

	MANUAL OF USE AND MAINTENANCE VIPRS Pressure regulator with integrated valve SERIES RO.165	MAN FT04 Rev. 14 11/10/2024 (EN)
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CE 0123	Dir. 93/42/CEE Dir. 2007/47/CE	Residual – Click adjustment – Fixed calibration Models: RO.165.12294 / 12294AM / 12295 / 12295AM / 12292
T 1370	Dir. 2010/35/UE	

 **WARNING: READ CAREFULLY THIS INSTRUCTIONS BEFORE THE USE OF THIS DEVICE. FAILURE TO COMPLY MAY IMPLY EXPLOSIONS AND SEVERE DAMAGES. DO NOT USE BY NON-SPECIALIZED OR NON-DULY TRAINED PERSONS.**

 **ATTENTION: IN CASE OF DAMAGED PACKAGE, NOTIFY TO SAN-O-SUB MBB BEFORE USE (see section Contacts)**



The instructions must always be available to all those involved in its purchase and use such as:

- Owner of the medical device,
- Medical device installer,
- Responsible for filling the cylinder with the medical device mounted,
- Maintenance workers for medical devices or the cylinder with medical device assembly,
- Users of the medical device mounted on the cylinder.

SAN-O-SUB guarantees the compliance of the valve with the above directives, it remains the responsibility of the indicated persons to verify compliance with the reference legislation in the country in which the device will be used.

Strictly follow the instructions provided in this manual, failure to comply with them will result in the forfeiture of the warranty of the device supplied and the consequent exclusion from any liability for any damage that may occur.

In the case of assembly of the device supplied on another product, it will be the responsibility of the person who carries it out to prepare and provide a new instruction manual for use and maintenance

SAN-O-SUB MBB SRL reserves the right to modify this use and maintenance manual without notice in compliance with Directive 93/42/CEE.

EXPLANATIONS OF SYMBOLS USED IN THE LABELLING AND THE INSTRUCTIONS FOR USE



Generic ATTENTION or WARNING symbol



Catalogue number



Consult the instructions for use



Manufacturer



Lot number



Expiry date



Manufacturing date



Temperature range for use



CE marking as per MDD



Lubricants forbidden



TPED marking

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DEVICE DESCRIPTION

This use and maintenance manual contains and provides the essential information for the use of the Integrated Oxygen Reducing Valve device produced in SAN-O-SUB MBB. The devices are produced and CE-marked in accordance with European Directives 93/42/EEC and 2007/47/EC (concerning medical devices) and Directive 2010/35/EU (relating to transportable pressure equipment). As for the use of the cylinders on which the device is mounted and the various accessories connected to the device, please refer to the instructions for use and warnings for the individual products.

Integrated pressure reducer unit is made of CW 617N UNI EN 12165 brass. It is machined, externally chromed and carefully assembled and calibrated. In all its configurations the safety valve is assembled which is pre-calibrated during assembly and must not be tampered with. The field of use is represented by the distribution of medical gases. The device is suitable for mounting on medical gas cylinders in accordance with existing ADR regulations.

The connection for recharging, in the Italian model, is of the UNI 11144-2 type. In case you want to make a vacuum inside the cylinder, the charging connection must be equipped with the special connection with a pin that keeps the check valve open. The valve-metering unit is delivered clean in accordance with EN ISO 15001 and must be maintained as such with all the devices in which it comes into contact both during installation and during use.

Most malfunctions are caused by contamination of the product. It is the responsibility of the gas distributor company to make the end user aware of all the contents of these instructions.

GENERAL SAFETY REQUIREMENTS

Anyone who uses this device must have complete knowledge of the instructions given in the this manual and other instructions and manuals applicable to the product.

- All parties involved in the use of the device must adhere to and comply with the laws and specific national or local regulations in force.
- Any other non-use is not permitted without written authorization from SAN-O-SUB MBB covered in these instructions.
- Failure to observe the warning instructions provided in this manual can cause damage to people and things.
- The valves must be handled with caution and must not be subjected to shocks or falls, if the valve is damaged should not be used.
- Keep the device out of the reach of children.
- Do not immerse in any liquid and do not expose to high temperature.

- Do not use the flow from the device to supply other devices apart the patient access (e.g. canula, mask).
- The customer is responsible for all damages to people and things, direct and indirect, that may occur derived from improper use or inadequate maintenance.
- Correctly use the flow selector inside the trigger positions corresponding to desired flow.
- Before commissioning the device at the patient, in case of connection to others medical devices or accessories, check their compatibility with the technical characteristics and operating characteristics in the manual in the "technical characteristics" section.
- In particular, the maximum allowable pressure to the accessory / device coupled to the valve reducer must be twice the pre-calibrated outlet pressure.
- The non-compatibility of the accessory / device coupled to the reducing valve can cause excessive or insufficient gas supply.

PRECAUTIONS USING OXYGEN

Oxygen can be extremely dangerous for its combustion gas characteristic, not burns directly, but significantly speeds up combustion. For this reason it is important that if a spark, flame, external heat source or an increase of pressure of oxygen in contact with other materials, the device must be clean and manipulated with attention to this aspect.

- Before using the integrated valve for the first time, check the general state of cleanliness, in particular that of fillets and fittings.
- Most of the drawbacks derive from the intrusion of dust particles or other materials.
- Do not grease or lubricate the valve
- Do not expose the reducing valve to contact with electrical devices or possible sparks.
- Do not smoke near the reduction valve mounted on a filled oxygen cylinder.
- The company that takes care of filling the cylinder with our reducing valve installed he must ensure that the container is kept clean and that there are no containers on its surface traces of dust particles, plastic, metal, grease or lubricants (EN ISO 15001).
- When connecting the integrated valve to another device or accessory, make sure that the latter is compatible with a supply pressure at least double that of pre-calibration of the reducing valve.
- When checking for leaks or gas leaks, use only products compatible with the use oxygen. It is not allowed to use ammonia-based leak detection products as they are not compatible with the brass that constitutes the integrated valve.
- When used, the shut-off valve of the reducing valve must be very open slowly opening quickly could result in high output speed and temperature such as to cause a fire or explosion hazard.
- Position yourself laterally at the opening of the valve.

PRECAUTIONS FOR THE FINAL SUPPLIER OF THE CYLINDER WITH VALVE

This device has been designed for use on high pressure gas cylinders. The end supplier (of reducer valve and cylinder together) is responsible for making the instructions and warnings suitable and sufficient to ensure compliant and safe use available to the end user. All instructions and warnings in the use and maintenance manual must be made available to the end user.

- Use only devices in perfect condition, compatible with the type of gas used and at specified operating pressures and at the required flow rates.
- Do not modify or alter the marking of the reducing valve.
- Respect the tightening torque indicated during the assembly phase on the cylinder.
- The pressure gauge mounted on the reducing valve cannot be used as a reference for determine the filling of the cylinder.
- This device is supplied with a CE marking and therefore complies with these technical indications, the customer must ascertain its traceability after assembly, the customer is required to inform SAN-O-SUB of all possible anomalies and return the defective valves to analysis checks.
- The reducing valve that integrates the check device must be filled using only specifically designed and manufactured SAN-O-SUB specific filling adapters.

PRECAUTIONS FOR THE END USER

- This use and maintenance manual must be available to every person who needs to operate on the integrated valve installed on the cylinder.
- Absolutely avoid working on the integrated valve or trying to remove it from the cylinder.
- Do not attempt in any way to fill the cylinder.
- This device must be used in compliance with the regulations under which it was carried out and to the instructions given by the competent medical staff.

TECHNICAL CHARACTERISTICS OF THE REDUCING VALVE

Storage and use range		
Parameters	Storage	Use
Temperature:	from -20 to + 50 °C ⁽¹⁾	from -20 to + 50 °C
Relative humidity:	from 10 to 100% HR ⁽²⁾	from 10 to 100% HR
Environment pressure:	from 600 to 1200 mbar	from 600 to 1200 mbar
⁽¹⁾ When storing at temperatures below -20 ° C, wait until the valve has reached at least this temperature.		
⁽²⁾ Temporary storage at 100% relative humidity (HR) values deriving from environmental or climatic conditions details requires a subsequent check of the integrity of the packaging and the device.		

Functioning	
Gas:	medical grade oxygen / oxygen based mixtures / air
Inlet pressure (P1)	max 230 bar (as reported by the valve body marking)
Preset outlet pressure (P2)	from 3,5 bar to 5 bar
Available flow rate output	Model 0-6 l/min ⁽³⁾ Model 0-15 l/min ⁽³⁾
Flow selector mod. 0-6 l/min	0.5 - 1 - 1.5 - 2 - 2.5 - 3 - 4 - 5 - 6 l/min
Flow selector mod. 0-15 l/min	1 – 1.5 - 2 - 3 - 4 - 6 - 9 - 12 - 15 l/min
Safety valve	Activation over 5,5 bar (preset during assembly)
Residual pressure valve	from 3 to 5 bar (as per ISO 10524-3)
Codici 12294-12295	Manometer not active (**)
Codici 12294AM – 12254AM	Manometer active (*)
⁽³⁾ Delivery accuracy as required by ISO 10524-3: 2005 in clause 5.4.18.1. The actual flow rate must be within ± 20% of each set value with a flow rate greater than 1.5 l/min or ± 30% of each value indicated for the flow rates of 1.5 l/min or less, while the supply pressure decreases from the maximum cylinder filling pressure up to 10 bar (at 15°C and 101,3 KPa)	
(**) – Manometer start service when the valve is open.	
(*) – Manometer always in service.	

Accessories
Protective cover (Chalice, universal), ISO 1117:2008 drop test compliant.
Stretcher hook.
Filling adapters (not necessary if no check valve is not installed).
Low pressure connection UNI ns. model 12067, G1/4"
Low pressure connection AFNOR ns. model 12064, G1/4"

THE INTEGRATED VALVE

Integrated valve device has been designed and manufactured for easy and safe use in order to facilitate the multiple needs of the patient and the gas supplier.

In particular, the reducing valve is easy to use, also thanks to the simplicity and ergonomics with which it was designed. Respect the characteristics of administration that have been prescribed to the patient by the medical staff.

Facilitates the filling, control and maintenance activities that are carried out by the gas supplier.

All these qualities have been achieved by following and respecting the safety requirements imposed by the various regulations in force.

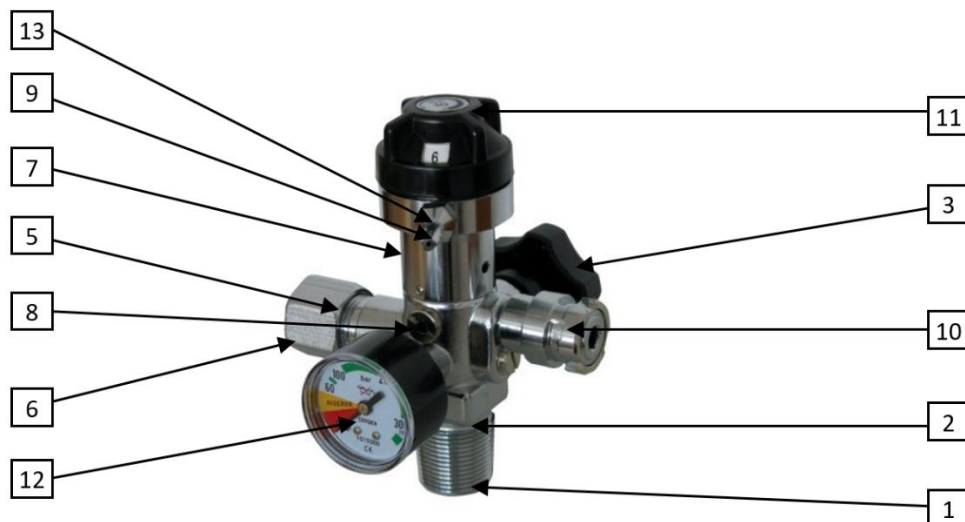
The SAN-O-SUB integrated valve device has been designed and manufactured for the only permitted use, which is that of its permanent mounting on the cylinder. The reducing valve constitutes a single system with the cylinder and therefore its maintenance is borne by the owner of the cylinder.

The valve is composed of the following elements:

- 1) Threaded stem for fixing on the cylinder,
- 2) Filter,
- 3) Shut-off valve,
- 4) Residual pressure device,
- 5) Connection for filling,
- 6) Cap for the filling connector,
- 7) Fixed setting pressure reducer,
- 8) Low pressure safety valve,

- 9) Rubber holder for connecting the use tube,
- 10) Exit for hospital attack,
- 11) Flow selection knob,
- 12) Pressure gauge,
- 13) Non-return device if present.

The device, in emergencies and only by duly trained or medical personnel, can be used to power other equipment for therapeutic use.



ASSEMBLY OF THE DEVICE

Respect the cleaning and safety rules provided in these instructions for the correct use of gases.

- Check the inside of the cylinder making sure that it is free of contaminants (e.g. water, insects, dust, dirt in general).
- Check the cleanliness of the keys and tools used for assembly.
- Check that the threads of the cylinder and the reducing valve are compatible and not damaged.
- Make sure that the reducing valve and the cylinder are made for the same type of gas, otherwise do not install the device on the cylinder.

The integrated valve must only be used with the gas marked on the body of the same by the manufacturer. It must never be used with any other type of gas.

The valve must be mounted on the cylinder according to the values indicated in the table below.



ATTENTION: too high tightening torques, excessive amount of Teflon, non-homogeneous distribution of Teflon and lubricating substances on the thread can lead to damage to the thread with the consequent impossibility of using the reducing valve.

To screw the integrated valve onto the cylinder, position the key in the appropriate housings on its body above the threaded stem (1). Do not force on other components such as the pressure gauge (12) or the shut-off valve to avoid damaging them

Do not disassemble parts of the integrated valve for mounting on the cylinder.

Where required by applicable standards, always protect the integrated valve with a suitable protection cap. The integrated valve mounted on cylinders with a capacity greater than 5 liters must be protected by a suitable cap according to EN ISO 11117.

Benchmark for valve tightening pairs according to Standard EN ISO 13341									
Threaded conical	Valve fillet	Weldless steel cylinders		Welded steel cylinders		Aluminum alloy cylinders			
						Unreinforced cylinder neck		Reinforced cylinder neck	
		MIN torque Nm	MAX torque Nm	MIN torque Nm	MAX torque Nm	MIN torque Nm	MAX torque Nm	MIN torque Nm	MAX torque Nm
	17 E	120 (80*)	150 (100*)	90	150 (120*)	75	95	75	140
	25E	200 (130*)	300 (200*)	110	300 (200*)	95	110	95	180
	M18x1.5	90	100	90	100	75	95	75	95

CHECKS BEFORE FILLING



Check that the device is not damaged (body, flow selection knob (11), pressure gauge (12), shut-off valve (4), etc.). In the event that the device or the protective cap shows signs of external damage, do not use the cylinder and adequately signal to the owner that the device cannot be used. As for repairs and maintenance, carefully read the dedicated parts of this manual (see the chapter "repairs that can be carried out by the user"). Check that the integrated valve and the cylinder on which it is assembled are clean, if this is not the case, carry out cleaning according to the instructions given in the "cleaning" chapter.



Verify that the maximum usage period for the device has not been exceeded. On the same there is the marking showing its date of manufacture. When testing the cylinder (after 10 years), the replacement of the valve is prescribed.

Mark interpretation example:

LOT 18-02/200 N.001

YEAR-MONTH LOT / LOT NO.

SERIES LOT IN 2018; 02 FEBRUARY MONTH; LOT 200; S/N within lot 001



ATTENTION: it is not allowed to reuse the device beyond the 10-year term inferable from the marking on the body of the same. **Check the integrity and cleanliness of the connection for filling.**

Before the filling phase, it is necessary to remove the filling connector cap (6), check the presence and condition of the seal inside the filling connector cap. If damaged, replace it.

Check the presence or absence of the non-return valve inside the refill connection. If this is present, use the original SAN-O-SUB MBB filling fitting to avoid damaging it

Do not use seals that have fallen on the floor, dirty with grease or oils, and have been damaged.

FILLING



ATTENTION: scrupulously follow the prescriptions present in the medical gas filling centers in compliance with the procedures, legal provisions and standards issued by specific sector bodies.

- Unscrew the cap for the filling connector (6) taking care not to lose the sealing gasket housed in it. Check that it is intact, clean and in good condition, replace it otherwise to ensure correct sealing.
- To carry out the vacuum and filling operations if the non-return valve is present, it is necessary to have the specific adapter supplied by SAN-O-SUB which allows you to exclude the non-return device (13) once connected to the filling (5).
- Connect the adapter only if the filling fitting is clean and intact.
- During assembly, do not apply excessive tightening torque.
- The flow selection knob (11) must be positioned on "0".
- The shut-off valve (3) must be completely open by operating it anticlockwise.
- Once the filling operation is complete, the shut-off valve (3) must be closed by turning it clockwise applying a tightening torque not exceeding 2,5 Nm.
- At this point it is possible to remove the filling adapter and refit the cap (6). If the device has a non-return valve, apply a screwing torque of 5 Nm. If the device has not the non-return valve, apply a screwing torque of 40 Nm to the cap.

In the event that, detecting the residual pressure from the pressure gauge (12), is greater than 20 bar, the cylinder must be emptied before applying the adapter by opening the shut-off valve (3) and selecting the maximum flow valves on the knob flow selection (11). This procedure will ensure the integrity of the connection for filling and the adapter.



ATTENTION: the cylinders on which this device is installed must only be filled with medical gas.



ATTENTION: when filling cylinders that have already been used, check that there is residual pressure inside by connecting the adapter to the filling connection and checking for gas leakage. If there is no residual pressure, the integrated valve must be disassembled and sent to SAN-O-SUB MBB for checking.



ATTENTION: during filling avoid high temperatures above 50°C.

If the device shows any malfunction or anomalous behaviour, do not try to fix by yourself. The device shall be sent to SAN-O-SUB MBB or an authorized service provider test for leakage at every filling.

CHECKS AFTER FILLING



ATTENTION: once the filling operation is complete, check for any gas leaks in the vicinity at the valve sealing points. Check the operation of the pressure gauge.

For verification use specific oxygen leak detector. Do not use ammonia-based leak finders that could damage the valve body and other materials.

Check the accuracy and stability of the flow according to the standard ISO 10524-3:2013 Clause 5.4.18.1 when the device is put into operation and at least once a year.

In the filling cycles following commissioning, check the presence of gas at the outlet from any low pressure intake and in all positions of the flow meter, check the seal in the zero position.

At the end of the tests, apply the white seal on the hose connector.

In the event of detection of leaks on the device, proceed as follows:

- Immediately remove the cylinder from the distribution circuit.
- Take it to a suitable place and empty it.
- Disassemble the reducing valve, replace it and have it sent to SAN-O-SUB MBB for checks. Avoid working on the reducing valve and attempting repairs.
- Place the cylinder with the valve replaced in the "CHECKS BEFORE FILLING" phase.

USE



ATTENTION: remove all the protections adopted to ensure the cleaning of the device and used during transport and storage before putting the cylinder into use with the integrated valve. Make sure that the rubber holder (9) and / or the hospital connection (10) are clean and the surfaces with no oil or grease.



ATTENTION: pay attention to the connection of the tube on the rubber holder (9) since an incorrect connection can cause leakage or expulsion of the tube with consequent possible injuries.



It is FORBIDDEN to use any type of lubricant.

DELIVERY OF GAS THROUGH RUBBER HOLDER (9)

The gas can be delivered through the rubber holder (9) for connection to the mask tube or through the hospital connection (10).

The supply of gas using the rubber holder can only take place when compatibility with the fitting, tube, mask, etc. has been verified. the characteristics of the integrated valve. Only after checking, connect the mask tube or other device and check correct positioning.

Position yourself laterally and open slowly, by turning the shut-off valve (3) counterclockwise.

Select the required gas flow by setting it on the flow selection knob (11).

Be careful not to position the flow selector in the intermediate area between two values as the output would be zero.



ATTENTION: do not force the rotation of the flow selection knob (11) beyond the "0" or beyond the maximum value.

CLOSING OF GAS DELIVERY



ATTENTION: to stop the gas supply from the device, turn the flow selection knob (11) clockwise to the "0" position. Do not force the rotation of the flow selection knob (11) beyond the "0" or beyond the maximum value.



ATTENTION: in the event that the flow selection knob (11) is inadvertently positioned in a position between two values, the flow delivery may not correspond to any of the values between which it is positioned.

DELIVERY OF GAS THROUGH HOSPITAL CONNECTION (10) (optional)

Check the compatibility of the fittings and auxiliary devices to be connected with the characteristics of the reducing valve. Connect the hospital connection (10) checking its correct positioning. Slowly open by turning the shut-off valve (3) counterclockwise. The flow selection knob (11) must be positioned on "0".

Coupling type AFNOR (NF S90-116):

- Proceed with the connection by inserting the coupling in the relative lost until the end of the stroke,
- Turn the coupling clockwise to hook it to the socket.

Coupling type UNI (UNI 9507):

- Proceed with the connection by inserting the coupling in the relative lost until the end of the stroke, if you must hear a click. **Attention: when connecting do not pull the ring nut.**
- Make sure that the coupling is hooked to the socket.

CLOSING OF GAS DELIVERY

Close the shut-off valve (3) by turning it clockwise. Do not apply an excessive tightening torque, 3 Nm is the limit value.

Coupling type AFNOR (NF S90-116):

- disconnect the coupling by pushing it towards the reducing valve until the end of the stroke.

- rotate the clutch anticlockwise.
- remove the graft.

Coupling type UNI (UNI 9507):

- disconnect the clutch by holding it with one hand while with the other hand push the ring nut of the socket towards the valve until the clutch is released.
- remove the graft.



ATTENTION: during the use of the hospital connection (10) the flow value is not adjustable.



ATTENTION: pay attention to the connection phase to the hospital attack (10) since an incorrect connection can cause leaks and / or cause the expulsion of the same, causing an injury.



ATTENTION: make sure that the flow rate is compatible with the equipment or devices connected to the integrated valve.



ATTENTION: too quick opening of the shut-off valve (3) can increase the risk of fire or explosion due to the high pressure and speed of the outgoing gas. An incomplete opening can limit the supply of gas.



ATTENTION: the pressure gauge (12) indicates the pressure value of the gas contained in the cylinder with the valve open.

PERIODIC CHECKS

At each filling of the cylinder it is necessary to check:

- The integrity of the cylinder.
- The functioning of the pressure gauge (12) and its integrity.
- The regularity of rotation of the flow selection knob.
- The presence of the sealing o-ring on the filler connector cap (6).
- The state of cleanliness, any oxidation or residues of dirt, dust or other substances on the device.
- The integrity of the rubber holder (9).
- The integrity of the protective cap.

HAZARDS



ATTENTION: during use, always observe the cleaning and safety rules provided in these instructions for the proper use of the oxygen and medical gases used.



ATTENTION: the valve must be kept away from heat sources (fire, cigarettes, open flames, etc.) and easily flammable materials. The flow of oxygen, or of oxygen mixtures, at the output **MUST NEVER and FOR NO REASON** be exposed to sources of heat, sparks or flames. Oxygen and its mixtures can be very dangerous.

Although not flammable, oxygen promotes combustion. The material which is not flammable in air, can burn in the presence of pure oxygen at high pressure. An increase in the oxygen concentration in the environment from the normal level of 21% to 25% is sufficient for the ignition of a flame, in the presence of a spark, flame or heat source, of all the materials present.



DO NOT LUBRICATE any part of the reducing valve with oils and / or greases, nor touch it with fingers, hands or utensils soiled with grease and / or oil. Combustion hazard.



ATTENTION: the cylinder must be protected from sudden blows. Integrated valve device must be protected for the entire period of its use from dust, water and other unfavorable environmental conditions, which could adversely affect its quality, reliability and safety.



ATTENTION: the device must be used only if in good condition. In the event that the user checks that the valve is defective or only suspects it, he must immediately discontinue its use and return it to the manufacturer.



ATTENTION: any home or hospital treatment with medical gas must be subject to medical prescription except in cases of urgency and emergency in which operators in the medical health sector intervene (e.g. ambulance operators).

To ensure patient safety, check the compatibility of the reducing valves with the medical devices and accessories connected to them.

MEDICAL SUPERVISION - data recording for the traceability system. Pursuant to 93/42/EEC and 2007/47/CE Directives, every accident or near accident with possible consequences on the health and safety of people must be communicated to local authorities in accordance with the national surveillance system. The surveillance system requires the manufacturer of the medical device to be informed immediately. In order to guarantee a possible recall SAN-O-SUB MBB recommends that the owner and users keep the registration of the data necessary to guarantee traceability updated.



ATTENTION: stand sideways and open the shut-off valve slowly, too rapid openings can cause the valve to self-ignite. Observe all the precautions provided for the use of oxygen contained in the product safety sheet.

REPAIRS



ATTENTION: repairs shall be done by SAN-O-SUB MBB, an authorized dealer, or persons duly trained. In absence of trained personnel, the repairs shall be performed by the manufacturer only.

The devices to be shipped to SAN-O-SUB MBB for repairs shall be clean, duly packaged and labelled with the indication of the detected malfunction, e.g. the following:

- manometer broken or defective.
- Check valve not functioning.
- Malfunction or leakage from the filling port.
- Filter in the shaft defective, detached or absent.
- Leakage from the rubber hose.
- Hospital connector damaged.
- Rubber hose broken.
- Leakage from the safety valve.
- Leakage from the pressure reducer at fixed settings.

Other defect not included in previous list shall be clearly reported on the accompanying label, in order to make faster the service operations. The manufacturer's address is reported at the end of this manual.



ATTENTION: before disassembling the valve, make sure that the cylinder is completely empty. Thoroughly clean the reducing valve as described in paragraph "cleaning".

- Make sure you have the bags and boxes available for packing and shipping.
- Remove the device only when it can be immediately stored in the packaging and thus ensure its cleaning.
- Blow the threaded stem for fixing on the cylinder (1) with compressed air and remove the Teflon and / or dirt residues.
- If the original packaging is no longer available, use alternatives which still guarantee the transport.

CLEANING

The cleaning of the device, its periodic maintenance and the protection of the connections and fittings with appropriate covers are the responsibility of the owner of the reducing valve.

For a general cleaning (always and only external) of the device use a cloth wet with soap and water, rinse carefully with clean water.

If using cleaning solutions, check that they are not abrasive and compatible with the brass that makes up the valve body, the plastic components, the labels and the gas used.

ATTENTION: never use solutions containing ammonia or flammable liquids.



Do not immerse the reducing valve in water or other liquids.

Do not expose the device to high temperatures.

Prevent the entry of the cleaning solution into the fittings and openings of the device.

DEFECTS, CAUSES AND REMEDIES

Supplier company		
DEFECT	CAUSE	REMEDY
The indicator of the gauge (12) indicates "0"	The cylinder is empty.	Change cylinder.
	Manometer is broken.	Call for assistance.
No flow from nipple (9)	Flow selection knob (11) at position "0"	Set the flow selection knob (11) at the correct value.
	Main on/off valve (3) not correctly open	Open main on/off valve (3).
Gas leak from valve connection (1) and cylinder.	Incorrect assembly of the integrated valve on the cylinder.	Take the cylinder in vented place and call your gas supplier for assistance.
Gas leakage from refilling port (5)	Incorrect assembly or seal damaging on the refilling connector (5)	Call for assistance.
Gas leak from gauge (12)	Gauge damaged or incorrectly assembled.	Close the integrated valve (3), take the cylinder in vented place and call your gas supplier for assistance.
Gas leak from interception valve (3)	On/off main valve (3) damaged or incorrectly assembled.	
Gas leak from no-return device (13)	Damaged or incorrectly assembled no-return valve (13)	

Gas leak from low pressure safety valve (8)	Damaged or incorrectly assembled safety valve (8)	
Increased exit or intervention of safety valve (8)	Damage to the fixed calibrated valve (7)	
Lack of flow while the gauge (12) indicates the cylinder is still full.	Damage to the reducing valve.	Call for assistance.
Difficult rotation of the on/of main valve (3)	On/off main valve (3) damaged.	

User		
DEFECT	DEFECT	DEFECT
Insufficient or null oxygen flow supply.	On/off main valve (3) is not fully open.	Open on/off main valve (3) and check pressure on the gauge (12).
	The integrated valve does not work.	Return the cylinder to the supplier.
	Presence of particles in the cylinder/valve assembly.	Return the cylinder to the supplier. DO NOT USE the cylinder.
	Inhalation device stopped or defective.	Disconnect the inhalation device. If flow is restored, clean or replace the inhalation device.
Opening of the main on/off valve (3) is not possible	The on/off main valve (3) is defective.	Return the cylinder to the supplier.
	The on/off mail valve (3) was tightened too much during the last closing.	Return the cylinder to the supplier. DO NOT ATTEMPT to force the valve.

STORAGE

- The integrated valves or the valve / cylinder assembly must be stored in clean and dry environments, preferably in the packaging in which they are delivered.
- The integrated valves or the valve / cylinder assembly must be stored away from open flames or heat sources and must be protected from prolonged exposure to direct sunlight.
- The integrated valves or the valve / cylinder assembly must not be stored in very cold places. The limit temperatures are shown in the chapter TECHNICAL CHARACTERISTICS OF THE INTEGRATED VALVE.

EXPIRY DATE

The device expires in 10 (ten) years.

TRACEABILITY

According to Directive no. 93/42/CEE SAN-O-SUB MBB ensures traceability of the device and its components through its archive.

DISPOSAL

For disposal follow local rules.

WARRANTY

SAN-O-SUB MBB guarantees each product and component for one year from the purchase. The guarantee is intended ex works and is not due for careless or improper use.

It covers any manufacturing defects in materials or construction of the device. SAN-O-SUB MBB declines all responsibility for damages related to production failure, loss of profit, damages and indirect losses.

Any returns must be agreed in advance with SAN-O-SUB MBB.

Responsibility for the device irrevocably passes to the owner or user of the same, if the device is maintained, modified or repaired by personnel not employed by SAN-O-SUB or not authorized by the same.

SAN-O-SUB declines all responsibility in case of improper use due to non-compliance with this manual.

CONTACTS

For any information or report:

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In case of accident, report the occurrence to San-O-Sub MBB and the Competent Authority.