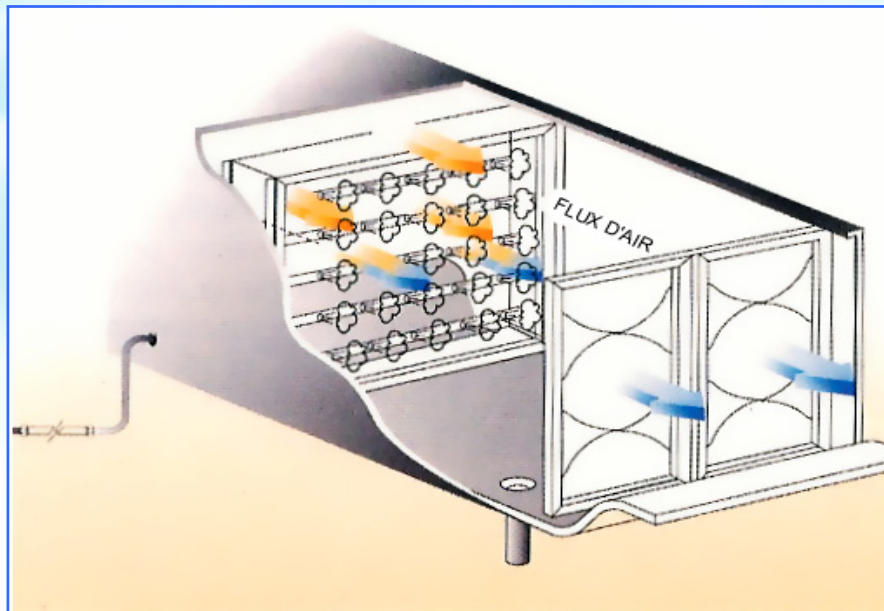


# *Fog*System

## WATER ATOMIZER SYSTEM



HUMIDIFICATION - COOLING

**IN A.H.U**



# ***FogSystem***

## ***BUS Nozzle in A.H.U.***

### ***Contents***

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# ***FogSystem***

## ***BUS Nozzles in A.H.U.***

***Basic composition***



**Bar length on request**



**Manifold**



**Regulation cabinet**

### ***Optional component parts***



**Flexible connecting hose  
1m long 1/2" FF (blue & grey)**



**Water filter  
NW18 25 $\mu$  3/4"**



**Air filter  
3/4"**



**UV Sterilizer  
with 1 $\mu$  filter  
3/4" inlet**



**Hygromat**



**Proportional sensor**

# ***FogSystem***

## ***BUS Nozzles in A.H.U***

### ***Ultrasonic BUS Nozzles***

#### **DRY AIR ? HIGH TEMPERATURE ? LOW QUALITY ? MACHINERY STOPS ?...**

One solution, humidification by ***FogSystem***

The ***FogSystem*** enables to solve problems of hygrometry in the industries and services, at low installation and maintenance costs.

#### ***Functionning:***

The Ultrasonic nozzle BUS uses compressed air to eject water that splashes against an Ultrasonic resonator, atomising the jet of water.

Once broken down into particules, the fog is quickly absorbed by the air.

This nozzle can be used in any air flow (air handling units, air ducts, cold storage rooms, etc...)

In a cold storage room, the BUS nozzle is fixed on a bracket and located in the evaporator flow. The fog pattern must be in the air flow.



**The fog is so misty that it is fastly absorbed by the air**

# ***FogSystem***

## ***BUS Nozzles in A.H.U***

### ***The Legionnaires' disease***

The legionnaires' disease only occurs when there are still waters in pipes.

It is obvious that as soon as there is a demand in hygrometry on a **water compressed air ultrasonic humidifier**, the water is constantly renewed so there is no bacterium.

During the so called humidification period, the machines work without long stopping so there is no risk of bacterium in the water tank.

However, during a long stopping, there are risks (mid-season or summer time).

On the regulation cabinet is installed an automatic draining system which operates when the regulation or the system stops . All the pipes are drained out preventing the stagnation of water.

A **UV sterilizer** is installed at the manifold water inlet.

**So, there is no risk of the legionnaires' disease with our BUS compressed air system if the automatic draining is correctly connected and if the UV sterilizer option is set up.**

### ***Water qualities***



**Heavy WATER** : nozzle maintenance compulsory

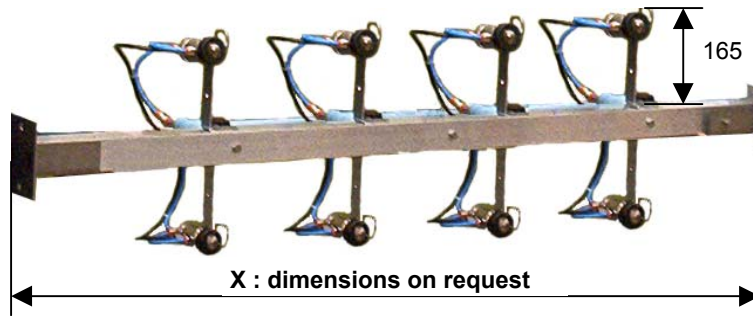
**Demineralized WATER** : nozzle maintenance not required

**Softened WATER** : we do not recommend the use of softened waters

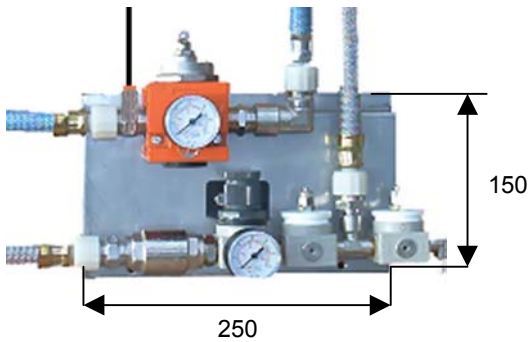
# FogSystem BUS Nozzle in A.H.U.

*Dimensions (mm)*

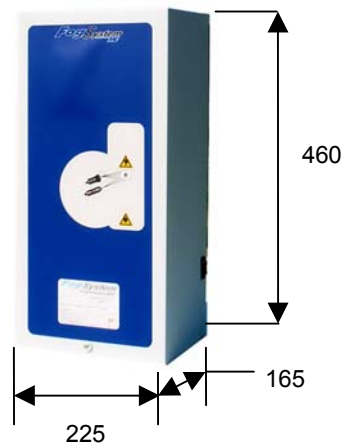
**BUS nozzle bar**



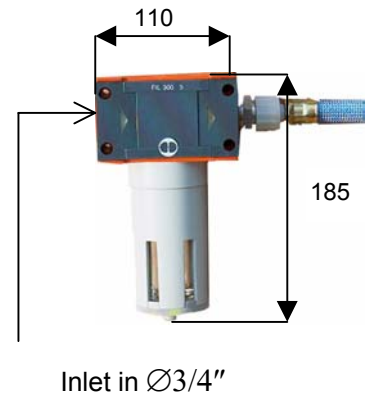
**Manifold**



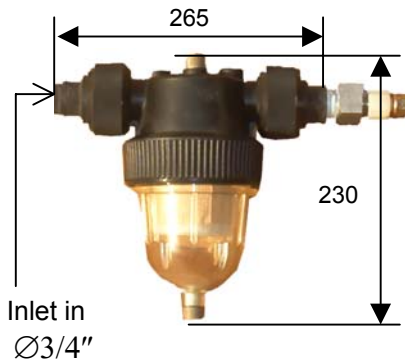
**Regulation cabinet**



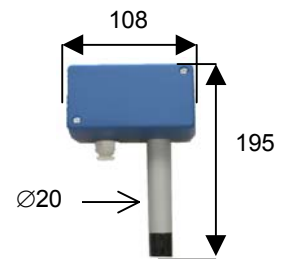
**Air filter**



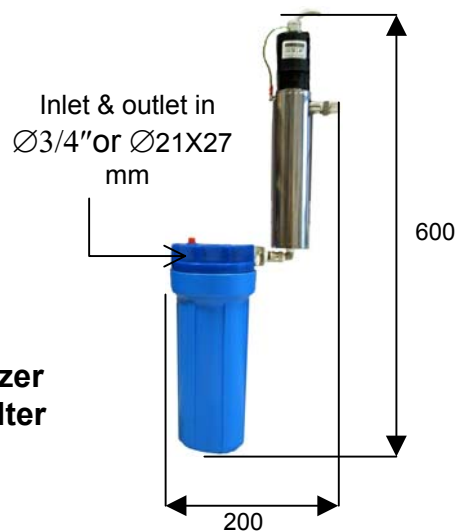
**Water filter**



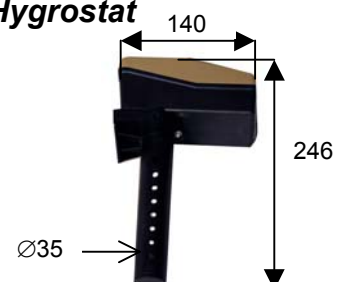
**Proportional sensor**



**UV sterilizer with 1µ filter**



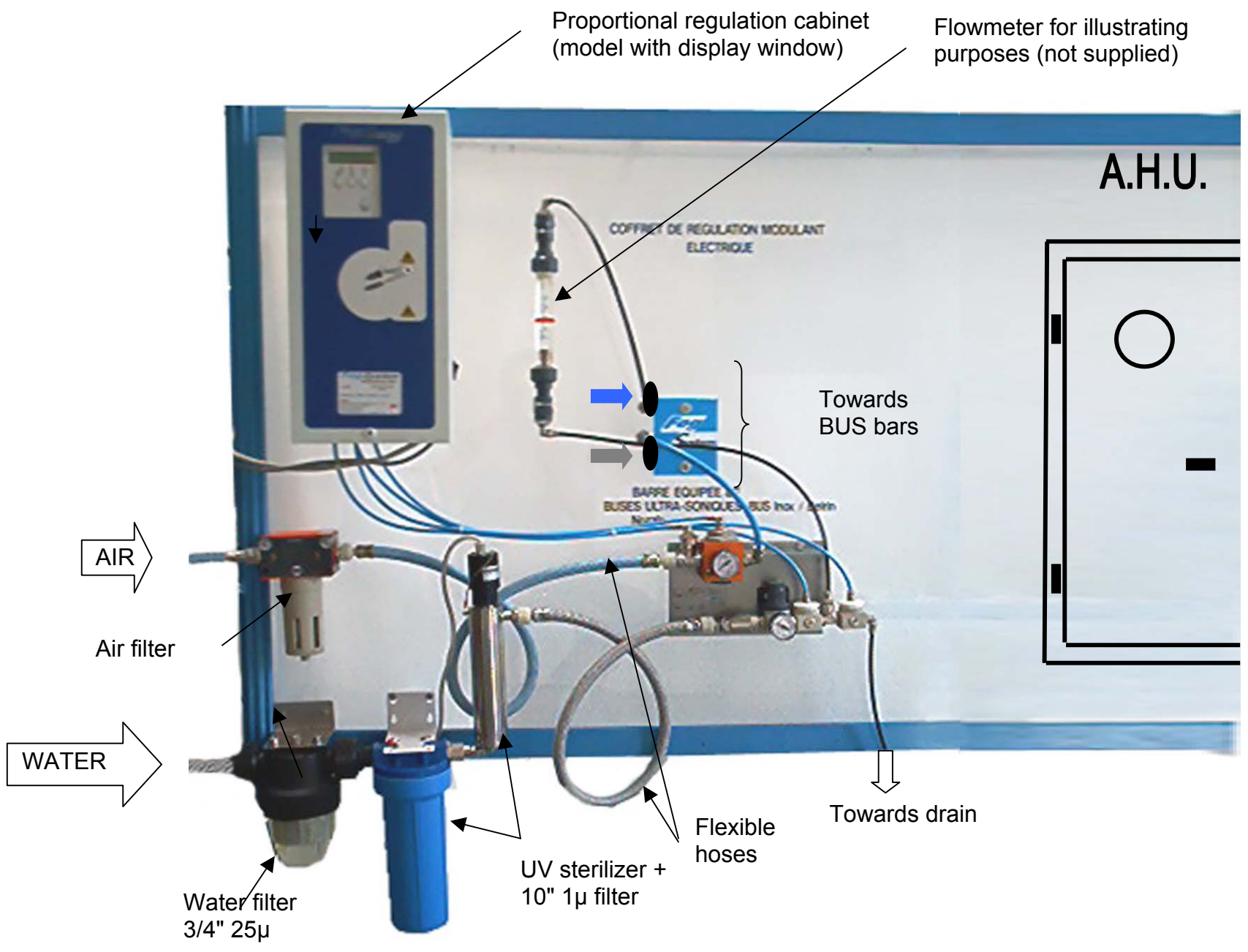
**Hygrostat**





# Fog System BUS Nozzle in A.H.U.

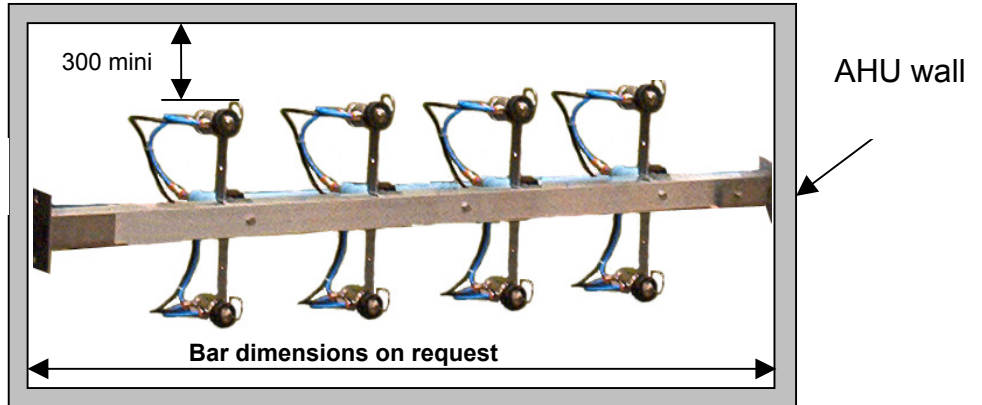
Example of installation



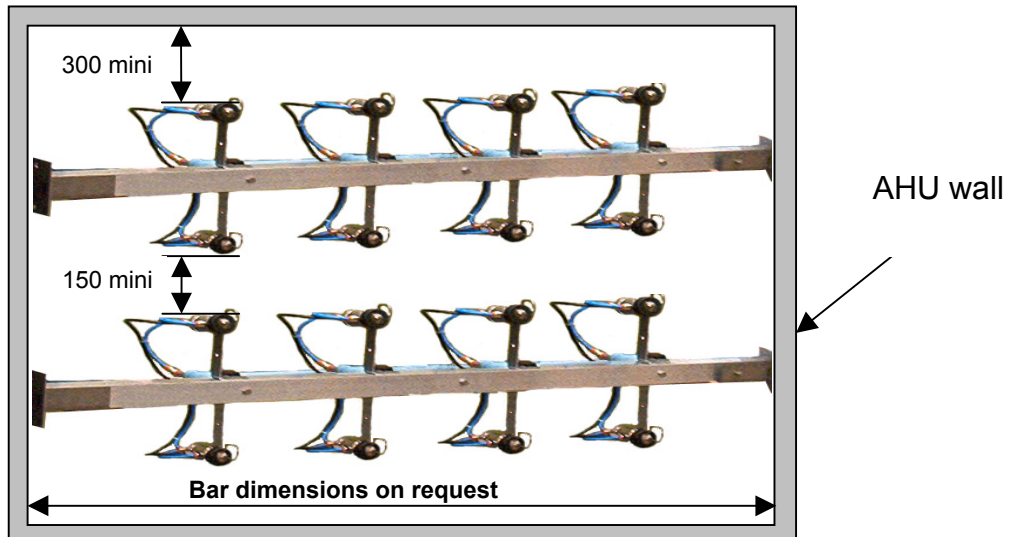
# FogSystem BUS Nozzle in A.H.U

*Example of installation in an AHU*

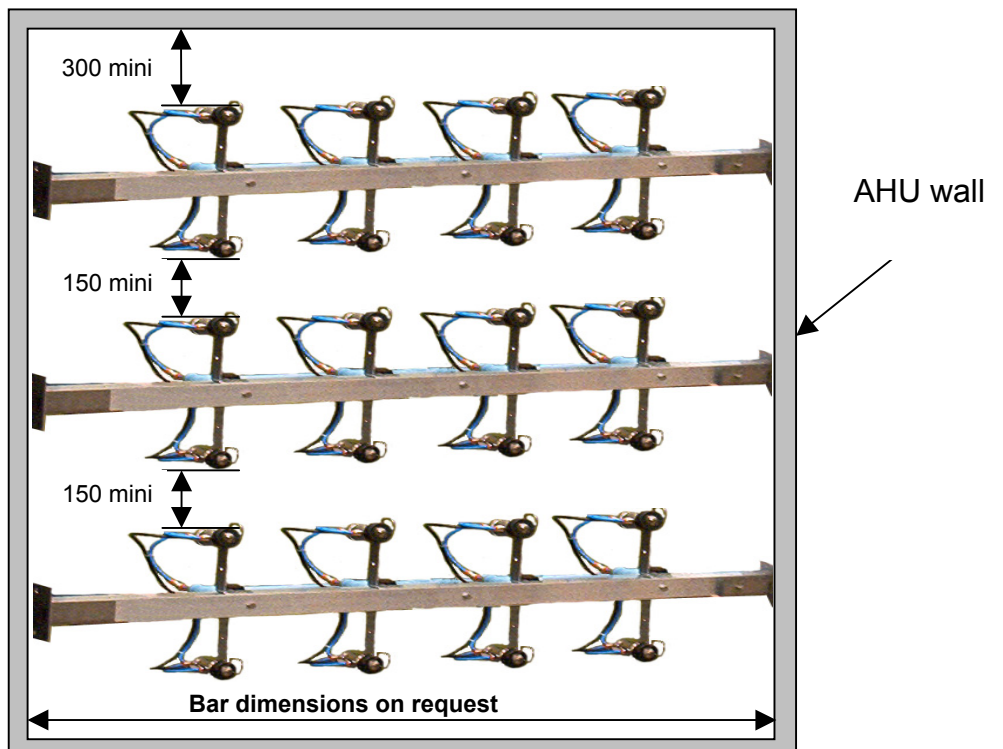
*Example for 1 bar*



*Example for 2 bars*



*Example for 3 bars*

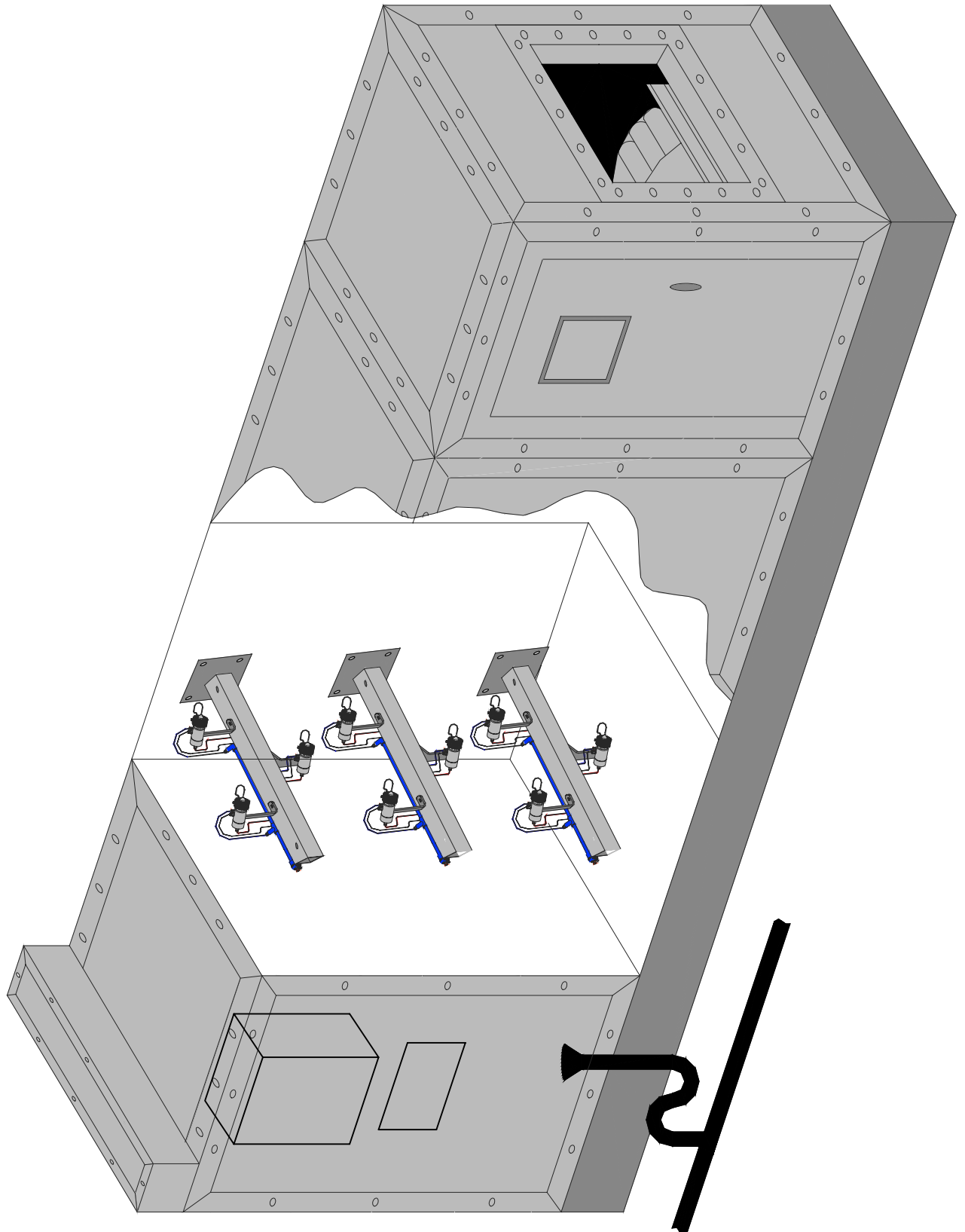




# ***FogSystem***

## ***BUS Nozzle in A.H.U***

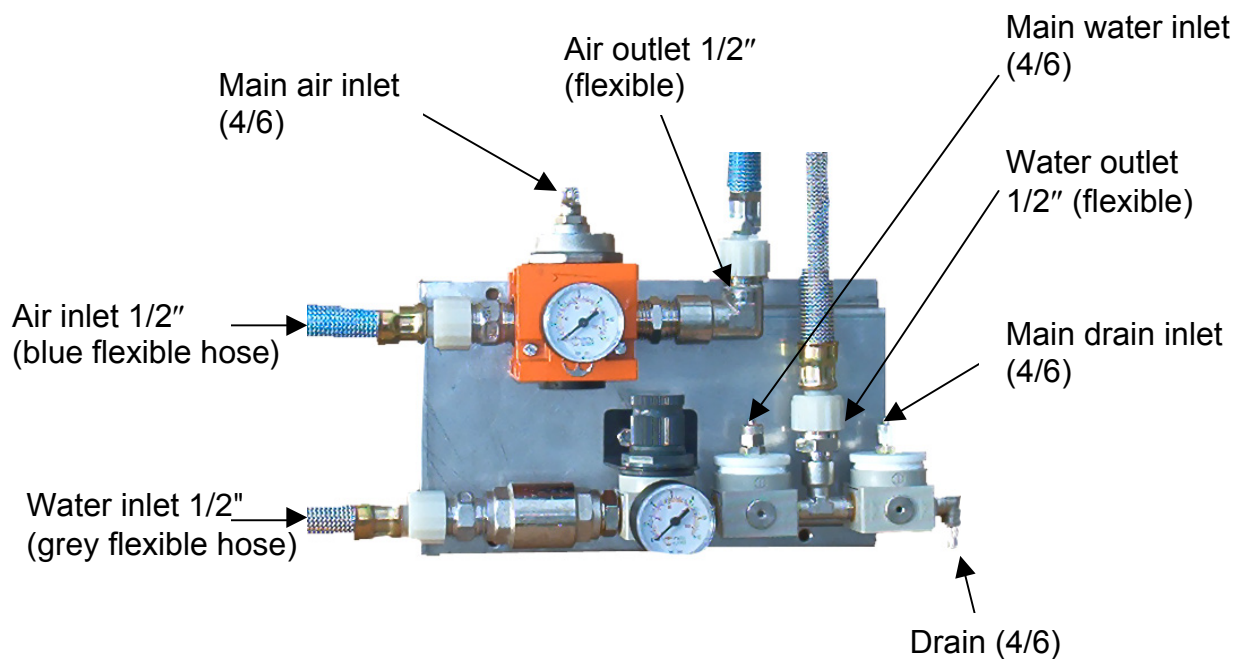
### ***Example of installation in a AHU***



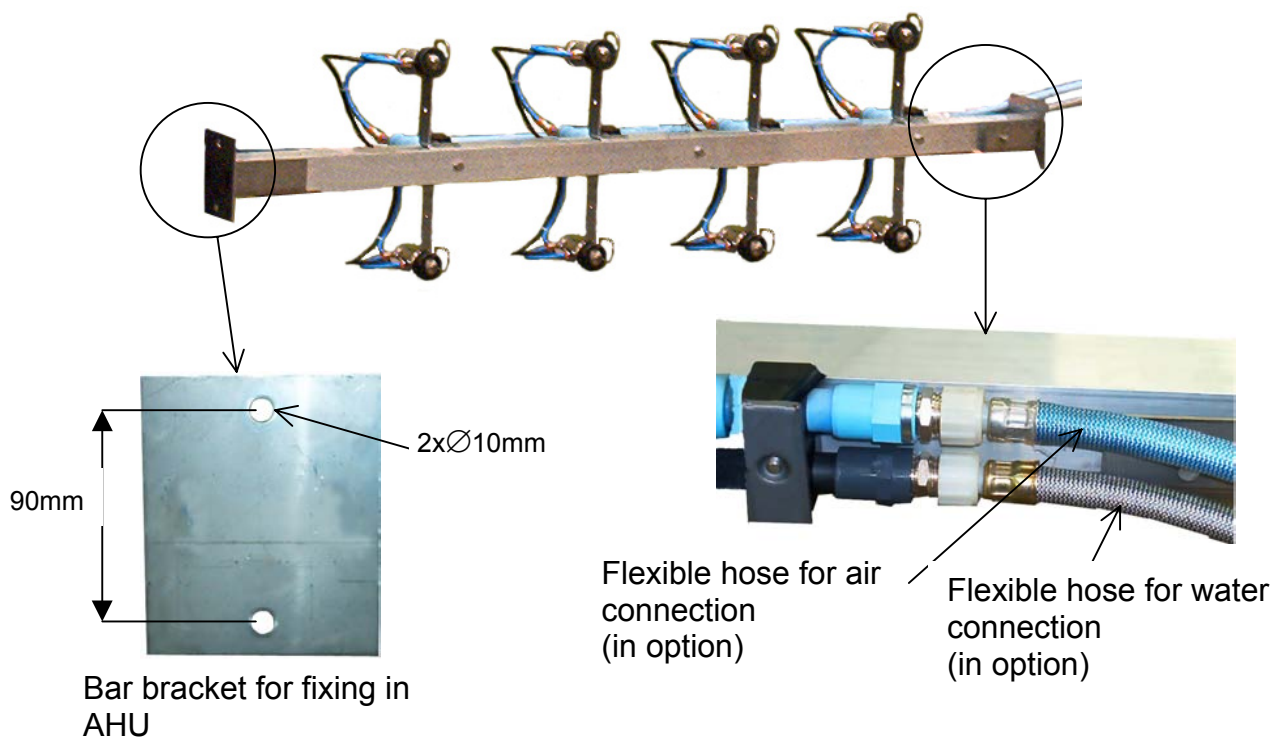
# FogSystem BUS Nozzle in AHU

## Components

### Manifold



### BUS bar :

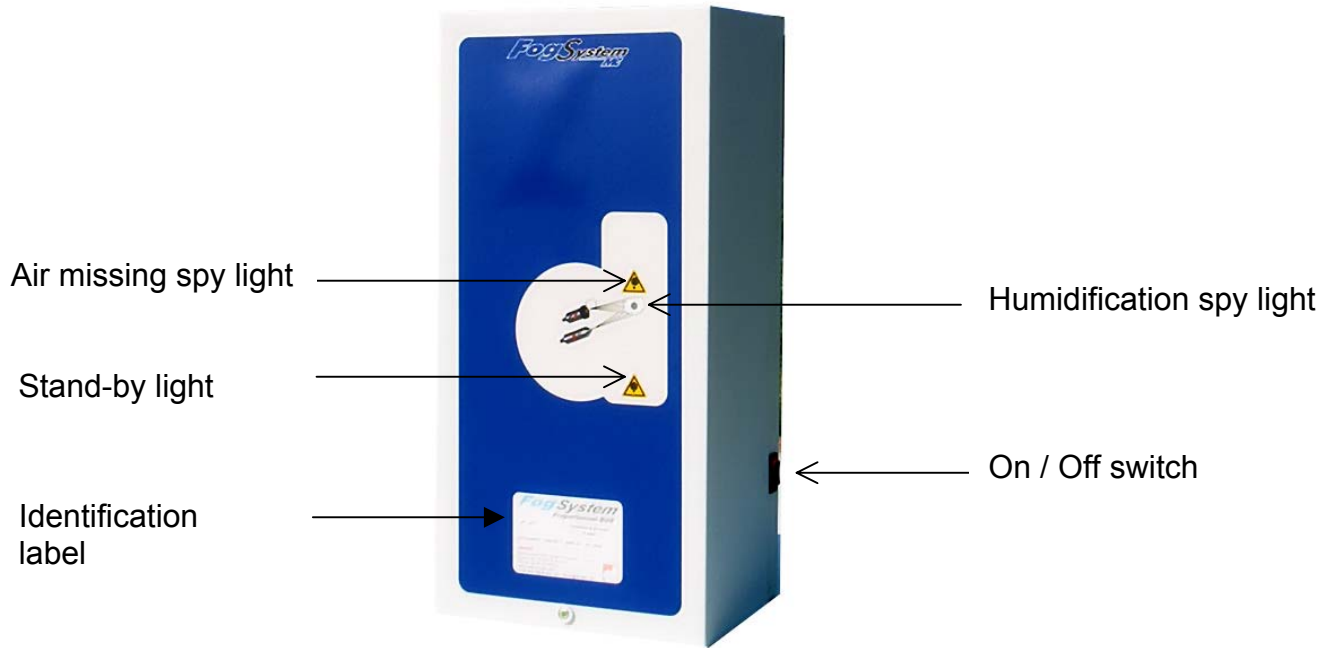


# ***FogSystem***

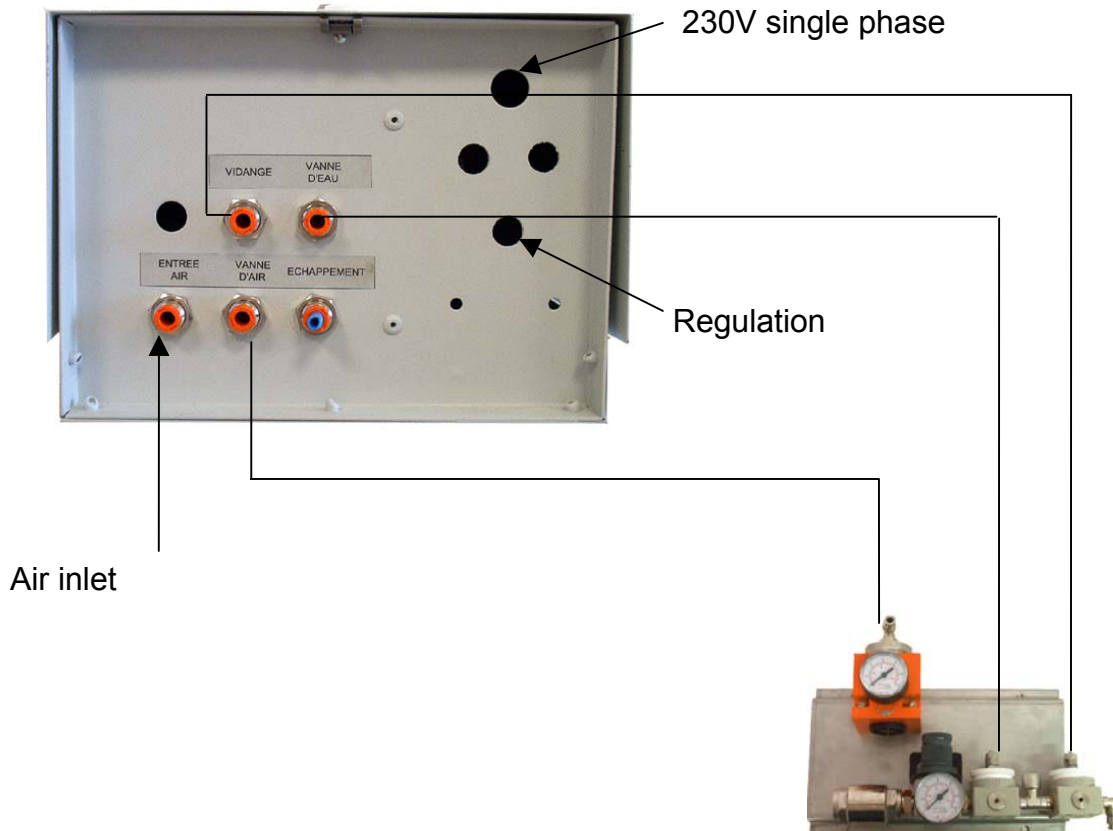
## ***BUS ultrasonic nozzle for A.H.U.***

### ***Proportional regulation cabinet***

**Identification :**



**Cabinet bottom view**

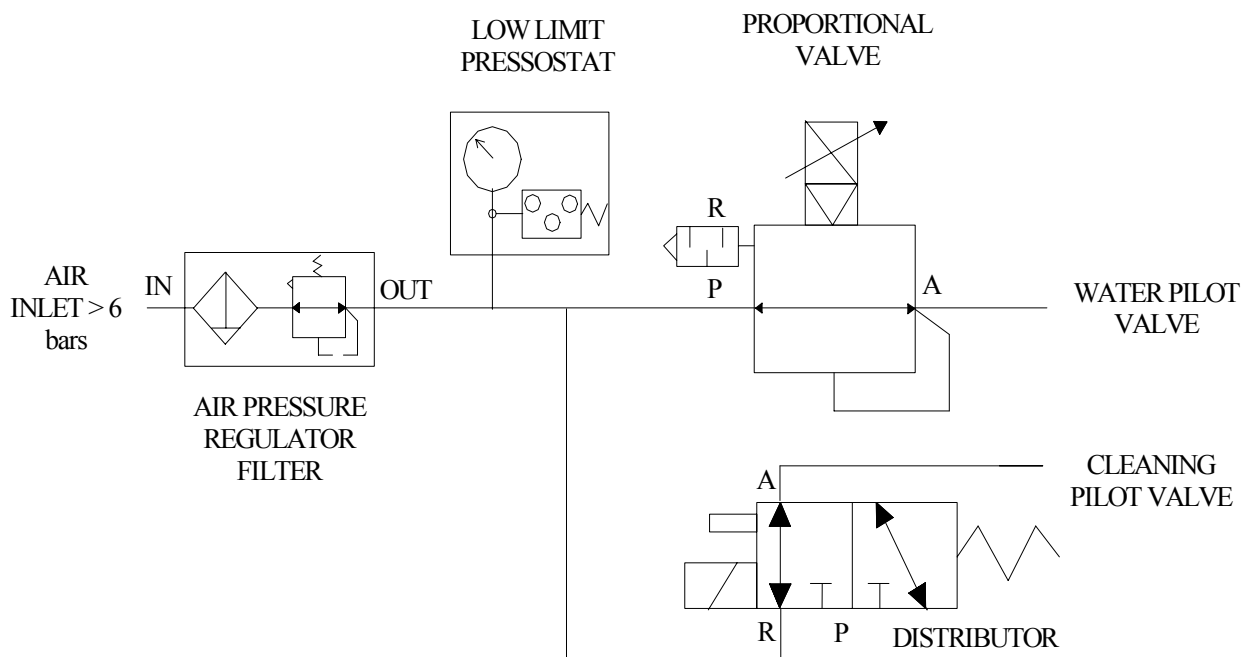


# ***FogSystem***

## ***BUS Nozzle in A.H.U.***

***Proportional regulation cabinet***

***Pneumatical scheme :***

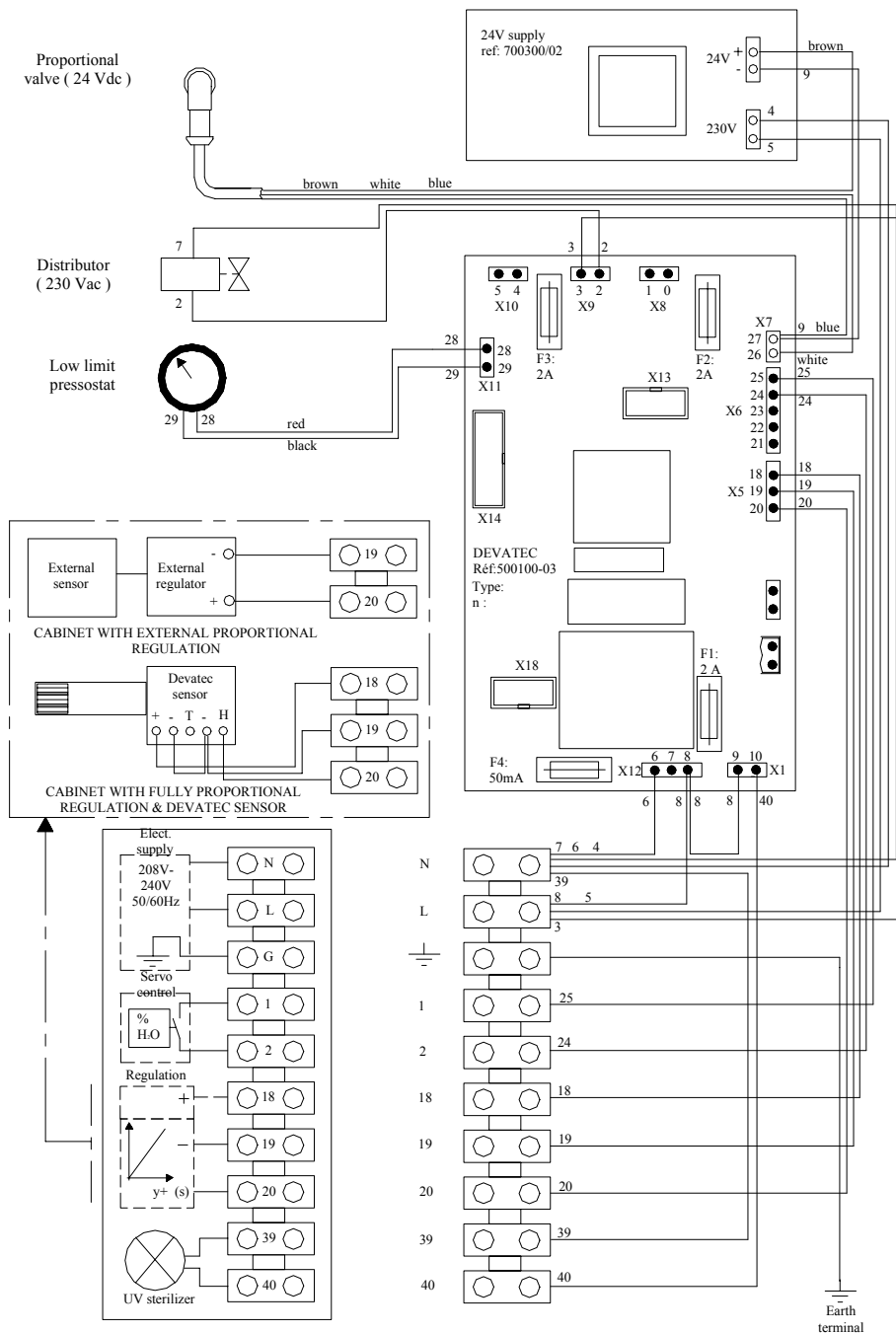


# FogSystem

## BUS Nozzle for A.H.U.

Proportional regulation cabinet

### Wiring scheme





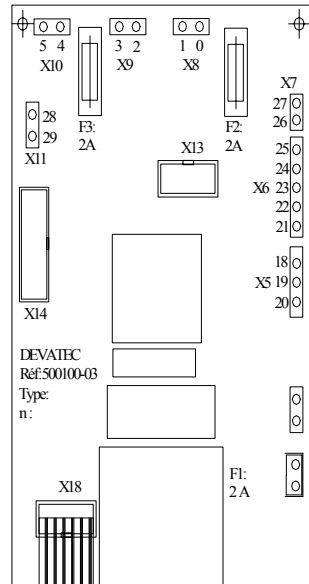
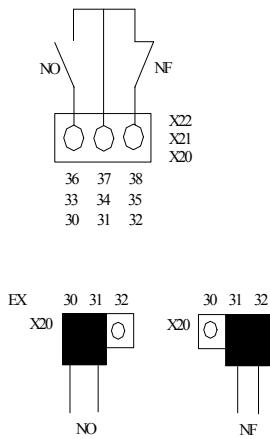
# FogSystem

## BUS Nozzle in A.H.U.

### Proportional regulation cabinet

Remote information board wiring scheme:

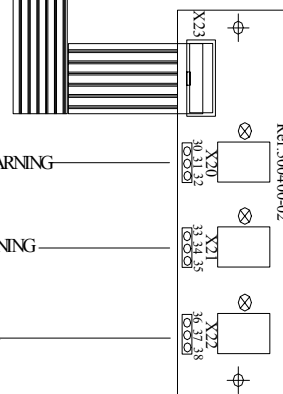
You can choose between a contact NO or NF depending of the contactor position



30 & 31 TERMINAL BLOCKS FOR REMOTE STEAM PRODUCTION WARNING

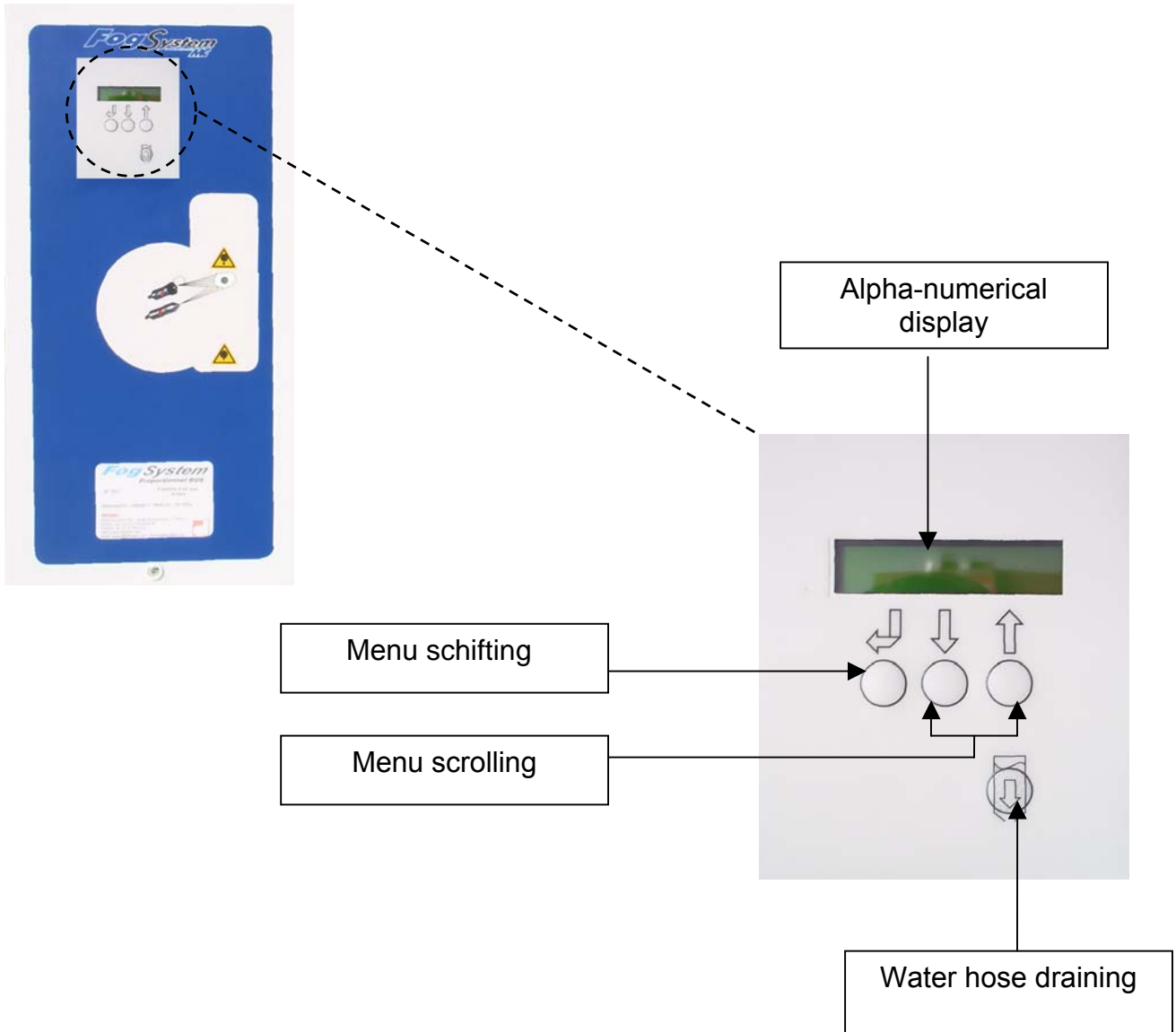
33 & 34 TERMINAL BLOCKS FOR CIRCUIT BREAKER REMOTE WARNING

36 & 37 TERMINAL BLOCKS FOR REMOTE STEAMPROD. WARNING



# ***FogSystem*** ***BUS Nozzle in A.H.U.***

***Model with display panel***



Alpha-numerical display enabling to parameter and providing information on the working of the regulation cabinet



***Never use solvent for cleaning the cabinet***

# ***FogSystem***

## ***BUS Nozzle in A.H.U.***

***Model with display panel***

***The display window shows the following menus :***

- **Humidifier status**

The "User information" menu provides information on the operating status of the unit. No parameters can be changed from within this menu.

- **Humidification configuration**

The humidifier configuration menu provides information only regarding the unit set up. No parameters can be changed from within this menu.

- **Changing unit configuration**

The "Changing Parameter System" menu allows the modification and adjustment of the operating pre-set parameters. The level 1 access code is required to gain entry.

***Alert and warning systems :***



LOW AIR  
PRESSURE P1

This alert is shown on the display and a red lamp is lighted on the front panel of the regulation cabinet.  
***Only the red lamp is activated on the proportional regulation cabinet in case the latter is used only.***

**Possible causes :**

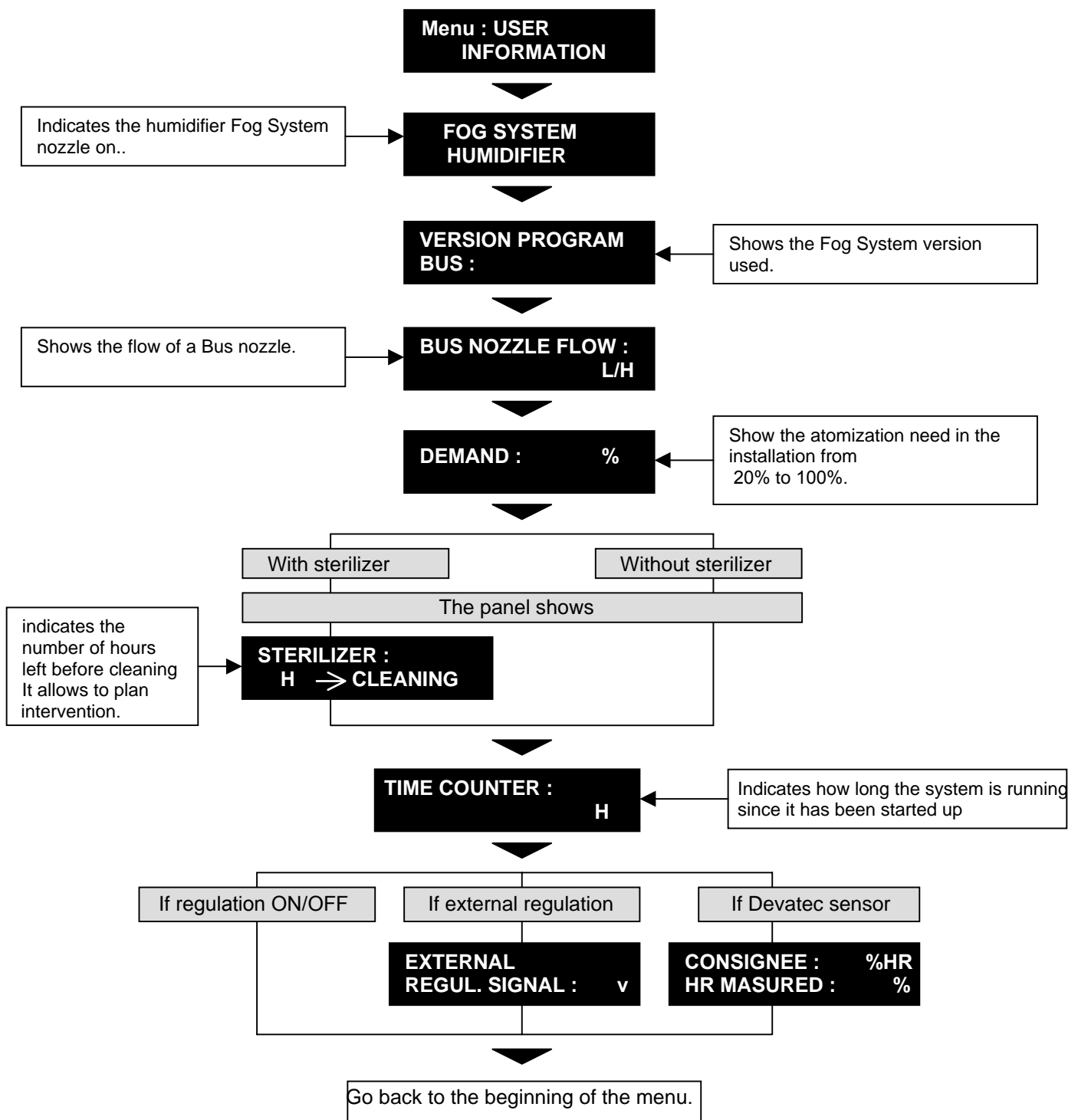
- The inlet air pressure may be lower than 2.5 bar. Don't exceed 4 bar max. in adjustment
- The pressure gauge filter may be choked
- The air supply may be cut off
- The air compressor may be faulty

# FogSystem

## BUS nozzle in AHU

### User information menu

Caution : to scroll the menu **↑↓**, press ? key once **↩** to change menu

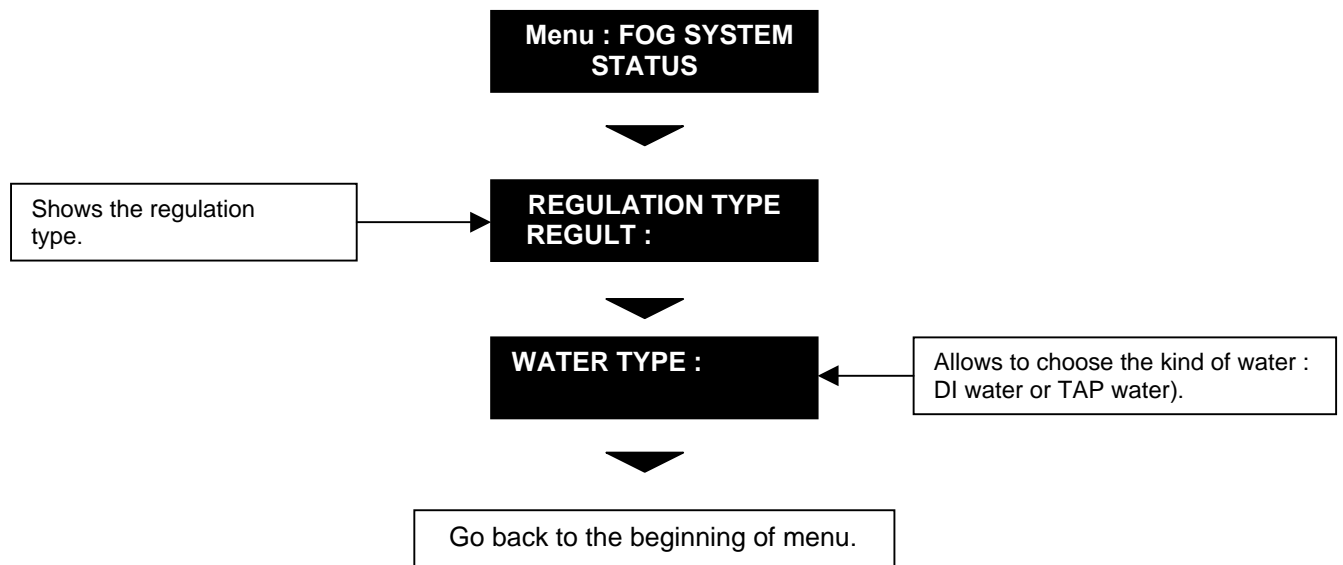


# ***FogSystem***

## ***BUS nozzle in AHU***

### ***HUMIDIFIER STATUS MENU***

Caution : to scroll the menu **↑↓**, press ? key once **↵** to change menu



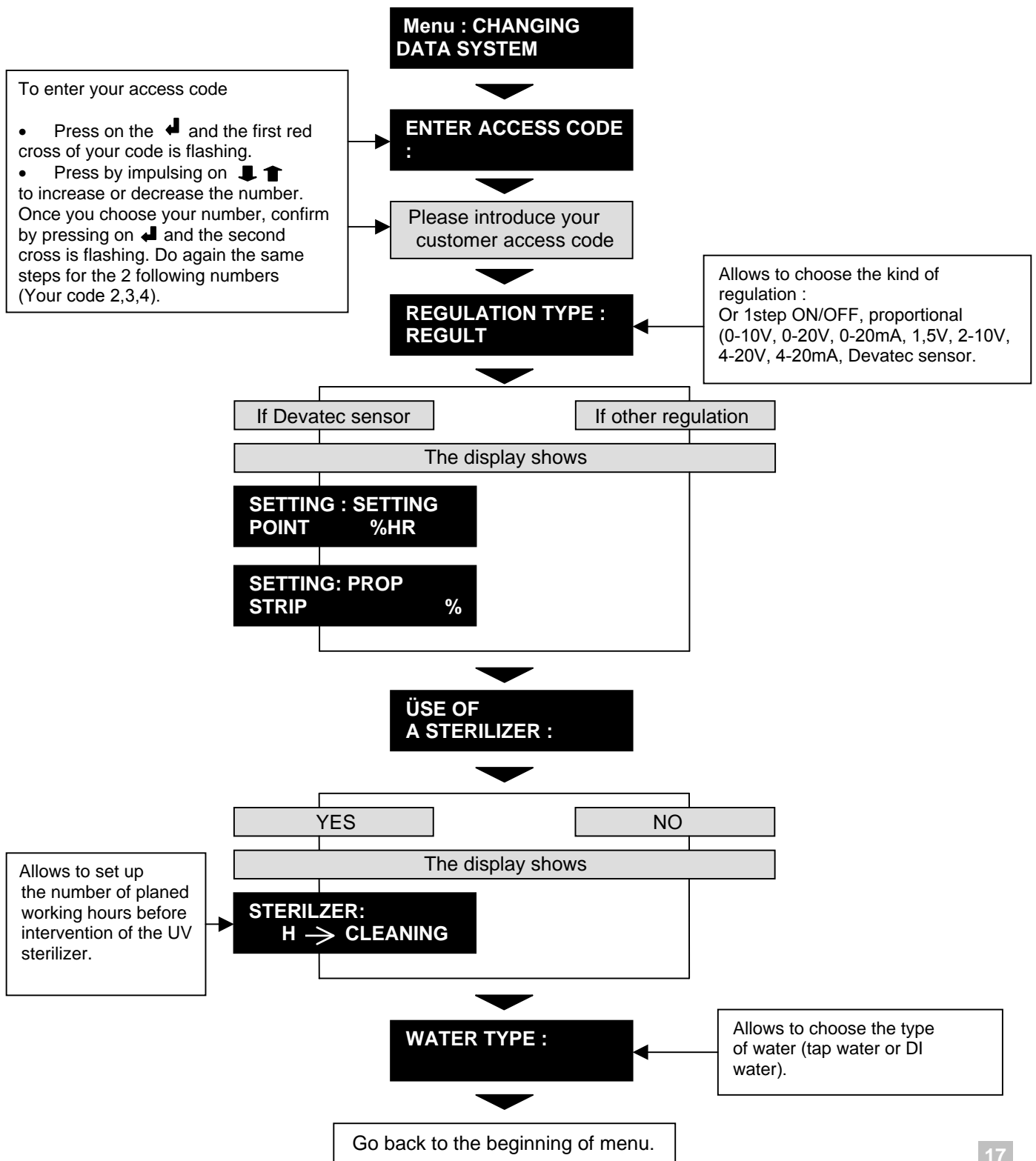


# FogSystem

## BUS nozzle in AHU

### Changing data menu (customer)

Caution : to scroll the menu pressing **↓↑**, an impulse at any time on **↵** allows you to change menu.

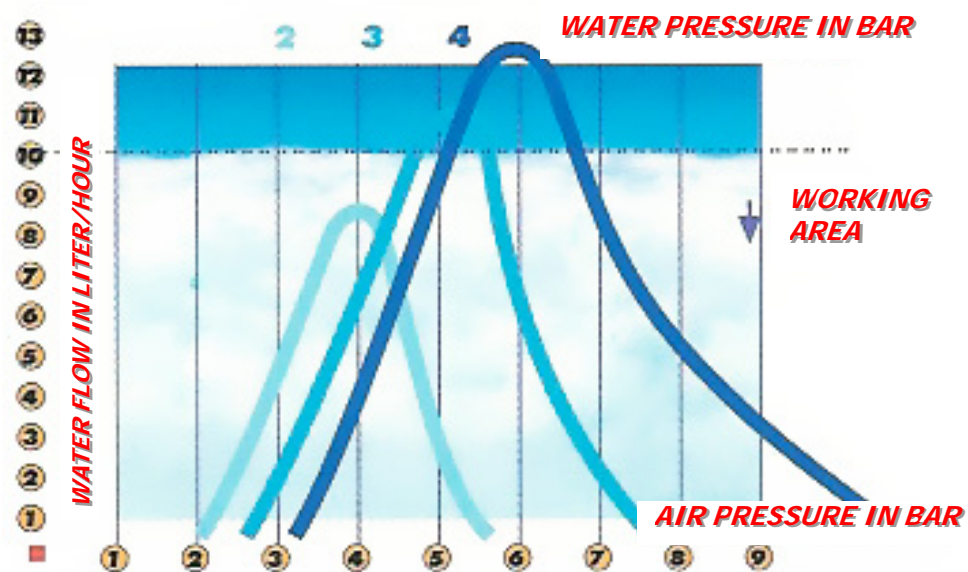


# FogSystem

## BUS Nozzle in A.H.U

### Consumptions

Atomisation curve :



Compressed air consumption per nozzle

Air pressure (in bar)	Water pressure (in bar)				
	1 (b)	2 (b)	3 (b)	4 (b)	5(b)
2 (b)	68 L/min 4,08 m3/h				
3 (b)		78 L/min 4,68 m3/h			
4 (b)			80 L/min 4,80 m3/h		
5 (b)				88 L/min 5,25 m3/h	
6 (b)					98 L/min 5,88 m3/h



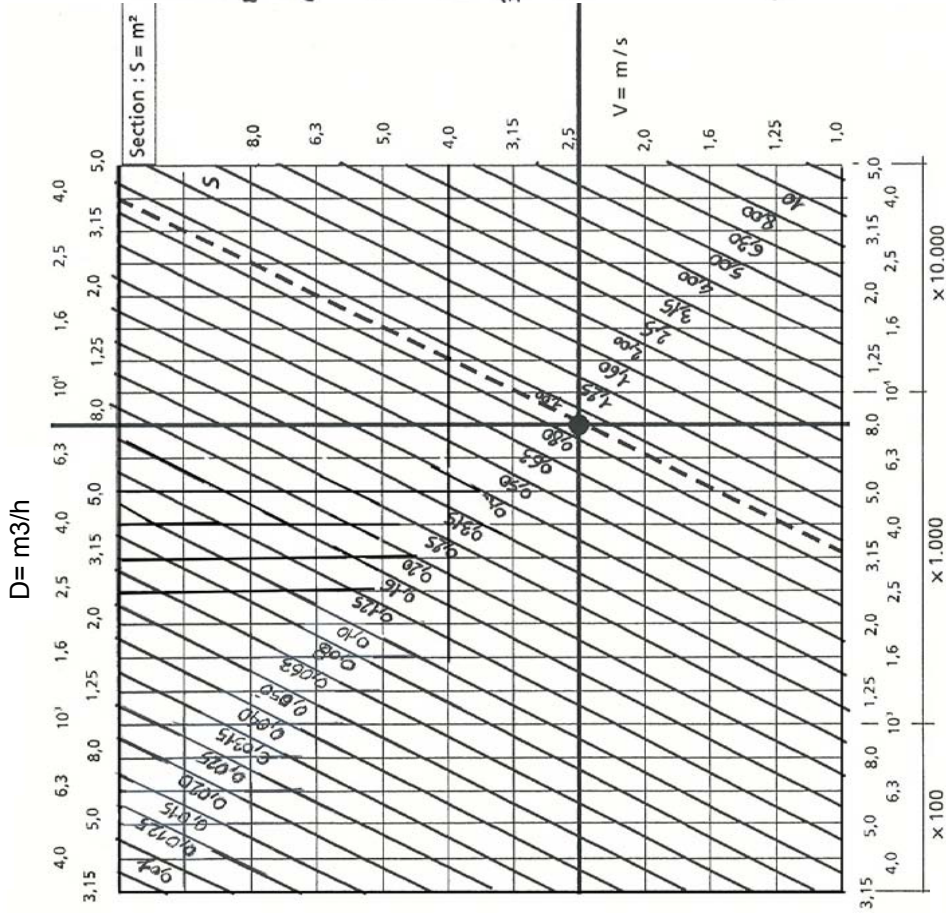
**Air pressure must be 1 bar higher than water pressure**

# FogSystem

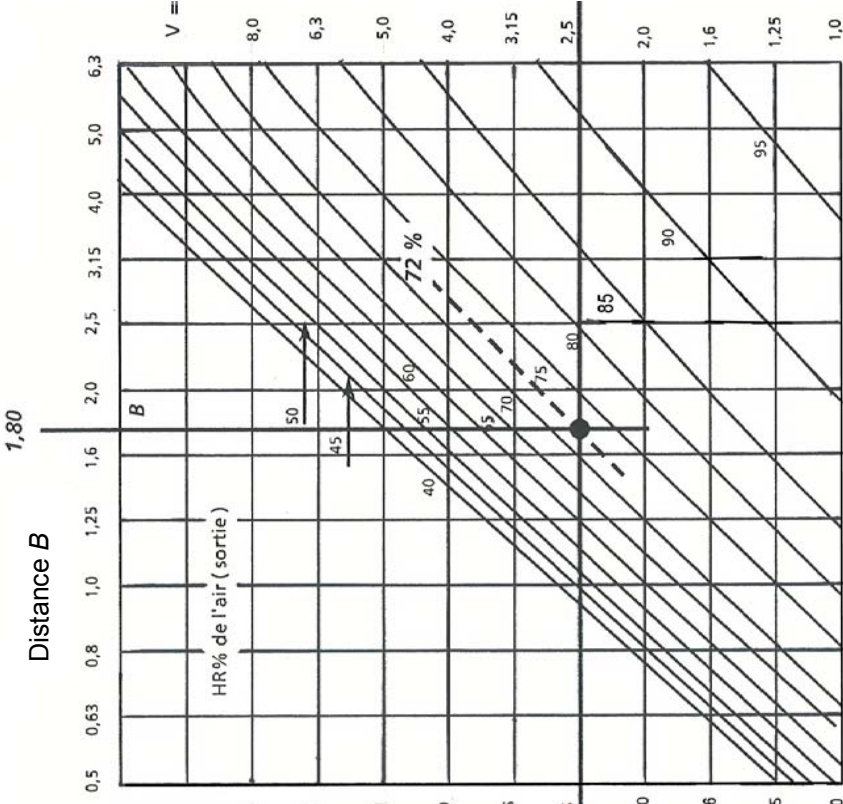
## BUS Nozzle in A-H-U

### Absorption distance

Part 1



Part 2



- Draw a vertical line at the air flow value.
- At the point where the air flow line meets the section value, draw an horizontal line upto drawing part 2. The figure shows the airspeed in m/s.
- On drawing part 2 , at the meeting point between the horizontal line and the selected humidity line, draw a vertical line. The figure shows the absorption distance  $B$

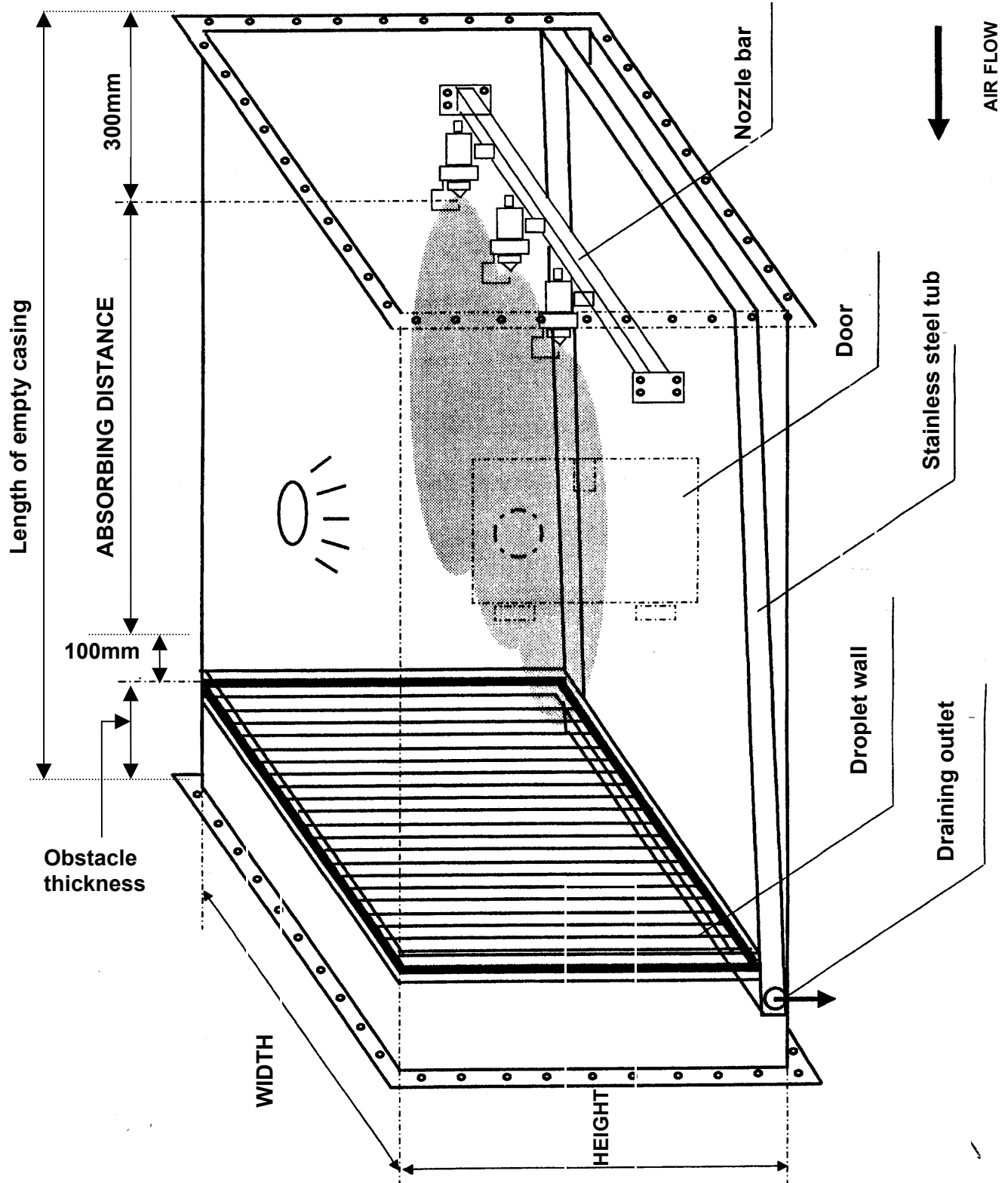
**Symbol description :**

- D= Air flow
  - V= Air speed
  - B= Absorption range
- EXAMPLE :** Speed = 2,5m/s, HR= 72%, Distance  $B = 1,80$  meter

# FogSystem

## BUS nozzles in A.H.U.

*Absorbion distance*

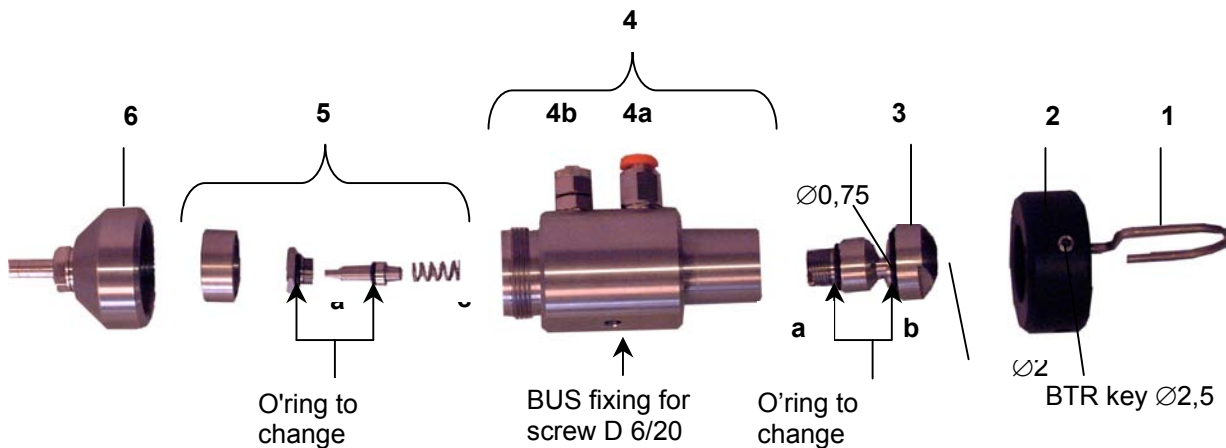


# FogSystem

## BUS Nozzle in A.H.U

### Nozzle maintenance

#### Split view:



#### Nomenclature:

- 1 – Resonator
- 2 – Ring
- 3 – Jet spray + o'ring : a (7,65X1,78) + b (14X1,78). (Gasket per 10)
- 4 – Main body. 4a et 4b= raccords air/eau 4-6 1/8
- 5 – Needle+seat+spring+piston+gasket a (7,65X1,78) + c (3,68X1,78). (Joints par lot de 10)
- 6 – Back body

#### Cleaning: *(Only with hard water)*

Is it recommended to change the gasket of the jet spray(3) and of the needle (5), to clean the resonator(1) and also the holes diam 2mm and diam 0.75 mm of the jet spray(3).



**Proceed as follows to clean the jet spray (page 22).**



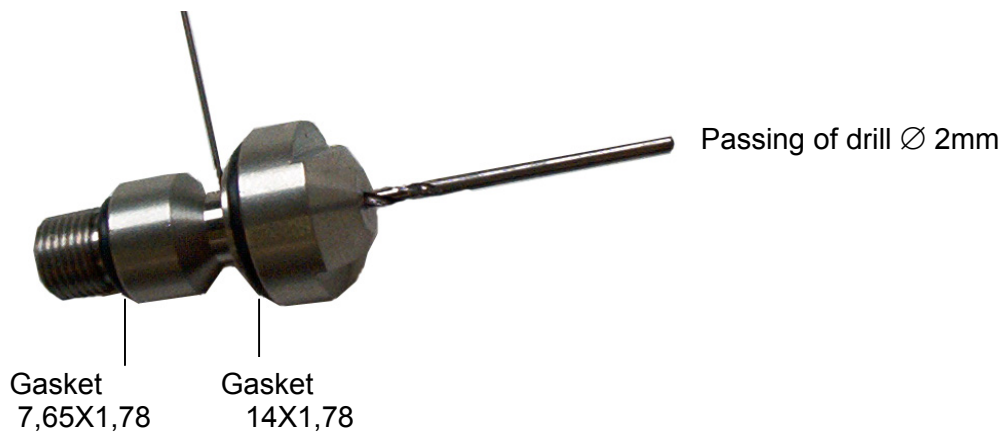
# FogSystem

## BUS Nozzle in A.H.U

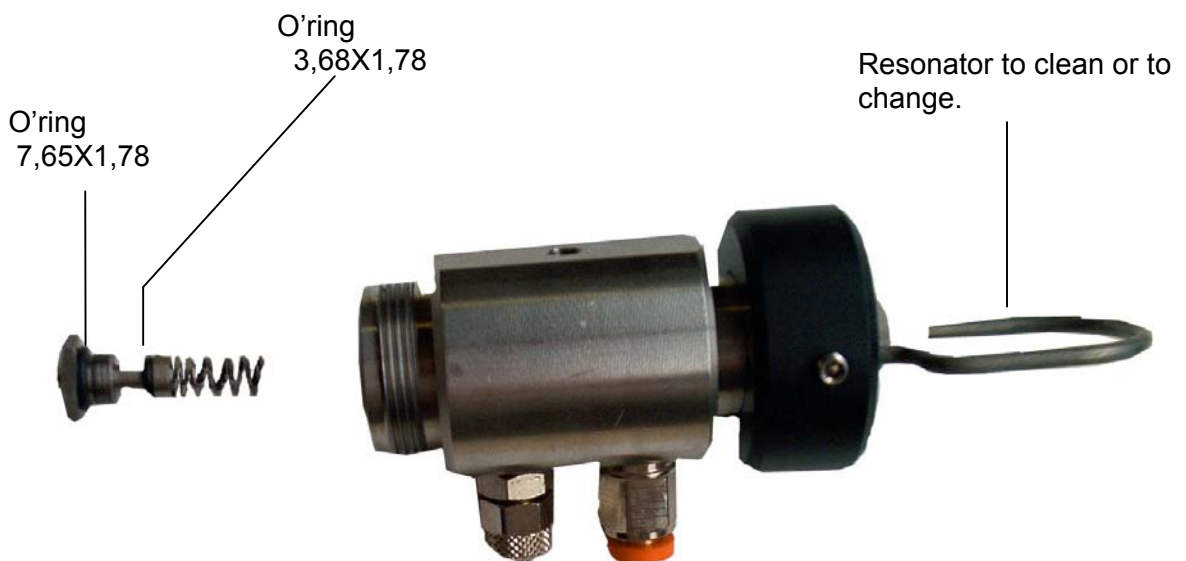
### Nozzle maintenance

**Maintenance of the jet spray: (with hard water only)**

Passing of drill  $\varnothing 0,75\text{mm}$



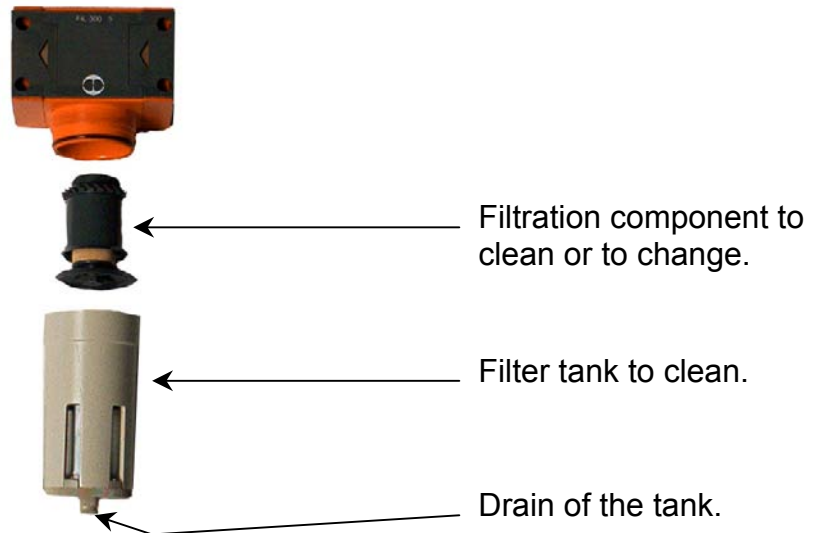
**Maintenance of the main body: (with hard water only)**



# FogSystem BUS Nozzle in A.H.U

## Filters maintenance

### Air filter:



### Water filter:



### Air filter unlock key :



# ***FogSystem***

## ***BUS Nozzle in A.H.U***

### ***Water treatment***

#### ***Water treatment for compressed air and water humidification system***

Humidification by compressed air/water has the drawback to make a dust deposit from the the mineral salts in the premises or on the products when used with heavy or softened waters.

#### ***Mineral salts must be eliminated before they enter the humidifier.***

To demineralize water, you can use a demineralizing resins process or a membrane filtering one.

*The initial investment is quite the same, but the exploitation cost with ion exchanging resins is prohibitive, whereas it is trivial with the membrane filtering.*

For instance, a humidifier with a water maximum flow of 60 litres per hour needs about 600 litres a day on average, that is to say 219 m<sup>3</sup> per year in order to maintain a 55% hygrometric rate.

In Paris, the water mineralization is about 40°*F* (400-700uSiemens). **To demineralize 219 m<sup>3</sup> at 40° *F*, you have to saturate 4.380 litres of resins and the regeneration would aproximatively cost € 11200.** Indeed, the price of regenerating products, caustic soda and hydrochloric acid explain why this method is almost discontinued today.

**With the membrane filtering, the annual explotation cost is about € 800** and mainly comes from the changing of pre-filters and membranes.

Another advantage of this process is that **the produced water is absolutely sterile** which is not the case in the exchanging resins system. What is more, the rejected water needs no neutralisation and does not pollute which is not the case when demineralizing with resins.

Your choice will be function of the humidifier maximum flow rate per hour. Moreover, the TH of the water to treat must be known because if it exceeds 20°*F*, you must schedule a softening imperatively to scheduled a softening post above, in order to protect the membranes of the unit in order to protect the membranes of the osmosers.

# ***FogSystem***

## ***BUS Nozzle in A.H.U***

### ***Water treatment***

#### ***Standard anti-bacteria system :***

When the water supply is shut off or when the regulation is stopped, some air is injected into water pipes to drain out all the piping and the nozzles.

#### ***UV sterilizer :***

The ultraviolet rays are able to destroy bacteria, virus and other pathogenic microorganisms. Single light ultraviolet sterilizer with polished stainless steel chamber. 1 $\mu$  pre-filtration necessary.

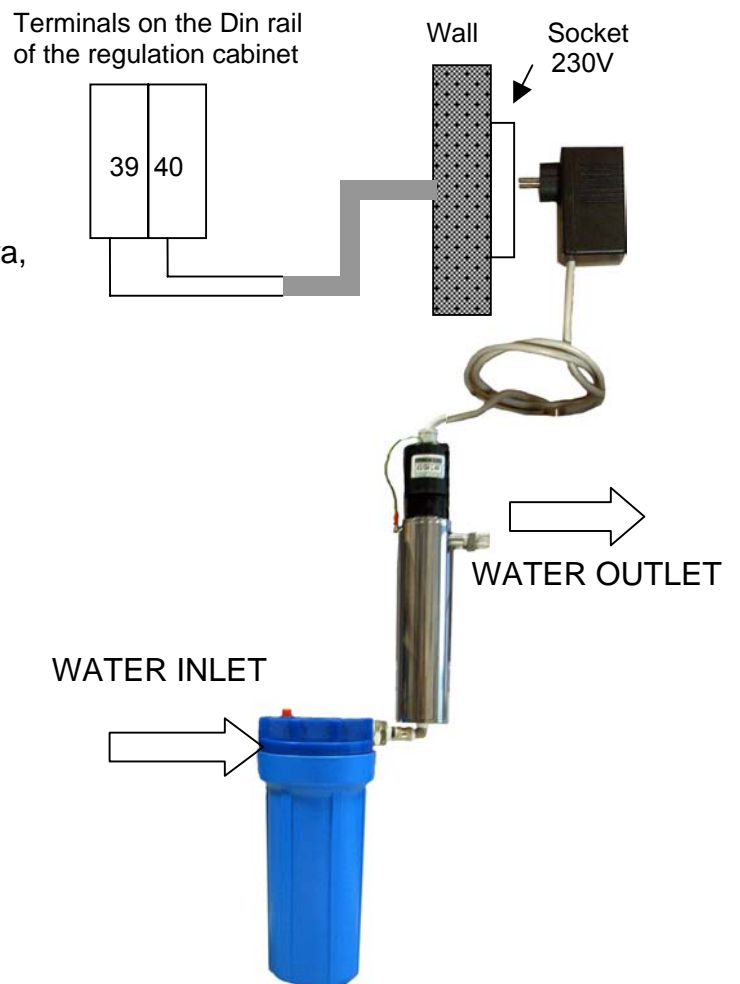
#### ***Advantages of the UV sterilizer :***

- Immediate bactericidal action.
- No tank in contact.
- No chemical product added.
- No alteration of the water quality.
- Low cost maintenance.
- 7000 hours duration UV light.

**Caution :** Do not exceed the maximum output of the sterilizer

If a sample of water must be taken, you should :

- not exceed the max. output
- Use a sterile tank
- Drain where the sample has been taken



# devatec



**RV3 / RV4**



**ELMC and Steam Bath  
ELMC et bain vapeur**



**HLK / OEM**



**Compact ELC2**

## **International certification Homologation internationale**

Our units **ELMC** or **FogSystem** are listed or in conformity with:  
Nos appareils **ELMC** ou **FogSystem** sont homologués ou certifiés aux normes suivantes :

**Germany/Allemagne : TÜV**

**Austria/Autriche : ÖVE**

**U.K./Grande Bretagne : WRC**

**USA : UL**

**Canada : CSA**

**Europe : C.E.**



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Email : [export@devatec.com](mailto:export@devatec.com)**

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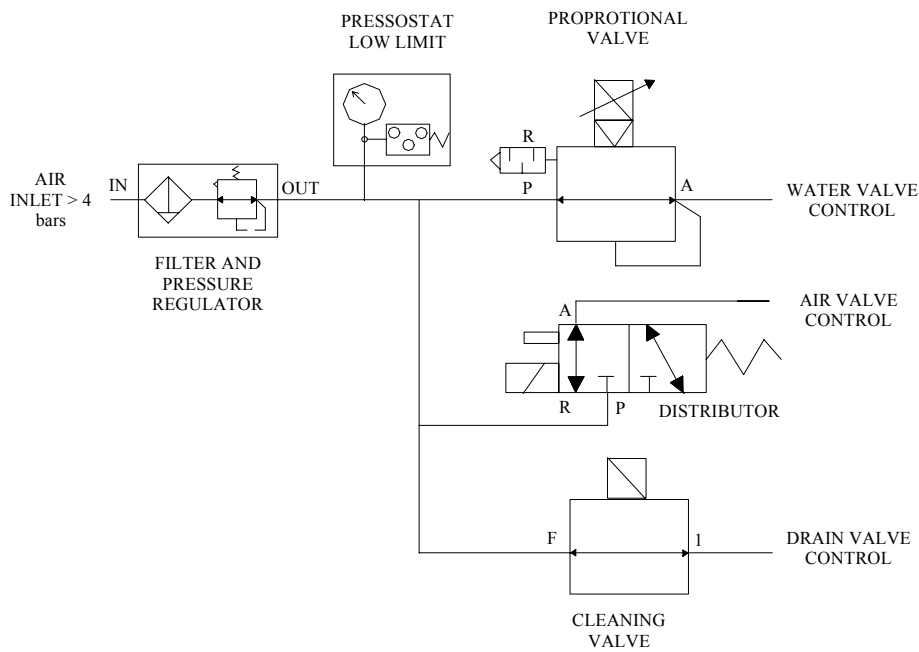
Edition : 24-08-06

# ***FogSystem***

## ***BUS Nozzle in A.H.U.***

***Proportional regulation cabinet***

***Pneumatical scheme :***



# ***FogSystem***

## ***BUS Nozzle in A.H.U.***

### ***Proportional regulation cabinet***

**Wiring scheme :**

