

Catalog  
Medical Fluids  
Distribution

MDR

2024

• • •

**Air Liquide Healthcare** is a world leader in medical gases, home healthcare services and specialty ingredients. Our 16,300 employees support 1.8 Million chronic patients at home, and supply medical gases solutions and associated services for 15,000 hospitals and new places of care.

**Air Liquide Medical Systems**, a subsidiary of Air Liquide Healthcare, is an expert in ventilation and respiratory assistance equipment. Its employees are involved in the design, manufacture and sale of innovative products and services, for hospital and home ventilation, distribution and administration of medical gases, aerosol therapy.

Always attentive to improving the care given to patients and meeting the expectations of healthcare professionals, Air Liquide Medical Systems develops adapted solutions combining quality and ergonomics.

## Innovation

Innovation is at the heart of Air Liquide Medical Systems' product ranges. Participating in the quality of care, optimizing patient comfort and simplifying the use of products are our priorities.

## Expertise

For 40 years, Air Liquide Medical Systems has listened to its customers and worked with healthcare professionals to provide the most appropriate solutions to changes in medical practices.

## Commitment

### Safety, quality and environment

The design of our products is based on safety and quality, with respect for patients and users, our employees and regulatory requirements. Air Liquide Medical Systems is committed to a continuous process of reducing its environmental impacts.

## Service

### Proximity and responsiveness

In all situations, our hotline and our local technical teams place their expertise at your service. They help you ensure the safety of your patients and the best performance of your equipment.

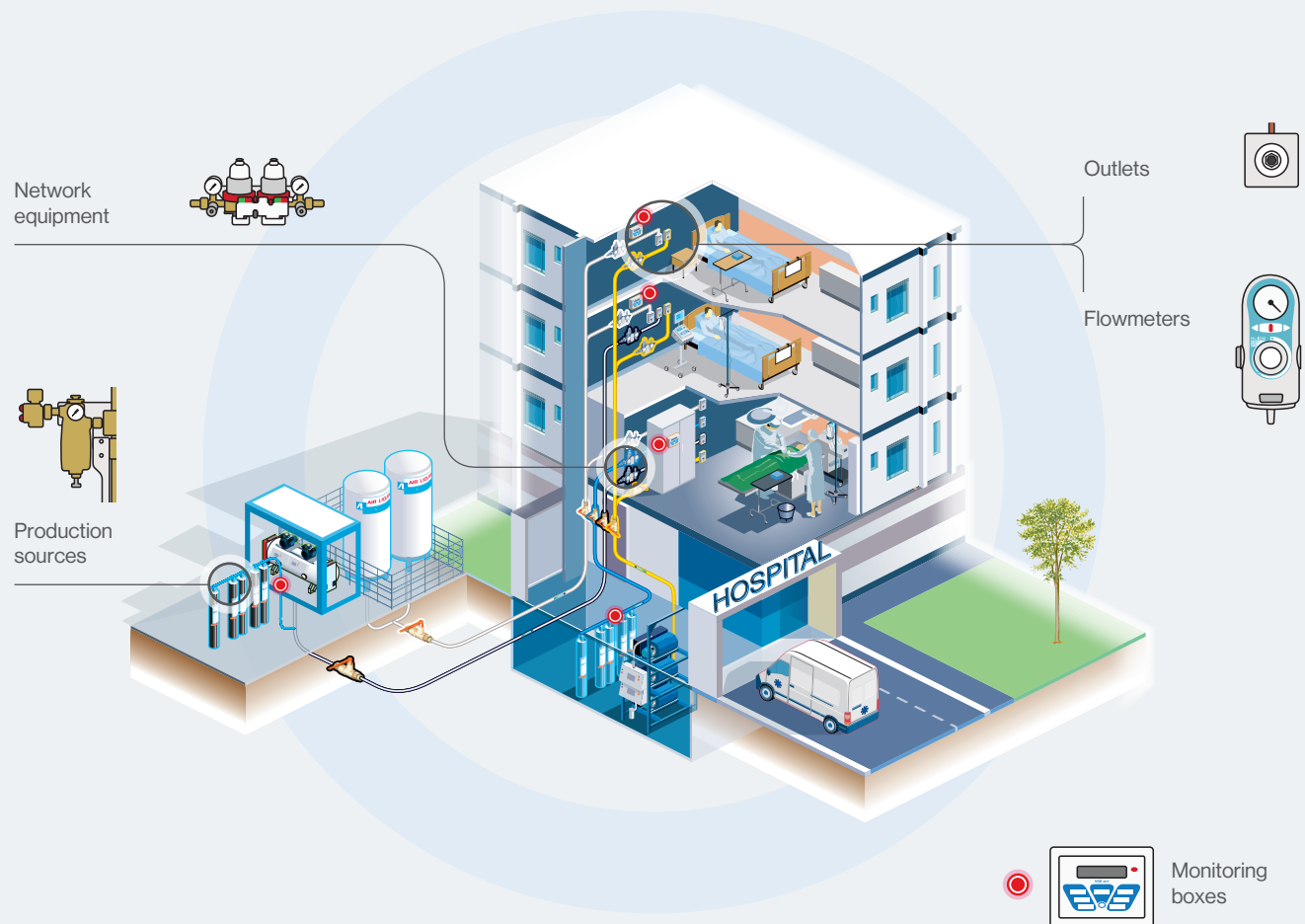


## Our offer for Medical Fluids Networks

A complex environment with multiple needs and a common goal:  
**“Continuity of gas distribution to patients”.**

Air Liquide Medical Systems offers solutions adapted to all levels of distribution.

- Hospitals need medical fluids available in the care departments at all times.
- Air Liquide Medical Systems offers a comprehensive set of equipment to be connected to a network.
- Each piece of equipment offered is suitable, reliable and of sufficient quality to ensure system security.



All our products are designed  
and manufactured by Air Liquide  
Medical Systems in France.

# ALMS's environmental approach



## Our responsible actions for the environment

ISO 14001 certification for the implementation and monitoring of its Environmental Management System at the Antony site. The renewal of this certification **since 2015** is an evidence of the commitment of both staff and management to sustainable development issues.

### The site's QSE policy

The company annually adjusts its **objectives** with a focus on continuous performance improvement:

**-20**  
MWh/year

Limiting its energy consumption

**285**  
TCO<sub>2</sub>e

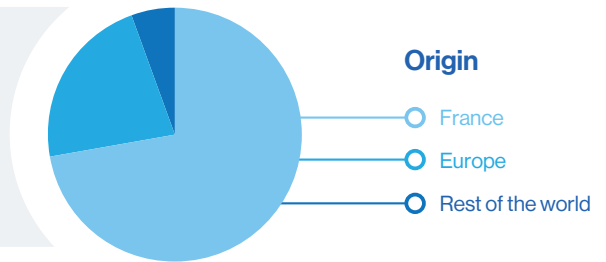
Reducing its CO<sub>2</sub> emissions

**12**  
waste flow

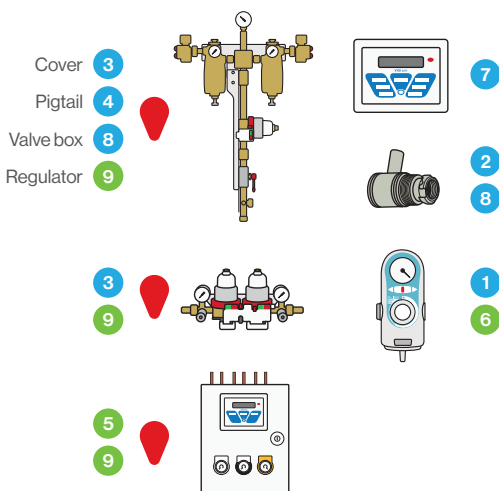
Giving its waste a second life

## Contribution to local development

In line with our commitment to support a **local, sustainable and responsible** economy, ALMS chooses to work almost exclusively with **French and European suppliers**.



## French and European suppliers



## French production



Our main **components** are sourced from France or the European Union.

Most of our medical devices are **assembled** directly at our Antony site, or **produced** directly by our partners within the French territory.



## Our social and societal responsibility

# ALMS

### The governance of the organization, keystone/central pillar of this structure

Air Liquide and its suppliers commit to fully comply with all applicable laws, regulations and international treaties concerning business ethics practices and rules of international trade, without any restrictions.

### Consumer protection

The **Customer Relationship Department (CRD)** plays a crucial role in building trust relationships with customers, and contributes to the reputation and growth of the company. In case of any needs, ALMS offers a hotline for its customers.

Consumer health and safety are also a priority for us, which is why we have a team of **experts** in medical practices closely linked to medical institutions.



### Communities

We deeply value celebrating **diversity** and promoting a culture of **inclusion**, which allows everyone to develop and grow. We are committed to supporting various organisations as part of our efforts.



### Working relations and conditions

At ALMS, it is our duty to guarantee the **well-being** and **job satisfaction** of our employees. That's why we have implemented initiatives to promote physical, social and mental well-being, personal development and work-life balance.



## Innovation

**25** An average of **patents/year** are filed

**7** clinical engineers dedicated to **Medical Innovation** (MedLab) from March 2023

Air Liquide  
Medical Systems

**+60** R&D employees from March 2023

**+40** Technical experts in 2023

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- Danube™ Manifold
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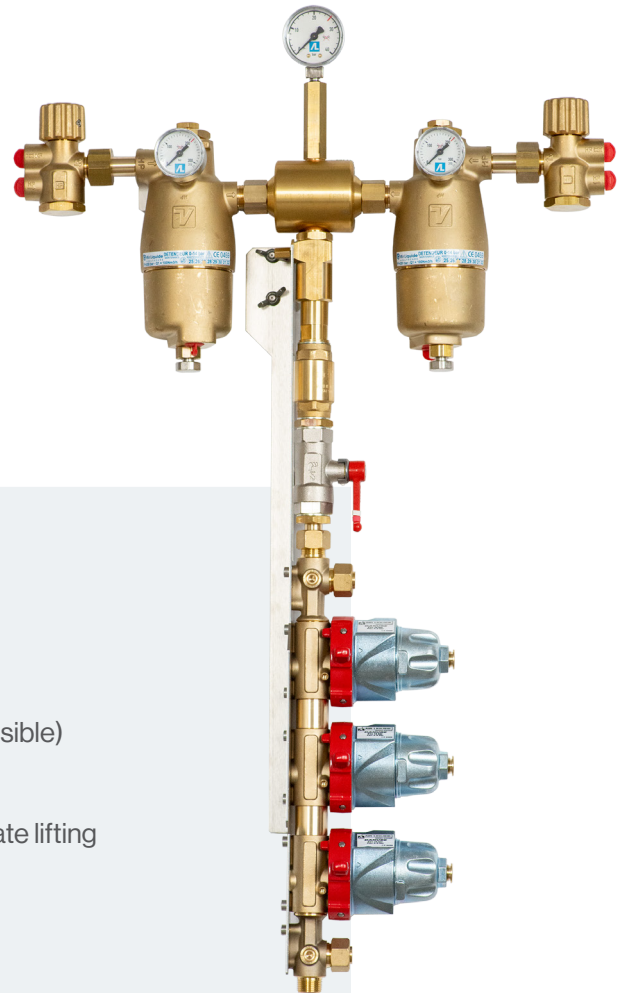
# Production sources





# ◆ Danube™ Manifold

The **Danube™** high pressure Manifold, specially designed for medical gas distribution, has a fully automatic switch-over system to provide a continuous supply to medical gas networks from cylinders or bundles of cylinders. This equipment is available in Single Stage Network (SSN) and Double Stage Network (DSN) and can be used as a main source or as a back up source for your gas network.



### Optimized reliability

- 100% automatic pneumatic inversion
- Piston regulator with patented design
- Pressure stability optimized
- Immediate pressure readings (pressure gage always visible)

### Simplified installation

- Two parts assembly using a sliding connector to facilitate lifting
- Only standard tools required for mounting

### Proven product

- Marketed since 2012
- More than 5,000 stations installed

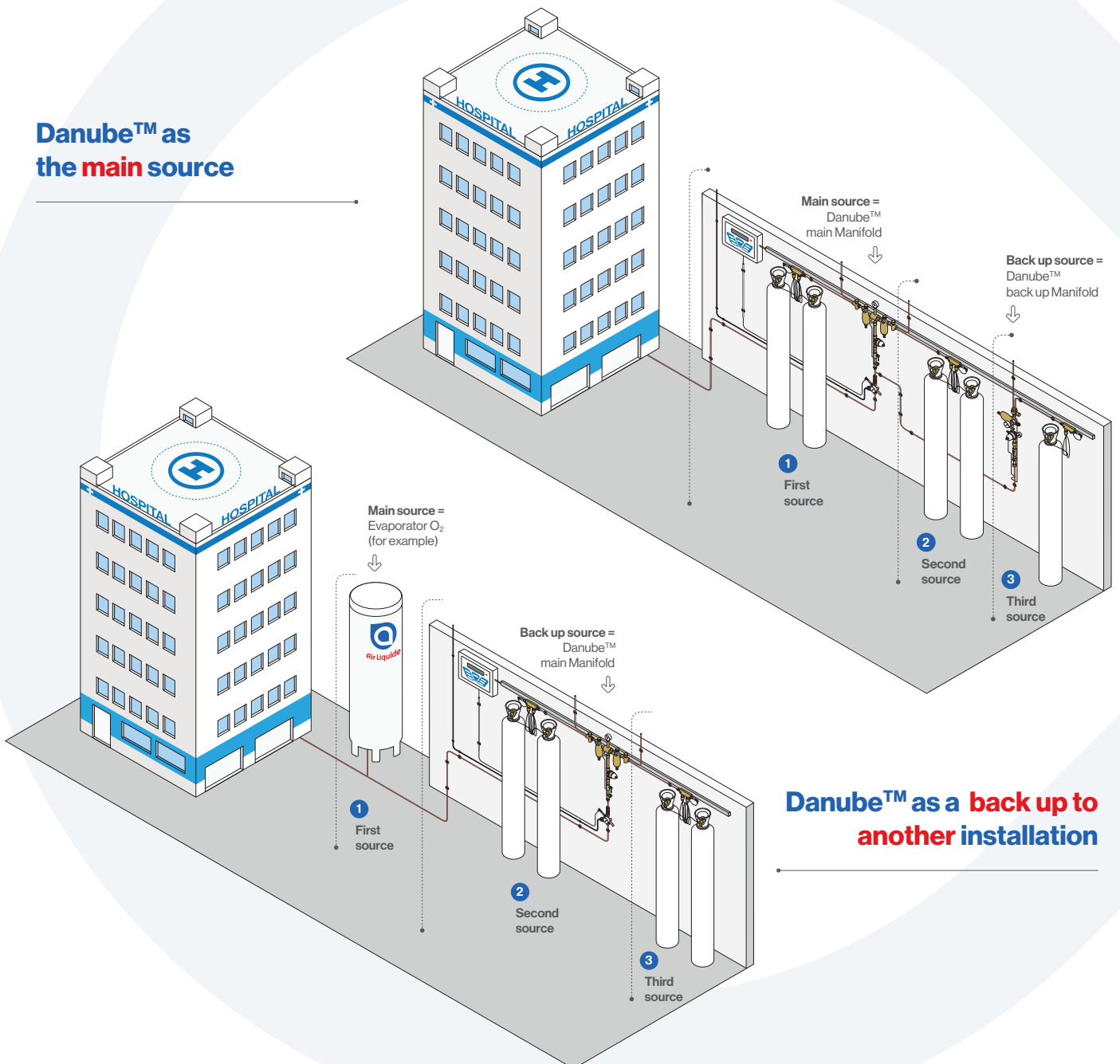
<b>Available for</b>	O <sub>2</sub> , Air, N <sub>2</sub> O, CO <sub>2</sub> , N <sub>2</sub> (Not compatible with acetylene and corrosive gases)	<b>Inlet connection</b>	With double ring for 5 x 10 copper tube
<b>Number of cylinders</b>	1 to n cylinders	<b>Outlet connection</b>	With double ring for 12 x 14 copper tube
<b>Outlet pressure</b>	SSN unit: between 4 and 5 bar (preset at 5 bar)	<b>Dimensions</b>	SSN unit: Main: 456 x 772 (mm) Back up: 236 x 714 (mm)
	DSN unit: between 8 and 9 bar (preset 9 bar)		DSN unit: Main: 456 x 608 (mm) Back up: 236 x 714 (mm)
<b>Inlet pressure</b>	Up to 200 bar	<b>Weight of main Manifold</b>	Between 13.5 kg and 16.7 kg depending on the reference
<b>Flow rate</b>	SSN = 40 and 80Nm <sup>3</sup> /h	<b>Weight of back up Manifold</b>	Between 6.1 kg and 9.5 kg depending on the reference
	DSN = 80Nm <sup>3</sup> /h	<b>Status</b>	Medical device
<b>Standards</b>	ISO 7396-1 and ISO 10524-2 standards	<b>Lifetime</b>	15 years

# Types of installation

Danube™ can be used as the main source and can also be be used as a back up to another installation.

Danube™ range also offers its own back up module in the event of supply shortage for the main Danube™ Manifold.

## Danube™ as the main source

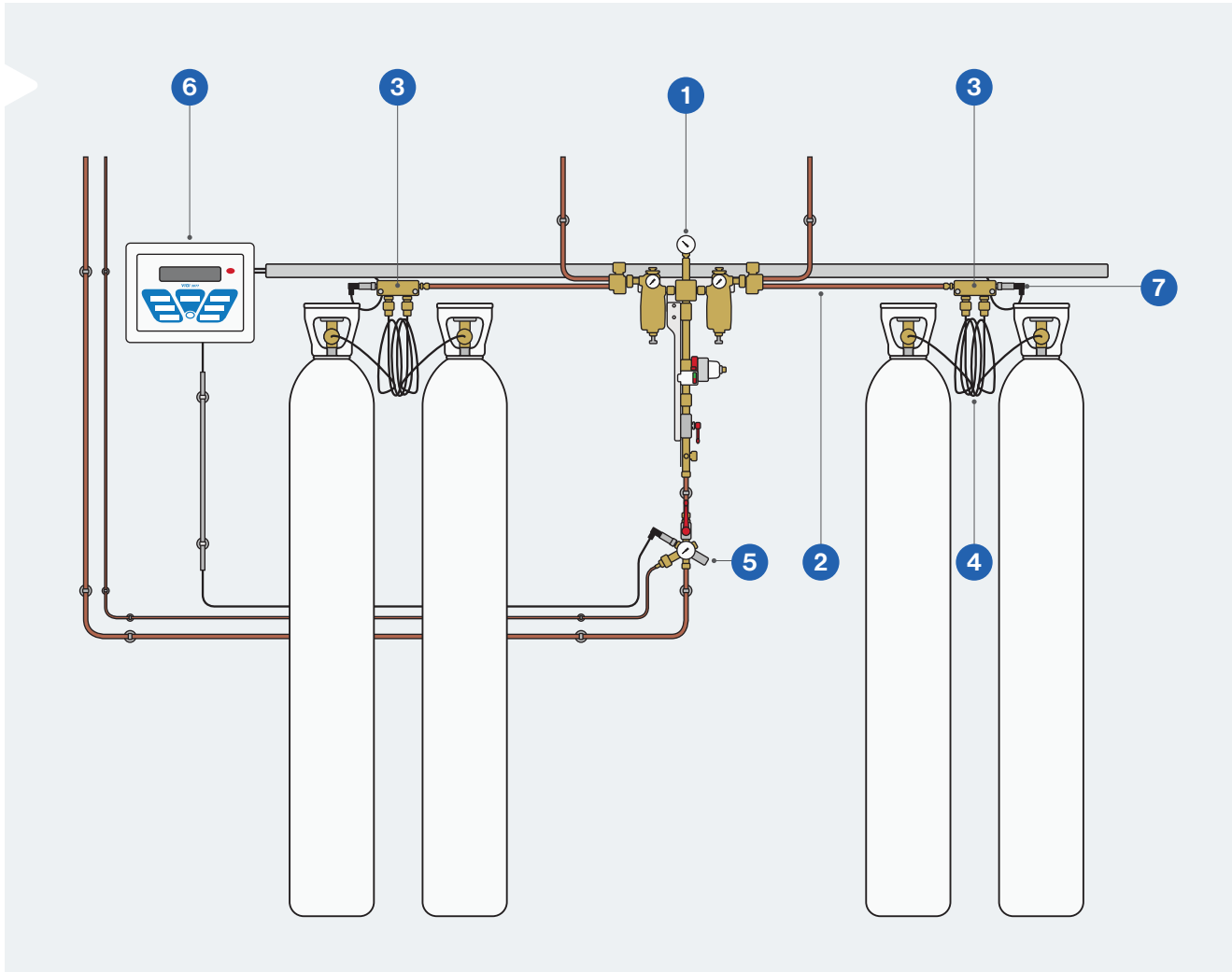


## Danube™ as a back up to another installation

# Composition of the Danube™



**Danube™**  
**Video to help you use the product**  
**Installation and maintenance**



Main station	back up	Connection accessories	Safety accessories
Danube™ Single Stage Network	Danube™ Single Stage Network back up	High pressure copper pipe degreased ②	Line valve assembly ⑤
Danube™ Double Stage Network ①	Danube™ Single Stage Network back up	High pressure valve box ③	Sensor Connection Valve
		Pigtails for cylinders ④, and/or Cylinder bundle station	Rack for cylinder fixing on the wall
			Protective cover
			Safety and instructions poster
			Vigi™ alarm ⑥
			Pressure sensor ⑦



# Connection accessories

## The valve box

The **valve** box connects the Manifold to its gas sources.

It allows the connection either of **pigtails** for the use of individual cylinders or of HP hoses for the use of cylinder bundles.

### High level of safety

- No risk of pigtail flapping when changing the cylinders thanks to its non-return valve
- Limited risks associated with adiabatic compression (flash fire) thanks to its “zero plastic” design



<b>Type of connection</b>	1/4" high pressure gas connection for 5 x 10 mm copper pipe	<b>Weight</b>	1 kg
<b>Allowable pressure</b>	Up to 200 bar	<b>Materials</b>	Brass
<b>Wall mounting</b>	spacers and screws supplied	<b>Dimensions</b>	67 mm (H) x 112 mm (L) x 26 mm (W)
<b>Standard</b>	ISO 7396-1, Medical device	<b>Lifetime</b>	15 years

## Pigtail

The **pigtails** are the final connectors of the high pressure Manifold. They connect the valve boxes to the cylinders.

### Strength

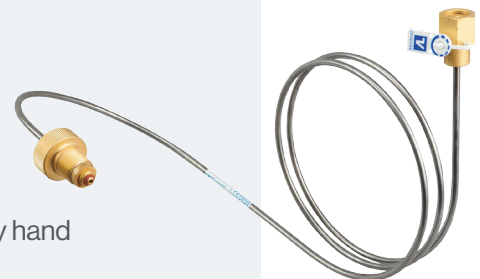
- Robust design with induction brazing
- Stainless steel

### Simplified use

- Cylinders replaceable by simply screwing/unscrewing them by hand

### Guaranteed safety

- Connected by hand, impossible to disconnect under pressure



<b>Gases available</b>	O <sub>2</sub> , Air, N <sub>2</sub> O, CO <sub>2</sub> , N <sub>2</sub>	<b>Weight</b>	712.5 g
<b>Working pressure</b>	Up to 200 bar	<b>Materials</b>	316 L stainless steel tube, brass fittings
<b>Inlet connection</b>	NF and other standards	<b>Lifetime</b>	15 years
<b>Status</b>	Medical Device	<b>Standard</b>	ISO 21969

## The Bundle kit

To connect the **Danube™** Manifold to cylinder bundles, it is possible to use a bundle station. The **bundle station** can include 1 or 2 valve boxes. The connection between the bundle station and the bundles is made using a high pressure hose and the connection to the gas Manifold through a copper tube.

### Strength

- Robust design
- Stainless steel
- Built-in and protected non-return valve box



<b>Gases available</b>	O <sub>2</sub> , Air, N <sub>2</sub> O, CO <sub>2</sub> , N <sub>2</sub>
<b>Supply pressure</b>	Up to 200 bar
<b>Inlet connection</b>	Bundle connection according to gas
<b>Outlet connection</b>	¼" high pressure gas connection for 5 x 10 mm copper pipe
<b>Dimensions</b>	750 mm (H) x 250 mm (L) x 250 mm (W)
<b>Weight</b>	5.8 kg
<b>Materials</b>	Stainless steel bundle station, brass fittings and valve box
<b>Attachment to the floor</b>	4 holes diameter 11 mm, spacing 190 mm x 190 mm
<b>HP safety cable attachment</b>	Two holes in the bundle station then attachment of the HP safety cable

# ◆ Safety accessories

## VSP Main shut-off valve

The **VSP** secures the high pressure medical gas network. This all-in-one device isolates the high pressure gas Manifold from the downstream network, evacuates excess pressure and enables a continuous supply of the network during maintenance. Combined with the pressure sensors, the **VSP** is used to monitor the network.

### Performance

- Sealing provided by the ball valve

### Simplified use

- Direct supply to the network with its built-in connector

### Guaranteed safety

- Network monitoring via pressure sensors

### Reliable

- Design validated by many years of feedback from the field



<b>Gases available</b>	O <sub>2</sub> , Air, N <sub>2</sub> O, CO <sub>2</sub> , N <sub>2</sub>	<b>Input/Output</b>	Connection with 1 ring for copper pipe ø 14 mm
<b>Pressure gage class</b>	1.6	<b>Dimensions</b>	260 mm (H) x 260 mm (L) x 80 mm (W)
<b>Max flow per connector</b>	NIST: 60 m <sup>3</sup> /h; NF: 80 m <sup>3</sup> /h	<b>Valve calibration</b>	SNP: Full opening at 10 bar/Closing above 7 bar DNP: Full opening at 12 bar/Closing above 9.5 bar
<b>Passage diameter</b>	712.5 g	<b>Materials</b>	Nickel-plated brass and brass
<b>Sensor connection</b>	M10 x 100	<b>Standard</b>	ISO 7396-1 standard
<b>SNP connector standard</b>	SNP: NIST DNP: NF	<b>Lifetime</b>	15 years
<b>Weight</b>	1.7 kg	<b>Status</b>	Medical device

## Sensor Connection Valve (VCC)

The **sensor connection valve** is intended to be installed at the outlet of the high pressure Manifold.

It complements the **line valve assembly** by allowing the connection of additional sensors and the analysis of the quality of medical gases.



# References

## Gas manifold

Description	Reference
Danube™ DSN 9b 80 m <sup>3</sup> /h	AD078000
Danube™ SSN 5b 80 m <sup>3</sup> /h	AD078200
Danube™ SSN 5b 40 m <sup>3</sup> /h	AD078500
Danube™ BACK UP DSN 7b 80 m <sup>3</sup> /h	AD078100
Danube™ BACK UP SSN 5b 80 m <sup>3</sup> /h	AD078300
Danube™ BACK UP SSN 9b 80 m <sup>3</sup> /h	AD078400
Danube™ BACK UP SSN 5b 40 m <sup>3</sup> /h	AD078600

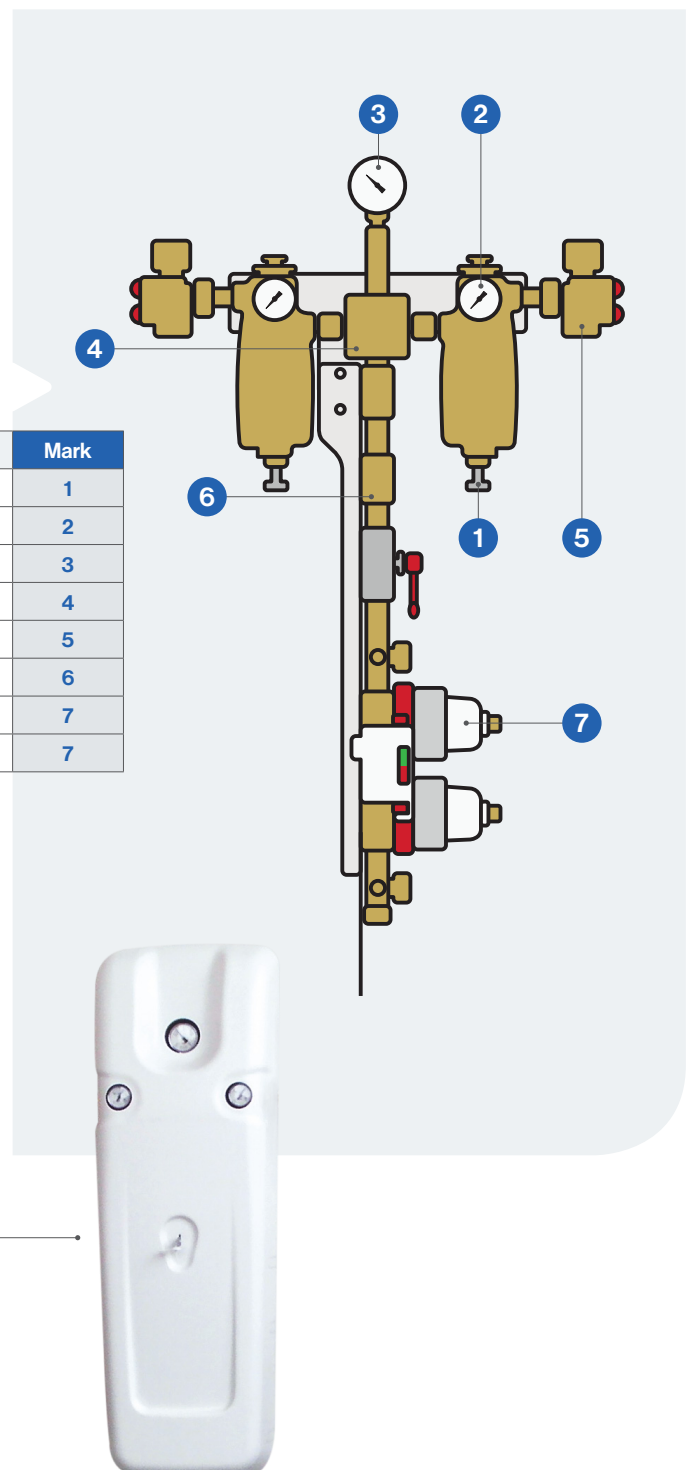
### Danube™ spare parts

Description	Reference	Mark
HP regulator 100 m <sup>3</sup> /h Danube	CE061400	1
Manometer 0-315 bar ø 40 for HP regulator	CX071000	2
Manometer 0-40 bar ø 50 for switch-over	CX092800	3
Automatic switch-over	AG060700	4
Purge valve with sintered filter	AE071100	5
Non-return valve	AD070600	6
MP regulator module DSN	BB021500	7
MP regulator module SSN	BB026100	7

Description	Reference
Manometer 0-40 bar ø 50 for back up station	CX012600
Manometer 0-40 bar ø 40 for back up station	BY020700
Diabolo gasket for manometer (x20)	CX079200
5 years maintenance kit for HP regulator	CY008200
Filter kit for purge valve	CY009000
5 years maintenance kit for purge valve	CY008100
5 years maintenance kit for MP module (x10)	CY008800
O-ring R13 (on pressure switch)	YJ105747

### Covers

Description	Reference
Danube™ protective cover for main Manifold	AD078700
Danube™ protective cover for back up Manifold	AD078800



# Connection accessories

## Valve box

Description	Reference
Valve box	AC101100
Valve box O <sub>2</sub> ES/IT	AC106100
Valve box AIR ES/IT	AC102400
Valve box N <sub>2</sub> O ES/IT	AC102500
Valve box N <sub>2</sub> CO <sub>2</sub> ES	AC102600
Valve box CO <sub>2</sub> IT	AC106000
Valve box N <sub>2</sub> IT	AC106700

## Spare parts

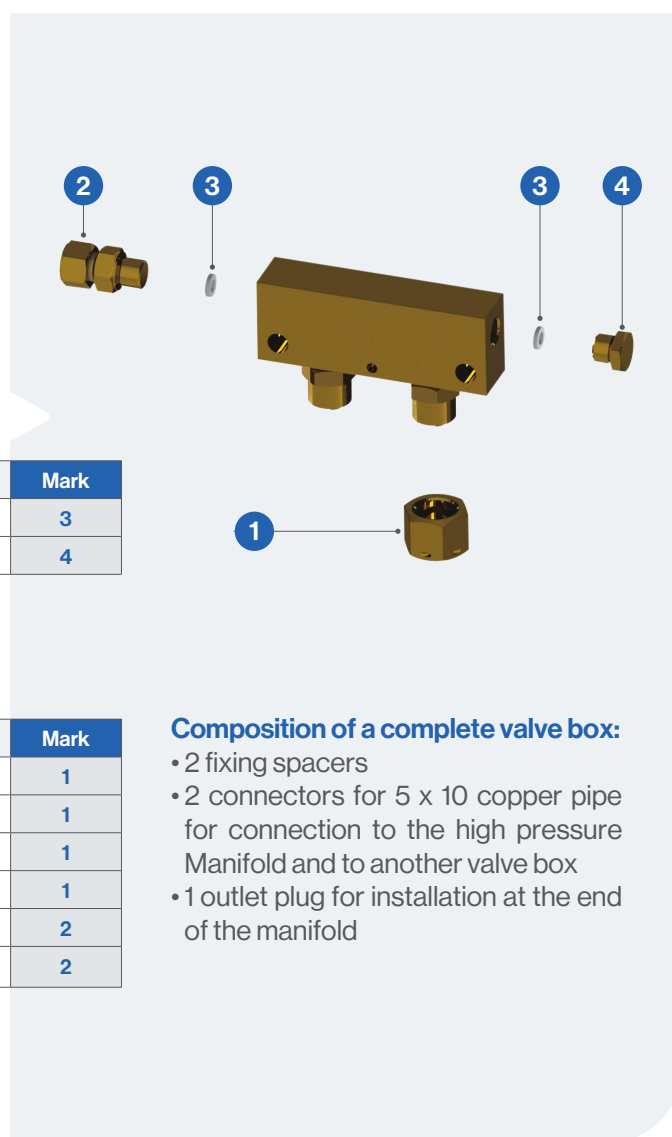
Description	Reference	Mark
Copper gasket 11 x 6 x 2 (x 10)	YJ101600	3
Plug H19 1/4" gas	CX086301	4

## Valve box accessories

Description	Reference	Mark
Plug M20 x 1.5	AC101600	1
Plug M20 x 1.5 Air for Spain/Italy	AC105100	1
Plug M20 x 1.5 N <sub>2</sub> O for Spain/Italy	AC105200	1
Plug M20 x 1.5 N <sub>2</sub> - CO <sub>2</sub> for Spain	AC105300	1
HP fitting 5 x 10 1/4" gas in brass (x 5)	AE070300	2
HP fitting 6 x 8 1/4" gas stainless steel (x 5)	AE070500	2

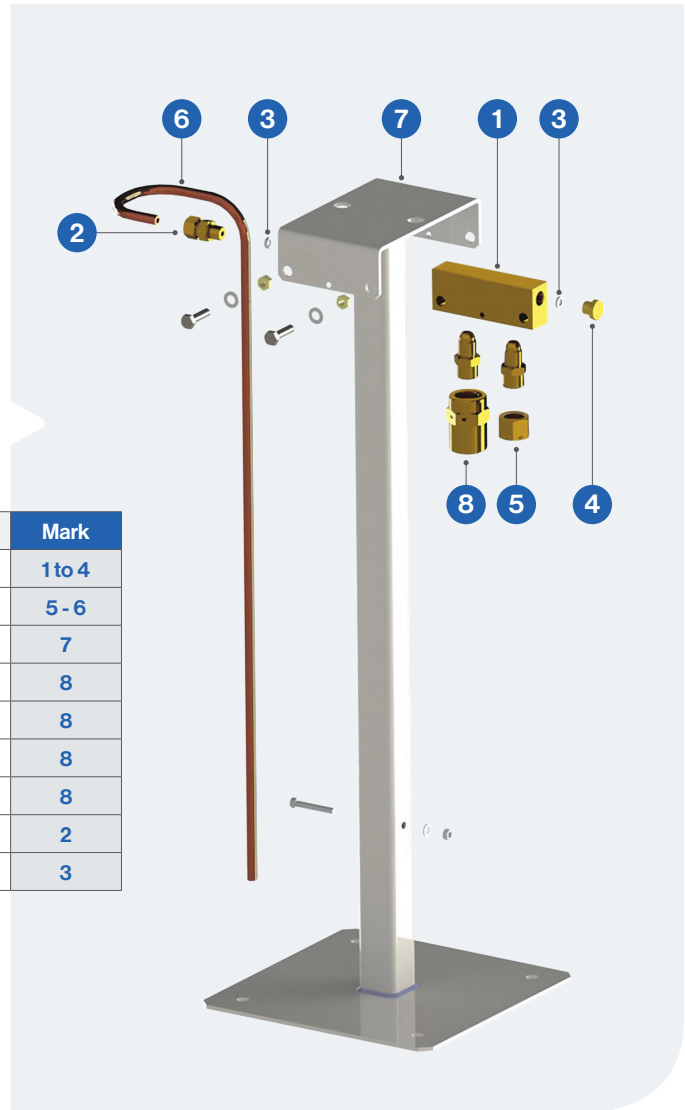
## Other connection accessories

Description	Reference
HP copper pipe 5 x 10, 2 meters long	YD021100
HP copper pipe 5 x 10, 1 meter long	YD021200
Union fitting Ermeto 5 x 10	AC052000
Tee fitting Ermeto 5 x 10	AC052300



## Bundle station

Description	Reference	Mark
Valve box	AC101100	1 to 4
Bundle station connection kit	AB092001	5 - 6
Bundle station support	AB092002	7
Connector kit O <sub>2</sub> Inlet fitting M35 x 28	AB090900	8
Connector kit Air Inlet fitting M30 x 1.758	AB091000	8
Connector kit N <sub>2</sub> O Inlet fitting M41 x 28	AB091100	8
Connector kit N <sub>2</sub> et CO <sub>2</sub> Inlet fitting M38 x 28	AB091200	8
HP fitting 5 x 10 1/4" gas in brass (x 5)	AE070300	2
Copper gasket 11 x 6 x 2 (x10)	YJ101600	3



## Pigtails

Description	Reference	Raccord d'entrée
Pigtail O <sub>2</sub> NF (F) X2	AC107000	NF type F
Pigtail air NF (D) X2	AC107100	NF type D
Pigtail N <sub>2</sub> O NF (G) X2	AC107200	NF type G
Pigtail N <sub>2</sub> /CO <sub>2</sub> NF (C) X2	AC107300	NF type C
Pigtails O <sub>2</sub> DIN X2	AC108000	DIN type 9
Pigtails AIR DIN X2	AC108100	DIN type 13
Pigtails N <sub>2</sub> O DIN X2	AC108200	DIN type 11
Pigtails CO <sub>2</sub> DIN X2	AC108400	DIN type 6
Pigtails N <sub>2</sub> DIN X2	AC108300	DIN type 10
Pigtails O <sub>2</sub> IT X2	AC104600	Italy type 2
Pigtails AIR IT X2	AC104300	Italy type 6
Pigtails N <sub>2</sub> O IT X2	AC104400	Italy type 9
Pigtails CO <sub>2</sub> IT X2	AC106600	Italy type 10
Pigtails N <sub>2</sub> IT X2	AC104500	Italy type 10
Pigtail O <sub>2</sub> (ES) X2	AC107500	Spain type F
Pigtail Air (ES) X2	AC107600	Spain type B
Pigtail N <sub>2</sub> /O (ES) X2	AC107700	Spain type U
Pigtail N <sub>2</sub> /CO <sub>2</sub> (ES) X2	AC107800	Spain type C

Pigtails are supplied in 2: one pigtail for connecting the cylinder on the left and one pigtail for connecting the cylinder on the right. The length of the pigtails is 3 m for Italian pigtails and 2m for the other standard pigtails.

## Accessories Pigtails

Description	Reference	Gas Cylinder
Thoracic gasket R5 silicone (x10)	YJ040600	NF All gas
Thoracic gasket EP851 10.5 x 2.7 (x10)	YJ102500	Valve box side
Thoracic gasket R10 SILICONE (x 10)	YJ069000	DIN O <sub>2</sub> type 9
Nylon joint 17.5 X 11 X 2 (x 10)	YJ105400	Italy O <sub>2</sub> type 2
Thoracic gasket 9.19 x 2.62 (x 10)	YJ086500	Spain Air type B
Thoracic gasket R7 SILICONE (x 10)	YJ067800	Spain N <sub>2</sub> O type U

## Safety accessories

### VSP main shut off valve

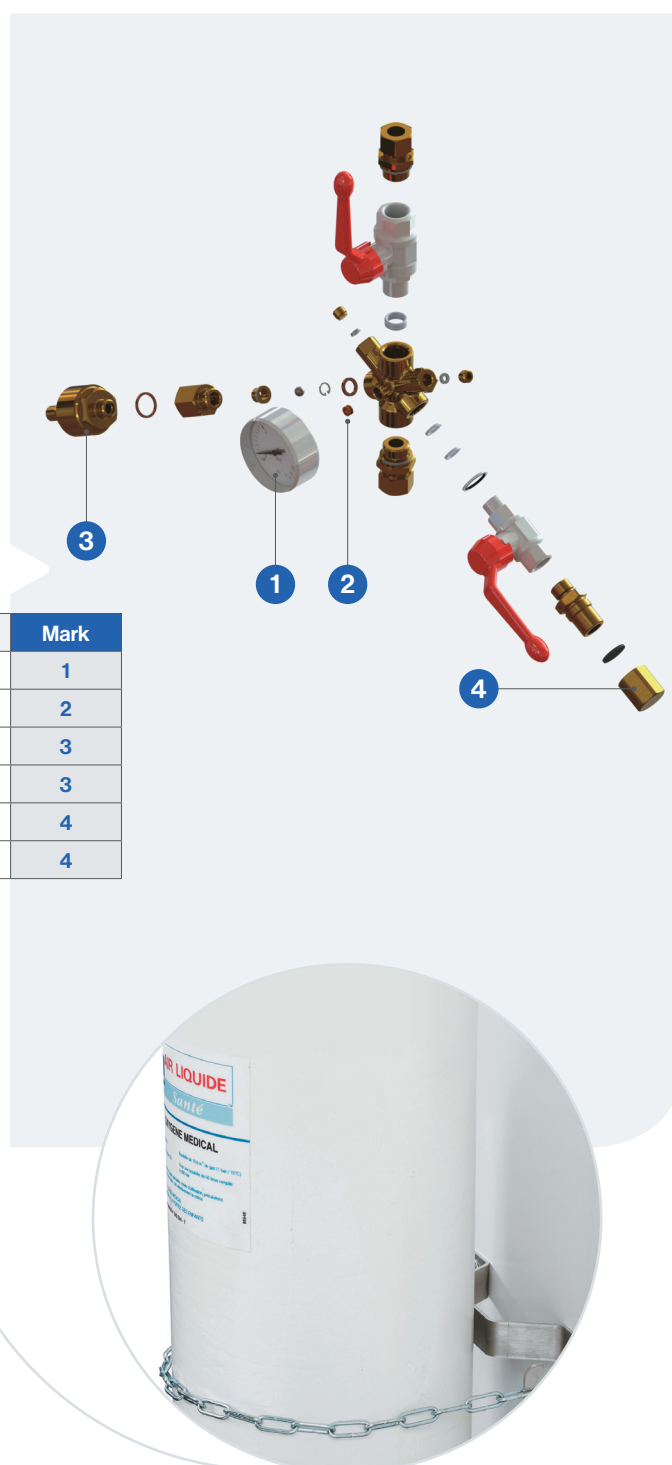
Description	Reference
VSP SSN NIST O <sub>2</sub>	BA062100
VSP SSN NIST Air	BA062200
VSP SSN NIST N <sub>2</sub> O	BA062300
VSP SSN NIST CO <sub>2</sub>	BA062500
VSP SSN NIST N <sub>2</sub>	BA062400
VSP DSN NF O <sub>2</sub>	BA063100
VSP DSN NF Air	BA063200
VSP DSN NF N <sub>2</sub> O	BA063300
VSP DSN NF CO <sub>2</sub>	BA063500
VSP DSN NF N <sub>2</sub>	BA063400
VCC Sensor connection valve	BA070000

### Spare parts

Description	Reference	Mark
Manometer 0-16 bar / M10 x 100	BY005900	1
Diabolo gasket for manometer (x 20)	CX079200	2
Safety valve 10 bar for VSP SSN	AH011000	3
Safety valve 12 bar for VSP DSN	AH011200	3
Cap for NIST inlet with flat gasket	BY017000	4
Plug H19 1/4" gas	CX086301	4

### Other accessories

Description	Reference
Cylinder rack in stainless steel	AC024100
Safety label for HP gas-station	YL003200
Safety label for N <sub>2</sub> O specificity	YL003000
Label "O <sub>2</sub> " (x10)	YF254078
Label "AIR" (x10)	YF254079
Label "CO <sub>2</sub> " (x10)	YF254080
Label "N <sub>2</sub> O" (x10)	YF254081
Label "N <sub>2</sub> " (x10)	YF254083
Seal in white plastic with AL logo 185 mm (x10)	YA011100

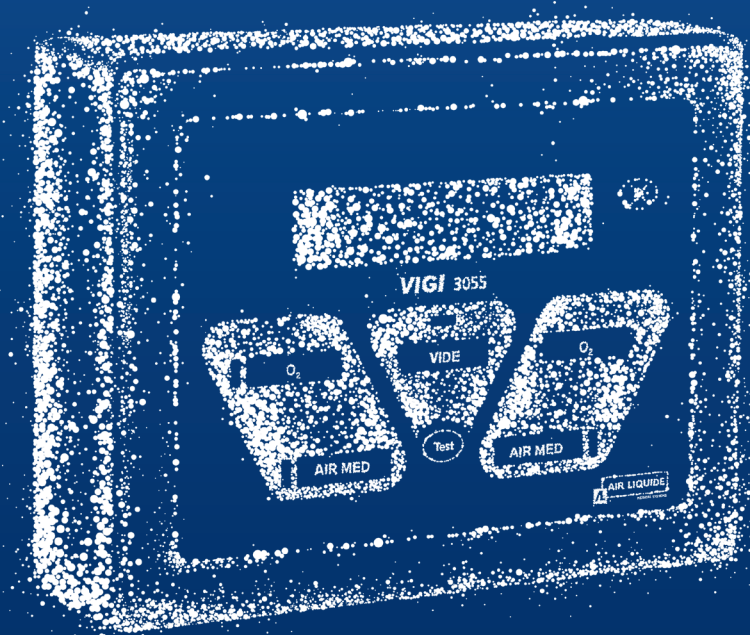


- 
- [Vigi™ alarm system](#)
  - [Accessories](#)
  - [References](#)



2

## Monitoring boxes



# Vigi™ alarm system

Vigi™ alarm system assure the safety of the medical gas network from the source to the wall outlet.



### Performance and modularity

- Monitors up to 7 channels simultaneously
- Detailed display of pressures
- Compatible with logic or analog sensors
- Connection with relay boxes available
- Building Management System communication with the MODBUS link

### Safety

- Signaling by LED and sound alarm
- Explicit message on the LCD screen
- Memorization of events in the event of a power failure

### Quick installation

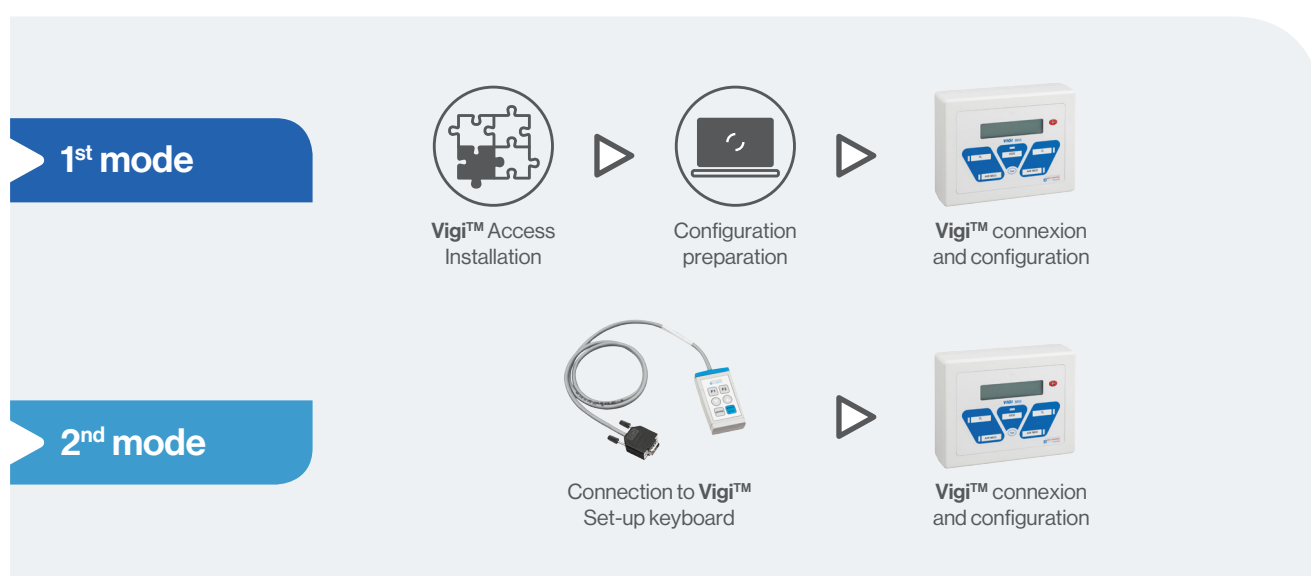
- Usual pre-saved configurations for quick setup
- Parameter setting by wired keyboard or **Vigi Access software**

<b>Number of channels</b>	3, 5 or 7	<b>Power supply</b>	Mono 115 VAC/230 VAC ( $\pm 10\%$ ) Electrical class: class 1
<b>Type of inputs</b>	Analog (4-20 mA) or logic (dry contacts normally closed)	<b>Weight</b>	Main unit: 1.7 kg - Remote unit: 0.44 kg
<b>Dimensions main unit</b>	Main unit (wall mount only): 165 mm (H) x 210 mm (W) x 60 mm (D)	<b>Materials</b>	Treated anti-UV ABS plastic housing
<b>Remote unit</b>	Flush (185 x 70 x 40 mm, Legrand ref. 080103)	<b>Weight of magnetic materials</b>	Main unit: < 50 g Remote unit: 145 g
	Surface-mounted (208 x 80 x 42 mm, Legrand ref. 080286)		
<b>Standards</b>	ISO 7396-1/ISO 60601-1/ISO 60601-1-2 standards. Medical device	<b>Lifetime</b>	10 years

# Installation

The **Vigi™** alarm ensures the safety of 3, 5 or 7 channels simultaneously. To optimize network security, the **Vigi™** alarm system must be configured depending on the monitored elements.

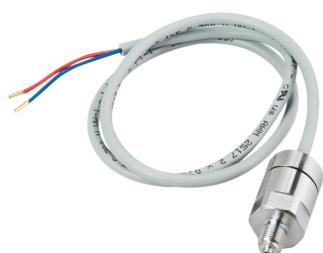
Air Liquide Medical Systems offers two configuration modes, via **Vigi™** Access software or via the **Vigi™** configuration keyboard.



## Analog pressure sensors

Logic or analog pressure sensors are the key elements of pressure monitoring. Placed throughout the network, from the high pressure Manifold to the wall outlet, they are the source of information for **Vigi™**. The parameters of the analog sensors distributed by Air Liquide Medical Systems are programmed in **Vigi™**, it is however possible to connect it to other sensors by configuring them.

<b>Electrical connection</b>	Mini-DIN, Pin 3: + Power supply, Pin 1: Signal, red: + Power supply, Blue: Signal
<b>Standard</b>	ISO 60601-1-2 standard
<b>Lifetime</b>	10 years



### Analog pressure and vacuum sensors 4-20 mA



# References



**Vigi™**  
3033 - 3-channels



**Vigi™**  
3055 - 5-channels



**Vigi™**  
3077 - 7-channels

Description	Reference
Vigi™ 3033 - 3-channels	AF071500
Vigi™ 3055 - 5-channels	AF071600
Vigi™ 3077 - 7-channels	AF071700
Vigi™ 3004 remote unit	AF071400



**Vigi™**  
3004 remote unit

## Accessories and spare parts

Description	Reference	Characteristics
Pressure sensor 4-20 mA - 0/16 bar	AF005000	Analog, 3 m cable, M10 x 100 connection
Pressure sensor 4-20 mA - 0/250 bar	AF005200	Analog, 1/4" gas connection
Vacuum sensor 4-20 mA - 0 / -900 mbar	AF005100	Analog, 3 m cable, M10 x 100 connection
Vacuum sensor 4-20 mA - 0 / -1000 mbar	AF005300	Analog, 1/4" gas connection
HP contact switch 2 wires 0/240 bar	AF070600	1/4" gas logic
1/4" male gas adapter - M10 x 100 female (x 5)	CX090500	-
1/4" female gas adapter - Ermeto	AF070700	-
14 x 16 mm T adapter with M10 x 100 connection for analog vacuum sensor	BB011100	-
Flat seal (x10) for 0/16 bar or vacuum sensor M10 x 100	BY008700	-
Copper seal 11 x 6 x 2 mm (x10) for 0/250 bar sensor	YJ101600	-

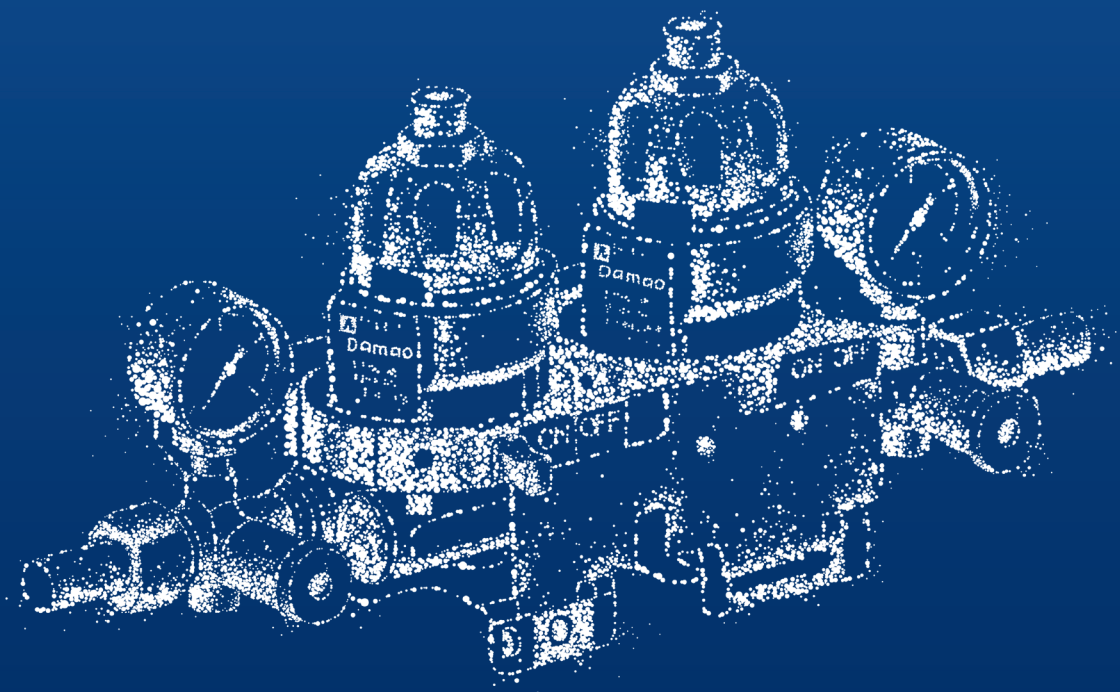
## Tools

Description	Reference
Vigi™ configuration keyboard	AF022500
USB/RS232 cable for PC/Vigi™ connection	YR191685
Vigi™ Access - Free software on demand	Consult us

- 
- Damao™ pressure regulator
  - Dalian™ Area Valve Section Unit
  - References

3

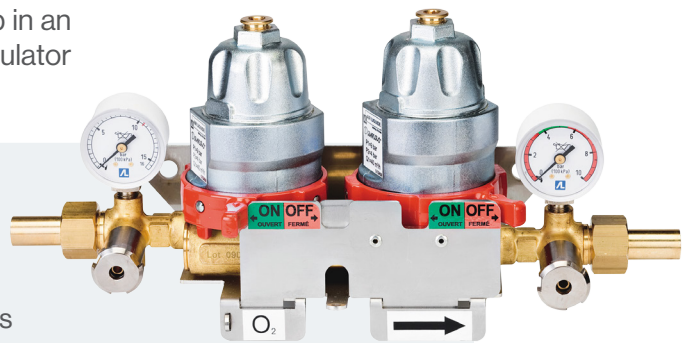
Network  
equipment



# ◆ Damao™

## pressure regulator

**Damao™** is an essential device in double pressure level piping networks. This pressure regulator secures the expansion of medical fluids between medium and low pressure and enables the network to be backed up in an emergency. It is available as a single or double regulator for increased safety.



### Safety

- Upstream and downstream pressure gauge
- Safety plate: coding ensuring that you always have a regulator in operation
- 1 emergency regulator permanently available (with double Damao™)
- Locations for pressure sensors

### Easy maintenance

- Upstream and downstream connectors
- Continuous gas distribution, the modules can be maintained separately (with double Damao™)
- Single-piece interchangeable regulation module for on-site maintenance

<b>Gases available</b>	O <sub>2</sub> , Air, N <sub>2</sub> O, CO <sub>2</sub> , N <sub>2</sub> , Air-800	<b>Double regulator dimensions</b>	157.5 mm (H) x 259 mm (L) x 107 mm (l)
<b>Notched connectors</b>	NF	<b>Cover Dimensions</b>	216 mm (H) x 303 mm (L) x 120 mm (l)
<b>Supply pressure</b>	6 to 10 bar	<b>Cover weight</b>	0.3 kg
<b>Downstream pressure</b>	Preset at 4 bar (8 bar for engine gas), adjustable from 0 to 10 bar	<b>Weight (cover not included)</b>	Single regulator: 2.91 kg
<b>Maximum flow</b>	40 Nm <sup>3</sup> /h		Double regulator: 3.95 kg
<b>Network connection</b>	Ready-to-braze copper tube 10 x 12 mm diameter	<b>Weight of magnetic materials</b>	Single Damao™: 80 g
<b>Upstream pressure gage</b>	0 to 16 bar		Double Damao™: 145 g
<b>Pressure gage accuracy</b>	± 2.5% of the full scale	<b>Sensor connection</b>	M10 x 100
<b>Standards</b>	ISO 10524-2/ISO 7396-1 standards	<b>Downstream pressure gage</b>	0 to 10 bar (0 to 16 bar for the Air-800)
<b>Lifetime</b>	10 years	<b>Status</b>	Medical device



# Dalian™ Area Valve Section Unit

**Dalian™** is an essential element in single pressure level piping networks.

This area valve section unit secures the distribution of medical fluids, identifies faults and enables the network to be powered in the event of an emergency.

### Modularity

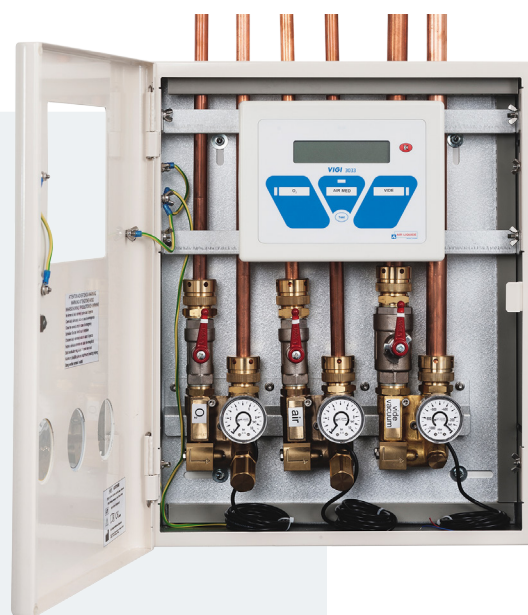
- Compatible with all medical gases
- Flexible configuration: from 1 to 3 types of gas, with or without alarm, surface or flush mounting

### Safety

- Pressure gauge with built-in sensor
- Built-in emergency valve and socket allowing the connection of a cylinder to supply the network
- Hand unlocking emergency system

### Efficient assembly

- Standardized pre-assembly of pipes
- Easy attachment of the gas kit in a single gesture



<b>Gases available</b>	O <sub>2</sub> , Air, N <sub>2</sub> O, CO <sub>2</sub> , N <sub>2</sub> , Air-800 and Vacuum	<b>Weight</b>	Weight of the flush-mounted box: 10 kg (including 3 kits and 1 Vigi™)
<b>Pressure</b>	5 bar		Weight of the surface-mounted box: 12 kg (including 3 kits and 1 Vigi™)
<b>Power supply</b>	NIST	<b>Network connection</b>	Ready-to-braze copper tube, diameter 13/15 and 20/22 mm
<b>Sensor connection</b>	M10 x 100	<b>Weight of magnetic materials</b>	7 kg
<b>Mounting version</b>	Flush-mounted or surface-mounted	<b>Lifetime</b>	10 years
<b>Standards</b>	ISO 7396-1	<b>Status</b>	Medical device

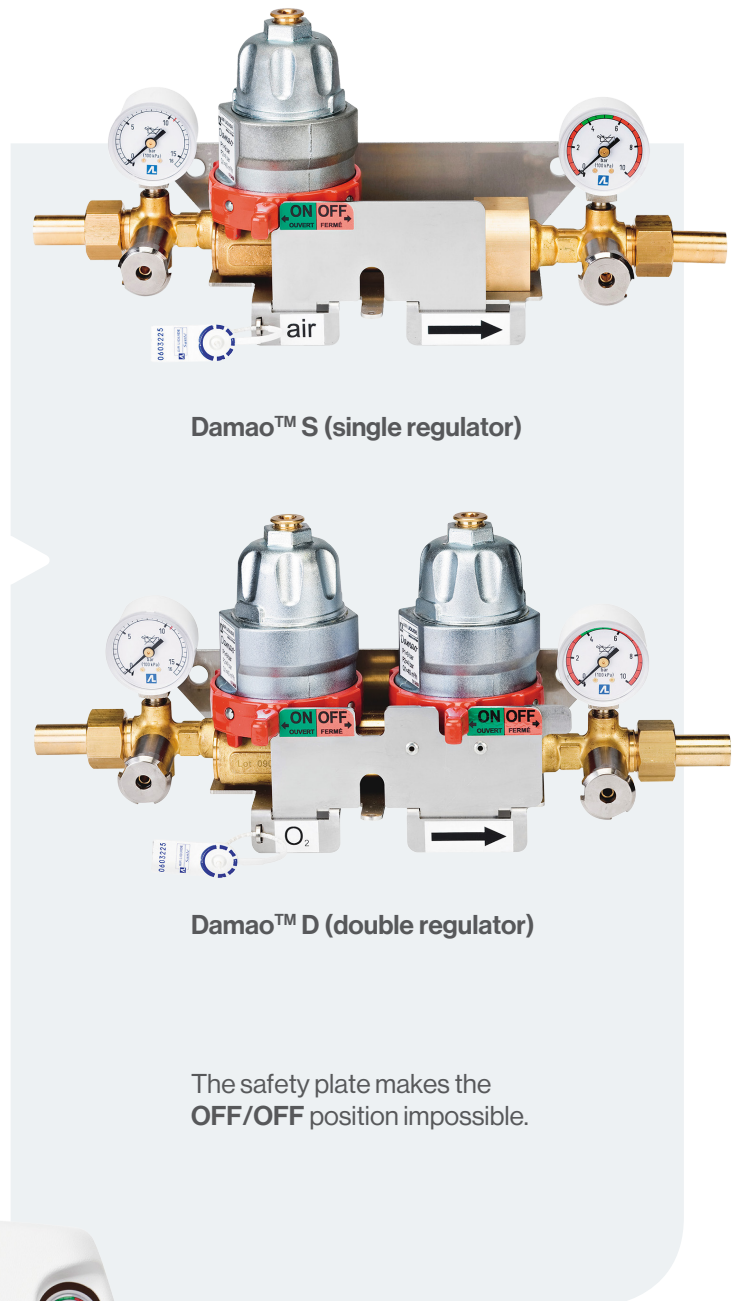
# References

## Damao™

Description	Reference
Damao™ S O <sub>2</sub> NF 4b	BB023100
Damao™ S Air NF 4b	BB023300
Damao™ S N <sub>2</sub> O NF 4b	BB023200
Damao™ S CO <sub>2</sub> NF 4b	BB023700
Damao™ S N <sub>2</sub> -800 NF 8b	BB023500
Damao™ S Air-800 NF 8b	BB023400
Damao™ D O <sub>2</sub> NF 4 bar	BB022100
Damao™ D Air NF 4b	BB02230
Damao™ D N <sub>2</sub> O NF 4b	BB022200
Damao™ D CO <sub>2</sub> NF 4b	BB022700
Damao™ D N <sub>2</sub> -800 NF 8b	BB022500
Damao™ D Air-800 NF 8b	BB022400

## Accessories and tools

Description	Mark
Protective cover (x5)	BB022000
White plastic seal with AL logo 185 mm (x10)	YA011100
Valve key for Damao expansion module	CY011800
Reversibility kit (x5) 12 elastic pins, 5 UD double arrow labels, 10 diabolito joints for pressure gage	BB021900

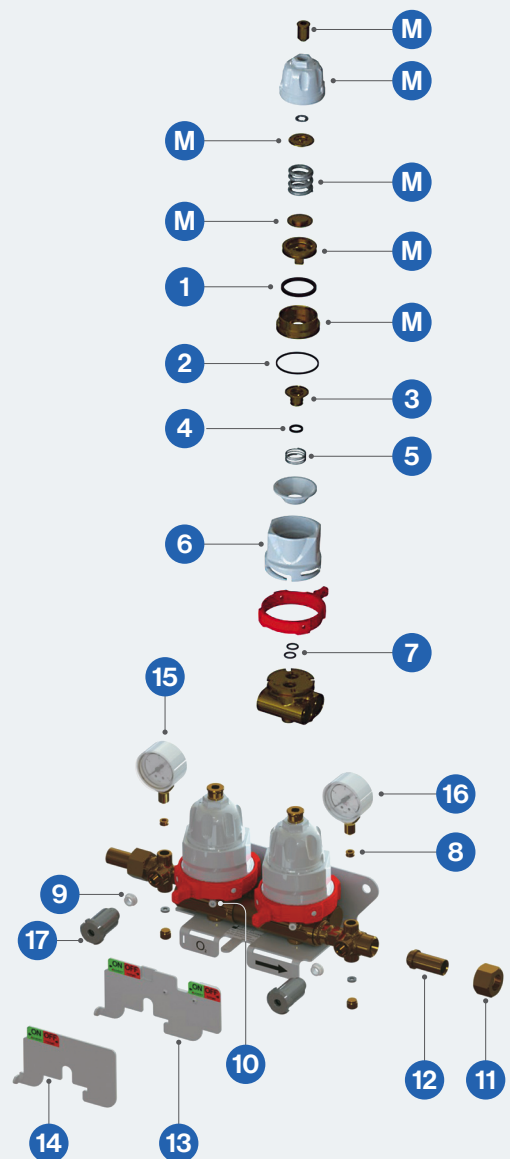


## Spare parts

CY008800, 2 year maintenance kit:

Description	Mark
Thoric gasket R25 (x10)	1
Thoric gasket 46 x 2 (x10)	2
Valve (x10)	3
Thoric gasket 11.6 x 2.4 (x10)	4
Filter (x10)	5
Thoric gasket 12.5 x 2 (x20)	7

Description	Reference	Mark
Regulation module 4 bar	BB021300	M + 1-6
Regulation module 8 bar	BB021400	M + 1-6
Safety plate double Damao™	BY015800	13
Safety plate single Damao™	BY016300	14
Screw CHC M4 x 8	YV036500	10
Nut	AD050400	11
Brazing socket 10 x 12	AD050300	12
Manometer 16B D40 RR M10 x 1 primary network	CX110400	15
Manometer 10B D40 RR M10 x 1 Secondary network	CX110300	16
Manometer 16B D40 RR M10 x 1 Secondary network	CX110500	16
Diabolo gasket for manometer (x20)	CX079200	8
Terminal unit NF O <sub>2</sub> BP	CK023501	17
Terminal unit NF Air BP	CK026100	17
Terminal unit NF CO <sub>2</sub> BP	CK029100	17
Terminal unit NF N <sub>2</sub> O BP	CK026200	17
Terminal unit NF Air-800 BP	CK033200	17
Nylon shoulder gasket (x100)	CX075600	9
Label for module Damao™ 4 bar	YF178400	6
Label for module Damao™ 8 bar	YF178500	6



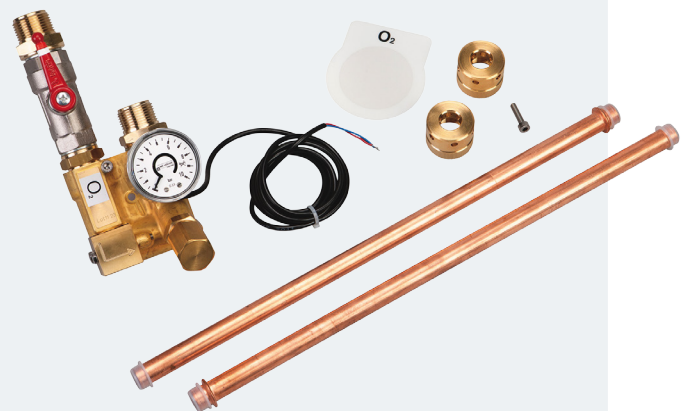
## Dalian™

### Select a Dalian™ box

Description	Reference
Dalian™ F + A (Flush box + alarm opening)	AD073600
Dalian™ S + A (Surface box + alarm opening)	AD073500
Dalian™ F (Flush box)	AD072200
Dalian™ S (Surface box)	AD072100
Dalian™ protective cap	AD073000

### Select the gas kits matching the needs of your facility

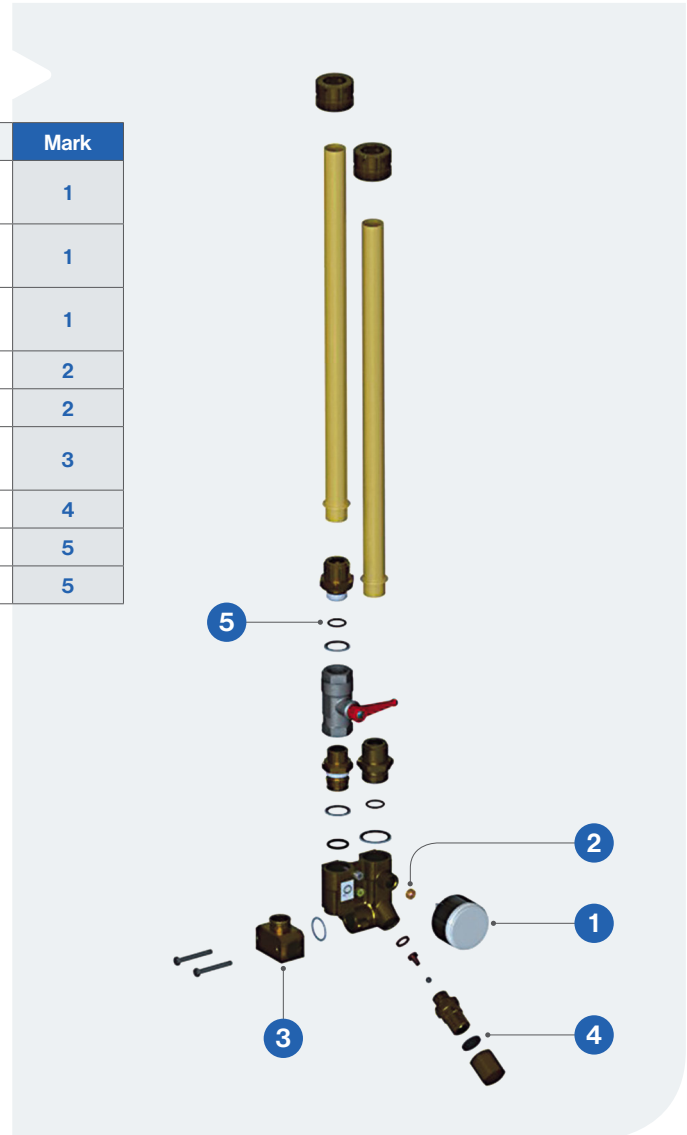
Description	Reference
Kit Dalian™ O <sub>2</sub> ø 13 x 15 mm	AD072300
Kit Dalian™ O <sub>2</sub> ø 20 x 22 mm	AD073700
Kit Dalian™ Air ø 13 x 15 mm	AD072400
Kit Dalian™ Air ø 20 x 22 mm	AD073800
Kit Dalian™ N <sub>2</sub> ø 13 x 15 mm	AD072500
Kit Dalian™ CO <sub>2</sub> ø 13 x 15 mm	AD072600
Kit Dalian™ N <sub>2</sub> O ø 13 x 15 mm	AD072700
Kit Dalian™ Air-800 ø 13 x 15 mm	AD072800
Kit Dalian™ Vacuum ø 20 x 22 mm	AD072900



## Spare parts

Description	Reference	Mark
Manometer with analogue sensor 0-10 bar all gases, 4-20 mA	BY017900	1
Manometer with analogue sensor 0-16 bar for Air-800, 4-20 mA	BY018200	1
Manometer with analogue sensor 0/-1000 mbar for Vacuum, 4-20 mA	BY018000	1
Diabolo gasket 1/4" gas for manometer (x10)	YJ104400	2
EPDM gasket 5 x 3 for vacuumeter (x10)	YJ073900	2
Permanent isolating block (with 2 gaskets and screws)	BY016500	3
Cap for NIST inlet with flat gasket	BY017000	4
Nitrile gasket for Dalian copper pipe (x10)	YJ074500	5
Nitrile gasket for Dalian copper pipe (x10)	YJ074600	5

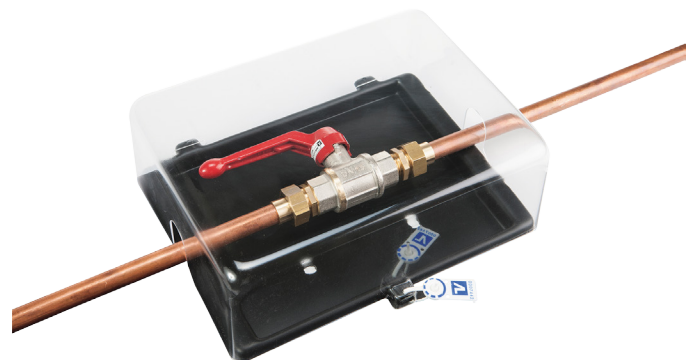
Description	Reference
Label for Dalian™ "O <sub>2</sub> "	YF182600
Label for Dalian™ "Air"	YF182700
Label for Dalian™ "N <sub>2</sub> "	YF182900
Label for Dalian™ "CO <sub>2</sub> "	YF183000
Label for Dalian™ "N <sub>2</sub> O"	YF183100
Label for Dalian™ "Air-800"	YF183200
Label for Dalian™ "Vacuum"	YF182800



## Valves


### Other network accessories

Description	Reference	mm	inch
BS valve	BS001000	08 x 10	3/8"
BS valve	BS001200	10 x 12	3/8"
BS valve	BS001400	12 x 14	3/8"
BS valve	BS001500	13 x 15	3/8"
BS valve	BS001600	14 x 16	1/2"
BS valve	BS001800	16 x 18	1/2"
BS valve	BS002000	18 x 20	3/4"
BS valve	BS002200	20 x 22	3/4"
BS valve	BS002800	26 x 28	1"
BS valve	BS003200	30 x 32	1 1/4"
BS valve	BS004200	40 x 42	1 1/4"
BS valve	BS005200	50 x 52	2"



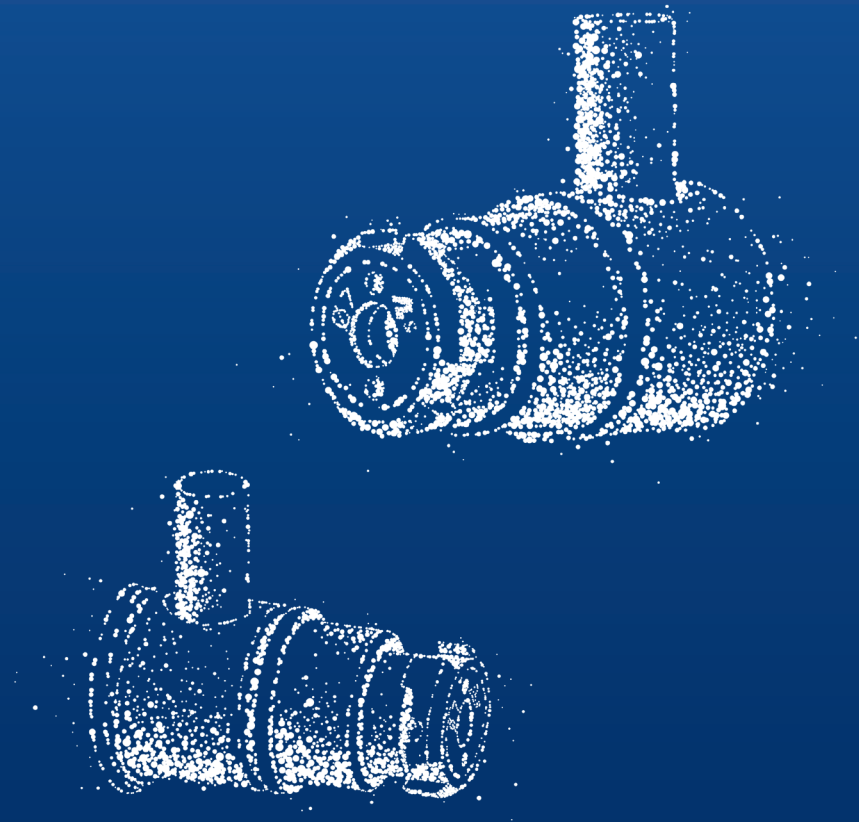
### Accessory

Description	Reference
Sealable box for BS valve (until diameter 20 x 22)	BB010600

- 
- BM terminal units
  - DIN terminal units
  - AGSS terminal units
  - References

4

## Terminal units



## • BM terminal units

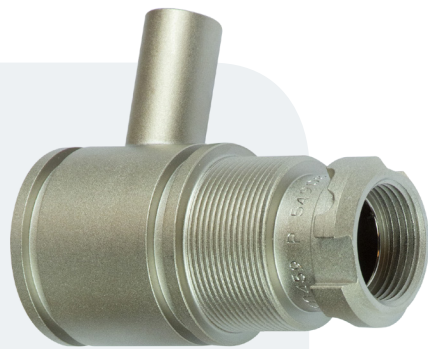
The **BM terminal units** designed according to the French standard (NF), allows quick connections to the medical fluids network. It is used to supply the medical gases essential for patient care. It is fitted with a valve/filter cartridge that can be easily replaced for maintenance.

### Proven product

- Sold for more than 20 years
- More than 3 million connectors installed worldwide
- The most widely used NF wall outlet in France

### The advantages of the one-piece

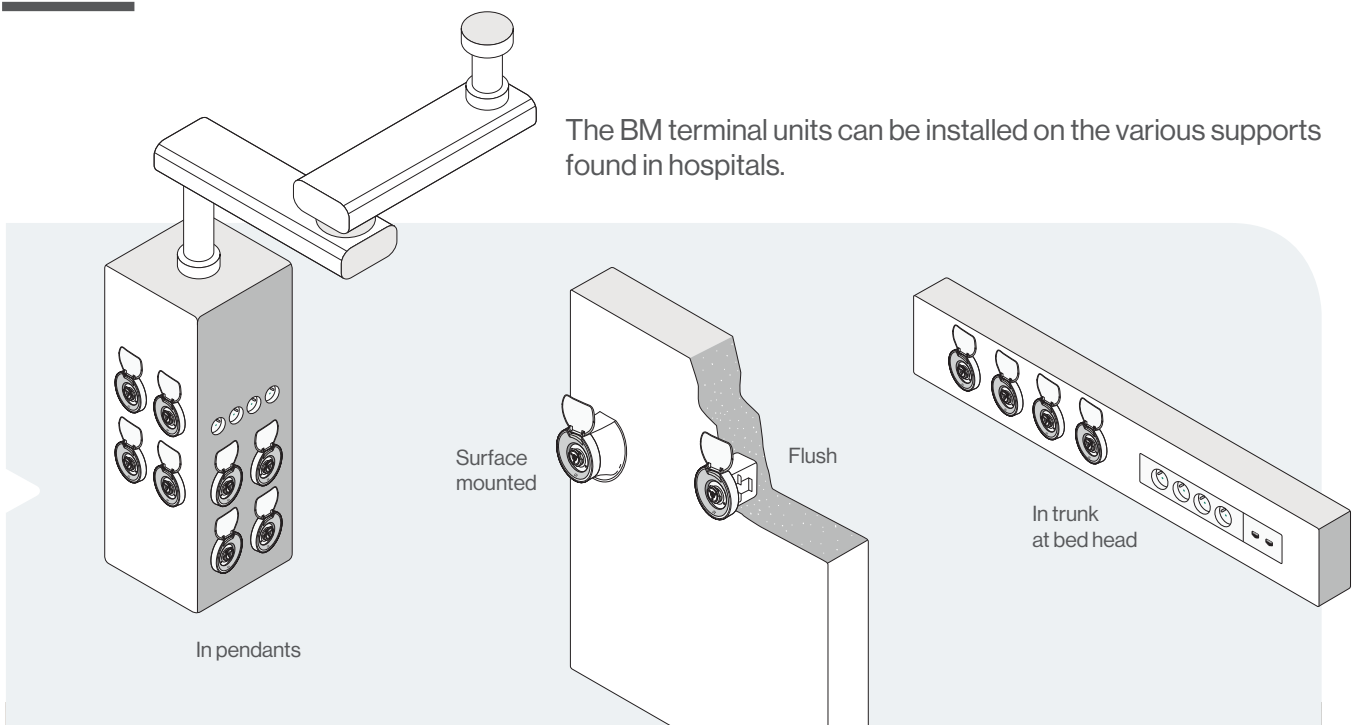
- Quick installation
- Reduced risk of leakage
- Single maintenance part only



<b>Gases available</b>	O <sub>2</sub> , Air, N <sub>2</sub> O, CO <sub>2</sub> , N <sub>2</sub> , Air-800, Vacuum
<b>3 types of mounting</b>	In trunk, flush, surface
<b>Nominal supply pressure</b>	4 to 5 bar for gases, 7 to 10 bar for Air-800, < -0,4 bar for vacuum
<b>Max pressure</b>	10 bar for gases, 20 bar for Air-800
<b>Max flow</b>	150 L/min for all gases, 100 L/min for vacuum
<b>Inlet</b>	Nickel-plated brass spool piece ø 10 mm
<b>Weight</b>	Outlet body 290 g
<b>Weight of magnetic materials</b>	26.1 g (MRI compatible)
<b>Materials</b>	Nickel-plated brass body, nickel-plated brass filter cartridge, ABS Housing
<b>Filter</b>	60 µm for gases and 350 µm for vacuum
<b>Standard</b>	ISO 9170-1 standard. Medical device
<b>Lifetime</b>	10 years



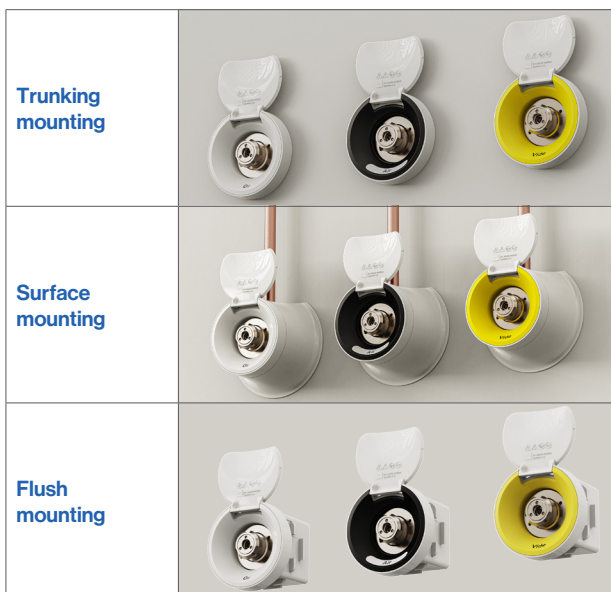
# Installation type



## Outlet housing

The BM terminal units housing protect the outlet. There are three types of housing corresponding to the different types of installation.

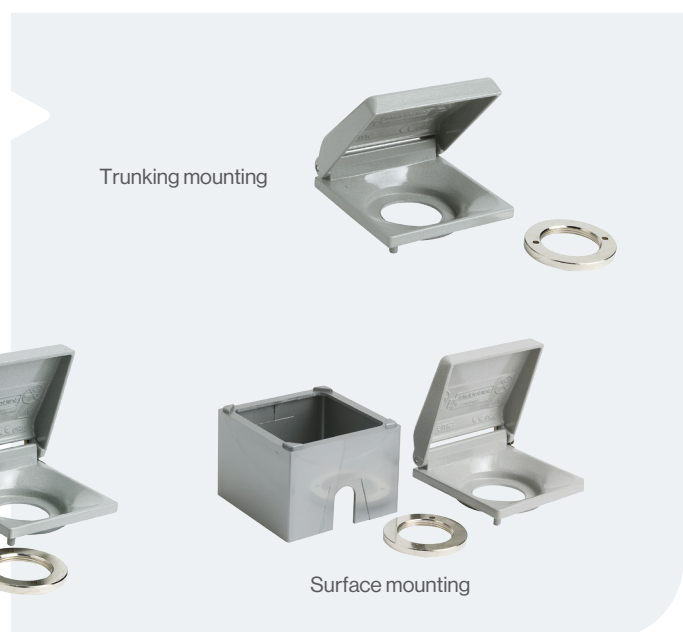
### Smile housing



<b>In wall housing dimensions</b>	Ø 78 mm x 28 mm (D)
<b>Surface housing dimensions</b>	Ø 105 mm x 46 mm (D)
<b>Drilling diameter</b>	67 mm
<b>Weight</b>	Trunking = 46g Surface = 31g Flush = 40g
<b>Material</b>	ABS

### Metal housing

<b>Dimensions of the hinge plate</b>	64 mm (L) x 64 mm (W)
<b>Surface-mounted box dimensions</b>	64 mm (L) x 64 mm (W) x 45 mm (D)
<b>Weight</b>	Box: in 140 g trunk, flush: 200 g, surface: 180 g
<b>Materials</b>	Surface and flush supports in plastic, hinge plate in Zamac



Flush mounting



Surface mounting

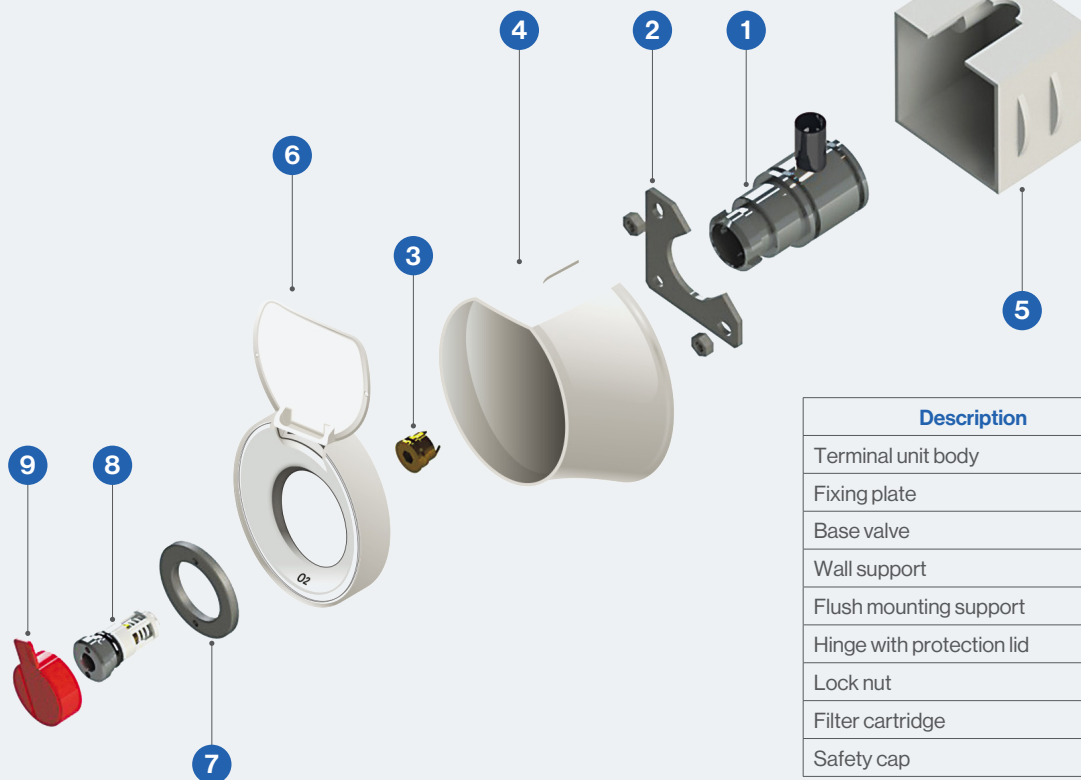
## The heart of the NF gas outlet: the all-in-one filter cartridge

The **filter cartridge** is the sole maintenance part for the BM outlet. It contains a filter and a valve and can be replaced by simply screwing/unscrewing.

<b>Identification of the filter cartridge</b>	<p>On each filter cartridge are:</p> <ul style="list-style-type: none"> <li>• The diameter allowing the gas to be identified instantly</li> <li>• The code (letter + number) guaranteeing visual traceability and thus the proper execution of maintenance</li> </ul>
<b>Maintenance</b>	Replacement of the filter cartridge once a year for heavy services, every 2 years for other services



## The BM terminal units composition

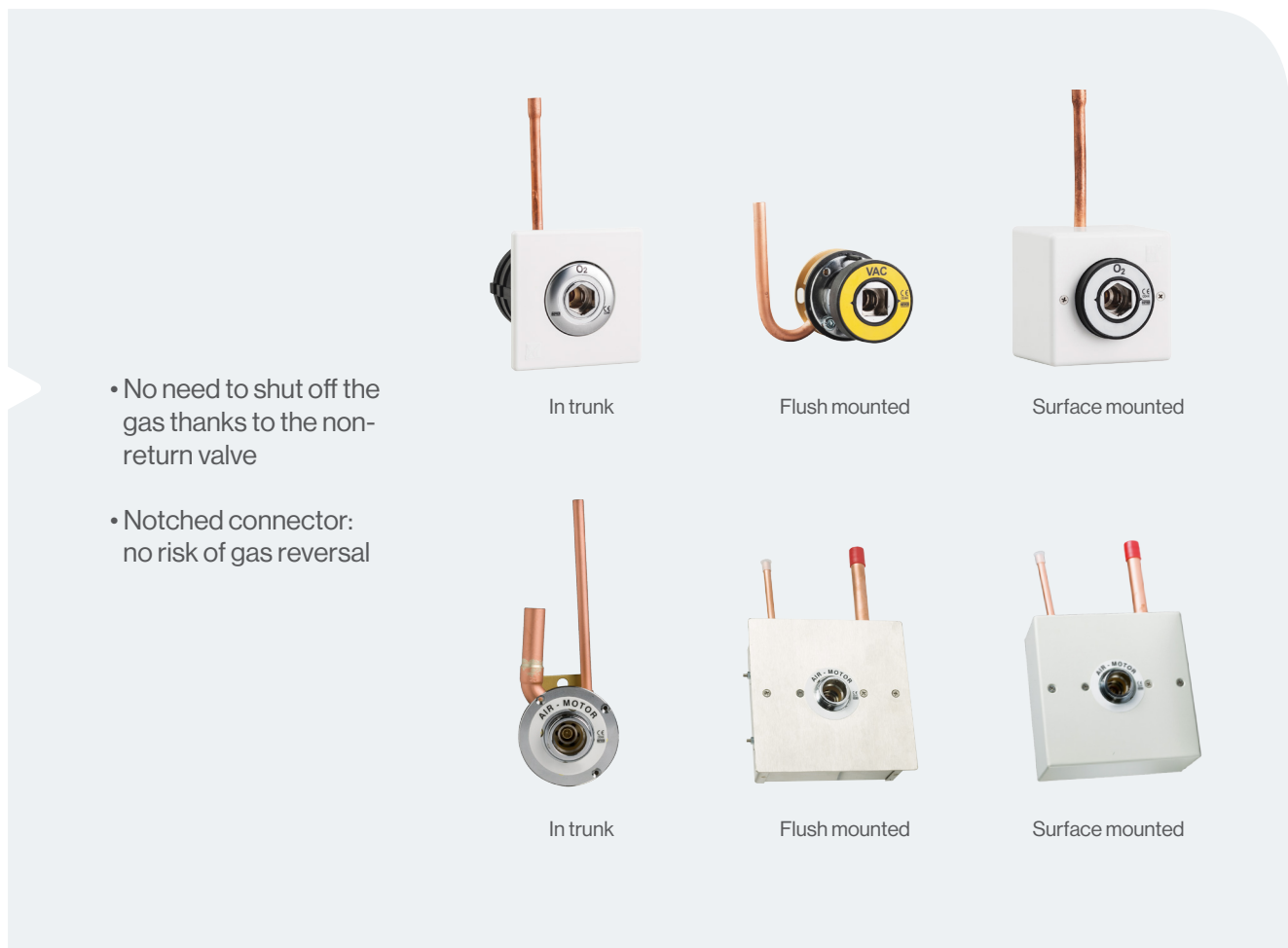


Description	Mark
Terminal unit body	1
Fixing plate	2
Base valve	3
Wall support	4
Flush mounting support	5
Hinge with protection lid	6
Lock nut	7
Filter cartridge	8
Safety cap	9

# Other terminal units

## DIN terminal units

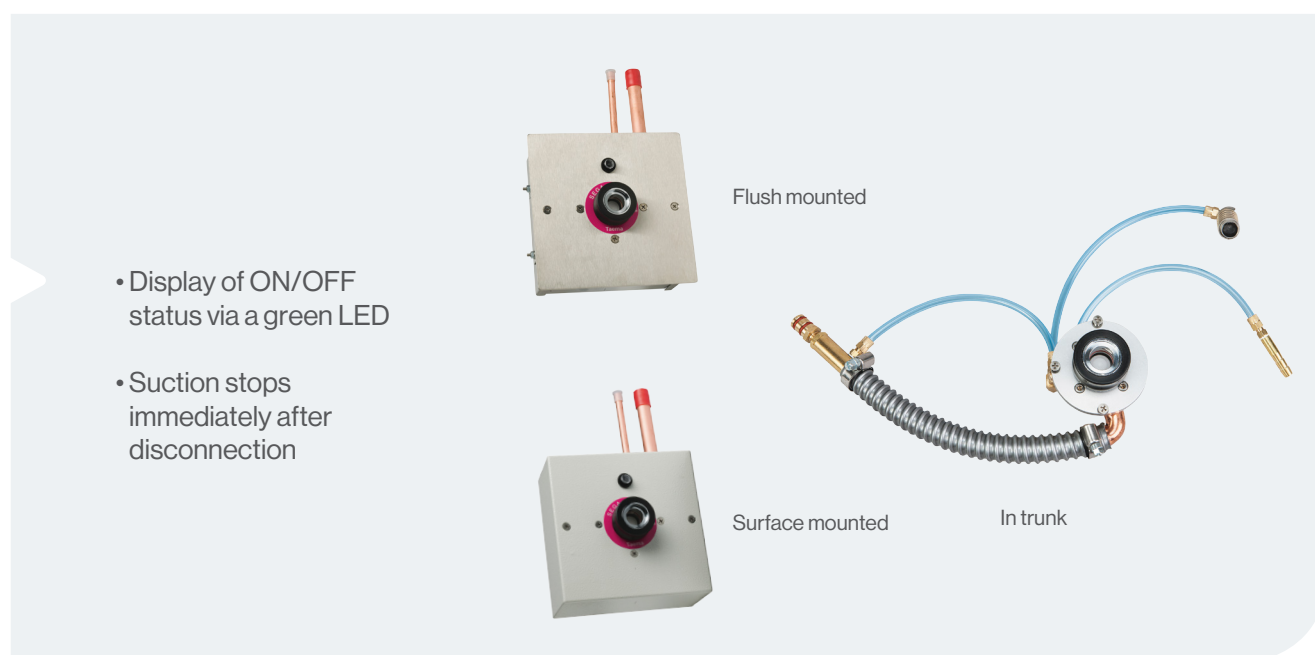
The **DIN wall outlet** is designed according to the German standard to make quick connections without the risk of interchanging medical fluids.



<b>Gas operating pressure</b>	5 bar $\pm$ 0.5 bar, Motor air = 8-10 bars, Vacuum: - 0.7 bar $\pm$ 0.2 bar
<b>Types of mounting</b>	In trunk, flush depth in the wall: approximately 62 mm), surface-mounted
<b>Plastic equalizer</b>	13 mm (only for flush mounting)
<b>Max flow</b>	200 L/min for all gases (500L/min for motor air) and 60 L/min for vacuum
<b>Weight (excluding motor air)</b>	In trunk: 400 g, flush: 640 g, surface: 730 g
<b>Motor air weight</b>	In trunk: 720 g, flush: 2160 g, surface: 2300 g
<b>Materials</b>	Metal: locking parts, valve body (nickel-plated and chrome-plated), Plastic connector body: push button, stainless steel: stainless steel locking parts
<b>Standards</b>	ISO 9170-1 and DIN 13260-2 standards
<b>Lifetime</b>	15 years

## AGSS terminal units

The **AGSS** connector is an essential device for operating rooms. During medical operations, the use of anesthetic gases contributes to the pollution of the room. For the operation to be successful, these gases must be evacuated. The anesthetic gas scavenging system (**AGSS**) creates a pressure drop and sucks up the pollutant gases.



<b>Suction flow</b>	45-50 L/min
<b>Air consumption</b>	40 to 60 L/min
<b>Suction volume</b>	max 80 L/min
<b>Air connection</b>	Copper pipe 6 x 8 mm
<b>Suctioned gas connection</b>	Copper pipe 13 x 15 mm
<b>Air use pressure</b>	5 bar
<b>Types of mounting</b>	In trunk, flush, surface
<b>Front panel dimensions</b>	160 x 160 mm
<b>Dimensions of the flush-mounted box</b>	150 x 150 x 60 mm
<b>Plastic equalizer</b>	20 mm
<b>Weight</b>	In trunk: 670 g, flush: 1,850 g, surface: 2,100 g
<b>Standard</b>	ISO 9170-2 standard
<b>Lifetime</b>	15 years

# References

## Terminal units (supplied with valve, safety cap and original filter cartridge)

Description	Reference
Terminal unit BM NF O <sub>2</sub>	BM000100
Terminal unit BM NF VAC	BM000200
Terminal unit BM NF Air	BM000300
Terminal unit BM NF N <sub>2</sub> O	BM000400
Terminal unit BM NF N <sub>2</sub> -800	BM000500
Terminal unit BM NF CO <sub>2</sub>	BM000800
Terminal unit BM NF Air-800	BM005000

## Securing systems

Description	Reference
* BM terminal rnd housing "O <sub>2</sub> " (6)	BM062602
* BM terminal rnd housing "air" (6)	BM062603
* BM terminal rnd housing "vide" (6)	BM062604
* BM terminal rnd housing "vac" (6)	BM062605
BM terminal rnd housing nude (6)	BM062606
Wall BM terminal rnd support	BM062607
Flush BM terminal rnd support	BM062624
Metal housing	BM001200
Metal housing + wall support	BM001100

\* Already printed housings = label not required

## Smile housing labels

Description	Reference
Label BM outlet rnd "O <sub>2</sub> "	YF254206
Label BM outlet rnd "air"	YF254207
Label BM outlet rnd "vide"	YF254208
Label BM outlet rnd "N <sub>2</sub> O"	YF254209
Label BM outlet rnd "air 800"	YF254210
Label BM outlet rnd "CO <sub>2</sub> "	YF254211
Label BM outlet rnd "N <sub>2</sub> 800"	YF254212
Label BM outlet rnd "ar resp"	YF254213
Label BM outlet rnd "oxygeni"	YF254214
Label BM outlet rnd "vac"	YF254215

## Metal housing labels

Label	Reference	Label	Reference
O <sub>2</sub>	YF254078	Air-800	YF254084
Vide	YF254082	Oxygenio (Portugal)	YF254087
Air	YF254079	Ar respiravel (Portugal)	YF254088
N <sub>2</sub> O	YF254081	Vacuo (Portugal)	YF254089
N <sub>2</sub>	YF254083	Oxygen	YF254085
CO <sub>2</sub>	YF254080	Vacuum	YF254086



## Filter cartridge

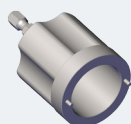
Description	Reference
Filter cartridge ø 6 (x10) Air-800	BM051600
Filter cartridge ø 7 (x10) O <sub>2</sub> , Air, N <sub>2</sub> O, CO <sub>2</sub>	BM055200
Filter cartridge ø 8 (x10) N <sub>2</sub>	BM055300
Filter cartridge ø 8 (x10) Vacuum	BM055400

## Spare parts

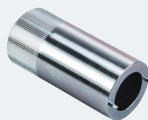
Description	Reference
Base valve (gas)	BM050800
Base valve (vacuum)	BM050900
Box alone for surface mounting	BM050200
Lock nut	BL050100
Safety cap	BM062627

## Tools

YA091830  
2 in 1 BM outlet nut wrench



YA003900  
BM outlet nut wrench



YA004400  
filter cartridge wrench



## DIN terminal units

Description	Reference
DIN gas outlet O <sub>2</sub> - Trunking	BM003100
DIN gas outlet Air - Trunking	BM003300
DIN gas outlet Vacuum - Trunking	BM003200
DIN gas outlet Air motor - Trunking	BM003500
DIN gas outlet O <sub>2</sub> - Flush	BM004100
DIN gas outlet Air - Flush	BM004300
DIN gas outlet N <sub>2</sub> O - Flush	BM004400
DIN gas outlet Vacuum - Flush	BM004200
DIN gas outlet Air motor - Flush	BM004500
DIN gas outlet O <sub>2</sub> - Surface	BM002100
DIN gas outlet Air - Surface	BM002300
DIN gas outlet N <sub>2</sub> O - Surface	BM002400
DIN gas outlet Vacuum - Surface	BM002200
DIN gas outlet Air motor - Surface	BM002500
Socket gasket DIN gas outlet Kit	BM062000

## AGSS terminal units

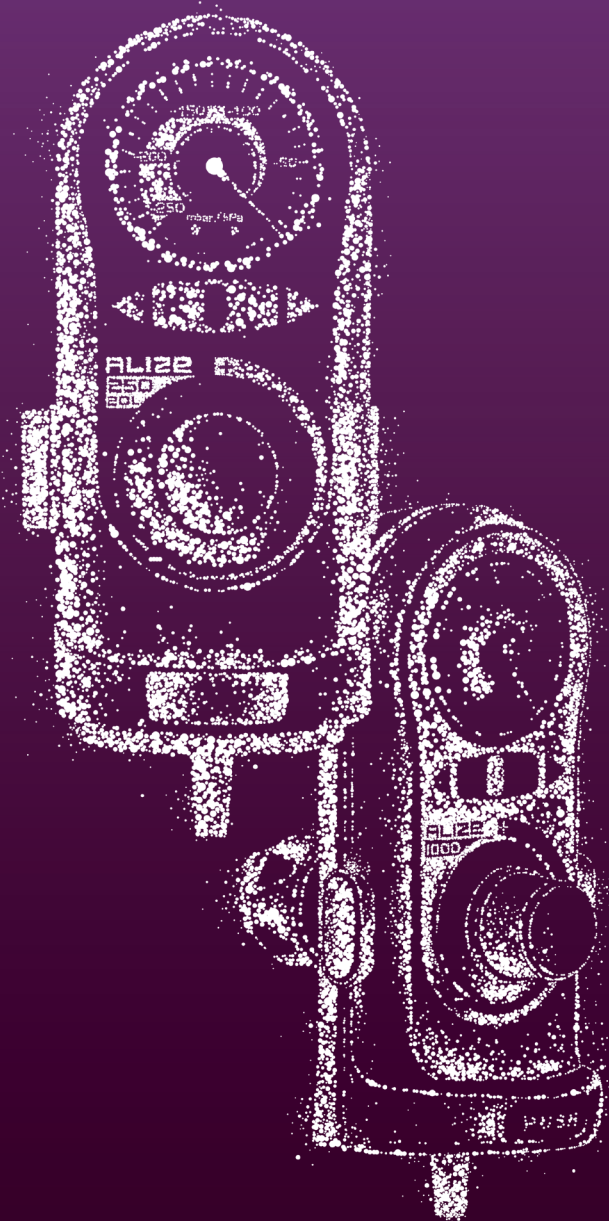
Description	Reference
AGSS terminal unit - Trunking	BM003600
AGSS terminal unit - Surface	BM002600
Socket gasket AGSS terminal unit KIT	BM061800
AGSS terminal unit green light	BM061900
AGSS terminal unit valve	BM062100

- 
- ALIZE™
  - References



5

# Flowmeters



# ALIZE™

**ALIZE™** is designed for precise regulation of suction, using a standardized medical vacuum connector. **ALIZE™** allows the safe suction of fluids and secretions from the patient.

### Sturdy and ergonomic

- Compact and robust design
- Instant on/off system retaining the previous setting
- Indicator window indicating device status (Green/Red)
- Wall connection with EASYCLIC orientating system
- Double scale mbar/mmHg pressure gage

### Precise and adapted

- Precise regulation of suction force
- 4 types adapted from neonatology to surgery

### Safe and hygienic

- Vacuum network protected thanks to the 2 in 1 filter: hydrophobic and bacteriological
- Flat, smooth surfaces for easy daily cleaning



<b>Supply</b>	Medical vacuum	<b>Safety valve</b>	-240 mbar (for ALIZE™ 250 and 250 20 L)
<b>Maximum inlet vacuum</b>	-950 mbar	<b>Adjustable vacuum (depending on model)</b>	0 to -200 mbar = 0/-150 mmHg, 0 to -500 mbar = 0/-375 mmHg, 0 to -800 mbar = 0/-600 mmHg
<b>Vacuum gage accuracy</b>	± 2.5 % of the full scale	<b>Max flow (depending on model)</b>	20, 75 or 80 l/min depending on model and configuration
<b>Dimensions</b>	174 (H) x 85 (W) x 125 (D)mm	<b>Weight</b>	347 g (NF Easyclik version) including 4.2 g of magnetic weight
<b>Storage temperature</b>	0 °C to + 55 °C	<b>Operating temperature</b>	5 °C to 40 °C
<b>Storage and operating humidity</b>	up to 90%	<b>Standards</b>	Normes ISO 7396-1 / ISO 10079-3
<b>Lifetime</b>	10 years	<b>Status</b>	Medical device

# References ALIZE™

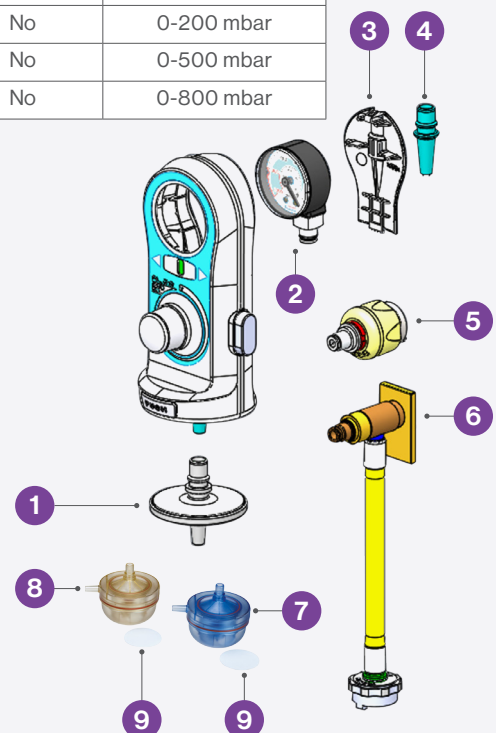
Description	Reference	Includes 2 in 1 filter	Includes rail connector	Adjustment range
ALIZE™ 250 20L NF + F	FB082700	Yes	No	0-200 mbar
ALIZE™ 250 NF + F	FB082800	Yes	No	0-200 mbar
ALIZE™ 600 NF + F	FB082900	Yes	No	0-500 mbar
ALIZE™ 1000 NF + F	FB083000	Yes	No	0-800 mbar
ALIZE™ 250-20L NF	FB083800	No	No	0-200 mbar
ALIZE™ 250 NF	FB083900	No	No	0-200 mbar
ALIZE™ 600 NF	FB084000	No	No	0-500 mbar
ALIZE™ 1000 NF	FB084100	No	No	0-800 mbar
ALIZE™ 250 20L NF F + R	FB087900	Yes	Yes	0-200 mbar
ALIZE™ 250 NF F + R	FB088000	Yes	Yes	0-200 mbar
ALIZE™ 600 NF F + R	FB088100	Yes	Yes	0-500 mbar
ALIZE™ 1000 NF F + R	FB088200	Yes	Yes	0-800 mbar
ALIZE™ 250 20L NF BR + F	FB084600	Yes	No	0-200 mbar
ALIZE™ 250 NF BR + F	FB084700	Yes	No	0-200 mbar
ALIZE™ 600 NF BR + F	FB084800	Yes	No	0-500 mbar
ALIZE™ 1000 NF BR + F	FB084900	Yes	No	0-800 mbar
ALIZE™ 250 20L BR + F	FB089100	Yes	No	0-200 mbar
ALIZE™ 250 BR + F	FB089200	Yes	No	0-200 mbar
ALIZE™ 600 BR + F	FB089300	Yes	No	0-500 mbar
ALIZE™ 1000 BR + F	FB089400	Yes	No	0-500 mbar
ALIZE™ 250 20L DIN + F	FB085000	Yes	No	0-200 mbar
ALIZE™ 250 DIN + F	FB085100	Yes	No	0-200 mbar
ALIZE™ 600 DIN + F	FB085200	Yes	No	0-500 mbar
ALIZE™ 1000 DIN + F	FB085300	Yes	No	0-800 mbar
ALIZE™ 250 20L DIN + F + R	FB087000	Yes	Yes	0-200 mbar
ALIZE™ 250 DIN + F + R	FB087100	Yes	Yes	0-200 mbar
ALIZE™ 600 DIN + F + R	FB087200	Yes	Yes	0-500 mbar
ALIZE™ 1000 DIN + F + R	FB087300	Yes	Yes	0-800 mbar
ALIZE™ 250 20L CM + F	FB086200	Yes	No	0-200 mbar
ALIZE™ 250 CM + F	FB086300	Yes	No	0-200 mbar
ALIZE™ 600 CM + F	FB086400	Yes	No	0-500 mbar
ALIZE™ 1000 CM + F	FB086500	Yes	No	0-800 mbar

## Accessories and consumables

Description	Reference	Mark
2 in 1 filter (X50)	FB081900	1
Cold disinfected jar	FB077800	7
Autoclavable 134 °C jar	FB078000	8
Bacteriological filter (x100) for jar	FY000700	9
Security nozzle	FB072900	4

## Spare parts

Description	Reference	Mark
Vacuum gauge ALIZE™ -250 mbar	FY004400	2
Vacuum gauge ALIZE™ -600 mbar	FY004600	2
Vacuum gauge ALIZE™ -1000 mbar	FY004800	2
Back trapdoor ALIZE™	FY002800	3
Easy click connector	BJ030000	5
Rail connector NF	FY006700	6



**Contact**



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