CIJ

F580

Operation Manual

16 December 2021 Edited V1.1

Content

1 Safety

1.1 Safety Outline

Maintenance of the equipment (ink jet printer) must be conducted by the maintenance professionals.

If the ink jet printer is accessed to the power supply, lethal voltage will be generated, and the laypeople cannot touch the circuit system.

The consumables used for the ink jet printer may be combustible liquid. The consumables used must comply with the instructions in the Material Safety Data Sheet (MSDS). Meanwhile, the ink jet printer must also be subject to regular inspection and maintenance, so as to eliminate potential safety hazard as much as possible.

(Note: The inkjet printer has an alarm function indicating that the service time is up, please pay attention to whether this function is normal. When there is an alarm indicating that the service time is up, please inform the maintenance engineer in time.)

1.2 Safety Measures

The ink jet printer must be installed in a safe, firm and stable way with good grounding.

The ink jet printer must be installed at a ventilated place, and far from the heat source, fire source and static electricity. Smoking near the ink jet printer is prohibited.

The covers of the containers for the printing ink, solvent and cleaning agent used for the ink jet printer must be tightly closed, and they shall be stored in a ventilated environment far from the ink jet printer.

The ink jet printer shall be maintained clean, because the consumable used may be the combustible liquid. The printing ink may also be subjected to combustion after being dried.

A carbon dioxide dry powder fire extinguisher shall be arranged near the ink jet printer.

1.3 Safety Considerations

The ink jet printer is non-contact ink-jet equipment, and is not applicable for all occasions (such as the explosive environment). The user must comply with the safety criterion and provide an appropriate working environment during use. Otherwise, the consequences caused shall be assumed by the user.

The consumables of the original factory or permitted by the original factory (including the printing ink, solvent, cleaning agent, maintenance products and so on) must be used. The Material Safety Data Sheet (MSDS) must be claimed from the dealer, and carefully read and observed. Otherwise, the consequences caused shall be assumed by the user.

Those who may touch the consumables during operation shall wear the ink-resistant gloves and protective glasses.

1.4 Medical

If liquid such as ink, solvent or cleaning agent accidentally enters eyes or other sensitive parts of human body during the operation, wash them with clean running water for at least 15 minutes and seek medical help.

1.5 Handling

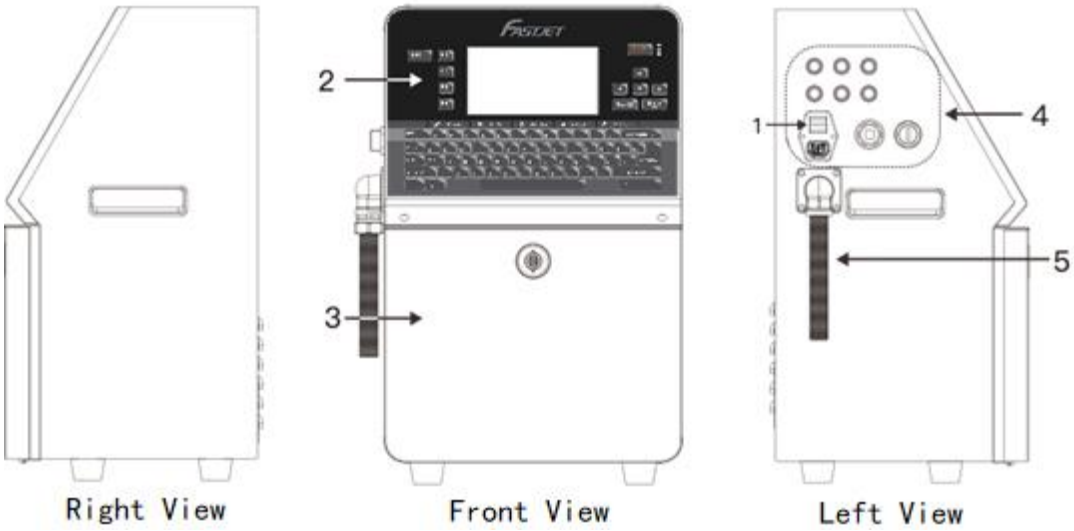
For the machines with inks and solvents in them, it is forbidden to carry them remotely directly. The inks and solvents should be completely emptied before remote handling.

1.6 Responsibilities

During use and maintenance of the equipment, the company shall not be responsible for any consequence caused by any behavior against the safety instructions, safety requirements and basic safety operation criterion.

2 Main Parts

2.1 Overview



1. Main power switch

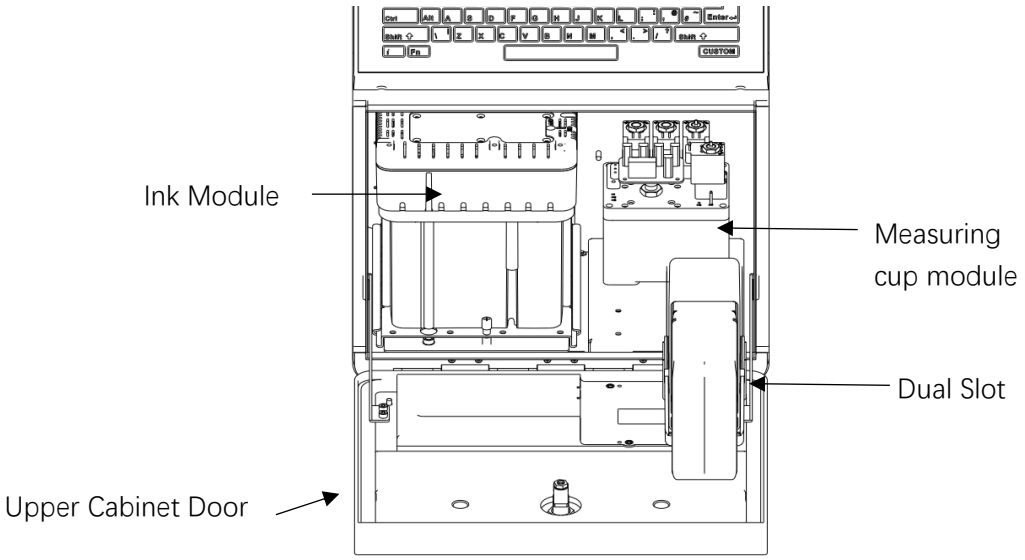
2. Upper overview: Electronics compartment and Control panel

3. Lower overview: Ink compartment

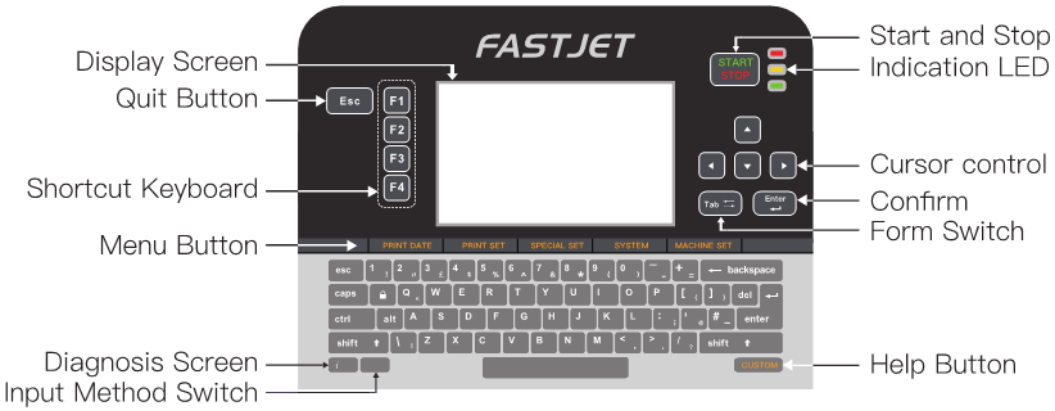
4. Connector panel

5. Umbilical

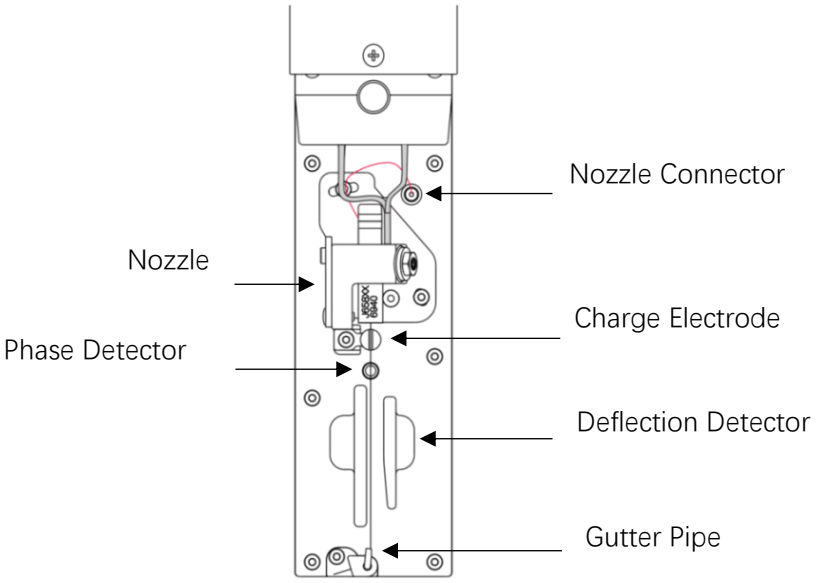
2.2 Ink Compartment

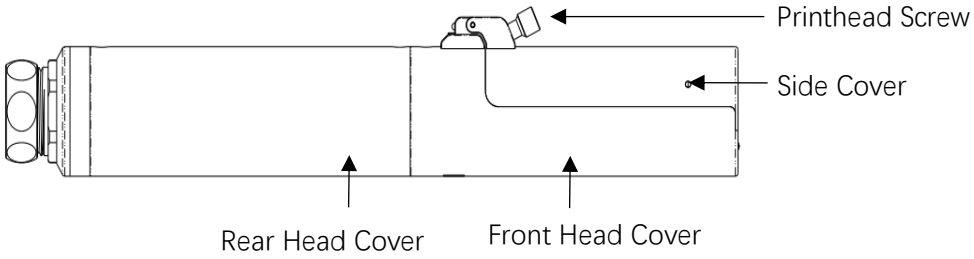


2.3 Control Panel



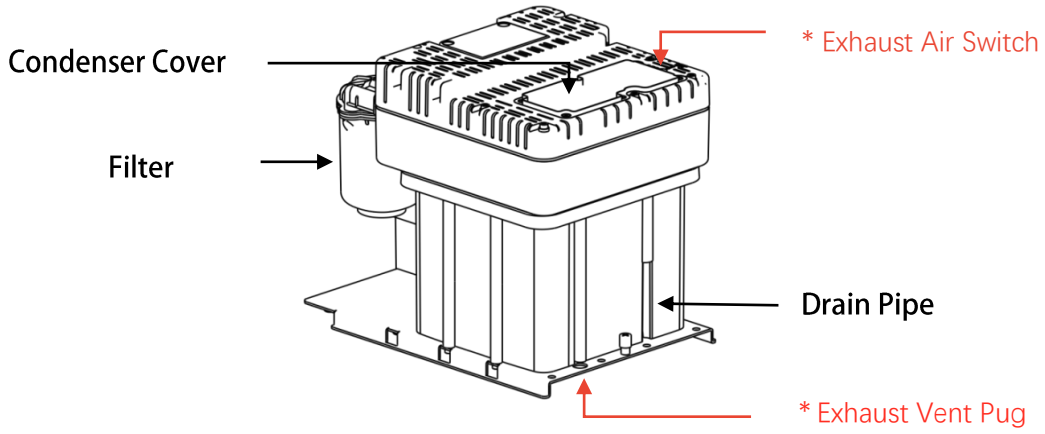
2.4 Printhead





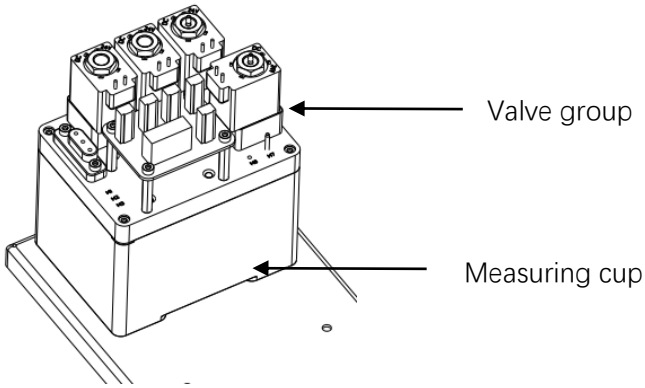
(Head cover in this picture is an optional part.)

2.5 Ink Module



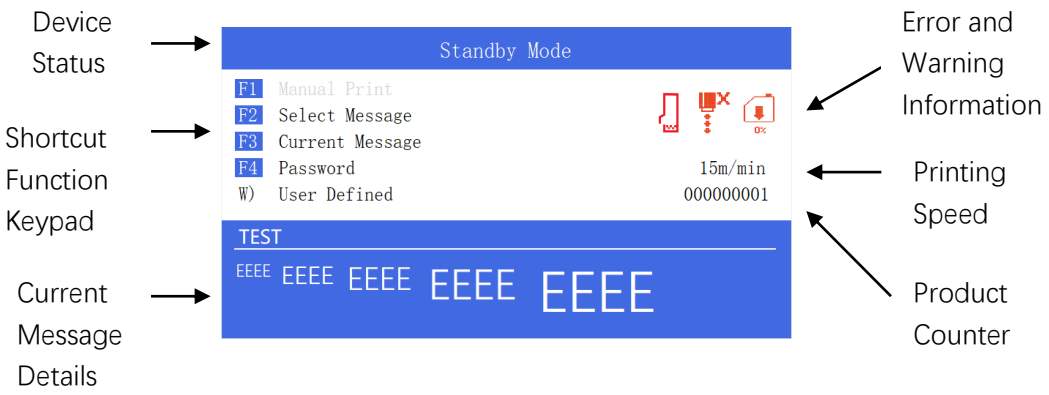
*** Please remove the exhaust vent plug and turn on exhaust air switch before use.**

Ink Core (Front View)



Separate measuring cup module (+45°)

2.6 Main Screen



Device Status: The current status of the printer

Shortcut Function Keypad: Shortcut to the menu

Current Message Details: The name and content of the current message, it's a WYSIWYG message viewer, the content of which is consistent with the content printed by the printer

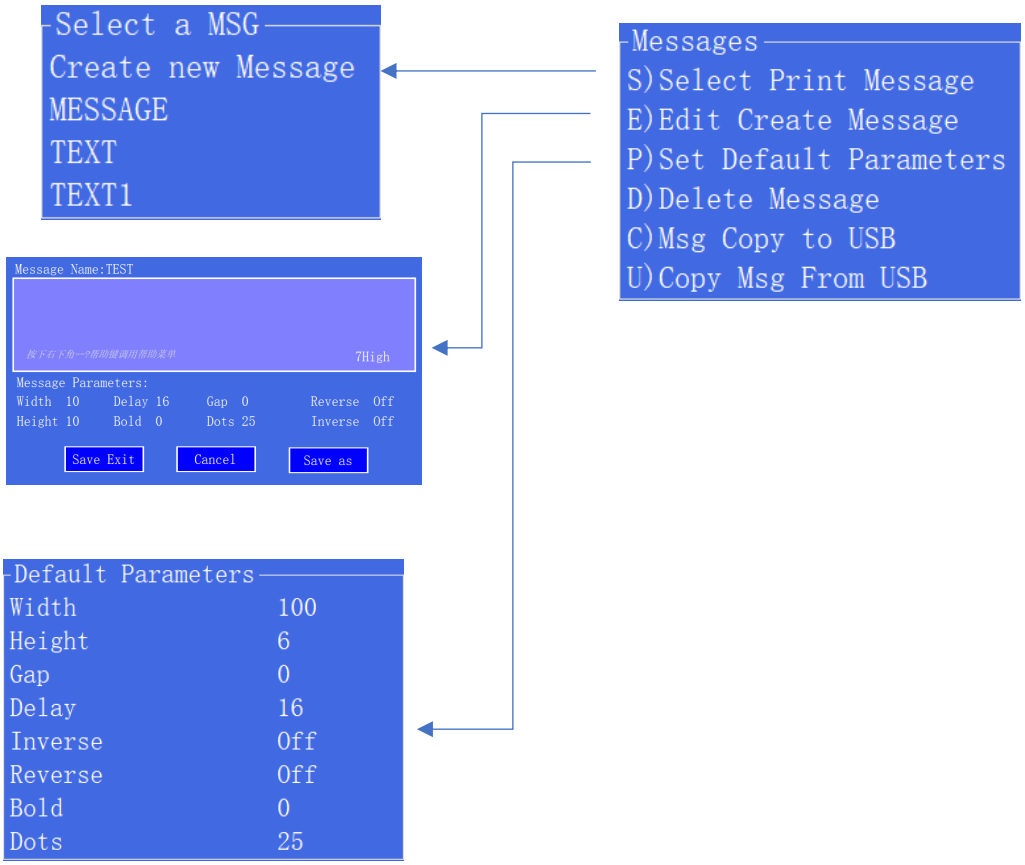
Error and Warning Information: Display consumables, equipment status, warnings and faults icons

Printing Speed: The maximum printing speed for current message parameters

Product Counter: The counter of the cumulative number of prints. Can be reset

2.7 Operation Menu

2.7.1 PRINT DATA PRINT DATA



S) Used to select and recall the stored message

E) Used to create or edit saved messages

P) Used to set the parameters of current message

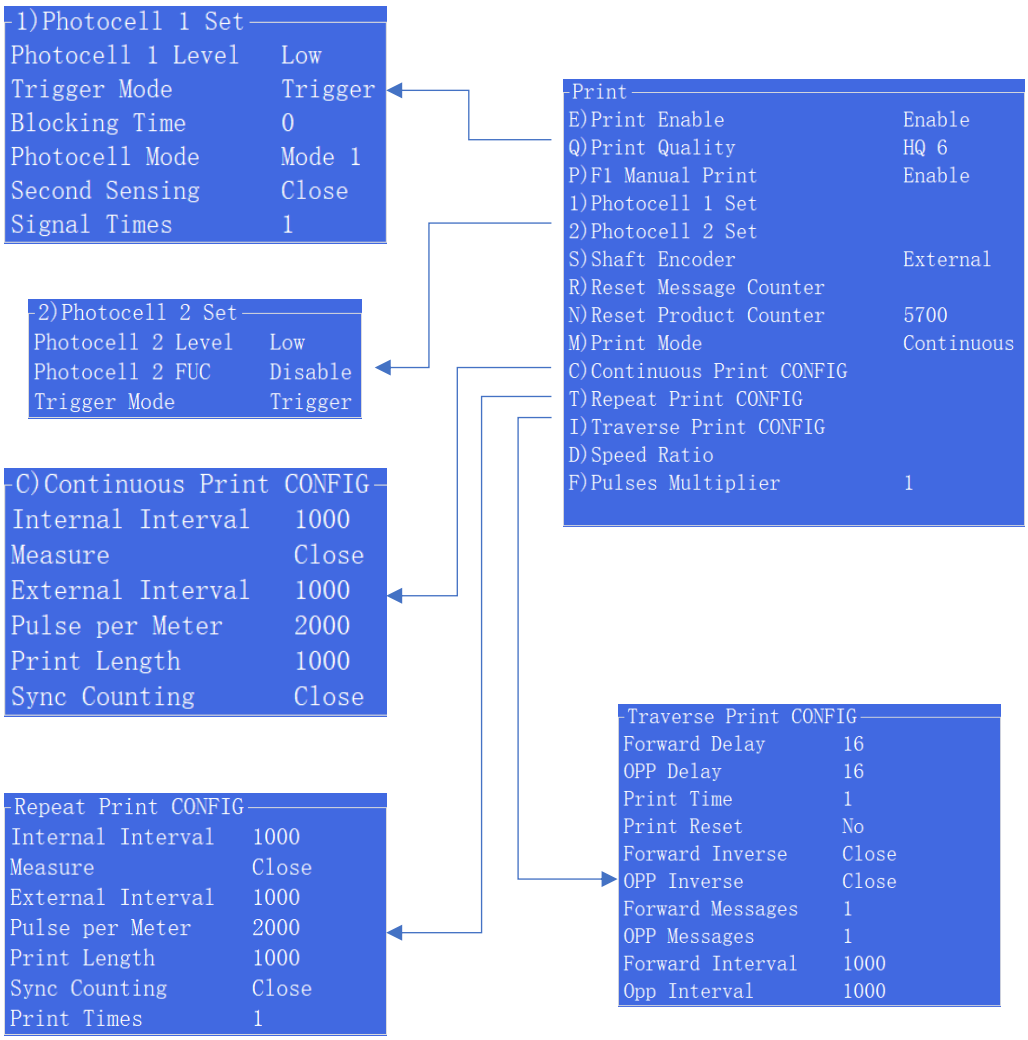
D) Used to delete one or more messages

C) Used to export messages saved in the printer to USB disks

U) Used to import messages from USB disks

*It is recommended that the USB disk file system is in FAT/FA32 format and the capacity is not larger than 8GB.

2.7.2 PRINT SET PRINT SET



E) Used to enable or disable the printing function

Q) Used to select different printing quality, high quality means low speed

P) Allowed to trigger printing manually by pressing F1 on the main screen. Please close this function when printing formally

S) Used to choose working in constant or variable speed state. Usually choose the external shaft encoder in variable speed state

R) Used to reset single or multiple counters

N) Used to reset counter to original value

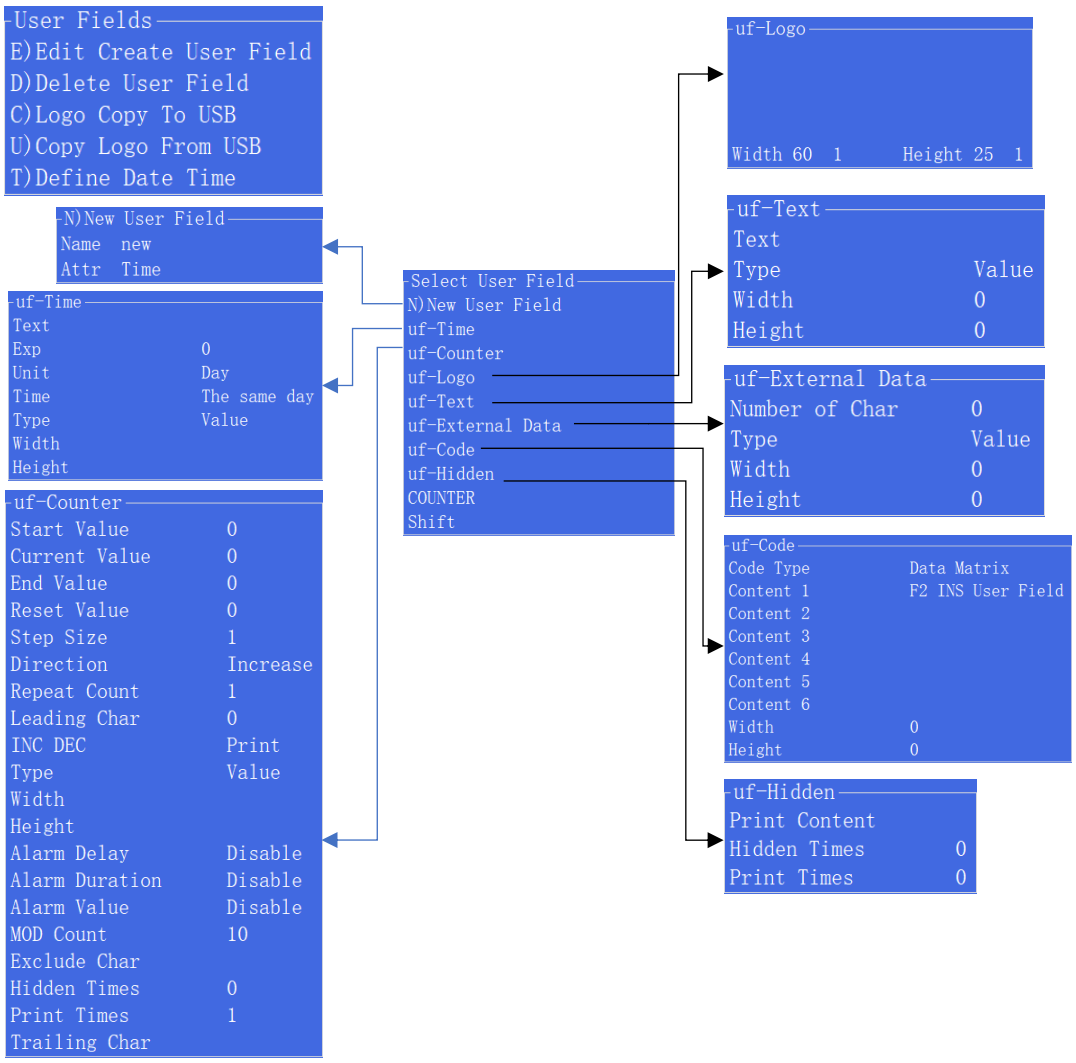
M) Print mode setting see section 3.9

C) T) I) depend on **M)** option to be valid respectively, as described in Section 3.9

D) Used to set the ratio between the actual effective values and the set values for word width, delay and message interval

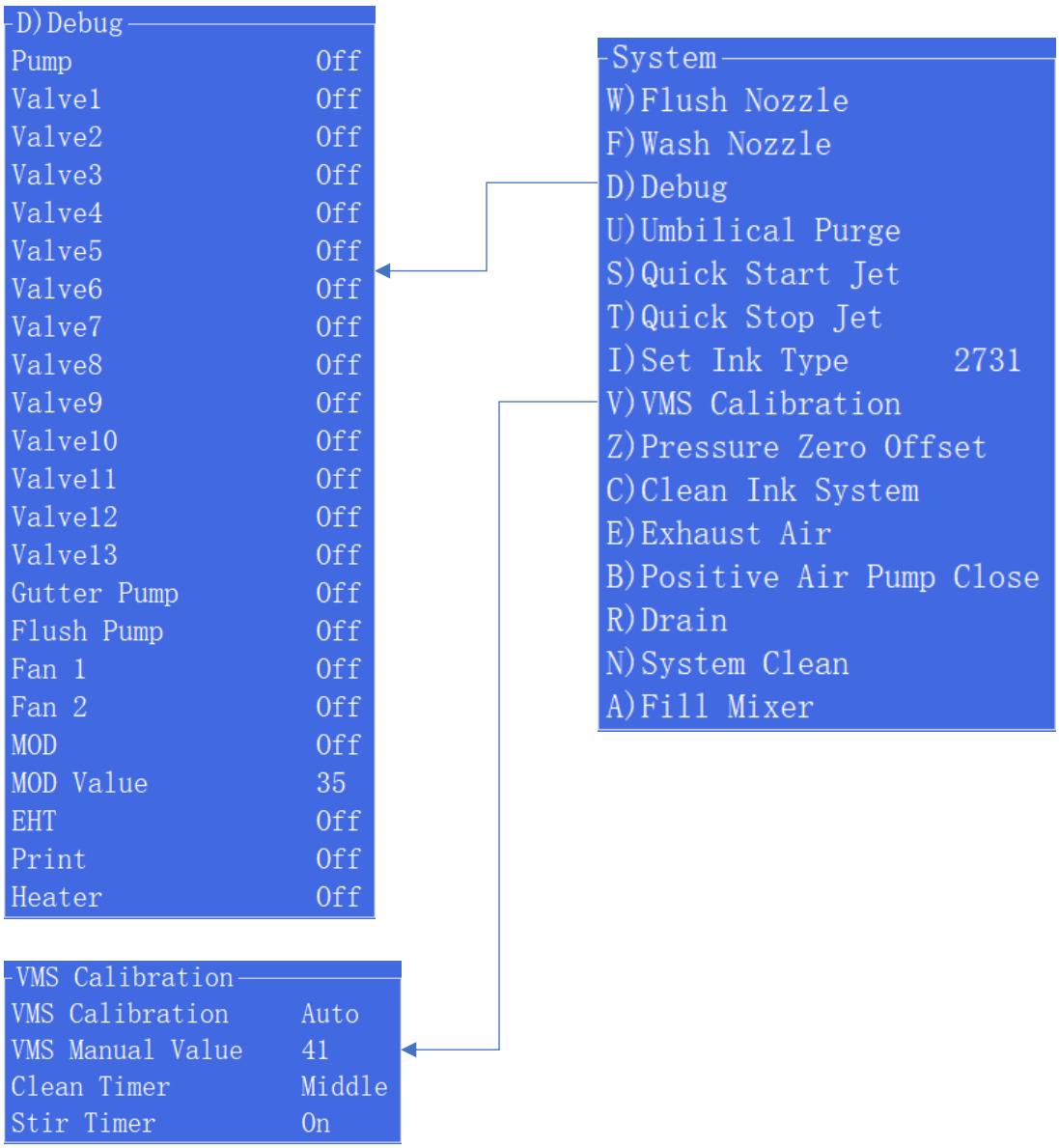
F) Used to set the frequency multiplication calculation of input synchronization signal, such as increasing the precision of delay, interval and other parameters of the encoder with too few PPR (pulse number per round)

2.7.3 USER FIELD



*The fields described in this section are simulated to illustrate the types of fields. The default fields in the printer may be different from those shown in this section. See Section 3.6.1 for the editing of all user fields and the using of COUNTER and Shift.

2.7.4 INK SYSTEM INK SYSTEM



W) Use strong pressure to force open the nozzle outlet (In most cases, need to be used in conjunction with F) program)

F) Common menu for nozzle cleaning, perform according to the screen prompt operation (Refer to Section 4.2)

D) Switch tests for testing controllable functional components. Due to the logic of safe operation, some components may not be enabled at the same time

U) Can be used by professional maintenance personnel only

S) Start the ink jet without a flushing sequence

T) Stop the ink jet without a flushing sequence

I) Select the correct ink type during initial installation to determine the baseline for automatic viscosity control during operation of the printer

V) Only when the VMS calibration is set to automatic, the printer will automatically adjust to the optimal viscosity according to the operating environment. Manual mode is not recommended in most application scenarios

Z) Used to calibrate pump pressure only when the pump pressure display abnormal

C) Can be used by professional maintenance personnel only

E) Can be used by professional maintenance personnel only

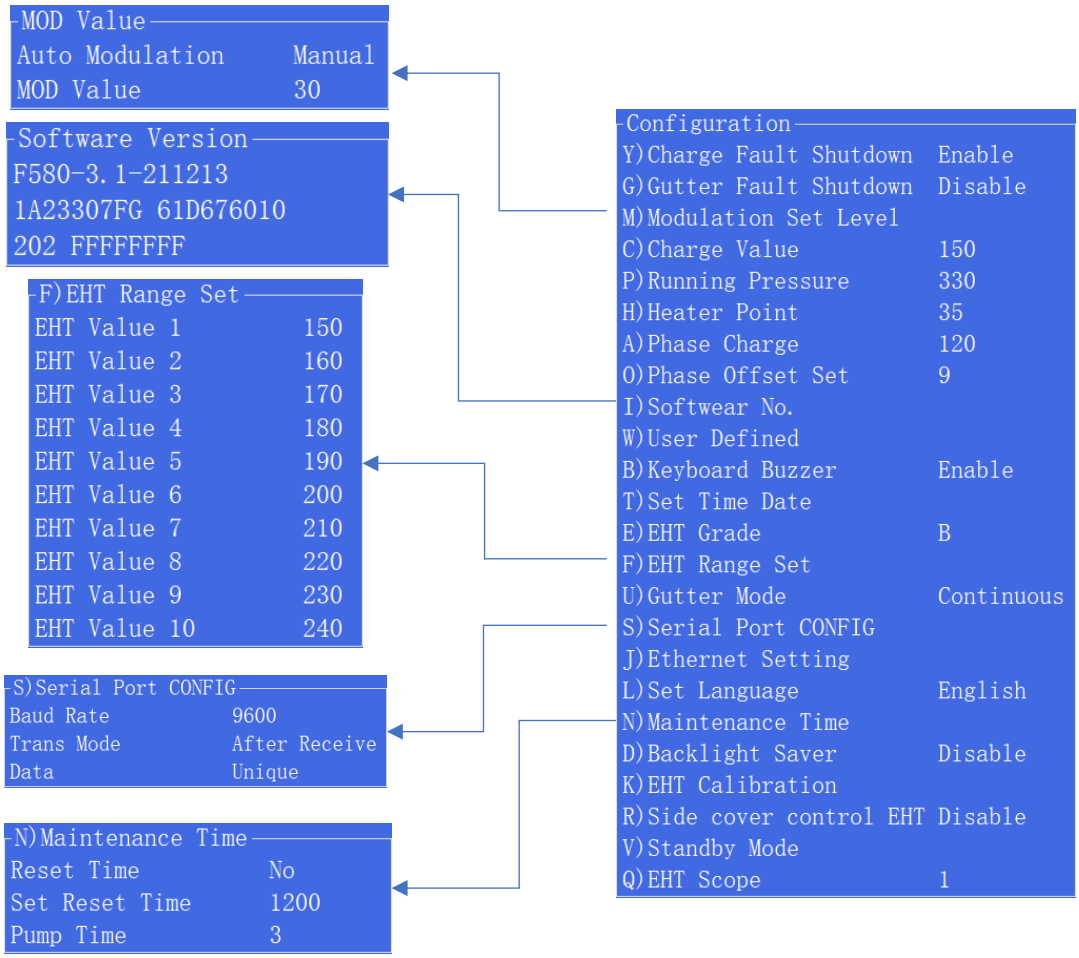
B) This function is only effective for printer with positive air pressure pump

R) Can be used by professional maintenance personnel only

N) Can be used by professional maintenance personnel only

A) Used to draw ink to fill the mixer tank

2.7.5 MACHINE SET



Y) Used to turn off the automatic stopping jet when charge fault. Disable after restart

G) Used to turn off the automatic stopping jet when gutter fault. Disable after restart

M) Used to set modulation value manually

C) Used to adjust the phase charging reference value, not recommended to change it

O) Used to adjust the phase offset value, not recommended to change it

W) Used to customize the main screen W) shortcut function

T) Used to set the system time and date jump time

E) Used to set the alarm threshold of EHT leakage, the larger the value is, the stronger the resistance to EHT is

F) Used to set the EHT range from the EHT module and the grading relationship of the corresponding character height

U) Used to set gutter mode continuous or intermittent. This function is disabled when the environment temperature is lower than 20℃

S) Refer to Section 3.10

L) Used to select system language

N) Used to set or reset the printer maintenance period

D) Used to turn the screen backlight on or off

K) Used to calibrate the EHT output alarm threshold

R) Used to set whether turn off EHT after side cover is opened, when the front head cover is equipped

V) Refer to Section 3.5.1.

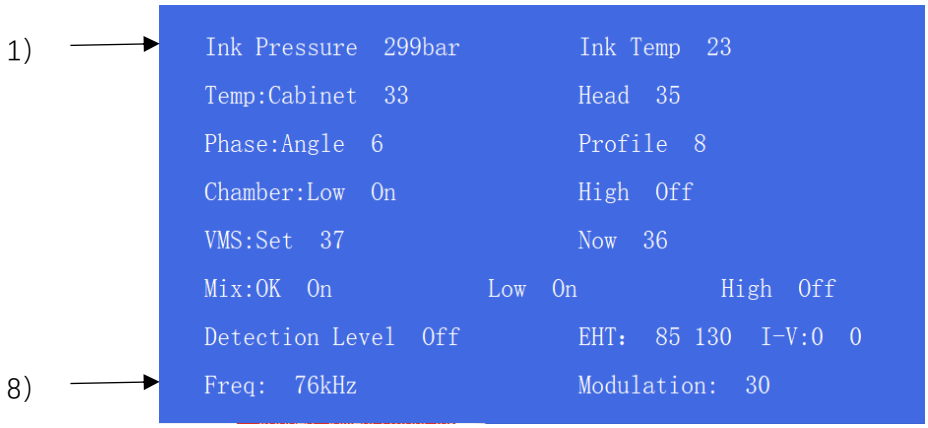
Q) Used to adjust the step size of the EHT booster

Prompt:

All functions introduced in the operation menu in this section are set based on standard software. If other special functions are released or updated, they will not be updated in this manual.

2.7.6 Diagnostic screen

Diagnostic screen can be entered into any time by press the “i” key located at the left bottom keyboard. The screen is as follows:



1) Ink Pressure: Real-time detection; Ink Temp: Real-time detection;

2) Cabinet Temp: Real-time detection; Head Temp: Real-time detection, can be set;

3) Phase Angle and Phase Profile of the working state. Phase Profile in standby mode is about 8;

4) The ink level state of the viscosity chamber. On and Off will alternate when standby;

5) VMS Set value: The optimum point based on temperature and ink type calculated by the system;

   VMS Now value: The measured actual viscosity value;

6) The ink level state in the mixer tank. Normal is OK On, Low On and High Off.

7) Detection Level: The liquid level state of the cavity tank, On or Off; EHT: EHT range from 85 to 130; I-V: The time for ink and solvent to fill the cavity tank respectively;

8) Freq: The crystal frequency is 76kHz; Modulation: The set value of modulation is 30.

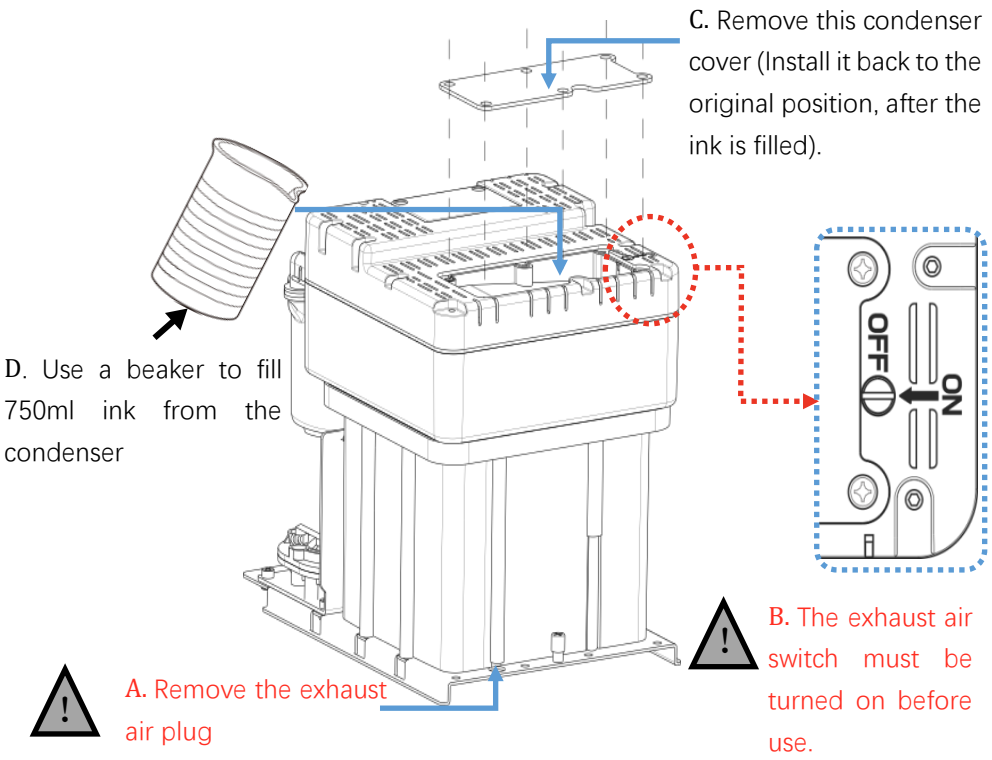
3 Printer Operation

3.1 Commission

Printer needs to be filled with ink and exhaust air before use. Steps are as follows:

1) Shake well the ink that needs to be added into the ink system (shake for more than 10 minutes);

2) Open the lower cabin door, pull out the ink system, and fill 750ml fully shaken ink into the mixer by a beaker in the order A, B,* C, D, as shown below;



3) Install the correct solvent to the unique slot position and close the lower cabin door;

4) Turn on the power supply of the machine;

5) Enter the 

Menu and perform **E) Exhaust Air** program. Ink will come from the gutter, so open the printer head cover and place a beaker under the printhead to prevent pollution.

6) Clean the printhead and use a balloon to dry it, so that the preparation for the first use is completed.

* During normal use of the printer, the exhaust vent plug **A** needs to be removed, and the exhaust air switch **B** needs to be opened , otherwise it will cause printer failure.

3.2 Start The Printer

3.2.1 Preparation before powering up

This machine needs to use 100V-240V/ 50-60Hz AC power supply and rated power is 120W. Please confirm the power supply parameters and ensure good grounding before connecting the power supply.

Before turning on the main power supply, check whether the nozzle needs to be cleaned and blow-dried. For details on how to clean the nozzle, see section 4.2.

Warning:

To avoid accidental deviation of inkjet and possibility of entering into eyes or other sensitive parts, please place the nozzle towards solvent recovery bottle or other direction will not harm the sensitive parts of human body before opening the inkjet.

3.3 Initial settings

Before starting jet, complete the following initial settings:

1) Select ink type

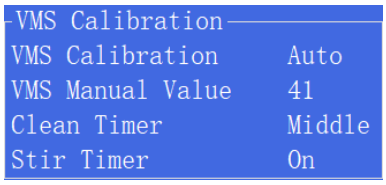
Enter 

>- “Set Ink Type” and select the installed ink type.

2) Confirm automatic viscosity on

Enter 

>- “VMS Calibration” and set VMS Calibration to Auto.



3) EHT calibration

Enter 

>- “EHT Calibration” and perform the calibration as prompted.

3.3.1 Start Inkjet

Turn on the main power switch on the left side of the cabinet and press 

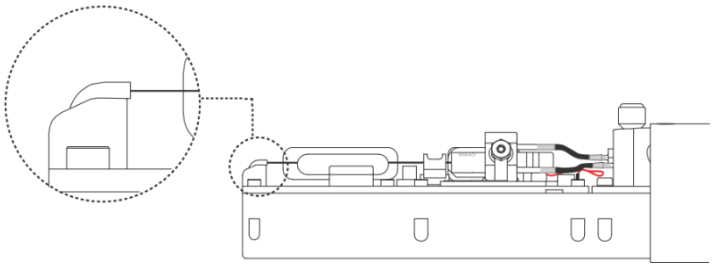
button. Then the screen shows that the inkjet is on and the nozzle status icon  will flash. After 3-5 minutes, if the icon does not flash, it means the normal startup is complete.

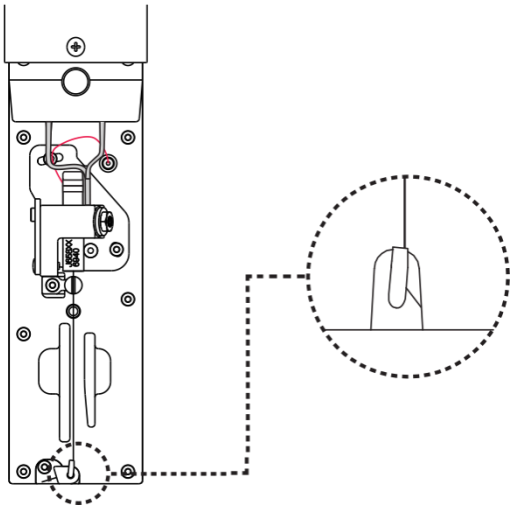
During the process of waiting for starting jet, it may be necessary to check the operating condition of the nozzle.

1) Loosen the printhead screw and move out the nozzle. (Clamshell printhead can be directly clamshell to expose the nozzle).

2) Check the inkjet enters the gutter sensing tube.

The inkjet is at the central position of the gutter pipe.





The inkjet is about 1/4 of the right side of the gutter pipe.

3) Check the breakpoint is normal.

The breakpoint is generated after the ink jet printer has started normally. The breakpoint state directly influences the jet printing effect and jet printing durability.

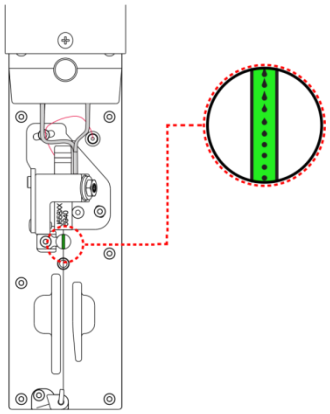
Good breakpoint roughly depends on the following three factors:

- Appropriate and stable pressure
- Correct ink viscosity
- Correct ink dot modulation value

The observation method is as follows:

① Take out the magnifying glass in the standard configuration, and place it about 15mm above the green LED lamp of the charge electrode.

② Slightly adjust the viewing distance of the magnifying glass vertically to observe the breakpoint in the following figure:



③ The breakpoint is about to break in the middle of the charge electrode. The shape of the breakpoint before breaking can be referred to the following figure:

Breakpoint adjustment method:

The adjustment of breakpoints can be performed through MACHINE SET "Modulation Set Level" and disable "Charge Fault Shutdown" first.

① Find the starting point **M0**

Add the modulation value gradually in unit of 1 with starting from 5, until three complete and good breakpoints can be observed in the charge electrode, and the position where the ink points start splitting is in the middle of the charge electrode. This modulation value is the starting point.

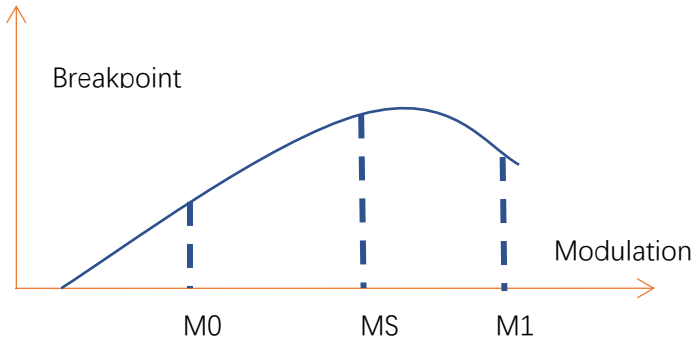
② Find the turning point **M1**

Continue to increase the modulation value until the incomplete split ink tail at the entrance of the charge electrode is not fused to the parent but separated longer and longer, and the position where the inkjet begins to split is still in the charge electrode, indicating that the modulation value has reached the turning point.

③ Determine the setting point **MS**

Recommend the final modulation value setting MS = （M0+M1）/2.

Breakpoint and modulation value relations diagrams



④ If the inkjet and breakpoint are normal, restore the printhead cover.

Prompt:

To avoid shutdown during inkjet adjustment and modulation value modification, close "Charge Fault Shutdown" and "Gutter Fault Shutdown" in MACHINE SET .

3.3.2 Start Printing

After "Ready" is displayed on the main screen, select information to print by pressing F2 button.

3.4 Add ink and solvent

3.4.1 Add ink

The ink consumption of the machine is related to the actual number of characters printed. When the ink level in the mixer is lower than the Ok level in the mixer, the event of adding ink will be triggered, and the screen displays the following prompt:

```
Please unplug the solvent cartridge,
insert a valid shaken ink cartridge,
and cut off the ink air vent.
  ENTER/ESC
```

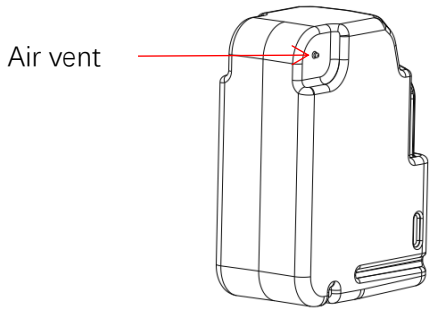


Figure 3-3-1

Prompt explanation:

1) Before inserting the ink cartridge, please keep shaking or vibrating for at least 10 minutes. It is recommended to use an electric oscillator to shake ink well.

2) The solvent cartridge needs to be temporarily removed from the slot so that the only slot position can be transferred to the ink cartridge that has just been shaken.

3) After the ink cartridge is inserted into the card slot, the air vent should be cut off immediately (Figure 3-3-1) so that the ink can be fully added to the mixer.

4) After the ink in the ink cartridge has been completely drained, replace the solvent cartridge back to the slot as prompted.

Note: Under normal circumstances, the ink will be drained all at once unless during the ink adding process, the ink level in the mixer reaches a high liquid level, and the following prompt will appear:

```
The mixer is full, please remove the
ink cartridge and insert a valid
solvent cartridge.
  ENTER/ESC
```

3.4.2 Add solvent

When the ink viscosity in the mixer is high, the event of solvent addition will be triggered.

The remaining capacity of the solvent will be calculated according to the measurement of each addition, and this capacity value will be displayed on the screen in real time.

* Note: The display of all solvent remaining capacity is for reference only, subject to the actual remaining.

3.5 Stop printing

The following four cases cover the disposal steps of shutdown machine in different scenarios that need to be dealt with in daily use.

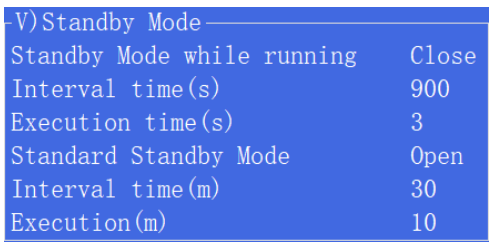
3.5.1 Standby mode

In this mode, the power supply need be kept on, but the inkjet do not need be kept on.

Enter 

and turn on **V) Standby mode**. System will enter standby mode, which will ensure that the ink in the mixer is periodically stirred.

The standard standby mode is set as follows: stir every 30 minutes for 10 minutes.



***Note: This mode is strongly recommended when site conditions are available.**

Description of two standby modes

1) Standby Mode while running

This mode is enabled when the inkjet is open and the ink stirring program will be periodically performed when printing is not performed.

2) Standard Standby Mode

This mode enables the ink stirring program when the power is on but the inkjet is not.

3.5.2 Stop normally

1) After pressing 

button, the inkjet will be stopped and cleaned by default, and the nozzle status icon  keeps flashing for about four minutes.

2) After the nozzle status icon  stops flashing, open the head cover and observe whether the printhead needs to be cleaned. For specific cleaning steps, see section 4.2.

3) Do not cut off the power supply before the nozzle status icon  turns red. Otherwise, some pipes may be blocked, which may affect the normal running of the printer or cause other serious faults.

Warning:

Switching the machine many times in a short period of time will affect the normal viscosity of ink, and may lead to poor printing effect, or lead to other faults.

3.5.3 Stop accidentally

In case of unexpected power failure resulting in abnormal shutdown of the printer, please restart the printer immediately after power-on, and let it clean and shut down normally after planned shutdown, otherwise part of the printer pipeline may be blocked, and may cause permanent damage to the printer.

3.5.4 Stop for a long time

If the printer is to be shut down for a long time, please inform professional maintenance engineers to seal up the printer. Any excessively long outage may result in an irreparable failure.

Warning:

Printers for long-term outage is necessary to pre-empty the ink and clean the entire ink system, including but not limited to mixers, umbilicals, valves, nozzles, gutter tubes and other important parts.

3.6 Edit/ Create Message

3.6.1 Edit/ Create User Field

Except for creating message through keyboard inputting, it may also consist of the following elements (hereinafter collectively referred to as user areas):

1) Time: Message elements such as time and date can be automatically updated with the system
2) Counter: A counter that can increase or decrease with preset rules
3) Logo: Black and white binary pattern with keyboard input, USB import or remote transmission
4) Text: Fixed text input by keyboard
5) External Data: Data and text transmitted remotely
6) Code: Used to combine time, text and counter into a code
7) Hidden: Used to display and hide the input text message according to the preset rule
8) Shift: System user field, used to set code of shift

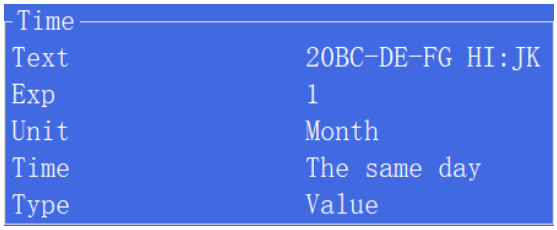
Time

When representing the date and time, message should be edited according to the following code rules to get the format that meets requirements:

Code	Definition	Code	Definition
A	Monday to Sunday	JK	Minute
BC	Year	LM	Second
DE	Month	OO	Week
FG	Day	PPP	Day
HI	Hour		

*Note: Only in time user field, the above codes will correspond to the time message. In other user fields, they represent only the character itself.

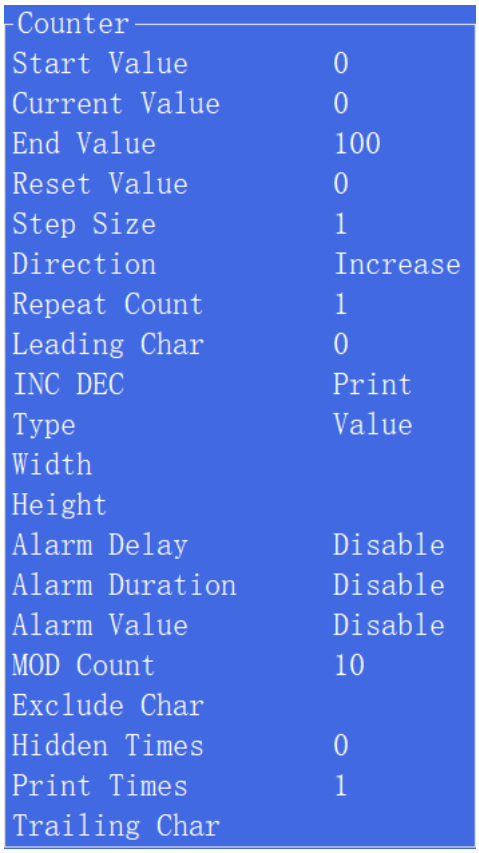
For details about how to generate the time user field, see the following settings:



Assume that the current date and time of the system is: 2022-03-04 05:05. Because the expiration unit is set to 1 month above, the code “20BC-DE-FG HI:JK” represents the time and date: 2022-04-04 05:06 (delayed one month). And if time is set to “One day before”, then the code represents the time and date: 2022-04-03 05:06 (delayed one month less one day). If the expiration is set to 0, the code represents the time and date: 2022-03-04 05:06 (equal to the current system time and date).

Counter

Refer to the following settings to create or edit a counter:



Start Value: Start value of the counter when cycle enabled

Current Value: Initial value of the counter enabled this time

End Value: End value of the counter when cycle enabled

Reset Value: Value to be reset when using “CNT Res” function of Photocell 2

Step Size: Step size of increasing or decreasing the counter

Direction: Option of increase or decrease

Repeat Count: Repeat times for each counter value

Leading Char: Char before the counter to ensure equal length of counter contents

INC/DEC: Event triggering the counter increase or decrease

Type: Presentation of the counter

Width: **Set the width of code when setting the printing type to code*

Height: **Set the height of code when setting the printing type to code*

Alarm Delay: Set delay of the counter alarm (System COUNTER only)

Alarm Duration: Set duration of the counter alarm (System COUNTER only)

Alarm Value: Set value of the counter alarm (System COUNTER only)

MOD Count: Optional 10、16、26、32、34、36

Exclude Char: 4 or 2 chars can be customized to not print when selecting 32 or 34

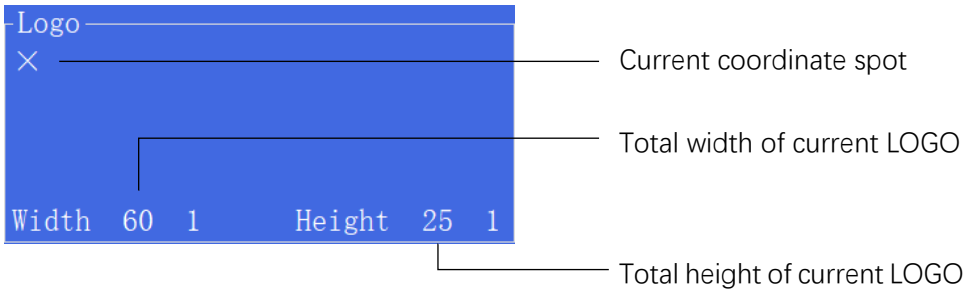
Hidden Times: Set times this counter needs to be hidden in print message

Print Times: Set times this counter needs to be printed in print message

Trailing Char: Set the suffix that follows the counter. Default is null

Logo

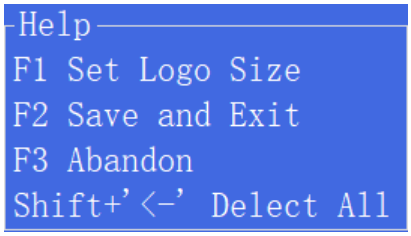
Logo user field can be modified or created through the keyboard. Pattern imported externally must ensure that the height does not exceed the maximum printing height and the width does not exceed 255 pixels. The pattern format must be binary black and white.



The way to move the cursor and fill or clear the pixels as follows:

Key combination	Function
	Move the cursor by a dot
shift +	Move the cursor by a dot, and fill the dot
ctrl +	Move the cursor by a dot, and delete the dot
	Reverse the current dot, draw dot / delete dot

After the pattern is edited, press ? to show Help menu:

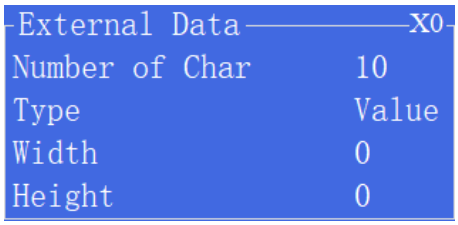


Press F2 to complete editing and save it.

Text

Text for fixed format and content. In contrast to keyboard input, the text user field can be converted to code format and nested in the code user field.

External Data



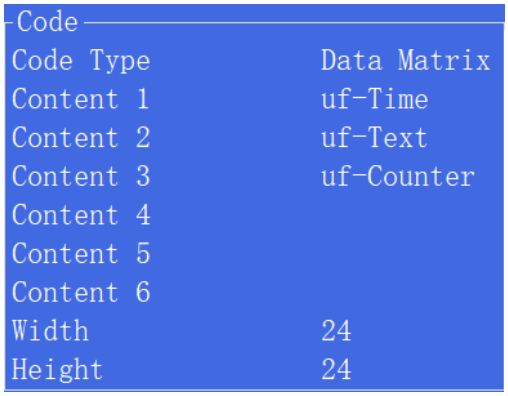
Number of Char: Indicates the number of bytes allowed for transmitting. If the length exceeds the threshold, the message will be automatically intercepted. This parameter is recommended to set to the maximum possible length for receiving message. The maximum value is 50.

X0: Indicates that the address space occupied by the current user field is X0. The system can provide four address spaces:X0, X1, X2 and X3.

Code

Code user field can be used to nest multiple user fields that have already been created to enable different user fields to form a code user field and present it in different formats.

Suppose that a code user field that contains time message (uf-Time), text message (uf-Text) and counter message (uf-Counter), with the name of the user field in parentheses needs to be created. The code user filed can be set as follows:



Overall presentation format of the user area

(F2 INS User Field) Content 1

(F2 INS User Field) Content 2

(F2 INS User Field) Content 3

DM code width of user field (Must be set)

DM code width of user field (Must be set)

Hidden

Hidden user field is used to meet the regular cycle of printing and non-printing a section of text. The following settings will not display “ABC123” once every three times during printing:

System user field (COUNTER/SHIFT)

In addition to its own COUNTER user field for certain special functions, the system also includes a shift user area.

The setting method of shift user field is as follows:

Shifts Set

No.	Start	END	Code
1	00:00	07:59	A
2	08:00	17:59	B
3	18:00	23:59	C
4	--:--	--:--	-
5	--:--	--:--	-
6	--:--	--:--	-
7	--:--	--:--	-
8	--:--	--:--	-

Shift A: from 00:00 to 08:00
Shift B: from 08:00 to 18:00
Shift C: from 18:00 to 24:00

**Note: The total duration of all setting periods cannot exceed 24 hours.*

Warning:

The width and height in all user fields must be set correctly when setting user field to print in code type.

Attachment: Available codes and specifications built in the system

QR code and barcode system supported by this model are as follows: QR Code (Figure 1), DataMatrix (Figure 2), Code39 (Figure 3), Code128 (Figure 4), EAN8 (Figure 5), EAN13 (Figure 6), EAN128 (Figure 7), UPC-A (Figure 8).


Figure(1)


Figure(2)


Figure(3)


Figure(4)

Figure(5)

Figure(6)

Figure(7)

Figure(8)

Attachment: Common code width and height (in pixels)

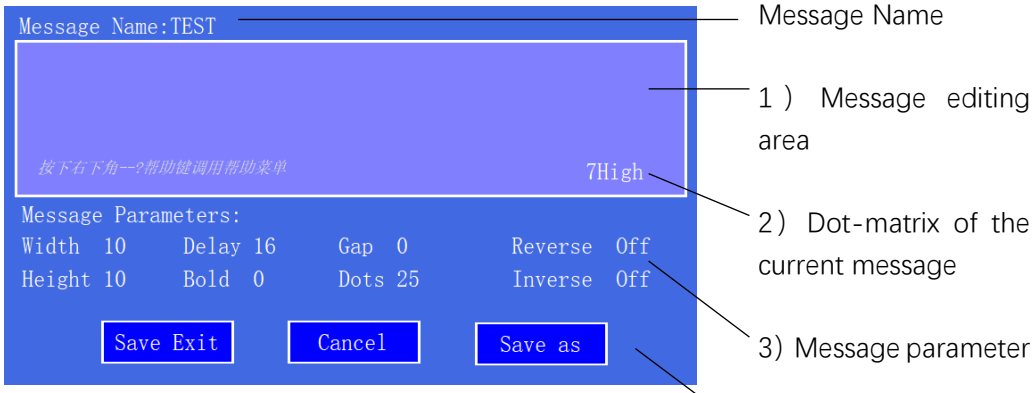
- DataMatrix supports 10x10, 12x12, 14x14, 16x16, 18x18, 20x20, 22x22, 24x24, 26x26, 32x32, 8x18, 8x32, 12x26 sizes (H x W).
- QR Code supports 21x21、25x25、29x29、33x33 sizes (H x W).
- If “Size is too small” or “Coding error” is displayed, modify the height and width to large size and save the settings again.
- Code39, Code128 are variable length bar codes.
- EAN8 can encode a string of 7 characters. EAN13 can encode a string of 12 characters. The last bit is the check bit, which is automatically calculated from the previous 7 or 12 digits.
- UPC-A can encode 11 digits, and the 12th digit is check digit, which is automatically generated.

3.6.2 Edit/ Create Message

After the user field is created, press 

on the main screen to modify the current message, or press 

in the keyboard function bar, and select Edit/Create Message to enter message editing area.



Message Name

1） Message editing area

2） Dot-matrix of the current message

3) Message parameter

4） Button commonly used

1） All user fields in the message can be inserted through F2 ;

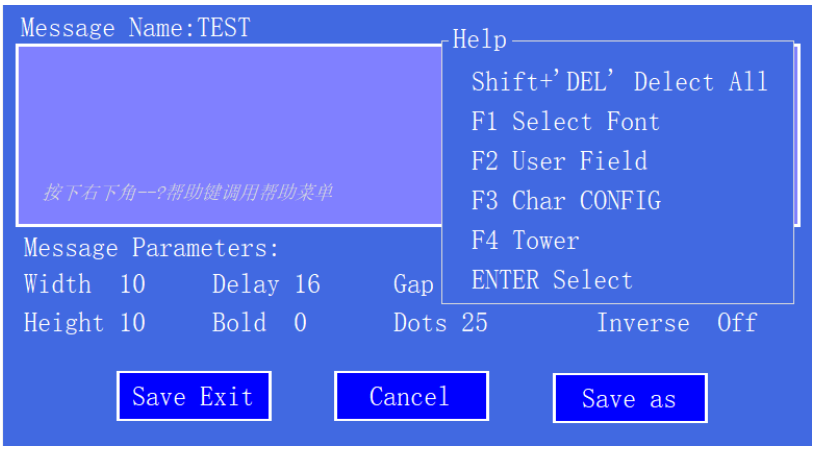
2） The dot matrix format can be selected through F1 , and Fn button can choose Chinese;

3） Modification method of message parameters: input directly on the keyboard or modify by +/- key on the keyboard;

4） Use Tab button to select “Save Exit” and use ◄ ► button to select other function key.

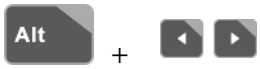
Other function:

1） Press ? to display the help menu



2) Cursor movement

+ key, move the cursor in units of one pixel.



+ key, move the cursor left and right in units of 100 pixels.

3) Anti-white display

+ key, select the characters to be adjusted

3.6.3 Modify message parameters

Parameter	Range	Function
Width	1-255	Actual printing message width: the smaller the width value set, the faster the printer's printing speed is.
Height	1-10	Actual printing message height: the bigger the height value set, the higher the characters printed.
Bold	0-7	The bold multiple of the vertical stroke of the actual printing message.
Delay	3-10000	The time interval between the trigger signal, such as the photocell, and the start of prinhint.
Gap	0-8	The stroke interval between characters.
Reverse	On/Off	Adjust all characters of the message jet printing up/ down direction without changing the horizontal ordering

Inverse	On/Off	Adjust all characters of the message jet printing left/ right direction and the horizontal ordering is also inverted
Dots	5-34* optional	Printing dot matrix height, *the highest dot matrix of some models is 25

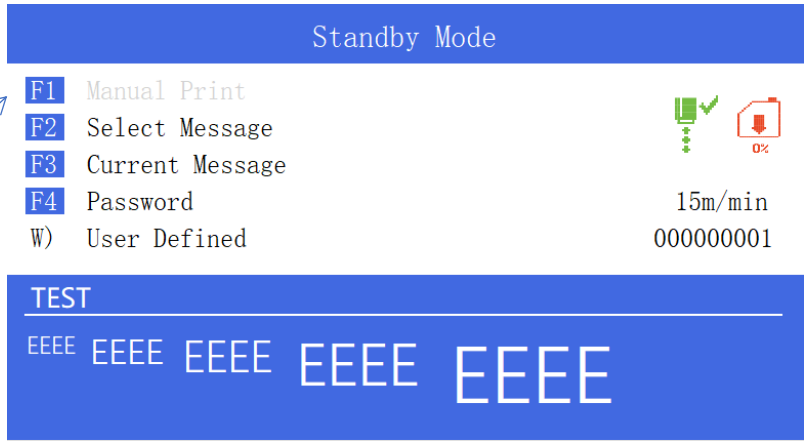
Prompt:

1. The new message uses Default Parameters in PRINT DATA by default.
2. Message parameters, content and format follow the message name.

3.7 Manual Print

Enable F1 Manual Print in PRINT SET. After returning to the main screen, F1 shortcut key has been enabled. At this time, each press F1 can achieve a manual printing.

Only after enable "F1 Manual Print", the F1 shortcut key will be available.



Warning:

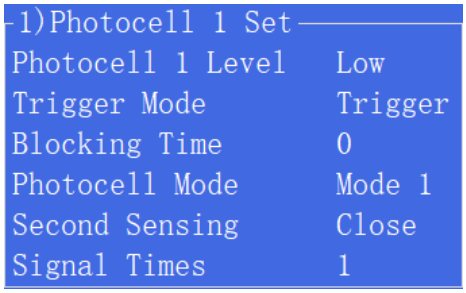
After enable "F1 Manual Print", the printing trigger function of Photocell 1 will be disabled. Therefore, when using photocell 1 to trigger printing, be sure to turn off "F1 Manual Print".

3.8 Photocell usage

3.8.1 Photocell 1

Press 

to open "Photocell 1 Set"



Photocell Level: Low level/ High level optional
Trigger Mode: Trigger/ Gate optional
Blocking Time: To avoid clutter or multiple triggers
Photocell Mode: Mode 1 is more sensitive to signals, while Mode 2 is ineffective to signals with small pulse width
Second Sensing: Can choose to open and pop up a prompt when second sensing occurs
Signal Times: Set the number of sensing before the trigger is effective

Warning:

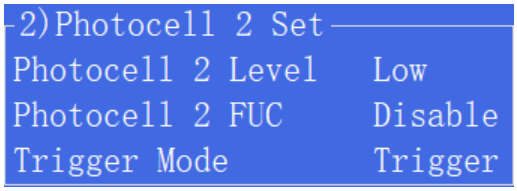
If photocell 1 is available or cannot receive signals, please check whether "F1 Manual Print" is disabled.

Warning:

The output power of the photocell 1 port is less than 6W. Ensure that the electrical parameters of the printer are matched.

3.8.2 Photocell 2

Press PRINT SET to open “Photocell 2 Set”

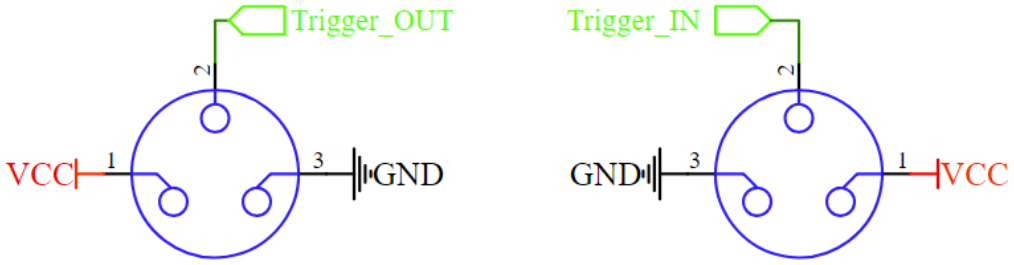


Photocell 2 FUC: When photocell 2 is connected, Disable/ CNT Res/ Rev Ctrl/ Reset Print/ OPP Print and CNT Prompt Reset are optional.

Warning:

The output power of the photocell 2 port is less than 6W. Ensure that the electrical parameters of the printer are matched.

Photocell connection diagram



Photocell direction　　Cabinet direction

Electrical parameters of photocell

Operating voltage	**+5~24V**
Rated current	**<100MA**
Output type	**Open collector**

3.8.3 Encoder usage

To match the machine application, select open collector or push-pull shaft encoder when connecting external encoder.

Press PRINT SET to set “Shaft Encoder”, Internal and External are optional.

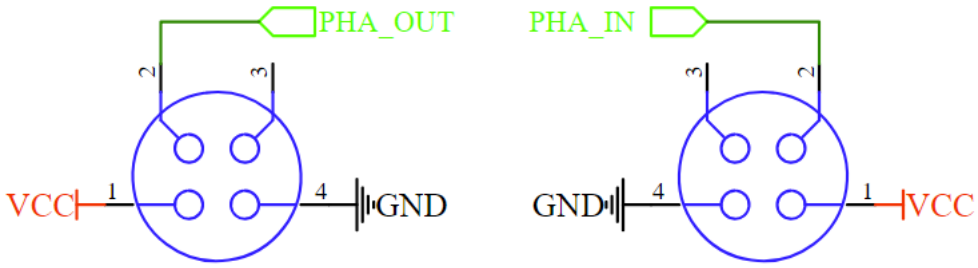
External: Uses external pulse signal generator (such as shaft encoder) to realize the synchronization of printing speed and product moving speed, so as to maintain the consistency of message printing width. Generally used for variable speed production line.

Internal: Uses system internal clock frequency as the synchronization signal of the printer, generally used for a fixed uniform production line.

Warning:

The output power of the encoder port is less than 6W. Ensure that the electrical parameters of the printer are matched.

Encoder connection diagram



Encoder direction　　Cabinet direction

Electrical parameters of encoder

Operating voltage	**+5~24V**
Rated current	**<100MA**
Output type	**Open collector**

3.9 Print Mode Setting

3.9.1 Single Print Mode

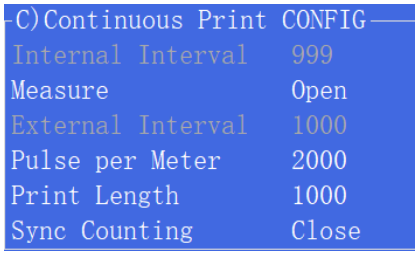
Press PRINT SET and set “Print Mode” to “Single”. At this point each trigger printing will only produce a single printing effect.

If “Print Mode” is set to Continuous, Repeat, or Traverse, follow the instructions below to set the parameters.

***Note: The selection of "Shaft Encoder" affects the validity of the menu in non-single printing mode. This manual takes "Shaft Encoder" as "External" as an example.**

3.9.2 Continuous Print Mode

***Note: This section takes effect only when "Print Mode" is set to "Continuous".**



Enable when "Shaft Encoder" is set to "Internal"
Measure mode on
Enable when Measure mode off
Set resolution*
Set unit length (mm)
Sync Counting function

**Note: Resolution can be set by calculating the number of valid pulses printer received per unit length in the direction of operation. It can also be calculated by setting the initial value as shown in the figure and measuring the actual value of "Print Length". For example, if the actual measured spacing is 750mm, the actual resolution should be 2000*1000/750=2667 according to the set "Print Length" of 1000mm.*

****Note: Sync Counting function can be used in the event of a faulty shutdown or planned shutdown of the printer, and the counter in the message remains updating with the operation of the external shaft encoder.**

3.9.3 Repeat Print Mode

***Note: This section takes effect only when "Print Mode" is set to "Repeat".**

Repeat Print CONFIG	
Internal Interval	999
Measure	Open
External Interval	1000
Pulse per Meter	2000
Print Length	1000
Sync Counting	Close
Print Times	1

Enable when "Shaft Encoder" is set to "Internal"
Measure mode on
Enable when Measure mode off
Set resolution*
Set unit length (mm)
Sync Counting function
The maximum times of printing allowed

Note: Resolution and Sync Counting function settings refer to "Continuous Print Mode".

3.9.4 Traverse Print Mode

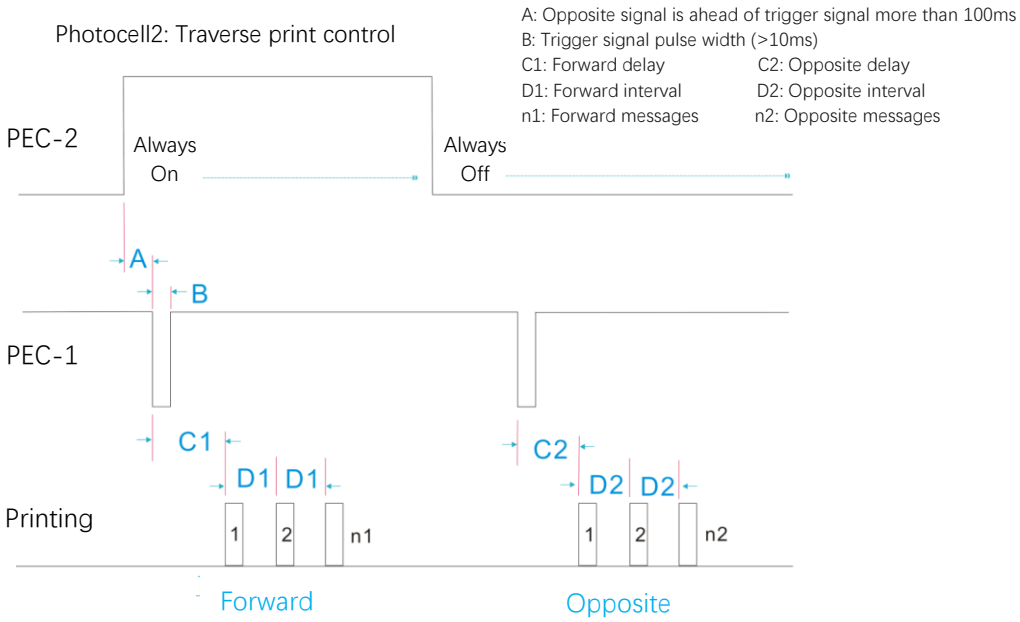
***Note: This section takes effect only when "Print Mode" is set to "Traverse".**

Traverse Print CONFIG	
Forward Delay	10
OPP Delay	10
Print Time	1
Ptint Reset	No
Forward Inverse	Close
OPP Inverse	Close
Forward Messages	1
OPP Messages	1
Forward Interval	1000
OPP Internal	1000

Refer to the following sequence diagram for the definition of the setting parameters

Commonly used traverse print mode:

As shown in the sequence diagram below, the photocell 2 is set as "Rev Ctrl" to realize the traverse printing function.



Traverse print mode reset:

- *Manual reset*

Enter Traverse Print CONFIG menu, and change Print Reset to Yes. Then reset will be completed after next printing.

- *IO reset*

Enter Photocell 2 Set menu, and set Photocell 2 FUC to Reset Print. And complete resetting after receiving IO signal.

Prompt:

To avoid sequence errors, please ensure that the signal duration of photocell 2 can cover each printing process, and ensure that the trigger signal of photocell 1 is unique and will not be triggered by mistake during printing.

3.10External data transmission setting

1) Serial port cable connection

Note: If there is no communication cable installed on the printer, please first order and install the communication cable (PN: C4.CP.QT0003A in Figure 1) and insert it into the communication port on the mainboard.

Figure 1 RS232 Serial Port Cable

Figure 2 Insert into J1 interface

The connection with COM port of PC is shown in Figure 3.

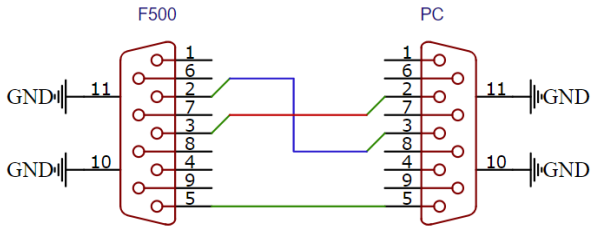


Figure 3 Communication connection

2) Printer Serial Port CONFIG

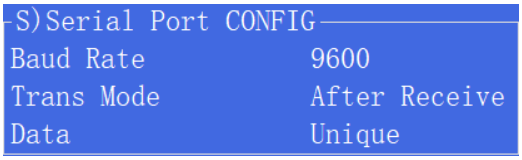
Enter MACHINE SET >- "Serial Port CONFIG".

Serial Setting

Baud Rate: The default value is 9600. Other values are optional.

Trans Mode: The default value is "After Receive", and the optional value is "After Print". (Different data transmission timing can be selected as required.)

Data: The default value is "Unique". This value can also be "the Latest" and "Latest& Once".



3) Communication test

Using the serial debugging tool can send the following instruction to the printer to verify the availability of communication.

Send instruction: <7E> 04000000FE7C<0D>

If the printer feedback received is similar to <7E> 0400????????<0D>, the communication is normal. ("?" in the instruction can be any character)

Note: <7E> and <0D> represent the hexadecimal byte 0x7E and 0x0D respectively.

Prompt:

Please refer to the communication manual for more instructions.

4 Daily maintenance

Warning:

To avoid unexpected damage to the equipment, only trained and approved personnel are allowed to perform maintenance and repair.

Warning:

To avoid injury to human body and meet the requirements of flame-proof and explosion-proof, all maintenance and maintenance personnel should pay attention to the existence of high voltage in the circuit of the machine and the igniting effect of high voltage source on sensitive heat source.

Warning:

To avoid static electricity damage to the circuit, please remove the static electricity from human body and tools before contacting the circuit.

4.1 Failure and warning

Warning: Indicates that the operating parameters or status of the machine are beyond the normal range but not serious or hazardous enough to stop the operation.

Failure: Indicates that a serious error has occurred and the machine will stop running immediately or has stopped running.

4.1.1 Warning icons and meanings

Icon	Name	Instructions for warning
	Jet printing operation	Inkjet open, EHT open, ready for printing
	Jet printing stop	Inkjet close
	Insufficient solvent	Solvent cartridge empty
	Insufficient ink	Ink cartridge empty
	Print head cover is open	The printhead cover is open
	Viscosity fault	The deviation between the actual viscosity and the theoretical viscosity exceeds the allowable range. If this warning is not handled for more than 20 minutes, a critical fault may occur.
	Mixer tank full	The ink level in the mixer is too high. If this warning is not handled for more than 20 minutes, a critical fault may occur.
	Encoder over speed	The pulse rate provided by the encoder exceeds the printing requirement, or the printing rate setting (character height, character width, etc.) exceeds the standard range of the printer.
	Service	The system displays a message indicating that the time for periodic maintenance period has expired (See Section 4.5).

	No enough time for phasing	During the printing interval, the system failed to complete a complete inspection. Usually refers to two printing trigger spacing too short.
	VMS Chamber cannot be empty	The liquid in the VMS Chamber cannot be empty within the specified time.
	VMS Chamber cannot be full	The liquid in the VMS Chamber cannot be full within the specified time.
	Head cover open	Printhead cover is open.

Failure icons and meanings

Icon	Name	Fault cause	Solution
	Mixer Tank Empty	Ink system leakage	Check and repair
		Abnormal level detection	Check whether the mixer tank has bubbling phenomenon
	Charge Fault	Nozzle Clogging	Perform Nozzle Flush and Wash Nozzle program
		Poor breakpoint	Adjust breakpoint (See Section 3.3.2)
		Incorrect ink stream position	Adjust ink stream position (See Section 3.3.2)
		Ink is out of expiration date or polluted	Drain the ink and clean the ink system. Renew ink.
		Fitter exhaustion	Perform regular maintenance and replace filters

	Gutter Fault	Inkjet didn't fully enter the gutter	Adjust inkjet into the gutter pipe
		Gutter Clogging	Soak and clean the gutter pipe
	EHT Trip	High Voltage Deflection Plate accumulate ink or moisture	Clean printheads high voltage deflection plate and dry it
		The mainboard has detected a current leak in the EHT circuit	Check whether the cables of the mainboard, EHT modulation, and nozzle are broken or short-circuited
	Unknown solvent cartridge	No solvent cartridge is inserted or solvent chip cannot be recognizable	Replace a new solvent cartridge Check the chip reader module
	Unknown ink cartridge	No ink cartridge is inserted or ink chip cannot be recognizable	Replace a new ink cartridge Check the chip reader module

4.1.2 Common problems without icon prompt

- **Turn on the power supply, there is no display on screen.**

  ① No AC power is connected to the host.

  ② The low-voltage power supply in the host is damaged.

- **No printing after triggering**

① Check whether the correct information is selected for printing.

② Open manual printing and test. If normal, rule out the printer printing function fault. If an exception occurs, check the parameter settings (such as character height and delay).

③ Close manual printing and access standard photocell test to eliminate the fault caused by the trigger signal.

- **False trigger printing**

① Check “Blocking” of Photocell1 setting and set an appropriate value.

② Set “Mode” to “Mode2” in Photocell1 setting to filter trigger signal clutter.

③ Choosing the contralateral photocell can also reduce the possibility of accidental trigger effectively.

- **Poor jet printing character quality or incomplete character**

① Check whether the distance between the printing port and the surface of the product is reasonable.

② Check the setting value of "ink model" and whether "automatic viscosity" is turned on in "viscosity setting" respectively. Check whether "running pressure" matches the model.

③ Check whether the value of “Height” in the information parameter is too high or too low.

④ Check inkjet alignment and breakpoint state (see section 5.3.1), and ensure that there is no accumulated ink in the gutter tube and deflection block.

⑤ Eliminate the unstable operation of the product or vibration of the printhead holder when printing.

⑥ Eliminate air flow interference or static electricity influence on jet printing port.

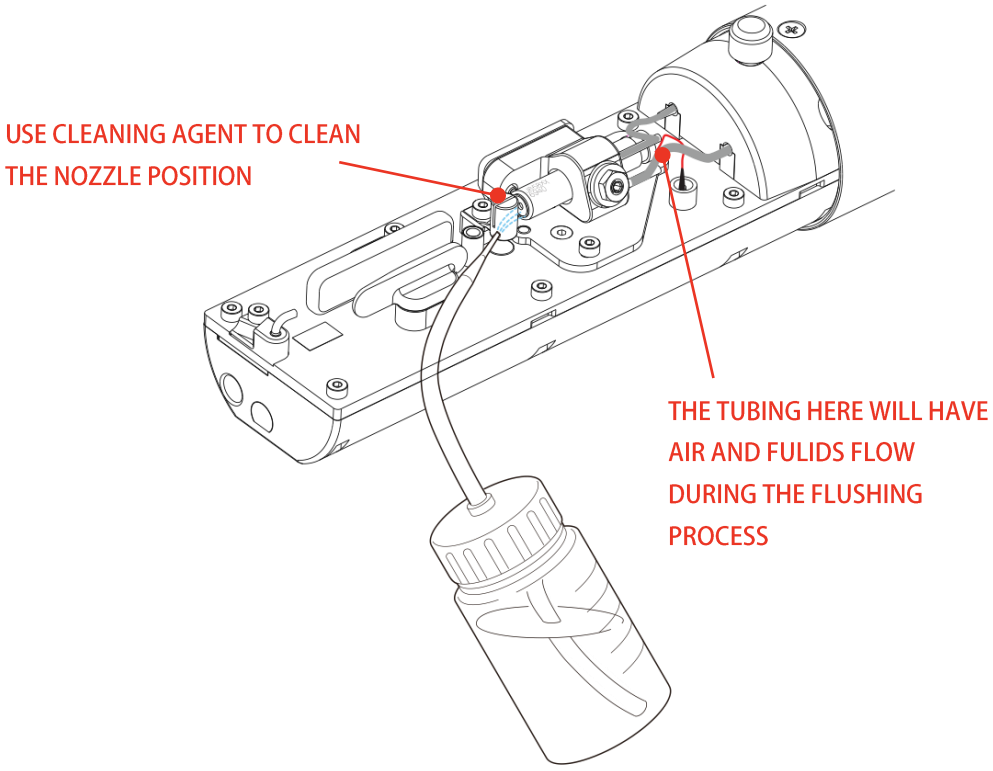
4.2 Nozzle cleaning

When the nozzle is blocked, manual cleaning is required. The operational procedure are as follows:

1) Press 

, select and execute “F) Wash Nozzle” program;

2) After the program is started, manually clean the position shown in the following figure with special cleaning agent;



3) If the blockage is serious, please repeat this cleaning step 3 times or more.

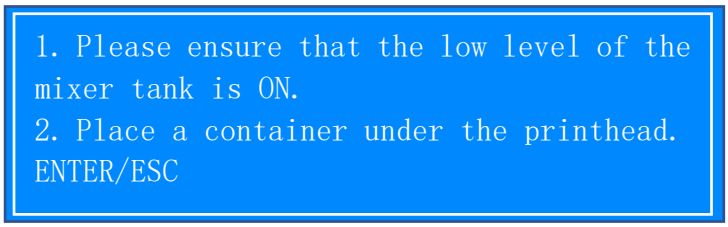
4) The method to judge whether the nozzle is blocked or the inkjet is deflected is usually to observe the direction of inkjet after opening it many times. If the direction of the inkjet changes each time, it is most likely due to blockage. If the deviation position of the inkjet is consistent, the problem is most likely the deviation of the inkjet, which can be usually solved by adjusting the position of the inkjet.

Warning:

To avoid accidental deviation of inkjet and possibility of entering into eyes or other sensitive parts, please place the nozzle towards solvent recovery bottle or other direction will not harm the sensitive parts of human body before opening the inkjet.

4.3 Drain

Press INKSYSTEM button, perform the "R) Drain" program, follow the instructions on the screen.



4.4 Clean Ink System

Press INKSYSTEM button, perform the "C) Clean Ink System" program, follow the instructions on the screen.

1. Make sure the ink in the mixer tank and pipes are emptied.
2. Place a container under the head.
ENTER/ESC

Warning:

To avoid ink vapor being inhaled into human body, please take personal protection.

Warning:

To prevent inkjet from accidentally entering sensitive parts like eyes, ensure that the discharge port is aligned with the inlet of the waste fluid tank before performing all ink maintenance procedures.

Warning:

To avoid pollution caused by the discharged ink, handle effluent according to local environmental requirements.

4.5 Regular maintenance

Daily

- Check whether ink cartridge or solvent cartridge needs to be replaced
- Check inkjet alignment and breakpoint
- Clean and dry the front of printhead (nozzle, charge electrode, deflection block, gutter sensing tube)

Weekly

- Use cleaning agent and fleece-free wet cloth to clean the outside of the cabinet
- Use alcohol and fleece-free wet cloth to clean the keyboard and screen

According to the following table, maintain the printer regularly.

Part name	Maintenance methods	Maintenance interval (hours)
Air Filter	Replace or wash	2400
Gutter Filter	Replace	1800-2400
Pre-head Filter	Replace	1800-2400
Main Filter	Replace	1800-2400

5 Parameter Specifications

5.1 Printing parameter

Speed list (based on 0.417mm character point gap and 76.8kHz crystal frequency)

Dot-matrix fonts	High Speed	Normal	HQ 1	HQ 2	HQ 3	HQ 4	HQ 5	HQ 6	HQ 7	HQ 8	HQ 9	HQ 10	HQ 11	HQ 12	HQ 13	HQ 14	HQ 15
5	-	320	-	192	128	96	76	64	54	48	42	38	34	32	29	27	25
6	-	274	-	160	106	80	64	53	45	40	35	32	29	26	24	22	21
7	-	240	-	137	91	68	54	45	39	34	30	27	24	22	21	19	18
9	192	106	-	-	71	53	42	35	30	26	23	21	19	17	16	15	14
12	147	80	-	-	53	40	32	26	22	20	17	16	14	13	12	11	10
13	137	73	-	-	49	36	29	24	21	18	16	14	13	12	11	10	9
16	90	60	-	-	-	30	24	20	17	15	13	12	10	10	9	8	8
19	-	38	-	-	-	25	20	16	14	12	11	10	9	8	7	7	6
20	-	34	-	-	-	24	19	16	13	12	10	9	8	8	7	6	6
25	46	25	-	-	-	19	15	12	10	9	8	7	6	6	5	5	5
27	-	22	-	-	-	17	14	11	10	8	7	7	6	5	5	5	4
34	-	15	-	-	-	-	11	9	8	7	6	5	5	4	4	4	3

Note:

1) All speeds are in m/min.

2) High Speed mode only supports 9, 12, 16, 25 dot-matrix fonts. 25 dot-matrix font only supports 3 lines 5*7 format.

5.2 Specifications

Electrical Specifications

Voltage	100V AC to 240V AC
Frequency	50Hz to 60Hz
Power Consumption	120W maximum

Weight

Dry weight	27KG

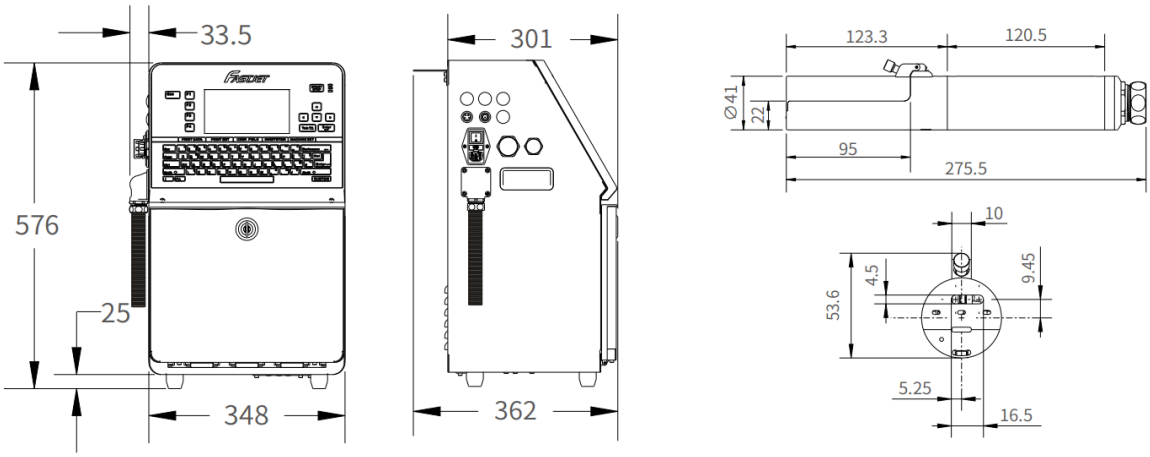
Dimensions

Cabinet	460L*230W*565H
Printhead diameter	41mm
Printhead length	260mm
Nozzle orifice diameter	70、60（um）
Umbilical length	2700mm

Environmental specifications

Working temperature	5℃ to 45℃
Changing rate of ambient temperature	10℃ per hour at most
Relative humidity	0-90%, No frost
Storage temperature	5℃-45℃ (Original package)

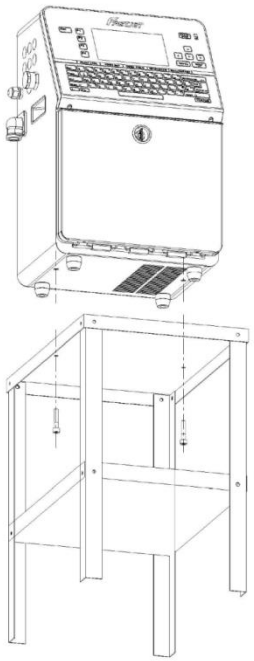
5.3 Machine specifications



Weight: Net weight 27Kg

Gross weight 40Kg (Including packing boxes and accessories)

Diagram of printer stand



Fastjet reserves the right to modify the technical characteristics of the product without prior notice

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