

Troubleshooting File



S 8 Range

Small character
ink-jet printing



S8 Contrast



A26986 - A



A DOVER COMPANY

General contents



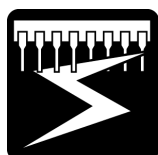
.....Preliminary instructions **p.5**



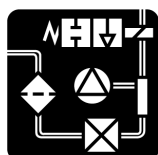
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Preliminary instructions



Before using or servicing the printer, read these instructions and the material data safety sheet (MSDS) for the consumables.

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

Liability

IMAJE cannot be held responsible if safety instructions and, generally speaking, basic safety rules for using and servicing its printers are not followed.

Any modification or intervention is the responsibility of his author as far as its possible consequences are concerned.

The same applies to any use of the printer that fails to comply 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, Image 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 consumable used.

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.

Never leave containers containing ink, additives or products used to clean the printer, or ink-soaked cloths (even dry) near the printer.

Environment

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



Preliminary instructions

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.

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.

Preliminary instructions



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 the interventions be carried out by persons who have been given the technical training proposed by Imaje.

Printer description

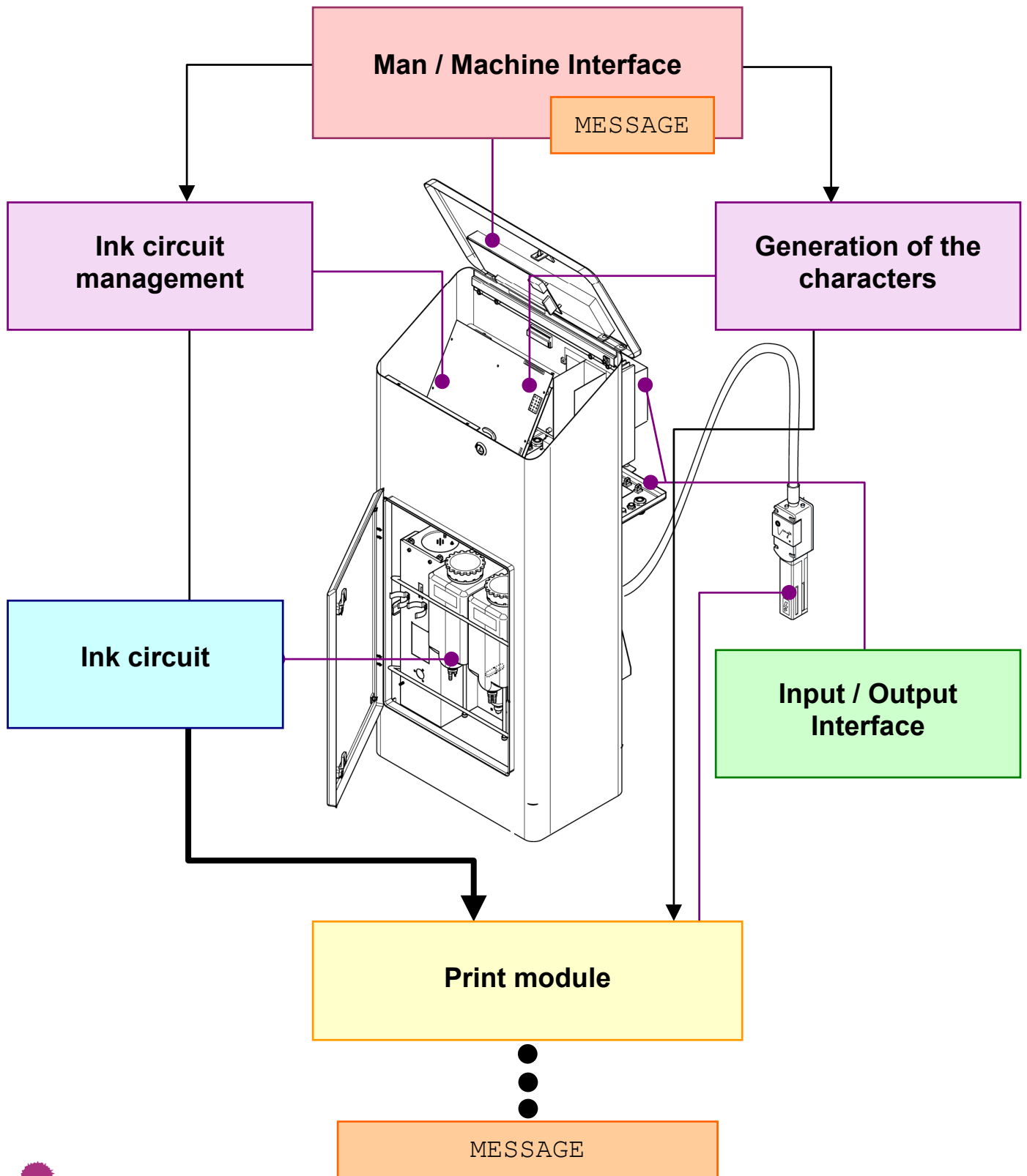
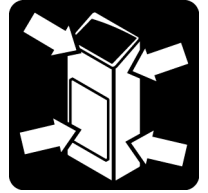
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Printer description

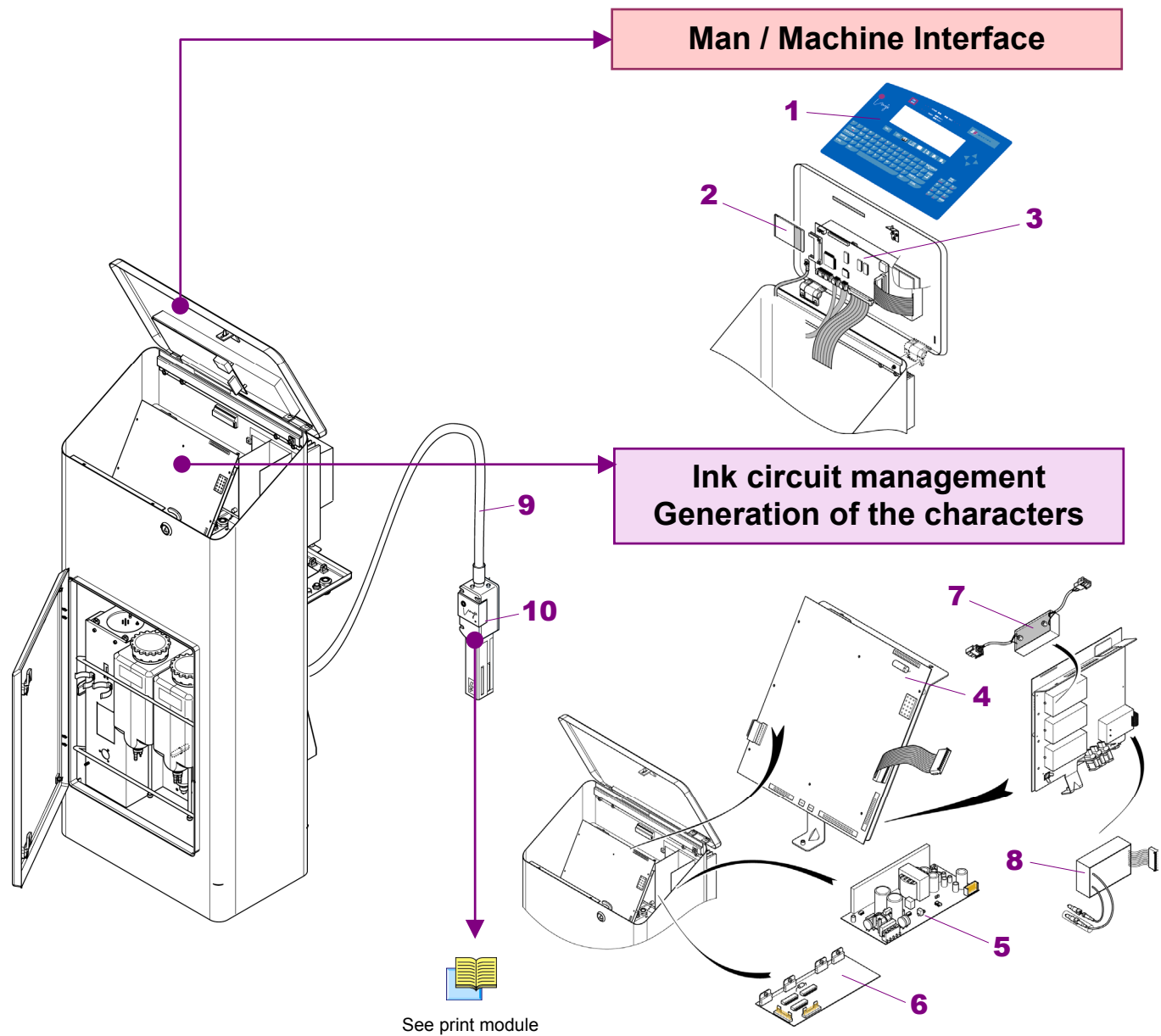
General synopsis





Printer description

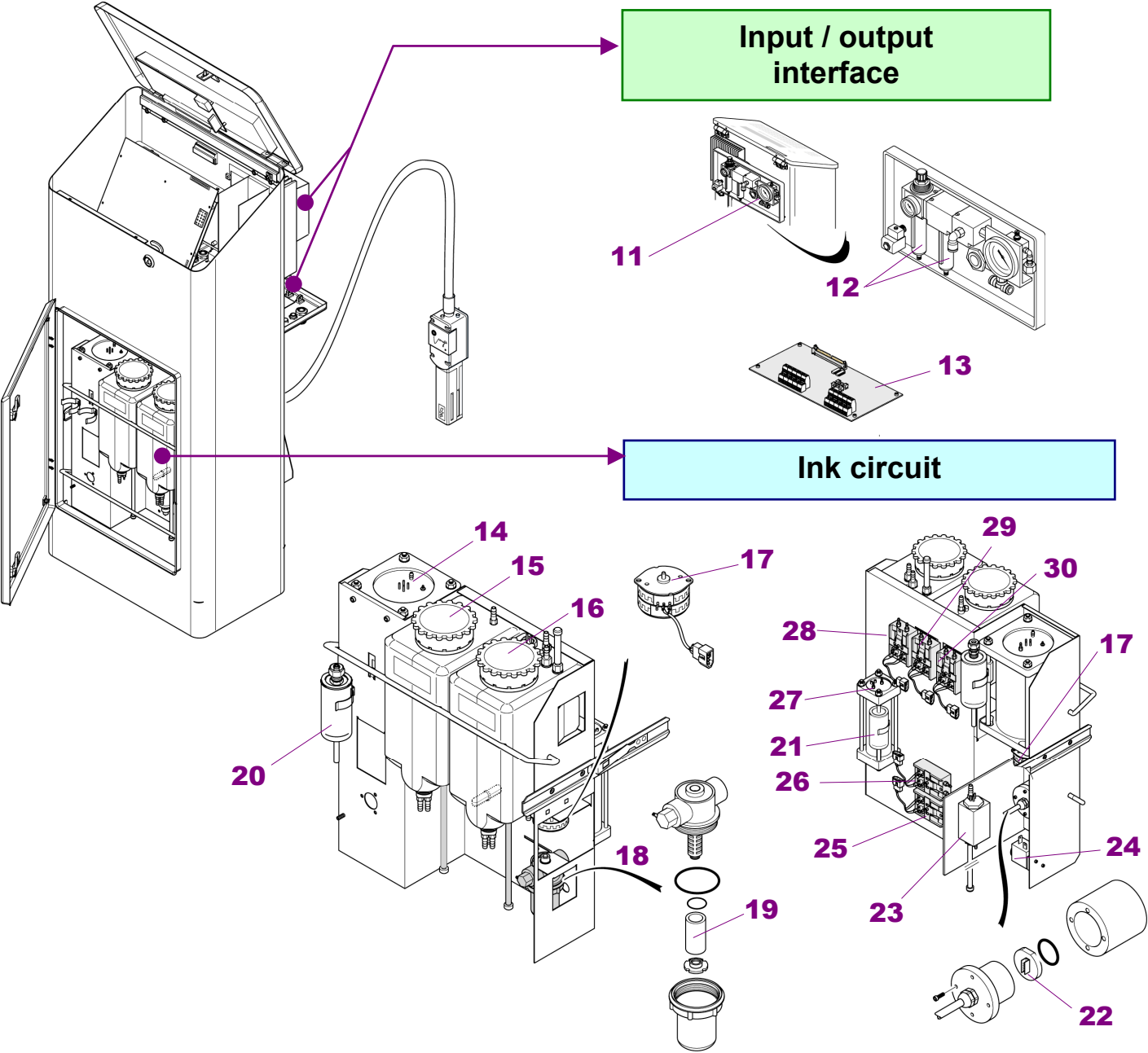
Printer





Printer description

Printer



Item	Description
11	Plant air kit
12	Plant air filters
13	Industrial interface board
14	Recup. tank
15	Additive tank
16	Ink tank
17	Stirring motor
18	Ink filter
19	Filter cartridge
20	Coalescent filter

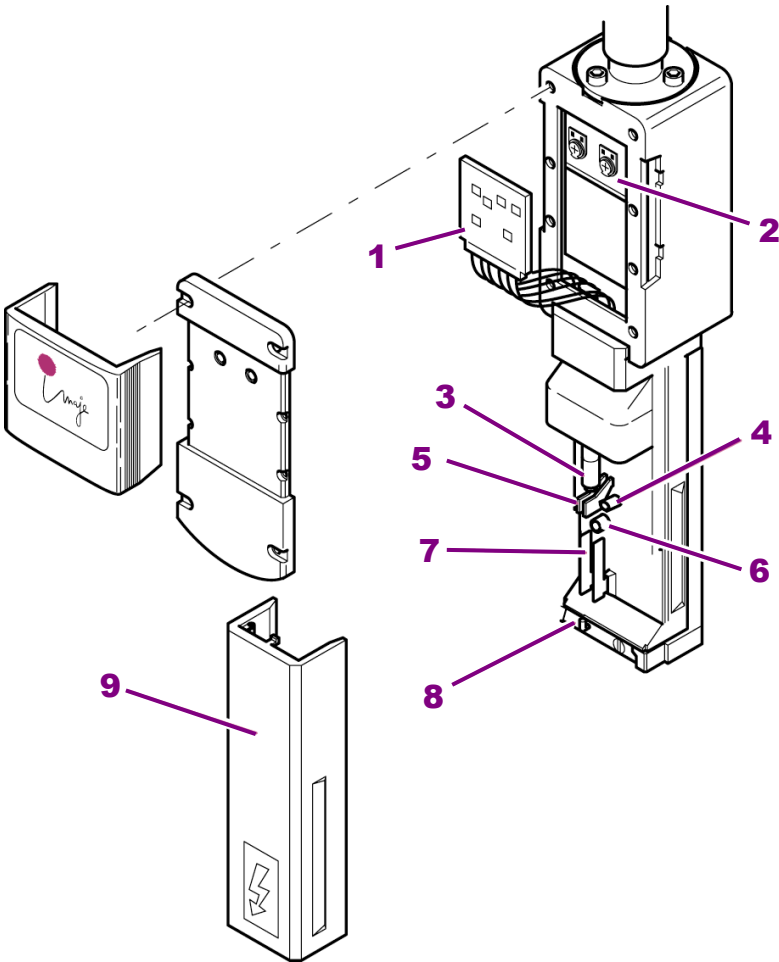
Item	Description
21	Coalescent filter
22	Pressure sensor
23	Viscometer
24	Viscometer electrovalve
25	Elv (not used-ink transfer)
26	Elv-ink addition-additive addition
27	Accumulator
28	Elv (air transfer-charge)
29	Elv (visco Equi-Air equi)
30	Elv (PA-Discharge)



Printer description

Print module

Print module



Item	Description
1	Board - phase detection amplifier
2	Board - resonator supply
3	Modulation assembly
4	Nozzle rinsing sprayer
5	Charge electrode

Item	Description
6	Detection electrode
7	Deflection plate
8	Recuperation gutter
9	Head cover



Troubleshooting charts

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● Fault displayed by the printer

S8 Contrast

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● Anomalies not signalled by the printer

Type	Symptoms
Anomalies of the printed message p.66	No legible message Ink dot dispersion Truncated or badly formed characters Message out of proportion Printing spoiled
Anomalies occurring when starting up the printer p.67	"ON" indicator light off when in standby position No display of ON/OFF in standby position No start-up when ON/OFF is pressed No correct execution of the start-up program
Anomalies when starting up the jet p.68	The jet does not start The jet is not centred The jet is not sucked in the gutter
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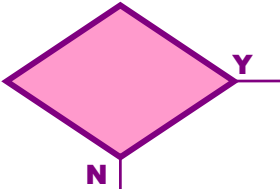




Troubleshooting charts

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 a visual or manual operation.
	End – end of a troubleshooting chart sequence's part

Definition of the pictograms used in the troubleshooting charts :



Fault on S8 Contrast printer



Use of a cleaning solution



The problem has been solved



Use of an eyepiece



Visual check



Use of an oscilloscope



Auditive check



Use of a measuring device



Pressing a keyboard key
or manual intervention



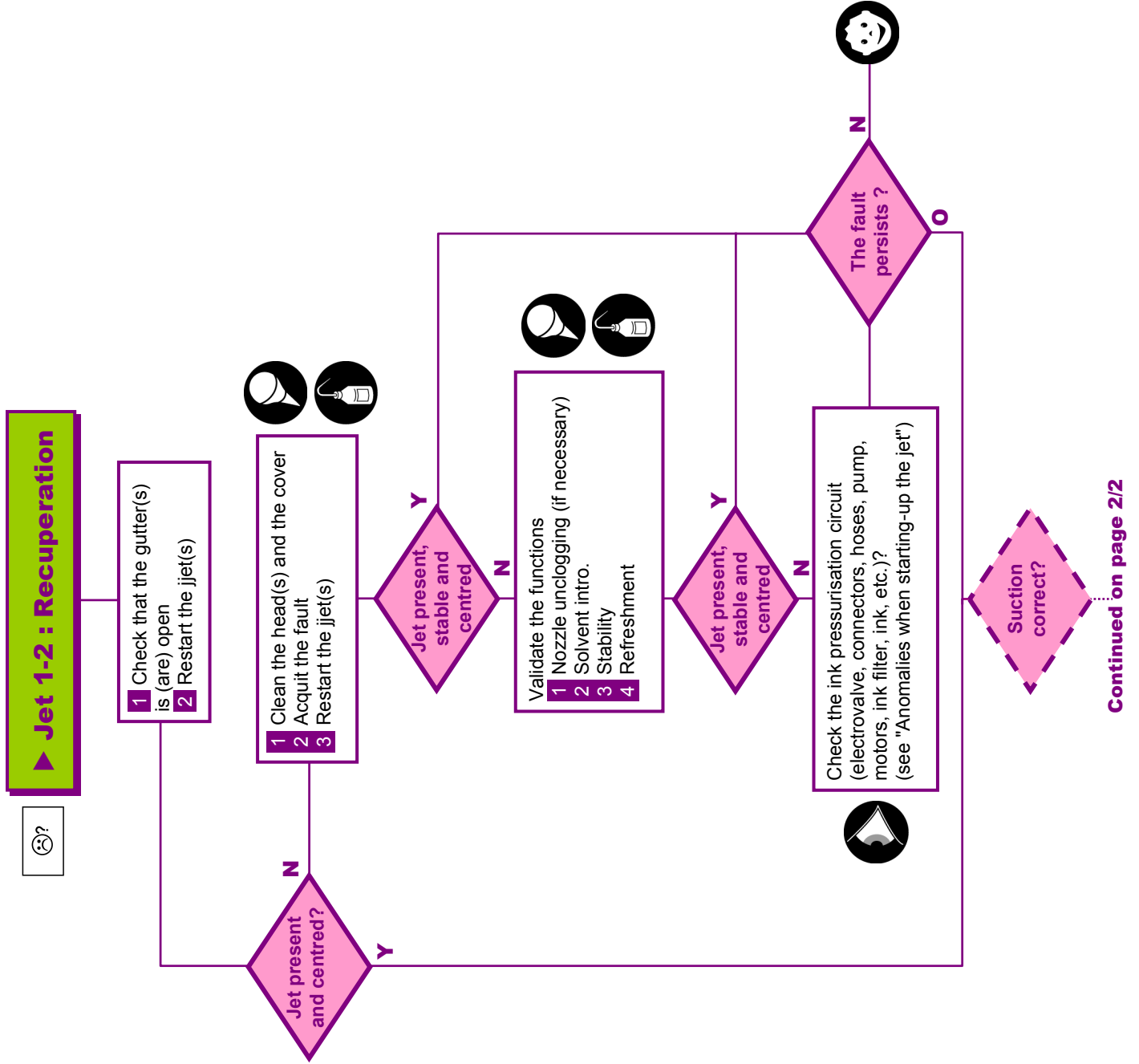
Use of an air gun



Use of a screwdriver

Troubleshooting charts

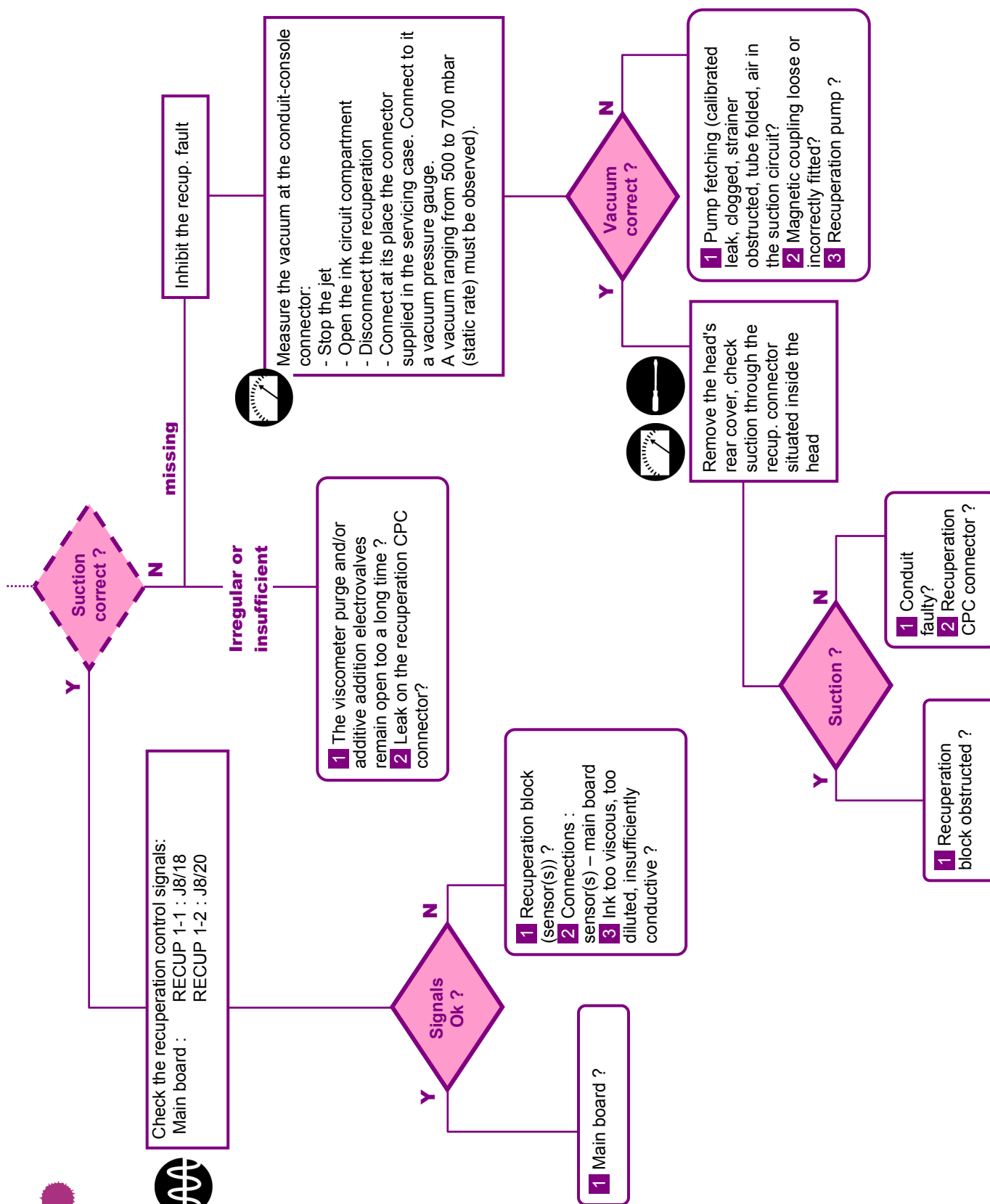
Recuperation fault





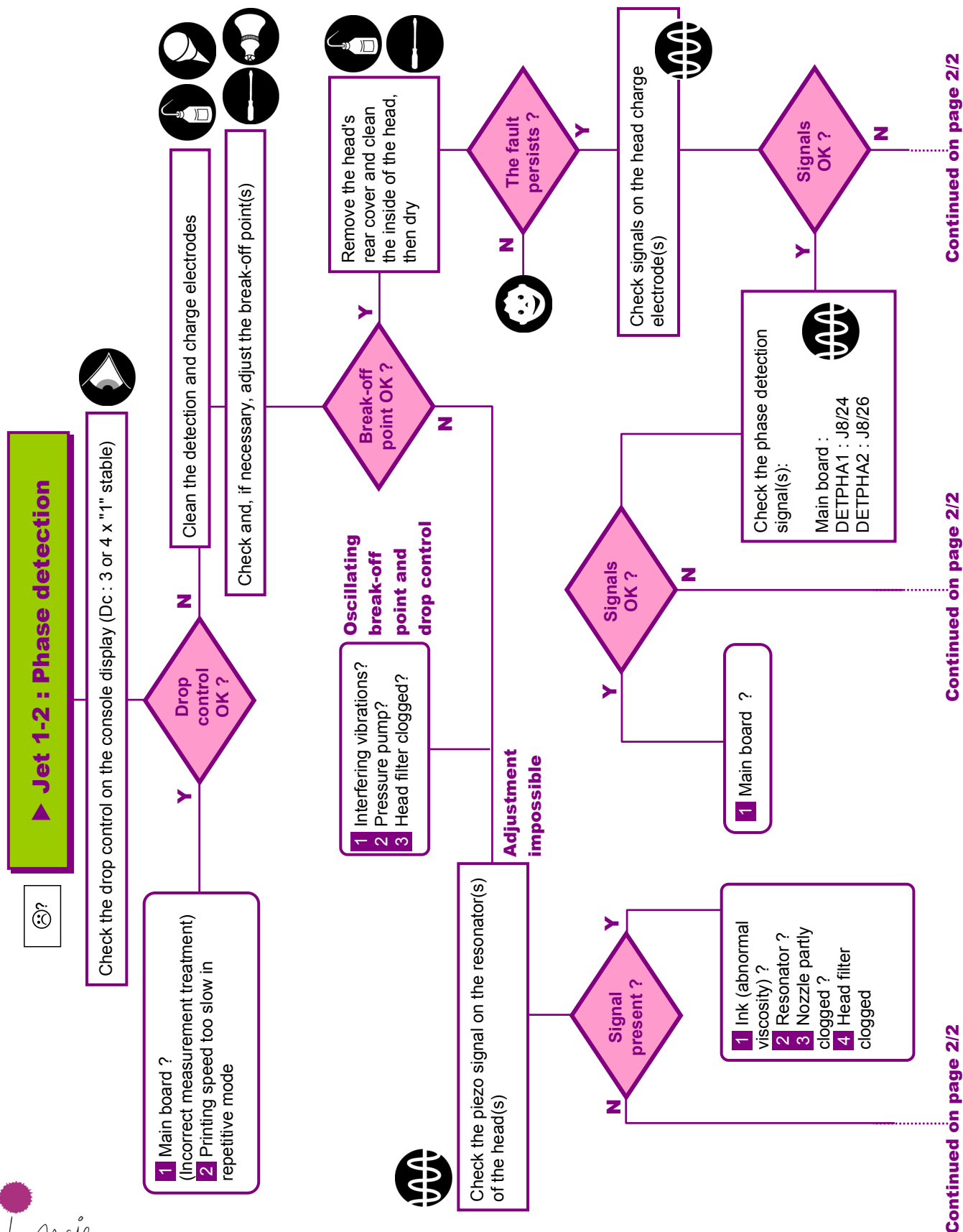
Troubleshooting charts

Recuperation fault



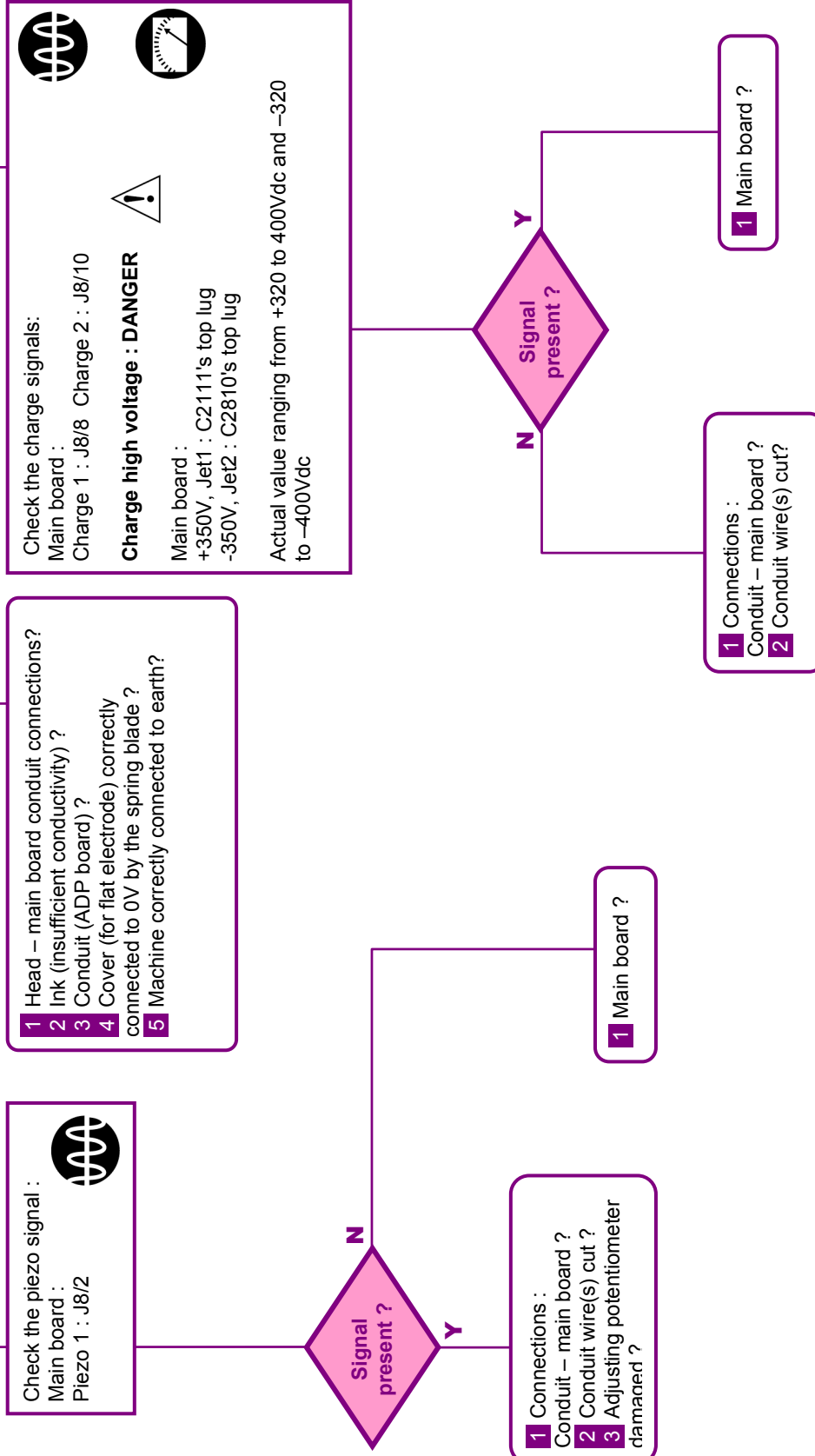
Troubleshooting charts

Phase detection fault



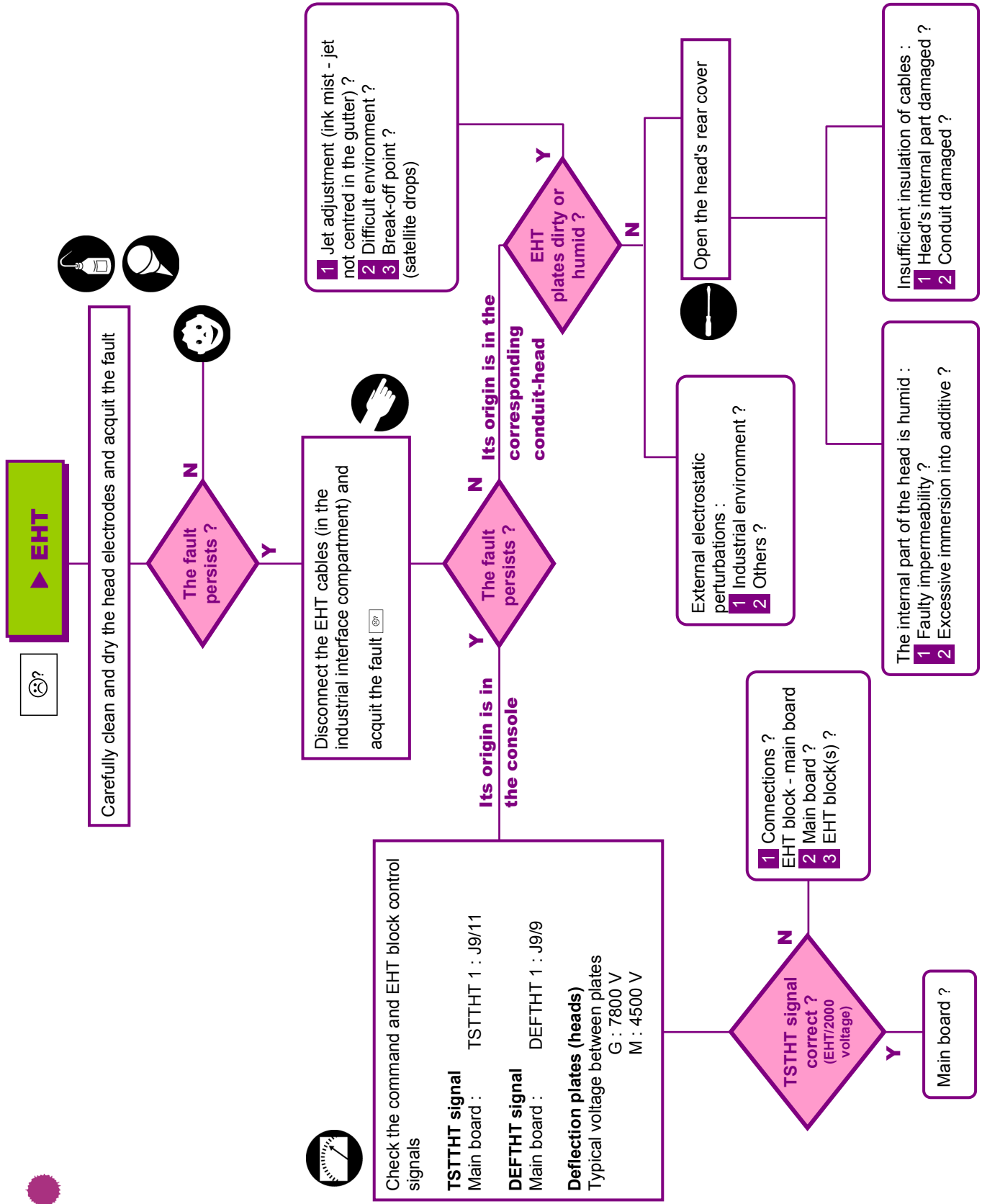
Troubleshooting charts

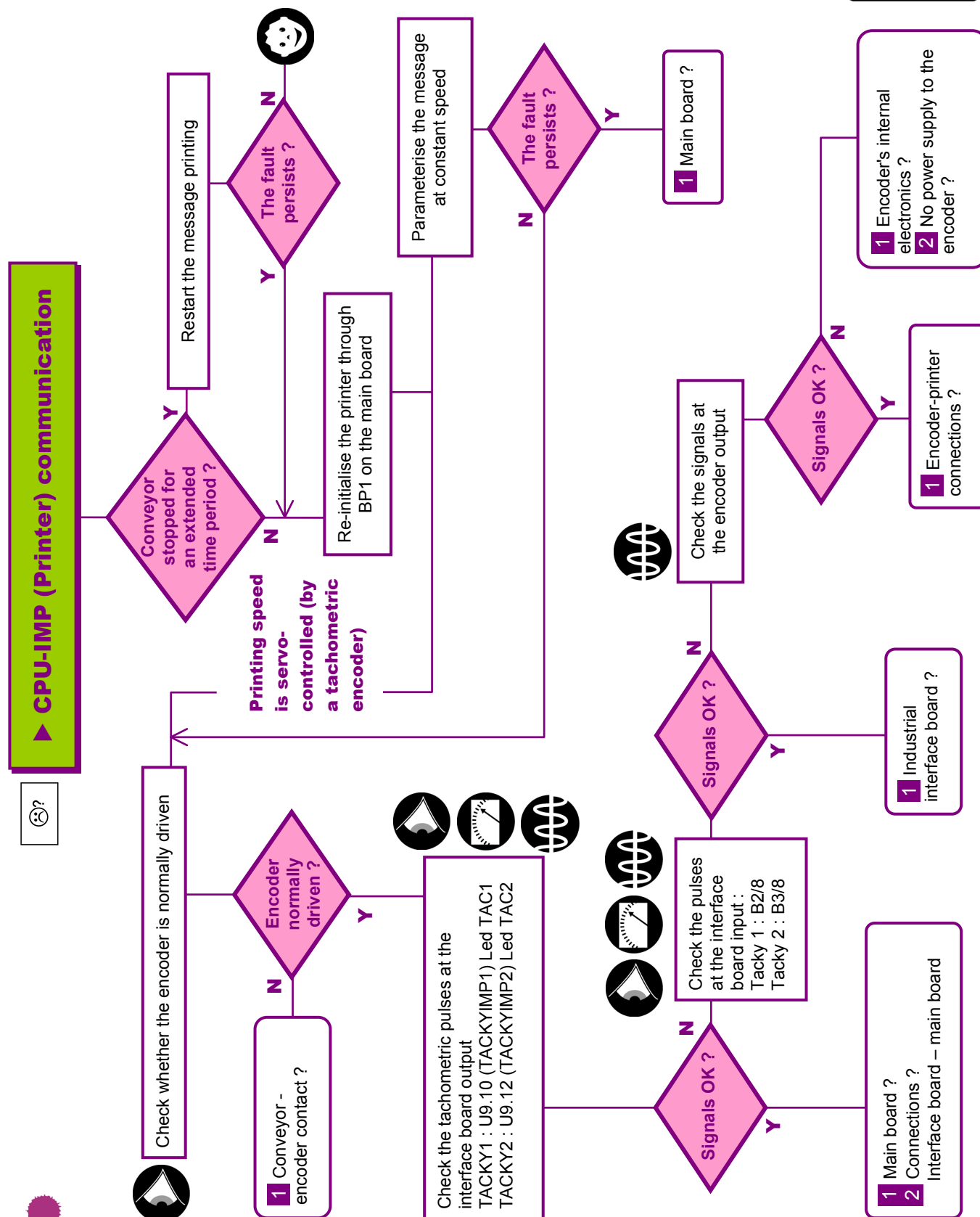
Phase detection fault



Troubleshooting charts

EHT fault



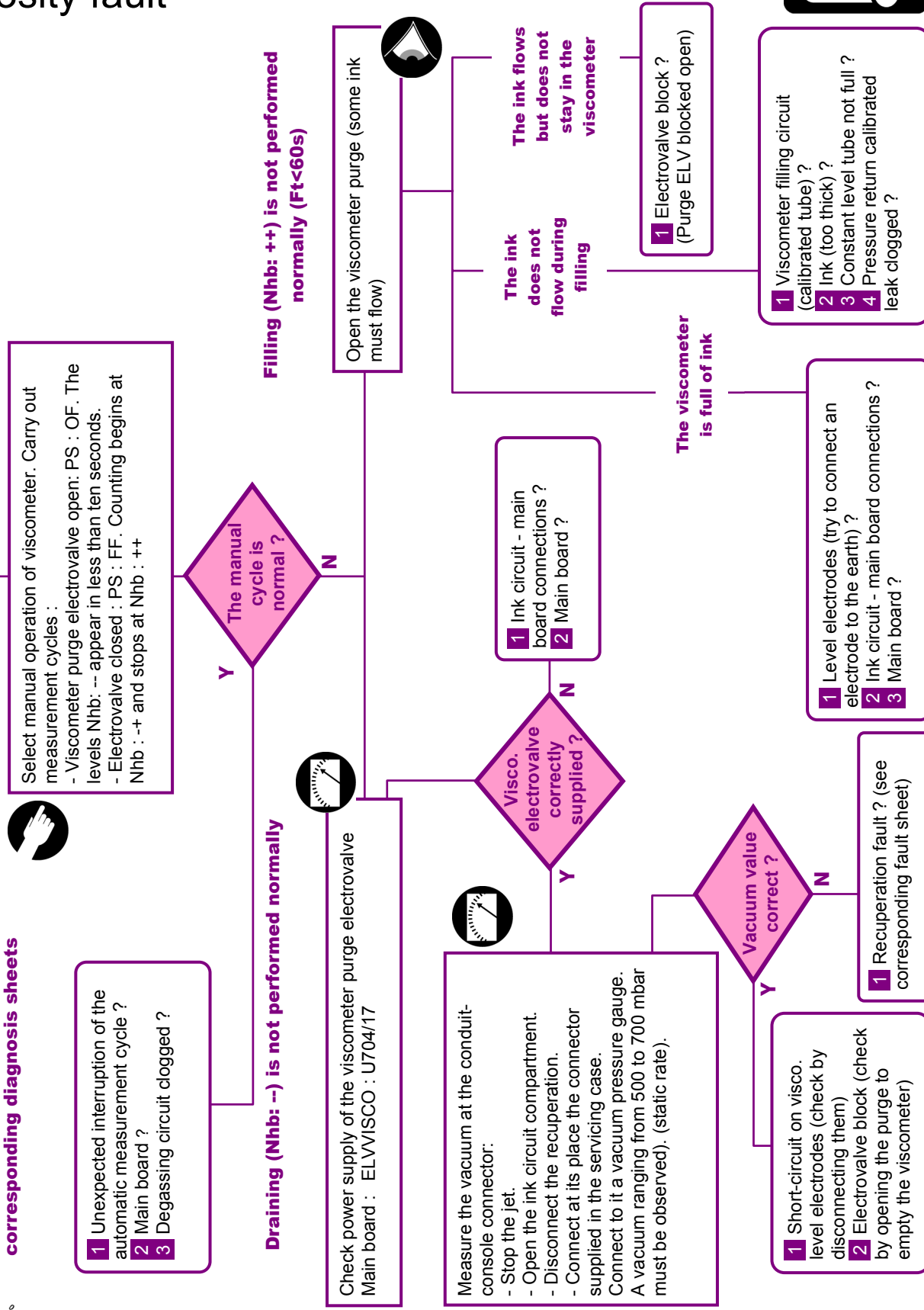




If the "recuperation" or "phase detection" faults appear at the same time, first refer to the corresponding diagnosis sheets



► Viscosity

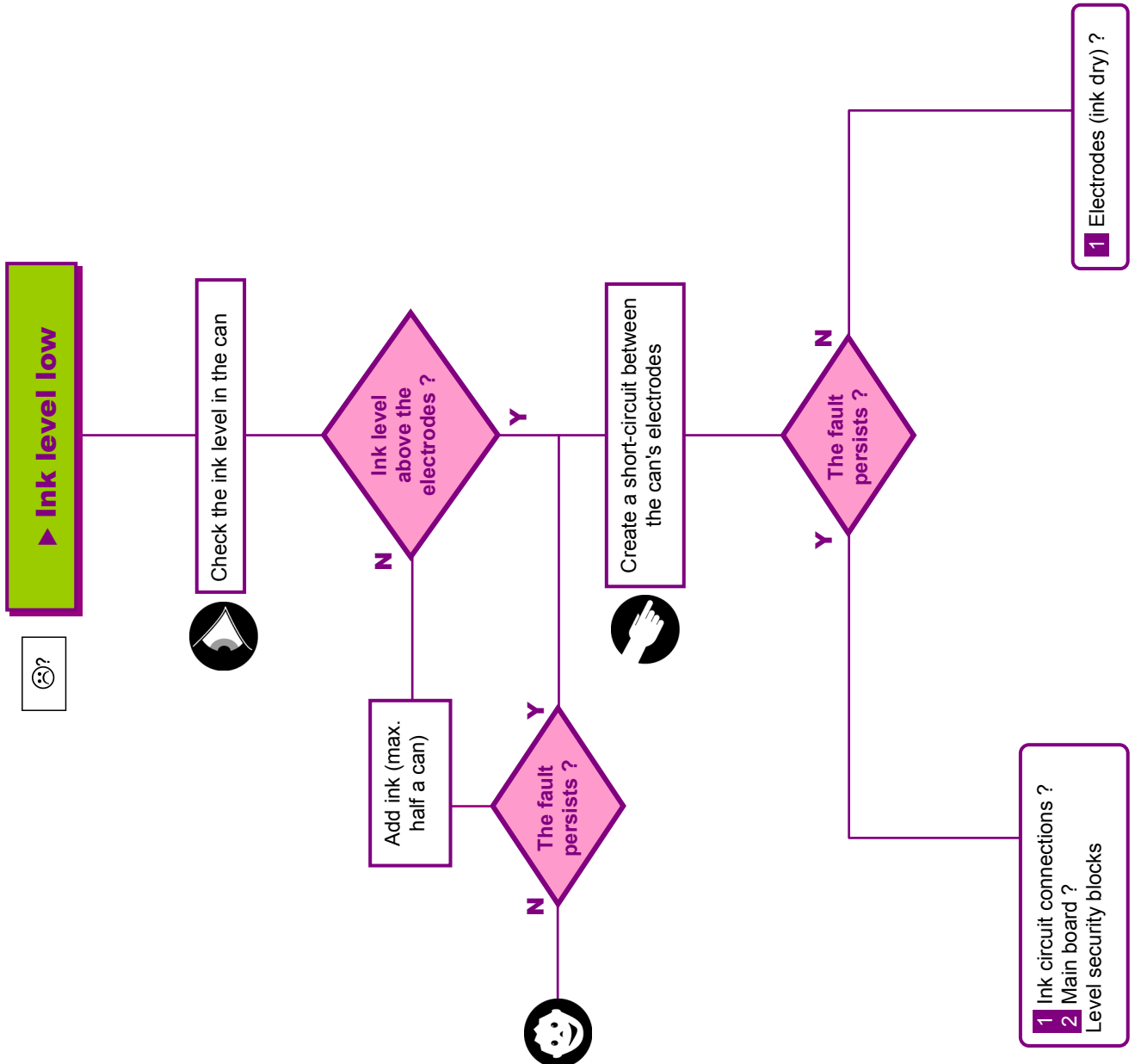


Troubleshooting charts

Viscosity fault

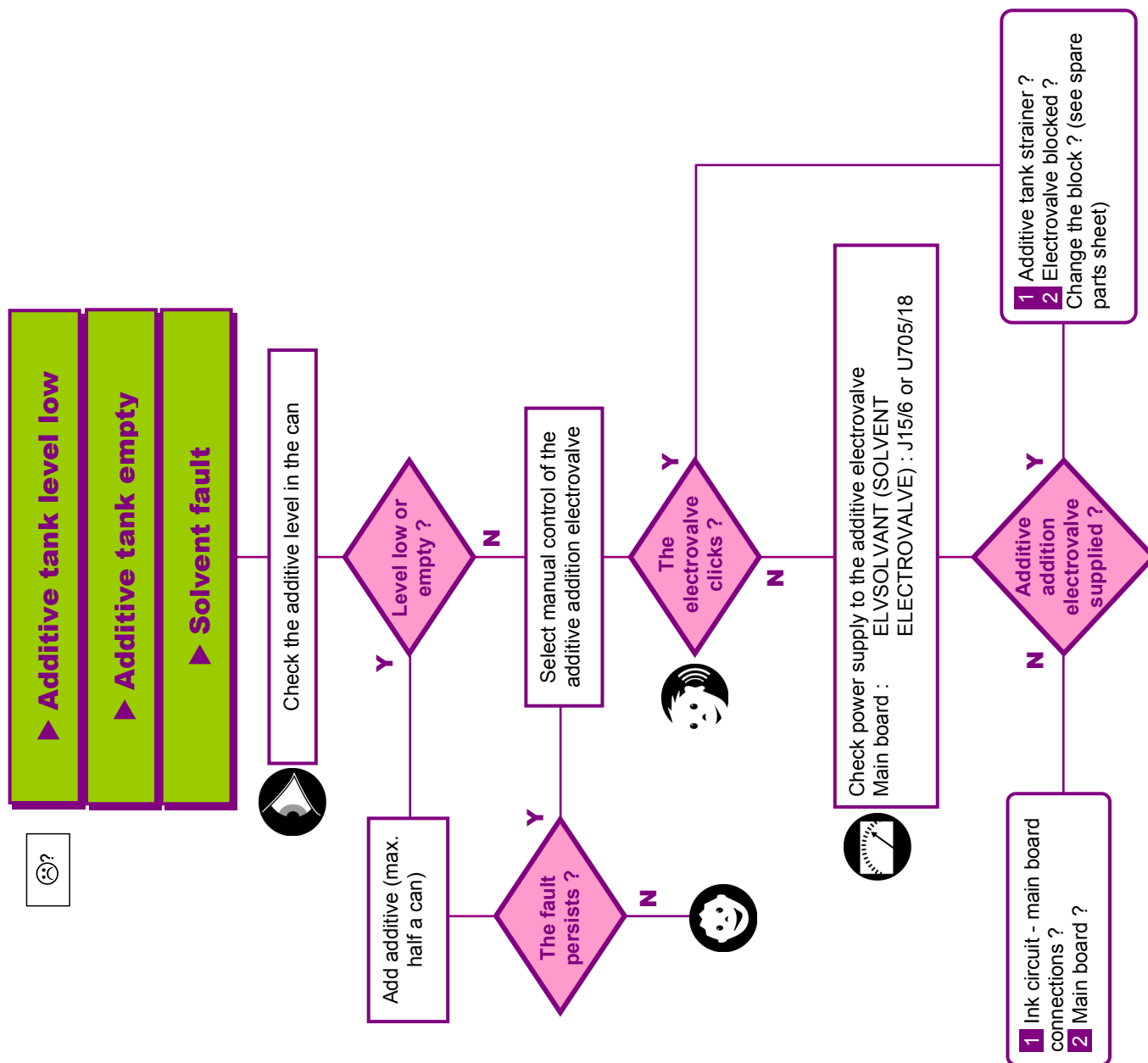
Troubleshooting charts

Ink level low fault



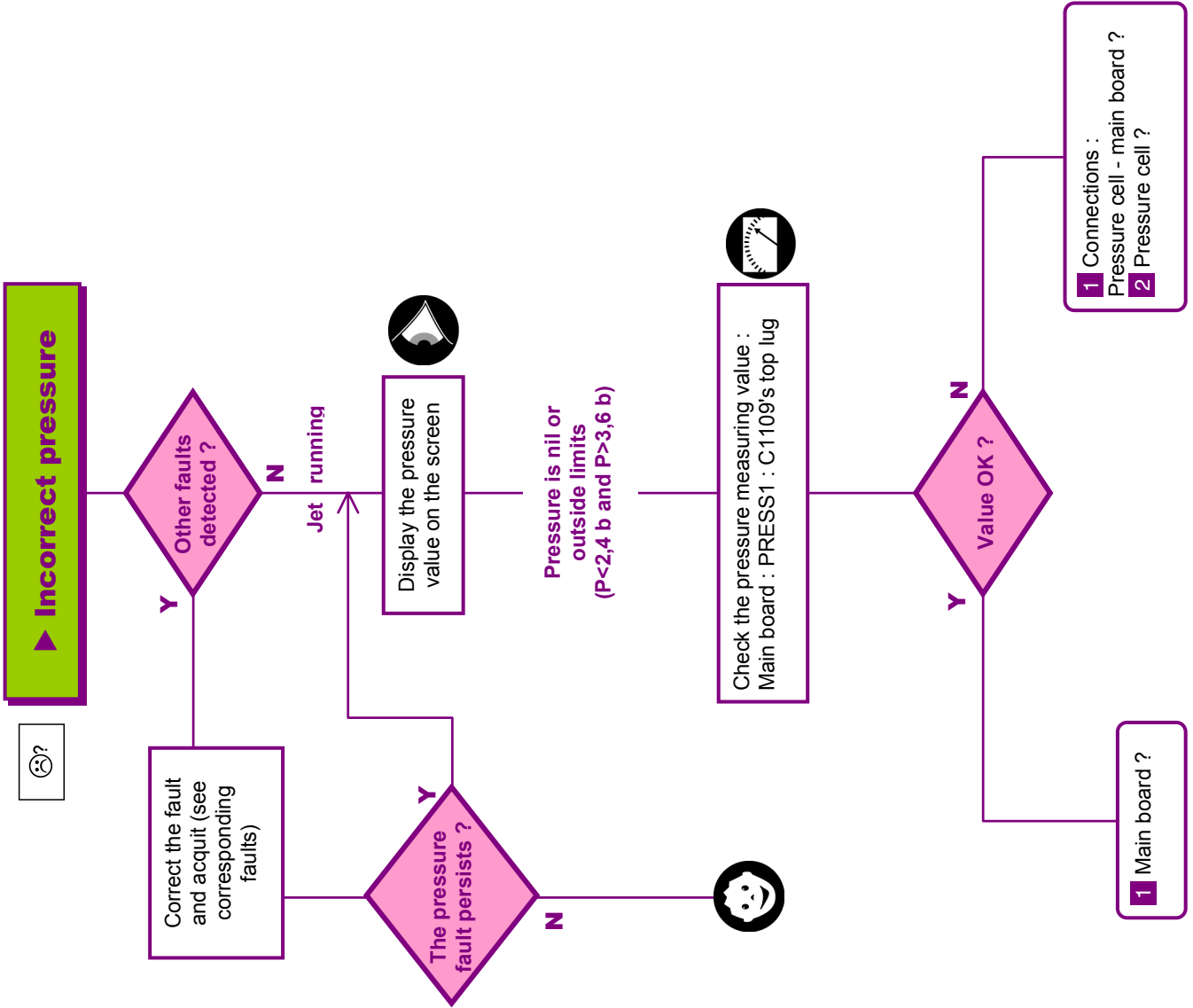
Troubleshooting charts

Additive fault



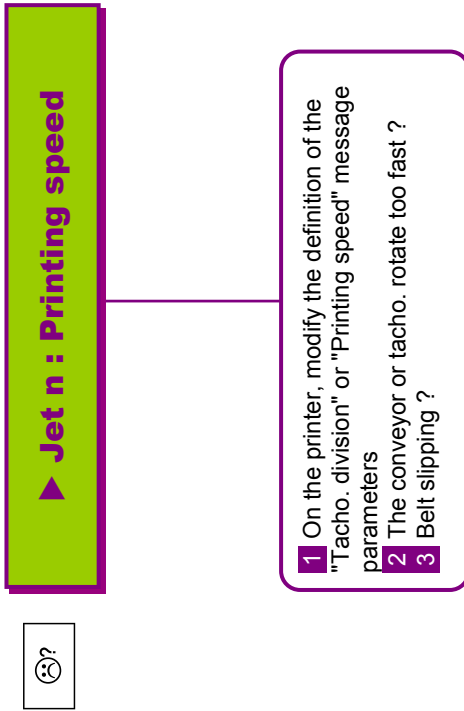
Troubleshooting charts

Pressure fault



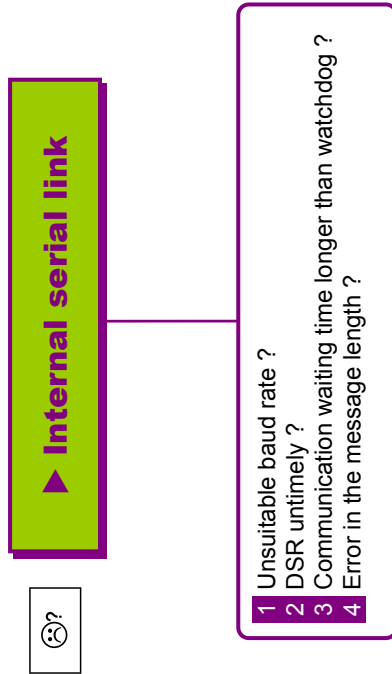
Troubleshooting charts

Printing speed fault



Troubleshooting charts

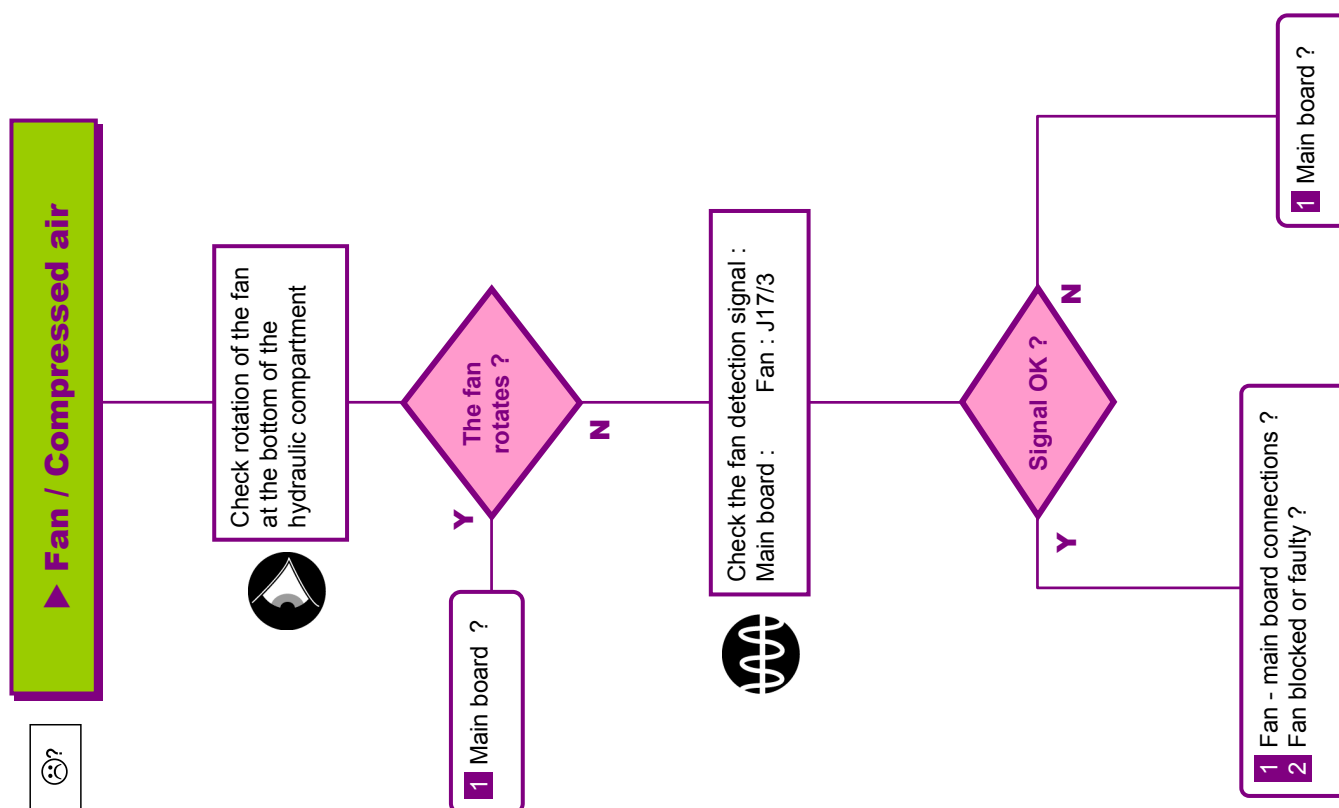
V24 link fault





Troubleshooting charts

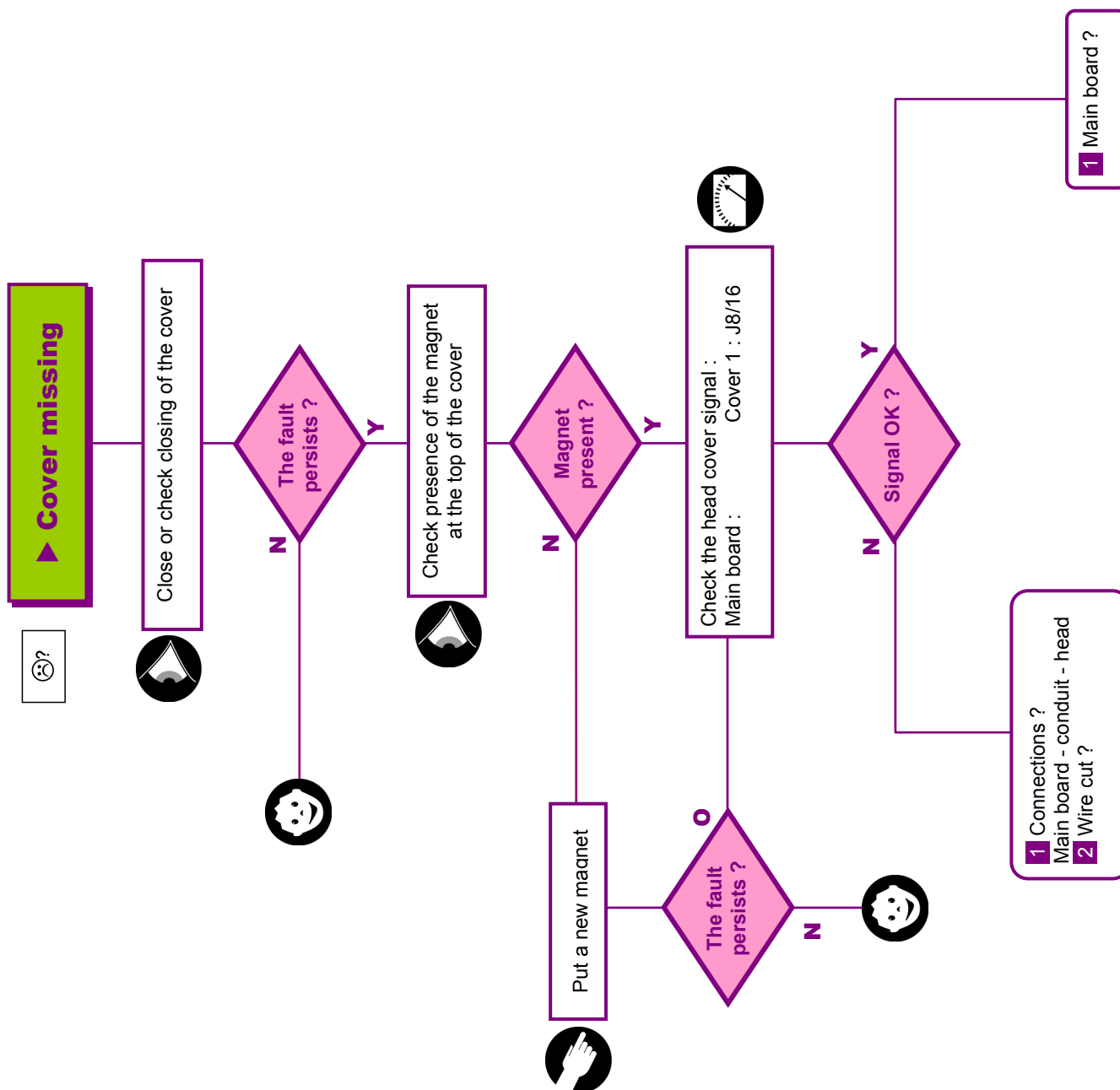
Ventilation / Compressed air fault





Troubleshooting charts

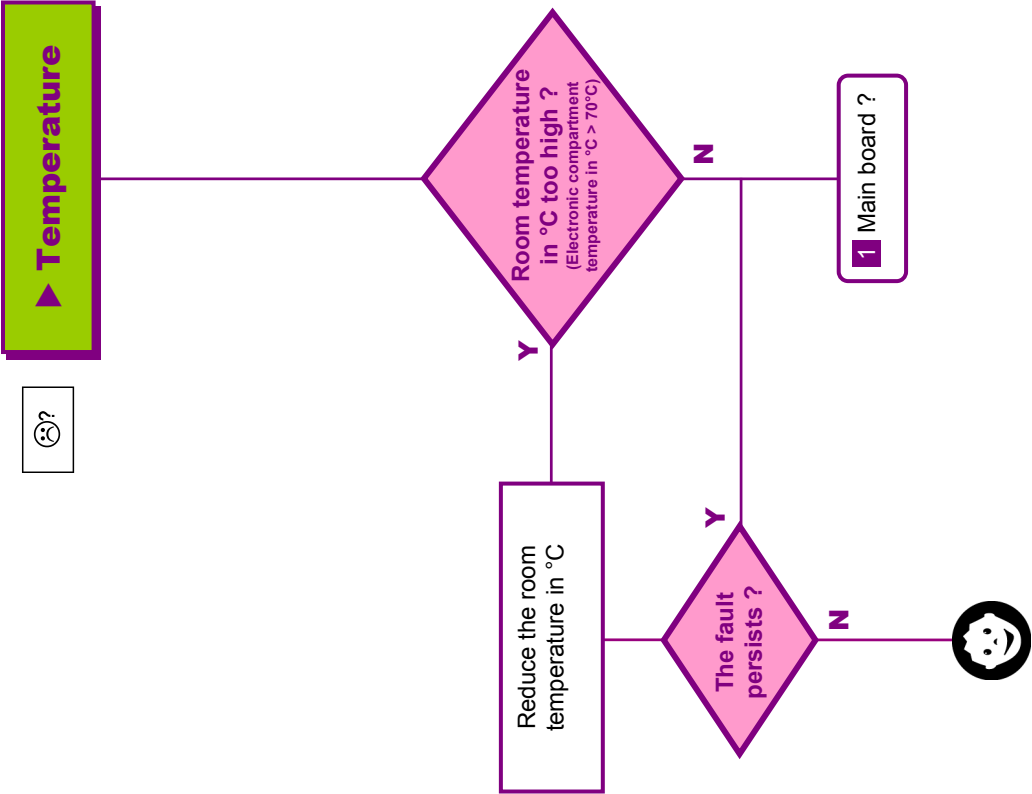
Cover missing fault





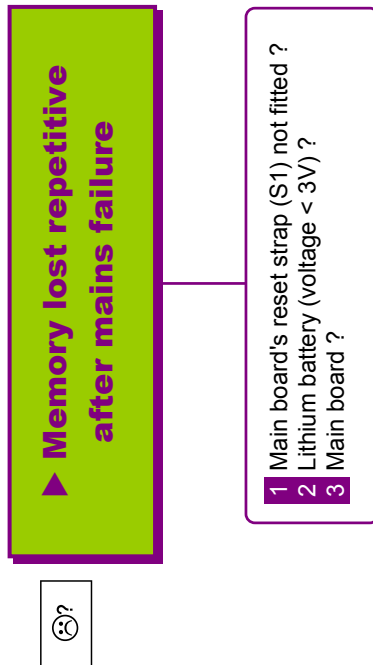
Troubleshooting charts

Temperature fault



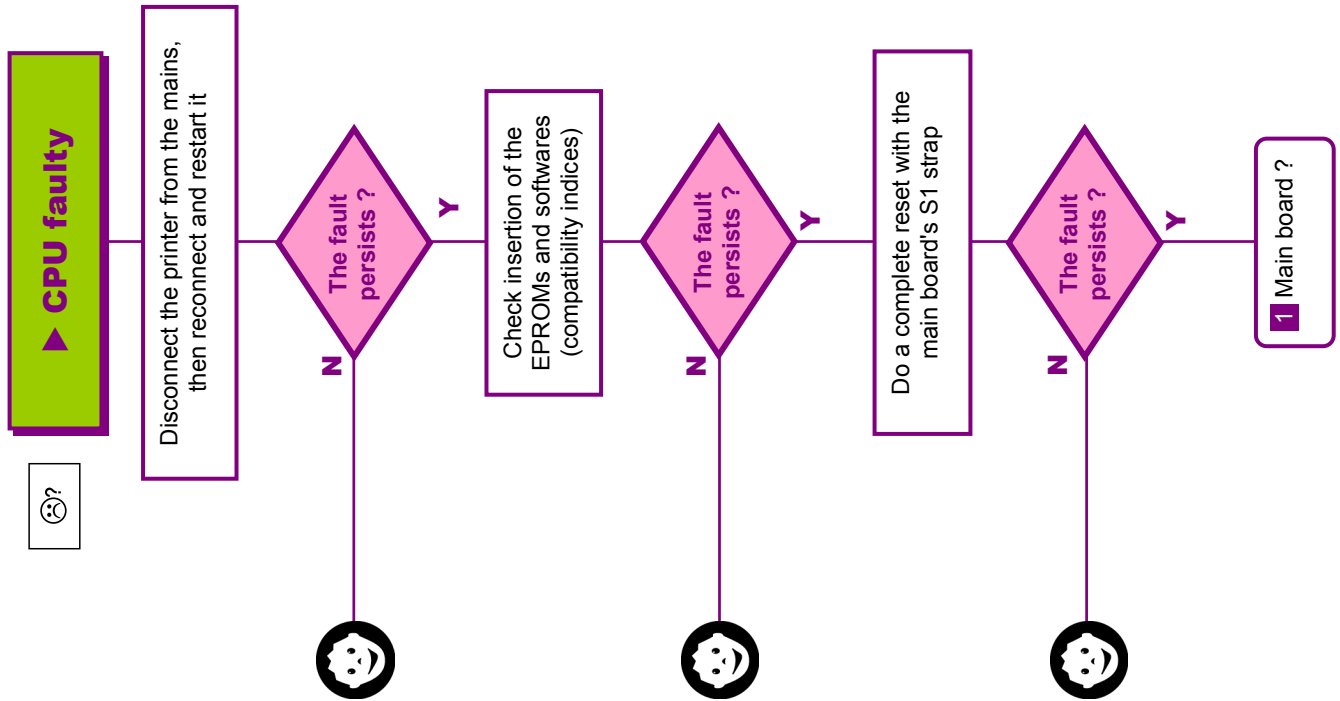
Troubleshooting charts

Memory lost fault



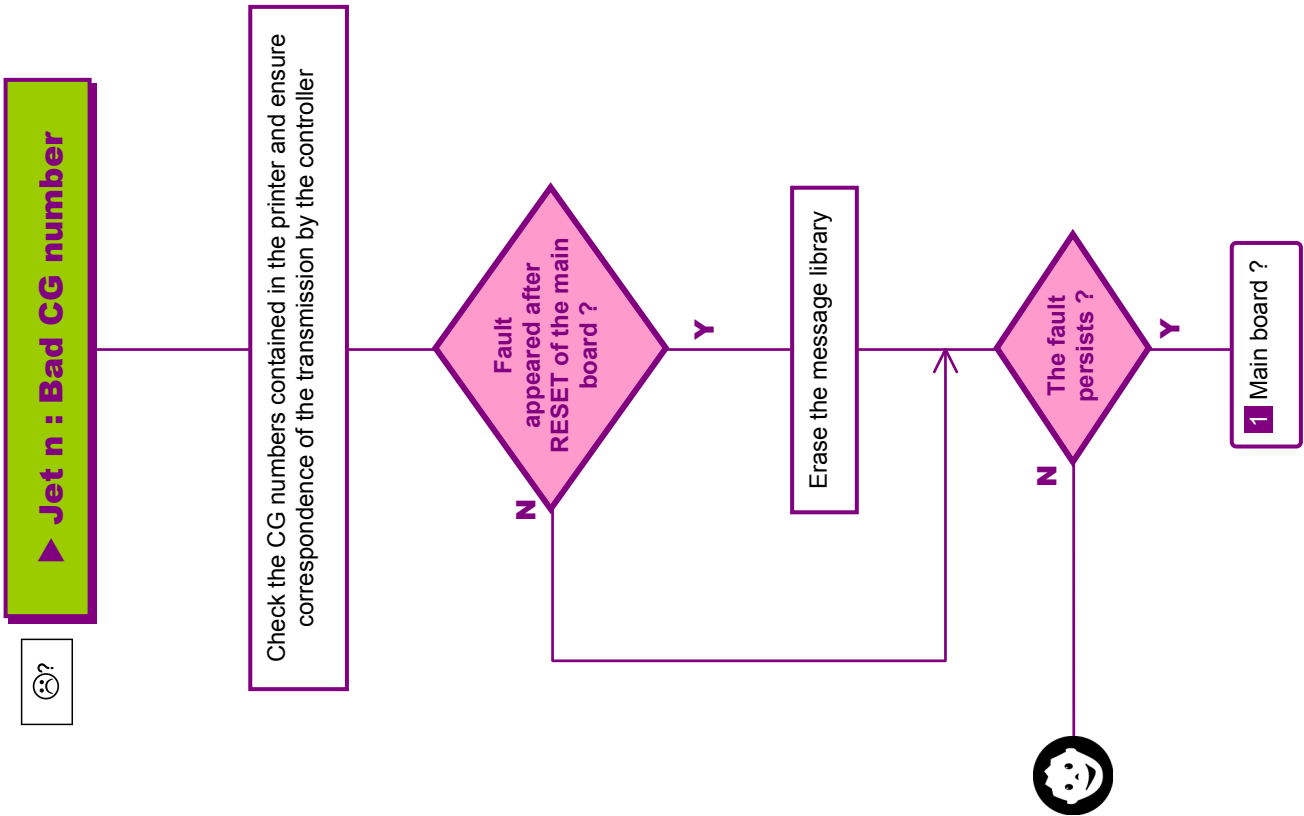
Troubleshooting charts

CPU fault



Troubleshooting charts

Character generator fault





Troubleshooting charts

Visco fault n° 8



► Visco fault n° 8

Condition : Recup. low level not reached within 90s
There is ink in the ink tank

Consequence : Ink circuit switched over to standby
Activates the main alarm

Create a short-circuit between the recuperation tank's electrodes



Y The low level remains at - ? **N**

- 1 Ink circuit connections ?
- 2 Main board ? Level security blocks ?

- 1 Electrode ? (dry ink)
- 2 Ink addition electrovalve ?
- 3 Blocked tube ?
- 4 Visco. electrovalve ? Visco. calibrated tube ?
- 5 No vacuum ?
- 6 Ink viscosity too high ?



Troubleshooting charts

Visco fault n° 11



► Visco fault n° 11

Condition : Visco. not drained within 90s

Consequence : Ink circuit switched over to standby
Activates the main alarm

Display the visco. levels,
pressing 



Disconnect the
visco. electrodes

Y The low level
remains at + ? **N**

- 1** Ink circuit connections ?
- 2** Main board ? Level security blocks?

- 1** Electrode ? (ink dry in the visco.)
- 2** Blocked tube ? Visco calibrated tube ?
- 3** Visco. electrovalve ?
- 4** P/A electrovalve ?
- 5** Visco. coalescent filter ?
- 6** No vacuum ?
- 7** Calibrated leak on P/A line ?
- 8** Ink viscosity too high?
- 9** Leak on equi/visco electrovalve ?



Troubleshooting charts

Visco fault n° 16



► Visco fault n° 16

Condition : Visco. low level not reached within 90s
Consequence : Ink circuit switched over to standby
Activates the main alarm

Display the visco. levels,
pressing 



Create a short-circuit between
the viscometer electrodes



Y

The low
level remains
at - ?

N

- 1 Ink circuit connections?
- 2 Main board ? Level security blocks ?

- 1 Equi-visc. electrovalve closed ?
- 2 Visco. electrovalve clogged ?
- 3 Visco. calibrated tube ?
- 4 Visco. coalescent filter ?
- 5 Ink visco. too high ?



Troubleshooting charts

Visco fault n° 17



► Visco fault n° 17

Condition : Visco. high level not reached within 90s

Consequence : Ink circuit switched over to standby.
Activates the main alarm

Display the visco. levels,
pressing 



Create a short-circuit between
the viscometer electrodes.



Y The low level
remains at - ? **N**

- 1** Ink circuit connections ?
- 2** Main board ? Level security blocks ?

- 1** Visco. electrovalve clogged ?
- 2** Equi-visc. electrovalve closed?
- 3** Visco. calibrated tube ?
- 4** Visco. coalescent filter ?
- 5** Ink visco. too high ?



Troubleshooting charts

Solvent fault n° 4



► Solvent fault n° 4

Condition : Visco. low level not reached within 90s
Consequence : Ink circuit switched over to standby
Activates the main alarm

Display the visco. levels,
pressing



Create a short-circuit between
the low electrode and the ink
circuit plate.



Y The low level
remains at - ? **N**

- 1 Ink circuit connections ?
- 2 Main board ? Level security blocks ?

- 1 Visco. electrovalve ?
- 2 Equi-visco. electrovalve ?
- 3 Calibrated Visco. tube clogged?
- 4 Visco. coalescent filter ?



Troubleshooting charts

Solvent fault n° 11



► Solvent fault n° 11

Condition : Visco. low level not reached within 90s
Ft Visco > Ft setpoint + 10s
There is solvent in the solvent reservoir

Consequence : Ink circuit switched over to standby
Activates the main alarm

Display the visco levels,
pressing 



Create a short-circuit between
the viscometer electrodes



Y The high level
remains at - ? **N**

- 1** Ink circuit connections ?
- 2** Main board ? Level security blocks ?

- 1** Solvent electrovalve ?
- 2** P/A electrovalve ?
- 3** P/A leak ?
- 4** Visco. coalescent filter ?
- 5** Leak on air transfer electrovalve ?

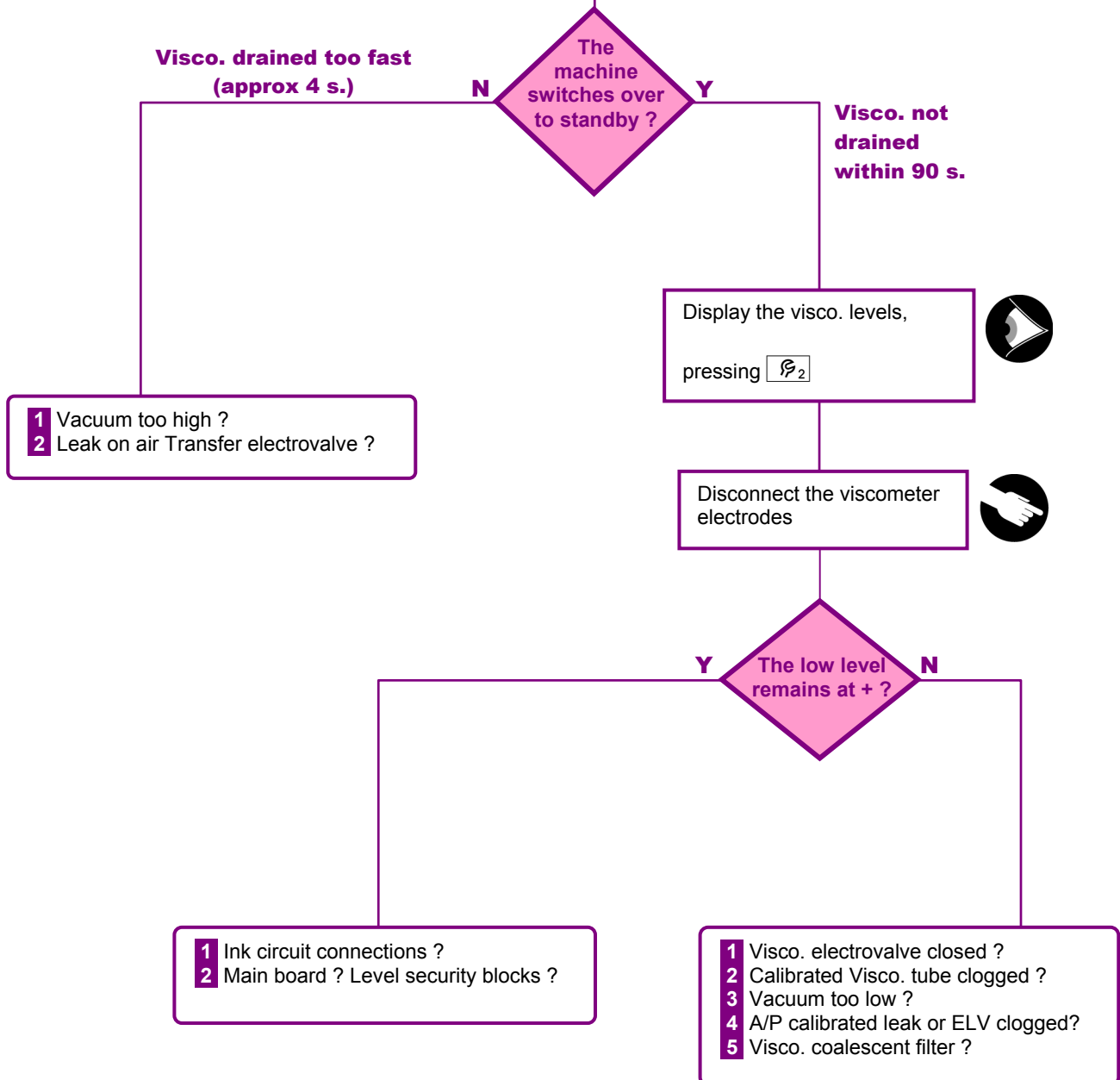
Troubleshooting charts

Solvent fault n° 14



► Solvent fault n° 14

Consequence : Activates the main alarm





Troubleshooting charts

Regulator fault



► Regulator fault

Condition : P accu. < P setpoint - 500 mb
or P accu. > P setpoint + 60 mb if visco. > 2 cps
P accu. > P setpoint + 200 mb if visco. ≤ 2 cps
Consequence : Ink circuit switched over to standby

Condition : Delta Pressure between charge and discharge ≥ 60 mb
Consequence : Ink circuit switched over to standby

The fault appears when the printer is started up

The fault appears when the printer is running

- 1 Low input pressure ?
(P input < P accu. + 0.7 bar)
- 2 Leak on accu. ?
- 3 Charge ELV or Equi-Air ELV ?
- 4 Leak on discharge electrovalve ?
- 5 Accu. coalescent filter ?
- 6 Pressure cell ?

- 1 Input pressure too high (dividing bridge restrictors clogged) ?
- 2 Dividing bridge pressure too low (restrictors clogged) ?
- 3 Pressure cell ?



Troubleshooting charts

Ink fault n° 3



► Ink fault n° 3

Condition : Visco. not drained within 90s

Consequence : Ink circuit switched over to standby
Activates the main alarm

Display the visco. levels,
pressing



Disconnect the viscometer
electrodes



Y The low level
remains at + ? **N**

- 1** Ink circuit connections ?
- 2** Main board ? Level security blocks ?

- 1** Ink addition electrovalve ?
- 2** Air transfer electrovalve ?
- 3** Visco. coalescent filter ?
- 4** Ink tank strainer ?

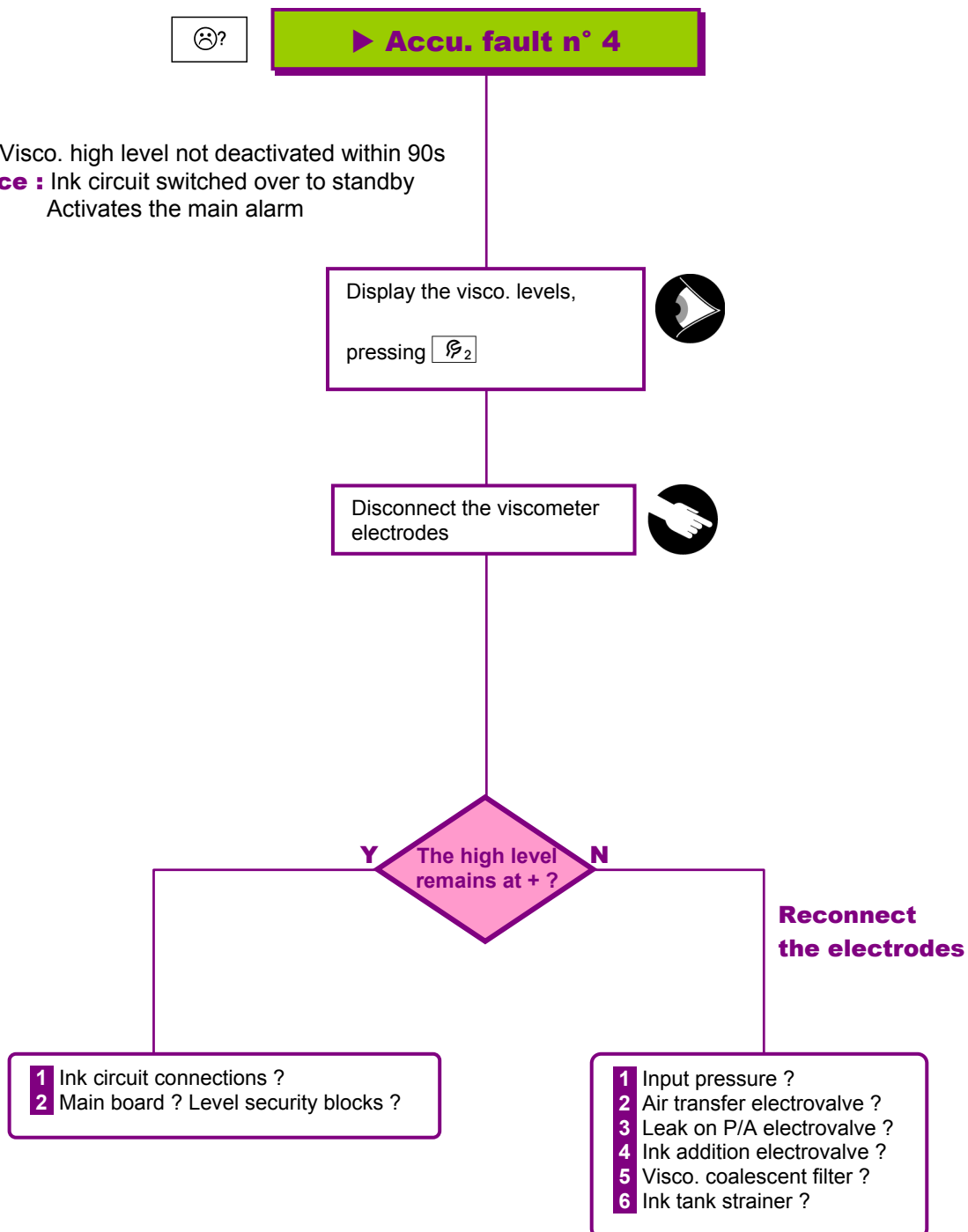


Troubleshooting charts

Accu. fault n° 4

Condition : Visco. high level not deactivated within 90s

Consequence : Ink circuit switched over to standby
Activates the main alarm





Troubleshooting charts

Accu. fault n° 9



► Accu. fault n° 9

Condition : Visco. not drained within 90s or visco. high level detected

Consequence : Ink circuit switched over to standby

Display the visco. levels,
pressing



Disconnect the viscometer
electrodes



Y The low level
remains at + ? **N**

- 1** Ink circuit connections ?
- 2** CPU board ? Level security block ?

- 1** Ink filter ?
- 2** Ink transfer electrovalve ?
- 3** Accu. calibrated leak ?
- 4** Air transfer electrovalve ?
- 5** Input pressure ? (too low)
- 6** Visco. coalescent filter ?



Troubleshooting charts

Init. fault n° 5



► Init. fault n° 5

Condition : P accu = 0b or > 0,8b

Consequence : Ink circuit switched over to standby
Activates the main alarm

- 1 Charge electrovalve?
- 2 Discharge electrovalve ?
- 3 Equi-air electrovalve ?
- 4 P/A electrovalve ?
- 5 Air transfer electrovalve ?
- 6 Pressure cell ?
- 7 Ink circuit loom connections ?
- 8 Main board ?



Troubleshooting charts

Init. fault n° 10



► Init. fault n° 10

Condition : Pmin Factory air (500mb) not reached within 90s.

The input pressure is correct

Consequence : Ink circuit switched over to standby
Activates the main alarm

- 1 Charge electrovalve ?
- 2 Equi-air electrovalve ?
- 3 Pressure cell ?
- 4 Leak on air transfer electrovalve?
- 5 Accu. coalescent filter ?



Troubleshooting charts

Init. fault n° 18



► Init. fault n° 18

Condition : Recup. low level not reached within 10 min.

Consequence : Ink circuit switched over to standby
Activates the main alarm

Display the recuperation tank
levels, pressing 



Create a short-circuit between
the recuperation tank
electrodes



Y The low level
remains at - ? **N**

- 1** Ink circuit connections ?
- 2** Main board ? Level security blocks ?

- 1** Visco. electrovalve ?
- 2** Ink addition electrovalve ?
- 3** Vacuum ?
- 4** Ink tank strainer ?
- 5** Visco. calibrated tube ?



Troubleshooting charts

Init. fault n° 22



► Init. fault n° 22

Condition : P.setpoint not reached within 90s

Consequence : Ink circuit switched over to standby
Activates the main alarm

- 1 Discharge electrovalve ?
- 2 Equi-air electrovalve ?
- 3 Head pressurisation ?
- 4 Pressure adjustment ?



Troubleshooting charts

Stop fault n° 13



► Stop fault n°13

Condition : Visco. not drained within 90 s

Consequence : Ink circuit switched over to standby
Activates the main alarm

Display the visco. levels,
pressing



Disconnect the viscometer
electrodes



Y The low level
remains at + ? **N**

- 1 Ink circuit connections ?
- 2 Main board ? Level security blocks ?

- 1 P/A electrovalve ?
- 2 Visco. electrovalve ?
- 3 P/A leak ?
- 4 Visco. calibrated tube ?
- 5 Visco. coalescent filter ?
- 6 Leak on equi-visco. electrovalve ?



Troubleshooting charts

Stop fault n° 19



► Stop fault n°19

Condition : Accu. not drained within 90 s

Consequence : Ink circuit switched over to standby
Activates the main alarm

Display the visco. levels,
pressing



Disconnect the accumulator
electrodes



Y The low level
remains at + ? **N**

- 1** Ink circuit connections ?
- 2** Main board ? Level security blocks ?

- 1** Ink transfer electrovalve ?
- 2** Visco. electrovalve ?
- 3** Accu. calibrated leak ?
- 4** Ink filter ?
- 5** Visco. calibrated tube ?
- 6** Pigments making connection on the low electrode ?



Troubleshooting charts

Stop fault n° 15 or 33



► Stop fault n° 15 or 33

Condition : P not stabilised within 90s or >2b

Consequence : Ink circuit switched over to standby
Activates the main alarm

Check the dividing bridge pressure
(between 0.8 and 1.4 b).



- 1 Equi-air or discharge electrovalves clogged ?
- 2 Turning to atmospheric pressure ?
- 3 Leak on charge electrovalve ?
- 4 Leak on head pressurisation ?
- 5 Accu. coalescent filter ?



Troubleshooting charts

Drain fault n° 13



► Drain fault n° 13

Condition : Visco. not drained within 90s

Consequence : Ink circuit switched over to standby
Activates the main alarm

Display the visco. levels,
pressing



Disconnect the viscometer
electrodes



Y The low level
remains at + ? **N**

- 1** Ink circuit connections ?
- 2** Main board ? Level security blocks ?

- 1** P/A electrovalve ?
- 2** Visco. electrovalve ?
- 3** P/A leak ?
- 4** Visco. calibrated tube ?
- 5** Visco. coalescent filter ?
- 6** Leak on equi-visco electrovalve ?



Troubleshooting charts

Drain fault n° 15 or 93



► Drain fault n° 15 or 93

Condition : P not stabilised within 90s or >2b

Consequence : Ink circuit switched over to standby
Activates the main alarm

Check the dividing bridge
pressure (between 0.8 and
1.4 b).



- 1 Equi-air or discharge electrovalve clogged ?
- 2 Turning to atmospheric pressure ?
- 3 Leak on charge electrovalve ?
- 4 Accu. coalescent filter ?



Troubleshooting charts

Drain fault n° 19



► Drain fault n° 19

Condition : Accu. not drained within 90s

Consequence : Ink circuit switched over to standby
Activates the main alarm

Display the visco. levels,
pressing



Disconnect the accumulator
electrodes



Y The low level
remains at + ? **N**

- 1** Ink circuit connections ?
- 2** Main board ? Level security blocks ?

- 1** Ink transfer electrovalve ?
- 2** Visco. electrovalve ?
- 3** Ink filter ? Accu. calibrated leak ?
- 4** Visco. calibrated tube ?
- 5** Vacuum low ?
- 6** Pigment accumulated at the bottom of the accu. ?



Troubleshooting charts

Drain fault n° 31 or 76



► Drain fault n° 31 or 76

Condition : Visco. not drained within 90s

Consequence : Ink circuit switched over to standby
Activates the main alarm

Display the visco. levels,
pressing 



Disconnect the viscometer
electrodes.



Y The low level
remains at + ? **N**

- 1 Ink circuit connections ?
- 2 Main board ? Level security blocks ?

- 1 Ink addition electrovalve ?
- 2 Air transfer electrovalve ?
- 3 Visco. coalescent filter ?
- 4 Ink tank strainer ?
- 5 Leak on P/A or equi-visco. electrovalve ?



Troubleshooting charts

Drain fault n° 41



► Drain fault n° 41

Condition : P setpoint not reached within 90s

Conséquence : Ink circuit switched over to standby
Activates the main alarm

- 1 Leak on discharge electrovalve ?
- 2 Equi-air or charge electrovalve clogged ?
- 3 Head pressurisation ?
- 4 Pressure adjustment ?



Troubleshooting charts

Drain fault n° 54



► Drain fault n° 54

Condition : Visco. not drained within 90s visco. high level detected

Consequence : Ink circuit switched over to standby
Activates the main alarm

Display the visco. levels,
pressing 



Disconnect the viscometer
electrodes

Y The low level
remains at + ? **N**

- 1** Ink circuit connections ?
- 2** Main board ? Level security blocks ?

- 1** Visco. coalescent filter ?
- 2** Ink transfer electrovalve ?
- 3** Accu. calibrated leak ?
- 4** Air transfer electrovalve ?
- 5** Input pressure (too low) ?
- 6** Ink filter ?
- 7** Leak on P/A or equi visco electrovalve ?



Troubleshooting charts

Drain fault n° 25 or 70



► Drain fault n° 25 or 70

Condition : Visco. high level not reached within 90s

Display the visco. levels,
pressing 



Create a short-circuit between
the visco. electrodes

Y **The high level
remains at - ?** **N**

- 1** Ink circuit connections ?
- 2** Main board ? Level security blocks ?

- 1** Visco. calibrated leak clogged ?
- 2** Visco. electrovalve ?
- 3** Equi-visco. electrovalve ?
- 4** Visco. coalescent filter ?



Troubleshooting charts

Drain fault n° 64



► Drain fault n° 64

Condition : Vacuum and pressure must be correct

Disconnect an electrode from the accu. low level



Y

The accu.'s low level remains at + ?

N

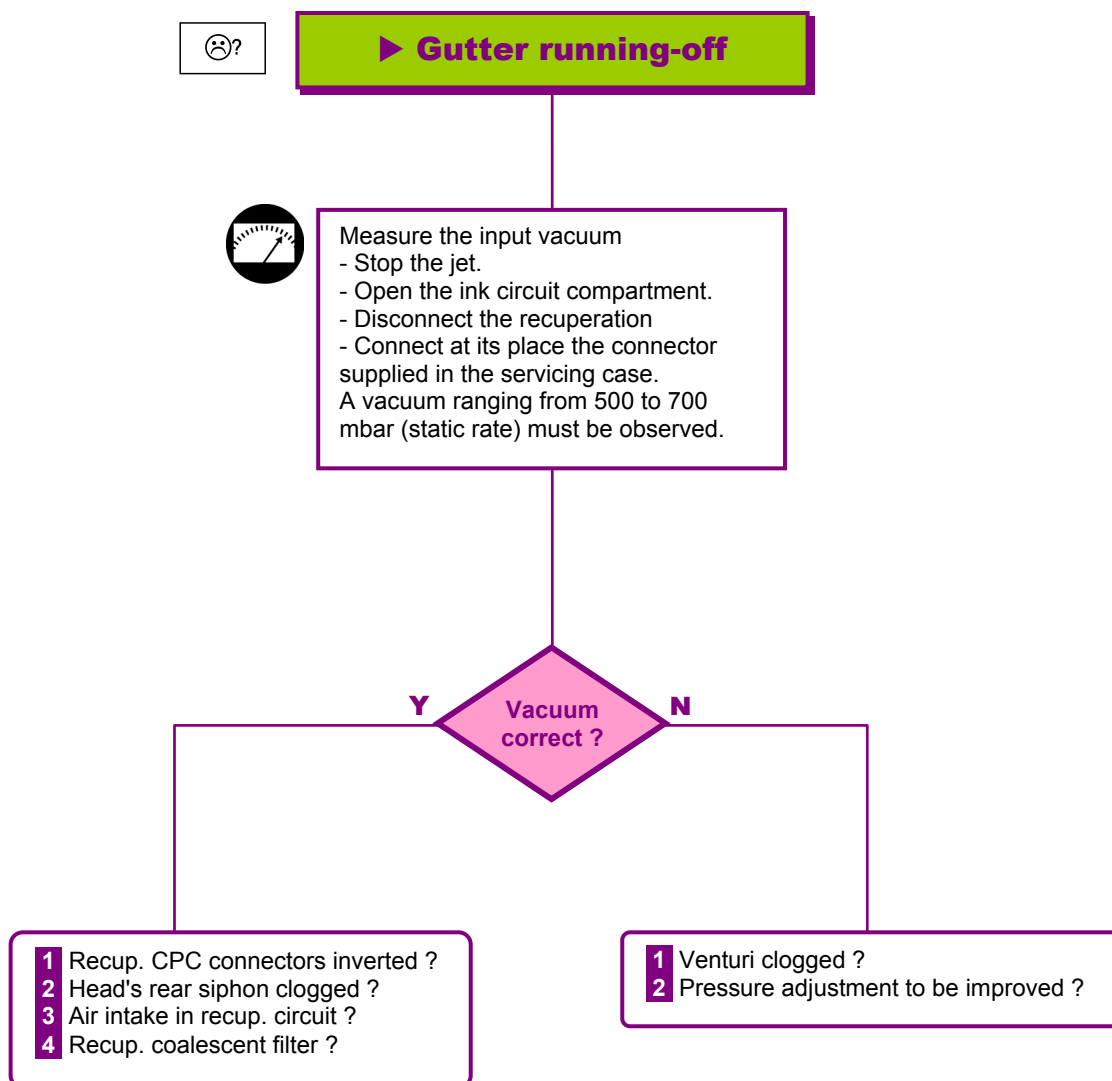
- 1 Ink circuit connections ?
- 2 Main board ? Level security blocks ?

- 1 Head electrovalves closed ?
- 2 Purge calibrated leak or nozzle clogged ?
- 3 Head filter. Self-locking connector ?



Troubleshooting charts

Gutter running-off fault





Troubleshooting charts

Incorrect dividing bridge pressure fault



► **Incorrect dividing bridge pressure :**
($> 1.4 \text{ b}$ or $< 0.8 \text{ b}$)

Condition : The input pressure is correct : $P_{\text{input}} = P_{\text{setpoint}} + 0.7 \text{ bar}$

P dividing bridge $> 1.4 \text{ bar}$

P dividing bridge $< 0.8 \text{ bar}$

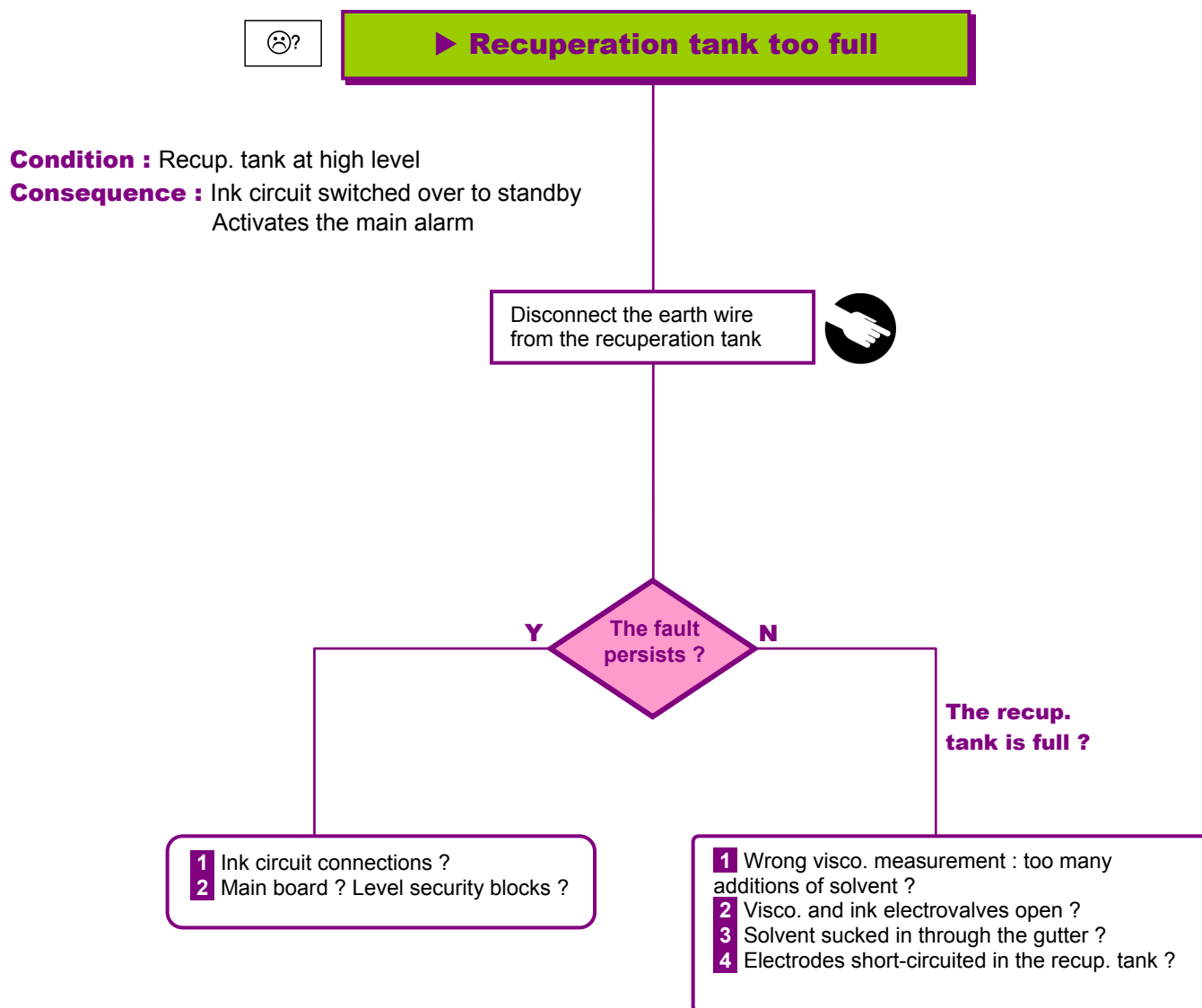
- 1 0.4 mm leak clogged ?
- 2 Head pressurisation clogged ?
- 3 Tube length incorrect ?

- 1 One of the two 0.3 leaks is clogged ?
- 2 Tube length incorrect?



Troubleshooting charts

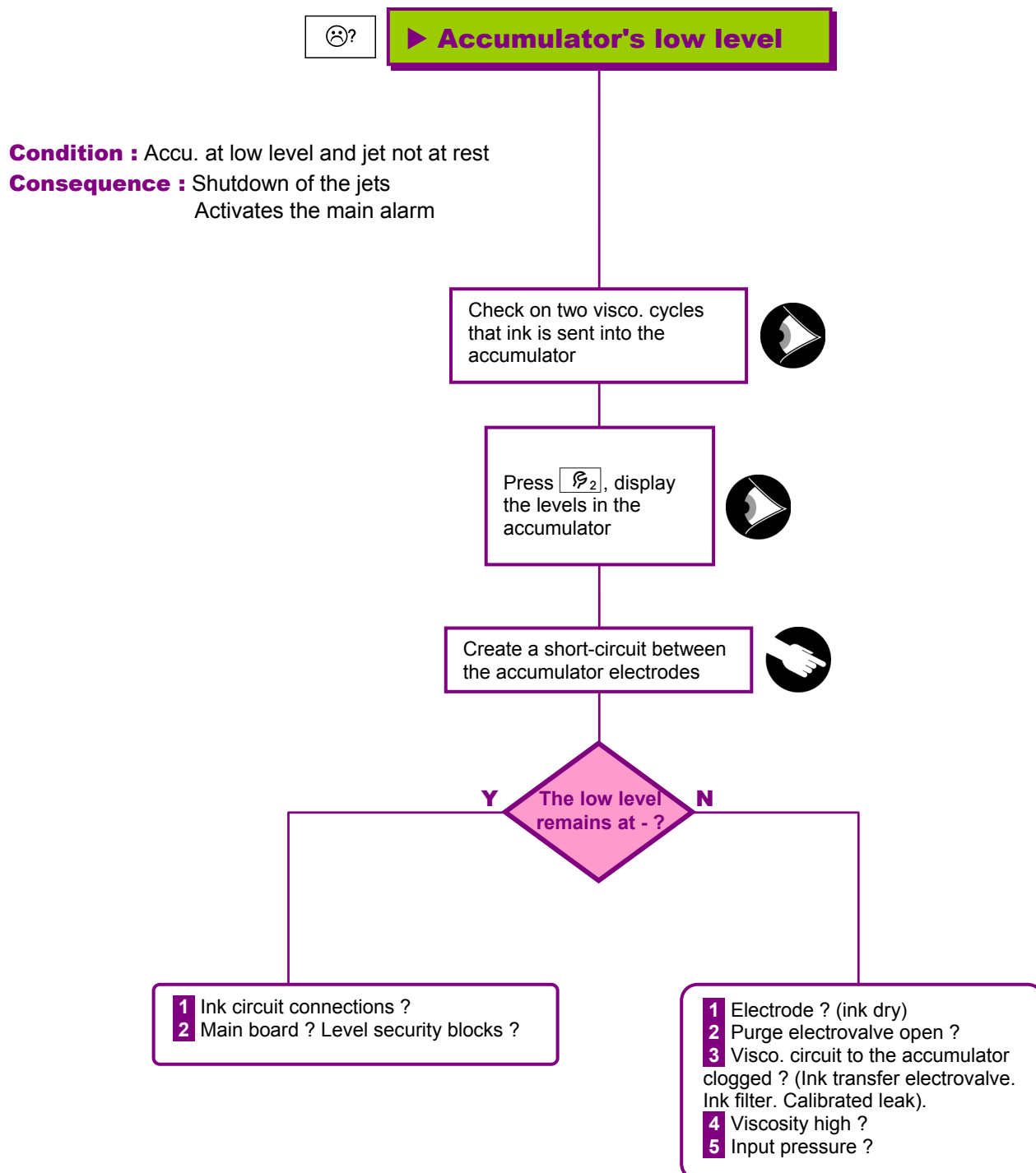
Recuperation tank too full fault





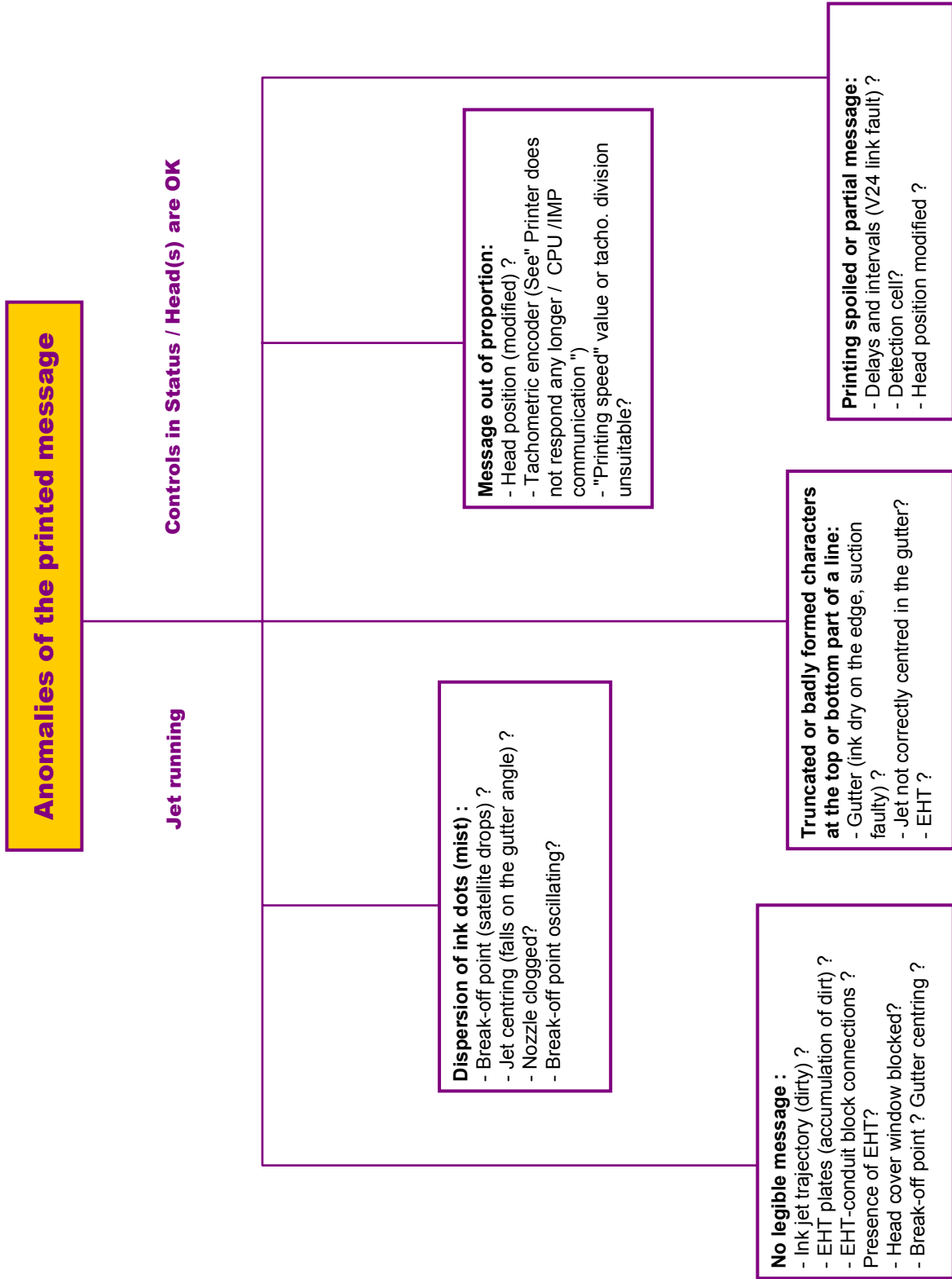
Troubleshooting charts

Accumulator's low level fault



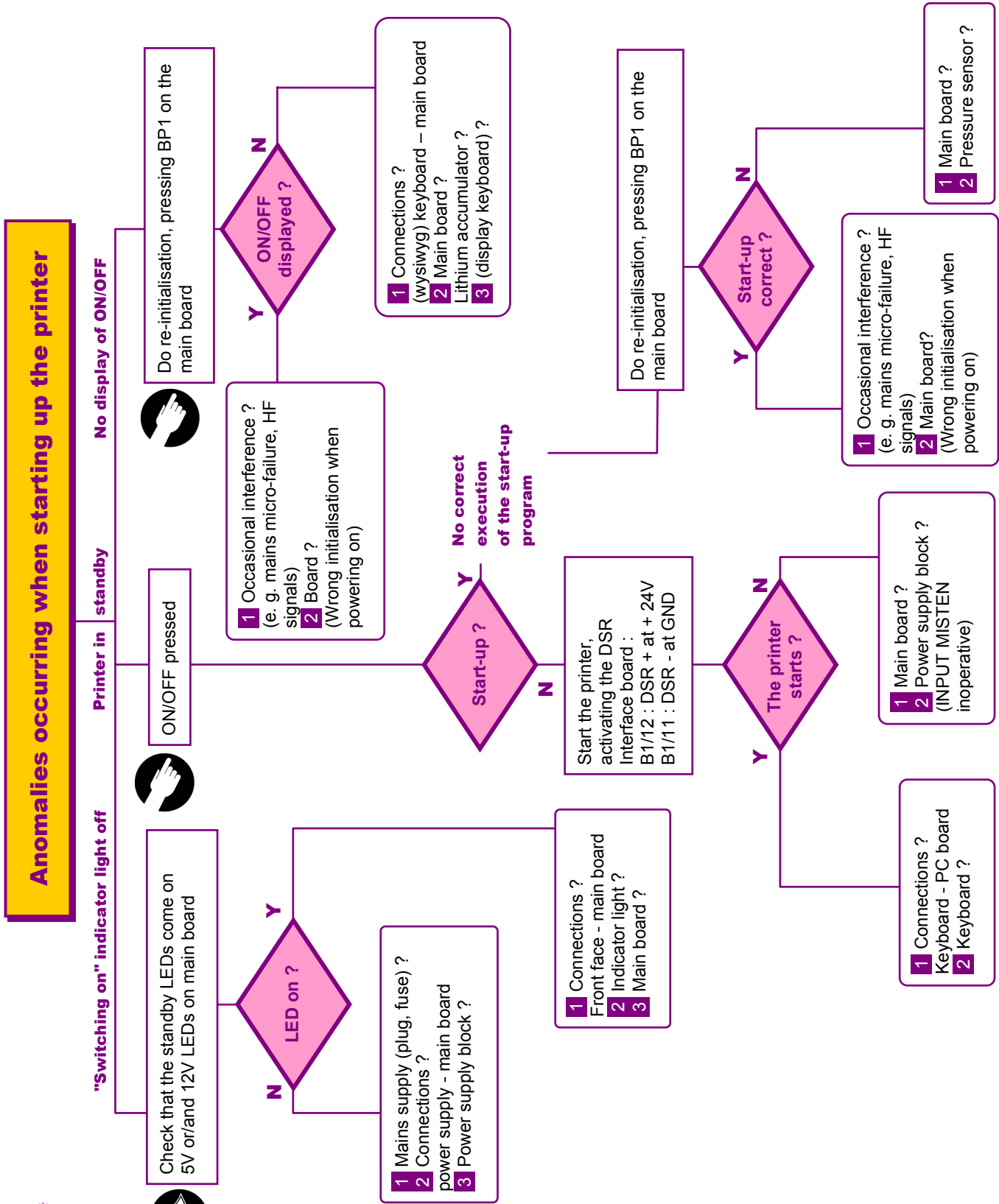
Troubleshooting charts

Anomalies of the printed message



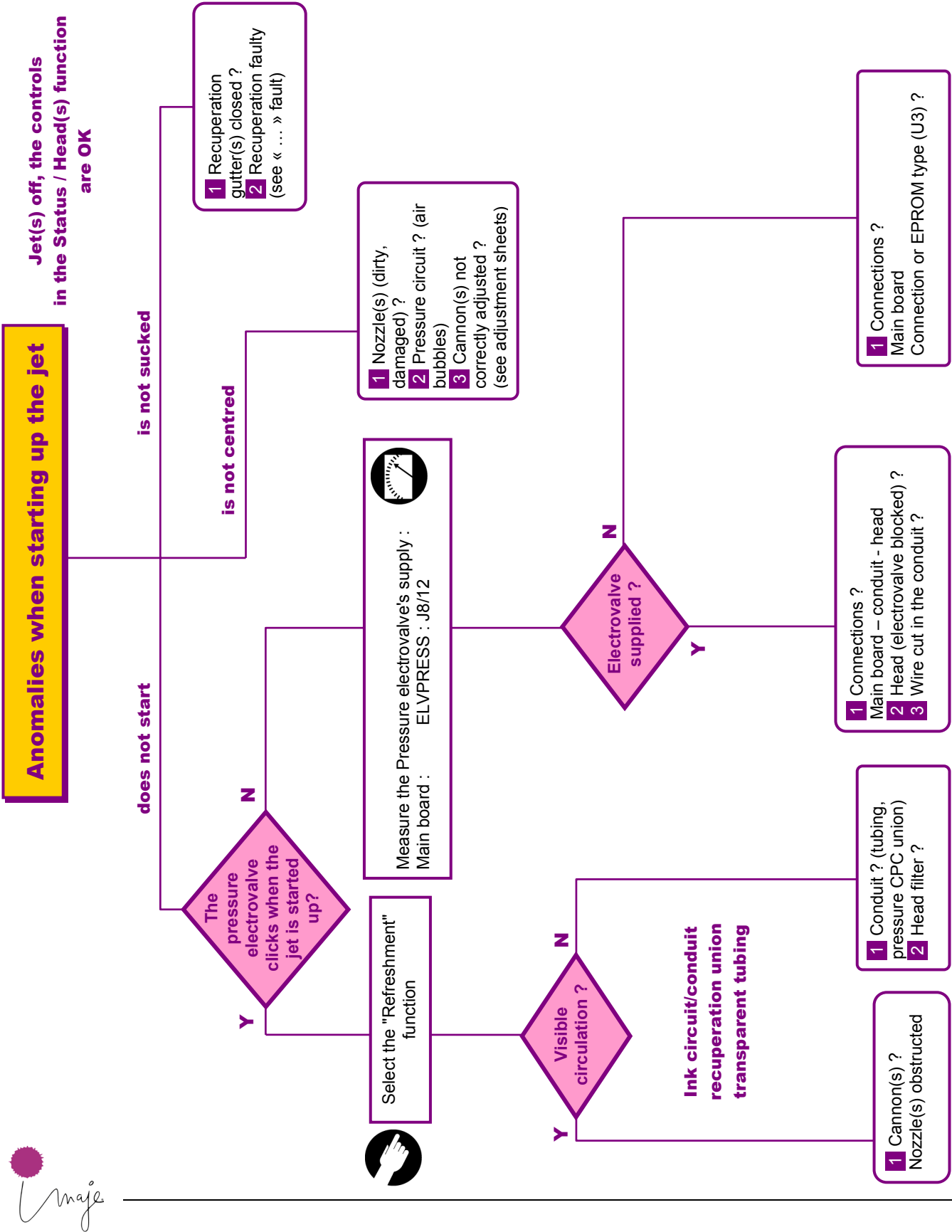
Troubleshooting charts

Anomalies occurring when starting up the printer

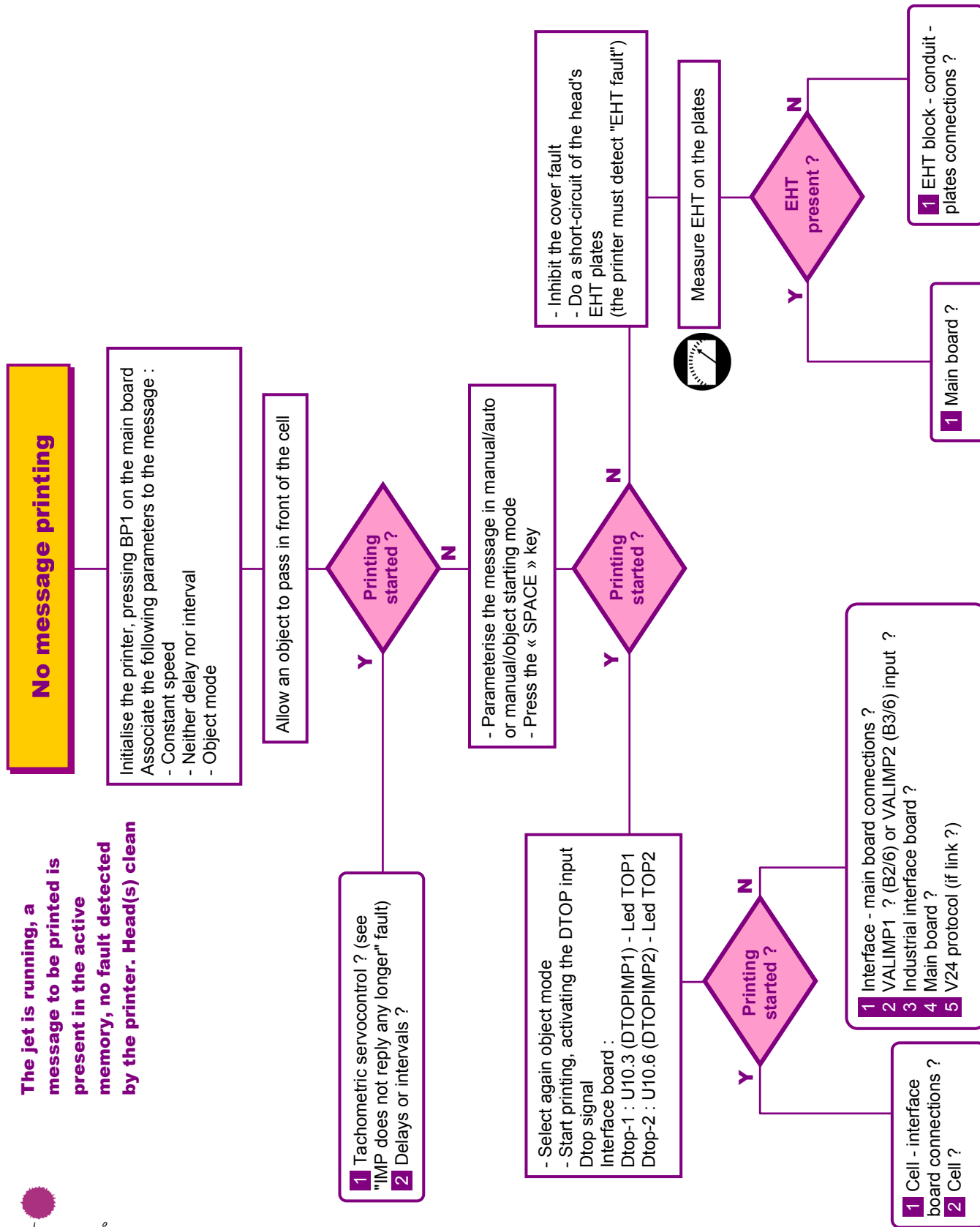


Troubleshooting charts

Anomalies when starting up the jet

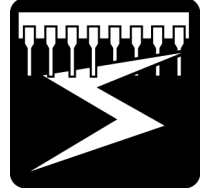


The jet is running, a message to be printed is present in the active memory, no fault detected by the printer. Head(s) clean

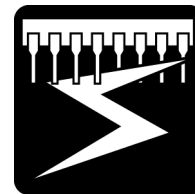


Troubleshooting charts

Anomalies : No message printing

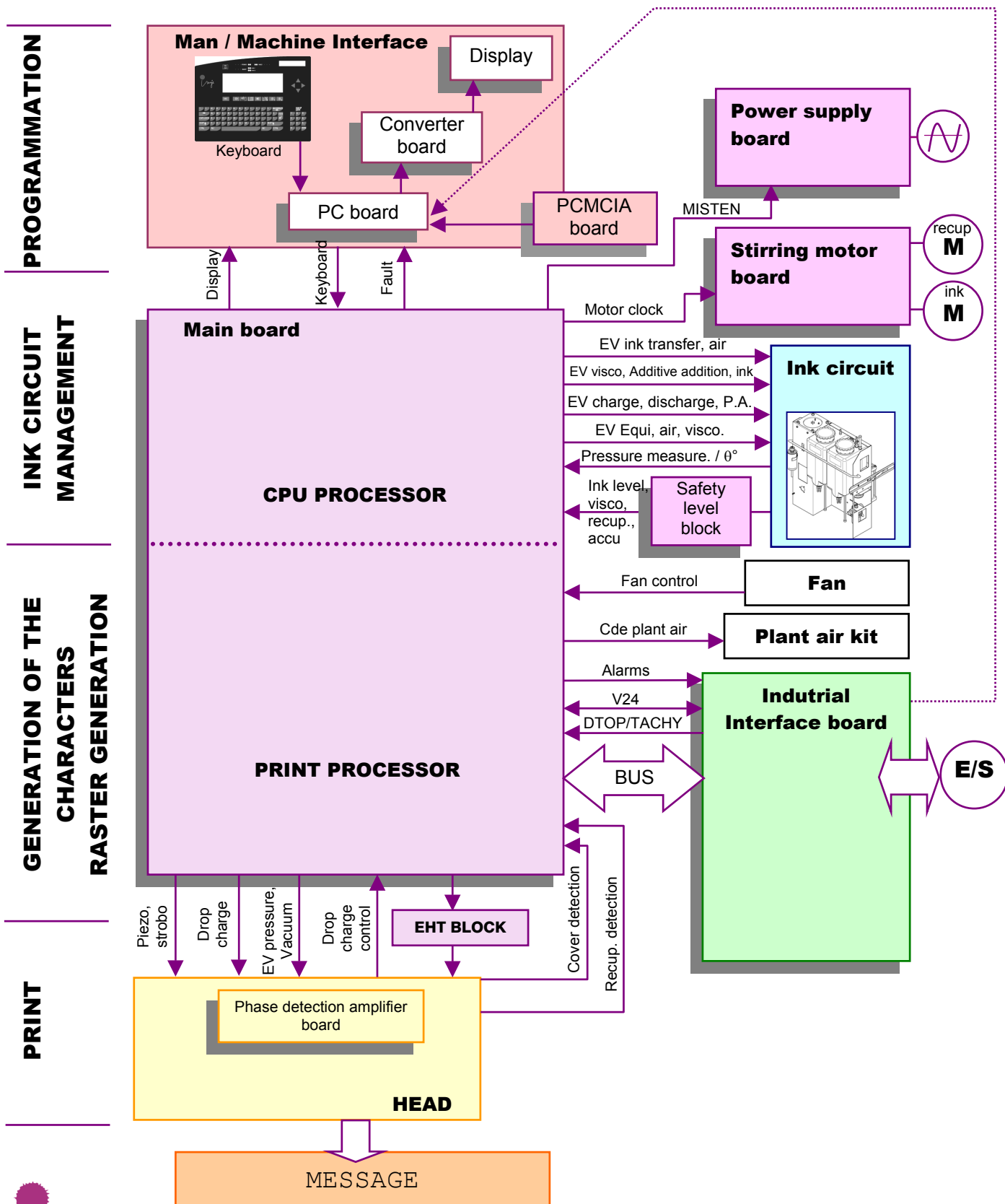


● One-head printer architecture	p.73
● Test point and connections	
● Main board	p.74
● Industrial interface board	p.79
● Print head	p.83
● Stirring motor board.....	p.84
● PC module board.....	p.86
● Display and converter	p.91
● Phase detection amplifier board	p.92
● Power supply board	p.93
● Resonator supply board	p.94
● Conduit	p.95
● Safety level block.....	p.96



Printer electronics

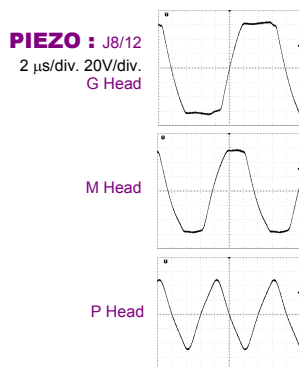
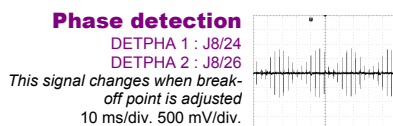
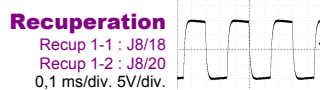
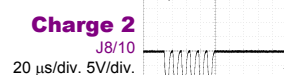
Architecture



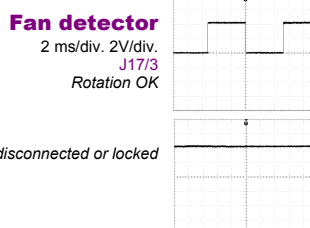
	TSTTHT1 : J9/11
typical	3,9 V (G head) 2,25 V (M head)

	TSTTHT1 : J9/11
TSTTHT = V/2000 typical	3,9 V (G head) 2.25 V (M head)

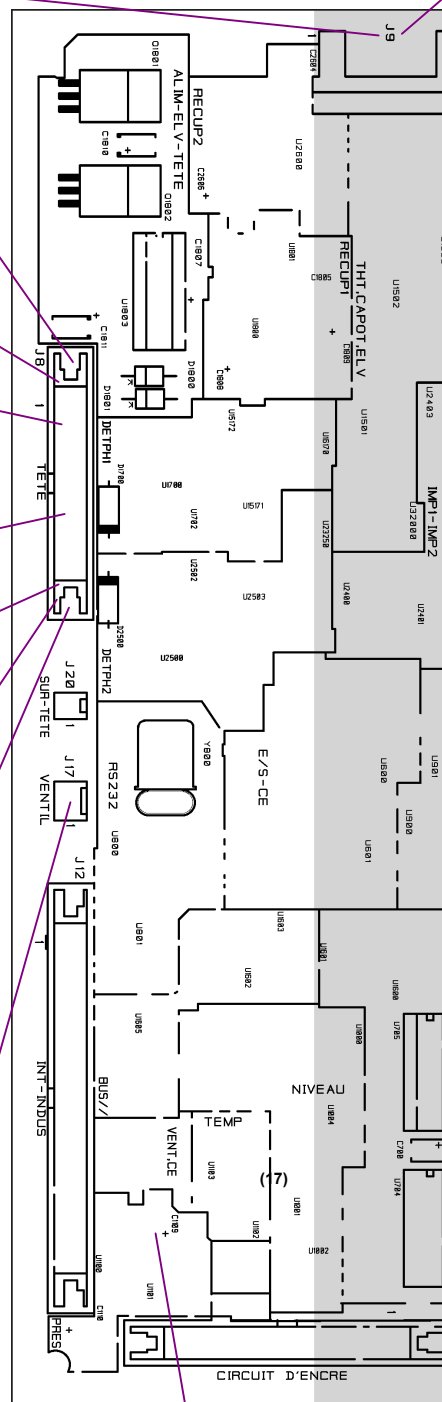
	CAPOT1 : J8/16
Cover open	+ 5 V
Cover closed	0 V



	ELVPRESS1 : J8/12
EV closed (stand-by)	+ 5 V (EV off)
EV open (jet running refreshment)	0 V

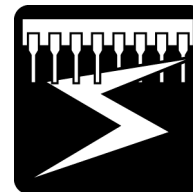


Fan disconnected or locked



Pressure measurement

PRESS1 : Upper pin of C1109
(offset between 0 and 600 mV)
 $\Delta \text{ voltage} = \Delta \text{ pressure}$
Eg : $\Delta U = 0,1 \text{ V} \rightarrow \Delta P = 0,1 \text{ b}$



Printer electronics

Probe : Main board A19915 / A19916-E



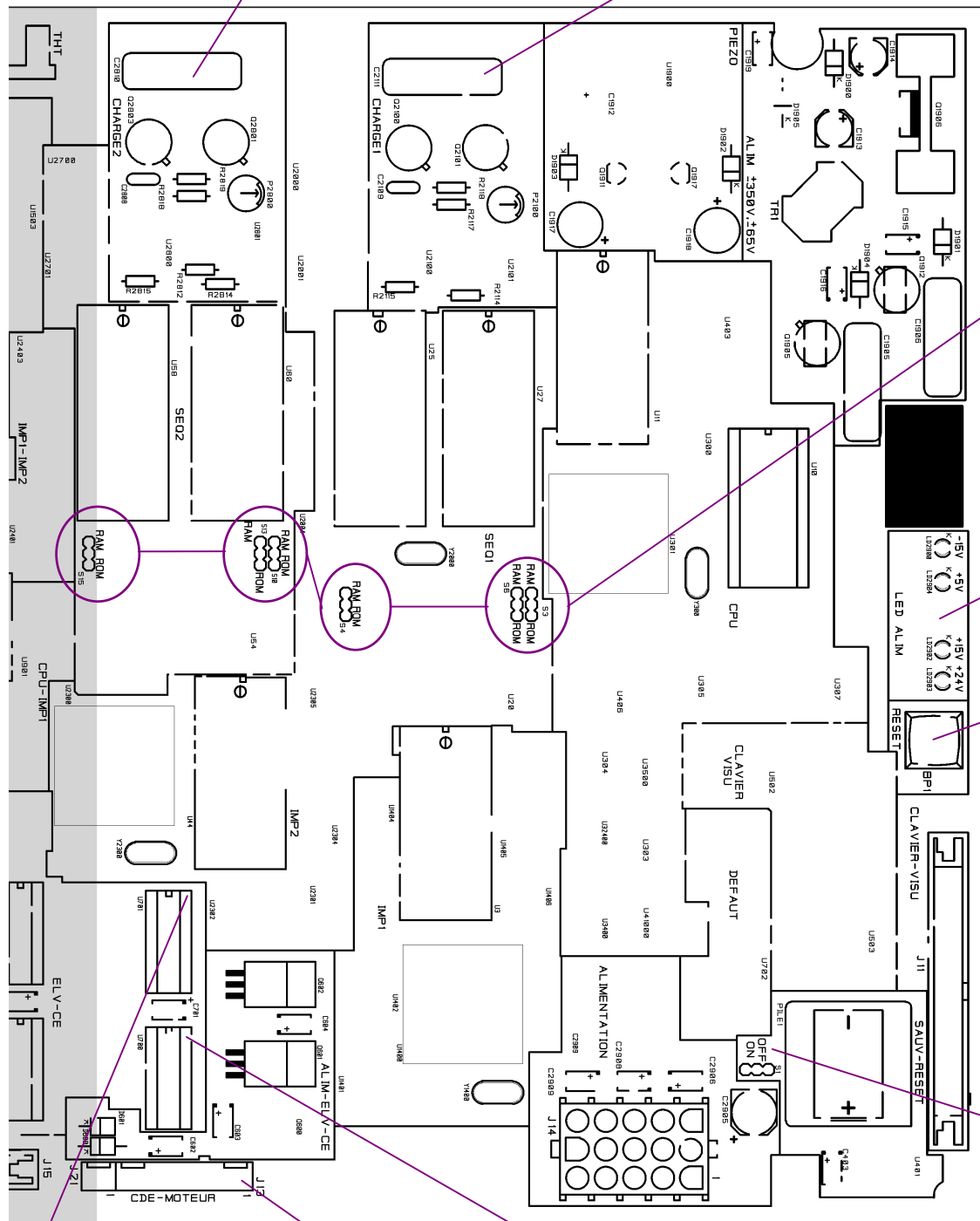
High voltage for charge

Negative : -320 à -400 V
Upper pin of C2810



High voltage for charge

Positive : +320 à +400 V
Upper pin of C2111



Jumper of main board configuration
S3-S4-S6-S10-S13

Leds

BP1

Push-button for reinitialisation of the command logic. The printer turns to stand by state without following a shut-down cycle.

S1

General reset jumper, disconnects the lithium battery. Erases program memories-Resets autotating, parameter setting, etc.

OFF General reset: OFF

ON Normal position : ON

SOLVENT ELV :	J15/6 ou U705/18
EV Closed (stand-by)	+ 5 V (EV off)
EV Open (Additive addition)	0 V

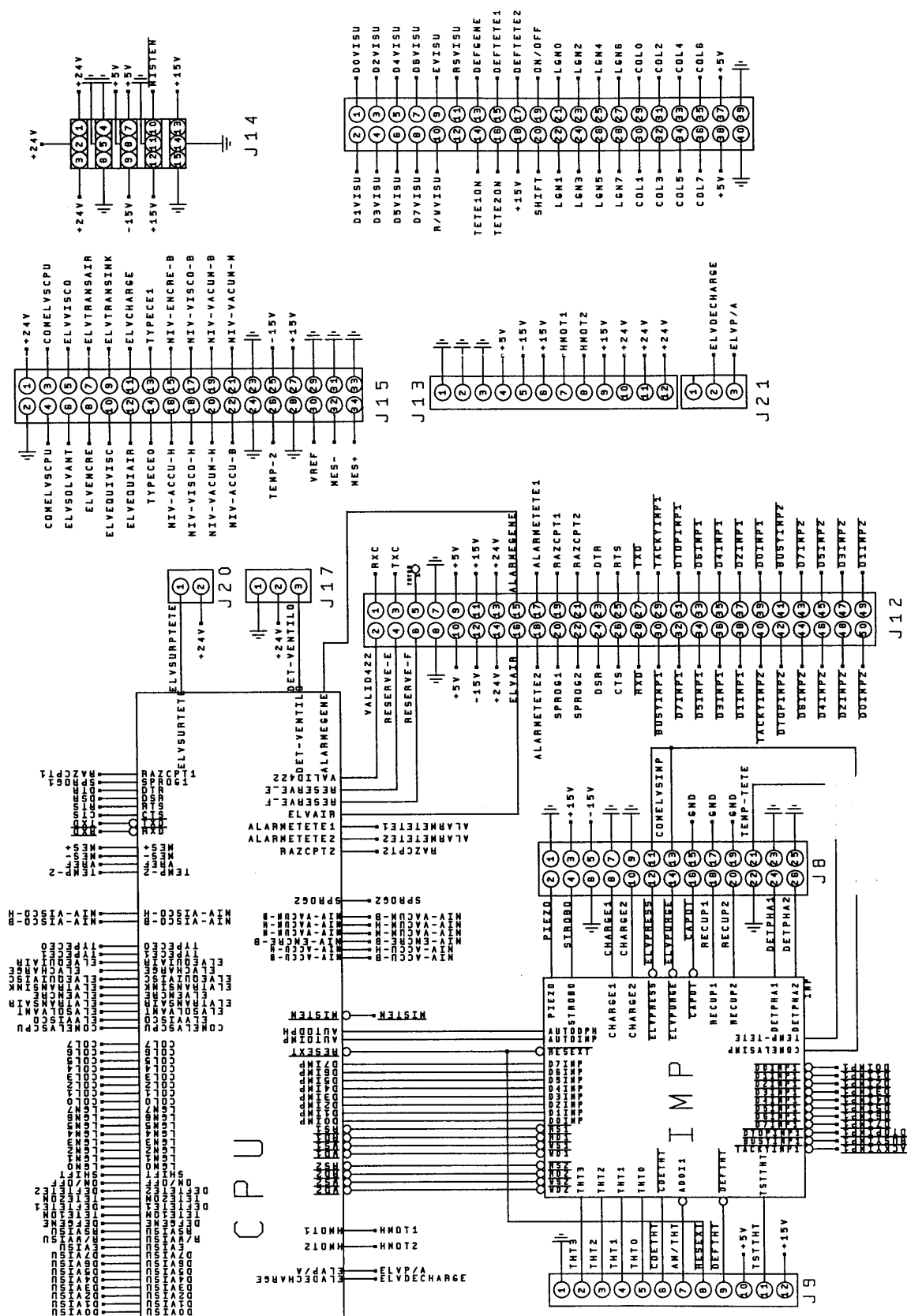
	ELV Visco : U704/17
EV Closed (stand-by)	+ 5 V (EV off)
EV Open (drain visco)	0 V

Pressure motor command

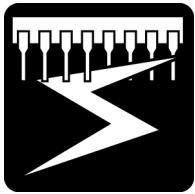
Hmott : J13/7
Eg : 1500 tours/mn
40 µs/div. 2V/div.



Printer electronics



Printer electronics



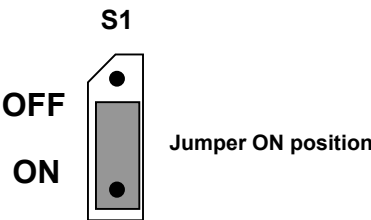
Jumpers position: Main board A19915 / A19916-E

See item numbers of the jumpers on the board screen print.

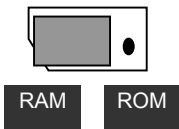
Software :

Software Prom in U11.

S1 jumper ON position (Battery).

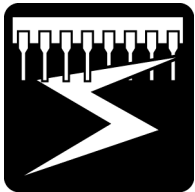


Jumpers position :



Jumper RAM position

	Version	S3	S4	S6	S10	S13	S15
S8 Classic Printer	Single-jet	ROM	ROM	ROM			
	Twinjet	ROM	ROM	ROM	ROM	ROM	ROM
S8 Master IP65 and Contrast Printer	Single-jet	RAM	RAM	RAM			
	Twinjet	RAM	RAM	RAM	RAM	RAM	RAM



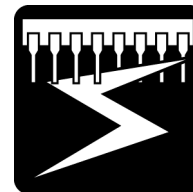
Jumpers position: Main board A19915 / A19916-E

PROM and RAM Position:

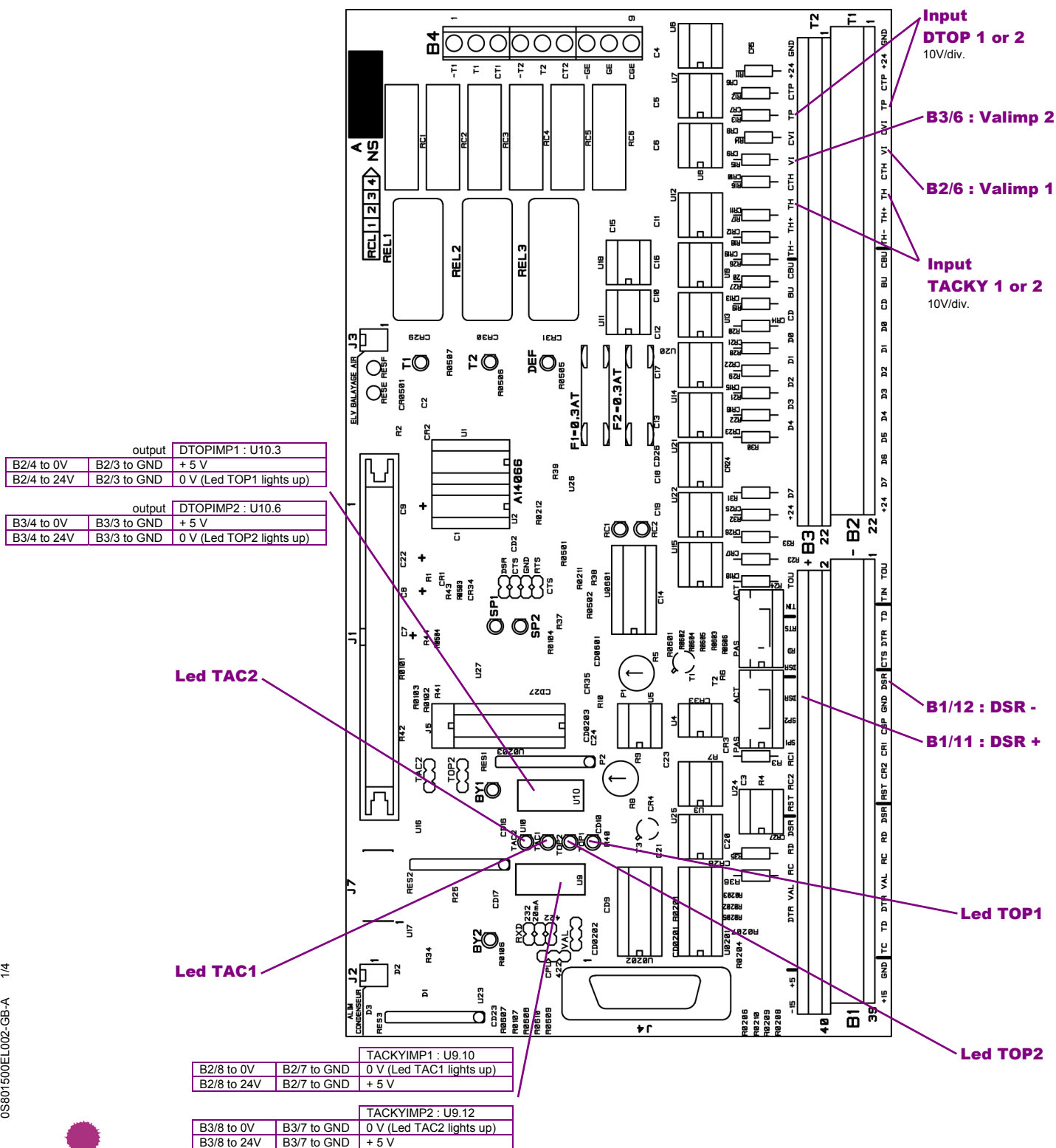
	Version	U25	U27	U58	U60
S8 Classic Printer	Single-jet	PROM	PROM		
	Twinjet	PROM	PROM	PROM	PROM
S8 Master IP65 and Contrast Printer	Single-jet	RAM	RAM		
	Twinjet	RAM	RAM	RAM	RAM

Printer electronics

Probe: Industrial interface board A19244 / A19245-B

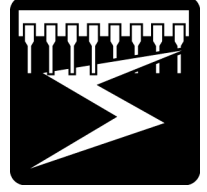


CAUTION: Make sure that the external assemblies (cell, controller, etc.) are disconnected before forcing the inputs to 24 V or 5 V.



Printer electronics

Connection: Industrial interface board A19244 / A19245-B



B1	BORNIER	40 POINTS
1	—	TTYOUT-
2	—	TTYOUT+
3	—	TTYIN-
4	—	TTYIN+
5	—	TXDOUT
6	—	RTSOUT
7	—	DTROUT
8	—	RXDIN
9	—	CTSIN
10	—	DSRIN
11	—	DSR-
12	—	DSR+
13	—	GND
14	—	SPROC 2
15	—	COMSPROC
16	—	SPROC 1
17	—	COMRAZC1
18	—	RAZC1
19	—	COMRAZC2
20	—	RAZC2
21	—	RESET-
22	—	RESET+
23	—	DSR422-
24	—	DSR422+
25	—	RXD422-
26	—	RXD422+
27	—	RXC422-
28	—	RXC422+
29	—	VALID422-
30	—	VALID422+
31	—	DTR422-
32	—	DTR422+
33	—	TXD422-
34	—	TXD422+
35	—	TXC422-
36	—	TXC422+
37	—	GND
38	—	+5V
39	—	+15V
40	—	-15V

CPU / MAIN BOARD SIGNALS

B2	BORNIER	22 POINTS
1	—	GND
2	—	+24VT1
3	—	COMDTOP1
4	—	DTOP1
5	—	COMVALIMP1
6	—	-VALIMP1
7	—	COMTACHY1
8	—	TACHY1
9	—	TACHY1+
10	—	TACHY1-
11	—	COMBUSY1
12	—	-BUSY1
13	—	COMDATA1
14	—	D0 1
15	—	D1 1
16	—	D2 1
17	—	D3 1
18	—	D4 1
19	—	D5 1
20	—	D6 1
21	—	D7 1
22	—	+24T1

HEAD 1 SIGNAL

B3	BORNIER	22 POINTS
1	—	GND
2	—	+24VT2
3	—	COMDTOP2
4	—	DTOP2
5	—	COMVALIMP2
6	—	-VALIMP2
7	—	COMTACHY2
8	—	TACHY2
9	—	TACHY2+
10	—	TACHY2-
11	—	COMBUSY2
12	—	-BUSY2
13	—	COMDATA2
14	—	D0 2
15	—	D1 2
16	—	D2 2
17	—	D3 2
18	—	D4 2
19	—	D5 2
20	—	D6 2
21	—	D7 2
22	—	+24T2

HEAD 2 SIGNALS

Not used in
S8 Contrast

B4	BORNIER	9 POINTS
1	—	-T1
2	—	T1
3	—	COMT1
4	—	-T2
5	—	T2
6	—	COMT2
7	—	-GENE
8	—	GENE
9	—	COMGENE

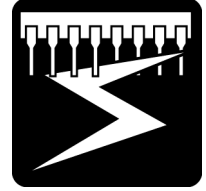
ALARMS RELAY



BERNARD COMPANY

Printer electronics

Connection: Industrial interface board A19244 / A19245-B



J1 CONNECTEUR 50PT MALE

1	--RXC	2	--RESERVE D
3	--TXC	4	--RESERVE E
5	--RESET	6	--RESERVE F
7	--GND	8	--GND
9	--+5V	10	--+5VEIL
11	--+15V	12	--+15V
13	--+24V	14	--+24V
15	--ALARME CENE	16	--EVAIR
17	--ALARME TETE1	18	--ALARME TETE2
19	--RAZCPT1	20	--SPROC1
21	--RAZCPT2	22	--SPROC2
23	--DTRIN	24	--DSROUT
25	--RTSIN	26	--CTSOUT
27	--TXDIN	28	--RXDOUT
29	--TACHYIMP1	30	--BUSYIMP1
31	--DTOPIMP1	32	--D7IMP1
33	--D6IMP1	34	--D5IMP1
35	--D4IMP1	36	--D3IMP1
37	--D2IMP1	38	--D1IMP1
39	--D0IMP1	40	--TACHYIMP2
41	--BUSYIMP2	42	--DTOPIMP2
43	--D7IMP2	44	--D6IMP2
45	--D5IMP2	46	--D4IMP2
47	--D3IMP2	48	--D2IMP2
49	--D1IMP2	50	--D0IMP2

BOTTOM OF RACK, MAIN BOARD LINK

U0203
DIL20

SUPPORT DIL 20 BROCHES

TACHIMP1	1	20	--+5V
TACHIMP1	2	19	--TACHYIMP1
TACHIMP2	3	18	--TACHYIMP2
-TOPIMP1	4	17	--DTOPIMP1
-TOPIMP2	5	16	--DTOPIMP2
SPROC1	6	15	--SPRG1
SPROC2	7	14	--SPRG2
-BUSYIMP1	8	13	--BUSY1
-BUSYIMP2	9	12	--BUSY2
GND	10	11	--NC

PAL 16V8 SUPPORT

J2 CONNECTEUR 2 POINTS

1	--+5V
2	--GND

CONDENSER SUPPLY

J3 CONNECTEUR 2 POINTS

1	--+24V
2	--EVAIR

HIGH FLOW EV

J4 SUBD

15PT MALE

1	--GND	9	--TXD422-
2	--TXD422+	10	--DTR422-
3	--DTR422+	11	--RXD422-
4	--RXD422+	12	--DSR422-
5	--DSR422+	13	--RXC422-
6	--RXC422+	14	--TXC422-
7	--TXC422+	15	--+5V
8	--GND		

LINK RS422

J6 CONNECTEUR 8 POINTS

1	--+5V
2	--GND
3	--+15V
4	--GND
5	--+15V
6	--GND
7	--+24V
8	--GND

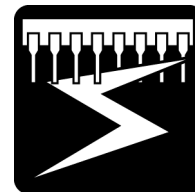
POWER SUPPLY OUTPUT

J5 DIL4

SUPPORT DIL 4 BROCHES

GND	1	4	--+24V
+15V	2	3	--+15V

EXTENSION BOARD SUPPORT



Jumpers, fuses : Industrial interface board A19244 / A19245-B

LEDs

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

Jumpers - Switches

SW1 SW2	Current loop powered by printer (ACTIVE) or external supply (PASSIVE)
CTS to DSR	The printer will send if DSR is active (CTS connected to DSR)
to CTS	The printer will send if CTS is active
to GND	Printer will send continuously (CTS connected to 0V)
to RTS	The printer will send continuously (CTS connected to RTS)
RXD to 232	Transmission by voltage level (V24 standard, high level: +3V to +12V - low level: -3V to -12 V)
to 20mA	Transmission by 20mA current loop . (Only on S8 Classic)
to 422	Transmission by RS422 (Mailjet)
VAL	RS422 transmission is enabled continuously RS422 transmission is enabled by the VAL input (B1/29-30)
TOP2	DTOP input on IMP2 board activated by DTOP2 input DTOP input on IMP2 board activated by DTOP1 input
TAC2	TACHO input on IMP2 board activated by TACHY2 input TACHO input on IMP2 board activated by TACHY1 input

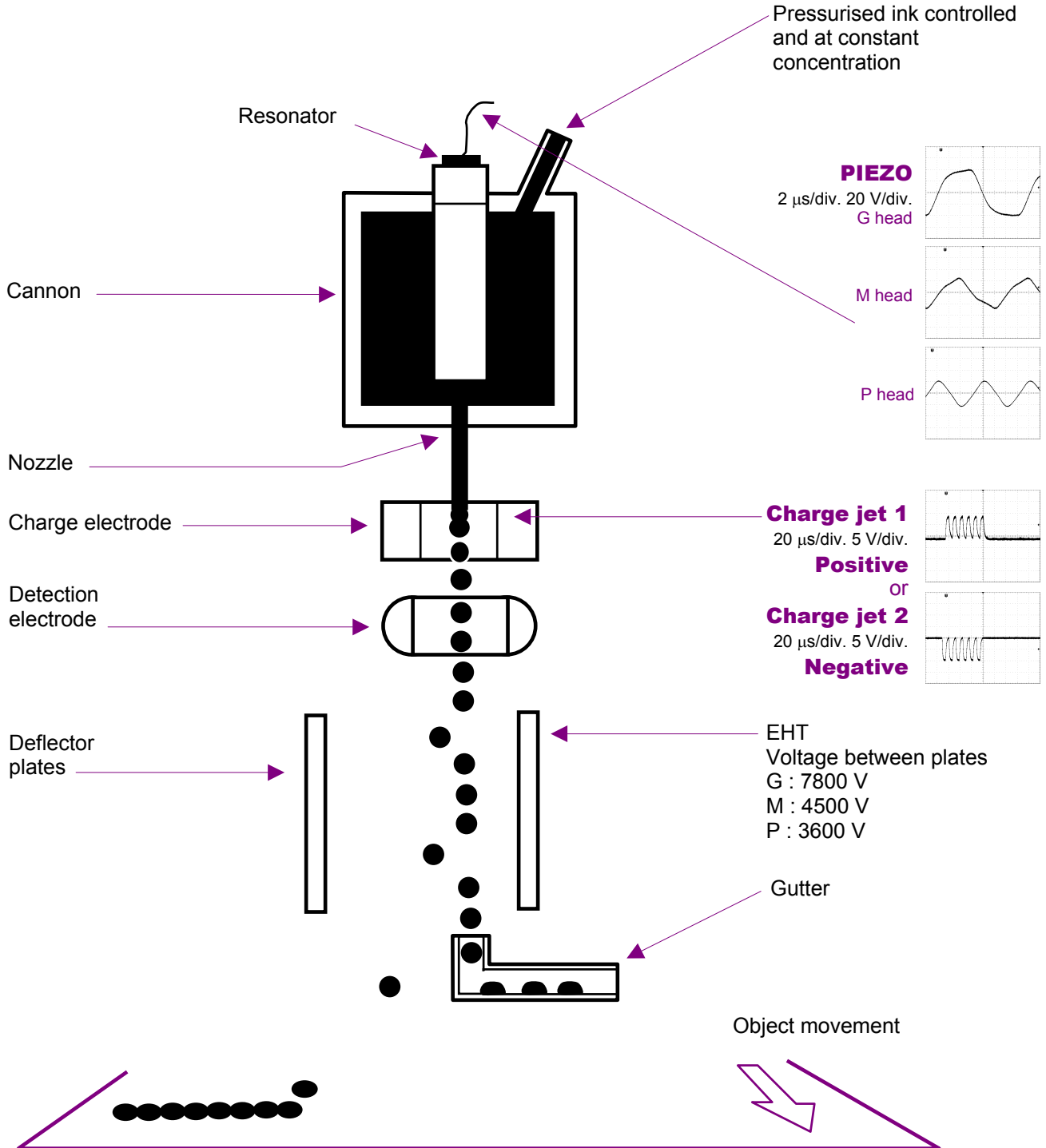
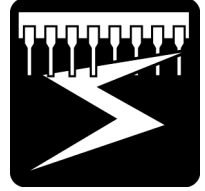
Fuse: 0.3 AT 5 x 20

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

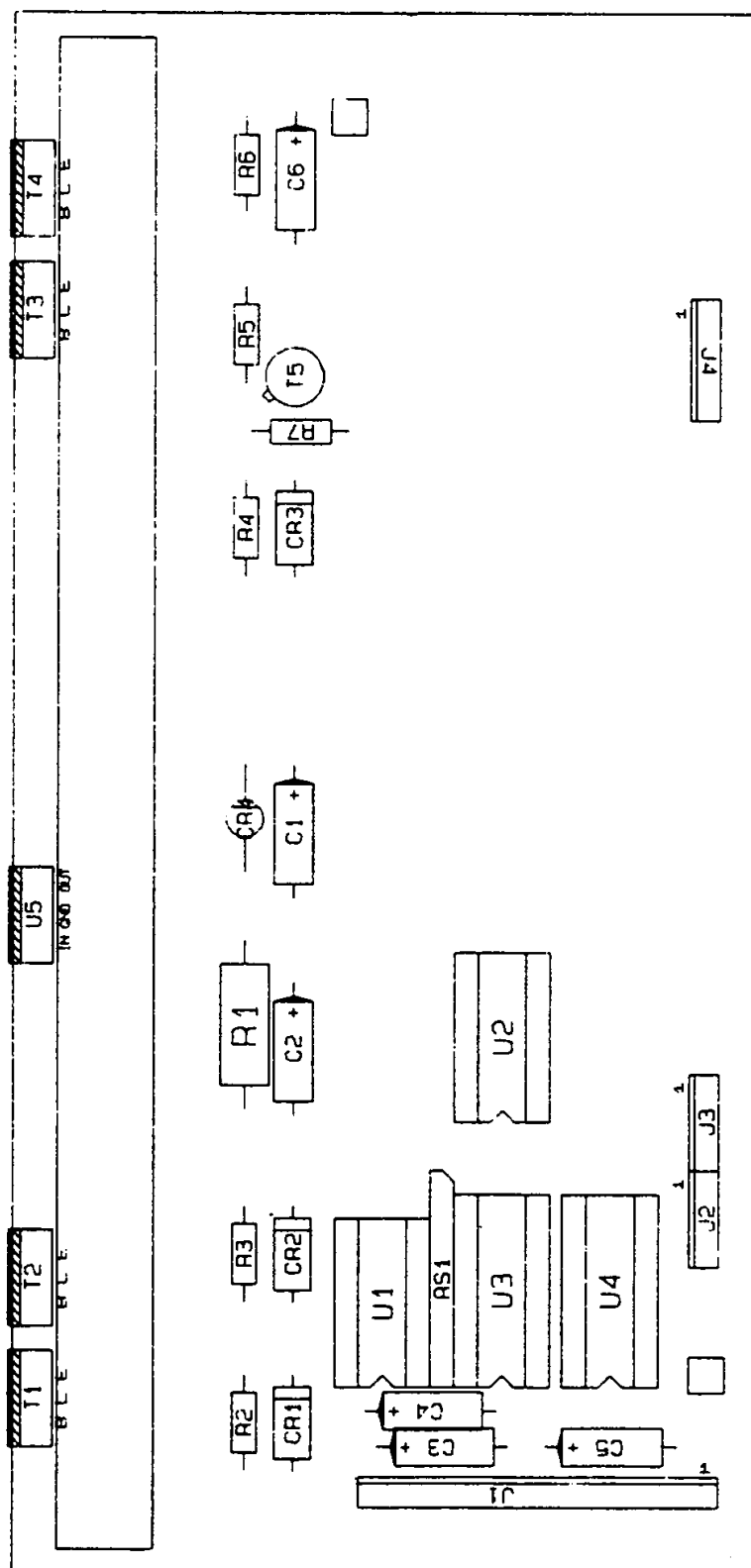
*Not fitted to simplified industrial interface

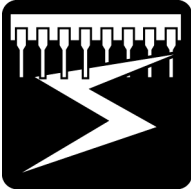
Printer electronics

Probe: print head



Lay-out: Stirring motor board A5996
mod. let. C





J1 CDE MOTEURS

(102)	J1	1	CD EQUIVISC
(101)	J1	2	CD TRANSAIR
(100)	J1	3	CD P/A
	J1	4	+24V
	J1	5	+24V
(91)	J1	6	+24V
(79)	J1	7	+12 VEIL
	J1	8	H MOT2
	J1	9	CD ELUS/ H MOT1
(71)	J1	10	+15V
(70)	J1	11	-15V
(73)	J1	12	+5 VEIL
	J1	13	GND
	J1	14	GND
(90)	J1	15	GND

J2 MOTEUR U1

(40)	J2	1	MOT1 2B
(41)	J2	2	MOT1 1B
(40)	J2	3	MOT1 2A
(39)	J2	4	MOT1 1A

J3 MOTEUR U2

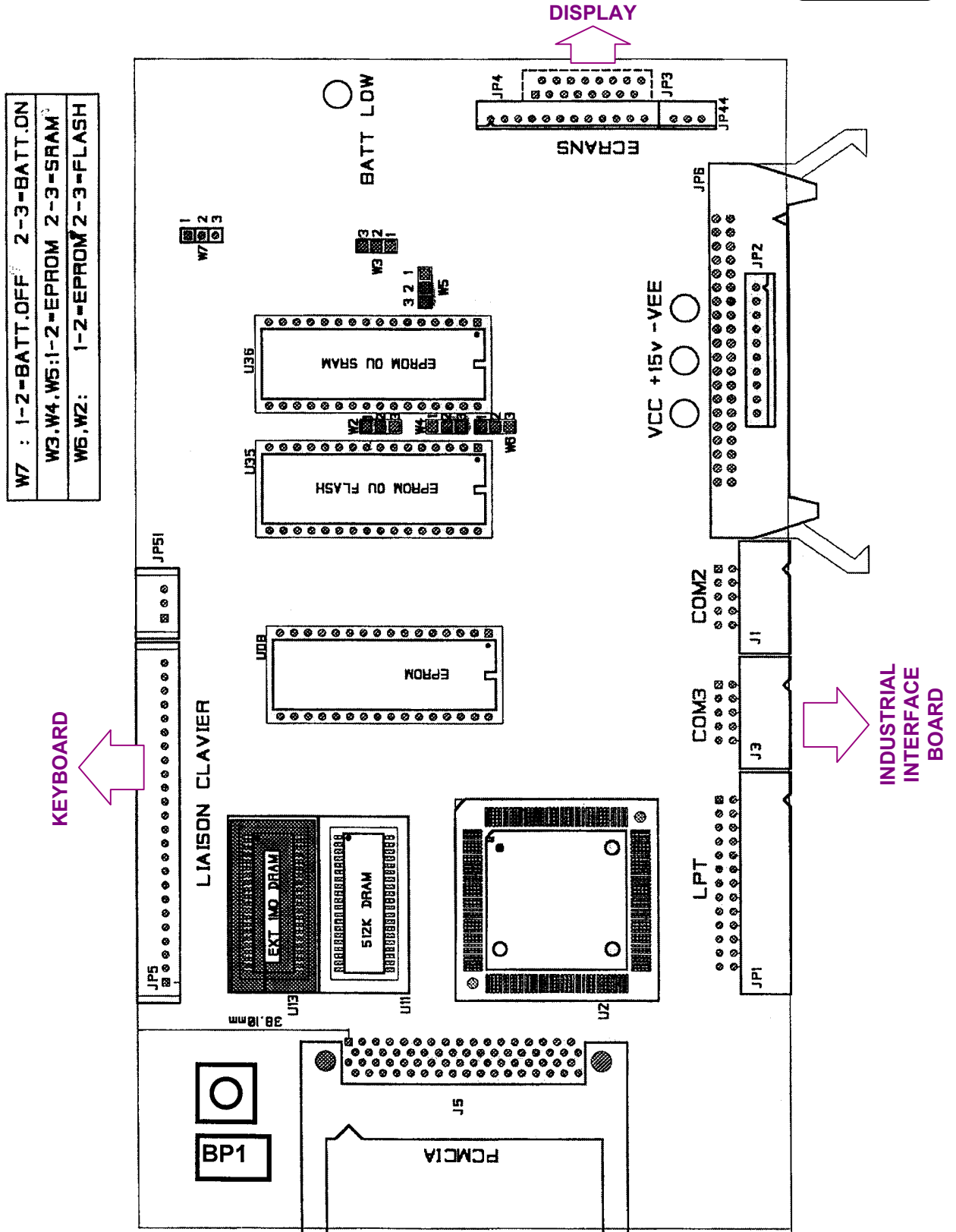
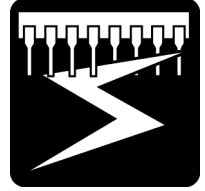
(30)	J3	1	MOT2 2B
(37)	J3	2	MOT2 1B
(36)	J3	3	MOT2 2A
(35)	J3	4	MOT2 1A

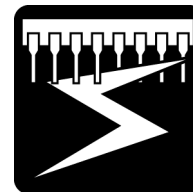
J4 ELECTROUVANNES

(106)	J4	1	COMMUN ELUS
(103)	J4	2	ELU P/A
(104)	J4	3	ELU TRANSAIR
(105)	J4	4	ELU EQUIVISC
	J4	5	NON UTILISE

Printer electronics

Lay-out: PC module board A18235-E





Printer electronics

Connection: PC module board A18235-E

JP4 connector: Display

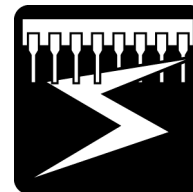
JP4	NAME	JP4	NAME
1	FLM	7	LD3
2	LP	8	+ 5 V
3	CLK	9	GND
4	LD0	10	VS
5	LD1	11	V0
6	LD2	12	GND

JP44 connector: Backlit display converter board

JP44	NAME
1	GND
2	+ 15 V
3	LIGHT OFF STANLEY

JP6 connector: Supply

JP6	NAME	NAME
13	LM	DEFGENE
14	LED CLAV	JET1ON
15	LH1	JEFJET1
16	LED CLAV	JET2ON
17	LH2	JEFJET2
18	+ 15 V	
37	+ 5 V	
38	+ 5 V	
39	GND	
40	GND	



Printer electronics

Connection: PC module board A18235-E

J3 and J1 connector: Communication

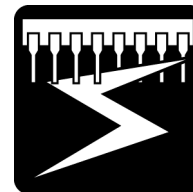
J3 COM3 TTL	J1 COM2 RS232C	NAME
1	1	DCD
2	2	DSR
3	3	RX
4	4	RTS
5	5	TX
6	6	CTS
7	7	DTR
8	8	RI
9	9	GND
10	10	GND

JP1 connector: Parallel interface board

JP1	NAME	JP1	NAME
1	STRB	14	GND
2	AUTOFF	15	P6
3	P0	16	GND
4	ERR	17	P7
5	P1	18	GND
6	INIT	19	ACK
7	P2	20	GND
8	SLCTI	21	BUSY
9	P3	22	GND
10	GND	23	PE
11	P4	24	GND
12	GND	25	SLCT
13	P5	26	NC

JP7 connector: Test

JP7	NAME	JP7	NAME
1	SPEAKER	6	GND
2	NC	7	GND
3	+ 5 V	8	KB DATA
4	+ 5 V	9	NC
5	GND	10	KB CLK



Printer electronics

Connection: PC module board A18235-E

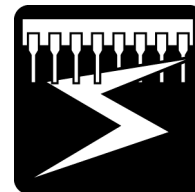
JP5 and JP51 connector: Keyboard

JP5	NAME	JP5	NAME
1	COLUMN 0	13	LINE 4
2	COLUMN 1	14	LINE 5
3	COLUMN 2	15	LINE 6
4	COLUMN 3	16	LINE 7
5	COLUMN 4	17	LINE 8
6	COLUMN 5	18	LINE 9
7	COLUMN 6	19	LINE 10
8	COLUMN 7	20	+ 5 V
9	LINE 0	21	LED DEFAULT
10	LINE 1	22	NC
11	LINE 2	23	NC
12	LINE 3	24	LED POWER

JP51	NAME
1	Led READY HEAD 1
2	Led READY HEAD 2
3	Led NUMLOCK

Keyboard key decoding line/column:

NAME	LIN	COL	NAME	LIN	COL	NAME	LIN	COL
ESC	0	4	~	3	5	SHIFT	9	5
F1	0	3	1	3	4	Z	6	4
F2	0	2	2	3	3	X	6	3
F3	0	0	3	3	2	C	6	2
F4	0	1	4	3	0	V	6	0
F5	2	1	5L	3	1	B	6	1
F6	2	0	6	4	1	N	9	1
F7	2	2	7	4	0	M	9	0
F8	2	3	8	4	2	<	9	2
NUM LOCK	2	5	9	4	3	>	9	3
			-	4	4	?	9	4
			+	4	5	↑	2	7
			BACKSPACE	4	6	←	1	7
TAB	1	5	CAPSLOCK	8	5	→	3	7
Q	1	4	A	8	4	↓	6	6
W	1	3	S	8	3	9 NUM	7	6
E	1	2	D	8	2	8 NUM	5	6
R	1	0	F	8	0	7 NUM	4	7
T	1	1	G	8	1	6 NUM	8	6



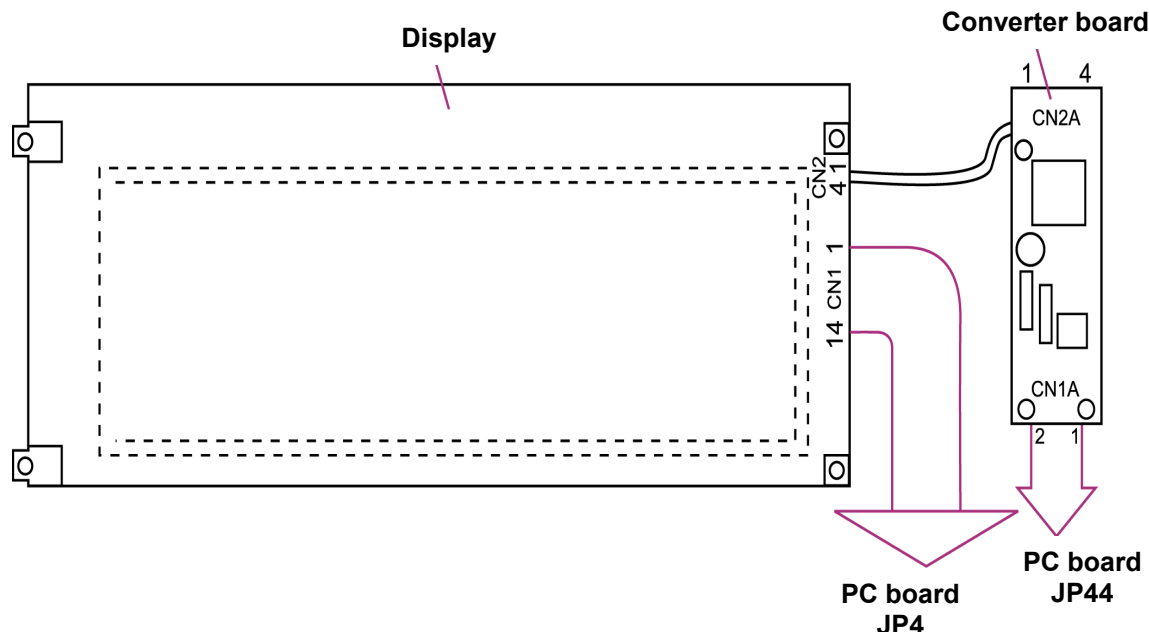
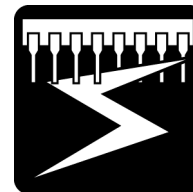
Printer electronics

Connection: PC module board A18235-E

NAME	LIN	COL	NAME	LIN	COL	NAME	LIN	COL
Y	5	1	H	7	1	5 NUM	7	7
U	5	0	J	7	0	4 NUM	5	7
I	5	2	K	7	2	3 NUM	0	6
O	5	3	L	7	3	2 NUM	8	7
P	5	4	:	7	4	1 NUM	6	7
{	5	5	«'	7	5	0 NUM	9	7
}	1	6		2	6	DEL	0	5
ENTER	3	6				ENTER NUM	0	7
CTRL	9	6	ALT	6	5	SPACE	10	0

Printer electronics

Lay-out and connection : Display A17702-C and converter board A17704-B



CN1 Connector Display	Ribbon cable 12 pts To PC board (JP4)	Name	Function
1	1	FLM	Scan start signal
3	2	LP / CL1	Display data latch signal
4	3	CLK / CL2	Display data receive signal
6	4	LD0 / D0	Display data 0
7		LD1 / D1	Display data 1
8	6	LD2 / D2	Display data 2
9	7	LD3 / D3	Display data 3
10	8	+ 5 V / VDD	Power supply for logic (+5V)
11	9	GND	GND fo logic (0V)
12	10	V5 / VEE	Power supply for LCD drive (-24V)
13	11	V0	LCD driving voltage * 2
14	12	GND / FG	Frame ground * 3

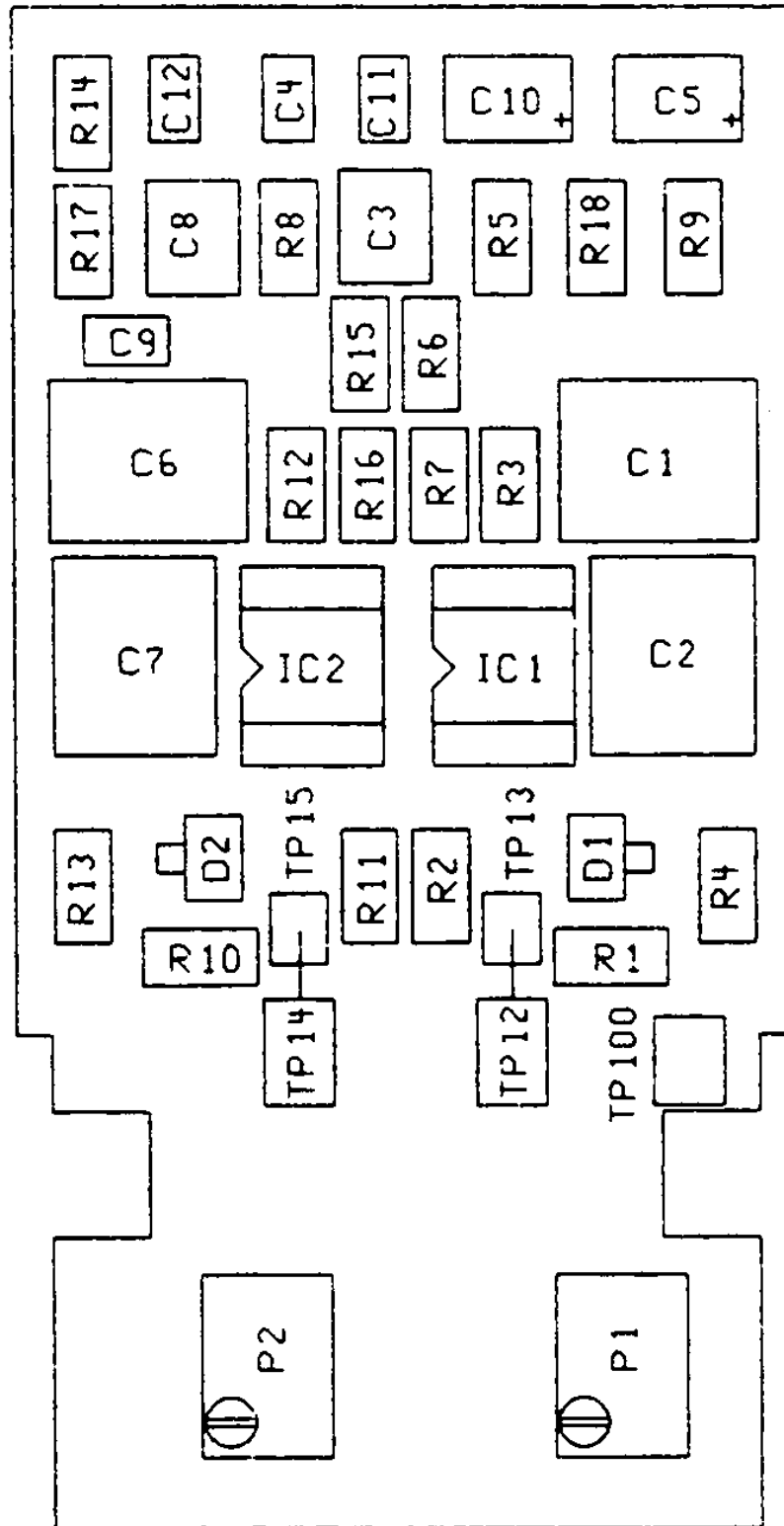
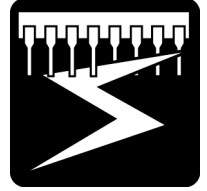
Converter board connection:

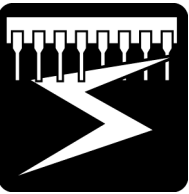
CN2A Connector	Name	Function
	CFL	connected to the inverter 001
2	NC	
3	NC	
4	CFL / GND	connected to the inverter "OUT GND"

CN1A Connector	Ribbon cable 3 Pts To PC board (JP44)	Name	
1	1	GND	
2	2	15 V	
	3	LIGHT OFF	R1 COTE CN1

Printer electronics

Phase detection amplifier board EN6428-A

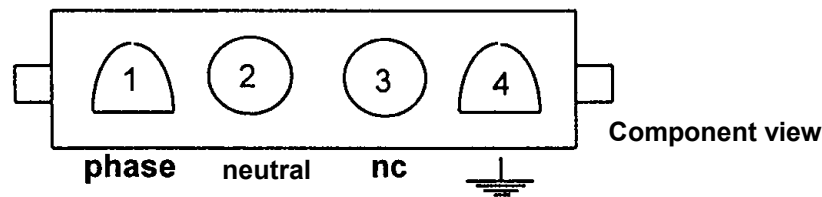




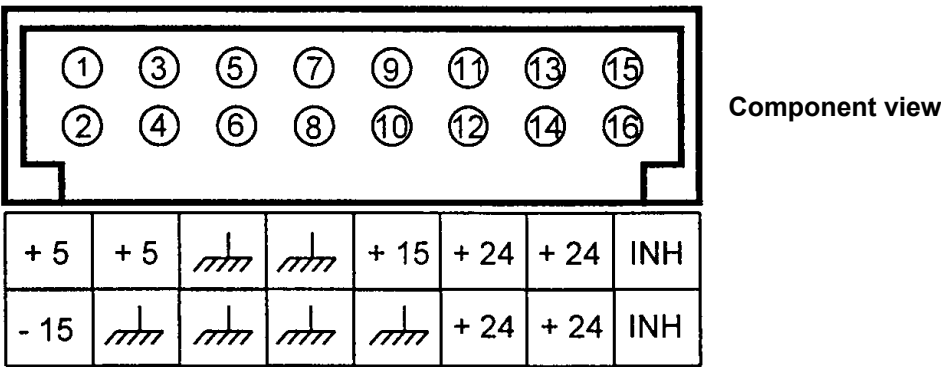
Printer electronics

Connection : Power supply board A14120-D

Main input : J1 Connector

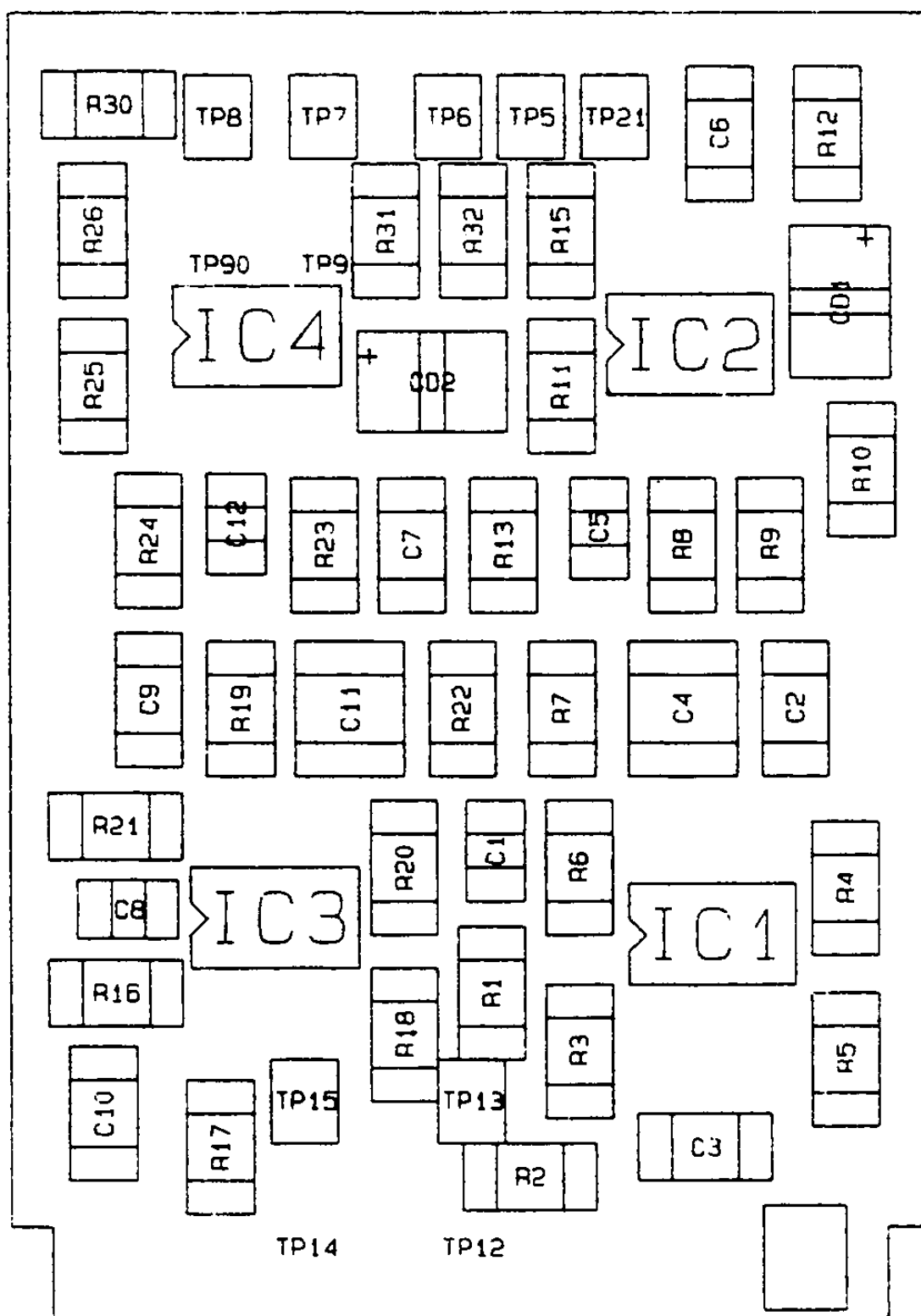
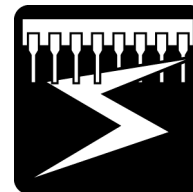


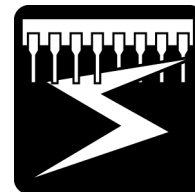
Output : J2 Connector



Printer electronics

Lay-out : Resonator supply board EN 6004-D





Printer electronics

Connection : Conduit

S8 1 head (1 or 2 jet)		S8 2 head and 1 head (fourjet)		Color		
J8-1	Blindage / Piezo	J8-1	Blindage / Piezo 1	J5-1	Blindage / Piezo 2	
J8-2	Piezo	J8-2	Piezo 1	J5-2	Piezo 2	Violet
J8-3	" +15V ADP"	J8-3	" +15V"	J5-3	" +15V"	Violet / white
J8-4	Led 1+	J8-4	Led 1+	J5-4	Led 3+	red
J8-5	" -15V ADP"	J8-5	" -15V"	J5-5	" -15V"	Yellow / White
J8-6	Led 2-	J8-6	Led 2	J5-6	Led 4-	Orange
J8-7	OV ADP	J8-7	OV	J5-7	OV	Brown / White
J8-8	Charge 1	J8-8	Charge 1	J5-8	Charge 3	Violet
J8-9	OV Encre	J8-9	OV Encre	J5-9	OV Encre	
J8-10	Charge 2	J8-10	Charge 2	J5-10	Charge 4	Black
J8-11	Cde Elv Pression	J8-11		J5-11		
J8-12	Elv Pression	J8-12		J5-12		Yellow
J8-13	Code Elv Purge	J8-13		J5-13		
J8-14	Elv Purge	J8-14		J5-14		Brown
J8-15	Capot 2 (Gnd)	J8-15	Capot -	J5-15		Black / White
J8-16	Capot 1	J8-16	Capot +	J5-16		Green
J8-17	Blindage / Récup 1	J8-17	Blindage / Récup 1	J5-17	Blindage / Récup 3	
J8-18	Récup 1	J8-18	Récup 1	J5-18	Récup 3	White/ Red coax
J8-19	Blindage / Récup 2	J8-19	Blindage / Récup 2	J5-19	Blindage / Récup 4	
J8-20	Récup 2	J8-20	Récup 2	J5-20	Récup 4	White / Blue coax
J8-21		J8-21		J5-21		
J8-22		J8-22		J5-22		Grey
J8-23	Blindage / Phase 1	J8-23	Blindage / Phase 1	J5-23	Blindage / Phase 3	
J8-24	Phase 1	J8-24	Phase 1	J5-24	Phase 3	White /Brown coax
J8-25	Blindage / Phase	J8-25	Blindage / Phase 2	J5-25	Blindage / Phase 4	
J8-26	Phase 2	J8-26	Phase 2	J5-26	Phase 4	White / white coax



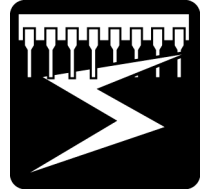
2 Head or 1 head fourjet : J5 and J8 Connectors of bottom of rack.
1 Head : J8 connector of main board.



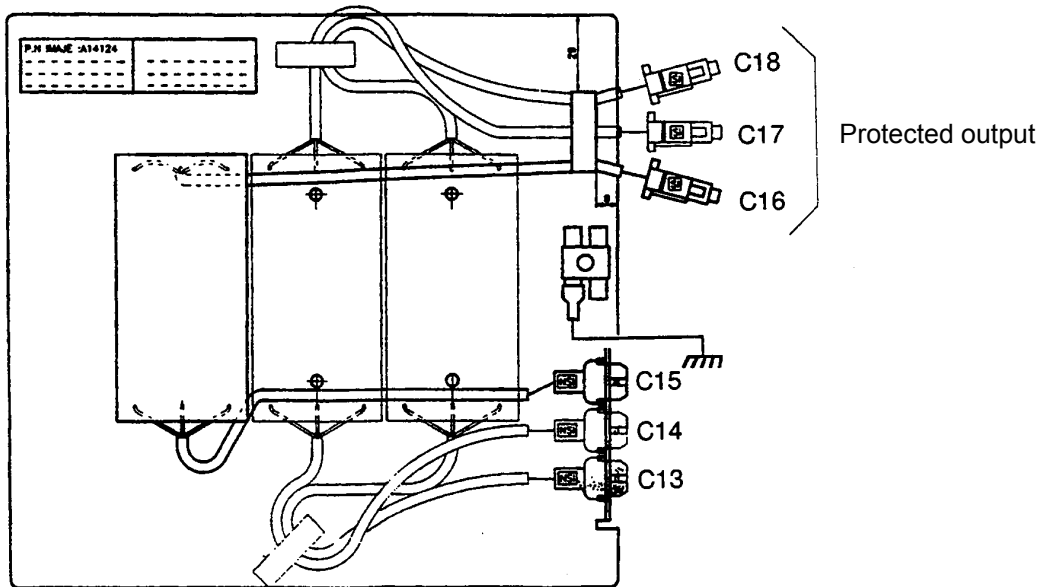
OS801500EL008-GB-A

Printer electronics

Safety level block

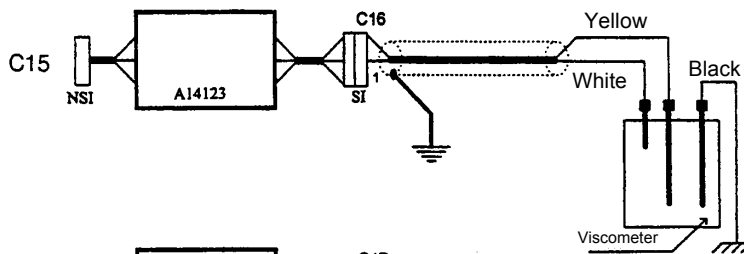


Lay-out:

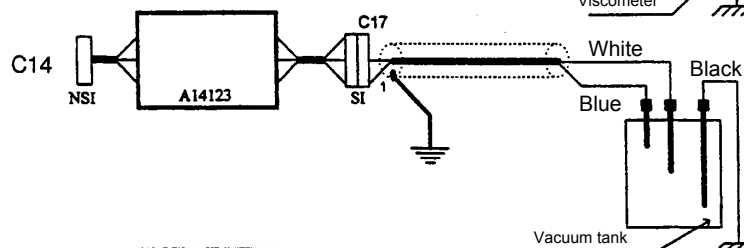


Connection:

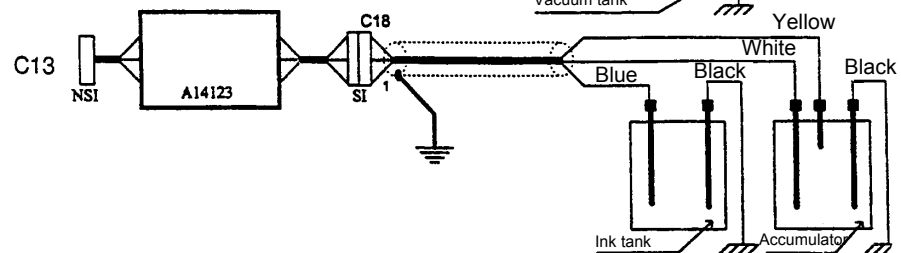
- 1:
2: Blue
3: Green

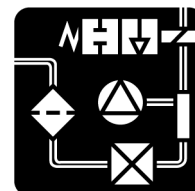


- 1: Blue
2: White
3:



- 1: Red
2: Green
3: Blue



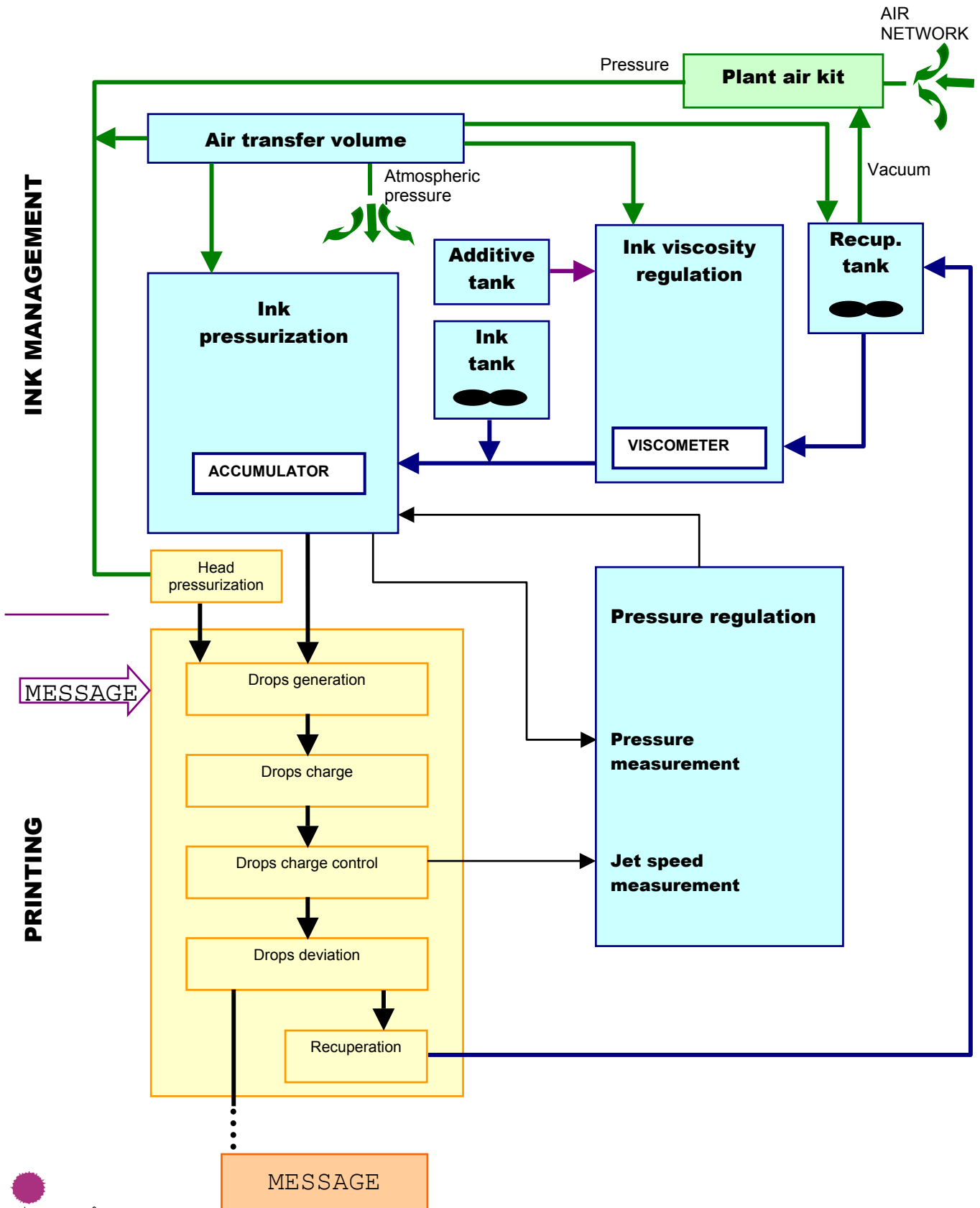
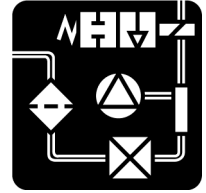


Printer hydraulics

Contents

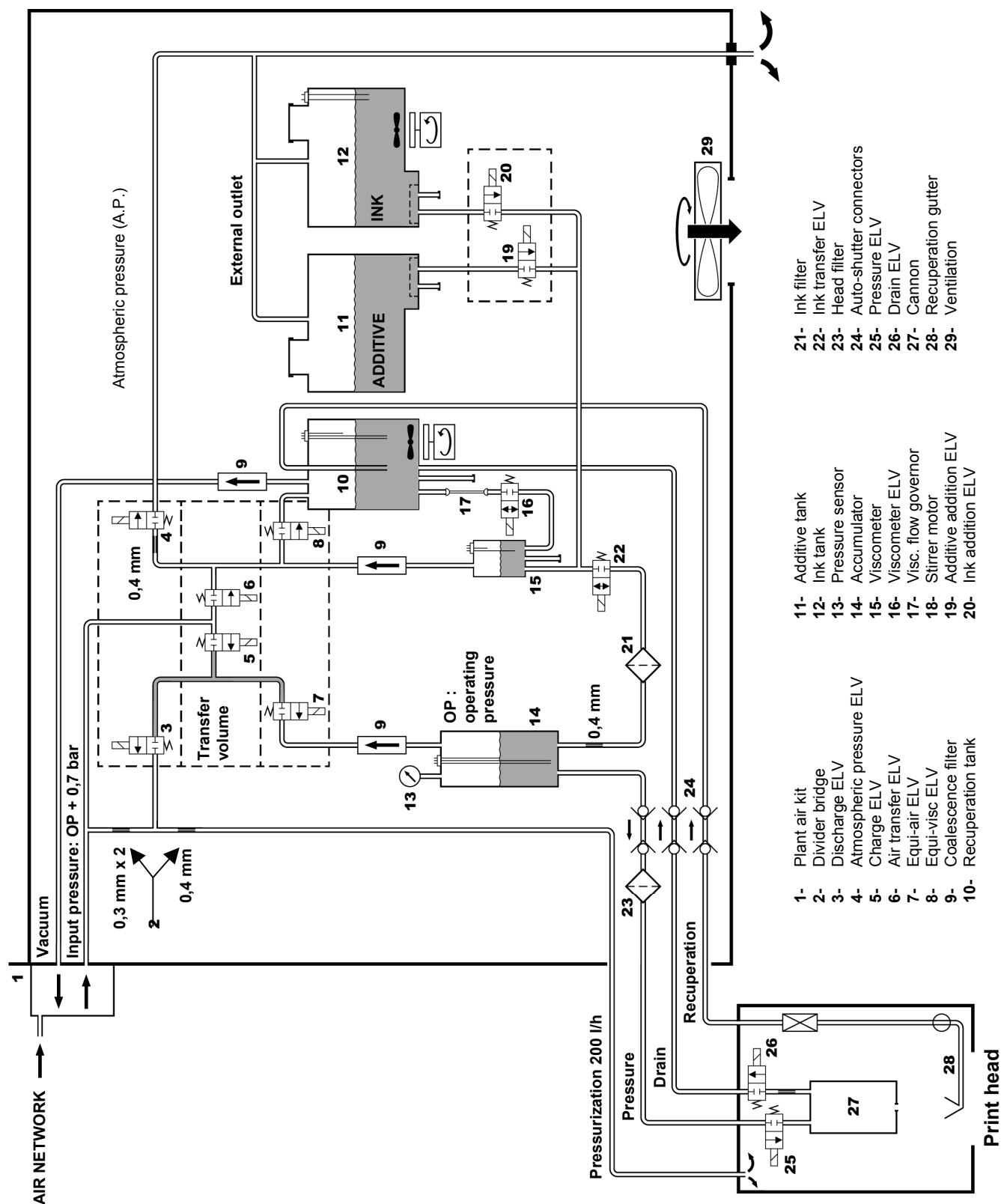
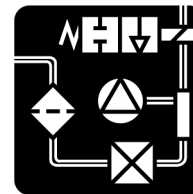
● Synopsis	p.99
● Diagrams	
● S8 Contrast single-jet	p.100
● S8 Contrast twin-jet	p.101
● Plant air kit	p.102
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● Ink circuit: stop	p.107
● Ink circuit: draining	p.108
● Ink circuit: wake-up	p.111
● Ink viscosity management synopsis	p.112
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● Ink circuit: transfer from visco. to ink tank	p.114
● Ink circuit: transfer from visco to accu.	p.115
● Ink circuit: additive addition	p.116
● Pressure regulator management synopsis	p.117
● Accu. charge	p.118
● Accu. discharge	p.119

Hydraulic synopsis



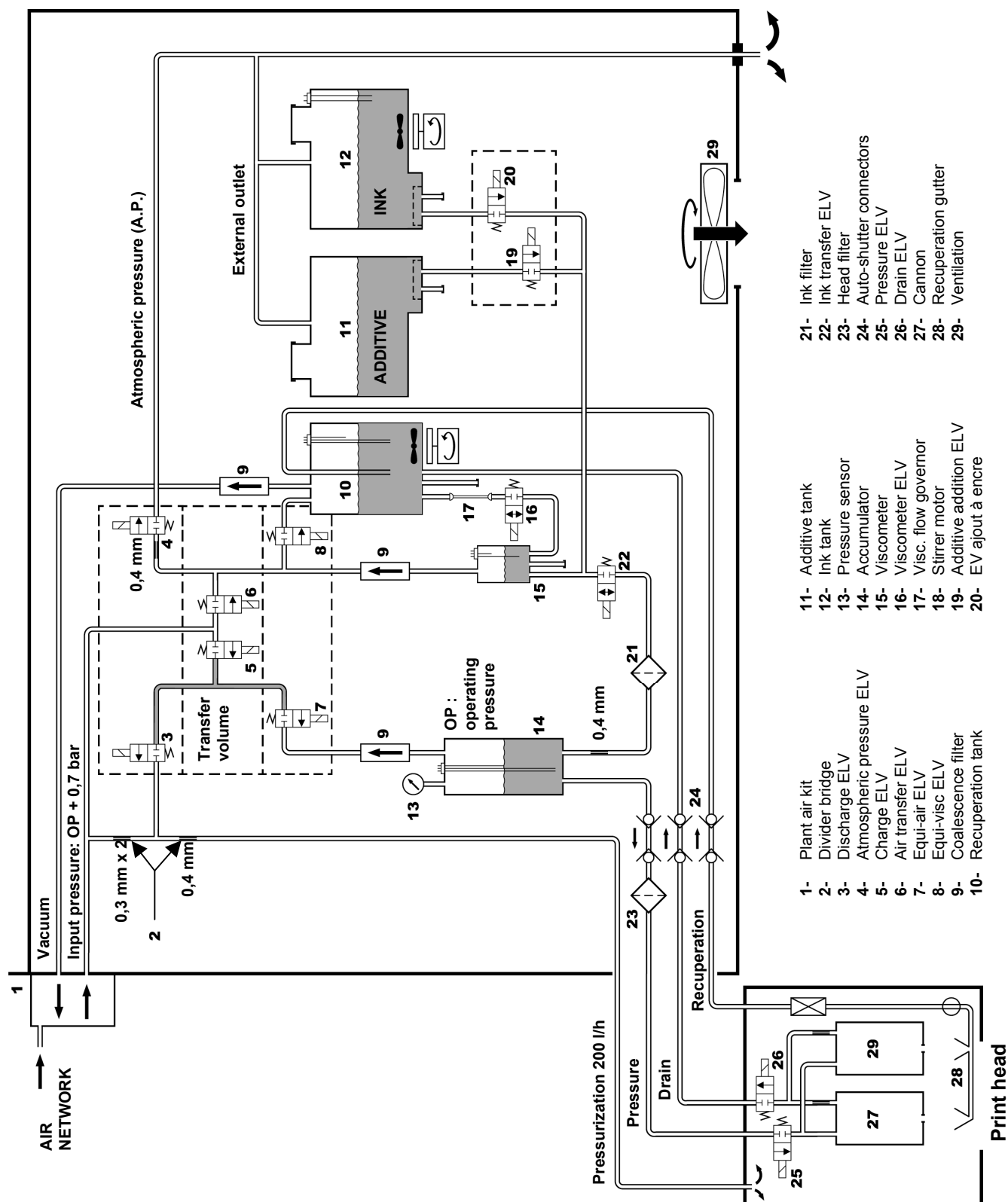
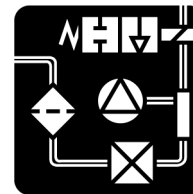
Hydraulic diagrams

S8 Contrast single-jet



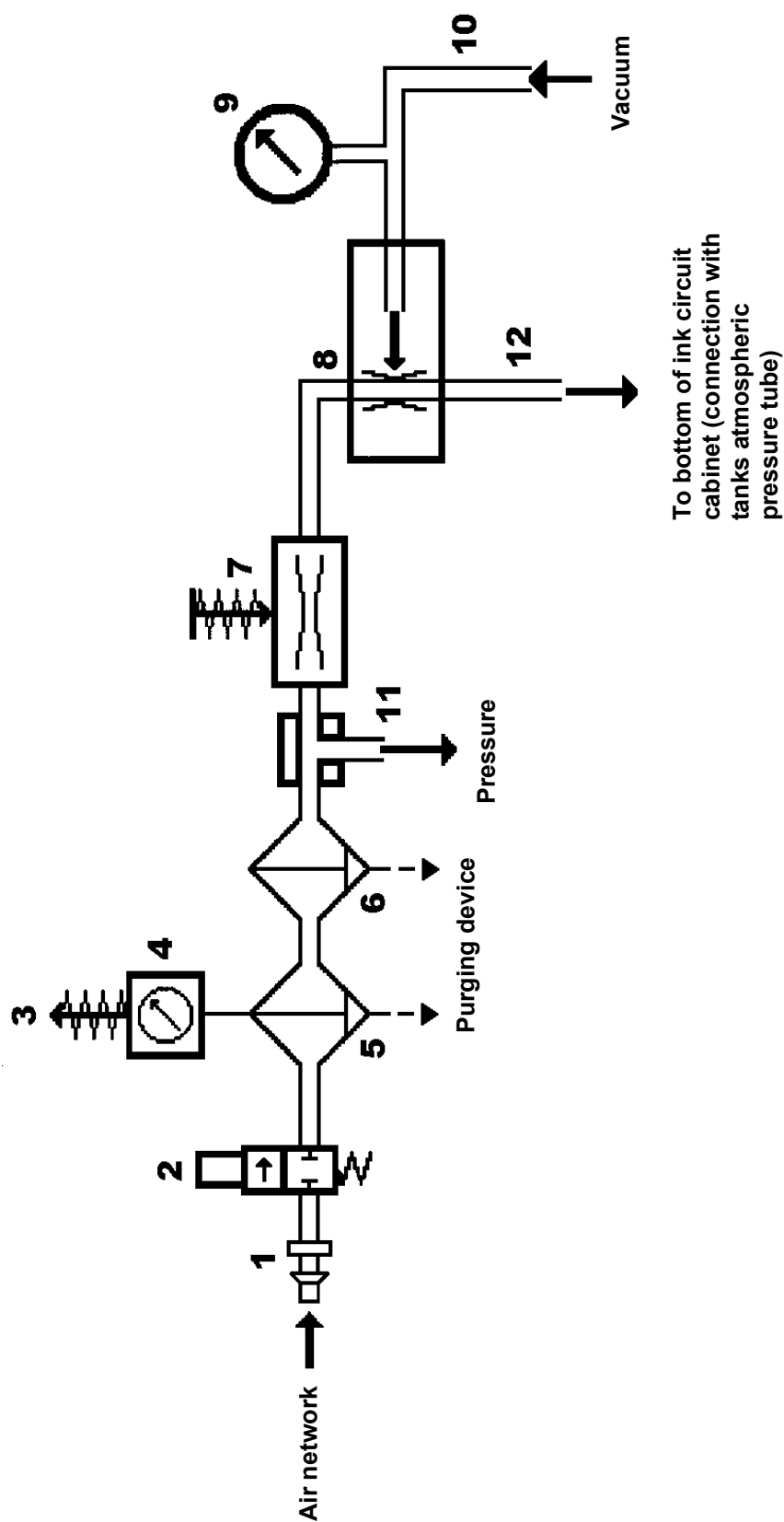
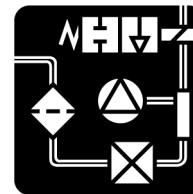
Hydraulic diagrams

S8 Contrast twin-jet

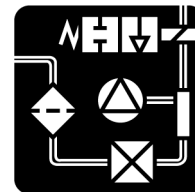


Hydraulic diagrams

Plant air kit



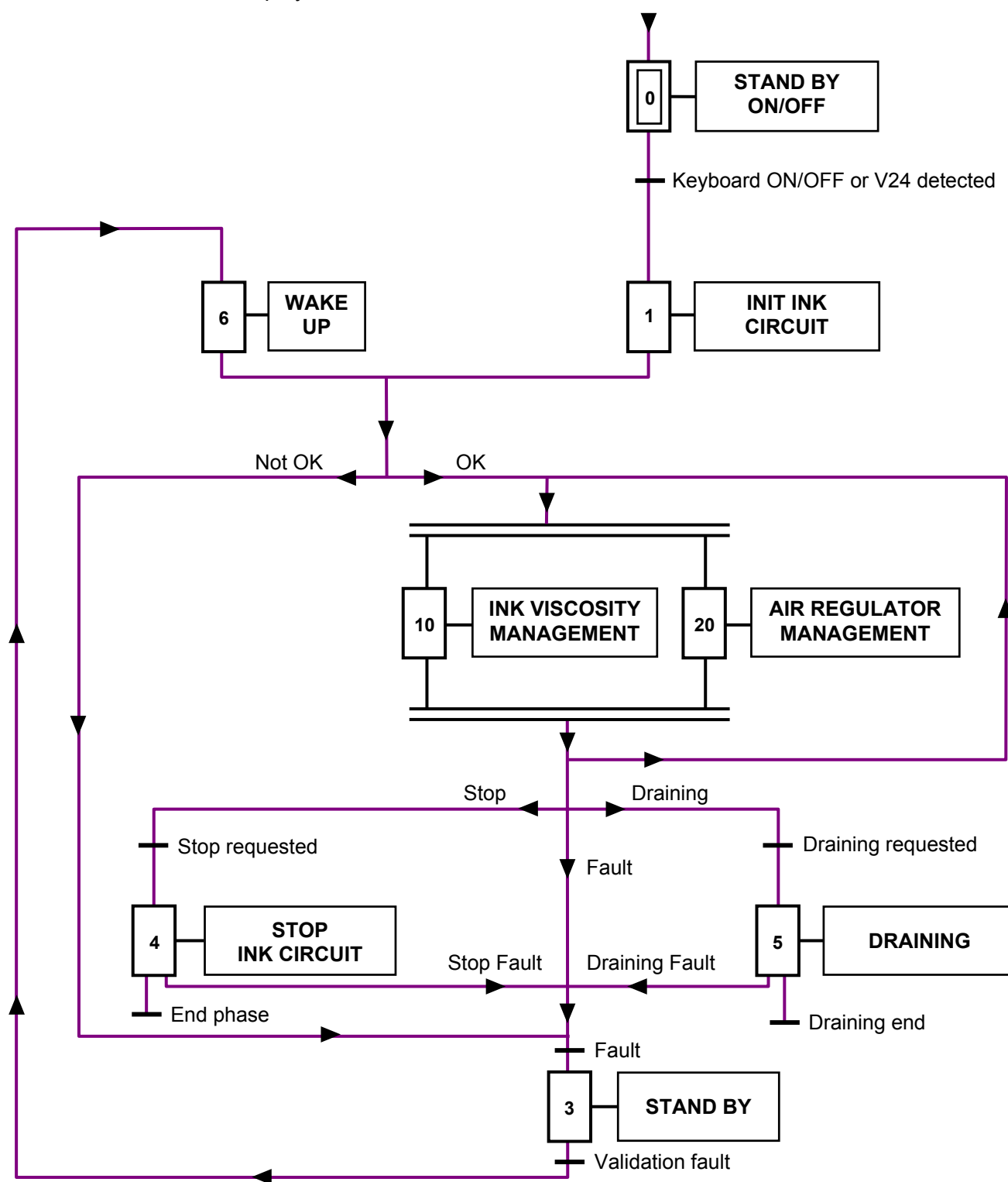
- | | |
|--|----------------------------|
| 1- Connection of compressed air plant | 7- Vacuum set screw |
| 2- Electrovalve | 8- Vacuum pump |
| 3- Pressure regulator | 9- Vacuum meter |
| 4- Pressure gauge | 10- Vacuum tube |
| 5- Filter 5 μ | 11- Pressure tube |
| 6- Filtre 0,03 μ | 12- Outlet |

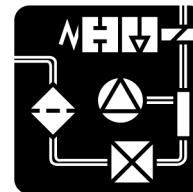


Ink circuit sequences

General synopsis

The ink-circuit management program consists of phases and sub-phases, which one can follow on the display.



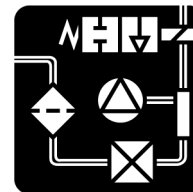


Ink circuit sequences

Ink circuit: test

The steps here-after deccribed could be verified only if the operator selects the phase: TEST

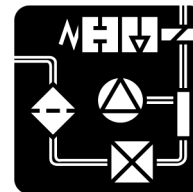
Objectives	Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-visco	A / P	Air-transfer	Ink-transfer	Equi-Air	Charge	Discharge
General Stop	All Elv closed	0	C	C	C	C	C	C	C	C	C	C
Max. pressure test of EV Plant air	Equi air opening	1	C	C	C	C	C	C	C	O	C	C
	Charge opening	2	C	C	C	C	C	C	C	O	O	C
	If "Space" => test delay	3	C	C	C	C	C	C	C	O	O	C
	Charge closing	4	C	C	C	C	C	C	C	O	C	C
Pressure test of Divider bridge	Discharge opening	5	C	C	C	C	C	C	C	O	C	O
	wait Paccu = Pref (+ 120mb -80mb)	6	C	C	C	C	C	C	C	O	C	O
	delay 7 s	7	C	C	C	C	C	C	C	O	C	O
	delay test (if "Space")	8	C	C	C	C	C	C	C	O	C	O
	Discharge closing	9	C	C	C	C	C	C	C	O	C	C
Reference Pressure in Accumulator	Charge opening	10	C	C	C	C	C	C	C	O	O	C
	Tempo 7 s	11	C	C	C	C	C	C	C	O	O	C
	Charge closing	12	C	C	C	C	C	C	C	O	C	C
	Discharge opening	13	C	C	C	C	C	C	C	O	C	O
	wait Paccu = Pref (+ 120mb -80mb)	14	C	C	C	C	C	C	C	O	C	O
	Discharge closing	15	C	C	C	C	C	C	C	O	C	C
	Equi -air closing	16	C	C	C	C	C	C	C	C	C	C
	1s delay	17	C	C	C	C	C	C	C	C	C	C
End of TEST	<i>goto Air-pressure Regulator</i>	18	C	C	C	C	C	C	C	C	C	C



Ink circuit sequences

Ink circuit: init

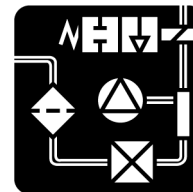
Objectives	Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-visco	A / P	Air-transfer	Ink-transfer	Equi-Air	Charge	Discharge
Setting the ink circuit to Atmospheric Pressure	charge opening	0	C	C	C	C	C	C	C	C	O	C
	discharge opening	1	C	C	C	C	C	C	C	C	O	O
	Equi-air opening	2	C	C	C	C	C	C	C	O	O	O
	A/P opening	3	C	C	C	C	O	C	C	O	O	O
	Air-transfer opening	4	C	C	C	C	O	O	C	O	O	O
	Calibration pressure sensor (when P=stable for 2 seconds then P=0)	5	C	C	C	C	O	O	C	O	O	O
	Air-transfer closing	6	C	C	C	C	O	C	C	O	O	O
Plant air command	Plant air starting	7	C	C	C	C	O	C	C	O	O	O
	7 second delay	8	C	C	C	C	O	C	C	O	O	O
	Discharge closing	9	C	C	C	C	O	C	C	O	O	C
Pressure test of plant air	Waiting for P= (Pref + 500mb)	10	C	C	C	C	O	C	C	O	O	C
	Charge closing	11	C	C	C	C	O	C	C	O	C	C
	A/P closing	12	C	C	C	C	C	C	C	O	C	C
	Equi-visco opening	13	C	C	C	O	C	C	C	O	C	C
	1 s delay	14	C	C	C	O	C	C	C	O	C	C
	Equi-visco closing	15	C	C	C	C	C	C	C	O	C	C
Filling recap tank	Visco opening	16	C	C	O	C	C	C	C	O	C	C
	Ink opening	17	O	C	O	C	C	C	C	O	C	C
	Waiting for medium level in recap tank	18	O	C	O	C	C	C	C	O	C	C
	Ink closing	19	C	C	O	C	C	C	C	O	C	C
	Visco closing	20	C	C	C	C	C	C	C	O	C	C
Deflating accumulator to reach P accu = Pref.	discharge opening	21	C	C	C	C	C	C	C	O	C	O
	wait Paccu= (Pref -80mb / +120mb)	22	C	C	C	C	C	C	C	O	C	O
	Discharge closing	23	C	C	C	C	C	C	C	O	C	C
	Equi-air closing	24	C	C	C	C	C	C	C	C	C	C
	1s delay	25	C	C	C	C	C	C	C	C	C	C
End of INIT	goto (VISCO) and starts (20 Air-pressure Regulator)	26										



Ink circuit sequences

Ink circuit: stand by

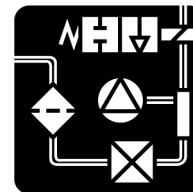
Objectives	Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-Visco	A / P	Air-transfer	Ink-transfer	Equi-Air	Charge	Discharge
General STOP	All valves are close (jet, Ink Circuit and regulator)	0	C	C	C	C	C	C	C	C	C	C
Conduit draining	20 s delay (allows emptying the omilical)	1	C	C	C	C	C	C	C	C	C	C
Plant air stop	Stop plant air	2	C	C	C	C	C	C	C	C	C	C
	Charge opening	3	C	C	C	C	C	C	C	C	O	C
	Discharge opening	4	C	C	C	C	C	C	C	C	O	O
	7 s delay	5	C	C	C	C	C	C	C	C	O	O
	Charge closing	6	C	C	C	C	C	C	C	C	C	O
Set Ink Circuit to Admospheric pressure	A/P opening	7	C	C	C	C	O	C	C	C	C	O
	Equi-Air opening	8	C	C	C	C	O	C	C	O	C	O
	14 s delay	9	C	C	C	C	O	C	C	O	C	O
	Charge opening	10	C	C	C	C	O	C	C	O	O	O
	Air-Transfer opening	11	C	C	C	C	O	O	C	O	O	O
	Wait Accu = stable pressure (>= 2 s)	12	C	C	C	C	O	O	C	O	O	O
	Air-Transfer closing	13	C	C	C	C	O	C	C	O	O	O
	Equi-Visco opening	14	C	C	C	O	O	C	C	O	O	O
	7 s delay	15	C	C	C	O	O	C	C	O	O	O
	Equi-Visco closing	16	C	C	C	C	O	C	C	O	O	O
	A/P closing	17	C	C	C	C	C	C	C	O	O	O
	Equi-Air closing	18	C	C	C	C	C	C	C	C	O	O
	Discharge closing	19	C	C	C	C	C	C	C	C	O	C
	Charge closing	20	C	C	C	C	C	C	C	C	C	C
End Stand-By phase		21										



Ink circuit sequences

Ink circuit: stop

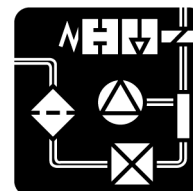
Objectives	Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-visco	A / P	Air-transfer	Ink-transfer	Equi-Air	Charge	Discharge
Starting plant air if it is stopped	If plant air is starting, go to sub-phase 7	0	C	C	C	C	C	C	C	C	C	C
	A/P opening	1	C	C	C	C	O	C	C	C	C	C
	Air-Transfer opening	2	C	C	C	C	O	O	C	C	C	C
	Plant air starting	3	C	C	C	C	O	O	C	C	C	C
	7 seconds delay	4	C	C	C	C	O	O	C	C	C	C
	closing Transfer-Air	5	C	C	C	C	O	C	C	C	C	C
	closing A/P	6	C	C	C	C	C	C	C	C	C	C
If not, general stop	closing all valves	7	C	C	C	C	C	C	C	C	C	C
Exhaust ACCU	Discharge opening	8	C	C	C	C	C	C	C	C	C	O
	Equi-Air opening	9	C	C	C	C	C	C	C	O	C	O
Visco draining	A/P opening	10	C	C	C	C	O	C	C	O	C	O
	7 s delay	11	C	C	C	C	O	C	C	O	C	O
	Visco opening	12	C	C	O	C	O	C	C	O	C	O
	wait for low level visco	13	C	C	O	C	O	C	C	O	C	O
	closing A/P	14	C	C	O	C	C	C	C	O	C	O
ACCU Draining	Wait P. accu = P. divider bridge	15	C	C	O	C	C	C	C	O	C	O
	Equi-Air closing	16	C	C	O	C	C	C	C	C	C	O
	Discharge closing	17	C	C	O	C	C	C	C	C	C	C
	Ink-Transfer opening	18	C	C	O	C	C	C	O	C	C	C
	waiting for low level Accu	19	C	C	O	C	C	C	O	C	C	C
	Ink-Transfer closing	20	C	C	O	C	C	C	C	C	C	C
	Visco closing	21	C	C	C	C	C	C	C	C	C	C
Plant air stop	Stop plant air	22	C	C	C	C	C	C	C	C	C	C
	Charge opening	23	C	C	C	C	C	C	C	C	O	C
	Discharge opening	24	C	C	C	C	C	C	C	C	O	O
	7 s delay	25	C	C	C	C	C	C	C	C	O	O
	Charge closing	26	C	C	C	C	C	C	C	C	C	C
Setting Ink circuit to Adm pressure	A/P opening	27	C	C	C	C	O	C	C	C	C	C
	Discharge opening	28	C	C	C	C	O	C	C	C	C	O
	Equi-Air opening	29	C	C	C	C	O	C	C	O	C	O
	14 s delay	30	C	C	C	C	O	C	C	O	C	O
	Charge opening	31	C	C	C	C	O	C	C	O	O	O
	Air-Transfer opening	32	C	C	C	C	O	O	C	O	O	O
	wait for Admospheric pressure	33	C	C	C	C	O	O	C	O	O	O
	Air-Transfer closing	34	C	C	C	C	O	C	C	O	O	O
	Equi-Visco opening	35	C	C	C	O	O	C	C	O	O	O
	7 s delay	36	C	C	C	O	O	C	C	O	O	O
	Equi-Visco closing	37	C	C	C	C	O	C	C	O	O	O
	A/P closing	38	C	C	C	C	C	C	C	O	O	O
	Equi-Air closing	39	C	C	C	C	C	C	C	C	O	O
	Discharge closing	40	C	C	C	C	C	C	C	C	O	C
	Charge closing	41	C	C	C	C	C	C	C	C	C	C
End STOP phase		42										



Ink circuit sequences

Ink circuit: draining

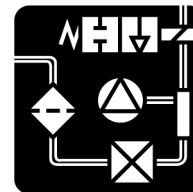
Objectives	Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-visco	A / P	Air-transfer	Ink-transfer	Equi-Air	Charge	Discharge
Starting plant air if it is stopped	If stand-by then go next else goto sub-phase 7	0	C	C	C	C	C	C	C	C	C	C
	A/P opening	1	C	C	C	C	O	C	C	C	C	C
	Air-Transfer opening	2	C	C	C	C	O	C	O	C	C	C
	Compressor* start-up	3	C	C	C	C	O	C	O	C	C	C
	Transfer-Air opening	4	C	C	C	C	O	O	O	C	C	C
	7 s delay	5	C	C	C	C	O	O	O	C	C	C
	A/p closing	6	C	C	C	C	C	O	O	C	C	C
If not, general stop	All valves close	7	C	C	C	C	C	C	C	C	C	C
Exhaust ACCU	Discharge opening	8	C	C	C	C	C	C	C	C	C	O
	Equi-Air opening	9	C	C	C	C	C	C	C	O	C	O
Visco draining	A/P opening	10	C	C	C	C	O	C	C	O	C	O
	7 s delay	11	C	C	C	C	O	C	C	O	C	O
	Visco opening	12	C	C	O	C	O	C	C	O	C	O
	wait for low level visco (become -)	13	C	C	O	C	O	C	C	O	C	O
	A/P closing	14	C	C	O	C	C	C	C	O	C	O
Accumulator draining	2 s delay (for Paccu=Pbridge)	15	C	C	O	C	C	C	C	O	C	O
	Equi-Air closing	16	C	C	O	C	C	C	C	C	C	O
	Discharge closing	17	C	C	O	C	C	C	C	C	C	C
	Ink-Transfer opening	18	C	C	O	C	C	C	O	C	C	C
	wait for low level accu (become -)	19	C	C	O	C	C	C	O	C	C	C
	Ink-Transfer closing	20	C	C	O	C	C	C	C	C	C	C
	Visco closing	21	C	C	C	C	C	C	C	C	C	C
RECUP. TANK DRAINING	Visco filling	Equi-Visco opening	22	C	C	C	O	C	C	C	C	C
		1 s delay	23	C	C	C	O	C	C	C	C	C
		visco opening	24	C	C	O	O	C	C	C	C	C
		wait for Viscometer full	25	C	C	O	O	C	C	C	C	C
		Visco closing	26	C	C	C	O	C	C	C	C	C
		Equi-Visco closing	27	C	C	C	C	C	C	C	C	C
	Set P++ into Visco	Air-Transfer opening	28	C	C	C	C	O	C	C	C	C
		1 s delay	29	C	C	C	C	O	C	C	C	C
		Air-Transfer closing	30	C	C	C	C	C	C	C	C	C
	Transfer visco into ink-tank	If low level visco= + then Ink opening (during 300 ms)	31	O	C	C	C	C	C	C	C	C
		Ink Add closing	31'	C	C	C	C	C	C	C	C	C
		A/P opening	32	C	C	C	C	O	C	C	C	C
		7 s delay	33	C	C	C	C	O	C	C	C	C
		A/P closing	34	C	C	C	C	C		C	C	C
	Empty recup. test	If low level Recup-Tank = - then goto sub-phase 22	35	C	C	C	C	C	C	C	C	C



Ink circuit sequences

Ink circuit: draining

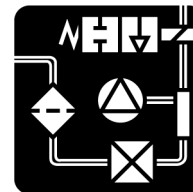
Objectives	Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-visco	A / P	Air-transfer	Ink-transfer	Equi-Air	Charge	Discharge
Set Pressure (P+) into Accu	Equi-Air opening	36	C	C	C	C	C	C	C	O	C	C
	Charge opening	37	C	C	C	C	C	C	C	O	O	C
	7 s delay	38	C	C	C	C	C	C	C	O	O	C
	Charge closing	39	C	C	C	C	C	C	C	O	C	C
	Discharge opening	40	C	C	C	C	C	C	C	O	C	O
	wait Paccu=Pref (+120 mb - 80mb)	41	C	C	C	C	C	C	C	O	C	O
	Discharge closing	42	C	C	C	C	C	C	C	O	C	C
	Equi.air closing	43	C	C	C	C	C	C	C	C	C	C
	start Air-Regulator	44	C	C	C	C	C	C	C	C	C	C
TRANSFER OF RINSING LIQUID INTO ACCU.	Filling visco with additive	A/P opening	45	C	C	C	C	O	C	C	C	C
		7 s delay	46	C	C	C	C	O	C	C	C	C
		Additive-Addition opening	47	C	O	C	C	O	C	C	C	C
		wait for visco level high (become ++)	48	C	O	C	C	O	C	C	C	C
		Additive-Addition closing	49	C	C	C	C	O	C	C	C	C
		A/P closing	50	C	C	C	C	C	C	C	C	C
	Filling ACCU with Additive	Transfer-Air opening	51	C	C	C	C	C	O	C	C	C
		1 s delay	52	C	C	C	C	C	O	C	C	C
		Ink-Transfer opening	53	C	C	C	C	C	O	O	C	C
		wait Viscosimeter low level (become -)	54	C	C	C	C	C	O	O	C	C
		Ink-Transfer closing	55	C	C	C	C	C	O	C	C	C
		Air-Transfer closing	56	C	C	C	C	C	C	C	C	C
		A/P opening	57	C	C	C	C	O	C	C	C	C
		7 s delay	58	C	C	C	C	O	C	C	C	C
		A/P closing	59	C	C	C	C	C	C	C	C	C
	Test if accu. full	IF Accu not full (level = + -) then goto sub-phase 45 (to fill up)	60	C	C	C	C	C	C	C	C	C
Emptying Accu throught jets	start " Jet umbloking"	61	C	C	C	C	C	C	C	C	C	C
	20s delay	62	C	C	C	C	C	C	C	C	C	C
	start " Jet refreshment"	63	C	C	C	C	C	C	C	C	C	C
	wait Accumulator level low	64	C	C	C	C	C	C	C	C	C	C
	stop jets	65	C	C	C	C	C	C	C	C	C	C
	IF Recup-tank not full (level +) then goto sub-phase 45 (to fill up)	66	C	C	C	C	C	C	C	C	C	C



Ink circuit sequences

Ink circuit: draining

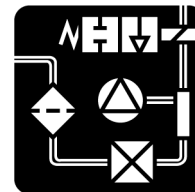
Objectives		Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-visco	A / P	Air-transfer	Ink-transfer	Equi-Air	Charge	Discharge	
RECUP-TANK DRAINING	Visco. filling	Equi-Visco opening	67	C	C	C	O	C	C	C	C	C	C	
		1 s delay	68	C	C	C	O	C	C	C	C	C	C	
		Visco opening	69	C	C	O	O	C	C	C	C	C	C	
		wait for Visco high level (become +)	70	C	C	O	O	C	C	C	C	C	C	
		Visco closing	71	C	C	C	O	C	C	C	C	C	C	
		Equi-Visco closing	72	C	C	C	C	C	C	C	C	C	C	
	Putting visco. on pressure	Air-Transfer opening	73	C	C	C	C	C	O	C	C	C	C	
		1 s delay	74	C	C	C	C	C	O	C	C	C	C	
		Air-Transfer closing	75	C	C	C	C	C	C	C	C	C	C	
	Transfer Visco toward Ink tank	If visco not empty (level= - +) then Ink-Addition opening	76	O	C	C	C	C	C	C	C	C	C	C
		300 ms delay	76'	O	C	C	C	C	C	C	C	C	C	C
		Ink Addition closing	76''	C	C	C	C	C	C	C	C	C	C	C
		A/P opening	77	C	C	C	C	C	C	C	C	C	C	C
		1 s delay	78	C	C	C	C	C	C	C	C	C	C	C
		A/P closing	79	C	C	C	C	C	C	C	C	C	C	C
		If recup-tank empty (level -) and	80	C	C	C	C	C	C	C	C	X	X	X
		IF additive in the Additive tank then goto subphase 45 (filling visco)	80'	C	C	C	C	C	C	C	C	X	X	X
		If not goto sub phase 60	80''	C	C	C	C	C	C	C	C	X	X	X
	General stop	Stop the "jet"	81	C	C	C	C	C	C	C	C	X	X	X
All valves closing		81'	C	C	C	C	C	C	C	C	C	C	C	
Stop Air-Regulator		81''	C	C	C	C	C	C	C	C	C	C	C	
Plant air stop	Stop plant air	82	C	C	C	C	C	C	C	C	C	C	C	
	Charge opening	83	C	C	C	C	C	C	C	C	C	O	C	
	Discharge opening	84	C	C	C	C	C	C	C	C	C	O	O	
	7 s delay	85	C	C	C	C	C	C	C	C	C	O	O	
	Charge closing	86	C	C	C	C	C	C	C	C	C	C	C	
Set ink circuit to Admospheric pressure	A/P opening	87	C	C	C	C	O	C	C	C	C	C	C	
	Discharge opening	88	C	C	C	C	O	C	C	C	C	C	O	
	Equi-Air opening	89	C	C	C	C	O	C	C	C	O	C	O	
	14 s delay	90	C	C	C	C	O	C	C	C	O	C	O	
	Charge opening	91	C	C	C	C	O	C	C	C	O	O	O	
	Air-Transfer opening	92	C	C	C	C	O	O	C	C	O	O	O	
	wait Paccu =Padmospheric	93	C	C	C	C	O	O	C	C	O	O	O	
	Air-Transfer closing	94	C	C	C	C	O	C	C	C	O	O	O	
	Equi-Visco opening	95	C	C	C	O	O	C	C	C	O	O	O	
	7 s delay	96	C	C	C	O	O	C	C	C	O	O	O	
	Equi-visco closing	97	C	C	C	C	O	C	C	C	O	O	O	
	A/P closing	98	C	C	C	C	C	C	C	C	O	O	O	
	Equi-Air closing	99	C	C	C	C	C	C	C	C	C	O	O	
	Discharge closing	100	C	C	C	C	C	C	C	C	C	O	C	
	Charge closing	101	C	C	C	C	C	C	C	C	C	C	C	
End " DRAINING "		102	C	C	C	C	C	C	C	C	C	C	C	



Ink circuit sequences

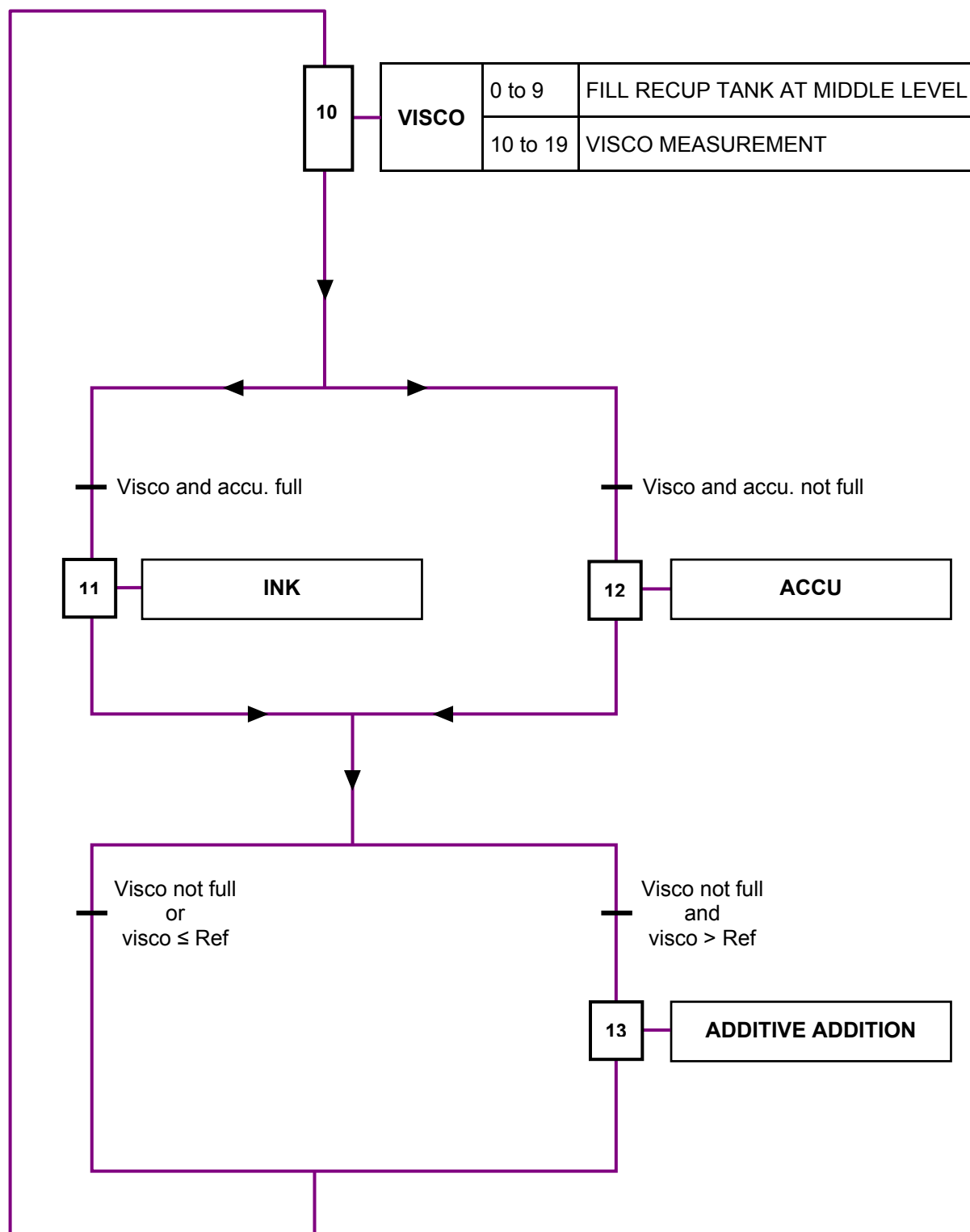
Ink circuit: wake-up

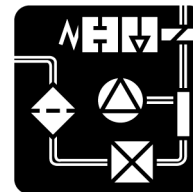
Objectives	Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-Visco	A / P	Air-transfer	Ink-transfer	Equi-Air	Charge	Discharge
General stop	All valves are closed	0	C	C	C	C	C	C	C	C	C	C
Set ink circuit to Admospheric Pressure	Equi-Air opening	1	C	C	C	C	C	C	C	O	C	C
	Discharge opening	2	C	C	C	C	C	C	C	O	C	O
	A/P opening	3	C	C	C	C	O	C	C	O	C	O
	Air-Transfer opening	4	C	C	C	C	O	O	C	O	C	O
Plant air starting	Start plant air	5	C	C	C	C	O	O	C	O	C	O
	Air-Transfer closing	6	C	C	C	C	O	C	C	O	C	O
	7 s delay	7	C	C	C	C	O	C	C	O	C	O
Inflating the Accu up to Pressure reference	Discharge closing	8	C	C	C	C	O	C	C	O	C	C
	Charge opening	9	C	C	C	C	O	C	C	O	O	C
	Tempo 7 S	10	C	C	C	C	O	C	C	O	O	C
	Charge closing	11	C	C	C	C	O	C	C	O	C	C
	Discharge opening	12	C	C	C	C	O	C	C	O	C	O
	wait Paccu= Pref (- 80mb + 120 mb)	13	C	C	C	C	O	C	C	O	C	O
	Discharge closing	14	C	C	C	C	O	C	C	O	C	C
	Equi-Air closing	15	C	C	C	C	O	C	C	C	C	C
	A/P closing	16	C	C	C	C	C	C	C	C	C	C
	1 s delay	17	C	C	C	C	C	C	C	C	C	C
End WAKE-UP	<i>goto Visco and start Air regulator</i>	18										



Ink circuit sequences

Ink viscosity management synopsis

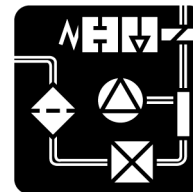




Ink circuit sequences

Ink circuit: visco. measurement

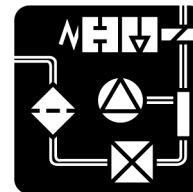
Objectives	Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-visco	A / P	Air-transfer	Ink-transfer
Exhaust Viscosimeter	Ink Add opening	0	O	C	C	C	C	C	C
	1 s delay	1	O	C	C	C	C	C	C
	Ink closing	2	C	C	C	C	C	C	C
Medium level in Recup-Tank	Equi-Visco opening	3	C	C	C	O	C	C	C
	1 s delay	4	C	C	C	O	C	C	C
	Equi-Visco closing	5	C	C	C	C	C	C	C
	Visco opening	6	C	C	O	C	C	C	C
	Ink opening	7	O	C	O	C	C	C	C
	wait for medium level in recup tank	8	O	C	O	C	C	C	C
	Ink Add closing	9	C	C	O	C	C	C	C
Visco draining toward Recup-Tank	A/P opening	10	C	C	O	C	O	C	C
	wait medium level recup tank	11	C	C	O	C	O	C	C
	A/P closing	12	C	C	O	C	C	C	C
	Visco closing	13	C	C	C	C	C	C	C
Visco, filling time measurement	Equi-Visco opening	14	C	C	C	O	C	C	C
	Visco opening	15	C	C	O	O	C	C	C
	waiting visco low level (become -+)	16	C	C	O	O	C	C	C
	waiting visco high level (become ++)	17	C	C	O	O	C	C	C
	Visco closing	18	C	C	C	O	C	C	C
	Equi-Visco closing	19	C	C	C	C	C	C	C
End VISCO phase	<i>If Accu full then transfer to ink reservoir else transfer to accu</i>	20							



Ink circuit sequences

Ink circuit: transfer from visco. to ink tank

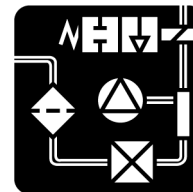
Objectives	Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-visco	A / P	Air-transfer	Ink-transfer
Set visco to high pressure P++	opening Air-Tranfer	0	C	C	C	C	C	O	C
	1s delay	1	C	C	C	C	C	O	C
	closing Air-Tranfer	2	C	C	C	C	C	C	C
Visco tranfer → INK Tank	Subroutine	3	C	C	C	C	C	C	C
	If visco = not empty (low level+) opens Ink Add. For 300 ms	3'	O	C	C	C	C	C	C
	If visco = empty (low level -) goto subphase 4	3''	C	C	C	C	C	C	C
Set Viscosimeter to Admospheric Pressure	opening A/P	4	C	C	C	C	O	C	C
	7 s delay	5	C	C	C	C	O	C	C
	closing A/P	6	C	C	C	C	C	C	C
End TRANSFER → Ink Tank	goto Additive Addition and increment counter "NBTRENCRE"	7							



Ink circuit sequences

Ink circuit: transfer from visco to accu.

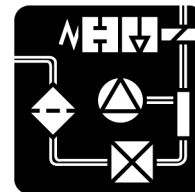
Objectives	Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-visco	A / P	Air-transfer	Ink-transfer
Attempt to transfer the ink contain in the visco toward the ink tank.	opening Air-transfer	0	C	C	C	C	C	O	C
	1 s delay	1	C	C	C	C	C	O	C
	closing Air transfer	2	C	C	C	C	C	C	C
	opening Ink Add	3	O	C	C	C	C	C	C
	wait for hight level visco become: -	4	O	C	C	C	C	C	C
	closing Ink Add	5	C	C	C	C	C	C	C
Transfer VISCO → ACCU	Air transfer opening	6	C	C	C	C	C	O	C
	1 s delay	7	C	C	C	C	C	O	C
	ink transfer opening	8	C	C	C	C	C	O	O
	wait for low level visco become: -	9	C	C	C	C	C	O	O
	closing ink transfer	10	C	C	C	C	C	O	C
	closing air transfer	11	C	C	C	C	C	C	C
Set Visco to Adm pressure	opening A/P	12	C	C	C	C	O	C	C
	7 s delay	13	C	C	C	C	O	C	C
Black flow (X 5)	ink transfer closing	14	C	C	C	C	O	C	O
	ink transfer opening	15	C	C	C	C	O	C	C
	A/P closing	16	C	C	C	C	C	C	C
Transfer VISCO → ACCU	Air transfer opening	17	C	C	C	C	C	O	C
	1 s delay	18	C	C	C	C	C	O	C
	ink transfer opening	19	C	C	C	C	C	O	O
	wait for low level visco become: -	20	C	C	C	C	C	O	O
	closing Ink transfer	21	C	C	C	C	C	O	C
	closing Air transfer	22	C	C	C	C	C	C	C
Set Visco to Adm pressure	opening A/P	23	C	C	C	C	O	C	C
	7 s delay	24	C	C	C	C	O	C	C
	A/P closing	25	C	C	C	C	C	C	C
End TRANSFER → Accu	goto Additive Addition and increment counter "NBTRENCRE"	26							



Ink circuit sequences

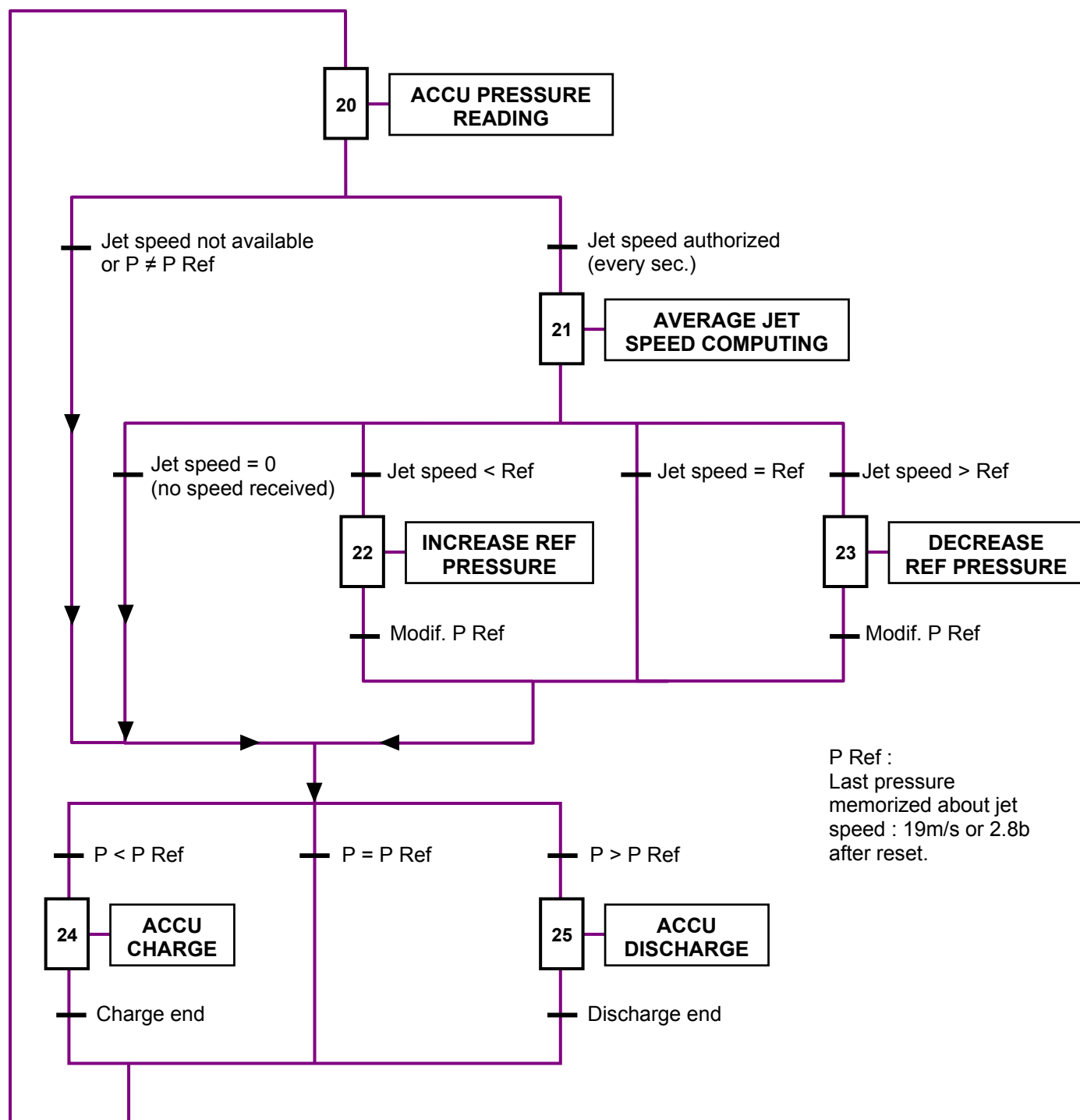
Ink circuit: Additive addition

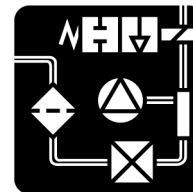
Objectives	Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-visco	A / P	Air-transfer	Ink-transfer
2 conditions	If Accu = not full then goto VISCO If Visco measured < visco reference then goto VISCO	0	C	C	C	C	C	C	C
Start filling an ink dose	Equi-Visco opening	1	C	C	C	O	C	C	C
	1 s delay	2	C	C	C	O	C	C	C
	Visco opening	3	C	C	O	O	C	C	C
	waiting for low level visco become +	4	C	C	O	O	C	C	C
	Setting an Ink dose	5	C	C	O	O	C	C	C
	Equi-Visco closing	6	C	C	O	C	C	C	C
	Visco closing	7	C	C	C	C	C	C	C
End filling with additive	A/P opening	8	C	C	C	C	O	C	C
	3 s delay	9	C	C	C	C	O	C	C
	Additive add opening	10	C	O	C	C	O	C	C
	waiting for high level visco (+ +)	11	C	O	C	C	O	C	C
	Additive addition closing	12	C	C	C	C	O	C	C
Transfer visco toward recup tank	Visco opening	13	C	C	O	C	O	C	C
	wait for low level visco (- -)	14	C	C	O	C	O	C	C
	Visco closing	15	C	C	C	C	O	C	C
	A/P closing	16	C	C	C	C	C	C	C
End Additive addition	increment counter total add and goto Visco mesurement	17							



Ink circuit sequences

Pressure regulator management synopsis





Ink circuit sequences

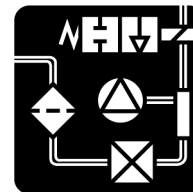
Accu charge

Objectives	Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-Visco	A / P	Air-transfer	Ink-transfer	Equi-Air	Charge	Discharge
Inflate de air transfer volume from P++	Charge opening	0	X	X	X	X	X	X	X	C	O	C
	200 ms delay	1	X	X	X	X	X	X	X	C	O	C
	Charge closing	2	X	X	X	X	X	X	X	C	C	C
Transfer the pressure volume into the Accu	Equi-Air opening	3	X	X	X	X	X	X	X	O	C	C
	200 ms delay	4	X	X	X	X	X	X	X	O	C	C
	Equi-Air closing	5	X	X	X	X	X	X	X	C	C	C

Noticed that before any charge or discharge cycle, the software records the Accu Pressure value which will be compare to the new Pressure obtained after the cycle.

In any case the new pressure should not be exceed the previous pressure + 60 mb for a charge cycle, if not:" Fault Regulator"

In any case the new pressure should not be exceed the previous pressure - 60 mb for a discharge cycle, if not:" Fault Regulator"



Ink circuit sequences

Accu discharge

Objectives	Action	Sub-Phase	Ink addition	Additive addition	Visco	Equi-Visco	A / P	Air-transfer	Ink-transfer	Equi-Air	Charge	Discharge
Inflate de air transfer volume from ACCU	Discharge opening	0	X	X	X	X	X	X	X	C	C	O
	100 ms delay	1	X	X	X	X	X	X	X	C	C	O
	Discharge closing	2	X	X	X	X	X	X	X	C	C	C
Transfer the pressure volume into the Divider then to the head pressurization	Equi-Air opening	3	X	X	X	X	X	X	X	O	C	C
	200 ms delay	4	X	X	X	X	X	X	X	O	C	C
	Equi-Air closing	5	X	X	X	X	X	X	X	C	C	C



Preventive maintenance: Summary table **p.123**

Shutdown: Summary table **p.124**

Start-up: Summary table **p.125**

● Shutdown the printer for less than 4 days **p.126**

● Starting the printer after a stop of less than 4 days **p.127**

● Draining / Rinsing the printer **p.128**

● Ink refill and restart after drain/rinse operation **p.129**

● Replacing the ink filter cartridge **p.130**

● Ink replacement **p.131**

● Replacing the coalescence filter **p.132**

● Plant air kit servicing **p.133**

● Replacing the filter cartridge of the plant air kit **p.134**

● Cleaning the head **p.135**

● Difficult start-up **p.136**



Servicing procedures

Preventive maintenance: Summary table



This table is to specify the procedures to be followed regularly.

Frequency	Action	Duration	Comment
When clogging is liable to cause malfunctions or poor print quality.	1 - Clean the print head.	3 mn.	See procedure
Every 2000 hours.	1 - Draining / Rinsing the printer.	2 hours	See procedure
	2 - Replacing the ink filter cartridge.	15 min.	See procedure
	3 - Replacing the coalescence filter.		See procedure
	4 - Refilling with ink. Start-up after daining / rinsing the printer.		See procedure
	Plant air kit:		See procedure
	1 - Replacing filters.		See procedure
	2 - Plant air kit servicing.		See procedure
Every 6 months.	1 - Replacing the ink filter cartridge.	15 min.	See procedure
See ink data sheet and use-by date.	1 - Replacing ink.		See procedure

CAUTION: the ink circuit is equipped with stirrers located at the bottom of the recuperation and ink tanks. Their role consists in stirring the ink permanently.

CONSEQUENTLY: The printer must never be disconnected from the mains for more than two hours, unless a recuperation and ink tank draining operation has been previously carried out.



Servicing procedures

Shutdown: Summary table

The shutdown procedures are different depending on the anticipated shutdown duration.

Shutdown duration	Action	Comment
< 4 days	1 – Procedure "Shutdown the printer for less than 4 days".	See procedure
≥ 4 days to ≤ 1 month	1 – Procedure "Draining / Rinsing the printer". 2 - OFF	See procedure
> to 1 month	1 – Procedure "Draining / Rinsing the printer". Repeat every 4 weeks 2 - OFF	See procedure

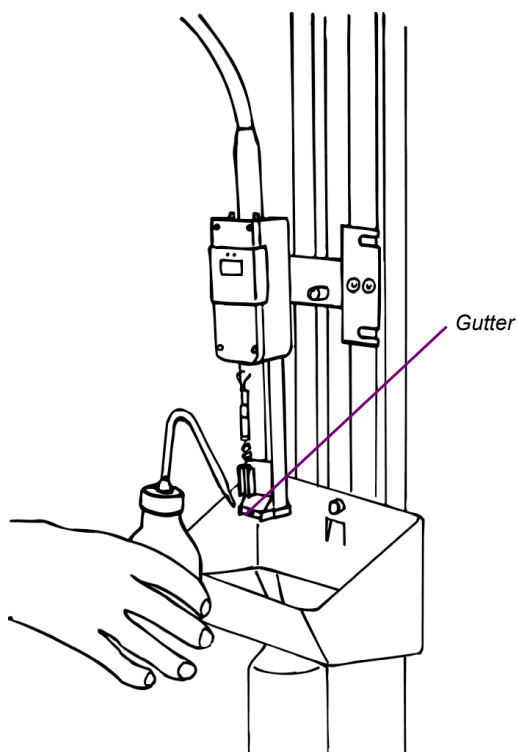
CAUTION: the ink circuit is equipped with stirrers located at the bottom of the recuperation and ink tanks. Their role consists in stirring the ink permanently.

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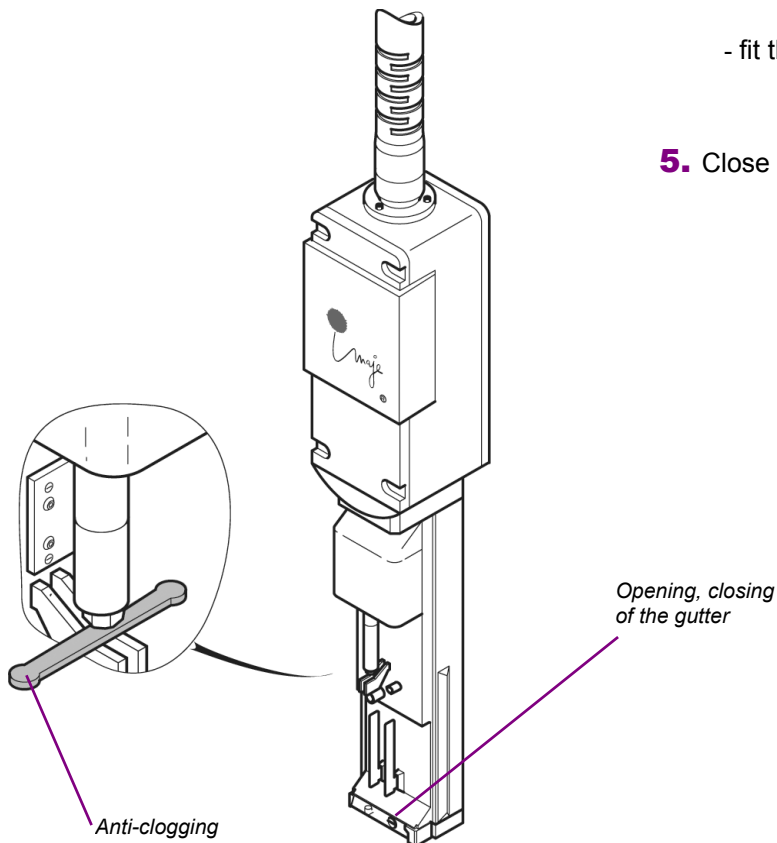


Servicing procedures

Shutdown the printer for less than 4 days

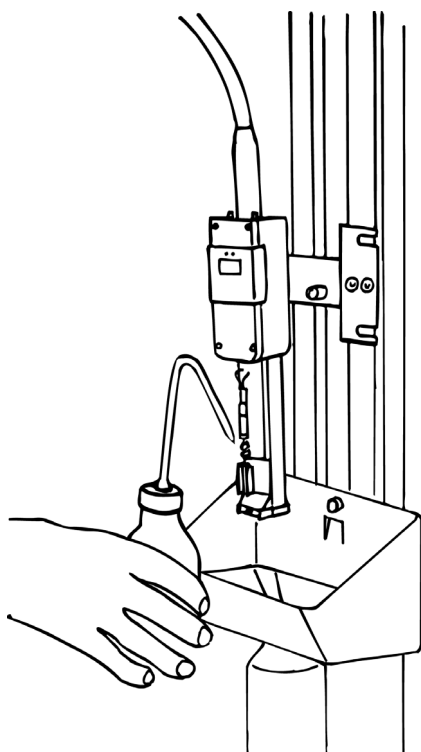


- 1.** Stop the jet and place the head on its maintenance stand.
- 2.** Open the head cover and spray cleaning solution into the recovery for a few seconds.
- 3.** Stop the printer.
- 4.** If an anti-clogging device is needed (see technical data sheet for the ink):
 - wait for the printer to stop,
 - close the gutter, 
 - fit the anti-clogging device.
- 5.** Close the head cover.

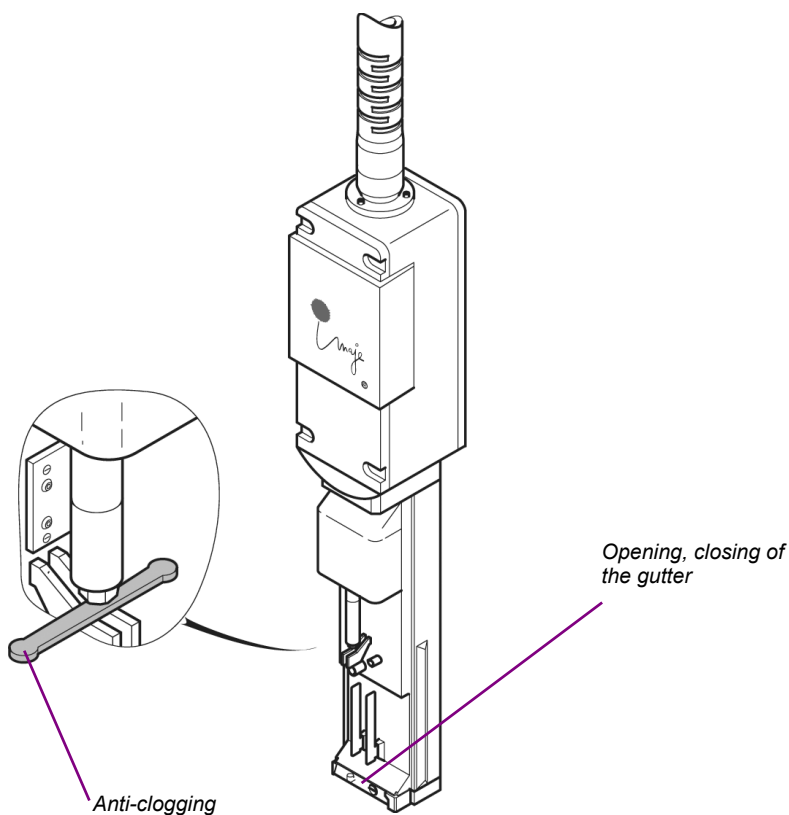


Servicing procedures

Starting the printer after a stop of less than 4 days



1. Open the head cover.
2. Remove the anti-clogging device if present.
3. Clean the head.
4. Open the gutter. 
5. Start the printer, with the cover open. (The jets start automatically).
6. Close the cover after the jets start.
7. Place the head on its working stand.



Servicing procedures

Draining / rinsing the printer

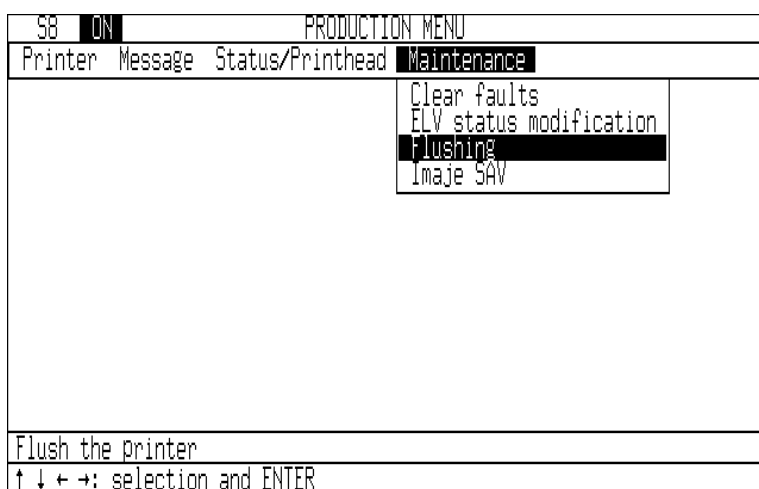


1. Place a tray under the additive.
2. Replace the stopper once the tank is empty.
3. Pour the rinsing liquid into the additive tank. 1 litre for an anticipated shutdown period for less than 15 days or 2 litres for an anticipated shutdown period for more than 15 days.

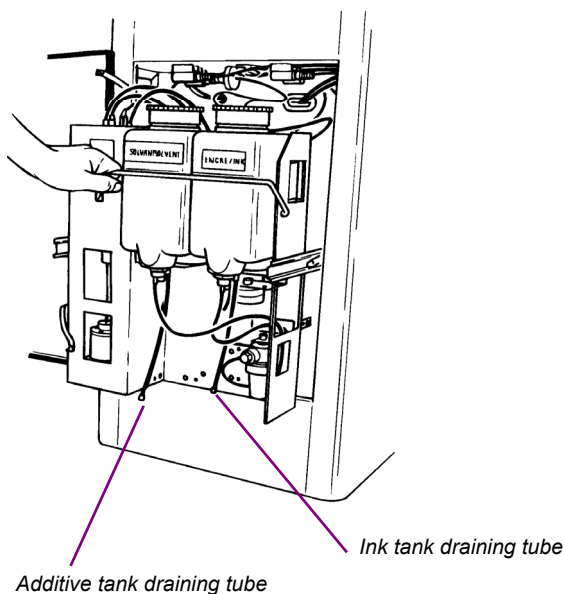
4. Place a tray under the ink tank, and remove the stopper from the draining tube.

Never reuse this ink.

5. Start draining / rinsing the ink circuit as follows.



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



Disconnect the printer from the mains after each draining/ rinsing operation, if re-inking does not take place immediately. This in order to prevent the stirrers from rotating under no load.

Servicing procedures

Ink refill and restart after drain/rinse operation



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

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

4. Check the viscosity 

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

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

Head:	1	
Status jet(s):	RUNNING	
Speed jet1:	20,00 m/s	
Phase jet1:	00001111	
Speed jet2:	20,00 m/s	
Phase jet2:	00001111	
Pressure:	2,89 bars	Transfer: 0013 s
Viscosity:	29 s / 2,9 cPs	Reference visco.: 29 s / 2,9 cPs
Elect. Temp.:	30 °C	Additions: 04
		FAULTS: ☒

Machine status / Operations on head

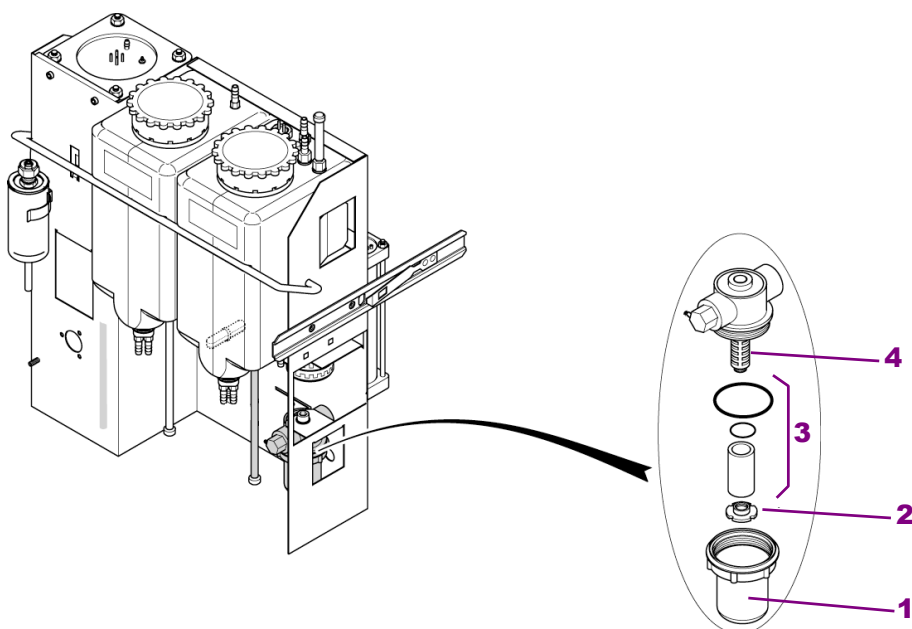
↑ ↓ ← → to select, SPACE to capture, ENTER / ESC to quit

Servicing procedures

Replacing the ink filter cartridge



1. Stop the printer.
2. Place a recuperation tray under the filter and unscrew the lower carter (1).
3. Unscrew the cartridge base (2).
4. Remove the cartridge and O-ring (3).
5. Change the filter support column (4)
6. Insert a new cartridge and screw the base.
7. Clean and screw the housing back, fitting a new o'ring seal.
8. Start-up the printer. Check filter tightness.



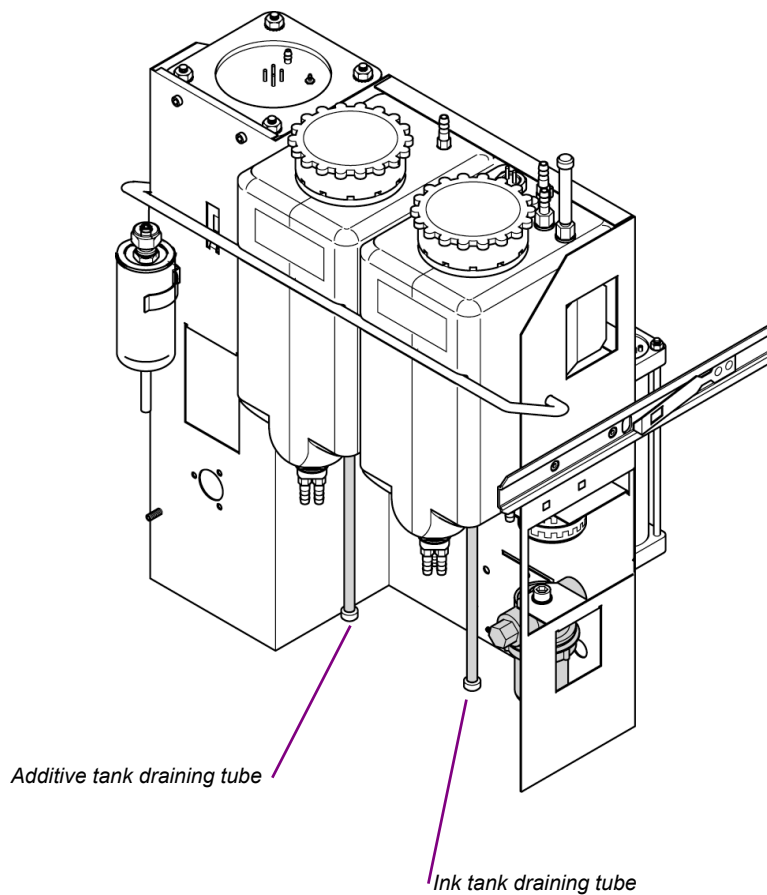
Servicing procedures

Ink replacement



Drain the printer as follows, printer on:

- 1.** Drain the additive tank. Place back the plug when draining is finished.
- 2.** Place the tray under the ink tank. Remove the plug from the tube.
- 3.** Select "Maintenance" in the "PRODUCTION" menu, then validate "Flushing" function.
- 4.** When draining is finished, the printer stopped automatically.
- 5.** Plug the ink tank draining tube.
- 6.** Refill the tank with ink (max. ½ tank).
- 7.** Start-up the printer, check head cleanliness, clean it if required.
- 8.** After 30 minutes of operation, check the jet break-off point. It might be necessary to adjust it after ink replacement.



Servicing procedures

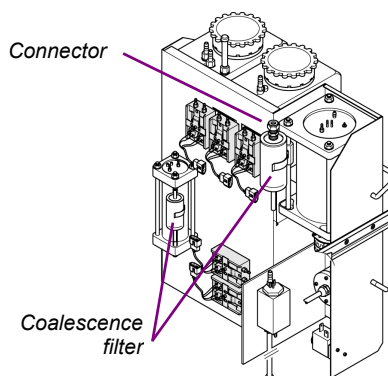
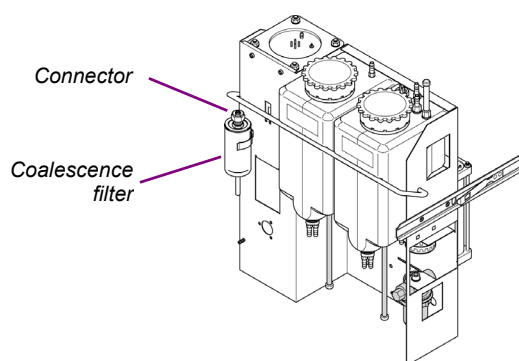
Replacing the coalescence filter



Specific tooling:

- Wrench.

1. Stop the printer.
2. Open the door of the hydraulic compartment.
3. Move out the ink circuit to access the filter.
4. Undo all nuts on the filter side fully.
5. Remove the filter.
6. Fit the new filter and make sure the arrow is pointing in the right direction.

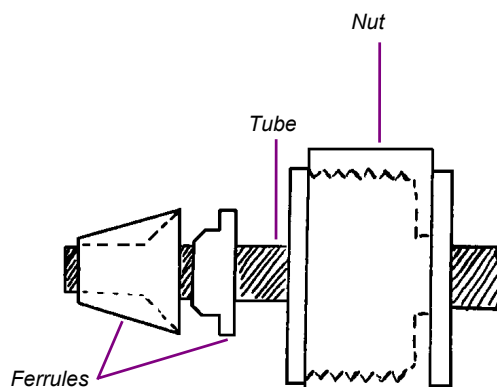


7. Replace the ferrules (Figure below).
8. Push in the tube as far as it will go inside the connector.
9. Do up the nut by hand and then tighten a further three quarters of a turn.

Tests:

10. Pull the filter to make sure there is no free play inside the connector.
11. Start up the printer and make sure there is no air leakage.

ROUTINE VERIFICATIONS



Servicing procedures

Pant air kit servicing



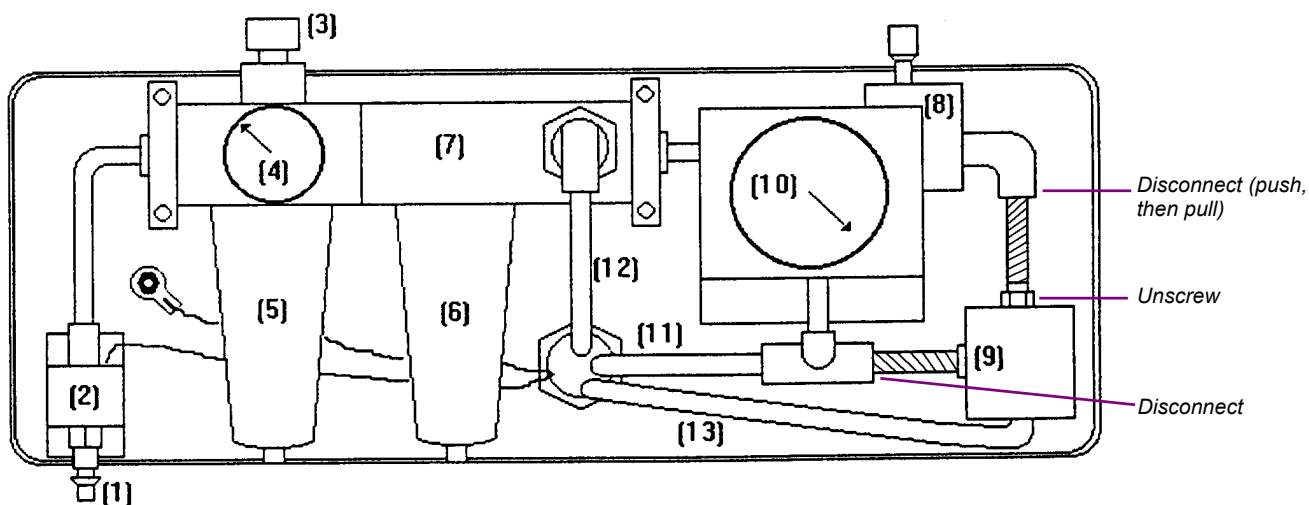
This operation should be performed every 2000 hours or when vacuum becomes too low.

Specific tooling:

- 13 mm open-ended spanner
- 3 mm hexagon wrench

1. Stop the printer and disconnect the air input.
2. Open the housing.
3. Disconnect the hatched tubes (on the quick coupling side).
4. Unscrew the top part by 9.
5. Clean with cleaning solution.
6. Grease the o'ring seal.
7. Refit the assembly.
8. Put the housing back.
9. Start the printer.
10. Check pressure and suction (adjust according to the specification sheet of the ink used).

ROUTINE VERIFICATIONS



Servicing procedures

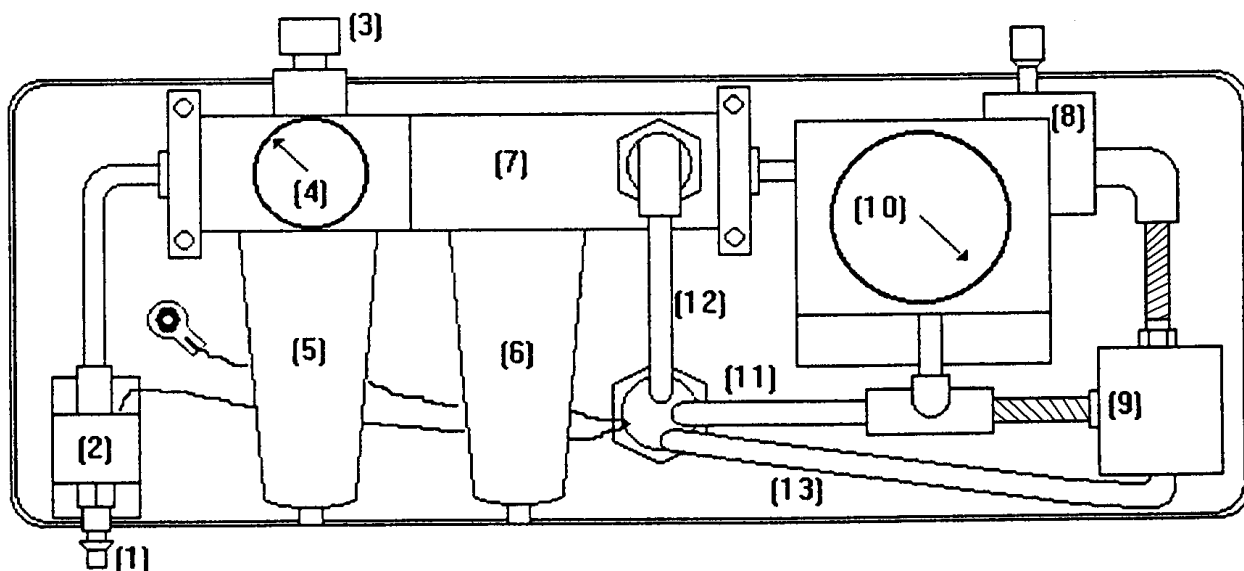
Replacing the filter cartridge of the plant air kit



This operation should be performed every 2000 hours:

1. Stop the printer and unplug it from the mains.
2. Open the plan air kit housing.
3. Unscrew the bowls a quarter of a turn and pull them down (5-6)
4. Unscrew the cartridge support assembly.
5. Take out the cartridge and replace it by a corresponding new one.
6. Refit the assembly, repeating the operations above in the reverse order.
7. Check pressure and suction (adjust according to the specification sheet of the ink used).

ROUTINE VERIFICATIONS



- [1] Connection of compressed air plant
- [2] Electrovalve
- [3] Pressure regulator
- [4] Pressure gauge
- [5] Filter 5 μm (bowl)
- [6] Filter 0.03 μm (bowl)
- [7] Bypass block
- [8] Flow limiting valve (to adjust the vacuum)
- [9] Ejector (vacuum pump)
- [10] Vacuumeter
- [11] Vacuum tube
- [12] Pressure tube
- [13] Outlet

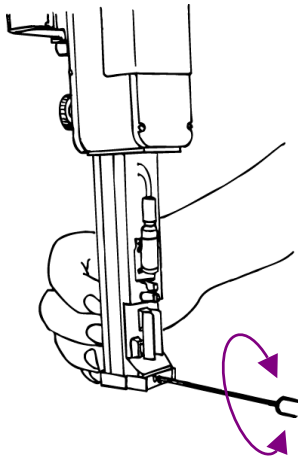
Servicing procedures

Cleaning the head



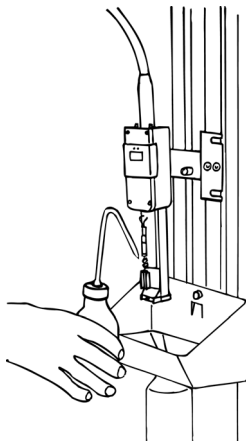
Specific tooling:

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

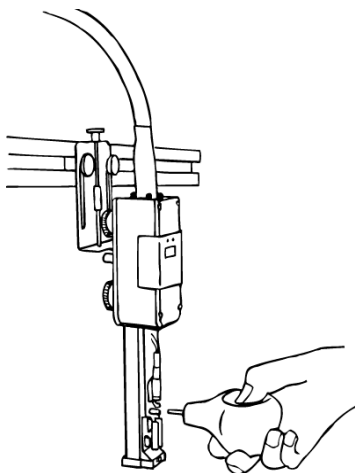


1. Stop the jet and position the head on its maintenance tray.
2. Open the head cover and close the recuperation gutter.

Gutter closed



3. Clean the electrodes and the cannon with cleaning solution (and the brush or a lintfree cloth if necessary) and carefully dry (head dryer or drying kit). (The use or not of the brush, the rag and the drying kit is mentioned on the technical sheet of the ink).



4. Open the gutter and restart the jet.

Gutter open



5. Close the head cover.

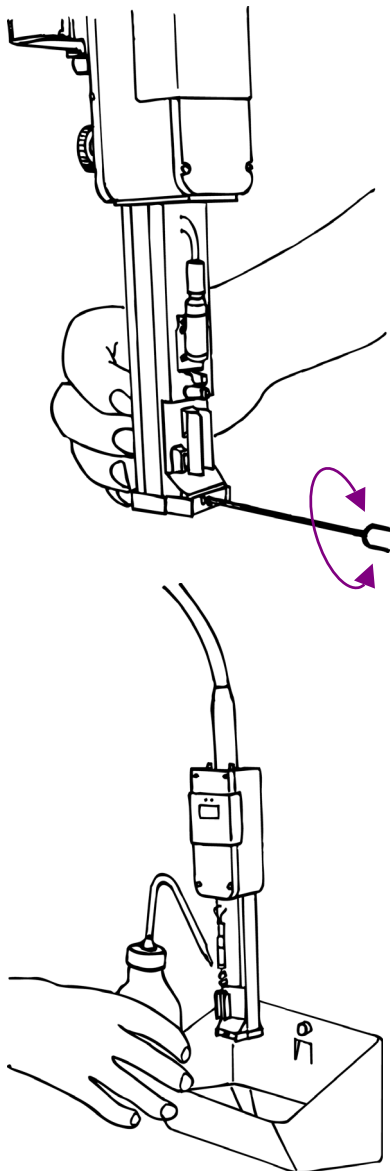
Servicing procedures

Difficult start-up



Specific tooling:

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



1. Close the recuperation gutter. 
2. Validate [Nozzle unblocking].
3. Spray the cannon with the cleaning solution until some ink flows from the nozzle.
4. Validate [Intro. Solution].
5. Spray the cannon with the cleaning solution for approx. 20 seconds.
6. Open the gutter. 
7. Validate [Stability].
8. When the jet is stable in the gutter, validate [Jets off].
9. Clean the head again.
10. Put the jet back in service.
11. Check visually.
12. Clean and reclose the head cover.
13. Acquit the faults.



Adjustment procedures

Contents

- Inlet pressure adjustment
Vacuum adjustment **p.139**
- Adjusting the jet in the gutter..... **p.141**
- Jet break-off point adjustment..... **p.143**

Adjustment procedures



Inlet pressure adjustment Vacuum adjustment

Inlet pressure adjustment

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

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

Adjustment:

1. Display the operating pressure .
2. Display the inlet pressure    .
3. If necessary, adjust the plant air kit to obtain the correct inlet pressure.

Vacuum adjustment

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

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



Adjustment procedure

Adjusting the jet in the gutter

Specific tooling:

- Cannon orientation tool, hexagonal key
- Lens (eyeglass).
- 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:

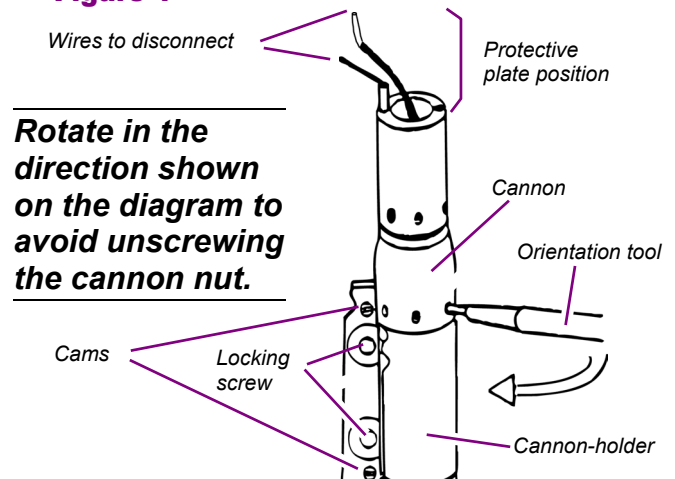
This operation involves three related adjustments:

- 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.

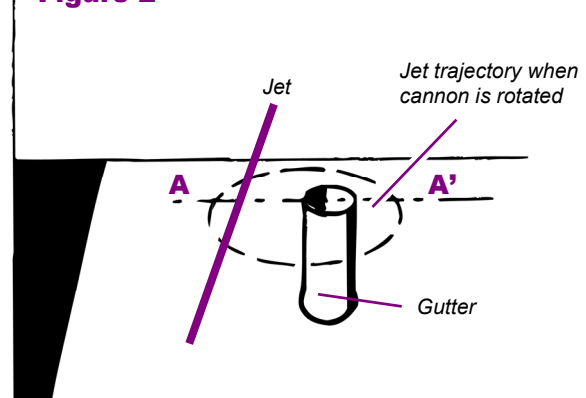
5. Remove the protection plate from the resonator wires and disconnect them.
6. Position the jet on the A- A' A' axis by pivoting the cannon in the cannon-holder with an orientation tool placed at the top (**Figure 2**).

Figure 1



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

Figure 2





Adjustment sheets

Adjusting the jet in the gutter

7. Loosen the cannon-holder locking screws (**Figure 1**)
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**),
 - off-center (1/3 - 2/3) for P heads (**Figure 5**).

10. Repeat steps 7, 8 or 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, M and P heads

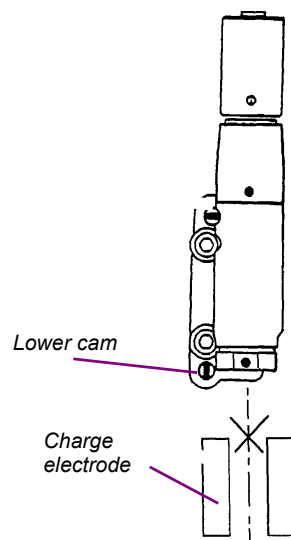


Figure 4 : G and M heads

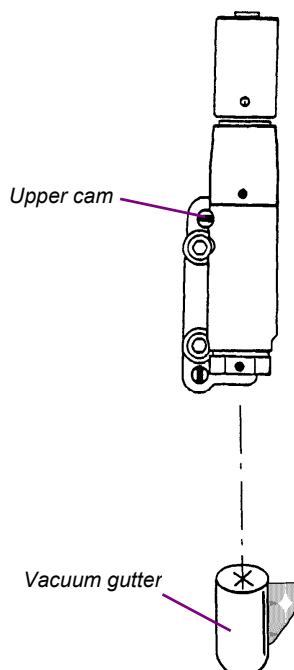
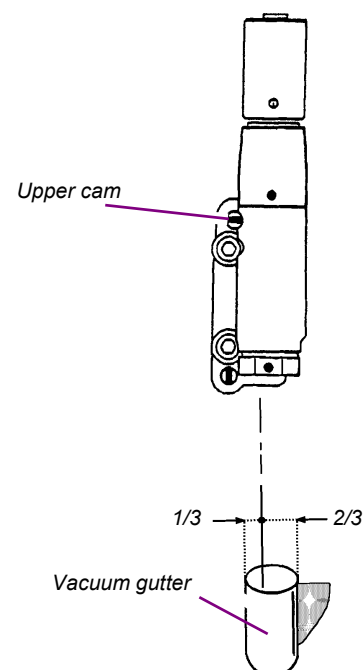


Figure 5 : P head





Adjustment procedure

Jet break-off point adjustment

Specific tooling:

- Safety glasses
- Lens (eyeglass).
- 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 (or the potentiometer protection caps on four-jet heads) and the removable cover.

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

Adjustment:

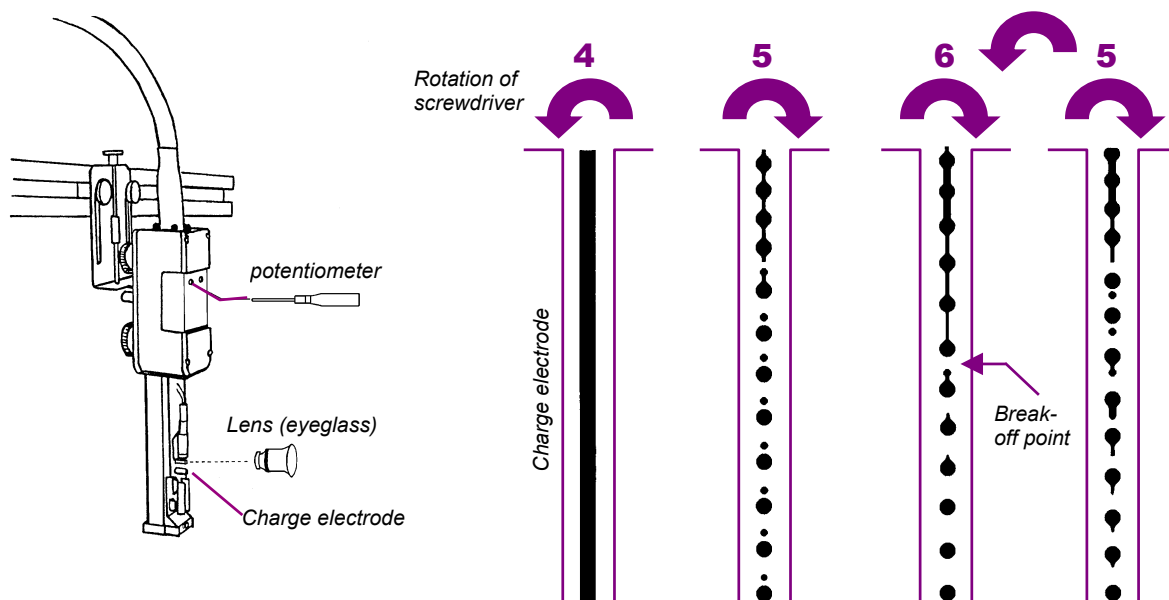
4. The adjustment procedure below involves looking at the jet in front of the charge electrode (stroboscopic LED) through the eyeglass (see Figure 1) :

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. Aim for the form shown by point 6 in Figure 1.

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.



4-5-6 : Jet seen through eyeglass, between the charge electrodes.

5 : Satellite drop

6 : Correct setting



- Replacing the pressure cell **p.147**
- Replacing the electrovalves block **p.148**

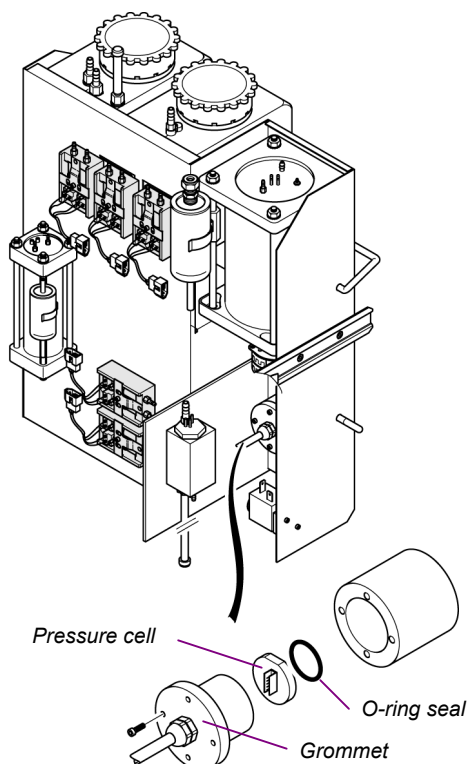


Spare parts assembly sheets

Replacing the pressure cell

Specific tooling:

- **Spanner, open, size 19.**
- **Hexagonal key male size 3.**
- **Tweezers.**



Preparation:

1. Stop the printer and disconnect it from the mains.
2. Remove the ink circuit as far the lateral stops.
3. Loosen the stuffing box's outer nut so that the cable slides freely.
4. Dismount the cover and remove it from its housing.

Warning, the residual ink will start leaking, take precautions.

5. Lift out the pressure cell, disconnect it.

6. Remove the O'ring seal from its housing (tweezers)
7. Clean all the inside of the pressure sensor.
8. Place the new O'ring seal at the bottom of the support.
9. Connect the replacement cell.
10. Carefully slide the cell and the cover inside the sensor. Make sure that the position is correct.
There must be approx. 1 mm clearance all around the cover.
Progressively tighten the four screws alternately so that they progress regularly.

Remounting and trials:

11. Re-connect the two motor control and ink circuit harnesses, as well as the self-blanking connectors (putting some additive in the female connectors).
12. Verify that the draining circuits are closed and put a little ink in the reservoir.
13. Start the printer and verify that there are no leaks and that the displayed pressure is correct.
14. Stop the printer and complete the restarting procedure: fan cable, ground strap, separating plate, positioning of the cables and tubes.

ROUTINE VERIFICATIONS



Spare parts assembly sheets

Replacing the electrovalves block

Specific tooling:

- **Used ink container.**
- **Usual equipment for draining and cleaning.**
- **Cutter, tube cutter.**
- **Key, male hexagonal, size 4.**

Preparation:

1. Before replacing the electrovalves blocks, adding ink or additive or transferring ink, first drain the machine.

Replacement:

2. Stop the printer and disconnect it from the mains.
3. Dismount the electrovalves block and disconnect the connector.
4. Note the connections of the 4 tubes, then cut them as close as possible to the firtree connectors without damaging them.
5. Fix the new block to the bulkhead. Push the 4 tubes on the corresponding barbed connectors. Re-connect the connector and the ground connection.

CAUTION: the three tubes marked opposite must be replaced by tubes of the same length, because their volume must not be modified.

6. Start the printer and verify:
 - that there are no leaks at the level of the barbed connectors,
 - that you can hear the click of the electrovalves when commanded manually.

ROUTINE VERIFICATIONS

Block 1 :

Left: Air transfer
Right: Charge

Block 2 :

Left: Equi-visc
Right: Equi-air

Block 3 :

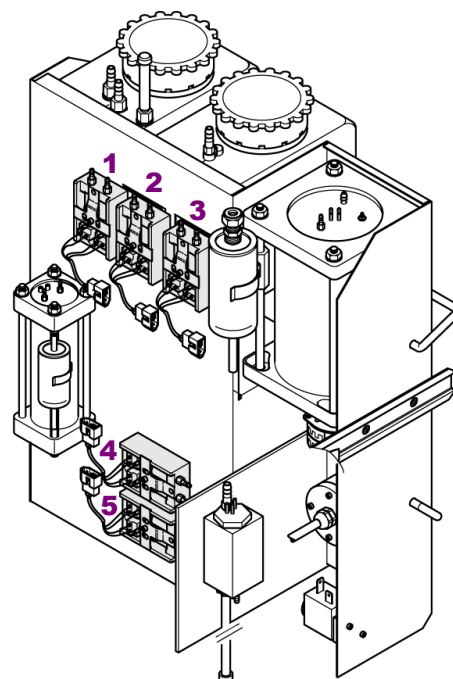
Left: P. Atmospheric
Right: Discharge

Block 4 :

High: Ink addition
Down: Additive addition

Block 5 :

High: Not used
Down: Ink transfer





Structure of the document

S8 Contrast Troubleshooting File

General contents

OS800100SG001-GB-A



Preliminary instructions

OS801500SA001-GB-A



Printer description

OS800100DE001-GB-A
OS800100DE002-GB-A
OS800100DE003-GB-A
C7801500DE001-GB-A



Troubleshooting charts

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Printer electronics

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Servicing procedures

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Adjustment procedures

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Spare parts assembly sheets

OS800100PR003-GB-A
OS800100PR001-GB-A
OS800100PR002-GB-A



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OS800100AZ001-GB-A 2/2

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