

Troubleshooting File



S 7 Range

Small character
ink-jet printing

S7 Prima

S7 Sigma

S7 Mega

S7 Supra



A27567 - A0



A DOVER COMPANY



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Preliminary instructions





Preliminary instructions



ENG

Before starting work, please read these instructions and the materials safety data sheet (MSDS) for the consumables used.

Disconnect the printer from the electrical source before opening it or changing any of its components.

Liability

Imaje shall not be held responsible if the safety instructions are not followed, nor more generally if elementary safety rules are not applied when using and servicing Imaje equipment.

This equipment is certified to comply with the department of labour regulations in force on the date of manufacture.

Any consequences of modifications or repairs shall be the sole responsibility of the person carrying them out.

The same applies to use not complying with Imaje specifications.

All Imaje printers have safety labels that meet the safety standards governing printer use compliant with Imaje recommendations.

Any modification carried out may be counter to printer compliance and the relevant safety standards.

Therefore, Imaje cannot be held liable for any malfunction or damage caused by any modification of the use recommended by Imaje or for any incident arising from use of the printer for any purposes other than those for which it is designed. It is the sole responsibility of the user to take the precautions required by any use to which he or she puts the printer.

Health / Hygiene

Please read the safety data sheet (MSDS) for the consumables used.

For certain consumables:

- Wearing contact lenses when handling these consumables is strictly prohibited.
- Ink-resistant gloves and safety goggles are recommended during filling and cleaning operations.

Max. noise level < 60 db A.

Fire prevention

It is essential to comply with the instructions on the safety data sheet (MSDS) for the consumables used.

For continued protection against possible fire, use only the following ink/solvent mixture: KETONE / ALCOHOL / WATER / ESTER.

If your printer uses flammable ink or additive:

- Never leave recipients containing ink, additive or cleaning products, or ink-soaked rags (even dry) near the printer.
- Install a foam, CO2 or powder extinguisher immediately adjacent to the printer (maximum 10 meters).
- Never smoke near the printer. Affix a sign "NO SMOKING, FLAMMABLE INK" near the printer.
- Ensure that the printer is kept particularly clean, as dried ink deposits remain highly flammable.
- Drums of ink, additive and cleaning solution must be closed and stored in a ventilated room.

Environment

Operating temperature: +5°C to +45°C (+41°F to +113°F). Humidity: 0 - 90% RH with no condensation.

The use of certain inks may limit the temperature and humidity ranges (see the ink specification sheet).

The printer must not be used in explosive atmospheres.



Preliminary instructions

Installation

The printer must be installed in a ventilated location, away from any source of heat, flames or sparks.

The printer and print heads must be fixed with the attachment devices provided.

The printer installation on the production line must not generate any risks for staff.

The operator's work station faces the printer.

The printer must be connected to a single phase mains electricity network with earth, using the cable supplied with the printer. The standard plug on this cable must be easily accessible.

The electrical and pneumatic installations upline of the printer must comply with applicable regulations.

When the printer or a part thereof is attached to a stand, the stand must be connected to earth.

Earth all conducting parts not at a voltage reference and which are related to or close to the printer (metal frames, protective guards, etc.).

Use

The printer is designed for contact-free printing by projecting ink. Any other use of the printer is prohibited, and any consequences shall be under the entire responsibility of the user.

Consumables (inks, additives, cleaning products, servicing products) not produced by Imaje must not be used, and any consequences shall be under the entire responsibility of the user.

Other types of Imaje consumables should not be used without Imaje's written approval, and any consequences shall be under the entire responsibility of the user.

Handling

When the printer contains consumables, it should not be tilted and should only be moved vertically.

Totally drain the printer before moving it to a non-vertical position.

The printer should be moved using the handles provided.

Servicing

Disconnect the printer from the mains before any operations requiring components to be removed or exchanged.

Use appropriate tools for any work on the electrical and hydraulic circuits.

After each maintenance operation, the recipients used should be emptied and cleaned. Do not leave rags soaked with consumables near the printer.

We recommend that repairs be carried out by staff who have received technical training from Imaje.



General





General

■ Ink jet printing

Ink jet printing enables contact-free marking or dating of items.

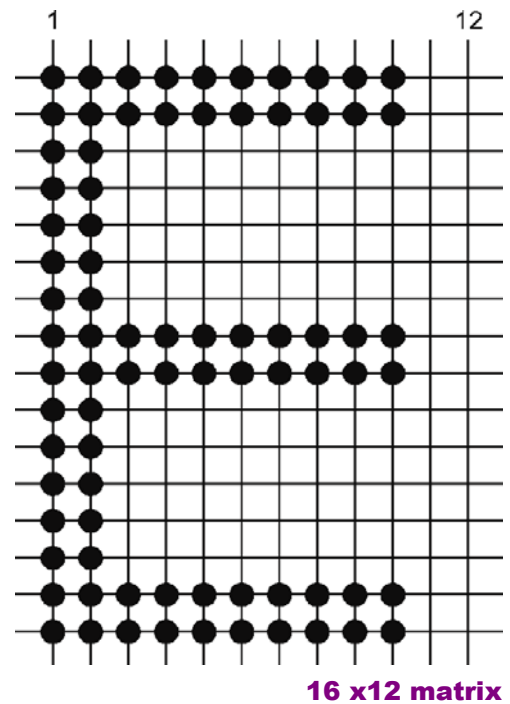
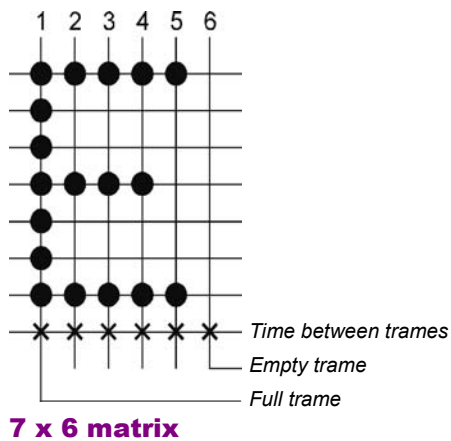
The principle used by IMAJE printers is the "deflected continuous jet" principle with dot-matrix type characters.

Dot-matrix characters

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

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

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





General

■ Ink jet printing (Cont'd)

Deflected continuous ink jet

The printer head is supplied with pressurized ink.

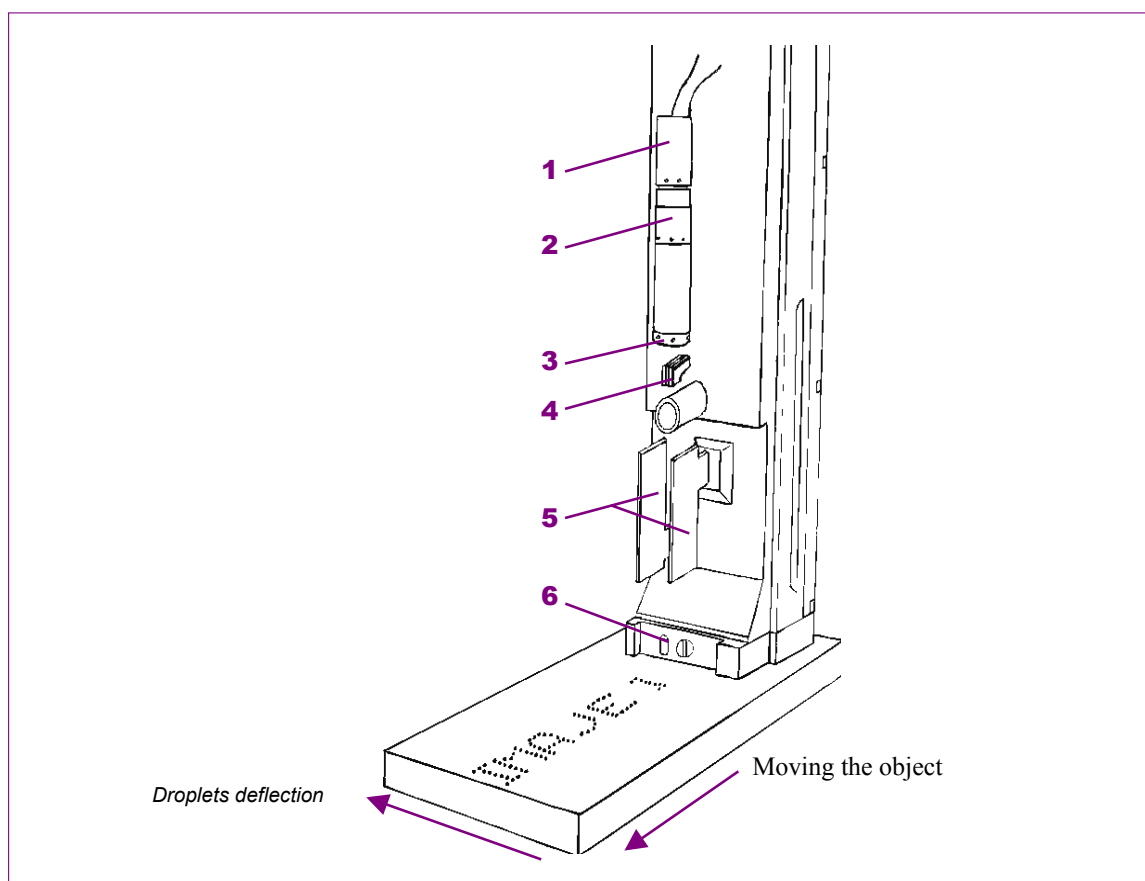
The ink arrives in a cannon (2) with a hole (nozzle) (3) through which the ink is ejected to form a jet.

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 re-used.

The droplets used for printing are charged 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 distance of a droplet depends on its charge value.

The droplets are deposited on the item to be printed. A character is formed frame by frame; these frames may be full, partial or empty. Moving the object perpendicular to the deflection plane enables the frames to be offset from each other.



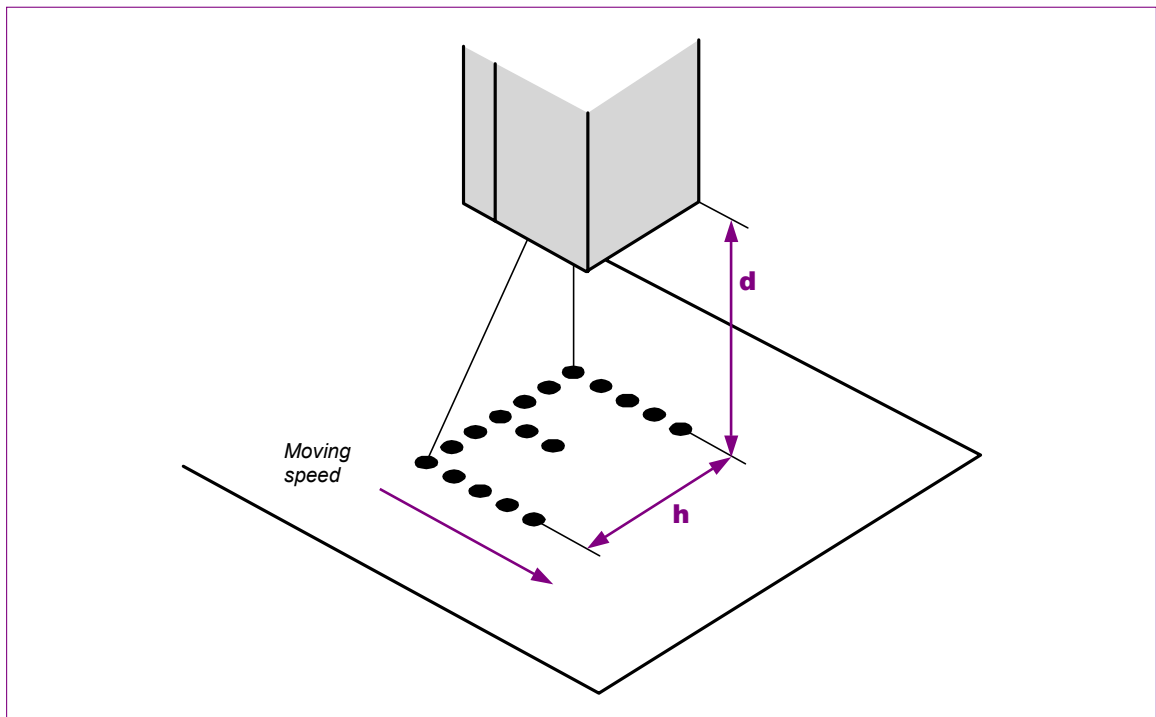


General

■ Algorithms

The algorithm is the calculation method which, depending on the printing parameter (head/object distance, printing speed, head type), makes it possible to calculate the correct charge value for each droplet.

The printing result (height, resolution, quality) will depend on the type of algorithm, the type of matrix, the head/object distance (d) and the printing speed.





General

■ Algorithms (Cont'd)

Example of algorithms

■ M head

Algorithms	d	Type of matrix	Maximum printing speed (resolution of 4.5 dots/mm)
Quality	20	11 x 8 dots	376 mm/s
		7 x 6 dots	557 mm/s
	8	24 x 21 dots	233 mm/s
		16 x 12 dots	368 mm/s
		11 x 8 dots	525 mm/s
		7 x 6 dots	796 mm/s
		5 X 5 dots	1645 mm/s
Rapid	8	24 x 21 dots	574 mm/s
		16 x 12 dots	914 mm/s
		11 x 8 dots	1073 mm/s
		7 x 6 dots	2270 mm/s
		7 x 6 dots	2640 mm/s in 6 drops
		5 X 5 dots	3011 mm/s
		5 X 6 dots	3700 mm/s in 4 drops

■ G head

Algorithms	d	Type of matrix	Maximum printing speed (resolution of 2.8 dots/mm)
Quality	30	16 x 12 dots	391 mm/s
		7 x 6 dots	970 mm/s
	10	24 x 21 dots	372 mm/s
		16 x 12 dots	603 mm/s
		11 x 8 dots	930 mm/s
		7 x 6 dots	1395 mm/s
Rapid	10	24 x 21 dots	790 mm/s
		16 x 12 dots	1313 mm/s
		11 x 8 dots	1810 mm/s
		9 x 6 dots	2230 mm/s
		7 x 6 dots	3180 mm/s
		7 x 6 dots	3720 mm/s in 6 drops
		5 X 5 dots	4400 mm/s
		5 X 6 dots	5500 mm/s in 4 drops

NOTE

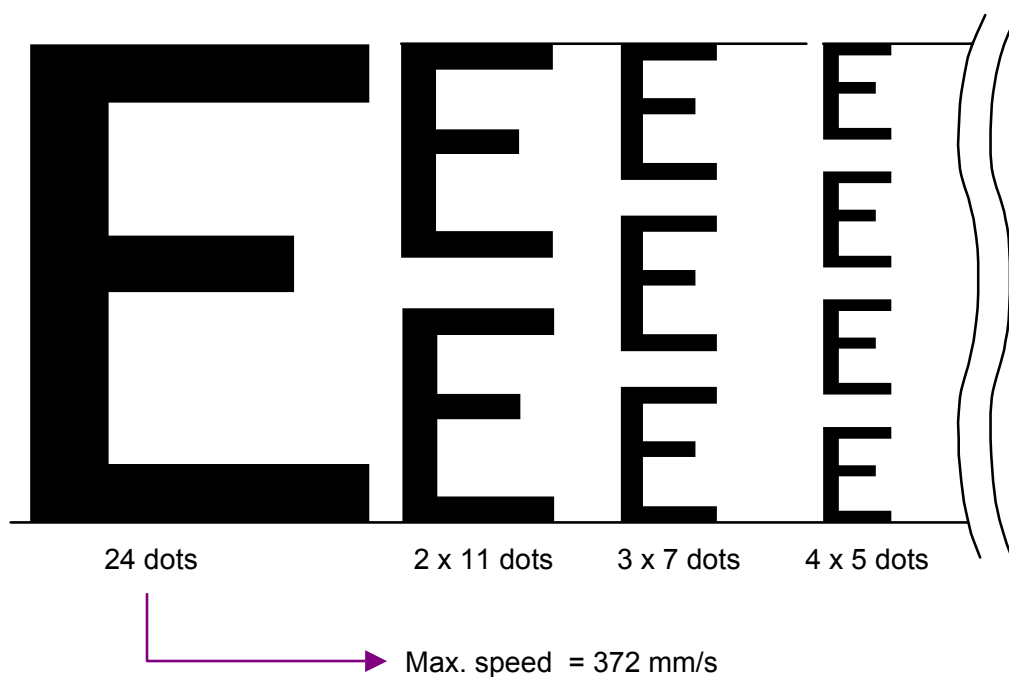
These data correspond to a monojet machine equipped with "industrial latin" fonts.



General

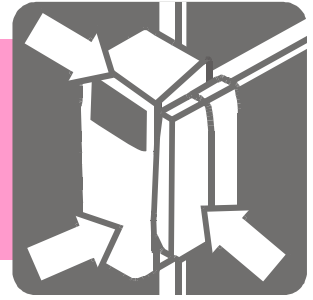
■ Algorithms (Cont'd)

Example of a G head monojet with industrial latin fonts.



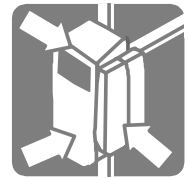
The example is based on fonts of 5, 7, 11 and 24 dots and the maximum speed is determined by the 24 dot algorithm.





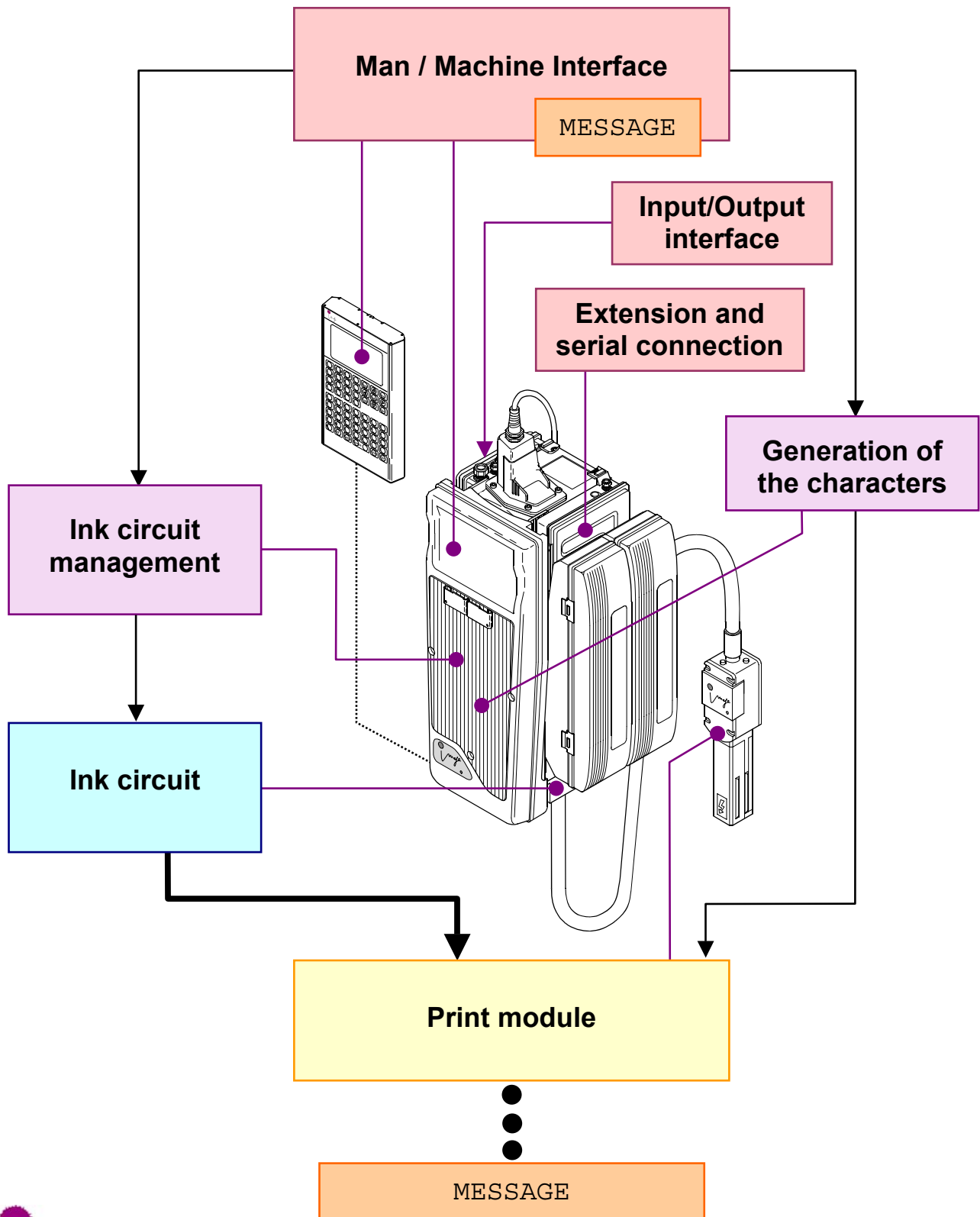
Introduction to the printer





Introduction to the printer

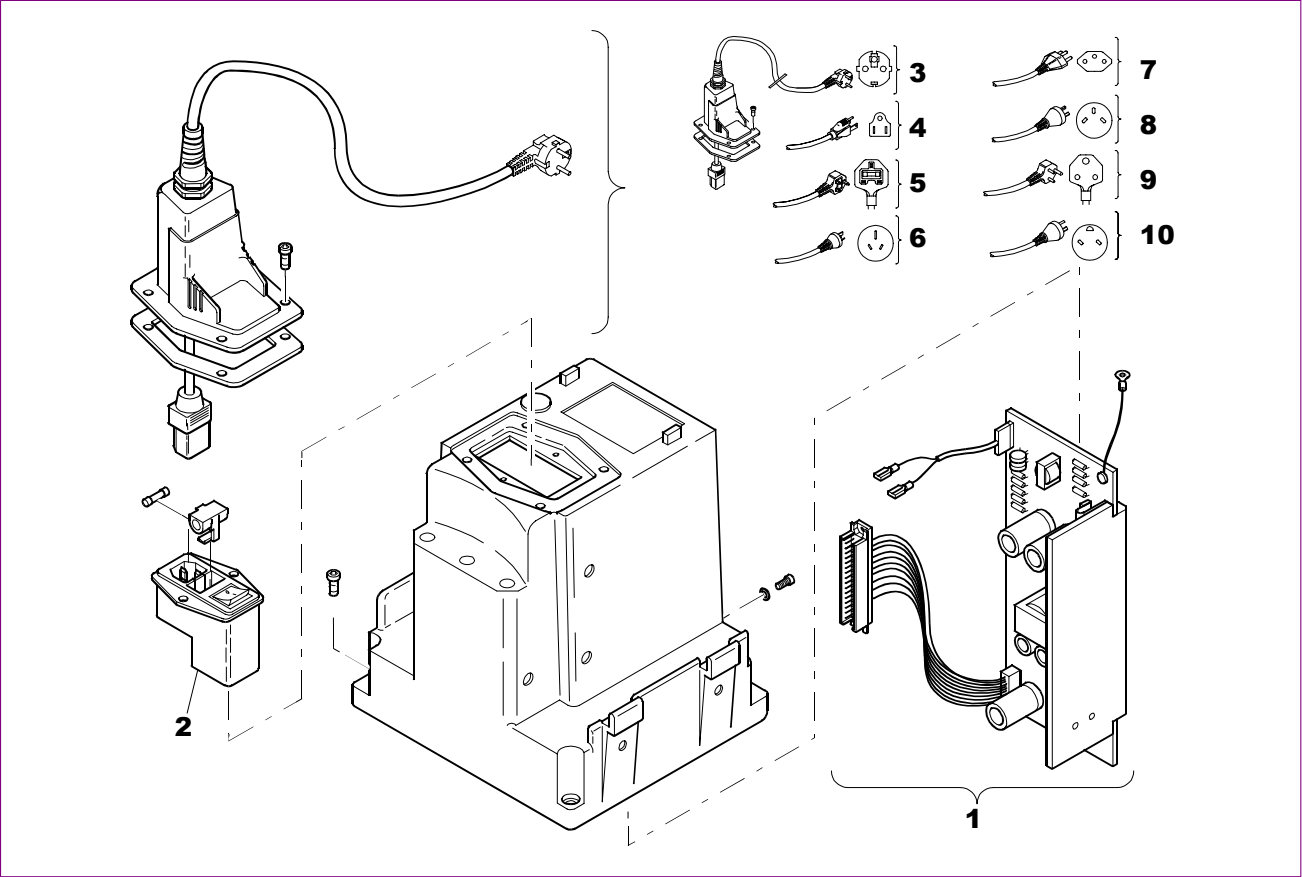
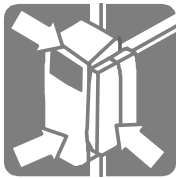
■ General synopsis



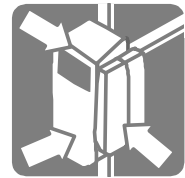


Introduction to the printer

■ Supply module

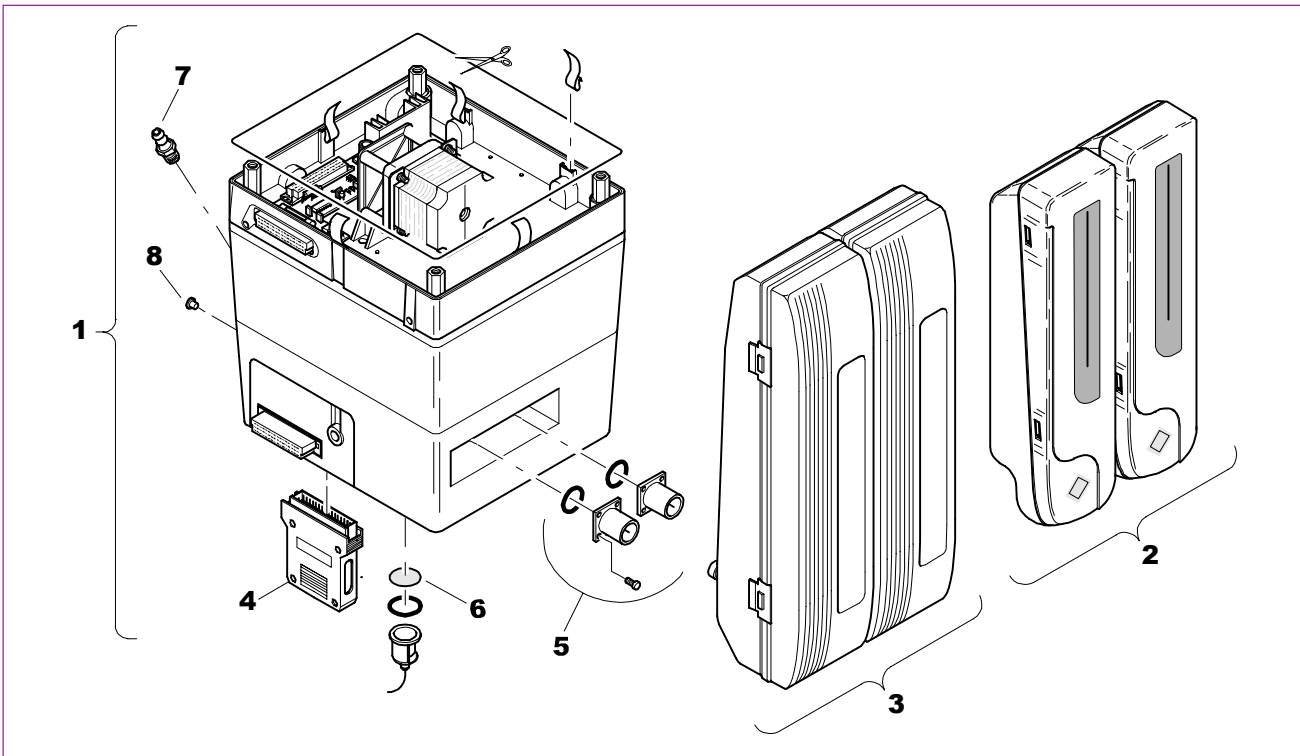


Item	Description
1	Board - Power supply 110V / 220V - with cables
2	Switch - Power filter with fuse
3	Power cord - CEE standard
4	Power cord - US standard
5	Power cord - UK standard
6	Power cord - Oceanic standard
7	Power cord - Israeli standard
8	Power cord - Swiss standard
9	Power cord - India & Southern African standard
10	Power cord - Danish standard



Introduction to the printer

■ Ink module and cartridge holders



Item	Description
1	Ink module
2	Cartridge holder (x2) - Small capacity
3	Cartridge holder (x2) - large capacity
4	Printing module simulator (ink circuit draining)
5	Duct holders
6	Grid - filtered 14 µm
7	Filtered connection - For E1 type ink module
8	Plug (x20)

Ink module

■ Each ink module uses a different type of ink.

It is highly inadvisable to change a printer's ink type.

CAUTION

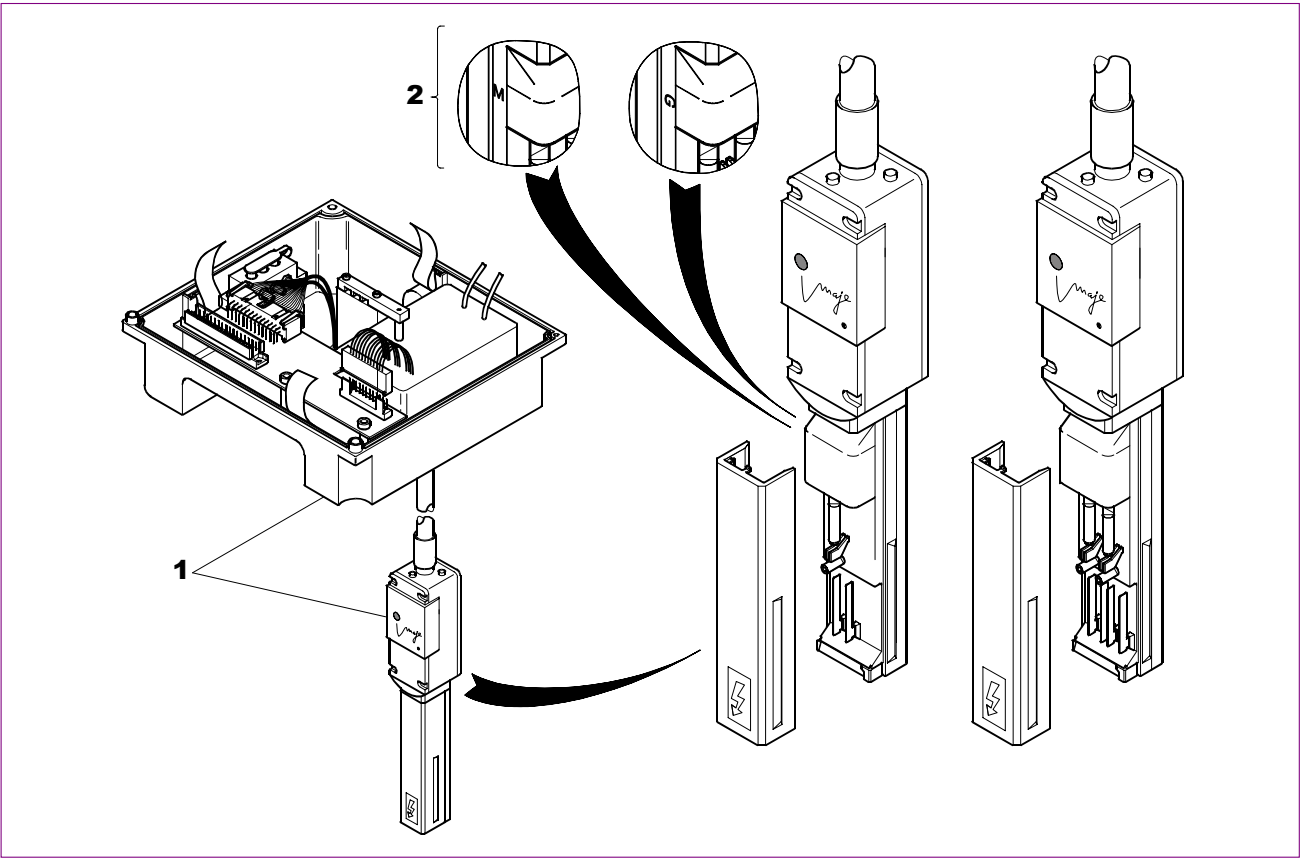
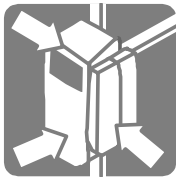
Each ink type has its corresponding ink module

The ink specifications indicate the reference of the ink module that you should order.
This sheet, SP xxxx (xxxx being the ink reference), is available from your Imaje representative.



Introduction to the printer

■ Print module



Item	Description
1	Print module
2	Mark for the head type - M or G

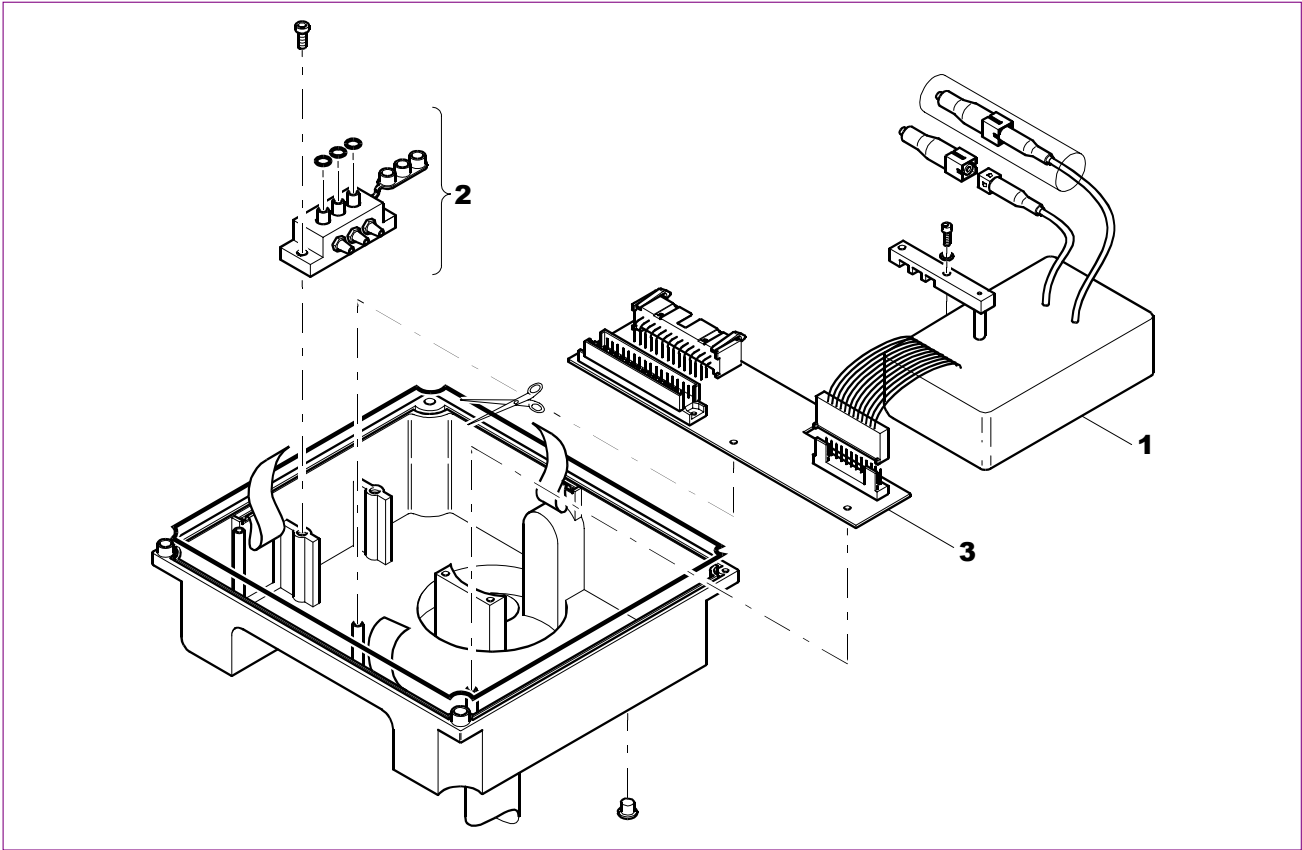
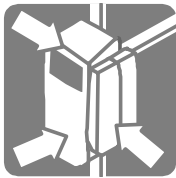
CAUTION

Each ink type has its corresponding printing module.



Introduction to the printer

■ Print module - Base

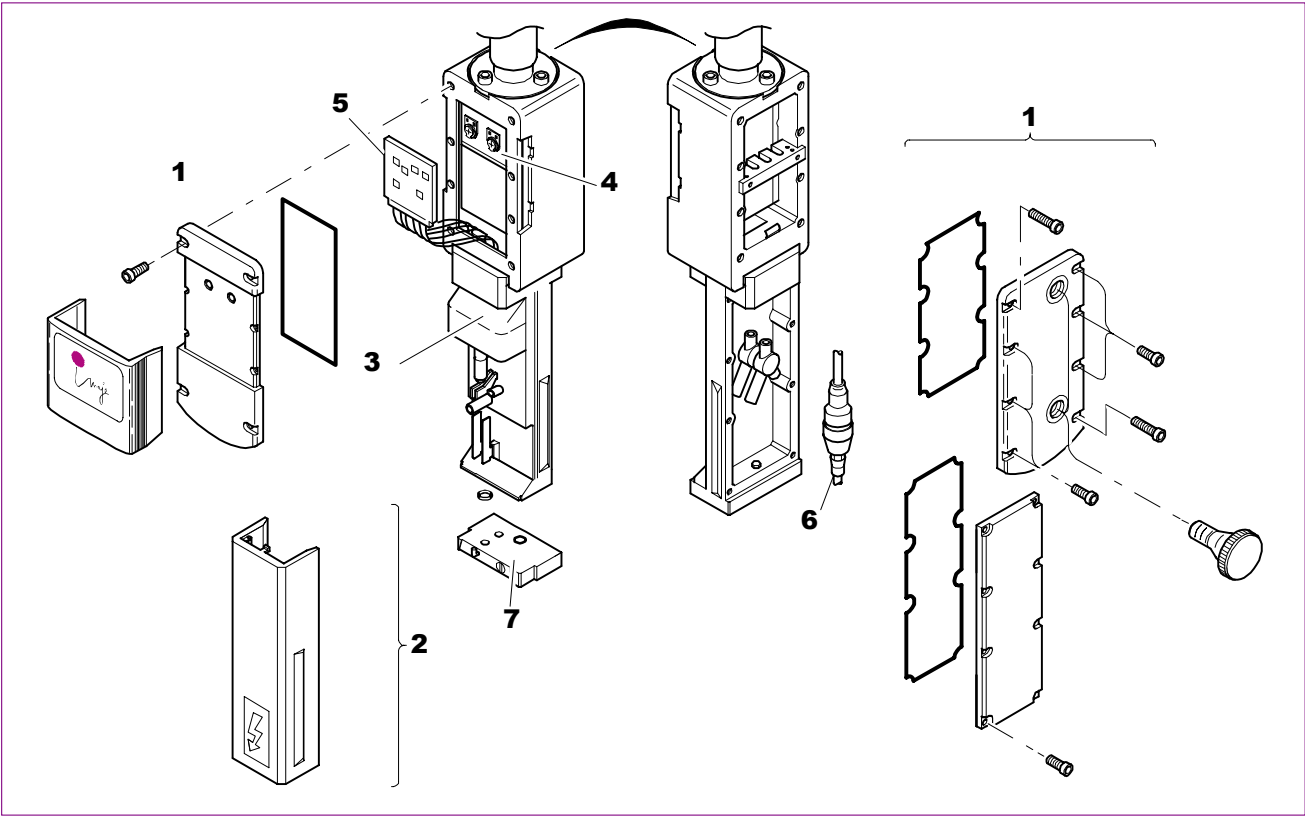
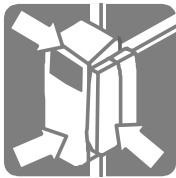


Item	Description
1	EHV block kit
2	Hydraulic collector
3	Board - head connection



Introduction to the printer

■ Print module - Head

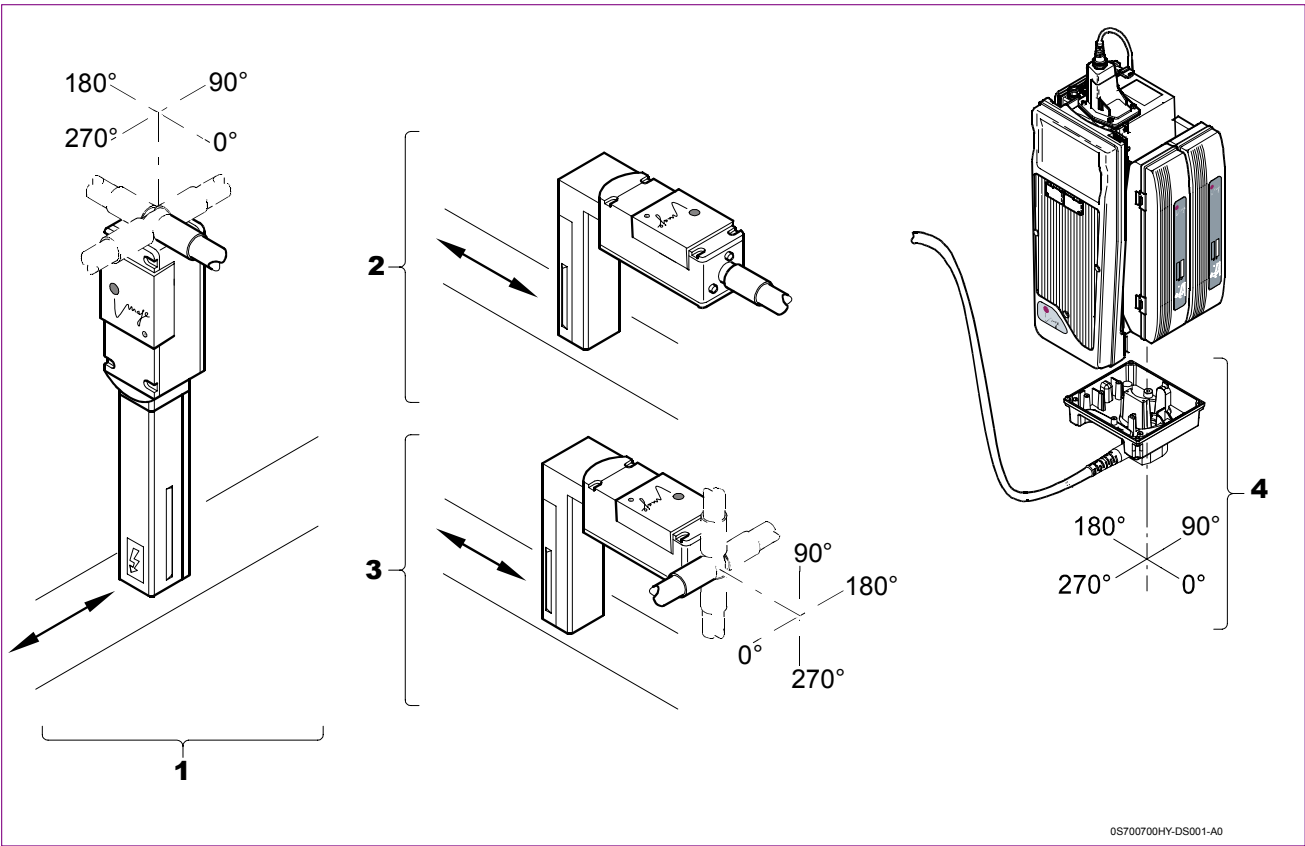
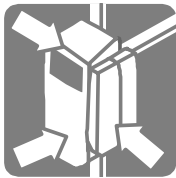


Item	Description
1	Fitted cover
2	Head cover
3	Protector - resonator
4	Board - Resonator supply
5	Board - Phase detection amplification
6	One way valve
7	Gutter block



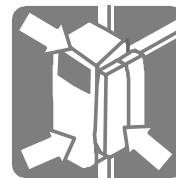
Introduction to the printer

■ Print module - Head options



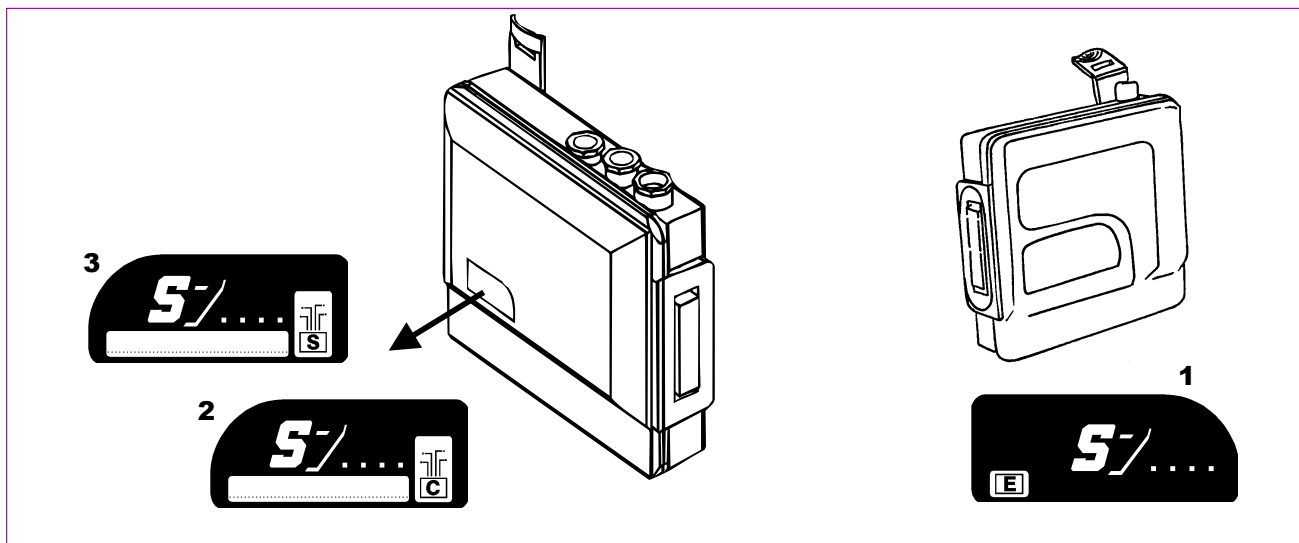
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Item	Description
1	Option - Straight head and angled conduit
2	Option - angled head and Straight conduit
3	Option - Angled head and angled conduit
4	Option - Angled under printer



Introduction to the printer

■ Cassettes - Industrial interface and Extension



Item	Description
------	-------------

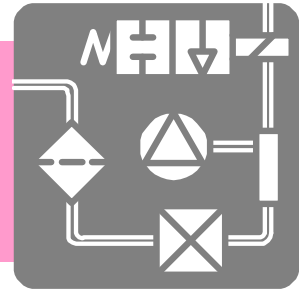
1	Cassette - Extension
2	Cassette - Complete industrial interface
3	Cassette - Simple industrial interface

	Cassette - Extension	Cassette - Complete industrial interface	Cassette - Simple industrial interface
Supra	Depending on the cassette model Extension of the printer possibilities ▪ Fonts (Curveprint) ▪ Printing speed ▪ Additional options Saving ▪ Message library Serial link interface ▪ RS 232C ▪ Current loop ▪ RS422	Connections : ▪ Cell ▪ Tacho. ▪ Alarms + ▪ Message Direction inversion ▪ Counter Initialisation ▪ Message Selection ▪ Parallel Interface ▪ Message Incrementation ▪ Programmable outputs	Connections : ▪ Cell ▪ Tacho. ▪ Alarms
Mega		No	
Sigma	No	No	
Prima	No	No	

CAUTION

The connection or disconnection of these cassettes should only be done only when the printer is OFF (disconnected or switch open).





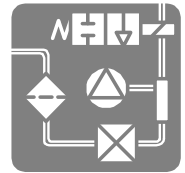
Hydraulics



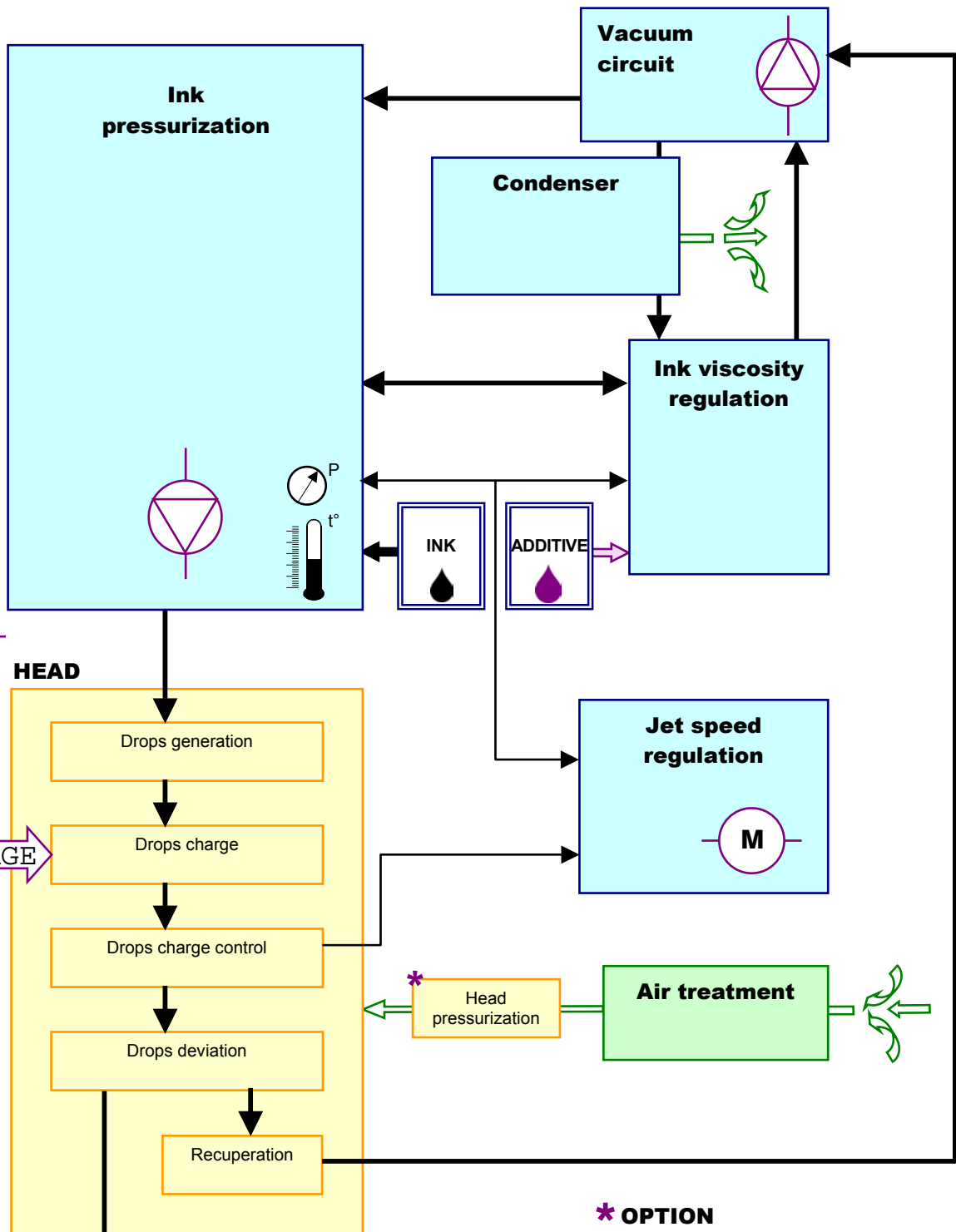


Hydraulics

Synoptic



INK MANAGEMENT



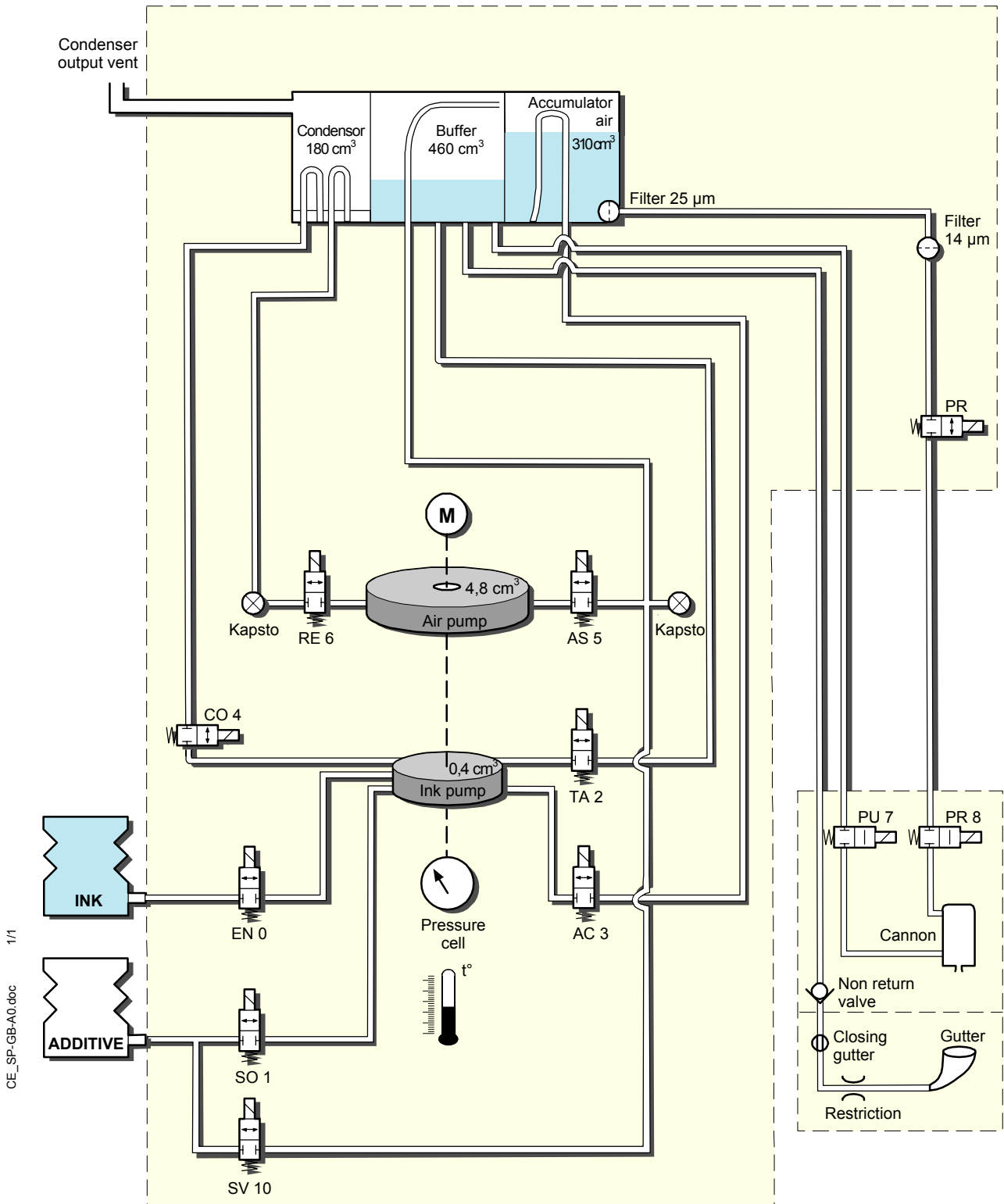
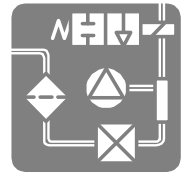
* OPTION

- Ink circulation
- Additive circulation
- Air Circulation



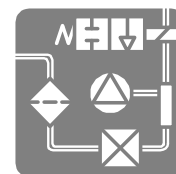
Hydraulics

■ Ink circuit diagram "solenoid valve"

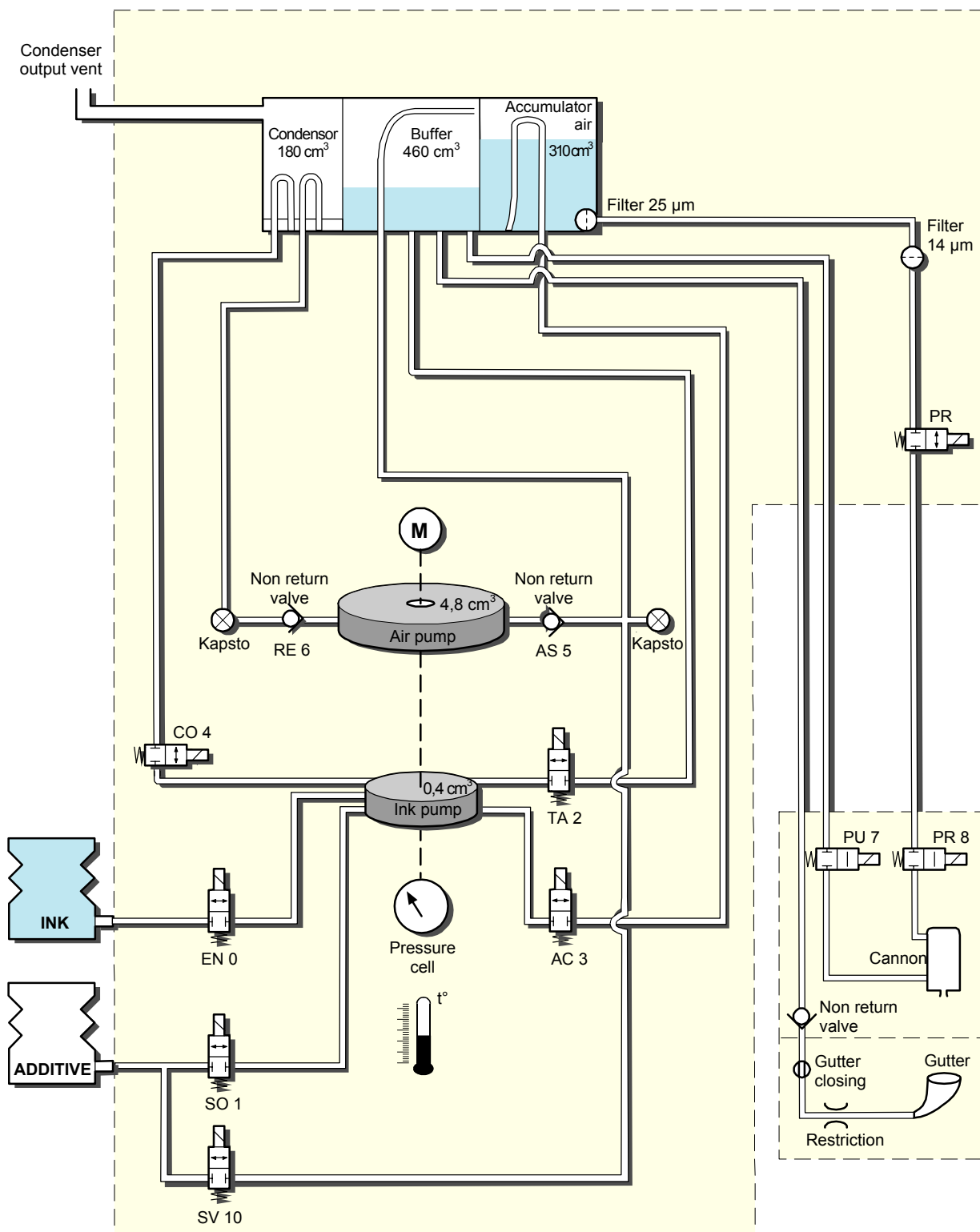


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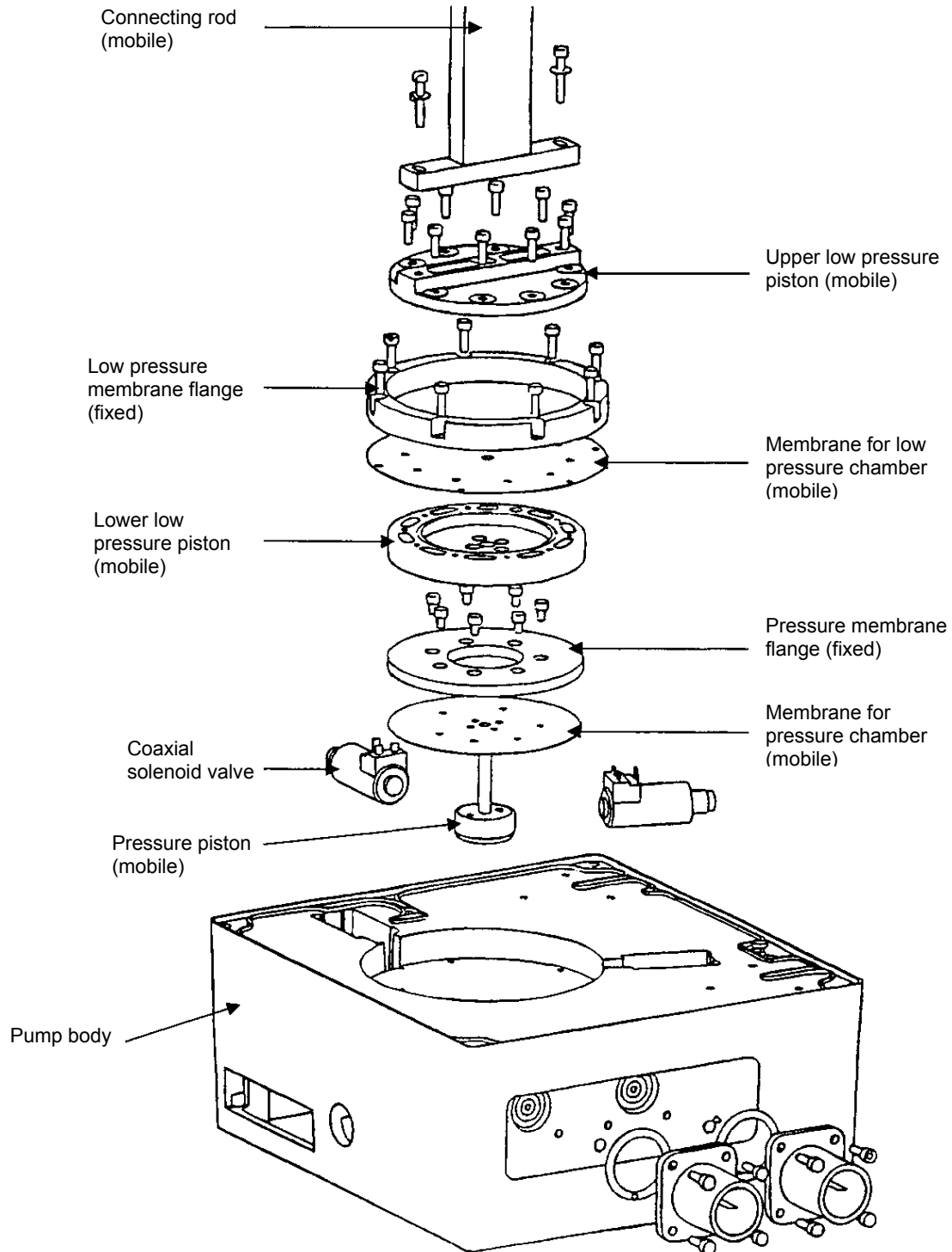
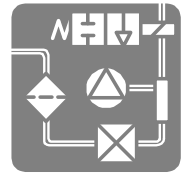
■ Ink circuit diagram "Non-return valve"





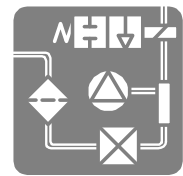
Hydraulics

■ Detailed view of the pump



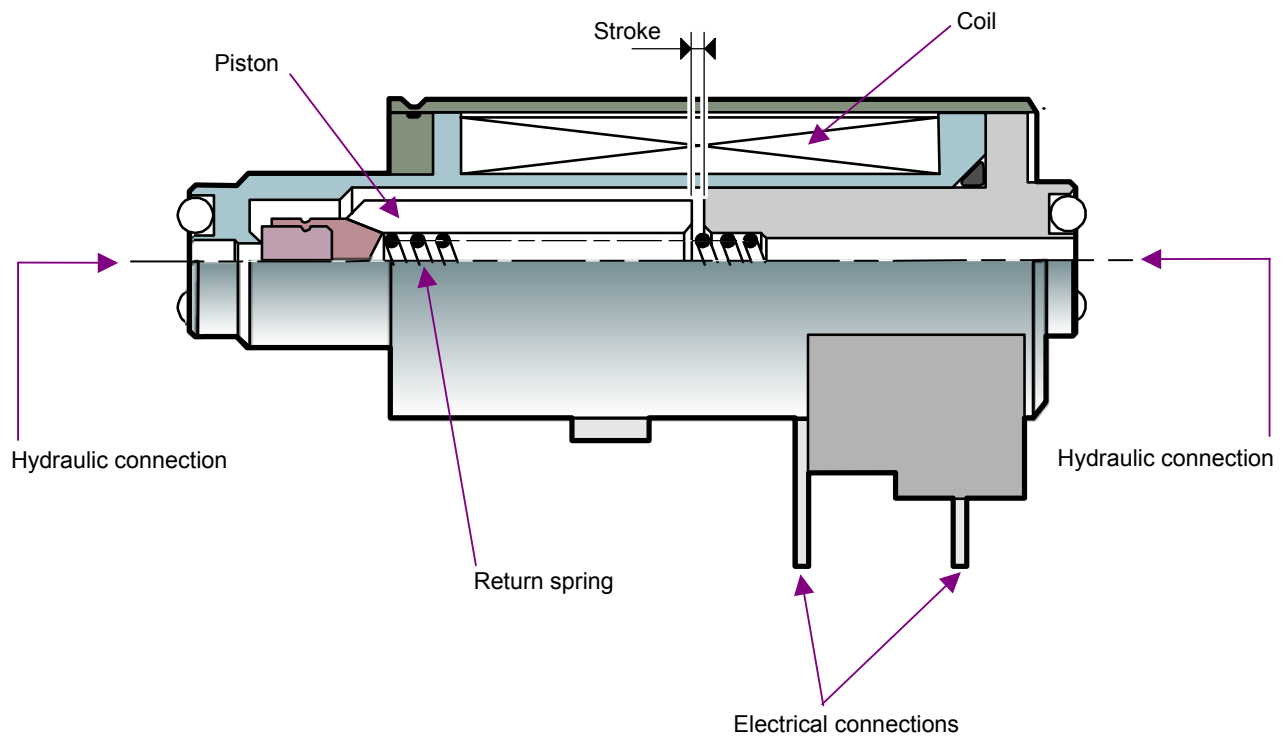
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Hydraulics

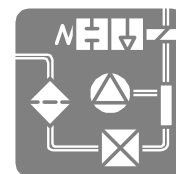
■ Detail of coaxial solenoid valve



All the solenoid valves of the S7 printer are of the "normally closed" type. Under the influence of an electrical opening signal (24 volts for 8 milliseconds), the solenoid valve piston moves, thus allowing the fluid (air, ink or additive) to go through. A hold signal (3 to 5 volts) is applied for the time period during which the solenoid valve must remain open. When the electrical signal disappears, the solenoid valve closes back under the influence of the return spring.

REMARK

The opening signal is held longer at 24 volts when the solenoid valves are manually unblocked ("Test the solenoid valves" function).



Hydraulics

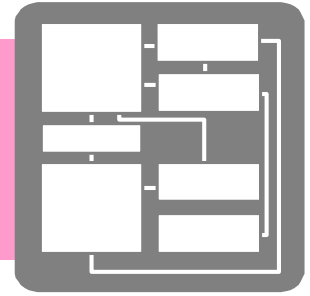
■ Ink circuit components

Components	Description
Stepping motor	By means of a connecting rod, this simultaneously drives the "ink" (or pressure) and the air (low pressure) pump.
Pressure cell	Measures the pressure or low pressure in the pump's ink chamber.
Pump membrane	Deformable seal between the piston and the pump body.
Ink filters	These guarantee fine filtration of the fluids which circulate in the hydraulic circuit, first at 25 and then at 14 micrometers.
Coaxial solenoids	Some of them convey ink and additive vapours (RE 6, CO4, AS5) while others convey the ink or additive.
One-way valves	A one-way valve is installed at the print head in the suction circuit in order to prevent ink from running back when the printer is stopped. Some versions of the Ink Management Module are equipped with one-way valves instead of the suction (AS 5) and exhaust (RE 6) solenoid valves.
Kapsto	Removeable, hermetic plugs which permit rapid access to solenoid valves RE 6 and AS 5 for maintenance purposes.
Hollow needle	Fast connection system: syringe-type needle between the cartridges of consumables and the ink circuit. Between them, the hollow needle and the cartridge capsule permit the connection, hermetic sealing and circulation of the liquid.
Connexion boards	Small boards which accommodate the pluggable connectors for the fast electronic connections between modules.
Condenser	This is the degassing tank for the low pressure pump. The condenser outlet takes the form of a free exhaust. However, this outlet can be connected to the "S7 bubble-through kit" in which a water column is used to filter the exhaust air from the printer.
Accumulator	This is a sealed tank for which the ink pump maintains: - the ink at the pressure necessary for the printer head, - an air pocket which compensates for the variations in pressure induced by the pump and the variations in the ink level
Buffer	This is a sealed tank in which the air pump maintains a negative pressure and sucks in ink from the recovery gutter. The recycling of the ink contained in the buffer to the accumulator is performed by means of the ink pump and the TA 2 and AC 3 solenoid valves.

1/1

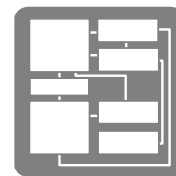
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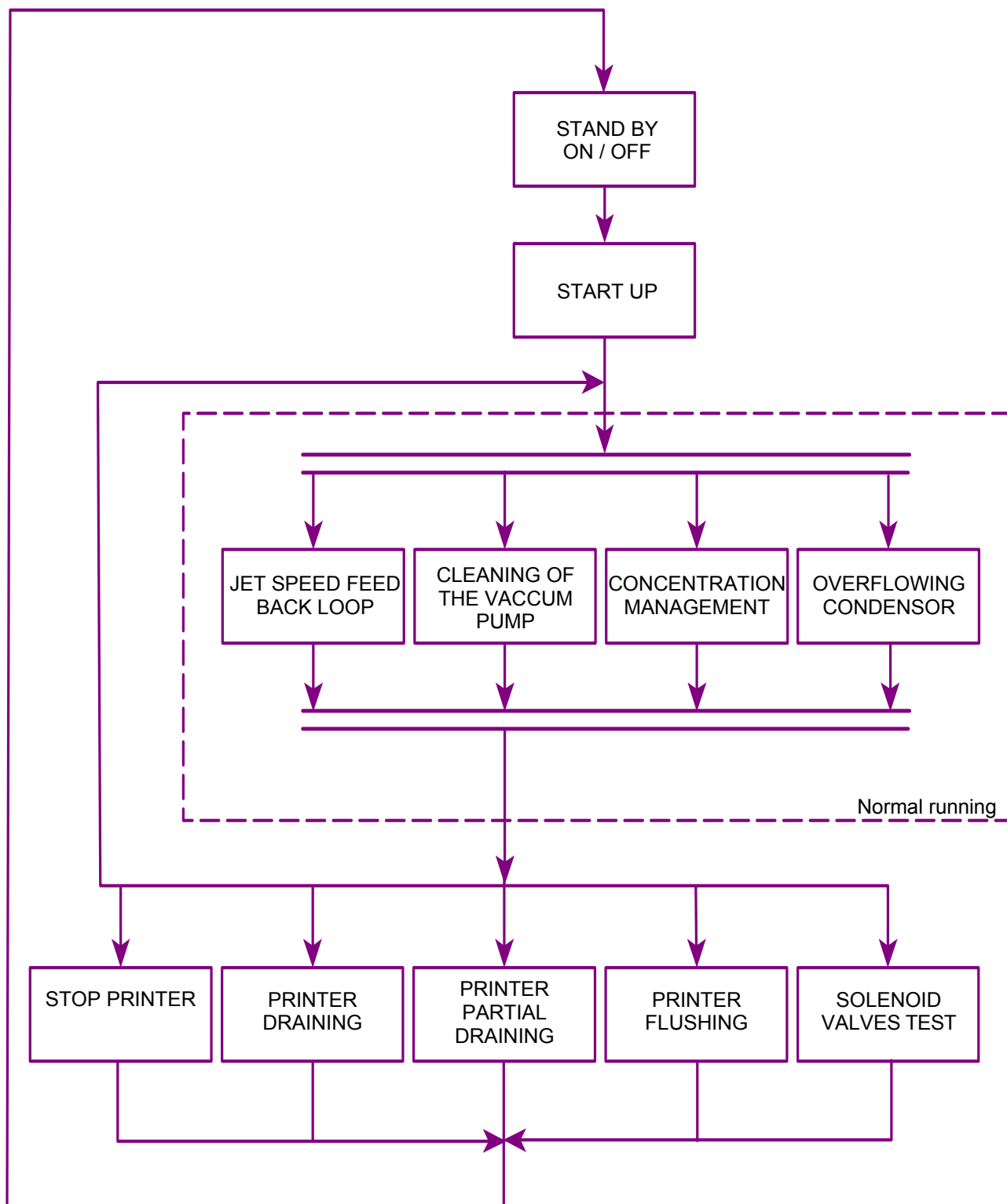
Principle flow charts

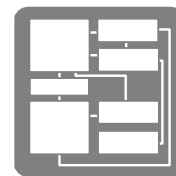




Principle flow charts

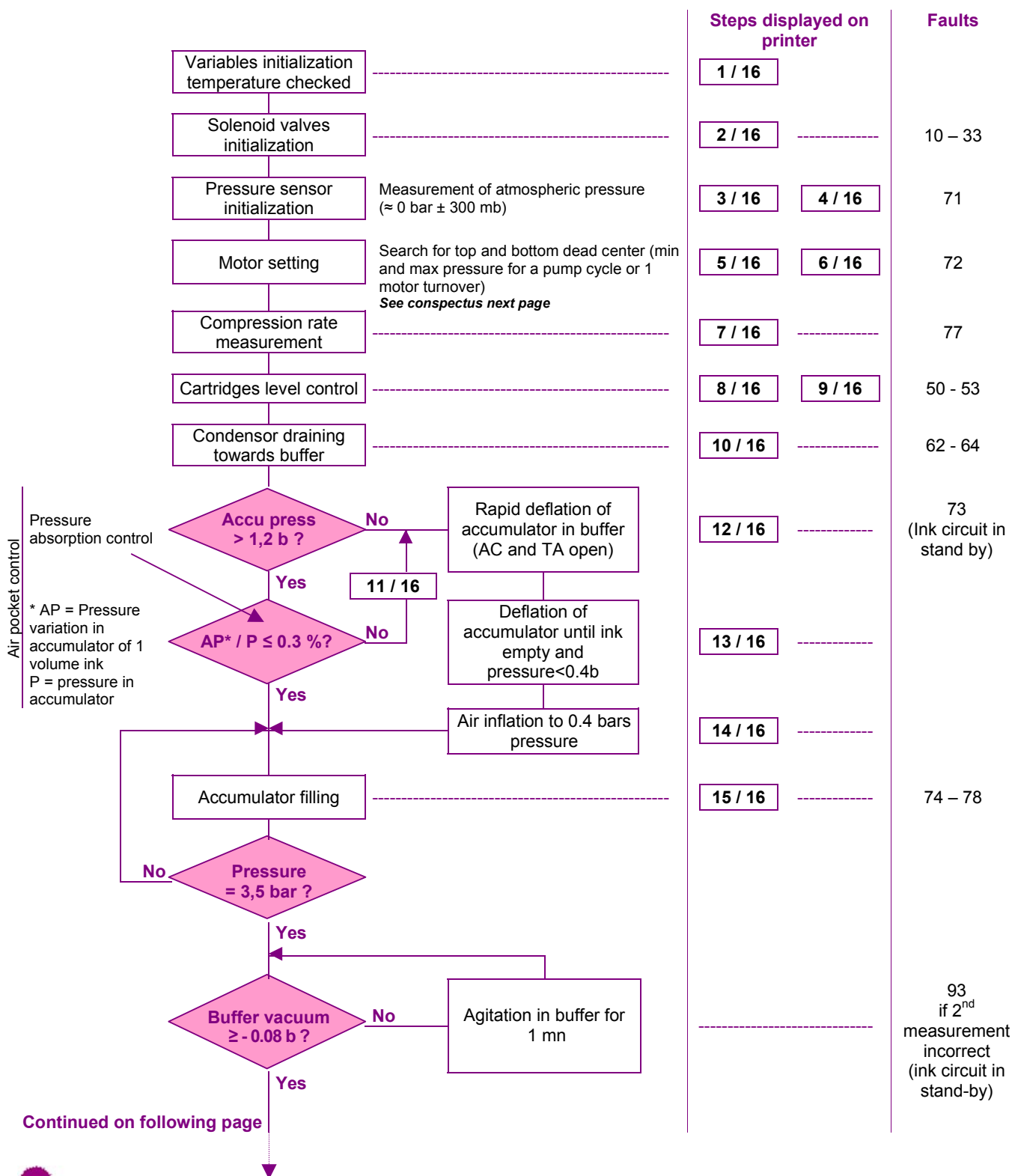
■ General

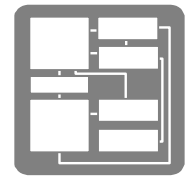




Principle flow charts

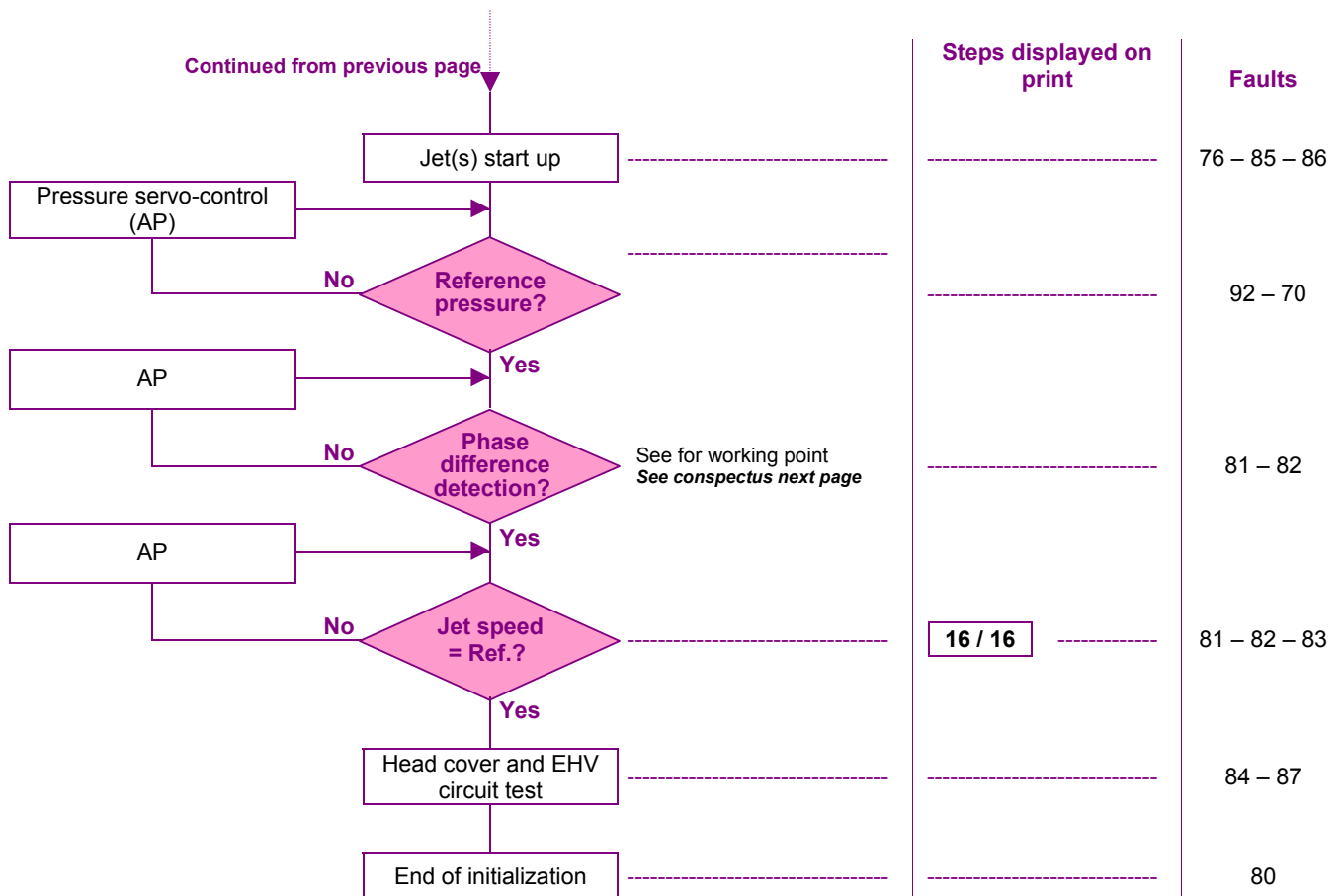
■ Printer start-up flow chart

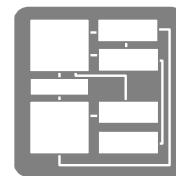




Principle flow charts

■ Printer start-up flow chart (continued)



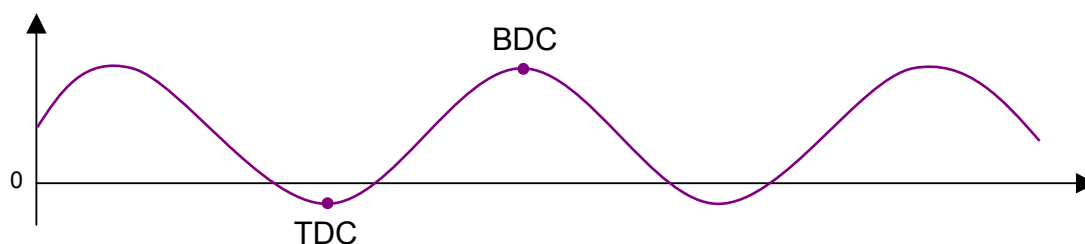


Principle flow charts

■ Printer start-up flow chart (continued)

Identifying the top and bottom dead centres

Pressure curve in the INK pump



In normal operation, the buffer tank is depressurised and the accumulator tank is pressurised.

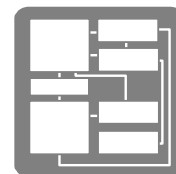
One of the functions of the ink circuit is to transfer ink from the buffer to the accumulator.

Before you open a solenoid valve, it is important that the pressure values on either side of the solenoid valve are approximately equal.

The ink processor regulates the timing of solenoid valve control to perform transfers without turbulence.

This is the general principle of operation of the ink circuit which contains five different reservoirs:

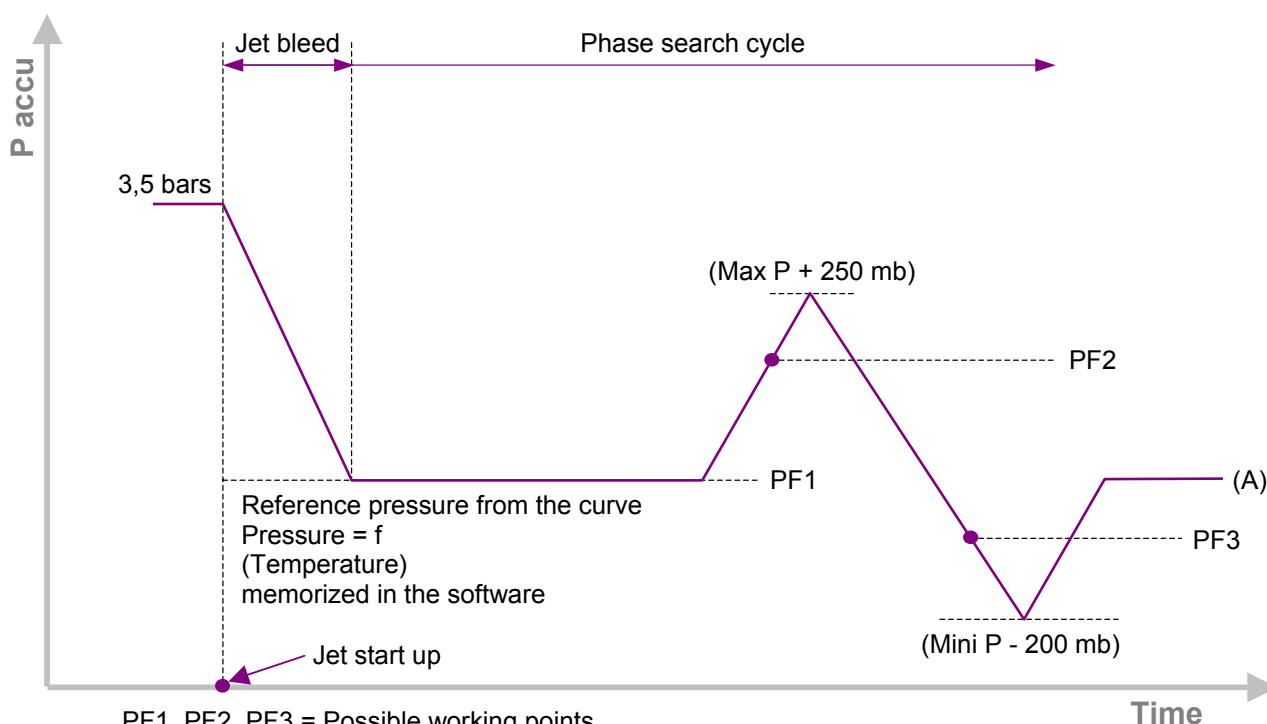
- Ink cartridge.
- Additive cartridge.
- Accumulator.
- Buffer.
- Condensor.



Principle flow charts

■ Printer start-up flow chart (continued)

Search for working point



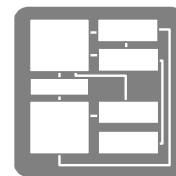
PF1, PF2, PF3 = Possible working points.
(A) = if no phase detection, faults 81 and/or 82.

■ Aim of this phase :

To be able to carry out a first "phase detection" and "jet speed" measurement in order to ensure the servocontrols of the pressure, jet speed and concentration as a function of the ink temperature.

■ Conduct of this phase:

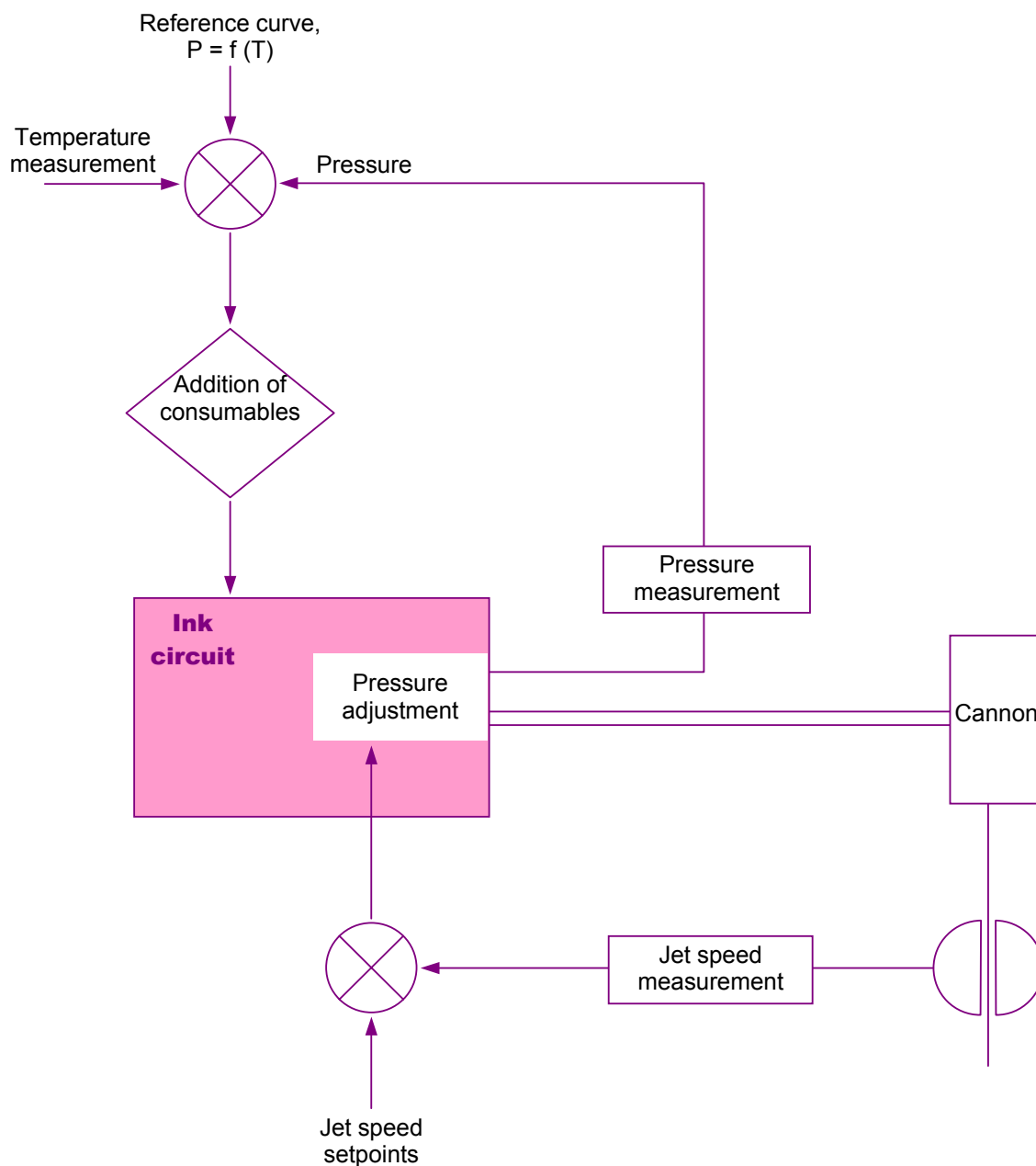
1. The pressure in the accumulator has increased to 3.5 bars.
2. The jet starts.
3. The pressure falls up to the reference pressure (memorised).
4. At this pressure, drop charge tests (drop control) and jet speed measurement tests are carried out.
5. If the "drop control" is possible, the software controls the jet speed and the ink concentration from this pressure. This pressure value is called PF1 Operating Point.
6. If the "drop control" is not possible, the software increases the pressure, searching for a PF2 operating point. Controls will then be done from this point.
7. If, during this pressure increase, no operating point is found, the software decreases the pressure, searching for a PF3 operating point.
8. If, during this pressure decrease, no operating point is found, the software declares the fault or faults 81 and 82.



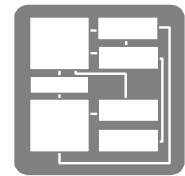
Principle flow charts

■ Normal running

Pressure servocontrol principle, jet speed, ink concentration



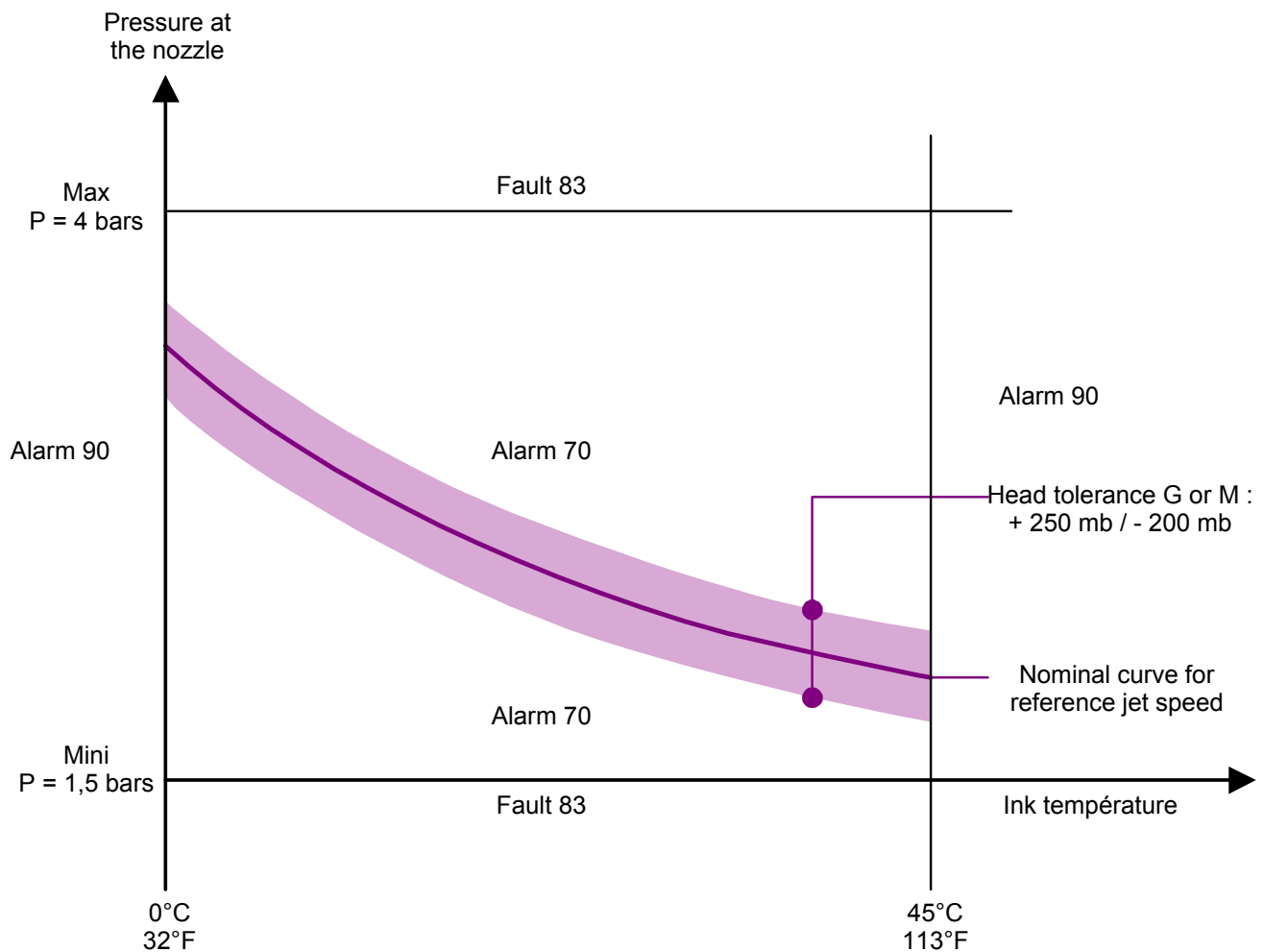
If the phase detection is not possible (for example in the event of dirty electrodes), the jet speed servocontrol is not carried out. Only the pressure is maintained at its setpoint for a maximum of 15 minutes. Beyond this time period, the ink circuit switches to stand-by.



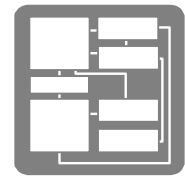
Principle flow charts

■ Normal running (Cont'd)

Pressure / temperature curve



Reference curve $P = f(T)$ of constant concentration
reference for an ink type and head type

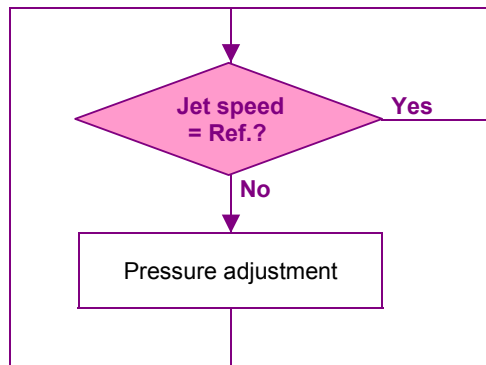


Principle flow charts

■ Normal running (Cont'd)

Permanent check flow charts

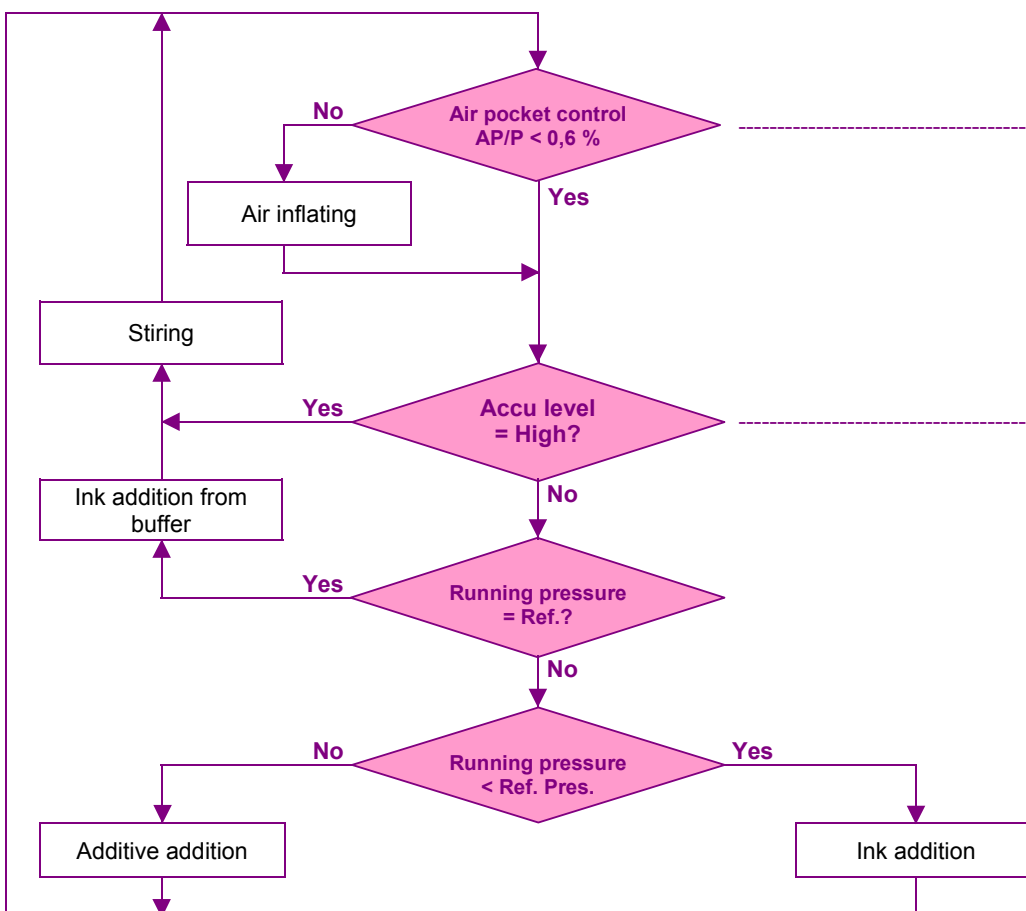
■ Jet speed feed back loop



Occuring faults

81 – 82 – 83– 88

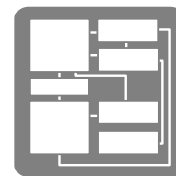
■ Concentration management



Occuring faults

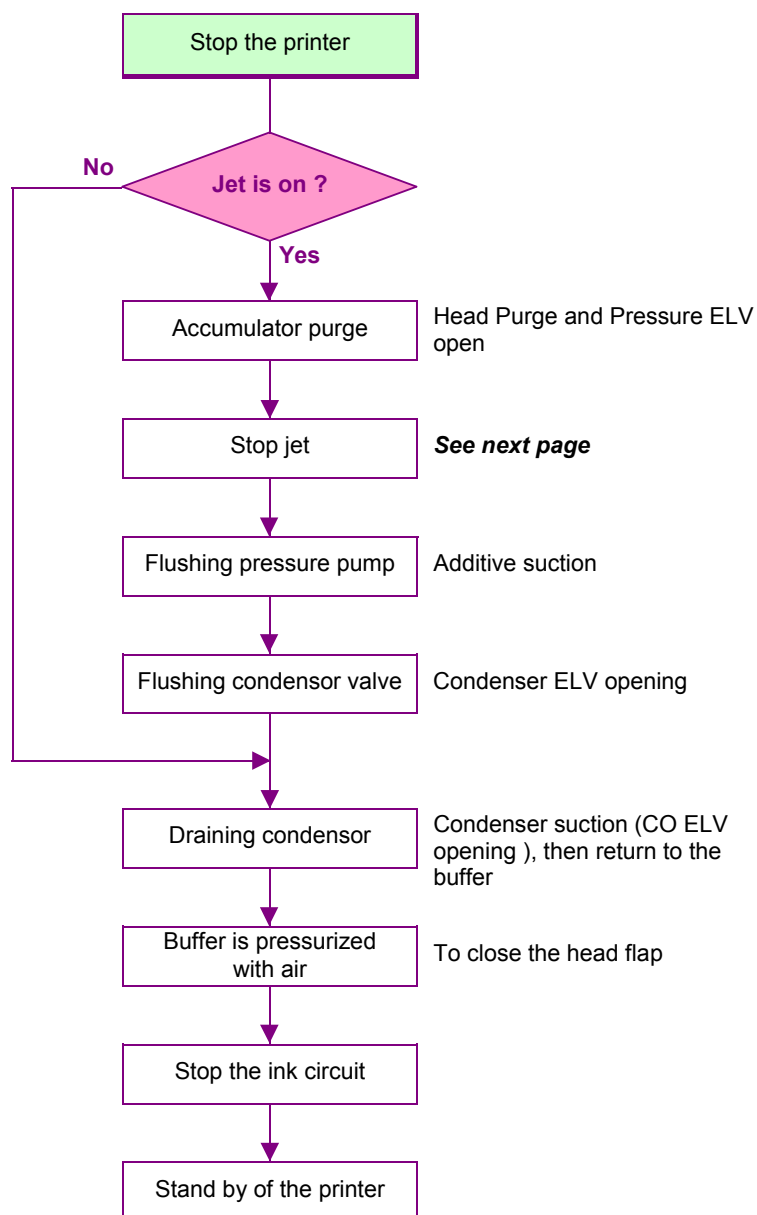
75 – 92

70



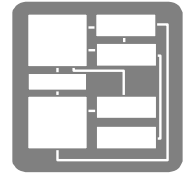
Principle flow charts

■ Stopping procedure



CAUTION

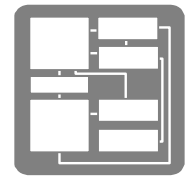
This procedure is followed only by the printers equipped with MGE and MI R7



Principle flow charts

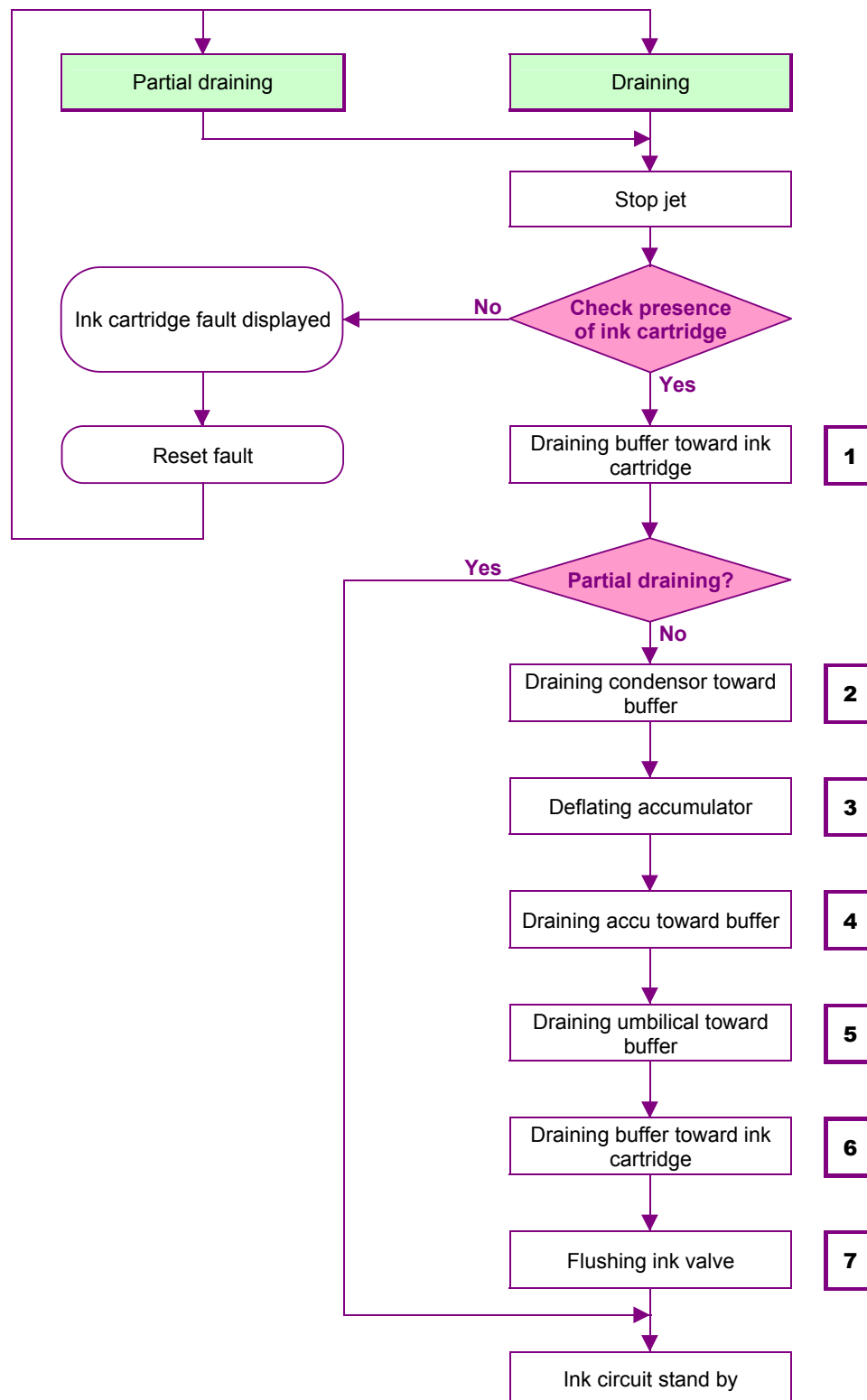
■ Stopping procedure (Cont'd)

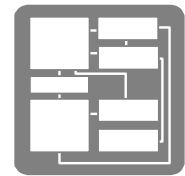
1. Closing of ELVs 7 and 8.
2. Acceleration of the pump engine and reinforced suction for 3 s.
3. Suction pump stoppage for 20 s.
4. Phases 2 and 3 will repeat 7 times.



Principle flow charts

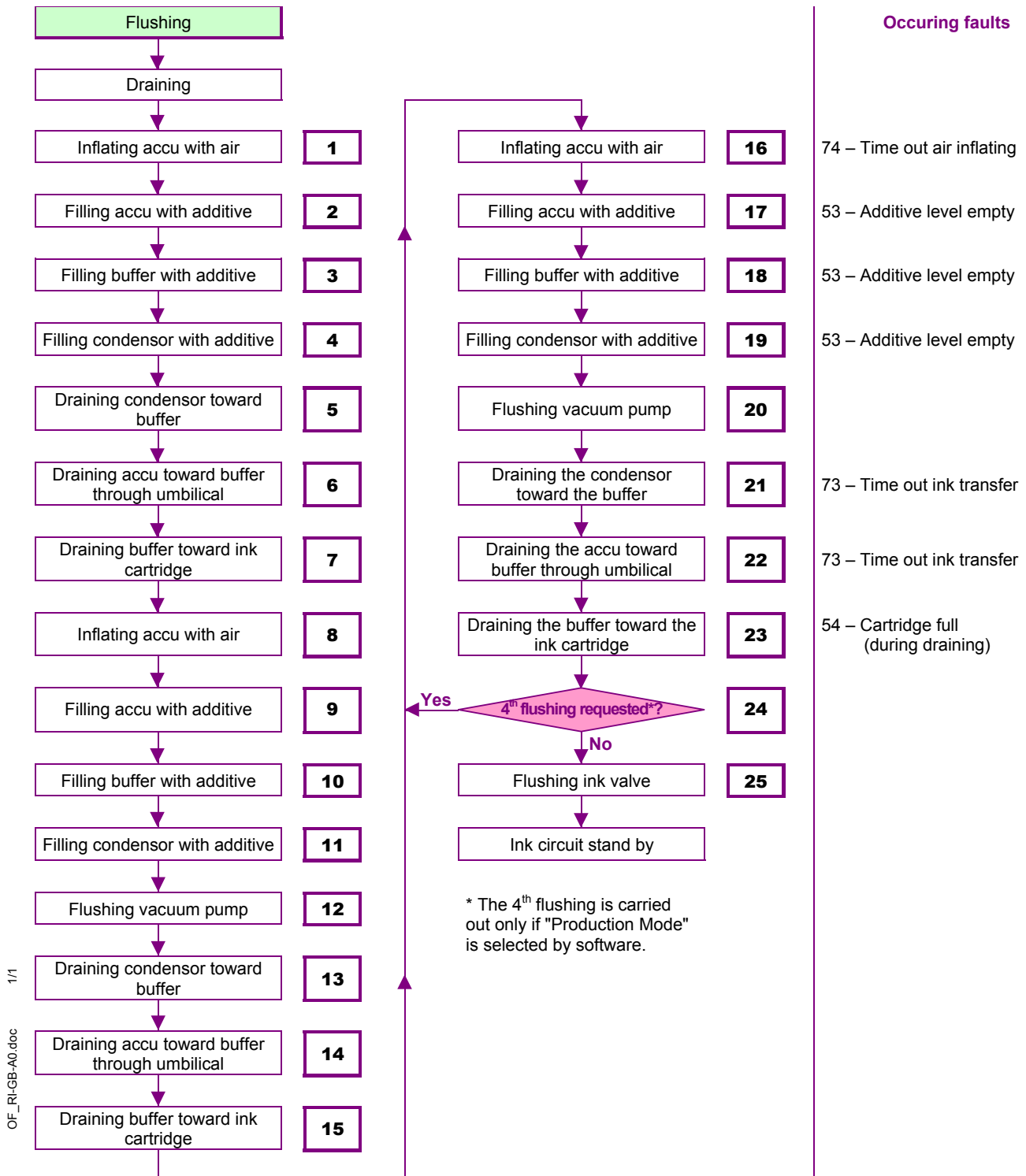
■ Printer draining





Principle flow charts

Printer flushing





Preventive maintenance





Preventive maintenance

■ Summary table

All the procedures described below, used at the right time, ensure optimal operation of the printer.

Frequency	Operation	Time	Comments
When clogging causes the printer to malfunction or to produce poor quality print.	Clean the print head	3 min	See procedure 1. CAUTION Some inks require special cleaning procedures. Refer to the ink technical data sheet..
Daily shut-down.	Press 	8 min	See procedure 2.
Daily start-up.	Press 	2 min	See procedure 3.
Before a shut-down lasting between 3 days and 1 week.	Prepare printer head.	10 min	Only applies to twin-jet heads. See procedure 4.
Start-up after a shut-down lasting between 3 days and 1 week.	Prepare printer head.	3 min	Only applies to twin-jet heads. See procedure 5.
Before a shut-down lasting for more than 1 week.	Flush out the printer completely	40 min	Should be performed at least every two months in the case of a prolonged shut-down. See procedure 6.
Start-up after a shut-down lasting for more than 1 week.	Press 	8 min	See procedure 7.
Every 2000 hours or every 6 months.	Replacing the filter cartridge of the air treatment unit.	15 min	If air treatment unit present. See procedure 8.

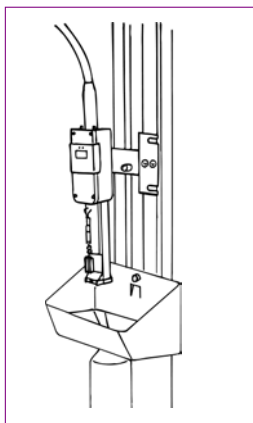


Preventive maintenance

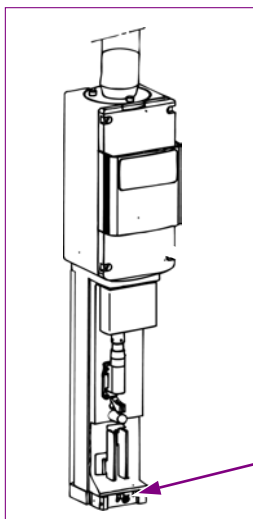
■ Procedure no. 1: Cleaning the head

Specific tools:

- Maintenance tray.
- Protective equipment (latex gloves, goggles, cloths).



1. - Stop the jet and position the head on its maintenance tray.
 - The head should be positioned vertically on the stand, with the gutter at the bottom to prevent the cleaning solution from trickling into the electronic part of the head on the conduit side.
 - The tray under the head recovers the used cleaning solution.

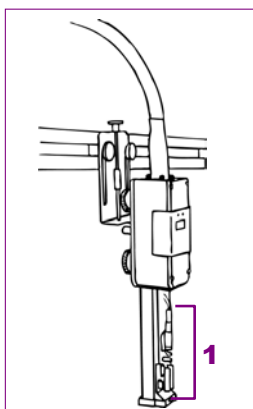


2. - Close the recuperation gutter.
 - The recuperation gutter must be closed to avoid an excessive quantity of cleaning solution entering the ink circuit.

Open



Closed



3. Clean the electrodes and the cannon(s) (1).

This is done by letting the appropriate cleaning solution trickle over the cannon(s) and electrodes. A brush may also be used if this is specified on the data sheet for the ink.

4. Dry carefully.

Using a puffer or using the kit if this is indicated on the data sheet for the ink.

5. Open the gutter and restart the jet.

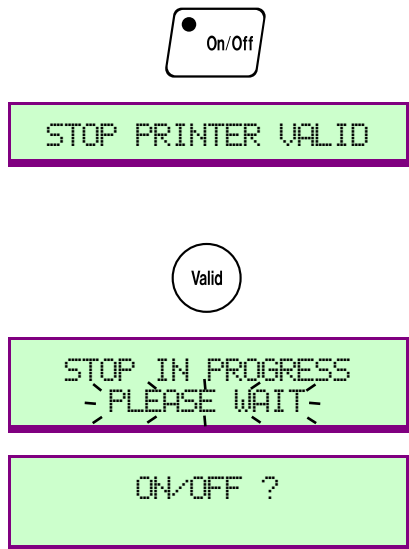




Preventive maintenance



■ Procedure no. 2: Daily shut-down



1. Position the head on its servicing support
2. Stop the printer with the **jet(s) running**.
3. When the printer is stopped, fit the anti-block stopper (if specified on the ink usage specification sheet).

This applies for normal stops at the end of the day.

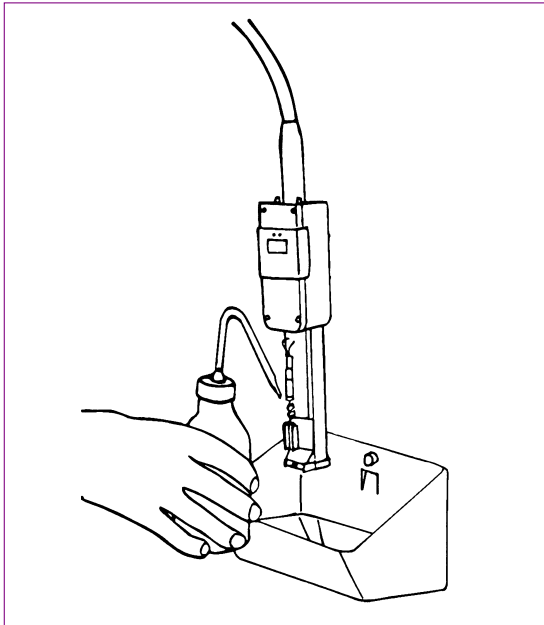
NOTE

Do not clean the head



Preventive maintenance

■ Procedure no. 3: Daily start-up



- 1.** Position the head on its servicing support.
Open the head cover.
- 2.** Remove the anti-block stopper (if fitted).
Clean the head if there are traces of ink (see procedure "cleaning the head").
- 3.** Press  (or connect only to the main power depending on the start-up configuration).
- 4.** Wait approximately 2 minutes.
When the machine is ready, the colour of the jet indicator light is non-flashing yellow.



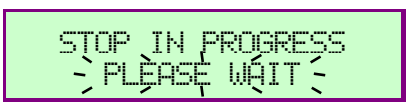
Preventive maintenance

■ Procedure no. 4: Shut-down lasting between 3 days and 7 days



CAUTION

This procedure only concerns printers with a dual-jet head

    	1. Position the head on its servicing stand. 2. Stop the printer with the jet(s) running 3. Await complete stop of the machine.
--	--

4. After the machine stops, close the recuperation gutter.

5. Fit a pad soaked with anti-clogging liquid if specified on the ink usage specification sheet. Otherwise fit the protection nozzle.

NOTE

Do not clean the head



Preventive maintenance



■ Procedure no. 5: Start-up after a shut down lasting between 3 and 7 days

CAUTION

This procedure only concerns printers with a twin-jet head

1. Position the head on its servicing stand. Open the head cover.
2. Remove the nozzle protection or the anti-block stopper.
3. Clean the head.
4. Open the recuperation gutter
5. Press  (or connect only to the main power depending on the start-up configuration).
6. Wait approximately 2 minutes. When the machine is ready, the colour of the jet indicator light is non-flashing yellow.



Preventive maintenance



■ Procedure no. 6: Shut-down lasting for more than 7 days

Start the flushing procedure by draining the printer completely, then flush using the additive. Two depressed empty cartridges are required.

CAUTION

Carry out the steps shown below with care so as to avoid any liquid being splashed. Use latex gloves and goggles for your protection.

18 DEC. 03-09:46
No054 : PARIS



FLUSH THE INK
CIRCUIT?



FLUSHING
- VALID -



PUT EMPTY CARTRIDGE
AND - VALID -



FLUSHING
- PLEASE WAIT -

The machine is in service and ready to print.

Sigma - Mega - Supra

Prima

Position the head on its servicing stand.

The ink cartridge must be replaced by an empty cartridge.



Preventive maintenance



■ Procedure no. 6 (Cont'd): Shut-down lasting for more than 7 days

PUT EMPTY CARTRIDGE
AND ~~VALID~~

Or

PUT ADDITIVE
CARTRIDGE AND ~~VALID~~

FLUSHING TERMINATED

Follow the instructions which appear on the screen.

Close the gutter. Fit a pad soaked with anti-closing liquid if specified on the ink usage specification sheet; otherwise fit the nozzle protection.

CAUTION

In the event of a prolonged shut-down, perform a full flush every two months. Perform this procedure "Shut down lasting for more than 7 days".



Preventive maintenance



■ Procedure no. 7: Start-up after a shut down lasting for more than 7 days

1. Position the head on its servicing stand. Open the head cover.
2. Remove the nozzle protection or the anti-block stopper.
3. Clean the head.
4. Open the recuperation gutter.
5. Replace an ink cartridge.
6. Press  to start the printer.

The printer is empty, so the start-up please lasts for approximately 8 minutes.



Preventive maintenance

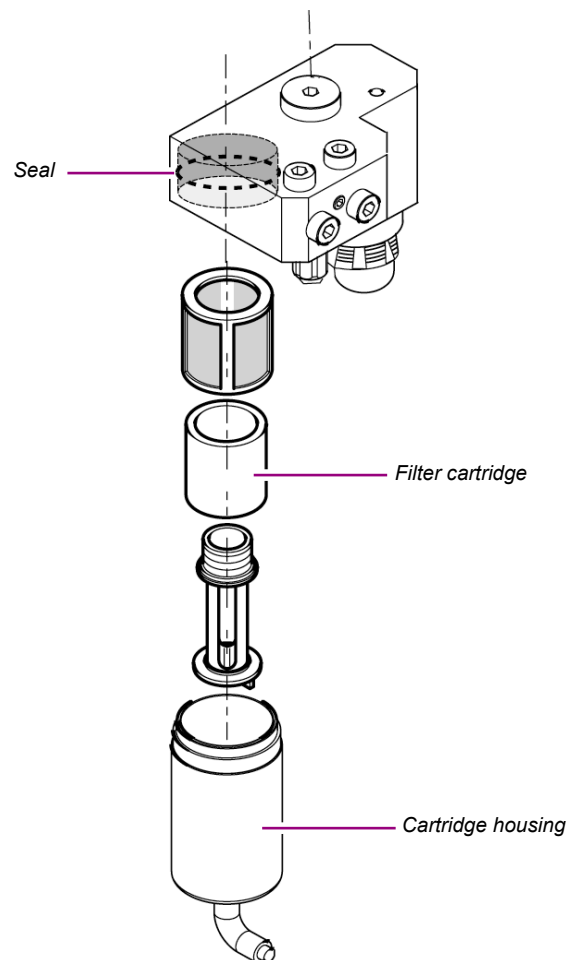
■ Procedure no. 8: Replacing the filter cartridge of the air treatment unit

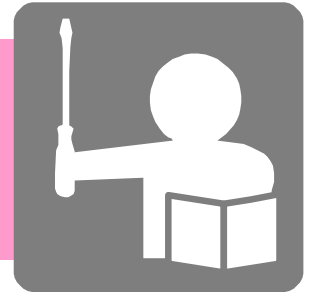


Only on the printers with "head pressurization".

1. Stop the printer.
2. Disconnect the air inlet or close the valve.
3. Unscrew the cartridge housing and pull it downwards.
4. Unscrew the filter.
5. Clean the grid with the cleaning solution.
6. Replace the filter cartridge and the seal.
7. Refit.

Air treatment unit:





Adjustment procedures





Adjustment procedures



■ Adjusting the jet in the gutter

Specific tools:

- **Cannon orientation tool, hexagonal key**
- **Magnifier.**
- **Head cleaning kit.**
- **Protective goggles.**
- **1.5 mm Allen key.**
- **Tweezers.**

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 these wires from the head.
6. Position the jet on the A-A' axis by pivoting the cannon in the cannon-holder with an orientation tool placed at the top (**Figure 2**).
7. Loosen the cannon-holder locking screws (**Figure 1**)

Figure 1

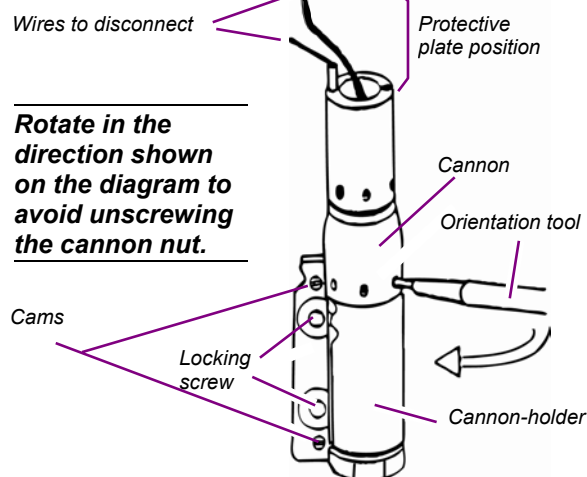
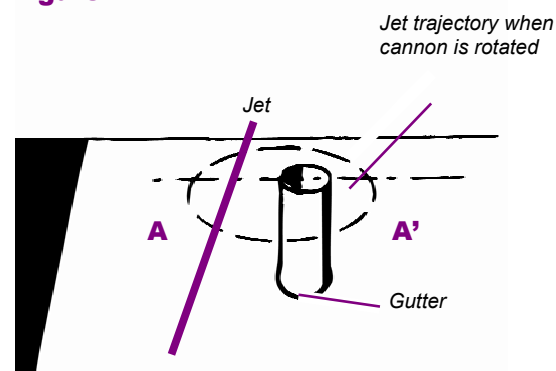


Figure 2





Adjustment procedures

■ Adjusting the jet in the gutter (Cont'd)

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

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:
- at the center of the gutter for G and M heads (**Figure 4**),

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

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.

Figure 3: G and M heads

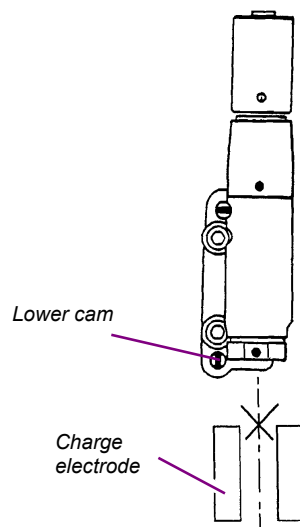
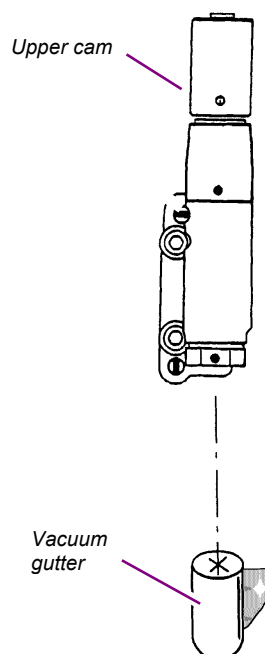


Figure 4: G and M heads





Adjustment procedures



■ Jet break-off point adjustment

Specific tooling:

- **Safety glasses**
- **Magnifier.**
- **2 mm Allen wrench.**

Preparation:

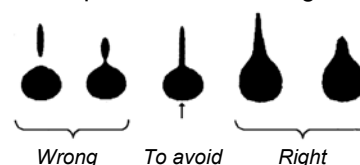
1. Place the head on the maintenance stand.
2. Start the jets and leave them running for at least half an hour.
3. Remove the upper cover and the removable cover.

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

Adjustment:

4. The adjustment procedure below involves looking at the jet in front of the charge electrode (stroboscopic LED) through the eyeglass (see Figure 1):
 - Start the operation by turning the potentiometer as far counterclockwise as possible. The jet will be continuous.

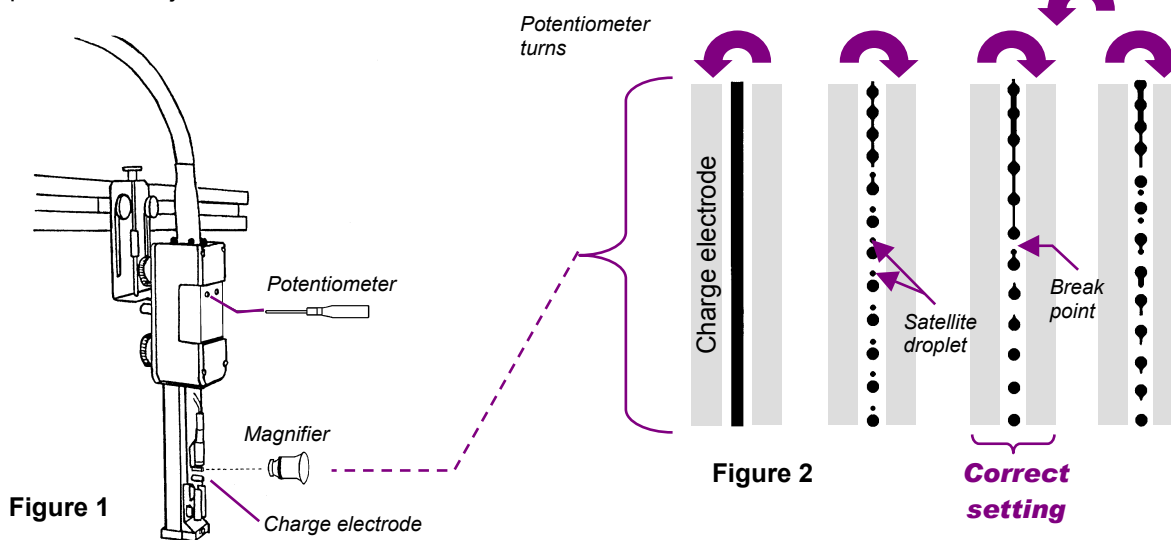
- Slowly turn clockwise until the jet starts to break at the centre of the charge electrode. See **Figure 2**.
- Only the shape of the drops after the break point indicate the right adjustment.



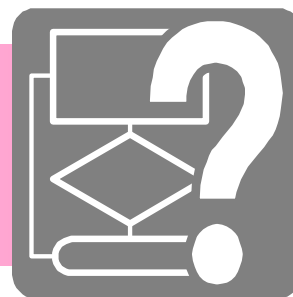
Adjust the potentiometer with care to avoid damaging it.

Checks and tests:

5. Close the head covers. Clear any faults.
6. Perform some printing tests and readjust if necessary.







Troubleshooting charts





Troubleshooting charts

■ Description of faults and solutions

		Alarm or			
No.	Designation	Fault	Definitions	Comments	Solutions
01	CRC eeprom Industrial Interface	F	On start-up, the calculated CRC is different from the CRC stored in memory.	The machine options and the default printing parameters have been lost.	Retype parameters data. Replace the industrial interface cassette.
02	CRC eeprom: Ink module	F	On start-up, the calculated CRC is different from the CRC stored in memory.	The information from the ink module's hour counter has been lost but ink module operation is unaffected.	
03	CRC eeprom: Control module	F	On start-up, the calculated CRC is different from the CRC stored in memory.	The ink type data has been lost. The ink management module stops and printing is impossible.	Perform an autocalibration procedure. If the fault recurs, replace the control module.
04	CRC eeprom: Printing	F	On start-up, the calculated CRC is different from the CRC stored in memory.	Printer operation is unreliable.	Replace the control module.
05	CRC eeprom: Ink	F	On start-up, the calculated CRC is different from the CRC stored in memory.	Printer operation is unreliable.	Replace the control module.
06	CRC eeprom Extension	F	On start-up, the calculated CRC is different from the CRC stored in memory.	The data stored in the extension cassette cannot be used.	Replace the extension cassette.
07	CRC algo, eeprom: Extension	F	On start-up, the calculated CRC is different from the CRC stored in memory.	The algorithmic data of the extension cassette are unusable.	Replace the extension cassette.
08	CRC algo, eeprom: Printing	F	On start-up, the calculated CRC is different from the CRC stored in memory.	The algorithmic data of the control module are unusable.	Replace the control module.
09	SCI timeout	A	Dialogue between terminal and control module interrupted.	Dialogue between terminal and control module interrupted	Check the terminal's connections and power supply cable.
10	V24 timeout	A	Dialogue between a computer and the printer (via the V24 RS232C serial connection) interrupted.	The data transmitted to the printer may be incorrect.	Check the connections of the V24 RS232C serial link.
11	SPI timeout	F	Dialogue between the Print processor and Ink processor interrupted.	Printing stops.	Replace the control module.
13	CRC ram: Extension	F	On start-up, the calculated CRC is different from the CRC stored in memory.	The data (extended library, time stamp table) are lost.	Check battery voltage. Replace the extension cassette.



Troubleshooting charts

■ Description of faults and solutions

No.	Designation	Alarm or Fault	Definitions	Comments	Solutions
14	V24	F	Control byte or data on serial V24 RS232C connection incorrect.		Check the value of the control byte and check for the presence of the identifiers used in the dialogue (V24 RS232C) with the printer.
17	CRC algo, ram	F	On start-up, the calculated CRC is different from the CRC stored in memory.	It is not possible to use the extension cassette's data bases.	Replace the extension cassette.
18	Algo number not found	F	When a message is selected or sent via the serial connection, the printer does not recognize the algorithm number	It is not possible to print this message.	Check the algorithms of the messages concerned.
19	CRC GC Ram: Extension	F	On start-up, the calculated CRC is different from the CRC stored in memory.	It is not possible to use the extension cassette's data bases.	Replace the extension cassette.
21	Non-doubled printing	A	The printer refuses to print the same message 2 times in a row. The second printing does not take place.	Only with a serial connection, when one tries 2 consecutive prints without having sent a new message.	Check the timing of sendings by the controller.
22	CRC ram printing library	F	On start-up, the calculated CRC for the library is different from the CRC stored in memory.	The library messages are lost.	Check the voltage of the control module battery. Replace the control module.
26	CRC ram: extension library	F	On start-up, the calculated CRC for the library of the extension cassette is different from the CRC stored in memory.	The library messages of the extension cassette are lost.	Check the battery voltage. Replace the extension cassette.
27	Printing library capacity	F	While the message library of the extension cassette is being loaded into the control module, the capacity of the library memory is exceeded.	The messages within memory capacity are available in the printer and the others continue to be present in the extension cassette.	



Troubleshooting charts

■ Description of faults and solutions

		Alarm or			
No.	Designation	Fault	Definitions	Comments	Solutions
28	Extension disconnection	A	Transfer interrupted between the machine and the extension cassette at the time of saving or loading of the library from the cassette to the printer.	The message library transmitted is erroneous. Reminder: Do not disconnect the extension cassette when the printer is ON.	Stop the printer and to disconnect it from the mains. Connect the extension cassette. Restart the printer and do the library transfer or saving again.
30	CRC ram: link	F	On start-up, the calculated CRC is different from the CRC stored in memory.	The saved data (hour counter etc.) are lost. The machine is still able to print.	Check the voltage of the control module battery. Replace the control module.
31	CRC ram: Printing	F	On start-up, the calculated CRC is different from the CRC stored in memory.	The saved data (date, time, etc.) are lost. The machine is still able to print.	Check the voltage of the control module battery. Replace the control module.
32	Time stamp	F	The time stamp data are incorrect.	Re-enter the time stamp information.	Check the voltage of the control module battery. Replace the control module.
33	Software versions	A	On start-up, the software versions of the ink CPU and the print CPU are incompatible.	The printer does not operate reliably.	Replace the control module.
37	Reading/writing Industrial interface eeprom	F	During operation, it is impossible to read from or write to the eeprom of the industrial interface cassette.	The printer can no longer save these parameters (printing, autocalibration, etc.).	Check that the industrial interface cassette is present. Replace the industrial interface cassette.
38	Reading/writing Ink module eeprom	A	During operation, it is impossible to read from or write to the eeprom of the ink module.	The printer can no longer save the values of the ink management module. This alarm does not disrupt printer operation.	Replace the ink module.
39	Reading/writing Control module eeprom	A	During operation, it is impossible to read from or write to the eeprom of the ink module.	The printer can no longer save the parameters of the ink module. Printer operation is not disrupted.	Replace the control module.
40	Frame frequency	A	Once printing has terminated, this alarm means that the tacho speed (after division) is too high for the algorithms used in the message.	Marking is too wide but it is still possible to print.	It is necessary to modify the tacho division in order to eliminate the alarm. The alarm can be inhibited if the speed is rarely exceeded and print quality remains acceptable.



Troubleshooting charts

■ Description of faults and solutions

No.	Designation	Alarm or Fault	Definitions	Comments	Solutions
44	Extension cassette library invalid	A	When the library is saved from the control module into a blank extension cassette without having deleted the « 13 » fault.	No consequence on the printer operation.	Delete the « 13 » fault before saving.
45	Option not present	A	Selection of a message with an option which is not present in the printer or option requested via V24 RS232C not available in printer.	The selected message cannot be printed.	Use the options contained in the printer.
46	CRC character generator of Printing eprom	F	On start-up, the calculated CRC is different from the CRC stored in memory.	The standard fonts in the control module are not acceptable.	Replace the control module.
47	CRC character generator of Extension eprom	F	On start-up, the calculated CRC is different from the CRC stored in memory.	The optional fonts in the extension cassette are not acceptable.	Replace the extension cassette.
48	Algo not available	F	During the transfer of a message via the V24 or on message selection, the print speed is incompatible with the algorithms stored in memory or with the position of the blocks in the lines or the algorithm number is incorrect.	The selected message cannot be printed.	Check the number of the algorithm used. Select the limits of the printing parameters before creating the message.
50	Ink low	A	Ink cartridge low.	The machine can still print.	Prepare a new ink cartridge and wait until the "Ink empty" alarm is displayed before replacing it.
51	Additive low	A	Additive cartridge low.	The machine can still print.	Prepare a new additive cartridge and wait until the "Additive empty" alarm is displayed before replacing it.
52	Ink empty	A	Ink cartridge empty.	The machine can still print.	Change the ink cartridge. Cancel the fault. If the fault persists, see Diagnosis Aid Form, faults 52, 53.



Troubleshooting charts

■ Description of faults and solutions

		Alarm or			
No.	Designation	Fault	Definitions	Comments	Solutions
53	Additive empty	A	Additive cartridge empty.	The machine can still print.	Change the additive cartridge. Cancel the fault. If the fault persists, see Diagnosis Aid Form, faults 52, 53.
54	Cartridge full on draining	F	During a draining or rinsing, the empty cartridge (instead of the ink cartridge) is full.		Remove the cartridge full of waste. Replace with an empty cartridge. Cancel the fault.
60	Ink SV (Nr 0)	A	Ink solenoid valve malfunction.	No immediate disturbance, but the ink transfers no longer take place.	See Diagnosis Aid Form, faults 60, 61.
61	Additive SV (Nr 1)	A	Additive solenoid valve malfunction.	No immediate disturbance, but the additive transfers no longer take place	See Diagnosis Aid Form, faults 60, 61.
62	Buffer (Nr 2)	F	Buffer solenoid valve malfunction.	The ink management module stops and printing is not possible.	Disconnect the printer from the mains and restart it to eliminate the fault. Use the "Test solenoid valves" function to release this solenoid valve.
63	Accumulator SV (Nr 3)	F	Accumulator solenoid valve malfunction.	The ink management module stops and printing is not possible.	Disconnect the printer from the mains and restart it to eliminate the fault. Use the "Test solenoid valves" function to release this solenoid valve.
64	Condenser SV (Nr 4)	F	Condenser solenoid valve malfunction	The machine can still print.	Use the "Test solenoid valves" function to release this solenoid valve.

See Diagnosis Aid Forms on following pages



Troubleshooting charts

■ Description of faults and solutions

No.	Designation	Alarm or Fault	Definitions	Comments	Solutions
70	Incorrect concentration	A	During operation, the pressure lies outside the tolerances of the curves: $P = f(t)$	This alarm can result from too much or not enough additive in the ink. Reminder : - Close the gutter correctly before cleaning the head. - Check the additive cartridge.	Leave the printer running, the concentration will correct itself (this can take several hours). If other faults appear (81, 82 or 83), this means that the concentration continues to degrade. These faults must then be treated. See Diagnosis Aid Form.
71	Pressure sensor	F	On start-up, after three failed attempts to measure atmospheric pressure.	The ink management module stops and printing is not possible.	Stop, disconnect, reconnect, then restart the printer. If the fault persists, see Diagnosis Aid Form.
72	Motor adjustment	F	On start-up or during operation, the printer does not detect an adequate pressure difference between the top and bottom dead centres.	The ink management module stops and printing is not possible.	Stop, disconnect, reconnect, then restart the printer. If the fault persists, see Diagnosis Aid Form.
73	Ink transfer timeout	F	The transfer time exceed the normal period when a reservoir is being drained.	The ink management module stops and printing is not possible.	Stop, disconnect, reconnect, then restart the printer. If the fault persists, see Diagnosis Aid Form.
74	Air inflation timeout	F	The accumulator air inflation time is too long during a startup, drainage or rinsing phase.	The machine is still able to print. If the air pocket is inadequate, the ink pressure fluctuates and the print quality is impaired.	Use the "Test solenoid valves" function to test the operation of solenoid valve CO 4. Replace the ink module.
75	Air pocket	A	During operation, the pressure variation in the accumulator during transfers is too great.	The print quality falls.	Stop, then restart the printer. If the fault persists, see Diagnosis Aid Form.
76	Jet purge timeout	A	At the end of the jet start-up phase, the accumulator pressure does not return to its nominal value within the allocated time.	The machine is still able to print.	Stop, then restart the printer. If the fault persists, see Diagnosis Aid Form.



Troubleshooting charts

■ Description of faults and solutions

No.	Designation	Alarm or Fault	Definitions	Comments	Solutions
77	Pump compression level	A	On start-up, the compression level of the ink pump is inadequate.	The machine is still able to print.	Use the “Test solenoid valves” function to test the operation of the ink management module.
78	Machine empty	F	During operation, the buffer tank and the ink cartridge are empty.	The jet(s) stop(s).	Replace the ink cartridge.
79	Condenser overflow	F	During operation, the condenser's pumping time is too long.	The ink management module stops and printing is impossible.	Stop, disconnect, reconnect, then restart the printer. If the fault persists, see Diagnosis Aid Form.
81	Droplet detection, jet 1	F	Faulty droplet detection, jet 1.	The machine cannot print.	Stop the jet. Clean the head. Restart the jet. If the fault persists, see Diagnosis Aid Form (faults 81, 82, 88).
82	Droplet detection, jet 2	F	Faulty droplet detection, jet 2.	The machine cannot print.	Stop the jet. Clean the head. Restart the jet. If the fault persists, see Diagnosis Aid Form (faults 81, 82, 88).
83	Concentration out of range	F	During operation, the pressure is far outside the tolerances of the curve: $P = f(T)$. either $P < 1.5$ bars, Or $P > 4$ bars.	This fault results from alarm 70, the ink concentration continued to degrade ; The printer cannot print any longer.	See Diagnosis Aid Form.
84	Head cover open	F	During operation, the printer detects that the head cover is absent.	The machine cannot print.	Replace the head cover.
85	Jet recovery	F	During operation, the recovery detector detects that there is no jet in the gutter(s) or that the recovery level is too low.	The jet(s) is(are) stopped.	See Diagnosis Aid Form.



Troubleshooting charts

■ Description of faults and solutions

No.	Designation	Alarm or Fault	Definitions	Comments	Solutions
86	EHV stopped	F	Presence of EHV at deflection plates not desired at present.	The jet is shut off and the EHV is stopped again.	Check that there is no leakage in the printing module. Replace the EHV block. Replace the control module.
87	EHV insulation	F	During operation, the printer detects current greater than 10 μ A in the EHV lines.	The EHV is shut off and the machine cannot print.	See Diagnosis Aid Form.
88	Ink module	F	On start-up and during operation, the printer is not able to attain jet speed.	This fault is preceded by fault 81 and 82 and followed by stoppage of the jet since the printer is unable to manage the ink concentration.	Stop the jet. Clean the head. Restart the jet. If the fault persists, see Diagnosis Aid Form (faults 81, 82).
90	Temperature	A	During operation, the temperature lies outside of the range of tolerance 0° C to 45° C.	The printer continues to operate despite the temperature.	Solve the ambient temperature problem. Replace the control module.
92	Pressure servocontrol	F	During operation, if the air pocket is too small, the addition of ink disturbs the pressure in the accumulator, thus making the jet speed regulation impossible.	The ink management module stops. The jet stops. Printing is impossible.	Stop, disconnect, reconnect, then restart the printer. Test solenoid valve no. 4. Change the ink management module.
93	Gutter closed	F	During draining and rinsing, the low pressure value is too great in the buffer because the gutter is closed.	The jet does not start.	Check that the gutter top is open. Check that the gutter is not blocked. Check that the one-way valve is not blocked.

See Diagnosis Aid Forms, next pages





Troubleshooting charts

■ Introduction

The table below summarises all the symbols used in the troubleshooting charts. Each troubleshooting chart in this section describes troubleshooting procedures depending on the symptoms.

Symbol	Explanation
	Test - a decision must be made as far as the sequence execution direction is concerned
	Action - represents an operation or a sequence of visual or manual operations. Apply a 1 st remedy, then check whether the fault is resolved before applying the following remedy.
	End - end of a troubleshooting chart sequence's part. Fault origin hypothesis

Definition of the pictograms used in the troubleshooting charts:



Fault



Use of a cleaning solution



The problem has been solved



Use of a magnifier



Visual check



Use of an oscilloscope



Audible check



Use of a measuring device



Pressing a keyboard key or manual intervention



Use of a puffer



Use of a tool

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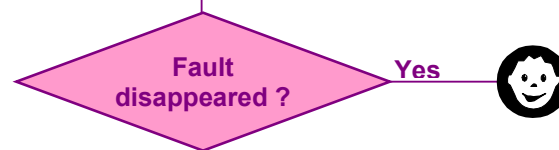
Troubleshooting charts

■ Faults 52 and 53: Ink empty and additive empty

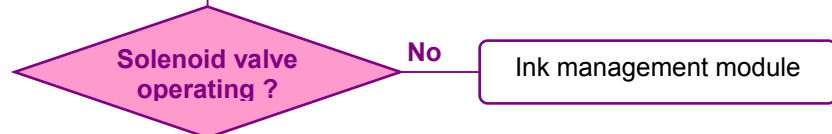
Fault 52 follows fault 50 or fault 53 follows fault 51. Install the corresponding cartridge which you have prepared.

Otherwise :

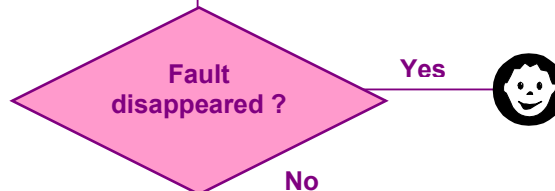
1. Check that a non-empty cartridge is present at the corresponding place.
2. Check that the cartridge is correctly inserted into its cartridge holder.
3. Check that the cartridge is correctly inserted in its hollow tube holder (the seal at the end of the cartridge's hollow tube must be pierced by the ink module's hollow needle).
4. Cancel the fault.



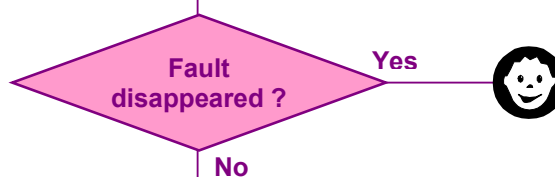
Use the « Test solenoid valves » function to check or unblock the « ink » solenoid valve (no. 0) if fault 52, or the « additive » solenoid valve (no. 1) if fault 53.



Restart the printer.



1. Check that the hollow tube holder's hollow needle is not blocked. Stop the printer, disassemble the corresponding hollow tube holder and clean it with clean additive. Reassemble.
2. Restart the printer and acquit the fault.



Control module

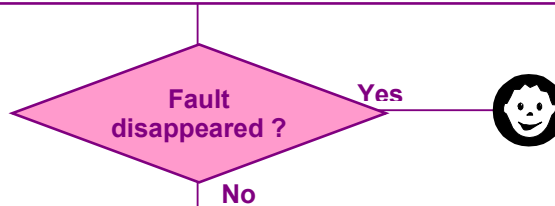


Troubleshooting charts

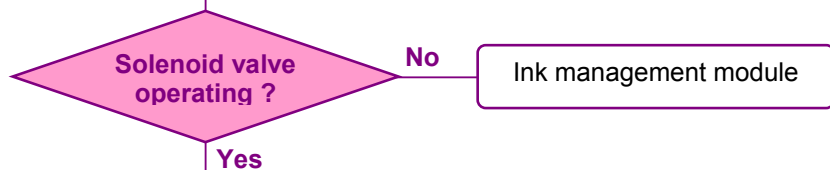


■ Faults 60 and 61: Ink SV (No. 0) and additive SV (No. 1)

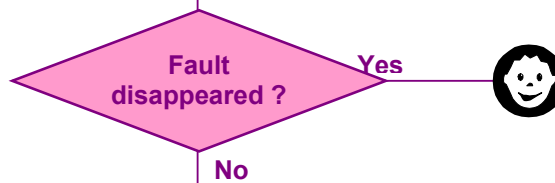
1. Check that the corresponding cartridge is correctly inserted into its cartridge holder.
2. Check that the cartridge is correctly inserted in its hollow tube holder (the seal at the end of the cartridge's hollow tube must be pierced by the ink module's hollow needle).
3. Cancel the fault.



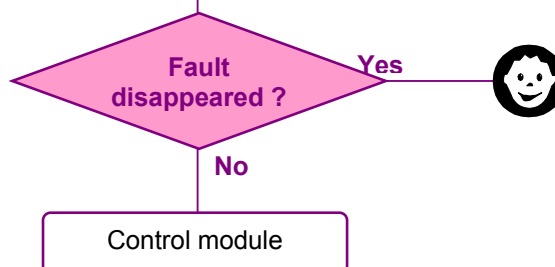
Use the « Test solenoid valves » function to check or unblock the « ink » solenoid valve (no. 0) if fault 60, or the « additive » solenoid valve (no. 1) if fault 61.



Restart the printer.



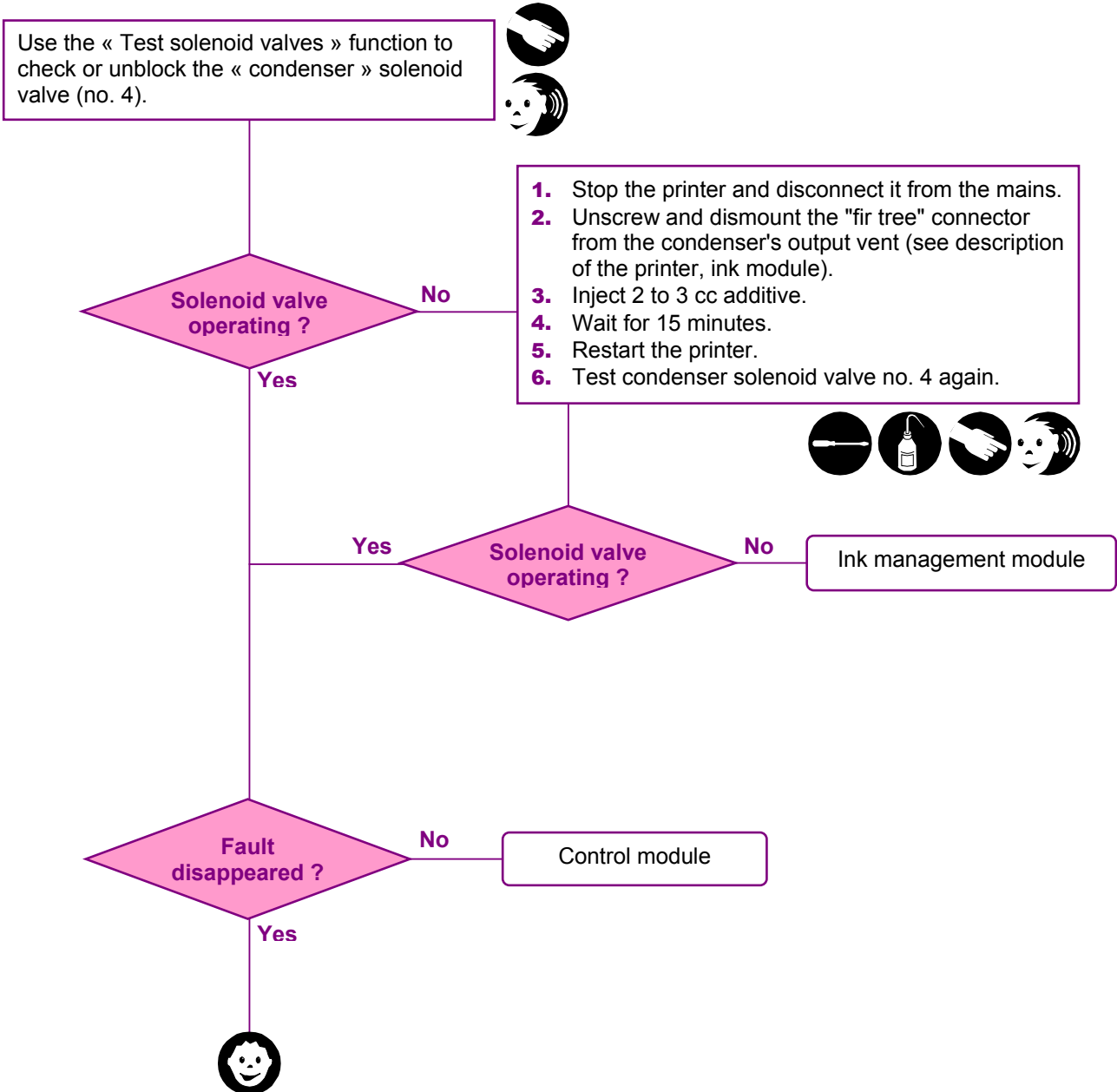
1. Check that the hollow tube holder's hollow needle is not blocked. Stop the printer, disassemble the corresponding hollow tube holder and clean it with clean additive. Reassemble.
2. Restart the printer and acquit the fault.





Troubleshooting charts

■ Fault 64: Condenser SV (No. 4)

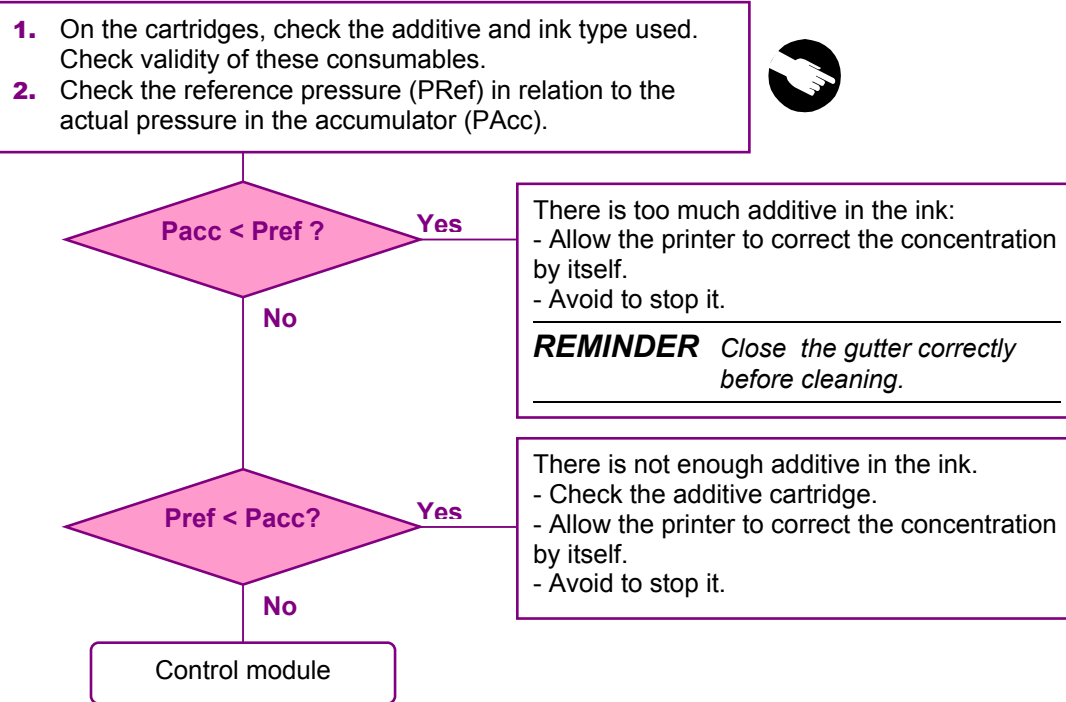




Troubleshooting charts

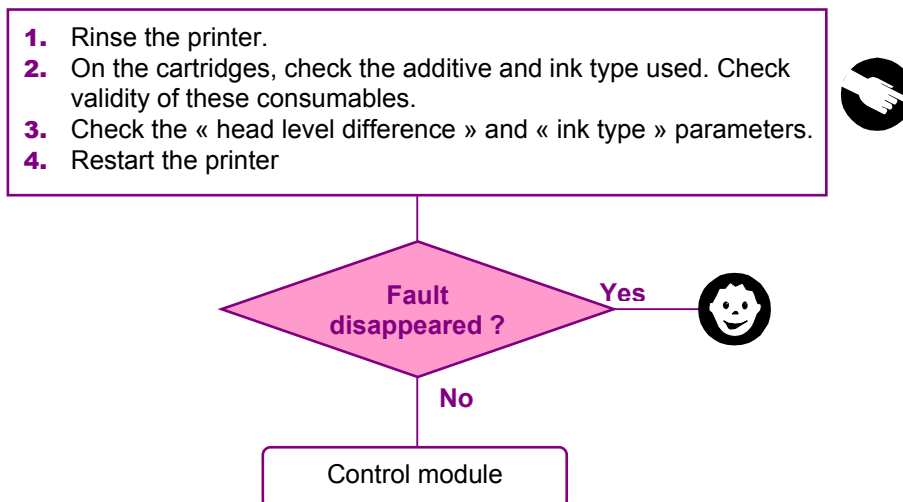
■ Fault 70: Incorrect concentration

Fault 70 is an alarm which does not prohibit printing. Before printing becomes impossible, it is important to know the origin of this fault.



■ Fault 83: Concentration out of range

The printer cannot print any longer.



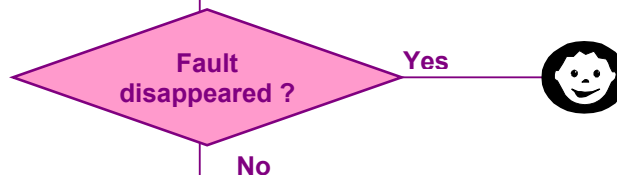


Troubleshooting charts

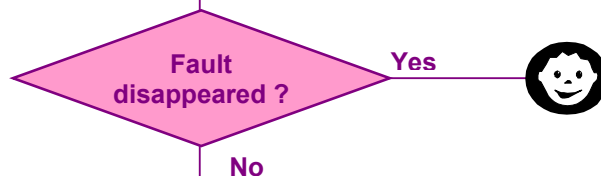


■ Fault 71: Pressure sensor

1. Stop, disconnect, reconnect, then restart the printer.
2. Use the « Test solenoid valves » function to check or unblock the condenser solenoid valve (no. 4).
3. Check that the vent is not blocked.



Stop, disconnect, reconnect, then restart the printer once or twice.

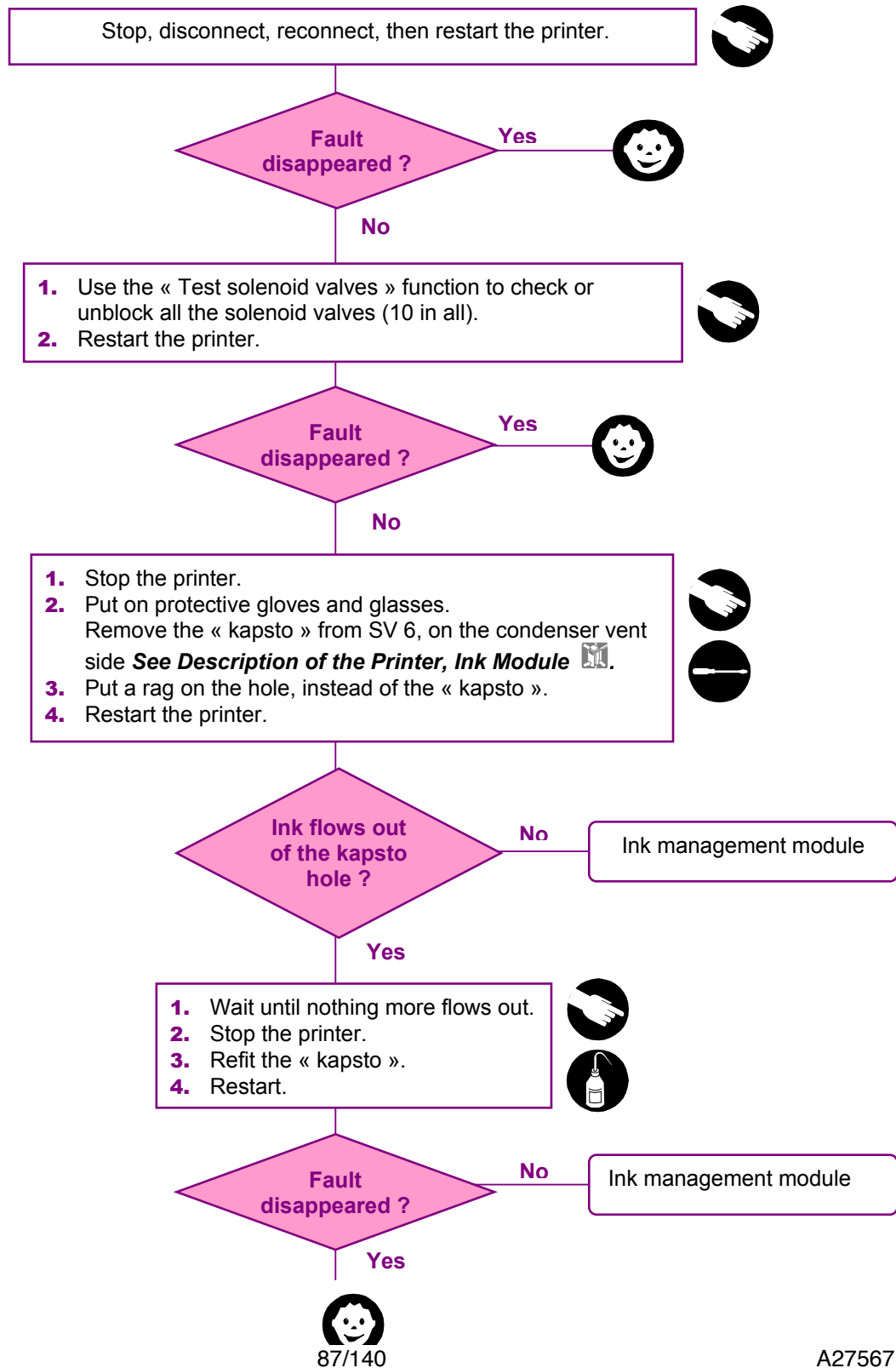


Control module



Troubleshooting charts

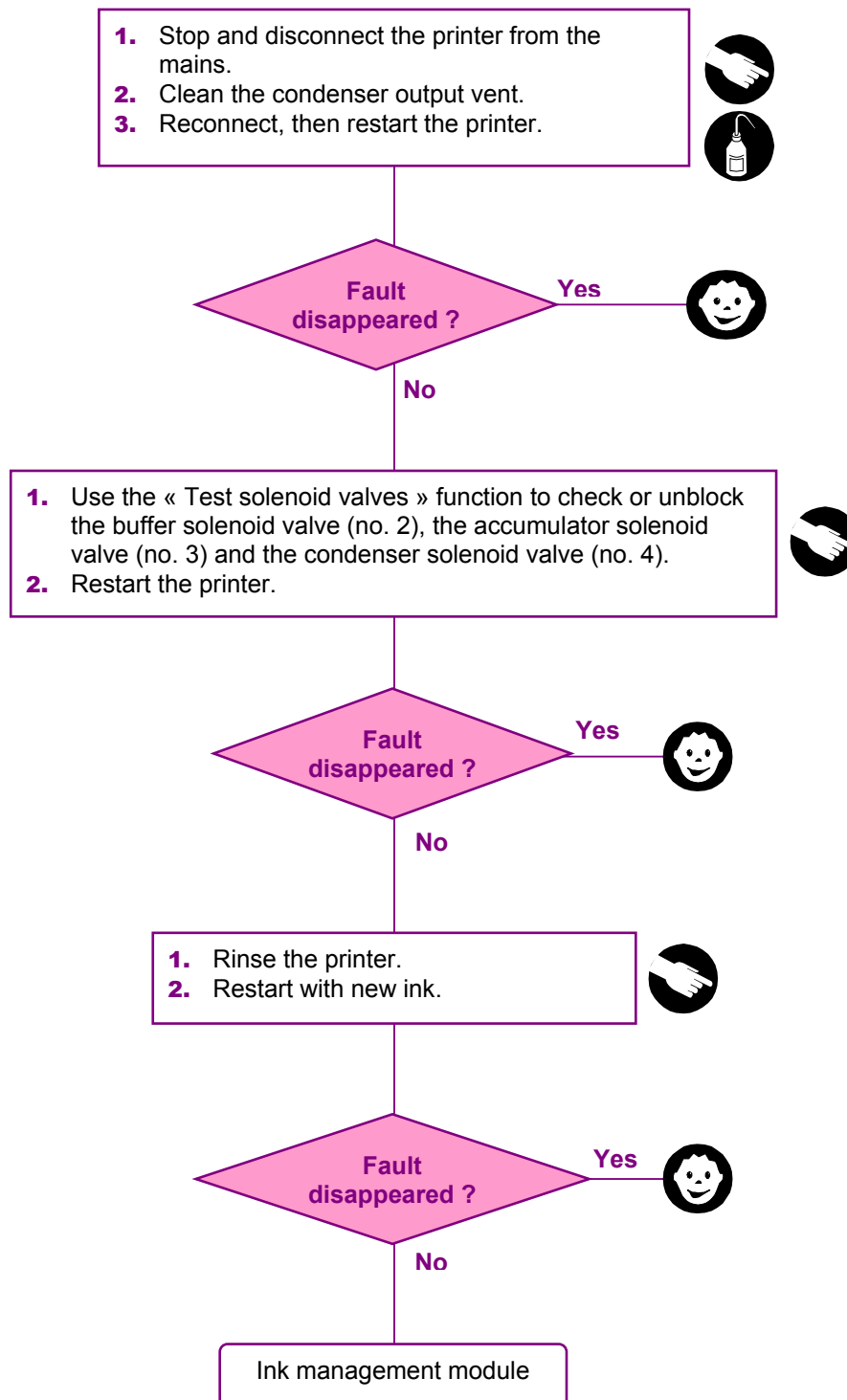
■ Fault 72: Motor adjustment





Troubleshooting charts

■ Fault 73: Ink transfer timeout

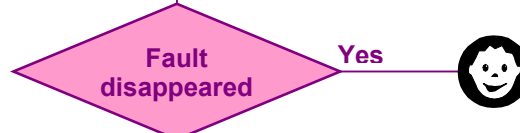




Troubleshooting charts

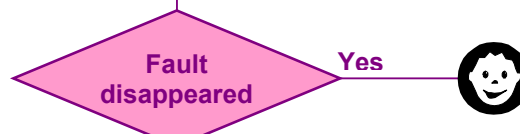
■ Fault 75: Air pocket

1. Stop the printer (with the jet running) pressing ON/OFF.
2. Wait until the jet stops, then restart the printer with ON/OFF.



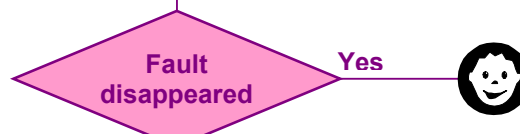
No

1. Use the « Test solenoid valves » function to check or unblock the condenser solenoid valve (no. 4) and the accumulator solenoid valve (no. 3).
2. Check that the vent is not blocked.



No

1. Drain the printer fully.
2. Restart.



No

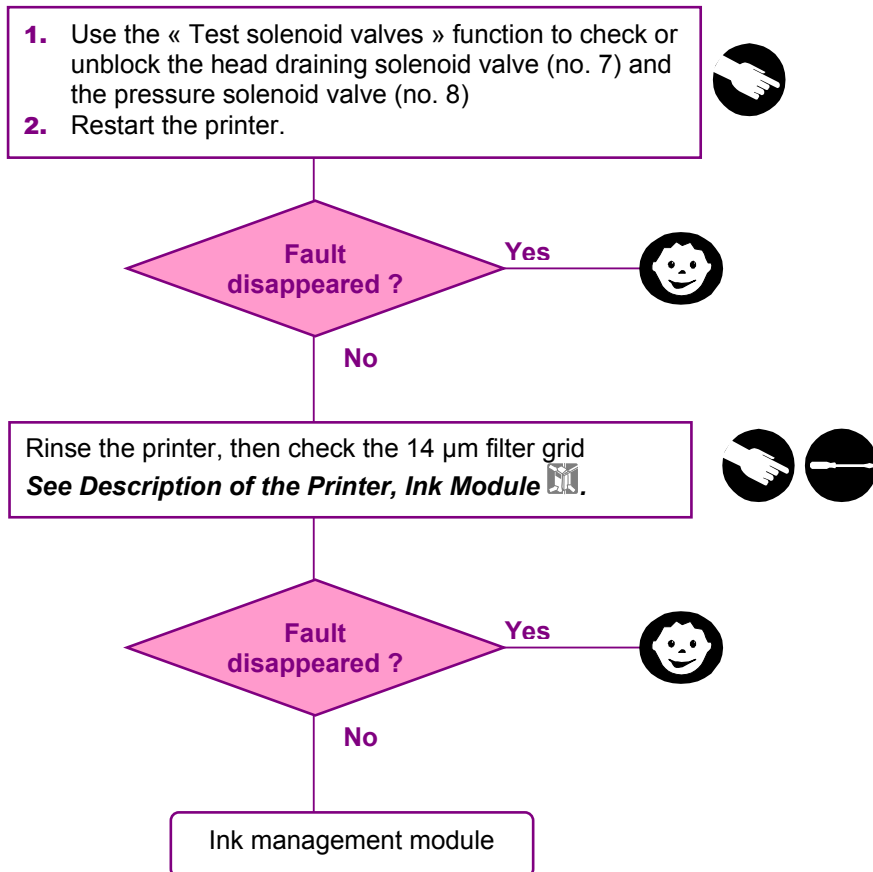
Ink management module



Troubleshooting charts



■ Fault 76: Jet purge timeout

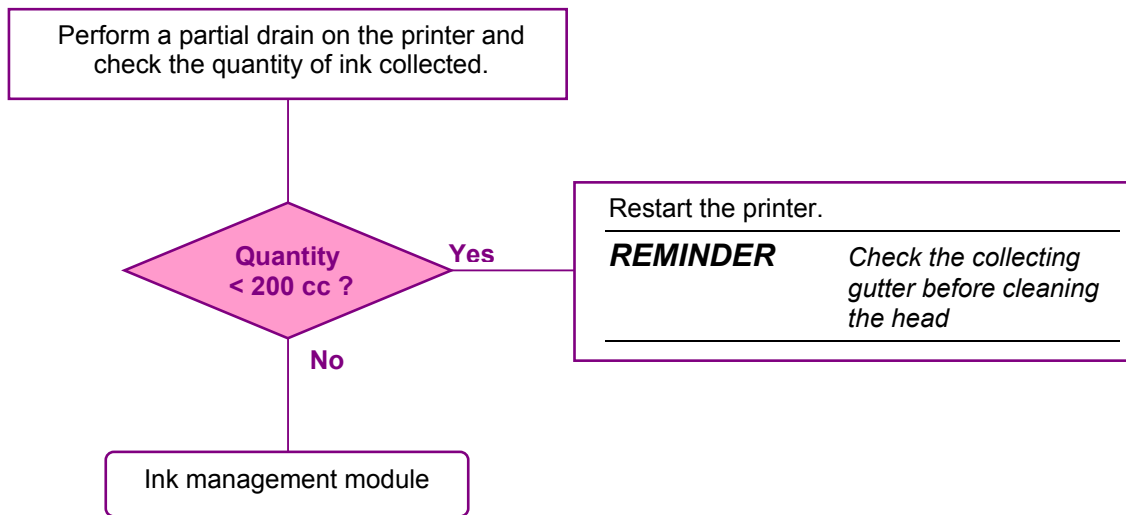




Troubleshooting charts



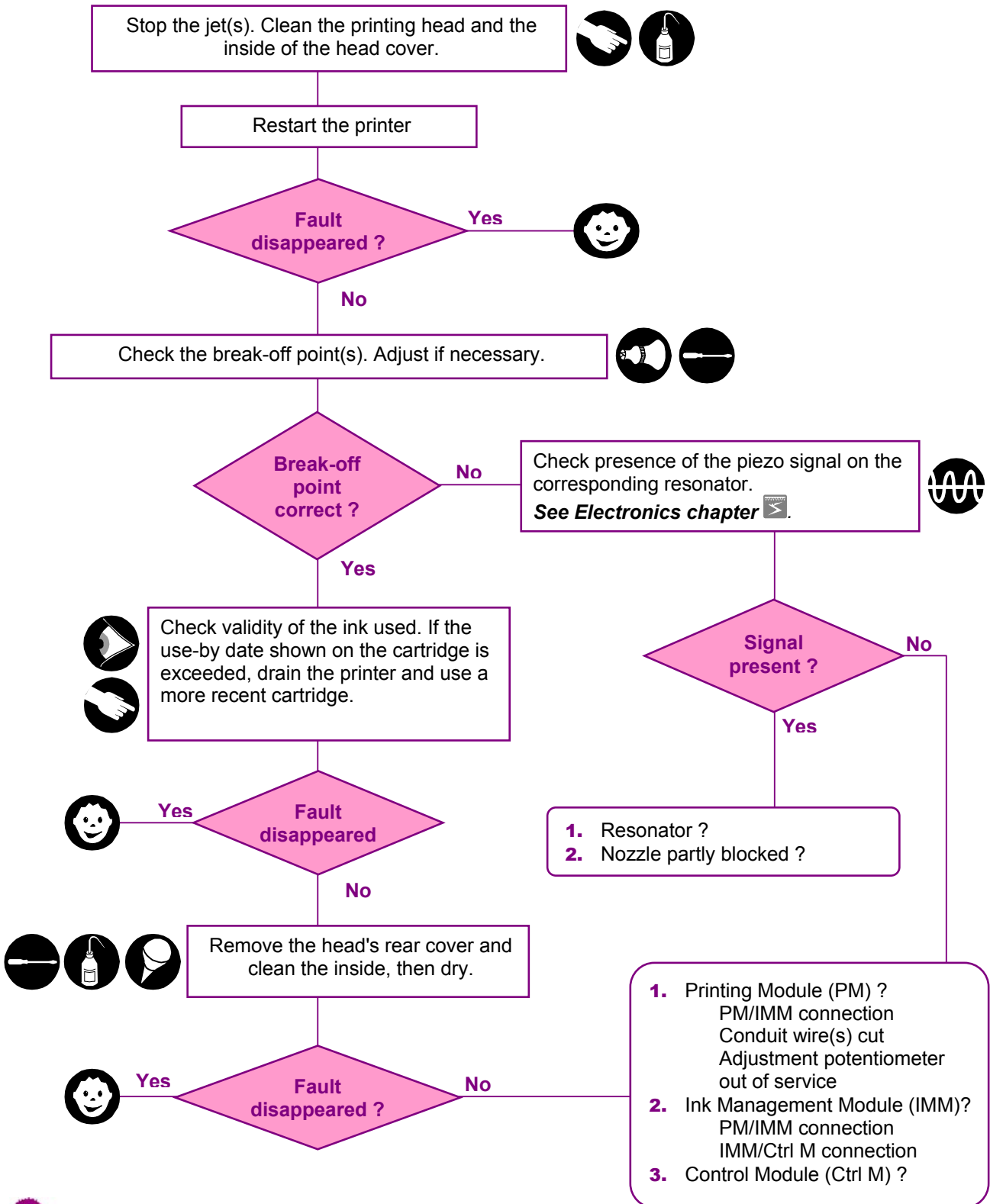
■ Fault 79: Condenser overflow





Troubleshooting charts

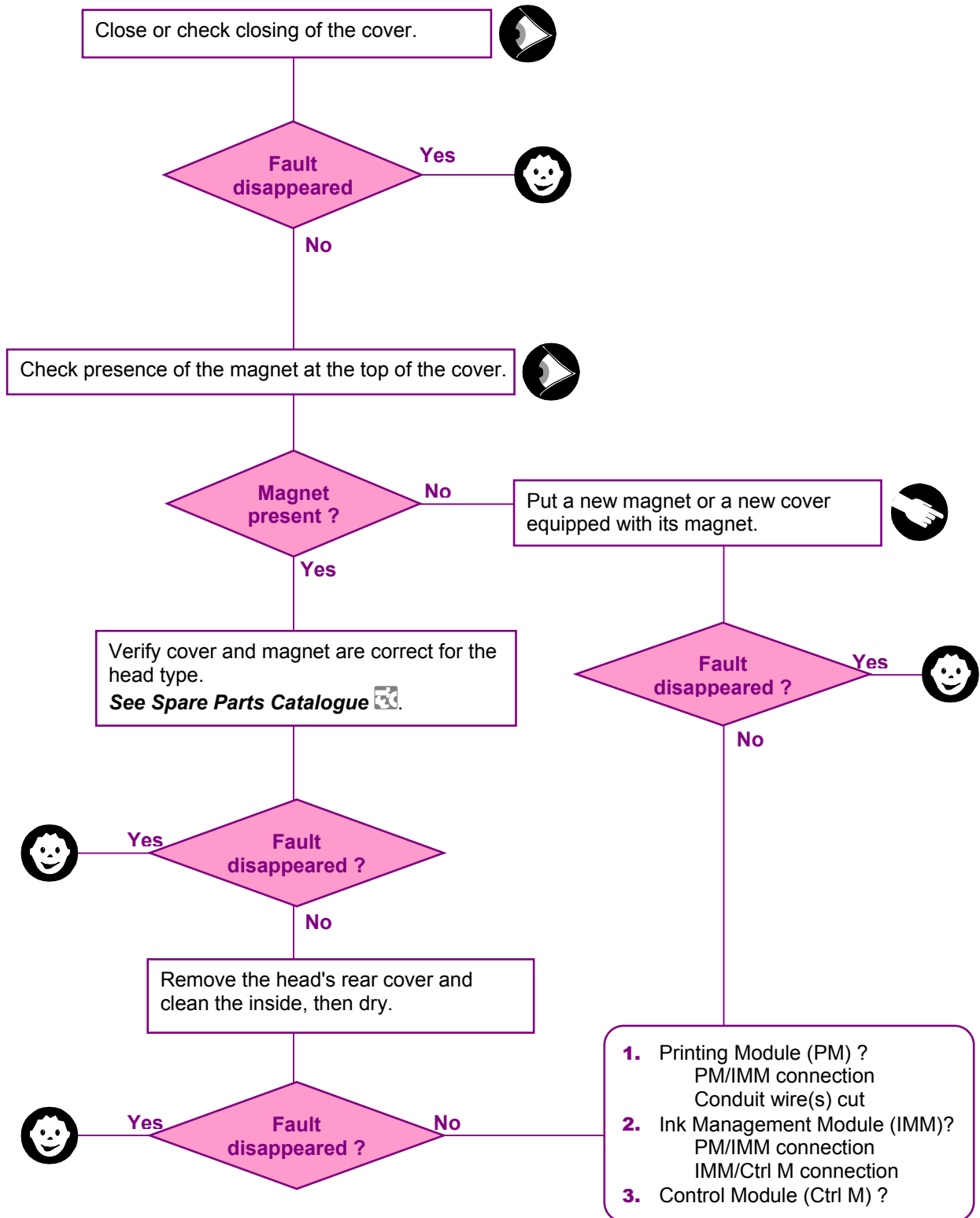
Faults 81, 82: Droplet detection (81 jet 1, 82 jet 2)





Troubleshooting charts

■ Fault 84: Head cover open

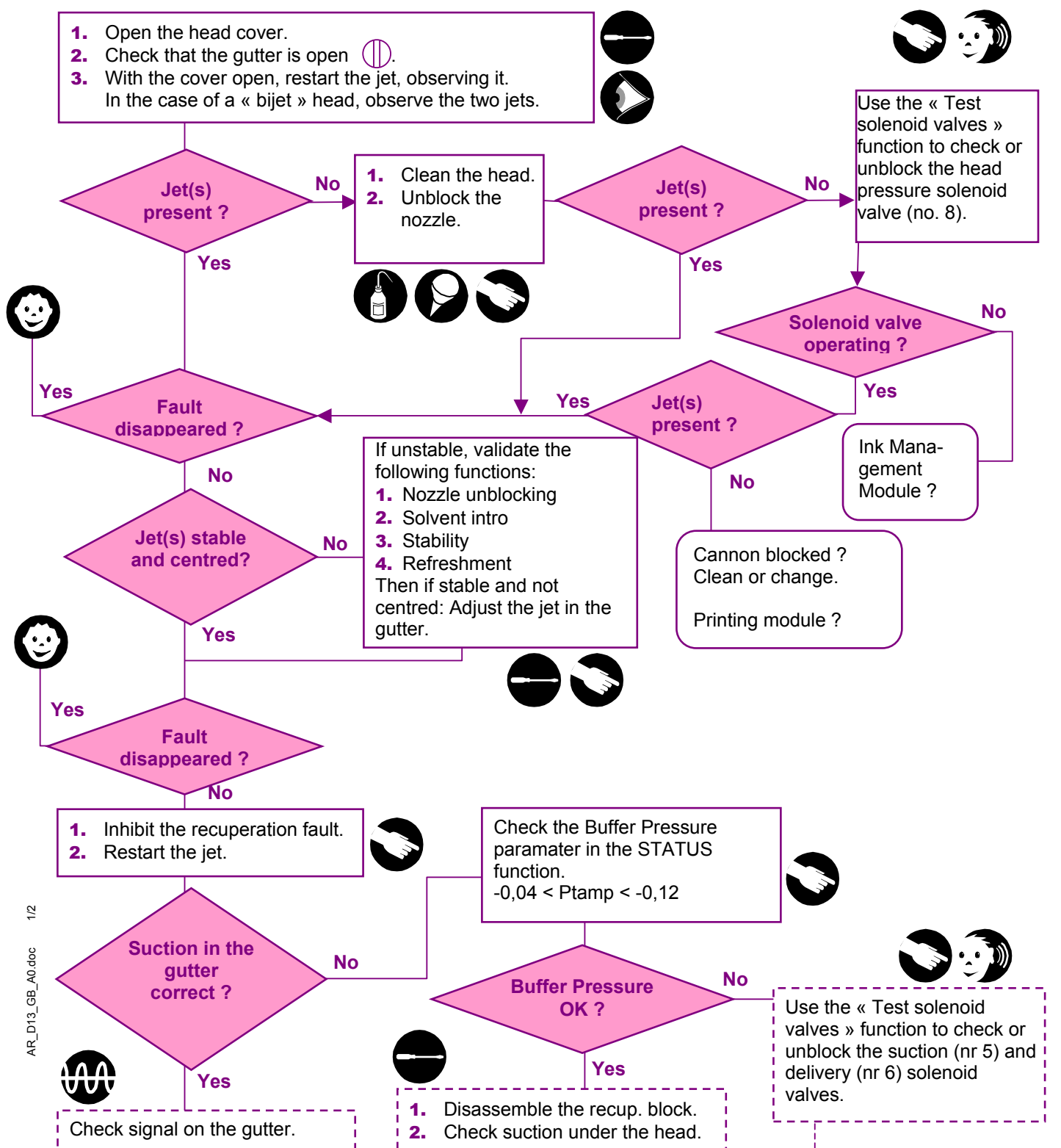




Troubleshooting charts



Fault 85 : Jet recovery





Troubleshooting charts

■ Fault 85 : Jet recovery (Cont'd)



Continued from
previous page

Check signal on the gutter.



Continued from
previous page

1. Disassemble the recup. block.
2. Check suction under the

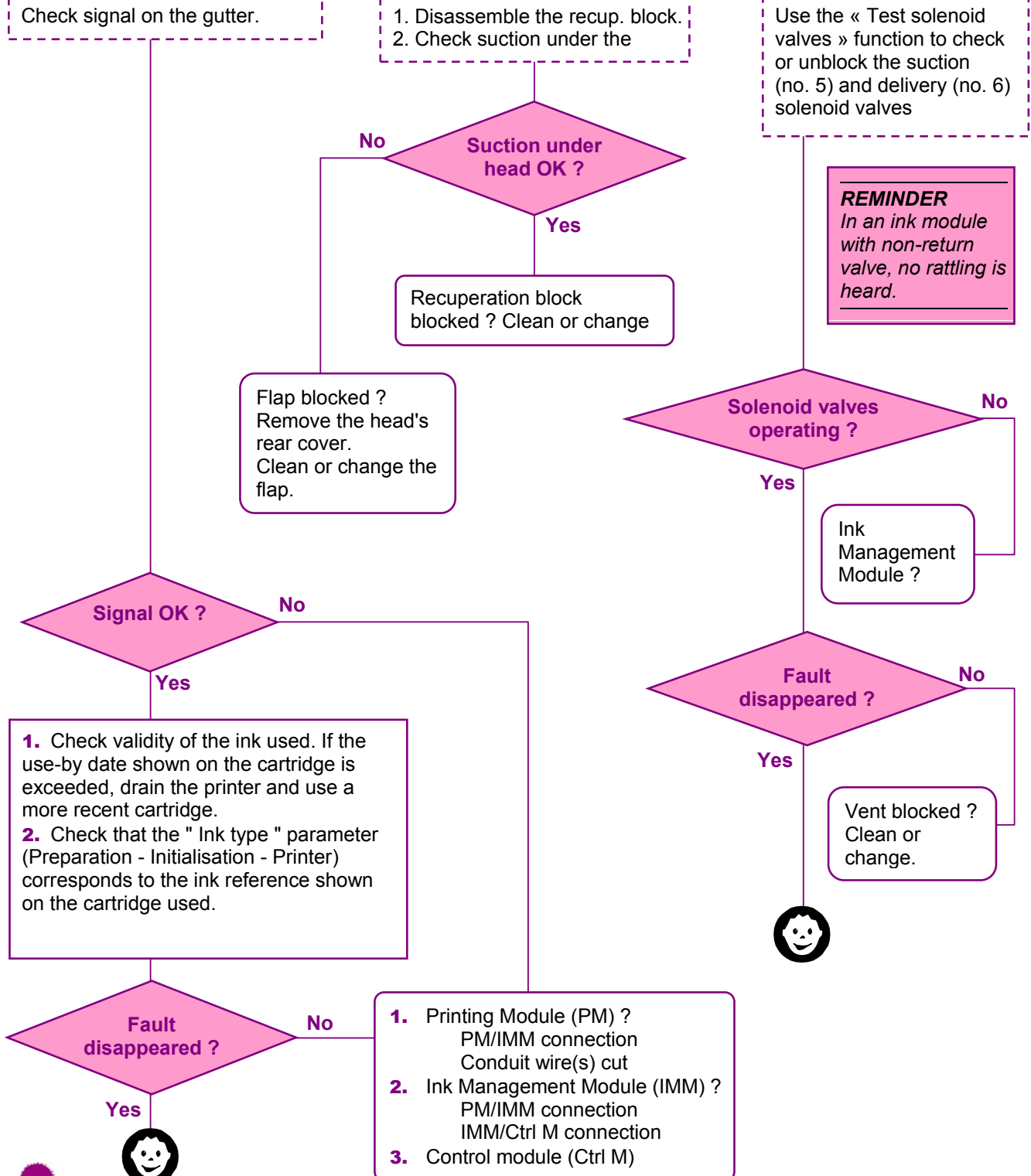
Continued from
previous page



Use the « Test solenoid valves » function to check or unblock the suction (no. 5) and delivery (no. 6) solenoid valves

REMINDER

In an ink module with non-return valve, no rattling is heard.

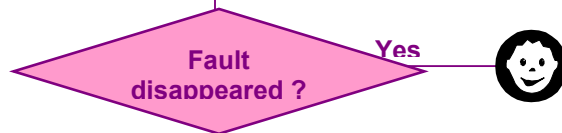




Troubleshooting charts

■ Fault 87: EHV insulation

1. Carefully clean and dry the head and the head cover.
2. Clear the fault.



No

1. Disassemble the head's rear bottom cover.
2. If there are traces of ink or humidity, clean and dry carefully.
3. Identify and eliminate the origin of the leak.
 - 1 Leak on an element inside the head
 - 2 Condition of the rear cover and seal.



No



1. Measure voltage between EHV plates.

CAUTION For this measurement, using an EHV probe is necessary.

Typical voltage between plates :
G head : 7800 V
M head : 4500 V



Yes

1. Printing Module (PM) ?
PM/IMM connection
Conduit wire(s) cut
2. Ink Management Module (IMM) ?
PM/IMM connection
IMM/Ctrl M connection
3. Control module (Ctrl M) ?
4. EHV block

1. Printing Module (PM) ?
PM/IMM connection
Conduit wire(s) cut
2. Ink Management Module (IMM) ?
PM/IMM connection
IMM/Ctrl M connection
3. Control module (Ctrl M)



Troubleshooting charts

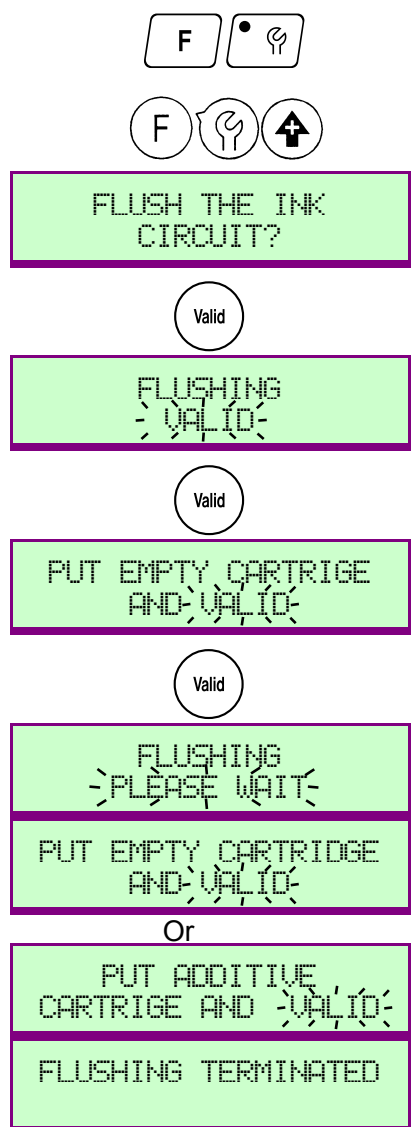
■ Maintenance procedures

Flush the ink circuit

This procedure must be carried out before a stop of more than 7 days, and before a the ink management module is changed (if this is possible).
Start the flushing procedure by draining the printer completely, then flush using the additive.
Two empty cartridges are required.

CAUTION

Carry out the steps shown below with care so as to avoid any liquid being splashed. Use latex gloves and goggles for your protection.



Sigma - Mega - Supra

Prima

Position the head on its servicing stand.

The ink cartridge must be replaced by the empty cartridge.

Follow the instructions which appear on the screen.



Troubleshooting charts



■ Maintenance procedures

Drain completely

DRAIN COMPLETELY?

Valid

DRAINING
- VALID -

Valid

PUT EMPTY CARTRIDGE
AND - VALID -

Valid

DRAINING
- PLEASE WAIT -

PUT EMPTY CARTRIDGE
AND - VALID -

DRAINING
TERMINATED

Position the head on its servicing stand.

The ink cartridge must be replaced by the empty cartridge



Troubleshooting charts



■ Maintenance procedures

Drain partialy

DRAIN
PARTIALY?

Valid

DRAINING
- VALID -

Valid

PUT EMPTY CARTRIDGE
AND - VALID -

Valid

DRAINING
- PLEASE WAIT -

PUT EMPTY CARTRIDGE
AND - VALID -

DRAINING
TERMINATED

Position the head on its servicing stand.

The ink cartridge must be replaced by the empty cartridge.



Troubleshooting charts

■ Maintenance procedures

Testing solenoid valves

Certain malfunctions may be caused by blocked solenoid valves.

There is a function which allows you to activate the solenoid valves independently in order to check their operation and unblock them if necessary.

This function is called via the menu "FUNCTION", "MAINTENANCE", and is called "TEST SOLENOID VALVES".

The different commands offered by this function are as follows:

- 0 : ink solenoid valve.
- 1 : additive solenoid valve.
- 2 : buffer solenoid valve.
- 3 : accumulator solenoid valve
- 4 : condenser solenoid valve.
- 5 : suction solenoid valve.
- 6 : exhaust solenoid valve.
- 7 : drain solenoid valve.
- 8 : pressure solenoid valve.
- 9 : suction and exhaust solenoid valves simultaneously.
- 10 : pump washing solenoid valve

To perform the test, press the  button to activate the solenoid valve and listen to the noise it makes when moving.

Generally, solenoid valves can be unblocked by simply continuing to move them.

The sections which follow detail special procedures for certain solenoid valves.

ATTENTION

Ink or additive spillage is possible during these operations. Wear gloves and safety goggles.

Unblocking ink solenoid valve 0

- With the printer started, go to "TEST INK SOLENOID VALVE 0".
- Carefully lie the machine on the side opposite the cartridges.
Remove the cartridges.
- Dismount the hollow needle holder and check that the needle is not blocked (clean it with additive if necessary).
- Insert additive in the solenoid valve duct.
Activate the solenoid valve until it is unblocked.



Troubleshooting charts



■ Maintenance procedures

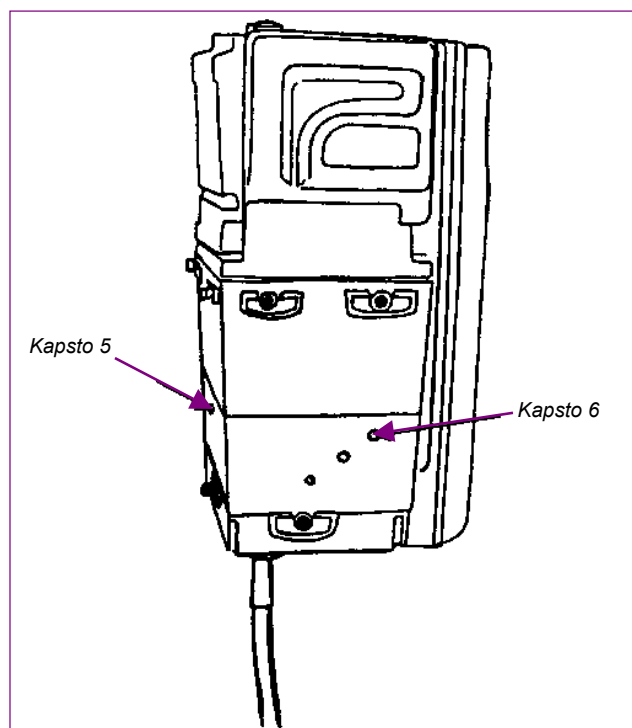
Unblocking the 5 (suction) and 6 (exhaust) solenoid valves

- With the printer started, move to "TEST 9 SUCTION / EXHAUST SOLENOID VALVES".
- Remove the kapsto plug from solenoid valve AS 5 which is located on the side opposite the control module.
Remove the kapsto plug from solenoid valve RE 6 which is located on the side opposite the cartridges.
- Place a **large cloth** in front of the aperture of solenoid valve RE 6 in order to absorb any spillage of liquid.

ATTENTION

Wear gloves and safety goggles.

- Check step "9 SUCTION and EXHAUST SOLENOID VALVES" and insert additive in the aperture of solenoid valve RE 6.
- Continue this operation until the additive comes out clear on the cloth.
- Test the solenoid valves individually to check their operation.
- Restart the printer with exhaust kapsto RE 6 open and with a cloth located in front of it to recover any liquid from the air pump.
- Replacer the kapsto. The printer can now restart production.



REMINDER

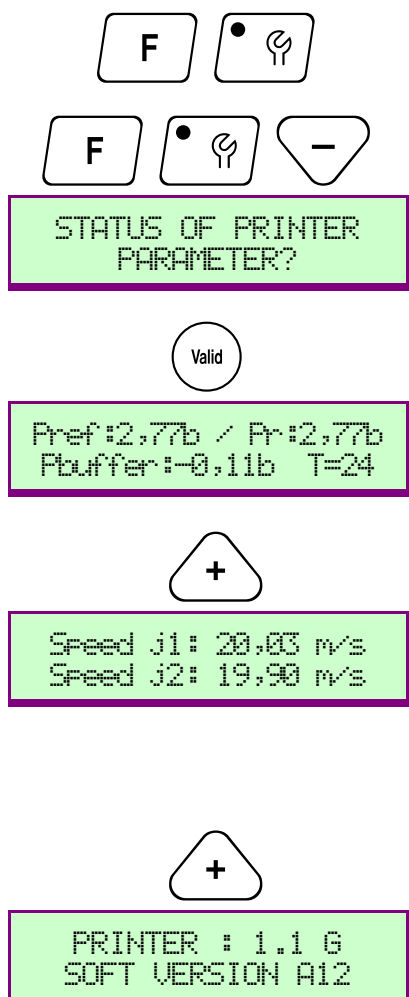
On the ink modules with "Flaps", there is no rattling noise.



Troubleshooting charts

■ Checking operating parameters

Using the Operator Interface



Pref : Pressure set-point for printer installation.
Pr : Actual pressure in the ink circuit.
T : Temperature (°C).
Pbuffer : Vacuum in buffer.

Speed j 1 : Speed of the jet no. 1
Speed j 2 : Speed of the jet no. 2

Printer : - Configuration of the head.
Soft version : - software version display.



Troubleshooting charts

■ Checking operating parameters

Using the terminal (except Prima)

In the STATUS sub-menu under the PRODUCTION menu, a dialog box tells you the status of the machine and of its operating parameters:

S7 PRODUCTION			
Printer	Message	Status	mAint.
Ink M.status: Readyt Jet status: Ready Ref P: + 2.77 acc P: + 2.77 Tamp P : - 0.11 T°C : 24 Jet speed 1 : 19.90 m/s			
↑, ↓ : for selection and VALID			

This function provides a real-time indication of the status of the machine and of its operating parameters:

- **Ink M.status:** Shows whether the ink circuit is in service or not.
- **Jet status:** Shows whether the jet is in service and ready to print or otherwise.
- **Ref P:** Shows the ink circuit set-point pressure.
- **Acc P:** Shows actual ink circuit pressure.
- **Tamp P:** Shows the negative pressure value at the gutter.
- **T°C:** Shows the printer operating temperature.
- **Jet speed 1:** Shows the speed of the jet
(with a twin-jet machine the speed parameter shown is for jet no. 2).
- **Display / acknowledgement of faults and Alarms:** When Faults or Alarms occur, they are displayed in clear text in a dialog box.

85 Default	01/01
Jet vacuum	
Restart jet,check gutter function	
↑ ↓ : list, VALID : acknowledge	

The figure at the top right indicates the number of faults.
A recommendation is displayed as to how to correct the fault.

To acknowledge, press .

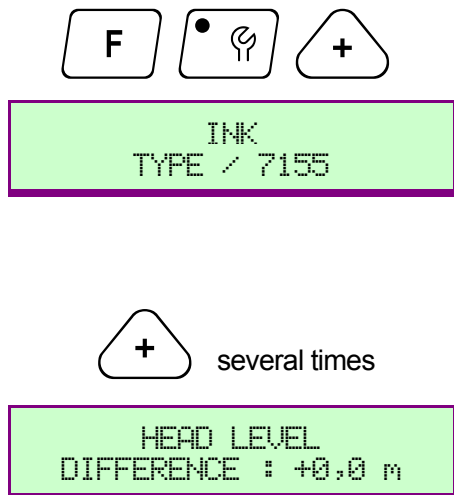


Troubleshooting charts



- Checking the installation parameters :
Ink type, head level difference.

On PRIMA



This parameter is programmed in factory. Do not modify it, since this might disturb the operation of the printer. However, this parameter must correspond to the reference of the ink used.

The level difference height between the head and the ink circuit must be programmed. The value is positive when the head is higher than the ink circuit. This value must be modified if the head installation height is modified.

On SIGMA, MEGA, SUPRA

In the PRINTER PREPARATION menu, Initialisation, Printer, Ink.

A dialog box shows the ink type.

This parameter has been fixed by an Imaje technician at the time of the installation of the printer. Do not modify it, since this might disturb the operation of the printer.

However, this parameter must correspond to the reference of the ink used.

In the PRINTER PREPARATION menu, Initialisation, Printer, Level Difference.

A dialog box enables to program the actual level difference between the head and the ink circuit on the production site. The value is negative if the head is lower than the ink circuit and positive if the head is higher than the ink circuit.

This value must be modified if the head installation height is modified.



Spare parts assembly sheets

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Spare parts assembly sheets



■ Introduction

Routine checks

- These checks should be performed whenever a part is changed.
- Acknowledgement of faults.
- Head and umbilic
 - General state,
 - Cleanness of electrodes.
- Electronic circuits:
 - External connections with the industrial interface cassette,
 - External connections with the extension cassette,
 - Terminal.
- Perform the print tests.

IMPORTANT

Any module having been in contact with ink must be rinsed.

For the exact references of the parts,

see « Accessories and spare parts » catalogue





Spare parts assembly sheets



■ Power supply board

Tools required:

- Hexagonal key (Allen wrench), 2 mm.
- Hexagonal key (Allen wrench), 3 mm.
- Dynamometric screwdriver (500 millinewton x meter - mN.m).

Preparation:

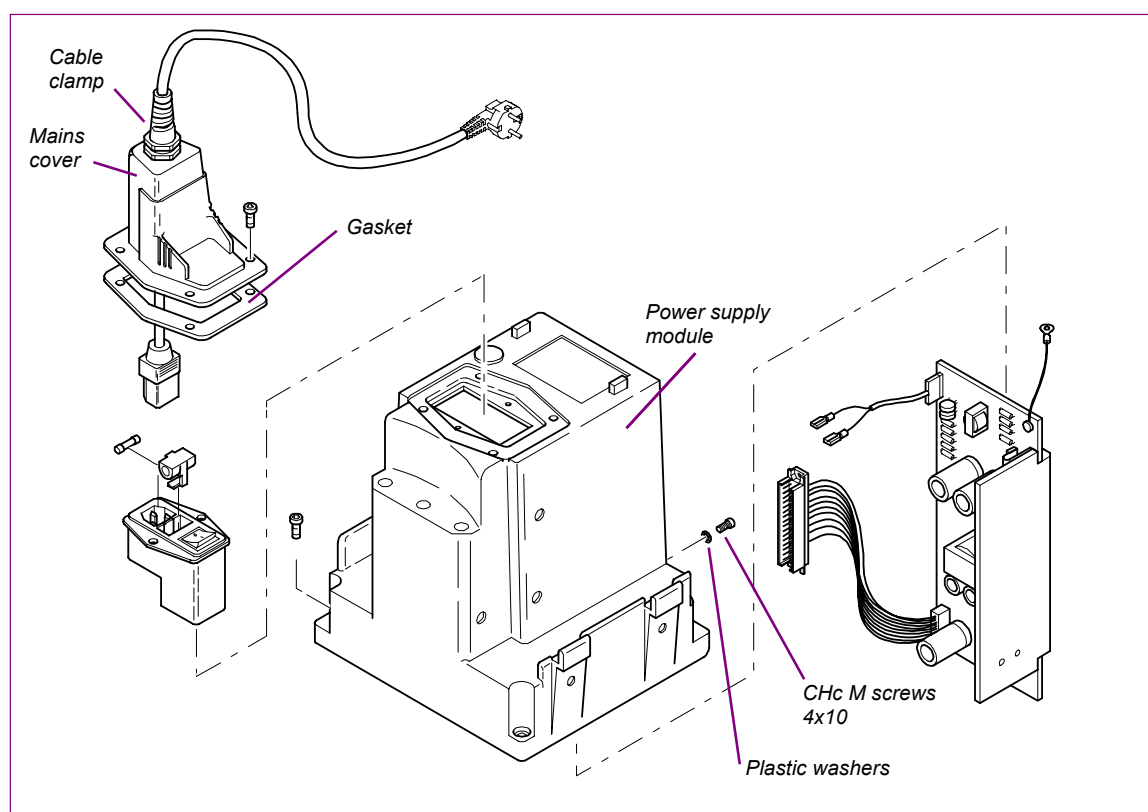
1. Switch the printer off.
Disconnect the power cable from the mains.
2. Disconnect the cassettes, the terminal and the 2 cartridges.
3. Dismount (3 screws with O-rings) and disconnect the control module.

Dismounting:

4. Dismount the mains cover (see figure below).
5. Dismount the power supply module (4 screws with plastic washers). Disconnect the power supply module from the ink management module.

ATTENTION

When handling the board, remember that the capacitors are charged to several hundred volts.





Spare parts assembly sheets



■ Power supply board (Cont'd)

6. Disconnect the 3 female terminal sockets on the mains filter switch.
7. Unscrews the screws which secure the ground wire (green/yellow) to the housing.
8. Remove the 2 screws which secure the male connector (see figure below).
9. Dismount the power supply board by unscrewing the 6 screws with washers which hold the board.

Replacement :

10. Fix the new board on the the power supply module housing using the 6 screws with washers.
11. Connect the three female terminal sockets to the mains filter switch.
12. Loosely screw the earth wire to the housing.
13. Fix the connector using the 2 screws. Carefully route the wire along the frame.

ATTENTION

During assembly, make sure that the seal is correctly positioned (so that it is not cut when you tighten the assembly) along with the ink management module clips.

14. Connect the power supply module. Loosely tighten the 4 screws with plastic washers, (500 mN.m maximum).

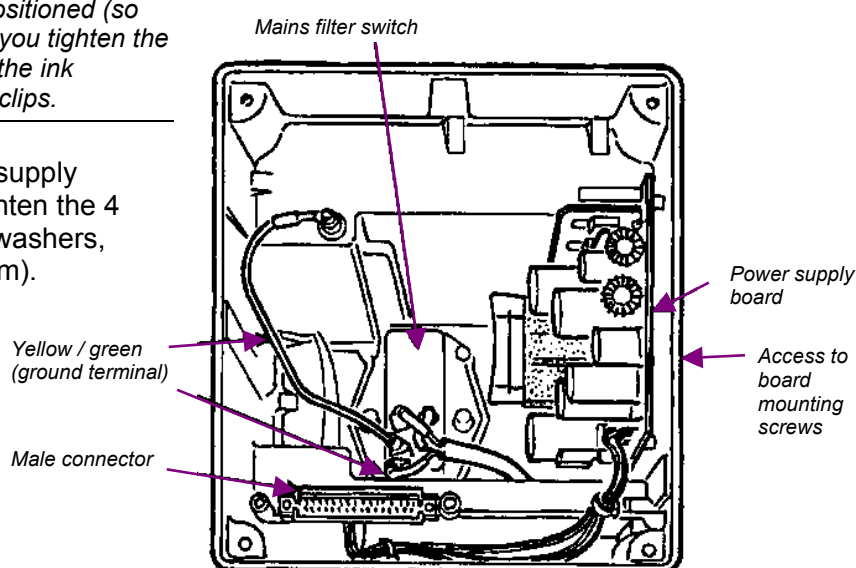
15. Fix the mains cover and flat seal after checking:
 - that the "O" position of the mains switch is not visible (power supply to module is active);
 - that the power supply cable is plugged into the power supply.Tighten the cable clamp.

16. Mount the control module.

Tests and startup:

Connect the cartridges and cassettes. Connect the power supply cable to the electrical power supply. Start the printer.

ROUTINE CHECK





Spare parts assembly sheets



■ Control module

Tools required:

- Hexagonal key (Allen wrench), 3 mm.

Preparation:

1. If necessary, save the library on an extension cassette.
Shut off and unplay printer

Dismounting:

2. Disconnect the cassettes and the terminal.
3. Dismount (3 screws with O-rings) and disconnect the control module.

ATTENTION

Hold the module at all times during disassembly.

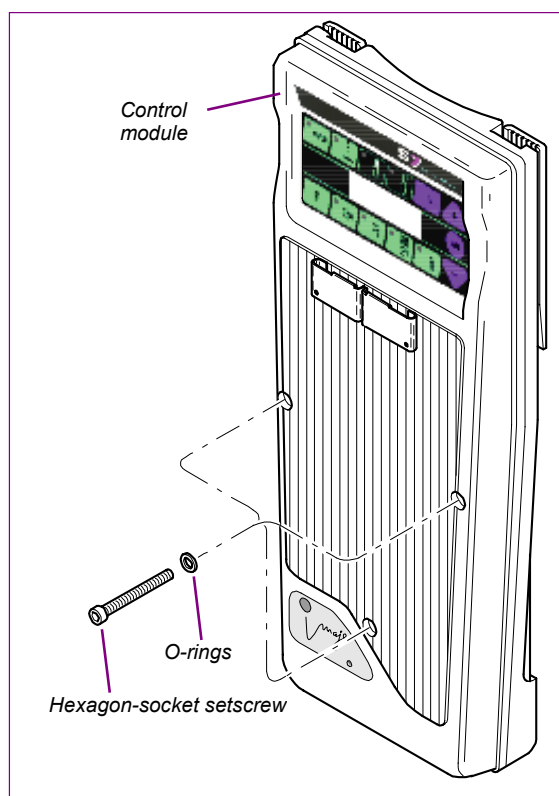
Replacement:

4. Visually check the following on the rear of the new control module:
 - The connectors (lugs not twisted),
 - Presence of the 2 cylindrical seals and seal on each connector.
5. Connect the control module and gently tighten the 3 screws together with their O-Rings.

Start up:

6. Install the cassettes, connect and start printer.
7. Perform print tests

ROUTINE CHECKS





Spare parts assembly sheets



■ Ink management module

Tools required:

- **Hexagonal key (Allen wrench), 3 mm.**
- **Print module simulation tool.**
- **Additive wash bottle.**
- **Blotting paper.**
- **Dynamometric screwdriver (500 milliNewton x mètre - mN.m).**

NOTE

There are two possible cases:

- *Rinsing possible - follow procedure as of point 1.*
- *Rinsing not possible - follow procedure as of point 7.*

Preparation with rinsing:

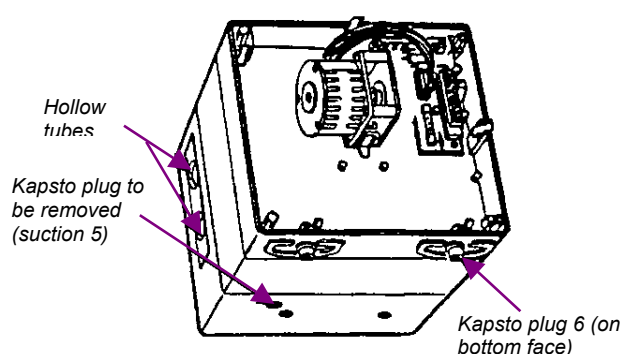
1. Change the ink cartridge for an empty cartridge (ref: 7002) and then rinse the printer.
2. Disconnect the printer from the power supply.
3. Disconnect the 2 cartridges, the terminal and the cassettes. Position the printer horizontally. Place blotting paper below the print module.

Preparation without rinsing:

7. Disconnect the printer from the power supply.
8. Attach the printer vertically on the surface opposite the cartridges and position the printing head approximately 1 meter below the printer body.
9. Place a recovery vessel (minimum 500 cc) and blotting paper below the ink circuit.

Dismounting with rinsing:

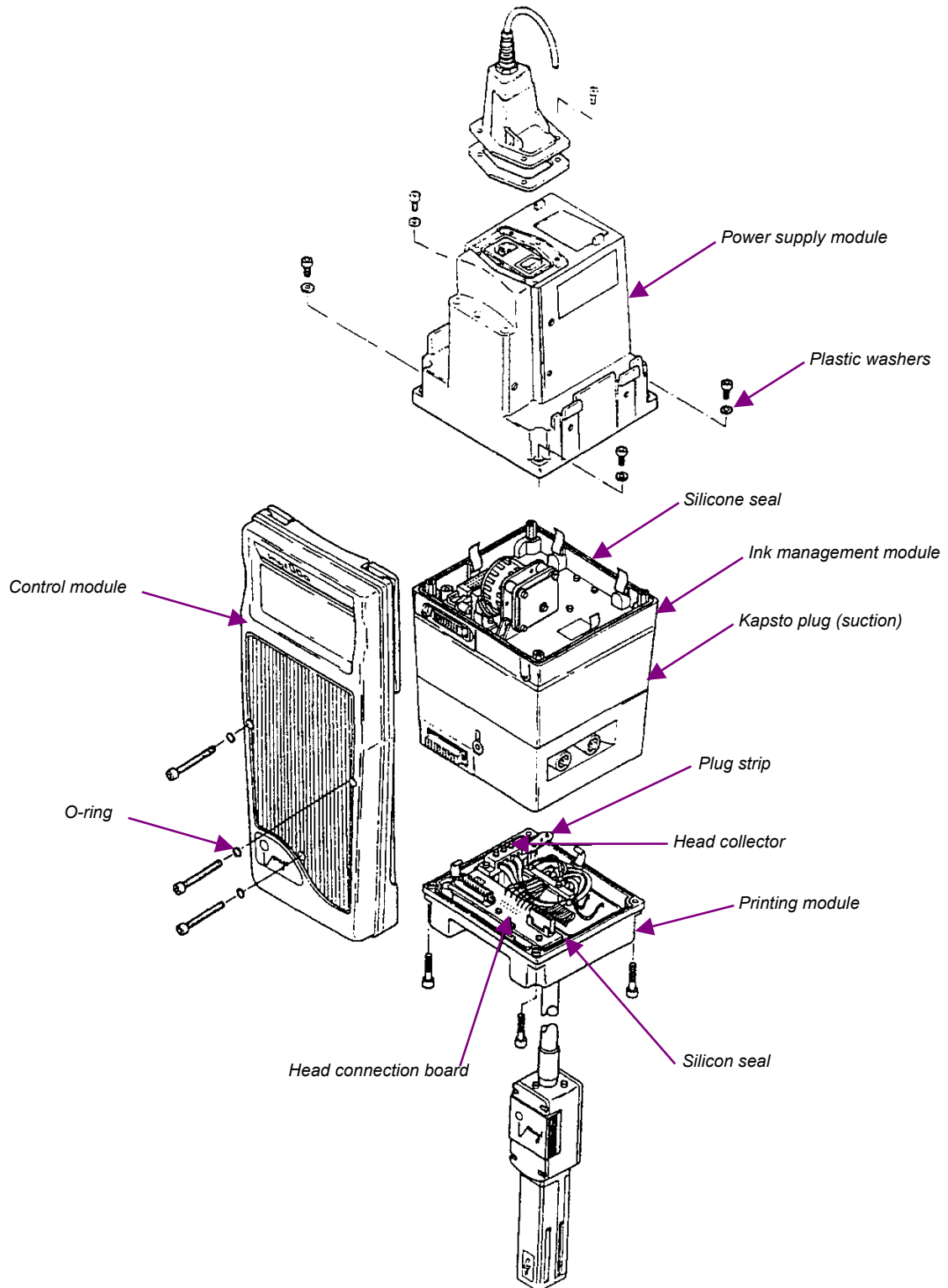
4. Dismount the control module (see figure on next page)
5. Dismount the print module. Remove the 4 screws, disconnect the module and place the plug strip on the head collector.
6. Dismount the power supply module. Remove the 4 screws with plastic washers. Disconnect the module.





Spare parts assembly sheets

■ Ink management module (Cont'd)





Spare parts assembly sheets

■ Ink management module (Cont'd)

Dismounting without rinsing:

10. Disconnect the 2 cassettes and the 2 cartridges.
11. Dismount the control module: idem point 4.
12. Remove the Kapsto plug 5 from the ink management module to put the buffer to the atmospheric pressure (see figure above).
13. Refit the Kapsto plug after a few seconds.

ATTENTION

regarding ink spillage when disconnecting the print module.

14. Dismount the print module.
Remove the 4 screws which hold the module in place and remove the module.

Place the plug strip on the head collector. Tilt the print module in such a way that the head collector is located at the bottom.
15. Remove the kapsto plug mentioned in point 12 in order to let the ink management module empty the ink from the buffer.
16. When the ink has finished flowing, install the print module simulator.
17. Mount and fix the control module without tightening it.
18. Reconnect the power supply to allow the accumulator to drain

entirely. Drainage can take some time and last up to 1 mm.

19. When the flow has stopped, disconnect the power supply and use the wash bottle to pour in some additive via the corresponding aperture in the kapsto plug. Insert the end of the wash bottle to a depth of a least 1 cm to make sure that the additive penetrates correctly.

Stop when the majority of the liquid coming from the container is additive and replace a kapsto plug.
20. Dismount the control and power supply modules: see points 4 and 6.

Replacement :

21. Remove the protective plugs from the hollow needle carriers and the new ink management module and place them on the module which you wish to return.
22. Before remounting the printer, check:
 - The electrical connector of each module (lugs not twisted).
 - The presence of the silicon seal on the Print and Ink management modules.
 - The presence of O.rings on the control module screws.
23. Mount the power supply module:
 - Connect the module and gently tighten the 4 screws with their plastic washers (500 mN.m).



Spare parts assembly sheets



■ Ink management module (Cont'd)

24. Mount the printing module.

Check that the 3 O-rings are present and that the collector is clean. Connect the Print module to the Ink management module. Tighten the screws gently (500 mN.m).

25. Mount the control module:
Connect the control module and tighten the 3 screws with their 3 O-rings gently.

26. Connect the cartridges and cassettes

Start up:

27. Connect the power supply cable to the mains socket. Start the printer.

28. Perform an autocalibration procedure.

ROUTINE CHECKS



Spare parts assembly sheets



■ Printing module

Tools required:

- **Hexagonal key (Allen wrench), 3 mm.**
- **Dynamometric screwdriver (500 millinewton x meter - mN.m).**

Preparation :

1. Rinse the printer. Disconnect the printer from the power supply.
2. Remove the ink and additive cartridges.
3. Position the printer horizontally with the control module on the left and the print head below the printer module.
4. Place some blotting paper below the printer for when you disconnect the print module.

Dismounting:

5. Remove the 4 screws and disconnect the Print module. Place the plug strip on the head collector.

ATTENTION

to disconnect the print module, position the printer as indicated in point 3.

Replacement :

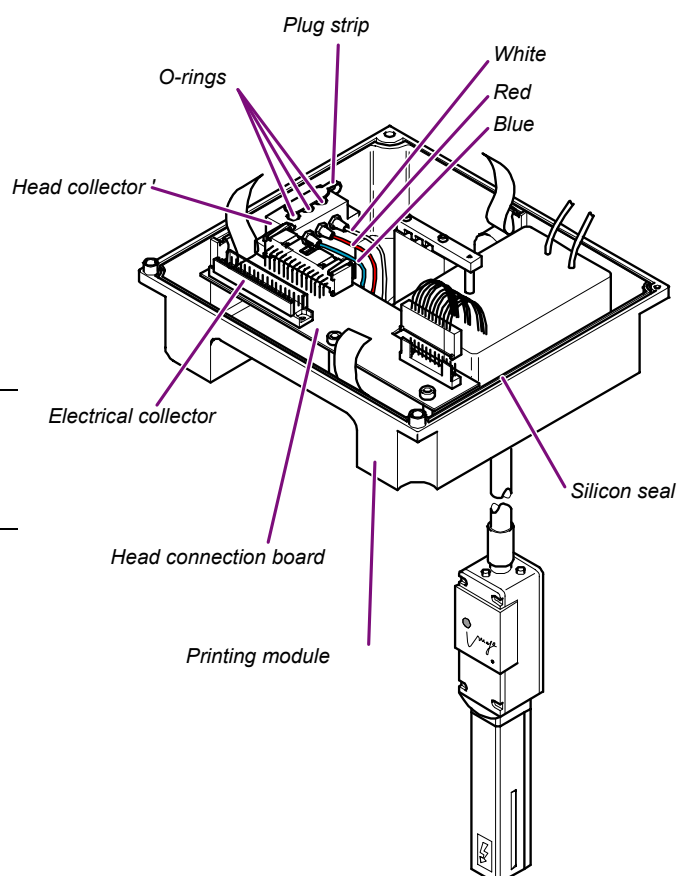
6. Assemble Print module:
Perform a visual check of:
 - The electrical connector (lugs not twisted)
 - The presence of the 3 O-ring s on the head collector after removing the plug strip.
 - The presence of the silicon seal on the Print module.

ATTENTION

to the position of this seal to avoid cutting it when tightening.

- The cleanness of the ink circuit collector.

Connect the Print module and loosely tighten the 4 screws (500 mN.m).





Spare parts assembly sheets



■ Printing module (Cont'd)

Tests and start-up:

- 7.** Restore the printer to its initial position
- 8.** Connect a new ink cartridges. The additive cartridge is positioned in step 11.
- 9.** Connect and start-up the printer.
- 10.** Perform an autocalibration procedure
- 11.** Connect the additive cartridge and acknowledge faults 51 and 53.
- 12.** Perform a print test.

ROUTINE CHECKS



Spare parts assembly sheets

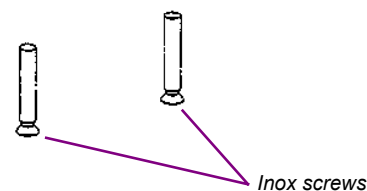
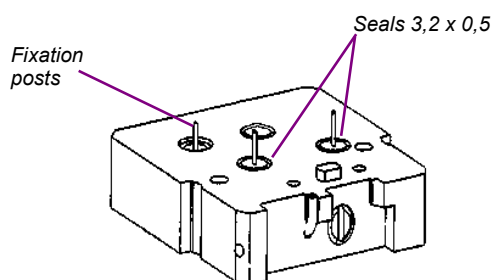


■ Gutter block

Specific tools:

- **Hex. Male key (Allen wrench), size 1.5**

1. Stop the printer and disconnect it from the mains.
2. Remove the two mounting screws of the gutter block underneath the head.
3. - Disengage the block without damaging the mounting posts.
- Pay attention to the seals
4. Mount the new block, proceeding in the reverse order and verifying that the O-rings stay in their inserts.



Trials :

5. Start up the printer, then the jet, verify that there are no leaks or recuperation faults detected by mistake

ROUTINE CHECKS



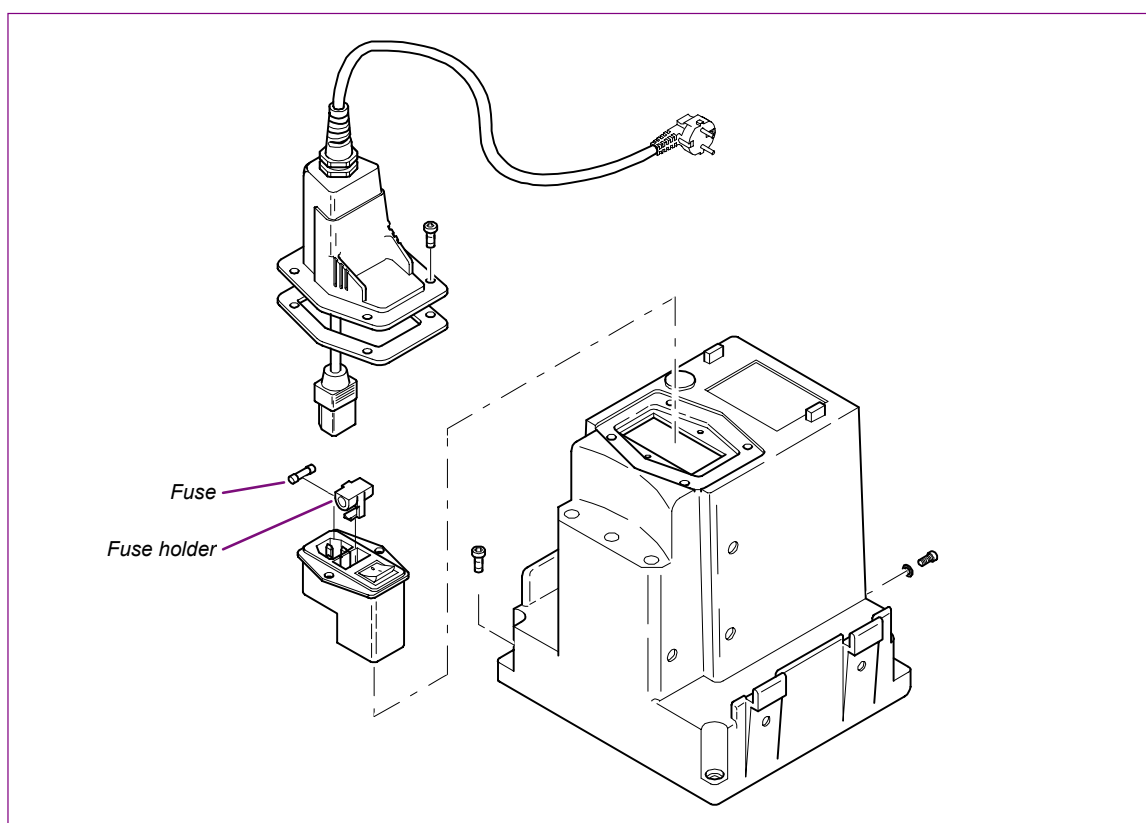
Spare parts assembly sheets



■ Mains fuse

1. Shut off and unplug the printer.
2. Unscrew the mains lead protective sleeve.
3. Remove the mains lead from the printer.
4. Use a screwdriver to remove the fuse holder from adjacent to the mains plug.
5. Change the fuse and replace the fuse holder.
6. Plug the mains lead back into the printer.
7. Replace the protective sleeve.
8. Connect the printer to the mains and start it up.

Fuse location:





Spare parts assembly sheets



■ Resonator G and M heads

Specific tools:

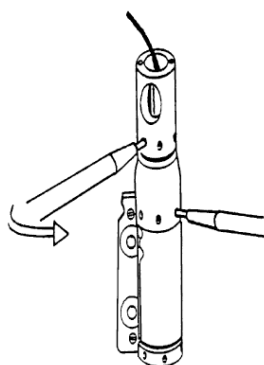
- 2 tools for tightening the cannon (pin punches or needle, contained in the servicing suitcase).
- Tweezers.
- Hex. male key (Allen wrench), size 1.5.

Adjustment procedure: Adjusting the jet in the gutter. Jet break-off point adjustment

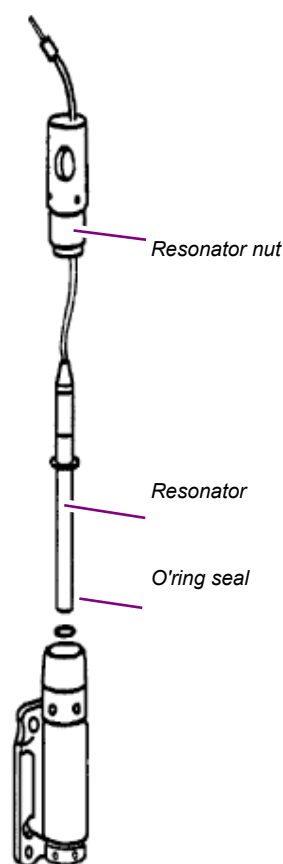
1. Stop the printer and disconnect it from the mains.
2. Disconnect wires of the resonator.

ATTENTION

Be careful with the wires and contacts between the resonator and the head.



3. Loosen the retainer by immobilizing the cannon body (pin punches or needle) to avoid misadjusting the cannon.
4. Remove the resonator and o-ring from its housing.



5. Pass the wire of the new resonator through the retainer and fit the new O-ring.
6. Place the assembly in the cannon body and moderately tighten the retainer while immobilizing the cannon body.
7. Reconnect the wires.

Trials and adjustments:

8. Start the printer and then the jet.
9. Verify that the jet falls in the gutter (otherwise see adjustment procedure) and that there are no leaks.
10. Adjust the break-off point (adjustment procedure).

ROUTINE CHECKS



Spare parts assembly sheets

■ Cannon G and M heads

Specific tools:

- 2 tools for tightening the cannon (pin-punches or needle, hexagonal key contained in the servicing suitcase).
- Tweezers.
- Hex. male key (Allen wrench), size 1.5.

Adjustment procedure: Jet in the gutter, jet break-off point.

CAUTION

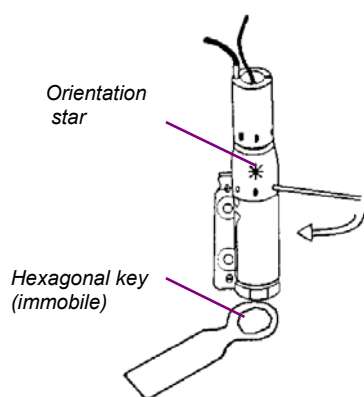
Carry out this operation in a dust-free environment.

Preparation:

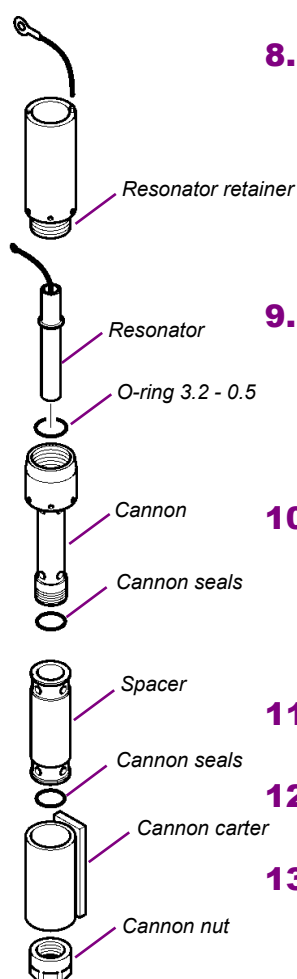
1. Stop the printer and disconnect it from the mains.
2. Remove the protector of the resonator
3. Disconnect the wires of the resonator

CAUTION

Take care with the wires and their contacts between the resonator and the head.



4. Unscrew the resonator retainer.
5. Remove the resonator from its mount.
6. For G cannon localize the star position on the old cannon.



Replacement:

7. Loosen the cannon nut (without removing it), keeping the hex. key immobile and pivoting the pin punch (see figure).
8. - Take the cannon out, remove traces of ink from the spacing tube and the nut, then remount the new cannon with two new seals.
- For G cannons, pre-position the cannon, orientating the cannon star as the old one.
9. These two seals, which are placed at either end of the central spacing tube, assure, by the effect of tightening, the position of the cannon and the water tightness of the assembly.
10. Remount the resonator with the new O-ring, moderately tighten the resonator retainer and connect the wires.

Trials and adjustments:

11. Start the printer and then the jet, verifying that there are no leaks.
12. Adjust the jet in the gutter (see procedure).
13. Adjust the break-off point (see procedure).

ROUTINE VERIFICATIONS



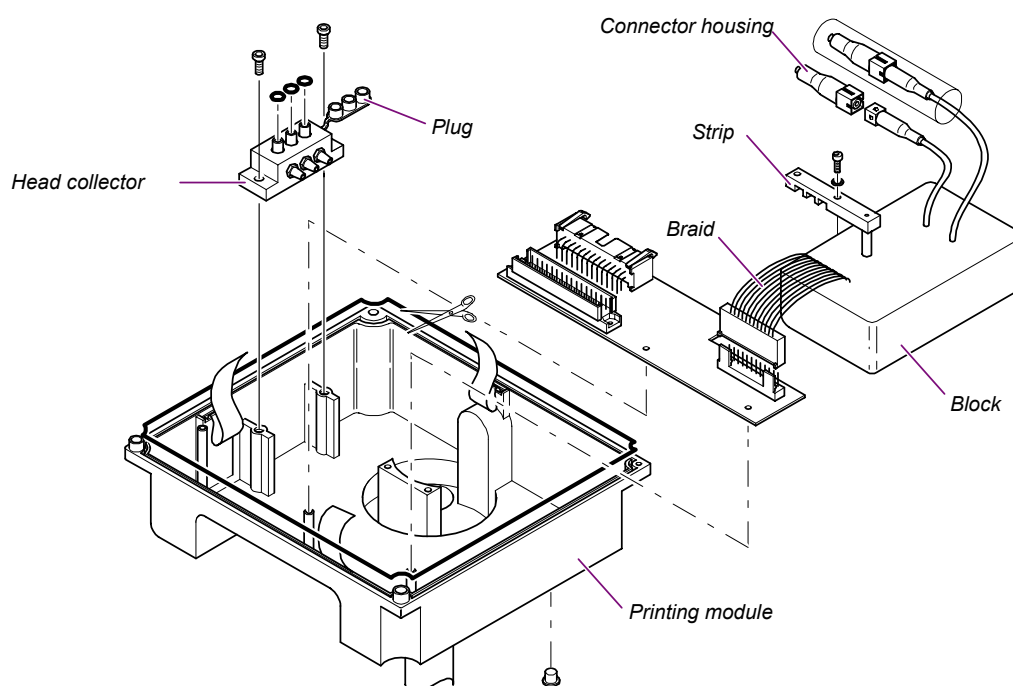
Spare parts assembly sheets



■ EHV block

Specific tools:

- Hexagonal keys (Allen wrenches), 2 and 3 mm.
- Soldering iron, crimping tool, hot air generator (if your faulty EHV block is soldered directly to the cable without a connection housing).
- Dynamometric screwdriver (500 milliNewton x meter - mN.m).



Preparation :

1. Replace the ink cartridge with an empty with an empty cartridge and drain the buffer. (Function : Drain partially)
2. Switch off the printer and disconnect it from the power supply.

Dismounting:

3. Dismount the print module to access the EHV block (see Replacing the Print module).

4. Place the plug on the head collector.
5. Remove the 2 strip fixing screws to access the EHV block. Identify the wire and pipe running direction.
6. Disconnect the braided cable from the EHV block.
7. - If your faulty EHV block possesses connector housings for cable connection:
- Remove the faulty block and jump straight to point 13.

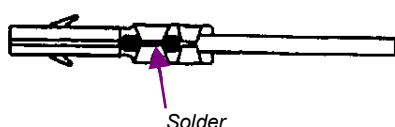


Spare parts assembly sheets

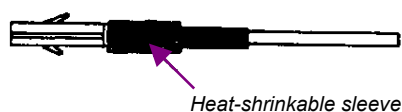
■ EHV block (Cont'd)

- 8.** Your EHV block is directly connected to the cable (without a connector housing). Cut the 2 EHV wires coming from the cable at a distance of 10 mm from the EHV block. Then strip these two wires over a distance of 4 mm.

- 9.** Crimp the connectors on the cable's EHV wires. Then smooth solder the stripped section.



- 10.** Position the heat-shrinkable sleeve dia.3 mm on the crimped connectors. Use a hot air generator to shrink the sleeve.



- 11.** Slide the heat-shrinkable dia.9 mm over the wires of the EHV block. Insert the crimped connectors as far as they will go into the connector housings to ensure correct connection.

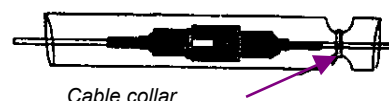


- 12.** Position the heat-shrinkable sleeve on the cylindrical part of the housings. Heat to shrink the sleeves and ensure adherence.



Assembly:

- 13.** Mount the EHV block and connect the braided cable.
- 14.** Slide the 2 sheaths of dia.18 mm onto the cables of the EHV block.
- 15.** Connect the block to the cable. Observe the cable colours.
- 16.** Protect the contacts by sliding the sheath dia. 18 mm over the connector housings (without shrinking it). Use a cable collar to hold the sheath in place.



- 17.** Mount the strip while making sure that the wires and pipes are correctly located. Tighten the screws gently.
- 18.** Remove the plug of the head collector.
- 19.** Mount the Print module (see Replacing the Print module). Connect the cartridges.

ROUTINE CHECK



Spare parts assembly sheets

■ Non-return valve

Specific tools:

- **Hex. male key (Allen wrench), size 1.5.**

CAUTION

The non-return valve in the head is a fragile part and is adjusted for a low pressure rating. It is meticulously flushed before being placed in its watertight packaging.

No impurities must penetrate internally during assembly and no additional flushing should be carried out.

Dismounting:

1. Stop the printer and disconnect it from the mains.
2. Dismount the lower rear cover (8 screws).
3. Slide the bottom ring to the valve, then remove the valve, disconnecting it from the recovery connector, then from the conduit pipe.

Replacement:

4. Fit the 2.7/4 pipe of the valve assembly onto the recovery connector.
5. Fit the valve onto the conduit's 3.2/4.5 pipe.
6. Slide the bottom ring down to the recovery connector.

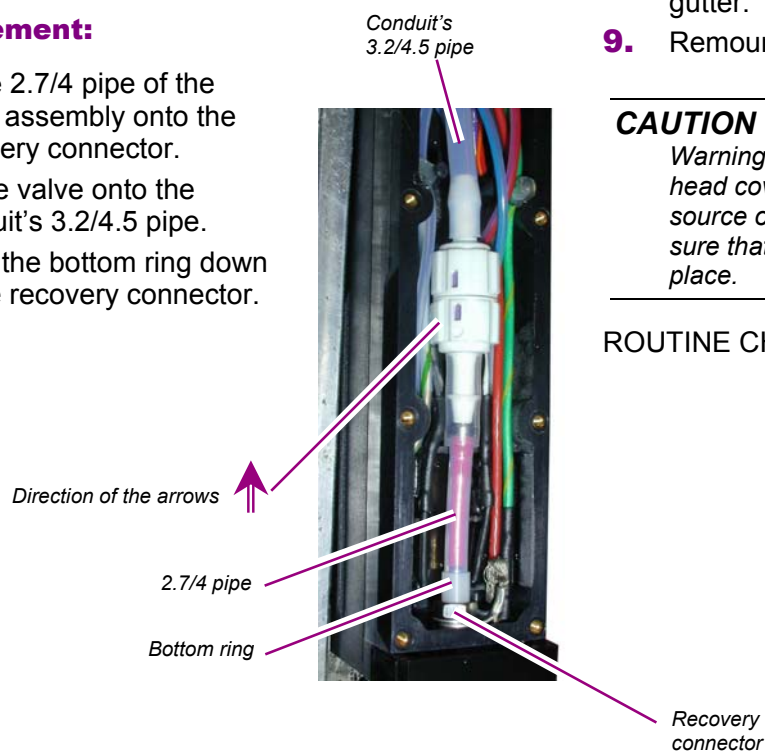
Trials and remounting:

7. Start up the printer and then the jet. Verify that the recuperation circuit is functioning correctly and that there are no leaks. Proceed with a printing trial.
8. Execute a complete shut-down cycle to be sure that the valve fulfills its role and that there is no back-flow from the recuperation gutter.
9. Remount the rear cover.

CAUTION

Warning, a badly closed rear head cover can become a source of EHV faults. Make sure that the seal is well in place.

ROUTINE CHECKS





Spare parts assembly sheets



■ Head collector

Tools required:

- Hexagonal keys (Allen wrenches), 2 and 3 mm.
- Tweezers.
- Dynamometric screwdriver (500 milliNewton x meter - mN.m).

Preparation:

1. Replace the ink cartridge with a low-pressure cartridge and drain the buffer (function "Drain Partial"). Disconnect the power supply cable.
2. Dismount the printing module to access the head collector. (see Replacing the Printing module).
8. Remount the Printing module (see Replacing the Printing module; do not perform the autocalibration procedure).

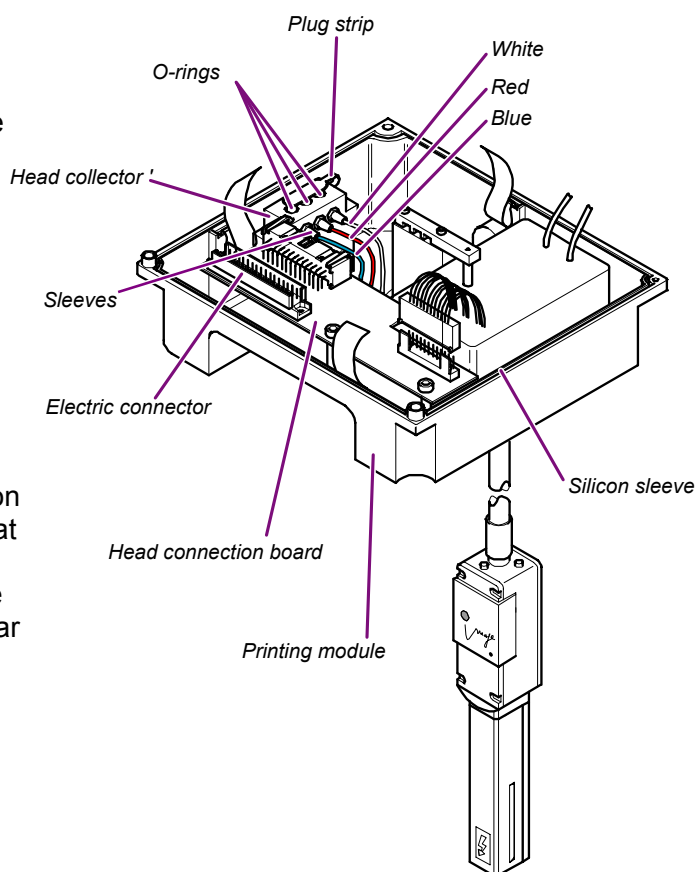
Dismounting:

3. Use the tweezers to slide on the 3 sleeves and cut the tubes entering the head collector as close as possible to the connections.
4. Remove the 2 screws, keep the plug strip and remove the head collector.

Replacement:

5. Before remounting the 3 pipes on the new collector, make sure that they are not kinked. Then check that the sleeves are present and slide the tubes as far as they will go.
6. Tighten the 2 screws which fix the head collector in place, without forgetting the plug strip.
7. Check that the 3 O-rings are present on the head collector.

ROUTINE CHECKS





Spare parts assembly sheets



■ Associated procedure

Autocalibration

■ When to perform an autocalibration

- After changing the print module.
- After changing the control module.
- After changing the ink management module

■ Why perform an autocalibration

The print quality is assured over time because of the automatic control of the jet speed. This automatic control depends on the type of ink and a number of machine components (print module, ink module, etc...).

Once the printer has been assembled and is filled with ink, the autocalibration procedure is used to reference the automatic control.

■ How to perform an autocalibration

After checking the installation parameters (head level offset), use ink of a known concentration as a reference.

When the jet has attained its nominal speed, the autocalibration validation mechanism positions the curve: Pressure = f (Temperature)

■ Procedure

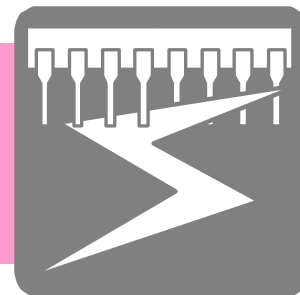
- Machine empty and stopped.
- Connect a new ink cartridge which has been stored at the same temperature as the printer.
- Remove the additive cartridge.
- Start the printer (faults 51 and 53 are displayed).
- Check or insert the head level offset and ink type parameters.
- Check the breaking point in the "Adjustment" function.
- Start the jet as if to print.

NOTE

Before validating autocalibration, acknowledge all faults and alarms.

- Validate the autocalibration with the jet speed is at its nominal value.
Check that the value for the reference pressure is the same as the real pressure value.
- Connect the additive cartridge and perform printing tests.





Printer electronics

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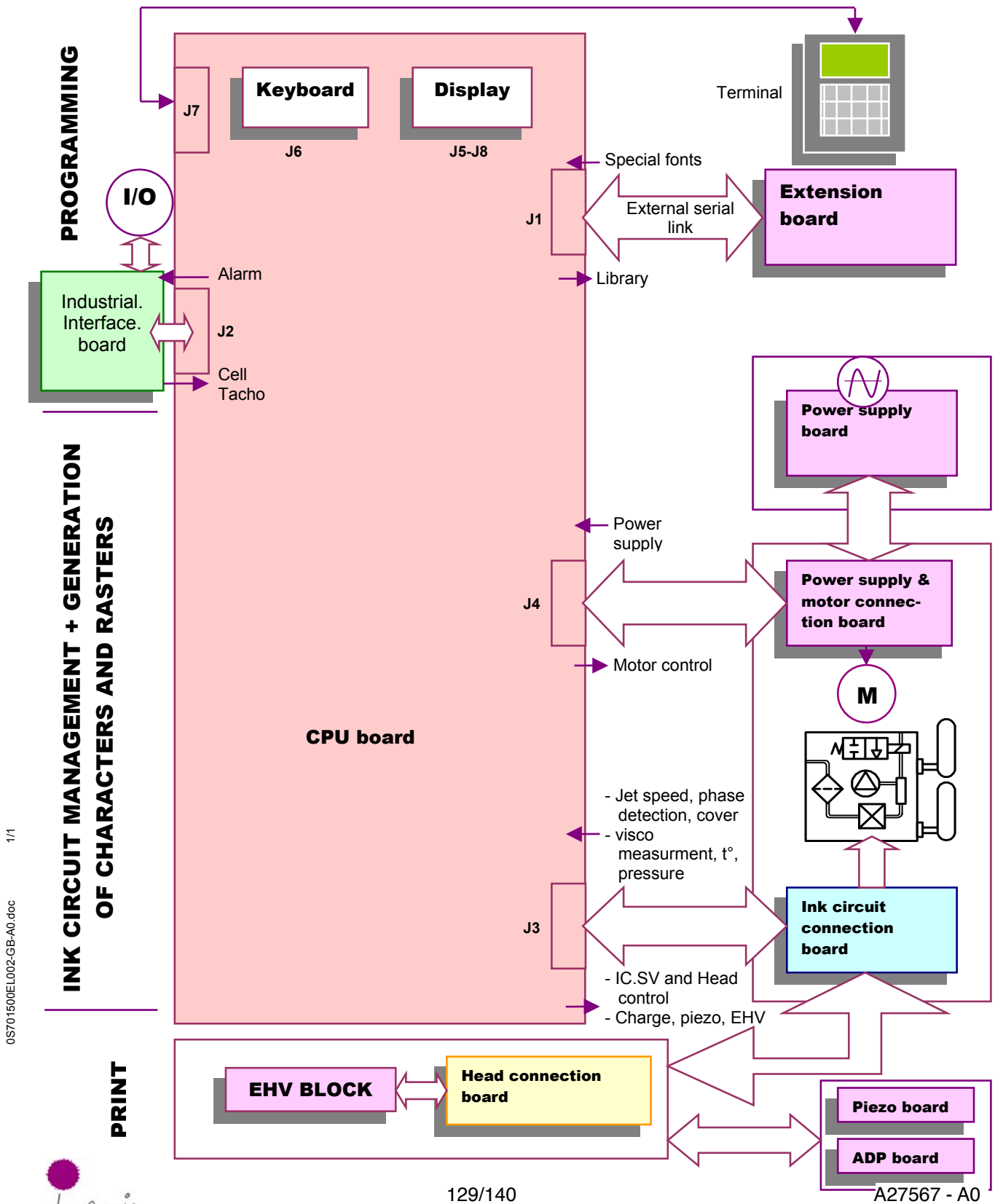
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Printer electronics

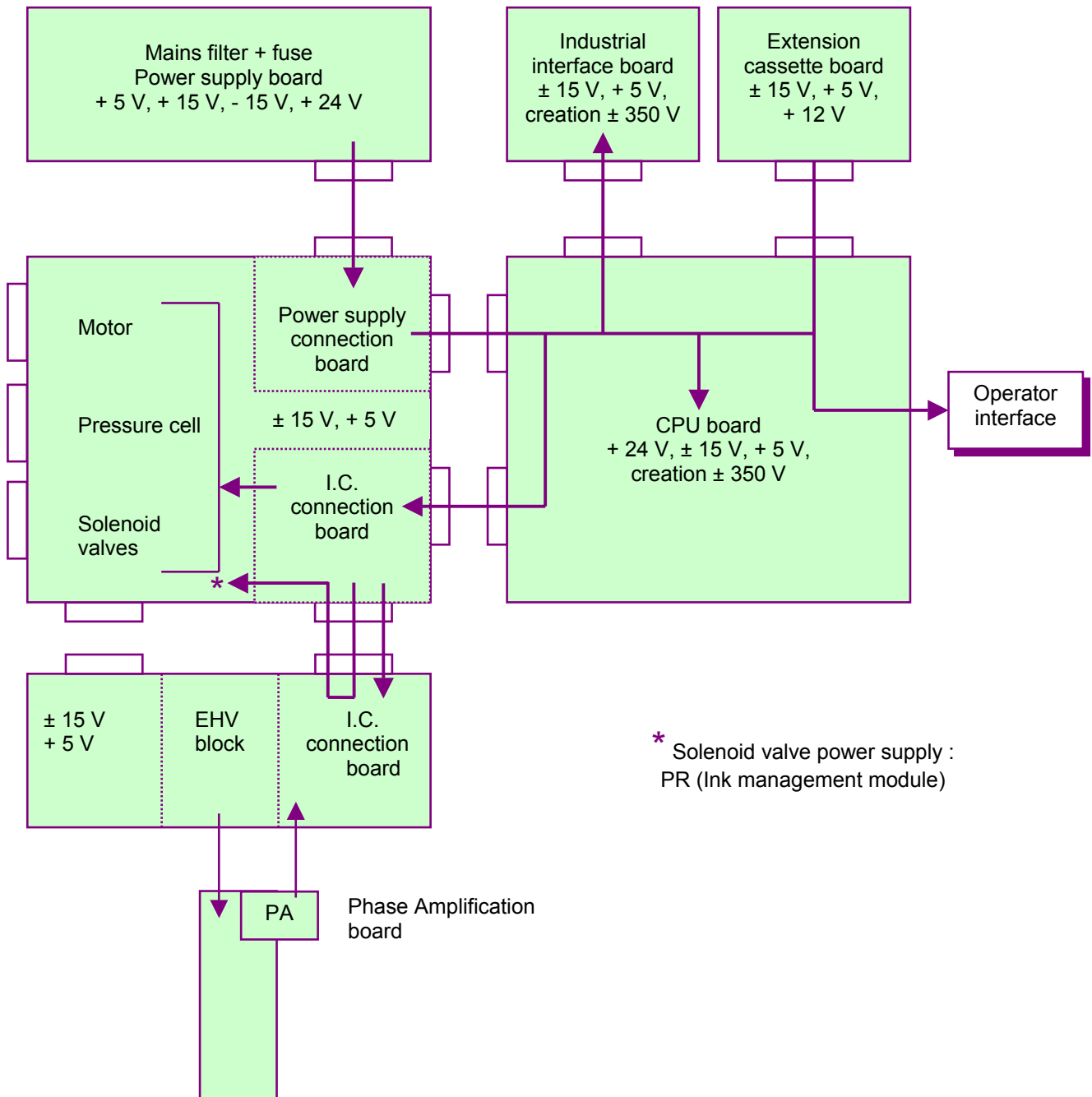
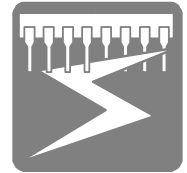
Architecture





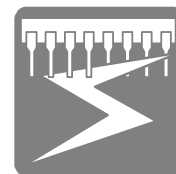
Printer electronics

■ General schematic diagram of power suppliers

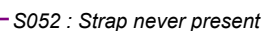


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- CPU board layout





Printer electronics

CPU board connections



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J4 (CPU -----> ALIMENTATION)

1a	PhB1	1b	REC2	1c	Ph/B2
2a		2b		2c	
3a		3b		3c	
4a	PhA1	4b	REC1	4c	Ph/A2
5a		5b		5c	
6a	+5V	6b	-DOUTEPROHPCPU	6c	+5V
7a		7b		7c	
8a	0V	8b	-CLKEEPROHPC	8c	0V
9a		9b		9c	
10a	0V	10b	Ph/B	10c	0V
11a		11b		11c	
12a	-15V	12b	-CDEHOT	12c	+15V
13a		13b		13c	
14a	0V	14b	Ph/B	14c	0V
15a		15b		15c	
16a	+24V	16b	Ph/A	16c	+24V

J2 (CPU -----> INTERFACE INDUSTRIEL)

1a	D85	1b	0V	1c	D15
2a	+5V	2b	0V	2c	0V
3a	D85	3b	0V	3c	D35
4a	+15V	4b	0V	4c	-15V
5a	D45	5b	0V	5c	D55
6a	TACHY111	6b	TACHY112	6c	INWESS11
7a	D65	7b	-DATAEEPROM	7c	D75
8a	TACHYEXT1	8b	-CLKEEPROM	8c	INWESSEXT
9a	SENSBIB	9b	RXD	9c	LATCHMESS
10a	ALCONS	10b	TXD	10c	ALDEF
11a	ETAT1HP	11b	TACHYEXT2	11c	TOPEXT
12a	SYNCHRESS	12b	0V	12c	\TOP11
13a	RAZCPT1	13b	0V	13c	RAZCPT2
14a	+24V	14b	0VQPT	14c	0V
15a	INCCPT1	15b	0V	15c	INCCPT2
16a	+5V	16b	0V	16c	0V

J8 (CPU -----> VISU GRAPH)

1	-CSAFF	2	-CSB7R
3	ADE7	4	ADE6
5	ADES	6	ADE4
7	ADE3	8	ADE2
9	ADE1	10	ADE0
11	0V	12	0V
13	-15V	14	+15V
15	0V	16	0V

J7 (CPU -----> V24)

1	+24V	2	0V
3	RXD	4	TXD
5		6	

J3 (CPU -----> CIRCUIT D'ENCRE)

1a	RES+	1b	RES-	1c	0VA
2a	VREF+5V	2b	0V	2c	EVREF1
3a	EVCON1	3b	PIEZ01	3c	0V
4a	EV+	4b	CHARGE2	4c	TETE0
5a	EVPRE1A	5b	TETE2	5c	ITETE11
6a	EVACCI	6b	0VA	6c	DETPH2
7a	EVTAH1	7b	DETPH1	7c	0V
8a	EVASPI	8b	RECUP2	8c	RECUP1
9a	EV+	9b	0V	9c	LED STROBO
10a	EVPIR1	10b	-15V	10c	+15V
11a	EVSDA1	11b	CHARGE1	11c	0V
12a	EVENC1	12b	0V	12c	CAPOT1
13a	AV1 TH1	13b	TEMP	13c	0V
14a	\CDE TH1	14b	YSTHT	14c	TH12
15a	\RESET TH1	15b	+5V	15c	TH12
16a	TH10	16b		16c	TH11

J6 (CPU -----> CLAVIER , LE)

1	0V
2	\COL1
3	\COL2
4	\COL3
5	LIC1
6	LIC2
7	LIC3
8	LIC4
9	\RESETEX
10	LEDPRET
11	LEDIMPRE
12	LEDAUDIA
13	LEDMAINT
14	LEDPARAM
15	LEDMESSA
16	LEDENCRE
17	LEDSOLVA
18	LEDONOFF
19	0V
20	0V

J1 (CPU -----> BADGE)

1a	0V	1b	+5V	1c	+5V	1d	0V
2a	D80	2b	D81	2c	D82	2d	D83
3a	D84	3b	D85	3c	D86	3d	D87
4a	0V	4b	0V	4c	0V	4d	0V
5a	D88	5b	D89	5c	D90	5d	D91
6a	D812	6b	D913	6c	D914	6d	D915
7a	0V	7b	0V	7c	0V	7d	0V
8a	A80	8b	A81	8c	A82	8d	A83
9a	A84	9b	A85	9c	A86	9d	A87
10a	0V	10b	0V	10c	0V	10d	0V
11a	A88	11b	A89	11c	A90	11d	A91
12a	A812	12b	A813	12c	A814	12d	A815
13a	0V	13b	0V	13c	0V	13d	0V
14a	A816	14b	A817	14c	A818	14d	A819
15a	R\A8	15b	\DSACK1	15c	\A89	15d	\DSB
16a	0V	16b	0V	16c	0V	16d	0V
17a	\CSB00T	17b	\CSB00B	17c	\CSB00L	17d	\CSB00PH
18a	EB	18b	\1PERIPH	18c	\0ER0T	18d	\VALDAT
19a	\RESET	19b	\WFLASH01	19c	FRAME	19d	-RESV1T2
20a	DTOP	20b	SYN_MESS	20c	-DEFINITION	20d	\BADGE
21a	0V	21b	-15V	21c	-15V	21d	TACKY
22a	DS1	22b	-RESV1T1	22c	+24V	22d	FREEZE
23a	DS0	23b	+15V	23c	+15V	23d	\BKPT
24a	0V	24b	+5V	24c	+5V	24d	0V

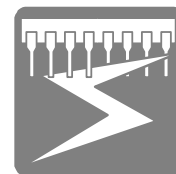
J5 (CPU -----> VISU 2L)

1	+5V	2	0V
3	RA	4	V0
5	EA	6	R\A
7	DA1	8	DA0
9	DA3	10	DA2
11	DA5	12	DA4
13	DA7	14	DA6

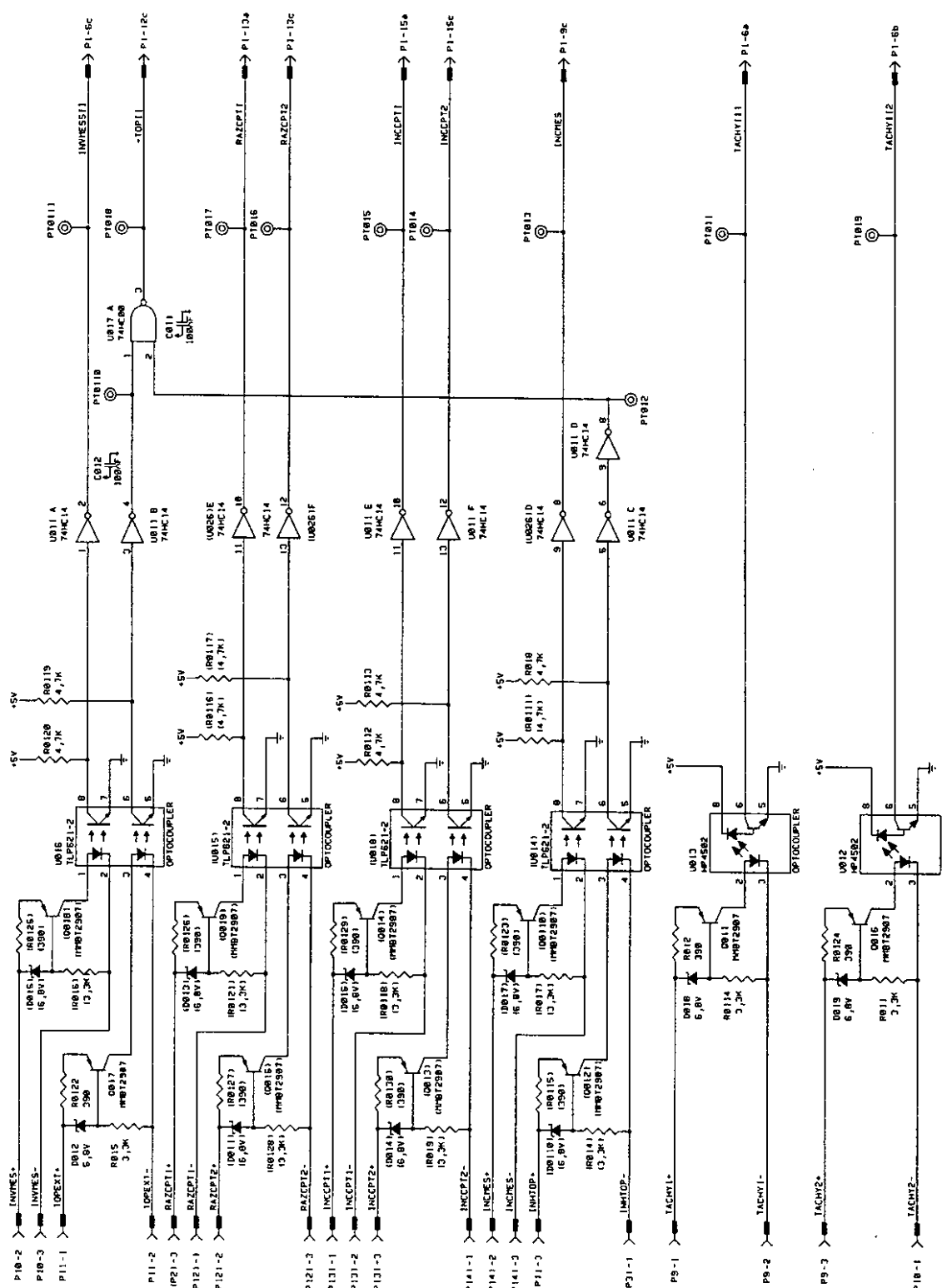


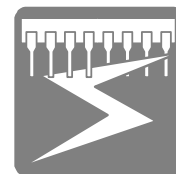
■ Industrial interface board layout



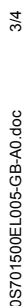


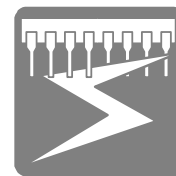
■ Industrial interface board drawing





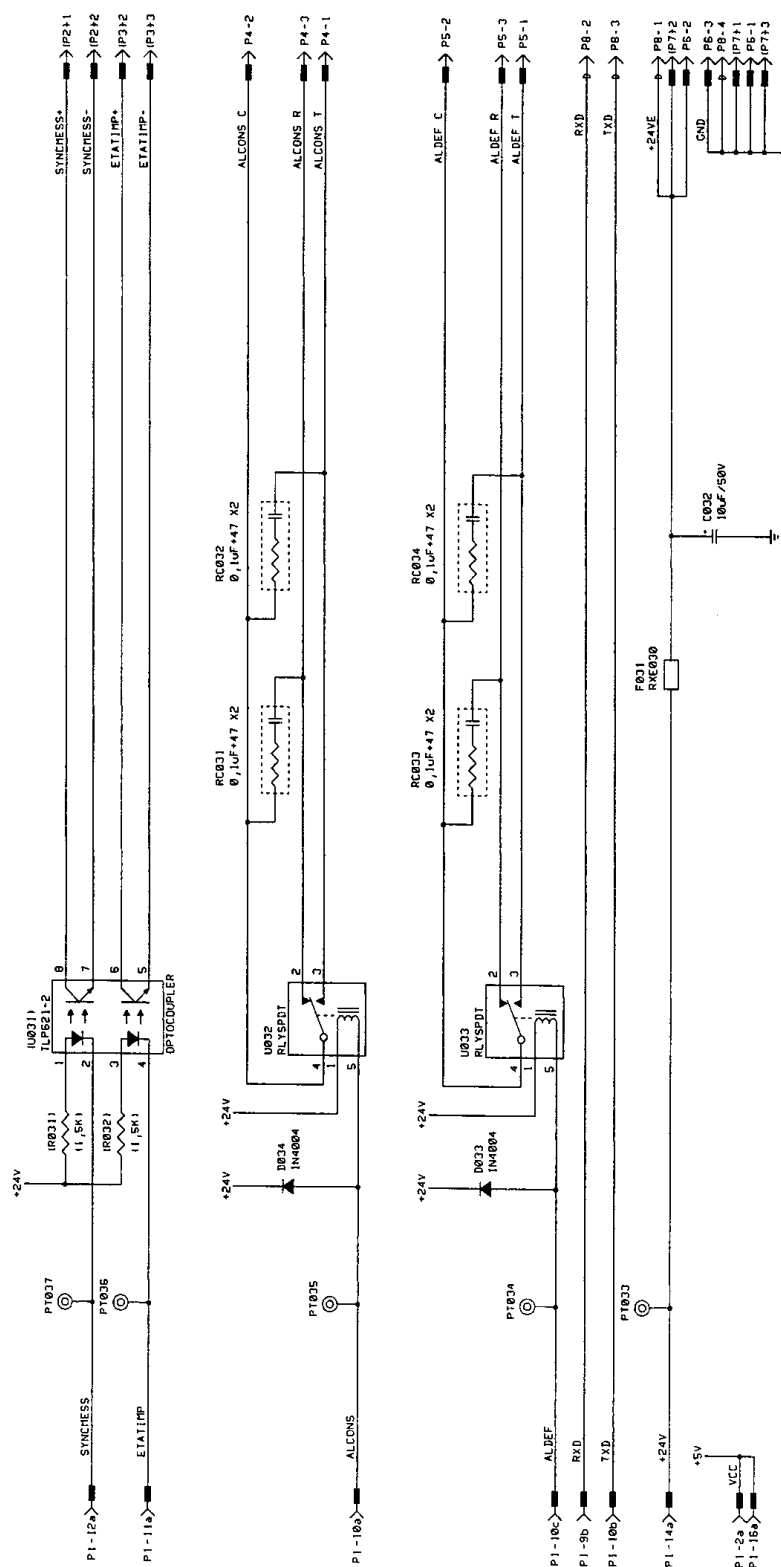
Industrial interface board drawing (Cont'd)

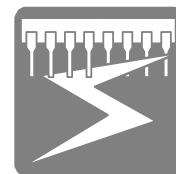




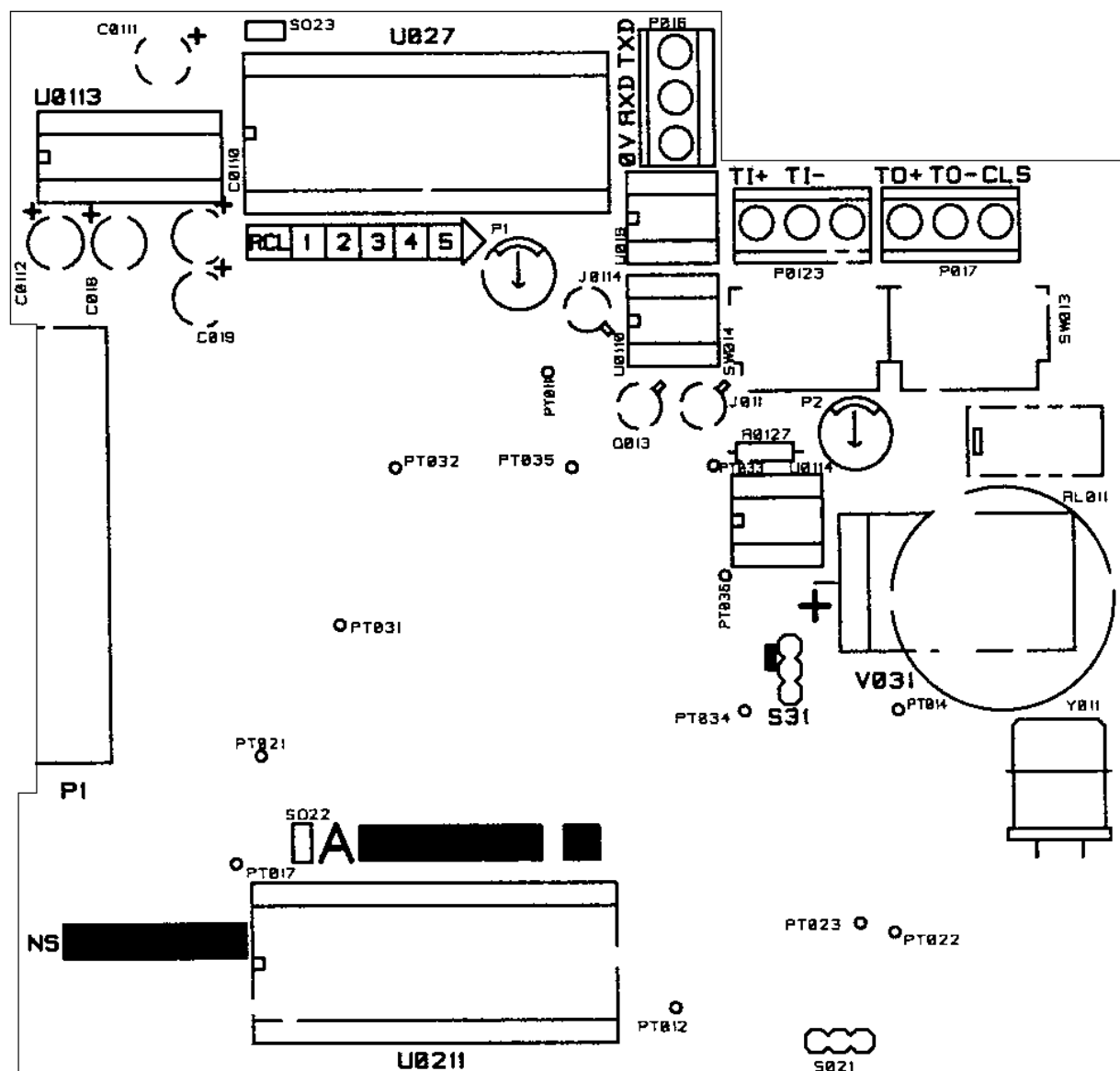
Printer electronics

Industrial interface board drawing (Cont'd)





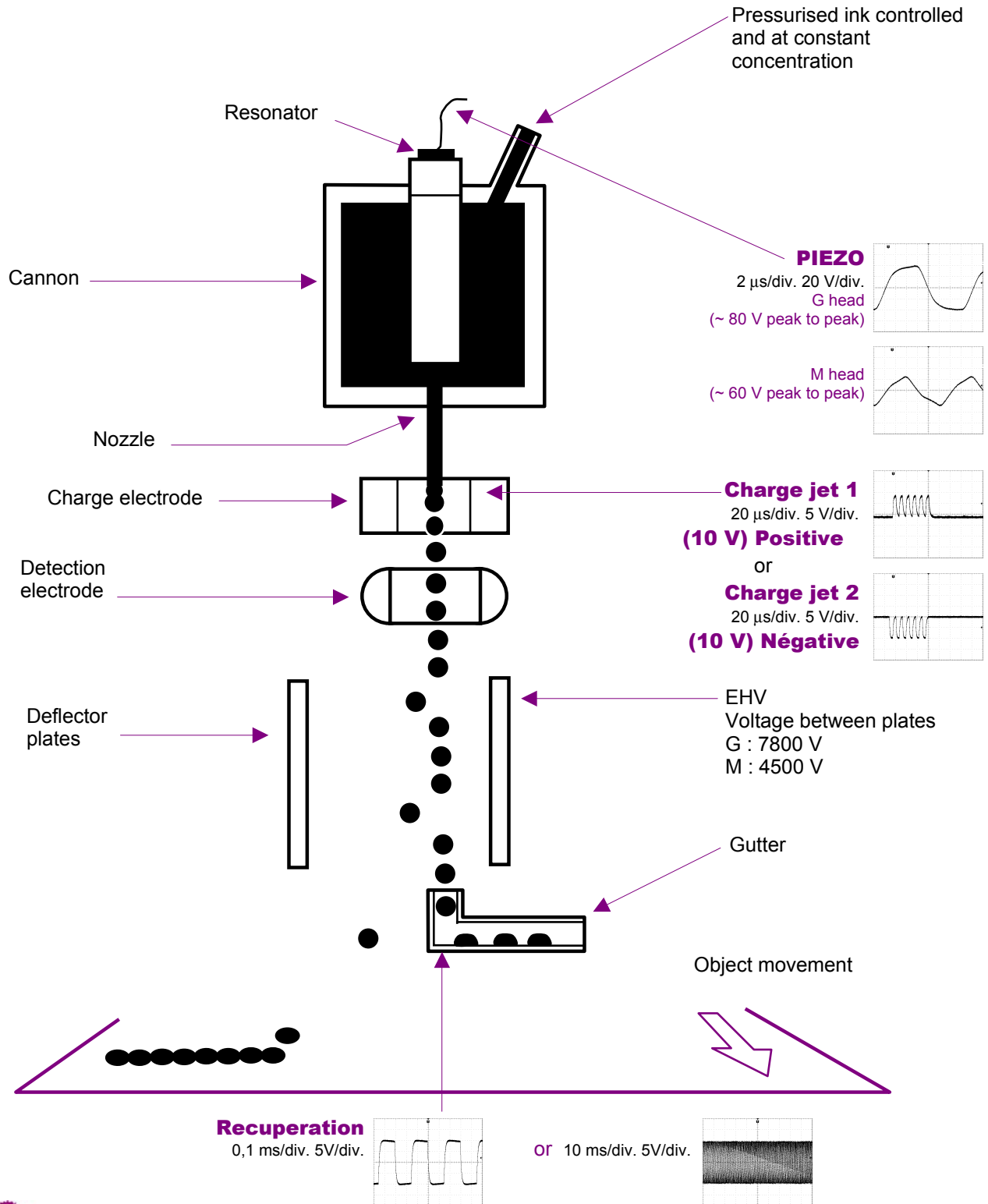
■ Extension board layout





Printer electronics

■ Probe: Print head



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Revision

■ Troubleshooting file S7

Update of the manual

- The revision index A corresponds to the first edition of this manual.
- The revision index changes with every modifications.

Date of edition	Document revision index	Software index
01/ 2003	A0	A12



01/ 2003
A27567 - A0

Mise en page : AXESS

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