

User Manual

9750



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for parts & service call QLC (800) 837-1309



markem·imaje

a **DOVER** company

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General

Introduction

Thank you for choosing a Markem-Imaje product to fulfill your marking and coding needs.

Because of its architecture, this printer can be used in many configurations. An optimised design, excellent start/stop quality and easier maintenance make this a printer that is easy to install, use and service.

Safety Instructions

WARNING: before using the printer, please carefully read the information concerning safety and installation in the important information and safety manual, the instructions and the Safety Data Sheet (SDS) for the consumables used.

Update

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Comments and notes for your Manual



Indicates a tip or further information.



Important information to take into account when using your printer.



Indicates an important note or further information.

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Description

Printer

This printer was specially designed to be user-friendly and only provides the user with access to those parts that he needs to use on a daily basis.

This printer includes a user interface with a 10-inch wide, diagonal colour touch screen, offers real-time display of the remaining printing capacity, consumption tracking, printing availability and maintenance procedures.

Consumables can be changed quickly and easily thanks, in particular, to front access without interrupting the current print job.

The front opening and removal of the rear panel offer easy access to the primary components.

Maintenance is made easy by replacing maintenance modules, which are accessible from the front of the printer.

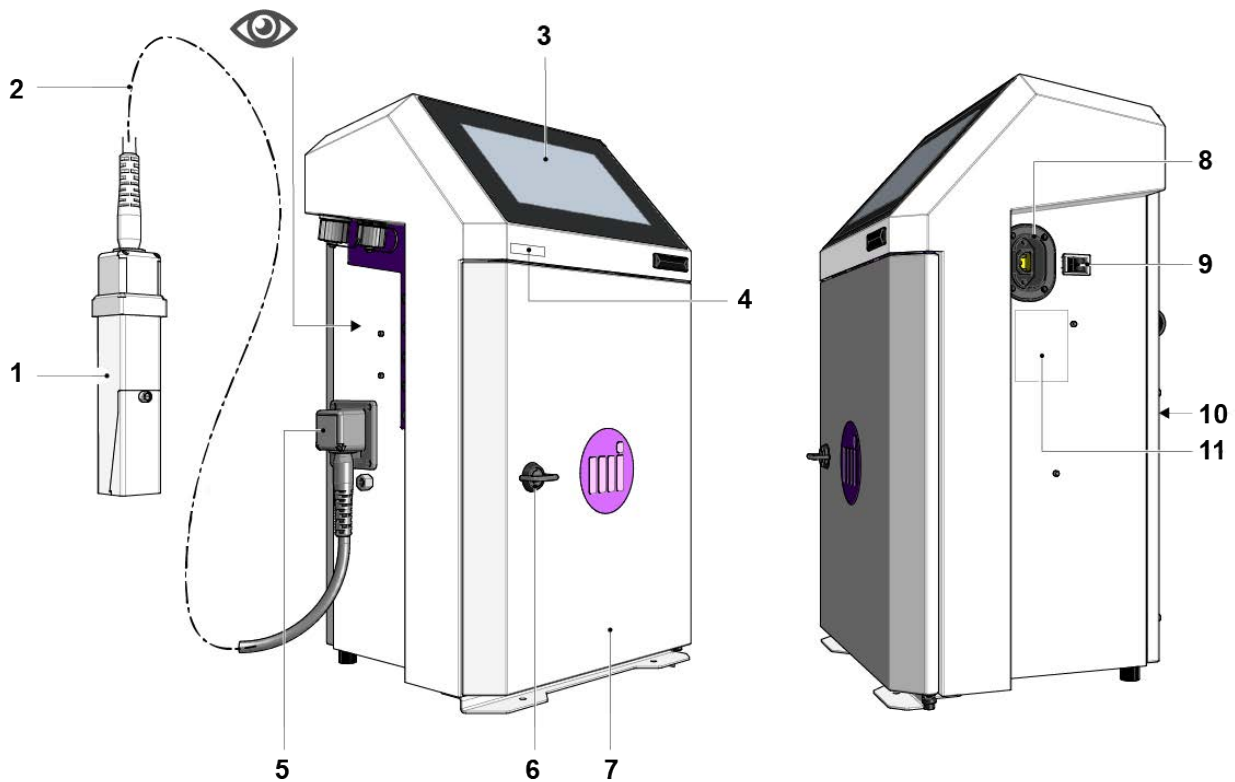
The cabinet is made of stainless steel.



- IP56 (humid and non-dusty environment)
- IP66 option (humid and dusty environment)

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Overview

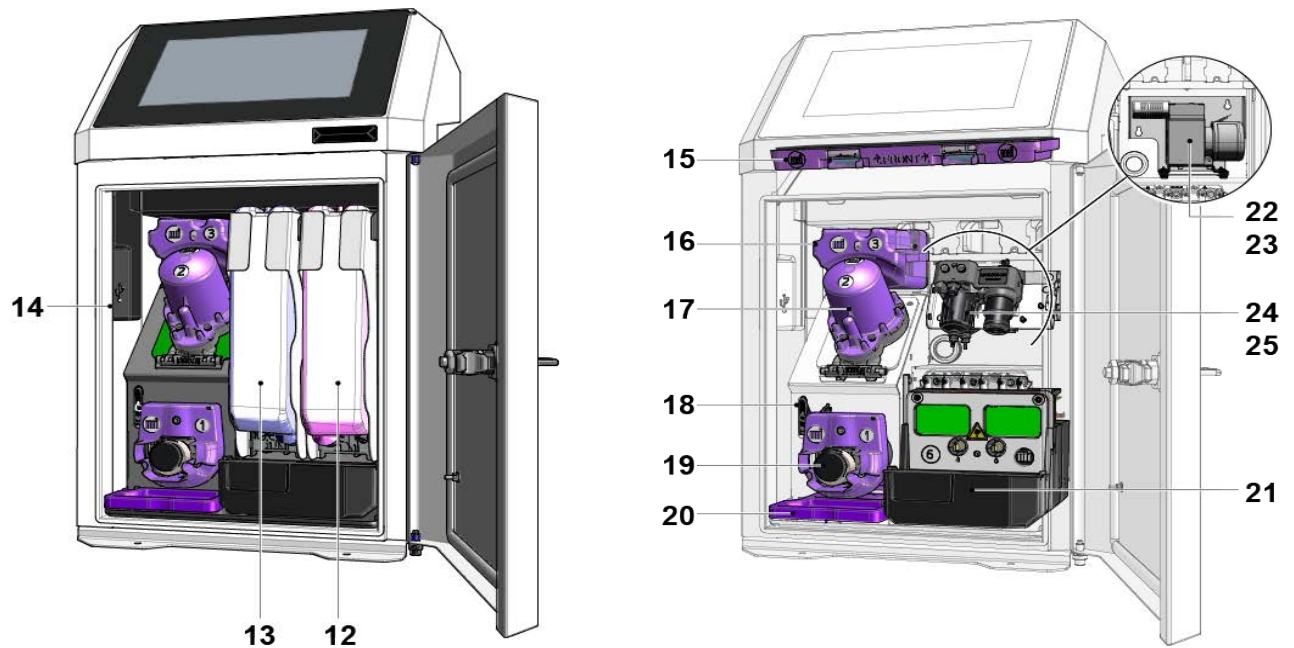


- | | |
|----|--|
| 1 | Printhead |
| 2 | Umbilical |
| 3 | Operator interface |
| 4 | Identification label (serial no.) |
| 5 | Umbilical outlet (the umbilical outlet may be positioned at 90°) |
| 6 | Handle for opening the door |
| 7 | Access door for consumable parts and maintenance modules |
| 8 | Electrical socket |
| 9 | ON/OFF switch |
| 10 | Access to hydraulic/electric/electronic components |
| 11 | Identification label |

 See "Side view" on page 11

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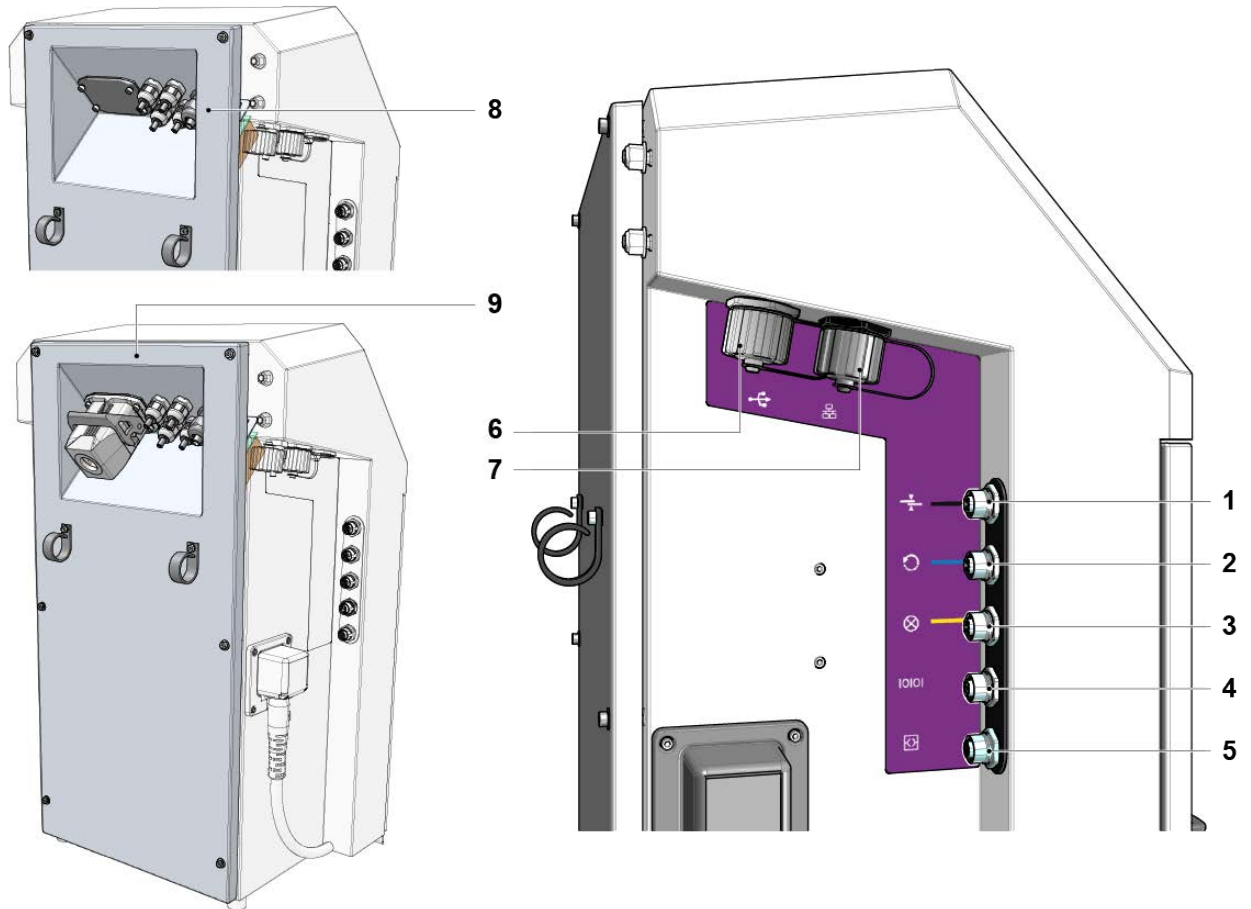
Open door overview



-
- 12 Additive cartridge
 - 13 Ink cartridge
 - 14 Internal USB port
 - 15 Module 4 - Air in filter IP56 (violet)
 - 16 Module 3 - Recovery pump/Venturi
 - 17 Module 2 - Filter for the primary ink
 - 18 Manual maintenance valve
 - 19 Module 1 - Pressure pump
 - 20 Module 5 - IP56 air out filter (violet) or non-removable IP66 filter (depending on the version)
 - 21 Module 6 - Equipped hydraulic module
 - 22 Standalone compressor kit module (optional)
 - 23 Filter cartridge for the standalone compressor
 - 24 Air Treatment Kit module (optional)
 - 25 Filter cartridge for Air Treatment Kit module
-

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Side view

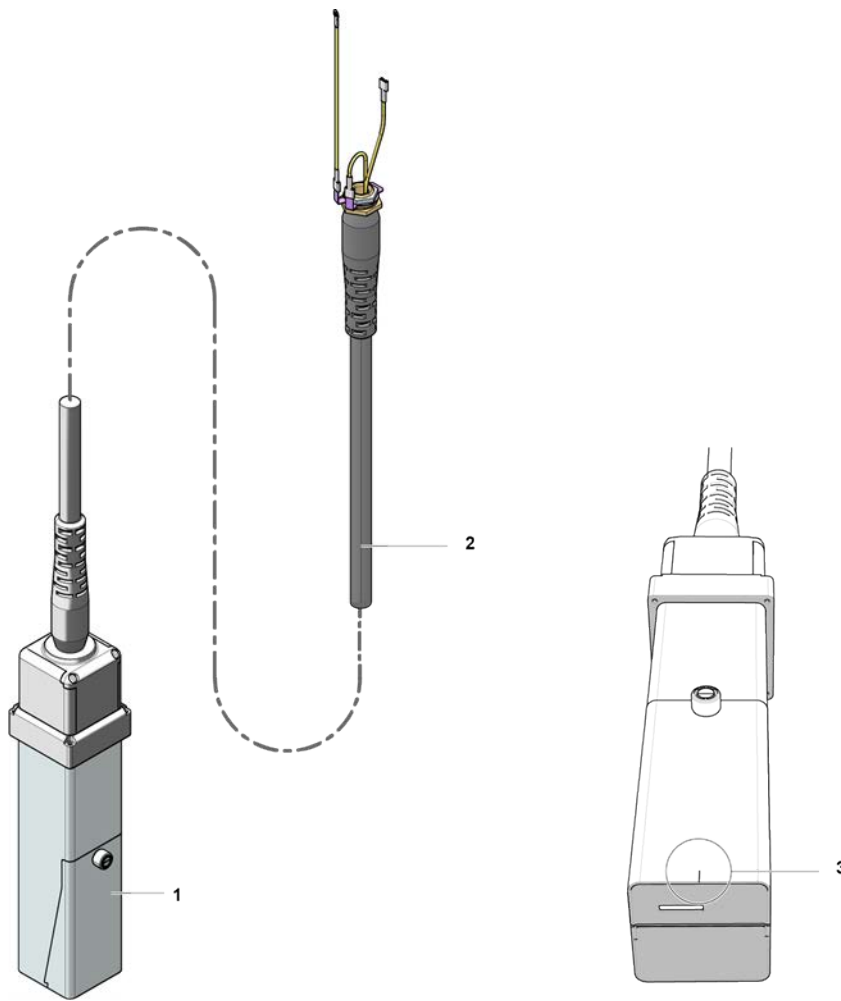


-
- 1 Cell input M12 socket (black)
 - 2 Encoder input M12 socket (blue)
 - 3 Warning light output M12 socket (yellow)
 - 4 Serial link RS232 connector M12 socket
 - 5 Configurable I/O M12 socket
 - 6 External USB port
 - 7 Ethernet connector
 - 8 Rear panel with Industrial interface card (4 cable glands - Serial/Parallel and Ethernet link) - Optional
 - 9 Rear panel with Industrial interface card (4 cable glands - Serial/Parallel and Ethernet link + 24-pin connector) - Optional
-

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The printing module

The printing module includes the umbilical (3 m or 6 m) and printhead (G or M).



- 1 Printhead
- 2 Umbilical outlet
- 3 Marker to indicate the position of the jet



It is easy to place the head over the product to be printed. The engraved mark indicates the position of the jet.



Regular maintenance of the print head: "Regular maintenance" on page95

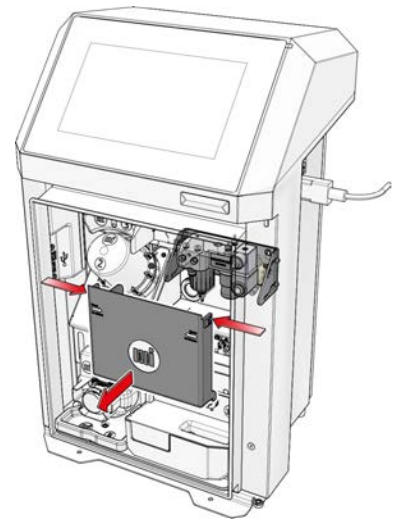
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Head pressurisation kit (optional)

The head pressurisation kit is recommended when the printer will be used in dusty or damp environments.

The dry air supply maintains a consistent humidity inside the head, guaranteeing the smooth operation of the printer and optimal print quality.

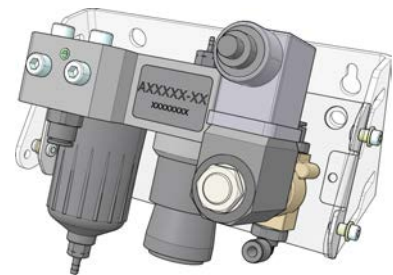
The kit is located inside the printer. To access the pressurisation kit, after removing the cartridges and cartridge holders, remove the protective housing as shown in the figure.



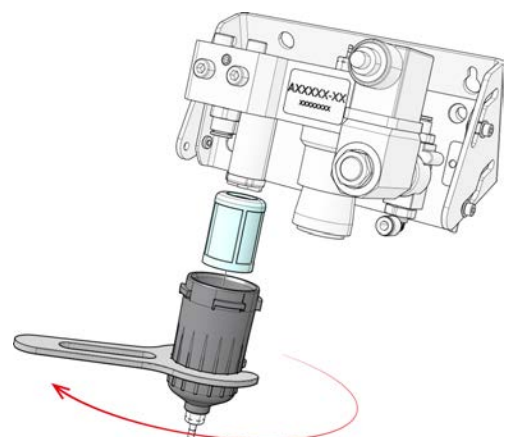
The filter removal/reassembly key is located on the back of the protective housing.

Replacement of the filter cartridge of the pressurisation kit

To remove the filter, loosen the 4 side screws and then rotate the kit holder as shown in the figure:



Unscrew the filter and remove the used cartridge. Replace the cartridge with a new one (reference, see spare parts catalogue).

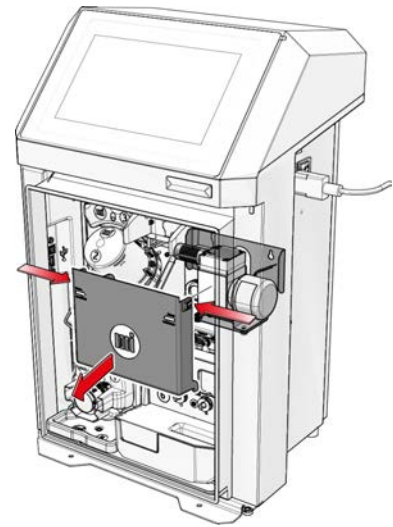


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Standalone compressor kit (optional)

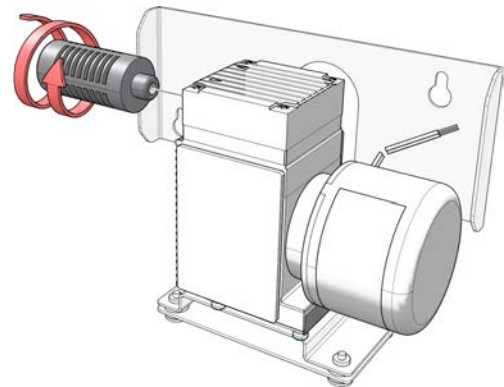
The standalone compressor kit has the same purpose as the head pressurisation kit, but it is used when connecting to the air network is not possible.

The kit is located inside the printer. To access the standalone compressor kit, after removing the cartridges and cartridge holders, remove the protective housing as shown in the figure.



Replacement of the filter-silencer cartridge for the standalone compressor kit

Unscrew the filter. Replace the old filter with a new one (see spare parts catalogue for reference).



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Interface

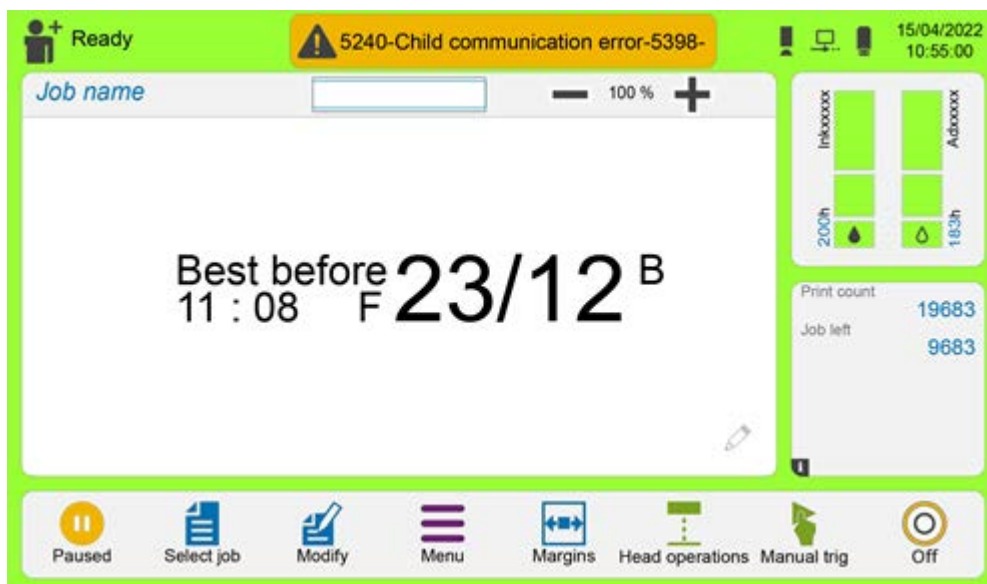
The printer is fitted with a fully tactile and interactive interface which adapts to each of the operator's actions.



Preview of the main screen

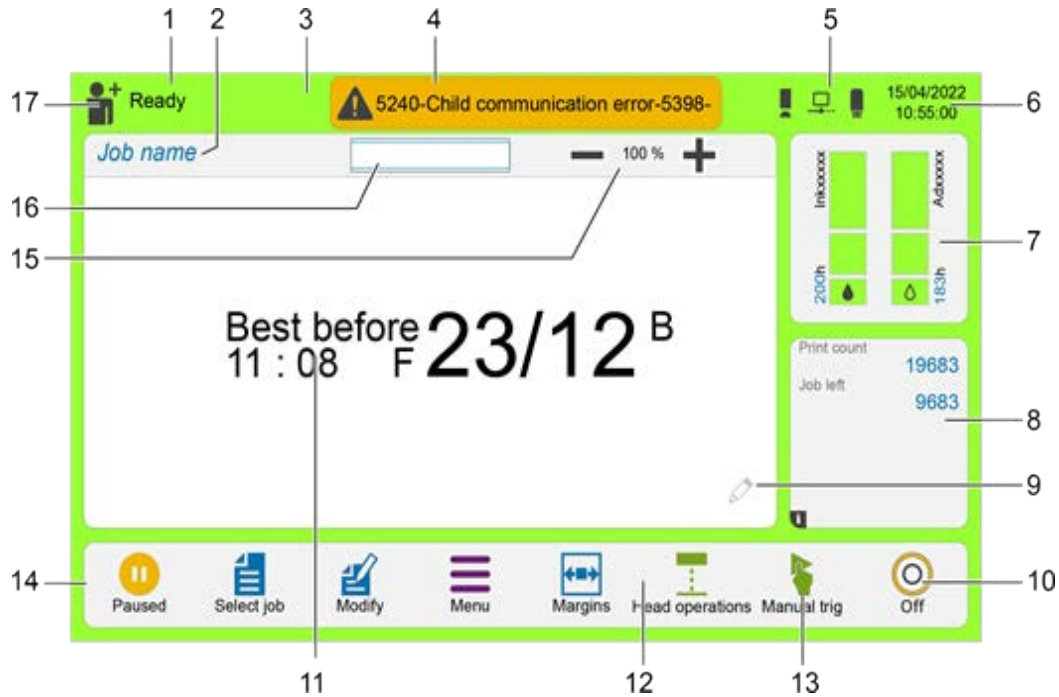
The main screen is used for:

- checking printing
- checking the printer's status
- viewing production information
- viewing the current print job
- accessing the various menus



Description of the interface on the next page.

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1	Printer reports
2	Name of the job being printed
3	Coloured background. Printing status
4	Coloured bar. Printer information
5	External equipment connection indicator
6	Current date and time
7	Consumable part level indicator and access to more information
8	Access to production and operation information
9	Modification of the message in production by pressing and holding on the screen
10	Start/Stop printer
11	Preview of the job being printed
12	Customisable shortcuts (x2)
13	Optional manual triggering
14	Icon bar
15	Increase or decrease display size
16	Navigation window
17	Access to profiles

External equipment connection indicators:

- Printer connected to the network ("Parent" printer)
- Printer connected to the network ("Child" printer)

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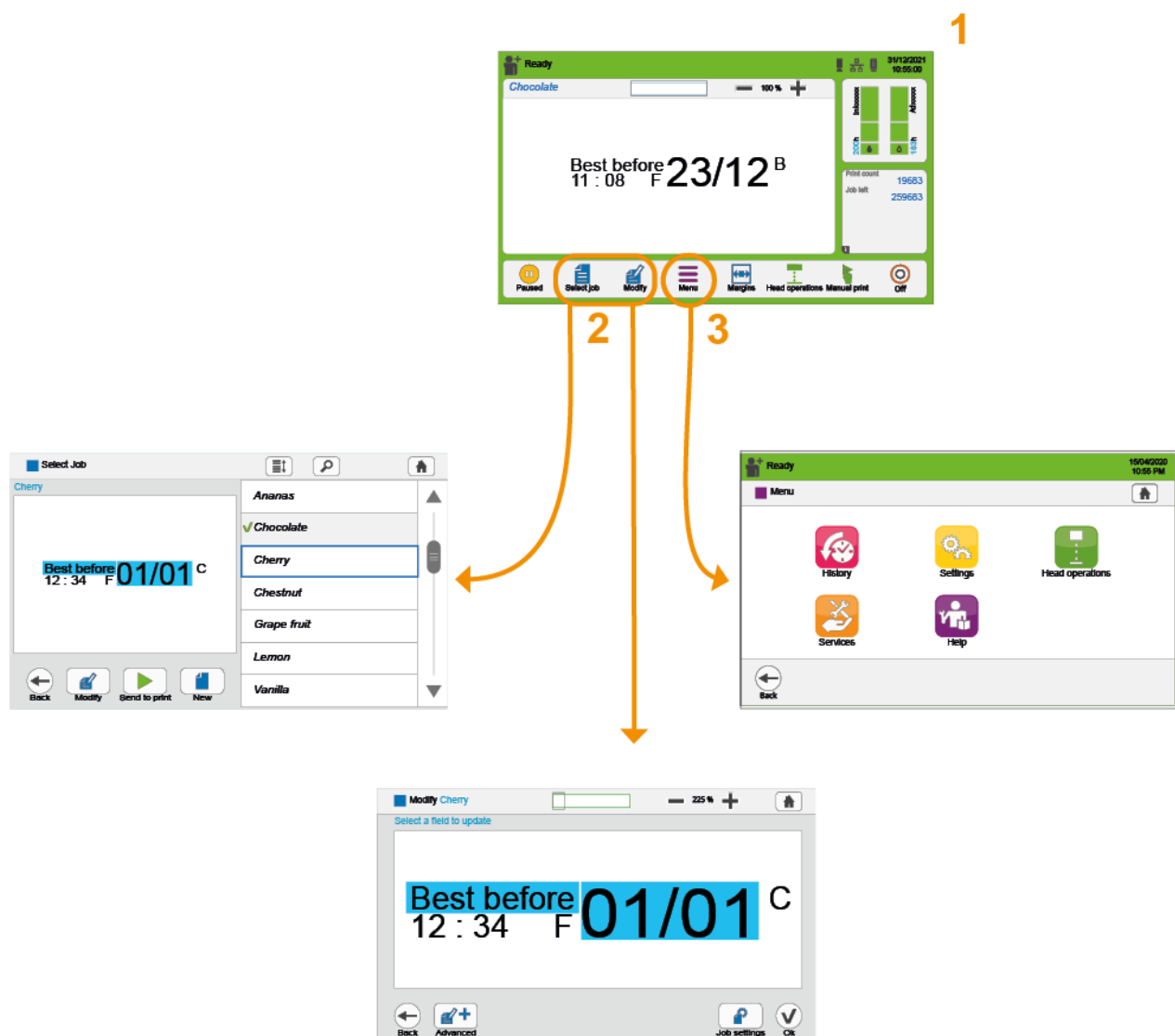
Interface usage principles

Menu structure

Organisation of the menu tree structure

The printer's three main functions are accessed from the main screen:

- Use and printing (1)
- Selecting, editing and managing jobs (2)
- Parameter settings and maintenance (3).



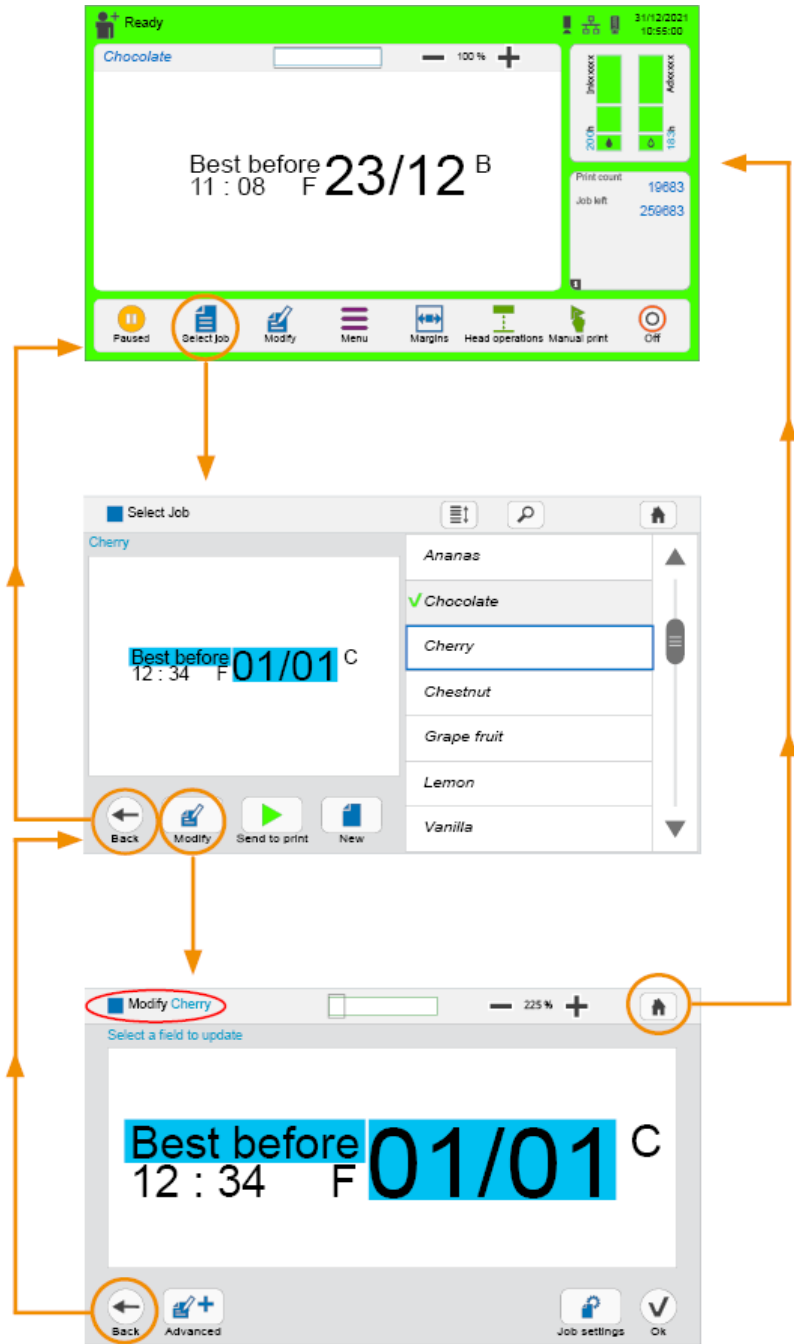
Presentation of the menus



Refer to your printer's [instruction manual](#).



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Navigation

The buttons and fields used for operating the interface and navigating the menus are as follows:



  Printing has started. One click pauses printing.

  Printing is paused. One click restarts printing.

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Dialog boxes

A dialog box is shown to inform the user or request confirmation:



Close the dialog box and go back to the previous screen

NO

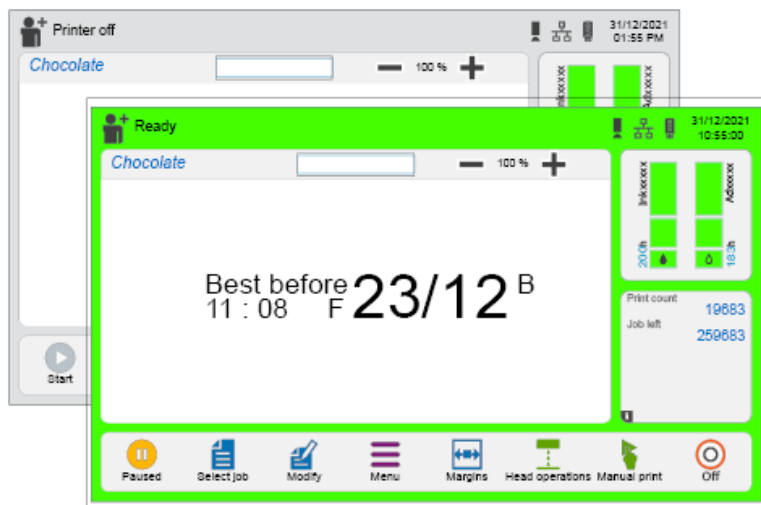
Cancel the action, go back to the previous screen

YES

Confirm the action

Printer status

The top left part of the screen shows the printer's current status against a background colour that varies according to its status:



GREY Printing paused OR Printer stopped

GREEN Printing in progress OR Printer ready to print

The table below gives a summary of the different printer statuses and the corresponding background colour according to the printing status:

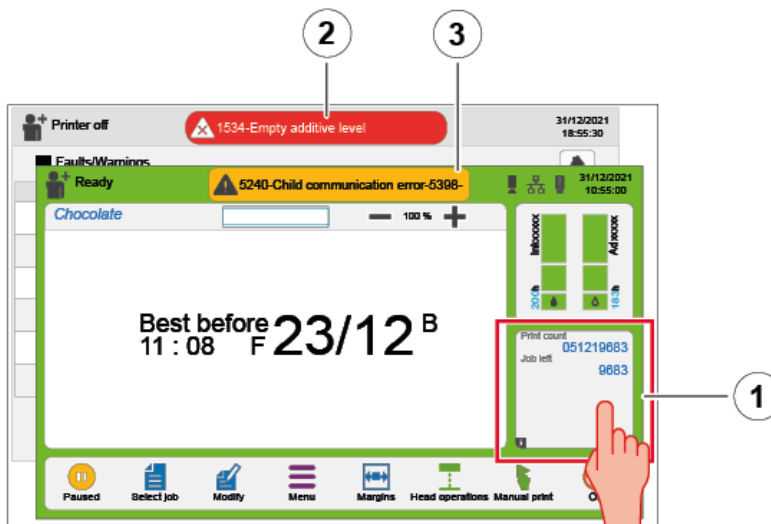
	INFORMATION	COLOUR	STATUS	
	Printer stopped	Grey	Printer stopped	
	Paused 	Grey	Printing paused	
Printer started	Ready	Green	Printer ready	Printing enabled
	Printing ▶	Green	Printing in progress	

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Consult operating information of the interface

Pressing the information zone (1) gives access to operating information (jet status, jet seed, motor speed, etc.). See section "Information" on page79/"History" on page81.

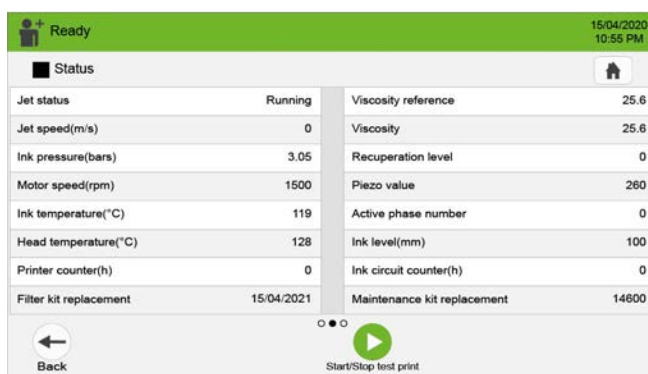
Depending on its colour, the information bar can also be used to view any faults (3) or warnings (2) and provides direct access to a list of faults or warnings and how to resolve them. For more details, refer to the section on viewing faults and warnings "Controlling warnings and faults" on page84.



-
- 1 Information zone (access to information screens) Warning Fault
 - 2 Alarm
 - 3 Fault
-

Example of the information screen:

Printer status and operating settings in real time.



○ ○ ● When the screen is swiped right or left, the following will be displayed:

- Printer and ink circuit counter values are shown, together with filter change and maintenance dates.
- List of warnings and faults.

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Viewing a job

The interface can be used for viewing a job's preview clearly and easily. There are three different viewing sizes. Use the **+** and **-** buttons to switch from one size to another.



- 1 The job is shown on the screen as it will be printed. The size of the job on the screen will be the same size printed.
- 2 The job preview is adjusted to the display area. The entire job is visible.
- 3 In production: the job preview is enlarged for easier viewing.
Editing: the job preview is enlarged to make it easier to select a field using a finger.

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If the preview is too big for the display area, scroll across the job using a finger.

The red block on the view bar scrolls across according to the part of the job it is displaying.

Use the **+** and **-** buttons to move from one size to another or press and hold to edit the job.

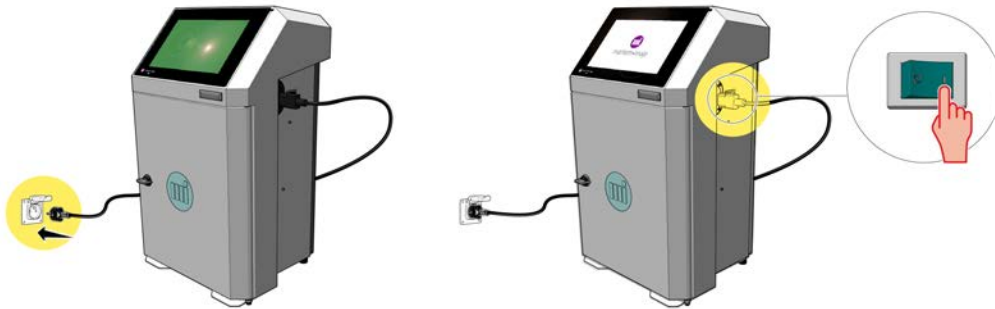
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Use

Starting up the printer

To be able to start printing, the printer must be started up once it is switched on.

1. Connect the printer to the mains power supply.
2. Press the switch.




3. The main screen will turn on after about 40 s.



The printer is on but not started up. The ink circuit and jet are not started up.

The printer's status is shown at the top left of the screen.


4. Press .
5. Confirm the printer is starting up in the window displayed.
6. Wait 4 minutes. The printer is starting up.
7. The printer is started up and ready to print. The ink circuit and jet are started up.



There is an option for starting up the printer without starting up the jet:

     **Automatic jet startup**

The operator will then be able to start up the jet manually in the screen

Head operations":    .



It is recommended to always print a series between starting up and stopping the printer. Repeatedly starting up and shutting down the printer without actually printing may result in abnormally low viscosity.



The minimum operating time must be 2 hours under nominal temperature conditions.

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Shutting down the printer

Shutting down the printer corresponds to shutting down the ink circuit and jet. The touch screen interface is still available after the ink circuit has been shut down and the interface can be used.




The printer must be turned off before disconnecting it from the mains.

The printer is printing, ready to print, or paused. The printer's status is shown at the top left of the screen:

▶ **Printing paused**

▶ **Printing**

▶ **Ready**

1. Press .
2. Confirm the printer shutdown for a shutdown of no more than 15 days.

The printer's status is shown at the top left of the screen: **"Stopping"** The shutdown time depends on the ink and the temperature.

"Printer shut down": the printer is still connected to the power supply. The ink circuit and jets have been shut down.



There is a function for automatically shutting the printer down after a certain period of inactivity:

 **Automatic shutdown**





If a shutdown lasts more than 15 days, the ink circuit must be fully drained and flushed (see section "Maintenance" on page93).

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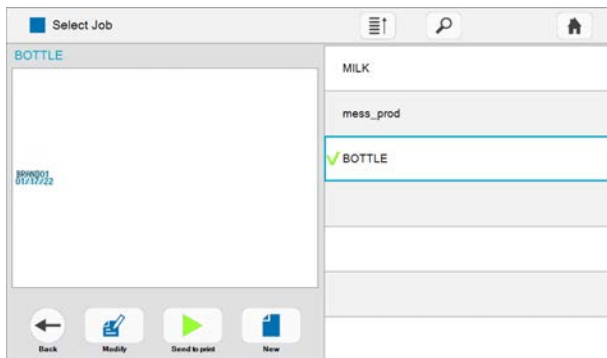
Sending a job for printing

Sending a job for printing means making the job ready for printing.

1. From the main screen, press .

The currently selected job is highlighted in blue with this  icon displayed in front of the job name in production.


A preview of the job is shown on the left of the screen. If the job contains fields that can be modified in simple modification mode, these fields are highlighted in blue in the preview (see **Editing section**).



2. Select a job from the job list.

The selected job is highlighted in blue.

A preview of the job is shown on the left of the screen. If the job contains fields that can be modified in simple modification mode, these fields are highlighted in blue in the preview (see **Editing section**).

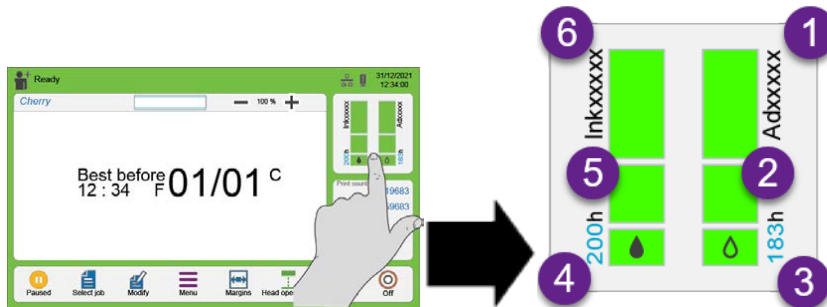
3. Press  to send the job for printing.

The new job selected is shown on the main screen and is ready to be printed.

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Managing consumables

The remaining life and references of consumables are shown on the main screen.



- | | |
|---|-----------------------------------|
| 1 | Additive reference |
| 2 | Additive life remaining indicator |
| 3 | Additive life |
| 4 | Ink life |
| 5 | Ink life remaining indicator |
| 6 | Ink reference |












*The ink life remaining varies depending on the number of characters in the job.
The additive life varies depending on the ambient temperature.*

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Statuses of life remaining indicators

The indicators can show various status values depending on the remaining life of the consumable.

Colour	Status of life remaining indicator	Information/Action
Green		Consumable OK.
Green		The cartridge should NOT be replaced.
Green		
		Level low. A warning is displayed.
Orange		The cartridge can be replaced.
Orange		
		Level critical. A warning is displayed.
		The cartridge must be replaced quickly.
Red		
		Consumable empty. A fault is displayed.
		Printing is impossible. The cartridge must be replaced immediately.
		

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Various behaviors of the consumables used

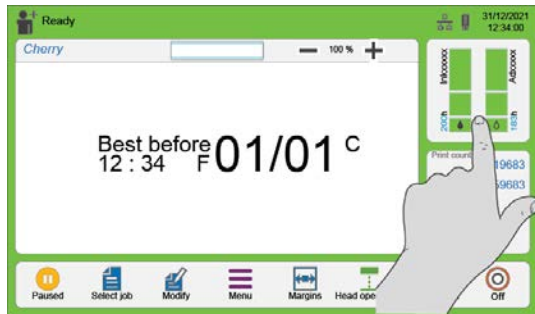
The table below shows a similar behavior for both consumables, but this behavior can appear separately for the ink or for the additive.

	STATUS	COMMENTS/ACTIONS
	<p>Markem-Imaje consumables have been detected.</p> <p>The reference numbers are displayed in black. The remaining life of the cartridges is displayed. The remaining life indicators are displayed.</p>	<p>Standard printer behaviour</p>
	<p>Use of the wrong consumables or the consumables have expired. The reference numbers that should be used with the printer are shown in red. The remaining life of the cartridges is displayed. The remaining life indicators are displayed.</p>	<p>Replace the Markem-Imaje consumables. Make sure they are compatible with the printer. Check the expiration dates for your batch of ink/additive and change the cartridge(s).</p>
	<p>The cartridges are not recognised.</p> <p>The reference numbers that should be used with the printer are greyed out. The remaining life of the cartridges is not shown. Only the remaining life indicator for the cartridges is shown.</p>	<p>Check that the Markem-Imaje cartridges have been properly inserted. If there is no change, your cartridge batch may be defective. Contact Markem-Imaje. Replace the cartridges with new Markem-Imaje cartridges. Note: Even with unrecognised cartridges, you can continue to print for a certain amount of time. A message will show the expiration date for your cartridges.</p>
	<p>The Markem-Imaje cartridges are not recognised.</p> <p>The reference numbers that should be used with the printer are greyed out. The remaining life of the cartridges is not shown. The remaining life indicators are greyed out.</p>	<p>Use Markem-Imaje cartridges. The cartridges used are not compatible or have been used already. Consumables inside the printer cannot be transferred. Replace the cartridges with new Markem-Imaje cartridges.</p>

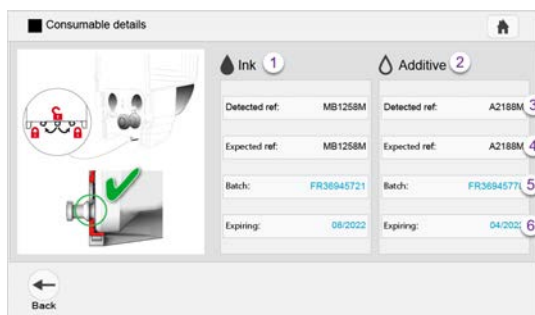
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Information about the consumables used

Press on the area of the screen dedicated to consumables:

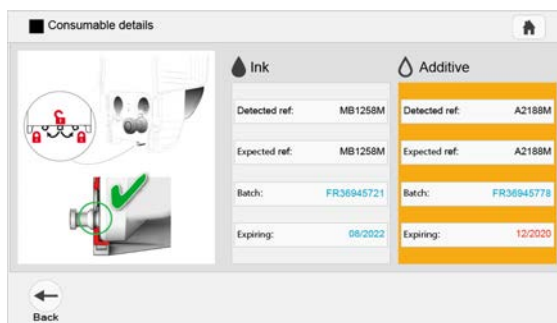


The following screen is displayed:



- 1 Ink cartridge information zone
- 2 Additive cartridge information zone
- 3 Ink/additive references detected.
Black text: OK
Red text: bad cartridge
Other text: the inserted cartridge is not a Markem-Imaje cartridge
- 4 Reference numbers that should be used with the printer
- 5 Cartridge batch number
- 6 Cartridge expiration date
Blue text: OK
Red text: out of date

If the printer detects a problem with any of the cartridges, the background turns orange:



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Replacing a consumable cartridge



Do not replace consumables unless a Consumable warning or fault is signalled by the printer.

Use only Markem-Imaje cartridges.



Waste and consumables, see "Safety and important information", [User Documentation Center Markem-Imaje](#)

Faults reported by the printer are displayed in:

- a warning message (orange background)
- an alert message (red background)



Illustrated procedure for replacing an ink or additive cartridge:

1. Open the front door

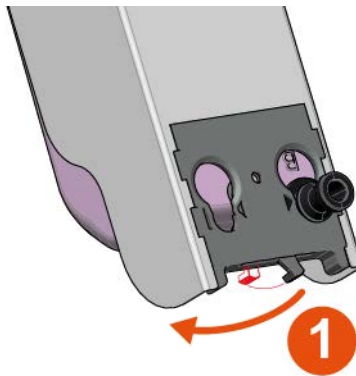


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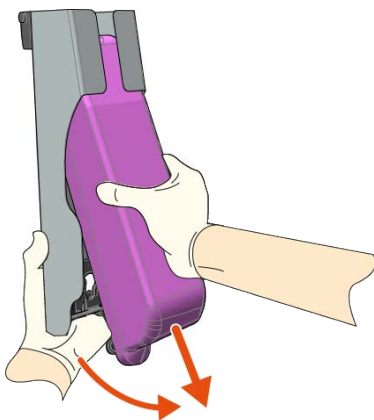
2. Remove the cartridge (ink or additive)



3. Unlock the cartridge

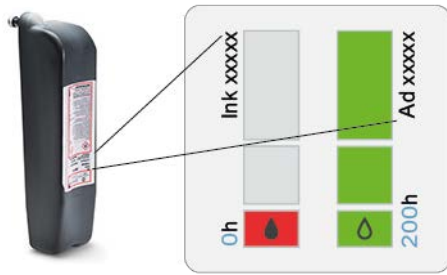


4. Remove the empty cartridge from the cartridge holder

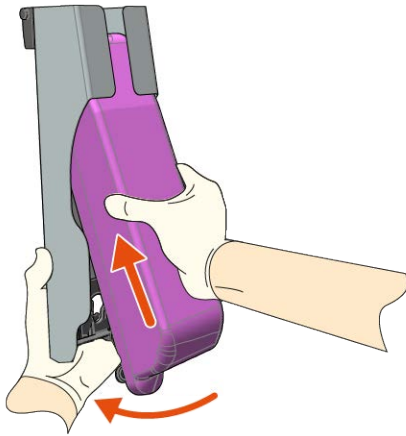


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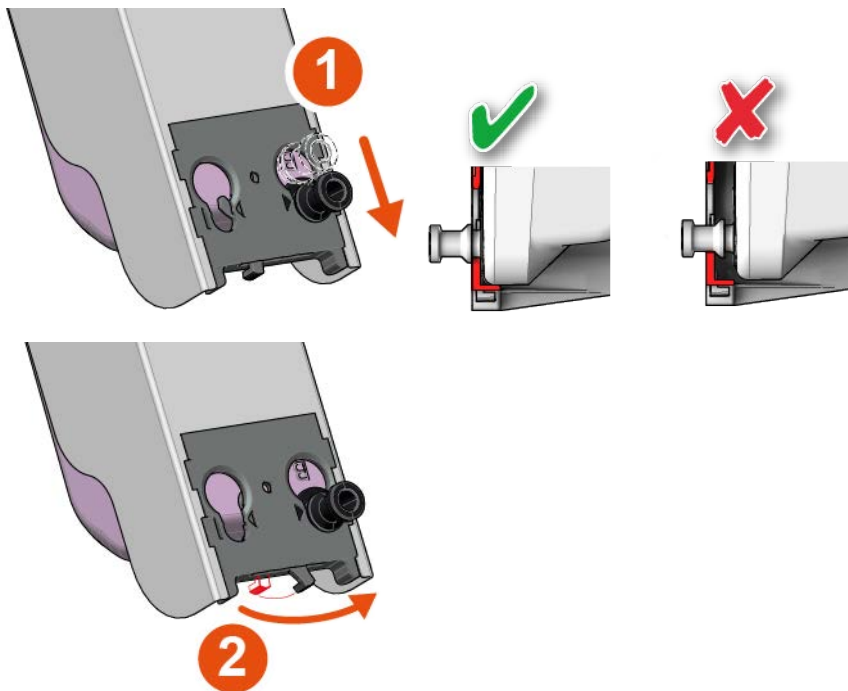
5. Check the information on the new cartridge



6. Insert the new cartridge

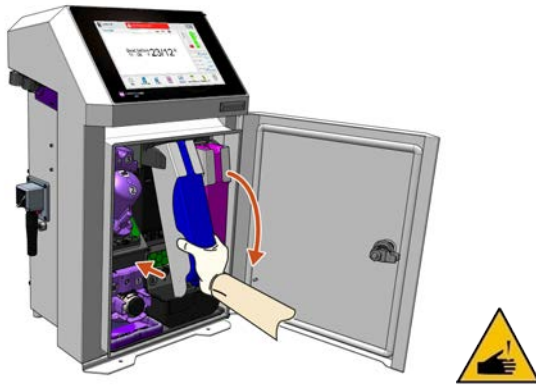



7. Lock the cartridge



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- Put the cartridge holder back in the printer



 Risk of puncture. When replacing the cartridges, do not touch the nozzle.

- Close the printer door.



 After the new ink cartridge is inserted, it empties partially into the printer's internal tank.

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Editing

Usage profiles

Profiles are used to manage access to the different menus/sub-menus, job modification levels and printer settings. Depending on the operators, it is possible to create 3 different profiles:

3 operator profiles

The 3 operator profiles can have a password or no password. (No default password).

The operator profiles can be customised with content that may vary.

Minimum level: unrestricted access only to the main screen with the "Profile" button and the Start/Pause key.

Maximum level: unrestricted access to all the menus/sub-menus and printer modification levels except password management.

1 advanced profile

This profile may have a password or no password.

From the advanced profile, it is possible to:

- Define the content of the 3 operator profiles.
- Manage the passwords for the 3 operator passwords and for the advanced profile.

All the menus/sub-menus and the printer functions are available from the advanced profile.

The factory default profile is: Advanced profile with the default password

"0000"

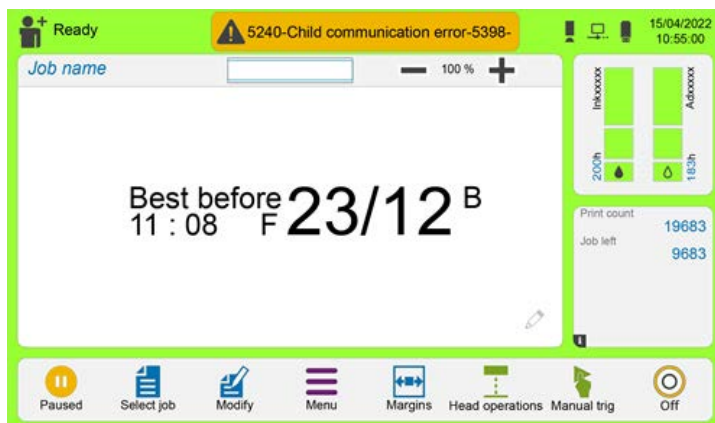
1 Markem-Imaje Engineer profile

This profile is only for use by Markem-Imaje Technicians and Engineers.

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Activating a profile

The profile icon that can be seen on the main screen shows the currently activated profile.



: the operator profile is activated (here Operator 1 profile).



: the advanced profile is activated. To activate a different profile:

1. Press the icon of the profile.
2. If the profile is associated with a password, enter the password then validate.

The icon of the new profile selected is then shown on the main screen.

Printer behaviour at startup

The most recently selected profile does not have a password:

The main screen displays the icon for the most recently selected profile.

The most recently selected profile does have a password:

A screen offers a choice of 4 possible profiles.





1. Press an icon for a profile.
2. If the profile is associated with a password, enter the password then validate.

The icon of the new profile selected is then shown on the main screen.

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Configuring usage profiles

Profiles can only be configured from the advanced profile.

1. From the main screen, press .
2. Press .
3. Press .
4. Press .
5. Press the button of the profile to be configured. The configuration screen, shown with 6 categories, is displayed.
6. Select each category to configure the various types of access to the functions.
7. Tick each desired function then validate.
8. Repeat the operation for each category.

Default setting

The default settings defined by Markem-Imaje can be restored.

1. From the main screen, press .
2. Press .
3. Press .
4. Press .
5. Press the button for the profile to be configured.
6. Press  to reset the settings.

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Managing passwords

Passwords can only be managed from the advanced profile.

Only uppercase Latin characters are allowed.

Minimum number of characters: 1

Maximum number of characters: 20

1. From the main screen, press .
2. Press .
3. Press .
4. Press .



The password management screen appears.

By default, Operator 1, 2 and 3 profiles do not have a password. The password for the Advanced profile is "0000".

Assigning a password:

5. Press the operator profile to assign a password.
6. Enter a password then confirm.
7. The new password appears in the password management screen.

Modifying or deleting a password:








1. From the password management screen, press the operator profile to modify the profile or delete the password.
2. Modify the password then validate or press  to delete the password.
3. Press  to confirm.
4. The new modified password appears in the password management screen or the message "No password" appears.

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Simple modification (Modification in production)

Principle (changing a text field)



Simple modification mode is used to change the content of certain fields in a job.

-  : Modify the current print job.
 -  : Access the selection list to modify another job.
 -  Pressing and holding on the screen allows you to modify the job currently being printed.
1. From the main screen, select  or press and hold .
 2. Press the modifiable text field underlined in blue.
 3. Enter the modification to the text field.
 4. Press . The change to the text field is shown.
 5. Press  to save the changes.
 6. Confirm the change made to the job in the window displayed.

Simple modification of a deferred Date field

1. Select the Date field to be modified.
2. Define the interval value
3. Select the interval unit: day, week, month or year. The changes instantly appear in the preview area.
4. Press . The change to the deferred Date field is shown in the job.
5. Press  to save.
6. Confirm.

Simple modification of a Counter field

1. Select the Counter field to be modified.
2. Select  to reset the counter to its starting value.
OR Select  to reset the counter to the desired value.
3. The modification made to the counter is shown in the job.

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Advanced Creation/Modification

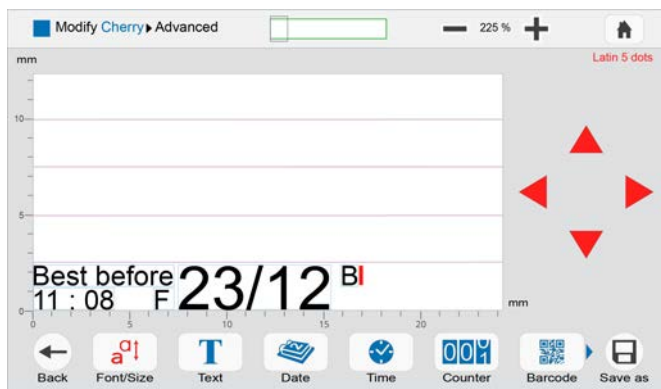
In simple modification, press  to go to advanced modification.

The editing screen in advanced modification alternates between two modes:

- Cursor mode
- Field mode

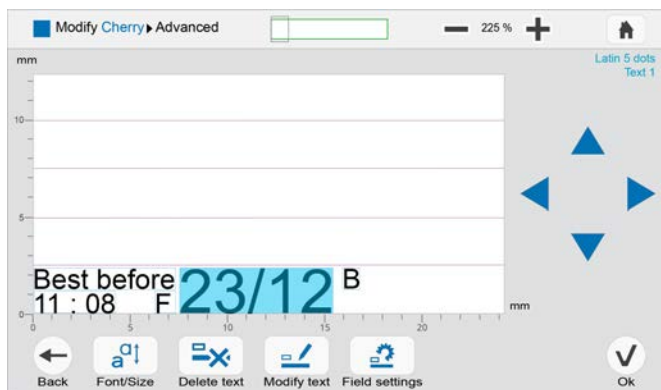
Cursor mode

To switch to field mode, select a field by clicking above.



Field mode

To return to cursor mode, click in the editing area outside of the fields OR press .



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Cursor mode: move the cursor, add a field and define a style.

This is the default mode if no field has been selected. In cursor mode, a red cursor flashes in the editing field and there are red arrows around the editing field. In this mode, the following actions are possible:

- Moving the cursor
- Defining a field's font style before creating it
- Adding a field at the cursor position

The font style associated with the cursor is shown in red in the top right corner of the screen.

The red arrows are used to move the cursor.

The scale unit (mm, inches or dots) can be changed by clicking in this area.











Moving the cursor

The cursor can be moved in two ways:

- Click in the editing field at the desired location for an approximate movement with magnetisation on the marker lines.
- Use the red arrows for a precise movement.

Adding a field

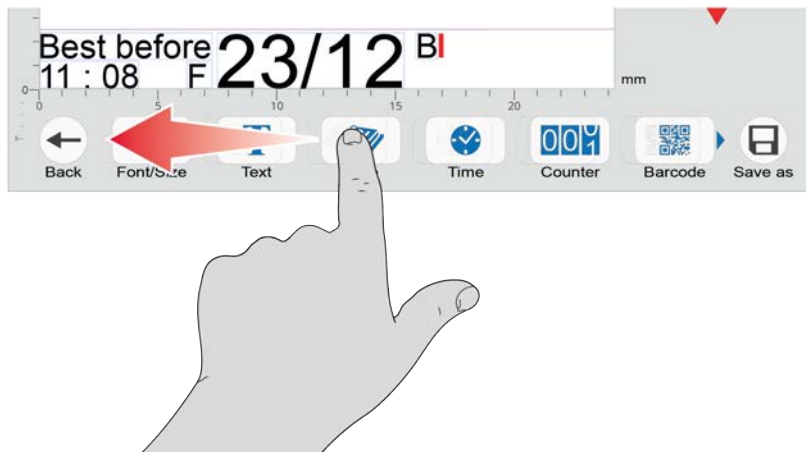
Click on one of the blue icons at the bottom of the screen to add the desired field type. The new field is shown at the cursor position.

	Text		Symbol
	Date		Shiftcode
	Time		External variable
	Counter		Customized Date/Time
	Barcode		Unique code

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To view all the fields (icons) when they are shown stacked, swipe the icon bar to the left:



Defining a field's font style before its creation

1. In cursor mode, the font style applied at the cursor position is shown in red in the top right corner of the screen. Press .
2. Three style attributes can be modified:
 - the font;
 - the font size;
 - the bolderisation of the characters.

The font sizes available will depend on the choice of font.

3. Once the modifications are complete, press .
4. Changes to the style come into effect at the cursor position. The next field created will have the defined font style. Field mode: move, modify, delete a field and modify a style

Editing switches to field mode if a field is selected using the finger.

In field mode, the selected field is highlighted in blue. The arrow keys around the editing field and the font style indicator (top right) turn blue. The scale unit (mm, inches or dots) can be changed by clicking in this area.

In this mode, the following actions are possible:

- Moving a field
- Modifying a field's content ;
- Modifying the font style for a field that is already created ;
- Deleting a field .

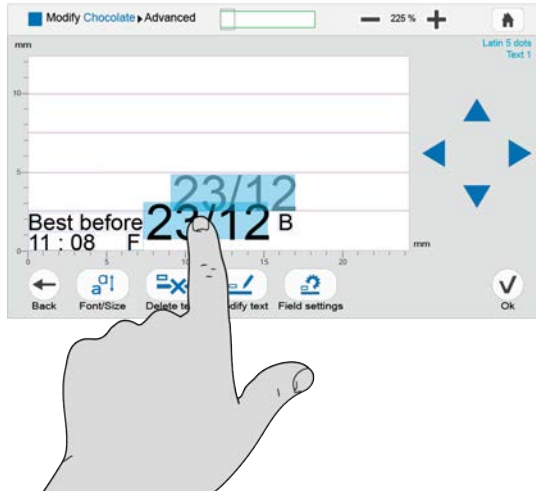
Moving a field

A field can be moved in two ways:

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Approximate movement:


1. Select the field to move by clicking above;
2. Press a 2nd time and hold down in the field and use the finger to drag it to the desired position. By dragging the field towards a marker line, it will automatically be aligned with it by magnetism.

**End movement:**

1. Press the field to select it.
2. Move the field using the blue arrows located around the editing area.

Modifying a field's content

Press the field to select it.

Press  to access the modification screen. The type of selected field is shown in blue under the font style indicator.

For more details on how to modify a particular type of field, refer to the corresponding section.

Modify a field's font style

1. Press the field concerned to select it.

The font style currently applied to the selected field is shown in blue in the top right corner of the screen.


2. Press .

3. Modifying the font style.

Three style attributes can be modified:

- the font;
- the font size;

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- the bolderisation of the characters.
4. The font sizes available will depend on the choice of font.
 5. The style changes made in the field are shown.
 6. Press  once the modifications are complete.

Delete a field

Press the field concerned to select it.


Press  to delete the selected field.

The field is deleted. The interface returns to cursor mode.

Locking/Unlocking a field

This function enables simple, secure modification of certain fields to be authorised without affecting the overall layout of the job.

In advanced modification mode, certain fields may be locked or unlocked.




Press , change the status with yes (locked) or no (unlocked).




The content of unlocked fields may be modified in simple modification mode.

When a field is created, it is unlocked by default.

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Modifying a job (Advanced modification)

- : Modify the current print job.
- : Access the selection list to modify another job.
-  Pressing and holding on the screen allows you to modify the job currently being printed.

1. From the main screen, press  or press and hold .
2. Select the job to be modified from the list.
3. Press .

The simple modification screen is shown. For more information on how to use this screen, refer to the "Simple modification (Modification in production)" on page 38 section.



Access the job settings.




4. Press .

The editing screen for the job is shown. The fields can be modified, moved or deleted. New fields can be added.

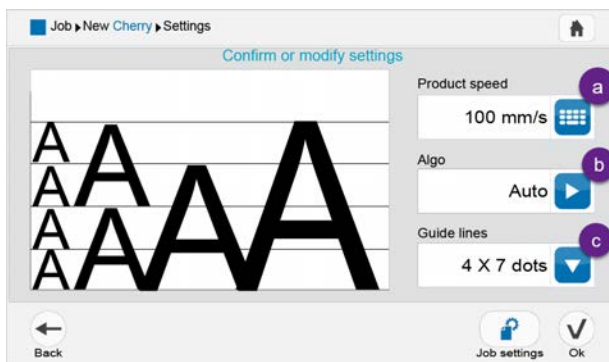
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Creating a job

A job is made up of different types of fields. Each field type corresponds to a data type (text, date, counter, etc.).

1. From the main screen, press .
2. From the job selection screen, press .
3. Enter the name of the new job.
4. Press .

The job settings screen is displayed. The default settings entered are preselected. The preview displays the marking options. The overall height of the job can vary according to the settings defined.



- a Product speed
- b Algorithm
- c Marker lines

5. The main settings for the job may be modified in this screen:

Product speed:

by leaving the algorithm selection on Auto, the object speed can be modified.

Algorithm:

according to the product speed, the printer must choose the algorithm that provides the best printing quality.

The algorithms are used to account for the aerodynamic and electrostatic effects that affect drop placement.

The algorithm used to print the message may be selected automatically by the firmware, depending on the printing speed selected in the message settings, or imposed by the operator when creating the message with their number.




See the list of algorithms in the Technical Specifications section and the "« Modifier les paramètres d'un job » page 1" paragraph in this section.

Marker lines:

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the number of marker lines defines the default font used in the job. The choice of number of marker lines depends on the algorithm or on the speed selected. With a multi-line algorithm, the number of marker lines is fixed.

6. Press  to confirm the default settings or the new settings. The editing screen is shown. The first field can be created.

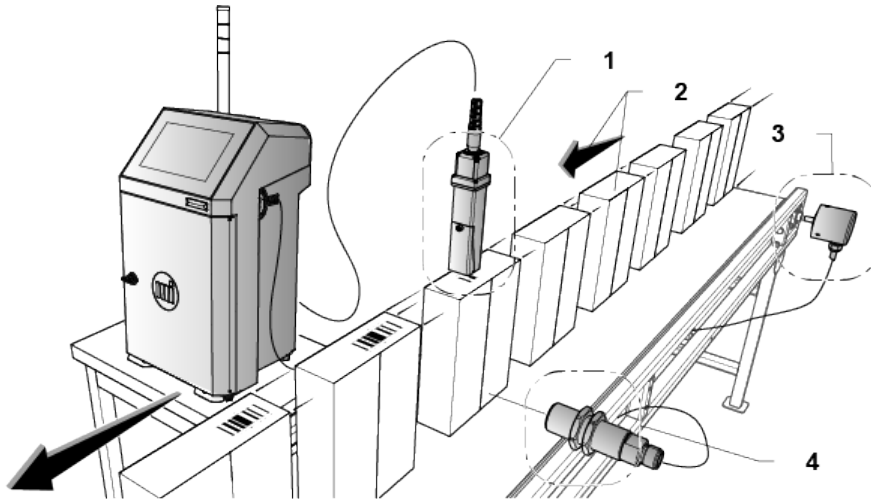


Access the full list of job parameters.

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Modifying job parameters

The job parameters can be accessed using the following paths from the main screen:

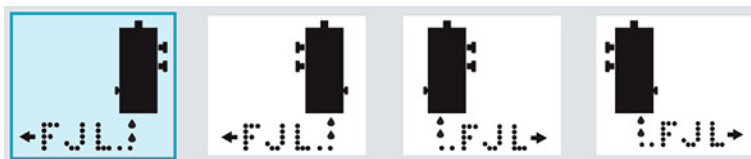


- 1 Head direction
- 2 Product speed
- 3 Speed measurement
- 4 Triggering

Head direction

Setting this parameter depends on the installation of the printer on the production chain and on the desired result when read.

The printer offers a choice from the following four configurations:



Product speed

If the products are moved at a constant speed, enter the speed value in millimetres per second (from 1 to 9999 mm/s). If the Encoder mode is used, enter the product's maximum speed value.

Algorithm number

An algorithm is a calculation formula making it possible to obtain optimal printing quality for a given font, at a given size and speed.

By leaving the algorithm selection on AUTO, the best algorithm will be selected automatically for the chosen settings.

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If you select a particular algorithm, the printer will offer a selection of appropriate fonts but the maximum speed will be fixed.



The editing area is determined by the selected speed and algorithm. Depending on the settings, certain zones may not be printable. If this occurs, the affected zones are shown in orange. Any fields that overlap unprintable zones are also shown in orange.

Speed measurement

this setting defines whether or not speed measurement is inactive (constant speed), if it is made using an encoder (tachometer) or with 1 or 2 cells.

Constant speed: no speed measurement, the speed is assumed to be constant.

Encoder: select this mode to use a speed detector, also called a tachometer, which continuously synchronises the printer's printing speed and the speed of the objects to be printed on the production line. This is particularly useful important if the objects' speed is not constant.

In this case, also define the Encoder Division setting: the enter a value (from 1 to 63) to determine the desired character width for printing. The higher the division value, the more the characters are spaced out.



See also ""Setting the Tacho step" on page56".

Cells: select this mode to measure the speed using 1 or 2 cells.

In this case, also define the     *Photocell Distance setting*

(see the Configuration section for more details about this setting).



For more information on the cell and encoder connections, see the External Connections section.

Trig mode

This setting is used for selecting single, repeated or multitop mode.

- **Single:** this mode corresponds to the printing of a single job per object detected.
- **Repeated:** this mode corresponds to continuous printing as long an object is detected. The print spacing can be defined in the Repetitive Interval setting (from 2 to 9999 mm).
- **Multitop:** this mode corresponds to the continuous printing of a set number of jobs for a top object. The number of jobs printed per top object can be defined in the Number of Multitops setting (from 1 to 255). The print spacing can be defined in the Repetitive Interval setting (from 2 to 9999 mm).

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Manual trig

This setting allows the "Manual trig" button to be displayed in the icon bar of the main screen. Select "yes" to display the Trig button:



The icon appears in grey when the printer is **off**.

Unit

This setting is used to define the unit of the Forward Margin, Return Margin and Repeated Interval values. This selection can be in millimeters, meters or inches.

TRIGG filtering (µs)

This parameter corresponds to the minimum time that the object detection signal must reach to be acknowledged by the printer. The value must be between 200 and 12,700 µs. Increase this time in the event of untimely printing.

Forward margin

This setting represents the space between the object's point of detection and the start of printing when the job is printed from the first character (from 3 to 9999 mm).

Return margin


This setting represents the space between the object's point of detection and the start of printing when the job is printed from the last character (from 3 to 9999 mm).

DIN mode

Selecting the DIN mode enables a message to be printed as follows:



After selecting the DIN mode, the associated tabulation setting can be changed (005 by default). This setting defines the distance between two fields (value in mm or Htrame depending on the selected setting).

If you select a "chimney" font (Latin chim) using the "font/Size" button, 

the result is as follows:



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The setting applied by default
to all jobs can be modified in:



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Saving a job

1. To implement the modifications made to a job, press .

A request to confirm overwriting appears.






2. Pressing on YES validates the modifications to the job.
3. Pressing on NO displays the job name.


To create a new job using the changes, enter a different name before validating.

A message confirms that a new job has been created.

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Deleting a field

1. From the main screen, press .
2. Press .
3. Press .
4. Press .
5. Press  to access the job selection list.
6. Select the job to be deleted.

Possibility to select all jobs by .

Possibility to deselect all jobs by .



The job cannot be deleted during printing. It appears greyed out in the job list, preceded by the icon .

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Creating/Modifying the printing list

The printing list contains the jobs that may be selected for printing via an external link. It is created from the main list of jobs in the printer's memory. It can contain up to 255 messages.

The list can be managed in one of two modes:

- **Auto Rank:** jobs in the printing list (Library) retain the same number as on the main list and are sorted in ascending order. One or more jobs may be deleted from the printing list.
- **Custom Rank:** the printing list (Library) can be customised. A sequence number is created for each job, and jobs can be moved or deleted from the printing list.




The choice of Auto Rank mode or Custom Rank may be selected in:




Auto Rank mode

1. Press  ►  ►  ► 

The main list of jobs is shown in the left hand column.


2. Press one or more jobs to select or deselect them.
3. Press  to include the jobs selected in the printing list.

The right-hand column shows the jobs currently included in the printing list.

4. Press one or more jobs to select or deselect them.
5. Press  to exclude the jobs selected from the printing list.




Jobs in the printing list retain the same number as in the main list and are sorted in ascending order. This number is used by the external link to identify jobs.

6. Once the printing list has been created or changed, press  to save it.

Custom Rank mode


1. Press  ►  ►  ► 

The main list of jobs is shown in the left hand column.

2. Press one or more jobs to select or deselect them.
3. Press  to include the jobs selected in the printing list.


The right-hand column shows the jobs currently included in the printing list.

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4. Press one or more jobs to select or deselect them.
5. Press  to exclude the jobs selected from the printing list.



*The **up** and **down** buttons can be used to move the job in the printing list.
The number shown will be used by the external link to identify the job.*

6. Once the printing list has been created or changed, press  to save it.

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Entering Chinese characters

Chinese characters may be entered using the Pinyin entry method or directly using the Chinese keyboard.

Pinyin entry method





Define the field's font style before its creation.

1. When creating a text field, press  to access the Chinese keyboard.
2. Use the alphabetic keyboard to enter the phonetic equivalent of the Chinese text.
The list of possible characters (or character sequences) is displayed above.
3. Press one of the possibilities to add it to the text field.



If there are more than 9 possibilities, press  to view all the options.

Chinese keyboard

1. Press  to select the Chinese keyboard and enter text.
2. Press  to confirm.

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Setting the Tacho step

The process for configuring the production mode requires the Tacho step to be set properly.

Theoretical Tacho step calculation

The Tacho step must be specified properly. The calculation depends on the system installed (type of encoder and wheel diameter).

Examples:

Case	MI encoder pulses (rpm)	Wheel circumference (mm)	Tacho step
1	5000	200	40 µm
2	5000	500	100 µm
3	2500	200	80 µm

The process entails rotating the encoder by a number of complete revolutions (e.g. 5 complete revolutions) then measuring the distance traveled by the cable.

For example, if the cable travels 1000 mm in 5 complete revolutions of the encoder, the Tacho step must theoretically be set to 40 µm.

$$\text{Tacho step} = 1000 \text{ mm} / (5000 \times 5) = 0.04 \text{ mm} = 40 \text{ µm}$$

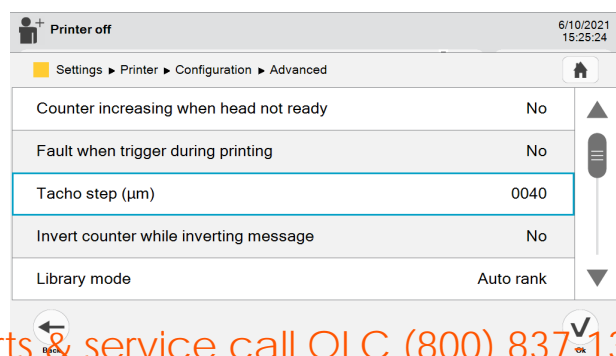
By performing a number of complete revolutions, the risk of error is reduced and the Tacho step can be set more accurately.

Useful formulas:

Useful formulas for setting the Tacho step depending on the configuration of the production line:

- **Tacho step (µm)** = Tacho perimeter (mm)/Tacho resolution x 1000
- **Number of "Tacho steps"** for 1 mm = 1000/Tacho step (mm)
- **Tacho division** = Number of "Tacho steps" for 1 mm/Theoretical horizontal resolution x 2
- **Actual horizontal resolution (dot/mm)** = Number of "Tacho steps" for 1 mm/Tacho division (rounded to 00) x 2

The Tacho step is defined via the "Tools" menu:





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Adding/Modifying a field

Adding/Modifying a Text field



Define the field's font style before its creation.


1. From the editing screen, place the cursor at the desired position.
2. Press  to add a Text field.
3. Enter the text.
4. Press .
5. The new Text field is shown in the job.

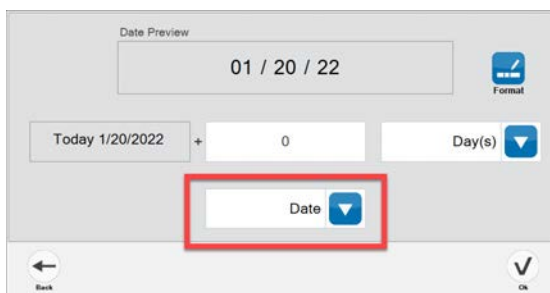
Adding/Modifying a Date field

A Date field inserts the current date or a deferred date to the job. Up to 6 deferred dates can be inserted in addition to the current date. The current date will correspond to a Date field. Deferred dates will correspond to Date 1 to 6 fields. The options for formatting the Date, Date 1 and Dates 2 to 6 are different.



Define the field's font style before its creation.

1. Place the cursor at the desired position.
2. Press  to add a "Date" field at the cursor's position.
3. Define the desired date type (Date, Postdate1 to 6; Calendar date1 to 6)



4. Define the interval value:
 - To enter the current date, select **Date** leave the interval on 0.
 - To enter a deferred date, select **Postdate** or **Calendar date** , define an interval other than 0.
5. Select the interval unit: day, week, month or year.


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The preview shows the new date calculated.

- Press  to insert the date in the job.

The new Date field is shown in the job.

Modify the date format



- Press .
- To add an element at the cursor position, select it from one of the dropdown lists underneath: Day, Month, Years, Week, Separator.



Access the Date field parameters.



Access other deferred Date formats.

- Press  to confirm the format.
- Press  to insert the date in the job.
- The new Date field is shown in the job.



If a date is present both in the body of a job and in a barcode of the same job, its format must be compatible with the type of barcode used.

The content of dropdown lists varies from one date type to the next.

You can insert:



d: day of the week (digit from 1 to 7)

dd: day of the month (number from 01 to 31)

ddd: day of the year (number from 001 to 366)

dyprog: day of the year, programmable for Date 1 only. Its value depends on the Modulo Date 1 setting. See the description of the Modulo Date 1 setting for more details.

dprog: day, programmable for Dates 2 to 6. Its value depends on the Modulo Date 2-6 setting. See the description of the Modulo Date 2-6 setting for more details.



ww: week of the year (number from 01 to 53)



mm: month of the year (number from 01 to 12)

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mmm: month of the year (first three letters) for Dates 2 to 6.

mmm1: month of the year in language 1 (first three letters)

mmm2: month of the year in language 2 (first three letters)

y
0-9



y: last digit of the year (0 to 9)

yy: last two digits of the year (between 00 and 99)

yyyy: the four digits of the year (from 0001 to 9999)



Modulo Date 1 and Modulo Date 2-6 are defined in the Date field settings. Language 1 and Language 2 are defined in the printer's Date variable settings.

Modifying Date field settings



Module date 1

this parameter is used for deferred dates with an interval of more than 365 days. Its value influences the dyprog element according to the following integer division principle:

The interval (in days) of the deferred date is the dividend, Module Date 1 the divisor, n the integer quotient, and dyprog the remainder of the integer division. The dyprog element is therefore used to encode the date according to the Modulo using the following formula:
 $\text{dyprog} = \text{Interval} - (n \times \text{Module Date 1})$

For example, an operator enters a deferred date with an interval of 1,000 days, dyprog will vary according to the Module value:

Module	Module dyprog
365	$1000 - (2 \times 365) = 270$
600	$1000 - (1 \times 600) = 400$
730	$1000 - (1 \times 730) = 270$
1000	$1000 - (1 \times 1000) = 0$

Module date 2 to 6

The same principle as for Module Date 1 but applied to Dates 2 to 6 and the dprog element.



The Module value must not exceed the interval value. The default value for Module Date 1 and for Module Dates 2 to 6 is 1000.

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The default settings applied to Date fields in all jobs can be modified in: 



Modifying the printer's Date variable settings



First day of the week

Used to define the first day of the week. For example, if Thursday is defined as the first day of the week, Wednesday will be the last day.

Date change time

Used to define the time at which the date changes to the next day. For example, if the time is set to 05:00, the day's date will change at 5:00 a.m., not at midnight.

Date change time 1 to 6

Used to define the time at which the date changes, for deferred dates 1 to 6.

Print leading zeros

Used to select whether leading zeros are printed for dates (e.g. 01/01/2022 → 1/1/2022). The printer's main date also takes this setting into account.

Month language 1

For selecting the language in which the month for the date and Date 1 will be written (item mmm1 from the "Month" drop-down list).

Month language 2

For selecting the language in which the month for the date and Date 1 will be written (item mmm2 from the "Month" drop-down list).

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Add/Modify a Time field

Place the cursor at the desired position.

Press to add a Time field at the cursor's position.

Define the field's font style before its creation.


Use the blue arrows to move within the time preview.

Click on  to remove the element preceding the cursor.

Click on one of the possible elements below the preview line to insert it.

The AM/PM element is added to the possible choices if the machine's time is defined using the 12-hour format in the time setting screen:



Click  to validate the format and insert the field. The new Time field is shown in the job.

Counter characteristics

a Select the counter number. The printer can contain a maximum of 15.



If the counter selected is already being used in another job, its characteristics will be replaced by the default settings. For this reason, if the same counter has to be used in more than one job, it is recommended that its characteristics are defined as the default settings. If a counter is present in both the body of a job and a barcode, its format must be compatible with the type of barcode used.

b Choose the type of counter: numeric, alphabetic, alphanumeric, hexadecimal.

c Select the starting value, maximum of 9 digits

d Select the final value, maximum of 9 digits

e Select the counter step, 1 to 99. This is the counter's incrementation value. For example, if the counter step is set to 10, the counter goes up by 10 with each incrementation.

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f Select the batch value, between 0 and 999,999. This is the number of items in a batch. The counter is incremented when the batch value is reached. For example, if the batch value is set to 5, the counter will only increment by the counter step value after 5 items have been detected.

Counter field parameters

Increment type

Used for selecting the counter's incrementation mode.

- Inactive: frozen counter
- Object: the counter is incremented by the industrial interface board TRIGG input or by the cell connected to the connector.
- Job: the counter is incremented when the printer prints a job.
- Chain linked: the counter is incremented when the previous job overflows.

Print leading zeros

Displays or hides the zeros at the beginning of the counter value. If this option is disabled, changes will be visible in the counter's editing screen:

Reset / Object signal

If this option is enabled, the counter will be reset to its starting value when each new item is detected by the photocell.

Auto RZ

Determines whether the counter is reset to its starting value as soon as the job is no longer active.



For the references to the industrial interface board connections, see the "External Connections" section.



The default settings applied to the Counter fields for all jobs can be modified in:




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Add/Modify a Counter field



Define the field's font style before its creation.

1. Place the cursor at the desired position.
2. Press  to add a Counter field at the cursor's position.




The preview line summarises the counter's characteristics.



Access the Counter field parameters






When the Counter field is unlocked: in simple modification mode, the counter can only be reset to its starting value or any other value.

3. Modify the counter's characteristics (see explanation on the following pages).
Changes made to the counter are shown in the preview line.
Press  to modify the parameters of the counter field (see explanation on the following pages).
4. Press  to confirm the modifications.
5. Press  to insert the counter in the job.

The new Counter field is shown in the job.

Counter characteristics

Preview Counter 1			
00000000		→	99999999
Start value		Final value	+01 x000001
Step		Batch	
Counter	Start value	Final value	
1	00000000	99999999	
Type	Step value	Batch value	
0...9	01	000001	
			
Back	Settings	OK	

Counter

Select the counter number. The printer can contain a maximum of 15.

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If the counter selected is already being used in another job, its characteristics will be replaced by the default settings. For this reason, if the same counter has to be used in more than one job, it is recommended that its characteristics are defined as the default settings.
If a counter is present in both the body of a job and a barcode, its format must be compatible with the type of barcode used

Counter	
1	

Type of computer

Choose the type of counter: numeric, alphabetic, alphanumeric, hexadecimal:

Type	
0...9	

0...9	
A...Z	
0...9-A...Z	
0...9-A...F	

Starting value

Select the starting value, maximum of 9 digits.

Start value
000000000

Final value

Select the final value, maximum of 9 digits.

Final value
999999999

Step value

Select the counter step, 1 to 99. This is the counter's incrementation value. For example, if the counter step is set to 10, the counter goes up by 10 with each incrementation.

Step value
01

Batch value

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Select the batch value, between 0 and 999,999. This is the number of items in a batch. The counter is incremented when the batch value is reached. For example, if the batch value is set to 5, the counter will only increment by the counter step value after 5 items have been detected.

Batch value
000001

Counter field parameters

Increment type:

used for selecting the counter's incrementation mode.

- Inactive: frozen counter
- Object: the counter is incremented by the industrial interface board TRIGG input or by the cell connected to the connector.
- Job: the counter is incremented when the printer prints a job.
- Chain linked: the counter is incremented when the previous job overflows.

Print leading zeros:

displays or hides the zeros at the beginning of the counter value. If this option is disabled, changes will be visible in the counter's editing screen:

Reset/Object signal:

if this option is enabled, the counter will be reset to its starting value when each new item is detected by the photocell.

Auto reset:

determines whether the counter is reset to its starting value as soon as the job is no longer active.



For the references to the industrial interface board connections, see the "External Connections" section.

The default settings applied to the Counter fields for all jobs can be modified in:  




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Adding/Modifying an External variable field

This type of field is used to reserve locations in a job for variable information to be transmitted by an external RS232/V24 or RS422 link (e.g. weight from a weighing machine, information from a PLC or from a barcode reader).

Up to ten external variables can be inserted in a message.

If no information is transmitted, the reserved locations are shown in the printed job by a selected character visible on screen.

1. Position the cursor at the desired position, then press  to add an external Variable field at the cursor's position.



Define the field's font style before its creation.

2. The field characteristics may be modified in this screen.

- Select the desired character:

External variable

1 ▼


- Define the number of characters to display:

Default print value

X

This is also the number of characters reserved for the external variable.

The preview line shows the external variable as it would be printed if no information is transmitted.





3. Press  to confirm. The External variable field is displayed in the job.

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Adding/Modifying a Symbol field

A symbol can be inserted into a job. This is a special shape, a drawing or a logo.

To make a symbol available, it must first be imported to the printer using the Transfer font/symbol function. The font containing the symbol must be selected.

1. Place the cursor at the desired position.
2. Swipe the icon bar to the left to display the  icon.
3. Press  to add a Symbol field at the cursor's position.
4. Select the symbol to insert.
5. Press  to confirm. The new Symbol field is shown in the job.
6. Press  to save the message.

for parts & service call QLC (800) 837-1309

Adding/Modifying a Time stamp field

A time stamp field enables time and date variables, pre-coded in the time stamp table, to be inserted in the job:



1. Place the cursor at the desired position.
2. Press  to add a Time Stamping field at the cursor's position.



Define the field's font style before its creation.

3. Compose the date and time information to encode.
To add an element at the cursor position, select it from the list below:

dow: day of week (7 values)

dom: day of month (31 values)

doy: day of year (366 values)

www: week of year (52 values)


mon: month of year (12 values)

yyy: year (10 values)

hhh: hour (24 values)

min: minutes (60 values)

separators: / : - . () _


4. Once composition is finished, press  to confirm.

The new Time stamp field is shown in the job.

Time Stamp table settings



The screen displayed is used to access the various time stamp tables corresponding to date and time items that can be inserted in a Time Stamp field.

1. Select an item from the list.
2. Press a box to modify it, and enter a new value using the keyboard that is displayed. Once the box has been modified, the new value can be copied to all boxes by pressing on .

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In any given Time Stamp table, all boxes contain the same number of characters as the longest box. If a box needs to contain fewer characters than the longest box, the missing characters will be replaced with spaces.

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Adding/Modifying a Barcode field

This field type is used to transcribe miscellaneous fixed or variable information as barcodes. Various types of barcodes are available for use in a job. A job may contain up to four Barcode fields.

1. Place the cursor at the desired position.
2. Press  to add a Barcode field at the cursor's position.




Define the field's font style before its creation.

3. Select the barcode type and the position of the plain text transcription. A preview of the selected options is displayed.




Access the Bar code field settings.

4. Press .
5. Create the barcode content using the items on the icon bar. The available items depend on the type of barcode selected.
The cursor can be moved within the barcode content using the red arrows.
To insert an item at the cursor position, press the icon corresponding to the item.
6. Click on an item to select it. When an item is selected, it can be modified (Text item only) or deleted.

Editing a barcode uses a similar principle to that for editing a job.

For example, when a Date item is inserted, a list of the dates already created in the job is shown. Select an existing date or create a new date to insert it in the barcode.

The screens for creating and modifying barcode items are identical to those for creating and modifying fields in a job.

7. Press  to confirm the content.

The new Barcode field is shown in the job.



If a date or counter is present in both the body of a job and a barcode, its format must be compatible with the type of barcode used.

Modifying the settings of a Barcode field



The list of modifiable settings depends on the type of barcode selected in the previous screen.

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Height

Select a height value from the list of available values. The height is expressed in dots and is limited to the height of the fonts present.

For EAN8, EAN13, UPCA, UPCE barcodes, if the plain text option is selected, the following heights can be configured: height of the barcode, spacing between the plain text and the barcode, font height used for the plain text (subject to fonts available).

Adding Bold

For EAN8, EAN13, UPCA and UPCE barcodes: enter the value for the height of the cells (1 or 2). If value 2 is selected, the code height cannot be less than 16 dots.

Narrow bar

Enter a value from 1 to 4 frames. Narrow bar must be strictly less than Wide bar.

Narrow space

Enter a value from 1 to 4 frames. Narrow space must be strictly less than Wide space.

Wide bar

Enter a value from 2 to 9 frames.

Wide space

Enter a value from 2 to 9 frames.

Inverse print

Enable this option to print the barcode in reverse video. Black and white areas will be inverted.

Check byte

Enable this option to include the check byte at the end of the barcode. The check byte will be included in the barcode but will not be visible in the plain text transcription. It is only available for industrial codes.

Margin





Enable this option to place white edges before and after a barcode printed in reverse video. This option is automatically enabled or disabled in conjunction with the Inverse print option. When enabled automatically, the option may be disabled manually.



Return to default settings.

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The default settings applied to the Barcode fields for all jobs can be modified in:    . A default barcode type can be defined, with associated settings.

Barcode characteristics

2/5 interleaved

- This barcode may only be used to represent numerical characters.
- May contain variables (counter, date, etc.).
- May contain a maximum of 32 characters.
- If a check byte is not used, the number of characters entered must be even.
- If a check byte is used, the number of characters entered must be odd.
- Alphabetic representations of dates, postdates and shift codes are impossible.

Code 39

- This barcode may be used to represent alphabetic characters, digits and the following additional characters: = . , space \$ / + %
- May contain variables (counter, date, etc.).
- May contain a maximum of 32 characters.
- The check byte is optional.

The GS1 system

- The following symbols are those used most frequently in the GS1 system:
 - EAN/UPC
 - GS1-128
 - GS1 DataMatrix

EAN/UPC

The 4 EAN/UPC barcodes are:

- EAN-13
- EAN-8
- UPC-A
- UPC-E

On the retail sales units, only EAN/UPC barcodes can be used. These codes are:

EAN-13, UPC-A, EAN-8 or UPC-E. These barcodes can also be used on sales units not intended for the retail market.

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GS1-128

GS1-128 is used in traceability applications and for the purpose of improving supply chain safety and durability.

The GS1-128 barcode is a variation of the 128 Code. This barcode is not designed to be read at retail store checkouts.

Each data field in a GS1-128 barcode is preceded by an **Application Identifier (AI)**.

This barcode makes it possible to represent other related data. In particular, it is used on products where the batch or serial number is required, or on outer packaging with variable weight and on which the net weight should be indicated.

The length of the GS1-128 barcode varies depending on the number of characters represented, the number of encoded characters and the X dimension (width of the narrowest bar in the barcode).

This barcode is designed to be read bidirectionally by fixed or portable scanners.

Predefined AI (Application Identifier) List

AI	Definition	Format
00	Serial Shipping Container Code (SSCC)	n2+n18
01	Global Trade Item Number (GTIN)	n2+n14
02	GTIN of trade items contained in a logistic unit	n2+n14
10	Batch or lot number	n2+an..20
11	Production date (YYMMDD)	n2+n6
15	Best Before Date (YYMMDD)	n2+n6
16	Sell by date (YYMMDD)	n2+n6
17	Expiration Date (YYMMDD)	n2+n6
20	Product Variant	n2+n2
21	Serial number	n2+an..20
22	HIBCC Quantity, Date, Batch and Link	n2+an..29
37	Count of items contained in a logistic unit	n2+n..8
310	Net weight (kilograms)	n4+n6
XX	Other AI	

Legend:

n = numeric

an = alphanumeric

.. = variable length

digits = number of characters


= position of the decimal point



The use of the AIs is subject to certain rules. Certain AIs must always be used together.

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Example: the AI (02) must be followed by the AI (37). Other AIs can never be used together, for example the AI (01) and the AI (02).

 **Other AI:** If an AI is not available in the predefined list, it can be entered manually. In this case, the application does not check the data entered by the user.
For AIs with a date (for example, AI11) the application does not check the date format. The default value is suggested in the **YYMMDD** format.

Modifying the settings of the GS1-128 Barcode field



The available settings are: Height, Bolderization, Inverse print, Quiet zone and Code set
Code set: the following options:

- Auto: this mode optimises the number of bars in the barcode.
Manual selection of the A, B and C content
- Mode A
- Mode B
- Mode C

It is however possible to manually select the content for the mode A, B or C barcode.

Datamatrix code

Datamatrix is a matrix-type barcode comprising a square or rectangular code formed from adjacent dots or cells. ECC 200 code is used.

The size of the cells is programmable: 1 or 2 drops. (Adding bold → select 1 or 2).

The code height varies depending on this setting:

Adding Bold Code height	
1	8 → 32 cells
2	8 → 16 cells

The code may be used to print all types of variables.

	Coding length:															
Code height (number of cells)	8	8	10	12	12	12	14	16	16	16	18	20	22	24	26	32
Code width (number of cells)	18	32	10	12	26	36	14	16	36	48	18	20	22	24	26	32
Number of numeric characters encoded	10	20	6	10	32	44	16	24	64	98	36	44	60	72	88	124
Number of alphanumeric characters encoded	6	13	3	6	22	31	10	16	46	72	25	31	43	52	64	91

	"Adding bold" setting 1															
Printed code height (number of drops)	8	8	10	12	12	12	14	16	16	16	18	20	22	24	26	32
Printed code width (number of drops)	18	32	10	12	26	36	14	16	36	48	18	20	22	24	26	32

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"Adding bold" setting 2

Printed code height (number of drops)	16	16	20	24	24	24	28	32	32	32
Printed code width (number of drops)	36	64	20	24	52	72	28	32	72	96

The Datamatrix contains a margin (Quiet zone). This is a blank area on all sides of the Datamatrix that must not contain any graphic elements likely to interfere with barcode reading. The width of the quiet zone corresponds to one elementary module on each of the four sides of the Datamatrix.

The Head/Object Distance must be set to verify the mathematical formula below, for optimal printing of the Datamatrix.

For this, use the formula below:










$(1/\text{Horizontal resolution}) \times (\text{number of dots} - 1) + 1$ dot size

Example for a 16-dot Datamatrix - Set the printer for a square shape:

Size of the Datamatrix = $1/2.6 \times (16-1) + 0.4 = 6.2$ mm

Three algorithms improve the quality of printed data with the dot-matrix printer (for the height of 16, 18 and 24-dot Datamatrix codes).

These algorithms can be selected in the "Algorithm Number" menu depending on the Datamatrix code height.

1. Press   .
2. Select the vertical resolution. Validate by pressing  once.
3. Select the correct horizontal resolution. Validate by pressing  twice.
4. Click on  to go to the main screen.
5. Press   .
6. Select the correct algorithm (1x16, 1x18, 1x24) depending on the Datamatrix height.

QR code

The QR code is two-dimensional barcode (or datamatrix barcode) made up of black modules placed in a square with a white background. The module layout defines the information contained in the code.

QR (short for Quick Response) means that the code content can be quickly decoded after it has been read by a barcode reader, a mobile telephone, a smartphone or a webcam. The benefit is that it can store more information than a barcode, in particular data that are directly recognised by applications, making it easy to trigger actions.

There are various versions of QR code symbols. Each version has a different configuration or number of modules. (The module is the black and white dots that make up the QR Code.)

The QR Code in detail:

The values below in the Numeric, Alphanumeric, Binary and Kanji columns show the maximum number of characters allowed.

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When you use QR code module 21x21 with correction level M, for example, the maximum numbers allowed are respectively 128, 34, 20, 14, 8 for data bits, numeric figures, alphanumeric values, Binary and Kanji.


The available settings are: Bolderization, Error correction (correction level L, M, Q or H), Quiet zone (margin) and Code page (UTF-8).

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Adding/Modifying a Shift code field

A shift code is used to print recurring time information over a daily period. The code is defined based on a starting time and an interval duration.

A job may include one shift code.

1. Place the cursor at the desired position.
2. Press  to add a Shift code field at the cursor's position.

Define the field's font style before its creation.


3. Select the Type of information to be used as the shift code in the job:
 - alphabetic, 26 letters (A to Z)
 - alphabetic, 24 letters (excluding I and O)
 - numeric (0 to 99)
4. Select the Format in which the starting time will be expressed:
 - 24 h
 - AM
 - PM
5. Next define the Starting time by pressing the corresponding box.
Use the buttons to express the starting time in hours and minutes.
Confirm by pressing .
6. Define the Interval by pressing the corresponding box.
Use the buttons to express the interval time in hours and minutes.
Confirm by pressing .
7. The list of shift codes for different times of day in accordance with the settings is shown on the screen.
Confirm the settings by pressing .

Modifying the Shift code field settings

The default settings applied to all Shift code fields may be modified in:




This screen is similar to the one that is displayed when a Shift code field is created or modified. It is used in exactly the same way.

1. Press  to access the advanced settings.

This screen shows the three coding tables so that they can be modified:

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- alphabetic, 26 letters
 - alphabetic, 24 letters (excluding I and O)
 - numeric
2. Press a box to modify it, and enter a new value using the keyboard that is displayed.
- Once the box has been modified, the new value can be copied to all boxes by pressing on  .

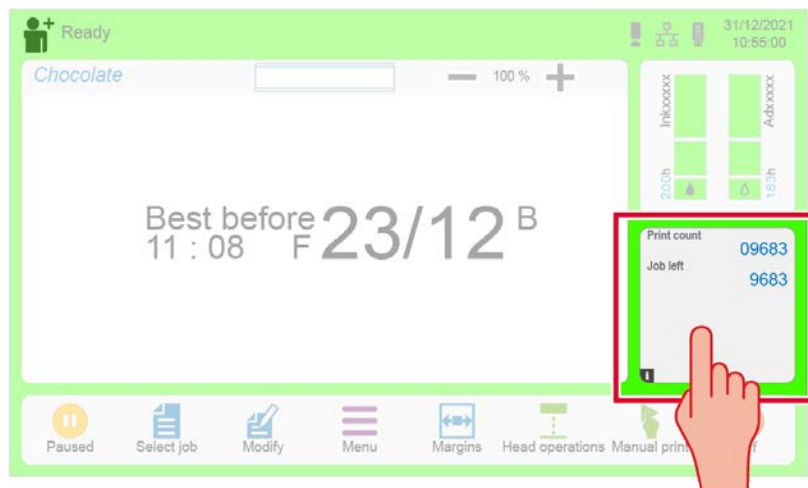
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Information

Information zone and information screen

Information zone and printer status information screen

The information zone shows two pieces of information on the main screen:



- The counter of printed messages (Print count)
- The number of messages still possible to be printed. (Job left)

Pressing this zone shows the printer status and operating settings in real time.

When the screen is swiped right or left, the following will be displayed:

- Printer and ink circuit counter values are shown, together with filter change and maintenance dates.
- List of warnings and faults.

Printer configuration information



This function is used to view:

- The serial number
- They type of head
- The protection index
- The configuration
- The ink reference
- The additive reference

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- The installation date
- The EHT level
- The total number of prints counter
- The software version

Operating history information




This function is used to view a record of the machine settings every 10 minutes in normal operation.

These settings are as follows:

- MotS: motor speed (rpm)
- Pres: measured pressure (bar)
- Pref: reference pressure (bar)
- JetS: jet speed (m/s)
- Sol: solvent pressure (bar)
- T1: head temperature (in °C)
- T2: temperature of ink circuit (in °C)

When a fault occurs, the values recorded minute by minute for the ten minutes preceding the fault are displayed, together with the fault code.

Pressing  saves this data and the configuration data to an external medium.



it is important to forward this information to your Markem-Imaje technical support contact when requesting telephone support.

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History

Printer history


The interface gives access to a history of various data about the printer (printing, maintenance, availability/consumption and warnings/faults).

Printing history



This history screen shows jobs printed over the last two months. For each job, the following are displayed: the period in which it was printed and the number of prints counted.

Pressing  displays the print total counter.


Pressing  transfers the data being displayed onto an external medium. Each transfer file includes the main printer configuration data and the data being displayed.


After the transfer is selected , a transfer confirmation message is displayed.


History of consumables used (Pay per print)




This history shows the number of cartridges used (ink and additive) by the printer as well as the number of prints. The information is shown by month.

Pressing  displays the information by year.

Pressing  displays the information by month.

Pressing  transfers the data being displayed onto an external medium. Each transfer file includes the main printer configuration data and the data being displayed.

After the transfer is selected , a transfer confirmation message is displayed.

Maintenance history



This history screen shows the last 30 maintenance actions.

For each maintenance action recorded, the screen shows:


- the date and time at which it was recorded,
- the total printer running time and ink circuit running time when the action occurred,


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- the kit identification number (batch number).



Maintenance actions must be saved in     to be shown in the history.

Pressing  transfers the data being displayed onto an external medium. Each transfer file includes the main printer configuration data and the data being displayed.

After the transfer is selected , a transfer confirmation message is displayed.

Availability and additive consumption history



Availability corresponds to the time during which the printer was printing, paused or ready to print over the period shown. It is expressed as a percentage.


The average additive consumption (in ml/h) and average ambient temperature (in °C) are also shown for each period.



To ensure that the availability and consumption data are correct, the time and date must always be correctly set, from the first time the printer is used.



The availability and additive consumption data are reset at the start of each month.

Pressing  transfers the data being displayed onto an external medium. Each transfer file includes the main printer configuration data and the data being displayed.

After the transfer is selected , a transfer confirmation message is displayed.

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Consumables history



This history shows the information from the last 100 cartridges (50 ink/50 additives) used by the printer.



This function is used to view:

- Date
- Time
- Reference of the ink or additive
- Counter
- Batch number
- Expiration date
- Cartridge number


Pressing  transfers the data being displayed onto an external medium. Each transfer file includes the main printer configuration data and the data being displayed.


Warning and fault history



In the context of maintenance, it may be helpful to view warnings  and faults  previously acknowledged in chronological order.

For faults, pressing "+" displays the record of certain settings during the ten minutes prior to the fault. See Information section.

Pressing  transfers the data being displayed onto an external medium. Each transfer file includes the main printer configuration data and the data being displayed.


After the transfer is selected , a transfer confirmation message is displayed.


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Troubleshooting


Controlling warnings and faults

Description of the Alarms and Faults screens

 : In certain cases, gives access to a warning or fault resolution wizard.

 : Clear the warning or fault



Pressing  takes you to the next screen:



Summary of the warning/fault in the information bar:



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Pressing the coloured area displays the list of defects or alarms:

Code	Faults/warnings	Date - Time
2061	Jet out the gutter	15/04/20 10:55:00
2334	No more Ink	14/04/20 12:26:09
4234	Jet out of gutter or not detected	13/04/20 12:26:09
2334	Low ink level	12/04/20 12:26:09
1218	Low ink level	11/04/20 12:26:09
1434	No more Ink	10/04/20 12:26:09

Pressing will resolve the alarm or fault. (Access the troubleshooting procedure)

Pressing will acknowledge all warnings and faults on the list.

Certain preventive maintenance warnings cannot be acknowledged without following a specific procedure (see the Maintenance section).

Access to the Markem-Imaje virtual assistant (Miva)

Use your mobile phone or tablet to scan the QRcode associated with each fault.



Our virtual assistant will help you troubleshoot and solve technical problems yourself using an online help tool. (Internet access required)

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List of warnings and faults

Fault resolution wizard



The interface proposes a detailed procedure for resolving certain warnings and faults. Just follow the steps shown on the screen:

The warning or fault will be cleared automatically once it is resolved

List of warnings and faults

No.	D: Fault A: Alarm	Description
0010	A	Fault/warning log corrupted
0020	D	Time/Date corrupted
0021	D	Internal communication error
1000	D	Font used not available
1010	D	Algorithm used not available
1020	D	Trigger detected during printing
1030	D	Hijri calendar fault
1040	D	Invalid job content
1050	A	Calendar printing date cannot be found
1500	A	Incorrect print speed
1510	A	Backup time too long for data flash
1520	A	Duplicate print attempt
1530	A	Print speed too low
1550	D	The calendar has almost expired
2000	D	Communication error with printhead
2010	D	Drop creation supply failure
2020	D	Drop load supply failure
2030	D	Drop deviation supply failure
2040	D	Solenoid valve supply failure
2050	D	Head cover absent or not detected
2060	D	Jet not detected
2061	D	Jet not in the gutter
2070	D	Drop (phase) detection
2500	A	Communication error with printhead
2510	A	Jet poorly positioned
2520	A	Break-off point setting interrupted
4000	D	Time out emptying measurement chamber
4010	D	Time out viscosity measurement
4020	D	Ink level too high
4030	D	Viscosity too high
4040	D	Ink empty
4050	D	Additive empty
4060	D	Cooling fan Failure
4070	D	Ink transfer pump blocked (P1)

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No.	D: Fault A: Alarm	Description
4080	D	Additive transfer pump blocked (P2)
4090	D	Drain pump blocked (P3)
4100	D	Technology roadmap: electronic fault
4110	D	Technology roadmap: solenoid valve power supply fault
4120	D	Drainage fault
4130	D	Level sensor outside of specifications
4140	D	Previous printer shutdown not completed
4150	D	Ink nozzle clogged
4160	D	Solenoid valve EV1 clogged
4340	D	Maintenance valve EV9 blocked
4350	D	Manual Valve in the wrong position (The valve must be in maintenance position)
4360	D	Manual Valve in the wrong position (The valve must be in nominal operating position)
4370	D	Module 1 Pressure pump not detected
4380	D	Module 2 Ink filters not detected
4390	D	Ink over-pressurisation detected
4400	D	Module 3 Recovery not detected
4500	A	Low additive level
4510	A	Low ink level
4520	A	Time out ink level measurement
4530	A	Ink pressure out of range
4540	A	Motor speed out of range
4550	A	Unstable viscosity measurement
4560	A	Ink temperature too high
4570	A	Viscosity too low
4580	A	Critical ink level
4600	A	Printer locked
4610	A	Confirm use of the ink cartridge?
4620	A	Confirm use of the additive cartridge?
4630	A	Additive pressure too low
4640	A	Additive pressure too high
4650	A	Ink cartridge not recognized
4660	A	Additive cartridge not recognized
4670	A	Ink cartridge not detected
4680	A	Additive cartridge not detected
4690	A	Ink cartridge already used
4700	A	Additive cartridge already used
4710	A	Invalid ink cartridge reference
4720	A	Invalid additive cartridge reference
4730	A	Consumable issue
4740	A	Critical consumable issue
4750	A	The ink cartridge will soon expire
4760	A	The additive cartridge will soon expire
4770	A	The ink cartridge has expired
4780	A	The additive cartridge has expired
4790	A	The ink cartridge has expired. Cartridge cannot be used.
4800	A	The additive cartridge has expired. Cartridge cannot be used.
5000	D	Invalid production settings file (Default used)

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No.	D: Fault A: Alarm	Description
5010	D	Time out on print unit initialization
5020	D	Unable to save production settings
5030	D	Invalid printer settings file (Use Default)
5040	D	Unable to save printer settings
5050	D	Printer initialization FAILURE
5060	D	Unable to initialize the PU system DATA
5070	D	Unable to initialize the PU Machine DATA
5080	A	Printer can't execute the command here
5090	A	Unable to save printer functioning data
5100	A	Low remaining life for additive
5110	A	Critical additive remaining life
5120	D	Missing plant air (IP66 only)
5130	A	External communication expired
5140	A	External communication data fault
5150	A	Internal SD card not detected
5220	A	Replace maintenance kit in 450 hours
5230	A	Maintenance kit must be replaced
5240	A	"Child" communication error
5250	A	Ongoing production is not updated
5260	D	Ongoing production is incorrect
5271	D	USB drive probably not connected
5295	A	No file for the job on the USB drive
5298	D	Unexpected unique code number on the USB
5300	A	Head cleaning required
6010	D	Clogged ink filter

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Diagnostic wizard

Preliminary checks

Various preliminary checks must be performed before searching for defective items.

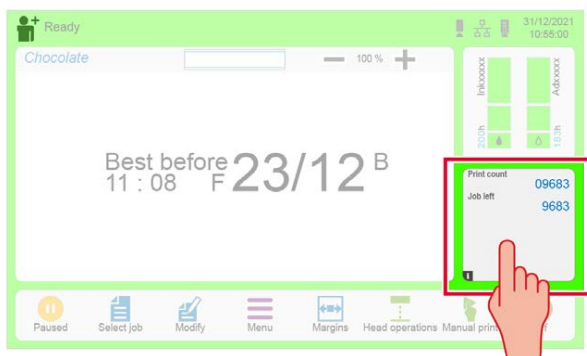
These enable problems such as dirty parts, ink leaks or poor electrical connections to be detected visually.

External appearance

Subassemblies to check	Possible anomalies
Print module	<input type="checkbox"/> Dirty electrodes <input type="checkbox"/> Ink leak <input type="checkbox"/> Leak. <input type="checkbox"/> Damaged cartridge.
Cartridge holder and cartridges	<input type="checkbox"/> Use-by date exceeded (see cartridge label). <input type="checkbox"/> TAG damaged or missing
Industrial interface board	<input type="checkbox"/> Poor connection of external accessories
Connectors	<input type="checkbox"/> Poor connection of power cord.
Power supply/Utilities	<input type="checkbox"/> Poor connection of air network
Air filters	<input type="checkbox"/> Dirty or clogged filters

Check operating settings

Press the information zone:



A dialog box shows the machine status, operating settings, and so on.

For more information, see the ""Information zone and information screen" on page79" section.

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Troubleshooting chart

Malfunction	Actions and solutions
1- Screen off.	1a- Check the mains power supply. 1b- Check the power cord and connection.
2- Time/Date corrupted	The date is reset to 01/01/2008. 2a- Enter the right date and time. 2b- Contact Markem-Imaje Technical Support.
3- Internal communication error	3a- Disconnect the printer from the mains power and reconnect. 3b- Contact Markem-Imaje Technical Support.
4- Font used not available	4a- Transfer the fonts used in the production job to the printer; OR Delete the job and create a new one with the existing fonts.
5- Algorithm selected not available	5a- Check and correct the print parameter settings OR Transfer the algorithm used in the job in production to the printer, OR Delete the job and create a new one using the existing algorithms.
6- Job selected not available	6a- Check the library in the printer.
7- Hijri calendar fault	7a- Check and correct the Hijri calendar's configuration.
8- Invalid job content	8a- Check the job content, particularly the barcode if there is one.
9- Incorrect print speed	Incorrect horizontal print. Adjust the tacho division.
11- Double printing detected	11a- Check that the printer is receiving jobs with different content with each print.
12- Print speed too low	12a- Check the speed measurement settings and the position of the cell in relation to the printhead.
13- Drop load supply failure	13a- Clean and dry the printhead
14- Drop deviation supply failure	14a- Clean and dry the printhead.
15- Head cover absent or not detected	15a- Replace the head cover to restart printing.
16- Jet out of gutter or not detected (default 2061 or 2060)	16a- Clean and dry the printhead. 16b- Use the "Unblock Nozzle" function in the head operations screen if the jet is not in the gutter.
17- Drop (phase) detection	17a- Clean and dry the printhead. 17b- Use the "Adjust break-off point" function in the head operations screen.
18- Jet poorly positioned	Printing may be of poor quality. The printhead may be dirty.

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	18a- Clean and dry the printhead.
	18b- Use the “Unblock Nozzle” function in the head operations screen.
19- Ink level too high	19a- Drain the printer according to the procedure described in this manual.
20- Viscosity too high	20a- Check that the ink used corresponds to the printer’s configuration.
	20b- Contact Markem-Imaje technical support.
21- Ink empty	21a- If the ink cartridge is not empty, check that it has been inserted correctly.
	21b- Replace the ink cartridge if it is empty.
22- Additive empty	22a- If the additive cartridge is not empty, check that it has been inserted correctly.
	22b- Replace the additive cartridge if it is empty.
23- Cooling fan Failure	23a- Check that nothing is blocking the fans’ blades.
	23b- Make sure that the fans are clean and that they turn easily.
	23c- Contact Markem-Imaje technical support.
24- Low additive level	The printer starts using the ink circuit’s additive tank. The remaining life is calculated and displayed on the screen.
	24a- If the additive cartridge is not empty, check that it has been inserted correctly.
	24b- Replace the additive cartridge if it is empty.
25- Low ink level	The printer starts using the ink circuit’s ink tank. The remaining life is calculated and displayed on the screen.
	25a- If the ink cartridge is not empty, check that it has been inserted correctly.
	25b- Replace the ink cartridge if it is empty.
	NOTE: this warning may also be caused by the air present in the pipes after a part has been replaced.
27- Ink temperature too high	27a- Check that the ambient temperature is not too high.
28- Critical additive level	28a- If the additive cartridge is not empty, check that it has been inserted correctly.
	28b- Replace the additive cartridge if it is empty.
29- Critical ink level	29a- If the ink cartridge is not empty, check that it has been inserted correctly.
	29b- Replace the ink cartridge if it is empty.
30- Missing plant air (IP65 only)	30a- Check that the air inlet is properly attached.
	30b- Check the following points:
	- minimum pressure: 4 bar
	- minimum flow rate: 400 L/h
31- No printing on the objects without faults being signalled	31a- Check the content of the message selected for printing.
	31b- Check the print Trigger Mode, Margin, Object Speed, Speed Measurement & Encoder Division settings.
	31c- Perform a printing test. Check the connections and oper-

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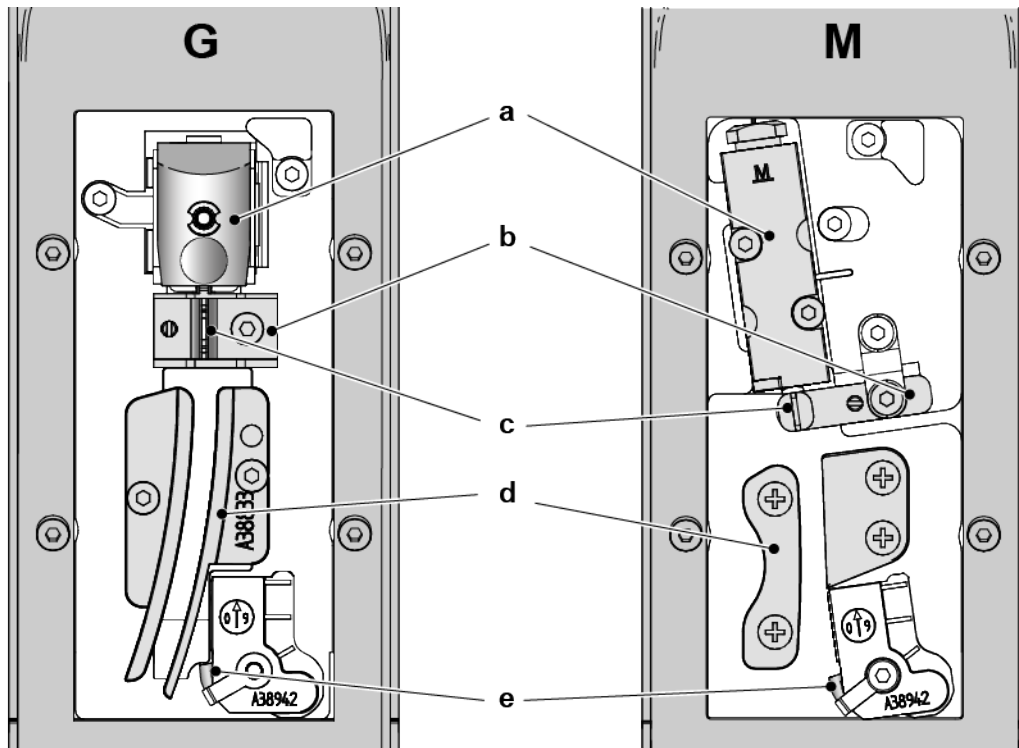
	ations on the cell(s) and encoder.
32- Poor printing quality	32a- Clean the printhead (including the cover) and check that there are no obstacles on the jet trajectory.
	32b- Check the stability of the head bracket (no vibrations).
	32c- Check the head/object distance (examples 1 and 2).
	32d- Check that the jet is centred in the recovery gutter (examples 3 and 4).
	32e- Mechanical and/or electronic adjustment of the head is required. Contact Markem-Imaje technical support.

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Maintenance

Description of the print head components

Description of the G and M head

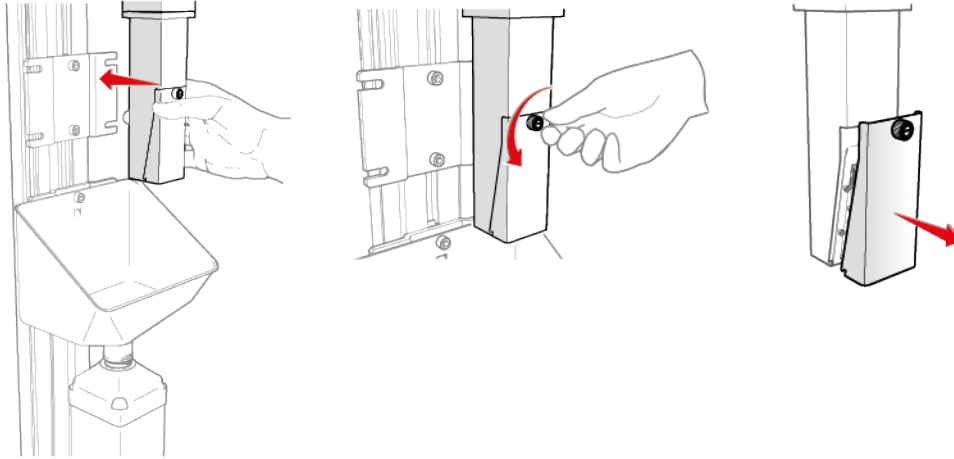


- a. Modulation chamber
- b. Charge electrode
- c. Stroboscopic LED
- d. Deflection plates
- e. Gutter

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Removing the head cover

1. Position the head on its stand.
2. Loosen the knurled screw and remove the head cover.



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Regular maintenance

You must perform periodic maintenance on your printer. Monitoring your printer and performing maintenance on it are essential in ensuring that it remains in good condition.

Forgetting or not doing maintenance can lead to bigger and more expensive failures.

The frequency of maintenance will depend on the type of use:

30 months or **18,000** hours from the date the printer was first used, whichever comes first.

Type of use	Maintenance frequency
Normal use (2 shift work sessions - 2 shifts)	30 months from the date of first use
Normal use (3 shift work sessions - 3 shifts)	18,000 hours from the date of first use
Harsh environment (pigmented, micro-pigmented ink or/and dust/humidity/high temperature environment)	15 months or 9,000 hours, whichever comes first

Number of preventive maintenance sessions over a 5 or 7 year period

Depending on the ink and shift work sessions and conditions of use:

	2 shift work sessions (2 shifts)	3 shift work sessions (3 shifts)	
Dye ink	1	2	5 years
	2	3	7 years



For example, during normal use (2 shifts), a printer will be serviced 1 time during 5 years.

	2 shift work sessions (2 shifts)	3 shift work sessions (3 shifts)	
Pigmented/micro-pigmented inks or severe conditions of use*	3	4	5 years
	5	6	7 years

(*) dust/humidity/high temperature environment



Please contact your representative for more information on all Markem-Imaje service offerings.

Replacement of the preventive maintenance kit

Description of the preventive maintenance kit and module replacement, see "Procedure for changing the modules 1 to 6" on page 111.

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Head cleaning

	Head movement	Pigmented/micro pigmented ink	Standard dye ink
G Head	Every week	Every week	Every two weeks
M Head	Every week	Every week	Every two weeks

Enhanced head cleaning: see "In-depth G Head cleaning " on the next page.

See the [Spare Parts catalogue](#) for the maintenance components.

The maintenance procedures are described in this section.

Cleaning the G head and the M head



The print head should be cleaned **every two weeks** for standard inks, and **every week** for mobile-head applications, pigmented and micro pigmented ink.

See the steps listed in the in-depth cleaning procedure. Skip steps 6 - 10.

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In-depth G Head cleaning

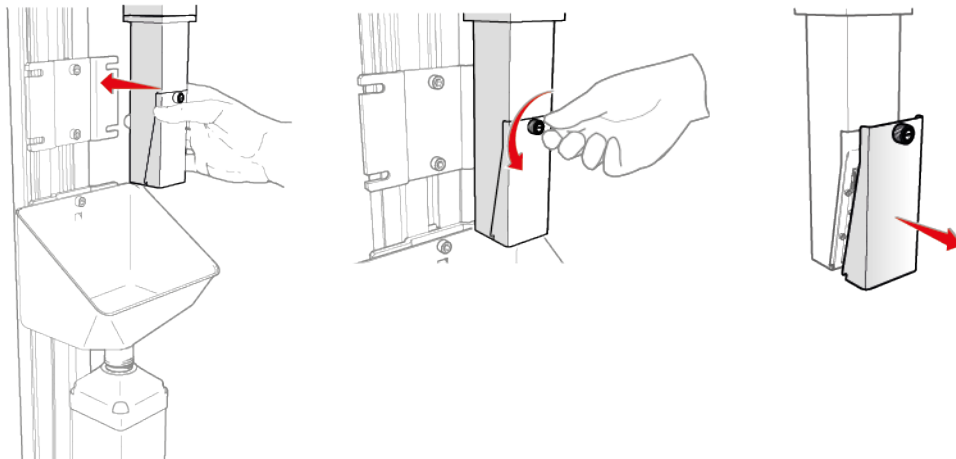


This type of cleaning is required for certain inks, or if the printer is used in harsh environments (high temperatures, dusty atmospheres).

Equipment required:

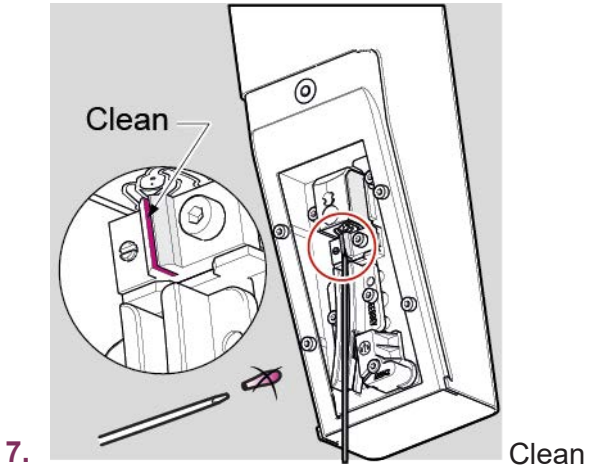
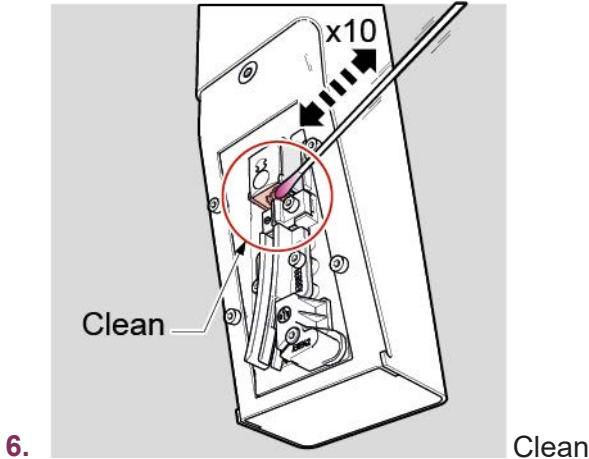
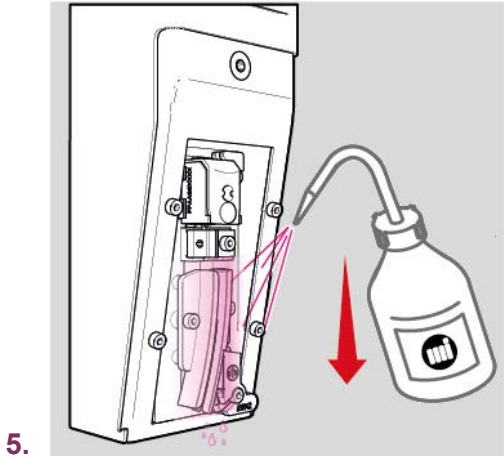
- Protective goggles
- Latex gloves
- Maintenance tray
- Spray bottle
- Squeeze blower
- Fiche A47081
- Cotton swab

1. Press
2. Press
3. Press to stop the jet (see the "Special operations on the jet" section).
- 4.

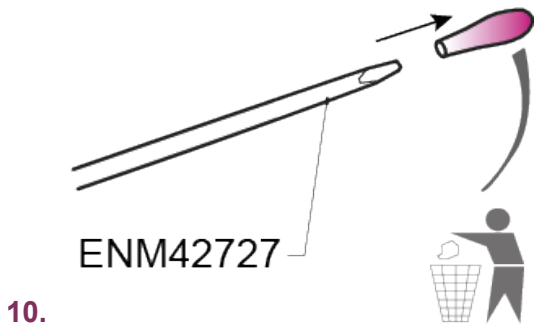
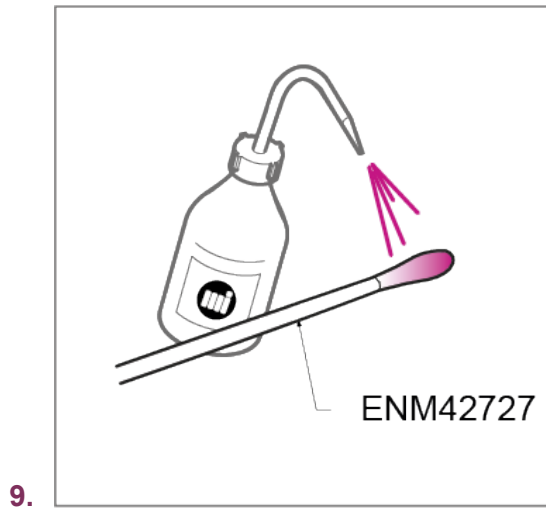
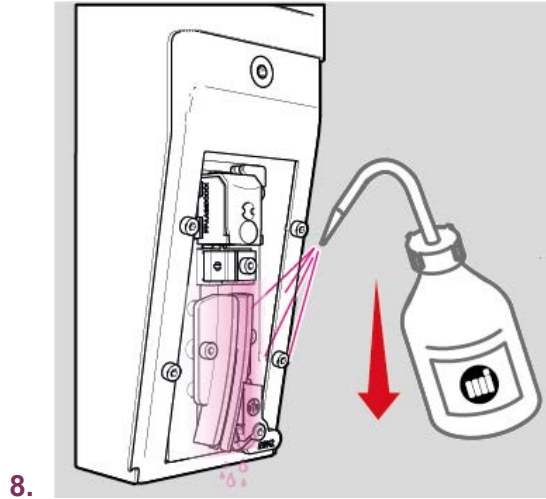


Only use Markem-Imaje cleaning fluid. Do not use an ultrasonic cleaner.

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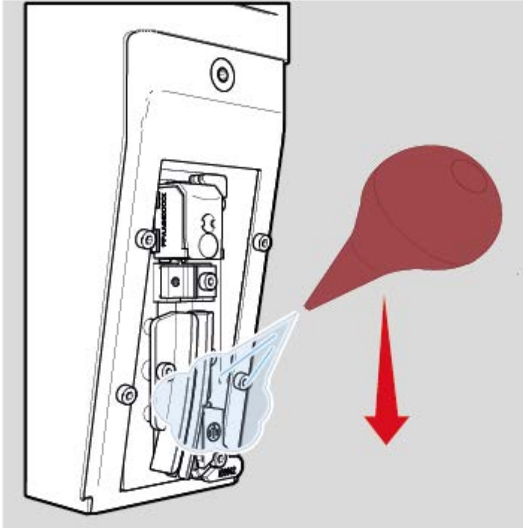
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11. Inserting additive **10 s**

12. Stability control **20 s**

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- 13.
14. Press  to restart the jet.
15. Closing the head cover again.
16. Clear the cover fault if necessary by pressing .

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In-depth M Head cleaning

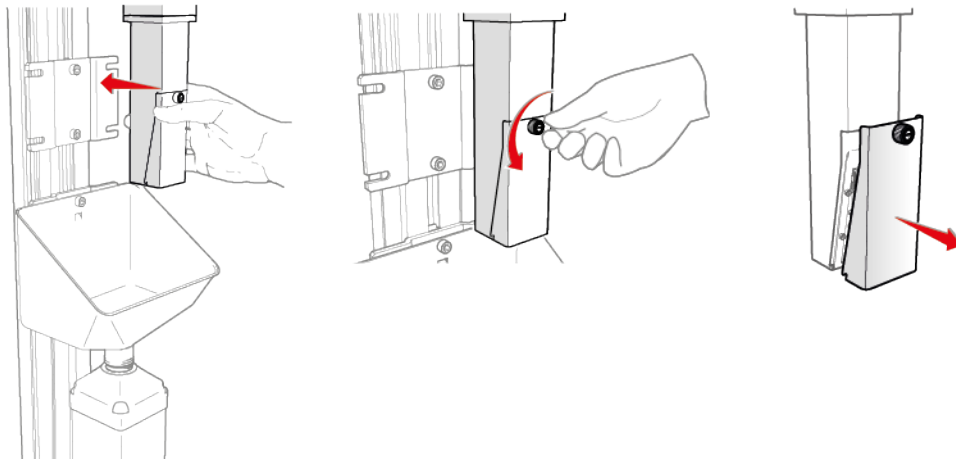


This type of cleaning is required for certain inks, or if the printer is used in harsh environments (high temperatures, dusty atmospheres).

Equipment required:

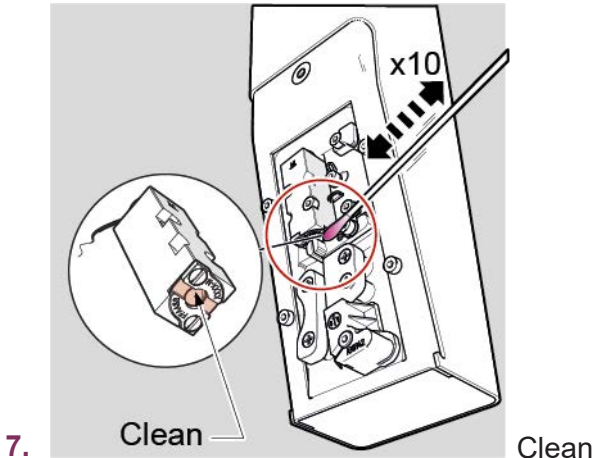
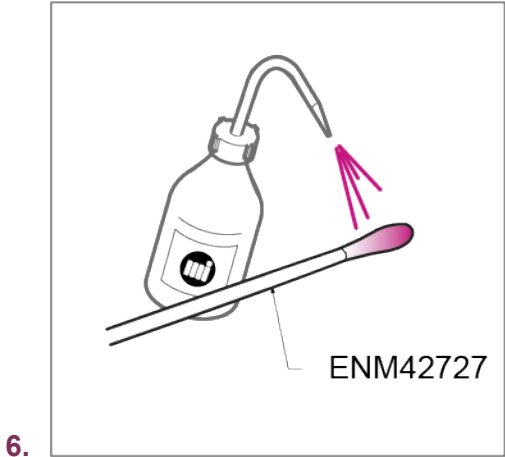
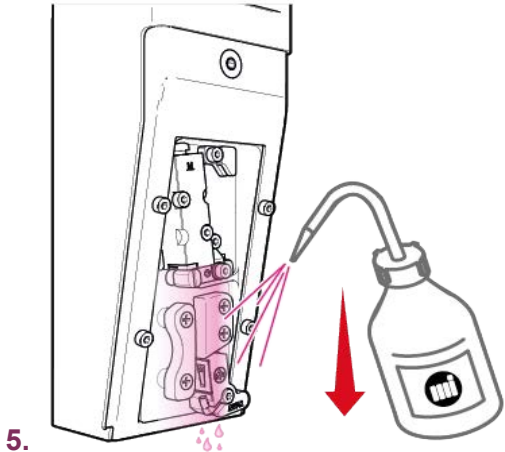
- Protective goggles
- Latex gloves
- Maintenance tray
- Spray bottle
- Squeeze blower
- Fiche A47081
- Cotton swab

1. Press .
2. Press .
3. Press  to stop the jet (see the "Special operations on the jet" section).
- 4.

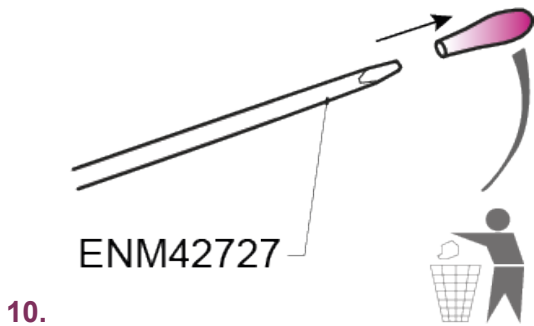
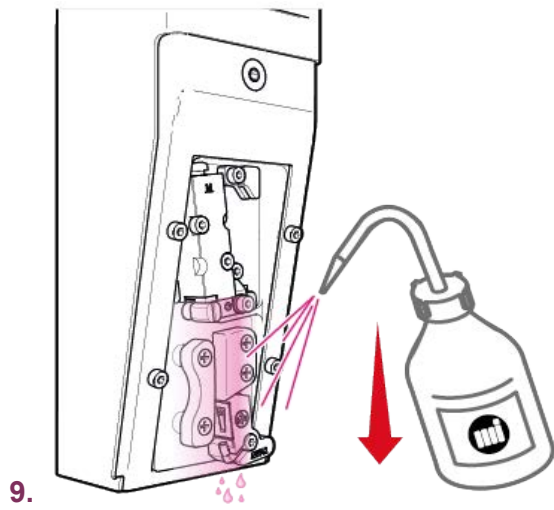
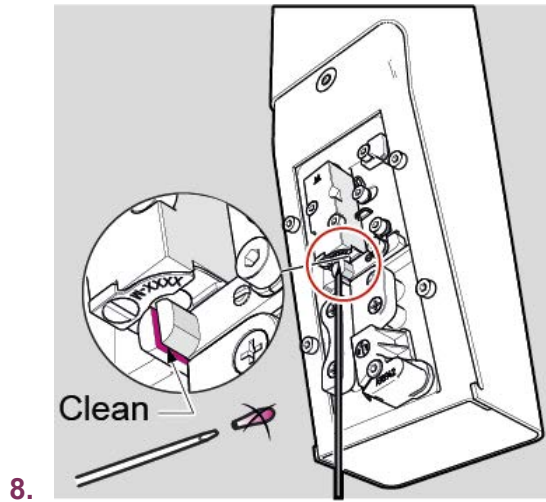


Only use Markem-Imaje cleaning fluid. Do not use an ultrasonic cleaner.

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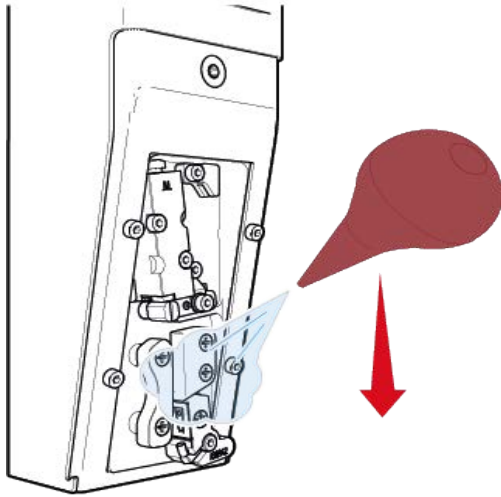
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11. Inserting additive **10 s**

12. Stability control **20 s**


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13.

14. Press  to restart the jet.



15. Closing the head cover again.

16. Clear the cover fault if necessary by pressing .

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Starting up the jet


After a maintenance, head cleaning or manual jet shutdown operation, proceed as follows to restart the jet.

To access the Head Maintenance screen, press  .

The jet's status is shown at the top left of the screen.

The jet is off.

The ink circuit is still started.

Press "Jet start-up" .

The jet is starting up. Wait for about 15 seconds

The jet is on.


Shutting down the jet

To perform maintenance or cleaning operations on the print head, the jet must first be shut down.

1. To access the Head Maintenance screen, press  .

The jet's status is shown at the top left of the screen.

The jet is on.

2. Press "Jet Off" .

3. The jet is off.

The ink circuit is still started.



Only leave the printer in this state during maintenance operations or while the printhead is being cleaned.
Do not leave the jet stopped for too long.






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Jet troubleshooting

Equipment required:

- Protective goggles
- Latex gloves
- Spray bottle
- Squeeze blower
- Eyeglass

If the jet is absent or deviated, various actions are used to re-center it in the gutter:

1. To access the Head Maintenance screen, press   .
2. Stop the jet by pressing . The jet's status is shown at the top left of the screen.
3. Position the jet on the maintenance stand and remove the head cover (see the ""Removing the head cover "" on page94" section).
4. Press "Unblock Nozzle" .



If the equipment does not operate, carry out in-depth cleaning of the head (see previous page) and repeat step 4, "Unblock nozzle".



If the jet does not appear within 15 minutes of selecting the "Unblock nozzle" operation, contact your Markem-Imaje dealer.

1. Observe the jet in the gutter, then turn off nozzle unblocking by pressing .



If the jet is already in the gutter, go to step 8. If not, go to step 6.

2. Press "Insert additive" .

Allow the cleaning solution to flow under the modulation chamber for approximately 20 seconds.

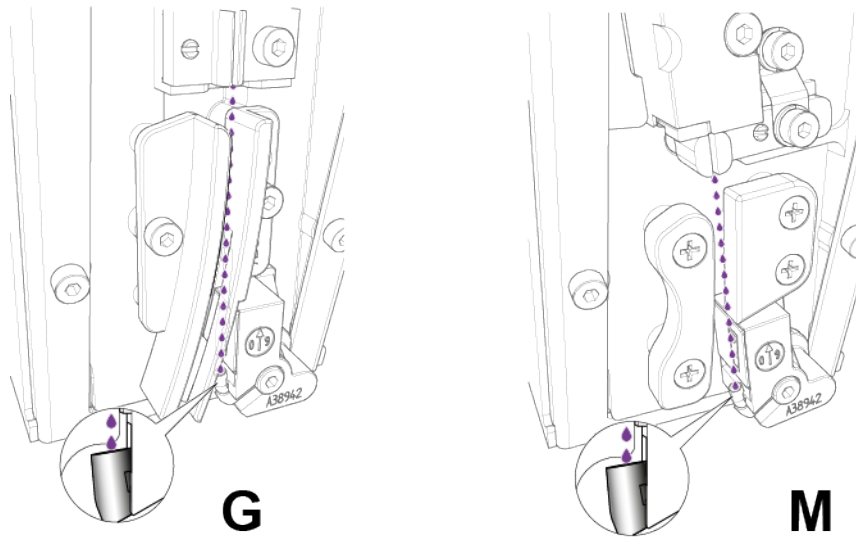


Only use Markem-Imaje cleaning fluid.

3. Stop additive insertion .
4. Press "Stability Control" .
5. Once the jet is aligned and in the gutter, turn off the jet's stability control.

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6. Clean the head (see the head cleaning procedure "Cleaning the G head and the M head " on page96).
7. After cleaning the head, restart the jet (see the jet start-up procedure "Starting up the jet" on page105).
8. Check that the jet is in the gutter.









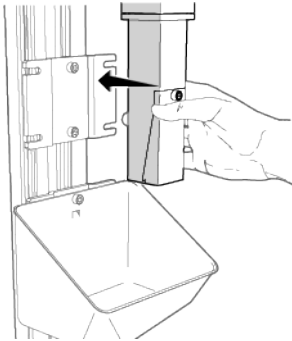
9. Replace the head cover and acknowledge the faults.



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Adjust the break-off point

If the printing is poor quality or if the printer detects faults, it may be necessary to adjust the break-off point.

1. Press  then  ►  ►  ►  to go to the screen for adjusting the jet break-off point ().
2. Position the head on the maintenance stand.



3. Press the break-off point adjustment button ().
4. Follow the procedure on the screen and perform the actions requested.
The measured viscosity must be equal to the reference viscosity displayed.
The operation takes about 10 minutes.
5. Press  when the procedure is finished.



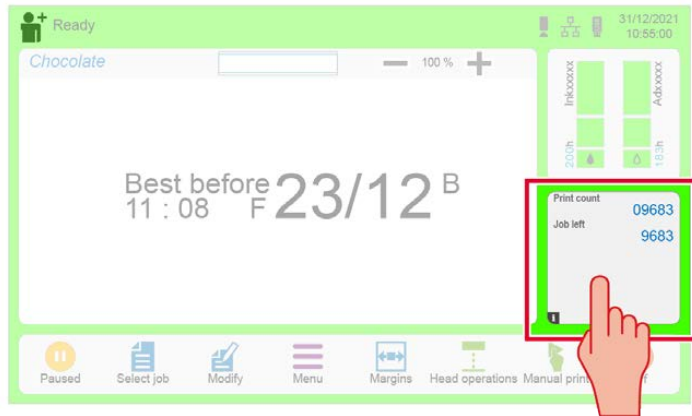
*During the procedure, if fault 2520 occurs, the break-off point adjustment must be restarted.
If fault 2520 occurs again after this, the modulator assembly must be replaced.*


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Performing a printing test

The printer status screen can be used to perform a printing test.

1. Press the information zone.



2. Press  to run a printing test

In single trigger mode, the printing test stops automatically after the job has been printed once.

In **repetitive trigger** mode, press  again to stop the printing test.

In **multitop trigger** mode, the printing test is stopped automatically once the number of prints defined in the "Number of Multitops" setting have been completed.



*The Speed Measurement setting must be defined in the job settings.
For more details about trigger modes, see the job settings section.*

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Inhibiting certain faults

The screen enabling certain printer faults to be inhibited is accessible from the main screen as follows:



During some servicing and maintenance operations it may be desirable to inhibit checks for certain faults. In other words, these faults will not be signaled, but will be ignored by the printer.

The following faults can be inhibited:

- cover open
- jet recovery in gutter
- printing speed.



*Inhibition of the "**Head cover fault**" and "**Recovery fault**" is disabled whenever the printer is started up. Faults should only be inhibited on an exceptional basis, for specific maintenance operations. The "**Speed fault**" is maintained at the value set by the user after each start-up.*



*When the jet is off, the "**Cover Open**" fault is automatically inhibited.*

Inhibiting certain alarms

The screen enabling certain printer alarms to be inhibited is accessible from the main screen as follows:



During some servicing and maintenance operations it may be desirable to inhibit checks for certain alarms. In other words, these alarms will not be signalled, but will be ignored by the printer.

The following alarms can be inhibited:

- Filter kit must be replaced in 4 weeks
- Filter kit must be replaced
- Maintenance kit must be replaced in 450 hours
- Maintenance kit must be replaced

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Procedure for changing the modules 1 to 6

The ink circuit is made up of several modules. Each module performs one or more functions in the ink circuit.

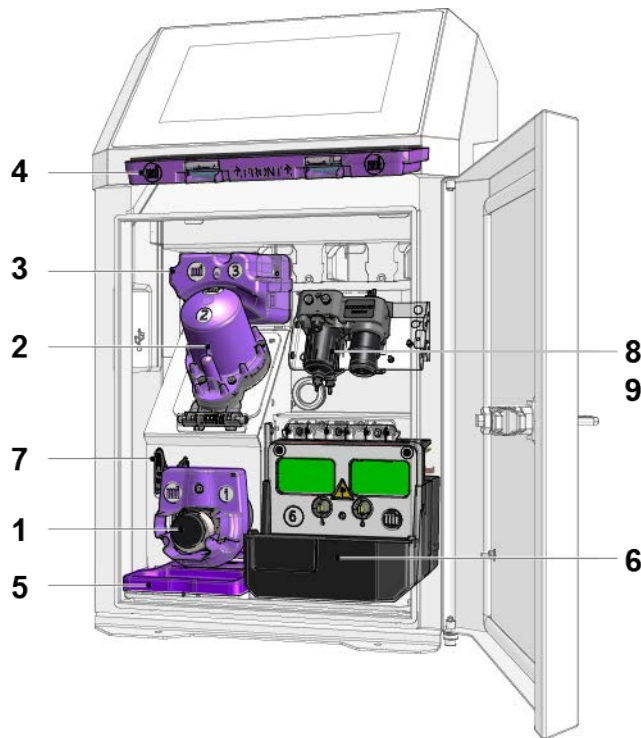
Preventive maintenance requires that all modules 1 to 5 be replaced.

Module change frequency: refer to the table at the beginning of this chapter "Regular maintenance" on page 95.

It is not necessary to completely drain or flush your printer before replacing the modules.

Initiating the procedure (see below) will automatically trigger a partial drain and flush of modules 1, 2 and 3.

Description and location of the modules

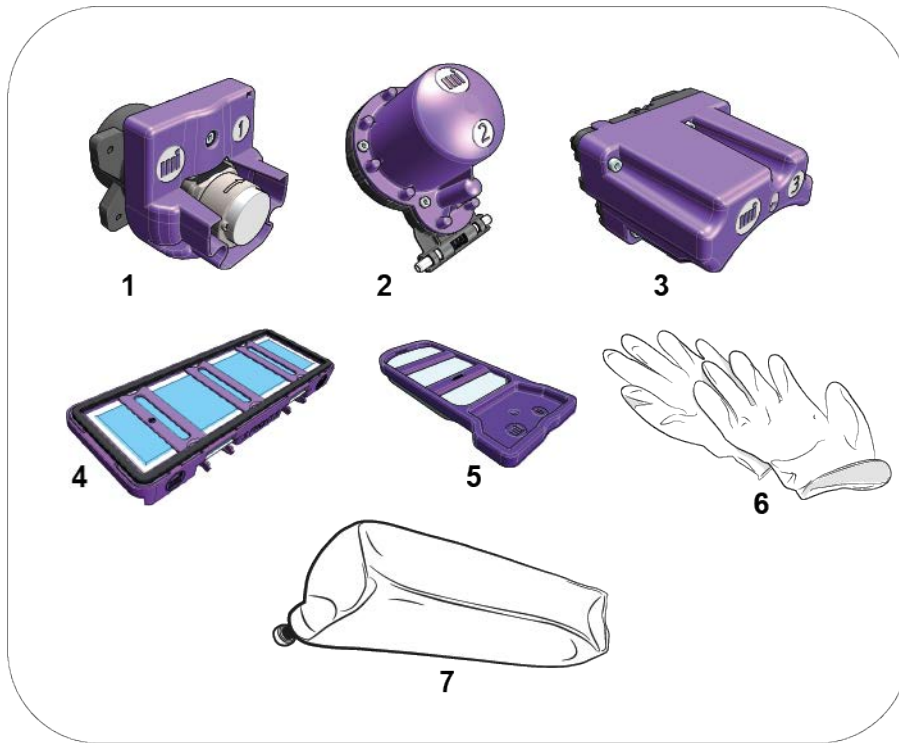


1	Module 1: Pressure pump
2	Module 2: Filter for the primary ink
3	Module 3: Recovery pump/Venturi
4	Module 4: Air in filter IP56 (violet)
5	Module 5: Air out filter IP56 (violet)
6	Module 6: Equipped hydraulic module ¹
7	Manual maintenance valve
8	Air Treatment Kit module (optional)
9	Standalone compressor kit module (optional)

¹Module 6 should not be replaced during preventive maintenance.

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Description of the preventive maintenance kit

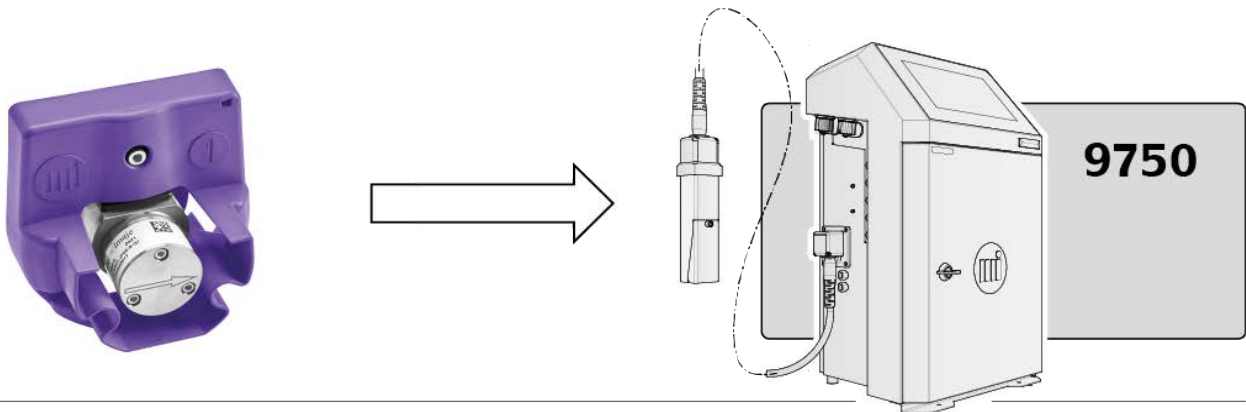


1	Module 1: Pressure pump
2	Module 2: Filter for the primary ink
3	Module 3: Recovery pump/Venturi
4	Module 4: Air in filter
5	Module 5: Air out filter IP56 (violet)
6	Gloves
7	Empty cartridge

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Ink pressure pump - Module 1


ENM10110977



Start of the draining procedure for replacing the modules


This procedure should be performed before replacing modules 1, 2, 3 or 6, or during preventive maintenance.



1. Confirm the start of the draining .
2. Follow the information and the different steps displayed on the screen.



Use your smartphone or tablet to scan the QR code on the screen to access the Markem-Imaje online help page

3. Replace the ink cartridge with the empty de-pressurized cartridge,
4. Replace the additive cartridge with a new additive cartridge and press .
5. At the end of the additive procedure, remove the additive cartridge.
6. Before starting step 3 of the procedure, move the valve to the maintenance position. Using the 3 mm Allen key, move the valve to the "Maintenance" position (Fig. A):

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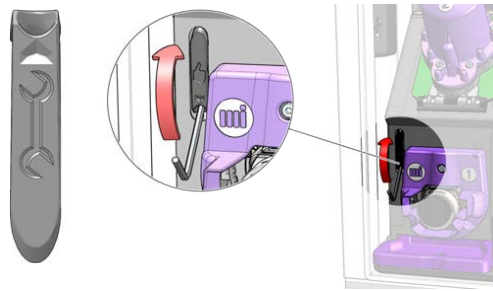


Fig. A

7. Press .

The module draining sequence then starts automatically.

8. Put the module back in place. Follow the replacement procedure in the next paragraph.

Replacing module 1: Pressure pump

1. Unscrew the 3 CHc M4 screws (a) (Fig.B)

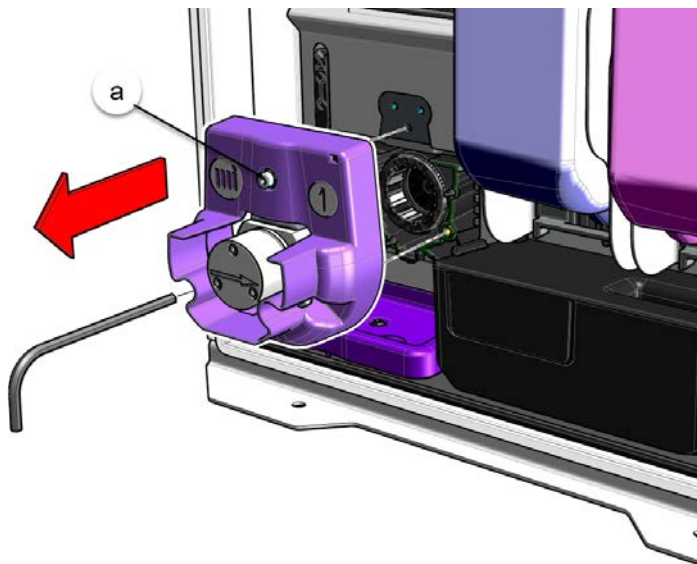
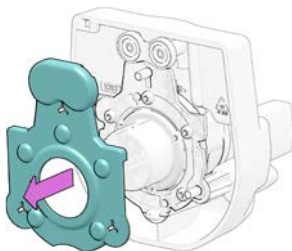



Fig.B

2. Remove module 1.
3. Remove the protection from the new module:



4. Reassemble by carrying out the removal steps in reverse.

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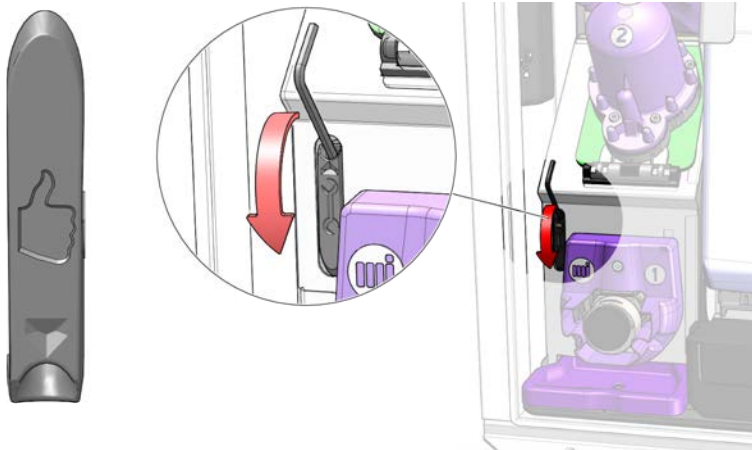
5. After replacing a module, press .
6. Remove the ink cartridge (waste),
7. Put the additive cartridge back in place,
8. Clean the printhead.



As waste, the module must be managed in compliance with local regulations related to waste management and transport of dangerous goods.

At the end of the module replacement procedure :





Using the 3 mm Allen key, move the valve to the "Operation" position as shown in the following figure:



Then press .



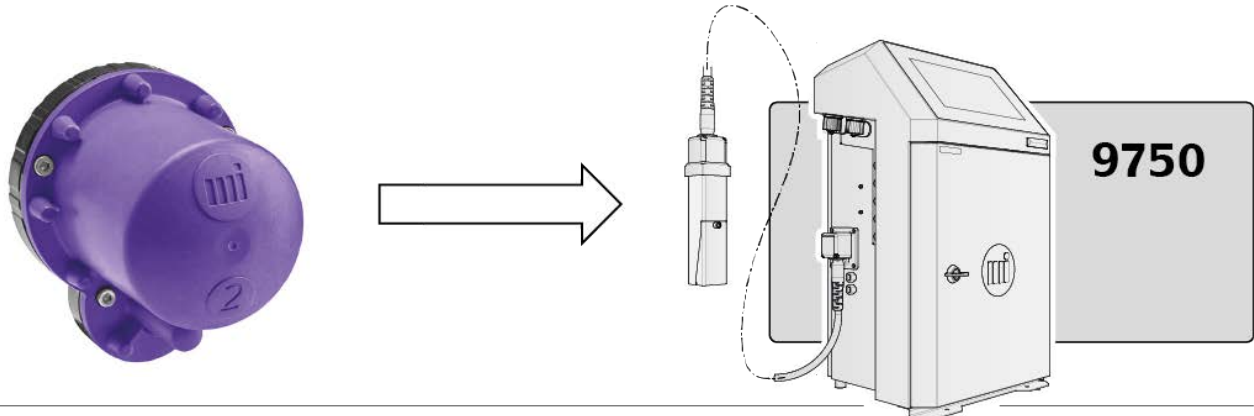
This maintenance procedure must be recorded in the

    *function for optimal tracking of the printer.*

for parts & service call QLC (800) 837-1309

Ink filter - Module 2


ENM10107952



Start of the draining procedure for replacing the modules


This procedure should be performed before replacing modules 1, 2, 3 or 6, or during preventive maintenance.



1. Confirm the start of the draining .
2. Follow the information and the different steps displayed on the screen.



Use your smartphone or tablet to scan the QR code on the screen to access the Markem-Imaje online help page

3. Replace the ink cartridge with the empty de-pressurized cartridge,
4. Replace the additive cartridge with a new additive cartridge and press .
5. At the end of the additive procedure, remove the additive cartridge.
6. Before starting step 3 of the procedure, move the valve to the maintenance position. Using the 3 mm Allen key, move the valve to the "Maintenance" position (Fig. A):

for parts & service call QLC (800) 837-1309

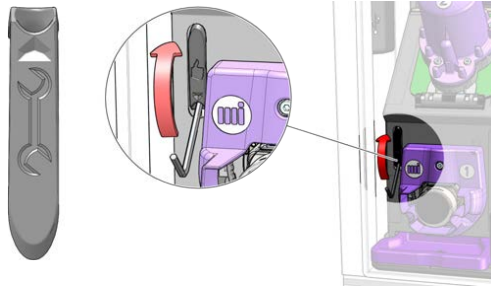


Fig. A

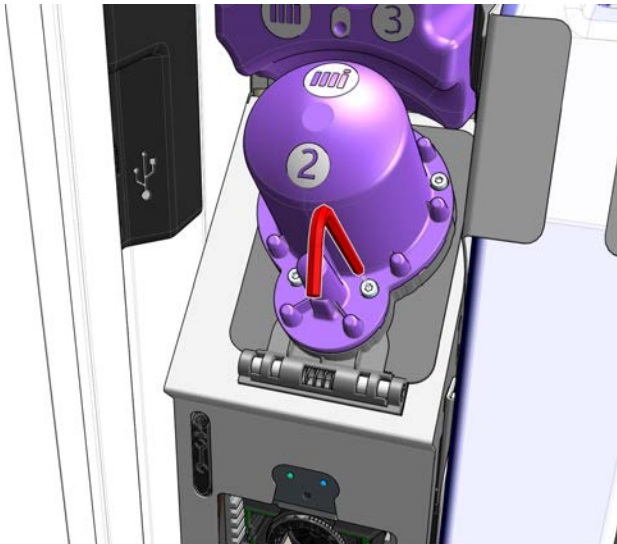
7. Press .

The module draining sequence then starts automatically.

8. Put the module back in place. Follow the replacement procedure in the next paragraph.

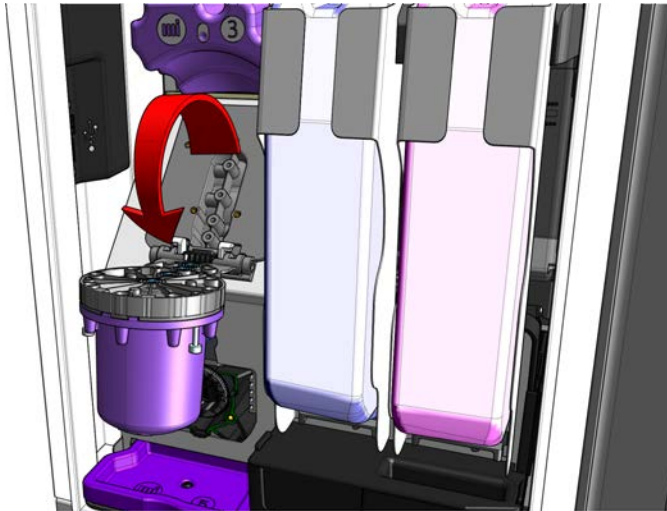
Replacing module 2: Ink filter

1. Unscrew the 4 CHc M4 screws (a):

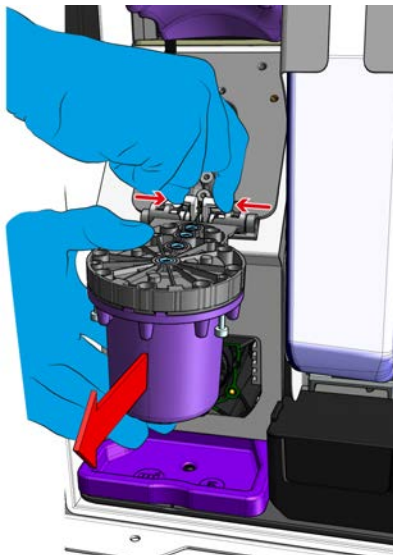


for parts & service call QLC (800) 837-1309

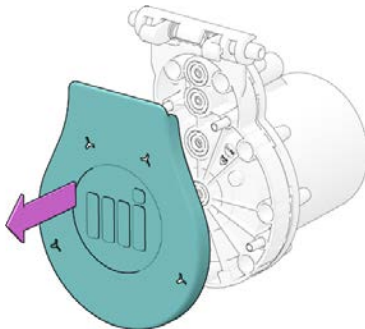
2. Pivot the module:




3. Unlock the module and pull it forward to remove as shown in the figure below:




4. Remove the protection from the new module:



5. Clean the bearing surface before installing the new module.
6. Reassemble the module by carrying out the removal steps in reverse.
7. After replacing a module, press .
8. Remove the ink cartridge (waste),

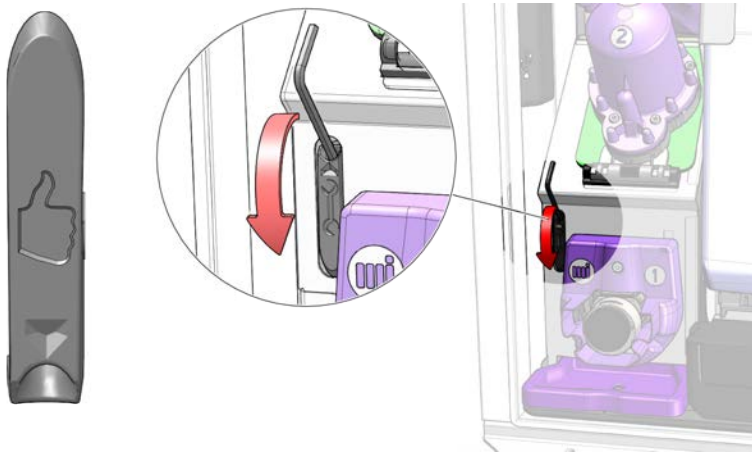
for parts & service call QLC (800) 837-1309

9. Put the additive cartridge back in place,
10. Clean the printhead.






 As waste, the module must be managed in compliance with local regulations related to waste management and transport of dangerous goods.

At the end of the module replacement procedure :

Using the 3 mm Allen key, move the valve to the "Operation" position as shown in the following figure:



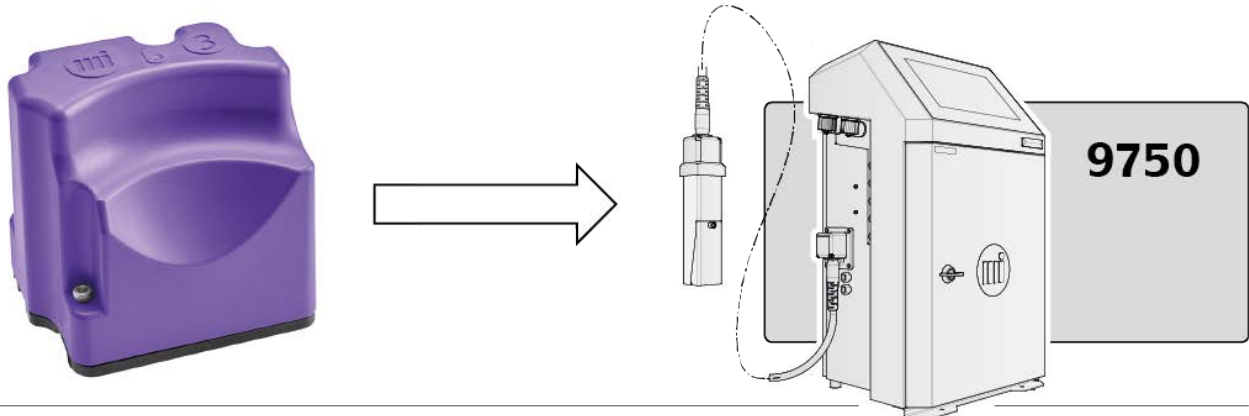
Then press .

 This maintenance procedure must be recorded in the     function for optimal tracking of the printer.

for parts & service call QLC (800) 837-1309

Ink vacuum pump - Module 3

ENM10109440




Module 2 must be disassembled to access module 3.



Start of the draining procedure for replacing the modules


This procedure should be performed before replacing modules 1, 2, 3 or 6, or during preventive maintenance.



1. Confirm the start of the draining .
2. Follow the information and the different steps displayed on the screen.



Use your smartphone or tablet to scan the QR code on the screen to access the Markem-Imaje online help page

3. Replace the ink cartridge with the empty de-pressurized cartridge,
4. Replace the additive cartridge with a new additive cartridge and press .
5. At the end of the additive procedure, remove the additive cartridge.
6. Before starting step 3 of the procedure, move the valve to the maintenance position. Using the 3 mm Allen key, move the valve to the "Maintenance" position (Fig. A):

for parts & service call QLC (800) 837-1309

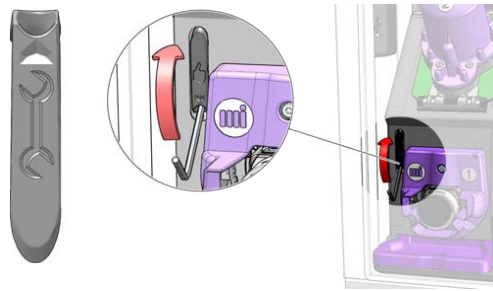


Fig. A

7. Press .

The module draining sequence then starts automatically.

8. Put the module back in place. Follow the replacement procedure in the next paragraph.

Replacing module 3 - Recovery pump/Venturi

1. Place a sheet of paper towel or the wipe supplied with the module kit under the module and unscrew the 4 CHc M4 screws (a):

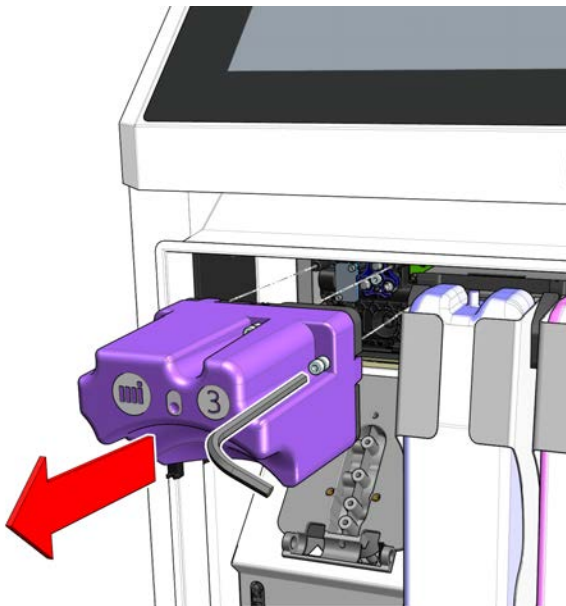
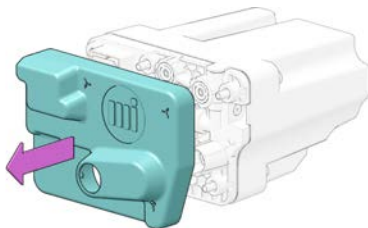


Fig. B

2. Remove module 3.
3. Replace the module with a new one. (Remove the protection from the new module first)



Clean the bearing surface before installing the new module.

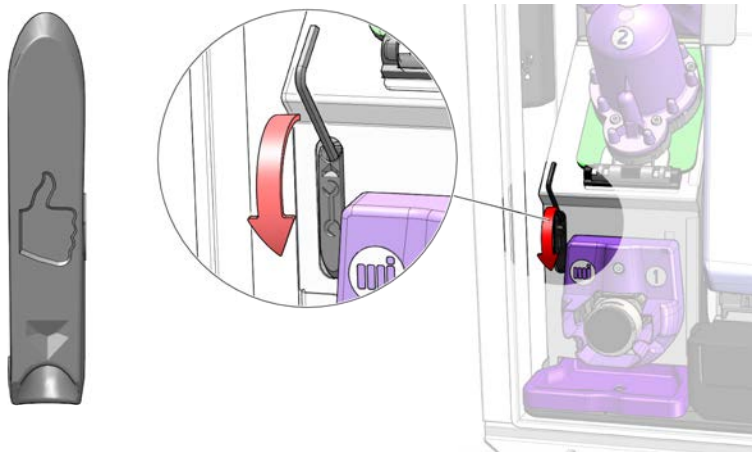
4. Reassemble by carrying out the removal steps in reverse.

for parts & service call QLC (800) 837-1309

5. Put module 2 back in place
6. After replacing modules, press →.
7. Remove the ink cartridge (waste),
8. Put the additive cartridge back in place,
9. Clean the printhead.

At the end of the module replacement procedure :

Using the 3 mm Allen key, move the valve to the "Operation" position as shown in the following figure:



Then press →.



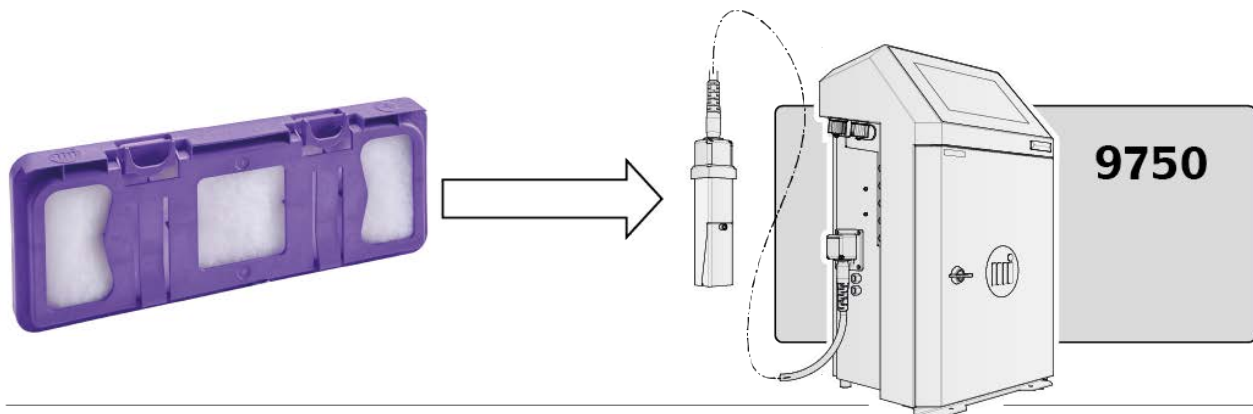
This maintenance procedure must be recorded in the

☰ ▶ 🛠️ ▶ 🔧 ▶ 📄 *function for optimal tracking of the printer.*

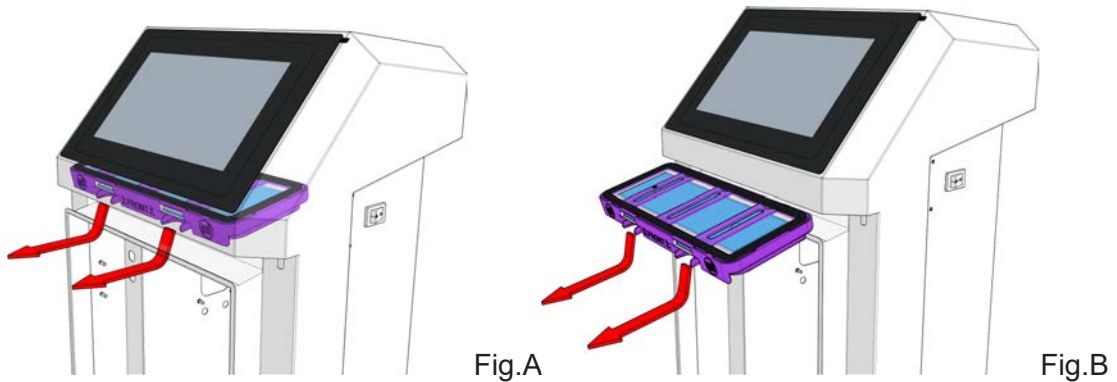
for parts & service call QLC (800) 837-1309

Module 4-Inlet Air filter

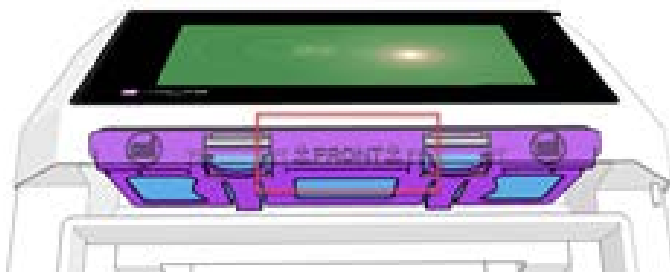
ENM10094182



Replacing module 4: Air in filter



1. Remove the filter and its holder by pressing into the two front notches of the filter while pulling down. (Fig.A then B)
2. Put the new filter and its holder in place of the old one in the direction of assembly indicated on the front of the filter holder.



This maintenance procedure must be recorded in the

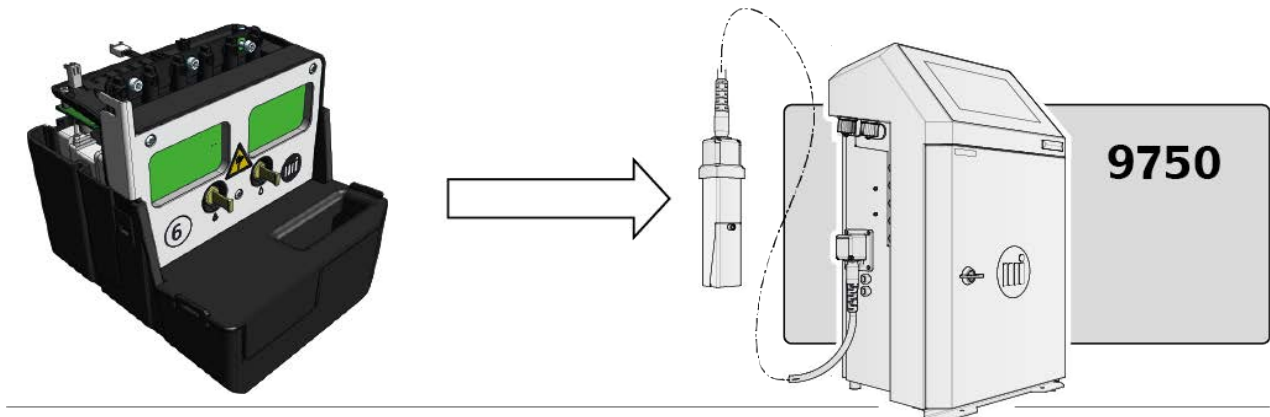


function for optimal tracking of the printer.

for parts & service call QLC (800) 837-1309

Hydraulic module - Module 6


ENM10110531



Start of the draining procedure for replacing the modules


This procedure should be performed before replacing modules 1, 2, 3 or 6, or during preventive maintenance.



1. Confirm the start of the draining .
2. Follow the information and the different steps displayed on the screen.



Use your smartphone or tablet to scan the QR code on the screen to access the Markem-Imaje online help page

3. Replace the ink cartridge with the empty de-pressurized cartridge,
4. Replace the additive cartridge with a new additive cartridge and press .
5. At the end of the additive procedure, remove the additive cartridge.

for parts & service call QLC (800) 837-1309

- Before starting step 3 of the procedure, move the valve to the maintenance position. Using the 3 mm Allen key, move the valve to the "Maintenance" position (Fig. A):

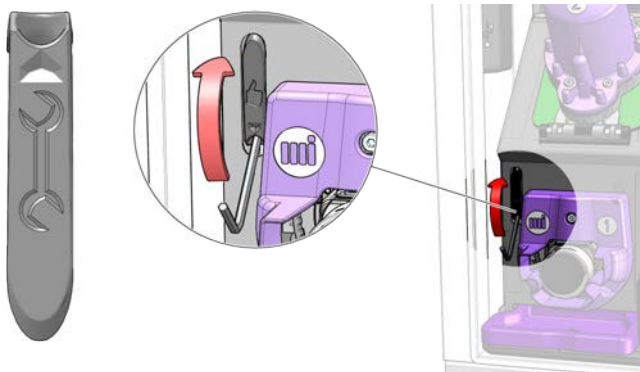


Fig. A

The module draining sequence then starts automatically.

- Put the module back in place. Follow the replacement procedure in the next paragraph.

Replacing module 6 - Hydraulic module

- Open the printer door and remove the cartridge holders (Fig.A).



Fig. A

- Unscrew the 3 front CHc M4 screws and the CHc M4 side screw (Fig.B)

for parts & service call QLC (800) 837-1309

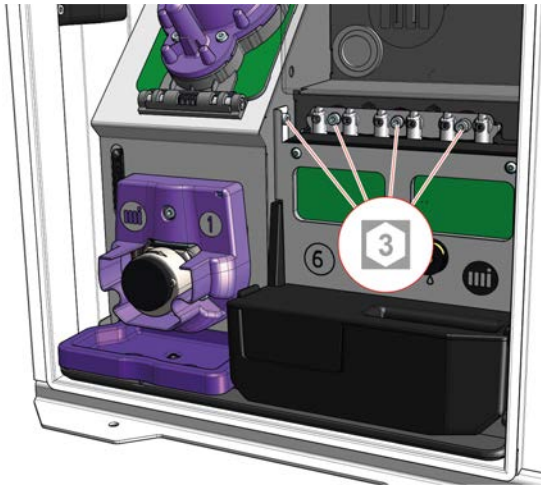


Fig.B

3. Pull module 6 forward to remove it. (Fig.C)

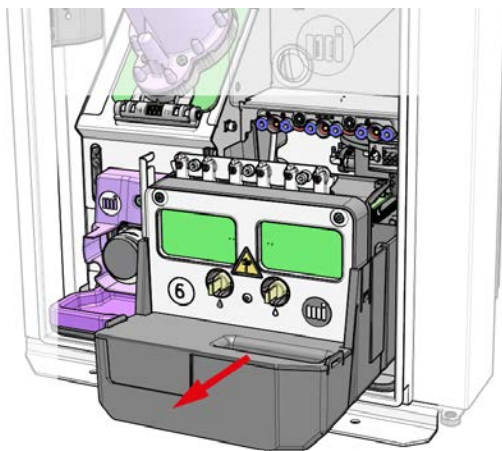



Fig.C

4. Replace the module with a new one.
5. Reassemble by carrying out the removal steps in reverse. Make sure that the seals on module 6 are present.
6. Insert the cartridge holders and the ink/additive cartridges.
7. After replacing a module, press .

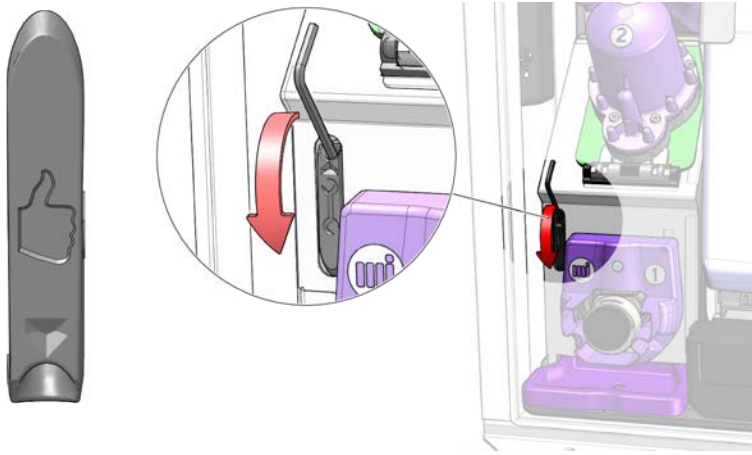


As waste, the module must be managed in compliance with local regulations related to waste management and transport of dangerous goods.

At the end of the module replacement procedure :

Using the 3 mm Allen key, move the valve to the "Operation" position as shown in the following figure:

for parts & service call QLC (800) 837-1309



This maintenance procedure must be recorded in the




function for optimal tracking of the printer.

for parts & service call QLC (800) 837-1309


Drain and rinse the ink circuit (full draining and flushing of the ink circuit)

Equipment required:

- Protective goggles
- Latex gloves
- Draining/flushing kit

 The ink circuit must be fully drained and flushed in the following cases:








- Shutdown for more than **15** days;
- Storage of the printer;
- Printer moved over a long distance.

 For Pigmented / Micro-pigmented inks, in case of shutdown for more than one week, drain and flush the ink circuit or start and let run the printer at least one hour every week.

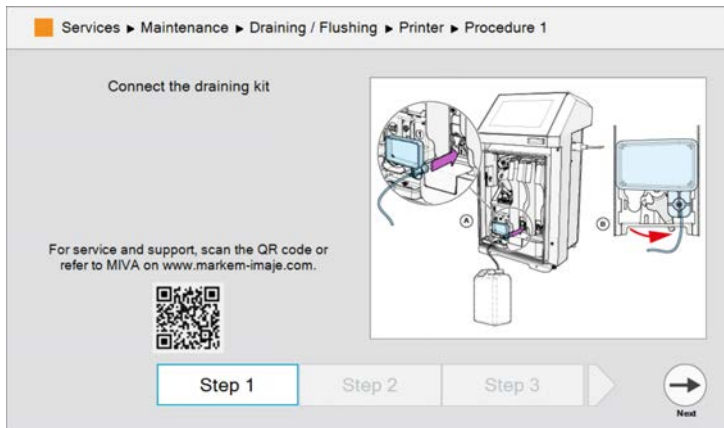
Draining/flushing procedure

1. Prepare the draining kit:

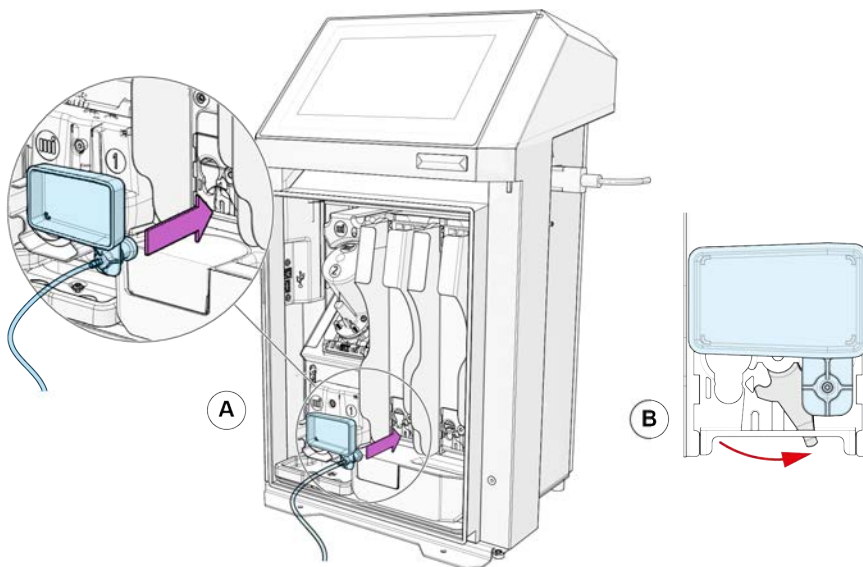


2. Press      .
3. Confirm that you want to start the drain/flush  and then follow the step-by-step instructions on the screen.

for parts & service call QLC (800) 837-1309

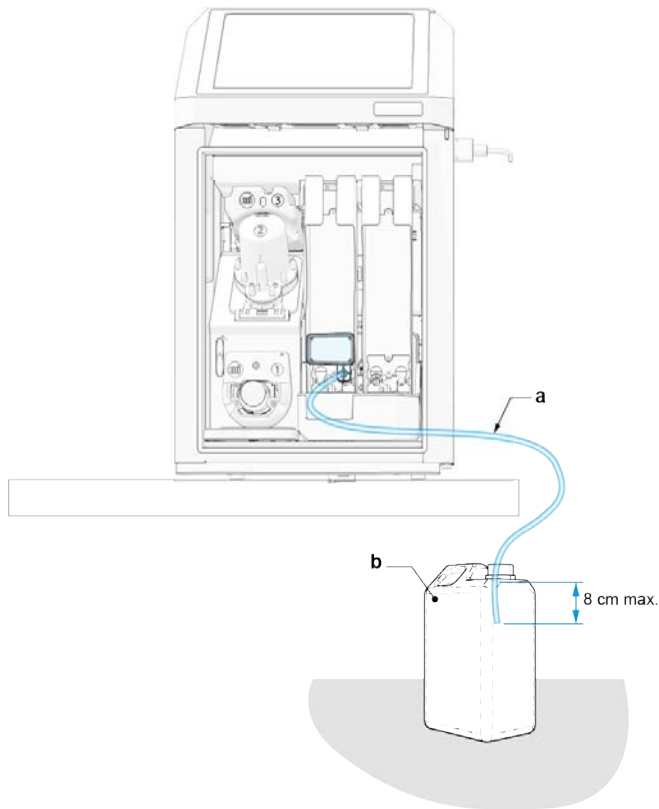


4. Install the drain kit as shown in the following figure:
- A:** insert the tip of the kit in place of the ink cartridge
- B:** lock the tool on the cartridge holder



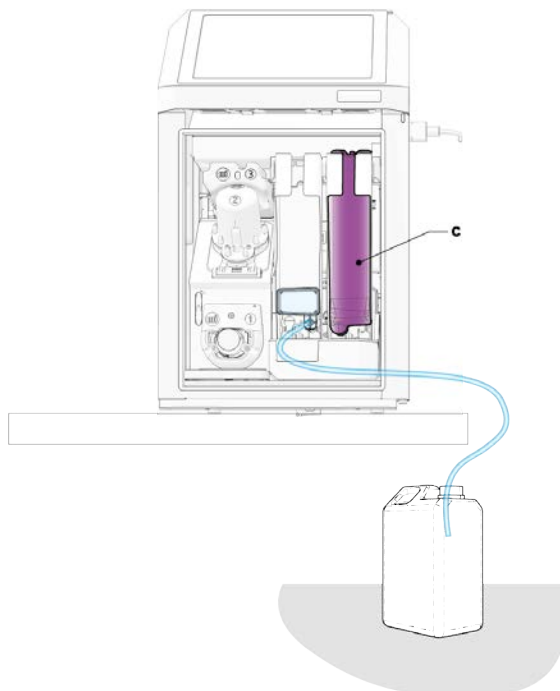
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5. Connect the hose (a) to the drum of the draining kit (b)



The hose (a) must be inserted no more than 8 cm inside the drum (b)

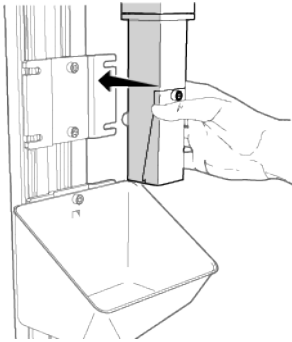
6. Click on → to go to the next stage.
7. Insert a full additive cartridge (c):



8. Click on → to go to the next stage.

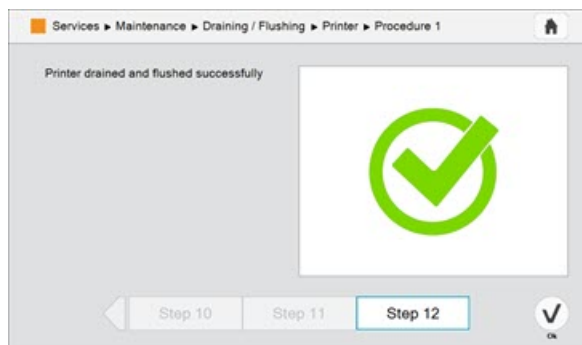
for parts & service call QLC (800) 837-1309

9. Position the print head on the maintenance stand.



10. Press . The draining/flushing operation will then start automatically.

11. The operation is completed in step 12:



12. Press then press .
13. Remove the empty additive cartridge
14. Remove the tip from the ink cartridge holder kit
15. Close the drum with the new undrilled cap
16. Dispose of the waste drum
17. Replace the cartridge holders with a full ink cartridge and a full additive cartridge



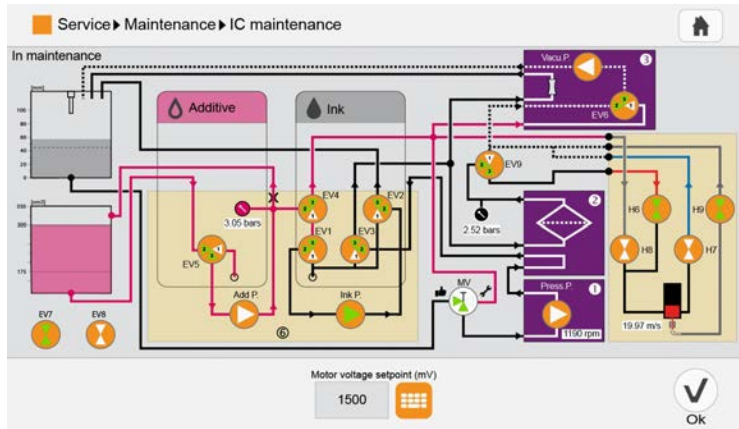
As waste, the ink collection drum must be managed in compliance with local regulations related to waste management and transport of dangerous goods.

for parts & service call QLC (800) 837-1309

Testing the ink circuit


Certain maintenance and troubleshooting operations require ink circuit components to be tested.

The printer must be shut down.



The screen may be different, depending on your configuration.

When this function is enabled, the printer is placed in standby.

It should be restarted with button  once the operations have been completed.

This function can be used to control:

- 5 ink circuit solenoid valves (EV1 to EV5);
- 4 head solenoid valves (H6 to H9);
- 2 Air solenoid valves (EV7 and EV8) (MTA kit + air gap kit)
- 1 solenoid valve of the recovery pump (EV6);
- 1 maintenance valve (EV9);
- 1 manual maintenance valve (MV);
- 4 pumps (Add P., Ink P., Press P., Vac P.).

Control the solenoid valves and pumps

The solenoid valves can be controlled by pressing the button that represents each solenoid valve:

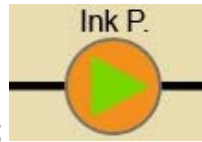


The pumps may be enabled in the same way:

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: pump stopped;

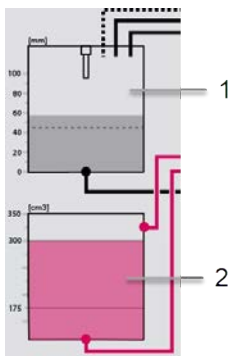


: pump in operation

The pressure, pump rotation or flow values are also displayed in real time on this ink circuit screen.

To facilitate these operations, the main operating settings (pressure, pump rotation or flow values) and the level of the measuring tank are displayed in real time.

Close up of the level information:



1 - Ink level measured by the upper sensor-level in mm.

Two states:

- White: the stick gage is not immersed.
- Black: the stick gage is immersed.









2 - Solvent level (3 states: 175, 300 or 350 cm³)

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Printer configuration

Setting the date and time

Setting the date

1. Press  ►  ►  ►  ►  to access the Date screen.
2. Press  or  to choose the month and year.
3. Select the day from the calendar.
4. Press  to confirm.

Setting the time

1. Press  ►  ►  ►  ►  to access the Time screen.
2. Press  or  to choose the hours, minutes and seconds.
3. Select 24h or 12h mode. If 12h mode is chosen, also select whether the current time is a.m. or p.m.










Quick access to date or time setting

Press the top right of the screen to go directly to the date and time setting screen.
(Advanced profile by default).




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Defining or modifying a screensaver

1. Press  ►  ►  ►  ► .
2. Press  and select a screensaver from the pull-down list.
3. Press  or  to set the time before the interface goes into standby.
4. Press  to confirm.

The screensaver is displayed if the printer is inactive for the time set in the "Time out" zone.

An image can be loaded from a USB stick by pressing  (see paragraph "Transferring data" on page 141").



 File format supported: .png. Size 10240x600 px.

Configuring inputs and outputs

Configuring the warning output

1. Press  ►  ►  ►  ►  ► .



This function selects the statuses during which the warning output is activated.

2. Pressing  (red) activates the alarm output.
3. Pressing  (orange) deactivates the alarm output.

Configuring the fault output

1. Press  ►  ►  ►  ►  ► .

This function selects the statuses during which the fault output is activated.


2. Pressing  (grey) activates the fault output.
3. Pressing  (red) deactivates the fault output.

Assign a generic element to inputs/outputs

1. Press  ►  ►  ►  ►  ► .

This function is used to assign an element to the generic inputs/outputs.

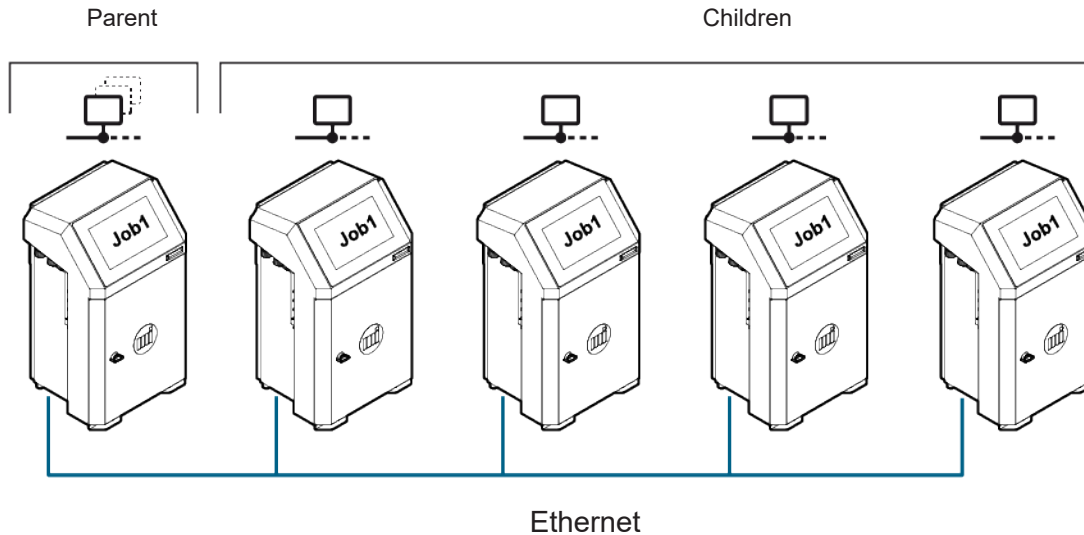
for parts & service call QLC (800) 837-1309


2. Select "Generic input" or "Generic output" and then assign an item from the list.
3. Press  to confirm.







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Configuring the Parent/Child function

To select the same job (with the same parameters) for production on several networked printers, one of the printers must be identified as a "Parent" printers and the others as "Child" printers.



 All the printers must have the same software configuration.
Between 1 and 4 "Child" printers may be connected.

1. Press      .
2. Select "Parent" status.
3. By default, the printer configuration is "Child".
4. Enter the IP addresses or the names of the connected printers.
5. Select the printers by checking the box opposite each address or name.


The connection is established and the serial number is displayed if the printer is recognized.

If not, "Not found" is displayed.

 It is possible to change a printer from "Parent" to "Child" status. In this case its configuration is hidden.

If the status is changed back to "Parent", the most recent configuration is displayed and the connection is tested.







"Parent" status is shown on the main screen by the pictogram 

"Child" status is shown on the main screen by the pictogram 

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Configuring network connections

Configuring the serial links

1. Press  ►  ►  ►  ►  ► .
2. Select:
 - transmission speed (in baud): 9600 - 19200 - 38400 - 57600 - 115200,
 - number of data bits
 - type of parity: none, even or odd
 - number of stop bits: 1 or 2
 - The protocol (see next page).



Return to default settings.

The advanced settings  are used to define the Print Receipt Behaviour:

- Printing successful
- Printing failed
- Successful and failed printing

Configuring the Ethernet connection

1. Press  ►  ►  ►  ►  ► .

DHCP (Dynamic Host Configuration Protocol) Mode

2. Change the name of the printer (optional) by pressing the "**Name**" field.
3. Define the port number to be used.

Fixed IP address mode

2. Change the name of the printer (optional) by pressing the "**Name**" field.
3. Define the port number to be used.
4. IP address, subnet mask and default gateway.



Consult the network administrator to obtain the connection configuration data.

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Selecting the protocol

1. Press  ►  ►  ►  ►  ► .

The printer is capable of handling various protocols corresponding to various types of external links (depending on its configuration)

2. From the Ethernet or Serial link 1 or 2 configuration screen, select one of the five protocols proposed:
 - Standard
 - Job name selection – Simplified
 - Job library selection – Simplified
 - External variable – Simplified
 - AsciiCommand – Simplified

Standard:

The operator interface handles V24 commands. This is the traditional protocol used for external communication. It is also the default protocol.

Contact your Markem-Imaje dealer or technician for more details.

Simplified protocols

These protocols are used with simple devices such as bar code readers, weighing machines, and so on. Data exchange is then simplified.

Job name selection – Simplified

This enables messages to be selected for printing based on their name. Sending a message name using this simplified protocol selects it for printing.

Format: STX (02h)/Message name/ETX (03h)

Job library selection – Simplified

This enables messages to be selected for printing, based on their name, from the current message library.

The library can contain up to 255 messages in the store.

The library is used by the print engine, selecting messages by external commands on the parallel port or industrial interface.

Selecting a library by name.

Format: STX (02h)/Message name/ETX (03h)

Ascii Command simplified

All data are encapsulated between two ETX (02h) and ETX (03h)

In addition, a first character must be added to identify the type of action to be performed.

N MsgName: Selection of the message from the list by name

for parts & service call OLC (800) 857-1309

< STX (02h) >< N(4Eh) > < MessageName (hexa) > < ETX (03h) >

Ex: 02 4E 4D 45 53 53 31 03 => To select a message named "MESS1"

M MsgNumber: Library message selection by number

< STX (02h) >< M(4Dh) > < MessageNumber (hexa) > < ETX (03h) >

Ex: 02 4D 4D 45 53 53 31 03 => To select a message named "MESS1"

W to fill in the variables identified by their 3-digit number. The \$ symbol delimits the variables

< STX (02h) > < W(57h) > < \$ > < Var1NumVar1Data > < \$ > < Var2NumVar2Data > < ETX (03h) >

Ex: 02 57 24 30 30 31 4D 41 52 4B 45 4D 24 30 30 32 49 4D 41 4A 45 03 => To send variable 1 "MARKEM" and variable 2 "IMAJE"

for parts & service call QLC (800) 837-1309

Transferring data

1. Press   .

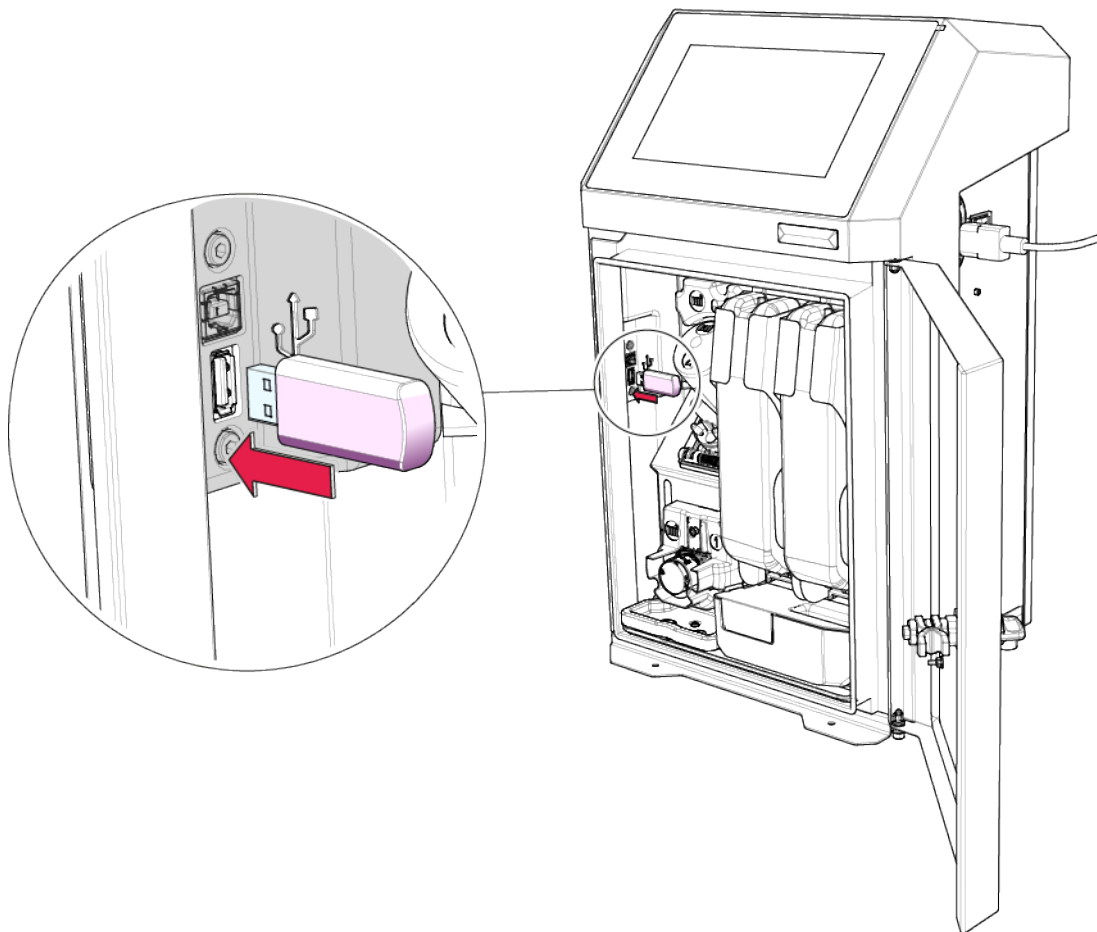
This function transfers data between the printer and an external medium: USB drive.

2. Open the printer door to access the USB port.

Various types of data can be transferred: jobs, fonts, symbols, algorithms, languages.









Production is stopped before starting the transfer.



General transfer principle

1. Press   .

2. Select the type of data to transfer       .

3. Press .

for parts & service call QLC (800) 837-1309


4. Select:

- source medium
- target medium, if necessary
- destination directory if the medium has one

Languages may only be transferred from an external medium to the printer.

5. Confirm by pressing . The contents of the source medium are displayed.**6. Select one or more directories or data items to transfer.**

Pressing at the root of a folder tree structure selects the entire structure.


7. Press  to copy the data in the transfer list.**8. To delete one or more data items from the list, click to select, then press  to delete them from the list.****9. When the data list is complete, pressing  transfers it to the target medium.**

A message confirms the transfer.



Do not remove the USB drive while data is being transferred; make sure there is available space on the USB drive before use.

Creating a new destination folder

1. To create a new directory, press .


The new folder is created in a folder selected from the list.

2. Give the new directory a name, then press .

The newly created folder will automatically be selected as the destination folder.

3. Press  to go to the screen where jobs to be transferred can be selected.

Enabling/disabling overwriting of data

1. Press  to access the data overwriting option.

This function is used to select whether the content is overwritten and replaced by the data transferred.

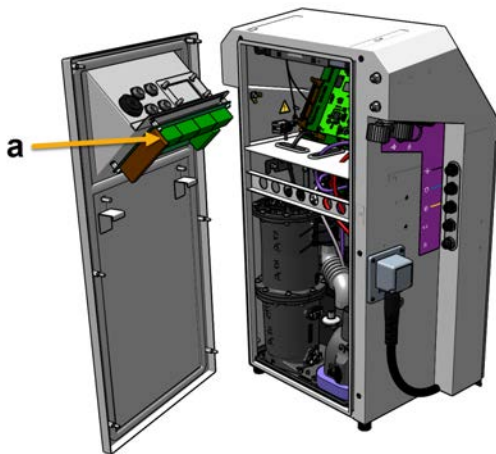
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External Connections

General information

The printer is connected to the surrounding environment via an industrial interface comprising an industrial interface board and dedicated connectors.

Rear door open with the industrial interface card (a):



Various types of signals may be exchanged:

- Line synchronization input/output signals (TRIGG, ENCODER, INVERSE MESS, etc.)
- Serial links for controlling the printer (RS232/RS422 interface)
- Warning and fault outputs

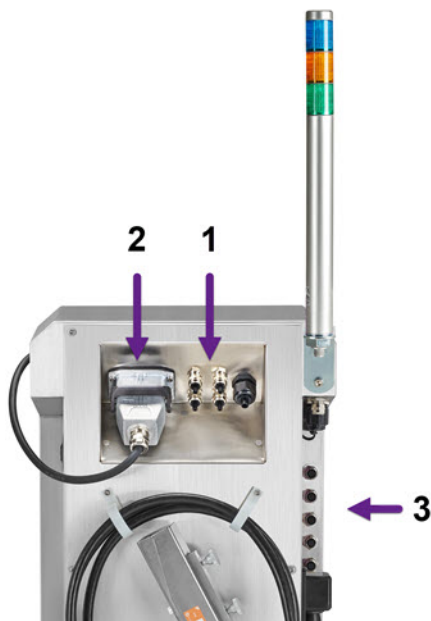
The printer also has the following features:

- Job selection signals on the interface parallel
- Various control input/output signals (counter incrementation / initialization, etc.)
- Additional detection photocell input
- Job number increment input
- Programmable and synchronization inputs/outputs

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External

The wiring for these signals may be connected:



- 1 industrial interface board terminals (optional)
- 2 24-pin connector (optional)
- 3 IP65 sealed M12 sockets (optional)

(1) Either to the terminal blocks on the industrial interface board (optional), with cables routed via IP65 sealed cable glands (located on the rear panel of the printer). Use shielding cable to make this type of connection. Each cable's shielding is connected to the metal cable gland around the full 360° circumference.

(2) Either by means of the 24-pin connector.

(3) Or, for some signals (encoder, photocell and warning), IP65 sealed M12 sockets.

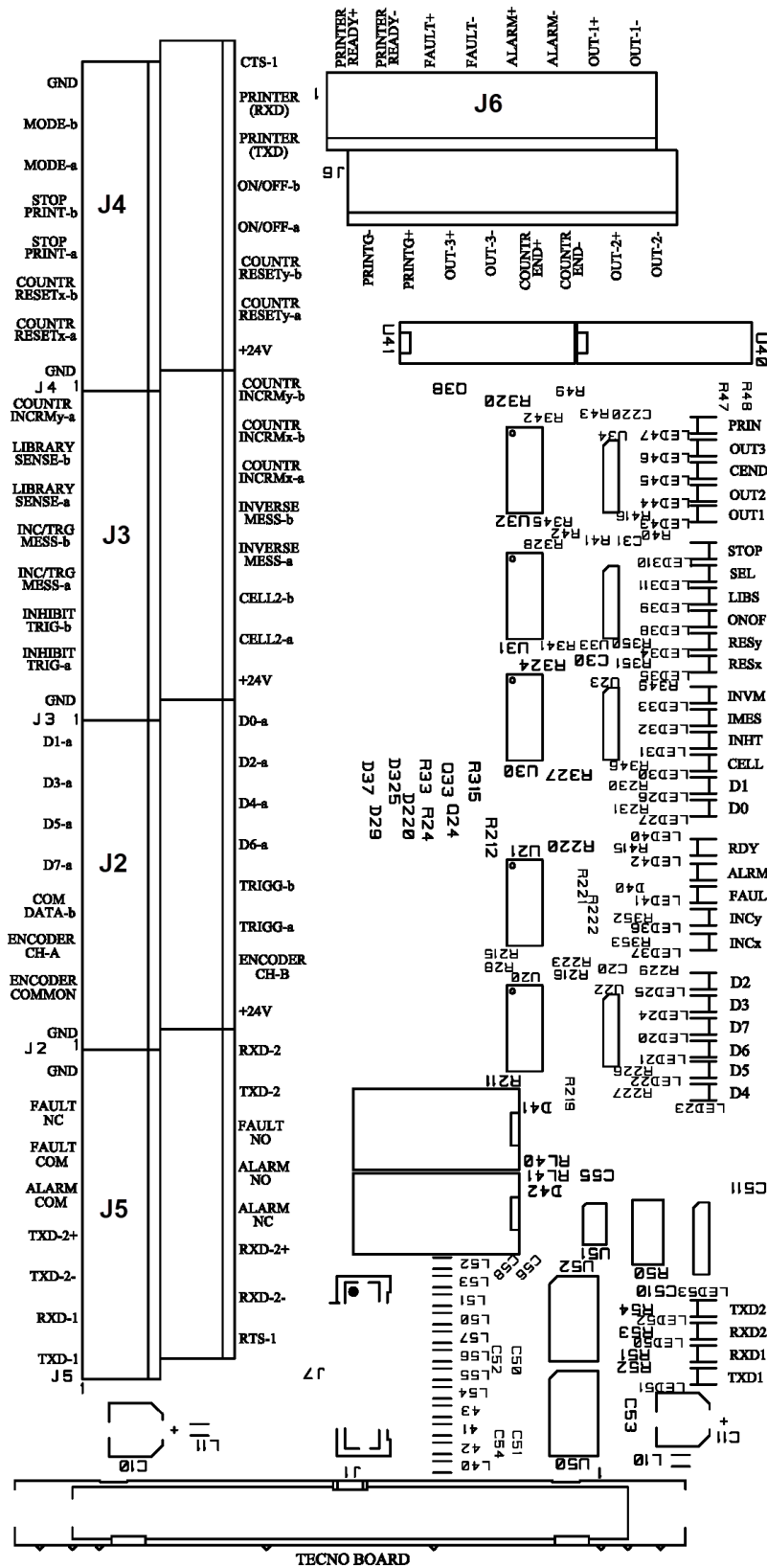
The sockets are located on the left of the printer.



The industrial interface board, the 24-pin connector and the cable glands on the rear panel of the printer are optional.

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Marking of industrial interface board terminals



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J5

I/O	Terminals		Name	Description
O		O	TXD-1	Serial link 1 (V24/RS232C): data output
I	O		RTS-1	Serial link 1 (V24/RS232C): Request To Send
I		O	RXD-1	Serial link 1 (V24/RS232C): data input
I	O		RXD-2-	Serial link 2 (RS422): data input
O		O	TXD-2-	Serial link 2 (RS422): data output
I	O		RXD-2+	Serial link 2 (RS422): data input
O		O	TXD-2+	Serial link 2 (RS422): data output
O	O		ALARM NC	Alarm: Break contact relay
O		O	ALARM COM	Alarm: Common contact relay
O	O		ALARM NO	Alarm: Make-contact relay
O		O	FAULT COM	Fault: Common contact relay
O	O		FAULT NO	Fault: Make-contact relay
O		O	FAULT NC	Fault: Break contact relay
O	O		TXD-2	Serial link 2 (V24/RS232C): data output
O		O	GND	Common
I	O		RXD-2	Serial link 2 (V24/RS232C): data input

J2

I/O	Terminals		Name	Description
O		O	GND	Common
O	O		+24 V	
I		O	ENCODER COMMON	Common encoder
I	O		ENCODER CH-B	Encoder (Input B)
I		O	ENCODER CH-A	Encoder (Input A)
I	O		TRIGG-a	Start printing/top object (Cell 1)
I		O	COMDATA-b	Common: job selection

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I	O		TRIGG-b	Start printing/top object (Cell 1)
I		O	D7-a	Job selection by parallel interface
I	O		D6-a	Job selection by parallel interface
I		O	D5-a	Job selection by parallel interface
I	O		D4-a	Job selection by parallel interface
I		O	D3-a	Job selection by parallel interface
I	O		D2-a	Job selection by parallel interface
I		O	D1-a	Job selection by parallel interface
I	O		D0-a	Job selection by parallel interface

J3

I/O	Terminals		Name	Description
O		O	GND	Common
O	O		+24 V	
I		O	INHIBIT TRIG-a	Top object inhibition Photocell 1
I	O		CELL2-a	Speed Measurement (Cell 2)
I		O	INHIBIT TRIG-b	Top object inhibition Photocell 1
I	O		CELL2-b	Speed Measurement (Cell 2)
I		O	INC/TRG MESS-a	Job increment
I	O		INVERSE MESS-a	Reverse job direction
I		O	INC/TRG MESS-b	Job increment
I	O		INVERSE MESS-b	Reverse job direction
I		O	LIBRARY SENSE-a	Job increment or decrement
I	O		COUNTR INCRMx-a	Counter increment set with input x
I		O	LIBRARY SENSE-b	Job increment or decrement
I	O		COUNTR INCRMx-b	Counter increment set with input x
I		O	COUNTR INCRMy-a	Counter increment set with input y
I	O		COUNTR INCRMy-b	Counter increment set with input y

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J4

I/O	Terminals		Name	Description
O		O	GND	Common
O	O		+24 V	
I		O	COUNTR RESETx-a	Counter reset set with input x
I	O		COUNTR RESETy-a	Counter reset set with input y
I		O	COUNTR RESETx-b	Counter reset set with input x
I	O		COUNTR RESETy-b	Counter reset set with input y
I		O	STOP PRINT-a	Cancel printing
I	O		ON/OFF-a	Printer On/Off
I		O	STOP PRINT-b	Cancel printing
I	O		ON/OFF-b	Printer On/Off
I		O	MODE-a	Job selection mode configuration
O	O		PRINTER (TXD)	Serial link: not assigned
I		O	MODE-b	Job selection mode configuration
I	O		PRINTER (RXD)	Serial link: not assigned
O		O	GND	Common
I	O		CTS-1	Serial link 1 (V24/RS232C): Clear To Send

J6

I/O	Terminals		Name	Description
O		O	PRINTER READY+	Ready to print
O	O		PRINTG-	Job synchronization
O		O	PRINTER READY-	Ready to print
O	O		PRINTG+	Job synchronization
O		O	FAULT+	Fault: optocoupled output
O	O		OUT-3+	Not assigned
O		O	FAULT	Fault: optocoupled output

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○	○		OUT-3-	Not assigned
○		○	ALARM+	Alarm: optocoupled output
○	○		COUNTR END+	Counter end value
○		○	ALARM-	Alarm: optocoupled output
○	○		COUNTR END-	Counter end value
○		○	OUT-1+	Not assigned
○	○		OUT-2+	Not assigned
○		○	OUT-1-	Not assigned
○	○		OUT-2-	Not assigned

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Operating Characteristics

Printing and counter connections

Inputs

The input circuits have the characteristics of a high speed photocoupler with an isolation voltage of 3 kV. They are protected against overvoltage and against polarity inversions.

- Operating voltage 5 to 35 V
- Regulated input current within the operating voltage range
- Current consumed 5/6 mA (encoder 12/13 mA)
- Maximum operating frequency: 6.25 kHz, 200 kHz for encoder input.

Outputs

The output circuits have the characteristics of a high speed photocoupler with open collector phototransistor.

- Maximum output current: 50 mA
- Maximum operating voltage: 50 V

Warning and fault outputs

The beacon column is connected to the printer via the M12 connector (yellow) on the left hand side, or via one of the following outputs on the industrial interface board:

Relays

The relay outputs are potential-free dry contacts. The contact switches warning systems or electrical configurations connected directly to the mains supply.

The electrical contacts are protected by R.C. cells (0.1 μ F / + 47 Ω).

- Maximum voltage: 24 V
- Maximum current: 1 A (AC or DC)

Optocouplers

The industrial interface board also provides optocoupled outputs for an alternative connection method.

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Printing

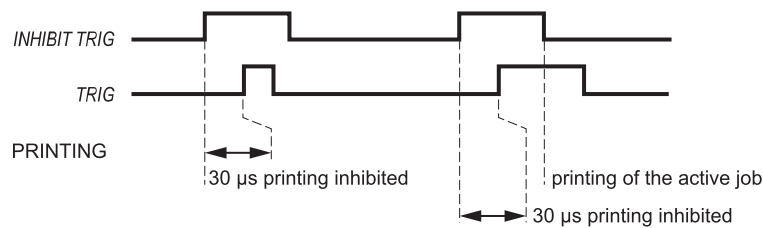
Object detection cell inputs (TRIG/CELL2)

The object detector are connected to the black M12 socket or to the industrial interface board's TRIG-a and TRIG-b terminals. When the detector is activated by a passing object, it sends a signal to the printer which triggers printing. The TRIG input is filtered to prevent interference.

A conveyor's speed can be measured using the TRIG input only, or by connecting a second photocell to the CELL2-a and CELL2-b terminals.

Object detector inhibition input (INHIBIT TRIGG)

The INHIBIT TRIG-a and INHIBIT TRIG-b inhibit the TRIG detection signal. The principle is shown on the diagram below:



Tachometric generator input (ENCODER)

A tachometric generator or encoder can be connected to the blue M12 socket or to the industrial interface board's ENCODER CH-A and ENCODER COMMON terminals. The tachometric generator enables printing to be sequenced with a variable speed conveyor.

Reverse job direction input (INVERSE MESS)

Information sent between the INVERSE MESS-a and INVERSE MESS-b terminals reverse the direction of the job printed (to and fro print operation).

Job synchronization output (PRINTG)

The industrial interface board's PRINTG+ and PRINTG- terminals provide a calibrated pulse throughout the printing of a job.

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Counter

Counter reset input

(COUNTR RESETx/COUNTR RESETy)

Two counters can be configured to be reset to their starting values by the COUNTR RESETx and COUNTR RESETy inputs. A pulse on the corresponding input resets the counter to its initial value.

Counter incrementation/decrementation input

(COUNTR INCRMx/COUNTR INCRMy)

Two counters (x and y) can be configured to be incremented or decremented by the COUNTR INCRMx and COUNTR INCRMy inputs. A pulse on the corresponding input increments or decrements the counter by its counter step value.

Counter end value output

(COUNTR END)

This output changes state when the counter reaches its final value.

The COUNTR END output can be enabled in each counter's settings.

Job selection by parallel interface

Direct selection by job number (independent mode)

The MODE signal determines the type of coding used to address the job number:

- if MODE = 0, the job number has a hexadecimal code.
- if MODE = 1, the job number is BCD coded.

Terminals D0, D1, D2, D3, D4, D5, D6 and D7 are used to address the job number selected for printing (using the coding defined by the MODE signal).

The INC/TRG MESS signal confirms the job number present in data D0 to D7, and triggers the printing of the job selected. This input is not filtered.

Selection via the job increment interface

Before this type of selection, the following two modes can work together, depending on the MODE signal.

The TRIG input triggers the printing of the job selected.

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Direct selection by job number (MODE = 0)

Terminals D0, D1, D2, D3, D4, D5, D6 and D7 are used to address the job number (hexadecimal) selected for printing.

The INC/TRG MESS signal confirms the job number present in the data D0 to D7.

Selection by job number incrementation (MODE = 1)

The job is selected using the LIBRARY SENSE and INC/TRG MESS inputs.

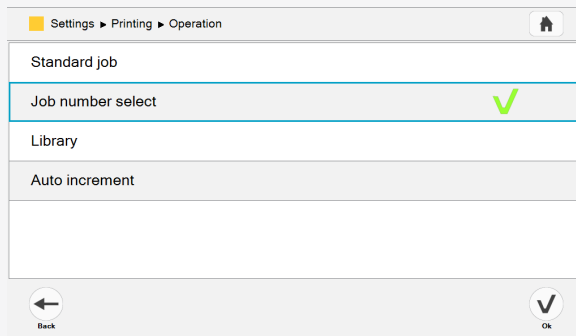
The bottom LIBRARY SENSE input is used to increment. The top LIBRARY SENSE input is used for decrementing.

Depending on the level of the LIBRARY SENSE input, each pulse in the INC/TRG MESS input changes the number of the active job for printing.



The type of selection can be defined in the menu   .

In "Operation", select the "Job Number" option to activate direct selection by job number (independent mode), or "Library" for selection by the job increment interface.



For more details about inputs and outputs related to job selection via the parallel interface, see the network interface manual or contact Markem-Imaje.

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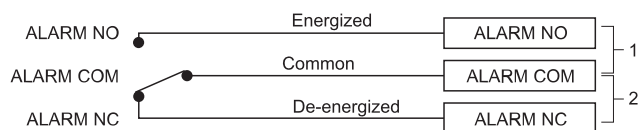
Warnings and faults

Warning output

This output signals a non-critical printer malfunction which does not prevent printing. The warning is generated to attract the operator's attention so that the anomaly can be corrected.

The relay output has two types of dry contacts:

- De-energized (normally closed)
- Energized (normally open)



1: Use of the Work contact: the circuit closes in case of alarm.

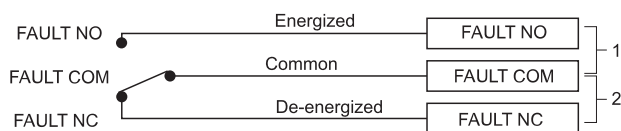
2: Use of the Rest contact: the circuit opens in case of alarm.

DEFAULT output

This output signals a critical printer malfunction which prevents printing. The signal is also asserted during start-up, until the printer is ready. It may be connected to a flashing beacon or audible warning; it may also be linked to the conveyor supply in order to stop the production line.

The relay output has two types of dry contacts:

- De-energized (normally closed)
- Energized (normally open)



1: Use of the Work contact: the circuit closes in case of alarm.

2: Use of the Rest contact: the circuit opens in case of alarm.

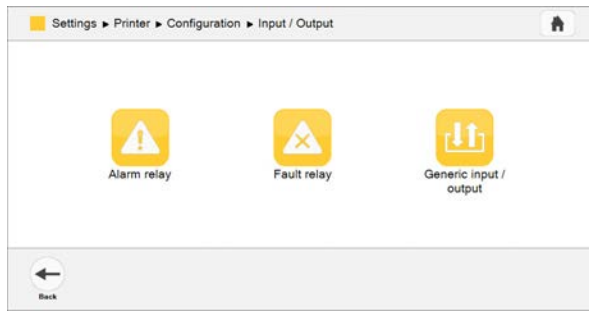


The WARNING and FAULT outputs are configured in the menu



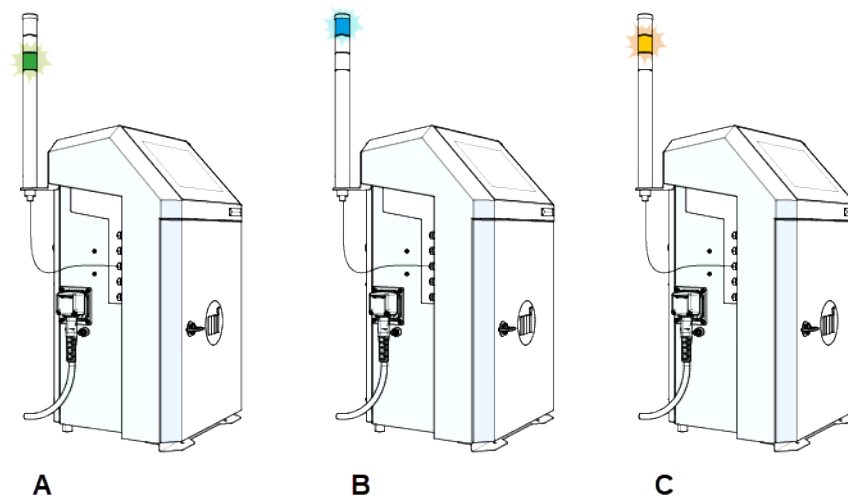
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Alarm/Fault/Generic Input/Output configuration screen:



Notification of the printer's status by a warning light

For machines equipped with a light beacon (green, blue, yellow):



- The green light indicates normal conditions. **(A)**
- The blue light indicates a condition that requires operator action. **(B)**
- The yellow light indicates an abnormal condition, the emergence of a critical condition. **(C)**

Other functions

Output ready to print (PRINTER READY)

This output is active when the printer is ready to print (jet started and job selected).

Serial / Ethernet links

Information about the V24/RS232 and RS422 serial link inputs and outputs, the Ethernet link and the communication protocol can be found in the network interface manual.

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Contact your Markem-Imaje retailer.

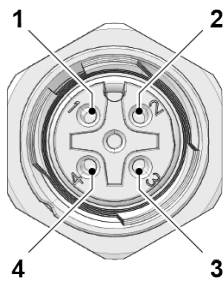
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M12 connector pinouts

The photocell and encoder inputs and the Warning/Fault output are available via female M12 connectors located on the left of the printer.



The pins on these connectors are numbered as follows:



Photocell input (black connector)

1	24 V
2	TRIGG-b
3	GND
4	TRIGG-a

Encoder input (blue connector)

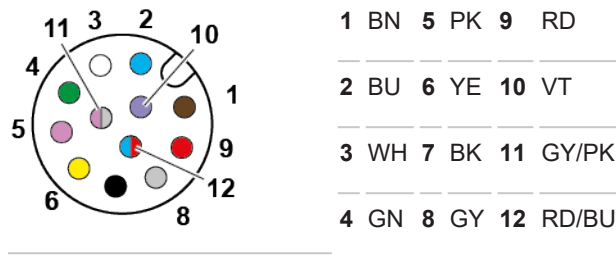
1	24 V
2	ENCODER COMMON
3	GND
4	ENCODER CH-A\\

Warning/fault output (yellow connector)

1	PRINTER READY (green)
2	FAULT (red)
3	GND
4	WARNING (orange)

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Wiring of the Generic M12 I/O connector



M12 Connector Pinout	Description/Désignation	Name/Nom	
Pin 1	Make-contact relay	FAULT_NO (DNO)	FAULT
Pin 2	Make-contact relay	ALARM_NO (WNO)	ALARM
Pin 3	Common contact relay	ALARM_COM (WCO)	ALARM
Pin 4	Break contact relay	ALARM_NC (WNC)	ALARM
Pin 5	Input Configurable	INPUT_CONF_a (I+)	-
Pin 6	Output Configurable	OUTPUT_CONF_+ (O+)	
Pin 7	Output Configurable	OUTPUT_CONF_- (O-)	-
Pin 8	Break contact relay	FAULT_NC (DNC)	FAULT
Pin 9	Common contact relay	FAULT_COM (DCO)	FAULT
Pin 10	GND	GND	-
Pin 11	Input Configurable	INPUT_CONF_b (I-)	-
Pin 12	24 V	24 V	-



Please see the spare parts catalogue for the part number of the generic M12 Input/Output connector.

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Technical Specifications

Printing functions

- Single-jet print head
- G head (printing Resolution: 71 dpi)
- M head (printing Resolution: 115 dpi)
- Up to 5 lines of printing
- Printing speed: up to 6.6 m/s
- Font height from 5 to 32 points
- Character height: from 1.2 to 11.2 mm
- Wide selection of 1D and 2D barcodes: EAN 8/EAN 13/UPCA/UPCE barcodes, code 39, 2 of 5 interlaced, Datamatrix, QRcode, Dotcode
- Wide selection of characters: Latin, Arabic, Cyrillic, Hebrew, Japanese, Chinese, Korean, etc.

Operation

- 10" WYSIWYG capacitive colour touch screen: real-time display of remaining print capacity in hours and messages; integrated help and alert system; easy printing and management of messages; creation of user profiles; monitoring of printer consumption and availability, with a wide selection of languages
- Message library (up to 1,000 messages)
- Automatic font selection based on print speed and print head/object distance
- Specific date management (date rounding function)
- Parent/Child Connectivity
- "Jet Speed Control" guarantees the quality of the marking
- Print head with integrated intelligence for high marking quality and low maintenance
- Wide range of inks: multipurpose, high performance; alcohol-based, ketone-free and MEK-free inks
- 0.8 litre sealed cartridges with keying filter system
- Compact and modular ink circuit for better thermal management and controlled additive consumption
- Modular ink circuit with full front access for easy preventive maintenance
- Remote services, including MI Virtual Assistant for 24/7 DIY and "how-to" videos
- Quick connection/disconnection of accessories (photocell, alarm and encoder)
- Enhanced native connectivity including USB, Ethernet, serial and a configurable M12 connector for I/O

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Other characteristics

- Weight: 25 kg
- Table top or vertical mounting
- 3-metre ultra-flexible umbilical cable
- Stainless steel housing and print head housing
- Dust/water protection rating: IP56 not requiring factory air
- Operating temperature range: 32°F to 122°F (0°C to 50°C) depending on ink used
- Humidity: 10 to 90% without condensation
- Power supply: 100-240 V; 1.6 A; frequency 50/60Hz

Options

- 6-metre ultra-flexible umbilical cable
- IP66 protection (factory air required)
- TCO option for reduced additive consumption: at 20°C, less than 3.5 cc/h for MEK-based ink or less than 2cc/h for MEK-free ink
- Print head pressurisation kit
- Several I/O possibilities including a configurable single point connector (24 pins)

Accessories

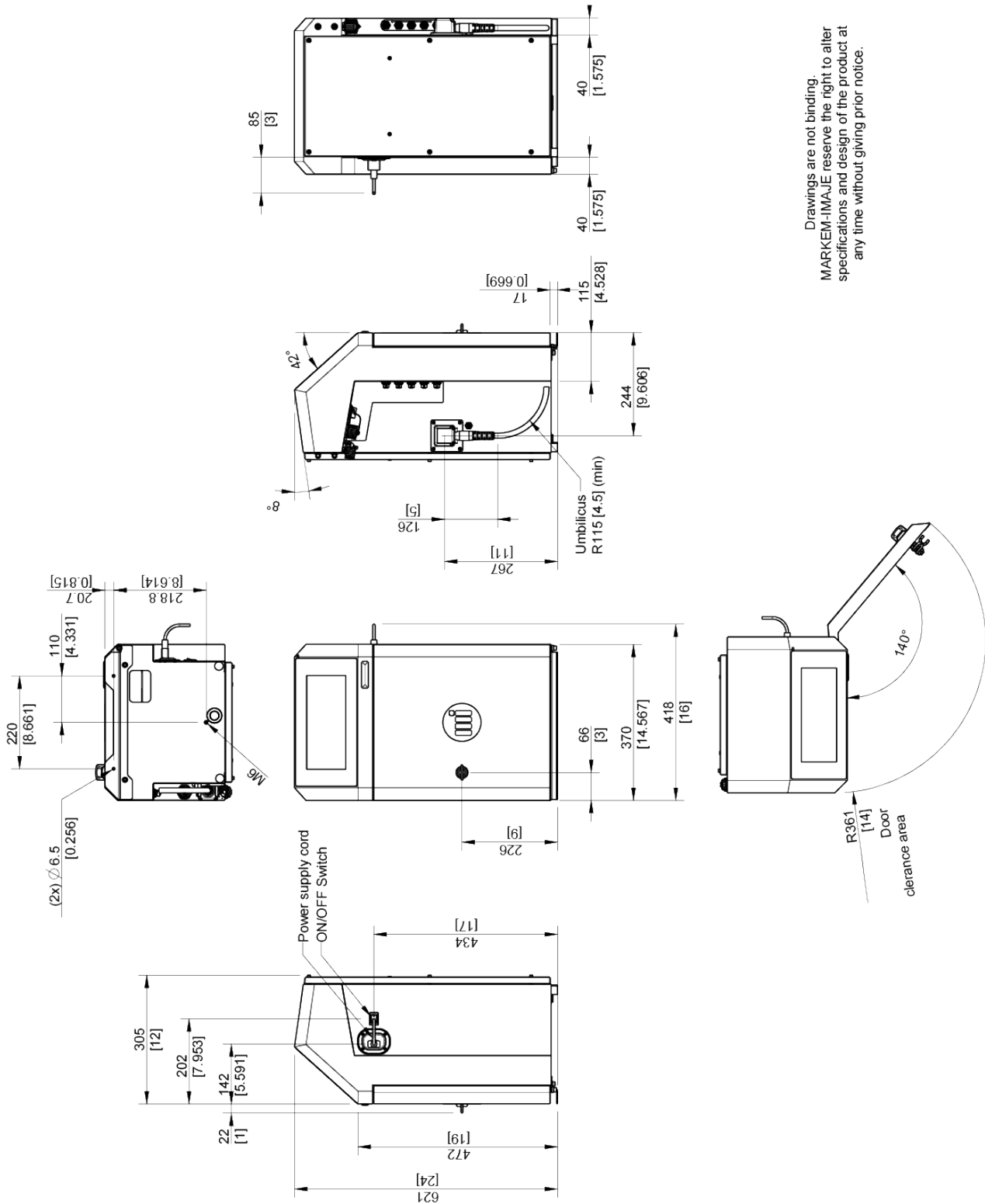
- Wide range of accessories
- Printer supports: bases (stainless steel or aluminium), table or wall mounts
- Print head supports: stand (stainless steel) and choice of supports
- Photocells
- Encoders
- Warning light (24 V)
- Pre-wired M12 connector set, Ethernet IP66

Software

- Compatible with CoLOS Create Professional and CoLOS Enterprise
- Logo design with CoLOS Graphics

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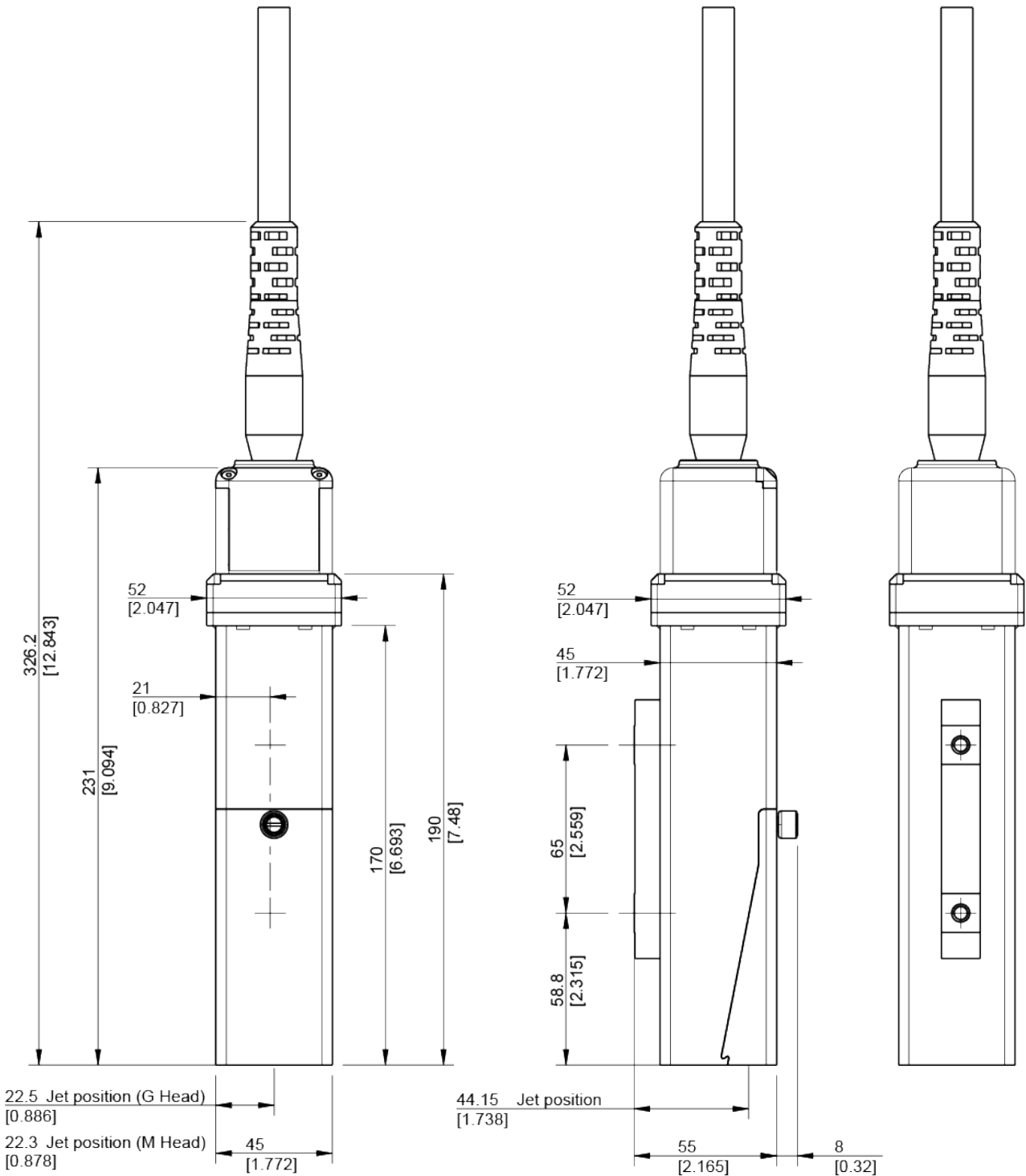
Printer dimensions



Drawings are not binding.
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Print head dimensions



units:

mm

[inch]

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Revision

Revision AA is the first version of this manual.

The Revision index changes with each update.

Date issued	Documentation revision index
04/2022	AA

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