CLIMATIC CABINET
SP MODELS
TYPE BVEHF
90 to 540 LITRES

OPERATING and TECHNICAL

INSTRUCTIONS

CONFORMITY CERTIFICATE

I, the undersigned, Joël CINIER, manager of Firlabo, 8 boulevard Monge ZI 69330 Meyzieu, France certifies that the following laboratory equipment :

- Climatic cabinet SP BVEHF 90 to 720 liters

complies with its technical directives :

- European Directive concerning the machine : 89/392/CEE, modified by the directives 91/368/CEE, 93/44/CEE and 93/68/CEE.

- European ElectroMagnetic Compatibility Directive : 89/336/CEE , modifed by the directives 92/31/CEE et 93/68/CEE.

- European Low Power Directive : 73/23/CEE , modified by the directive 93/68 CEE.

Meyzieu, July 17th 2001

GUARANTEE TERMS

This instrument is guaranteed for 18 months

The guarantee starts from the invoice date.

The guarantee will be invalidated if:

- the unit is uncorrectly used

- poorly serviced or neglected

- power surges in the supply

- accidental damage in the transport

There is no explicit guarantee other than as stated above.

SUMMARY

Operating Instructions

Operation

Wiring diagrams and Spares List

1- Contents of the package

Included with the cabinet are :

- 8 shelf supports

- 2 shelves

- an instruction manual

- a technical manual for the electronic controller

THIS MANUAL IS INTENDED FOR USE BY TECHNICAL PERSONNEL. PLEASE DO NOT CHANGE THE PARAMETERS SET INTO THE CONTROLLERS

2- Installation

Locate the cabinet in an area where it will not be subjected to large variations in temperature. This could have adverse effects on the thermal stability. A space of about 1 metre should be left between any side of the cabinet which is near a warm surface.

Example : near a high temperature oven, or behind a large expanse of glass; especially in hot weather.

- Electrical connection:

Before connecting the cabinet to the power supply, make sure that the plug and fuse are on the correct rating. (check the information label at the back of the cabinet)

Make sure that the electrical plug is provided with an earth terminal and that this is connected to the earth cable of the power supply.

- Distilled or deionised water supply:

Fill in the reservoir with water (see below picture)

Removal of waste water

It is necessary to plan an evacuation in the sewer of waste waters through the outlet planned for that purpose (see picture of the back of the cabinet diam. 15-21mm).

REMOVAL OF WASTE

TAP OF
FILLING

LEVEL
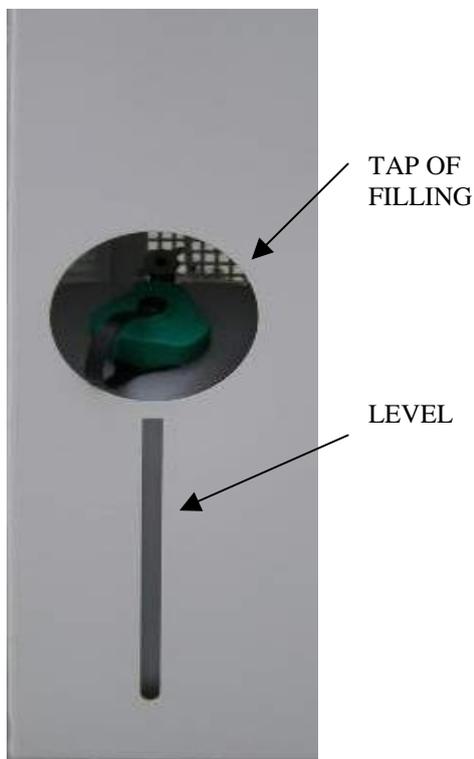
RESERVOIR
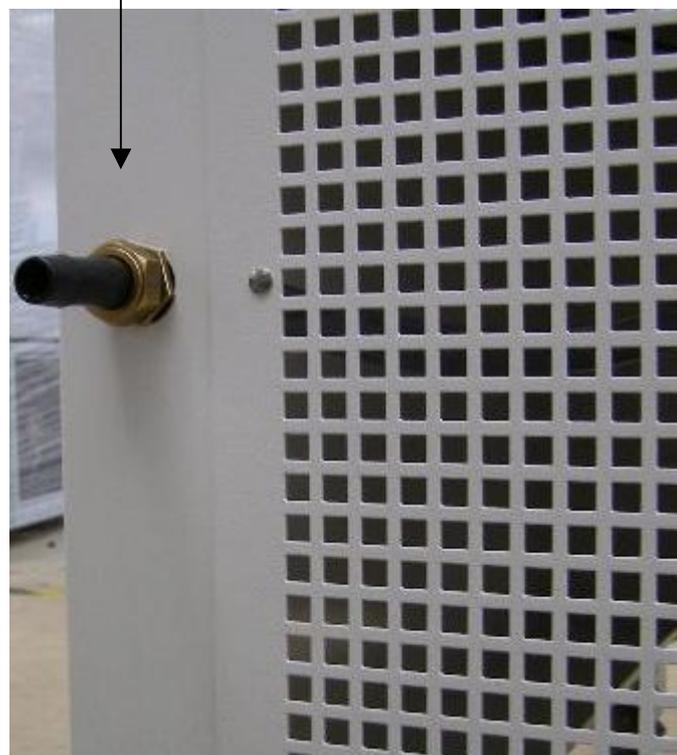
Loading

- Do not place **highly corrosive products** into the cabinet as these will attack the internal fittings.

- Do not place **explosive or highly inflammable products** into the chamber.

    These climatic cabinets are NOT spark proof

- Avoid placing the load too close to the sides of the chamber.

- Try not to cover any shelf completely. To maintain even temperatures inside the chamber, air must be able to circulate.

- Where possible, try to load the chamber evenly to avoid creating warm or cold zones.
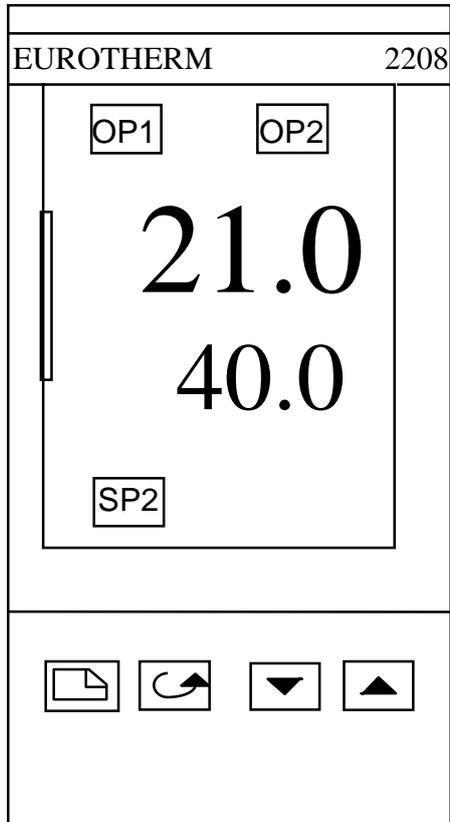
EUROTHERM	2208

OP1   OP2

21.0

40.0

SP2

OP1: Output light 1 running
  OP2: Output light 2 running
  SP2: Set point light 2 running
      (option)
 RUN: Ramp light running
 HOLD: Waiting program light
 ⬚ : Function key Page
 ↺ : Function key Continuous play
 ▼ : Function key Decreasing
▲ : Function key Increasing

1- Control : EUROTHERM 2208

When the power is switched on, the controller display will light up.

Example :

21.0

40.0

" 21.0 "   *Measured temperature*
" 40.0 "   *Set point temperature*

The light " OP 1 " is lit when the controller is asking for the warm.

The light " OP 2 " is lit when the controller is asking for the cold.

The key allow you to change the under menu.

The key allow the regulator parameters to be viewed by the user in order to modify them.

The keys and are used to modify the value of the parameters.
They can be used as single touch, or continuous pressure mode. Continuous pressure will speed up the rate of change.

At the first pressure on the display will show " C " at the second line, to indicate that all the temperatures are in celsius.

A the second successive pressure on the display will show the actual power at the exit.

At the third successive pressure on the display will show the alarm parameters.
To modify them see section 2.

1-1 Changing the set point

Press on or to set the point.

(from 10°C to 60°C)

No validation is necessary.

1-2 Setting the alarm

The alarm is a ' high-following ' alarm on this model

That means that a **maximum temperature gap** is admissible, regarding the set point, for any value of the set point

If the actual temperature exceeds this gap , the alarm operates with the following effects :

   - The error message "1DHI" will flash together with the set point

   -The heaters are totally cut-out until the temperature returns to a correct level

On this apparatus, the high alarm is factory-set at **3 °C** above the set point.

To regulate it manually, press three successives times on [⟳] and the alarm parameters will show on the display (1DHI).

Adjust the value by pressing on [△] and [▽] , be careful do not never key in a value inferior at 1, if you enter the value 0, the starting temperature will be the same as the set point temperature. It can disturb the control.

2- Relative Humidity control

2-1 RH system starting up

When the relative humidity unit is switched on, the second controller Eurotherm will light up.

At the first installation of the unit, after a long break or if the tank low level is reached, you have to wait 15 minutes to load the nebulizer stainless tank, to the cabinet to be operational.

2-2 Hygrometry regulating : EUROTHERM 2208
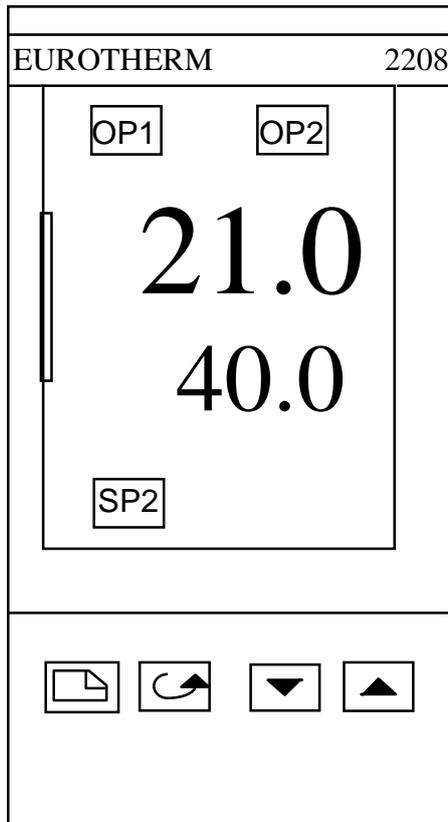
```
┌─────────────────────────┐
│ ┌─────────────────────┐ │
│ │ EUROTHERM      2208 │ │
│ │ ┌─────────────────┐ │ │
│ │ │ ┌───┐    ┌───┐   │ │ │
│ │ │ │OP1│    │OP2│   │ │ │
│ │ │ └───┘    └───┘   │ │ │
│ │▐│      21.0       │▌│ │
│ │ │                 │ │ │
│ │ │      40.0       │ │ │
│ │ │                 │ │ │
│ │ │ ┌───┐           │ │ │
│ │ │ │SP2│           │ │ │
│ │ │ └───┘           │ │ │
│ │ └─────────────────┘ │ │
│ └─────────────────────┘ │
│ ┌─────────────────────┐ │
│ │ ┌──┐ ┌──┐ ┌──┐ ┌──┐ │ │
│ │ │  │ │  │ │▼ │ │▲ │ │ │
│ │ └──┘ └──┘ └──┘ └──┘ │ │
│ └─────────────────────┘ │
└─────────────────────────┘
```

OP1: Output light 1 running
  OP2: Output light 2 running
  SP2: Set point light 2 running
      (option)
 RUN: Ramp light running
 HOLD: Waiting program light
 ⬜ : Function key Page
 ↻ : Function key Continuous play
 ▼ : Function key Decreasing
▲ : Function key Increasing

When the power is switched on, the controller display will light up.

Example :

```
│ 21.0
│
│ 40.0
```

" 21.0 "   *Measured humidity*
" 40.0 "   *Set point humidity*

10

The light " OP 1 " is lit when the controller is asking for the vapour.

The light " OP 2 " is lit when the controller is asking for the catching of the vapour.

The key ⬚ is not used on this model.

The key ↻ allow the regulator parameters to be viewed by the user in order to modify them.

The keys △ and ▽ are used to modify the value of the parameters.
They can be used as single touch, or continuous pressure mode. Continuous pressure will speed up the rate of change.

A the first pressure on ↻ the display will show the actual power at the exit.

At the second pressure on ↻ the display will show the alarm parameters.

Changing the set point

Press on △ or ▽ to change the set point.

(from 10 % RH to 90 % RH)

No validation is necessary.

Setting the alarm

The alarm is a ' high-following ' alarm on this model

That means that a **maximum humidity gap** is admissible, regarding the set point, for any value of the set point

If the actual humidity exceeds this gap , the alarm operates with the following effects :

- The error message "1DHI" will flash together with the set point

-The RH sytem is totally cut-out until the humidity returns to a correct level

On this apparatus , the high alarm is factory-set at **3 % RH** above the set point.

To regulate it manually, press twice successively on ⟨↰⟩ and the alarm parameters will show on the display (1DHI).

Adjust the value by pressing on ⟨△⟩ and ⟨▽⟩ , be careful do not never key in a value inferior at 1, if you enter the value 0, the starting humidity will be the same as the set point one. It can disturb the control.

3- Cleaning the nebulizer tank

The stainless steel nebulizer tank must be cleant annually, to ensure that the generator produces a good output of vapour.

Proceed as follows:

Before any intervention cutt off the electrical power supply

1) Remove the perforated cover at the rear, base of the cabinet.

2) Drain the nebuliser tank using the drain tap on the distilled water reservoir.

3) Removal of the tank:
   Lift out the tank, which is held by two clips, one at the front and one at the rear.

4) Clean the tank with a non-corrosive product which will not damage the piezo electric, vapour generator cell.

5) Replace the tank.

6) Close the drain tap.

7) Replace the rear panel.

8) Wait 15 minutes, necessary time of tank loading
   The cabinet is now ready to operate again.

ISOLATION
LAINE DE VERRE

RESISTANCE
CHAUFFANTE

BATTERIE
FROID

BP
FU1 FU2

PIEgE
HR EN
OPTION

EVACUATION
DES EAUX USAgEES

BAC NEBULISEUR

ROBINET DE VIDAN.

P1

RESERVOIR D EAU
DEMINERALISEE

| Indice | Date | Nom | Modification | | | ENCEINTE SP | Dessiné | | P76 | | | Vor PO. |
| --- | --- | --- | --- | --- | --- | VUE ARRIERE | Date | | | | | |

14
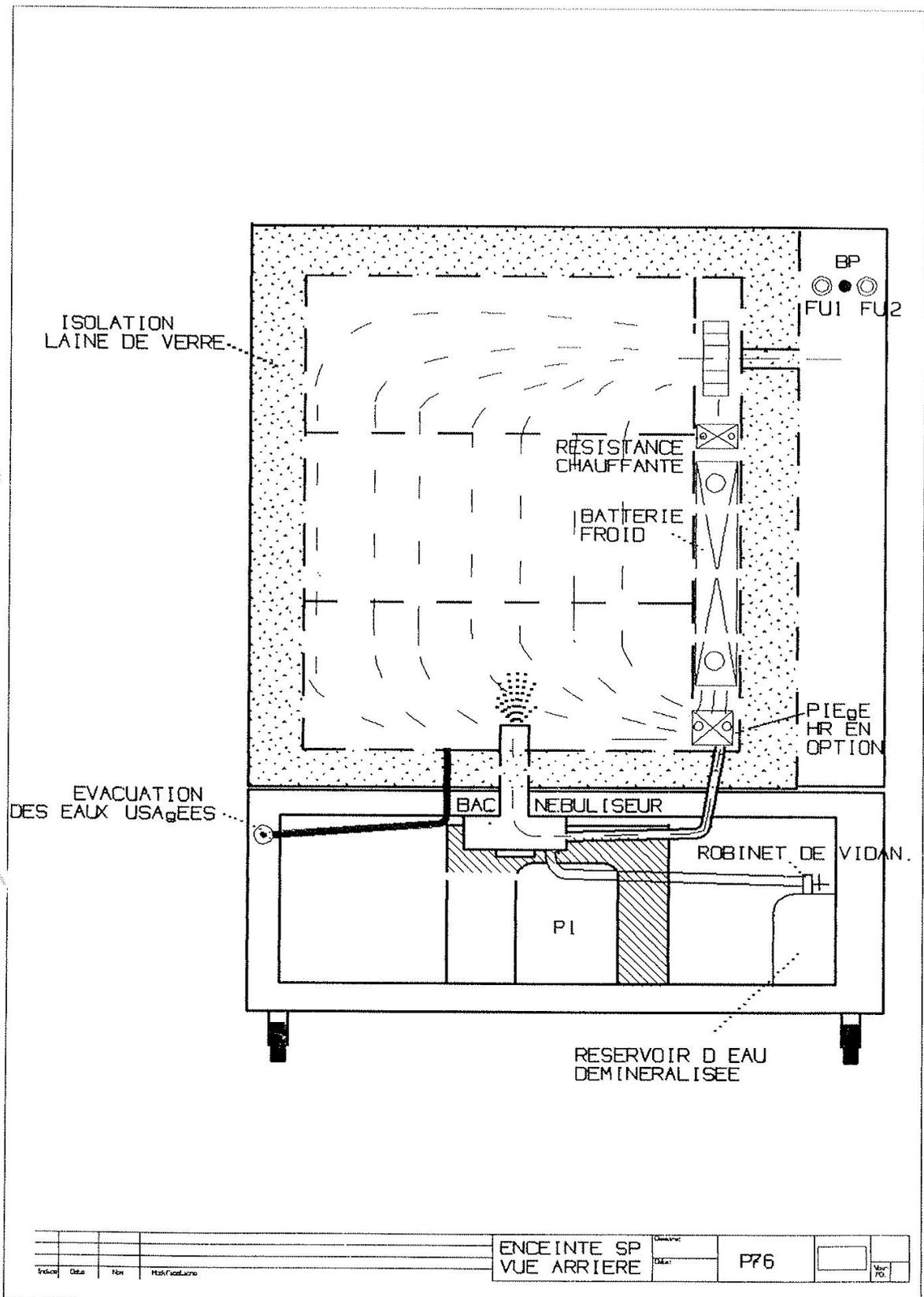
WIRING DIAGRAMS
AND
SPARES LIST

Climatic Cabinets, model SP, type BVEHF 90 to 540 litres
Programmable controllers 2208 for T$^\bullet$ And RH
Spares : Warm/Cold

REFERENCE	ITEM	LOCATION ON DIAGRAM
ELECOMP000106	Eurotherm Controller 2208	REg1
THEMESU000077	PT 100 Ω Probe	S1
ELEELEC000041	Mains switch	Ig1
THEREG2000105	Safety Thermostat	THS1
ELEREL4137121	Static Relay	RS1-RS2
ELEELEC000057	Safety Relay	KM1
ELEPROT000027	Fuse, Temperature circuit	FU1
THEVE NT000040	Fan	MV1-MV2
ELEPASS000004	Condenser dephasing for MV	C1-C2
THEELEM000025	Heaters x 4 300 w for door	R2
MECFER2000030	Doorlock	
THEELEM000004	Model SP90 Heater 500 w	R1
THEELEM000007	Model SP260 2 Heaters 500 w	R1
THEELEM000008	Model SP540 2 Heaters 750 w	R1

Climatic Cabinets, model SP, type BVEHF 90 to 540 litres
Programmable controllers 2208 for T[•] And RH
Spares : Relative Humidity

Climatic Cabinets, model SP, type BVEHF 90 to 540 litres
Programmable controllers 2208 for T[•] And RH
Spares : Relative Humidity

REFERENCE	ITEM	LOCATION ON DIAGRAM
ELEELEC000041	Main Switch RH System	Ig2
ELEPROT000026	Fusible circuit HR	FU2
ELECOMP000106	Eurotherm Controller 2208	REg2
ELEENER000006	30 V supply for SHR	ALM1
ELEELEC000073	Fill in Relay (FINDER 1 contact)	KM2
ELECOMP000143	RH probe	SHR1
ELEENER000051	Pump transformer 220 / 2 X 25 V	TR1
ELEELEC0000115	Vaporiser Cell	VAP1
THEACC3000016	Level switch nebuliser bath	N1 / N2

Climatic Cabinets, model SP, type BVEHF 90 to 540 litres
Programmable controllers 2208 for T$^\bullet$ And RH
Spares : Cold installation

REFERENCE	ITEM	LOCATION ON DIAGRAM
THEGROU000074	Fridge unit for SP 260	GP1
THEGROU000065	Fridge unit for SP 540, 1000	GP1
THEGROU000073	Fridge unit for SP 90	GP1
THEREG2000084	Pressurestat	PBP1
THEREG2000233	Gateswitch	EV1 / EV2
THEREG2000011	Buzzer	
THECUI10000	Capillary for pressurestat	

| 1 | IG 1 | 3 | FU 1 | 5 | 5 | | | | 5 | | 5 | | 5 | | 5 |

T

5
THS1
7

7

5
KM 1

9

9 9 6

3	4
RS 1	
2	1

9 11

R 2

R 1 4

4A	HA	L
1A	HA	L
1B	HB	N
1C	HC	T
1D	HD	LA
2A	HE	LB
2B	HF	LC
2C	JA	AA
2D	JB	AB
3A	JC	AC
3B	JD	V1
3C	JE	V+
3D	JF	V-

REG 1

S1

5
23 PB P1

MV 1   C 2

5
5 24 23

3		4
RS 2		
2		1

5 25 4

GP 1

EVF 1

N

4   4   4   4   4

2
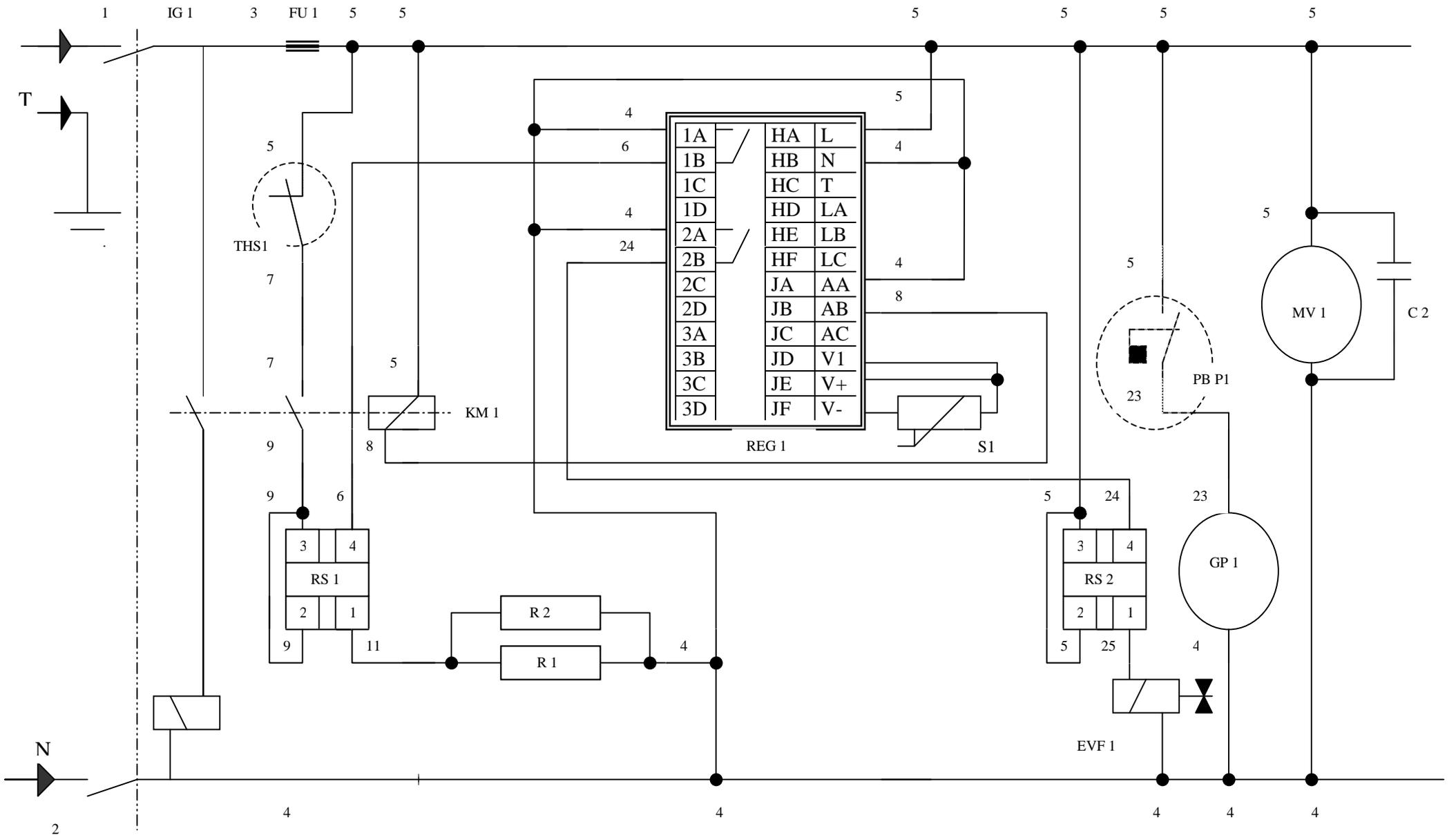
| | CHAUD FROID | SP BVEHF | P 462 | JNP |
| | REGULATEUR 2208 / 2408 / SECHEUR | 90 540 LITRES | 17.09.09 | |

GP1

CONDENSEUR

BO1

DH1

PBP1

OPTION

PIEGE HR

EV2   DA1

EVAPORATEUR

EV1   DT1
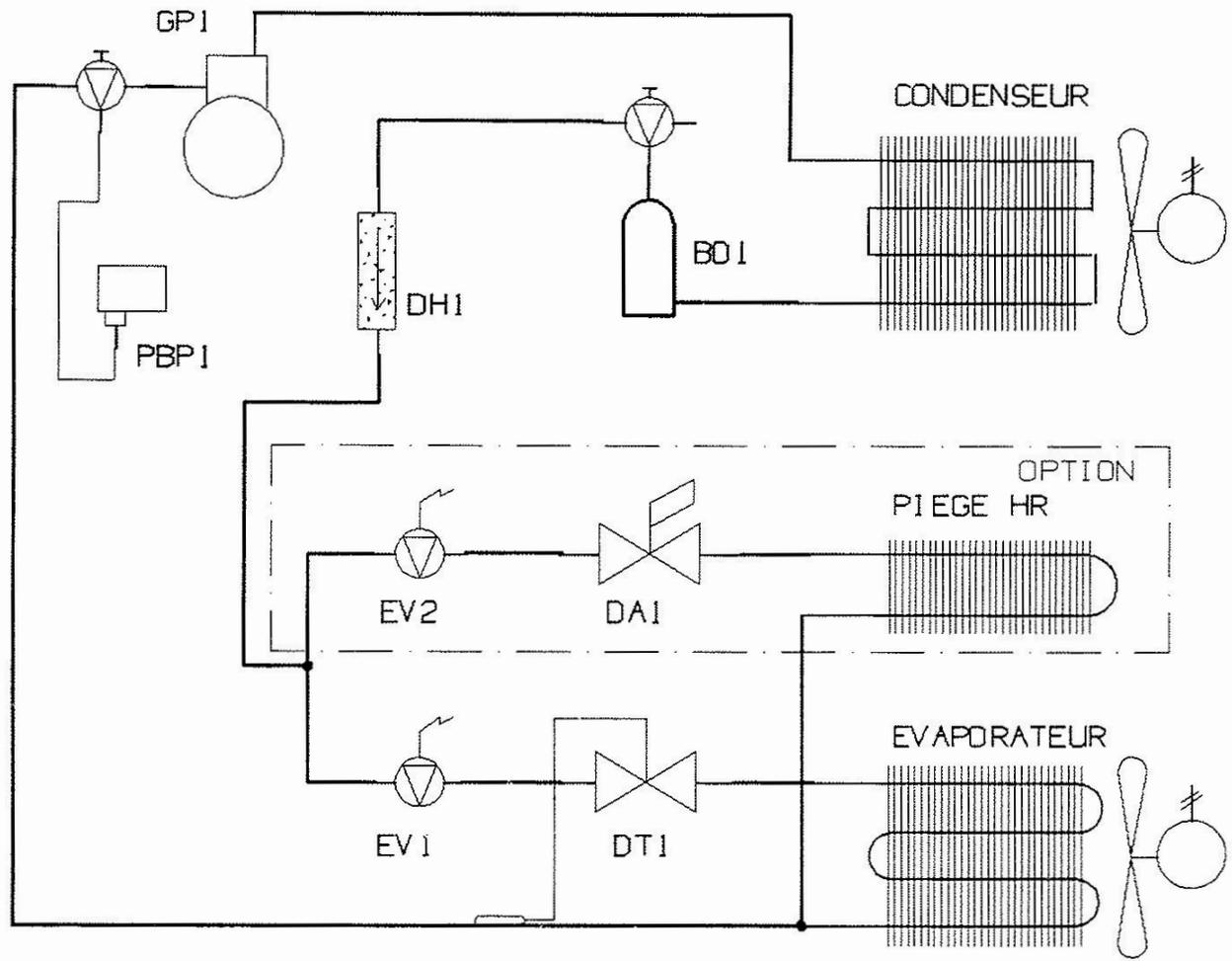
GAZ : R134 a

MODELE:	SP 90	SP160	SP260	SP360	SP540
POIDS:	325 GR	350 GR	450 GR	500 GR	605 GR

			AVEC OPTION PIEGE HR	CIRCUIT FROID	Dessiné:			
				MODELE SP DE			P118	
Indice	Date	Nom	Modifications	90 A 540 LITRES	Date: 01/94			Voir FG.

IG2

1   13   15   **REG 2**   15   15   15

FUS 2

T

1A	HA	L
1B	HB	N
1 C	HC	T
1 D	HD	LA
2A	HE	LB
2B	HF	LC
2 C	J A	AA
2 D	JB	AB
3 A	JC	AC
3 B	JD	V1
3 C	JE	V+
3 D	JF	V-

030   15

32

10   10

TR1

48 V

291

030

291

240

240

VAP

VAP 1   33

33

15

10

3	4
RS3	
2	1

15   47

N1 S   **N2 C**   15   **P1**

017   015   45

HR

18

KM4

35   **EV 2**   **KM4**   **KM 3**

ALIM

220v

15

10

20

18

+

30v =

-

ALIM 1

GND

OUT 1

K2

-

V+

K1

SHR1 HF 535

10   10   10   10   10   10

CIRCUIT HUMIDITE **HF 535**	**SP BVEHF**	P 601	**NB 59 S**
ALIMENTATION EAU MANUEL	**90 A 540 LITRES**	DATE 18.09.2011	
SECHEUR			