Printer manual

Small character ink-jet printing

S8 Range

S8 Contrast

A20736 B0

Image

A DOVER COMPANY

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1 Ink jet printing

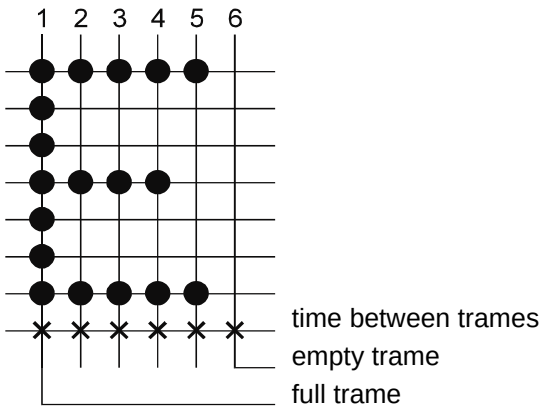
Ink jet printing enables contact-free marking to identify, date or customize a product. Your printer uses the "deflected continuous jet" principle with dot-matrix type characters.

1.1 Dot-matrix characters

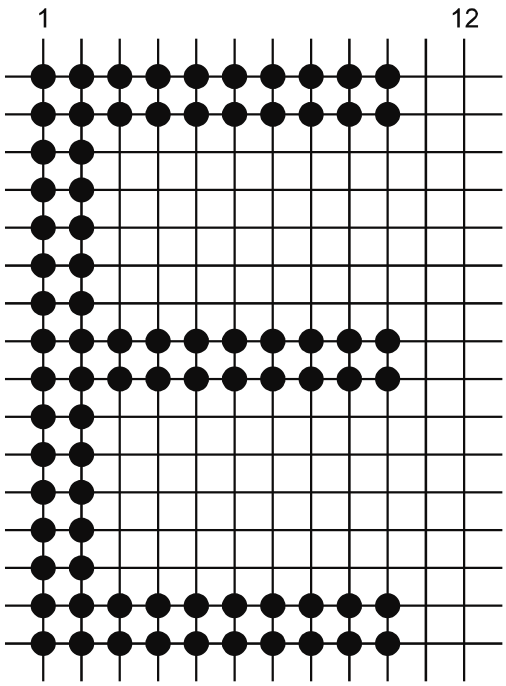
Each symbol (letter, digit, punctuation mark, etc.) is contained within a rectangular area known as a "matrix", which is divided into columns known as "trames" and which has a defined height and width.

Example: 7 × 6 matrix - 16 × 12 matrix.

The first digit is the number of dots per trame and the second digit is the number of trames per matrix.



7 × 6 matrix



16 × 12 matrix

1.2 Continuous deviated ink jet printing

The printer head is supplied with pressurized ink.
The ink arrives in a cannon (2) with a hole "nozzle" (3) through which the ink is ejected to form a jet.

The ink jet is modulated by a piezo-electric resonator (1) to form calibrated and equidistant droplets. The droplets not used for printing are recuperated in a gutter (6) to be reusedreused.

The droplets used for printing are polarized electrically by a charge electrode (4) and then deflected from their initial path by two deflector plates (5) to produce the required symbol. The deflection of a droplet depends on its polarization value.

The droplets are projected onto the item to be printed. A character is formed trame by trame; these trames may be full, partial or empty. Moving the object perpendicularly to the deflection plane enables the trames to be offset from each other.

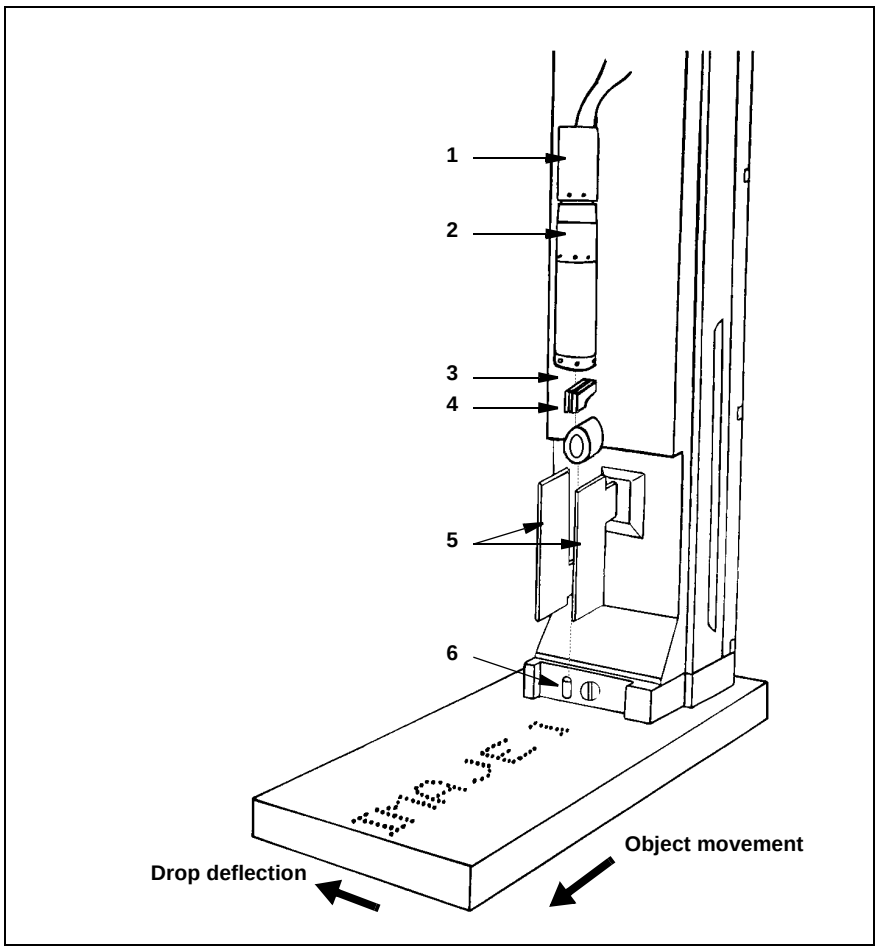


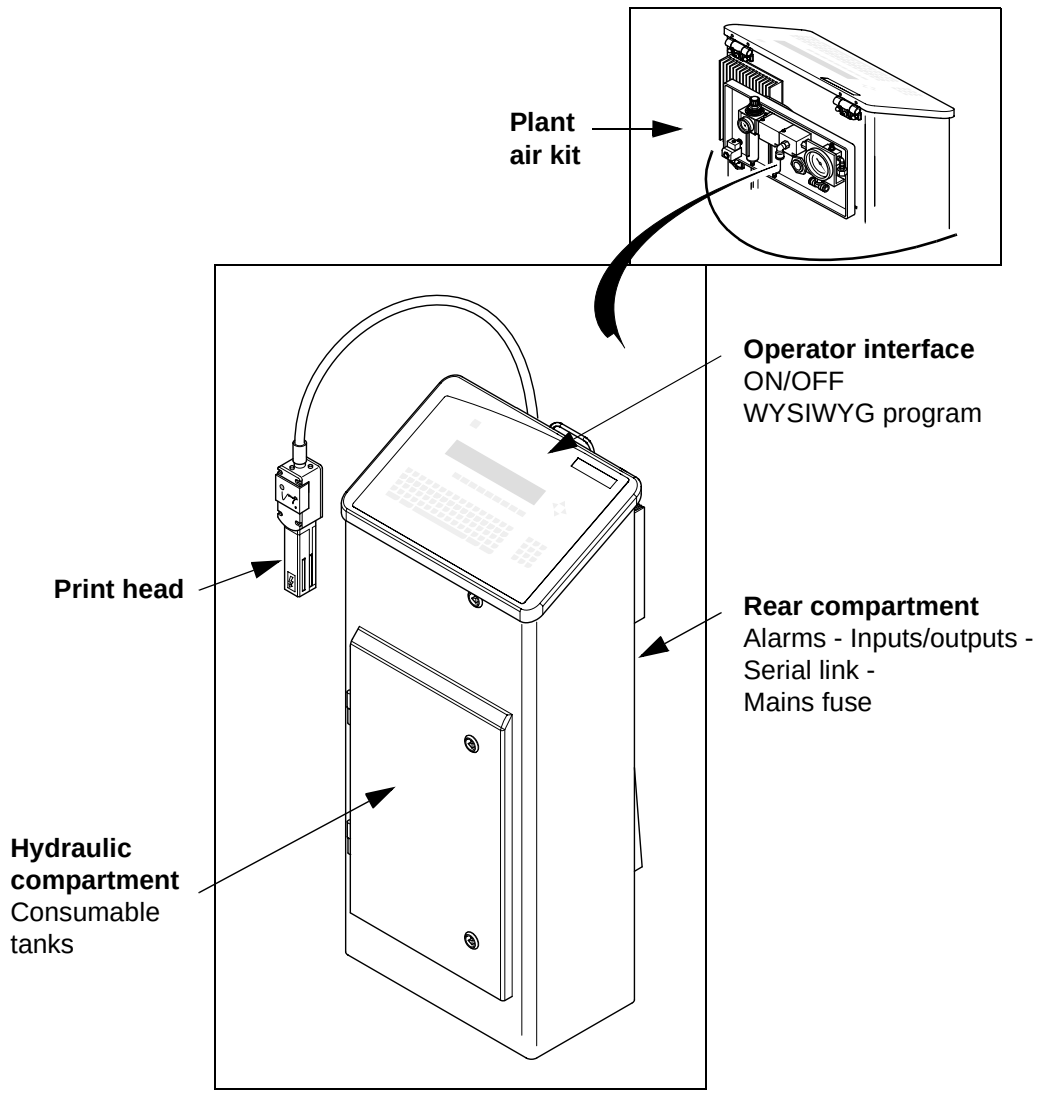
Figure 1

2 S8 Contrast printers

2.1 Overall view

This manual covers all the printers in the S8 Contrast range.

Some items of equipment or software may not be present in your printer depending on its configuration.



The printer must be installed in a ventilated room.

3 Operator interface

Display

Large LCD screen with WYSIWYG (What You See Is What You Get) message display, with programming and maintenance help messages.

NOTE	**1) The display is switched off if no keys are pressed on the keyboard for 5 minutes. It is switched back on when any key is pressed.** **2) A "screen saver" showing the time is displayed when the ESC key is pressed from the main menu. Press any key to restore the main menu.**

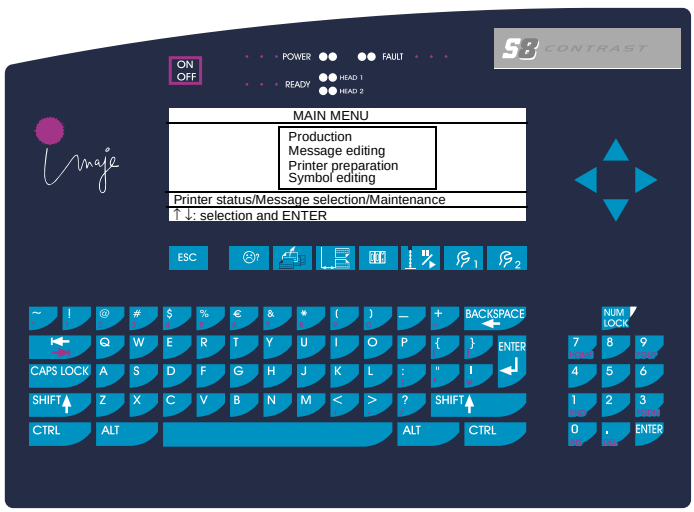
Keyboard

Completely dust-proof and waterproof, with tactile keys. It can be cleaned with the same cleaning solutions used for the printer.

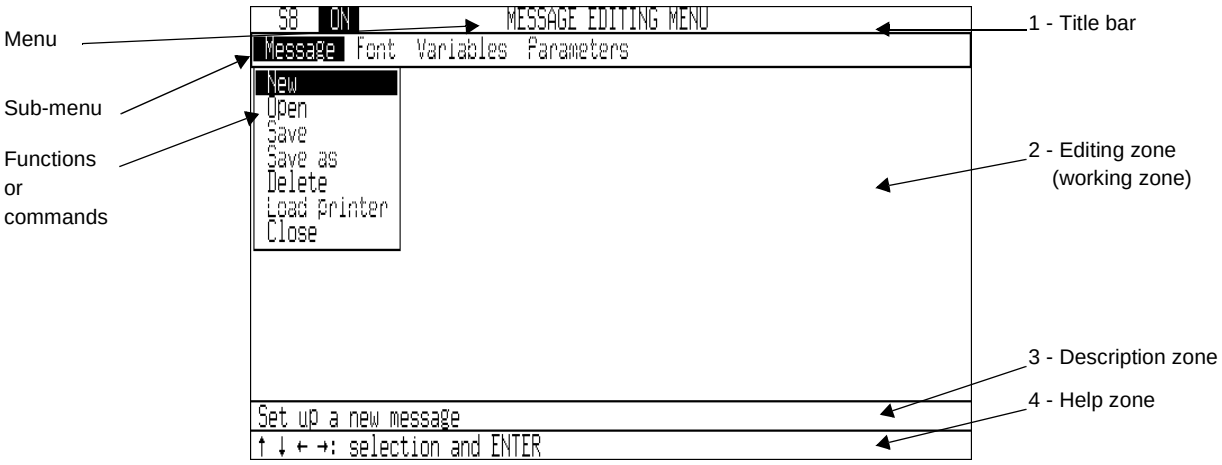
Indicators

Provide a rapid visual indication of the printer status.

- POWER: Green. Lit when the printer is switched on.
- FAULT: Red. Lit if the printer detects a fault.
- READY HEAD1: Green. Lit steadily, if the head is ready to print. Flashe, if the head is in service but not ready or faulty. Off, when the head is stopped.
- NUM LOCK: Green. Lit when the number keys are accessible.



4 Description of the screen



1 Title zone

This zone contains the name of the menu you are in and the name of the message you are working on.

2 Editing zone

At the top of this zone, a menu bar shows all the available sub-menus in the selected menu. This bar is always visible. A box shows the functions for the selected sub-menu. It is then possible to select and validate a function or command, after which the box disappears from the screen to leave as much free space as possible.

NOTE	**Sub-menus and functions may be grayed out to show that they are not accessible.**

3 Description zone

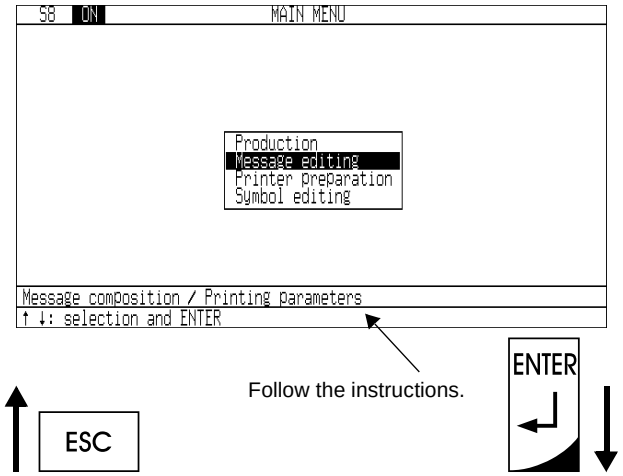
Describes the selected function. Specific operations may be mentioned between angle brackets <<---->>.

4 Help zone

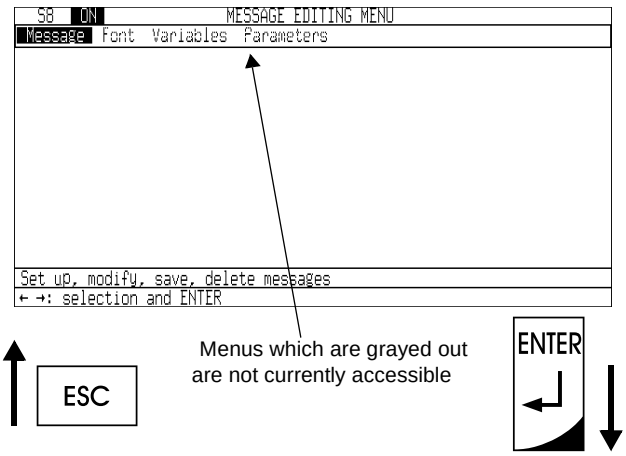
Describes what operations should be performed to select a command, change a value, validate a function, etc.

CAUTION	**It is always advisable to read the explanations and instructions shown in the help and description zones to avoid making mistakes.**

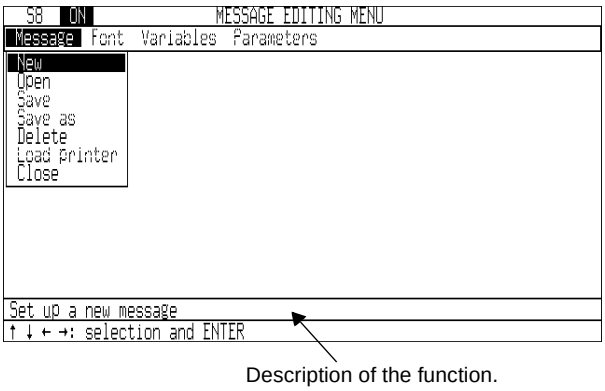
5 How to reach the desired function or command



A selection of several menus is proposed. Choose the one you want.



Another choice is proposed. Continue in this way until you reach the desired function or command.



The items selected remain displayed, and specific help is displayed at each step.
All the pull-down menus which you will use operate according to the same principle.

6 Presentation of the keyboard

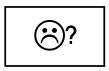
The keyboard comprises:

- Alphabetic keys, a standard numerical keypad and certain symbols (%, $, etc.).
- "ALT", "SHIFT", "CTRL", "ESC" keys, etc.
- An editing pad with four arrow keys.
- Keys for direct access to important functions.

7 Using the keys

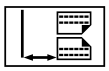
Direct access keys:

ON/OFF.

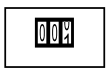


Used to display and acknowledge a fault or alarm detected by the printer.
This key may not be used when a dialog box is open.

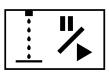
Used to select the message to be printed.



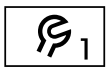
Used to modify the parameters of the active message.



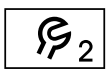
Used to display and reset counters.



Used to pause then restart printing. This key has no effect on messages printed in manual mode.



Provides direct access to jet maintenance functions [Jet shut down, Jet start up, Refreshment, Stability, Intro. solution, Nozzle unblocking, Jet adjustment].



Provides direct access to open and close certain ink circuit electrovalves (in stand by mode only).

Other keys:

ESC — Used to go back to the previous menu and/or the main menu. It can also be used to abandon the input of a value or quit parameter modification and ignore any changes made.

ENTER — Used to validate a choice or a menu and save current operations.

CAPS LOCK — Used to toggle between upper and lower case letters.
In upper case mode, the following symbol is displayed at the bottom right of the screen: ⇧.

0 INS — In the [Message editing] function, used to select the mode:
- Insert: the cursor is shown as a vertical bar and modifications can be inserted into the message without overwriting the contents.
- Overwrite: the cursor is shown as a horizontal bar and the content of the message is modified by placing the cursor on the characters to modify.

|←→| — In the [Message editing] function, used to toggle tabulation mode on or off.
In tabulation mode the following symbol is displayed at the bottom right of the screen: ⇦⇨.

Space bar:
The space bar is used to select items in the various dialogue boxes.

. DEL — In overtype mode, this key deletes the element (trame, character or variable) at the cursor location.
In insert mode, it deletes the character to the right of the cursor.

7 HOME — This key is used to move to the start of a message or a list.

1 END — This key is used to move to the end of a message or a list.

9 PGUP — This key is used to display the "previous list" directly.

3 PGDN — This key is used to display the "next list" directly.

ALT

This key gives quick access to the menu items, using the upper case letter in the menu title, e.g. ALT+F for [Font].

When used with the ! 1 keys, it also makes it possible to switch from the [Production] to the [Message editing] menu in order to modify the message selected for printing.

ALT + ! 1 to make corrections to the message on head 1.

CTRL + Q to return to the [Production] menu after these changes.

CTRL

This key is used in special cases in conjunction with other keys:

CTRL + F: In the [Message editing] function, used to display and select the fonts used in the message.

CTRL + P: In the ☹? and 888 dialog boxes, this key triggers manual printing.

CTRL + V: In the [Message editing] function, if the cursor is placed on a bar code, this key displays the content of the code.

CTRL + S: In the [Message editing] function, this key is used to display spaces (dots appear on the screen).

CTRL + E: This key is used to invert the video mode of the display at any time

CTRL + ◀ or ▶: These keys adjust the contrast of the display.

CTRL + Q : In the [Message editing] function, this key is used to return to the [Production] menu after correcting a current message.

CAUTION	**In the [Symbol editing] function, some keys may have other meanings. See the [Symbol editing] Menu section.**

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1 General appearance of the menus

The main menu is split into four independent menus:

They appear in the following order:

- The [Production] menu, which contains all the functions and commands for day-to-day use of the printer.
- The [Message editing] menu, which contains all the functions used to create and modify the messages to be printed.
- The [Printer preparation] menu, which contains all the functions and commands used to initialize the printer when it is first commissioned.
- The [Symbol editing] menu, which contains all the functions and commands used to create and modify symbols, logos and drawings.

In this chapter, each function is explained separately. Certain functions are interrelated, and this is mentioned in the explanation for each. The functions are described in the order in which they are presented on the printer screen.

Despite this order, the first steps for using the printer are to select the dialog language and set the clock. Similarly a message must be created before it can be printed.

2 Detailed description of each function and command

This section explains each function and command on the printer, in the order in which they appear on screen.
An overall view of the menus is given below as a quick reference guide:

PRODUCTION

Printer	Message	Status/Printhead	Maintenance
Start-up Shut-down Jet(s) start-up Jet(s) stop Start Mode	Message selection Library creation Counter display / reset	Status jet(s) FAULTS	Clear faults ELV status modification Flushing Imaje SAV

MESSAGE EDITING

Message	Font	Variables	Parameters
New Open Save Save as Delete Load printer Close	Select font Select Symbols Bolderization Tabulation Barcodes	Counter Time Date Postdate Postdate 2 Shift code External	Message Counter Postdate Postdate 2 Shift code Barcodes

PRINTER PREPARATION

Initialization	Parameters	Options	Access codes
Language Autoclock Jet alignment RS232 Connection PCMCIA transfer Font(s) downloading	Message Counter Postdate Postdate 2 Shift code Autodating table Barcodes	Versions Hour counter Machine options	Keyboard Security

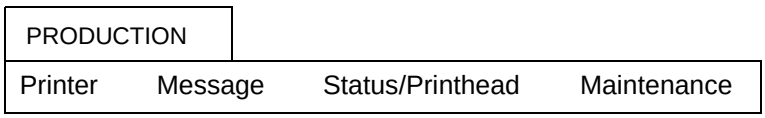
SYMBOL EDITING

Symbol	Size
New Open Save Save as Delete Close	Symbol size

REMINDER **The initials in upper case can be used to access the commands directly. If several commands in one menu have the same upper case letter (e.g. Bolderization and Barcodes), pressing the key repeatedly toggles between them.**

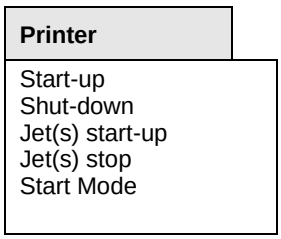
NOTES

3 PRODUCTION menu



The "Production" menu is used for printer operation, message selection, printer head status and access to maintenance functions.

3.1 Printer



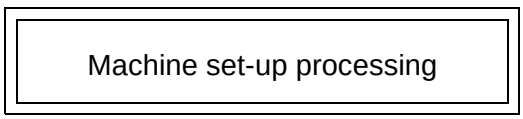
The [Printer] menu allows you to start and stop the printer and the jets.

3.1.1 Start-up

The [Start-up] command enables you to start the printer.

REMINDER **You can use the ON OFF direct access key to start the printer and jets automatically if this has been programmed.**

Each start-up requires time to initialize. During this time the following message:



is displayed on the screen.

3.1.2 Shut-down

The [Shut-down] command enables you to stop the printer at the end of production. The printer enters a 2-minute shutdown phase during which printing is impossible. The jet is then stopped automatically.

The following message is displayed on the screen:

PRINTER SHUTDOWN PROCESSING

IMPORTANT	**Do not interrupt this shutdown phase.**

REMINDER	**You can use the ON OFF direct access key.**

3.1.3 Jet(s) start-up

The [Jet(s) start-up] command is used to start up all the jets in the following three cases:

- printer startup with manual jet startup.
- restart jets after automatic stop due to a fault detected by the printer.
- restart jets after being stopped by the user.

3.1.4 Jet(s) stop

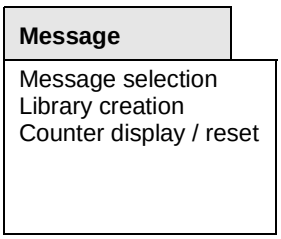
The [Jet(s) stop] command is used to stop the jets for maintenance (e.g. cleaning the head) without stopping the printer.

3.1.5 Start Mode

The [Start Mode] command is used to program:

- whether jet startup is automatic or manual.

3.2 Message



The [Message] menu is used to select the message(s) to be printed, create a library and display or reset the message counter(s) during printing.

3.2.1 Message selection

The [Message selection] command is used to select the message to be printed.
The messages are chosen from those created and stored in the printer.
The list of messages is shown in a dialog box. It may be selective if you use a library.

The message can be selected:

- Either by selecting the message from the list proposed and validating it.
- Or by calling the message by name (by pressing  followed by the message name or the start of the name).

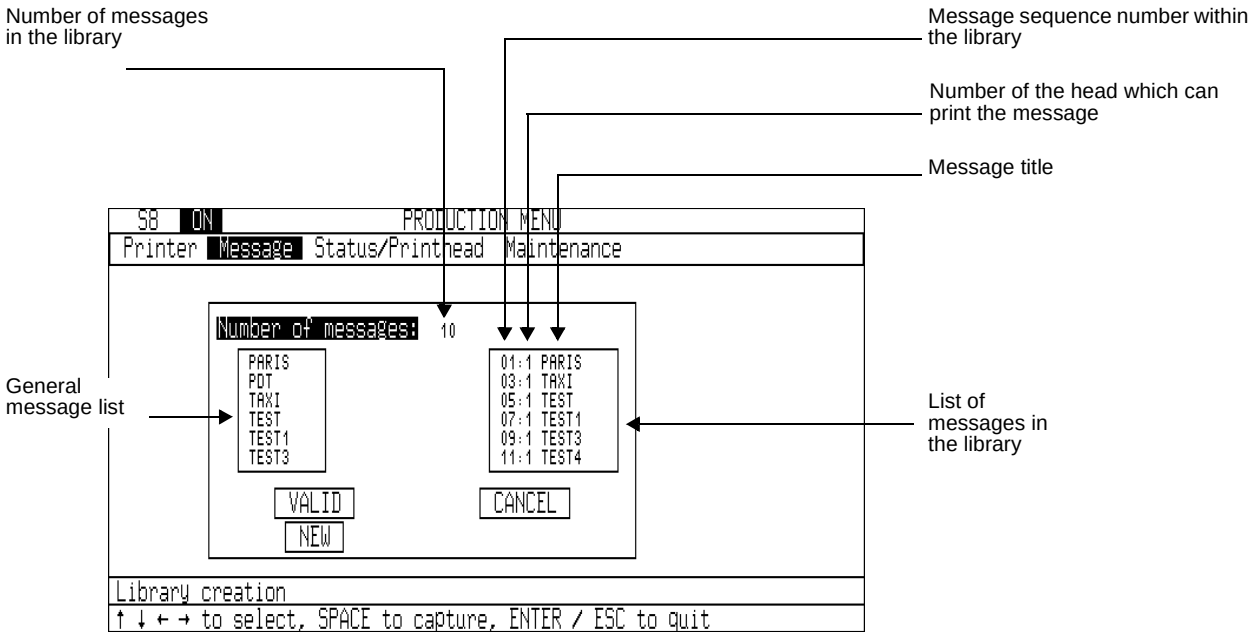
REMINDER **You can use the**  **direct access key.**

3.2.2 Library creation

The [Library] command allows you to preselect a maximum of 79 messages from the general message list stored in the PC board's memory.
Preselection displays the messages in selective lists, some of wich may be specific to each head .

IMPORTANT **The maximum number of messages in memory depends on the number of characters in each message.**

The dialog box below is displayed on the screen:



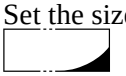
IMPORTANT **The number of messages contained in a library must be greater than the number of printer heads.**

The library is limited to a maximum of:
79 messages for a printer with one or two single-jet heads.
39 messages for a printer with one or two twin-jet heads.

The larger the library, the fewer characters per message.
The smaller the library, the more characters per message.

To create a library:

1) Set the size of the library by specifying the number of messages to be included.



2) Select the messages in the general list and store them in the library.
Select the message by pressing ▲ or ▼ then [Enter].

IMPORTANT	**Messages are stored in increasing numerical order.** **If you have a twin-jet head, the message numbers increase in twos.**

3) Validate the library.
Select the [Valid] box with the ◀ key then press [Enter].

To modify a library completely:

1) Delete the preceding library.
Select the [New] box with the ◀ or ▶ keys then press [Enter].

2) Set the size of the library by specifying the number of messages to be included.

3) Select the messages from the general list and store them in the library.
Select the messages with the ▲ and ▼ keys then press [Enter].

4) Validate the library.
Select the [Valid] box with the ▶ key then press [Enter].

To reduce the size of the library:

1) Delete the unwanted messages from the library.
Select the messages to be deleted and press [Enter].

IMPORTANT	**The remaining messages move up in the list.**

2) Modify the number of messages.

3) Validate. Select [Valid] and press [Enter].

To increase the size of the library:

1) Increase the number of messages.

2) In the general list, select the message to be added to the library and press [Enter]. It is added to the end of the library list.

To modify the contents of the library:

1) Select the message to be deleted, then press [Enter].

IMPORTANT **The following messages move up in the list.**

2) In the general list, select the message to be added to the library and press [Enter]. It is added to the end of the library list.

To delete the library:

1) Erase the existing library by selecting [New].

2) Set the number of messages to zero.

3) Confirm by selecting [Valid] and pressing [Enter].

3.2.3 Counter display / reset

This command is used to show changes to the counter in real time, and reset it if necessary.

REMINDER	**You can use the**  **direct access key.**

NOTE	**If the key combination [CTRL]+[P] is pressed in this menu, the message may also be printed if it is set to "Manual object" or "Manual auto".**

3.3 Status/Printhead

Status/Printhead or (Press  to access)

This menu allows you to display the main printer operating parameters.

- **Speed jet 1 and jet 2**: speed of jet expressed in metres per second (m/s).
- **Phase jet 1 and jet 2**: drop control or phase detection (000011110). Three or four (1) in succession corresponding to the breaking point of the ideal jet.
- **Pressure**: operating pressure expressed in bars.
- **Viscosity**: viscosity of the ink expressed in centipoises (cps) and seconds (s).
- **Temperature**: temperature of the electronic compartment of the console, in degrees Celsius (°C).
- **Transfer**: transfer time of ink from viscosimeter to accumulator, expressed in seconds (s).
- **Reference visco**: visosity reference on the basis of which the machine will admix additive.
- **Additions**: number of admixtures of additive by the printer since the last start-up.

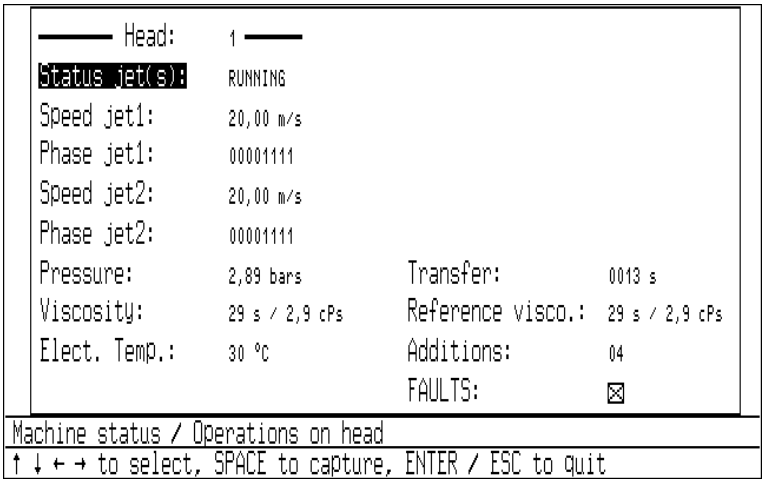
You can also process the status of the jet(s) thanks to the provision of a number of maintenance functions. Select "Status jets" and press the spacebar to confirm.

- **REFRESHMENT**: this function shoulc be used whenever ink is refilled after the printer or reservoir has been drained.
- **STABILITY**: function used to check the stability of the jet(s).
- **INTRO. SOLUTION**: used for cleaning the cannon(s) if the jet(s) is (are) blocked.
- **NOZZLE UNBLOCKING**: function used when there are no jets (cannon(s) blocked).
- **JET ADJUSTMENT**: used if it is necessary to reposition the jet in the gutter and in the centre of the charge and detection electrodes.

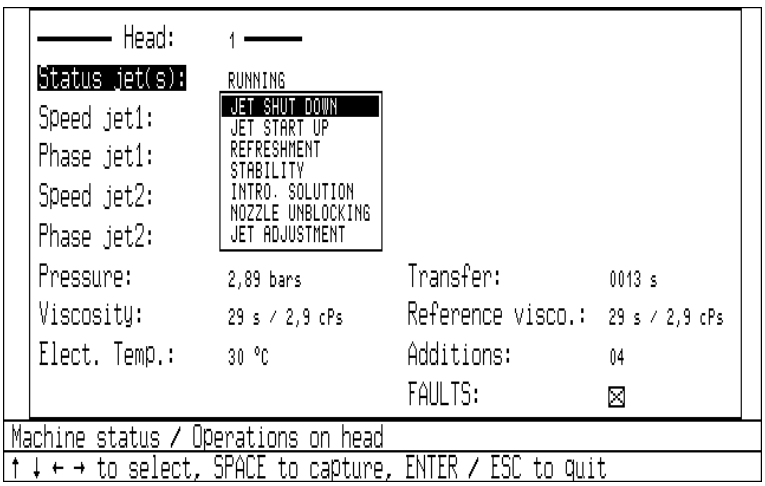
You can also display faults detected by the machine by selecting
FAULTS: ○ .

NOTE	**In this menu, pressing the buttons [CTRL] [P] (Control Print) simultaneously triggers printing of the message if this is in "Manual Object" or "Manual Auto" mode and if the jet is operational.**

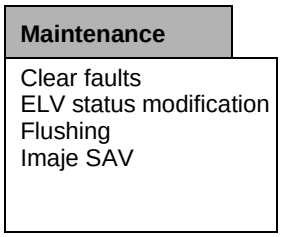
Printer operating parameters



Maintenance functions



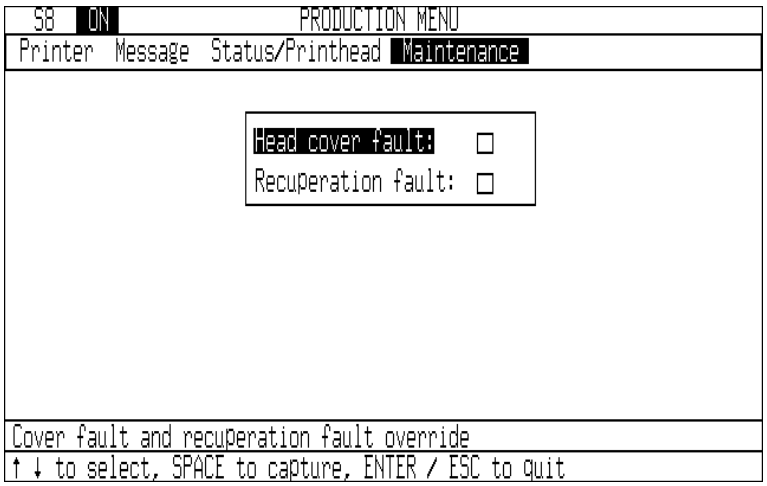
3.4 Maintenance



The [Maintenance] menu enables you to temporarily override the permanent head cover presence and recuperation checks, modify the status of certain ink circuit electrovalves or start a machine drain cycle. This menu also provides a historical record of printer operating parameters.

3.4.1 Clear faults

The [Clear faults] command can be used to temporarily override the head cover presence and jet recovery checks. The following dialog box is displayed:

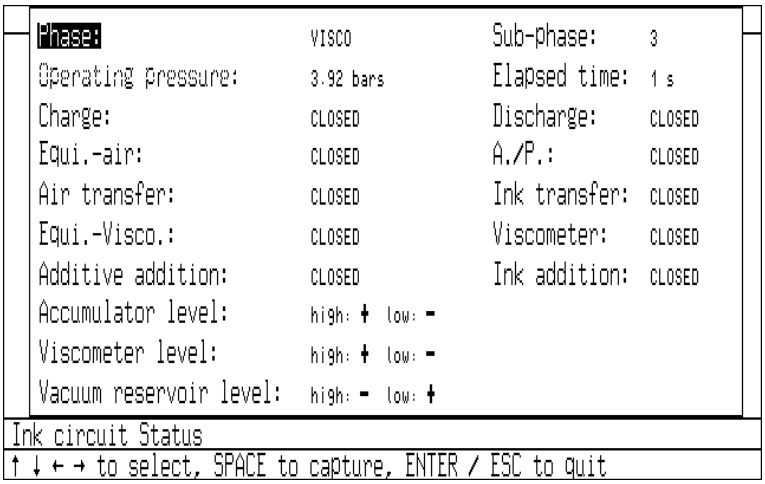


3.4.2 ELV status modification

• **During normal operation** (no fault present)

This dialogue box allows you to display:

- The different phases and subphases of ink circuit monitoring.
- Changes to the reservoir level, the accumulator, viscosimeter and recuperation.
- The status of all the electrovalves in the ink circuit.

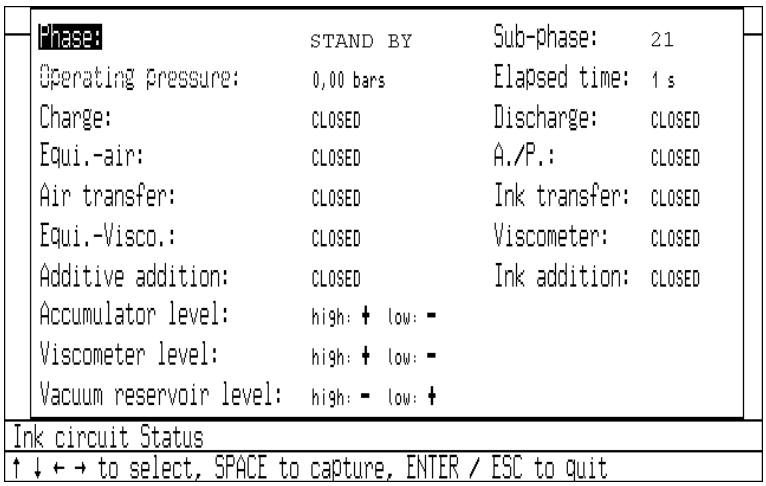


Ink circuit check: direct access via [2] key.

• **In the event of a fault in the ink circuit**

The sequence of phases is interrupted and the printer switches to "stand-by phase".

Press [2] to display the following dialogue box.



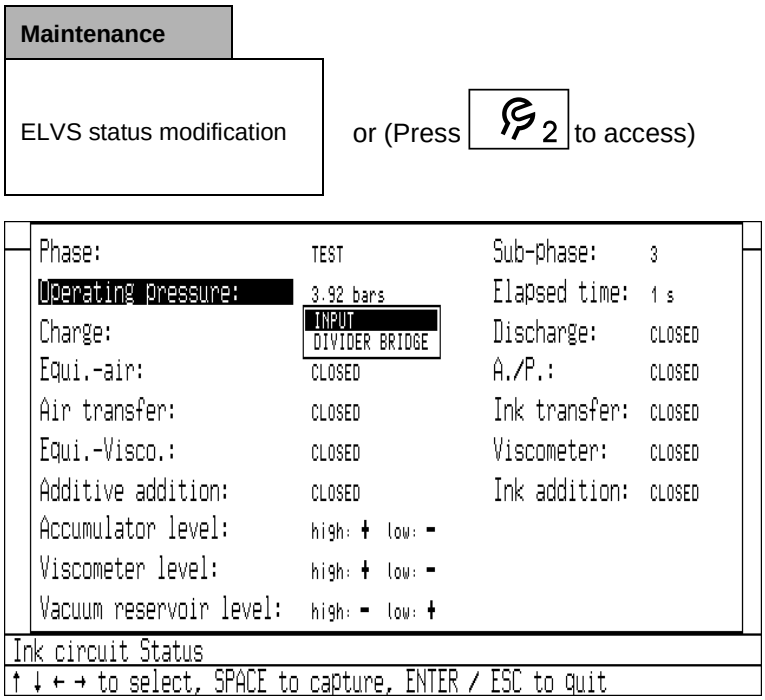
Activating the "stand by" mode:
- shut-down of jets
- closure of ink circuit electrovalves
- cut-off of compressed air.

Then wait for "Sub-phase 21" to be displayed. You can then control the ink circuit electrovalves in order to check their operation.

Then press the ▼ button to select the electrovalve you want to test.

Followed by [ ] ▼ [ENTER] to command it.

3.4.3 TESTS: Operating pressure/Input pressure and divider bridge

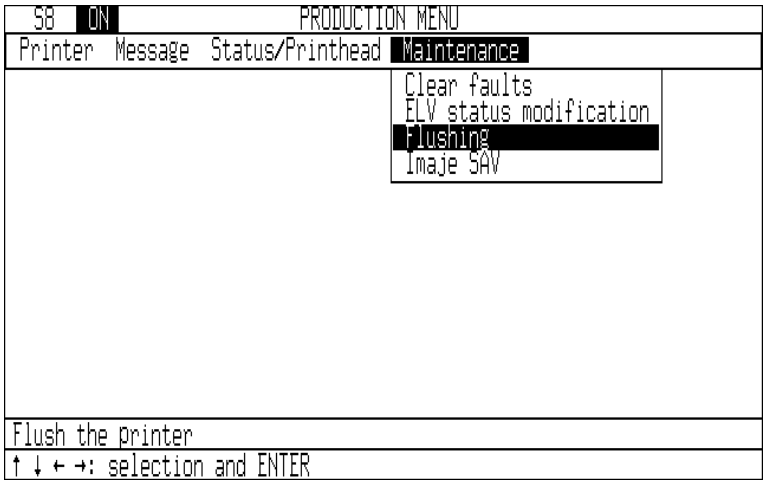


- Select "phase" and confirm with ⏎ to display **TEST**;
  - **Operating pressure**: this is the value necessary to maintain the jet speed.
    It is displayed by default in this dialogue box.
    It varies as a function of the ink type and viscosity.
    It should therefore be checked at the correct vicosity.

- Select "**Operating pressure**" and confirm (by pressing the ⏎ to display "**INPUT**" "**BRIDGE DIVIDER**".
  - **Input pressure**: select "**Input**" and confirm (by pressing ENTER) to display. This should always be 0.7 bar higher than the operating pressure (-0.1; +0.3). This check makes it possible to measure the printer input pressure which is also the Imaje plant air kit output pressure.
  - **Divider bridge**: select "**Divider bridge**" and confirm (by pressing ENTER) to check that the displayed pressure is **between 0.8 and 2 bars**.
    This test makes it possible to check that one of the 3 calibrated divider bridge leak points is not blocked. First check that the input pressure is correct.

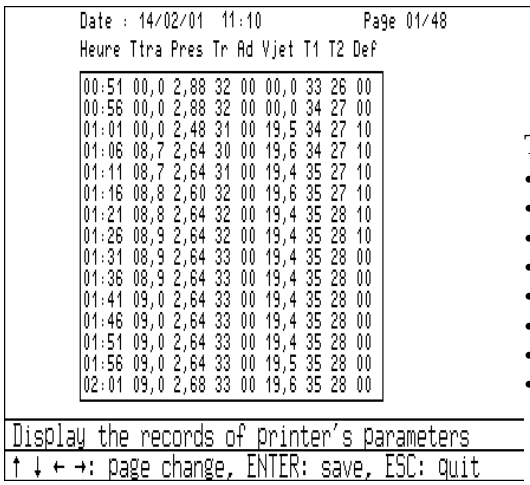
3.4.4 Flushing

The [Flushing] command is used to start a flush and rinse cycle and monitor its progress.



3.4.5 Imaje SAV

This command is used to display a history of printer operating parameters (48 tables of 15 records at 5 minute intervals).



The parameters are as follows:

- Ttra: transfer time
- Pres: Pressure (bar)
- Tr: Viscometer filling time
- Ad: Number of additive additions
- V jet: Mean jet speed (m/s)
- T1: Electronic compartment temperature (°C)
- T2: No significant
- Def: Hexadecimal value of machine parameter byte

NOTES

4 MESSAGE EDITING menu

MESSAGE EDITING			
Message	Font	Variables	Parameters

This menu contains all the functions needed to create and modify messages to be printed. This includes the content, format and appearance of the message.

REMINDER	**The size of editing zone on the screen depends on the number of jets on the print head. The zone is shown by a vertical bar at the left of the screen.**

4.1 Message

A "Message" refers to what is printed by a print head.

Message
New
Open
Save
Save as
Delete
Load printer
Close

REMINDER	**The upper case letter in each command can be used to access the command directly.**

The [Message] menu can be used to create a new message, open or copy an existing message, store a message in memory, delete it from memory or print a message. This menu can be accessed at any time, irrespective of whether the printer is running or not.

4.1.1 New

The [New] command is used to create a new message. When you choose [New], a dialog box asks you to enter a name for your message (maximum 8 characters).
A flashing cursor then appears at the bottom left of the working zone, on the lowest line in the message.
You can place your cursor anywhere you like within the lines available in the working zone, as shown by the vertical bars to the right of the zone boundary.
You can then enter your text, which will be printed with the default font. To customize your message with other fonts, use the [Font] menu.

4.1.2 Open

The [Open] command is used to open an existing message to modify its content, format or printing parameters.
When you select [Open], a dialog box displays the start of the list of stored messages. You can then scroll through the list to choose a message (follow the instructions in the help zone at the bottom of the screen).

4.1.3 Save

The [Save] command is used to save a message that you have created or modified. It can only be accessed after using the [New] or [Open] functions.

4.1.4 Save as

The [Save as] command is used to save a modified version of an existing message without losing the original message.
This command can only be accessed after using the [New] or [Open] functions.

1- Select the original message using [Open].
2- Modify this message.
3- Select [Save as].
4- A dialog box is displayed with the message name.
5- Enter a new name for the modified message.

The new message name is displayed at the top right of the screen and is added to the list of existing messages.

4.1.5 Delete

This command is used to delete a message from the printer memory.

IMPORTANT	**Once a message has been deleted, it cannot be recovered. As a safeguard, the system asks you to confirm deletion of the selected message.**

4.1.6 Load printer

This command is used to transfer the message being edited to the print head (e.g. for a print test). Transferring to the print head automatically saves the message.

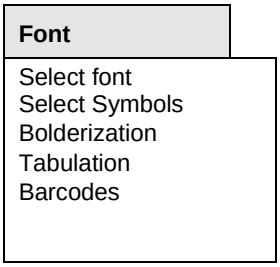
4.1.7 Close

The [Close] command is used to exit from the message which you have just created or modified.

If you have not saved the message, or if you have modified an existing message, a dialog box asks you whether you wish to save. Enter "YES" to save changes before closing, or "NO" to ignore changes.

4.2 Font

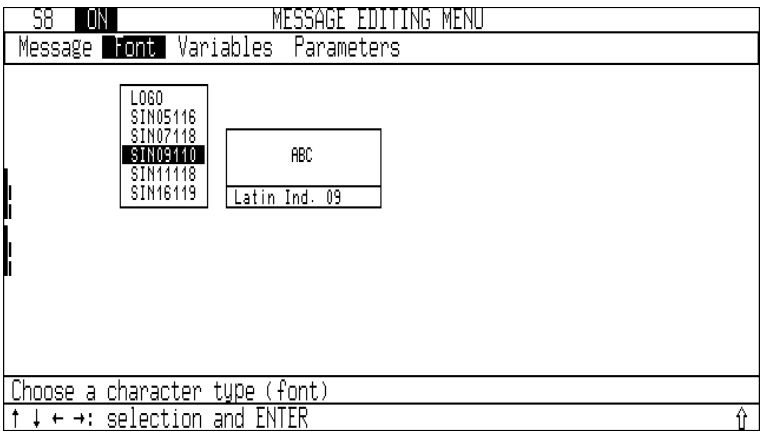
A "Font" is a group of characters or symbols in the same style and of the same size.



This menu contains all the functions required to choose the style of your characters or symbols to enable you to customize your messages. One of more of these functions or commands may be applied to your text, sometimes at the same time.

4.2.1 Select font

When this function is selected, a dialog box lists all the fonts available in your printer. A preview of a few characters from the selected font allows you to view your choice. After confirming, the cursor size changes to that of the chosen font and the line delimiters indicate the accessible lines.



NOTE	**Fonts with an H in their name (e.g. SIN5H116) can be used in the High part of the printing zone for each jet (3 and 4 lines per jet option). Selecting an H font gives access to the corresponding lines.**

4.2.2 Select Symbols

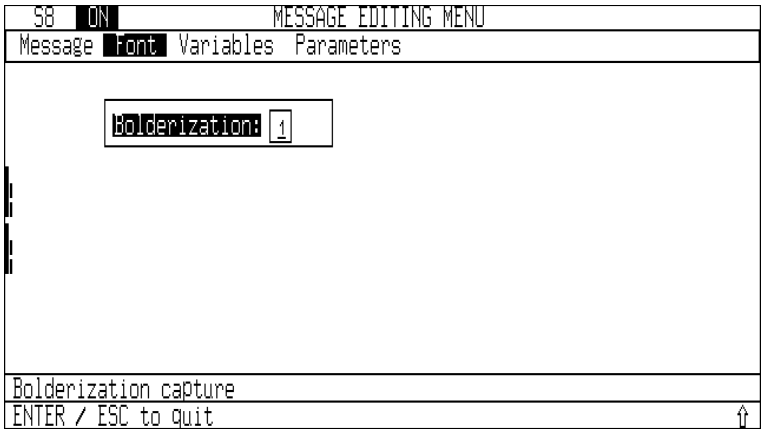
When this function is selected, a dialog box is displayed containing all the symbols or characters in the selected font (some fonts cannot be displayed in full, in which case the 7 HOME, 1 END, ◀, ▶ keys can be used to see all the characters).
Use the ◀ and ▶ keys to choose the symbols. The space bar can be used to preselect symbols.

Use the ENTER key to insert the selected character or the preselected characters at the cursor position.

This function is particularly useful when using special fonts with characters which do not exist on the keyboard (e.g. logos).

4.2.3 Bolderization

This function can be used to print bold characters in the message for emphasis, without altering their height.
A dialog box is used to enter the bolderization factor, from 1 to 9, where 9 is the boldest (this factor is set to 1 by default).

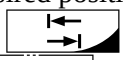
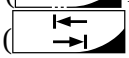


All selected symbols are then displayed on the screen with the programmed bolderization factor (what you see on the screen is what will be printed).
There is no restriction to the number of possible bolderized sections per line or per message.

4.2.4 Tabulation

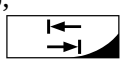
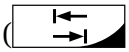
This function is used to define a blank zone between two characters or symbols, with a width different from that of the standard space in the font used.
A dialog box asks you for the number of trames in this blank zone (1 to 255).

To place a tab:

- move the cursor to the desired position,
- enter [Tabulation] mode ( key),
- insert a tabulated space ( key),
- exit [Tabulation] mode ( key).

Trames may be added or removed from a tab at any time during message editing.

To adjust a tab:

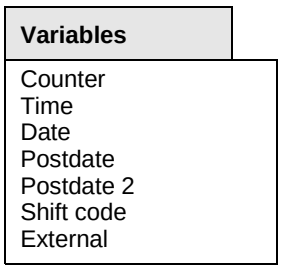
- move the cursor to the tab,
- enter [Tabulation] mode ( key),
- adjust (◀ or ▶ keys),
- exit [Tabulation] mode ( key).

4.2.5 Barcodes

This option allows you to insert up to four barcodes per jet in your message.
Details of how to program these bar codes are given in a special section at the end of this chapter.

4.3 Variables

A "variable" is an element that varies according to time, such as date codes and shift codes, or depending on a counter.



This menu is used to insert variable data items in your message.

4.3.1 Counter

This menu is used to insert counters in your message.
The screen display shows the initial counter value.

4.3.2 Time

This menu is used to insert time data in your message.
A dialog box can be used to compose the [Time] variable using the hours, minutes, and seconds, in the required order.
Possible separators are the colon (:), dash (-), slash (/) and a space.

4.3.3 Date

This menu is used to insert calendar data in your message.
A dialog box can be used to compose the [Date] variable using the following items:

- Day of the week (one digit, from 1 for Sunday to 7 for Saturday).
- Day of the month (1 to 31).
- Day of the year (1 to 366).
- Week of the year (1 to 53).
- Month of the year (1 to 12 or 3 letters).
- Year.
- Last digit of the year.

Possible separators are the colon (:), dash (-), slash (/) and a space.

4.3.4 Postdate

This menu is used to enter a postdate in your message.
A dialog box is used to compose the [Postdate] variable using the following items:

- Postday of the month.
- Postday of the year.
- Postweek of the year.
- Postmonth of the year in digits or letters.
- Postyear.

Possible separators are the colon (:), dash (-), slash (/) and a space.

The Postdate duration is set in the [Parameters] menu.

4.3.5 Postdate 2

This menu is used to enter a second postdate in your message.

A dialog box offers the same items as the first postdate.

The second postdate duration, different from the first, is set in the [Parameters] menu.

4.3.6 Shift code

This function is used to insert an alphabetic or numeric code corresponding to a time period into a message.

This code and its parameters are selected in the [Parameters] menu.

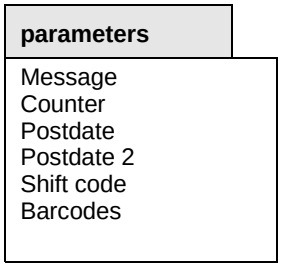
4.3.7 External

This function is used for reserving locations within a message for string variables which will be sent over the external V24 link.

If no information is sent by the external link, the selected display symbol as shown on the screen is used in the reserved locations when printing.

A dialog box is used to specify the number of characters to be reserved and the display symbol.

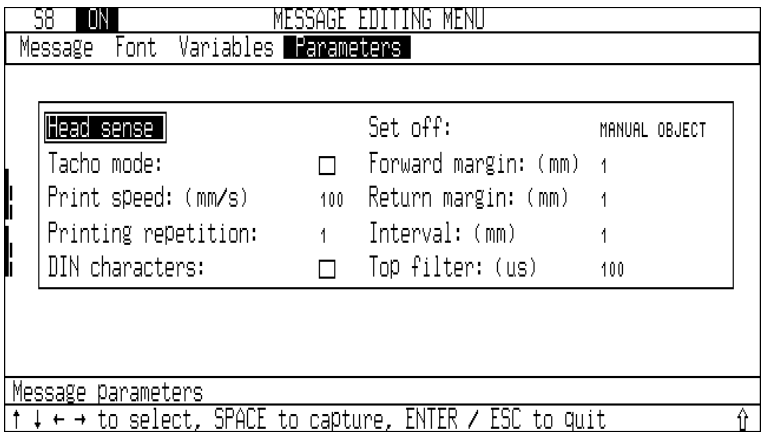
4.4 Parameters



This menu is used to program the parameters for the variables used in the messages and the message parameters which adapt the printer to your production line.
All these parameters are specific to a message and may therefore be different for each message.

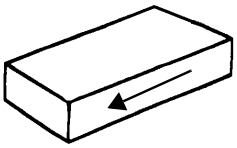
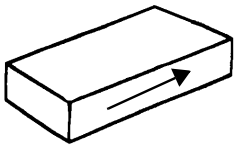
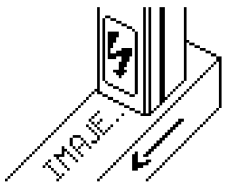
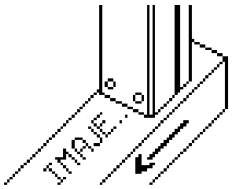
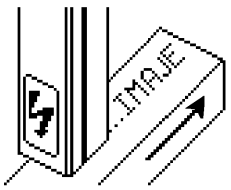
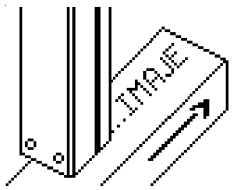
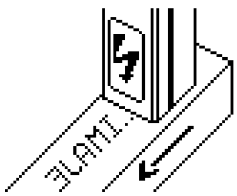
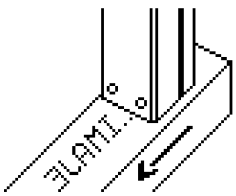
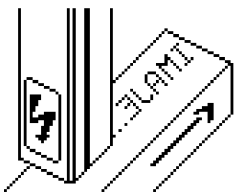
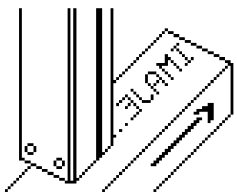
4.4.1 Message

A dialog box is displayed containing all the data required to customize your message.



• Head sense

The value of this parameter depends on how your printer is installed on the production line and the result you require when reading the message.
The table below summarizes the various possibilities.

Direction in which the object moves				
Direction of the head				
Direct vision				
Transparent vision				

• **Tacho mode:**

The printing speed can be continually synchronized with the speed of the objects to be printed by installing a tachometric pulse generator (tacho) on your production line.
This option is particularly useful if the items do not move at a constant speed.
If this box is checked, the printer follows the rate given by the tacho pulses.

IMPORTANT	**Do not check this box if your system does not have a tacho.**

• **Print speed (or tacho division):**

If the objects pass at a constant speed, enter the speed value in millimeters per second.
If you check the tacho box, enter a "tacho division" (number between 1 and 9999). Depending on the printed results, increase or decrease this number.

• **Printing repetition:**

This parameter is used in object mode to repeat the message a programmed number of times whatever the object length.

IMPORTANT	**Printing repetition: 1 means one message printed, no repetition.** **Printing repetition: 2 means two messages printed, etc.**

• **Set off:**

This function is used to choose between
MANUAL OBJECT
MANUAL AUTO
OBJECT
REPETITIVE

Select:

MANUAL OBJECT or MANUAL AUTO: If you want to perform manual printing tests.

- MANUAL OBJECT: Printing is triggered by pressing the space bar on the keyboard. One print is obtained every time the space bar is pressed.

- MANUAL AUTO: Printing is started by pressing the space bar and continues until the space bar is pressed again.
  This prints the same message several times automatically between two presses of the space bar.

Select:

OBJECT or REPETITIVE during production.

- OBJECT: Printing is triggered when an object passes in front of a detection cell.
  One message is printed for each object detected.

- REPETITIVE: Printing is triggered when an object passes in front of a cell and is continues for as long as the cell is active or until the number of repeat prints is reached.

• Forward margin:

This parameter defines the space between the point where the object is detected and the start of printing when the message is printed starting from the first character. The distance is given in millimeters.

• Return margin:

This parameter defines the space between the point where the object is detected and the start of printing when the message is printed starting from the first character. The distance is given in millimeters.

• Interval:

This parameter defines the space between two successive prints in [Repetitive] set off or in case of [Printing repetition]. The distance is given in millimeters.

• **Top filter:**

This parameter is the minimum duration of the object detection signal in order to be taken into account by the printer.
You may increase this time if spurious messages printing occurs.
The time is given in microseconds.

• **DIN characters:**

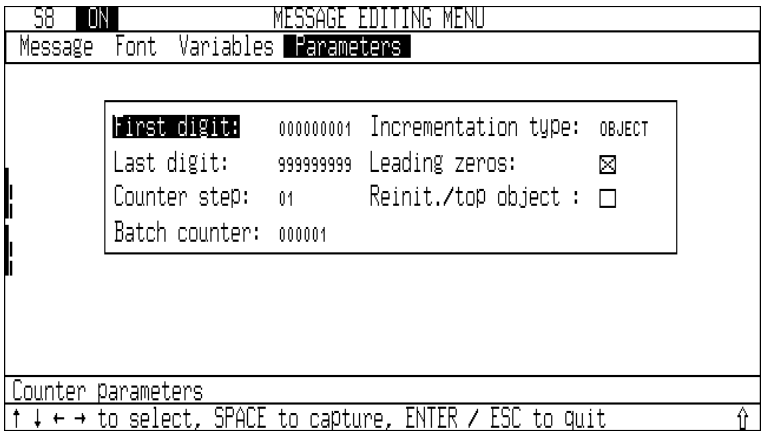
If you check this box, the message is printed as follows:

NOTE	**If you have also selected a "chimney" font (in the [Font] menu) the result will be as follows:**

IMPORTANT	**DIN characters are only available on single-jet heads.**

4.4.2 Counter

All the data needed to control the counter is displayed in a dialog box:



- **First digit and Last digit:**
  These are the values between which the counter is updated. If the first digit is less than the last digit, the counter counts upwards. If, on the other nand, the start value is greater than the end value, the counter counts backwards. If either of the values is reached, the counter loops back to the other value.

- **Counter step:**
  This is the amount by which the counter is incremented (from 00 to 99).

- **Batch counter:**
  This is the number of objects in the batch. The counter is incremented when the batch value is reached.

- **Incrementation type:**
  You can choose whether the counter is incremented for a number of objects or a number of messages.

- **Leading zeros:**
  Check this box if you want non-significant leading zeros to be printed. In any case, the space taken by the counter in the message takes the leading zeros into account, whether they are printed or not.

NOTE **Leading zeros cannot be suppressed in a bar code.**

- **Reinit./top object:**
  Check this box if you want the counter to be reset whenever the "object pulse" signal is received.

4.4.3 Postdate/Postdate 2

A dialog box is used to enter the duration of the postdate in days or months.

4.4.4 Shift code

All the data required to control the shift code is displayed in a dialog box.

Start time	: 00 : 00
Interval	: 00 : 01
Type	: NUMERICAL
	LETTER
	LETTER (-I -O) (except I and O)

Example:

Start time	: 06 : 00
Interval	: 08 : 00
Type	: LETTER

The following will be printed:

A - from 6 a.m. to 1:59 p.m.
B - from 2 p.m. to 9:59 p.m.
C - from 10 p.m. to 5:59 a.m. the next day
and so forth.

4.4.5 Barcodes

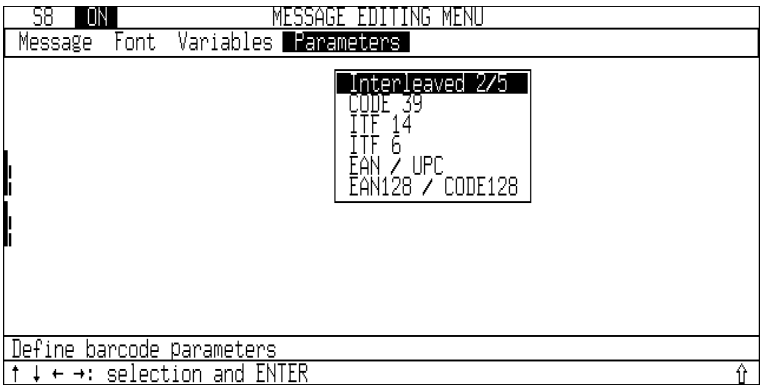
All the data required to control how bar codes appear is displayed in a dialog box.

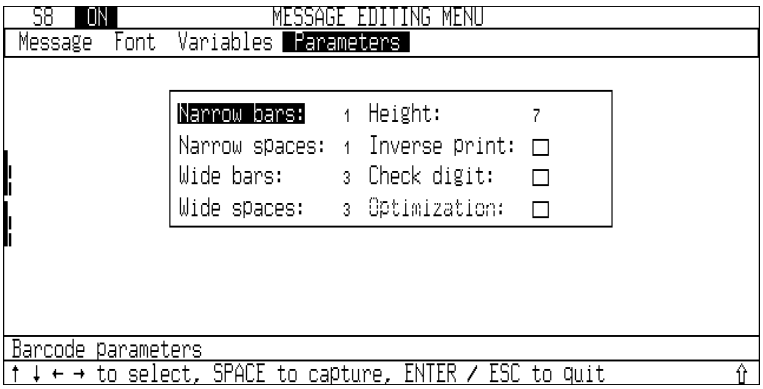
4.5 Barcodes editing

If your printer is fitted with the [Barcodes] option, you can insert up to four bar codes per jet. The list of the various types of bar code is shown in the menu:

MESSAGE EDITING
Parameters
Barcodes

Whichever type of bar code is selected, a specific dialog box is displayed, limiting access to only those parameters which can be modified for that type.





Narrow bars must be strictly less than **Wide bars**.
Narrow spaces must be strictly less than **Wide spaces**.
Height: expressed in dots, limited to the height of the fonts present.
Inverse print: enables printing in reverse video.

Check digit: may be present x or not o .
Optimization: Optimizes the size of the "CODE 128" and "EAN 128" barcodes.

Certain parameters may be grayed out for some types of bar code, in which case they cannot be modified.

4.5.1 Key usage in [Barcodes] mode

- Where applicable, displays an additional dialog box.
- Used to check checkboxes in additional dialog boxes (Date, Time, Postdate).
- Inserts the counter and shift code values directly in the bar code input.
- Inserts a space in the composition zone, if spaces are permitted.

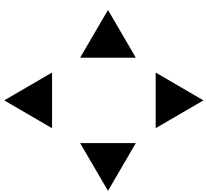
- Validates the final bar code.
- Validates input in additional dialog boxes.

- Can be used to return without validating.

- When the cursor is placed in front of a bar code which has already been entered, pressing these two keys simultaneously displays the layout of the bar code.

IMPORTANT **The check digit is not displayed.**

- Used to enter a dialog box.



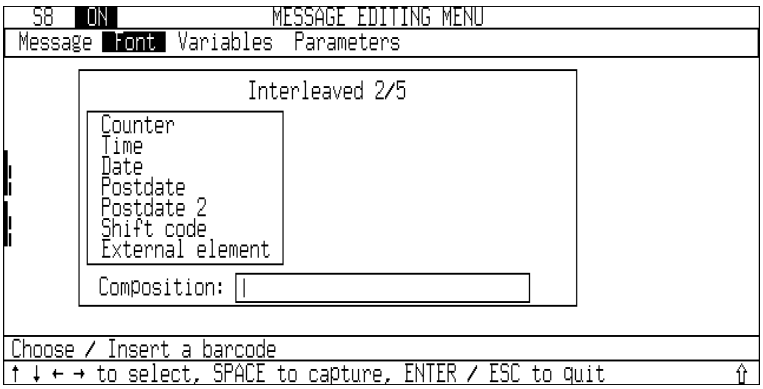
- Used to move the selection in the various dialog boxes.

4.5.2 General rules for composing bar codes

When creating or modifying a message in the [Message editing] menu:

1) Set the parameters for the type of bar code you wish to compose [Parameters, Barcodes].

2) Compose your bar code, inserting fixed and variable elements [Font, Barcodes]. The code will be displayed with the initial parameters.



- The permitted fixed elements (digits or letters) can be inserted directly.
- "External element" can be used to reserve locations within the bar code for variable characters to be sent over the external link (V24).

IMPORTANT

It is possible to set a preferred bar code type and parameters in the [Printer preparation, Parameters] menu.

This type of bar code will then be systematically displayed in message editing. However, it is still possible to insert other types of bar codes by following the above procedure.

4.5.3 Details of each bar code

Interleaved 2/5

- Used to transcribe numerical characters only into bar code form.
- These characters may be variables (counter, date, etc.).
- Max. 32 characters.

IMPORTANT

1) Without a check digit (O) an even number of characters must be input.
- With a check digit (X) an odd number of characters must be input.

2) It is not possible to represent alphabetic dates, postdates and shift codes.

Code 39

- Used to transcribe alphabetic characters, numeric characters, and the following symbols: : = . , space $ / + %
- These characters may be variables (counter, date, etc.).
- Max. 32 characters.

ITF 14, ITF 6 (high code)

- Used to transcribe numerical characters only.
- 14 obligatory characters for ITF 14.
- 6 obligatory characters for ITF 6.

IMPORTANT

1) The last character (14th character for ITF 14, 6th character for ITF 6) is a check digit.
If it is not entered, it is calculated and positioned automatically by the printer.
If it is entered and incorrect, the printer signals an error and automatically replaces it with the correct value.

2) These codes can only be printed with a type G twin-jet head.

3) On a twin-jet head, an ITF code occupies both available jets (height 54 dots).
Items not forming part of the ITF code can only be inserted in a message before or after the bar code, not above or below it.

EAN / UPC

- Possible choices: EAN 13, 1/2 EAN 13, EAN 8, 1/2 EAN 8, UPCA, 1/2 UPCA, UPCE, 1/2 UPCE.
- Used to transcribe numerical characters only into barcode form.
- 13 obligatory characters for EAN 13 and 1/2 EAN 13.
- 8 obligatory characters for EAN 8 and 1/2 EAN 8.
- 12 characters for UPCA and 1/2 UPCA.
- 8 characters for UPCE and 1/2 UPCE.

IMPORTANT

1) The last character is a check digit.
If it is not entered, it is calculated and positioned automatically by the printer.
If it is entered and incorrect, the printer signals an error and automatically replaces it with the correct value.

2) On a single-jet head, the plain text transcription of the bar code is not printed.

3) A twin-jet head is necessary to print the bar code and the plain text transcription below.

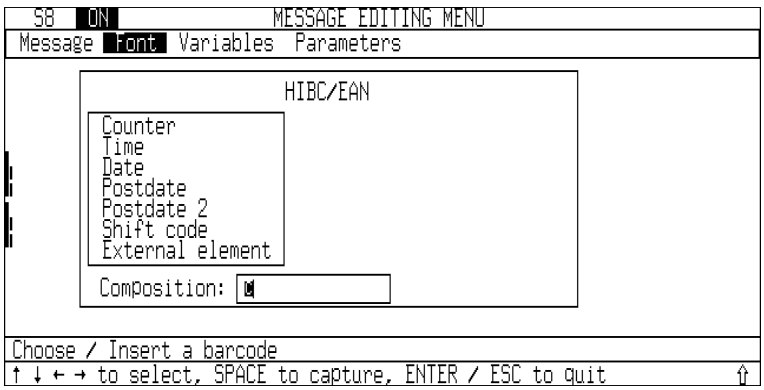
4) For a twin-jet head, an EAN or UPC code occupies the two available jets (bar code on one jet and plain text transcription on the other jet).

5) The first character of an UPCE code is always a 0 (zero).

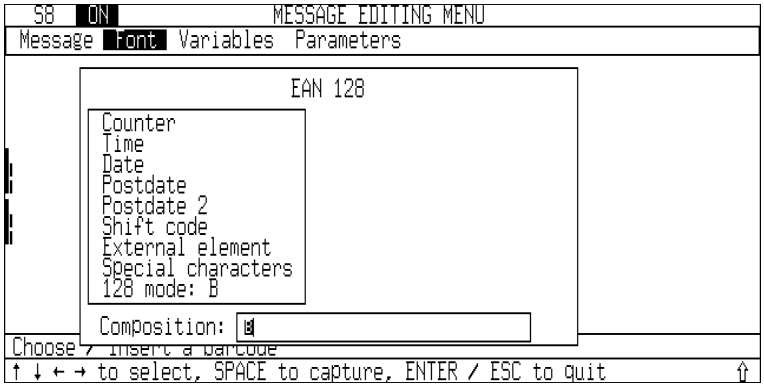
EAN 128, Code 128

- Possible choices: EAN 128, 1/2 EAN 128, code 128, 1/2 code 128, HIBC/EAN, 1/2 HIBC/EAN.
- Maximum 39 characters.
- HIBC codes are only available in mode C.
- The other modes have four different modes: A, B, C and auxiliary characters.
- **Mode A** includes all standard upper case alphanumeric characters, control characters and special characters.
  Mode B includes all standard upper and lower case alphanumeric characters and special characters. This is the default mode. Its size is optimized.
  Mode C includes the set of 100 pairs of digits from 00 to 99 and special characters
  (the characters are entered two by two).
  Auxiliary characters includes only the following characters: DEL, SHIFT, FNC2, FNC3 and FNC4.

The dialog box for the HIBC code is as follows:



The dialog box for other bar codes is as follows:



IMPORTANT

1) Characters in reverse video A, B or C appear in the composition corresponding to codes A, B and C.

2) Whatever the number of jets in the head, a code 128 or EAN 128 code occupies the full height of the jets.

3) The height of a 1/2 code 128 or 1/2 EAN 128 can be selected in the bar code parameters.

4) For a single-jet head, the plain text transcription of the bar code is not printed.

5) If the "Optimization" parameter is checked, only mode B is available.

5 PRINTER PREPARATION menu

PRINTER PREPARATION			
Initialization	Parameters	Options	Access code

The [Printer preparation] menu is used to configure your printer (operator language, local time, etc.). It is therefore essential when the printer is commissioned.

5.1 Initialization

Initialization

Language
Autoclock
Jet Alignment
RS232 Connection
PCMCIA transfer
Font(s) downloading

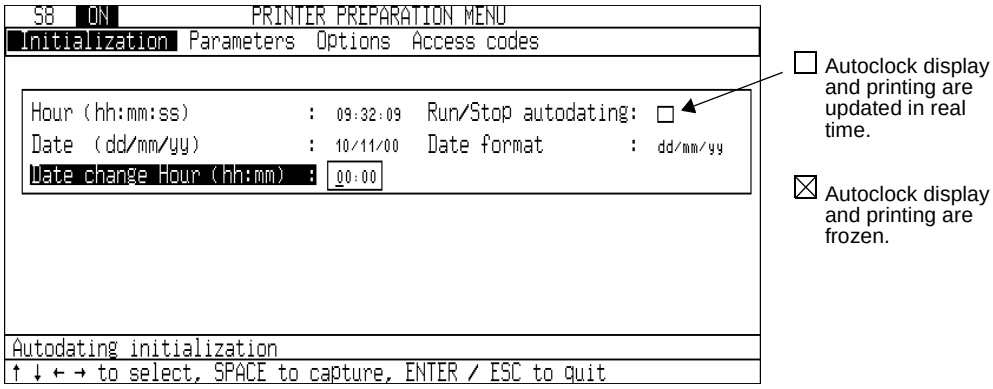
The [Initialization] menu is used to select the language for dialog between the printer and the operator, set the date and time on the clock, align the printing zones of the jets, configure the RS232 link and save and load operating data.

5.1.1 Language

The [Language] function is used to select the language in which all menus, functions, commands, help instructions, error messages, etc. are displayed on screen.
When you select [Language], a dialog box is displayed to enable the language to be selected from a list. This language remains valid unless you change it.

5.1.2 Autoclock

The [Autoclock] function is used to set the time and date, freeze the clock, select the date format and the date change time.
When you select [Autoclock], the following dialog box is displayed:

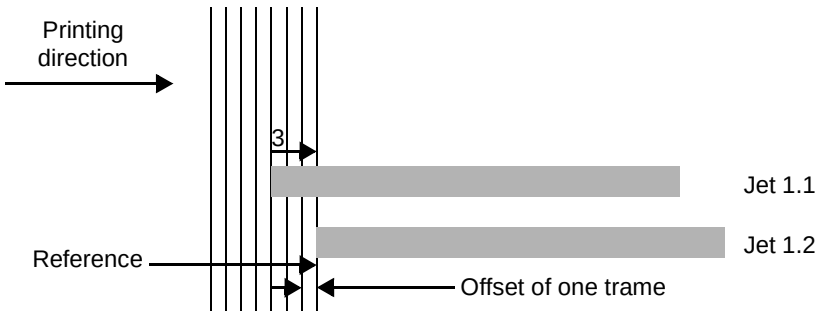


Date change Hour (hh:mm): Enter the time at which the date should change.

5.1.3 Jet alignment

The [Jet Alignment] function is used to align the jet print-out in relation to each other. To align the jets, the jet with the largest offset must be identified and the other jet must be assigned a corresponding number of offset trames.

Example: 2 jet head



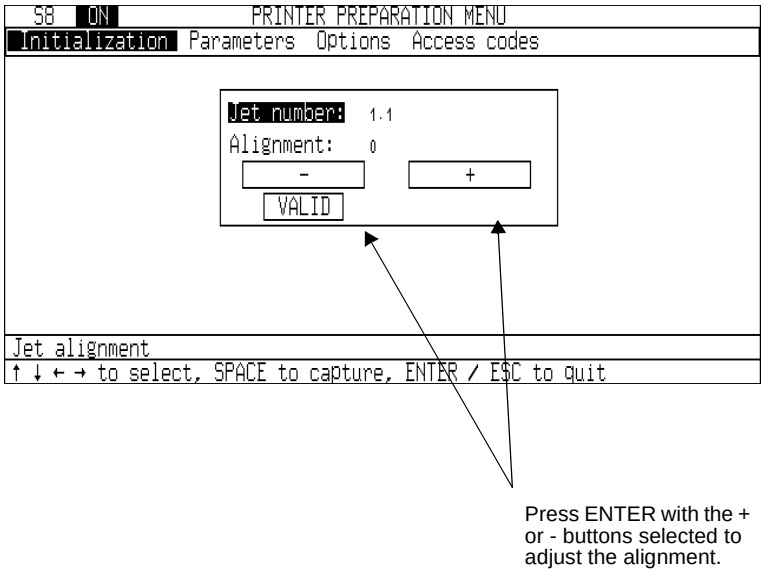
In the above example, the jet with the largest offset is jet 1.2.
Therefore, the offset must be:

- 3 trames for jet 1.1.

for all the jets to be aligned.

IMPORTANT **Check the direction of printing when determining the jet to use as the reference jet.**

A dialog box enables you to associate a number of alignment trames with each jet.



5.1.4 RS232 Connection

The [RS232 Connection] function is used to configure the serial link between the printer and an external device.

The dialog box displayed is used to select:

- Speed (the baud rate): (4800, 9600, 19200 or 38400).
- The parity: (no, even or odd).
- The number of stop bits: (1 or 2).
- The watchdog value in seconds: (1 to 99).
- RS232 Link: (Direct, standard or Test).
- Simple Protocol: (No, Message selection or external data).

IMPORTANT	**The 8 bit transmission format is fixed.**

5.1.5 PCMCIA transfer

This function enables the printer's working data [Messages, Parameters, Fonts, Machine configuration) to be stored on a PCMCIA card or retrieved from a PCMCIA card.

IMPORTANT	**Use an ATA PCMCIA card.** **Insert the PCMCIA card into its slot.The printer shuts off.** **If the printer is on, reboot it after inserting the PCMCIA card (Reset button on PC card).**

- To store working data on a PCMCIA card:
  - Insert a PCMCIA card on its connector.
  - Select [New] (◀ or ▶ then ENTER).
  - Enter a directory name (max. 8 characters) then press ENTER.
  - Select "=> **PCMCIA**".
  - All working data present in the printer is then transferred to the PCMCIA card by pressing the ENTER key.

• To load a directory from a PCMCIA card into the printer:

- Insert the PCMCIA card on the connector.
- Select the directory to be loaded into the printer from the list of data (ENTER).
- Select "<= **PCMCIA**".
- All the data present in the directory is then transferred by pressing the ENTER key.

• To delete a directory from a PCMCIA card:

- Insert the PCMCIA card on the connector.
- Select the directory to be deleted from the list of data (ENTER).
- Select "**DELETE**".
- Press ENTER.
- It is necessary to confirm deletion by pressing ENTER again before the directory is permanently deleted.

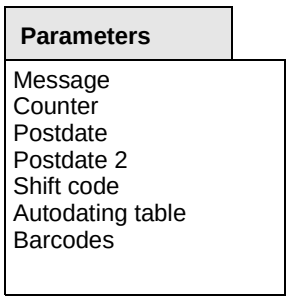
• To format a PCMCIA card:

- Insert the PCMCIA card on the connector.
- Select "**FORMAT**".
- Confirm by pressing ENTER.

5.1.6 Font(s) downloading

A dialog box lists all fonts present.
In this list, check a maximum of 10 fonts which can be used in the [Message editing] menu.

5.2 Parameters



This menu is used to preset the message and variable parameters for all new messages.
These parameters can be modified in the [Message editing] menu to adjust them for each message.
See the section discussing the [Message editing, Parameters] menu for details of these parameters.

5.2.1 Autodating tables

This function enables all autodating items to be edited.

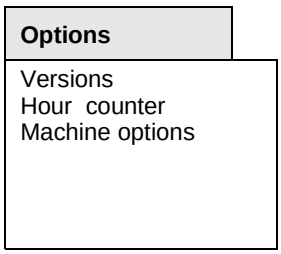
- Month of the Year: to code months and postmonths alphabetically as any string of three characters.
  By default, this table is initialised with the abbreviations of the month names in the current language.
- Alpha Shift Code: 26 codes of any single character can be programmed in this table.
  By default it is initialised with letters from A to Z.
- Numeric Shift Code: 24 codes of any two characters can be programmed in this table.
  By default it is initialised with digits from 01 to 24.

NOTE

- Month name and shift code strings can only be printed in languages using the Latin script.

- When a message is displayed, the month string in the table is displayed.
01 is displayed for a Numeric Shift Code digit, and A for an Alpha Shift Code.

5.3 Options



The [Options] menu is used to display data of a general nature (program versions, operating time) and to validate temporary functions.

5.3.1 Versions

The [Versions] function displays the versions of the programs in your printer.

5.3.2 Hour counter

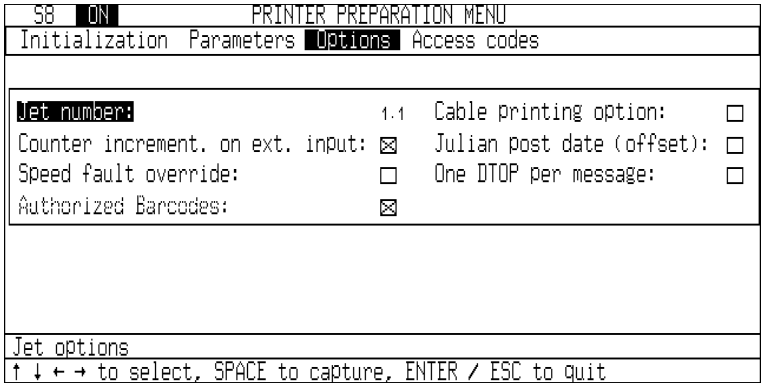
The [Hour counter] function allows you to visualize:
- How many hours the printer has been on.
-The number of prints made (pay-per-print option)

CAUTION	**If the CPU board or P7C board is replaced, the counter "run time" will be reset.**

5.3.3 Machine options

The [Machine options] function is used to enable or disable temporary functions and check whether your printer is fitted with the bar code option.

The following dialog box is displayed:

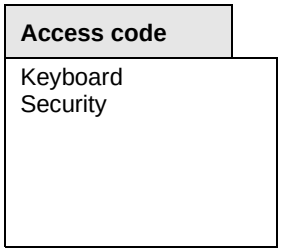


Cable printing option: If this option is checked, the counters are incremented when an object pulse is received, whatever the jet status (even if a fault is present).

Julian postdate: This option can be used to add between 0 and 999 days to the Julian calendar. The (current date + offset) value may not be greater than 999.

One DTOP per message: With this option, each message may only be printed once.

5.4 Access codes



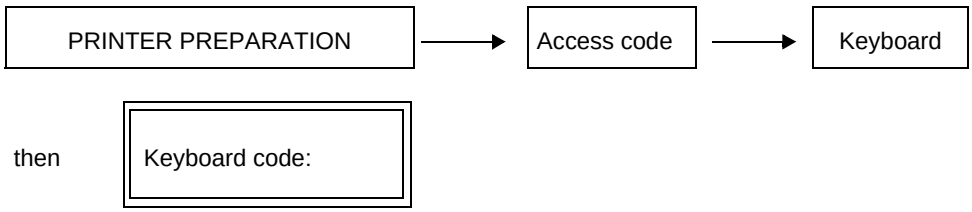
This menu is used to enter codes to deny access to certain functions.

5.4.1 Keyboard

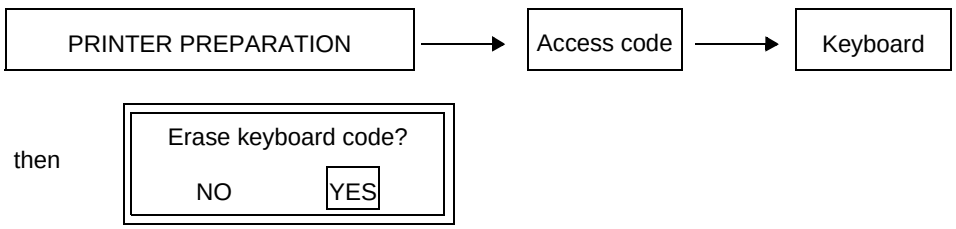
The [Keyboard] command is used to deny access to all menus available from the keyboard except the [Faults] function of the [Status/Printhead] menu, which is always accessible using the ☹? key.

When you select [Keyboard], a dialog box asks you to enter a three-character code. This code will be requested whenever access to a menu is attempted.

• **To create a keyboard code:**



• **To delete a keyboard code:**



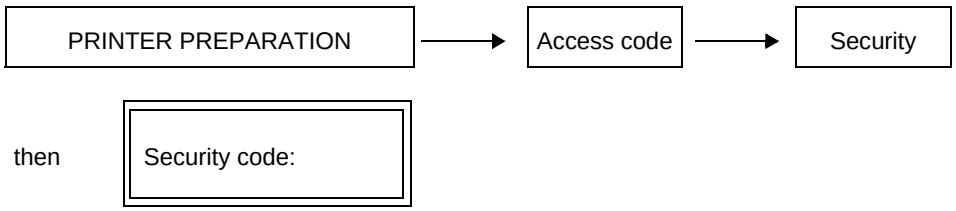
IMPORTANT	**The keyboard code will be requested for access to the [Printer preparation] menu.**

5.4.2 Security

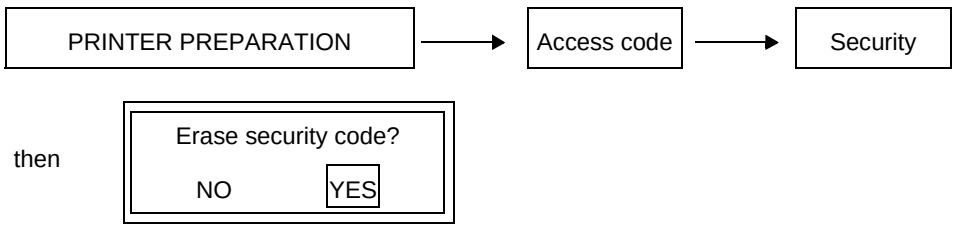
This command is used to deny access to the [Message editing] and [Printer preparation] menus, leaving unrestricted access to the [Production] and [Symbol editing] menus.

When you select [Security] a dialog box asks you to enter a three-character code.

• **To create a security code:**

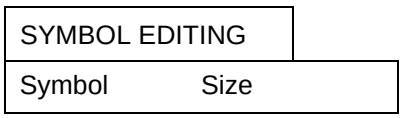


• **To delete a security code:**



IMPORTANT	**The security code will be requested for access to the [Printer preparation] menu.**

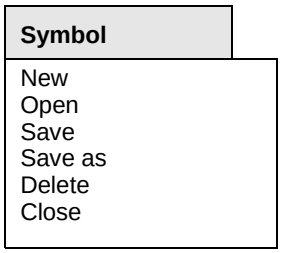
6 SYMBOL EDITING menu



The [Symbol editing] menu can be used to create your own symbol or logo.

IMPORTANT	**The height of a symbol is defined when it is created. To enable it to be printed, an Imaje font with at least the same height as the symbol must be present in the printer.**

6.1 Symbol



The [Symbol] menu can be used to create a new symbol, modify or copy an existing symbol, store a symbol in memory or delete it.
The menu can be accessed at any time, whether the printer is switched on or not.

6.1.1 New

The [New] command is used to create a new symbol to be stored in a font. When you select [New], a dialog box asks you for:

- the name of the font (max. 8 characters).
- the number of the font (210 to 255).
- a number for the symbol (001 to 224).

REMINDER **A font is a group of symbols of the same size.**

A second dialog box asks you to define the size for all symbols in the font (height 24, 16, 11, 9, 7 or 5 dots; width 1 to 127 dots).

6.1.2 Open

The [Open] command is used to access an existing symbol in order to modify it.

When you select [Open], a dialog box displays the start of the list of existing symbol fonts. You can either scroll through the names and select the one which interests you, or press the space bar  to call up a cursor, then enter the start of the font name.

6.1.3 Save

The [Save] command is used to save the symbol created or modified. It is only available after using the [New] or [Open] commands.

6.1.4 Save as

The [Save as] command is used to save a modified version of an existing symbol without overwriting the original.

It is only available after using the [New] or [Open] commands.

6.1.5 Delete

This command is used to delete a symbol or an entire font.

Choose [Symbol] if you wish to delete a single symbol.

Choose [Symbol font] if you wish to delete an entire font of symbols.

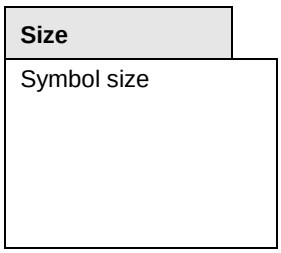
6.1.6 Close

The [Close] command is used to leave a font in which you have just created or modified a symbol.

When using [Close], the contents of the font in which you have been working are saved.

IMPORTANT	**1) To be used in the [Message editing] menu, a symbol font must be transferred.** **2) To transfer a symbol font you have two possibilities:** **- Create the font and transfer it immediately. To do this, close, save, then use the space bar  to select this font in the list proposed (a maximum of 10 fonts can be selected).** **- Create the font, save it and only transfer it when needed. In this case use the [Printer preparation] menu, [Initialization], [Font(s) downloading].**

6.2 Size



This command is used to modify the height and width of symbols defined in a font.

IMPORTANT	**If you reduce the size, existing symbols will be truncated. If you increase the size, existing symbols will be placed at the bottom left of the definition.**

6.3 General rules for creating one or more symbols in a font

To create the font:

- Enter a name for the font (8 characters).
- Enter a number for the font (201 to 255).
- Enter a number for the symbol in the font (006 to 224).
- Enter the height of the symbols (24..... 5 dots).
- Enter the width of the symbols (1 to 127 points).

To create the symbol:

- Draw the symbol.
- Save the symbol.

To create a new symbol:

- Recall the font (by name or number).
- Give the new symbol a number.
- Draw the symbol.
- Save.

To close the font:

- The font is saved in the PC.

To transfer the font (to the printer):

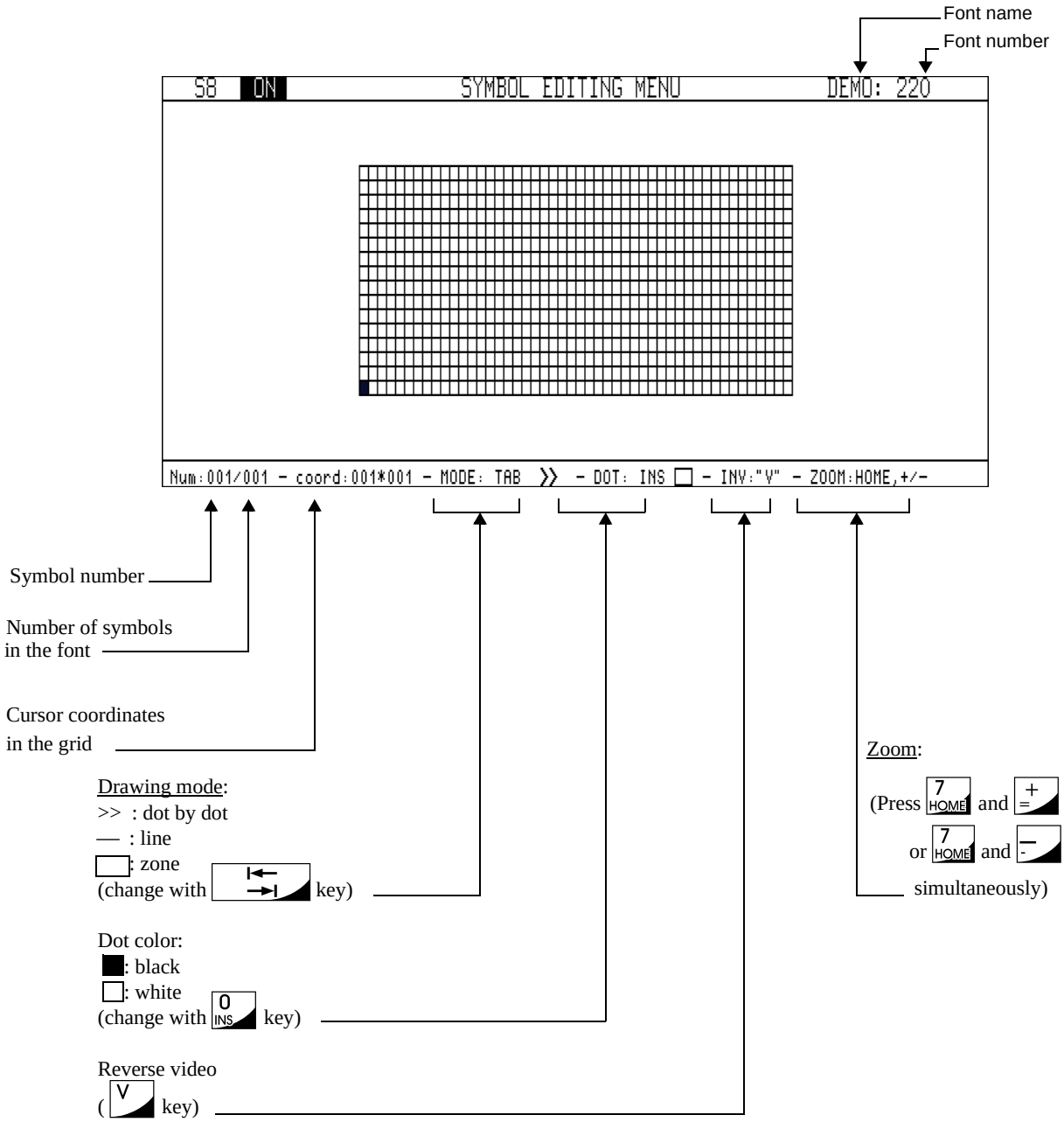
- Check the font to be transferred.

The font can now be used in the [Message editing] menu.

6.4 Drawing a symbol

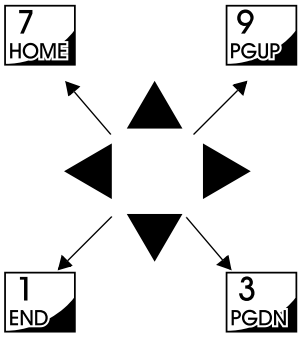
6.4.1 Screen

After defining the font name and number and the symbol number and size, the printer displays the following screen:



6.4.2 Using the keys

In dot by dot » mode

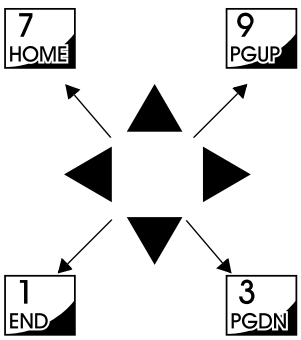


Move the cursor around the drawing grid in the direction shown by the arrows.

Toggle the color of the dot at the cursor location.

In line — mode

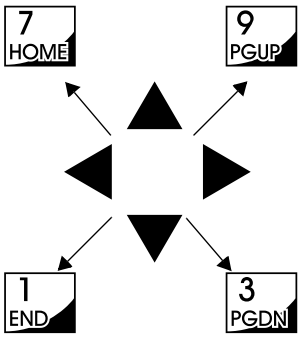
Toggle the color of the line (white or black).



Draw a line in the direction of the arrows.

In zone ☐ mode

0 INS — Toggle the color of the zone (white or black).



Press two keys repeatedly to define a zone.

6.4.3 Other keys and functions

- Display the symbol at normal scale:

  ENTER key

  The symbol is displayed in a window at the top right or top left of the screen depending on the cursor position.

- Zoom:

  This function is valid when the cursor is at the bottom left of the screen (coordinate 001 × 001). Use the + or − keys to enlarge or reduce the grid.

• Home function:

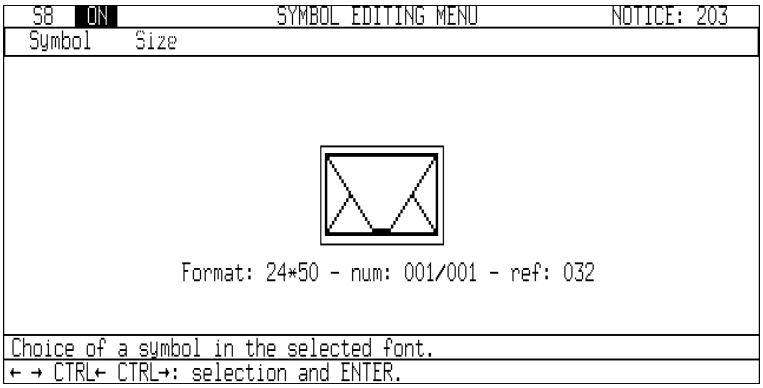
The 7 HOME key moves the cursor to the bottom left of the screen.

The CTRL + 7 HOME keys move the cursor to the top right of the screen.

• Delete symbol:

. DEL key with request for confirmation.

6.4.4 Symbol display screen [Symbol, Open]



This screen is used to display and select a symbol from an existing font so that the symbol, size or number can be changed if needed.

format = symbol format: height * width.

num = symbol number in the font / number of symbols in the font.

ref = symbol reference in decimal (references start at 32 ($20)).

Selecting a symbol:

The ▶ key displays the next symbol.

The CTRL + ▶ keys move forward by 10 symbols.

The ◀ key displays the previous symbol.

The CTRL + ◀ keys move backwards by 10 symbols.

Enter symbol editing mode:

ENTER ↵ key.

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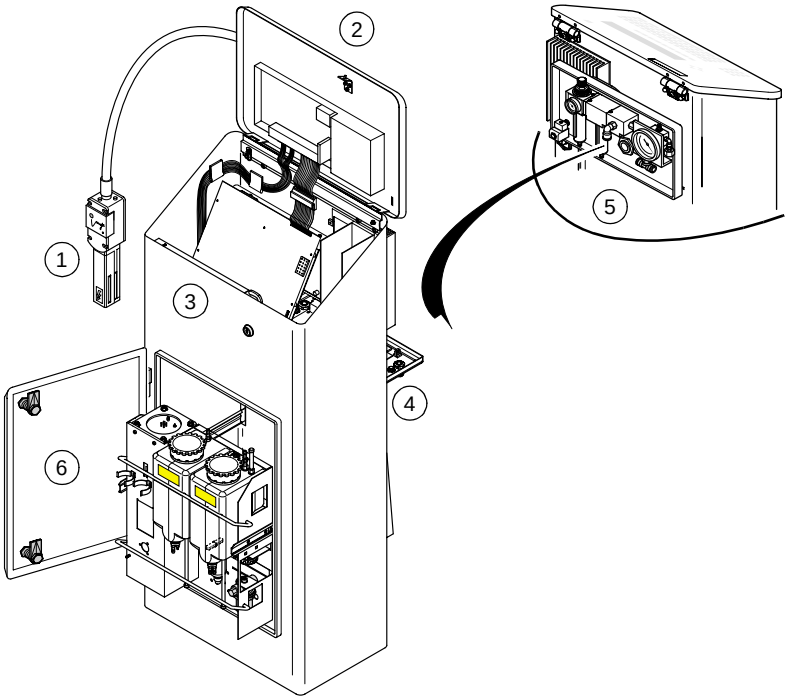
1 Overall view

Figure 1 : S8 Contrast configurations

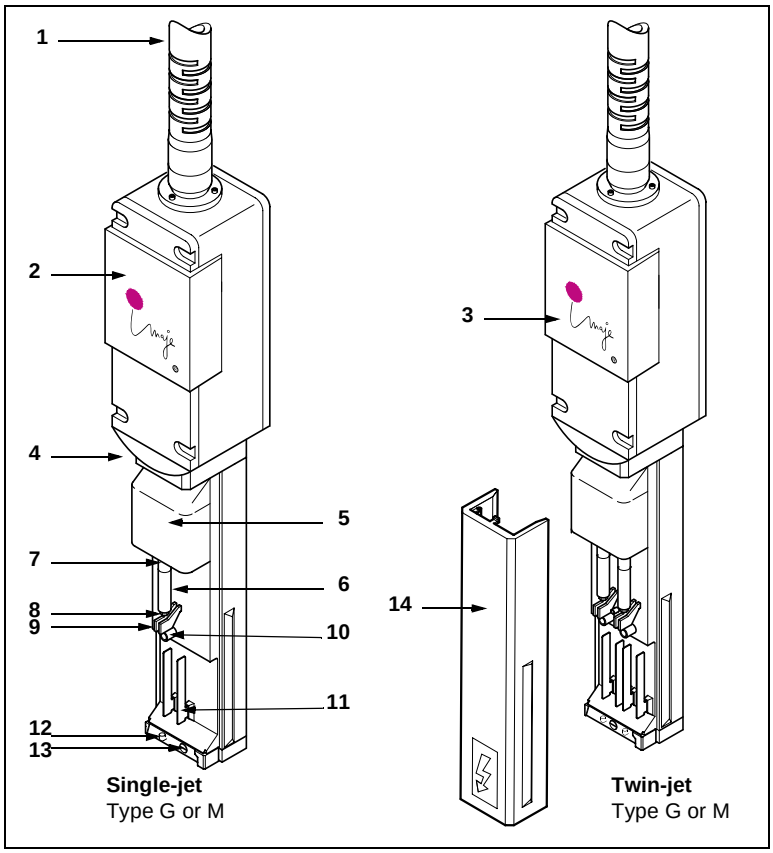
1	**Print head** 1 to 2 Jets per head Type G or M head
2	**Operator interface** Keyboard WYSIWYG display PC board
3	**Electronic compartment** One main board Power supply board Control motors board
4	**Rear compartment** Inputs / Outputs / Alarms Electricity supply External connections
5	**Plaint air kit**
6	**Hydraulic compartment** Ink circuit



S8 Contrast 1 single or twin-jet head

2 Print modules

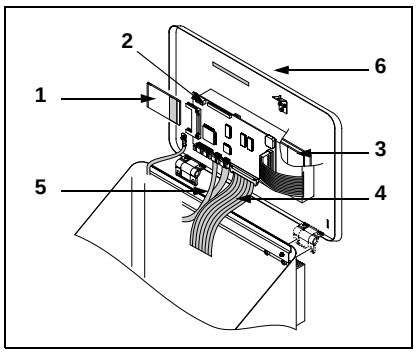
1	Conduit
2	Top cover
3	Break point adjustment
4	Pressurization air inlet
5	Resonator wire protection
6	Cannon holder(s)
7	Cannon(s)
8	Nozzles(s)
9	Charge electrode(s)
10	Detection electrode(s)
11	Deflection plate(s)
12	Recuperation gutter(s)
13	Recuperation gutter closure screw
14	Head cover



3 Electronic compartments

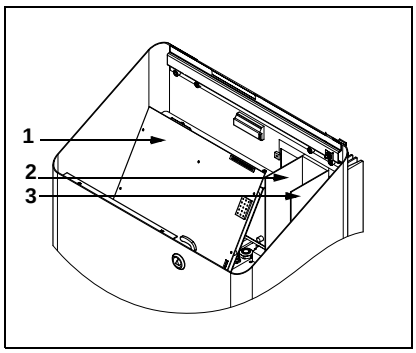
3.1 Operator interface

1	PCMCIA card
2	PC board
3	WYSIWYG display
4	Main ribbon
5	internal V24-RS232 ribbon
6	Keyboard



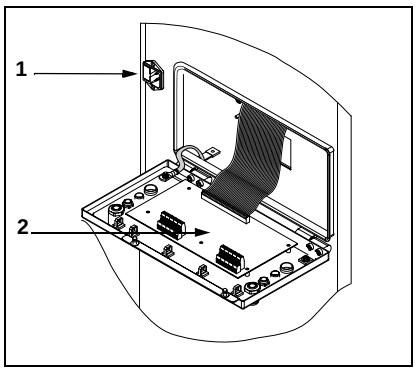
3.2 Front compartment

1	Main board
2	Control stirrer motor card
3	Power supply board



3.3 Rear compartment

1	Electrical connector with mains fuse
2	Industrial interface board - Inputs/Outputs (Tacho - cell) - External alarms - External links (RS232-optional parallel link)



4 Plant air kit

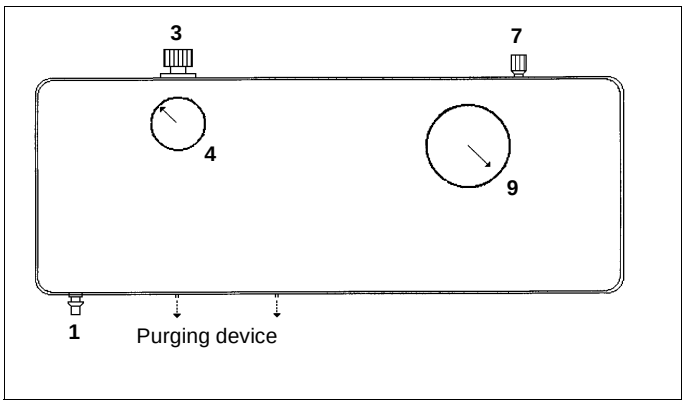
4.1 Characteristics

The plant air kit connected to the plant's compressed air network provides the air supply to the S8 Contrast printer. Filters ensure that the air sent to the printer is clean.

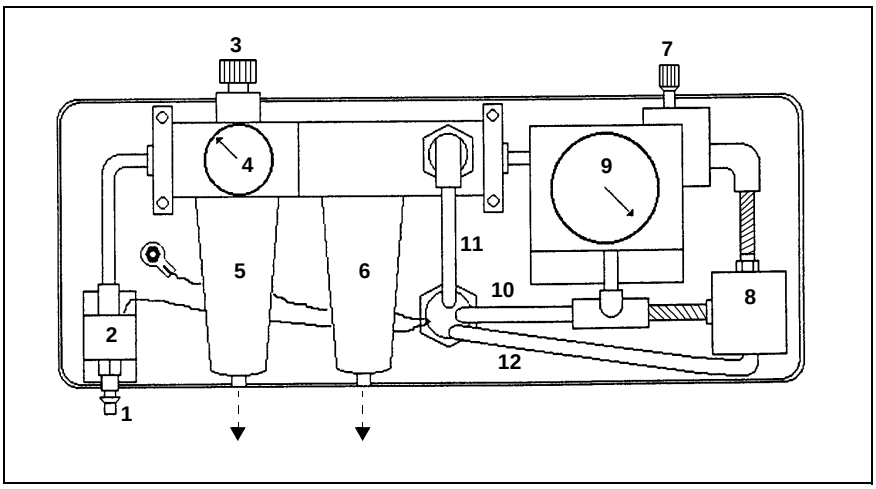
Check your plant air for the following characteristics:
- Air pressure at the input should be between 5 and 10 bar (72.5 and 145 PSI)
- Air flow at the kit's input should be at least 1100 Nl/hour (0.2 scfm) at 4 bar (58 PSI)
- Operating temperature should be between 32°F and 122°F (0°C and 50°C)
- The air must be clean, dry and oil free. It must contain at the most: 0.12 grams of water/m^3 (0.15 once of water/cubic foot), 1PPM of oil and size of particle <5 µ.

4.2 Location of components

1	Connection of compressed air plant
2	Electrovalve
3	Pressure Regulator (Adjustment)
4	Pressure gauge
5	Filter 5 µ
6	Filter 0,03 µ
7	Vacuum set screw
8	Vacuum pump
9	Vacuum gauge
10	Vacuum tube
11	Pressure tube
12	Outlet



External view

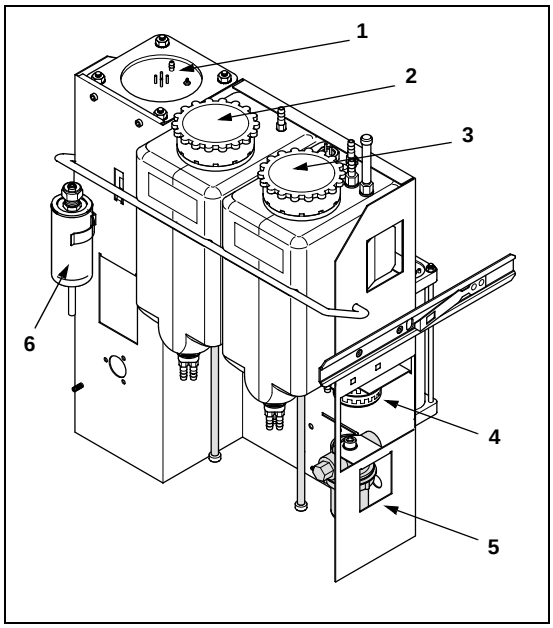


Interior view

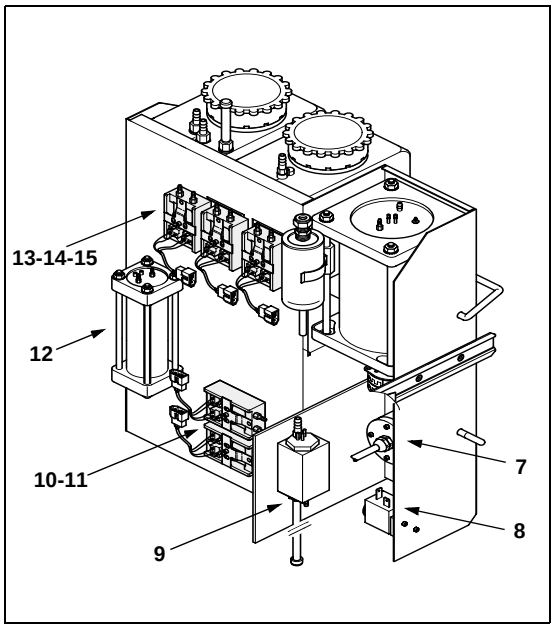
5 Hydraulic compartment

Ink circuit

Front view



Rear view



1	Recuperation tank
2	Additive tank
3	Ink tank
4	Stirrer motor
5	Ink filter
6	Coalescence filter
7	Pressure sensor
8	Viscometer ELV
9	Viscometer
10	Electrovalves: ink addition, additive addition
11	Electrovalves: not used, ink transfer
12	Accumulator
13	Electrovalves: air transfer, charge
14	Electrovalves: equi-visc, equi-air
15	Electrovalves: AP, discharge

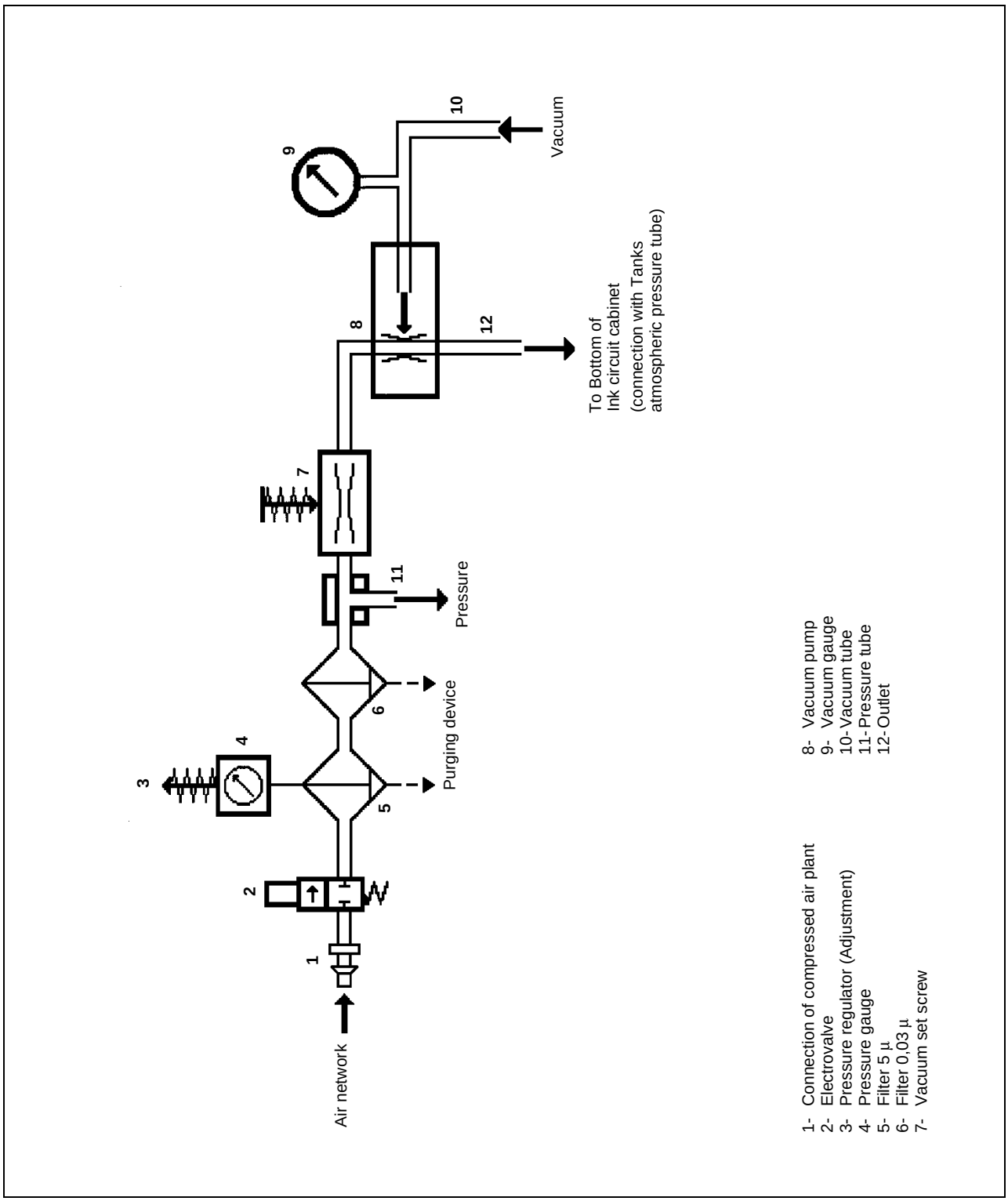
6 Diagrams

Plant air kit **78**

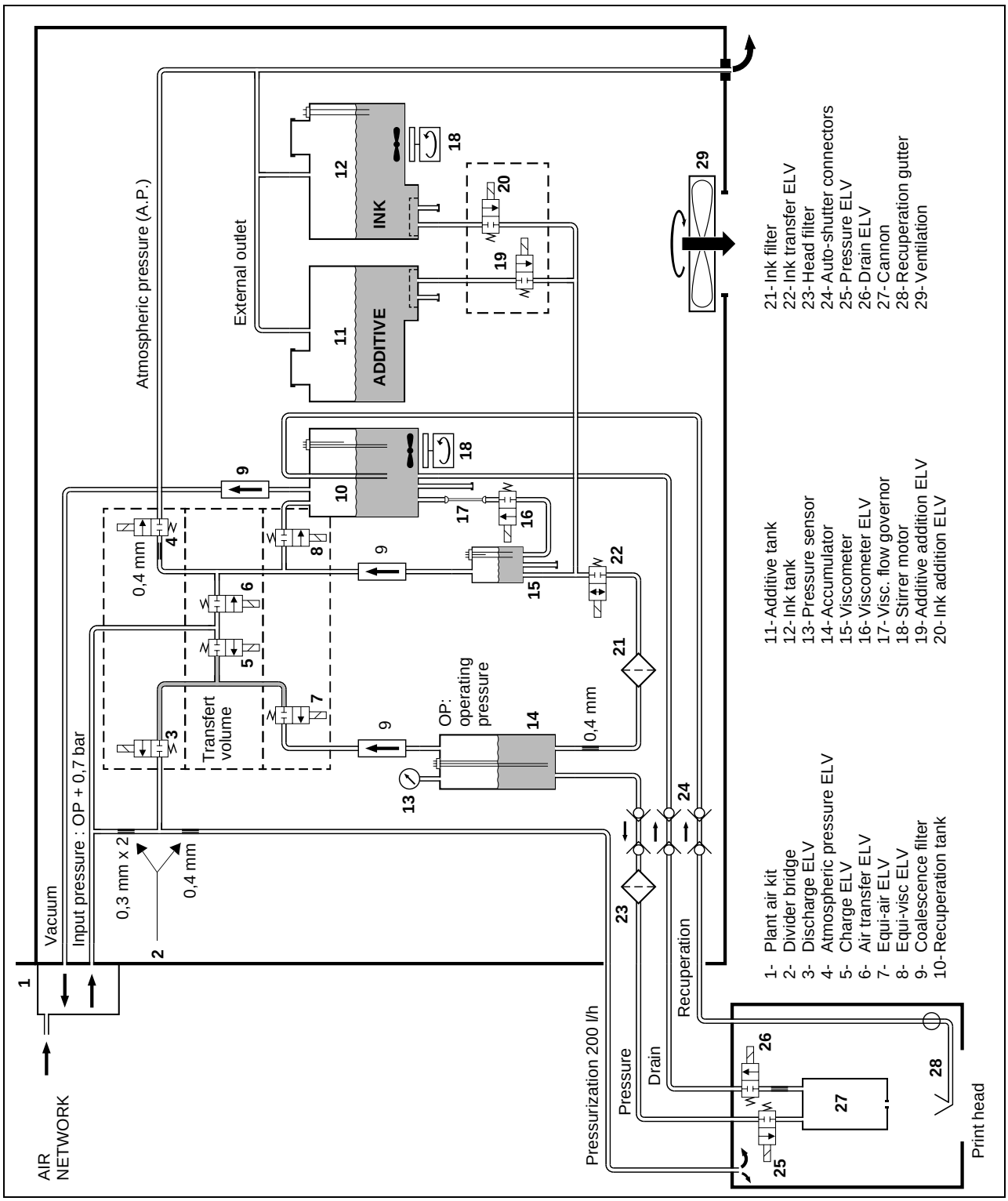
S8 Contrast one single-jet head **79**

S8 Contrast one twin-jet head **80**

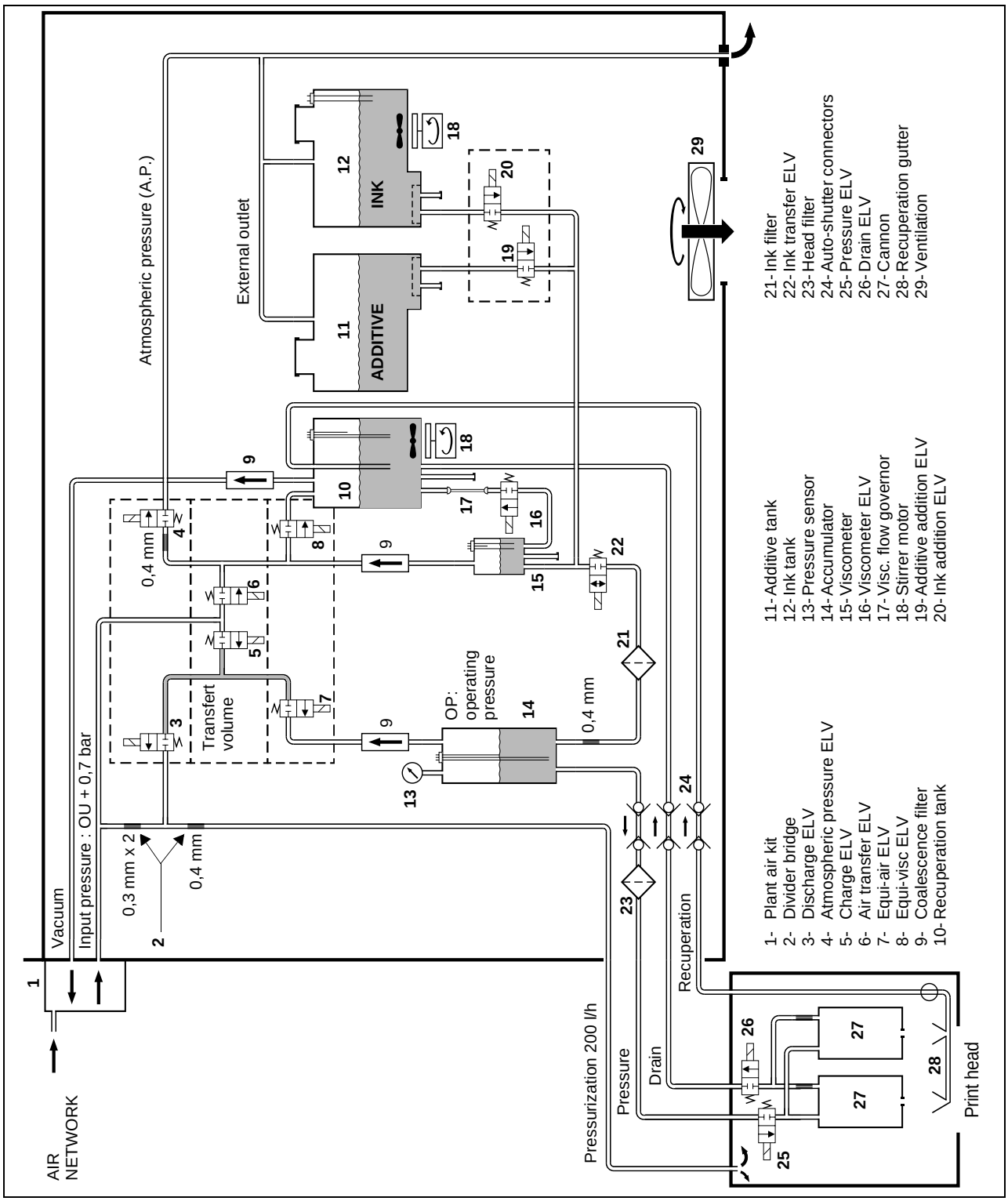
Plant air kit



S8 Contrast one single-jet head



S8 Contrast one twin-jet head



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1 Introduction

The aim of this section is to provide all the information needed to perform servicing correctly. All the procedures given in this chapter are standard operations which must be performed correctly for optimum printer operation.

2 General maintenance table

CIRCUMSTANCES	OPERATIONS TO BE PERFORMED	
	BEFORE SHUTDOWN	BEFORE RESTART
Stoppage < 4 days.	Shutdown procedure.	Restart procedure.
Whenever there is a risk of malfunction due to head blockage.		Clean head.
Stoppage > or = 4 days and < or = 15 days.	Drain/flush printer.	Refill with ink.
Stoppage > 15 days and < or = 1 month.	Drain/flush printer.	Replace ink filter cartridge. Refill with ink.
Stoppage > 1 month.	Drain/flush printer *Repeat every 4 weeks.*	Replace ink filter cartridge. Refill with ink.
Every 2000 hours.	Drain/flush printer.	Replace ink filter cartridge. Replace coalescence filters. Refill with ink.

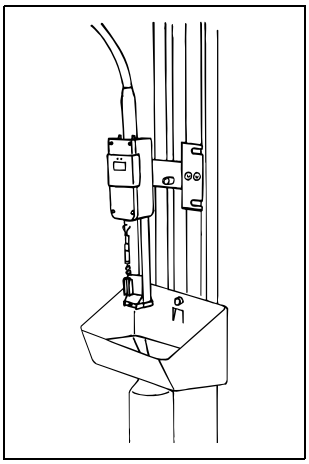
Associated procedures, following pages.

CAUTION **After draining/flushing the printer, always disconnect it from the electrical power supply if it is not to be immediately refiled with ink. This prevents the agitators from rotating at zero load.**

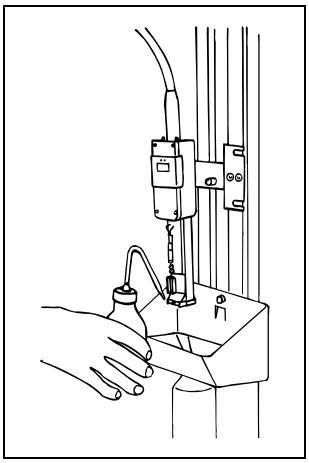
Drain/flush the printer before any operation which requires it to be disconnected from the electrical power supply for more than 2 hours.

3 Preventive maintenance procedures

3.1 Stopping the printer for less than 4 days

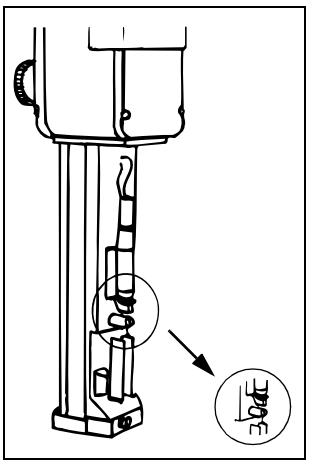


1 Stop the jet and place the head on its maintenance stand.



2 Open the head cover and spray cleaning solution into the recovery gutter for a few seconds.

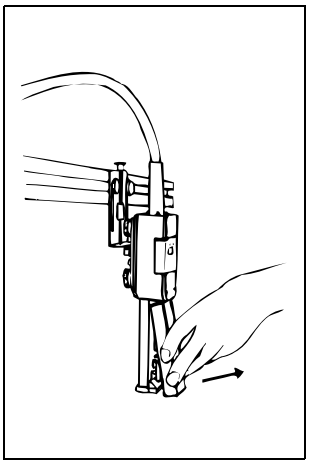
3 Stop the printer.



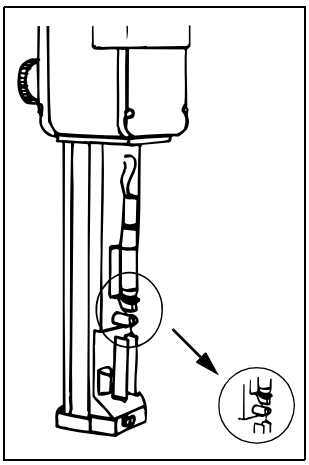
4 If an anti-clogging device is needed (see technical data sheet for the ink):
- wait for the printer to stop,
- close the gutter,
- fit the anti-clogging deviceL.

5 Close the head cover.

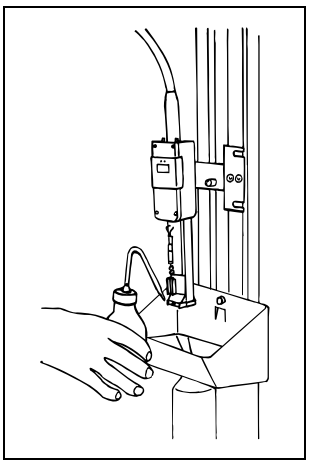
3.2 Starting the printer after a stop of less than 4 days



1 Open the head cover. Remove the anti-clogging device if present.



2 Clean the head. Open the gutter.



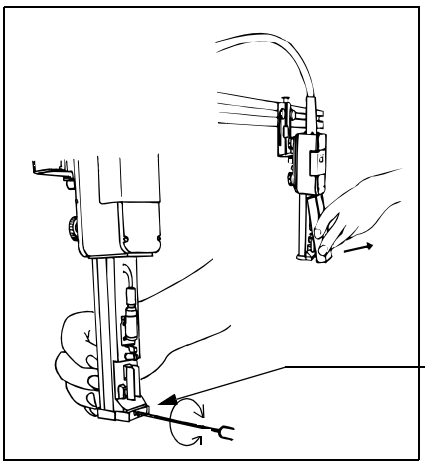
3 Start the printer, with the cover open. The jets start automatically.

4 Close the cover after the jets start and place the head on its working stand.

3.3 Cleaning the head

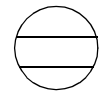
If the head become clogged with ink, this could cause electronic faults (poor droplet detection, EHT fault, etc.) or poor printing quality (deformed or truncated characters).

The cleaning procedure is as follows :

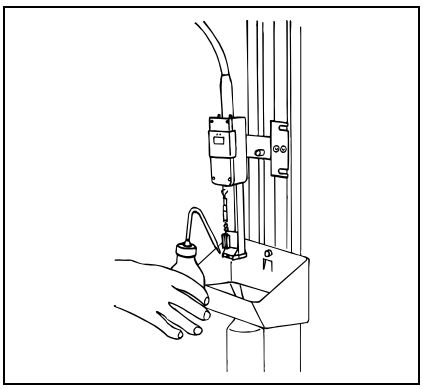


1 Stop the jet and place the head on the servicing support.

2 Open the head cover and close the recovery gutter.

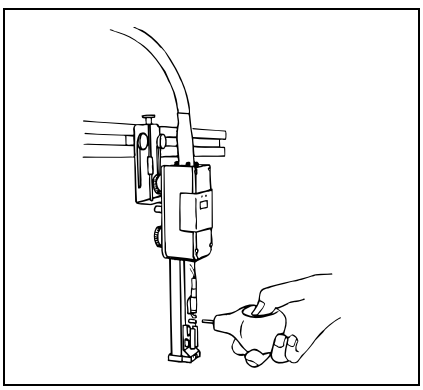


Closed



3 Clean the electrodes and the cannon with cleaning solution (and the brush if necessary) and carefully dry.

(The use or not of the brush and the drying kit is mentioned on the technical sheet of the ink).



4 Open the gutter and start the jet.

Open

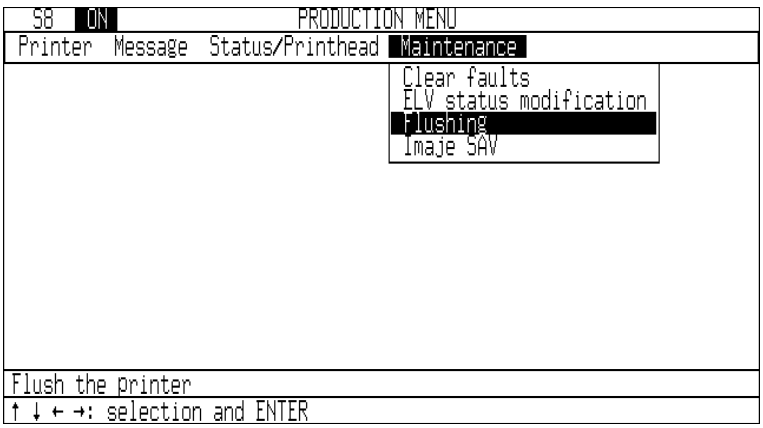
5 Close the head cover.

3.4 Draining/flushing the printer

- Place a tray under the additive tank, and remove the stopper from the draining tube.
- Replace the stopper once the tank is empty.
- Enter 1 or 2 litres (depending on the planned duration of the shutdown) of rinsing liquid into the additive tank.
- Place a tray under the ink tank, and remove the stopper from the draining tube.

NOTE **Never reuse this ink.**

- Start draining/flushing the ink circuit as follows..



1	Ink tank draining tube
2	Additive tank draining tube.

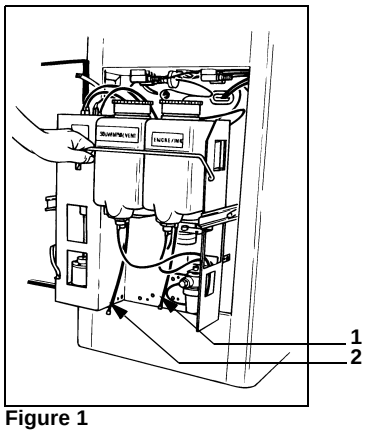


Figure 1

- The rinsing liquid circulates through all parts of the ink circuit and is drained through the ink tank.
- Flushing stops automatically when the additive tank is empty.
- Close the recuperation gutter.
- Clean the print head.
- Fit the anti-clogging device (if necessary).
- Replace the stopper on the ink tank draining tube.

3.5 Ink refill and restart after drain/rinse operation

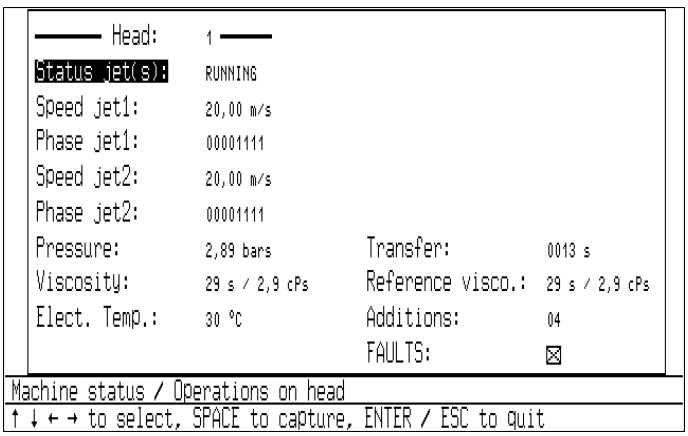
- Replace the ink filter cartridge (procedure on following pages) if the machine is stopped for more than 15 days.
- Enter half a litre of new ink in the ink tank.
- Start the printer and run it with the jet operating for 30 minutes.

CAUTION	**Do not enter any additive in the additive tank before reading the ink viscosity.**

- **Check the viscosity** 

  - **If it is less than "Reference visco.:"**
    Stop the machine and drain the recuperation tank.
    Then enter half a litre of new ink in the ink tank.

  - **If it is greater than "Reference visco.:"**
    Enter a litre of additive into the additive tank.
    Let the printer run. The correction is performed automatically..



4 Troubleshooting

4.1 Introduction

This chapter is a troubleshooting guide which enables any user to locate the origin of a fault logically and quickly.

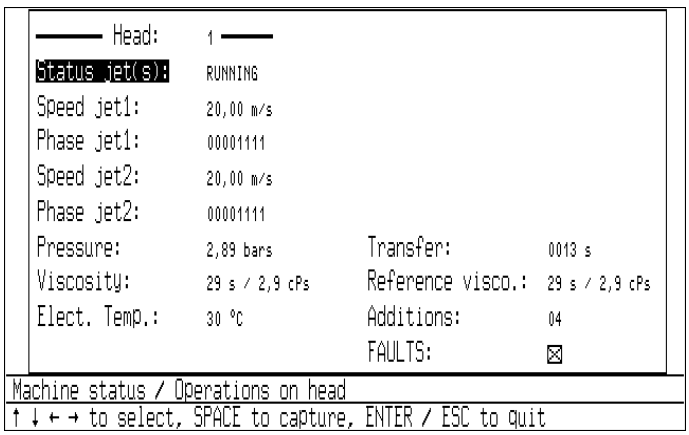
Using the simple fault diagnostics, the search will narrow down to the part at fault without having to disassemble the machine.

This guide lists all the possible faults and related remedies to resume normal operation.

The equipment required is limited to the use of the printer servicing suitcase.

4.2 General printer operating parameters check

All information on the general operation of the printer appears in the menu PRODUCTION - Status/Printhead or key [F1] .



4.3 Preliminary checks

All troubleshooting operations should begin with the preliminary checks.
These are used to spot problems such as soiled parts, ink leakages or faulty electrical or hydraulic connections with the naked eye.

Stop the printer and unplug it from the mains. Check the points below:

	Check	Type of problem sought
External appearance	Console and operator interface	Dents or cuts
	Printing head	Soiled electrodes Damaged or badly set mechanical parts Leakage
	Accessory connections	Disconnections Power cuts
Ink circuit appearance	Tanks	Tanks open or damaged Leakage Ink and additive reservoirs empty Ink appearance (odor, consistency) Additive appearance (odour, colour)
	Hydraulic connections and tubes	Leak Folded, damaged or cut pipe
	Electrical connections of the various parts	Bad connections: - of the ink circuit loom, - of the ink level detector (top of ink reservoir), - of the fan, - of the viscometer, - of the electrovalves.
Electronic compartment	Presence of various boards present in the electronic compartment.	Board missing
	Connections in the electronics compartments	Bad connections: - of the main board, - of the "Front" board, - of the "Motor control" board, - of the power supply board.
Industrial interface compartment	Electrical connections	Bad connections: - of a ribbon cable of the umbilical to the main board, - of the EHT unit to the corresponding cables of the umbilical, - of the ribbon cable on the industrial interface board, - on the industrial interface board terminals.
	Pneumatic connections	Bad connections: - air hoses

4.4 Help with diagnostics

4.4.1 Introduction

This chapter contains tables with the following two columns:

- Anomalies observed (by the operator) or displayed (by the printer)
- Solutions

Each anomaly is identified in the tables by a number in bold.

Each anomaly may be resolved by several "Solutions".

After performing the preliminary checks, apply the first solution proposed which corresponds to the situation.
If the anomaly recurs, apply the next solution, and so on.

After the incident has been corrected, cancel the fault record by pressing  key.

ATTENTION	**The ink circuit is fitted with two stirrers located at the base of the ink and recovery tanks, whose purpose is to mix the ink continuously.**
AS A RESULT	**Never disconnect the printer from the mains electricity network for more than two hours without first draining and flushing.**

4.4.2 At printer start-up

Anomalies		Solutions	
1-	Green "Power on" indicator not lit.	**1a-**	Check the mains supply.
		1b-	Change the 4 A delayed-action fuse (see corresponding procedure).
2-	Operator interface display not lit. Printer starts.	**2a-**	Stop and restart the printer.
		2b-	The front panel board is at fault. Contact Imaje Technical Assistance.
3-	Operator interface indicators and display not lit. Printer does not start. or Operator interface indicators and display lit and remain fixed. Printer does not start.	**3a-**	Stop and restart the printer.
		3b-	Check the power supply voltage LEDs on the Main board. **-** only two LEDs are lit, the power supply board is faulty. Contact Imaje Technical Support. - If all the LEDs are lit, either the Main board or the Motor Control board is faulty. Contact Imaje Technical Assistance.
4-	Red alarm / fault indicators lit.	**4a-**	Perform self-diagnostics by pressing  .
5-	Memory lost.	**5a-**	Reprogram the printer then contact Imaje Technical Assistance.
6-	CPU faulty.	**6a-**	If the fault persists, contact Imaje Technical Assistance.
7-	Ink level low.	**7a-**	Add ink to the corresponding tank (max. 1/2 tank).
		7b-	The Main board may be faulty. Contact Imaje Technical Assistance.
8-	Additive tank level low or Additive tank empty or Solvent fault.	**8a-**	Add additive to the tank (1/2 tank max.).
		8b-	Check that the additive top-up electrovalves is working correctly ([PRODUCTION] menu - [Maintenance] - [ELV status modification]). Check the viscometer circuit.
		8c-	If the fault persists, contact Imaje Technical Assistance.

Anomalies	Solutions
9- Fan / compressed air	**9a-** Fan fault or absence of compressed air.
	9b- Check that the fan at the bottom of the cabinet is connected and rotates. This fan should run continuously as soon as the printer is switched on.
	9c- The Main board may be faulty. Contact Imaje Technical Assistance.
10- Temperature	**10a-** The ambient temperature in the room where the printer is installed is too high, resulting in a temperature above 70°C in the electronics compartment. Alter the installation.
	10b- The Main board may be faulty. Contact Imaje Technical Assistance.
11- Viscosity	**11a-** Check the viscosity measurement circuit.
	11b- Check that the viscometer electrovalve operates correctly by monitoring the variation in the viscometer level ([PRODUCTION] menu - [Maintenance] - [ELV status modification]) or  .
	11c- If the fault persists, contact Imaje Technical Assistance.
12- Accumulator low level	**12a-** The fault appears after several jet start-up or after too long refreshment sequences. Wait for the reservoir to fill up again.
	12b- If the fault persists, contact Imaje Technical Assistance.
13- Recup. Reservoir draining	**13a-** The fault appears after sequences of print head cleaning or cleaning solution introduction. Drain the recuperation tank using the appropriate tube.
	13b- The recuperation tank high level is faulty. Contact Imaje Technical Assistance.

Anomalies	Solutions
14- Drain the ink tank	**14a-** The fault appears during printer draining. Drain the tank. Contact Imaje Technical Assistance.
15- Regulator fault	**15a-** Operate the regulator electrovalve. Cancel the fault with the STAT function ☹? **15b-** If the fault remains, contact Imaje Technical Assistance.
16- Ink fault 03	**16a-** Operate the electrovalves: - Ink addition. - Air transfer. **16b-** Cancel the fault with the STAT function ☹?. If the fault remains contact Imaje Technical Assistance.
17- Accu fault 04	**17a-** Operate the electrovalves: - Air transfer. - A/P. - ink addition. **17b-** Cancel the fault with the STAT function ☹?. If the fault remains, contact Imaje Technical Assistance.
18- Accu fault 09	**18a-** Operate the electrovalves: - Ink transfer. - Air transfer. **18b-** Cancel the fault with the STAT function ☹?. If the fault remains contact Imaje Technical Assistance.
19- init fault 05	**19a-** Operate the electrovalves: - Charge. - Discharge. - Equi. air - A/P. - Air transfer. **19b-** Cancel the fault with the STAT function ☹?. If the fault remains, contact Imaje Technical Assistance.

Anomalies	Solutions
20- Init fault 10	**20a-** Check input pressure. Adjust it if necessary. **20b-** Operate the electrovalves: - Discharge. - Equi. air. **20c-** .Cancel the fault with the STAT function ☹? . If the fault remains contact Imaje Technical Assistance.
21- Stop fault 13	**21a-** Operate the electrovalves: - A/P. - Visco. **21b-** Cancel the fault with the STAT function ☹? . If the fault remains contact Imaje Technical Assistance.
22- Stop fault 15 or 19	**22a-** Operate all the electrovalves. **22b-** Cancel the fault with the STAT function ☹? . If the fault remains contact Imaje Technical Assistance.
23- Visco fault 08	**23a-** Operate the electrovalves: - Visco. - A/P. **23b-** Cancel the fault with the STAT function ☹? . If the fault remains contact Imaje Technical Assistance.

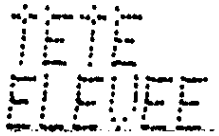
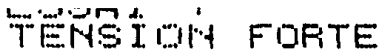
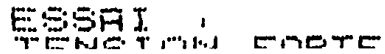
NOTE	**(Fault 16 to 23)** **It is possible to activate the electrovalves in "stand-by" phase after displaying "sub-phase 21".**

4.4.3 At jet start-up

Anomalies		Solutions	
1-	Cover missing	**1a-**	Close the head cover or check that it is properly closed.
		1b-	The magnet inside the cover (at the top) is missing.
		1c-	The cover sensor is faulty or the main board is faulty. Contact Imaje Technical Support.
2-	EHT	**2a-**	Clean the head electrodes and dry them carefully.
		2b-	Check the electromagnetic environment around the head (interference).
		2c-	The main board is faulty. Contact Imaje Technical Support.
3-	Jet n: Recuperation	**3a-**	Restart the jets and watch them. If one of the jets is unstable or deviated (outside the gutter), validate the [Intro. solution] and [Stability] functions in turn. If the jet is missing, validate the functions [Nozzle unblocking], [Intro. solution], [Stability] and [Refreshment] functions in turn.
		3b-	If the jet(s) are still missing, one of the pressure circuit components is faulty. Contact Imaje Technical Support.
		3c-	If there is a lack of suction in the gutter, one of the recuperation circuit components is faulty. Contact Imaje Technical Support.

4.4.4 During printing

Anomalies		Solutions	
1-	Jet n: Phase detection (n = 1 to 2)	**1a-**	Clean and dry the head electrodes.
		1b-	Check the general printer operating parameters [1].
		1c-	Check that the ink used in the printer is valid: expiry date (see container), replacement frequency and environmental conditions (see ink data sheet).
		1d-	Validate the [Refreshment] function for 2 minutes.
		1e-	Check the electromagnetic environment around the head (interference).
		1f-	The main board is faulty. Contact Imaje Technical Support.
2-	CPU-IMP communication	**2a-**	The fault occurs after the conveyor has been stopped for a long time during message printing. Restart message printing.
		2b-	The fault persists after attempting to print the message at constant speed. The main board is faulty. Contact Imaje Technical Support.
3-	Printing speed	**3a-**	Modify the [Tacho division] or [Printing speed] parameters.

Anomalies	Solutions
4- Poor print quality Example 1:  Example 2:  Example 3:  Example 4: 	**4a-** Clean the print head (including the cover) and check that there is nothing obstructing the path of the jet. **4b-** Check that the head support is stable (no vibrations). **4c-** Check the distance between the head and the object (examples 1 and 2). **4d-** Check that the jets are centered in the recuperation gutters (examples 3 and 4). **4e-** Check the viscosity reference time displayed on the printer and the theoretical viscosity given on the ink data sheet. **4f-** The head requires mechanical and/or electronic adjustment. Contact Imaje Technical Support. **4g-** The main board is faulty. Contact Imaje Technical Support.

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1 Adjustment procedures

1.1 Jet break-off point adjustment

Special tools:
- Bifocal lens (eyeglass).
- Insulated screwdriver.

PREPARATION

1- Place the head on the maintenance stand.

2- Start the jets and leave them running for at least half an hour.

3- Remove the upper cover and removable cover.

For a multi-jet head, each jet has its own potentiometer (right-hand jet = right-hand potentiometer, etc.).

ADJUSTMENT

4- The adjustment procedure below involves looking at the jet through the eyeglass (see Figure 1). Start the operation by turning the potentiometer as far counterclockwise as possible. The jet will be continuous. Slowly turn clockwise until the jet starts to break at the centre of the charge electrode. Aim for the form shown by point 6 in Figure 1.

IMPORTANT	**Adjust the potentiometer with care to avoid damaging it.**

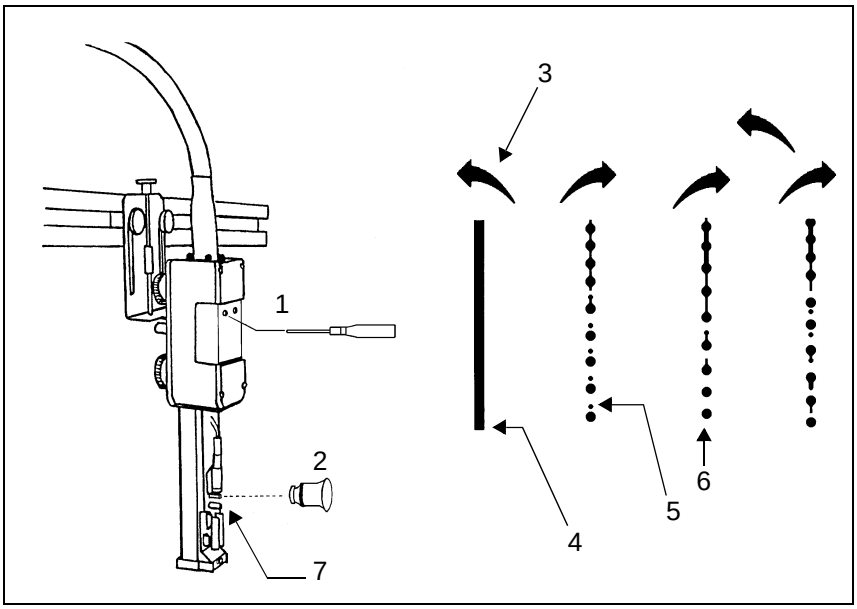
CHECKS AND TESTS

5- Close the head cover. Clear any faults.

6- Perform some printing tests and readjust if necessary.

Figure 1: Adjusting the break-off point

1	Location for screwdriver (potentiometer)
2	Eyeglass
3	Rotation of screwdriver
4	Jet seen through eyeglass
5	Satellite drop
6	CORRECT SETTING
7	Charge electrode



1.2 Adjusting the jet in the gutter

Special tools:
- Cannon orientation tool, ring spanner.
- Bifocal lens (eyeglass).
- Head cleaning kit.
- Protective goggles.
- 1.5 mm Allen key.
- Tweezers.

CAUTION	**To avoid ink splashing into your eyes, goggles must be worn during these operations.**

PRELIMINARY CHECKS

1- Place the head on the maintenance stand.

2- Check the stability of the jet by validating the [Stability] function.

3- Validate the [Jet adjustment] function.

4- Check that recuperation operates correctly.

ADJUSTING THE JET IN THE GUTTER

This operation involves three related adjustments:
- 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 protection plate from the resonator wires and disconnect them.

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

7- Bring the jet close to point A or point A' by pivoting the cannon in the cannon-holder with an orientation tool placed at the top (see Figure 2).

CAUTION	**Rotate in the direction shown on the diagram to avoid unscrewing the cannon nut.**

Figure 1:	Canon pressetting
1	Wires to disconnect
2	Cams
3	Locking screw
4	Orientation tool
5	Cannon-holder
6	Protective plate position
7	Cannon

Figure 2:	Pressetting the jet in the gutter
1	Jet
2	Gutter
3	Jet trajectory when cannon is rotated

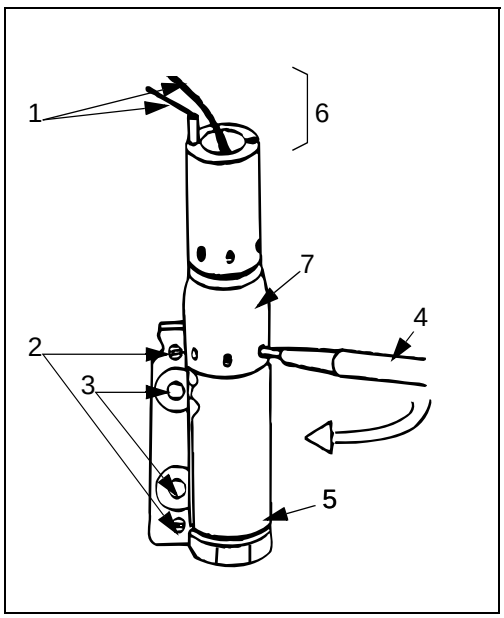


Figure 1

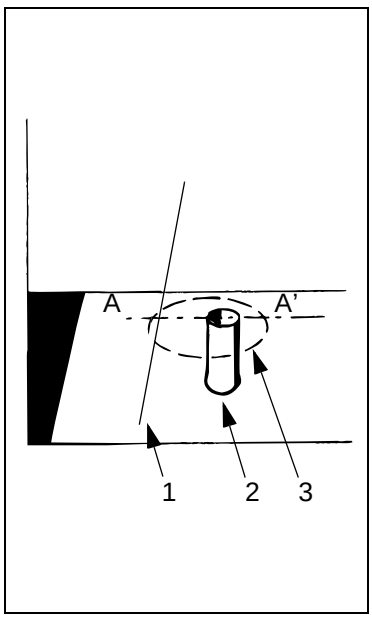


Figure 2

8- Center the jet in the charge electrode by sight using the lower cam (see Figure 3).

CAUTION	**Do not force the cams. Use the locking screw to loosen or tighten the cannon holder movement.**

9- Position the jet in the gutter using the upper cam:
- in the center of the gutter (see Figure 4).

10- Repeat steps 7, 8 and 9 until the jet is correctly positioned in the gutter and centered in the charge electrode.

Figure 3:	Centering the jet in the charge electrode
1	Lower cam
2	Charge electrode
Figure 4:	Centering the jet in the gutter
1	Upper cam
2	Recuperation gutter

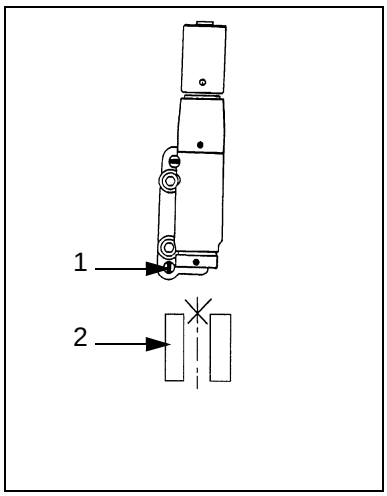


Figure 3

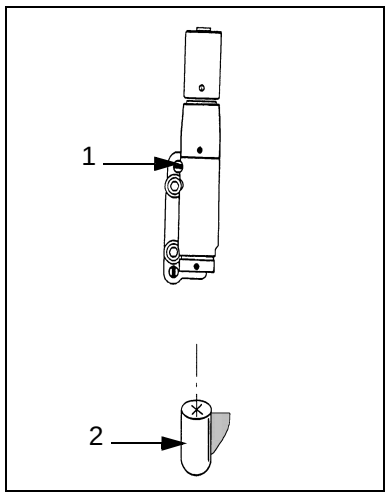


Figure 4

FINAL OPERATIONS

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

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

13- Start the jets.

14- Check the break-off point, and adjust if necessary.

15- Clear any faults. Perform continuous printing tests.
Check that the electrodes and gutter are clean after 10 minutes of printing.

IMPORTANT	**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.**

1.3 Inlet pressure adjustment

The inlet pressure is the pressure necessary at the inlet to the S8 Contrast printer, i.e. at the outlet of the Imaje plant air kit.

This pressure must be 0.7 bar (+ 0.3 - 0.1) greater thant the printer's operating pressure at correct viscosity.

ADJUSTMENT

1- Display the operating pressure [2].

2- Display the inlet pressure [ ] [▼] [ ] [ENTER].

3- If necessary, adjust the plant air kit to obtain the correct inlet pressure.

1.4 Vacuum adjustment

The pressure drop value depends on the type of ink and the type of printer.

See the technical data sheet for the ink used to know this value and adjust the plant air kit accordingly.

Figure 1 :	Plant air kit
1	Pressure adjustment
2	Vacuum adjustment

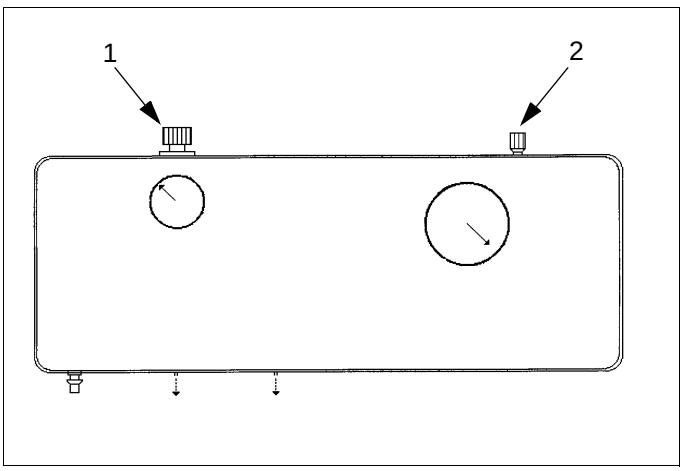


Figure 1

2 Replacing procedures

2.1 Replacing the mains fuse (4 A delayed-action fuse)

With the printer stopped and the power cable unplugged:

1- Unscrew the power socket protective cover.

2- Disconnect the power cable from the printer.

3- Using a screwdriver, remove the fuse-holder from adjacent to the mains socket.

4- Change the fuse and replace the fuse-holder.

5- Reconnect the power cable to the printer.

6- Replace the protective cover.

7- Connect the printer to the mains power and start it.

Figure 1:	Location of the fuse

1	Fuse-holder location
2	Mains socket
3	Protective cover

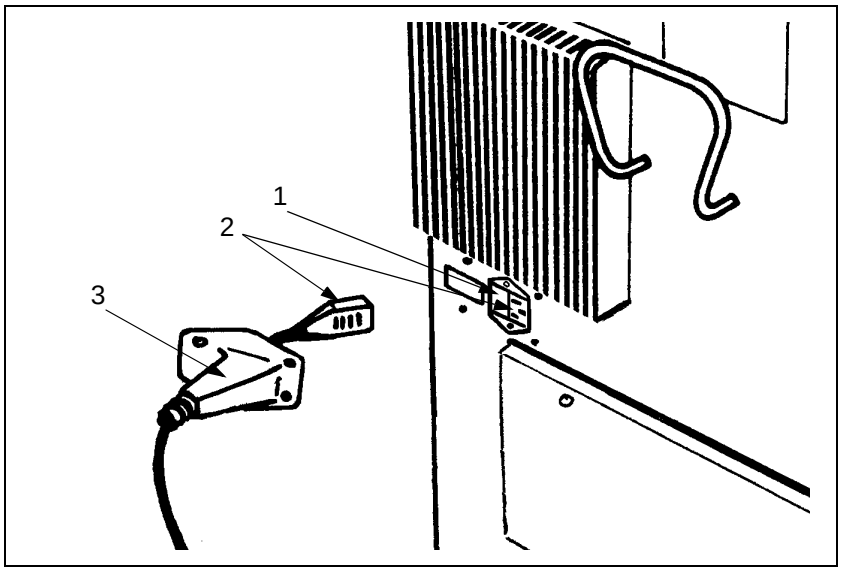


Figure 1

2.2 Ink replacement

Frequency: see ink technical sheet.

When the same ink is regularly used in the printer without additions of new ink, the physical and electrical characteristics might be altered.

Do not forget to check the expiry date on the ink tank label.

Drain the printer as follows, printer on:

1- Drain the additive tank. Place back the plug when draining is finished.

2- Place the tray under the ink tank. Remove the plug from the tube.

3- Select "Maintenance" in the "PRODUCTION" menu, then validate "Flushing" function.

4- When draining is finished, the printer stopped automatically.

5- Plug the ink tank draining tube.

6- Refill the tank with ink (max. 1/2 tank).

7- Start-up the printer, check head cleanliness, clean it if required.

8- After 30 minutes of operation, check the jet break-off point. It might be necessary to adjust it after ink replacement.

1	Ink tank draining tube
2	Additive tank draining tube

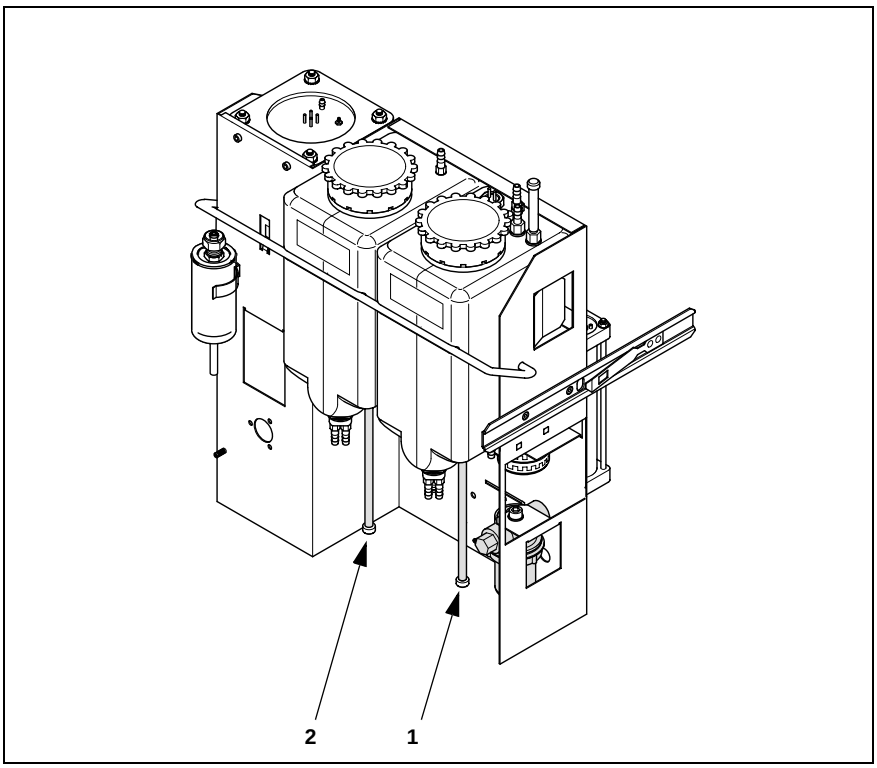


Figure 1

2.3 Replacing the ink filter cartridge

This operation should be performed every 2000 hours of operation and/or every 6 months.

1- Stop the printer.

2- Place a recuperation tray under the filter and unscrew the lower carter.

3- Unscrew the cartridge base.

4- Remove the cartridge and O-ring.

5- Insert a new cartridge and screw the base.

6- Screw the carter with a new O-ring.

7- Start-up the printer. Check filter tightness.

ROUTINE VERIFICATIONS

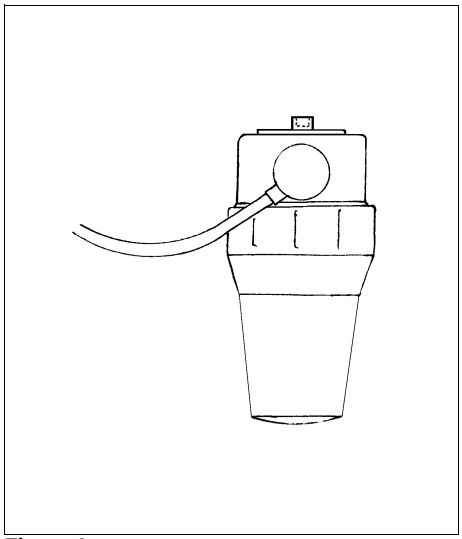


Figure 1

2.4 Replacing the coalescence filter

Operation to be carried out every 2,000 hours.

Special tools:
- Wrench.

1- Shut down the printer.

2- Open the door of the hydraulic compartment.

3- Move out the ink circuit to access the filter (Figures 1 and 2).

4- Undo all nuts on the filter side fully.

5- Remove the filter.

6- Fit the new filter and make sure the arrow is pointing in the right direction.

1	Coalescence filter
2	Connector

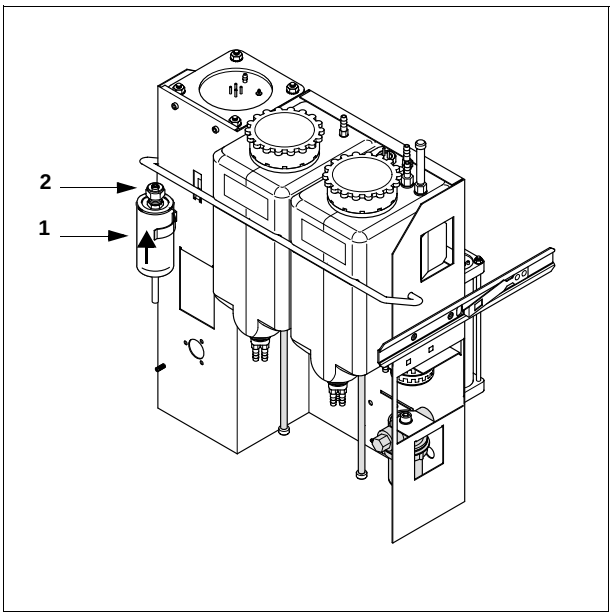


Figure 1 : Front view

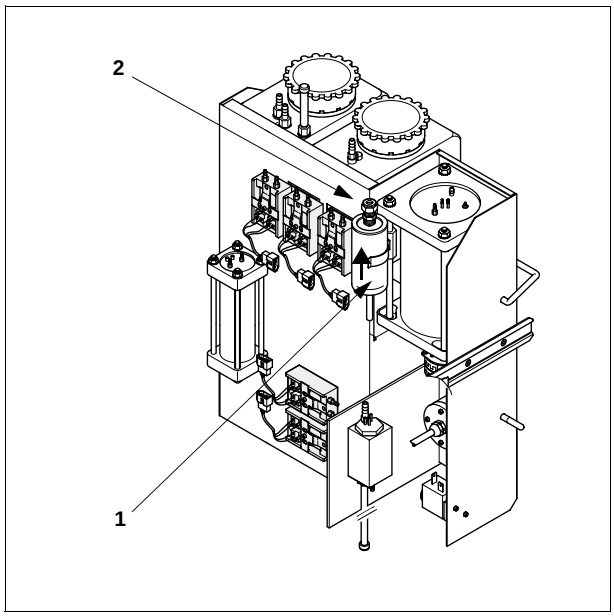


Figure 2 : Rear view

7- Replace the ferrules (Figure 1).

8- Push in the tube as far as it will go inside the connector.

9- Do up the nut by hand and then tighten a further three quarters of a turn.

TESTS

10- Pull the filter to make sure there is no free play inside the connector.

11- Start up the printer and make sure there is no air leakage.

ROUTINE CHECKS

1	Ferrule
2	Tube
3	Nut

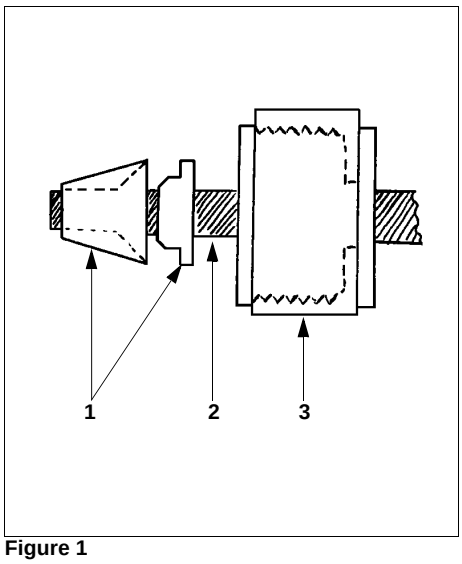


Figure 1

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1 Industrial Interface board

The rear access door must be opened to connect accessories.
To do this:

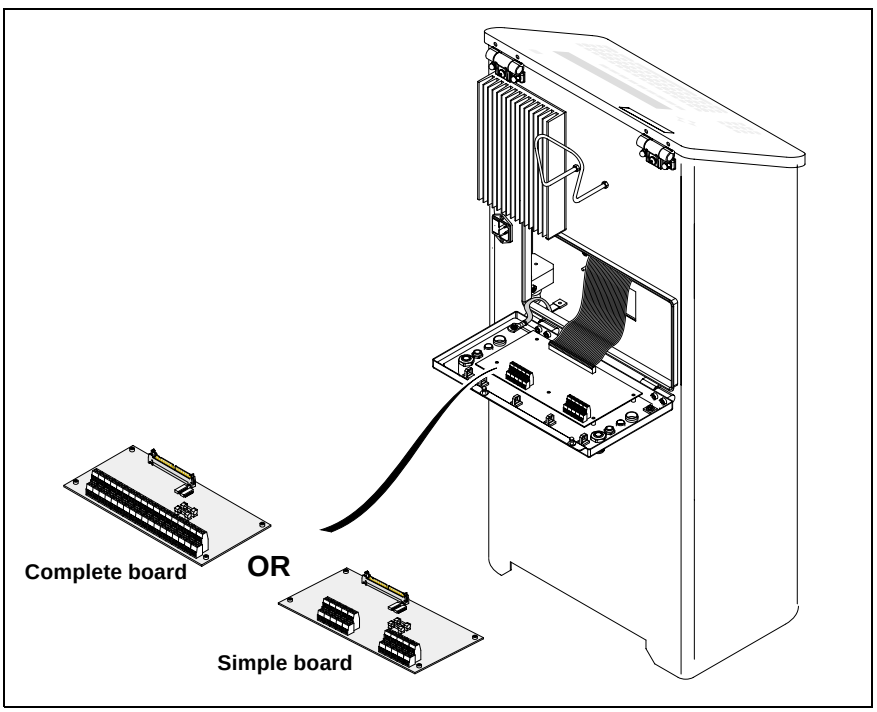
- Unscrew the two quarter-turn screws located on either side of the rear door.
- Gently pull the door open (see Figure 1).

The four connection terminal blocks on the Industrial Interface board are organized as follows:

- Connector B1: 2 × 20 pins CPU signals
- Connector B2: 22 pins Head 1 signals
- Connector B3: 22 pins Not used
- Connector B4: 9 pins Alarm relay signals

Details of the pinouts are shown on the following pages.

Figure 1: View of the industrial interface board



Connector B1:CPU

RS232C asynchronous serial link
Program output - counter reset.

1	DO NOT USE			
2				
3				
4				
5	-TXDOUT	Transmit Data	RS232C Link	
6	RTSOUT	Request To Send		
7	DTROUT	Data Terminal Ready		
8	-RXDIN	Receive Data		
9	CTSIN	Clear To Send		
10	DSRIN	Data Send Ready		
11	DSR-	Photocoupled DSR input		
12	DSR+			
13	GND	0 V		
14	SPROG 2	Program output		
15	COMSPROG			
16	SPROG 1			
17	COMRAZC 1	Counter reset		
18	RAZC1			
19	COMRAZC2			
20	RAZC2			Not fitted to simplified industrial interface board
21	RESET-			
22	RESET+			
23	-DSR422-	NOT USED ON THIS TYPE OF PRINTER		
24	-DSR422+			
25	RXD422-			
26	RXD422+			
27	RXC422-			
28	RXC422+			
29	VALID422-			
30	VALID422+			
31	-DTR422-			
32	-DTR422+			
33	TXD422-			
34	TXD422+			
35	TXC422-			
36	TXC422+			
37	GND			
38	+ 5 V	300 mA	CAUTION: No fuse protection	
39	+ 15 V	50 mA		
40	- 15 V	50 mA		

Connector B2: Head 1 printing

1	GND		0V
2	+ 24V T1		+ 24 V power supply, max. 300 mA, not galvanically isolated (not present when machine stopped)
3	COMDTOP1	Object pulse common	Terminals for connecting object detection cell
4	DTOP1	Object pulse	
5	COMVALIMP1	VALIMP common	
6	-VALIMP1	VALIMP	Inhibition of object detection signal
7	COMTACHY1	Tacho common	Terminals for connecting tachometric generator (open collector)
8	TACHY1	Tacho	
9	TACHY1+	Differential inputs	Terminals for connecting tachometric generator (differential)
10	TACHY1-		
11	COMBUSY1	BUSY common	Printing start output
12	-BUSY1	BUSY-	
13	COMDATA1	DATA common	Parallel interface inputs used in "message selection" (option on industrial interface board)
14	D0 1	DATA 0	
15	D1 1	DATA 1	
16	D2 1	DATA 2	
17	D3 1	DATA 3	
18	D4 1	DATA 4	
19	D5 1	DATA 5	
20	D6 1	DATA 6	
21	D7 1	DATA 7	
22	+24 T1		+ 24 V power supply, max. 300 mA, not galvanically isolated (not present when machine stopped)

Connector B3: Not used

Connector B4: Print alarms

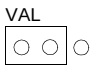
1	-T1	Inactive	Head 1 printing alarm output
2	T1	Active	
3	COM T1	Common	
4	-T2	Inactive	Not used
5	T2	Active	
6	COM T2	Common	
7	-GENE	Inactive	General alarm output
8	GENE	Active	
9	COM GENE	Common	

LEDs

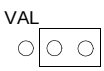
*	BY1 and BY2	BUSY 1 and 2 (printing start on parallel bus, head 1 and 2)
	RC1 and RC2	Activate counter 1 and 2 reset input
	DEF	General alarm
	T1 - T2	Fault, head 1 and 2
	TOP1 - TOP2	Activate DTOP 1 and 2 inputs
	TAC1 - TAC 2	Activate TACHY 1 and 2 inputs
	SP1 - SP2	SPROG (printing start on RS422, head 1 and 2)

Jumpers - Switches

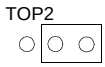
SW1 SW2		Current loop powered by printer (ACTIVE) or external supply (PASSIVE)
CTS	to DSR	The printer will send if DSR is active (CTS connected to DSR)
	to CTS	The printer will send if CTS is active
	to GND	Printer will send continuously (CTS connected to 0V)
	to RTS	The printer will send continuously (CTS connected to RTS)
RXD	sur 232	Transmission by voltage level (V24 standard, high level: +3V to +12V - low level: -3V to -12 V)
	to 20mA	Transmission by 20mA current loop
	to 422	Transmission by RS422 (Mailjet)

* VAL 

RS422 transmission is enabled continuously

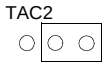


RS422 transmission is enabled by the VAL input (B1/29-30)

TOP2 

DTOP input on IMP2 board activated by DTOP2 input

DTOP input on IMP2 board activated by DTOP1 input

TAC2 

TACHO input on IMP2 board activated by TACHY2 input

TACHO input on IMP2 board activated by TACHY1 input

Fuses: 0.3 AT 5 x 20

F1	External 24V protection - Terminal block B2
F2	External 24V protection - Terminal block B3

* Not fitted to simplified industrial interface

2 Inputs

2.1 Object detection cell

• **Role:**

The object detector is connected to the "DTOP" and "COM DTOP" terminals on the industrial interface board.
When it is activated by an object, the detector sends a signal to the printer which starts printing.
To avoid spurious signals, the DTOP input is filtered to a minimum of 100 µs (programmable value).
The object detection input uses the properties of a high-speed photocoupler with an isolation voltage of 2.5 kV.

2.2 Object detector inhibit

• **Role:**

The "-VALIMP" and "COM VALIMP" terminals on the industrial interface board can be used to inhibit the object detection signal. They can be connected to any accessories which comply with the specifications given.
The object detector inhibit input uses the properties of a high-speed photocoupler with an isolation voltage of 2.5 kV.

2.3 Tachometric generator

• **Role:**

When the conveyor belt speed is variable, the "TACHY" and "COM TACHY" terminals on the industrial interface board can be used to connect an open-collector tachometric generator to sequence printing. The tachometric input uses the properties of a high-speed photocoupler with an isolation voltage of 2.5 kV.
The "TACHY+" and "TACHY-" terminals can be used to connect a differential tachometric generator.

2.4 Data Transmission Inputs by the Parallel Interface ("Message selection" mode)

- **Role:**

Inputs "D0, D1, D2, D3, D4, D5, D6, D7" on the industrial interface board are used to transmit message numbers for the print head.
Parallel transfer enables the message selection option to be used with the message library.
These signals are optocoupled.
See the RS232 Link - Parallel link manual.

2.5 Absolute limit values for inputs

- Maximum permissible current in photocoupler LED:

  DC: I_F = 25 mA

  AC ~: I_F = 50 mA with a duty cycle of 50% and a pulse width of 1 ms.

  Pulsed: I_F = 1 A with a pulse width ≤ 1 µs and 300 pulses/sec.

- Maximum power dissipation: 45 mW
- Maximum operating frequency:
  150 kHz (duration of pulses > 2 µs) for the TACHY input,
  10 kHz for the object detector, parallel interface and counter reset inputs.

3 Outputs

3.1 General alarm output

• **Role:**

This output signals a printer malfunction which does not stop printing. This alarm is generated to warn the operator to correct the cause of the anomaly.

Two types of contact are available for this output: an "Inactive" (normally closed) dry contact or an "Active" (normally open) dry contact.

3.2 Jet alarm output

• **Role:**

This output signals a printer malfunction which stops printing. This output may be connected to a girolamp or a siren, and also to the conveyor control system to stop the production line.
When the fault output is activated, the alarm output is always activated at the same time.

Two types of contact are available for this output: an "Inactive" (normally closed) dry contact or an "Active" (normally open) dry contact.

3.3 Electrical characteristics of the outputs

• Max. voltage: 250 Vac

• Max. current: 1 A

For a DC voltage, the maximum permitted current is 1 A.
These are potential-free dry contacts, which can be used to control alarm systems or electrical assemblies directly connected to the mains.

The electrical contacts are protected by RC filters (0.1 µF / 250 V + 47 Ω).
Whatever the type of voltage (AC or DC) applied to these terminals, the filter should never be disconnected.

3.4 Printing start output

• **Role:**

The industrial interface terminals "-BUSY-1" and "COM BUSY1" for head 1 and "-BUSY-2" and "COM BUSY2" for head 2 provide a synchronization signal that a message is being printed. This enables the message to be viewed stroboscopically during continuous printing or signals that message printing has finished.

This message synchronization output uses the outputs of a high-speed photocoupler with open-collector phototransistor.

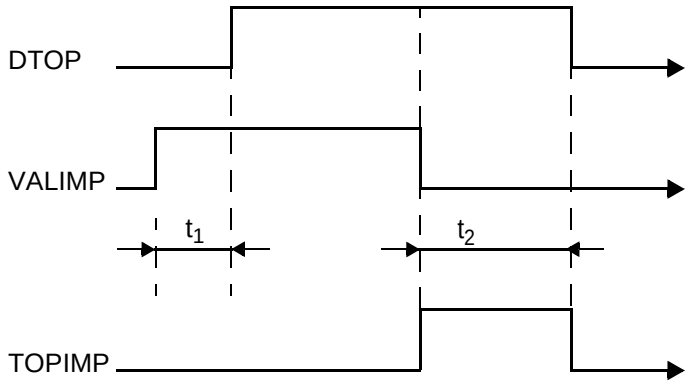
• **Operating characteristics:**

- Supply voltage between "-BUSY" and "COM BUSY": – 0.5 V to 15 V
- Maximum output current I_S on "-BUSY" terminal: 25 mA
- Maximum operating frequency: 10 kHz
- Maximum output power: 100 mW

The photocoupler is switched on for the entire time that a message is being printed.

4 Timing diagrams

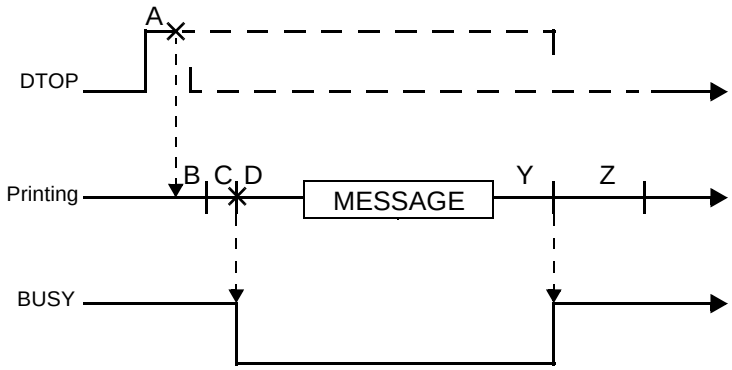
4.1 DTOP and VALIMP



$t_1 \geq 1\ \mu s$
If t_2 > filter value => Message printed
If $t_2 \leq$ filter value => No message printed

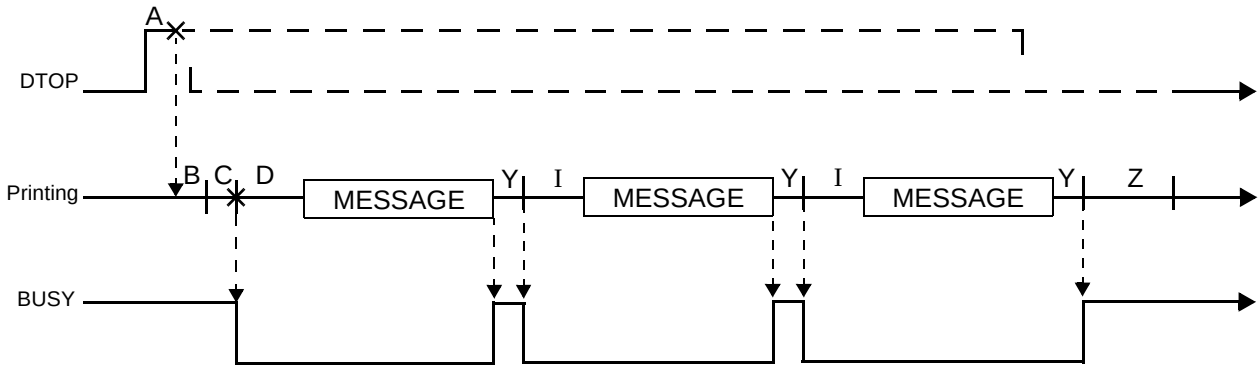
4.2 DTOP, message printing and BUSY

4.2.1 Printing : "Object mode"



A = TOPIMP > filter value
B = CPU/IMP communication = from 0 to 700 µs if "Run/Stop" option set to Run
= 0 if "Run/Stop" option set to Stop
C = print signal processing = 1 to 9 ms for message with bar code
= 800 µs for message without bar code
D = print delay
Y = phase measurement = 3 ms
Z = minimum time between phase measurement and new DTOP = 1 ms

4.2.2 Printing : " Repeat mode"



A = TOPIMP > filter value
B = CPU/IMP communication = from 0 to 700 µs if "Run/Stop" option set to Run
= 0 if "Run/Stop" option set to Stop
C = print signal processing = 1 to 9 ms for message with bar code
= 800 µs for message without bar code
D = print delay
I = Interval
Y = phase measurement = 3 ms
Z = minimum time between phase measurement and new DTOP = 1 ms

NOTES

• Physical description

- Dimensions :
  - Control cabinet: 1051 mm x 463 mm x 340 mm (41.4" x 18.2" x 13.4")
  - Single-jet and twin-jet print head: 225 mm x 44.5 mm x 47.5 mm (8.8" x 1.7" x 1.9")
- Weight :
  - Control cabinet: 40kg (88.2 lbs)
  - Head and conduit: 3kg (6.6 lbs)
- Volume:
  - Tanks: Total: 2 liters (3.52pts)
    Useful: 1 liter (1.76pts)

• Installation conditions

- Working position:
  - Control cabinet: vertical
  - Print head: any position
- Max. height difference between head and printer body:
  - ± 2 meters (± 6.56 ft)
- Distance between head and printer body:
  - 3 meters (9.8ft), 5 meters (16.4ft), and 8 meters (26.2ft) (dépending on machine and options. options.)

• Power source

- Electrical :
  - 100 V - 240 V ac
  - Frequency 50 Hz-60 Hz
- Compressed air:
  - Min. 5 bar (72 PSI) - Max. 10 bar (145 PSI)

• Limits of use

- Operating temperature:
  - 0°C to 50°C (32°F to 122°F)
- Humidity:
  - 10 to 90 %

- **Standard accessories**
  - Head support stand
  - Object detector
  - Tachometric generator
  - External alarm (girolamp or siren)
  - Head protection
  - Transport trolley
  - Head movement

- **Main operating characteristics**
  - counting of individual objects or batches,
  - full autodating,
  - variable message library,
  - logo printing (15 logos/jet)
  - special characters: "Chimney", transversal and longitudinal "DIN"
  - non-doubled printing of a given message
  - programmable print delays
  - controlled by operator interface or any system with a serial interface
  - auto-diagnosis of printer status
  - automatic ink viscosity regulation
  - automatic nozzle unclogging system
  - automatic rinsing and flushing of printer
  - pressurized print head(s)

- **Performance parameters**

  • Printing:
  - On any support, in all positions
  - Up to 1024 characters per message
  - 1 to 4 lines per jet
  - 1 to 2 jets per printer
  - One single or twin-jet head per printer
  - Character height depends on head type and options - contact Imaje
  - Choice of character fonts: 5, 7, 9, 11, 16, and 24 dots
  - Possibility of printing all types of characters and graphics
  - Possibility of creating symbols
  - National characters: Arabic, Norwegian, Swedish, Spanish, Greek, Cyrillic, Hebrew
  - Inversion of character reading and printing directions

  • Head to object distance:
  - G head: 10 mm (0.39") or 30 mm (1.18") depending on font used
  - M head: 8 mm (0.32") or 20 mm (0.79") depending on font used

  • Max. speed :
  - G head: up to 5.4 m/s (1063 ft/mn) depending on font used
  - M head: up to 3.6 m/s (708.7 ft/mn) depending on font used

- **Ink**
  - Color:
    - See ink catalog
- **Standards compliance**
  - EMC:
    - Emission EN55011 - Class B
      FCC - Class B
    - Immunity IEC 1000-4-2 (10 Kv)
      IEC 1000-4-3 (10 v/m)
      IEC 1000-4-4 (2 Kv)
      IEC 1000-4-5 (2 Kv)
  - EC conformity
    - Declaration of conformity with EC machine and EMC directives
- **Max. noise level**

  < 60 db A

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1 Consumables

1.1 Definition

The term "consumables" refers to products consumed during printing or used to ensure correct printer operation. The consumables include:

- **Ink:**
  Used for printing.
  The formula contains all the ingredients needed for:
  - stability in the container (expiry date) and in the machine,
  - printing performance (adhesion on a given surface, resistance to specific constraints).
  It may be presented ready for use or as several components to be mixed.

- **Additive:**
  Used to correct the viscosity of the ink.
  Its composition strictly matches the operational requirements of the ink.

- **Cleaning solution:**
  Used for printer maintenance (head cleaning, etc.).
  Its composition is compatible with the ink and additive used.

- **Rinsing liquid:**
  Used on specific printers.
  Its composition enables various maintenance operations to be performed.

- **Anti-clogging liquid:**
  Used for specific inks.
  Its composition prevents the ink drying within the cannon during a printer shutdown.

1.2 Sales units

Depending on the type of ink and additive, Imaje offers packs of 4 or 6 units and starter kits containing ink and additive.

1.3 Labeling

Labeling serves three purposes:

- Identify the supplier, giving the address and contact details.
- Inform the user about the product.
  - article reference,
  - manufacturing batch number: this should be quoted if you need to contact our Technical Support department,
  - expiry date: date guaranteeing original product quality.
- Inform the user about the specific risks due to the substances in the ink, such as inflammability, irritation of eyes, etc.

2 Consumables and the application

The customer is solely responsible for qualifying the intended application. To help existing and prospective customers qualify their applications (including the ink, ink jet equipment, nature of surfaces, manufacturing process, printing specifications, etc.), Imaje makes a wide range of printers and inks available for producing print samples.

3 Consumables and the printer

3.1 Ink usage specification

This document is essential, and can be obtained from our sales offices.

The sheet informs the user about the operating parameters (viscosity, jet speed, etc.) and 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

The ink consumption over a given period depends on the number of characters printed per object, the number of objects printed during this period, the font (matrix, bolderization) and the nozzle diameter.

Additve consumption depends primarily on the number of hours of operation and the ambient temerature.

4 Consumables and safety

Safe use of Imaje consumables implies knowledge of some of the corresponding physical and chemical properties as well as the safety recommendations for storing, handling and using the products.

All this information is available on a safety data sheet, available by request from our sales offices.

Please read these sheets before using the products.

NOTE	**The presentation and content of the Safety Data sheets comply with EEC Directive 67/548 and the OSHA (Occupational Safety and Health Administration) nomenclature (through the HCS = Hazard Communication Standard).**

The safety data sheets include all the following information.:

- Identification of the substance and manufacturer
- Composition / information on ingredients
- Hazard identification
- First aid measures
- Fire-fighting measures
- Accidental release measures
- Handling and storage
- Exposure controls / personal protection
- Physical and chemical properties
- Stability and reactivity
- Toxicological information
- Ecological information
- Disposal considerations
- Transport information
- Regulatory information
- Other information

For:

- Operators and technicians
- Works health & safety committee
- Occupational Medecine doctors
- Transport companies
- Emergency services
- Warehouse staff

5 Consumables, the printer warranty and public liability

Our consumables are specially designed for use with Imaje printers and produce optimum results in terms of convenience of use and consumption levels.

The use of any consumable products other than those supplied by Imaje shall render the equipment warranty null and void and result in the exclusion of any claims concerning impaired performance potentially causing production stoppages.

Manual updates

- Revision index A corresponds to the first edition of this manual.
- The revision index changes with each update.
- The modified pages are shown in the table below. This gives the history of updates since the first edition.

Date of issue	Document revision index	Software index	Pages modified
05/2001	A0	D80/A80	First edition
11/2002	B0	D8x/A9x	All

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