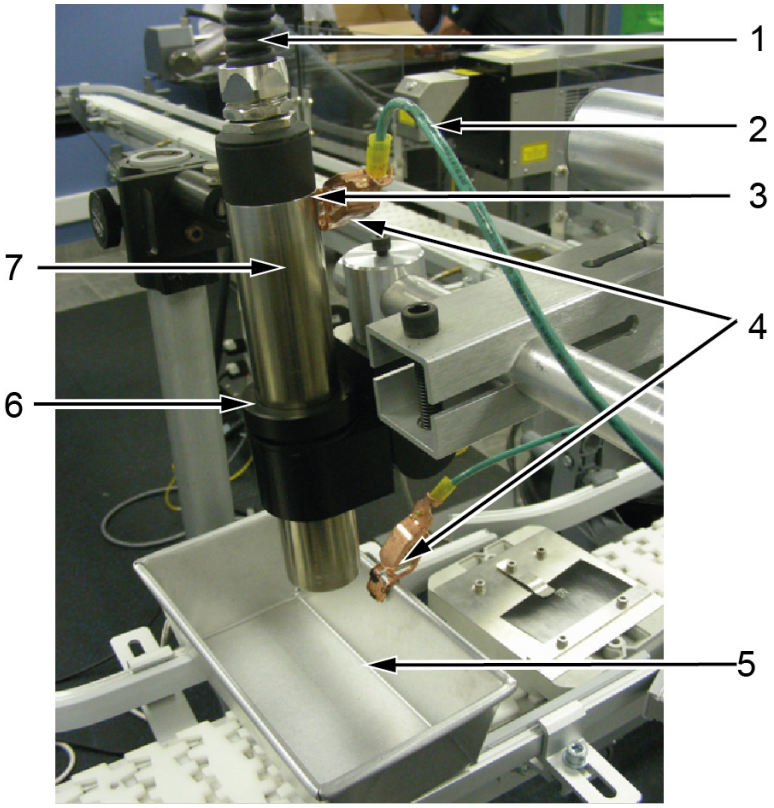
**Note: Spares 611407 and 611408 require Tool 613546*

7.1 Printhead Bonding during Printing

Do the following tasks to establish bonding for the printhead and receptacle:

1. Make sure that the printhead cover (item 6, Figure 7-1) is attached.

   Note: *The printhead is ground through the printhead screw (item 3) and umbilical (item 1). If there is no screw, you must provide the printhead with the path to the electrical ground.*



1. Umbilical
2. Earth Bond Strap
3. Printhead Screw
4. Crocodile Clip
5. Receptacle
6. Printhead Cover
7. Printhead

Figure 7-1: Printhead and Receptacle

2. Use a metal or other conducting receptacle (item 5) to collect the printhead fluid.
3. Connect one end of the earth bond strap (item 2) using crocodile clip (item 4) to the receptacle. Make sure that the connection is rigid.
4. Connect the other end of the earth bond strap to the printhead cover screw. Make sure that the connection is rigid.
5. Check the path from the electrical ground to the main printer cabinet using a multi-meter or a similar device to make sure that the earth loop is closed.
6. After the checks are completed, continue the printing operation.

7.2 Bonding during Servicing

1. Remove the printhead cover (see Figure 7-1 on page 7-2).
2. Locate the printhead screw into the printhead (Figure 7-2) and make sure that the screw is in contact with the earth wire in the umbilical.

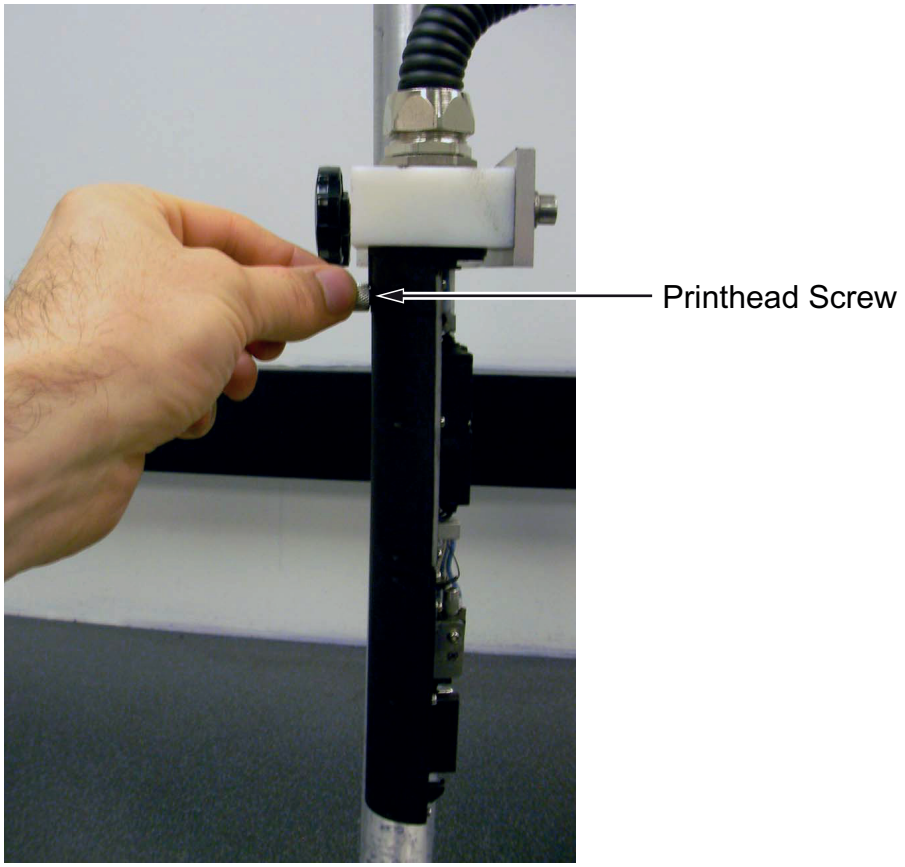


Figure 7-2: Printhead Screw

3. Follow Step 2 to Step 5 under "Printhead Bonding during Printing" on page 2.
4. Perform the required maintenance operation. Refer to Section 8 "Maintenance" for more information on maintenance procedures.
5. Remove the printhead screw.
6. Refit the printhead cover.

The printhead bonding instructions is complete.

Section 8 Maintenance

Introduction

The maintenance of the printer includes the intervals, tasks and procedures that a trained service technician or authorized personnel can perform.

This section provides the information on the following topics:

- Maintenance Schedule
- Maintenance User Interface

8.1 Maintenance Schedule

The Table 8-1 provides the list of maintenance activities that needs to be performed on a periodic schedule:

Interval	Task
As Required	Clean the Print Cabinet
As Required	Clean the Touch Screen
When the ink and/or make-up cartridges are empty	Replacement of Fluid Cartridges
As Required - The user will be prompted to clean gutter/printhead based on printer setup.	Clean the Printhead Clean the following parts of the printhead: • Deflector Plate • Gutter ***Note:*** *Check the quality of the print before you do maintenance.*
3,000 hrs	Replacement of Air Filter
5,000 hrs or 12 months	Replacement of Service Module 1

Table 8-1: Maintenance Schedule

Refer to Operator manual for detailed procedure on maintenance schedules.

8.2 Maintenance User Interface

The Maintenance screen allows user to perform maintenance activities on the printer.

Do the following tasks to view the Maintenance screen:

1. Touch the  button. The Maintenance screen is displayed as shown in Figure 8-1.
2. Select the required options to perform maintenance activities of the printer.

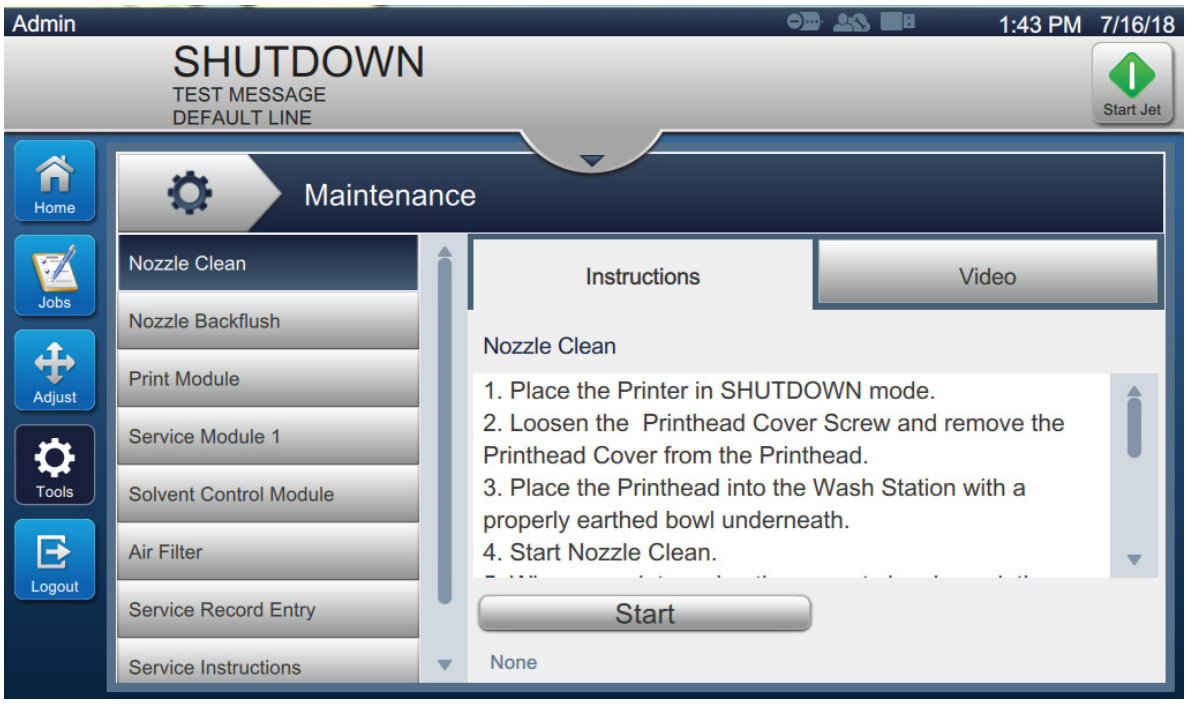


Figure 8-1: Maintenance Screen

Refer to Operator manual for detailed procedure on maintenance instructions.

Section 9 Troubleshooting

Introduction

The Videojet 1580 Operator Manual (Part Number: 463170) contains the troubleshooting procedures that an operator is allowed to perform. Refer to the operator manual for these procedures.

This chapter contains the troubleshooting procedures that only trained personnel or a service technician is allowed to perform.

⚠WARNING

PERSONAL INJURY.
It is possible that in a fault condition the heater can reach 70° C. Do not touch the plate on which the heater is installed. The failure to follow this warning can cause the personal injury.

Important Guidelines

1. Before you perform fault diagnosis or do any repairs described in this section, Videojet recommends to shift the printer from the production line to a clean environment.
2. When a fault condition occurs, the first step to locate the cause must be to check the fault number on the display.
3. Table 9-5 on page 9-4 lists the possible faults and warnings. These tables contain either remedial action or a reference to more detailed fault finding information.
4. When you need to replace a part (for example, MCB, Touch screen and so on), refer to the related replacement instructions. For more information on how to obtain the related instructions, refer to Chapter 7, "Replacement Instructions".

9.1 Startup Problems

9.1.1 Printer Fails to Start

Possible Cause	Remedial Action
Printer does not start	Check the power cord and plug for damage.
No mains power supply	Make sure that the mains power supply is available. To turn on the printer, press the on/off button.
Mains Power supply input cable disconnected or defective	1. Make sure that the mains power supply cable is connected. 2. Check the continuity of the cable. If the cable is defective, repair or replace the cable.
Printer mains power circuit breaker has tripped	Reset the circuit breaker - Turn off and turn on the circuit breaker.
Mains Power switch is faulty	Check mains if the switch is working. Replace the switch if faulty.
Cable between mains switch and PSU is disconnected or faulty	1. Check the cable connections. Reconnect if necessary. 2. Check the cable for continuity. Replace if faulty.
PSU output not reaching the MCB	Make sure the Power LED is ON and LED is flashing.

Table 9-1: Printer Startup Problem and Remedies

Possible Cause	Remedial Action
Cable between PSU and MCB is faulty or disconnected	1. Check if the cable between PSU and MCB is connected. Reconnect if necessary. 2. Check the cable for continuity, replace if faulty.
PSU faulty	Replace the PSU.
MCB failed	1. Make sure that Print Module and Ethernet LED are flashing. 2. Change the MCB.

Table 9-1: Printer Startup Problem and Remedies (Continued)

9.2 Display Faults

9.2.1 Backlight

⚠WARNING

PERSONAL INJURY.
Lethal voltages are present within this equipment when it is connected to the mains electrical supply. Only trained and authorized personnel must carry out the maintenance work.

Possible Cause	Remedial Action
Cables between MCB and front panel is disconnected or faulty	1. Check for correct fitting of cable. 2. Check the cables for continuity, replace if faulty.
MCB faulty	Check for 24 VDC on pin 6 of connector on MCB. If 24 VDC is not present, replace the MCB.

Table 9-2: Display Backlight Failure

9.2.2 LCD Faults

Possible Cause	Remedial Action
LCD doesn't light	Check display is in sleep mode from the user interface. Check the cabling. Check the MCB.
Cables between MCB and LCD are faulty	Check the cables for continuity. Replace MCB to FIB ribbon cable if faulty. Replace display door if cables to LCD are faulty.
MCB faulty	Check for 24 V at MCB from PSU. Replace the PCB.
LCD faulty	Replace the LCD assembly.

Table 9-3: LCD Failure

9.3 Beacon Indication

Beacon Color	Description
Red	• Alarm present • Jet off • All relays are off
Amber	• Jet on/off • Warning present • Print not enabled • Relay 2 is set
Green	• Print enabled • No warnings • Relay 1 is set
Green and Amber	• Print enabled • Warning present • Relay 1 and 2 is set
Red and Amber	• Alarm present • Warning present • Jet off • Relay 2 is set
No Lights	• Jet on or off • No alarms • No warnings • Print disabled • All relays are off

Table 9-4: Alarm Light Conditions

9.4 Fault Messages and Warnings

The errors are divided into two groups:

- Warning Errors - These errors indicate a warning condition. The printer continues to print until the warning condition becomes a fault condition.

Figure 9-1: Warning Message

- Fault/Alarm Errors - These errors indicate a fault condition. During a fault condition, the printer stops printing.

Figure 9-2: Fault Message

9.4.1 Printer Alarms

Error Reference and Name	Remedial Action	Cause
Air Filter Replacement Recommended	The Air Filter has reached the end of its recommended service life. Please replace the Air Filter.	
Mandatory updates available	Mandatory Software Updates are available. Please use the Software Download Tool to Upgrade the System Software.	
Service Module 1 Replacement Due in %L1 Hours	The Service Module 1 is nearing the end of its usable life. Please ensure that you have a replacement available.	
Solvent Control Module Replacement Due in %L1 Hours	The Solvent Control Module is nearing the end of its life. Please ensure that you have a replacement available.	
Updates Available	Software Updates are available. Please use the Software Download Tool to Upgrade the System Software.	
(E1001) Counter End Value Reached	The current Job includes a Counter (printed or non-printed) with 'Rollover' turned OFF and the End Value for the Counter has been reached. Press CLEAR to resume printing from the Start Value specified in the Job, or reload the Job.	
(E1005) Print Limit Exceeded	The Print Limit specified for the current Job has been reached. Select and Load a new Job in order to resume printing. If controlling the Printer externally, then utilize the Protocol Command set in order to reset the allocation.	
(E1011) No Job Assigned To Selected Line	The Line selected for printing does not have a valid Job assigned. Please assign a valid Job to the Line and re-try.	
(E1012) No Line Setup Available	The current Job requires a Line Setup which is not available. Please Edit the Job and select the required Line Setup.	
(E10379) Incompatible Ink Cartridge Type	The ink cartridge inserted is not suitable for use with this printer. Please insert an ink cartridge of the correct size.	

Table 9-5: Printer Alarms

Error Reference and Name	Remedial Action	Cause
(E10619) Invalid Main Control Board	A valid Main Control Board cannot be detected. Please contact your local Videojet Service representative.	1) Defective Main Control Board
(E10620) Invalid Ink Management Board	A valid Ink Management Board cannot be detected by the Main Control Board. Please contact your local Videojet Service representative.	1) (if asserted with E15067) Bad connection between Main Control Board and IMB. 2) Defective IMB (unprogrammed or incorrectly programmed Smart Chip)
(E10621) Wrong Cartridge in Make-up Slot	The Cartridge in the Make-up slot contains Ink. Please fit a suitable Make-up Cartridge.	1) Improper cartridge fitted. 2) Ink Cartridge Smart Chip was programmed incorrectly. 3) Fluid cartridge was labeled incorrectly.
(E10622) Wrong Cartridge in Ink Slot	The cartridge in the Ink slot contains Make-up. Please fit a suitable Ink Cartridge.	1) Improper cartridge fitted. 2) Ink Cartridge Smart Chip was programmed incorrectly. 3) Fluid cartridge was labeled incorrectly.
(E10623) Ink Cartridge Insertions Exceeded	The Cartridge in the Ink slot has exceeded its allowed number of insertions. Please fit a suitable Ink Cartridge.	1) Number of allowed insertions actually exceeded. 2) Cartridge programmed incorrectly. 3) Unrelated event caused 'insertions' parameter to increment.
(E10624) Make-up Cartridge Insertions Exceeded	The Cartridge in the Make-up slot has exceeded its allowed number of insertions. Please fit a suitable Make-up Cartridge.	1) Number of allowed insertions actually exceeded. 2) Cartridge programmed incorrectly. 3) Unrelated event caused 'insertions' parameter to increment.
(E10625) Ink Cartridge Expired	The Ink Cartridge has reached the end of its usable life. Please fit a suitable Ink Cartridge.	1) Cartridge is actually expired. 2) Printer date is set incorrectly. 3) Smart Chip mis-programmed.
(E10626) Make-up Cartridge Expired	The Make-up Cartridge has reached the end of its usable life. Please fit a suitable Make-up Cartridge.	1) Cartridge is actually expired. 2) Printer date is set incorrectly. 3) Smart Chip mis-programmed.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E10627) Printhead 1 Ink Temperature Below Threshold	The Ink Temperature in Printhead 1 did not reach the required target Temperature. Continue to run the Jet to allow the Temperature to reach target. If the alarm persists, contact your local Videojet Service Representative.	
(E10635) Ink System Missing Data	The Ink System Data cannot be found and no valid backup exists. Please contact your local Videojet Representative.	
(E10636) Ink Cartridge Communication Error	The IMB is unable to communicate with the Ink Cartridge. Please confirm that the Ink Cartridge is inserted fully and power cycle the printer. If the alarm persists, please contact your local Videojet Service Representative.	
(E10637) Make-up Cartridge Communication Error	The IMB is unable to communicate with the Make-up Cartridge. Please confirm that the Make-up Cartridge is inserted fully and power cycle the printer. If the alarm persists, please contact your local Videojet Service Representative.	
(E10639) IMB Fluid Data Incompatible With Nozzle Size	The Fluid Data contained within the IMB is not compatible with the Nozzle size of the Print Module. Please update the Fluid Data on the IMB, or replace the Print Module with one of the correct Nozzle size.	
(E10649) New Ink Parameters	The Ink operating parameters have changed and updated to IMB.	
(E10650) Service Module 1 Communication Error	The Printer is unable to communicate with Service Module 1. Please confirm Service Module 1 is inserted fully and power cycle the printer. If the alarm persists, please contact your local Videojet Service Representative.	
(E10651) Main Board Communication Error	The Main Board is unable to communicate with the printer. Please confirm MCB cables are connected securely and power cycle the printer. If the alarm persists, please contact your local Videojet Service Representative.	
(E10652) Solvent Control Module Communication Error	The Printer is unable to communicate with Solvent Control Module. Please confirm Solvent Control Module is inserted fully and power cycle the printer. If the alarm persists, please contact your local Videojet Service Representative.	
(E10653) IMB Communication Error	The MCB is unable to communicate with the IMB. Please confirm IMB is inserted correctly. If the alarm persists, please contact your local Videojet Service Representative.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E10662) Printhead 1 Print Module Communication Error	The MCB is unable to communicate with the Print Module. Please confirm Print Module is inserted correctly and power cycle the printer. If the alarm persists, please contact your local Videojet Service Representative.	
(E10670) Viscometer Temperature Feedback Error	The Ambient and Viscometer Temperatures do not agree. Turn the printer OFF and check the connection between the Viscometer Temperature Sensor and the Ink Management PCB.	
(E10671) Ink System Valve Current Offset Out of Range	The Current Offset measured by the printer at initialization for the Ink System Valves is outside of the allowed tolerance. Please cycle power to reset the Current Offset.	1) Erroneous offset value calculated by the printer at boot-up. 2) Environmental extreme is affecting circuit sensitivity 3) Mismatch between software and hardware - the 'offset' limitation is not appropriate for the hardware in use. 4) Short circuit in one or more valves (run hardware self-test or valve test) 5) Defective Ink Management PCB.
(E10672) Printhead 1 Valve Current Offset Out of Range	The Current Offset measured by the Printer at initialization for the Printhead valves is outside of the allowed tolerance. Please cycle power to reset the Current Offset.	1) Erroneous offset value calculated by the printer at boot-up. 2) Environmental extreme is affecting circuit sensitivity 3) Mismatch between software and hardware - the 'offset' limitation is not appropriate for the hardware in use. 4) Short circuit in one or more valves (run hardware self-test or valve test) 5) Defective MCB.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E10680) Ink System Valve Current Too High	The current measured in the Valve Drive circuit is too high for the number of Valves in use. Stop the Jet and run a Hardware Test to check Valve functionality.	1) Mismatch between software and hardware - the coded current tolerance is not appropriate for the hardware in use. 2) Short circuit in one or more valves (run hardware self-test or valve test) 3) Defective Ink Management PCB.
(E10681) Ink System Valve Current Too Low	The Current measured in the Valve Drive circuit is too low for the number of Valves in use. Stop the Jet and run a Hardware Test to check Valve functionality.	1) Mismatch between software and hardware - the coded current tolerance is not appropriate for the hardware in use. 2) Environmental extreme, or excessive cycling of valves has affected circuit sensitivity or valve resistivity. 3) Open circuit in one or more valves (should be reported as soon as jet is stopped and valve is shut; run hardware self-test or valve test) 4) Defective Ink Management PCB.
(E10682) Printhead 1 Valve Current Too High	The Current measured in the Valve Drive circuit is too high for the number of Valves in use. Stop the Jet and run a Hardware Test to check Valve functionality.	1) Mismatch between software and hardware - the coded current tolerance is not appropriate for the hardware in use. 2) Short circuit in one or more valves (run hardware self-test or valve test) 3) Defective MCB.
(E10690) Printhead 1 Valve Current Too Low	The Current measured in the Valve Drive circuit is too low for the number of Valves in use. Stop the Jet and run a Hardware Test to check Valve functionality.	1) Mismatch between software and hardware - the coded current tolerance is not appropriate for the hardware in use. 2) Environmental extreme, or excessive cycling of valves has affected circuit sensitivity or valve resistivity. 3) Open circuit in one or more valves (should be reported as soon as jet is stopped and valve is shut; run hardware self-test or valve test). 4) Defective MCB.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E10698) Waste Cartridge in Ink Slot	The cartridge in the ink slot has been used for waste. This cannot be used for normal operation.	
(E10699) Waste Cartridge in Make-up Slot	The Cartridge in the Make-up slot has been used for waste. This cannot be used for normal operation. Please remove and insert a suitable Make-up Cartridge.	
(E10700) Waste Cartridge in Ink Slot Full	The Cartridge in the Ink slot is full with waste fluid. Please replace it with an empty Evacuated Cartridge to continue Empty & Clean System operation.	
(E10717) Incompatible Software	The downloaded Software is not compatible with this printer. Please contact your local Videojet Service Representative.	
(E10718) IMB Programming Error	The Ink Management Board is unable to read fluid data from the printer. Please contact your local Videojet Service Representative.	
(E10719) Printhead 1 Job Not Ready to Print	Printhead 1 Job is not ready to print. Please Run and Load Job.	
(E10727) Evacuated Cartridge in Ink Slot	The Cartridge in the Ink slot is a pre-evacuated empty Cartridge supplied by Videojet.	
(E10728) Evacuated Cartridge in Make-up Slot	The Cartridge in the Make-up slot is a pre-evacuated empty Cartridge supplied by Videojet.	
(E10729) Modulation Driver Readback Error	The Main Control Board has detected a communication error with the Modulation Driver. Please contact your local Videojet Service Representative.	
(E10737) A Crash Dump File is Available	A Crash Dump File is available for download. Please download to USB disk and contact your local Videojet Service Representative.	
(E10738) Resident Flash Failure	The MCB is unable to communicate with the MicroSD Card. Please remove and re-insert the MicroSD Card and power cycle the printer. If the alarm persists, please contact your local Videojet Service Representative.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E10740) Improper Printer Shutdown	The printer was not able to complete the Shutdown sequence. To avoid start up issues, inspect the Printhead prior to start up and clean if necessary.	
(E10741) Invalid Software Version	The Software version installed on the printer must be updated. Please use the Software Download Tool to Upgrade the System Software.	
(E10742) System Update Failed	The System Update failed to install. Please retry install process.	
(E10743) Corrupted System Update	The System Update failed the verification check and was not installed. Please retry install process.	
(E10744) Air Pump Current Too Low	The measured current for the Air Pump is below the minimum allowed value. Please contact your local Videojet Service Representative.	
(E1104) Invalid Job File - Invalid Date Field	The Job file is invalid and needs to be corrected. The Job file you are trying to select contains an incorrectly specified Date Calculation. The Default Offset for the date falls outside of the date range specified by the Minimum and Maximum user concession. Please correct this error in the Job file. Then, retry with the corrected file.	
(E1105) Invalid Job File - Multiple Transmitted Fields	The Job file is invalid and needs to be corrected. A Transmitted Field attribute was found on more than one field. Only one field can be tagged as the transmitted field. Please correct this error in the Job file. Then, retry with the corrected file.	
(E1200) Invalid Job File - Invalid Barcode Character	A barcode in the current job file contains at least one character which is not within the allowed character set of the barcode type. Check the data source for the barcode (Custom Reference Field, or CLARiSOFT Database) and remove or replace the invalid character.	
(E1210) Invalid Job File - EAN barcode Out of Spec.	The Job file is invalid and needs to be corrected. An EAN128 barcode field in the Job file contains an application identifier that requires a check digit, but this check digit was either missing or invalid. Please check and correct the EAN128 barcode fields in the Job file. Then, retry with the corrected file.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E1212) Invalid Job File - Barcode Length Incorrect	The Job file is invalid and needs to be corrected. A barcode field in the Job file does not have the expected number of characters. Please check and correct the barcode fields in the Job file. Then, retry with the corrected file.	
(E1214) Invalid Job File - Invalid Checksum/Encryption Data	The Job File is invalid and needs to be corrected. A Field in the Job File uses a checksum/encryption (e.g an Claricom.Modulo10Checksum/ CLARiTY.Encryption.HIBC) but the data supplied to calculate the checksum or encrypt the data were not valid. Use CLARiSOFT to check and correct Field(s) using checksums/encryption in the Job File. Then, download the corrected File.	
(E1216) Invalid Job File - Barcode Symbology Not Installed	The Job file contains a barcode symbology that is not installed in this printer. Please remove the barcode from the Job file. Then, retry with the corrected file.	
(E1219) Invalid Job File - Invalid Barcode Size	The Job file is invalid and needs to be corrected. A Data Matrix Barcode field in the Job file has invalid dimensions.	
(E1226) Invalid Job File - Invalid Price	The Job file contains a price field that is not supported by this printer. Please remove all price fields from the job. Then, retry with the corrected file to the printer.	
(E1243) Invalid Job File - Avoidance Date	The Job file contains a calculated date that is an avoidance date. Please check and correct the calculated dates in the job. Then, retry with the corrected file.	
(E15000) Air Pump is Not Turning	The Air Pump is energised but is not turning. Please contact your local Videojet Service Representative.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15001) Ink Pump Not Turning	The Ink Pump is energised but is not turning. Please contact your local Videojet Service representative.	1) Faulty connection between the IMB and the ink pump. 2) Defective ink pump (electrical). 3) Defective ink pump (mechanical). 4) Defective IMB.
(E15002) Ink Pump Drive Near Maximum	The Ink Pump Controller is operating at maximum drive. Turn the printer off and inspect the Ink Compartment for leaks.	1) Ink leak. 2) Faulty connection between the IMB and the ink pump. 3) Faulty connection between the IMB and the pressure transducer. 4) Defective Pressure Transducer. 5) Defective Ink Pump. 6) Defective IMB.
(E15003) Ink Pressure Too Low	The Ink Pump discharge pressure is below target. Turn the printer off and inspect the Ink Compartment for leaks.	1) Ink leak. 2) Faulty connection between the IMB and the ink pump. 3) Faulty connection between the IMB and the pressure transducer. 4) Defective Pressure Transducer. 5) Defective Ink Pump. 6) Defective IMB.
(E15004) Ink Pump Warning	The Ink Pump is generating insufficient pressure at maximum drive. Turn the printer off and inspect the Ink Compartment for leaks.	1) Ink leak. 2) Faulty connection between the IMB and the ink pump. 3) Faulty connection between the IMB and the pressure transducer. 4) Defective Pressure Transducer. 5) Defective Ink Pump. 6) Defective IMB.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15005) Ink Pump Fault	The Ink Pump generated insufficient pressure at maximum drive. Turn the printer off and inspect the Ink Compartment for leaks.	1) Ink leak. 2) Faulty connection between the IMB and the ink pump. 3) Faulty connection between the IMB and the pressure transducer. 4) Defective Pressure Transducer. 5) Defective Ink Pump. 6) Defective IMB.
(E15006) Viscometer Fault	The Viscometer was not completely empty at the beginning of the printer's viscosity control cycle. Please contact your local Videojet Service Representative.	1) Viscometer not empty. 2) 'High' or 'low' probe shorted to ground. 3) Defective Ink Management PCB.
(E15007) Viscometer Fill Time Too Long	The Viscometer failed to fill within the allotted time and therefore the printer is incapable of viscosity monitoring. Run a Hardware Self Test to check ink system components.	1) VMS Restrictor is clogged. 2) 'High' level probe is malfunctioning (not connected). 3) Valve VV malfunction. 4) Defective IMB (Level probe or Valve Drive circuit). 5) Viscometer overflow is blocked (no vent path).
(E15008) Viscometer Empty Time Too Long	The Viscometer failed to empty within the allotted time and therefore the printer is incapable of viscosity monitoring. Please contact your local Videojet Service Representative.	1) Viscometer drain is clogged. 2) Ink is thick. 3) Mixer tank vent cross-connect is blocked. 4) Valve VV leaking by. 5) 'Low' level probe is malfunctioning (shorted to ground). 6) Defective IMB.
(E15009) Ink Pump Pressure Too High	The Ink Pump discharge pressure is above target. Please contact your local Videojet Service representative.	1) Defective pressure transducer. 2) Defective IMB.
(E15021) Printhead 1 Gutter Pump Not Turning	Printhead 1 Gutter pump is energised but is not turning. Please contact your local Videojet Service Representative.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15031) Modulation Driver Too Hot	The Modulation Drive Circuit on the Main Control Board has exceeded its maximum allowed temperature. Please contact your local Videojet Service Representative.	1) Defective Print Module. 2) Defective Print Module PCB. 3) Defective umbilical. 4) Defective Main Control Board.
(E15039) Make-up Tank Not Filling	The Make-up Tank has failed to fill in the allowed time. Please check the Make-up Cartridge and fit a suitable replacement Cartridge if necessary.	1) Make-up cartridge physically empty but ok per Smart Chip. 2) Solvent Control Module failure (valves or flush pump) (Check if plugged in; run Hardware Test to confirm faulty component and replace). 3) Failed level sensor (Replace Ink System). 4) Failed IMB (Valve driver circuits).
(E15040) Mixer Tank Not Filling	The Mixer Tank has failed to fill in the allowed time. Please check the Ink Cartridge and fit a suitable replacement Cartridge if necessary.	1) Ink cartridge physically empty but ok per Smart Chip. 2) Solvent Control Module failure (valves) (Check if plugged in; run Hardware Test to confirm faulty component and replace). 3) Failed level sensor (Replace Ink System). 4) Failed IMB (Valve driver circuits). 5) Venturi clogged.
(E15041) Invalid Filename	The Filename is invalid. Please locate and re-save the File with a unique name.	
(E15042) File Does Not Exist	The requested File cannot be found. Please confirm filename is correct and file is available.	
(E15044) Invalid Job Width	The Job exceeds the maximum Print Width. Please edit the Job to reduce the Print Width before continuing or select a new Job.	
(E15046) Information Manager Error	An unexpected Information Manager Error has occurred. Please contact your local Videojet Service Representative.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15047) Ink Cartridge Low	The level of ink in the ink cartridge is below 20% and will require replacing soon.	
(E15048) Ink Cartridge Empty	The Ink Cartridge is empty. Please fit a suitable Ink Cartridge.	1) Ink Cartridge depleted.
(E15049) Make-up Cartridge Low	The level of Make-up in the Make-up Cartridge is below 20% and will require replacing soon.	
(E15050) Make-up Cartridge Empty	The Make-up Cartridge is empty. Please fit a suitable Make-up Cartridge.	1) Make-up Cartridge depleted.
(E15051) Ink Compartment Fan Not Turning	The Ink Compartment Fan is not rotating. Please open the Ink Compartment Door and inspect the Fan for proper operation.	1) Fan is unplugged. 2) Fan blades are obstructed. 3) Fan failure. 4) Fan drive or sensing circuit failure (bad IMB).
(E15053) Make-up Tank Level Sensor Error	The printer has not received a valid response from the Make-up Tank Level Sensor. Please turn the printer off and confirm that the sensor is plugged into the Ink Management PCB.	1) Level sensor unplugged. 2) Level sensor mis-wired. 3) Bad level sensor connector. 4) Mixer Tank sensor installed in place of Make-up Tank sensor. 5) Make-up Tank sensor addressed incorrectly. 6) Sensor failure. 7) Bad IMB.
(E15054) Mixer Tank Level Sensor Error	The printer has not received a valid response from the Mixer Tank Level Sensor. Please turn the printer off and confirm that the sensor is plugged into the Ink Management PCB.	1) Level sensor unplugged. 2) Level sensor mis-wired. 3) Bad level sensor connector. 4) Make-up Tank sensor installed in place of Mixer Tank sensor. 5) Mixer Tank sensor addressed incorrectly. 6) Sensor failure. 7) Bad IMB.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15055) Mixer Tank Temperature Out of Range	The Mixer Tank Temperature Sensor is reporting a value outside of the allowed range. Please contact your local Videojet Service representative.	
(E15059) Make-up Tank High	The level of fluid in the Make-up Tank is above the allowed limit. Please continue to run the Ink Jet if possible and avoid actions that will result in the introduction of additional Make-up into the system, including Clean Stop/Start and Nozzle Flushing.	1) High level in tank due to excessive starts and stops, or excessive nozzle flushing. Note that these events do not raise the level directly, but will cause it to increase over time due to the vent/condenser. 2) Printer / tank is not level. 3) Carryover from Mixer Tank. 4) Defective Level Sensor.
(E15060) Make-up Tank Low	The level of fluid in the Make-up Tank is below the allowed limit. Please check the Make-up Cartridge and fit a suitable replacement if necessary.	1) Make-up Cartridge Empty. 2) No Make-up Cartridge. 3) Wrong Make-up Cartridge. 4) Expired Make-up Cartridge. 5) Make-up Cartridge incorrectly fitted. 6) Solvent Control Module failure (valves, flush pump). 7) Bad Level Sensor. 8) Bad IMB (valve drivers).
(E15061) Make-up Tank Empty	The Make-up Tank is empty. Please check the Make-up Cartridge and fit a suitable replacement if necessary.	1) Make-up Cartridge Empty. 2) No Make-up Cartridge. 3) Wrong Make-up Cartridge. 4) Expired Make-up Cartridge. 5) Make-up Cartridge incorrectly fitted. 6) Solvent Control Module failure (valves, flush pump). 7) Bad Level Sensor. 8) Bad IMB (valve drivers).

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15062) Make-up Tank Empty	The Make-up Tank is empty. Please fit a suitable Make-up Cartridge and perform 'Prime Make-up Tank' before restarting the jet.	1) Make-up Cartridge Empty. 2) No Make-up Cartridge. 3) Wrong Make-up Cartridge. 4) Expired Make-up Cartridge. 5) Make-up Cartridge incorrectly fitted. 6) Solvent Control Module failure (valves, flush pump). 7) Bad Level Sensor. 8) Bad IMB (valve drivers).
(E15063) Mixer Tank High	The level of fluid in the Mixer Tank is above the allowed limit. Please continue to run the Ink Jet if possible and avoid actions that will result in the introduction of additional Make-up into the system, including Clean Stop/Start and Nozzle Flushing.	1) High level in tank due to excessive starts and stops, or excessive nozzle flushing. 2) Foaming in Mixer Tank. 3) Defective Level Sensor.
(E15064) Mixer Tank Low	The level of fluid in the Mixer Tank is below the allowed limit. Please check the Ink Cartridge and fit a suitable replacement if necessary.	1) Ink Cartridge Empty. 2) No Ink Cartridge. 3) Wrong Ink Cartridge. 4) Expired Ink Cartridge. 5) Ink Cartridge incorrectly fitted. 6) Solvent Control Module failure (valves). 7) Bad Level Sensor. 8) Bad IMB (valve drivers) 9) Venturi clogged.
(E15065) Mixer Tank Empty	The Mixer Tank is empty. Please check the Ink Cartridge and fit a suitable replacement if necessary.	1) Ink Cartridge Empty. 2) No Ink Cartridge. 3) Wrong Ink Cartridge. 4) Expired Ink Cartridge. 5) Ink Cartridge incorrectly fitted. 6) Solvent Control Module failure (valves). 7) Bad Level Sensor. 8) Bad IMB (valve drivers). 9) Venturi clogged.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15066) Mixer Tank Empty	The Mixer Tank is empty. Please fit a suitable Ink Cartridge and perform 'Prime Mixer Tank' before restarting the jet.	1) Ink Cartridge Empty. 2) No Ink Cartridge. 3) Wrong Ink Cartridge. 4) Expired Ink Cartridge. 5) Ink Cartridge incorrectly fitted. 6) Solvent Control Module failure (valves). 7) Bad Level Sensor. 8) Bad IMB (valve drivers) 9) Venturi clogged.
(E15067) Ink System Connection Lost	The Main Control Board has lost communication with the Ink Management PCB. Turn the printer OFF and check the cable connection between the Main Control Board and the Ink System.	1) Faulty connection between the IMB and the Main Control Board. 2) Defective IMB (loss of +24VDC power to IMB, or faulty load is pulling down +24VDC on the IMB. Note that loss of communications impairs the IMB's ability to report a power supply problem). 3) Defective Main Control Board.
(E15068) Ink System Connection Error	The Main Control Board has bad communication with the IMB. Turn the printer OFF and check the cable connection between the Main Control Board and the Ink Management Board.	
(E15085) Preview Image Corrupted	The Preview Image failed to load. The default Image has been used.	
(E15088) Main Board FPGA Unprogrammed	The Main Board FPGA does not contain the required programme to proceed. Please contact your local Videojet Service Representative.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15097) Printhead 1 Gutter Fault	Gutter Fault detected on Printhead 1. Ensure that the Gutter is unobstructed and then clean and dry the Printhead.	1) No ink stream - clog. 2) No ink stream - pressure problem. 3) No ink stream - valve. 4) Misdirected ink stream - partial clog. 5) Misdirected ink stream - viscosity problem. 6) Misdirected ink stream - misaligned. 7) No vacuum - valve. 8) No vacuum - clog. 9) No vacuum - venturi. 10) No vacuum - leak. 11) Print Module is poorly fitted. 12) Ink conductivity issue.
(E15114) Printhead 1 ADC Offset Initialisation Failed	Printhead 1 ADC Offset failed to initialise. Please contact your local Videojet Service Representative.	
(E15131) Printhead 1 Heater Temperature Too Low	The measured Temperature for Printhead 1 is below the normal control band. Please check the ambient conditions in the vicinity of the Printhead and relocate it if necessary.	1) Poor fit - Valve Module to chassis. 2) Ambient extreme. 3) Heater defective (blown thermal cutout). 4) Heater not turned on (software issue). 5) Defective temperature sensor. 6) Defective valve module, umbilical or MCB.
(E15141) Printhead 1 Heater Temperature Too High	The measured Temperature for Printhead 1 is above the normal control band. Please check the ambient conditions in the vicinity of the Printhead and relocate it if necessary.	1) Ambient temperature exceeds warning trip point. 2) Heater control issue (software / microcontroller). 3) Defective temperature sensor. 4) Adjacent component causing overheating of the circuit. 5) Cabling in chassis is physically or electronically interfering with the circuit. 6) Defective valve module.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15150) Ink Viscosity Too Low	The Ink is too thin. Please continue to run the Ink Jet if possible and avoid actions that will result in further dilution, including Clean Stop/Start and Nozzle Flushing.	1) Ink is actually too thin due to operator error. 2) Residual fluid at installation or during component replacement. 3) Ink quality issue. 4) Smart Chip programming issue (incorrect coefficients). 5) Viscometer quality problem (tolerances of level rods or drain). 6) Ink temperature sensor not reading the correct temperature. 7) Viscometer overflow is blocked; chamber is pressurized.
(E15151) Ink Viscosity Too High	The Ink is too thick. Check the Make-up Tank level and re-prime the tank if necessary.	1) Ink is actually too thick due to Make-up Tank level issue, although E15062 should protect against this. 2) Viscometer drain partially clogged. 3) Make-up Tank level sensor failure (empty without alarm asserted). 4) Make-up add flow path compromised (Make-up Tank to Solvent Control Module to Mixer Tank venturi) 5) Valve failure - VR or VJ. 6) Venturi failure. 7) Ink quality issue. 8) Smart Chip programming issue (incorrect coefficients). 9) Viscometer quality problem (tolerances of level rods or drain). 10) Ink temperature sensor not reading the correct temperature.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15152) Unable To Control Viscosity	The Printer has been unable to recover from an incorrect Ink Viscosity condition within the allowed time. Perform a Hardware test to check the Ink System components. Then, restart the Ink Jet to allow for additional Viscosity correction.	1) Ink is actually too thick due to Make-up Tank level issue. 2) Ink is too thin due to operator error. 3) Viscometer quality problem (tolerances of level rods or drain). 4) Make-up Tank level sensor failure (empty without alarm asserted). 5) Make-up add flow path compromised (Make-up Tank to Solvent Control Module to Mixer Tank venturi) 6) Valve failure - VR or VJ. 7) Venturi failure. 8) Ink quality issue. 9) Smart Chip programming issue (incorrect coefficients). 10) Ink temperature sensor not reading the correct temperature.
(E15153) Flush Pump Not Turning	The Flush Pump is energised but is not turning. Check the ribbon cable connection between the Mixer Tank and Solvent Control Module.	1) Faulty connection between the IMB and the Solvent Control Module PCB. 2) Defective Solvent Control Module (flush pump). 3) Defective IMB.
(E15154) 'Quick' Stop due to Operator Selection	The printer performed a 'Quick' Stop due to Operator selection. To avoid start up issues, restart the Ink Jet at the earliest opportunity. Inspect the Printhead prior to start up and clean if necessary.	1) Manual selection via UI

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15161) Printhead 1 Heater Over-temperature	The measured Temperature for Printhead 1 is above the maximum allowed limit. Please check the ambient conditions in the vicinity of the Printhead and relocate it if necessary.	1) Ambient temperature exceeds fault trip point. 2) Heater control issue (software / microcontroller). 3) Defective temperature sensor. 4) Adjacent component causing overheating of the circuit. 5) Cabling in chassis is physically or electronically interfering with the circuit. 6) Defective valve module, umbilical or MCB.
(E15171) Printhead 1 No Time to Phase	The Printer failed to acquire valid Phase Profile data before the timeout occurred. Please reduce the Print Rate / Line Speed and check the Product Detector for correct operation.	1) Printing too fast. 2) Printing too slow on shaft encoder - line has paused mid-print. 3) Product detector malfunction - 'fluttering' due to mis-adjustment or moisture.
(E15181) Printhead 1 No Good Phase	The Printer failed to acquire a good Phase Profile before the timeout occurred. Please stop the Jet and clean the Printhead.	1) No phasing / velocity - dirty printhead. 2) No phasing / velocity - bad sensor. 3) No phasing / velocity - bad fit between Print Module, umbilical and MCB. 4) Ink viscosity out of tolerance. 5) Bad break-off (nozzle clog) 6) Bad break-off (modulation) 7) Erratic pressure 8) Noise in phasing/velocity signal, or bad umbilical or connection issue between Main Control Board and Print Module 9) Ink conductivity / expiry / oxidized / contaminated 10) Defective Print Module or MCB 11) Defective Main Control Board.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15191) Printhead 1 Phase Threshold Error	The Printer was not able to auto-adjust to acquire a good Phase Profile. Please contact your local Videojet Service Representative.	1) Bad fit between Print Module and MCB. 2) Bad umbilical or connection issue between Main Control Board and Print Module. Check conductivity of Umbilical 3) Bad Print Module 4) Bad Main Control Board.
(E15199) Printer Log Error	An error has occurred whilst saving Printer Log information. Please contact your local Videojet Service Representative.	
(E15201) Printhead 1 Velocity Detect Timeout	The Printer failed to acquire valid drop speed data before the timeout occurred. Please reduce the Print Rate / Line Speed and check the Product Detector for correct operation.	1) Printing too fast. 2) Printing too slow on shaft encoder - line has paused mid-print. 3) Product detector malfunction - 'fluttering' due to mis-adjustment or moisture. 4) No phasing / velocity - dirty printhead. 5) No phasing / velocity - bad sensor. 6) No phasing / velocity - bad fit between Print Module and MCB. 7) Ink viscosity out of tolerance. 8) Bad break-off (nozzle clog). 9) Bad break-off (modulation). 10) Erratic pressure. 11) Noise in phasing/velocity signal, or bad umbilical or connection issue between Main Control Board and Print Module. 12) Ink conductivity / expiry / oxidized / contaminated. 13) Defective Print Module. 14) Defective Main Control Board. 15) Defective Umbilical.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15209) Diagnostic Log File is Invalid	The Diagnostic Log File is invalid and cannot be exported to USB. Please contact your local Videojet Service Representative.	
(E15211) Printhead 1 Drop Velocity Too High	The measured ink drop speed for Printhead 1 is above the allowed tolerance. If possible, please refrain from printing until the drop speed has auto-corrected and the warning has cleared.	1) Normal transient during printer startup. 2) Ink is too thin. 3) Partial nozzle clog causing irregular break-off. 4) Pressure transducer not reading correct pressure. 5) Printer sequence does not include the correct pump control mnemonic
(E15221) Printhead 1 Drop Velocity Too Low	The measured ink drop speed for Printhead 1 is below the allowed tolerance. If possible, please refrain from printing until the drop speed has auto-corrected and the warning has cleared.	1) Normal transient during printer startup. 2) Ink is too thick. 3) Partial nozzle clog causing irregular break-off. 4) Pressure transducer not reading correct pressure. 5) Printer sequence does not include the correct pump control mnemonic
(E15229) Printhead 1 EHT Module Not Detected	The EHT Module cannot be detected by the Main Control Board. Turn the printer OFF and check the ribbon cable connection between the Main Control Board and the EHT Module.	1) Faulty connection between the Main Control Board and the EHT Module. 2) Defective EHT Module. 3) Defective Main Control Board.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15237) Printhead 1 EHT trip	The measured EHT Current is outside of the allowed tolerance. Please clean and dry the Printhead before restarting the Ink Jet. Refer to the Service Manual for appropriate safety precautions.	1) Dirty or wet printhead. 2) Ink jet aligned too high in the gutter. 3) Improper drop break-off. 4) Ink viscosity too high or too low. 5) Ink contaminated. 6) Printer is operating in a harsh environment. 7) Contaminants creating a path to ground within the printhead chassis. 8) Defective umbilical. 9) Defective EHT Module. 10) Defective Main Control Board.
(E15245) Printhead 1 EHT Voltage Too High or Too Low	The measured EHT Voltage is outside of the allowed tolerance. Please contact your local Videojet Service Representative.	1) Faulty connection between the Main Control Board and the EHT Module. 2) Defective EHT Module. 3) Defective Main Control Board.
(E15253) Too Many Raster Files Found	The number of Raster Files exceeds the maximum allowed by the system. Please contact your local Videojet Service representative.	1) Anomaly during software upgrade procedure. 2) Anomaly during back-up / restore. 3) Uncontrolled version / SAR version containing excess or incorrectly named files was loaded.
(E15254) Faulty Raster File Detected	The Printer has identified a faulty Raster File within its memory. Please contact your local Videojet Service Representative.	1) Anomaly during software upgrade procedure. 2) Uncontrolled version containing excess or incorrectly named files was loaded.
(E15255) Raster Pixel Span Problem	The printer has identified a faulty Raster File within its memory. Please contact your local Videojet Service Representative.	Bad file in software build
(E15256) Raster Family File Size Too Large	The number of Raster Files exceeds the maximum allowed by the system. Please contact your local Videojet Service Representative.	Extra file(s) in build

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15257) No Raster Files Found	The printer's memory is void of Raster files and therefore printing is not possible. Please contact your local Videojet Service Representative.	1) Anomaly during software upgrade procedure. 2) Uncontrolled or SAR version containing excess or incorrectly named files was loaded.
(E15258) Raster Manager Parameters Missing	The Raster Manager failed to update with the required parameters. Please cycle power to reprogram the Raster Manager.	1) Anomaly during power-on. 2) Anomaly during software upgrade procedure. 3) Bad software build.
(E15260) Failed to Add Raster Table	The Raster Table failed to load due to an internal software error. Please contact your local Videojet Service Representative.	
(E15261) Incompatible Raster File Detected	The Printer has identified an incompatible Raster file within its memory. Please contact your local Videojet Service Representative.	Bad file in software build
(E15262) 'Quick' Start as Mixer Tank High	The printer is performing a 'Quick' Start as the Mixer Tank is High.	1) High level in tank due to excessive starts and stops, or excessive nozzle flushing. 2) Foaming in Mixer Tank. 3) Defective Level Sensor.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15263) 'Quick' Start due to No Make-up Cartridge	The printer is performing a 'Quick' Start as there is No Make-up Cartridge.	1) Cartridge is missing. 2) Cartridge is not fitted correctly. 3) Communications error (see note below). 4) Smart Chip is not programmed. 5) Faulty connection between the Ink Management PCB and the Solvent Control Module. 6) Defective Solvent Control Module. 7) Defective Ink Management PCB. ***Note:*** *The Smart Chip Supplies and Parts Validation System utilizes 'time-outs' in inter-chip communications and also has a 'sleep mode' in order to reduce power consumption (heat generation) during periods of inactivity. If this warning is asserted following the insertion of a new cartridge, then it may be helpful to REMOVE and REINSERT the cartridge (since Smart Chip authentication is initiated following a CHANGE in the status of the slot).*
(E15264) 'Quick' Start as Make-up Cartridge Empty	The printer is performing a 'Quick' Start as the Make-up Cartridge is Empty.	1) Make-up Cartridge depleted.
(E15265) 'Quick' Stop as Mixer Tank High	The printer performed a 'Quick' Stop as the Mixer Tank is High. To avoid start-up issues, restart the Ink Jet at the earliest opportunity. Inspect the Printhead prior to start and clean if necessary.	1) High level in tank due to excessive starts and stops, or excessive nozzle flushing. 2) Foaming in Mixer Tank. 3) Defective Level Sensor.
(E15266) 'Quick' Stop due to Incorrect Make-up Type	The printer performed a 'Quick' Stop due to incorrect Make-up Type. To avoid start-up issues, restart the Ink Jet at the earliest opportunity. Inspect the Printhead prior to start and clean if necessary.	1) Improper cartridge fitted. 2) Make-up Cartridge Smart Chip was programmed incorrectly. 3) Fluid cartridge was labeled incorrectly. 4) IMB Smart Chip failed to program/update correctly.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15267) 'Quick' Stop due to No Make-up Cartridge	The printer performed a 'Quick' Stop as there is No Make-up Cartridge. To avoid start-up issues, restart the Ink Jet at the earliest opportunity. Inspect the Printhead prior to start and clean if necessary.	1) Cartridge is missing. 2) Cartridge is not fitted correctly. 3) Communications error (see note below). 4) Smart Chip is not programmed. 5) Faulty connection between the Ink Management PCB and the Solvent Control Module. 6) Defective Solvent Control Module. 7) Defective Ink Management PCB. ***Note:*** *The Smart Chip Supplies and Parts Validation System utilizes 'time-outs' in inter-chip communications and also has a 'sleep mode' in order to reduce power consumption (heat generation) during periods of inactivity. If this warning is asserted following the insertion of a new cartridge, then it may be helpful to REMOVE and REINSERT the cartridge (since Smart Chip authentication is initiated following a CHANGE in the status of the slot).*
(E15268) 'Quick' Stop as Make-up Cartridge Empty	The printer performed a 'Quick' Stop as the Make-up Cartridge is Empty. To avoid start-up issues, restart the Ink Jet at the earliest opportunity. Inspect the Printhead prior to start and clean if necessary.	1) Make-up Cartridge depleted.
(E15269) Printhead 1 Missed Print: Product Delay too short	Missed Print: Printhead 1 Product Delay is too short. Review the PD to PH Distance and increase as required.	
(E15277) Printhead 1 Missed Print: Out Of Strokes	Missed Print: The print is being missed as the Job was not created in the available time.	
(E15285) Incorrect Make-up Type	The cartridge in the Make-up slot is of the wrong type (%1). Please fit a %2 Make-up Cartridge.	1) Improper cartridge fitted. 2) Make-up Cartridge Smart Chip was programmed incorrectly. 3) Fluid cartridge was labeled incorrectly. 4) IMB Smart Chip failed to program/update correctly.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15286) Incorrect Ink Type	The Cartridge in the Ink slot is of the wrong type (%1). Please fit a %2 Ink Cartridge.	1) Improper cartridge fitted. 2) Ink Cartridge Smart Chip was programmed incorrectly. 3) Fluid cartridge was labeled incorrectly. 4) IMB Smart Chip failed to program/update correctly.
(E15287) Printhead 1 Missed Print: Overlap	Missed Print: The Print is being truncated due to an overlap with the following print.	
(E15295) Printhead 1 Missed Print: Overlap	Missed Print: The Print is being missed due to an overlap with the following print.	
(E15311) Job Too Long	The Job exceeds the maximum Print Width. Please edit the Job to reduce the Print Width before continuing or select a new Job.	
(E15319) Printhead 1 Missed Print: Product Queue Too Deep	Missed Print: There are more than 20 products between the Product Detector and the Printhead which are not yet printed. Contact your local Videojet Service Representative.	
(E15327) Raster Size Exceeds FPGA Capacity	The FPGA failed to program with complete Raster data due to memory limitations. Please cycle power to reprogram the FPGA.	1) Anomaly during boot-up. 2) Raster files corrupt. 3) Bad software build was loaded. 4) Bad Main Control Board 5) Check on SD card.
(E15335) Printhead 1 Missed Print: Invalid Compensation	Missed Print: The specified compensation requires an unavailable Raster. Please select a different Raster or contact your local Videojet Service Representative.	
(E15343) Installation Not Complete	The Installation procedure is not complete. Please go to the Installation System Tool to review progress.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15344) Selected Job Too Long	The selected Job is too long. Please reduce the Job length.	
(E15352) Make-up Tank Level Sensor Out of Range	The Make-up Tank Level Sensor is reporting a value outside of the allowed range. Please contact your local Videojet Service Representative.	1) Defective Sensor. 2) Defective IMB.
(E15353) Mixer Tank Level Sensor Out of Range	The Mixer Tank Level Sensor is reporting a value outside of the allowed range. Please contact your local Videojet Service Representative.	1) Defective Sensor. 2) Defective IMB.
(E15356) Printhead 1 Overspeed	Printhead 1 Line speed is too fast for the current Job. Review the Line Speed setting and adjust as needed.	
(E15364) Printhead 1 EHT Voltage Offset Out of Range	The EHT Voltage Offset measured by the Printer at initialization is outside of the allowed tolerance. Please cycle power to reset the Voltage Offset.	1) Erroneous offset value calculated by the printer at boot-up. 2) Environmental extreme is affecting circuit sensitivity. 3) Faulty connection between the EHT Module and the Main Control Board. 4) Faulty EHT Module. 5) Defective Main Control Board.
(E15372) Printhead 1 EHT Current Offset Out of Range	The EHT Current Offset measured by the Printer at initialization is outside of the allowed tolerance. Please cycle power to reset the Current Offset.	1) Erroneous offset value calculated by the printer at boot-up. 2) Environmental extreme is affecting circuit sensitivity 3) Faulty connection between the EHT Module and the Main Control Board 4) Faulty EHT Module 5) Defective Main Control Board.
(E15380) Printhead 1 EHT 'OFF' Current Too High or Too Low	Excessive Current was measured in the EHT circuit after the EHT was turned OFF. Please clear the fault before attempting to restart the Ink Jet.	1) Faulty EHT Module 2) Defective Main Control Board
(E15388) Kernel Tracker Start Failed	The Kernel Tracker cannot be started.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15389) Main Control Board +24 VDC Power Supply Error	The Main Control Board +24 VDC is outside of the allowed tolerance. Please contact your local Videojet Service Representative.	1) External load is pulling down voltage. 2) Defective Mains Power Supply. 3) Defective Main Control Board.
(E15398) Ink management 3v out of range	The 3 V supply on the ink management board is outside the expected range.	
(E15399) Ink Management PCB Ink Pump Supply Voltage Out of Range	The Ink Management PCB Ink Pump Supply Voltage is outside of the allowed tolerance. Please check the connection between the Main Control Board and the Ink Management PCB.	1) Thermal event has caused F1 on the IMB to open. 2) External load on the IMB or Solvent Control Module is pulling down +24 VDC. 3) Defective Ink Pump. 4) Loss of +24 VDC from the Main Control Board (other warnings will likely be asserted). 5) Defective Ink Management PCB.
(E15400) Ink Management PCB -5 VDC Power Supply Error	The Ink Management PCB -5 VDC is outside of the allowed tolerance. Please contact your local Videojet Service Representative.	1) +5 VDC Power Supply output outside of tolerances. 2) Defective Ink Management PCB.
(E15401) Ink management 5 V out of range	The 5 V supply on the ink management board is outside the expected range.	1) External load is pulling down voltage. 2) Defective +24 VDC input from Main Control Board. 3) Defective Ink Management PCB.
(E15402) Ink management 3.3 V out of range	The 3.3 V supply on the ink management board is outside the expected range.	1) External load is pulling down voltage. 2) +5 VDC Power Supply output outside of tolerances. 3) Defective Ink Management PCB.
(E15435) Printhead 1 Gutter Fault Shutdown Disabled	The Gutter Fault Shutdown for Printhead 1 is currently disabled. Please enable the Gutter Fault Shutdown at the earliest opportunity.	1) Software Menu selection
(E15445) Warming Up	Please wait while the Ink System warms up.	1) 'Cold' start-up. 2) Printer is operating in an environment outside of the prescribed limits. 3) Cold ambient and ink compartment door is open. 4) Defective viscometer temperature sensor.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15446) Printhead 1 Flight Time Compensation Error	Due to excessive Line Speed, the printer is unable to maintain the Print Margin established for this job. Increase the PD to PH distance, reduce the programmed "Printhead Throw Distance' or reduce the Line Speed after moving the printhead closer to the substrate. If precise code placement is not required, then utilize the 'Warning Suppression' option to prevent assertion of this warning.	1) Line speed too high (reduce line speed, reprogram Line Setup if using internal encoding). 2) PD to PH Distance too low (move product detector upstream and reprogram Line Setup). 3) Printhead Throw Distance too high (move printhead closer to substrate and reprogram Line Setup) 4) Wrong matrix selected for job (auto-select turned off) 5) Print Margin too low.
(E15463) Ambient Temperature Sensor Supply Voltage Too Low	The supply voltage to the Ambient Temperature Sensor circuit is below the minimum allowed value. Please contact your local Videojet Service Representative.	1) Defective Ink Management PCB. 2) Faulty component in the ink system is pulling down the local +3.3 VDC supply.
(E15464) Ambient Temperature Sensor is an Open Circuit	The Ink Management PCB is not receiving a valid signal from the Ambient Temperature Sensor. Please contact your local Videojet Service Representative.	1) Defective Ink Management PCB (sensor or TMP chip). Note that the sensor itself is a transistor surface-mounted to the board in the vicinity of the front-left portion of the board near the pump connector. Therefore, there is no 'connection' to check.
(E15465) Viscometer Temperature Sensor Supply Voltage Too Low	The supply voltage to the Viscometer Temperature Sensor circuit is below the minimum allowed value. Please contact your local Videojet Service Representative.	1) Defective Ink Management PCB. 2) Faulty component in the ink system is pulling down the local +3.3 VDC supply.
(E15466) Viscometer Temperature Sensor is an Open Circuit	The Ink Management PCB is not receiving a valid signal from the Viscometer Temperature Sensor. Turn the printer OFF and check the connection between the Viscometer Temperature Sensor and the Ink Management PCB.	1) Sensor is not plugged in. 2) Defective sensor (replace viscometer). 3) Defective IMB.
(E15471) Printhead 1 Internal Temperature Sensor Supply Voltage Too Low	The Supply Voltage to the Printhead's Internal Temperature Sensor is below the minimum allowed value. Please contact your local Videojet Service Representative.	Check valve module, MCB and continuity on umbilical.
(E15479) Printhead 1 Internal Temperature Sensor is an Open Circuit	The MCB is not receiving a valid signal from the Printhead's Internal Temperature Sensor. Please contact your local Videojet Service Representative.	Check valve module, MCB and continuity on umbilical.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15487) Printhead 1 Heater Temperature Sensor Supply Voltage Too Low	The Supply Voltage to the Printhead Heater Temperature Sensor circuit is below the minimum allowed value. Please contact your local Videojet Service Representative.	1) Defective MCB, valve module or umbilical. 2) Check valve module and continuity on umbilical.
(E15495) Printhead 1 Heater Temperature Sensor is an Open Circuit	The MCB is not receiving a valid signal from the Printhead Heater Temperature Sensor. Ensure that the Print Module is properly fitted.	1) Defective MCB or print module. 2) Faulty component in the printhead is pulling down the local +5 VDC supply.
(E15519) Service Module 1 Replacement Required	Service Module 1 has reached the end of its usable life. Please replace the Service Module 1.	1) Run hours consumed. 2) Service Module 1 Smart Chip was not programmed correctly. 3) Unrelated event caused Service Module 1 Smart Chip run hours to increment.
(E15520) Ink conductivity too low.	Ink conductivity too low.	
(E15532) Printhead 1 Too Many Holes in Phase Profile	The Printer's Phase Profile is unstable. This may adversely affect the print quality. If the warning fails to clear, then please stop the Jet and clean the Printhead if necessary.	1) Transient during jet start-up (not an abnormality). 2) Phasing sensor is dirty. 3) Ink viscosity out of tolerance 4) Bad break-off (nozzle partial clog). 5) Bad break-off (modulation setting). 6) Erratic pressure / velocity. 7) Noise in phasing signal. 8) Ink conductivity / expiry / oxidized / contaminated.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15556) No Ink Cartridge	The printer cannot detect the presence of a Cartridge in the Ink slot. Please fit a suitable Ink Cartridge.	1) Cartridge is missing. 2) Cartridge is not fitted correctly. 3) Communications error (see NOTE below). 4) Smart Chip is not programmed. 5) Faulty connection between the Ink Management PCB and the Solvent Control Module. 6) Defective Solvent Control Module. 7) Defective Ink Management PCB. ***Note:*** *The Smart Chip Supplies and Parts Validation System utilizes 'time-outs' in inter-chip communications and also has a 'sleep mode' in order to reduce power consumption (heat generation) during periods of inactivity. If this warning is asserted following the insertion of a new cartridge, then it may be helpful to REMOVE and REINSERT the cartridge (since Smart Chip authentication is initiated following a CHANGE in the status of the slot).*
(E15557) No Make-up Cartridge	The printer cannot detect the presence of a Cartridge in the Make-up slot. Please fit a suitable Make-up Cartridge.	1) Cartridge is missing. 2) Cartridge is not fitted correctly. 3) Communications error (see note below). 4) Smart Chip is not programmed. 5) Faulty connection between the Ink Management PCB and the Solvent Control Module. 6) Defective Solvent Control Module. 7) Defective Ink Management PCB. ***Note:*** *The Smart Chip Supplies and Parts Validation System utilizes 'time-outs' in inter-chip communications and also has a 'sleep mode' in order to reduce power consumption (heat generation) during periods of inactivity. If this warning is asserted following the insertion of a new cartridge, then it may be helpful to REMOVE and REINSERT the cartridge (since Smart Chip authentication is initiated following a CHANGE in the status of the slot).*

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15558) Main Control Board FPGA Communication Error	The printer is unable to communicate with the Main Control Board FPGA. Please cycle power in order to reset the FPGA.	1) Communication error. 2) Defective microSD card. 3) Defective Main Control Board.
(E15561) No Code No Run	The printer has stopped printing, because it has missed a number of prints, equal to the No Code No Run Threshold setting. Please review any 'Missed Print' warnings displayed and adjust the printer setup or No Code No Run Threshold accordingly.	
(E15562) Electronics Compartment Temperature Too Hot	The measured temperature in the Electronics Compartment is above the allowed limit. Please check the ambient conditions in the vicinity of the Printer and relocate it if necessary.	1) Ambient environmental extreme. 2) Cabinet inadvertently or intentionally insulated. 3) Electronics Compartment fan not working. 4) Faulty component has caused compartment overheating. 5) Defective MCB.
(E15563) Job Queue Overload	Print Job Queue Overload. Please contact your local Videojet Service Representative.	
(E15572) Service Module 1 Not Fitted or Invalid	A valid Service Module 1 cannot be detected by the printer. Please install a suitable Service Module 1.	1) Service Module 1 is removed. 2) Service Module 1 is not fitted correctly. 3) Service Module 1 Smart Chip is not programmed. 4) Bad connection between the Ink Management PCB and the Service Module 1 Smart Chip Reader. 5) One-wire bus failure. 6) Defective Ink Management PCB. 7) Defective Ink System Bare (Smart Chip Reader).
(E15573) Incompatible Modulation	The Modulation is not correct for the Ink Type. Please contact your local Service Representative.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15574) Solvent Control Module Not Fitted or Invalid	A valid Solvent Control Module cannot be detected by the printer. Please install a suitable Solvent Control Module.	1) Solvent Control Module is missing. 2) Solvent Control Module is not fitted correctly. 3) Solvent Control Module Smart Chip is not programmed. 4) Faulty connection between the Ink Management PCB and the Solvent Control Module. 5) Defective Solvent Control Module. 6) Defective Ink Management PCB.
(E15591) Ambient Temperature Sensor Communication Error	The Ink Management PCB is unable to communicate with the Ambient Temperature Sensor. Please cycle power the printer. If the alarm persists, please contact your local Videojet Service Representative.	
(E15592) Viscometer Temperature Sensor Communications Error	The Ink Management PCB is unable to communicate with the Viscometer Temperature Sensor. Please contact your local Videojet Service representative.	
(E15595) Printhead 1 Internal Temperature Sensor Error	The MCB is not receiving a valid signal from the Printhead's Internal Temperature Sensor. Please contact your local Videojet Service Representative.	1) Check valve module and continuity on umbilical.
(E15603) Printhead 1 Heater Communication Error	The Printer is unable to communicate with the Printhead Heater. Please your local Videojet Service Representative.	1) Check valve module and continuity on umbilical.
(E15620) Valve Current Sensor Communications Error	The Ink Management PCB is unable to communicate with the Valve Current Sensor. Please contact your local Videojet Service Representative.	
(E15622) Printhead 1 Invalid Job Adjustment	The Selected Job cannot be printed with the active Line Setup. Please select a new Line Setup from the Line Setup System Tool or within Job Parameters.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15630) Printhead 1 EHT Voltage Feedback Error	The Voltages measured by the two channels of the EHT Voltage Monitor do not agree. Turn the Printer OFF and check the ribbon cable connection between the EHT Module and the Main Control Board.	1) Faulty connection between the Main Control Board and the EHT Module (the two feedback channels connect to the main control board at opposite ends of the ribbon cable connector). 2) Defective EHT Module. 3) Defective Main Control Board.
(E15638) Printhead 1 EHT Overvoltage	The measured EHT Voltage exceeded 9000 VDC. Please contact your local Videojet Service Representative.	1) Faulty EHT Module 2) Defective Main Control Board
(E15647) Ink Type Incompatible With Nozzle Size	The Ink Type contained within the Ink Cartridge is not compatible with the Nozzle size of the Print Module. Please install a suitable Ink Cartridge, or replace the Print Module with one of the correct Nozzle size.	1) Improper cartridge or improper Print Module has actually been fitted (especially likely after cartridge or Print Module replacement). 2) Ink Cartridge Smart Chip was programmed incorrectly. 3) Fluid cartridge was labeled incorrectly.
(E15648) Service Module 1 Insertions Exceeded	The Service Module 1 has exceeded its allowed number of insertions. Please fit a new Service Module 1.	
(E15649) Service Module 1 / Ink Cartridge Mismatch	The Ink type contained within the Ink Cartridge is not compatible with the Ink type previously used with the fitted Service Module 1. Please install a suitable Ink Cartridge, or replace the Service Module 1 with a new or compatible module.	1) Improper cartridge or used Solvent Control Module/Service Module 1 has actually been fitted (especially likely after cartridge insertion or Solvent Control Module/Service Module 1 replacement). 2) Ink Cartridge Smart Chip was programmed incorrectly. 3) Fluid cartridge was labeled incorrectly. 4) Defective Solvent Control Module (Smart Chip programmed with 'ink type' although new).
(E15650) Ink System incompatible with Service Module 1	Service Module 1 is not compatible with the Ink System fluid. Please install a suitable Service Module 1.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15667) Printhead 1 EHT Trip	The measured EHT current is outside of the allowed tolerance. Please clean and dry the printhead before restarting the ink jet. Refer to the Service Manual for appropriate safety precautions.	
(E15679) Valve VJ is an Open Circuit.	The Ink Management PCB failed to confirm that Valve VJ is properly connected to the printer's electrical system. Ensure that the Solvent Control Module is properly fitted.	1)Solvent Control Module is removed, or is not properly fitted. 2) Ribbon cable between Ink Management PCB and Solvent Control Module is not properly fitted. 3) Valve failure (replace Solvent Control Module). 4) Defective Ink Management PCB.
(E15680) Valve VJ is a Short Circuit.	Excessive current was detected when attempting to operate Valve VJ. Check for ink leakage in the vicinity of the Solvent Control Module's electrical interface.	1) Short circuit caused by foreign substance (ink) at Solvent Control Module electrical interface. 2) Short circuit caused by foreign substance on Ink Management PCB. 3) Defective ribbon cable between Ink Management PCB and Solvent Control Module. 4) Valve Failure (replace Solvent Control Module). 5) Defective Ink Management PCB.
(E15681) Valve VR is an Open Circuit.	The Ink Management PCB failed to confirm that Valve VR is properly connected to the printer's electrical system. Ensure that the Solvent Control Module is properly fitted.	1) Short circuit caused by foreign substance (ink) at Solvent Control Module electrical interface. 2) Short circuit caused by foreign substance on Ink Management PCB. 3) Defective ribbon cable between Ink Management PCB and Solvent Control Module. 4) Valve Failure (replace Solvent Control Module). 5) Defective Ink Management PCB.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15682) Valve VR is a Short Circuit.	Excessive current was detected when attempting to operate Valve VR. Check for ink leakage in the vicinity of the Solvent Control Module's electrical interface.	1) Short circuit caused by foreign substance (ink) at Solvent Control Module electrical interface. 2) Short circuit caused by foreign substance on Ink Management PCB. 3) Defective ribbon cable between Ink Management PCB and Solvent Control Module. 4) Valve Failure (replace Solvent Control Module). 5) Defective Ink Management PCB.
(E15683) Valve VI is an Open Circuit.	The Ink Management PCB failed to confirm that Valve VI is properly connected to the printer's electrical system. Ensure that the Solvent Control Module is properly fitted.	1) Solvent Control Module is removed, or is not properly fitted. 2) Ribbon cable between Ink Management PCB and Solvent Control Module is not properly fitted. 3) Valve failure (replace Solvent Control Module). 4) Defective Ink Management PCB.
(E15684) Valve VI is a Short Circuit.	Excessive current was detected when attempting to operate Valve VI. Check for ink leakage in the vicinity of the Solvent Control Module's electrical interface.	1) Short circuit caused by foreign substance (ink) at Solvent Control Module electrical interface. 2) Short circuit caused by foreign substance on Ink Management PCB. 3) Defective ribbon cable between Ink Management PCB and Solvent Control Module. 4) Valve Failure (replace Solvent Control Module). 5) Defective Ink Management PCB.
(E15687) Valve VV is an Open Circuit.	The Ink Management PCB failed to confirm that Valve VV is properly connected to the printer's electrical system. Ensure that the valve assembly is properly connected to the Ink Management PCB.	1) Valve assembly is unplugged, or the connector is not properly fitted to the IMB. 2) Valve failure (replace Valve Assembly). 3) Defective Ink Management PCB.
(E15688) Valve VV is a Short Circuit.	Excessive current was detected when attempting to operate Valve VV. Please check the integrity of the valve assembly connector.	1) Short circuit caused by foreign substance on Ink Management PCB. 2) Defective valve or defective valve assembly wire harness (replace valve assembly). 3) Defective Ink Management PCB.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15697) Valve VK is an Open Circuit.	The Ink Management PCB failed to confirm that Valve VK is properly connected to the printer's electrical system. Ensure that the Solvent Control Module is properly fitted.	1) Solvent Control Module is removed, or is not properly fitted. 2) Ribbon cable between Ink Management PCB and Solvent Control Module is not properly fitted. 3) Valve failure (replace Solvent Control Module). 4) Defective Ink Management PCB.
(E15698) Valve VK is a Short Circuit.	Excessive current was detected when attempting to operate Valve VK. Check for ink leakage in the vicinity of the Solvent Control Module's electrical interface.	1) Short circuit caused by foreign substance (ink) at Solvent Control Module electrical interface. 2) Short circuit caused by foreign substance on Ink Management PCB. 3) Defective ribbon cable between Ink Management PCB and Solvent Control Module. 4) Valve Failure (replace Solvent Control Module). 5) Defective Ink Management PCB.
(E15699) Ink System Valve Driver 1 Power Supply Warning	The supply voltage to the Ink System valve driver chip is outside of the allowed tolerance. Please turn the printer OFF and check the connection between the Main Control Board and the Ink Management PCB.	1) External load is pulling down +24 VDC on the IMB. 2) Defective IMB. 3) Defective Mains Power Supply. 4) Defective connection between the MCB and the IMB. 5) Defective Main Control Board.
(E15700) Ink System Valve Driver 1 Thermal Warning	The Ink System valve driver chip has overheated. Please stop the Jet and refrain from operating the printer until the condition has cleared.	1) Excessive valve operation (scratchpad, flush kit etc.). 2) Printer operation in extreme ambient conditions. 3) Short circuit in valve(s). 4) Defective IMB.
(E15701) Ink System Valve Driver 2 Power Supply Warning	The supply voltage to the Ink System valve driver chip is outside of the allowed tolerance. Please turn the printer OFF and check the connection between the Main Control Board and the Ink Management PCB.	1) External load is pulling down +24 VDC on the IMB. 2) Defective IMB. 3) Defective Mains Power Supply. 4) Defective connection between the MCB and the IMB. 5) Defective Main Control Board.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15702) Ink System Valve Driver 2 Thermal Warning	The Ink System valve driver chip has overheated. Please stop the Jet and refrain from operating the printer until the condition has cleared.	1) Excessive valve operation (scratchpad, flush kit etc.). 2) Printer operation in extreme ambient conditions. 3) Short circuit in valve(s). 4) Defective IMB.
(E15703) Printhead 1 Valve VF is an Open Circuit	The MCB failed to confirm that Valve VF is properly connected to the Printhead's electrical system. Ensure that the Valve Module is properly fitted.	1) Valve Module is not properly fitted. 2) Check continuity of umbilical. 3) Valve failure (replace Valve Module). 4) Defective MCB.
(E15711) Printhead 1 Valve VF is a Short Circuit	Excessive Current was detected when attempting to operate Valve VF. Please check the integrity of the Valve's connectors.	1) Loss of integrity of valve wires. 2) Foreign substance within the printhead chassis has created a short. 3) Valve Failure (replace Valve Module).
(E15719) Printhead 1 Valve VL is an Open Circuit	The MCB failed to confirm that Valve VL is properly connected to the Printhead's electrical system. Ensure that the Valve Module is properly fitted.	1) Valve Module is not properly fitted. 2) Check continuity of umbilical 3) Valve failure (replace Valve Module). 4) Defective MCB.
(E15727) Printhead 1 Valve VL is a Short Circuit	Excessive Current was detected when attempting to operate Valve VL. Please check the integrity of the Valve's connectors.	1) Loss of integrity of valve wires. 2) Foreign substance within the printhead chassis has created a short. 3) Valve Failure (replace Valve Module). 4) Defective MCB.
(E15735) Printhead 1 Valve VP is an Open Circuit	The MCB failed to confirm that Valve VP is properly connected to the Printhead's electrical system. Ensure that the Valve Module is properly fitted.	1) Valve Module is not properly fitted. 2) Check continuity of the umbilical. 3) Valve failure (replace Valve Module). 4) Defective MCB.
(E15743) Printhead 1 Valve VP is a Short Circuit	Excessive Current was detected when attempting to operate Valve VP. Please check the integrity of the Valve's connectors.	1) Loss of integrity of valve wires. 2) Foreign substance within the printhead chassis has created a short. 3) Valve Failure (replace Valve Module). 4) Defective MCB.

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15751) Printhead 1 Valve VG is an Open Circuit	The MCB failed to confirm that Valve VG is properly connected to the Printhead's electrical system. Ensure that the Valve Module is properly fitted.	1) Valve Module is not properly fitted. 2) Check continuity of the umbilical. 3) Valve failure (replace Valve Module). 4) Defective MCB.
(E15759) Printhead 1 Valve VG is a Short Circuit	Excessive Current was detected when attempting to operate Valve VG. Please check the integrity of the Valve's connectors.	1) Loss of integrity of valve wires. 2) Foreign substance within the printhead chassis has created a short. 3) Valve Failure (replace Valve Module). 4) Defective MCB.
(E15767) Printhead 1 Valve Driver Power Supply Warning	The Supply Voltage to the Valve Driver chip for Printhead 1 is outside of the allowed tolerance. Please turn the Printer OFF and check the connection between the Main Control Board and the Printhead.	1) External load is pulling down +24 VDC in printhead. 2) Defective valve module. 3) Defective Mains Power Supply. 4) Defective umbilical. 5) Defective Main Control Board.
(E15775) Printhead 1 Valve Driver Thermal Warning	The Valve Driver chip for Printhead 1 has overheated. Please stop the Jet and refrain from operating the Printer until the condition has cleared.	1) Excessive valve operation (scratchpad, flush kit etc.). 2) Printer/printhead operation in extreme ambient conditions. 3) Short circuit in valve(s). 4) Defective MCB.
(E15783) Printhead 1 Product Delay Out of Range	Printhead 1 Product Delay is outside of the allowed range. Review the PD to PH Distance and increase or decrease as required.	
(E15791) Printhead 1 Width Divider Out of Range	Printhead 1 Width Divider is outside of the allowed range. Review the Width Divider setting and increase or decrease as needed.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15799) Make-up Type Incompatible With Nozzle Size	The Make-up Type contained within the Make-up Cartridge is not compatible with the Nozzle size of the Print Module. Please install a suitable Make-up Cartridge, or replace the Print Module with one of the correct Nozzle size.	
(E15800) Main Board FPGA Programming Error	The Main Board FPGA does not contain the required programme to proceed. Please contact your local Videojet Service Representative.	
(E15801) Clean & Empty System Operation In Progress	The Clean & Empty System operation is in progress. The Jet cannot be started whilst this operation is running.	
(E15806) Printhead 1 Nozzle Operation Not Optimal	Printhead 1 Nozzle is operating outside optimal Parameters and should be replaced. Please contact your local Videojet Service Representative.	
(E15814) Printhead 1 No Good Phase	The Printer failed to acquire a good Phase Profile with the phase threshold set to the minimum value. Please stop the Jet and clean the Printhead.	
(E15822) Printhead 1 Phase Threshold Error	The Printer failed to acquire a good Phase Profile with the phase threshold set to the maximum value. Please stop the Jet and clean the Printhead.	
(E15830) Printhead 1 No Good Phase	The Printer failed to acquire a good Phase Profile before the timeout occurred. Please stop the Jet and clean the Printhead.	
(E15838) Printhead 1 No Phase Frequency	The Printer failed to acquire a good Phase Profile. Please stop the Jet and clean the Printhead.	
(E15846) Printhead 1 No Good Phase at Startup	The Printer failed to acquire a good Phase Profile at Startup. Please stop the Jet and clean the Printhead.	
(E15854) Printhead 1 Auto modulation Voltage Too Low	The Auto modulation voltage has dropped below the recommended minimum value for Printhead 1. Please contact your local Videojet Service Representative.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15862) Printhead 1 Auto modulation Voltage Too High	The Auto modulation voltage has exceeded the recommended maximum value for Printhead 1. Please contact your local Videojet Service Representative.	
(E15870) Printhead 1 Auto modulation Requires Tuning	Auto modulation Tuning is recommended for Printhead 1. If the alarm persists, please contact your local Videojet Service Representative.	
(E15878) Firmware Diagnostic Download In Progress	Firmware diagnostic download to the MicroSD card is in progress. Please do not turn off the printer.	
(E15879) Firmware Diagnostic Download has completed.	Firmware diagnostic download to the MicroSD card is now complete.	
(E15883) Printhead 1 No Jet Break-off	The Printer failed to acquire a good break-off before the timeout occurred. Please stop the Jet and clean the Printhead.	
(E15891) Expired Ink in Make-up Slot	The Ink Cartridge fitted to the Make-up slot has reached the end of its usable life. Please fit a suitable Ink Cartridge.	
(E15901) Service Module 1 Expiry in %1 days	The Service Module 1 has less than %1 days to the end of its usable life. Please ensure that you have a replacement available.	
(E15902) Service Module 1 Expired	Service Module 1 has reached the end of its useable life. Please fit a new Service Module 1.	
(E15903) The Gutter Pump Not Turning	The Gutter Pump is energised but is not turning. Please contact your local Videojet Service Representative.	
(E15920) Cabinet Fan is an Open Circuit	The Ink Management PCB is not receiving a valid signal from the Cabinet Fan. Turn the printer OFF and check the connection between the Cabinet Fan and the Ink Management PCB. The temperature in the Cabinet may increase if the fan is not operating correctly.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E15921) Cabinet Fan is a Short Circuit	Excessive Current was detected when attempting to operate the Cabinet Fan. Please check the integrity of the Fan's connectors.The temperature in the Cabinet may increase if the fan is not operating correctly.	
(E15922) Electronics Fan is an Open Circuit	The MCB is not receiving a valid signal from the Electronics Fan. Turn the printer OFF and check the connection between the Electronics Fan and the MCB. The temperature in the Electronics Compartment may increase if the fan is not operating correctly.	
(E15923) Electronics Fan is a Short Circuit	Excessive Current was detected when attempting to operate the Electronics Fan. Please check the integrity of the Fan's connectors. The temperature in the Electronics Compartment may increase if the fan is not operating correctly.	
(E15924) Solvent Control Module Replacement Required	The Solvent Control Module has reached the end of its recommended usable life. Please replace the Solvent Control Module.	
(E15925) Electronics Fan Not Turning	The Electronics Fan is energised but is not turning. Please contact your local Videojet Service Representative.	
(E15926) Printhead1 Heater Current Is Out Of Range	The measured current of the Printhead 1 Heater is outside of the allowed tolerance. Please contact your local Videojet Service Representative.	
(E15934) Solvent Control Module Replacement Due in %L1 Hours	The Solvent Control Module is nearing the end of its life. Please ensure that you have a replacement available.	
(E15935) Main Control Board +28 VDC Power Supply Error	The Main Control Board +28 VDC is outside of the allowed tolerance. Please contact your local Videojet Service Representative.	
(E15936) Main Control Board +24 VDC (VRS) Power Supply Error	The Main Control Board +24 VDC (VRS) is outside of the allowed tolerance. Please contact your local Videojet Service Representative.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E2008) Failed to Load Job	The selected Job failed to load and cannot be printed. The Job file is invalid and needs to be corrected. Please select a new Job file and reload to continue.	
(E2010) Failed to Load Job: %1	The selected Job failed to load and cannot be printed. The Job file is invalid and needs to be corrected. Please select a new Job file and reload to continue.	
(E2011) File(s) Not Found in External Database	The File(s) requested could not be found in the External Database. Please resend command with the correct filename(s) and path(s) required. For additional information, please contact Videojet Service.	
(E2012) Failed to Load Job	The selected Job failed to load from the External Database and cannot be printed. The Job file is invalid and needs to be corrected. Please select a new Job file to continue.	
(E2013) Job Not Valid for Printer	The selected Job failed to load from the External Database and cannot be printed. The Job file contents feature(s) that are not valid for this Printer model and needs to be corrected.	
(E2014) Invalid Job - Missing Data	The Data requested for the Job could not be found in the External Database. Please resend the valid Data required or select Job with correct valid Data. For additional information, please contact Videojet Service.	
(E2015) Font Load Failed	The required Font failed to load and is not available. The font is invalid and needs to be corrected or try reloading the required font file. Please select a new Job file and reload to continue.	
(E2016) Dependent File(s) Cannot Be Found for Job: %1	The selected Job %2 failed to load as the dependent file(s) %1 cannot be found. The Job is looking for a Line Setup or Custom Reference Field(s) that is no longer available. Edit the Job and select a valid Line Setup or Custom Reference Field(s). Reload Job to continue.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E2017) Dependent File(s) Already Exist in Job: %1	The dependent file(s) %1 already exists in Job %2. The Job contains a Line Setup or Custom Reference Field(s) with this reference. Edit the Job and select a valid Line Setup or Custom Reference Field(s). Reload Job to continue.	
(E2018) %1 File cannot be Read	%1 file cannot be ready and has been deleted from the File Manager and is no longer available.	
(E2019) Invalid Job File - Invalid Orientation: %1	The Job file is invalid and needs to be corrected. A field in the Job file has an orientation not supported by the Printer. Please check and correct the orientation of the fields in the Job file. Then, retry with the corrected file.	
(E2021) %1 File not valid for Printer	%1 file cannot be used as the Line setup is not valid for this Printer model. Please select a valid Line Setup to continue.	
(E2022) Inconsistent Digital Input(s)	Selected Digital input in Printer Settings Digital I/O is inconsistent with the Digital input selected in Counter Options. Select the valid input in Printer Settings Digital I/O.	
(E2023) External Job Selection Mode	The Printer is in External Job Select Mode. Job Selection from the Printer is not permitted in this mode. Please select the required Job from the Remote Database.	
(E3127) Data File Complete	All data has been printed in the current Data File. Please select a new Job for resume printing. ***Note**: Install a new Data File before selecting the Job if that Job uses a Data File.* This alarm can be cleared once a new Data File is installed on the Printer or load another Job for printing which does not have a Field with CLARiTY. Encryption.DataFile as encryption.	
(E3128) Missing Data File	A Data File needs to be installed on the Printer to start printing the current Job. Insert a USB which has a Data File in it to install a new Data File on the Printer. This alarm can be cleared once a new Data File is installed on the Printer or load another Job for printing which does not have a field with CLARiTY. Encryption.DataFile as encryption.	

Table 9-5: Printer Alarms (Continued)

Error Reference and Name	Remedial Action	Cause
(E6500) Failed to Uninstall Workflow Module: %1	The Workflow Module failed to uninstall. Please retry the uninstall process.	
(E6501) Workflow Module: %1 Uninstalled Successfully	The Workflow Module is successfully uninstalled.	
(E6502) Failed to Install Workflow Module: %1	The Workflow Module failed to install. Please retry install process.	
(E6503) Workflow Module: %1 Installed successfully	The Workflow Module is successfully installed and ready for use.	
(E6504) Downgrade Successful	The Downgrade process has completed successfully.	
(E6506) Unlicensed Workflow Module Installed: %1	An Unlicensed Workflow Module has been installed on the Printer. Please remove the Workflow Module to remove the error. Please contact Videojet service.	

Table 9-5: Printer Alarms (Continued)

9.5 Voltage Checks

Table 9-6 is a representation of the power connector with the voltages shown for each pin. Use Pin 2 as the 0 V reference.

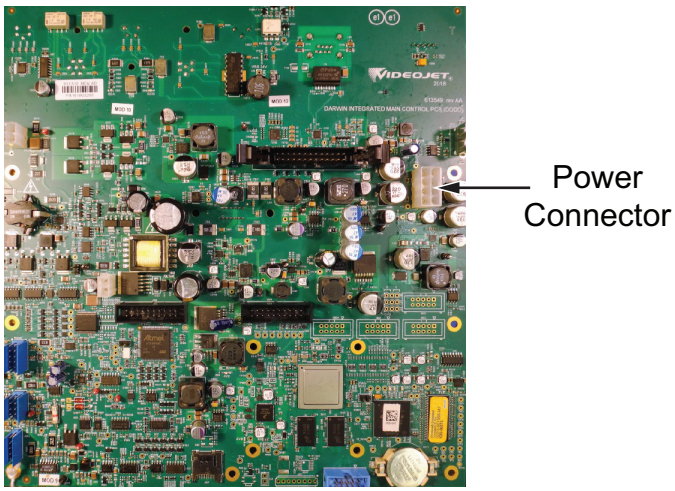


Figure 9-3: MCB Power Connectors

Note: *Allow ± 5% tolerance on all voltages. The power connector must be connected to the MCB to carry out this check.*

Voltage	Connector	MCB
+24V	PIN 6	TP726
GND	PIN 2 & 7	GND
No connect	PIN 1, 3, 4, 5 & 8	

Table 9-6: MCB Power Connector Voltage Check

9.6 Jet Start and Stop Diagnostics

Use the following flow charts to diagnose problems that occur because of dirty inkjet starts and stops.

Quick Start Diagnostics

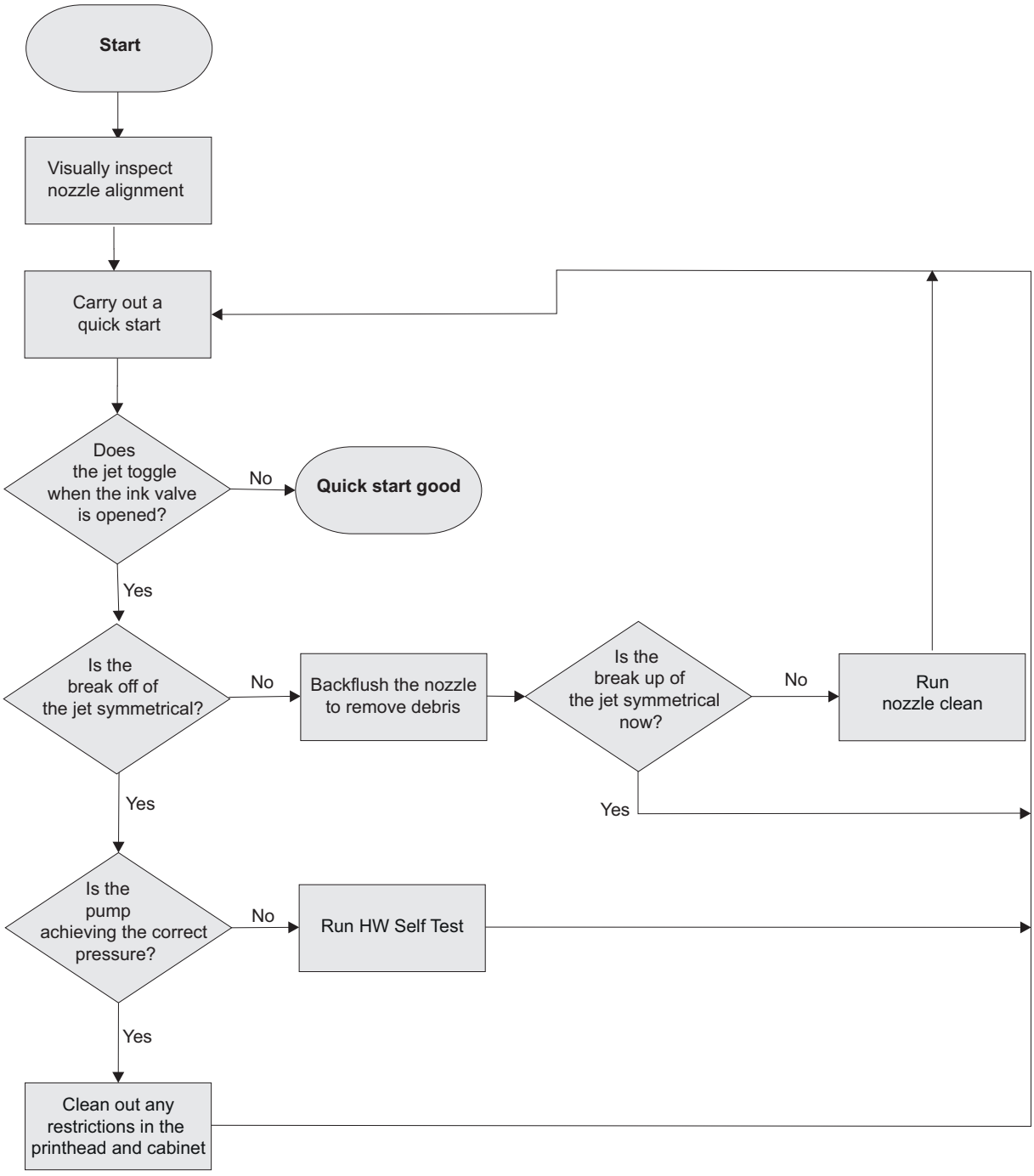
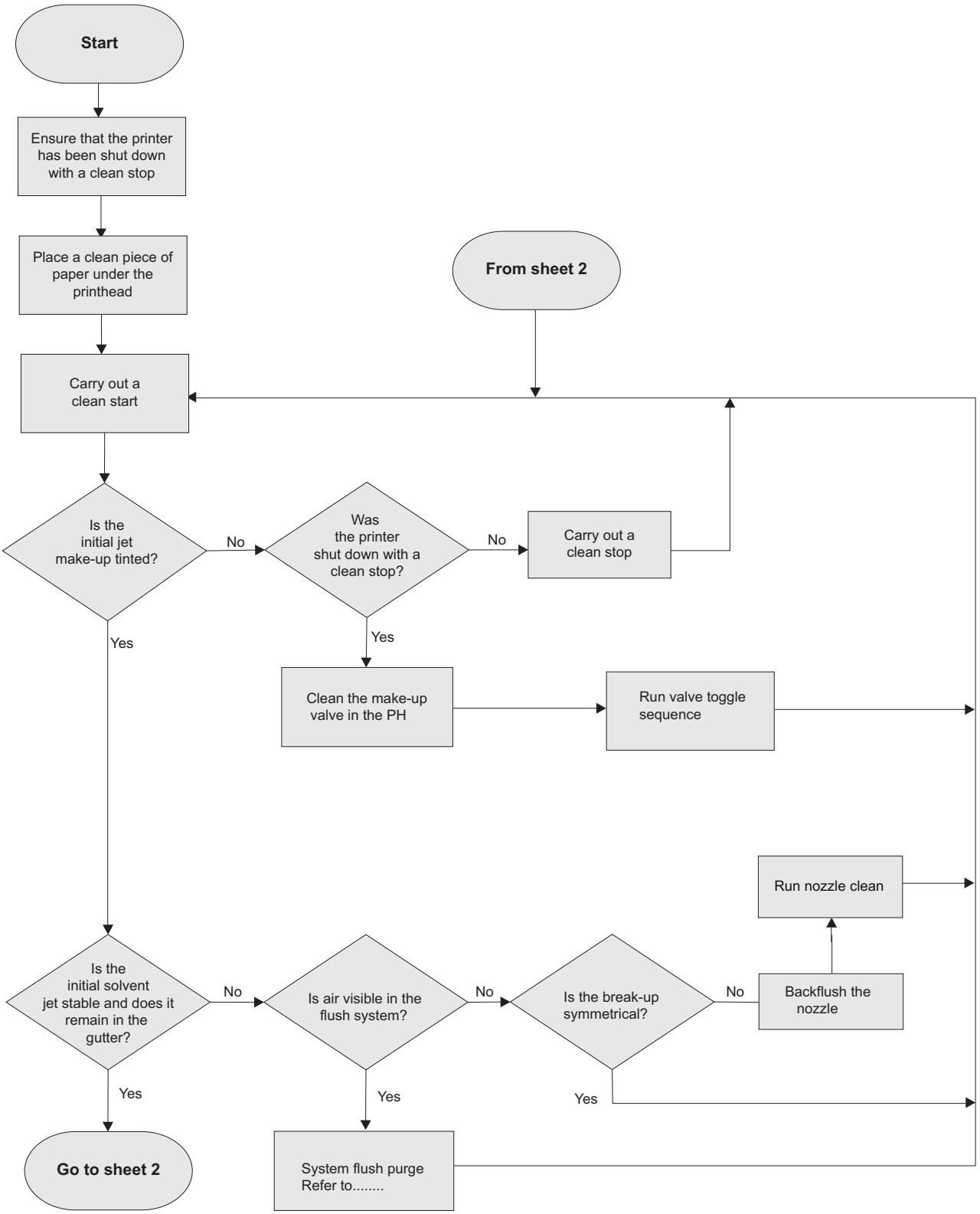


Figure 9-4: Quick Start Diagnostics Flowchart

Clean Start Diagnostics

Sheet 1 of 2 - Clean Start Diagnostics



Sheet 2 of 2 - Clean Start Diagnostics (continued)

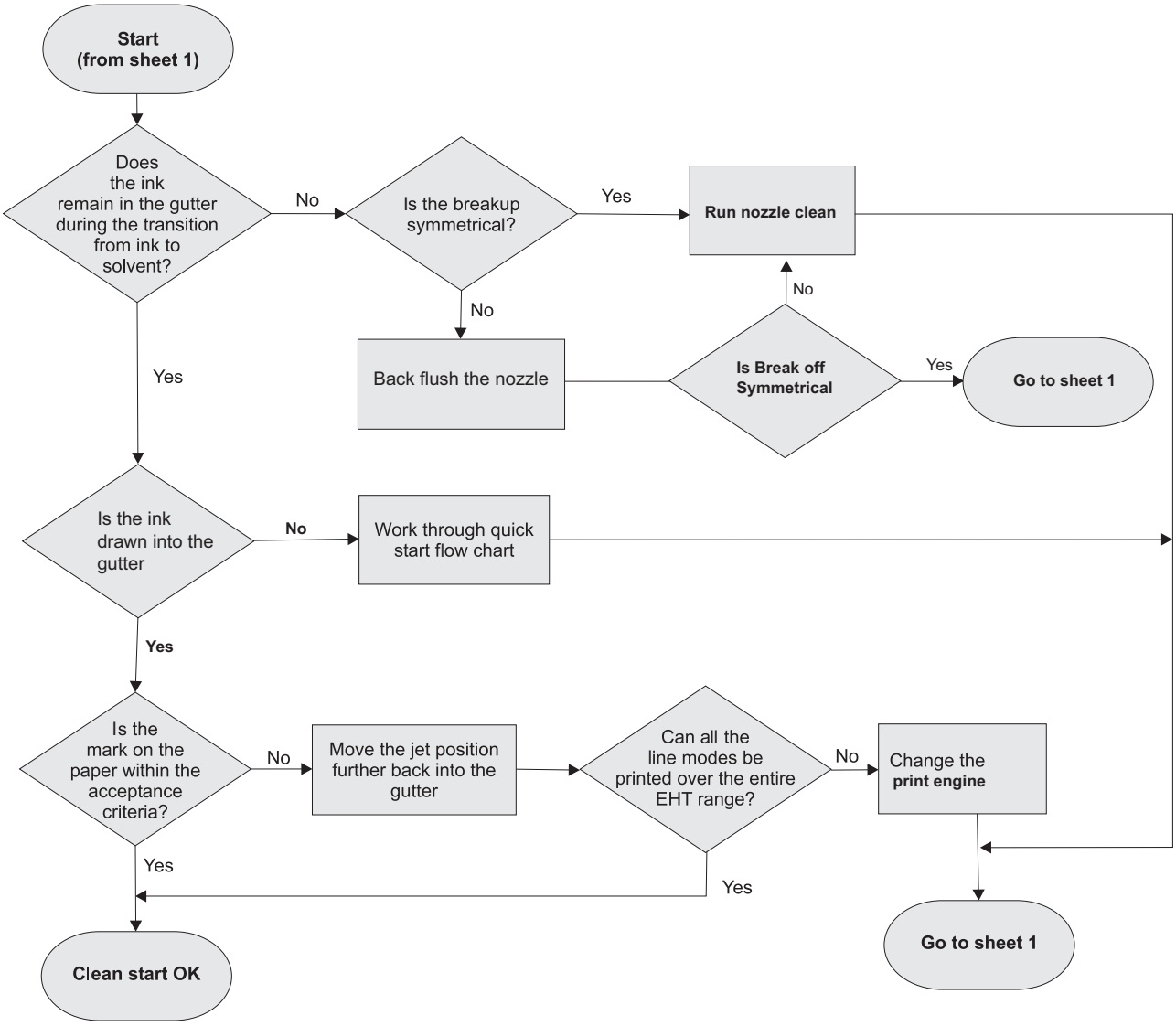


Figure 9-5: Clean Start Diagnostic Flowchart

Clean Stop Diagnostics

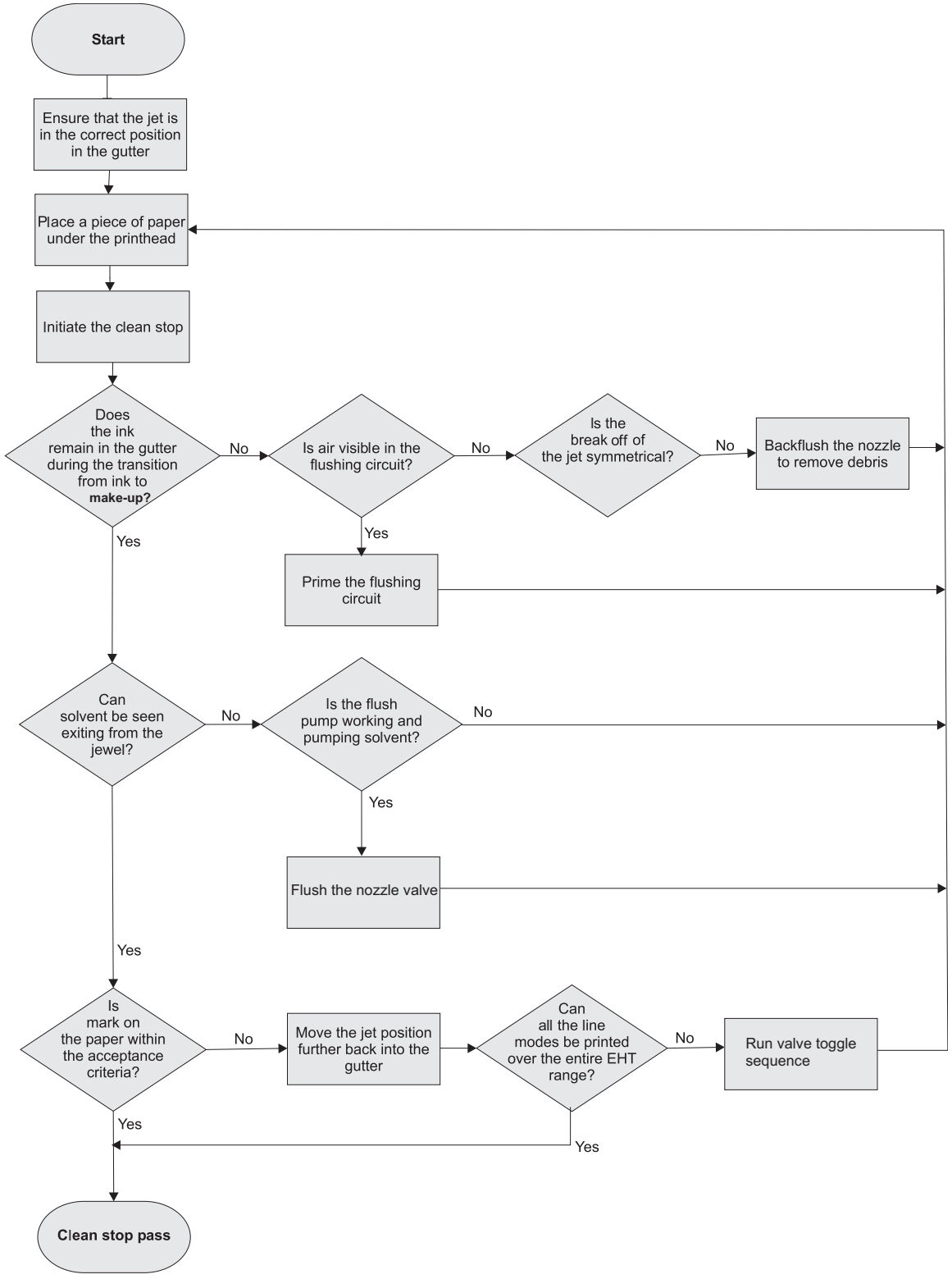


Figure 9-6: Clean Stop Diagnostics

9.7 How to Clear a Clogged Nozzle

A blockage in the nozzle may be present if the print module is showing signs of a misaligned ink stream/loss of ink stream. To clear the blockage in the nozzle, please follow the procedures described below:

1. Perform two Nozzle Backflush operations (*Tools* > *Maintenance* > *Nozzle Backflush*). Refer Perform a Nozzle Backflush for more information.
2. If needed, perform a Nozzle Clean operation (*Tools* > *Maintenance* > *Nozzle Clean*). Refer Perform a Nozzle Clean for more information.

9.7.1 Perform a Nozzle Backflush

Do the following tasks to perform Nozzle Backflush:

1. Place the printer in SHUTDOWN mode.
2. Remove the printhead cover screw that fastens the printhead cover to the printhead chassis and remove the printhead cover.
3. Place the printhead into the wash station with a properly earthed bowl underneath to collect any extra solvent.
4. Make sure the container is connected to the electrical ground.
5. Make sure to have the correct cleaning solution on the hand.
6. Touch the Start button (Figure 9-7) to start the Nozzle Backflush. During the sequence, spray the cleaning solution into the charge electrode slot in short bursts.

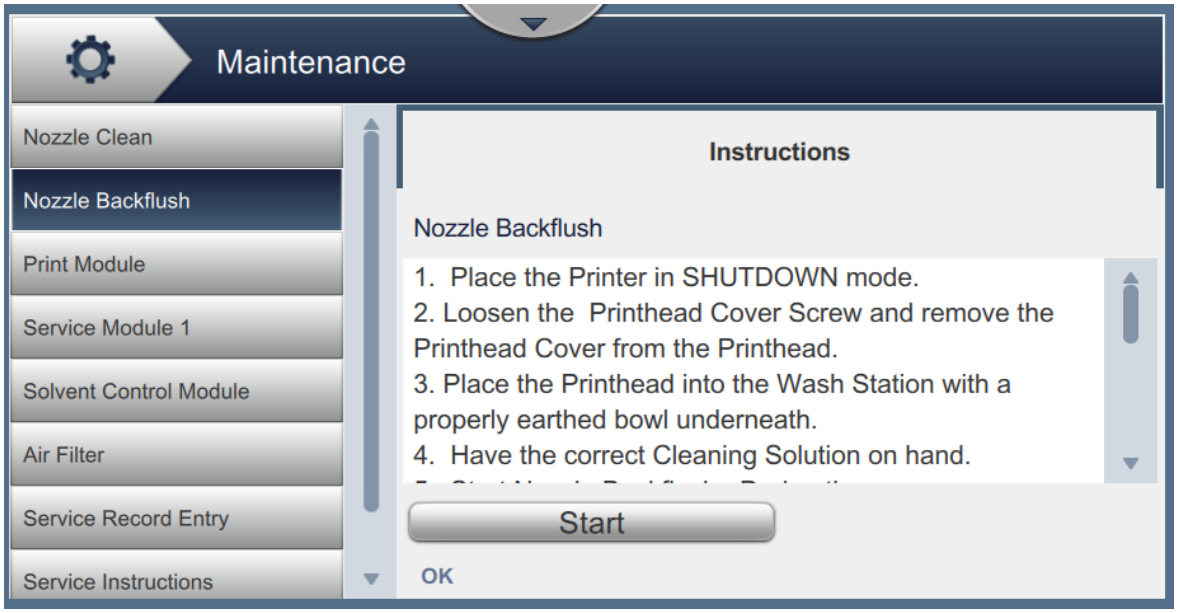


Figure 9-7: Nozzle Backflush

7. After it is completed, clean the print module using the correct cleaning solution until any ink build-up is removed.
8. Repeat Step 6 and Step 7 and continue to Step 9.
9. Let the nozzle dry completely.

10. Remove the Printhead from the wash station and replace the printhead cover on the printhead chassis and secure it with the help of the printhead cover screw.
11. Remove the bowl and discard the contents according to local regulations.
12. Perform a test print to check if the nozzle is clean.

9.7.2 Perform a Nozzle Clean

If the jet remains out of alignment, do the following tasks to perform Nozzle Clean:

1. Place the printer in SHUTDOWN mode.
2. Remove the printhead cover screw that fastens the printhead cover to the printhead chassis and remove the printhead cover.
3. Place the printhead into the Wash Station with a properly earthed bowl underneath to collect any extra solvent.
4. Make sure the container is connected to the electrical ground.
5. Touch the Start button (Figure 9-8) to start the Nozzle Clean.

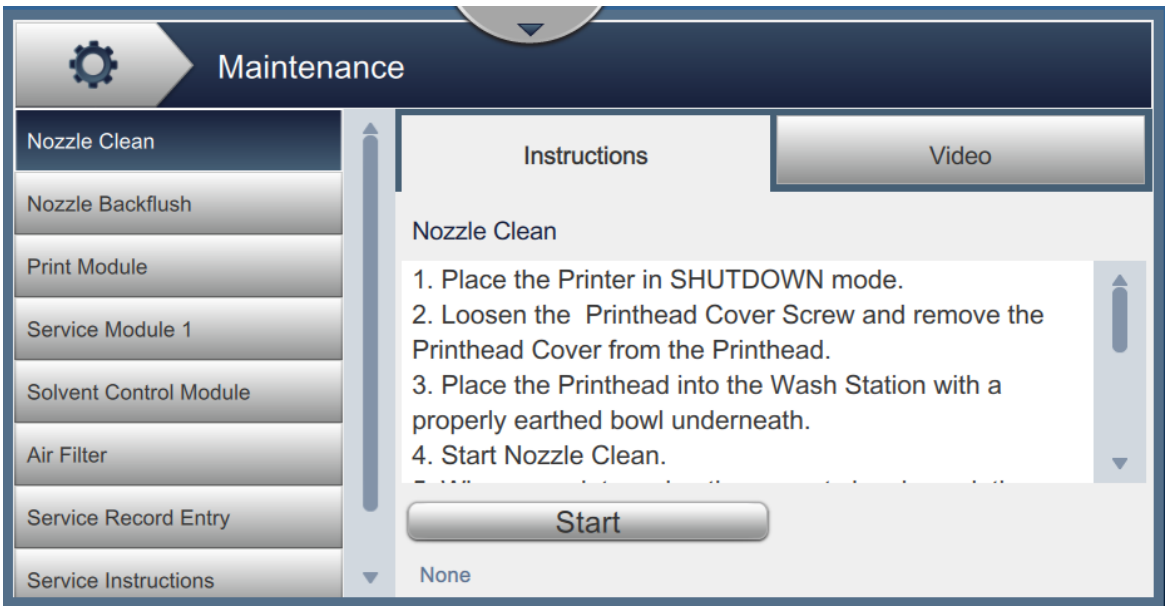


Figure 9-8: Nozzle Self-Clean

6. After it is completed, clean the print module using the correct cleaning solution until any ink build-up is removed.
7. Let the nozzle dry completely.
8. Remove the printhead from the Wash Station and replace the printhead cover on the printhead chassis and secure it with the help of the printhead cover screw.
9. Remove the bowl and discard the contents according to local regulations.
10. Perform a test print to check if the nozzle is clean.

9.8 How to Correct Loss of Modulation

Do the following tasks if a print module indicates loss of modulation:

Note: *Ensure that the auto modulation is enabled (Tools > Printer Settings > Printhead Control).*

1. Perform a Nozzle Clean operation (*Tools* > *Maintenance* > *Nozzle Clean*). Refer Perform a Nozzle Clean for more information.
2. If needed, perform a Quick Start operation (*Tools* > *Printer Settings* > *Printer Control* >*Jet Start and Stop Mode* and select *Quick*).
3. Use a magnifying loupe to inspect the ink stream for drop formation. You must perform this task to make sure that the nozzle creates the droplets.
4. If the ink stream remains solid, check the modulation wire on the print module to make sure that it is not damaged and is correctly connected.
5. If you see a broken modulation wire, contact Videojet Technologies Inc. to change the print module.
6. If the modulation wire is not broken, use an oscilloscope to measure the MOD Voltage on test point TPL26 on the MCB to make sure that the on-board power supplies the modulation voltage.
7. Another possible cause of a loss of modulation is a bad connection under the print module itself.

    a. Turn off the printer.

    b. Remove the print module and test for continuity between the MCB and the printhead circuit.

    c. If the continuity is good, install again the print module.

    d. Restart the printer.

    Note: *The user can set the modulation voltage to the required value based on Last Known Good Modulation voltage available for reference.*

Appendix A Clean/Quick Start and Stop Description

Introduction

This chapter provides the printer specifications and contains the following topics:

A.1 Clean Start/Stop Standards

The following illustrations show the minimum acceptable standards for clean start and clean stop. Compare these samples obtained by placing a sheet of blank paper directly under the printhead.

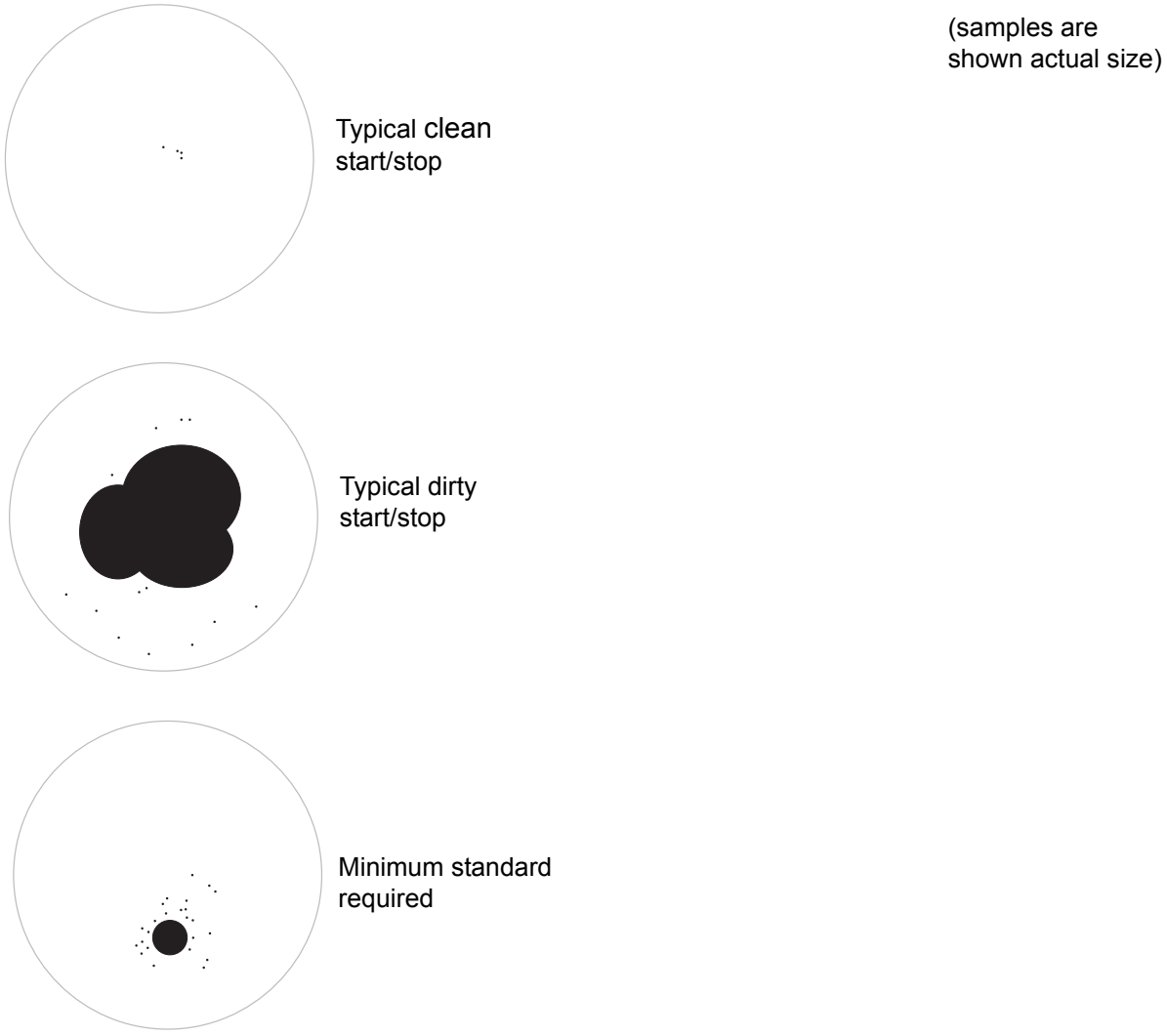


Figure A -1: Clean Start/Stop Test Illustrations

A.2 Clean Start

The Clean Start sequence is as follows:

1. Prepares the printer to start
2. Checks the valve operation
3. Cleans the Nozzle
4. Starts the solvent pump
5. Starts the Ink Jet
6. Waits for head to stabilize.

A.3 Quick Start

This method starts without cleaning sequence, and uses the ink supply to bleed the air from the nozzle.

A.4 Clean Stop

The Clean Stop sequence is as follows:

1. Disable jet control operations
2. Starts the solvent pump
3. Stops the ink pump
4. Cleans the nozzle
5. Prepares and stops the ink system.

A.5 Quick Stop

Note: *This sequence is used to manually stop the jet for a short period, or to automatically stop the jet during instances like EHT trip and charge error.*

This method switches off the ink without flushing the nozzle or manifold. Hence, the manifold and the nozzle are full of ink when the jet stops. The machine must not be left in this state for long periods, as dry ink in the jet orifice may make restarting difficult. This procedure is primarily intended for situations where the machine may be stopped and restarted several times in quick succession. Under these conditions, the use of solvent may become excessive and cause dilution of the ink.

A.6 Nozzle Backflush

When nozzle Backflush is selected, solvent is applied to the nozzle and gutter to clear any blockage.

Nozzle Backflush completes automatically, but can be stopped at any time before that by powering off the printer.

Appendix B Encoder Information

Introduction

This chapter provides the encoder information and contains the following topics:

B.1 Manual Setup (Internal Encoding)

Internal Encoding is used when product speed is constant. An internal clock sets the stroke-rate to a constant pace.

Internal Encoding is used when the product speed is constant. The internal clock of the printer is set to the speed of the product in feet per minute (FPM) or meters per minute (MPM).

To use Internal Encoding, it is necessary to determine the product speed. This section describes four methods that can be used to determine the product speed.

Method 1

Use a handheld tachometer that is calibrated to measure linear surface speed in FPM or measure the Revolutions Per Minute (RPM) of the pulley. Convert RPM to surface speed by using the following formula:

Surface speed (FPM) = [Pd x (RPM)]/12

where P = 3.14 and d = pulley diameter in inches.

Method 2

Establish a reference mark on the conveyor belt and measure how many inches (one inch equals 25.4 mm) this mark moves in 5 seconds. This number is equal to the conveyor speed in FPM.

Method 3

If you know the number of products produced per minute on the line, the size of the product, and the gap between each product, you can calculate the product speed.

For example:

1200 products per minute are produced on the line, each product is 2.5 inches wide, and there is a one inch gap between each product.

Conveyor speed = [(products per minute) x (size + gap)]/12

where size and gap are in inches.

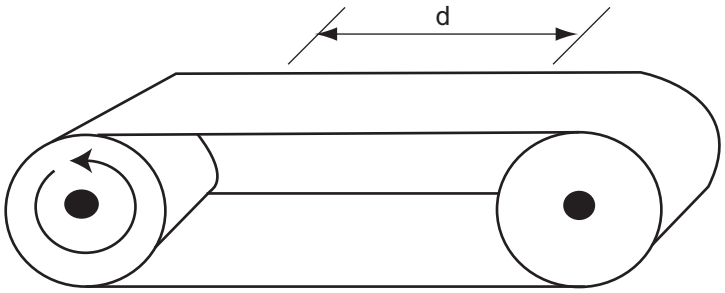
Method 4

It is also possible to use the printer's product counter to determine the number of products per minute, and then calculate the line speed as described in "Method 3".

B.2 Measured by Shaft Encoder (External Encoding)

External Encoding is used when the speed of the conveyor varies. A shaft encoder measures the conveyor speed, and transmits the data to the printer. This data enables the printer to vary the stroke rate according to the variation in the speed of the conveyor. You can use the following types of shaft encoding methods:

- A direct shaft encoder maintains a 1:1 ratio between the encoder pulses and print strokes.
- Non-quad - Uses both the channels from encoder A and B. The leading and trailing edges of the channels give four times the number of pulses delivered from the encoder.
- Rollback Compensation or Backlash Protection - If the product is placed on a line that can move or settle (for example, conveyor belt) and it stops, rollback compensation makes sure that the printer prints on that product one time only. In this feature either A leads B or B leads A. This provides the printer with rollback compensation. The printer counts the number of encoder counter strokes as it prints. If the line stops and moves backwards, the printer will not restart printing until the counter stroke number has returned to the last known good position. This feature makes sure that the printer prints one time in the standard direction of line travel and not in the reverse direction of line travel.
- A divided-down shaft encoder is used when the conveyor speed requires fewer pulses than the actual output of the shaft encoder.



d = distance of conveyor (product) travel per revolution of shaft

Figure B-1: Product Distance

Required shaft encoder:

Pulses per Revolution (PPR) = d x (strokes per inch)

Where strokes per inch = (strokes per character) x (characters per inch)

Example 1

1800 PPR Encoder connected to production line.

d = 10 inches of product travel for one revolution

If you want to print using 5x7 SL matrix and the required print pitch is 10 Characters Per Inch (CPI),

then 1800 PPR / 10 = 180 PPI, where Encoder (PPR) = 1800 and Wheel Circumference = 10 in.

If both A and B channel are in use,

Encoder Type = Quadrature

Direction = select either A leads B or B leads A

The printer PPI is 720 with a print pitch requirement of 10 CPI. The number of strokes required for a 5x7 SL matrix at 10 CPI is 60.

As the 5x7 SL matrix is based on 10 CPI, you can get the top line speed on printer speed chart.

Example 2

1800 PPR Encoder connected to a production line

d = 23 inches per revolution

PPI = 1800 / 23 = 78 PPI, where Encoder (PPR) = 1800 and Wheel circumference = 23 in.

But, as the setting is a non-quad configuration,

Encoder Type = Non-quad

Example 3

If the standard 1800 PPR shaft encoder is to be used as shown in Example 1, it will be necessary to provide some type of gearing to supply the required 60 pulses per inch as shown in Figure B-2.

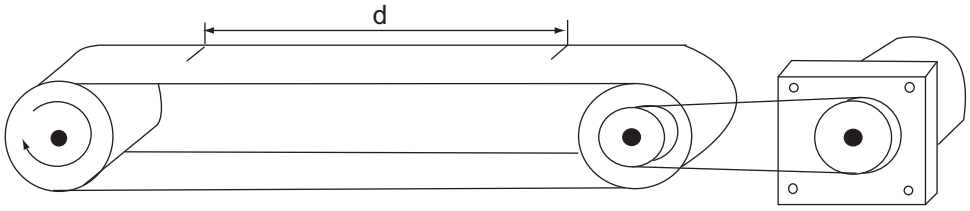
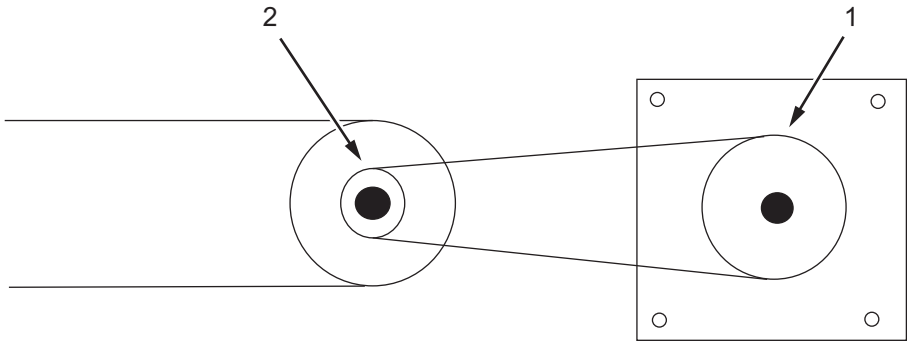


Figure B-2: External Shaft Encoder

To determine the required gearing, the following method is used.

1800 PPR/1380 PPR = 1.3 or 1: 3: 1 gear ratio



1. Pulley b
2. Pulley a

Figure B-3: External Shaft Encoder - With Pulley

If the diameter of "a" = 2.0 inches, then the diameter of "b" is 2.6 inches (2.0 inches x 1.3 = 2.6 inches). For one rotation of "a", 1380 pulses are produced from the 1800 PPR shaft encoder.

If that same 1800 PPR shaft encoder is connected directly to the shaft on the conveyor, the calculation would be as follows:

(1800 pulses per revolution)/(23 inches per revolution) = 78 pulses per inch,
where Encoder (PPR) = 1800 and Wheel Circumference = 23 in.

(78 pulses per inch) / (6 strokes per character) = 13 characters per inch

Since the standard calls for 10 characters per inch (refer to Example 1), the message would be compressed on the product.

Encoder Type = Quadrature

Direction = select either A leads B or B leads A

B.3 Measured by Product Size/Time (Auto Encoding)

Auto Encoding is used when the product speed and the conveyor speed are different (product slippage) or when the product is allowed to fall through guides from one level to another. When Auto Encoding is selected, the signal from the product detector is used to determine the product speed, and code the product at a set stroke rate.
The requirements for Auto Encoding are the following:

- A product detector
- The length of the detect area (the amount which the detector senses). This value must be entered into the printer.
- The distance between the printhead and the product detector must be set such that, both the leading and trailing edges of the product are sensed by the product detector before the printer starts printing the message.

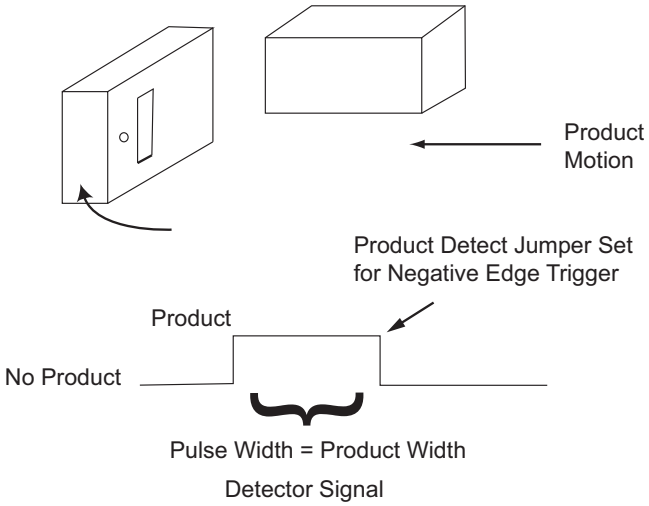


Figure B-4: Auto Encoding

Appendix C MCB Test Points

Introduction

This chapter provides the MCB information and contains the following topics:

C.1 Power Supply Test Points

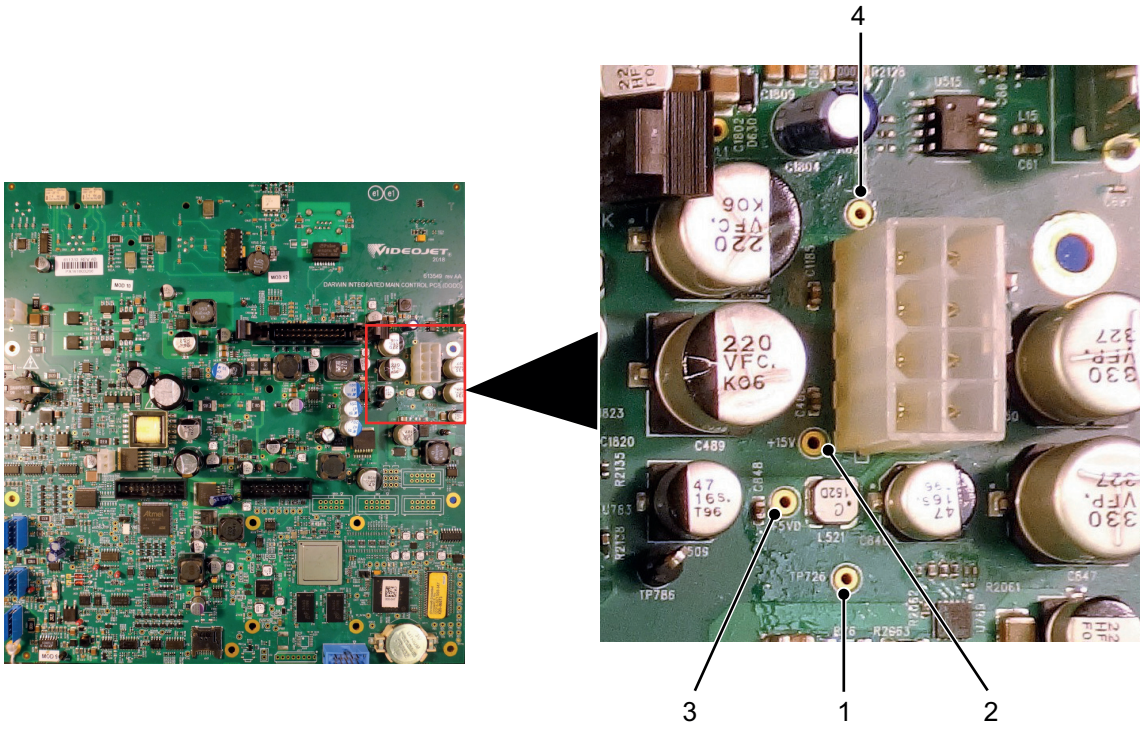


Figure C-1: Test points - Power Supply

C.1.1 Test Points

Item No.	Test Point	Description	Minimum	Maximum
1	TP726	24V	22.8V	25.2V
2	+15V	15V	14.2V	15.8V
3	+5VD	5V	4.7V	5.3V
4	-15V	-15V	-15.8V	-14.2V

Table C-1: Test Points - Power Supply

C.2 Charge and Modulation Test Points

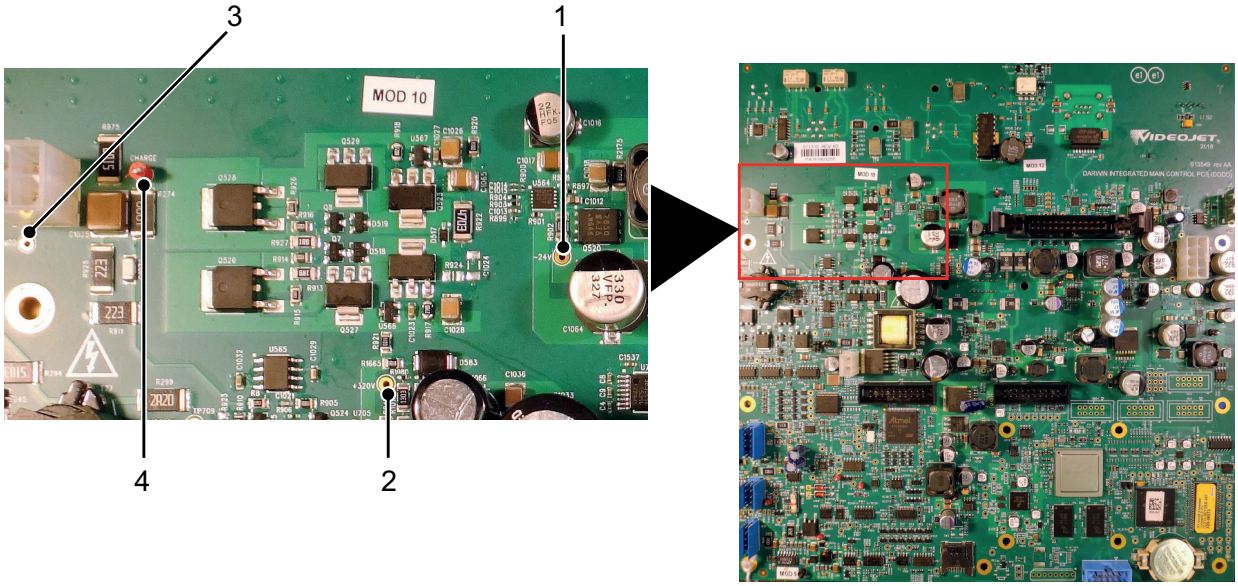


Figure C-2: Test points - Charge and Modulation

C.2.1 Test Points

Item No.	Test Point	Description	Minimum	Maximum
1	-24V	-24V	-25.2V	-22.8V
2	+320V	320V	304V	336V
3	MOD	Nozzle Modulation	0	200V (Sinewave peak-to-peak)
4	CHARGE	Drop Charging (pulses at drop rate)	0	300V

Table C-2: Test Points - Charge and Modulation

C.3 Printhead Test Points

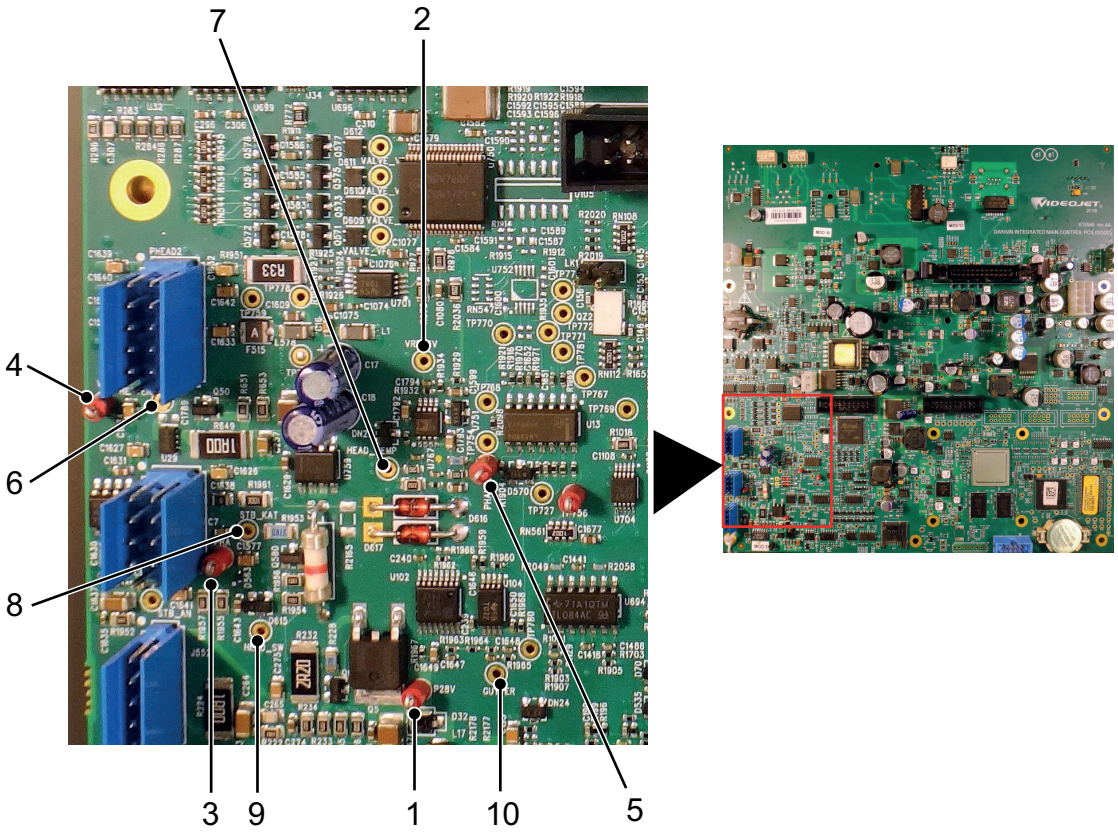


Figure C-3: Test points - Printhead

C.3.1 Test Points

Item No.	Test Point	Description	Minimum	Maximum
1	P28V	EHT POWER	26V	32V
2	VREF3V	3V	2.8V	3.2V
3	PHA	Signal from phase (first) detector	0V	3V
4	VAL	Signal from velocity (second) detector	0V	3V
5	PHAVEL	PHA+ Velocity	0V	3V
6	HEATER	Head Heater	0V (OFF)	24V (ON)
7	HEAD_TEMP	HEAD TEMP	Proportional to head temperature	
8	STB_KAT	LED strobe in charge electrode	0V (ON)	-
9	HEAD_SW	Head Cover Switch	0V (Fitted)	3.3V (Not Fitted)
10	GUTTER	Gutter ink detect	Variable (lower voltage = more ink in gutter)	

Table C-3: Test Points - Printhead

C.4 EHT Test Points

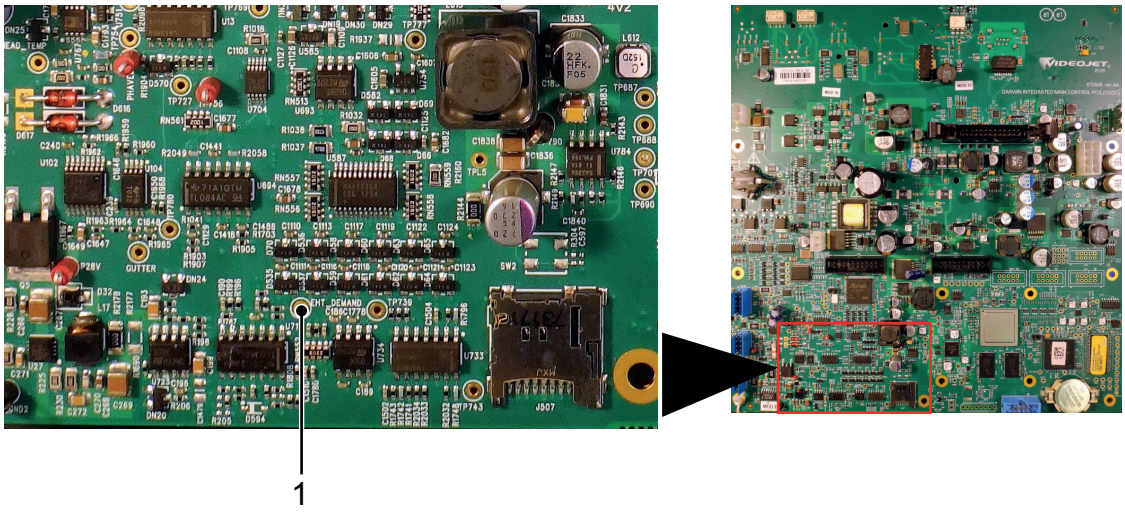


Figure C-4: Test points - EHT

C.4.1 Test Points

Item No.	Test Point	Description	Minimum	Maximum
1	EHT_DEMAND	EHT Demand	0V (OFF)	4V (ON)

Table C-4: Test Points - EHT

C.5 Connector Panel Test Points

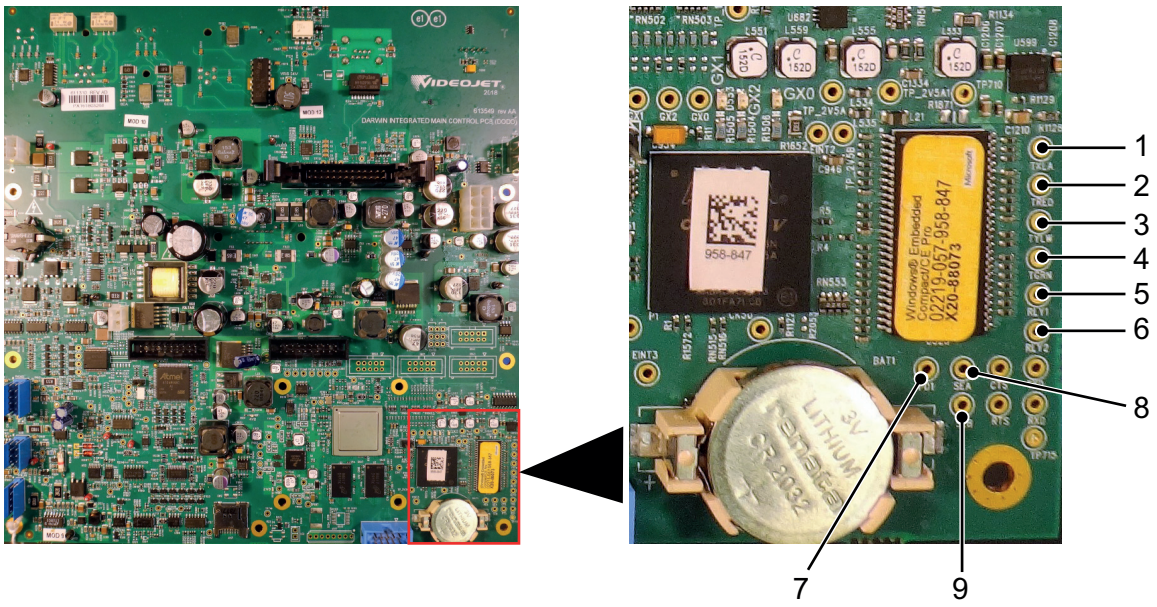


Figure C-5: Test points - Connector Panel

C.5.1 Test Points

Item No.	Test Point	Description	ON	OFF
1	TKLA	Beacon Klaxon Output	On = 0V	Off = 24V
2	TRED	Beacon Red Output	On = 0V	Off = 24V
3	TYLW	Beacon Yellow Output	On = 0V	Off = 24V
4	TGRN	Beacon Green Output	On = 0V	Off = 24V
5	RELAY1	Relay 1 Output	On = 0V	Off = 24V
6	RELAY2	Relay 2 Output	On = 0V	Off = 24V
7	PD1	Photocell Input	Active = 0V	Quiescent = 3.3V
8	SEA	Shaft encoder phase A	-	-
9	SEB	Shaft encoder phase B	-	-

Table C-5: Test Points - Connector Panel