User Manual of EC-JET1100(CIJ）

Copyright Notice

Disclaimer

Information of a technical nature and particulars of the product and its use are given by EC-JET in good faith. However, it is acknowledged that there may be errors or omissions in this user manual.

EC-JET shall not be liable for any loss or damage arising from the use of any information, particulars or errors in this user manual, or maintenance carried out by unauthorized personnel, or any incorrect use of the product, whatsoever.

At all times the printer must be operated with EC-JET approved spares and consumables. Maintenance not identified in this user manual must be carried out by EC-JET engineers or authorized distributors.

About this Manual

The purpose of this user manual is to provide the operator with sufficient information to operate the EC-JET1100 series.

Products described in this user manual are subject to continuous development, and reviews of this user manual will be made accordingly in subsequent editions or reissues.

Contents

1. Safety

1.1 Warnings and Cautions

At appropriate points within the text of this manual, additional safety statements will be displayed. These are designed to alert your attention to hazards and important information that assists you in carrying out your activities on this printer safely and efficiently. Each safety statement has a separate meaning so that you can identify the importance of the information provided. Examples and descriptions of safety statements have been provided as follows:

WARNING: A WARNING ALERTS YOU TO HARMFUL OR POTENTIALLY LETHAL ACTIVITIES. A DESCRIPTION OF THE HAZARD IS GIVEN AND THE CONSEQUENCES OF IGNORING THEM. A WARNING CAN ALSO BE SHOWN AS A SPECIFIC HAZARD, FOR EXAMPLE, EYEROTECTION (SEE BELOW).

THE EYE PROTECTION WARNING ICON IS SHOWN THROUGHOUT THE MANUAL TO INDICATE. THAT APPROVED EYE PROTECTION, WHICH CONFORMS TO EUROPEAN AND INTERNATIONAL SAFETY STANDARDS, MUST BE WORN WHEN CARRYING OUT INK OR SOLVENT RELATED

ACTIVITIES

.

CAUTION: A CAUTION ALERTS THE USER TO ACTIVITIES THAT MAY CAUSE DAMAGE TO EQUIPMENT OR REDUCE ITS OPERATING EFFICIENCY, BUT IS NOT DIRECTLY HAZARDOUS TO PERSONNEL.

1.2 Lethal Voltages

WARNING: LETHAL VOLTAGE. DANGEROUS VOLTAGES ARE PRESENT IN THIS EQUIPMENT WHEN ELECTRICAL POWER IS APPLIED. THERE IS A DANGER OF DEATH OR INJURY FROM ELECTRIC SHOCK.

UNDER NO CIRCUMSTANCES ARE YOU TO ATTEMPT TO OPEN THE SCREEN DOOR OR THE BACK ACCESS DOOR AND REMOVE OR ADJUST ANY COMPONENTS FITTED WITHIN THE PRINTER.

ONLY FULLY TRAINED OPERATORS OR APPROVED SERVICE ENGINEERS ARE QUALIFIED TO OPEN THE FRONT INKSYSTEM DOOR WHEN ADDING INK OR SOLVENT, ONLY FULLY TRAINED EC-JET APPROVED ERVICE ENGINEERS ARE QUALIFIED TO OPEN THE SCREEN DOOR OR THE BACK ACCESS DOOR TO MAINTAIN OR ADJUST THE INTERNAL PARTS.

1.3 Operation

All users operating the printer must be aware of the following hazards associated with ink jet printers.

The following safety information should be made available to all personnel and is applicable to anybody in the printer's operating environment. Only fully trained and competent personnel should operate or maintain EC-JET printers. If you are in any doubt as to your ability to operate or maintain the printer, did not hesitate to consult your supervisor for guidance or contact your local EC-JET distributor who will be happy to advise you.

1. Don't smoke or use naked flames in the vicinity of the printer. The printer contains flammable inks and solvents.
2. Always ensure that the printer electrical supply is isolated prior to performing cleaning or maintenance activities. Lethal voltages are present in the printer cabinet and printhead when mains power is applied which can cause death or serious injury if the correct electrical procedures are not observed. When a main operated external alarm is connected to the external alarm socket, this must be disconnected before any maintenance activities are carried out.
3. Only the fully trained operators or service engineers qualified to open the front ink system door to add the ink or solvent. Only fully trained EC-JET approved service engineers qualified to open the screen door or the back access door.
4. Always check that all covers are correctly fitted and all doors are closed before you use it. If you are not sure, ask your supervisor for guidance. Covers act as safety barriers and also ensure the printer retains its electromagnetic compatibility.
5. It is recommended that the printer is situated at least 600 mm from floor level for your comfort.

1.4 Inks and Solvents

Whenever inks and solvents are used, safety eyeglasses to the appropriate European and International Directives must be worn. Solvent resistant gloves must be worn when contact with inks or solvents is likely.

The effects of solvents and inks are potentially harmful. Prior to use, ensure the printing area is properly ventilated and the Material Safety Data Sheets have been read and fully understood. If you are unsure, contact your supervisor for guidance.

If the Material Safety Data Sheets have not been supplied or are not available, please contact your local EC-JET distributor. Always refer to the Material Data Safety Sheets before working with inks and solvents.

Store all inks and solvents in original containers, in a well- ventilated cabinet and away from heat sources. Ensure all spilt ink or ink deposits are removed immediately using the correct solvent for the ink used.

1.5 First Aid

Ensure that first aid information is readily available in the event of ingestion, inhalation, or contact with the

skin or eyes. Ideally all operators should be trained in First Aid and should be aware of the effects of working with flammable and toxic substances. All operators should have access to the ink and solvent Material Safety Data Sheets, which explain the hazards and medical action to be taken if first aid is necessary.

1.5.1 Eye Contact

Flush eyes using clean running water for a minimum of 10 minutes. Obtain immediate medical attention.

1.5.2 Skin Contact

Remove any contaminated clothing and wash the affected skin area thoroughly with proprietary cleaner. Do NOT attempt to use solvents to remove ink from skin.

1.5.3 Inhalation

Evacuate the person into a fresh air environment. If the person experiences any difficulty in breathing, obtain immediate medical attention.

1.5.4 Ingestion

Do not induce vomiting; obtain immediate medical attention and give the casualty half a litre of water to drink.

1.6 In Case of Emergency

If the printer needs to be stopped quickly due to an emergency, press the red [stop] key on the printer to stop the printing and switch the printer power switch on the rear panel of the printer to the ‘O’ (off) position. Call for medical assistance as required.

1.7 Noise Emissions

The noise emission level from this printer does not exceed 70 dBA. This means that there is no hazard to hearing and, therefore, no legal requirement for ear protection to be worn when working in the vicinity of this printer.

2. Introduction

A Safety section has been provided at the front of this manual for your use. You are strongly advised to read the Safety section carefully before attempting to use the EC-JET printer.

2.1 Printer System Overview

The EC-JET printers provide a means of application of printed information onto a wide range of products. This information would typically be the date, production codes, consumer information, product or corporate identification, product traceability, and many others. It can be widely used in pharmaceutical, chemical, food, construction materials, tobacco, ceramics, electronics and other industries.

The printer is normally fixed to a production line in such a way that printing takes place as the product passes the print head. The presence of the product and printing can be synchronized using a product detecting sensor.

The printer consists of a cabinet and a print head. The cabinet houses the electronics module, the ink system, a power supply and a message screen display. The print head is attached to the rear of the cabinet via a flexible conduit.

The print head is supplied with ink by the ink system which the print head forms into a continuous stream of ink drops which recycle to the ink system. When printing is required, drops of ink for printing the message are deflected from the stream out of the print head onto the product, providing a non-contact method of printing. The process is controlled by the electronics module which also stores the messages to be printed. The message is programmed using the touch screen.

2.2 System Description

The EC-JET printers are designed to provide versatile, uninterrupted operation in factory environments. The models available, together with available raster types and compatible print heads are as follows:

PRINTER MODEL	PRINTERHEAD TYPE	RASTER TYPE	CHARACTERS
EC-JET1100	60μm	5 Dot High Speed	5
		7 Dot Standard Speed	5、7
		7 Dot High Speed	5、7
		7 Dot Small	5、7
		9 Dot Standard Speed	5、7、9
		9 Dot High Speed	5、7、9
		12 Dot Standard Speed	5、7、9、11
		12 Dot High Speed	5、7、9、11
		16 Dot Standard Speed	5、7、9、11、15、16
		16 Dot High Speed	5、7、9、11、15、16
		24 Dot Standard Speed	5、7、9、11、15、16、24
		24 Dot High Quality	5、7、9、11、15、16、24
		32 Dot Standard Speed	5、7、9、11、15、16、24、32
		34 Dot Standard Speed	5、7、9、11、15、16、24、32

2.2.1 Operating Simplicity

Easy start-up and shutdown requires minimal operator intervention. Messages are easily created using the built-in QWERTY keyboard, and the printer offers print adjustment and message editing facilities.

2.2.2 Diagnostics

A comprehensive diagnostics package is built into the printer to enable problems to be identified and rectified quickly.

2.2.3 Real-time System Control

The computer component in the inkjet printer constantly detects the ink/solvent level, ink viscosity, pressure and charging value, and reflects the detection results to the diagnostic menu. We can see these data on the display.

2.2.4 Print Head

The print head is robustly designed for industrial environments. It is hermetically sealed and is permanently attached to the printer itself by a 2 meters length of conduit.

2.2.5 Printing Drops

To form a printed pattern, each drop must be directed to a different place on the product being printed. To achieve this, the drops pass through a charge electrode (within the print head), which applies a different charge to each drop. This causes the flight path of the drops to differ as they travel between two deflector plates. When the drops reach the product, they form one line of drops called a raster. As the product passes under the print head, rasters are laid down side by side to form the printed message.

2.2.6 Leaving Gaps

Non-printed drops in a raster carry no charge and are therefore not deflected. These drops are captured by a gutter in the print head, and returned to the ink tank. Gaps between raster (perhaps to separate readable characters) are created by the printer simply not printing a raster as the product continues to move past the print head.

2.2.7 Detecting Products

A photocell or product detecting sensor is used to inform the printer when the product has been detected. After a predefined delay, the first raster of the pattern will be printed, followed by the remaining rasters of the pattern, as described above.

2.2.8 Conveyor Speed

For production setups using a conveyor, variation in conveyor speed can produce variation in the appearance of the printed message. If the product is moving very slowly, the rasters could be printed too close together and the characters formed would be too thin. Conversely, if the product is moving very fast, the rasters could be printed too far apart, resulting in unprinted gaps between the rasters. This problem is overcome by either varying the print width (through a user menu option) to match the production of rasters with the conveyor speed, or by using a shaft encoder to control the rate at which each raster is printed in relation to the conveyor movement.

2.2.9 Ink Blockage Prevention

It is essential to use the correct solvent for the ink being used, i.e. the solvent used in the ink base: MEK solvent for MEK based ink, ETHANOL solvent for ETHANOL based ink, etc.

The principle of continuous ink jet printing has proved to be the most effective means

of printing with an ink which is required to dry instantly, within a second, on almost any surface.

2.2.10 Blockages

If ink is required to dry on the product it will also have a tendency to dry in the printer, with a possibility of causing a blockage.

The continuous ink jet printer overcomes this problem by continuously producing the print drops in operation. Although the ink is evaporating quickly during this process, it does not cause a nozzle blockage, as there is a constant replacement of ink in the nozzle.

Automatic Cleaning at Shutdown

A potential problem arises on shutdown when ink is left in the nozzle; as it is fast drying it will soon dry and clog up the nozzle. To overcome this, special procedures to clear the nozzle are necessary.

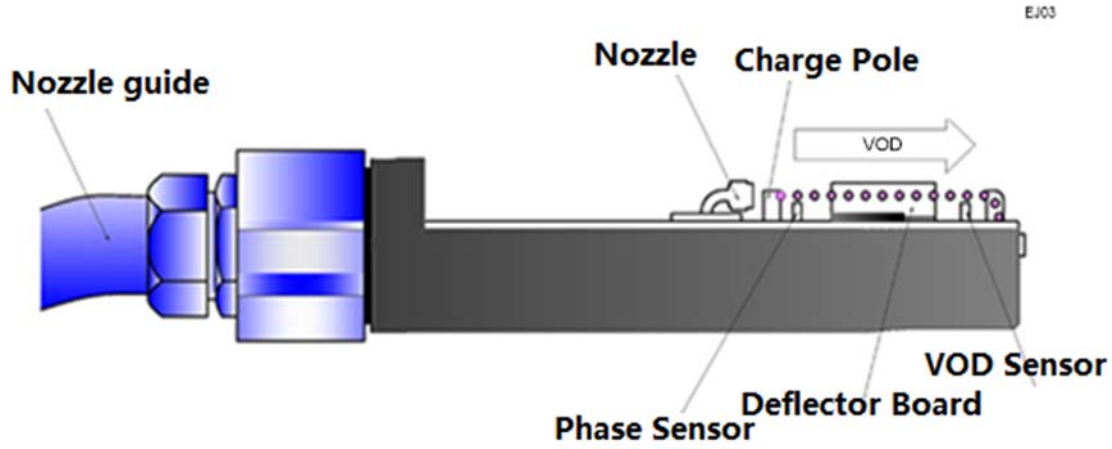
With EC-JET printers the clean-up procedures at shutdown are achieved by an automatic flushing system.

On shutdown, the ink is removed from the ink nozzle assembly by suction through a purge line. Just prior to shutdown, a solvent flush system introduces solvent into the printhead, and runs solvent through the nozzle and gutter, thus clearing ink from these vital components. This automatic procedure makes it unnecessary to clean the printhead on shutdown.

2.2.11 Velocity of Drop

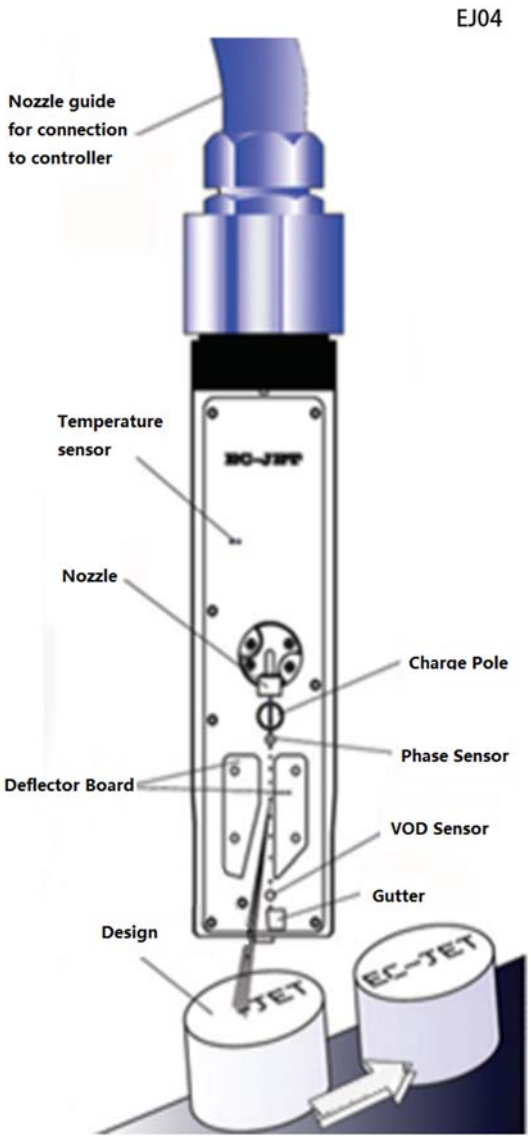
Ink velocity can impose a minor change in the mass of a drop, which will affect the final printing position of the drop. However, precise placement of drops is more dependent on the speed of the drops as they travel through the deflector plates.

For this reason, the velocity of drop (VOD) is constantly monitored and compared with the optimum (VOD reference) value printed on the print head conduit. A “feedback loop” is used to increase or decrease ink pressure, thus maintaining the correct speed of drops for accurate placement and therefore quality of print. The following illustrates principle:



2.3 Principles of Operation

A conducting ink is supplied under pressure to an ink gun and forced out through a small nozzle of typically 40 to 70 micro diameters. As it passes through the nozzle the liquid is piezo-electrically pulsed (modulated) and the stream breaks up into a continuous series of drops which are equally spread and are of the same size.



Surrounding the jet at the point where the drops separate from the liquid stream is a charge electrode. A voltage is applied between the charge electrode and the drop stream. When the drop breaks off from the stream it carries a charge proportional to the applied voltage at the instant at which it breaks off. By varying the charge electrode voltages at the same rate as the drops are produced, it is possible to charge every drop to a predetermined level.

The drop stream continues its flight and passes between two deflector plates which are maintained at a constant potential, typically plus and minus 5 kilovolts. In the presence of this field a drop is deflected towards one of the plates by an amount proportional to the charge carried. Drops which are uncharged are unelected and are collected by a gutter to be recycled into the ink tank. Those drops which are charged, and, therefore, deflected, are printed on the substrate, which is travelling at a certain degree and speed to the direction of the drop deflection.

By varying the charge on the individual drops, whatever pattern is required (including alphanumeric characters) may be printed. A series of drops deflected across the substrate is known as a raster.

3. Controls and Indicators

3.1 Getting Started

This section of the manual is intended to help you understand the setting-up of the printer and tells you how to switch it on, program a simple message, start the printer jet, print the message and stop the printer.

Apart from familiarizing you with the machine and some of the most frequently used software, it will enable you to verify that all is well and the printer and accessories have reached you in good condition.

3.2 Installation

The printer should always be installed by a fully trained, EC-JET approved, service engineer. Guarding and safety interlocks should all be in place and working correctly. EC-JET can accept no liability for damage to either machine or personnel in the event of the printer being installed, moved or maintained by unauthorized and/or untrained personnel.

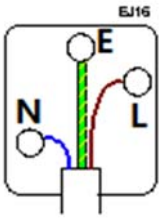
If the printer is relocated or changes to the production line are made, information on how to install and set up the printer can be found in “Appendix 1: Installation and Setting Up”.

EC-JET printers can be fit to a single-phase 50/60 Hz AC power supply of 115V or 230 V.

3.3 Connection

Before connecting to the power supply, make sure the ON/OFF switch is in the OFF position. The wires in this electrical supply lead are colorized in accordance with the following code:

GREEN-YELLOW	EARTH (E)
BLUE	NEUTRAL (N)
BROWN	LIVE (L)



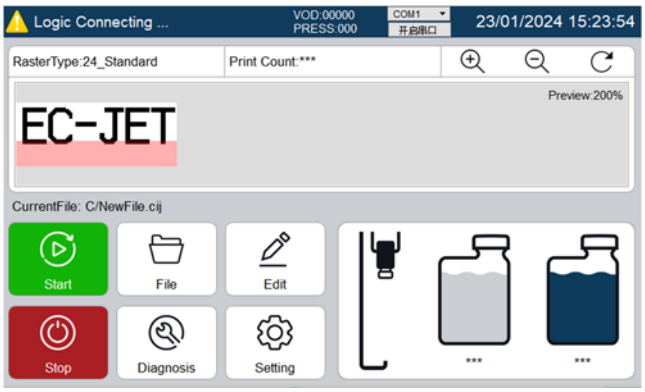
WARNING: THIS PRINTER MUST BE EARTHED. THIS PRINTER MUST ONLY BE WIRED BY A QUALIFIED ELECTRICIAN. EC-JET CAN ACCEPT NO RESPONSIBILITY FOR ANY DAMAGE CAUSED TO EITHER MACHINE OR PERSONNEL DUE TO INCORRECT OR FAULTY WIRING.

3.3.1 Switch on the printer

Plug the printer into a suitable supply and switch the printer power switch at the rear right of the machine to on.

The following screen is displayed when power is switched on:

There will be a delay of a few seconds while the computer logic carries out internal checks. When these checks are complete, the following display will be seen:



3.3.2 Start and Stop keys

Start Key Turn on the power of the inkjet printer and enter the main interface after the machine starts. This initiates 

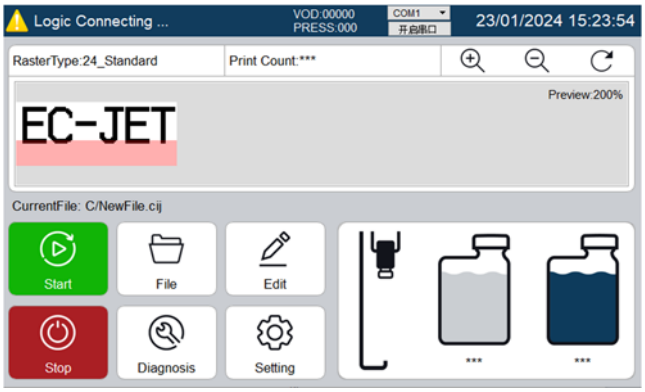
the start-up sequence which is responsible for carrying out internal checks and regulating the ink flow until it is ready for printing.

Stop Key

Click the 

stop button on the screen to choose to execute the inkjet printer shutdown sequence. Taking flushing shutdown as an example, it includes discharging the ink in the nozzle and automatically executing the nozzle cleaning process (this can prevent the nozzle clogging caused by dry ink), and the entire shutdown sequence takes about 3 minutes. When shutting down, the status line of the display will show:

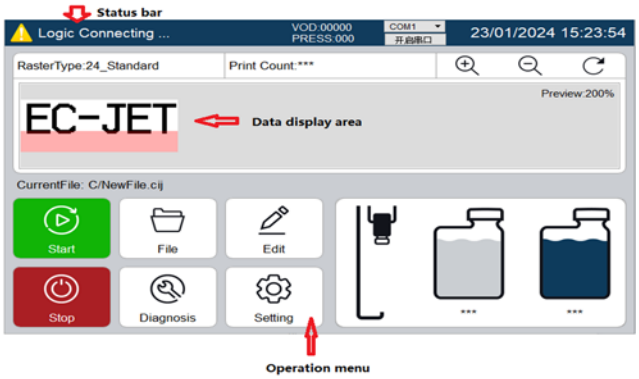
When the printer has finished the shutdown sequence, the following message will appear in the status line of the screen:



The machine may now be switched off by the power switch at the rear of the printer.

CAUTION: Only when the status line displays "Jet Stopped" can the inkjet printer be turned off. Whenever the Start or Stop keys are pressed, the CURRENT MESSAGE screen is displayed.

3.4 Screen Display



Message Display

This part of the display area is used for displaying, creating and editing messages to be printed.

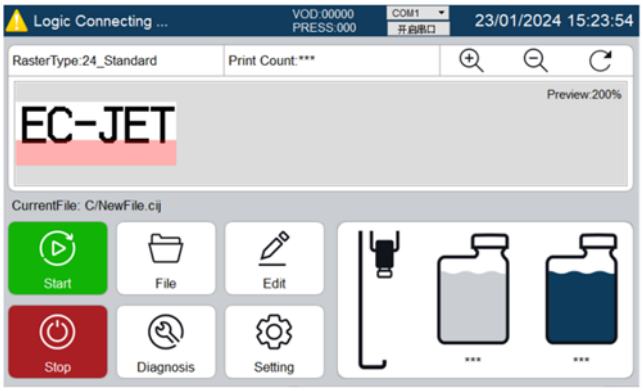
Operation Menu Display

This is used to display the operation message.

Appearance Line

This status bar appears on all menu screens. Used to display warning messages, printing status, and printing fault information to the operator. Displays real-time VOD (ink droplet flight speed), pressure value and real-time date and time.

3.4.1 Display Brief Introduction



3.4.2 Ink/Solvent Icon

Ink/Solvent Icon: Click to check machine service hours and ink/solvent consumption.

3.4.3 Print Head Icon

Print Head Icon: Click to check machine service hours and ink/solvent consumption: It is used to assist in observing the running status of the ink line, which can be divided into three situations: no ink line, running ink line and printing (ink line is broken).

3.4.4 General Function Keys

RasterType:24_Standard Select raster size for printing data

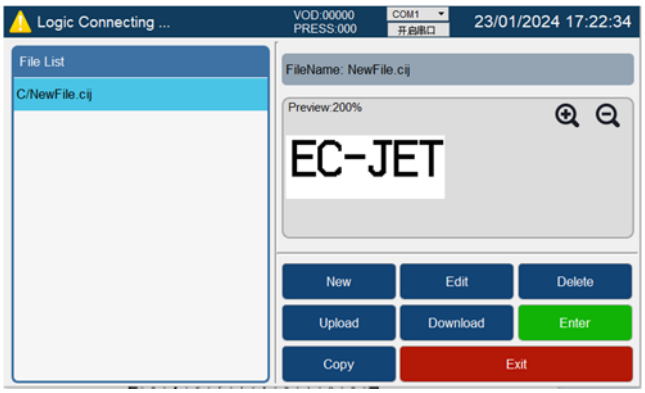
Zoom in/out to view the printed content

Refresh the printing data display area to restore the data to its initial position

3.5 Creating a Simple Message

If there are no messages stored in the printer memory, selecting 

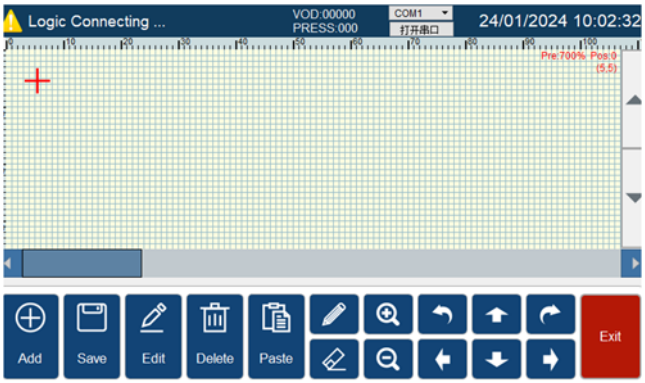
on the initialization screen to enter the "File List" menu:



Press the 

key to enter the file name setting interface, and press the 

key to confirm to create a blank document:



Then click to 

enter the editing interface, add the required data in the data display area of the screen. "Pay attention to the red cross in the display area as the positioning of the new data, which can be adjusted as needed." After completion, save the data and exit.

In the following example, we enter simple text data "EC-JET PRINTER"

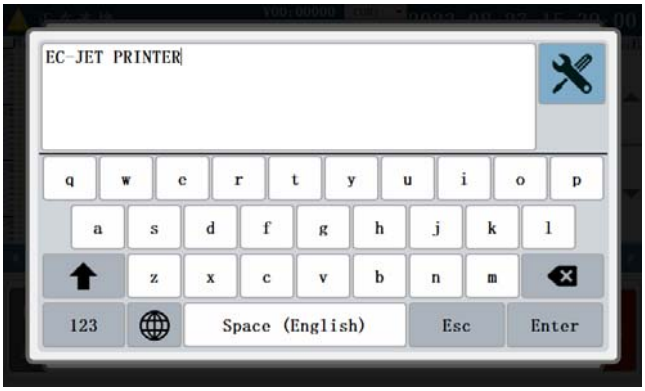
Click 

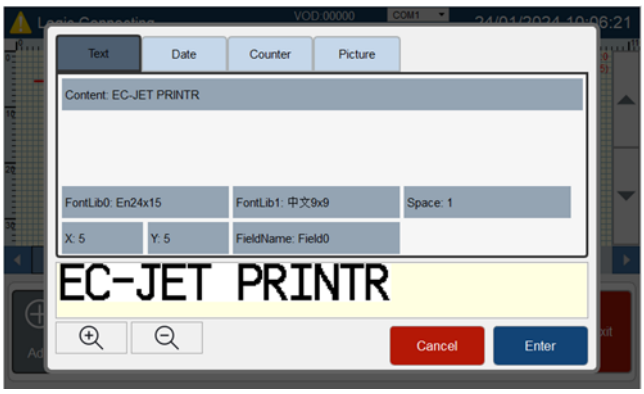
to take advantage of text, date, counter, and image functions. These options are explained in detail later, see "Creating and Editing Profiles".

Click 

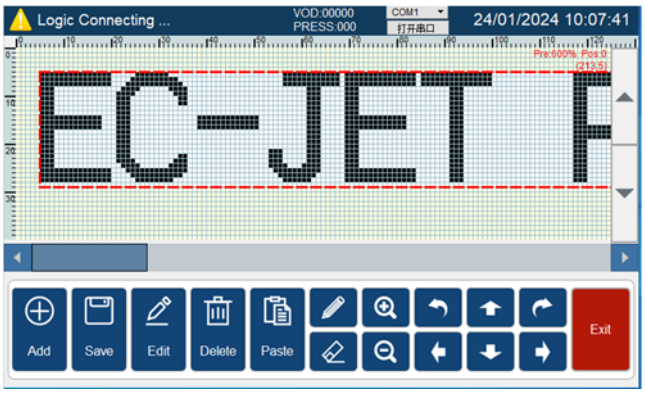
to enter text content editing, enter "EC-JET PRINTER", and click 

when finished:

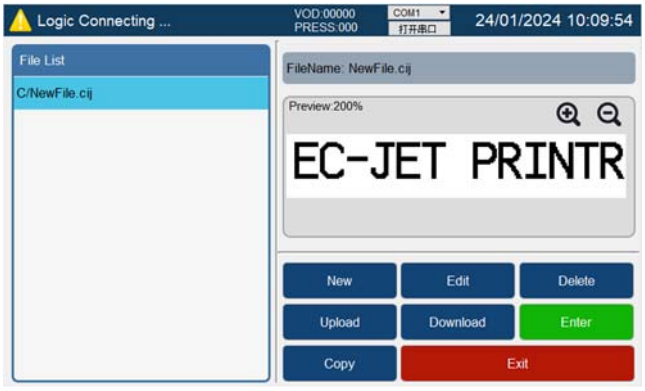




Font library and spacing can be set in this interface. Click Enter after editing is completed.



At this point, one text field has been added. If you need more text fields, you can continue to add them. After saving, exit and return to the file list. Click Exit to select the newly added file and return to the main interface.



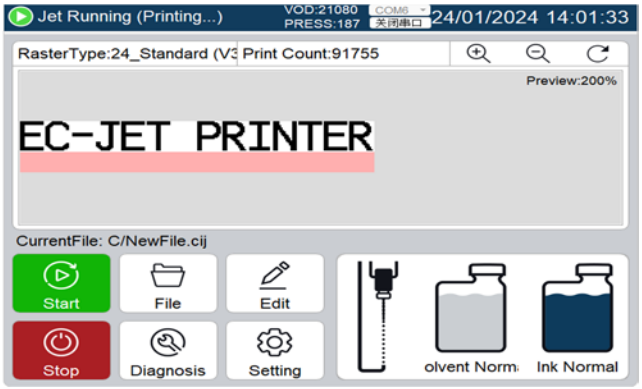
After pressing 

on the main interface to confirm startup, the status bar will display:

"Starting ink line...0%"

After completing the startup procedure, printing will begin, and the status bar will display as:

"Ink line running (printing...)"



Note: Jetting continues to run when printing is stopped! The status bar displays:

"The ink line is running (waiting...)"

3.6 Advanced Editing Features

To make editing easier and give further control over the appearance of messages, there are a number of extra features available from the keyboard.

3.6.1 Moving to Pixel (Drop) Locations

Each character of a message is made up of a number of drops. Each drop is called a pixel. Click on the blank display area to display the red cross cursor. Press    or  , the cursor will move one pixel.

This is useful when the spacing between characters needs to be adjusted to improve readability and/or

appearance. Also, this makes it possible to adjust the position along a vertical axis, perhaps to centralize a 7 high field against a 16 high field.

3.6.2 Pencil and Eraser Function

In editing mode, click on a blank area to display a red cross cursor. Press  to draw a point at the cursor position. In the same way, if you need to eliminate redundant points, you can also move the cursor to select the object and click  to eliminate it.

3.6.3 Copying and Pasting the Message

In editing mode, click to select the content to be copied and press 

. "Note that the paste function cannot be used if specific content is not selected." The pasted content will appear directly after the copied content.

3.7 Starting the Printer

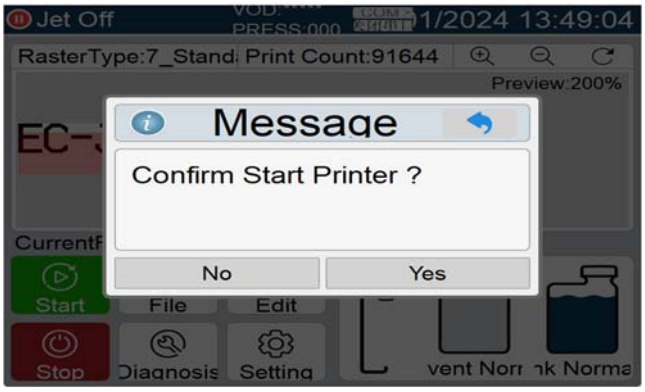
Set the print head and the printing distance, start the conveyor and then press the 

key to print.

All the setting correct, the printing will be good.

If the printing is not so good, see “Troubleshooting” and check all the setting.

Contact with your EC-JET Distributor if there is any identified failure.



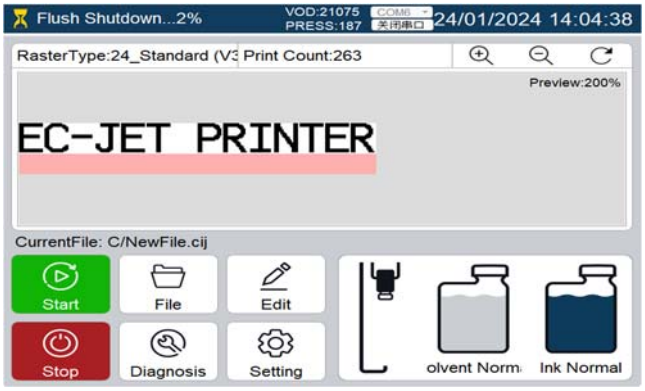
3.8 Stopping (switching off) the printer

Caution: Never switch off until the printer tells you to do so when it displays “Jet Stopped: You may now switch off.” Otherwise, it may lead to the print head failure. System should be reset completely if there is any working failure.

As long as you press 

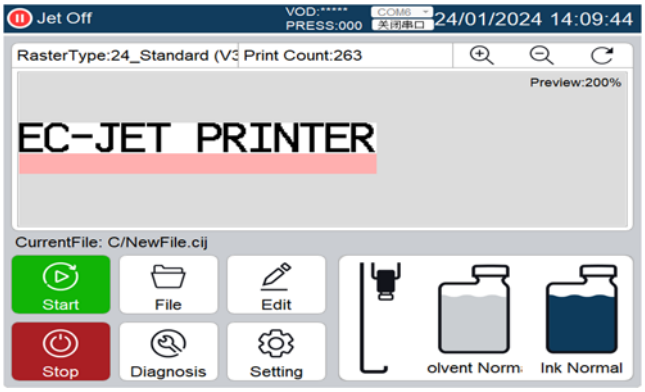
to select the shutdown mode, the inkjet printer will execute the shutdown procedure. Taking flushing shutdown as an example, the whole process takes about 3 minutes. When the inkjet printer executes the flushing shutdown procedure, the status bar will display:

"Flushing Shutdown...0%"



At this time, please wait for the system to complete the shutdown process, including cleaning the nozzles. After the shutdown process is completed, the status bar will display:

"The ink line has stopped"

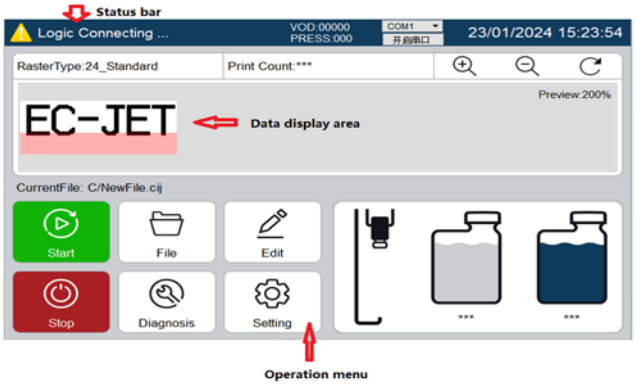


The machine may now be switched off by the power switch at the rear of the printer.

Note that there are 4 shutdown modes, please choose as needed:

Part 4 -Using the System

4.1 Home Page Interface



4.1.1 Menu Browsing

After the inkjet printer startup program is completed, the “Home” interface will be displayed first.

The appropriate function keys are required to select the desired menu. （ File , Edit , Diagnosis , Setting ）

Selecting Menus

Menus are selected either by pressing a function key (as described above) or, in some cases, a further menu may be selected in response to a menu option being selected. For example, you will see later that by selecting the Change Language option of the SETUP menu, a menu entitled CHANGE LANGUAGE will be selected. This is to prompt you to choose which language you wish the system to use.

Menu Options

Each option of a menu is preceded by wither a black or white “bullet”. Aback bullet indicates the option can be selected. A white bullet indicates the option is for display only and cannot be altered.

For example, some options can be selected during message creation but not message editing. Similarly, the Set Time option in the SETUP menu cannot be used when the printer is printing.

4.2 Select and edit

4.2.1 Current Message Screen

After the inkjet printer is powered on, the screen first displays the EC-JET logo, and then the printing homepage interface appears:

This key is to edit or modify current information

This key is to check the printing status of the inkjet printer, ink, solvent, warning information, etc.

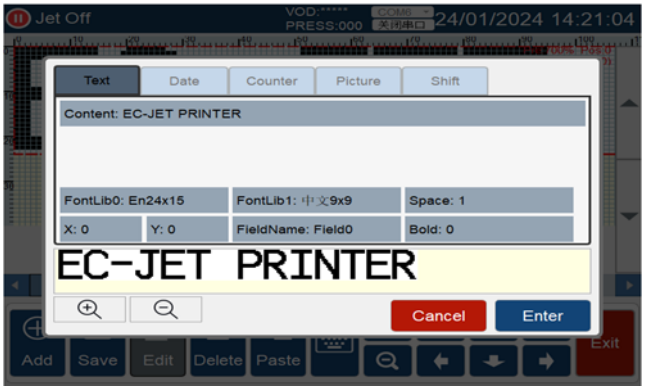
This key is to create a new profile

This key is to enter the settings menu

4.2.2 Editing a Message

When editing data, first click 

to enter the editing interface, then select the items to be edited and press Edit to edit the data. Take daily text editing of data as an example. For other data editing methods, please refer to the section on creating and editing data.



FontLib0: FontLib1: Font 0/1, clicking this key to select the appropriate font size

Space: This key is to change text spacing

X: 0 Y: 0 This key is to change the data coordinates. The origin of the coordinates is the upper left corner of the raster.

FieldName: Field0 This key is to Change profile name

4.3 Checking the Current Status of the Printer

The EC-JET printer provides 3 on-screen visual guides as to its current status (condition) – the System Status Line, Diagnostic and Ink / Solvent.

4.3.1 System Status Line

System Failures

System failures occur when a condition is detected that prevents normal printer operation.

If a System Failure message is displayed, contact your local distributor immediately. Note any information from the display as this will help diagnosis of the problem.

Print Failures

Print Failures occur when a condition is detected that affects printing.

If a Print Failure occurs, a message is displayed on the System Status Line and, if the jet is running, a jet shutdown sequence is started.

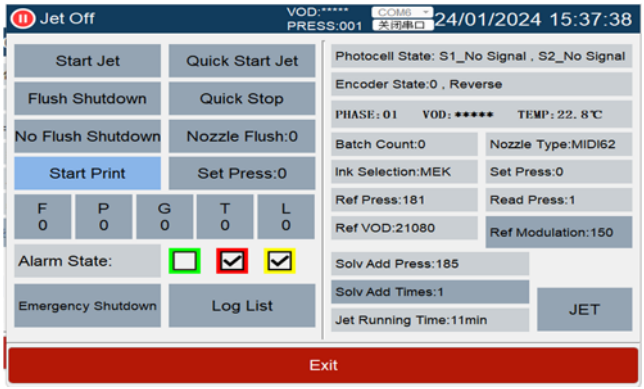
System Warnings

System Warnings inform the user of problems which may affect the operation of the printer but are not serious enough to shutdown the printer. However, they should be acted upon at the earliest possible opportunity.

4.3.2 Print Status Screen

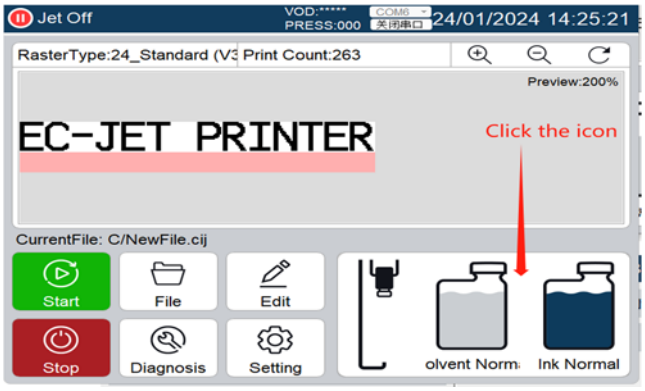
On the initial page, click 

to view the printer's operating parameters, warning messages, and logs



4.3.3 Ink/Solvent

Click the ink bottle icon on the homepage to enter the ink/solvent interface:



This interface can query the ink/solvent consumption and machine service time.

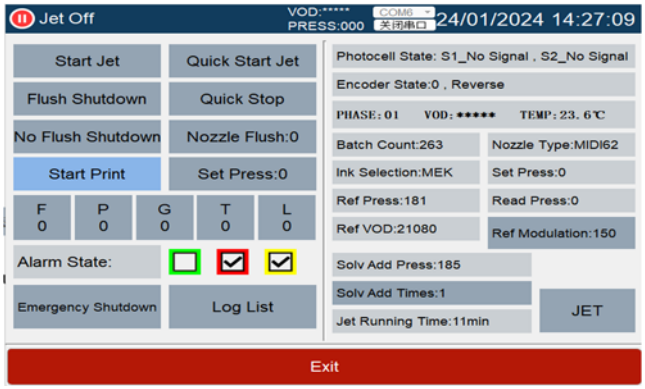
The ink and solvent levels should show OK. If not, they must be refilled with the correct ink or solvent

CAUTION: Only One bottle of APPROVED Ink or Solvent (500ml) should be added when the level is reported Low. If the level is still reported LOW after adding one bottle of ink or solvent, it could be that the level sensors are faulty. In this case you should contact your local EC-JET Distributor.

4.4 Detecting Printer Condition

To detect the current status of the printer, press 

the key on the initial interface, and the printing status menu will be displayed.



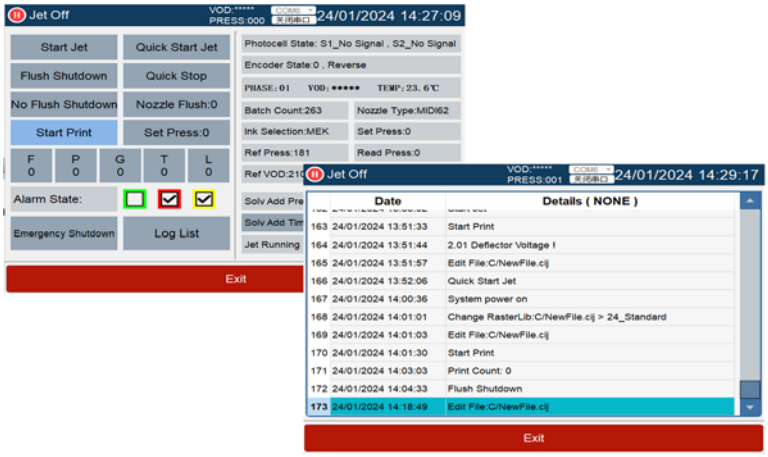
Log List	This list can query the historical operation information of the machine
Status Bar	This will display the operating status of the printer Ink line stopped - jetting has stopped and no ink line comes out Ink line running - Jetting is starting or printing is paused but jetting is still in progress The ink line is running (printing) - the printer is in the printing state

4.5 Listing Error Messages

The printer maintains a current error list. The log list lists the operation records and warning messages that have occurred in the system since the inkjet printer was turned on. These warnings will also appear in the status display line of the inkjet printer.

To view the warning message list, press 

the key in the initial interface, and then press Log List the key again. As shown in the picture:



When the power of the inkjet printer is turned off and the shutdown procedure is executed, the contents in the log list will not be automatically deleted. (To learn more about the different warning messages and their meaning, please refer to the "Warnings and Faults" section)

5. Creating, Editing and Deleting Message Fields

5.1 Introduction

5.1.1 Message composition

The message used has a complete mix of all field types:

Text Fields

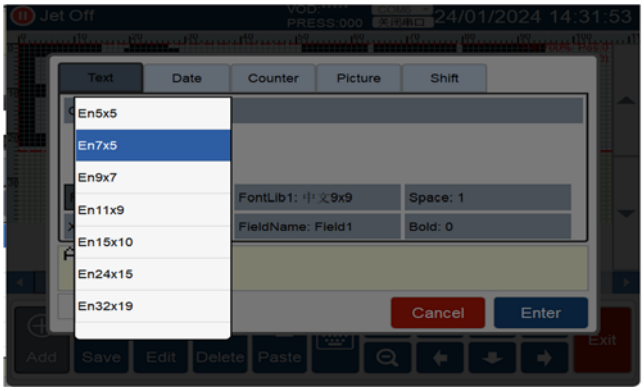
Date

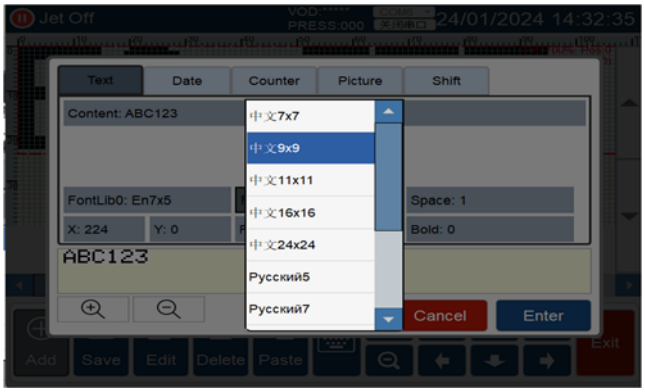
Counter

Picture

Character Height

The interface for adding/editing message fields allows you to change the character height in the font library:





The currently available English fonts are: En5x5, En7x5, En9x7, En11x9, En15x10, En24x15, En32x19; the Chinese fonts include Chinese 7x7, Chinese 9x9, Chinese 11x11, Chinese 16x16, Chinese 24x24, and support Chinese and English mixed editing.

Note: The numerical value in each raster type and character set indicates the height of the printed characters in pixels (drops).

5.1.2 Message Fields

Text Fields

Press the key 

in the edit menu, select text in the menu that appears, and then click on the content to enter message. It supports mixed editing of Chinese and English. A text field can be added with Chinese and English at the same time.

Counter

Press the key 

in the edit message display screen, and create counter fields as required in a series of menus that appear subsequently. The maximum value can reach 4,294,967,295/0xFFFFFFFF (hexadecimal).

Each time printing is performed, the count will automatically change the current value as required.

Date Fields

Press the key 

in the edit message display screen, and create date fields as required in a series of menus that appear subsequently. Likewise, you can choose a different date format.

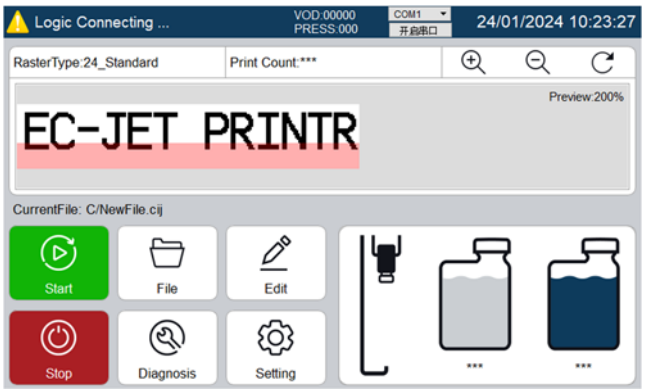
Logo Fields

Only available if logos are included in the software.

It enables logos to be placed into the message area.

5.2 Editing and Deleting Message Fields

An example message comprises all types of field, is used here to show how to create and modify message fields:



The message used has a complete mix If all field types: Text, Date, Counter and Logo.

In the following pages, you will be shown how to use the message editing menus.

5.3 Adding Message Fields

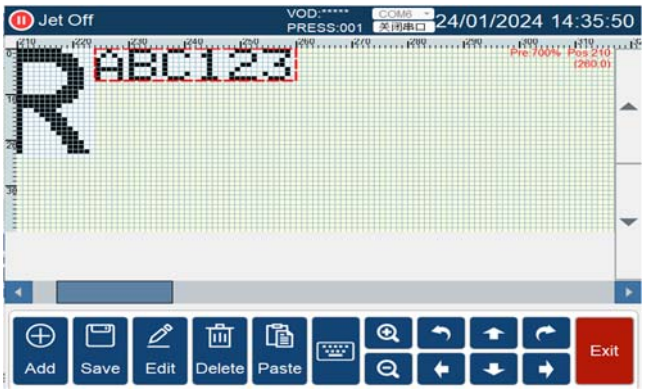
5.3.1 Adding Date Fields

Date fields can be used to create sale dates, trial dates, or other date-related information.

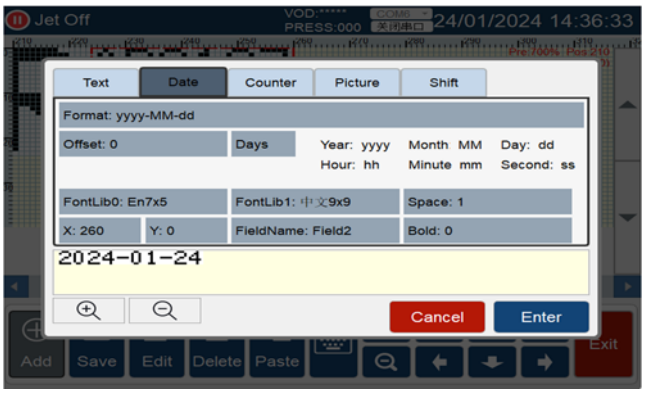
Before making the date fields, we first create another text field in the "Edit Information" interface: "Sell By (Sold on this date)". Click FontLib0: to select the font "En7x5":

Please pay attention to the cursor position. The cursor position is the message insertion position. You can also select the previous message field (as shown above) and directly insert the text "Sell By", so that the message will be sorted at the end of the previous message field by default.

After editing the message, you can select and drag to adjust the position.



Then click Add in the "Edit Information" interface and select to add a date field:



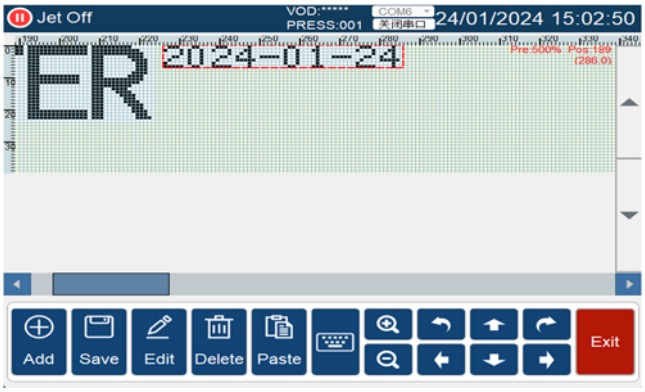
Select the Date as shown above, click Format: yyyy-MM-dd to confirm the date format. The actual content of the date field can be previewed at the key of the interface.

The basic date format is as follows:

Yyyy	4-digit year	Such as 2023
Yy	Last 2 digits of year	Such as 23
MMMM	Month	Such as August（8 月）
MMM	Month abbreviation	Such as AUG（8 月）
Mmm	Month abbreviation	Such as Aug（8 月）
Mmm	Month abbreviation	Such as aug（8 月）
MM	Month	Such as 08（8 月）
M	Month (removed to zero)	Such as 8（8 月），12（12 月）
DDDD	Day of week	Such as Thursday
D	Day of week	Such as 4（Thursday）
ddd	Day of the month	Such as 4（Thursday）(周 4)
d	The day of the month (removed to zero)	Such as 1-31
hh	24 hours time	Such as 00-24
h	24-hour timer (removed to zero)	Such as 0-24
mm	Minutes	Such as 00-60
m	Minutes (removed to zero)	Such as 0-60
ss	Second	Such as 00-60
s	Second (removed to zero)	Such as 0-60
WW	Week of year	Such as 36（36th week of the year）
JJJ	Week of year (removed to zero)	Such as 0-366
JJJZ	Week of year	Such as 001-366

The above basic formats can be freely combined to create custom date formats

In this example, the date format created by the system by default is "yyyy.mm.dd", and the effect is as shown below. Use basic date formats (such as dd) to create date formats according to your actual needs.

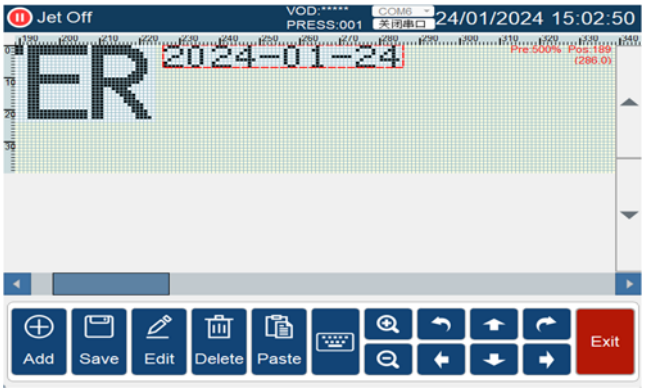


Offset The number of days/months/years added to the current date. The date when printing is the current date plus the number of offset days/months/years.

5.3.2 Adding Counter

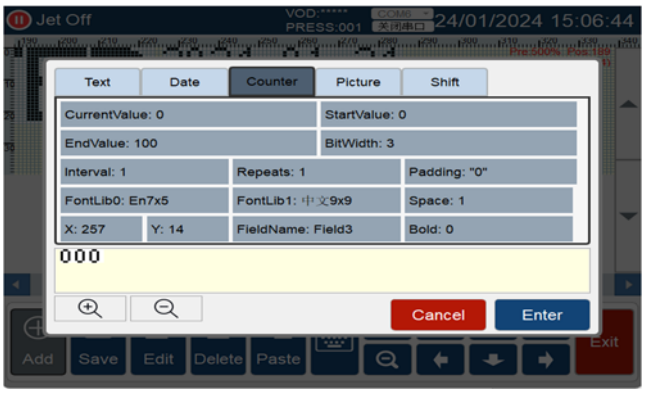
This function can be used to generate serial numbers, product counts, etc.

In this example, before creating the serial number, we need to create another message field "BATCH (batch number)" under the "Sell By" message field.



Then click 

in the "Edit Message" interface to create a counter:



Current Number Displays the current number

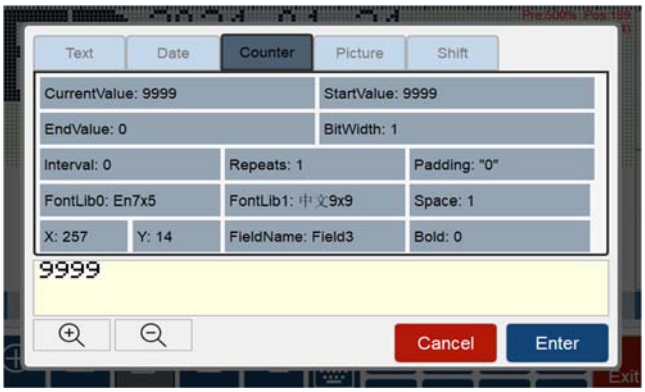
Start Number The first value of the counter

End Number The last value of the counter, the maximum value is 4294967295

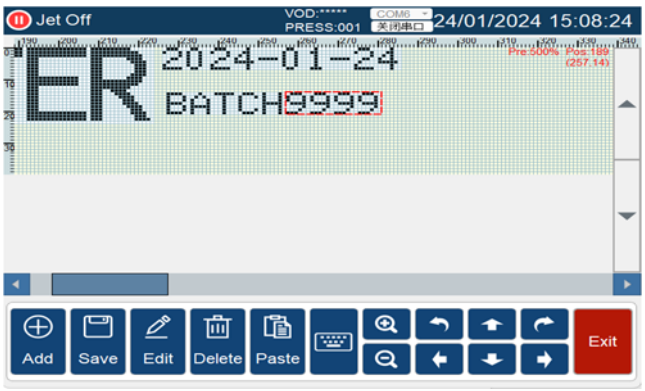
Number of Digits The number of digits displayed by the counter

Interval Value by which to increment or decrement. For example if this was set to 5 with a Start Number of 00, the counting sequence would be 0, 5, 10, 15, and so on.

Repeat The number of times the print is repeated before the value is set to the interval increment.



If the start value is greater than the end value, the counter will perform decrement mode. In this example, the current value/start value is set to 9999, and the end value is 0.



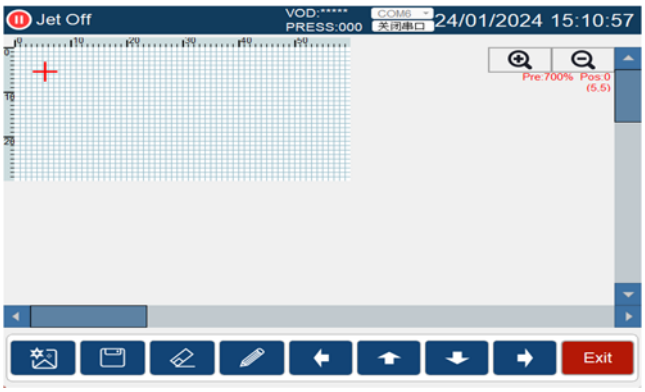
Note that the starting value at this time is 9999.

5.3.3 Adding Logo Fields

Logo fields can only be added if the file list contains picture files.

Click File on the main page to enter the file list interface, and then create a new bmp image file (the system default new file format is cij format, just change the file suffix from "cij" to "bmp"), and click Enter after completion.

Then select the newly created bmp file from the file list and click Edit to enter image editing.



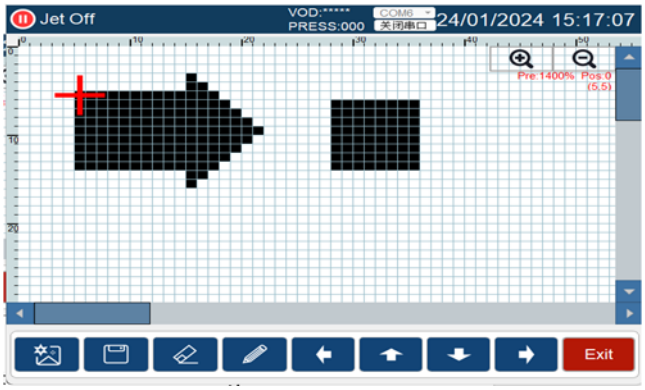
This key is to set the picture size (since the maximum raster height is 34, the picture height is generally not higher than 34)

This key is to save picture file

Eraser function

Pencil drawing function

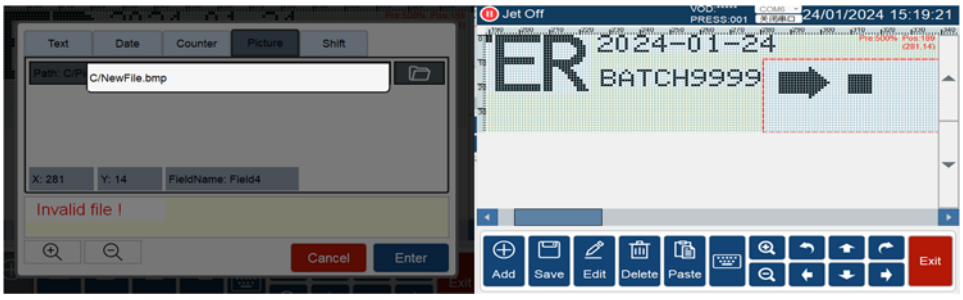
Arrow Moving the cursor up, down, left and right



The pattern drawn in this example is an arrow and a square. Click  to save and exit editing to complete the creation of the image file.

At this point, click 

on the main page to enter the editing interface and add the newly created bmp image file.

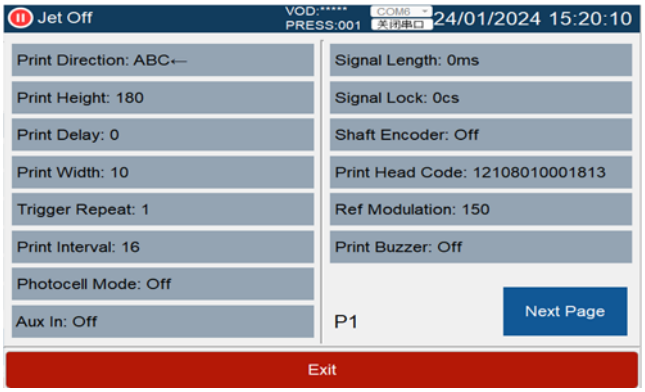


6. Changing System Settings

Many system functions can be altered to suit individual requirements

Click 

on the homepage interface to enter the settings menu. The following picture shows the settings menu interface:

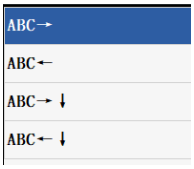


P1	P2	P3	P4
Printing Direction	**Print Count**	**System Language**	**Change Login Password (Level 1 Low)**
Print Height	**Ink Selection**	**Software Version**	**Change Login Password (Level 2)**
Print Delay	**Pre-filled Filter**	**Remote Mode**	**Change Login Password (Level 3 High)**
Print Width	**Phase**	**Serial Port Baud Rate**	**Log out**
Trigger Repeat	**Warm-up Cycle**	**Host IP**	
Print Interval	**First Solvent Addition**	**Target IP**	
Photocell Mode	**Flushing Shutdown**	**Restoring Factory Settings**	
Aux In	**Conduit Length**	**Set Date/Time**	
Photocell Signal Length	**Print Head Height**	**Software Upgrade**	
Photocell Signal Lock	**Charge Value Calibration**	**Touch Screen Calibration**	
Shaft Encoder Mode	**Charging Value**	**System Flush**	
Print Head Code	**Machine Number**		
Ref. Modulation	**Area Code**		
Printing Reminder			

6.1 P1

6.1.1 Printing Direction

Using this option to choose four different directions for printing material.



6.1.2 Print Height

Using this option to select the appropriate character height to achieve the best printing effect.

The printing height can be adjusted within the range of ±30% to meet different needs.

6.1.3 Print Delay

This is the delay between prints (Photocell Off/Enable) or the delay between the photocell triggering and print appearing on the product (Photocell Triggered).

NOTES:

1. Too small a delay may result in a “3.02 Over Speed (Print Go)” or “3.04 Variable Data” warnings.
2. Minimum width and delay settings are interactive to allow sufficient time between printing for Phasing and VOD to occur.

6.1.4 Print Width

Minimum width (i.e. the fastest the printer can print) is 0. The width of printed characters may be increased by increasing the stored value. When used in conjunction with Shaft Encoder “On” the width is equivalent to shaft encoder pulses between rasters.

6.1.5 Trigger Repeat

The printer must be stopped to change this option. Then put in the Triggered Number. The default triggered number is 1, in other words, it will print 1 time for every trigger. If the triggered number is 2, it will print twice for every trigger, and so on.

6.1.6 Print Interval

The value displayed by the print count is the number of times the printer has printed. The print count value can be reset or changed by selecting it and then entering the new value.

On entering a value less than the minimum against the Print Delay option (for example: 16), the following message will be displayed: “Value not set: too small”

6.1.7 Photocell Mode

Printing must be stopped to change this option.

Off Printer ignores the photocell signal and will print continuously at a rate dictated by the Print Width and Print Delay settings.

On Each time the photocell signal is triggered, it will be printed once.

6.1.8 Aux In

Off Not available.

Resets SN The counter in the current printing message acts as a reset. When the aux in receives a trigger signal, the counter is reset.

INV MSG LV Changing the printing direction of the current printing message, and the message direction is determined by the level of the photocell signal.

INV MSG TR Changing the printing direction of the current printing message. Each time it is triggered, the message direction changes.

6.1.9 Photocell Signal Length

Entering the specific signal length to filter invalid signals.

6.1.10 Photocell Signal Lock

Given the signal triggering time, the photocell only triggers once within the specified time.

6.1.11 Shaft Encoder Mode

The print must be stopped to change this option. Choose the appropriate mode according to your needs.

Forward Printing will only occur if the forward shaft encoder signal is received

Reverse Printing will only occur if the reverse shaft encoder signal is received

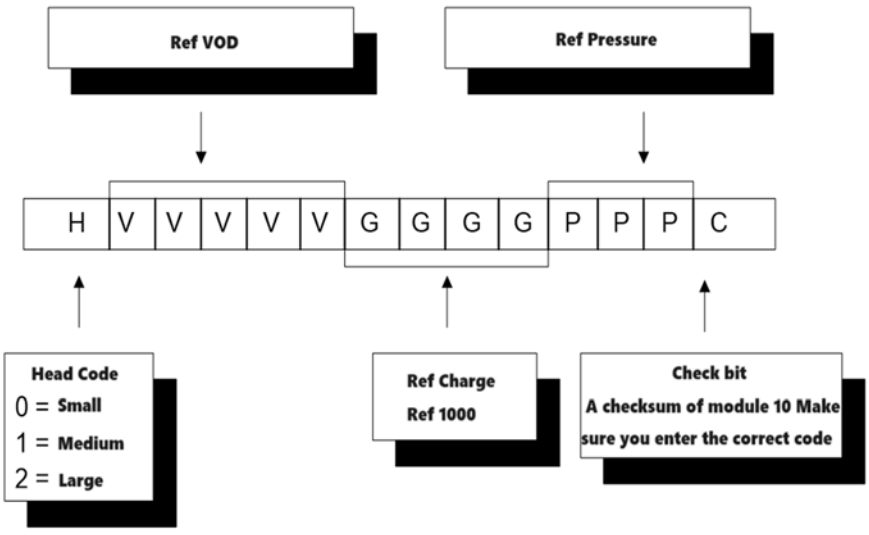
6.1.12 Print Head Code

This can only be entered if the jet is stopped.

It will also need re-entering if a PCB or software is replaced.

To be used when a new print head has been fitted to the printer and/or when a reset to default has occurred.

The 14 digits are encoded as follows:



6.1.13 Ref. Modulation

Displays the current Reference Modulation.

6.1.14 Printing Reminder

Off Turn off the printing reminder function.

On When the printing reminder function is turned on, if the machine is in printing status, the system will continue to output alarm signals.

6.2 P2

6.2.1 Print Count

This display shows the number of products printed so far. To reset or change this value, type in the required number.

6.2.2 Ink Selection

A choice between MEK, Ethanol or Pigmented.

6.2.3 Pre-filled Filter

Use it when the internal pipeline of the inkjet printer is empty or a new filter is replaced.

On The inkjet printer uses a fixed pressure 120 pre-flush new filter

Off Set pressure to zero

6.2.4 Phase

On The system will load the phase automatically when it is On

Off Unload when it is Off

6.2.5 Warm-up Cycle

On To use the warm-up cycle function, the first solvent addition function needs to be turned off. When the warm-up cycle function is turned on, the system will automatically determine the solvent addition time based on actual conditions.

Off Turn off the warm-up cycle function.

6.2.6 First Solvent Addition

On After the first solvent addition function is turned on, solvent will be added every one minute.

Off Turn off the first solvent addition function.

6.2.7 Flushing Shutdown

During the flushing shutdown process, some solvent will be drawn into the print head and nozzle to remove the ink during the injection stop process, so that there will be no problem when the inkjet printer is restarted after being left for a period of time. This option has the following 2 settings:

Off When set to off, flushing shutdown is not used. If the spray is stopped at this time, the printer will not perform the cleaning process.

On When set to on, flushing shutdown is adopted. If the injection is stopped at this time,

the printer will perform the cleaning process of the pipeline and nozzle.

Note: If the printer will be left unused for a night, a cleaning procedure must be performed before shutting it down. The entire shutdown procedure must be completed, and the power can be turned off only when the status bar displays the following information：

“The print has stopped.”

6.2.8 Conduit Length

The jet must be stopped to set up this option. Select the appropriate conduit length for the print head fitted by using the left or right arrow keys.

6.2.9 Head Height

The jet must be stopped to set up this option. Pressure varies by 5 units for every metre above and below the printer. You may change the value between -9.5 and +9.5 metres, however, print heads are currently a maximum of 6 metres in length, so the maximum value here should be 6.0. Simply specify, in terms of half or whole meters, how far above or below the printer the print head is mounted. For practical purposes, the measurement should be made from the space bar of the keyboard to the print head nozzle assembly. If the print head is mounted below the printer, the value should be inputting the following format - X.Xm. If the print head is mounted above the printer it is not necessary to place + in front of the value. The value may be entered simply as - X.Xm.

NOTE: Care must be exercised with this option; poor printer performance will result if incorrectly set.

This will automatically change the pressure reference from which the Solvent Add values calculated and shown on the MONITOR JET menu.

6.2.10 Charge Value Calibration

On When set to on, the system automatically performs the charging value calibration procedure.

Off Turn off the charging value calibration function.

6.2.11 Charging Value

Setting the printer charging value.

6.2.12 Machine Number

Displaying the printer number.

6.2.13 Area Code

The area code (16 digits) needs to be entered when the inkjet printer is turned on for the first time.

6.3 P3

6.3.1 System Language

Printing must be paused before changing this option. Using this option to change the language type.

6.3.2 Software Version

Displaying the software version number installed on the machine.

6.3.3 Remote Mode

The system supports the following three remote modes:

RS232/UDP/TCP

6.3.4 Serial Port Baud Rate

The system supports the following serial port baud rates:

9600/19200/38400/57600/115200

6.3.5 Host IP

The host IP will be displayed when connecting remotely.

6.3.6 Target IP

The target IP will be displayed when connecting remotely.

6.3.7 Restoring Factory Settings

Note on backup: Restoring factory settings will erase all data and personal settings on the printer. Before performing a factory reset, be sure to back up your important data.

6.3.8 Set Date/Time

To change the date/time, the printer must first pause printing, and then enter the date/time as needed.

6.3.9 Software Upgrade

Automatically detect the USB flash drive for software upgrade. Please make sure to insert the upgrade USB flash drive before upgrading.

6.3.10 Touch Screen Calibration

Clicking five times to enter touch screen calibration mode.

6.3.11 System Flush

The system flushing function is used for machine maintenance (needs to be used in conjunction with a buffer). Can only be performed by EC-JET certified engineers.

Empty Ink Tanks Click to execute the process of clearing the ink tank. The default duration is 99 seconds. When emptying the ink tank, you need to prepare the ink container. You can perform the emptying process multiple times according to the actual situation of the ink tank.

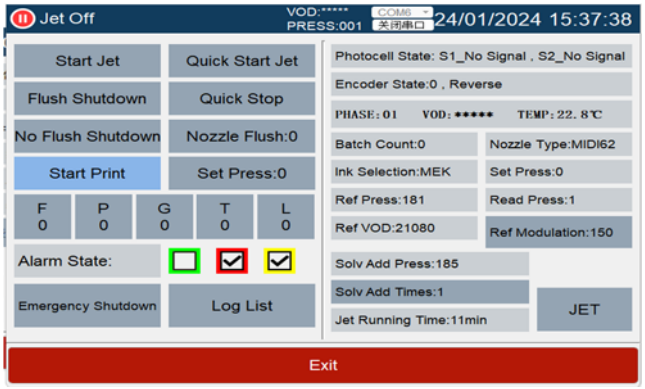
Circular Flushing Click to execute the cycle cleaning program, the default time is 99s. When performing cycle flushing, you need to add sufficient solvent to the ink tank after emptying the ink tank. Cycle flushing can be performed multiple times according to the cleaning conditions of the ink circuit. **Note that after the ink path is flushed, you need to perform the emptying ink tank procedure again to drain the solvent in the ink tank.**

Solvent Discharge Click to execute the solvent discharge program. The default time is 599s. When performing solvent discharge, it is also necessary to prepare a solvent container

and discharge it from the buffer port.

7. Diagnostics

There are a large number of diagnostic functions. However, not all functions are valid at all times – some are only valid when the jet is stopped (e.g. “Clear Nozzle”); some are valid only when the jet is running and printing is stopped (e.g. “Start Print”).



7.1 Start Jet

Attempts to start the jet but does not start printing.

The following message will be displayed while starting the jet:

"Starting ink line...0%"

7.2 Quick Start Jet

Start the jet without printing. (The checking system mentioned below is different from that of “Start Jet”)

Please note this operation does not check any of the following:

- **Ink**
- **Solvent**
- **Service time**
- **Phase**
- **VOD**
- **Modulation**

i.e. it simply switches the jet on at the reference running pressure and reference modulation.

The following message will be displayed while starting the jet:

"Quick Start Jet...0%"

WARNING: THIS COMMAND WILL START THE JET EVEN IF THE INK LEVEL IS LOW.

THE PUMP MAY BE DAMAGED IF IT IS RUN WITHOUT INK.

7.3 Flushing Shutdown

Using flushing shutdown, if you stop inkjet printing at this time, the inkjet printer will perform the cleaning process of pipelines and nozzles.

The status line will display:

"Flushing shutdown in progress... 0%"

7.4 Quick Shutdown

This option allows the printer to skip the cleaning process and directly stop the inkjet line.

The status line will display:

"Quick shutdown in progress... 0%"

7.5 Non-flushing Shutdown

Using non-flushing shutdown, if inkjet is stopped at this time, the printer will not perform the cleaning process.

The status line will display:

"Non-flushing shutdown in progress... 0%"

7.6 Flush Nozzle

This option is used to select the number of times the nozzle should be flushed. To clear blockages or obstructions, we recommend a minimum of 3 nozzle flushing procedures. 3 times is a set, and the maximum number cannot exceed 10 sets.

When the printer performs three nozzle cleanings, the status line will display:

"Flushing nozzles...(3)0%"

When performing this operation, the correct solvent must be used and the solvent should be sprayed intermittently into the nozzle and recovery tank. (Please see Chapter 9 Routine Maintenance - Cleaning Nozzles)

7.7 Start Printing

This option enables the printer to start printing after it is ready for printing. The function of this option is lower than the 

key. For example, using this option to start printing "Phase" option setting will not change, while "Start" will automatically set the phase to on.

7.8 Set Pressure

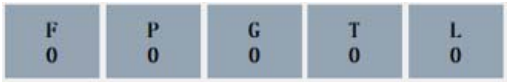
Displays the current pressure set on the pressure DAC.

Your local distributor may ask you to use this option to:

1. Diagnose and/or check for any pressure loss.
2. Purge the filter without resetting the filter time, e.g. if changing ink only.
3. Clean out print head by use of the venture vacuum.
4. Use Quick Start Jet to try and obtain VOD measurements and ascertain if ink is thick or thin.

7.9 Valve Test

The valve test can be used to check the working status of each valve of the inkjet printer and certain ink system failures, and can only be performed by EC-JET certified engineers.



7.10 Alarm Status

EC1100 inkjet printer has three alarm states:

The first is the printing alarm state. When the inkjet printer is in the printing state, the system will send out an alarm signal.

The second type is the ink line running alarm state. When the inkjet printer is in the ink line running state, the system will send out an alarm signal.

The third type is the printer fault alarm state. When the system is in the fault alarm state, you need to manually eliminate the signal (cancel the check mark), otherwise the system will continue to output the signal and buzz.

7.11 Emergency shutdown

Used for emergencies, this shutdown mode skips the ink path cleaning process and shuts down the machine, which can easily clog the nozzle.

7.12 Log List

This list displays all operation records of the inkjet printer. The total number of records is 30,000 (cannot be deleted manually), which can be used to assist in troubleshooting the inkjet printer failure.

7.13 Photocell Status

Used to display the photocell connection status. It is only used for display and can't be changed by the user.

7.14 Shaft Encoder Status

Used to display the shaft encoder connection status. It is only used for display and cannot be changed by the user.

7.15 PHASE

Displaying the phase value of the inkjet printer in real time. It is only used for display and cannot be changed by the user.

7.16 VOD

Real-time display of inkjet printer ink speed. It is only used for display and cannot be changed by the user.

Note: If valid VOD is not available for 15 minutes, the screen status display line will display the warning message "No Ink Speed". If VOD is still not available after that, the warning will be displayed every 15 minutes.

7.17 TEMP

Real-time display of the internal temperature of the inkjet printer is for display only and cannot be changed by the user.

7.18 Print Count

Displaying the printing count of the inkjet printer in real time (same as the printing count on the home page). It is only used for display and cannot be changed by the user.

7.19 Nozzle Type

Displaying the nozzle model of the printer. After installing a new nozzle, the nozzle model will be automatically identified and displayed. It is only used for display and cannot be changed by the user.

7.20 Ink Type

Displaying the type of ink currently used by the printer. It is only used for display and cannot be changed by the user.

7.21 Reference Pressure

Displaying the reference pressure for normal operation of the printer. It is only used for display and cannot

be changed by the user.

7.22 Read Pressure

Displaying the pressure currently measured by the pressure sensor. Under normal circumstances, it should be within 2-3 points near the set pressure. It is only used for display and cannot be changed by the user.

7.23 Reference VOD

It is equal to the VOD entered in the nozzle code. It is only used for display and cannot be changed by the user.

7.24 Reference MOD

The reference MOD is equal to the amplitude obtained during the last nozzle calibration, and the user can also set it by himself (its value is equal to the reference MOD in the setup menu).

7.25 Solvent Addition Pressure

Displaying the threshold for the system to automatically add solvent (generally 3-5 points higher than the reference pressure). It is only used for display and cannot be changed by the user.

7.26 Solvent Addition Times

Displaying the number of times the system has added solvent, which can be modified by entering the password.

7.27 Ink Line Running Time

Displaying the running time of the ink line since the system is turned on. It is only used for display and cannot be changed by the user.

7.28 JET

Test printing function:

Click to 

issue a trigger printing command. The test trigger printing command is the same as the sensor trigger command.

This command is only valid when the sensor mode in the setup menu is set to On and the printer is in the printing state. This command is invalid if the sensor is set to off

If a shaft encoder is used and the production line is not started, printing will not occur. Printing will only occur when the production line is started.

8. Routine Maintenance

There are two levels of routine maintenance: User – performed by the operator, and Service – performed by EC-JET Trained Service Engineers.

User maintenance is required daily (each time the printer is used) and weekly.

Service (scheduled) maintenance is required after every 4000 jet running hours.

The following table defines the user maintenance requirements for EC-JET printers:

EJ86

	Supervise	Clean	Replace/Add
1.Inkjet machine chassis	Daily or after each use	Weekly or as needed	NO
2.Ink Head	Daily or after each use	Everyday or as needed	NO
3.Ink and solvent	Startup or in use	NO	As needed
4.Air filter	It's normally checked every week, In cases where there is a lot of dust or contamination, Check it every day	Weekly or as needed	As needed

8.1 Cleaning the Printer Cabinet

8.1.1 General

The exterior of the printer can be cleaned using a soft cloth lightly soaked in a mild detergent.

CAUTION: Do not use abrasive cleaning agents. Do not use excessive pressure when wiping over the LCD screen; excessive pressure can cause damage.

8.1.2 Ink Spillages

If ink is accidentally spilled onto the exterior of the printer the following procedures are recommended:

WARNING: ALWAYS WEAR RUBBER GLOVES AND SAFETY GLASSES WHEN HANDLING SOLVENT. DO NOT USE SOLVENTS IN CONFINED AREAS WITHOUT ADEQUATE VENTILATION.

CAUTION: USE ONLY EC-JET SOLVENT.ENSURE THAT THE SOLVENT MATCHES THE TYPE USED IN THE PRINTER.

Do not use excessive amounts of solvent. It is not recommended that solvent is used frequently to remove ink from the front panel and LCD screen as this can lead to deterioration of the membrane surface.

8.1.3 Cleaning the Nozzle

Select the Nozzle cleaning Procedure in the DIAGNOSIS menu, type in 3 as the cleaning times (3times as a full cleaning set), squirt the solvent in the gutter, then flush the nozzle intermittently until the procedure

is over.

8.1.4 Cleaning the Print head

CAUTION: USE ONLY EC-JET SOLVENT.ENSURE THAT THE SOLVENT MATCHES THE TYPE USED IN THE PRINTER.

WARNING: POTENTIALLY LETHAL VOLTAGES ARE PRESENT WITHIN THE PRINTHEAD. BE SURE ALL POWER IS SWITCHED OFF BEFORE THE PRINTHEAD IS OPENED FOR INSPECTION AND CLEANING.

Print head Cleaning Procedure

While wearing approved, solvent resistant gloves: Remove the print head cover tube and hold the print head as shown below. Place a suitable container underneath and wash the entire printed circuit board (PCB) surface with the appropriate solvent. Do not use the wrong solvent; make sure it is the solvent corresponding to the ink type being used in the printer.

Simply squirt the solvent in short bursts onto the affected parts with a short delay between bursts to allow ink to dissolve. The surplus solvent will run down the print head and can be collected in the container for disposal.

Allow the print head to dry completely by letting it stand for a few minutes. Do not dry the print head with a cloth or towel as this may leave fibers that could interfere with the printed drops. Particular care should be taken to ensure that the space between the nozzle and charge electrode is free of solvent. If not, it can usually be removed by inverting the wash bottle and blowing off the excess solvent.

WARNING: MOST INK BASES ARE FLAMMABLE. IT IS THEREFORE IMPORTANT TO DISPOSE OF THE WASTE CLEANING FLUID IN ACCORDANCE WITH LOCAL REGULATIONS.

CAUTION: DO NOT BE TEMPTED TO IMMERSE THE PRINTHEAD IN SOLVENT OR AN ULTRASONIC BATH. THIS MAY DAMAGE THE PRINTHEAD AND WILL VOID THE WARRANTY.

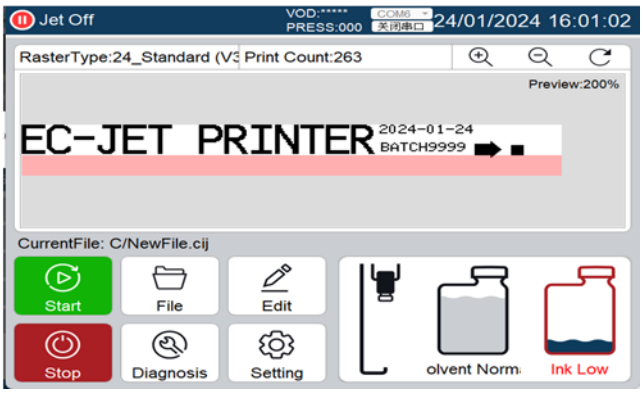
8.2 Replenishing Ink and Solvent

8.2.1 Note：

1. When ink or solvent low, printer can’t start up normally.
2. Add only EC-JET ink and solvent
3. Check the ink or solvent specification are consistent with the using printer before replenishing
4. Only add ink or solvent when ink or solvent low warning, each add no more than 500ML

8.2.2 EC1100 Consumable Quality Code Verification

1. When the ink or solvent level is low, the printer will display following interface:

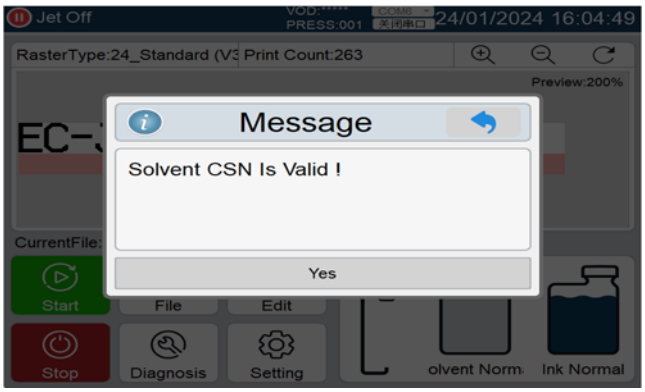


Note: If consumables are not added in time, the printer will alarm and automatically flush and shut down after 4 hours.

2. Open the ink system door and find the RFID assembly which is located at the right of the rear door.

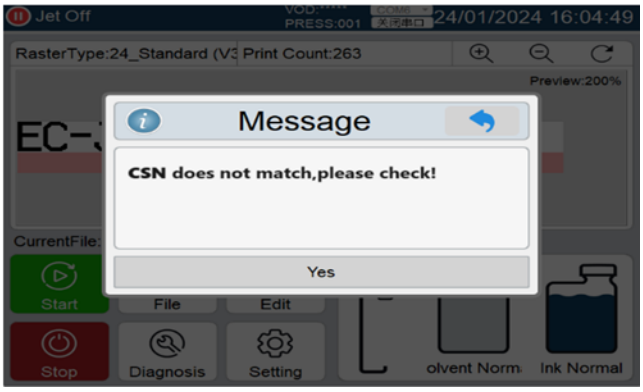
3. Hold the ink or solvent bottle, keep label alignment of RFID , putting into the groove about 2 seconds. When the light of the RFID turn green with one-long alarming, it means read successfully.

4. When shown the following interface, printer read the correct quality code.

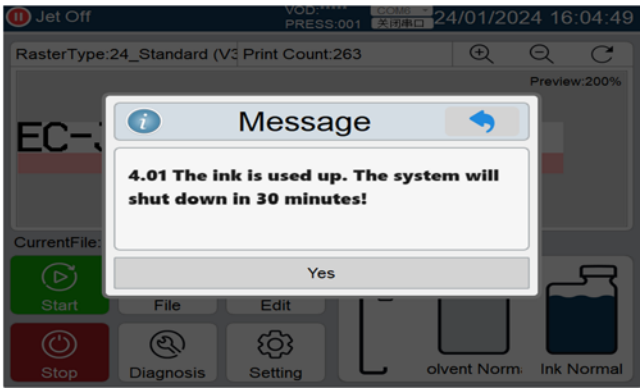


Click OK

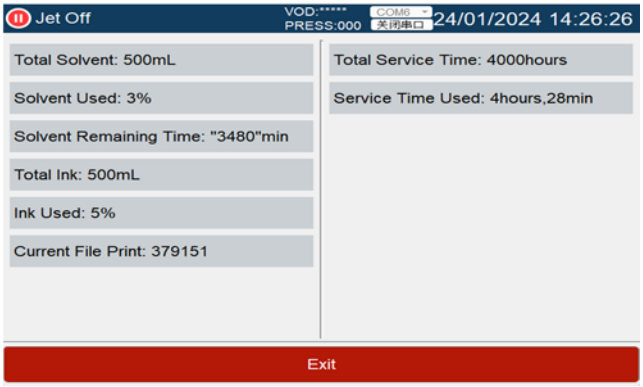
Note 1: If can't read the correct quality code, then printer show the following interface. Please check whether choose the correct consumable, then continue to verify.



Note 2: If you directly add ink/solvent without verifying the quality code of the consumables first, the printer will have the following prompt and it will automatically stop after 30 minutes.



Note 3: The remaining usage time of the ink/solvent can be viewed on the "Ink/Solvent" interface, as shown in the figure below: 3480 (minutes) and 379151 (number of times).



Note 4: The inkjet printer will only display the remaining ink usage time when it is in the "printing" state and lasts for more than one minute.

8.2.3 Refilling the ink or solvent

1. Withdraw the ink system gently until catches the locating pin, if necessary, another hand hold the ink routine gently

2. Remove the ink or solvent bottle cap, insert the ink bottle with aluminum foil-sealed cap upside down into the ink tank. Note that if the aluminum foil is not pierced immediately, you can rotate it a few times using the knife-edge of the funnel to puncture the foil.

3. Pour the ink or solvent into the corresponding tank. After the liquid in the bottle is finished, take away the empty tank. (Note: the solvent tank is white and the ink tank is black.)

4. Tighten the cap of ink or solvent tank after refilling, push back the ink system.

8.3 Cleaning/Replacing the Air Filter

There are two air filters (the inlet and outlet filter) in the model.

8.3.1 Cleaning and replacement of air inlet filter

1. The inlet air filter is located in the rear of the machine. According to the environment, periodically perform routine maintenance. Suggest to clean every week, to replace filter when is blocked by dust.

2. Clean or replace the inlet air filter, open the inlet air baffle and inlet air filter cover on the back of the machine.

3. Take out the inlet air filter, clean the filter by taping or blowing with compressed air.

4. Re-install the filter into outlet air cover.

8.3.2 Cleaning/Replacing the air outlet filter

1. Open the front door (ink tank door), and with your hand, support and pull the ink system box outward until it locks into position with the locating pin.

2. Loosen the screws on the guide rail mounting plate and take out the ink system tank assembly

3. Unscrew the thumb screw in the outlet of the fans

4. Replace the dust proof cotton and return to each part according to the reverse steps

8.4 Quick Maintenance Mode

This new maintenance mode is for users requesting to maintain and repair the machine urgently, but the EC-JET authorized engineers can't come on users' site. Sending EC1100 machines to agents or resellers by couriers for maintenance or repairing, easy operation, no need to empty the ink tank and solvent tank.

1. Open the ink system door
2. Hold the ink system and draw out until it can't move

3. Take out the ink tank, put a clean cloth or paper under the ink tank, unscrew the connector of the ink routine, take out the ink dip tube and level sensor carefully then put into the SMART bottle, show as following picture, screw the connector of routine.

4. Follow the same instruction, replace the solvent tank with SMART solvent bottle.

5. Screw the ink tank and solvent tank cap, then store in case avoiding high temperature and fire.

6. Clean the SMART ink and solvent bottle and put in the ink-system bracket, setup the bracket, screw the thumb and close the ink-system door.

7. Pack the machine, send back to agents or reseller, EC-JET and agents or resellers will provide you more dedicated service.

9. Warning and Fault Messages

9.1 Warning and Fault Messages

This section describes the printer warning messages for the EC-JET printers.

The error messages may occur at any time and are NOT a direct response to user commands, although a user response may be required.

Each system warning is given a unique code number which identifies the type and source of the error, and is followed by a short description when displayed on the screen, e.g.:

"4.01 The ink is out!"

9.2 Summary of Warning Messages

9.2.1 System Failures

These prevent normal printer operation.

9.2.2 Print Failures

These occur when the software detects a problem which affects printing.

2.00 Abnormal print head temperature!

2.01 Deflector voltage!

2.04 300V power supply!

2.12 The stress is out of control!

2.16 Maintenance time or period of use

9.2.3 System Warnings

These are errors which are not serious enough to shut down the printer, but give advance warning of potential problems.

3.00 No VOD!

3.01 Jet Shut Down Incomplete!

3.07 Print Head Cover Off!

3.16 Memory Failure!

3.19 Failed to start injection, ready to start again...

3.20 Logical RTC clock error!

3.11 Temperature sensor failure!

4.00 Solvent exhausted!

4.01 Out of ink!

4.02 Service time expired!

9.3 System failures

System failures occur when the software detects a condition which prevents normal printer operation.

If a system failure occurs, please contact your EC-JET distributor immediately.

WARNING: LETHAL VOLTAGE. UNKNOWN HIGH VOLTAGES MAY BE PRESENT WITH SOME SYSTEM FAILURES. DO NOT TAMPER WITH THE PRINTER OR PRINTHEAD. WAIT UNTIL THE FAILURE SHUTDOWN IS COMPLETE.

9.3.1 Print Failures

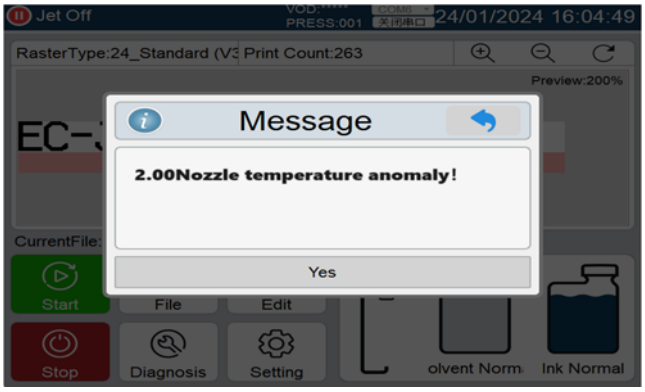
These occur when the software detects a problem which affects printing.

When a Print Failure occurs a message is displayed on the screen status line and a jet shutdown sequence is started.

The internal alarm buzzer is switched on, the ‘print ready’ line set low and the alarm relay is activated (if enabled).

The keyboard is inactive while the shutdown is taking place.

When the shutdown sequence is complete the Print Failure screen is displayed:



Following a print failure shutdown, the software sets:

- Pressure to zero
- EHT off
- All valves closed
- 300V off these settings cannot be altered until the print failure has been cleared (i.e. the jet cannot be restarted).

The following pages give a brief description of each Print Failure and what should be done to correct it. In each case, if the suggested action does not rectify the error condition, you should contact your local distributor.

9.3.2 2.00 Abnormal Print Head Temperature

The print head temperature sensor indicates that a temperature around or in the print head has exceeded the safe operating limit. This may mean that a fire has occurred within the head cover.

Possible causes

● Excessive local heat source:

Relocate the print head away from the heat source.

● Fire in the print head:

Have your printer checked by your local engineer.

9.3.3 2.01 Deflector Voltage

The voltage on the deflector plates has discharged which is normally caused by ink build-up.

Possible causes

● Excess build-up of ink on deflector plates:

Clean the print head as described earlier in this manual (see “Routine Maintenance”).

● Static discharge:

Check for any source of excess static electricity.

● Print head still wet after cleaning:

Allow the print head to fully dry before starting the jet.

● Debris or fibers creating a discharge path:

Clean the print head and check for fibers.

9.3.4 2.04 300V Power Supply

Possible causes

● The 300 volt power supply output is out of tolerance or has failed:

Call your local EC-JET distributor.

9.3.5 2.12 Out of Control Pressure

This indicates that when printing is started, the printer detects a loss of pressure that affects printer performance.

Possible causes

● Main filter clogged.

● The output of the ink pump is small.

Call your local EC-JET distributor.

9.3.6 2.06 Ink Tank Empty

This failure occurs when the ink level sensor has been indicating low for a predetermined time:

Midi 8 hours

This prevents the ink from running out completely if the user fails to top up the ink reservoir following an “Ink Low” error (see System Warning “3.03”). This failure only occurs when the jet is running since the jet cannot be started when the ink is low.

9.3.7 2.16 Internal Spillage Fault

This may occur either at switch on, or during normal running. A sensor within the ink system detects the unwanted presence of ink or solvent within the cabinet tray.

Possible causes

● The ink or solvent tanks have been overfilled.

● A leak has developed within the ink system.

● A Lure fitting has become loose on the main filter or damper.

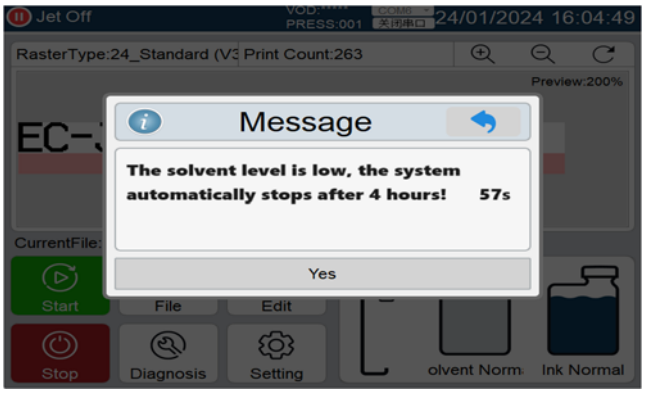
To cure the fault, the cause needs to be rectified and the ink tray completely cleaned and dried. Contact your local EC-JET distributor.

9.4 System Warnings

System Warnings inform the user of problems which may affect the operation of the printer but are not serious enough to require a shutdown.

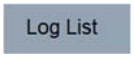
When a System Warning occurs, a message is displayed on the screen status line for a minimum time of approximately 1 minute.

At this time, the internal alarm buzzer will continue to sound, and the alarm relay (if set to effective) will also continue to sound.

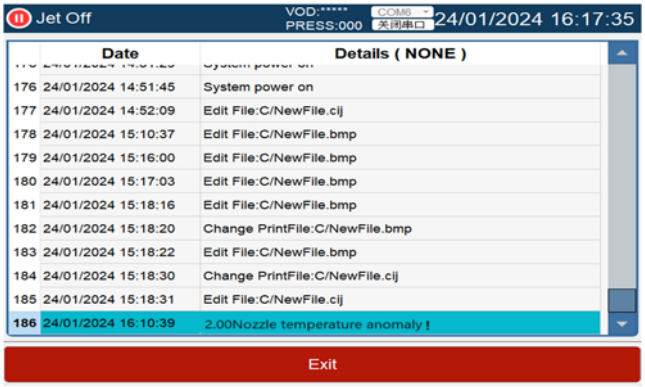


To turn off the alarm sound, you need to uncheck the alarm status. Please refer to the "Diagnosis" interface introduction for details.

The system logs all errors and warnings that occur. To view these warning messages, please click 

on the "Home" interface, then click on 

the subsequent interface, and you can see all the errors and warning messages recorded by the system.



The following describes system warning messages and their corrective measures.

9.4.1 3.00 No VOD Adjustments

This warning can occur when the jet is being started, or when the jet has been running for some time.

Possible causes

- Print head code values are set incorrectly:

  Check the Print head and Modulation values printed on the print head serial number label found on the conduit, with the stored values. (see “hanging the System Setup”).

- Ink viscosity is excessively out of range:

  Allow the printer to run to bring the viscosity back into range.

- There is a pressure loss in the system:

  Call your local EC-JET distributor.

9.4.2 3.01 Jet Shut Down Incomplete

This indicates that the printer was previously switched off while the jet was running or before the printer had completed the shutdown routine. Completion of the shutdown routine is important and must be allowed to finish.

The warning does not stop the printer from functioning. It will be reported at every subsequent printer start-up until a jet shutdown routine is fully completed. Press the 

key and wait for the message:

“Jet Stopped.”

9.4.3 3.07 Print Head Cover Off

This warning is reported if the print head cover is removed.

The supply to the EHT plates is switched off (by hardware) when the cover is removed.

WARNING: THERE IS A LINK WHICH, WHEN FITTED, DISABLES THIS AUTOMATIC SHUT OFF. THEREFORE, THE PRESENCE OF THIS WARNING IS NOT A GUARANTEE THATTHE EHT IS OFF.

Printing is suspended when the cover is removed and is resumed a few seconds after the cover is refitted.

The warning applies to the currently printing pattern - it is reset automatically when

printing is restarted.

9.4.4 3.16 Memory Failure

Possible causes

● Backup battery failure (battery exhausted)

Recharge the battery by turning the printer on for 24 hours.

Otherwise, contact your local EC-JET distributor.

9.4.5 3.19 Failed to Start Injection, Ready to Start Again...

Possible causes

● VOD not detected

● Ink line deviation

9.4.6 3.20 Logical RTC Clock Error

Please contact your local EC-JET distributor.

9.4.7 3.21 Temperature Sensor Failure

Please contact your local EC-JET distributor.

9.4.8 4.00 Solvent Exhausted

A warning message that occurs when the solvent sensor detects a low level for longer than a predetermined time.

Midi 4 hours

When a low solvent level appears on the homepage, the solvent will not be completely used up even if the user does not add solvent immediately. This fault message will only appear if the solvent is at a low level during continuous injection for a predetermined time.

9.4.9 4.01 Out of Ink

A warning message that occurs when the ink sensor detects a low ink level for longer than a predetermined time.

Midi 4 hours

When a low ink level appears on the homepage, the ink will not be completely used up even if the user does not add ink immediately. This fault message will only appear when the ink is at a low level during continuous ejection and reaches a predetermined time.

9.4.10 4.02 Service Time Expired

After inkjet starts, the printer checks how long it will be until the next scheduled service maintenance is performed. If the time exceeds 4000 hours, this warning message will be issued, but injection can still proceed normally.

When the time exceeds 4000 hours, this warning message will be issued every time injection is started until the service time is reset.

When this warning appears, regular service and maintenance must be arranged as soon as possible, otherwise the stable performance of the machine will be affected.

10. Troubleshooting

Introduction

This section provides general advice on fault diagnosis on the EC-JET Ink Jet Printers, as well as specific procedures for identifying and rectifying faults. Fault diagnosis is complicated by the number of variables involved in producing good print quality. Fast, non-contact printing involves fluid dynamics, physics, electronics, computing and chemistry.

Many of the faults that could occur within the printer are self-diagnosed by the integral software. Upon diagnosis, the operator is alerted by way of error messages (warnings and faults) which appear in the status line of the display screen.

Before attempting any fault diagnosis for the first time, operators are advised to familiarize themselves with the “Warning and Fault Messages” section of this manual, as it contains information which is useful in rectifying many simple faults.

Problems can be found to have either a single cause or several combined causes. The complications arising from the simultaneous failure of several different components make it impossible to consider such faults in this user manual. In this section, individual problems are linked to their most probable causes.

The most successful fault diagnosis technique will be found by investigating each problem, separately, in turn. Do not begin by assuming the most complicated combination of faults; always start by investigating the simplest possibilities.

10.1 Where to Start

All problems with printer operation are distinguished from each other by the symptoms displayed. These symptoms can be obvious faults with the print quality; error messages on the display; or any other signs by which it is apparent that the printer is not functioning correctly. When the symptoms have been correctly identified, the possible cause(s) of the symptoms the printer is displaying can be investigated.

The recommended fault diagnosis sequence is as follows:

1. Collect as much information as possible on ALL the symptoms that the printer is displaying, including error messages, print samples and signs of electrical or mechanical malfunctions.
2. Use the “Identifying Faults¡” sub-section to identify all the possible causes of the symptoms that the printer is displaying.
3. Start with the most probable cause, and investigate each of the possible causes in turn. This will eliminate all the possible causes that are not responsible for the problem, until the actual cause is established.
4. When the actual cause of the symptoms has been established, use the “Problem Solving” sub-section to perform the necessary adjustments and repairs to rectify the fault.
5. Finally, check that the printer operates correctly and that any error messages have been cleared, and that there is not a second fault causing supplementary symptoms.

   If, after rectifying one fault the symptoms have not been eliminated, continue with the fault diagnosis until all faults have been identified and rectified. Only when all faults have been eliminated, and the

printer is operating correctly, has the fault diagnosis been completed.

The “Identifying Faults” sub-section includes lists of symptoms (by print sample and by description), and gives references to fault codes which identify the particular type of fault.

The “Problem Solving” sub-section provides problem solving instructions for each fault code number, and defines checks, adjustments and repair procedures for all the faults identified in “Identifying Faults”.

These procedures explain how to check whether the fault is present and how to rectify it.

Use the following list of action points to approach fault diagnosis in a logical way:

- If possible, ask whoever found the problem to describe it in detail, including any action taken.
- Do not jump to conclusions. Take the time to examine the printer carefully. Is there sufficient ink and solvent? Are there any signs of ink leakage? Are there any loose wiring connections?
- Check the Print Status option for any error messages that have been logged.
- Make use of the Diagnostics options to check and record the jet monitoring parameters of Pressure, Velocity Of Drop, Modulation and Phase. Compare these with the reference values and identify any out-of-specification measurements. (See “Diagnostics”)
- Make print samples (if possible) and examine the prints carefully for signs of print quality problems.
- Only when all of the symptoms have been noted should an attempt be made to identify the possible cause of the problem.

10.2 Identifying Faults

Some faults are best identified by the appearance of the print when a sample of the test pattern is printed. Other faults may not permit a print to be made, or may produce other symptoms such as fault messages. To accommodate these differences, this sub-section is divided into two parts: “Identifying Faults by Print Sample” and “Identifying Faults by Symptom”.

10.3 Identifying Faults by Print Sample

This part of the manual is intended to help distinguish between different types of print fault, in order to identify the possible causes.

There are several ways in which print quality can be affected, and in some cases print quality problems can be caused by more than one fault. For most faults, it is not difficult to identify the cause of the problem, but some faults have similar symptoms, making accurate diagnosis a little more difficult. For example, a low modulation problem can give similar symptoms to high viscosity.

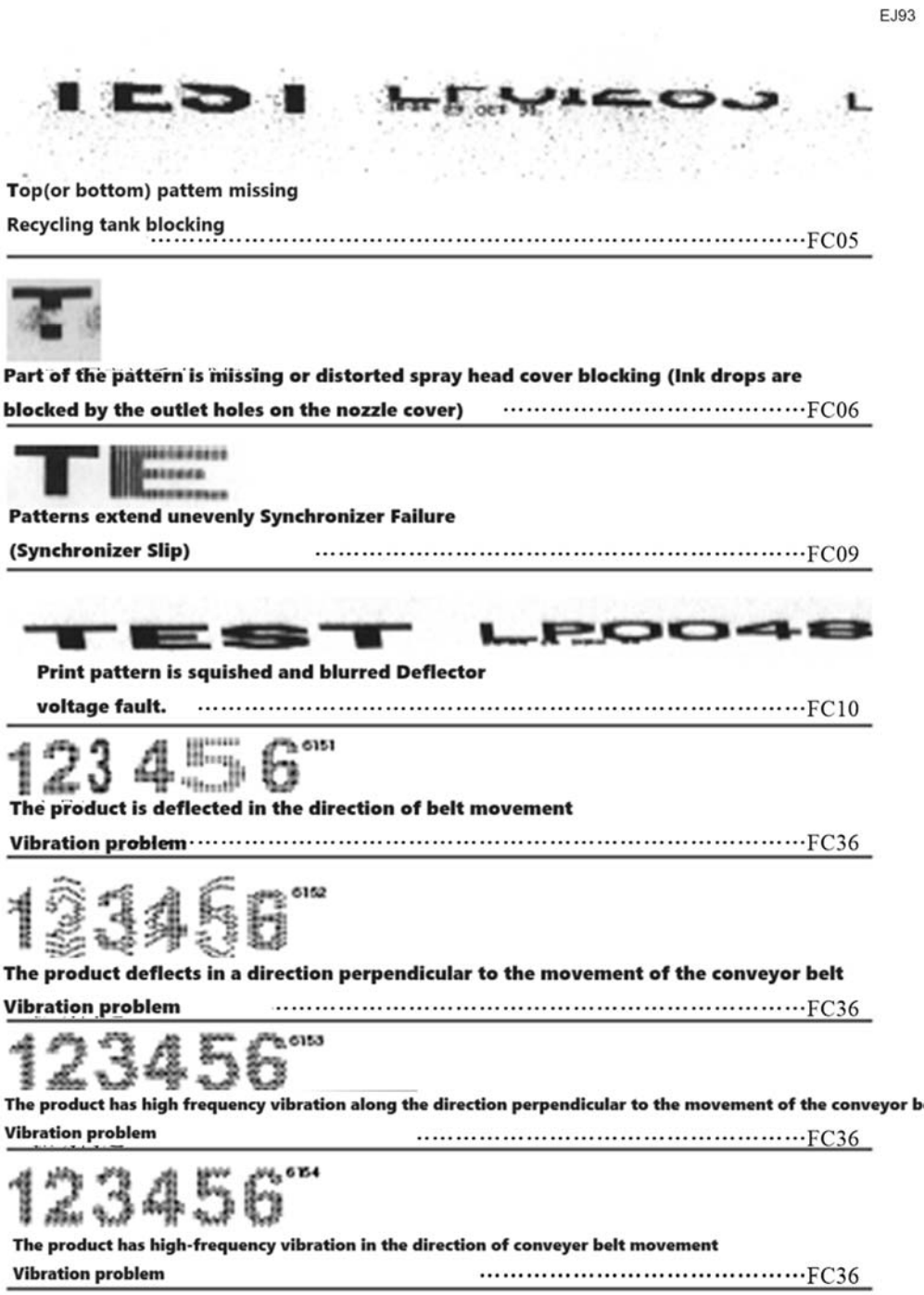
In cases where the cause of the print fault is not immediately obvious from the print sample, secondary symptoms should always be sought that will help to distinguish between the possible causes. In the example above, the current modulation would need to be checked, and the pressure, the Velocity Of Drop, and the operation of the ink system components investigated. These additional pieces of information will then enable you to decide which of the possible causes is the reason of the print fault.

The following list classifies faults by the appearance of the print samples they produce. The list shows print samples of the standard test pattern which can be compared with samples taken from the printer

under investigation. Below each sample, or set of samples, is a brief description of the fault symptoms. Also provided are the possible causes of the fault and a reference to a particular fault code number in the “Problem Solving - Print Samples” part, where the problem and its method of rectification is described in more detail.

NOTE: Throughout this manual, reference to the “top” of the print means the part of the pattern closest to the negative deflector plate of the print head (i.e. the least deflected drop).

Identifying Faults by Print Sample:



10.4 Identifying Faults by Symptom

When it is not possible to identify a fault by the visible effect on the print sample, it becomes necessary to look for other symptoms. For example, it may not be possible to start the jet satisfactorily, so it will be impossible to obtain any sort of print.

However, in most circumstances there will be some obvious indication as to the nature of the fault, the best example being the fault messages displayed in the screen status line.

The “Warning and Fault Messages” section lists all of the warning and fault messages. This section also gives a detailed explanation of the condition that the printer control logic has detected which has resulted in the particular message being displayed. If there is no fault message, or if the message on its own is not enough to identify the problem, refer toothed following list of symptoms to identify the possible cause of the fault.

The list is organized to group the symptoms into the five different stages of printer operation:

1. Before switching on.

2. After switching on.

3. When the jet is started.

4. During printing.

5. After the jet is stopped.

Note: that these groupings only indicate the earliest point at which the symptom could be observed; the symptom could also be observed later in the cycle of printer operation. For example, solvent contamination might be observed at any time, but it is included in the first group because it is possible to check this symptom before switching on.

The text below each symptom describes the different types of fault that can give rise to the symptom, with references to fault code numbers by which the faults are identified in the “Problem Solving ” subsection, where the problem and its method of rectification is described in more detail.

Symptom and Possible Causes	**Fault Code**
BEFORE SWITCHING ON	
Ink deposits in the print head or on the cover slot.	
JetAlignmentProblems	.....FC32
Ink leaking from gutter	
GutterProblems.....	.....FC35
AFTER SWITCHING ON	
Ink leaking from gutter.	
Gutter Problems.....	FC35
Low pressure warning on start-up.	
Pressure Loss (mechanical).....	.. ..FC12
Partial or total pressure loss	
Pressure Loss (mechanical).....	FC12

Discrepancy between Set and Read Pressures

Pressure Loss (mechanical)..... FC12

Symptom and Possible Causes	**Fault Code**

WHEN THE JET IS STARTED

No jet at start-up.

Jet Alignment Problems (nozzle blockage)..... FC32

Messy print head at start-up.

Jet Alignment Problems (nozzle out of alignment)..... FC32

No VOD adjustment on start-up.

Pressure Loss (mechanical)..... FC12

Blocked gutter.

Gutter Problems..... FC35

Jet catching print head cover slot.

Printhead Cover Catch..... FC06

Jet Alignment Problems..... FC32

Ink leaking from gutter or poor gutter action.

Gutter Problems..... FC35

DURING PRINTING

Poor print quality..... Refer to “Identifying Faults by Print Sample” (page 75)

Jet velocity reduces - increased VOD reading.

Gutter Problems.....FC35

Messy print, missing drops

Gutter clipping.....FC05

Printhead cover catch.....FC06

No Print

Print Delay value incorrectly set..... FC39

Part of message missing..... FC40

AFTER THE JET IS STOPPED

Poor purge of nozzle at shutdown.

Gutter Problems..... FC35

10.5 Problem Solving

This sub-section describes the faults identified in the previous sub-section “Identifying Faults”.

For each fault, identified by a fault code (FC) number, procedures are given for confirming the presence of the fault, and actions necessary to rectify the fault.

Fault codes not referenced in this manual are faults that can only be rectified by a Service Engineer.

10.5.1 Problem Solving - Print Samples

FC05 Gutter Clipping

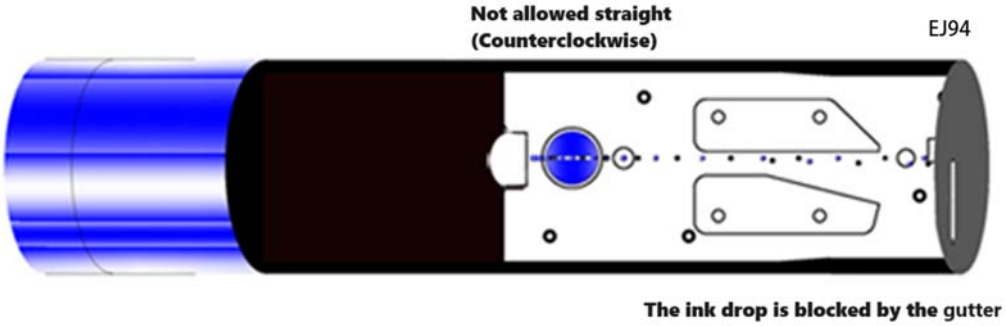
Diagnosis

This fault is also known as “gutter catch” and is similar to the associated problem of Printhead Cover Catch. The problem occurs when the least deflected drops clip the gutter and are thus not printed.

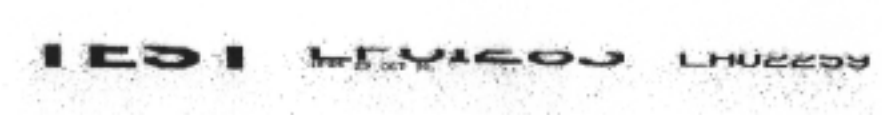
If the jet is misaligned on the gutter, the least deflected drops may catch the edge of the gutter. This will cause the loss of the drops from the top of the print pattern.

As printing continues, the ink will build up on the gutter edge and the print loss will increase, sometimes leading to deflector plate shorting and EHT failures.

The following diagram illustrates the problem:



喷印样品 EJ95



This print sample shows gutter clipping, resulting in loss of the top part of the print.

Cause and Cure:

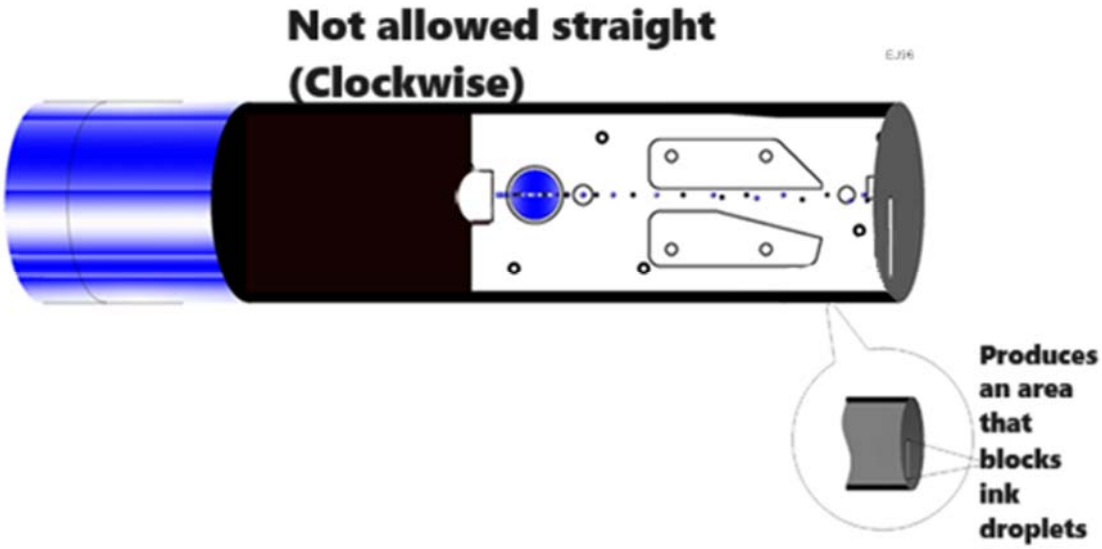
Check the EHT settings (see - “Changing the System Setup”). Check the jet alignment.

FC06 Printhead Cover Catch

Diagnosis

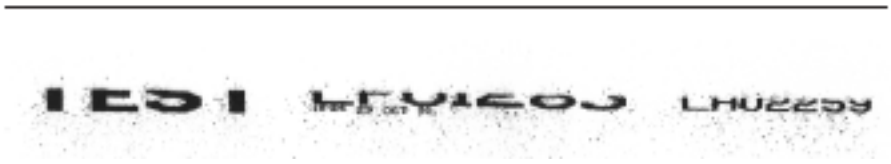
This problem is caused by the most deflected drops catching the edge of the exit slot in the printhead cover, and thus failing to be printed.

The following diagram illustrates the condition:



NOTE: It is sometimes possible for the least deflected drops to clip the cover slot, in which case the effect is similar to the Gutter Clipping fault

喷印样品 EJ95

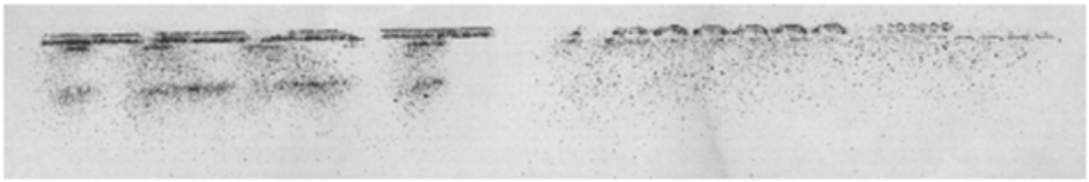


Most commonly, the drops are lost at the bottom of the print, as in the above print sample. Whether the top or the bottom of the print is missing, a typical result of print head cover catch is a fine diffuse spray of drops.

Cause and Cure:

Check the EHT settings and connections. Check the print head cover slot for an obstruction, which may be a buildup of ink. If the print head cover is badly out of place on the print head, the drops to be printed may miss the cover slot altogether. Ensure that the conduit is not pulling the print head out of line with the cover slot

Print Samples



The above print sample shows what can happen if the print head cover slot is obstructed by dried ink, dust or some other contaminant, such as a hair.

Cause and Cure:

Clean the exit slot using the appropriate solvent for the type of ink being used in the printer. Make sure that the print head cover is correctly positioned and securely fitted on the print head.

NOTE: Some of the Printhead Cover Catch print samples may show similarities with Phasing Errors problems. The fundamental difference to note is that phasing errors still print ALL the drops, although not in the correct positions, while print head cover catch (or clipping) problems show a considerable loss in the number of drops printed.

10.5.2 Problem Solving - Ink System Mechanical Faults

FC12 Pressure Loss

There are several ways in which a pressure loss can manifest itself:

- a Low Pressure warning on start-up (error 3.12);
- a No VOD Adjustments warning (error 3.00);
- a significant discrepancy between Set Pressure and Read Pressure when the pressure is set to 255 by the service engineer in Diagnostics;
- an obvious leak of ink from around the pump, the tubing or the manifold.

The following identifies how each of the ink system components can contribute to a loss of pressure in the system:

Ink Tank Reservoir

- debris in the ink tank can cause either a partial or a total pressure loss. The debris can be pieces of foil seals from ink bottles, or other extraneous material that has fallen into the reservoir.

Pre-Pump Filter

- debris from the ink tank reservoir that has been drawn into the body of the filter can cause a total, or more usually a partial, pressure loss;
- over tightening of the connectors onto the threaded stud of the filter body can cause a partial pressure loss by constricting the olive and reducing the size of the flow aperture;
- the actual filter membrane may have become blocked; it has done its job of protecting the pump.

Pump Assembly

The pump assembly is an electromagnetically-coupled gear pump.

- the pump motor has failed, resulting in loss of drive and hence total pressure loss;
- the motor has decoupled from the pump, so that the motor is spinning wildly but not turning the gears in

  the pump head, again resulting in a total pressure loss;
- the gears in the pump are worn, resulting in less than totally efficient drive and a partial pressure loss;
- a leak has developed on the output side of the pump.

NOTE: If the pump motor is turning but the pump itself is not, there will be a normal reading for Set Pressure, but a zero reading for Read Pressure.

Main Ink Filter

- the filter has fulfilled its task and has eventually collected an excess of debris and become blocked;
- the PTFE tubing has been incorrectly fitted to the filter. If the tubing is pushed too far into the elbow assembly, a pressure loss can result due to reduced flow;
- the stainless steel inserts, when pushed into the PTFE tubing, have pared off a little of the inner wall of the tubing causing a blockage which reduces flow, and hence pressure;
- a leak has developed at an assembled or welded joint.

Manifold Assembly

- the pressure transducer is faulty. Check the transducer and its associated wiring before suspecting a fault in the pressure circuit hybrid of the IPM PCB;
- the vacuum venture has either become blocked, or the stainless steel insert has been lost through incorrect assembly;
- a leak has developed at an assembly joint or crack. The manifold has simply become worn-out after years of ink flow.

10.5.3 1 Problem Solving - Printhead Mechanical Faults

FC32 Jet Alignment Problems

Possible causes:

- the jet has been shut down incorrectly;
- ink has been leaking from the nozzle during a period of non-use;
- the ink is contaminated causing quantities of salt deposits to build up around the nozzle;
- the nozzle problem(the cap loose , the diamond cracked, the nozzle assembly distorted)

Before attempting to rectify a jet alignment problem, it is advisable to investigate which of these possible causes is most likely to have occurred, and to take the appropriate steps to ensure it does not reoccur.

The first thing to do is to clear the nozzle, which will most often cure the problem. Clearing the nozzle should remove any deposits of ink or debris which could be causing an obstruction in the nozzle orifice, resulting in jet misalignment.

If clearing the nozzle does not solve the problem, it will be necessary to call your local Distributor for a EC-JET approved engineer.

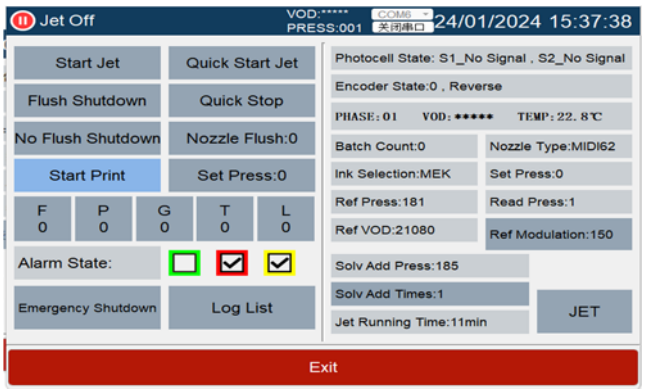
How to clearing the Printhead Nozzle

The nozzle has a very small orifice and it is possible for this orifice to become blocked in a number of ways, for instance: dried ink, foreign debris introduced into the ink supply, or contamination of ink types.

The most common occurrence is when ink has dried within the nozzle and caused a restriction. In this situation, the first course of action is to perform a series of nozzle clear routines. In normal operation, ink is supplied to the nozzle under pressure and is emitted from the orifice as a jet. When a nozzle clear is performed, vacuum is applied to the nozzle, and air and solvent can be drawn the reverse way into the nozzle to clear any restrictions.

To perform a series of nozzle clears, call up the Setup menu from the CURRENT MESSAGE screen, by pressing the 

key:



After entering the cleaning nozzle option, enter the number of times you want to clean the nozzle.

Do not press the Enter key yet. Before starting the cleaning process, be sure to make the following preparations:

NOTE: To remove clogs in the nozzle, we recommend performing a cleaning procedure at least 3 times.

Enter "3" after the cleaning nozzle option and press Enter to perform 3 consecutive cleaning process.

While wearing disposable gloves:

1. Remove the print head cover.
2. Wash the print head as described in “Cleaning the Print head” ensuring the nozzle area is clean.
3. Invert the print head, with some absorbent material wrapped around it where it connects to the conduit, and hold it in a vertical position.
4. Activate the Clear Nozzle routine by pressing the Enter key.
5. The status line will indicate that the printer is clearing the nozzle.
6. Apply small amounts of solvent to the inverted nozzle face as illustrated below. It should be observed that when a small drip of solvent is applied to the nozzle face, it will be drawn in through the nozzle orifice and back into the assembly.
7. Apply drops of solvent repeatedly until no more solvent is drawn in.
8. The routine of three Clear Nozzle sequences should be carried out a maximum of 10 times, with an attempt to start the jet at the end of each routine. If the nozzle is still blocked after the 10 routines have

been completed, the print head should be replaced.

CAUTION: Be certain to use the correct solvent that corresponds to the ink type being used in the printer.

FC35 Gutter Problems

The faults which can occur in the gutter line are as follows:

- blocked gutter which can be due to:

  incorrect shutdown not purging the gutter;

  print head mounted lower than the printer (causing siphoning effect);

- ink leaking from the gutter during a period of non-use:

  print head mounted lower than the printer (causing siphoning effect).

- poor gutter action (inadequate suction):

  Very thick ink, e.g. pressure is 40 points above the reference pressure value.

If you suspect a gutter blockage, do not attempt to clear it yourself; contact EC-JET or your local distributor.

FC36 Vibration Problems

Poor print quality is the most common indicator of vibration problems. This is because the print drops are relatively stable while in flight, so vibration in either the product being marked or the print head it will result in the drops being misplaced or obstructed.

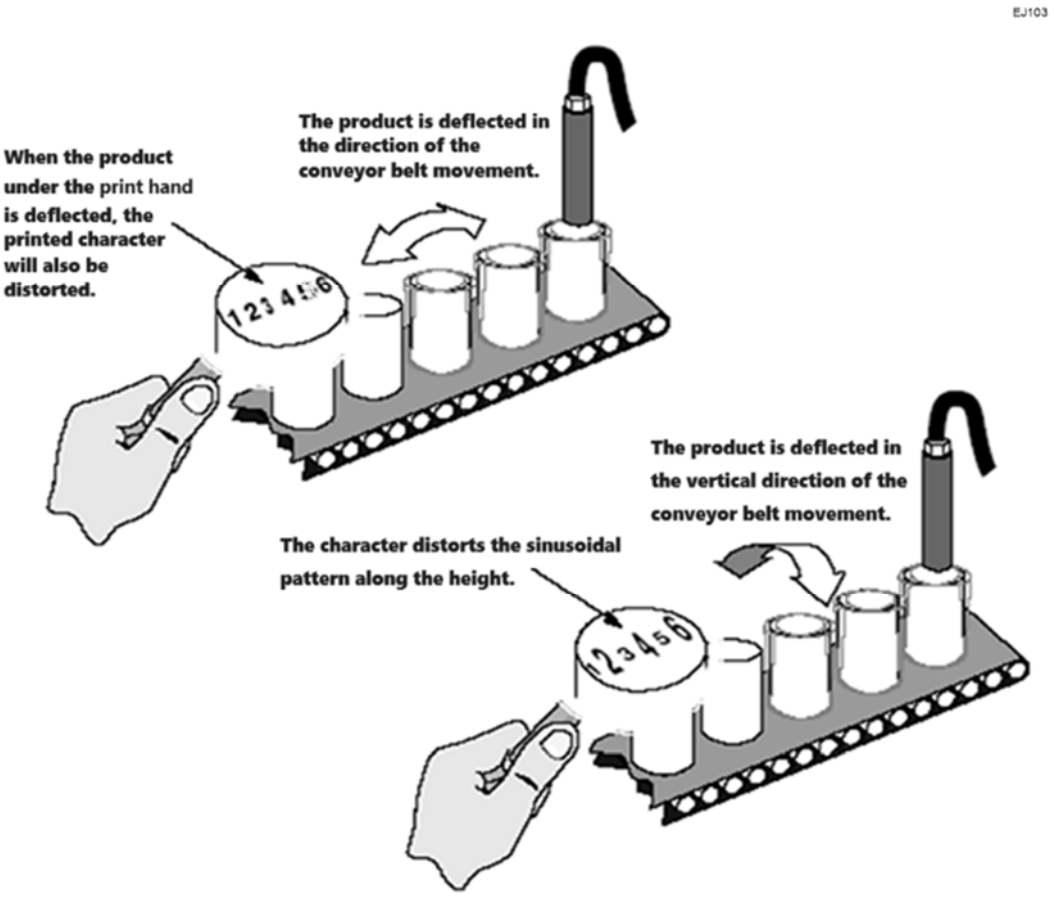
Diagnosis

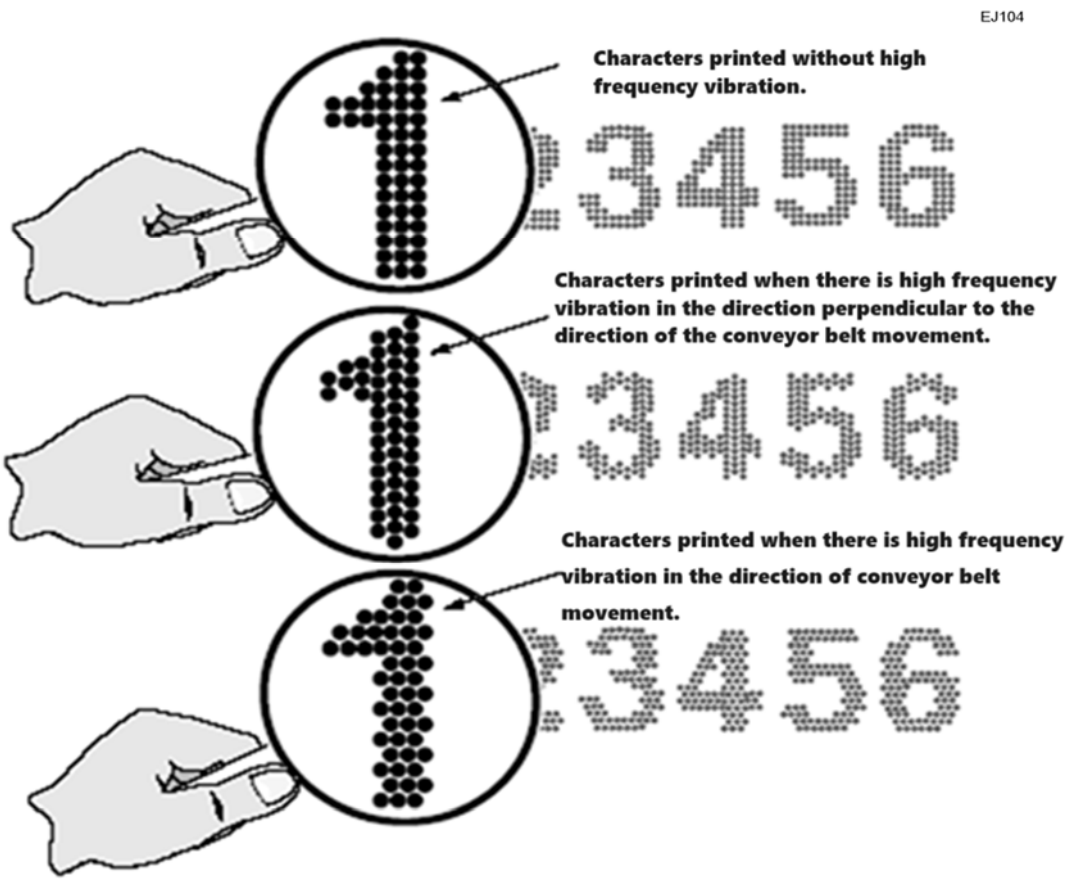
To determine whether high frequency vibration is affecting the product or the print head, simply pass a piece of paper under the print head and trigger the print. Take care to move the paper at a steady speed.

If it is the product which is vibrating, then the print quality will be good. If the print quality is poor, the

vibration is likely to be coming from the print head.

To test for print head vibration, pass a piece of paper under the print head in the same way as described above, but this time hold the print head with your other hand to dampen any vibration in it. If print quality improves as a result, then the print head is suffering from the effects of vibration.





The various types of vibration and their effects are described in the following:

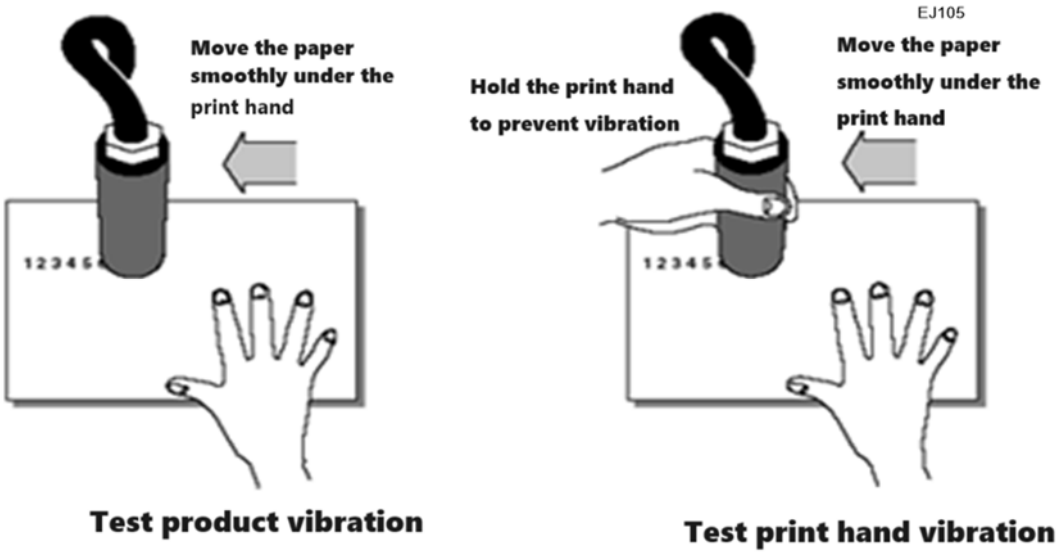
1) Tilting

The product can tilt from one side to the other, either along the axis of the conveyor travel or at 90 degrees to it (i.e. across the conveyor width)

When the product tilts along the axis of the conveyor travel, the width of some characters will be contracted and some expanded, as the product tilts first one way then the other.

Similarly, when the product tilts at 90 degrees to the axis of the conveyor travel, the height of some characters will be contracted and some expanded, as the product tilts first one way then the other.

This is shown in the following illustrations:



Knocking and Strong Vibration

Strong vibration and knocking to the print head is the most serious vibration problem likely to occur, since this will affect operation of the printer itself. Severe vibration or knocking will lead to the printer shutting itself down and displaying a warning message:

“2.01 Deflector Voltage”

It will also be found necessary to clean the print head more often than would be expected.

To understand what is happening, consider that the stream of drops is relatively stable once in flight.

Therefore, if the print head suffers vibration or sudden movement, the drops will be obstructed either by the VOD sensor or the edge of the gutter. This will cause ink to be splashed on the VOD sensor and deflector plates, and to build up deposits on the gutter.

10.5.4 Blockage Caused by Knocking and Strong Vibration

FC39 No Print - Print Delay Problem

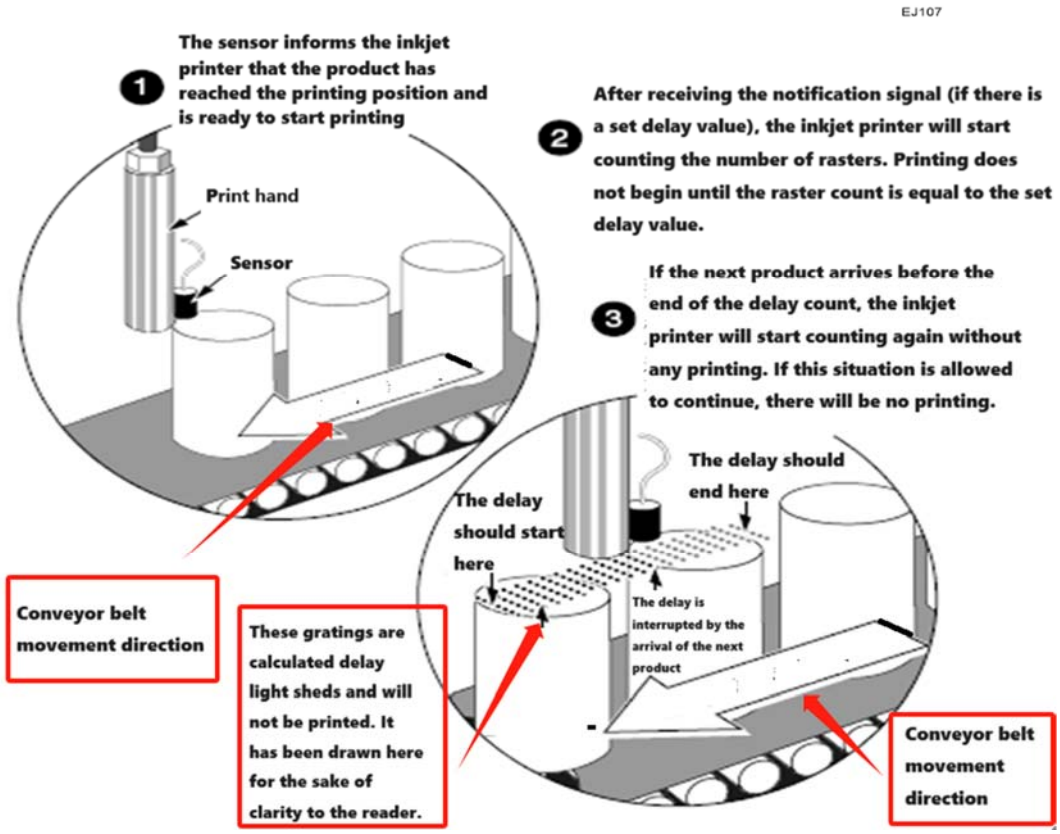
Normally, when the system detects a product passing the photocell, it will activate a “print go” signal which causes the current message to be printed immediately. The Print Delay option of the SETUP menu is used to delay printing to allow the product to travel further before printing, thus controlling exactly where the message is to be printed. For instance, if the product is a long one and the message is to be printed in the middle, it will be necessary to set the delay to a value appropriate to the speed of the conveyor and the length of the message, which will cause printing to occur at the desired place.

What actually happens is that when the system detects a product passing the photocell, it will delay printing by counting the number of rasters it would have printed, until that count becomes equal to the value of the Print Delay option.

However, if the Print Delay value is set to an inappropriate value, it is possible for the next product to arrive before the delay expires. This resets the delay to begin counting again, and since the conveyors

travelling at the same speed, the next product will once again arrive before printing has occurred and the delay will be reset; and so on. If this is allowed to continue, printing will never occur.

The following illustrates this problem:

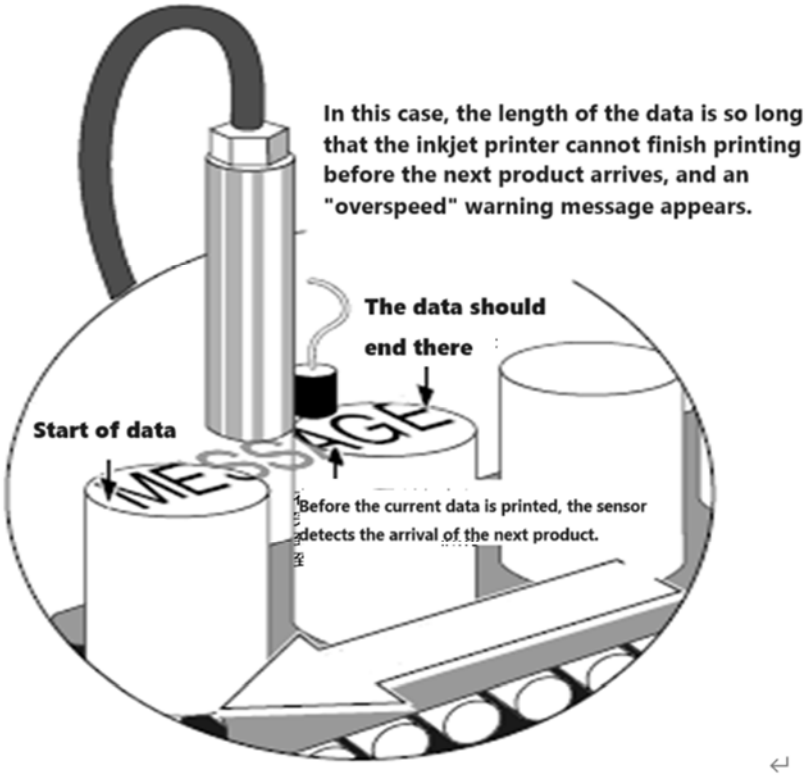


FC40 Part of Message Missing - over speed Error

If the message to be printed is too long for the product or the conveyor is travelling faster than the system can print, the following warning message will be displayed in the status line of the display:

"3.02 Over Speed (Print Go)"

The following illustrates the problem:



Appendix 1：Installation & Setting Up

This appendix is to help you install and set up the printer. Normally this procedure will be carried out by EC-JET Service Engineers when commissioning a new printer.

These notes are provided as a guide to be used if the printer is relocated or changes are made to ancillary equipment. Guarding and safety interlocks should all be in place and working correctly. ECJET can accept no liability for damage to either machine or personnel in the event of the printer being installed, moved or maintained by unauthorized and/or untrained personnel.

If you are unsure of any procedure it is recommended that you contact your local EC-JET distributor.

Unpacking the System.

1.1 Unpacking the System

Please carefully remove the cardboard packaging and check for the following contents:

- EC-JET printer
- EC-JET User Manual
- Final test print sample sheet
- Total Quality Plan packing card

- Key for cabinet
- A Guide to Quick Use

1.2 Where to Put the Printer

The EC-JET printer must be sited on a firm, solid base (preferably a EC-JET cabinet or mounting table) and with a clean power supply, i.e. free from electrical interference.

The printer physical dimensions, in millimeters, are as follows:

360 (wide) x 404 (high) x 261 (deep).

The printer weighs 14 kg (not including ink or packaging).

1.3 Accessories

The following accessories are available for purchase with the EC-JET printer:

- RS232 Communications Cable - allows multiple, remote printer control from Windows based PC system
- Shaft Encoder - enables even print width at uneven line speeds
- Photocell - detects presence of product
- Printhead Gantry
- Positive Air Kit - to prevent dust interfering with print quality

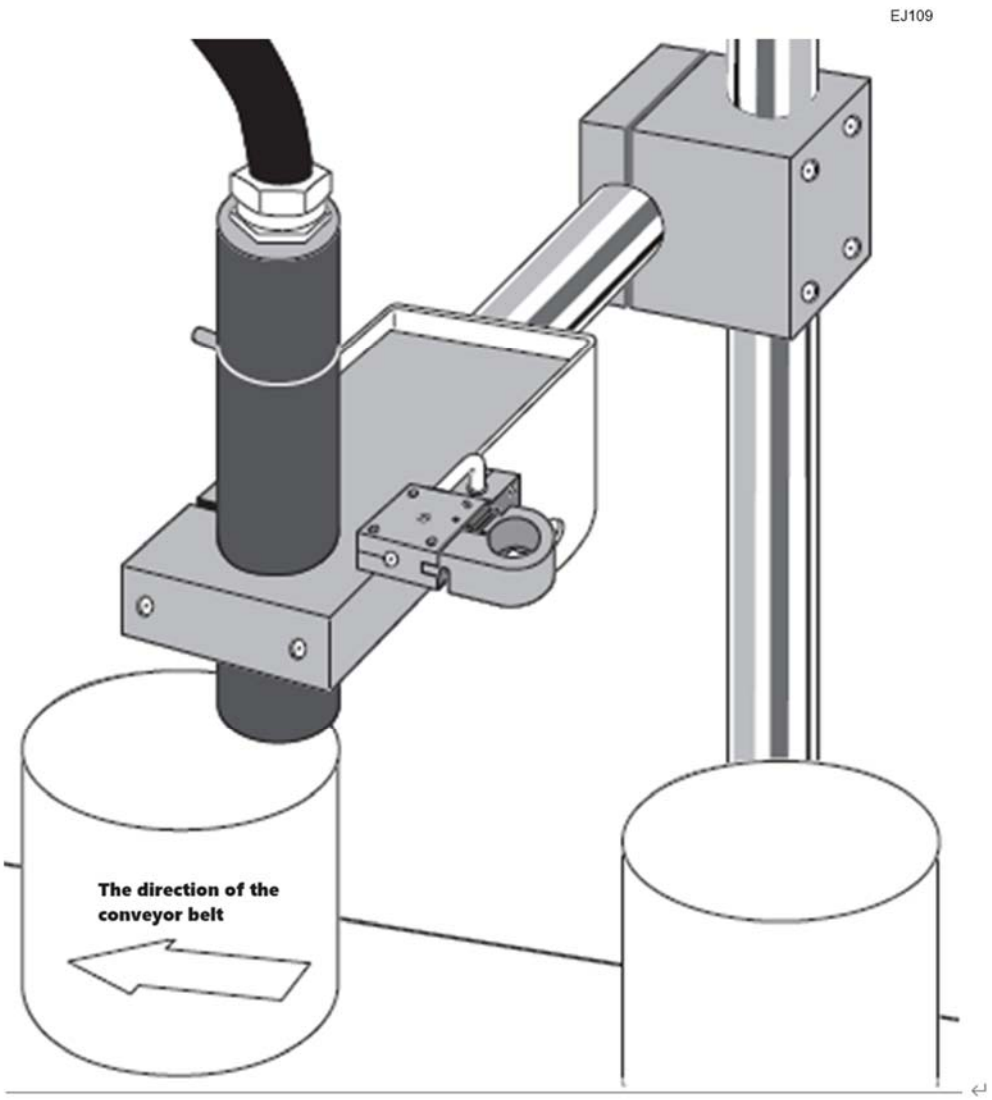
For a full list of all available accessories, please contact EC-JET or your EC-JET distributor.

1.4 Power Connection

Please refer to the chapter 3.1.2

1.5 Attaching the Printhead to the Production Line

The print head can operate from any angle if clamped in place with a EC-JET head bracket to ensure secure and vibration free operation.



1.5.1 Print Height

If the printhead is moved nearer to the surface to be printed, height of the printed character will decrease - if moved further away, its height will increase.

However, adjustment of the print height should be controlled through the SETUP menu.

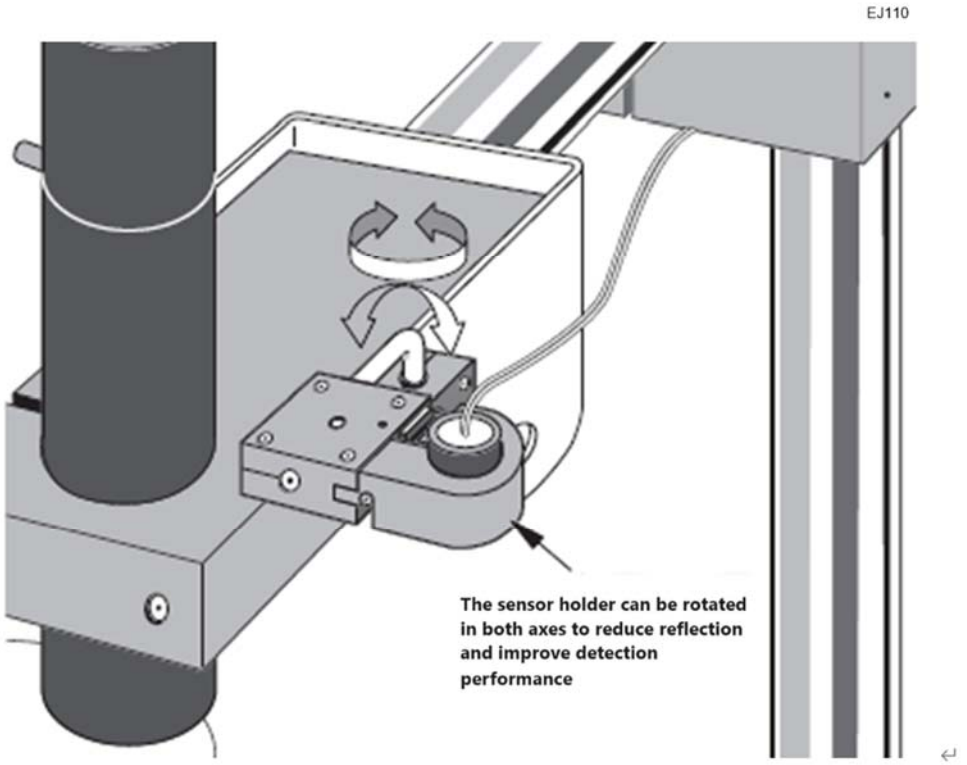
NOTE: Do not attempt to adjust the printed character height by changing the print head-to-product distance. This may result in deterioration of print quality.

1.6 Setting up the Photocell

The photocell is used to detect the presence of a product to be printed on. There are variations in the way this "trigger" can be interpreted by the system, but usually a message is printed in response to a signal from the photocell.

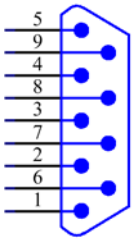
The photocell should be mounted upstream of the print head (so it detects the product before the product reaches the print head), as close to the print head as possible and at a distance from the product which

gives consistently reliable triggering when a product passes it. A delay between the photocell being triggered and the print taking place can be set by a menu command, to aid fine adjustment of print positioning on the product.



1.6.1 Photocell Connections

The photocell is connected to the system via a 9-pin D - Type connector. The function of each pin is described below:



Pin 1 +24 volts

Pin 2 0 volts

Pin3 +5 volts

Pin 6 Next Object Signal

If the photocell has a screened conductor, it should be connected to the shell of the D - Type connector and to the printer chassis at the printer end of the cable (it must not be connected to D volts).

CAUTION: Electromagnetic Compatibility performance may be compromised by the use of unsuitable photocells. Use only EC-JET approved accessories.

1.7 Setting up the Shaft Encoder

Shaft encoders are recommended for production lines where variable speed is likely. A shaft encoder generates a pulse for a fixed distance of product movement. This can be used to produce constant width print as the line speed increases or decreases.

If an encoder is to be fitted, it should be attached to a suitable production line drive shaft, with appropriate gearing if necessary. It must be installed and driven in a position where it best follows the movement of the product being printed on.

The calculations shown in the next few pages should be used to select the optimum arrangement for your application. EC-JET will be happy to advise the best position and gearing for shaft encoder installation.

The selection of encoder and gearing will determine the printed pitch and the maximum possible line speed for the application. The printer allows some variation using the Print Width parameter, but the initial selection of the encoder and gearing is critical.

EC-JET offer a range of shaft encoders:

●2500 pulses per revolution

● 5000 pulses per revolution

● 10000 pulses per revolution

Each is available with either a 3 m or 5 m connecting cable.

For applications where the encoder needs to be driven from a conveyor belt or from the product, ECJET

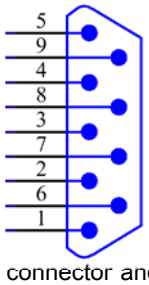
Provide the encoder wheels:

●188.8mm circumference (60mm diameter)

A given encoder and drive gearing will have a fixed encoder pitch - that is, the distance travelled by the product for each pulse cycle of the encoder output. The width control in the printer is used to generate rasters at integer multiples of the encoder pitch. This multiplier is the pitch factor and will always be a whole number. The calculations on the following pages show how this is used and explain the difference between pitch factor and print width.

1.7.1 Shaft Encoder Connections

The shaft encoder is connected to the system via a 9-pin D - Type connector. The function of each pin is described below:



Pin 1 +24 volts

Pin 2 0 volts

Pin3 Input 1

Pin 8 Input 2

The screened conductor should be connected to the shell of the D - Type connector and to the printer chassis at the printer end of the cable (it must not be connected to 0 volts).

CAUTION: EMC performance may be compromised by the use of unsuitable shaft encoders. Use only EC-JET approved accessories.

1.7.2 Selecting the Encoder, Gearing, and Print Width

When using a shaft encoder it is vitally important that the calculations are followed and the print width is computed based on the geometry of the set up. If guessed at, messages will not be printed at the required

size; rasters will be printed too close together or too far apart.

The calculations take you through a series of steps as shown below. There is also a worked example and a problem solving section afterwards.

Step 1: Define the required raster pitch for the application.

Step 2 :Select the encoder, gearing and pitch factor that gives an actual raster pitch close to that required.

Step 3 :Check the calculated print performance (size and speed) is adequate.

Step 4: Calculate the print width from the pitch factor and enter it.

Step 5: Check print samples for performance.

Step 1: Define the Required Raster Pitch for the Application

For each raster type on each printhead type there is a drop pitch which gives the best quality print, i.e. 1:1 aspect ratio at the default printer settings. This value is known as the ideal pitch; a table later in the section lists them. For a particular application you may want to choose a different pitch, bearing in mind that the aspect ratio can be adjusted using the Print Height setting (see “Changing the System Setup”).

The required raster pitch is calculated by:

Required raster pitch (mm)

$$\frac{\text{Printed Length (mm)}}{\text{Number of Characters x Character Width (rasters)}}$$

$$\frac{\text{Printed Length (mm)}}{\text{Number of Rasters in Message}}$$

Where:

Printed length = length of message on product. This must be less than the length of any area left clear for printing.

Number of characters = number of characters in the longest line of the message.

Character width = number of rasters in each character; see the following table.

(Alternatively, obtain the number of rasters in the message by creating the message on the printer and noting the x-position of the cursor just after the end of the message.)

The character width varies with the size of character chosen. The figures in the table include the gaps between characters; this will introduce a small error as the gap after the last character is not printed.

Character	Height	Width
En5x5	5	5
En7x5	7	5
En9x7	9	7
En11x9	11	9
En15x10	15	10
En24x15	24	15

En32x19	32	19
Chinese7x7	7	7
Chinese9x9	9	9
Chinese11x11	11	11
Chinese16x16	16	16
Chinese24x24	24	24

For example:

Consider printing “Sell By 19 Nov 0000” in 7 High Full using a Midi print head and the 7 GEN STD raster onto a print area 38 mm long.

From the table above, the width of each character is 6 rasters. The message is 17 characters long including spaces. Therefore, the required raster pitch is given by:

$$\text{Required raster pitch (mm)（mm）} = \frac{38\text{mm}}{17 \text{ Character x } 6 \text{ Raster}} = 0.373\text{mm}$$

This will be the maximum pitch possible; any larger and the message will not fit in the print target area （38mm）.

Note: the ideal drop pitch for the 60 micron printhead of EC-JET is 0.4mm.if the actual drop pitch is bigger than 0.4mm, the raster distance will be wider, the line speed will increase.

Step 2: Select the Encoder, Gearing, and Pitch Factor

A particular combination of encoder and encoder drive (gearing or wheel) will give a particular encoder pitch; that is, the distance the product will travel for each cycle of the encoder output signal. The encoder pitch will be multiplied by the pitch factor (a whole number) to give the actual raster pitch. This should be as close as possible to the required raster pitch.

The table below gives the encoder pitches for standard EC-JET encoders and wheels. The encoder pitch for other gearing or drives can be calculated using:

$$\text{Encoder Pitch (mm)} = \frac{\text{Wheel Circumference (mm)}}{\text{Encoder Pulses Per Revolution}}$$

Where:

Wheel Circumference = Distance the product moves for one revolution of the encoder. This may be 3.14 x roller diameter, or 3.14 x star-wheel diameter, etc., depending on the application.

The encoder pitch will be multiplied by a whole number to give the actual raster pitch. By selecting a suitable encoder and gearing, the actual raster pitch can be made close to the required raster pitch.

No	shaft/shaft wheel	Encoder Pitch X pitch factor=Actual Raster Pitch		
1	2500ppr/188.2mm	0.075mm	5	0.375

2	5000ppr/188.2mm	0.0375mm	10	0.375
3	10000ppr/188.2mm	0.0188mm	20	0.375

For this example, the actual pitch using EC-JET standard encoder wheel and the resulting two encoder are close to the desired pitch, taking into account the higher pulse value, the higher cost synchronizer, we will start with 5000PPR encoder with EC-JET standard encoder wheel (diameter 60mm, perimeter 188.2mm) factor 10 (this is covered in later sections).

Step 3: Check the Expected Print Performance

Any difference between the required raster pitch and the actual raster pitch will influence the print performance. There is also a limitation due to the frequency of the encoder signals. In particular, the printed message length and the maximum line speed must be checked. If there are any problems with these, the selection process must be repeated.

Printed Message Length (mm) = Number of Rasters x Actual Raster Pitch (mm)

Where:

Number of Rasters = as calculated in Step 1

Actual Raster Pitch = as calculated in Step 2.

Max. Line Speed (m/s) = Actual Raster Pitch (mm) x Raster Rate (kHz)

Where:

Actual Raster Pitch = as calculated in Step 2

Raster Rate = Maximum Rate of Raster Production.

The raster rate varies with printhead type and raster:

Raster Type	60um PH Raster Speed（KHz）
7 GEN STD	5.714
16 GEN STD	1.5
24 GEN STD	0.895

The maximum line speed calculated above should be compared with that expected for the production line - use the section “Line Speeds Per Product Frequency” later in this manual if necessary.

The line speed may also be limited by the encoder signal response:

Max. Encoder Speed (m/s) = Encoder Pitch (mm) x Specified Frequency (kHz)

Where:

Encoder Pitch = value from table in Step 2 for encoder/gearing

Specified Frequency = Limiting Signal Frequency (see the following table).

The specified frequency varies with encoder type:

Shaft Encoder	Frequency（KHz）

2500ppr	20.0
5000ppr	80.0
10000ppr	

This gives the following maximum encoder speeds for standard EC-JET encoders and wheels:

Encoder	Maximum Encoder Speeds for EC-JET Standard Wheel (188.2mm)	
2500ppr	0.075	1.5m/s
5000ppr	0.0375	3m/s
10000ppr	0.0188	1.5m/s

The maximum encoder speed must also be higher than the production line maximum speed.

Referring back to the example, the actual raster pitch is 0.375 mm (Step 2) and the number of rasters is 102 (Step 1).

Printed Message Length (mm) = 102 x 0.375 (mm)

=38.25 mm

This will fit in the target area of 38 mm.

The message is printed using the Midi 7 GEN STD raster with a raster rate of 5.33 kHz.

Max. Line Speed (m/s) = 0.375 mm x 5.33 kHz

= 2 m/s.

The Max. Encoder Speed of the 5000ppr encoder/gearing chosen in Step 2 is 3m/s

This will not limit the expected printable maximum line speed.

If we chose 2500ppr or 10000ppr encoder with EC-JET standard wheel, The Max. Encoder Speeds are only 1.5m/s, will limit the expected printable maximum line speed.

Step 4: Enter the Print Width Parameter

The “Print Width” parameter is used by the printer to generate the pitch factor and print rasters at the actual pitch calculated in Step 2. Print Width is a setting accessed from the SETUP menu. The way it can be changed is described in “Changing the System Setup”.

The relationship between Print Width and Pitch Factor is:

Print Width = Pitch Factor - 1

The requirement to subtract 1 arises from the printer software operation.

Referring back to the worked example, the pitch factor calculated at Step 2 is 10.

Therefore, the Print Width parameter entered at the printer must be 10 - 1 = 9.

This will print one raster for every 9 encoder pulses.

Step 5: Check the Print Performance

Having entered the print width and created a message using the character size and raster from the calculation, prints must be taken at a variety of normal running speeds to confirm the settings. This must include the maximum running speed.

Note: If the customer has strict requirement on the message width, necessary to calculate the drop pitch as requirement and design encoder wheel diameter rather than using EC-JET standard encoder wheel and choose the right encoder, check if suitable following Step 3

1.7.3 Encoder and Print Width Problems

Important Notes:

1. Never assume that the entered print width value is correct; always go back to the calculations.

2. Never assume that the line speed is known accurately; try to measure it or estimate it as you see it on the day. (Refer to the “Line Speeds per Product Frequency” section later in the manual).

The encoder will only maintain a fixed print width up to the lower of the maximum line speed and the maximum encoder speed calculated in Step 3. When this speed is exceeded, the printed message length can increase dramatically and unpredictably. The same effect can be seen if the print width value is incorrectly calculated or entered. Very often a printer will be set up on line with a shaft encoder, the pitch factor poorly calculated (if at all) and print samples taken.

Troubleshooting must follow a logical sequence:

1. If the message length measured on the print samples is larger than that calculated in Step3, then it is possible that the line speed is too high. This can easily be checked:

   a) From the SETUP menu, set Shaft Encoder to Off. Note down the original Print Width setting, then set Print Width to 0.

   b) Note the original Print Delay setting. Multiply this by the original Print Width setting. Enter the new value.

   c) Run the line at the same speed and take print samples.

   The printer will now be generating rasters at its maximum rate.

   (i) If the printed length of the message is still too long, then the line speed is too high for the print head/raster being used. No adjustment of the encoder, gearing, or Print Width will influence this.

   (ii) If the printed length of the message is now shorter than required, the original print width was wrong. It may need to be increased or decreased. Only going through the calculations will give the correct value to enter. Remember to check the maximum encoder speed.

Remember to enable the shaft encoder using the SETUP menu and adjust the Print Delay.

2. If the message length measured on the original samples (i.e. with the shaft encoder enabled and the original Print Width setting) was shorter than that required, then the print width must be increased. The calculations will give the correct setting; if guessed at the results could still be unpredictable.

1.8 Using the Printer Alarm Output

When there is a print warning or failure, the printer activates a 24 volt external alarm, where fitted.

The Alarm Beacon available from EC-JET is as follows:

Alarm Beacon Single Stage 24V.

The pin connections are as follows:

Alarm out A

Pin 9 Alarm –Out_0 (24V signal)

Pin 5 GND

Alarm out B (Reserve)

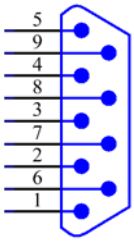
Pin 1 Alarm –Out_0 (24V signal)

Pin 6 GND

Alarm out C (Reserve)

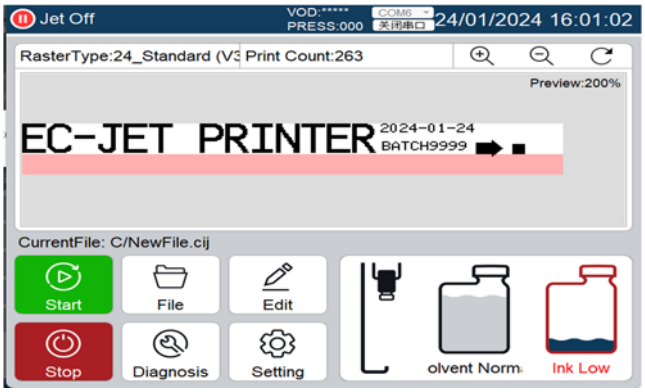
Pin 4 Alarm –Out_0 (24V signal)

Pin 8 GND



1.9 Filling with Ink and Solvent

Switch the printer on and check if the ink or solvent level warning messages are displayed. Fill the system with ink and solvent as necessary (see “Routine Maintenance”).



1.10 Purging (or priming) the Filters

After a main ink filter change, the filter must be completely filled with ink before the system is run. For this purpose, a Filter Purge option is available from the DIAGNOSTICS menu.

This procedure should only be performed by an authorized service engineer following filter replacement. (For details, refer to Chapter 6 Changing System Settings)

Appendix 2：Technical Specification

Introduction

The EC-JET Continuous Ink Jet Printer is a fast, reliable, non-contact printer capable of applying sell by dates, batch codes and other variable information to a wide range of substrates on the production line.

Technical Data

Cabinet

Construction

Base tray unit: Stainless steel grade 304

Top cover: Stainless steel grade 304 (Special surface)

Dimensions

Height: 528 mm

Width: 264 mm

Depth: 325 mm

Weight

Printer weight: 18.1kg (excluding ink, solvent and packaging)

Power Requirements

Voltage: 100 V (3 A) to 240 V (1 A) a.c., A.C 50/60 Hz

Power rating: 200 VA

This equipment is a Class 1 earthed Electrical connections at the rear of the cabinet comply with the extra low voltage safety requirements.

WARNING: THIS PRINTER MUST BE EARTHED/GROUNDED. (Acquired EN60950 Certificate)

Environmental

Operating temperature: +5 to +45 Celsius ambient

Humidity range: Up to 90% relative humidity, non-Condensing

Acoustic emission: Less than 70 DB

Ink System

Construction

System enclosure: Stainless steel grade 304

Ink tank: MDPE natural

Solvent tank: MDPE natural

Capacity

Ink tank: 1800 ml approximately

Solvent tank: 1800 ml approximately

Pressure

Pressure range: Up to 4.48 bar (65 p.s.i.) normal operating pressure

Maximum pressure: 6.2 bar (90 p.s.i.) maximum under fault conditions

Level Control

Ink tank sense low: Warning reported at approximately 750 ml

Solvent tank sense low: Warning reported at approximately 750 ml

Performance

Solvent consumption: <8 ml/h at 20 Celsius ambient using EC1240 MEK black ink

Memory Capacity

Message storage capacity: Up to 46 messages

Logo storage capacity: Up to 120 logos

Chinese Character: 12000 inside

Printhead

Types

Midi: 60 micron

Construction

Printhead: Machined Acetal body

Cover tube: Stainless steel grade 304

Conduit adaptor: Stainless steel grade 303

Minimum Conduit bend radius: 230mm

Dimensions

Conduit length: 2m

Conduit diameter: 20mm

Throw Distance (recommended)

Midi:10 mm

Printing Performance Data

Raster Information

Lines of print: Maximum one line of 34 High characters, or up to four lines of 7 High characters, or up to six lines of 5 High characters

Rasters available: Available character types (depending on the model): Currently available English fonts include: En5x5, En7x5, En9x7, En11x9, En15x10, En24x15, En32x19; Chinese fonts include Chinese 7x7, Chinese 9x9, Chinese 11x11, Chinese 16x16, Chinese 24x24.

Character Height Range

Minimum character height: 1.0 mm (60μm Midi print head) using 5 Min raster

Maximum character height: 15 mm (60μm Midi print head) using 24 raster

Certificate Acquired

EMC Certificate

CERTIFICATE

Anbotek
Product Safety

CERTIFICATE

of Conformity
EU Council Directive 2014/30/EU
Electromagnetic Compatibility

Registration No.: AT18230EC302074

Report No.: 18230EC30207401

Applicant	:	GUANGZHOU EC-PACK PACKAGING EQUIPMENT CO.,LTD
Address	:	No.16, Huang Qi Shan Road, Yonghe Economic Zone, GETDD,511356 Guangzhou ,Guangdong Province,China.
Product	:	Ink-jet Printing Machine
Test Model No.	:	EC-JET1100
Reference Model No.	:	EC1110P, EC1120N, EC1120H, EC1130N, EC1130H, EC1140N, EC1140H, UN830, UN8830, UN8860
Trade Mark	:	EC-JET
Rating	:	Input: 100-240V~, 3A-1A, 50/60Hz, 200W
Test Standards	:	EN 55032:2015+A1:2020 EN IEC 61000-3-2:2019+A1:2021 EN 61000-3-3:2013+A2:2021 EN 55035:2017+A11:2020

The certificate of conformity is based on an evaluation of a sample of the above-mentioned product. Technical report and documentation are at the applicant's disposal. This is to certify that the tested sample is in conformity with all provisions of Annex II of Council Directive 2014/30/EU, in its latest amended version, referred to EMC Directive. The certificate does not imply assessment of the production and does not permit the use of Lab's logo. The applicant of the certificate is authorized to use this certificate in connection with EU declaration of conformity to Article 15 of the Directive.

Shenzhen Anbotek Compliance Laboratory Limited * Approved *

Certified by

Nov. 20, 2023
Date

KingKong Jin

CE The CE Marking may only be used if all relevant and effective EU Directives are complied with CE

Shenzhen Anbotek Compliance Laboratory Limited
1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.
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Http://www.anbotek.com Email: service@anbotek.com

Page 1 of 1

LVD (Safety Regulation) Certificate

CERTIFICATE

Anbotek
Product Safety

CERTIFICATE

Of Conformity
Low Voltage Directive 2014/35/EU

Registration No.: AT18230SC301167

Report No.: 18230SC30116701

Applicant	:	GUANGZHOU EC-PACK PACKAGING EQUIPMENT CO.,LTD
Address	:	No.16, Huang Qi Shan Road, Yonghe Economic Zone, GETDD,511356 Guangzhou ,Guangdong Province,China.
Product	:	Ink-jet Printing Machine
Model No.	:	EC-JET1100, EC1110P, EC1120N, EC1120H, EC1130N, EC1130H, EC1140N, EC1140H, UN830, UN8830, UN8860
Trade Mark	:	EC-JET
Rating	:	Input: 100-240V~, 3A-1A, 50/60Hz, 200W
Test Standards	:	EN IEC 62368-1:2020+A11:2020

The certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical report and documentation are at the applicant's disposal. This is to certify that the tested sample is in conformity with Low Voltage Directive 2014/35/EU relating to electrical equipment designed for use within certain voltage limits. The certificate does not imply assessment of the series-production of the product. The applicant of the certificate is authorized to use this certificate in connection with EU declaration of conformity specified in Article 15 and Annex IV of the Directive.

Certified by

Shenzhen Anbotek Compliance Laboratory Limited * Approved *

Nov. 21, 2023
Date

Jeff Zhu

CE

The CE Marking may only be used if all relevant and effective EU Directives are complied with

CE

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Appendix 3: Printable Line Speeds

The following table shows the line speed at which good printing will be obtained for each raster type and print head model at ideal pitch:

7 Dot Standard Speed	120	9 Dot Standard Speed	81.5
12 Dot Standard Speed	55.5	16 Dot Standard Speed	34
24 Dot Standard Speed	20		

The line speeds shown above can be adjusted if printing at more than ideal pitch, i.e. double or treble pitch (see “Appendix 1: Installation and Setting Up”).

NOTE: Print quality will be impaired if printing takes place at anything other than ideal pitch.

Ideal Pitch

Otherwise known as single pitch, this is dependent on the raster (i.e. printer type) being used. Printers with the faster rasters have an increased pitch capacity because the overall character height is larger. This helps to form “square” (more precise and uniform) characters.

Double Pitch

Twice the ideal pitch. Print height may need to be increased to maintain character proportion.

Triple Pitch

Three times the ideal pitch. Print height may need to be increased to maintain character proportion.

Appendix 4: Dimension Layout