

## CHECK

Verify at least every 6 months or at intervals as agreed by user (hospital or health company).

1. Check leakage on outside of pressure reducer following point 13 abovementioned.
2. Check all threads for leakages using a solution of water and soap.
3. Check the accuracy of measure of flow. In this case it is best to seek technical help from your local agent.

## MAINTENANCE

SAN-O-SUB pressure regulators are manufactured with material that does not require ordinary maintenance if used correctly and the checking every 6months is effected. Nevertheless, inside the instruments there are non-metallic parts that require an extraordinary maintenance after and every 5 years from production.

Ordinary maintenance carried out by professional technicians.

**⚠ ATTENTION:** effect the following only with reducer removed from the cylinder.

- A. Replacement of O-Ring at inlet of pressure reducer - valve connection (use only viton O-Ring 70 sh.)
- B. Replacement of H.P. and L.P manometers (use only oxygen manometer diam. 40mm 1/8"gas conical class 2,5)  
Attention: When removing faulty manometers take care to clean the thread from residue of teflon or seal paste by using decontaminated air or nitrogen.  
DUST or BRASS RESIDUE left inside pressure reducer may cause serious injury.
- C. Clean pressure reducer with cotton cloth.

**EXTRAORDINARY** maintenance must be effected after 5 years from production or in case of abnormal function resulting from periodical checks, maximum service life for the product is 10 years providing the above maintenance recommendations are followed

This is only to be effected by SAN-O-SUB ITALIA or authorized local agent.  
**TRACEABILITY OF REDUCER:** SAN-O-SUB guarantees the traceability of reducers sold under the CE norm for medical devices.

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**SAN-O-SUB ITALIA** s.r.l.

**EQUIPMENT FOR GASES**

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## OXYGEN REGULATOR FOR MEDICAL GASES

### SERIES RO.200./300

**⚠ ATTENTION :** IT'S EXTREMELY IMPORTANT TO READ AND TO UNDERSTAND ALL THE INFORMATIONS CONTAINED IN THIS MANUAL IN ORDER TO EXTEND THE KNOWLEDGE OF THE APPARATUS TO AVOID EXPLOSIONS OR SERIUOS INJURES

**CE 0123**

COD.	MODEL	CONNECTION IN/OUT	PRESSURE GAUGE IN/OUT	DIMENSIONS
RO.200	Preset pressure reducer with fixed outlet 1 .manometer	UNI (Any European standard / 9/16"	200 / 4 315-bar	90x90x130 mm.
RO.200	Adjustable pressure reducer with 2 manometres	UNI (Any European standard / 9/16	200/ 4 315- 16bar	90x90x130 mm
RO.300	Adjustable pressure reducer with index flowmeter	UNI(Any European standard / 9/16	200/ 15 lt./ min 315bar	90x90x130 mm
RO.200	Adjustable pressure reducer with flowmeter	UNI(Any European standard / 9/16	200/ 15 lt./min 315bar 200/ 06 lt./min 315 bar	160x170x130 mm

### TECHNICAL SPECIFICATIONS

**Inlet pressure:** from 10 to 200 atm

**Outlet pressure:** function of the model

**Inlet fitting:** UNI 11144

**Outlet fitting:** hose up to 4 bar

**Reducer with flowmeter (RO.200):** Flow 0-15 l/min

**Reducer with flow indicator ( RO.300):** Flow 0-15 l/min

**Accuracy:** + or – 10% o 0,5lt.min.

Pressure release valve factory preset.

Outlet of regulator: 3.5 mm hose or with quick connection AFNOR/UNI...

Class of manometers: 2.5

**High pressure gauge:** 0-315 atm - class precision 2.5

**Low pressure gauge:** 0-15 atm - class precision 2.5

## DESCRIPTION

Pressure reducer model RO.200/300 are manufactured in brass CW 617N UNI EN 12165 or in aluminium alloy, chromed externally and assembled carefully according to the model. All the models have pressure relief valve preset from the manufacturer and cannot be tampered with. This is to be used in the control and distribution of medical gases.

The reducer is suitable for assembly on medical cylinders in accordance with existing standards. UNI/DIN/EN/NF or PIN INDEX and with all the norms that rule gas distribution.

Before use check that the reducer is suitable for the same medical gas indicated on the cylinder.

The reducer is to be used with max pressure of 232 bar and in case of preset pressure, outlet is 4 bar.

## IDENTIFICATION

On the body of pressure reducer there are the following markings:

- Name or symbol of gas
- Model with month, year, series number
- CE-with number of notified organisations
- Name or initial of producer
- Maximum inlet pressure

## USE

Before connecting the reducer to the cylinder follow these procedures:

1. Check that the reducer is compatible with same gas of cylinder.
2. Fasten the cylinder on the wall or use an appropriate trolley.
3. Check that the seal is present on the medical valve.

**⚠ ATTENTION:** If there are these substances do not use the gear unit: self-ignition and may cause serious damage to person and property.

4. Remove the seal and check that the thread is not damaged.
5. There should be no traces of OIL, GREASE or DIRT on the reducer.

**⚠ ATTENTION:** In case there is the presence of any one of the above substances, don't use pressure reducer. It is extremely dangerous and may cause injury. Check that there is O-ring on the connection and the gauges are in good condition. In the case of dirty or damaged O-ring, don't use regulator. Replace the O-ring following the instructions under MAINTENANCE.

6. Screw the swivel connector into the cylinder valve with a force of 10/15 Nm to assure enough seal. If you note a blocking during this operation don't force with a key because probably one of the two threads is damaged.  
Fasten the reducer with h.p.manometer in upright position.
7. Unscrew handwheel pressure regulator (in case of adjustable pressure regulator).
8. Connect at the outlet of regulator the medical device that you require by means of rubber tubing, checking that they support the outlet pressure of regulator and that the medical gas is compatible.
9. Screw handwheel of flowmeter in case of reducer with flowmeter.
10. Stay on side of regulator and open slowly the cylinder valve one complete turn.

**⚠ ATTENTION:** opening quickly the valve may cause autoignition of the internal components.

11. Turn anticlockwise the handwheel of flowmeter and clockwise the handle of regulator to start the gas supply.  
In case of regulator with flow index the flow must be read on the index.  
In case of regulator with flowmeter the flow must be read by seeing that the middle of the ball of the flow indicator is on the value required.  
In case of regulator with low pressure gauge the outlet pressure must be read on the manometer.
12. Check that there is no leakage from the pressure relief valve. In case of leakage stop the use of regulator, close the cylinder valve and return the pressure reducer for maintenance.
13. Checking of eventual leakages from pressure reducer:  
Close pressure reducer in one of the following ways:
  - a) Turn the handwheel of flowmeter clockwise, the flow ball indicator starts to fall down to zero (in case of pressure reducer with flowmeter).
  - b) Turn the handwheel of index flowmeter anticlockwise (in case of pressure reducer with index flowmeter).
  - c) Turn the handwheel of pressure reducer anticlockwise (in case of adjustable pressure reducer with 2 manometers).
  - d) Close flow supply (in case of pressure reducer only). Close cylinder valve and wait 60 sec.  
High pressure manometer must remain at same level of working pressure. In case there is a considerable decrease, the fault is a leakage in the unit.
14. Attention: in case of N<sub>2</sub>O or CO<sub>2</sub> medical gas being used for more than 60 min. there may be a freezing of the unit that is seen as frost on the reducer. In this case close the cylinder valve and wait until unit returns to normal condition.

## AFTER THE USE

Close cylinder valve and open the reducer to purge residual gas before unscrewing the reducer from the valve.

**⚠ ATTENTION:** be sure there is no pressure left in the reducer before unscrewing it from the valve. If it is difficult to unscrew the reducer, it is possible that there is still pressure inside.

## PRECAUTIONS FOR USE WITH OXYGEN INCORRECT USE MAY RESULT IN SERIOUS INJURY OR DEATH

- A. Pay particular attention when using medical oxygen gas min. 99,5% and with a sealed cylinder valve .Max working pressure 200 bar.
- B. Fix oxygen cylinder to a wall or on a trolley.
- C. If you note any abnormality during use such as leakage, abnormal noise, loss of oxygen from relief valve, freezing, or faulty gauges etc. suspend use and ask for assistance from your local agent.
- D. Verify the integrity of the unit, the valve and washer of valve connection. For more Safety, substitute after every use.  
**DO NOT use near heating source or bare flame.**  
**DO NOT use oil.**  
**USE pressure regulator with care. DO NOT contaminate with dust or greasy hands.**