

Small character
ink-jet printing

S7 Range



S7 Prima



A18779 D



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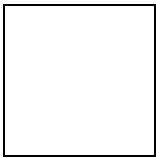
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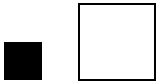
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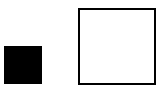
General Information



1 Ink jet printing

Ink jet printing allows a product to be identified, dated or marked without contact.

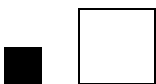
The principle used in the S7 PRIMA printer is the continuous ink jet, characters are formed using a matrix.



2 Initial set up

Certain printer functions or values must be initialized the first time the printer is started, after which they are stored in memory.

For example: choose the operator dialogue language, set the clock for the autodating function or lock access to certain commands using a code.



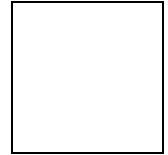
3 Printing a message

3.1 Messages

The term «message» is used to refer to what is printed by the print head. It includes fixed alphabetic or numeric characters and elements which vary over time, such as a counter or a date.

The printer can store up to 10 messages, 5 are pre-programmed.

Each message can be stored in memory and be printed or modified.



3.2 Characters

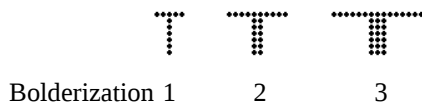
All characters inserted in a message are defined by a font.

The font or character generator defines the size of the character.

Example :



Each character defined in the font can be bolderized :



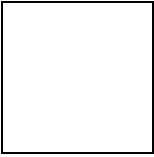
3.3 Parameters

For the printed message to appear as desired, the printer must be configured for the production line.

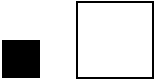
Printing speed must be adjusted depending on the product speed and the message print direction must be chosen depending on the desired reading direction.

3.4 Variables

The variables (counter, times and dates) must be set to change as required.



General Information



4 Production start-up

Once the printer is initialized and the messages are programmed, the message to be printed is selected and production may start.

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Overview of the printer

1 Overall view

- | | |
|---|-----------------------------|
| 1 | Ink and additive cartridges |
| 2 | Print head |
| 3 | Umbilical |
| 4 | Printer body |
| 5 | Operator interface |
| 6 | Industrial interface unit |

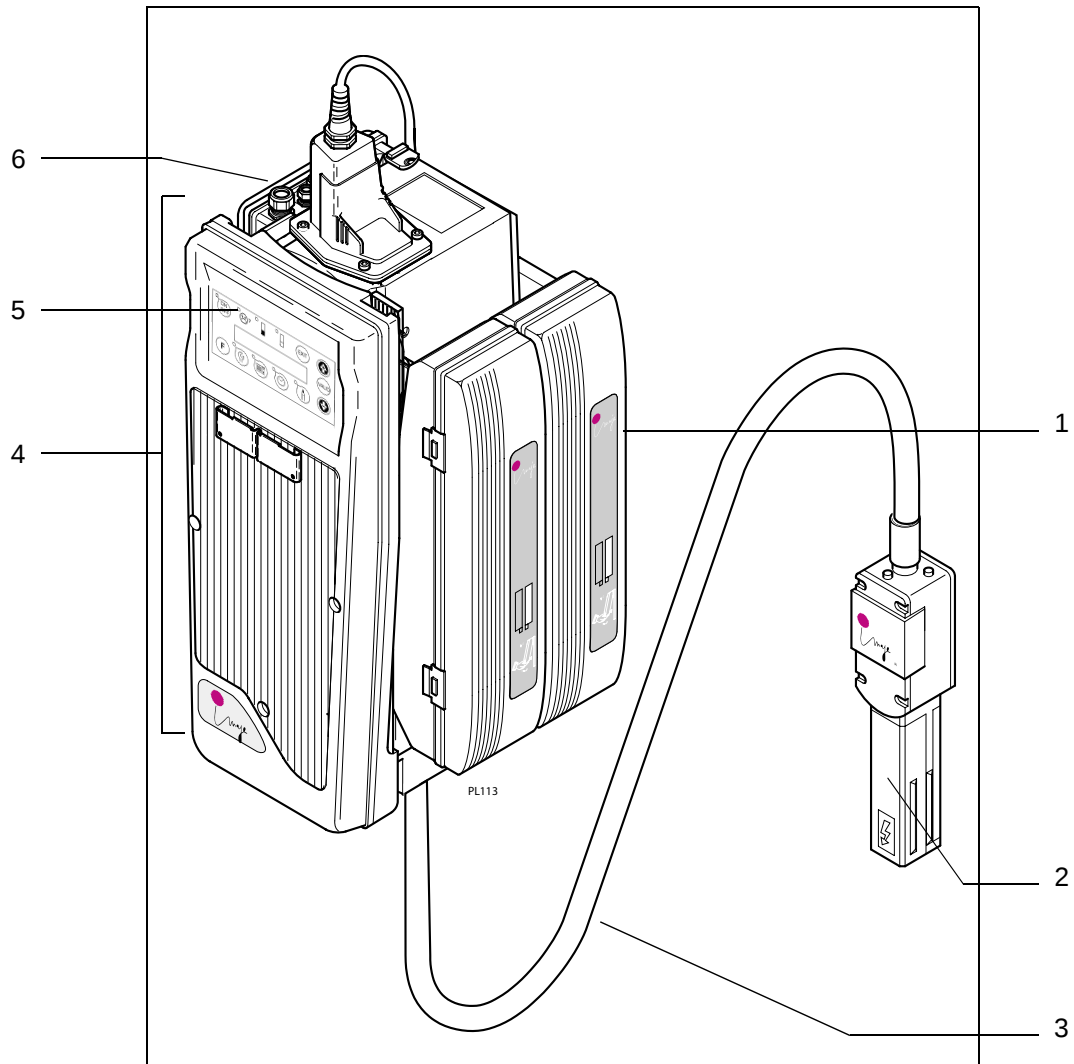


Figure 1

2 Printer body

This handles the electrical and hydraulic supply to the print head.
It allows for operator input.
It allows input / output connections.

It includes the Industrial Interface unit, the ink and additive cartridges, the Operator Interface and the electrical and hydraulic control modules.

The printer body may be moved with two grip points accessible above the Operator Interface and below the «S7 PRIMA» label.

3 Print head

This generates the ink drops.

The removable cover is opened and closed as shown on figure 1.

Figure 1 : Opening and closing the print head

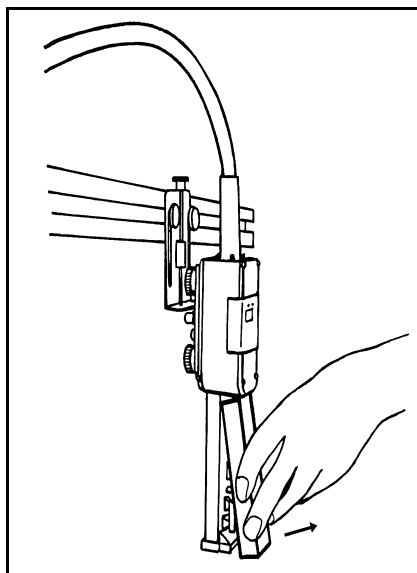
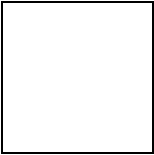


Figure 1



Overview of the printer

Figure 2 : Head (cover open)

- | | |
|---|-------------------------|
| 1 | Removable cover |
| 2 | Recuperation gutter tap |
| 3 | Recuperation gutter |
| 4 | Deflection plates |
| 5 | Detection electrode |
| 6 | Charge electrode |
| 7 | Cannon |
| 8 | Top front cover |
| 9 | Umbilical |

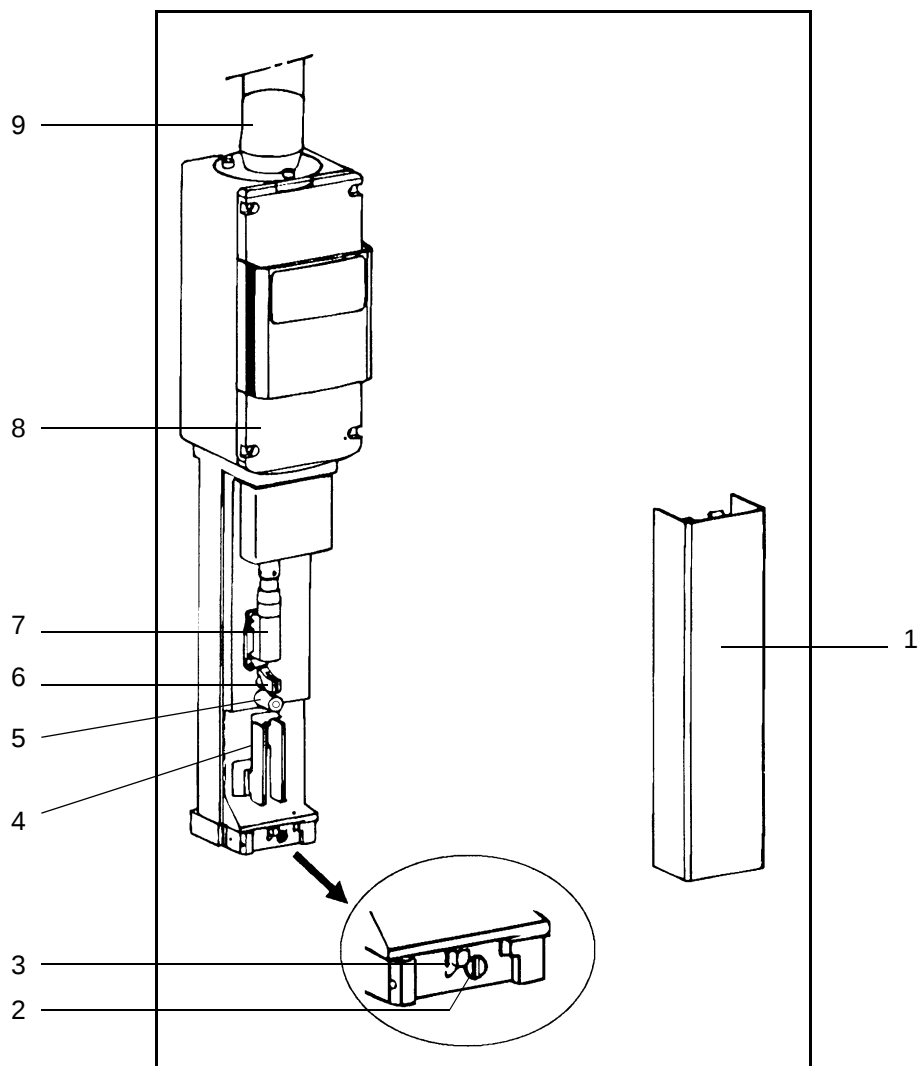


Figure 2

4 Industrial Interface unit

The industrial Interface unit is used for standard connections: Photo Cell, encoder, alarm output.

- | | |
|---|---|
| 1 | Industrial Interface Unit |
| 2 | Industrial Interface Unit identification icon |

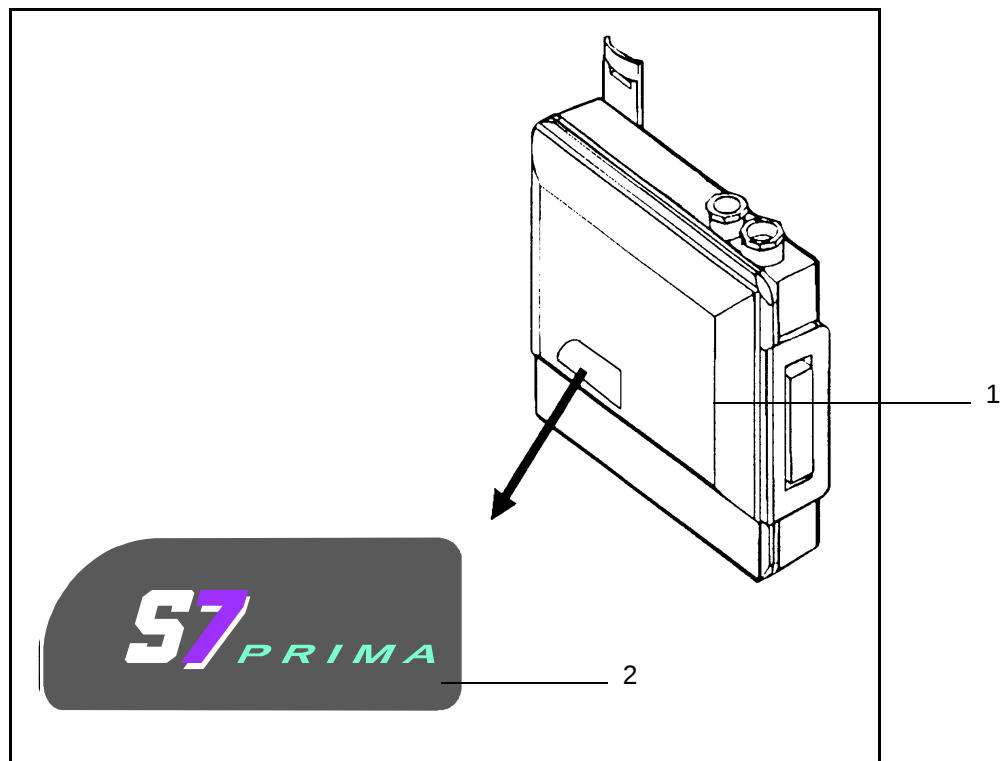
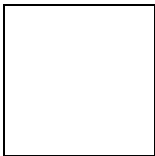
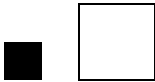


Figure 1



Overview of the printer



5 Head pressurization kit and head drying kit

The head pressurization kit should be used in dusty or damp environments. The clean air provided keeps the head clean dry, ensuring correct printer operation.

The drying kit makes it easier to dry the head after cleaning.

Figure 1 : Printer, head pressurization and drying kit

- | | |
|---|--------------------------|
| 1 | Head dry ink kit |
| 2 | Head pressurization kit. |

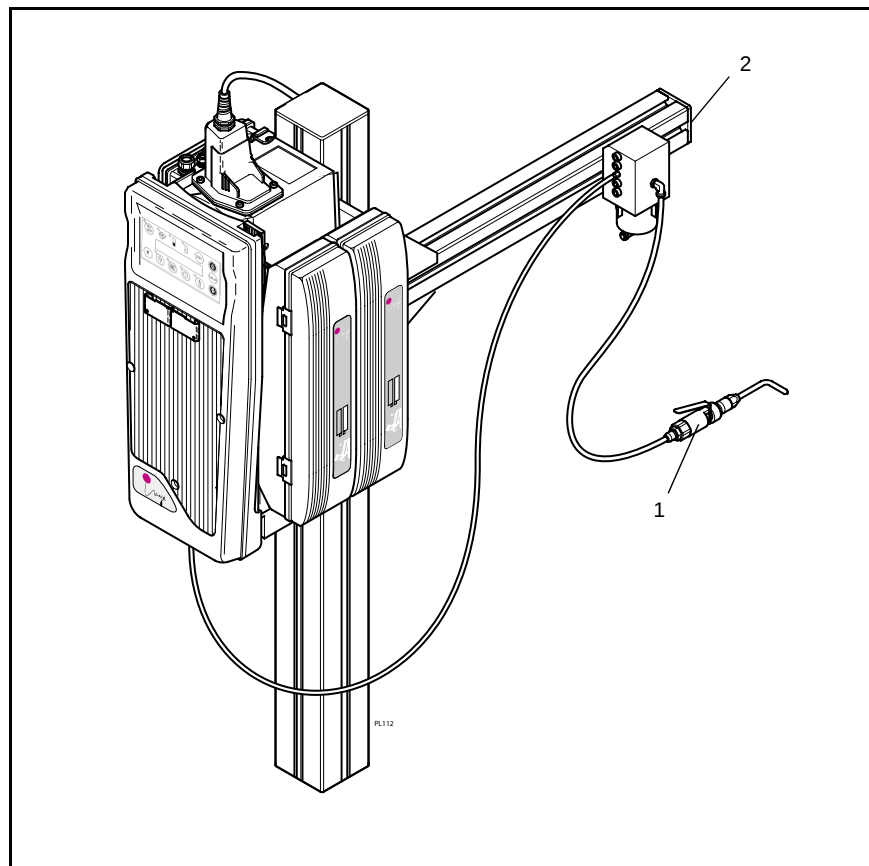
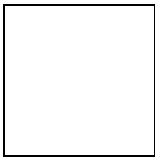


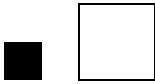
Figure 1

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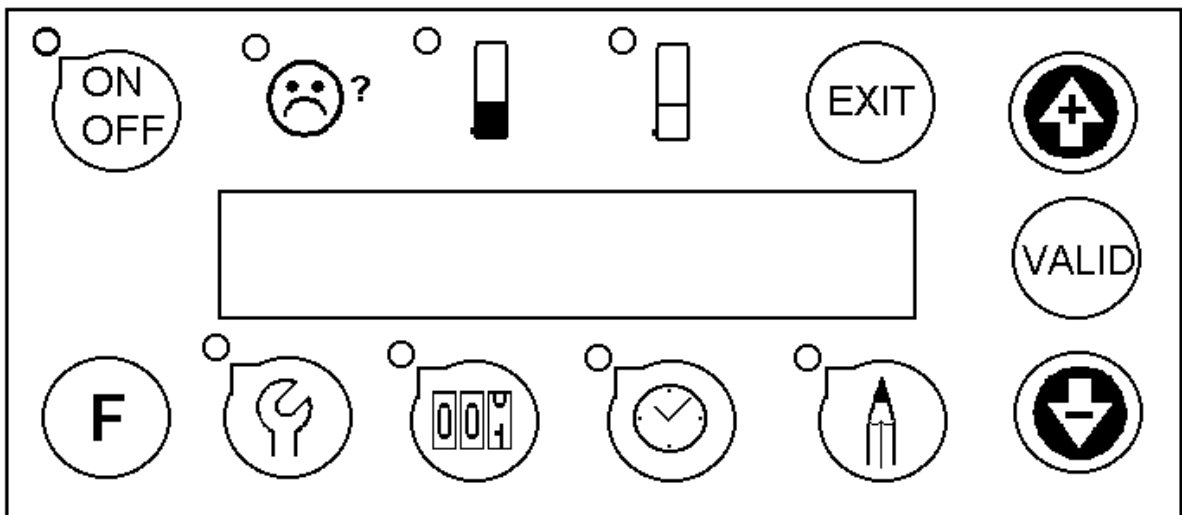


Using the printer

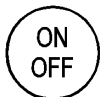


1 Using the Operator Interface

The Operator Interface is used to start or stop the printer and the ink jet. Its indicators provide information about faults and fluid levels. It is also used to display, select, create and modify messages.



1.1 Keys and Indicators



Used to start or stop the printer.
The printer is ready to print when the light on this key is lit.



The light on this key is lit when a fault is detected by the printer.
Pressing this key displays the fault, and pressing it again clears it.



This light flashes when the ink level is low.
This light is lit when the ink cartridge is empty.



This light flashes when the additive level is low.
This light is lit when the additive cartridge is empty.



Used:

- to validate the choice displayed,
- to access a step in a menu.



Used to move forward:

- in a menu
- in an alpha-numerical list
- in a pre-defined list
- in a message zone.



Used to move backwards:

- in a menu
- in an alpha-numerical list
- in a pre-defined list
- in a message zone



Used to leave a menu or exit from a function.



and



Used to increase the screen contrast.



and



Used to decrease the screen contrast.



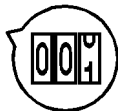
This key is used to access maintenance functions.



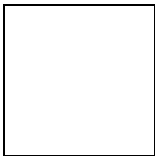
This key is used to select and display a message.



This key is used to display time and date elements contained in a message.



This key is used to display the counter and set it to its start value.



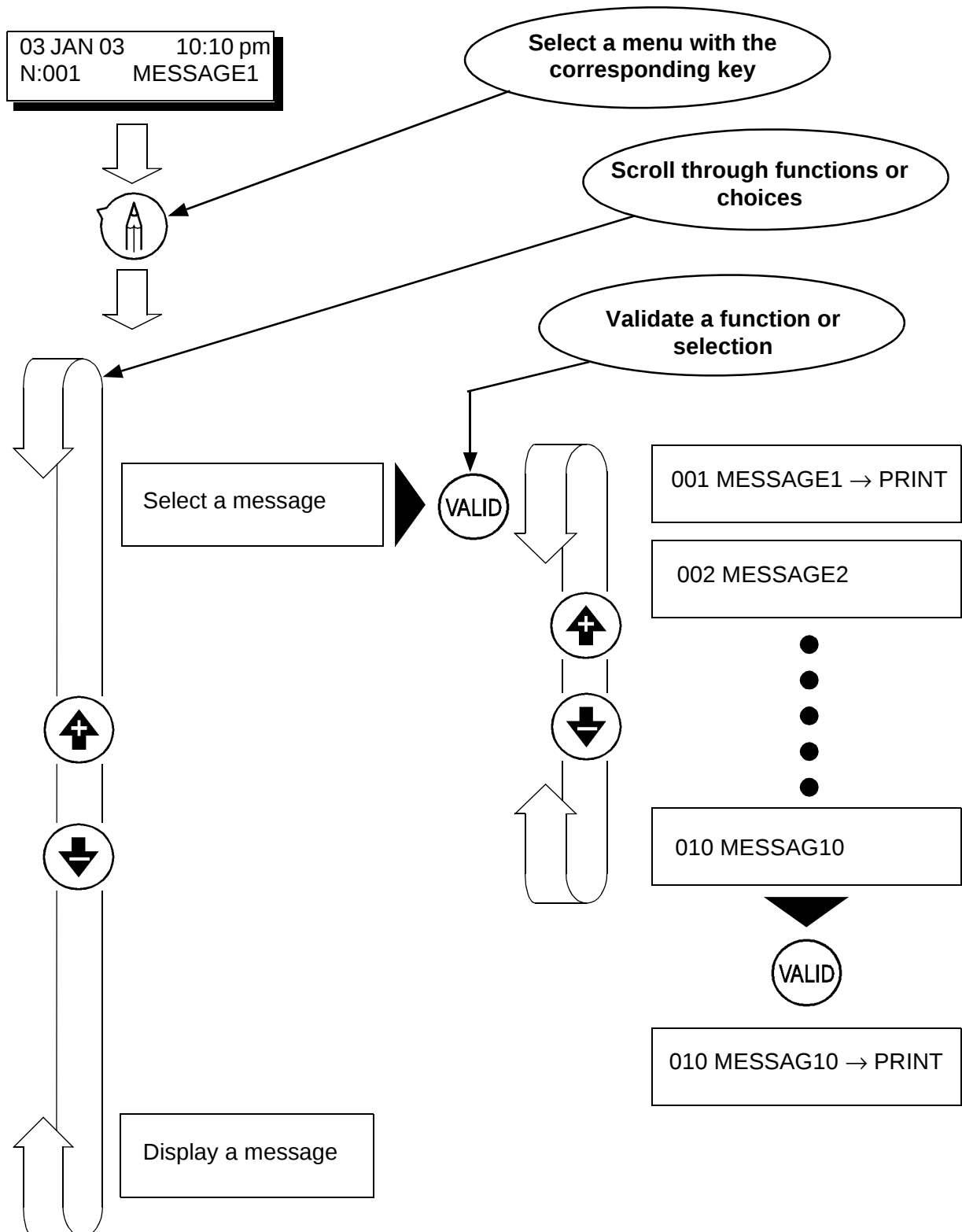
Using the printer

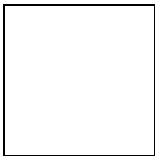
- | | | |
|---|---|--|
|  |  | These keys are used to access the printer installation and maintenance functions. |
|  |  | These keys are used to set counter parameters. |
|  |  | These keys are used to set the printer time and date. |
|  |  | These keys are used to modify or create a message. |
| | | In this message editing menu the     keys have additional functions (see the "Editing a message" section). |
|  |  | In the message editing menu, these keys are used to insert a character (see the "Editing a message" section). |
|  |  | In the message editing menu, these keys are used to delete a character, (see the "Editing a message" section). |
|  |  | In the message editing menu, these keys are used to exit a function without saving any changes. |

IMPORTANT

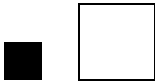
When the  key is used, the two keys are always pressed in succession, except when setting the display contrast.

1.2 How to navigate through the menus

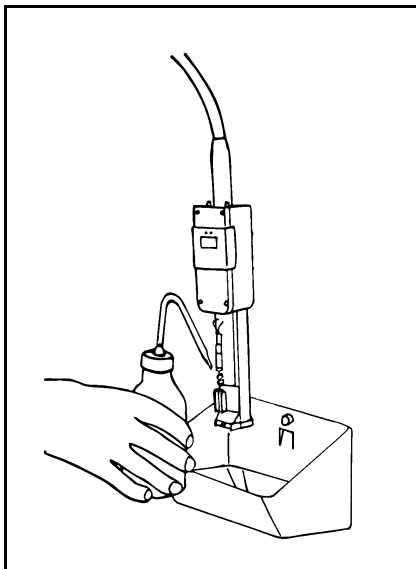




Using the printer



2 Starting the printer



With the head placed on its maintenance stand, open the head cover and clean the head.

Press the  key.

When the machine is ready, the light on the  key is steady green (approximately 2 minutes).

NOTE

After draining or rinsing, the start-up phase lasts approximately 8 minutes.

3 Stopping the printer

Place the head on its maintenance stand.



STOP PRINTER?
VALID

Stop the printer.



SHUTDOWN IN PROGRESS
PLEASE WAIT 01/03

NOTE

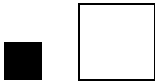
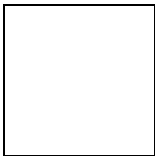
Do not clean the head.

CAUTION

Perform a shutdown of this type at least once per week.

It is the normal daily stop procedure.

This procedure is sufficient for a stop lasting less than one week. For stoppages longer than one week, see chapter 1 of the maintenance section.



4 Displaying and clearing a fault



FAULT	01/02
COVER OPEN	84

If a fault is detected by the printer, the light on the ☹️? button lights up.

FAULT	02/02
JET RECUPERATION	85

If you are within a menu, exit the menu to see the full fault description.

The ⬆️ key allows you to display all the faults.

01/02 means that there are two faults ; fault numbers 84 and 85.

01/02: the first is COVER OPEN 84.

02/02: the second is RECUPERATION 85.

After displaying the faults, you clear them,



05 Dec 03-11 : 05
N° 002 : MESSAGE2

with the VALID key

When all faults have been cleared, the date, time and the title of the active message are shown on the screen.

5 Working on the head

5.1 Stopping and starting the ink jet



JET STATUS: START
STOP INK JET?

This function allows you to stop the ink jet to clean the head temporarily without stopping the printer.



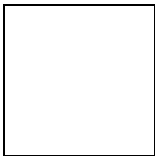
JET STATUS: OFF
START INK JET?

When the jet status is "OFF", you can start the jet with the  key.

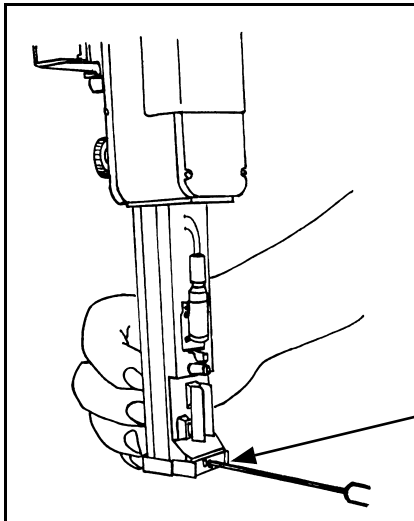


JET STATUS: START
STOP INK JET?

The jet status becomes "START" after about one minute, and the light of the  key stops flashing.

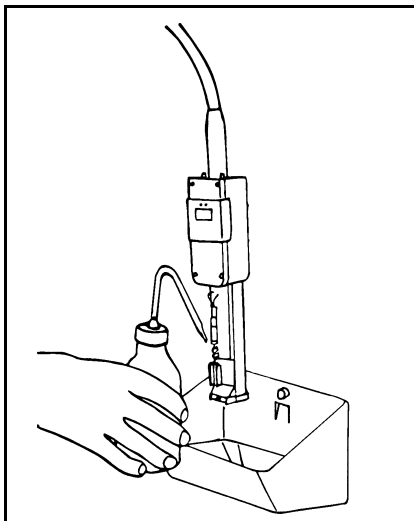
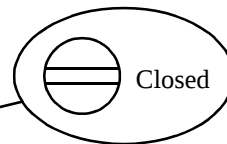


5.2 Cleaning the head

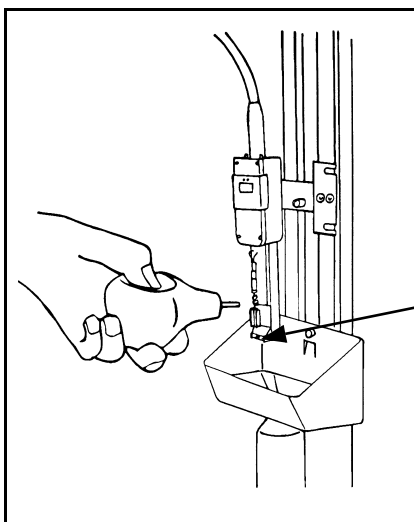


Stop the ink jet and place the head on its maintenance stand.

Close the recuperation gutter.

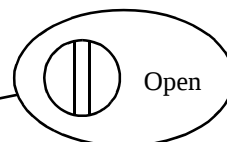


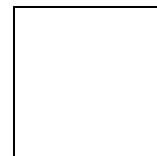
Clean the electrodes and cannon with the cleaning solution.



Dry them thoroughly.

Open the recuperation gutter and restart the jet.

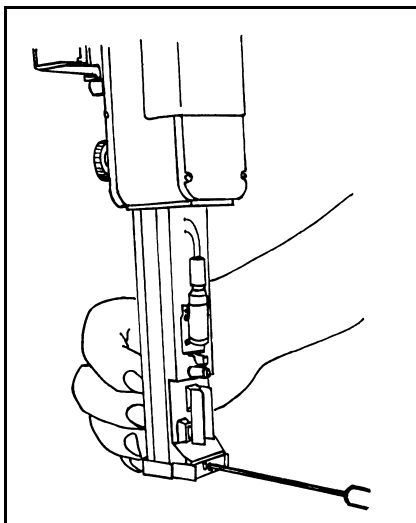




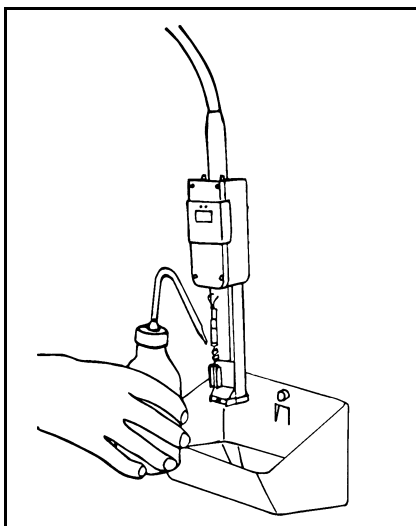
5.3 Start up tips

If the ink jet is unstable or not flowing at start up, clean the print head and try restarting the jet.

If unsuccessful:



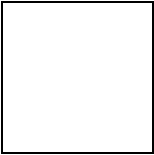
Place the head in the maintenance stand and select the UNBLOCK NOZZLE function in the  menu and follow the instructions on the display. Spray the cannon with cleaning solution until ink comes out of the nozzle.



Validate the following stage: INTRODUCE SOLUTION. Follow the instructions on the display. Spray cleaning solution into the nozzle for 20 seconds.

Finally, validate the CHECK JET STABILITY function. Once the jet is stable, stop the stability check and clean the head.

Once this phase is over, restart the jet and visually check the presence of the jet in the recuperation gutter. Close the head cover and clear any faults.



5.4 Adjusting the jet



STATUS JET: OFF
START INK JET?



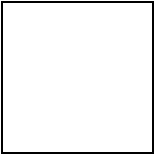
ADJUST THE JET?

The jet is started and all faults are by-passed to allow head adjustment.

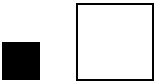
The adjustment of the jet in the gutter should be performed by an experienced technician or maintenance person with proper Image training.

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Editing a message



1 Selecting a message



MESSAGE SELECTION?



MESSAGE SELECTION
N° 001 : MESSAGE1 → PRINT

The message "MESSAGE 1" is active.



MESSAGE SELECTION
N°002 : MESSAGE2

To select another message, scroll through the message titles using the



or



keys



MESSAGE SELECTION
N° 002 MESSAGE2 → PRINT

Validate the desired message. The message is displayed for a few seconds.

NOTE

This message is now selected. It can be created, modified, displayed, renamed and printed.

2 Displaying the contents of the active message



MESSAGE SELECTION?



VISUALIZE MESSAGE?



S7 PRIMA
IMAJE le dd/mm/yy

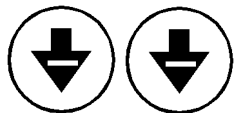
The content of the active message is displayed.

If the message is long, you can use the  or  arrows to see the rest of the message

3 Changing the message name

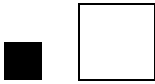
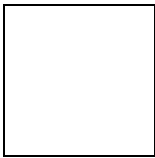


EDIT LOWER LINE
N:001 MESSAGE1



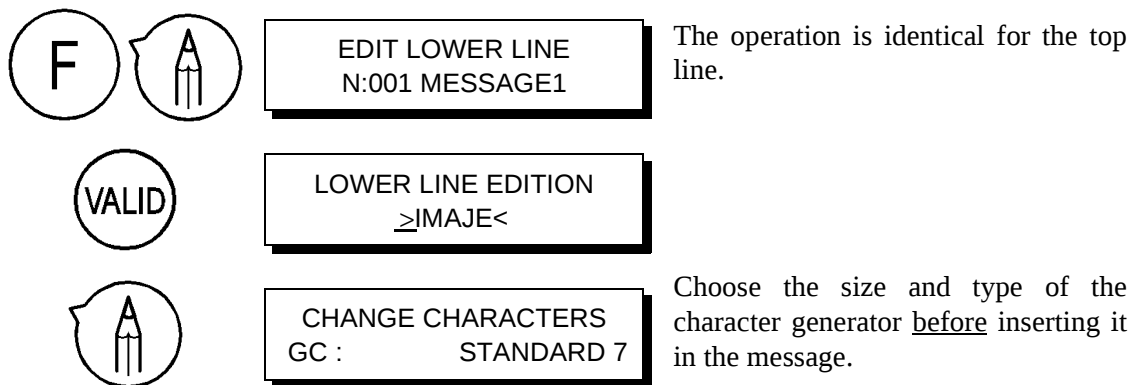
CHANGE NAME?

If you press validate, you can change the message name (8 alpha-numeric characters).



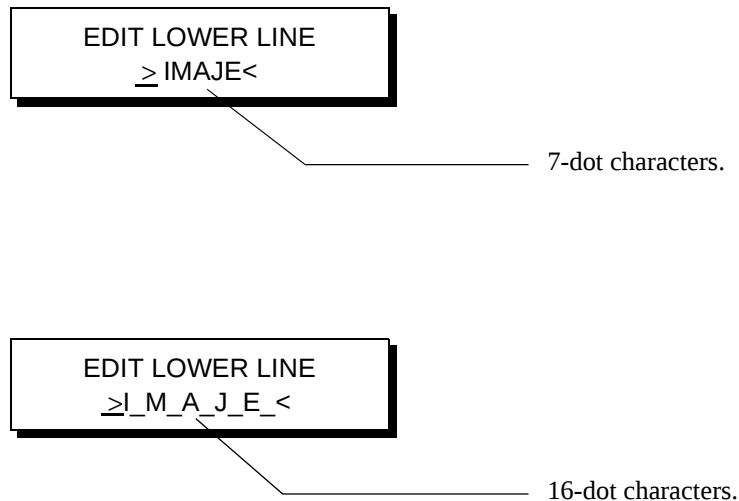
4 Defining the type of character

4.1 Fonts or character generators

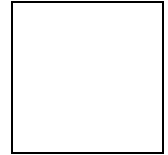


A 16-dot character is shown on the screen as a 7-dot character followed by a dash.

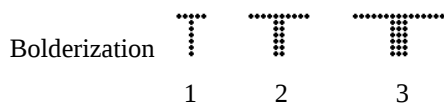
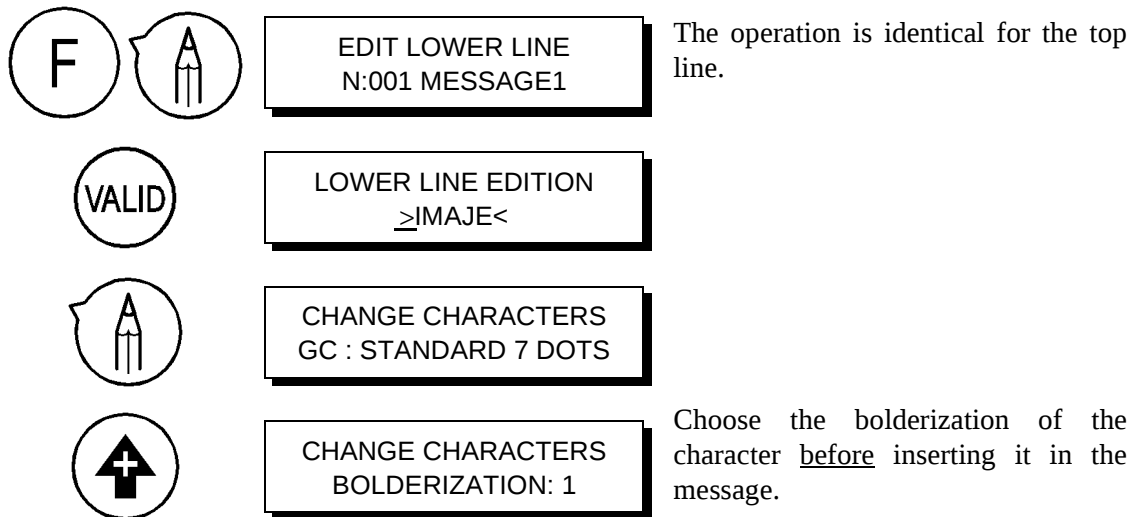
Ex. :



See the list of fonts and character generators available in the S7 PRIMA in the Technical Specifications section.

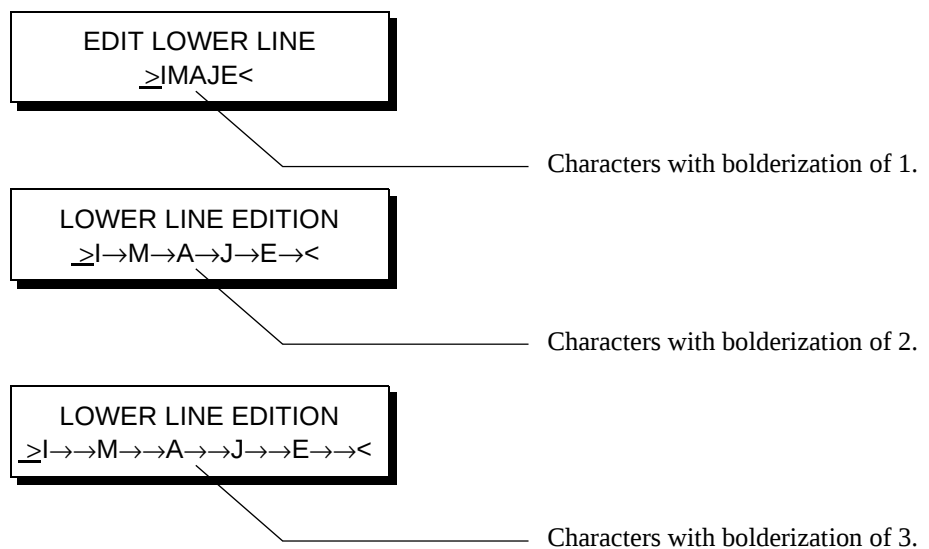


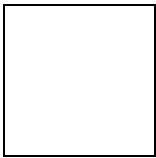
4.2 Bolderization



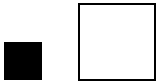
A character with bolderization of 2 is shown as a character with bolderization of 1 followed by a small arrow.

Ex. :





Editing a message



5 Inserting a character



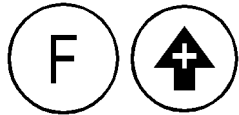
EDIT LOWER LINE
N:001 MESSAGE1

The operation is identical for the top line.



LOWER LINE EDITION
≥IMAJE<

Position the cursor with the arrows.



LOWER LINE EDITION
>A IMAJE<

Using the  or  arrows, scroll through all the characters in the font.

The  key is used to insert the chosen character.

6 Modifying a character

F

EDIT LOWER LINE
N:001 MESSAGE1

The operation is identical for the top line.

VALID

LOWER LINE EDITION
>I M A J E <

Position the cursor with the arrows.

LOWER LINE EDITION
> I M A J E <

VALID

LOWER LINE EDITION
> I M A J E <

When the character is flashing, use the arrows to scroll through all the characters in the font. The VALID key is used to insert the desired character.

7 Deleting a character

F

EDIT LOWER LINE
N:001 MESSAGE1

The operation is identical for the top line.

VALID

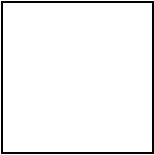
LOWER LINE EDITION
>I M A J E <

Use the arrows to position the cursor under the character to be deleted.

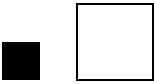
LOWER LINE EDITION
> I M A J E <

F

LOWER LINE EDITION
> M A J E <



Editing a message

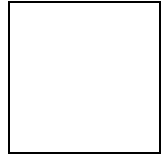


8 Using a counter

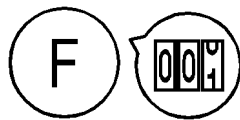
Two counters, one printed with the message and a production counter, are available. In order to print the message counter, it must be inserted and set. You can also display it and reset it to its starting value. The production counter can only be displayed and reset to its starting value. It increments each time the printer is used.

8.1 Inserting the counter

		EDIT LOWER LINE N:01 MESSAGE1	The operation is identical for the top line.
		LOWER LINE EDITION ≥ I M A J E <	Position the cursor with the arrows.
		NUMBER OF DIGITS OF THE COUNTER: 9	Define the maximum number of counter digits using the arrows.
		NUMBER OF DIGITS OF THE COUNTER: 8	
		EDIT LOWER LINE > c c c c c c c c I M A J E <	The number of small "c" characters corresponds to the number of digits.



8.2 Setting the counter parameters



SET THE COUNTER?



SETTING COUNTER
START VAL: 00000001

To modify the start and end values, validate then change it digit by digit.



SETTING COUNTER
END VAL.: 099999999



SETTING COUNTER
MODE: **OBJECT**

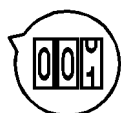
There are two modes :

- object: the counter changes each time the cell is triggered,
- message: the counter changes with each message printed.



SETTING COUNTER
ZERO BEFORE FIG.: **NO**

8.3 Displaying and resetting the counters



INIT. COUNTER?
VALUE = 00005492

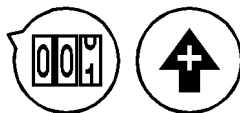


INIT. COUNTER?
- 0 0 0 0 0 0 1 - VALID -



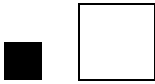
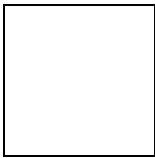
INIT. COUNTER?
VALUE = 00000001

The counter start value which has been programmed is 00000001.



INIT. PRINT COUNTER?
VALUE = 000001504

The production counter is reset in the same way as the message counter.



9 Using the date and time

To print a date or a time, insert them in the message, display them and set the printer to the correct date and time.

9.1 Inserting the date or time



EDIT LOWER LINE
N:001 MESSAGE1

The operation is identical for the top line.



LOWER LINE EDITION
≥ I M A J E <

Position the cursor with the arrows.



INSERT DATE/TIME
DAY OF THE MONTH

With the arrows, select the items you wish to insert into the message.

Title	On the screen in the message
Day of the month	dd
Day of the year (Julian date)	jjj
Week of the year	ww
Month in figures	mm
Month in letters	mom
Year	yy
Year's last digit	y
Postday of the month	pd
Postday of the year modulo 365 (Julian date)	pjj
Postweek of the year	pw
Postmonth of the year in numbers	pm
Postmonth of year in letters	pmo
Postyear	py
Hours	hh
Minutes	nn
Seconds	ss
Shift code letter	e
Shift code number	ee
Shift code letter except 0 and I	e
Day of the week	d
Time mode for printing	md

9.2 Setting the time and date

F

SET TIME?
10 : 28 pm

SET DATE?
30 / 12 / 03

SET POSTDATE?

SET SHIFT CODE?

CHOOSE DATE LANG.?

CHOOSE TIME MODE
FOR PRINTING ?

CHOOSE THE 1ST DAY
OF THE WEEK ?

Using the arrows and the valid key, set the hour, the postdate value in days, the shift code, the autodating language, the time mode for printing...

9.3 Displaying the date and the time

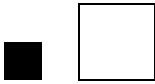
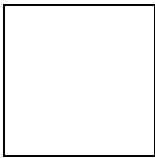
VISUALIZE
AUTODATING?

VALID

VISU. AUTODAT 01 / 02
DAY OF THE MONTH: 30

VISU. AUTODAT 02 / 02
MONTH OF THE YEAR12

01/02 means that there are two autodating elements in the message, and 01 is the first.



10 Defining the message parameters

		EDIT LOWER LINE N:01 MESSAGE1	
		SET MESSAGE?	These parameters allow the message to be adapted to the production line.
		MESSAGE PARAMETERS MESSAGE DIR.: NORMAL	
		MESSAGE PARAMETERS HORIZ. DIR. NORMAL	For the message direction, horizontal and vertical, see the following table.
		MESSAGE PARAMETERS VERTIC. DIR.: NORMAL	
		MESSAGE PARAMETERS MODE : CONSTANT	"Constant" mode corresponds to products moving at constant speed, and "tacho" mode corresponds to products moving at variable speed.
		MESSAGE PARAMETERS TACHO DIVISION: 0001	If you use an encoder, this parameter is used to set the width of the printed character.
		MESSAGE PARAMETERS OBJECT SPEED: 0550	If you do not use an encoder, this parameter is used to set the width of the printed character. If you use an encoder, this parameter represents the maximum speed of the object (mm/s).
		MESSAGE PARAMETERS SET OFF: OBJECT	"Object" set off (triggering) corresponds to printing one message for each pulse on the cell. Repetitive triggering allows continuous printing for as long as the cell is activated.



MESSAGE PARAMETERS
FORWARD MARGIN: 003

The margins correspond to the space between the object detection point and the start of printing.



MESSAGE PARAMETERS
RETURN MARGIN: 003

The "forward margin" is used with the "normal" message direction and the "return" margin is used with the "reverse" message direction.

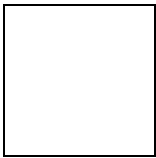


MESSAGE PARAMETER
INTERVAL: 002

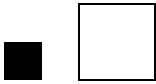
The interval corresponds to the distance between two messages in "repetitive" set off triggering mode.

MESSAGE, HORIZONTAL AND VERTICAL DIRECTION

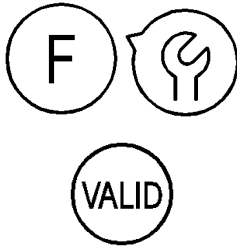
Head/object movement direction. Front to rear or rear to front								
Direction the message is read on the object. Front or back.								
Viewed directly or by transparency.								
Message direction	Normal	Reverse	Reverse	Normal	Reverse	Normal	Normal	Reverse
Horizontal direction	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Vertical direction	Normal	Reverse	Normal	Reverse	Reverse	Normal	Reverse	Normal



Editing a message



11 Printing the message manually

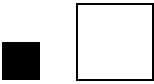
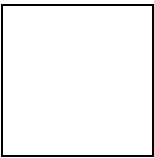


PRINT
TEST?

Press validate to obtain a test print.
The printing depends on the message
parameters.

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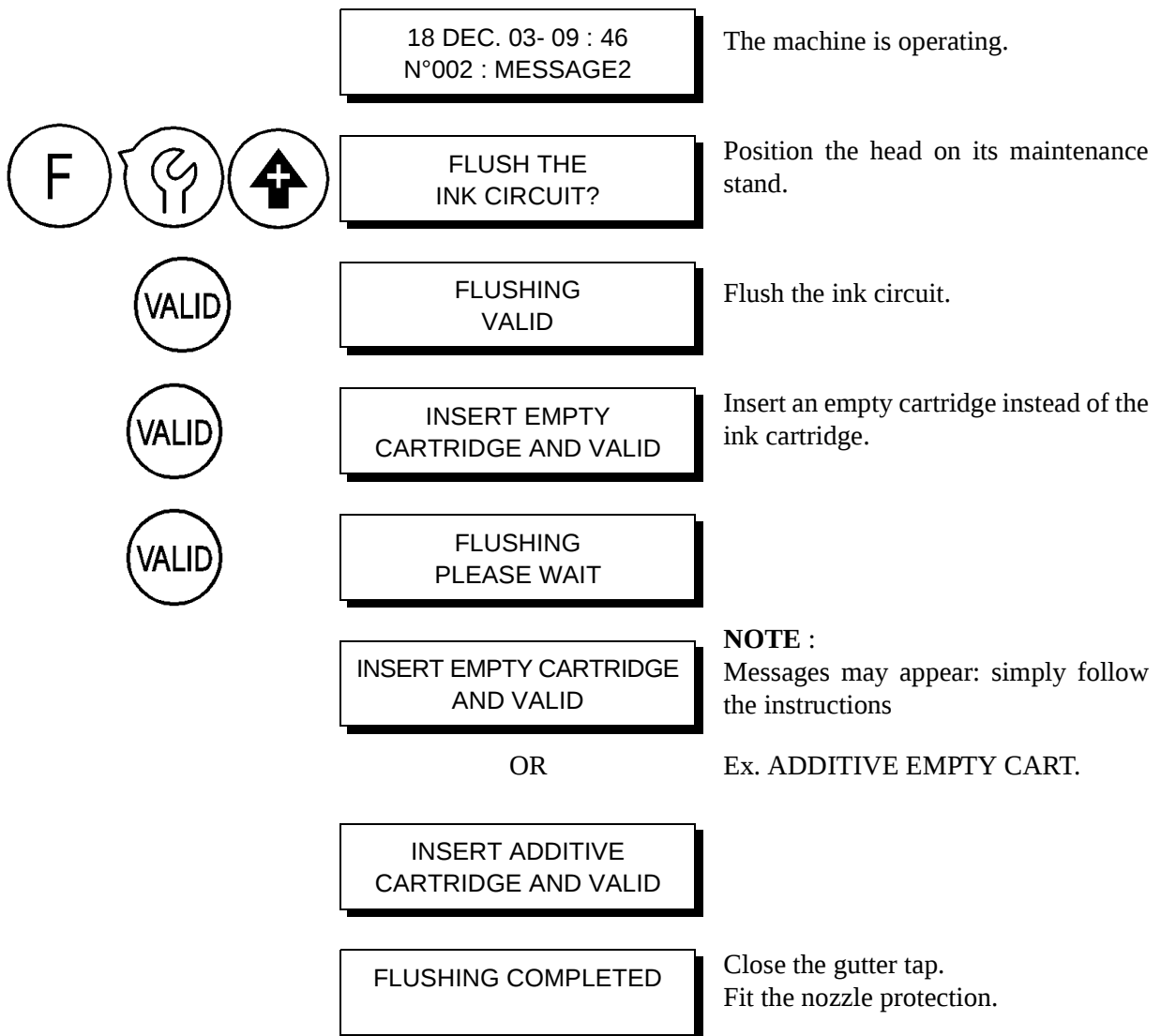


1 Stopping the printer for more than one week

A shutdown of more than one week requires that the printer be flushed.

CAUTION

Perform the operations below with great care in order to avoid splashing fluid. For your protection, use goggles and latex gloves.



CAUTION

During a very long shutdown, flush the ink circuit completely every two months. So use this procedure "Stopping the printer for more than one week".

2 Starting the printer after a shutdown of more than one week

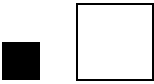
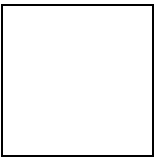
With the print head on its maintenance stand, remove the nozzle protection. Install an ink cartridge, check the additive cartridge and open the gutter tap.

After pressing , the printer starts up.

Since the machine is empty, start-up will take about 8 minutes.

3 Printer operating parameters

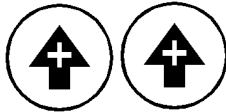
PRESS	DISPLAY	COMMENTS
 	PRINT TEST?	
	STATUS OF PRINTER PARAMETER?	
	Pref : 2,77 b /Pr : 2,77 b Pbuffer : -0,11 b T = 24°	Pref: Reference pressure (value depends on the printer installation). Pr: Actual ink circuit pressure.
	Speed J1 : 20,03 m/s	Pbuffer: vacuum. Speed J1: Jet speed
	PRINTER: SOFT VERSION B07	Displays the printer software version.



4 Maintenance menu



PRINT
TEST?



DRAIN
COMPLETELY?

This function allows the printer to be drained completely.



DRAIN
PARTIALLY?

This function allows the printer to be partially drained. For maintenance operations.



TEST THE
ELECTROVALVES?

This command allows you to open and close each solenoid valve to check if it is operating correctly.



PRINTING
MODULE: R7

This function allows you to set an updating index for the printing module (R6 or R7). To modify this setting, contact Imaje's technical support.



OPEN COVER
CONTROL: YES

This function allows you to override the cover fault.

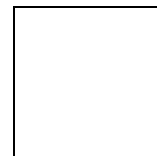
CAUTION: this function should only be used for maintenance operations.



CONTROL JET
RECUPERATION: YES

This function allows you to override the jet recuperation fault.

CAUTION: this function should only be used for maintenance operations.



INK
TYPE: 7155

This is a factory set parameter , do not modify it !



AUTOCALIBRATION
PRINTER: YES

This is a factory set parameter , do not modify it !



OPERATOR
INTERFACE / ENGLISH

You may change the display language to one of the various languages available in the printer.



HEAD HEIGHT
DIFFERENCE: + 0.0 m

This is the height difference between the print head and the ink circuit. This value is positive when the head is higher.



PROTECTED ACCES?

You can program a code which locks the menus accessible by the function key. The code uses any three keys of the following four :

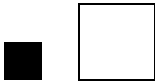
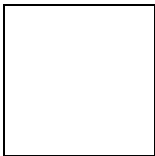


This code must be entered each time you access the protected menus: **DO NOT FORGET THIS CODE.**



FILTERING
DTOP : 0200

This is a factory set parameter , do not modify it !



5 Troubleshooting

5.1 Introduction

The tables in this chapter include the following two columns:

- Problems
- Solutions

Each problem is identified in the table by a number in bold type.
Each problem can be resolved with one of several «Solutions».

5.2 Example diagnosis

Problems	Actions and solutions
1- Display and indicators not lit	1a - Check that voltage is present at the outlet 1b - Check the main power cable and connection 1c - Change the 1.25 A slow-blow fuse

The operator should perform the preliminary checks first.

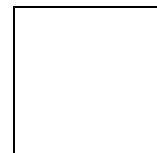
For each problem (1 in example above), the operator must then:

- Try the first solution (1a in example above).
- If the problem persists, the second solution (1b in example above) must be applied.

After correcting the situation, clear the fault using the ☹️? key on the Operator Interface.

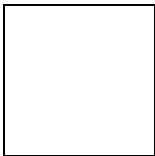
5.3 When starting up the printer

Problems	Solutions
1- Display not lit	1a - Check that voltage is present at the outlet. 1b - Check the main power cable and connection. 1c - Change the 1.25 A slow-blow fuse .
2- Alarm / fault light lit	2a - Clear the fault by pressing the ☹️? key on the Operator Interface. If a number greater than 01 appears at the top of the screen, check the other faults with the arrow keys.
3- Data memory	3a - Stop the printer, remove power and start again. 3b - Contact IMAJE Technical Support.
4- Data incorrect	4a - Stop the printer, remove power and start again. 4b - Contact IMAJE Technical Support.

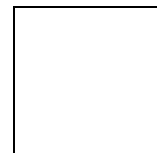


5.4 During printer operation

Problems	Actions and solutions
1- Ink level: LOW-50-	1a - Prepare to install a new ink cartridge.
2- Additive level: LOW-51-	2a - Prepare to install a new additive cartridge.
3- Ink level: EMPTY-52- or Drainage cartridge missing	3a - Replace the ink cartridge.
4- Additive level: EMPTY-53-	4a - Replace the additive cartridge.
5- Cartridge full-54-	5a - In draining or flushing phase, install an empty cartridge.
6- Temperature fault-90-	6a - The ambient temperature of the room where the printer is installed is too high, leading to a temperature of greater than 70°C within the control module. Modify the installation. 6b - Contact IMAJE Technical Support.
7- Cover fault-84-	7a - Close or check that the head cover is closed. 7b - Check the presence of the magnet in the cover. 7c - Contact IMAJE Technical Support.
8- EHV fault-86 87-	8a - Carefully clean and dry the head. 8b - Check that the environmental conditions (humidity, temperature) comply with the specifications given in the ink technical data sheet. If not, contact Imaje Technical Support to install the head dry air pressurization kit. 8c - Contact IMAJE Technical Support.
9- Recovery fault-85-	9a - Start the jets again, observing them. If one of the jets is unstable, deviated (out of the gutter) or missing, validate the «Nozzle unblocked», «Introduce solution» and «Stability control» functions. 9b - If the jets fall into the gutter correctly but are not sucked in, check the position of the gutter tap. 9c - Check the machine parameters and contact IMAJE Technical Support.

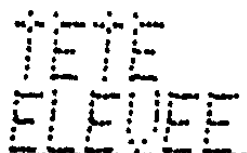


Problems	Actions and solutions
10- Drop detection-81 82-	10a - Clean and dry the head, restart the jet. 10b - Check the validity of the ink used in the printer: expiry date (see indications on the cartridge). If the date has past, drain the printer and use a more recent ink cartridge. 10c - Check the general printer operating parameters. 10d - Contact IMAJE technical support.
11- Conveyor speed-40-	11a - On the printer, check the number in the «Tacho division» parameter, or the object speed value whichever is used. 11b - Contact IMAJE technical support.
12- Printing speed-48-	12a - The programmed printing speed is too high in relation to the content of the message.
13- Concentration alarm -70- fault -83-	13a - Check the additive cartridge. 13b - Clean the head electrodes, with the gutter tap closed. Allow the printer to correct this incident automatically over time. 13c - If the alarm persists, fault 83 occurs. Drain the printer completely and install a new ink cartridge. 13d - Check the printer parameters and contact IMAJE technical support.
14- Ink module fault 71 to 77	14a - Stop, unplug, replug and restart the printer. 14b - Check the printer parameters and contact IMAJE Technical Support.
15- Machine empty-78-	15a - Change the ink cartridge. 15b - Check the printer parameters and contact IMAJE technical support.
16- Solenoid valve-60 to 64-	16a - Test the corresponding solenoid valve manually. 16b - Contact IMAJE Technical Support.
17- Condenser overflow -79-	17b - Contact IMAJE Technical Support.
18- No printing and no faults displayed	18a - Check the content of the message selected for printing. 18b - Check the print parameters «Triggering mode», «Margin», «Printing speed», «Tacho». 18c - Perform a print test with the   keys. Check that the cell and the encoder (if installed) are correctly connected and operating.

**Problems**

19- Poor print quality

Example 1 :



Example 2 :

**Actions and solutions**

19a - Clean the print head (including cover) and check that there are no obstacles in the jet path.

19b - Check that the head support is stable (no vibrations).

19c - Check the distance between the head and the object.

19d - The head requires mechanical and/or electronic adjustment. Contact IMAJE Technical Support.

6 Adjustments

6.1 Jet in the gutter adjustment

Special tools (service kit):

- Cannon direction tool (ring spanner).
- Bifocal magnifying glass.
- Head cleaning kit.
- Goggles.
- Hex. Allen key, 1.5.
- Tweezers.

To avoid getting ink in the eyes, goggles must be worn during these operations.

PRELIMINARY CHECKS

- 1 - Place the head on the maintenance stand.
- 2 - Make sure that the jet is stable by validating the "Check jet stability?" function.
- 3 - Validate the "Adjust the jet?" function and start up the jet.
- 4 - Check that the recuperation operates correctly.

SETTING THE JET IN THE GUTTER

The operation includes three related settings:

- cannon rotation,
- upper cam rotation,
- lower cam rotation.

In general, this is performed gradually, stopping the jet from time to time to clean the electrodes if necessary.

- 5 - Remove the wire protection plate from the resonator wires and disconnect them.

- 6 - Unfasten the cannon-holder screws (see Figure 1).

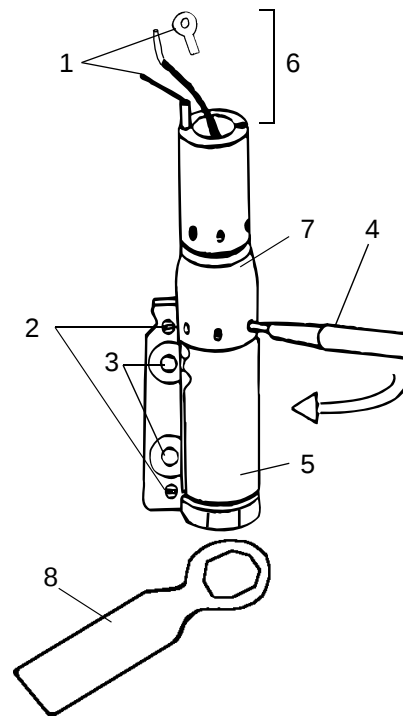


Figure 1 :

- 1 - Wires to be disconnected
- 2 - Cams
- 3 - Screw
- 4 - Direction tool
- 5 - Cannon holder
- 6 - Protective plate position
- 7 - Cannon
- 8 - Ring spanner

- 7 - Bring the jet to point A by tilting the cannon in the cannon-holder with a direction tool placed above.

WARNING: Respect the rotation direction indicate on the figure 1 otherwise to unscrew the cannon nut.

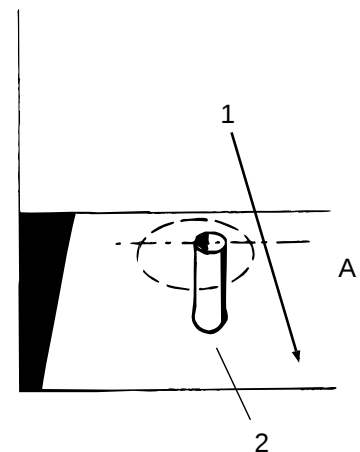
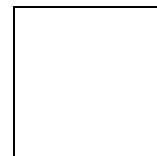


Figure 2 :

- 1 - Jet
- 2 - Gutter



8 - Centre the jet in the charge electrode by sight using the lower cam (see Figure 1).

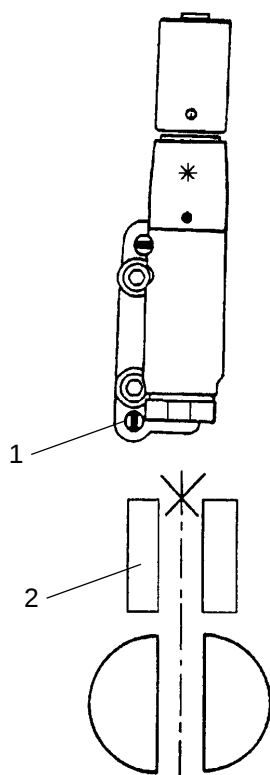


Figure 1 :

- 1 - Lower cam
- 2 - Charge electrode

Do not apply excessive force to the cams. Turn the screw to make the cannon-holder movement easier or stiffer.

9 - Centre the jet in the gutter using the upper cam (see Figure 2).

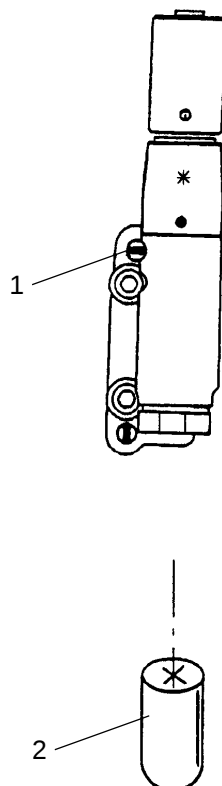


Figure 2 :

- 1 - Upper cam
- 2 - Recuperation gutter

10 - Repeat points 7, 8 and 9 until the jet is centred in the gutter and in the charge electrode.

FINAL OPERATIONS

11 - Tighten the two cannon-holder screws, without forcing them.

12 - Stop the jets.
Clean the head and reconnect the resonator wires. Replace the protective plate. Close the head cover.

13 - Start up the jets.

14 - Check the break-point. Set it if necessary (see Break off point adjustment).

15 - Cancel any faults. Perform continuous printing tests.
Check the cleanliness of the electrodes and the gutter after 10 minutes printing.

CAUTION: On a multi-jet printer, in order for the trame to be connected, each jet must be adjusted in relation to the others.
This setting can be finely tuned only by printing tests.

6.2 Break-off point adjustment

Special tools :

- Bifocal magnifying glass.
- Hex head screwdriver 2 mm.

PREPARATION

1 - Place the head on the maintenance stand.
Start the jet(s) and leave them running for at least 1/2 an hour.

2 - Remove the upper plate and the head cover.

In multi-jet printers, each jet has its own potentiometer (right-hand jet-right-hand potentiometer, etc.).

SETTING

3 - The setting below is performed by looking at the jet through the magnifying glass (see Figures 1 and 2):

- Initialize the operation by turning the potentiometer fully to the left. The jet is continuous.
- Turn it gently to the right until the jet break-point appears in the form shown in 4 on Figure 2.
- Only the shape of the drops after the break point indicate the right adjustment (see Figure 3).

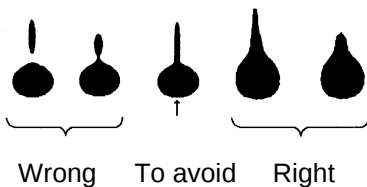


Figure 3 :

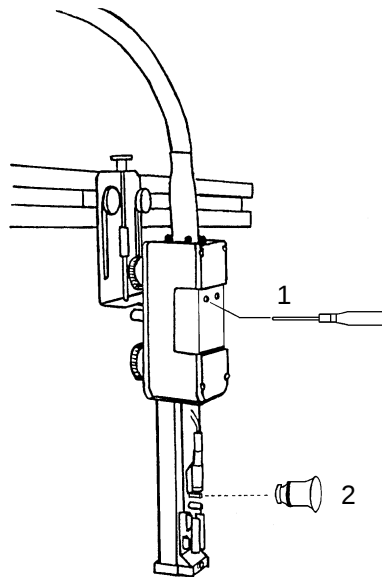


Figure 1 :

- 1 - Potentiometer slot
2 - Magnifying glass

During settings, handle the potentiometer with care to prevent damage.

CHECKS AND TESTS

- 4 - Close the head covers. Clear any faults.
- 5 - Perform some printing tests and repeat the setting if necessary.

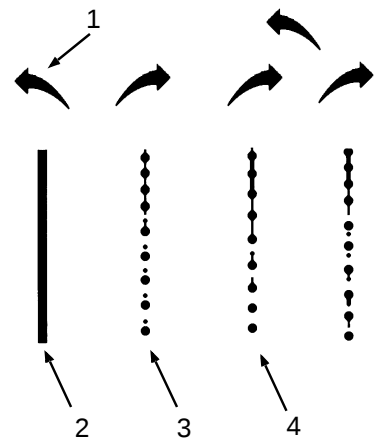
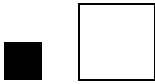
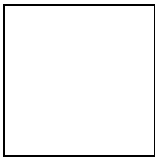


Figure 2 :

- 1 - Potentiometer turns
2 - Jet as seen through magnifying glass
3 - Satellite droplet
4 - CORRECT SETTING

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1 Consumables

1.1 Definitions

The term consumables refers to products consumed during printing or used to ensure correct operation of the printer. This includes:

- **Ink:**

Used for printing.

Its formula contains all elements required for:

- stability in the container (expiration date) and in the machine.
- printing performance (adhesion to the identified product and resistance to specific constraints).

It may be delivered in a ready-to-use form or in the form of several components to be mixed.

- **Additive:**

Used to maintain the viscosity (thickness) of the ink.

Its composition corresponds to the needs of the ink during operation.

- **Cleaning solution:**

Used for printer maintenance (head cleaning, etc.).

Its composition is compatible with the ink and additive used.

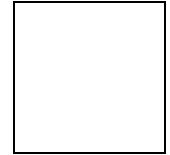
- **Anti-clogging liquid:**

Used only for specific inks.

Its composition prevents ink drying within the cannon when the machine is stopped.

1.2 Units

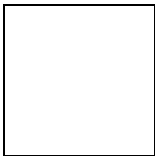
Depending on the type of ink or additive, Imaje offers groups of 4 or 6 units as well as start-up kits including ink and additive.



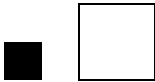
1.3 Labeling

This serves three purposes:

- Identify the supplier, indicating the contact details.
- Inform the user about the product itself:
 - article reference
 - manufacturing batch number: to be quoted if you need to contact our Technical Support
 - use before date: limit date up to which the original quality of the product is guaranteed.
- Inform the user about the nature of the special risks related to the substances contained in the ink. ex. flammability, eye irritation, etc.

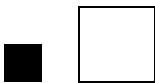


Consumables



2 Consumables and the application

Qualification of the application is the sole responsibility of the customer. In order to assist with this qualification (which covers the ink, ink jet equipment, nature of products, manufacturing process, printing requirement specifications, etc.), Imaje makes a wide range of printers and inks available to its current and potential customers for producing print samples.



3 Consumables and the printer

3.1 Ink usage specification

It is essential to possess this document, available from our sales branches on request.

This sheet informs the user of the operating parameters (viscosity, jet speed, etc.) and the specific printing characteristics (printing speed, head to object distance, etc.) depending on the printer configuration (nozzle size, number of nozzles, etc.) and the chosen ink.

3.2 Consumption

You should be aware that the ink consumption for a given period depends on the number of characters printed per object, the number of objects printed during the period, the font (matrix, bolderization) and the diameter of the nozzle.

The additive consumption primarily depends on the operating time and the ambient temperature.

4 Consumables and safety

The use of our consumables implies the knowledge of some of the associated physical and chemical characteristics, as well as the safety recommendations for storage, handling and use of these products.

All of this information is included on a material safety data sheet (msds), which is available up on request from our sales offices.

You should study the msds before starting use.

Foreword:

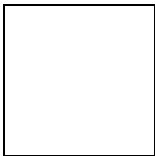
Ⓔ The presentation and authoring rules for the Safety Data Sheets comply with Directive 67/548/EEC and the OSHA (Occupation Safety and Health Administration) nomenclature (through the HCS (Hazard Communication Standard)).

On these sheets, you will find all data concerning:

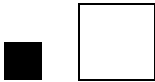
- identification of the preparation and the manufacture,
- the composition and information on the components
- identification of the hazards
- first aid
- fire fighting measures
- measures to be taken in the event of accidental spillage
- handling and storage
- control of exposure / individual protection
- physical and chemical properties
- stability and reactivity
- toxicological information
- ecological information
- considerations for disposal
- information concerning transport
- regulatory information
- other information

For:

- operators and technicians
- the customer's occupational health and safety department
- occupational health doctors
- transport companies
- the fire department
- store keepers



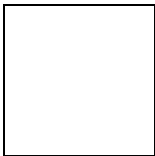
Consumables



5 Consumables, guarantee and responsibility

Our consumables have been specially designed to operate with Imaje printers and give the best results in terms of ease of use and consumption.

The use of consumables other than those proposed by Imaje invalidates the equipment guarantee and any complaints concerning a deterioration of performance leading to production stoppages.



Technical specifications

Physical description

Dimensions: mm (inches)

• Printer body	390x210x180 (15.35x8.27x7.09)
• Print head	225x45x45 (8.86x1.77x1.77)
• Consumable cartridge	230x60x35 (9.05x2.36x1.38) (small) 250x55x55 (9.84x2.16x2.16) (large)
• Cassette	140x140x40 (5.51x5.51x1.57)

Weight:

• Complete machine	less than 10 kg (22 lb)
• Cartridge	less than 0,5 kg (1.1 lb) (small) less than 0.8 kg (1.76 lb) (large)
• Cassette	less than 0.5 kg (1.1 lb)

Performance parameters

Printing:

- On most media, in all positions.
- Library: 10 messages.
- Height from 2.5 to 5.7 mm (depending on font) (.098 to .224 inches).
- maximum 60 characters or 2400 rasters per message.
- Matrix: 7 dots, single or double line, 16 dots, single line. 24 dots for certain special characters.

Maximum speed:

- 1.2 m/s, one 7-dot line (236 ft/min).
- 0.6 m/s, two 16-dot lines (118 ft/min).
- 0.6 m/s, two 7-dot lines (118 ft/min).
- See table of special characters for associated maximum speeds.

Functions:

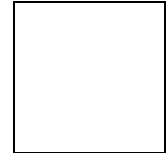
- 9 operator dialog languages.

Modes of operation:

- Automatic start-up,
- Automatic ink quality control.

Operating characteristics:

- Automatic nozzle unblocking procedure,
 - Auto-diagnosis of printer status,
 - Automatic draining and flushing procedures.
-



Power sources

- 100-120 V or 200-240 V a.c. (automatic switching).
- Frequency 50 or 60 Hz, 40 VA.

Ink

- Color: black.
- Fast drying.
- Average consumption: Small capacity:
24 million characters/cartridge (7x5 dots).
Large capacity:
45.7 million characters/cartridge (7x5 dots).

Usage limits

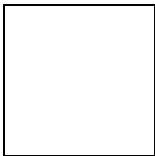
- Operating temperature: +5°C to 45°C (40° to 113° F).
- The use of certain inks may limit the temperature range, see ink data sheets.
- Humidity: 0 to 95 % RH without condensation.

Installation conditions

- Printer working position: vertical.
- Maximum height difference between head and control panel: programmable, between - 1.5 m and + 2 m (-60 to +78.75 inches).
- Umbilic length: 3 m (118 inches).
- Head / object distance: 10 mm (0.4 inches).

Standards

- Compliance: CE marking
 - Safety label: UL - CSA.
-



Characteristics:

Fonts:

- Standard (industrial Latin) 7 dots and 16 dots.
- Arabic/Greek: 7 dots and 16 dots.
- Hebrew/Russian 7 dots and 16 dots.
- Special characters: Chinese, Thai, Kanji, Korean, Arabic.

Autodating:

- Hour, minute, second, 24 hour clock or AM/PM mode.
- Day, month, year, Julian day, day of week, last digit of year, shift code, postdate.

Counters (9 digit):

- one counter.
- one production counter (not printed).

Inputs/Outputs:

- One object pulse input, one encoder input, one alarm output.

Standard accessories

- Head stand and printer base support.
 - Photocell: object detector.
 - Tachometer: speed detector.
 - External alarm (visual or audible).
 - Head movement.
 - Vapour catcher.
 - Head pressurisation kit.
 - Head drying kit.
-

Technical specifications

MESSAGE (Real size print samples)	FONT NAME	TRANSLATION	SYMBOL SHOWN	FONT SIZE	PRINT mm/s	SPEED ft/min
JAPANESE (KANJI)						
製造	KANJI SEIZO	PRODUCTION	J1	7 drops	1240	244
年月日	KANJI NENGAPPI	YEAR, MONTH, DATE	J2	7 drops	1240	244
賞味	KANJI SHOUMI	TASTE	J3	7 drops	1240	244
消費	KANJI SHOUHI	CONSUME	J4	7 drops	1240	244
使用	KANJI SIYOU	USE	J5	7 drops	1240	244
期限	KANJI KIGEN	LIMIT	J6	7 drops	1240	244
KOREAN						
유효기한	KOREA YUHYOKIHAN	LIMITED DATE	K1	7 drops	1240	244
까지	KOREA KAJI7	BEST BEFORE	K2	7 drops	1240	244
유통기한	KOR.YUTONGKIHAN9	LIMITED DATE	K3	9 drops	558	109
까지	KOREA KAJI9	BEST BEFORE	K4	9 drops	558	109
유통기한	KOR. YUTONGKIHAN11	LIMITED DATE	K5	11 drops	558	109
까지	KOREA KAJI11	BEST BEFORE	K6	11 drops	558	109
CHINESE						
生产日期 保质期至	CHN SHCHBZHRIQI	PRODUCTION EXPIRY DATE	C1	16 drops	558	109
生产日期 批号	CHN SHCHRIQPIHAO	PRODUCTION DATE BATCH NUMBER	C2	16 drops	558	109
生产日期	CHN SHCHRIQ(PRO)	PRODUCTION DATE	C3	11 drops	558	109
保质期至	CHN BZHRIQI(EXP)	EXPIRY DATE	C4	11 drops	558	109
合格	CHN HEGE(PASS)	PASS	C5	11 drops	558	109
批号	CHN PIHAO(BATCH)	BATCH NUMBER	C6	11 drops	558	109
THAI						
วันที่ผลิต วันหมดอายุ	THAI PROD EXP1	PRODUCTION DATE EXPIRY DATE	T1	24 drops	372	73
ครั้งที่ผลิต : วันที่ผลิต :	THAI BATCH PROD	BATCH NUMBER PRODUCTION DATE	T2	24 drops	372	73
วันที่ผลิต : ควรบริโภคก่อน :	THAI PROD EXP2	PRODUCTION DATE EXPIRY DATE	T3	24 drops	372	73
วันที่ผลิต	THAI PROD1 LINE	PRODUCTION DATE	T4	16 drops	558	109
ควรบริโภคก่อน	THAI EXP1 LINE	EXPIRY DATE	T5	16 drops	558	109
ครั้งที่ผลิต	THAI BATCH1 LINE	BATCH NUMBER	T6	16 drops	558	109
ARABIC						
تاريخ الإنتاج تاريخ الانتهاء	ARABIC PROD EXP	PRODUCTION DATE EXPIRY DATE	A1	16 drops	558	109



↓

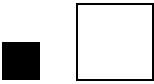
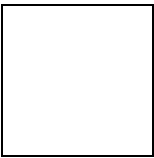


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1	Inputs / Outputs	62
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1.3	Output	65



1 Inputs / Outputs

1.1 Connection

The industrial interface includes:

- the detection cell and encoder inputs,
- the fault output.

To make electrical connections, switch off the printer, disconnect the unit from the body of the printer and remove the upper cover after removing the four screws, as shown on the diagram below.

Figures 1-2 : View of the industrial interface module and its terminal blocks

- | | |
|---|-------------------|
| 1 | Grommet |
| 2 | Connection strips |

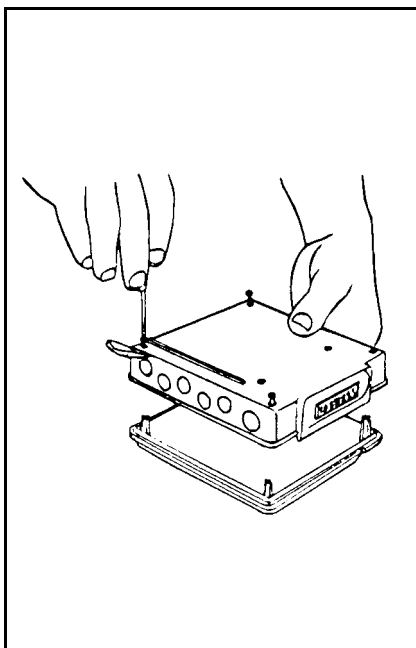


Figure 1

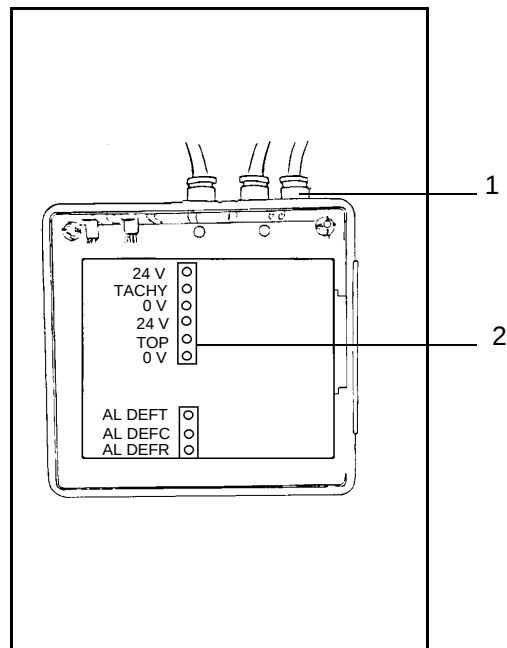
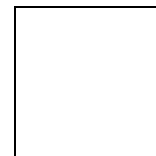


Figure 2



Terminal markings

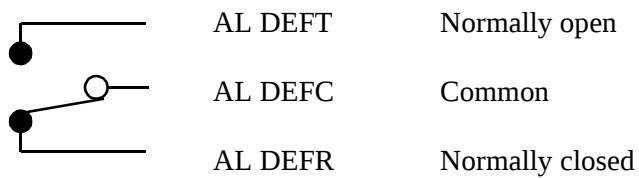
Inputs

TOP Start printing (photo cell or proximity switch)

TACHY Encoder input (shaft encoder)

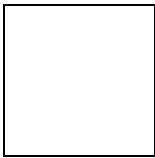
Outputs

Alarm:



Power supply:

0 V	
+ 24 V	Maximum current 300 mA



1.2 Inputs

1.2.1 Input characteristics

The input circuits have the properties of a high speed photocoupler with an isolation voltage of 3 KV.

- Usable voltage from 10 to 24 V.
- Current limited by resistor.
- Maximum operating frequency: 200 kHz.

1.2.2 TOP: object detection cell

- **Purpose:**

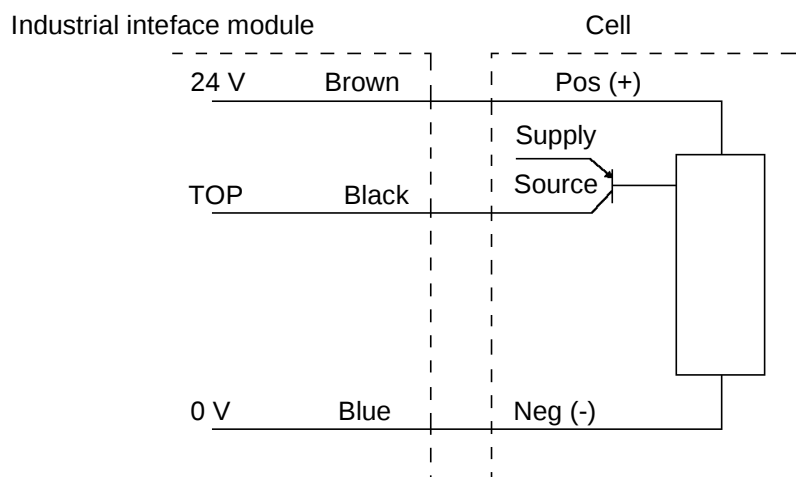
The object detector is connected to the TOP terminal on the industrial interface cartridge. When activated by the passage of an object, the detector sends a signal to the printer which triggers printing. In order to avoid spurious signals, the TOP input is filtered.

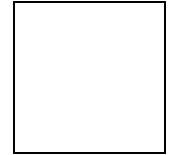
CAUTION

The cells used must be Imaje PNP cells.

- **Cell connection:**

Industrial interface module





1.2.3 TACHY: Encoder

- **Purpose:**

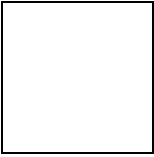
When a variable speed conveyor is used, the TACHY terminal on the industrial interface module can be used to connect an encoder in order to sequence printing.

1.3 Output

- AL DEF: relay alarm output.

This output signals a shortage of consumables (ink or additive) or a printer malfunction.

The relay is only actuated when an alarm or fault condition occurs.



NOTES

Updates to the printer manual

- Revision index A corresponds to the first issue of this manual.
- The revision index changes with every update.
- The page changes are shown in the table below. This gives the history of the various updates since the first issue.

Issue date	Document revision index	Software index	Pages modified
06/1998	A	B03	First issue
10/1999	B	B05	2 - 7 - 9 - 25 - 26 - 32 - 33 - 39 - 41 - 55 - 60
05/2001	C	B06	6 - 10 - 17 - 37 - 39 - 42 - 43 - 44 - 45 - 46 - 47 - 48 - 56 - 57 - 58 - 60 - 61 - 68
09/2002	D	B07	All

Photograph and drawings are not binding. Photo: GINKO, X



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09/2002