CE 0474

EN 250

BOMBOLE

SEAC SUB

CYLINDERS

SEAC DIVING PRO S.r.l.
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WARNING!

In order to prevent corrosion inside the CYLINDER the following operations MUST be performed:

1. **Read the instruction manual carefully before using the cylinder**

2. **Inspect the inside of the cylinder at least every 100 refills or every year.**

3. **Before each refill, make sure that there is no water in the cylinder valve.**

4. **Always empty the cylinder slowly. Quick emptying causes condensation and accelerates corrosion**

5. **Avoid water and/or humidity getting inside the cylinder**

ATTENTION!

Read the entire manual before using this equipment!

⚠

This booklet is not a diving manual. Before using the cylinder or any other product for underwater diving it is necessary to attend a course held by qualified instructors and gain a relevant diving certificate.

The use of diving equipment by unqualified people is very dangerous. Serious accidents, even death, to the diver and his diving companions is possible without the correct training.

The underwater cylinder valve is UNI EN 250 certified which entails a series of functional tests up 50 meters underwater.

This underwater cylinder has been designed for normal air in conformity to norm EN 12, Appendix A.

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Do not use this or any other product of the SEAC SUB range with different gasses or oxygen enriched air mix (commonly called NITROX), without checking that it has been cleaned to accept the gas that you require to use.

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Neglecting this recommendation can cause serious accidents, even death, due to fire or explosions, and can seriously damage the equipment.

If you are not an experienced diver we strongly advise you to get familiar with the equipment by test diving in shallow waters and favorable conditions; or contact a qualified instructor for a refresher course.

Action has been taken to provide adequate protection against internal and external corrosion of cylinders during manufacture.

This action can become ineffective and the cylinder can be subject to corrosion if it is not maintained and used in line with these instruction. SEAC SUB declines all responsibility for any problem of external or internal corrosion due to non-compliance with the instructions in this booklet.

For any other problem refer to your dealer or directly to SEAC SUB. Only SEAC SUB authorized technicians can carry out repairs or maintenance.

SEAC SUB underwater cylinders were planned and built in co-operation with numerous professionals' divers. SEAC innovations guarantee that cylinder reliability remains unchanged even after a long series of

dives. At the same time the functioning and maintenance is easy, economical and simple.

THE VALVES

The valves are made in hot-forged brass; they are subsequently protected by three layers of electrogalvanised coating of more than 12 micron thickness. The internal parts are chrome plated and/or nickel coated brass, with seals in teflon and nitril rubber.

Each one of the two independent turrets carries an INT fitting; unfastening the special fitting with a 6 mm Allen key, you find a thread able to house the DIN 232 bar fitting. The hand grips are big enough to be easily gripped with gloves. The closing valve is conventional, and closes on a nylon pad.

The thread is a standard M25X2.

THE CYLINDER

The cylinder is made in steel 34 CrMo4 with a maximum working pressure of 232 bar (220 bar for the 18 liter model). The weight is such to make the trim slightly negative when the cylinder is empty.

The thread is a standard M25X2.

The coating has an anti-corrosive metal base (aluminum), applied with the flame-hardening method, which reaches a thickness of over 100 micron. Then 5 layers of epoxy bi-component base are applied followed by 3 layers of polyurethan bi-component paint to finish. This treatment has total thickness of over 200 micron and combines bright color with high resistance to chemical and mechanical agents.

RECOMMENDATIONS FOR THE USE AND MAINTENANCE OF STEEL CYLINDERS FOR UNDERWATER BREATHING EQUIPMENT

The following instructions we have referred to the international norms below:

- **EN 132**
- **British Standard BS 4001 (Care and maintenance of underwater breathing apparatus)**
- **DIN 3188 (Druckluft für Atemgeräte)**
- **CGA (Compressed Gas Association: Pamphlet P-5; Suggestions for the care of high pressure air cylinders for underwater breathing)**

During the manufacture of cylinders for underwater breathing equipment, all actions in line with the current legislation has been taken to provide adequate protection against internal and external corrosion.

This action can become ineffective and the cylinder can be subject to corrosion if it is not used correctly or maintenance is not performed adequately.

It is advisable to have maintenance

performed by expert personnel at specialized centers.

- **Handling:**

The cylinders must be handled with care. During transport they must be secured in order to prevent them from falling, rolling and rubbing.

- **Filling:**

Cylinders must be filled only using compressors equipped with filters to ensure that the compressed air is free from humidity and other impurities. The compressed air for breathing equipment can contain no more than 50 mg/m3 of water for loading pressure of 232 bar.

It is important that filling is done gradually to avoid a pressure surcharge and/or cylinder overheating.

Overfilling the cylinders is highly dangerous!

- **During use:**

Avoid emptying the cylinders rapidly as the consequent lowering of the temperature causes the humidity present in the air inside the cylinder to condense.

Before refilling, open the valve let a small quantity of compressed air escape in order to free the nozzle from water and all foreign objects.

To prevent water from entering the cylinder it must never be emptied completely.

Immediately after use, especially in seawater, the cylinder must be washed carefully with fresh water to remove salt and traces of dirt. While washing the bottom the protection net must be removed. Then the cylinder and the valves must be dried.

Do not ever leave the cylinder full for a long period, especially if you think there could be water inside.

- **Maintenance:**

If:

- the cylinder must be stored;
- you think there is water or con densation inside;
- the cylinder has not been moved for a long period;

It will be necessary to perform the following:

* empty the air
* remove the valves
* remove the sea water and/or condensation from the inside the cylinder
* rinse with fresh water and blow dry with clean air
* check for internal oxidation with a light
* lubricate the inside of the cylinder with alimentary Vaseline oil
* reassemble the valves

A very thin layer of oxidation

can be removed by rinsing in fresh water and subsequent drying; if the rinse is not sufficient, Professional maintenance is required.

- **Storage**

When the cylinder is stored the valves must be closed to prevent humidity and any damaging substances from getting inside. The inside of the cylinder must be dry and clean for storage and filled to 50 bar pressure.
The cylinder should be stored in vertical position in a cool place, protected from atmospheric agents, direct sunlight and excessive heat.

BEFORE EACH DIVE

To assemble the proceed as follows:

Check the O-Ring seal incased in the valves: it must be in perfect condition and it is advisable to always carry a spare Replace the O-Ring if there is even the minimal signs of damage, small cuts or porosity.

Open the valve slightly and, let out a small quantity of compressed air. This will clear the valve from any foreign objects.

Remove the protection cap from the A clamp of the first stage.

Place first stage over the valve, ensuring that the valve is seated onto the O-Ring and fasten the closing knob tightly.

Slowly open the valve of the cylinder anti-clockwise. **The valve must be completely open and turned back half a turn before diving.**

Press the purge button on the second stage twice or three times to discharge dust or foreign material. Finally, breathing from the second stage to ensure normal functioning of the regulater.

AFTER EACH DIVE AND PERIODICAL MAINTENANCE

The cylinder is made with excellent quality materials and has undergone exhaustive seawater testing. However you must carry out the listed precautions to protect apparatus from salt corrosion. Follow the step by step procedures when you have finished diving.

As soon as the cylinder has been used, close the valve by turning it clockwise. Discharge the residual air in the regulator by pressing the purge valve in the middle of the second stage. Unscrew the A clamp that holds the first stage in position. (anti clockwise)

Lay the cylinder down to avoid damage. Carefully clean and dry the filter of the first stage and its housing with compressed air. Repeat the same operation on the protection cap that covers the filter. Place the protection cap on the filter and fix it by fastening the counteracting screw. As soon as you have access to clean water, care-

fully rinse the cylinder with fresh water; if you do this with the protection net on, rinse with great care since the net retains large quantities of salt that can start the corrosion process.

Then, discharge a small quantity of compressed air from both connections in order to free the nozzle from residual water. This is extremely important since small quantities of salt water from the valves can get inside the cylinder when filling.

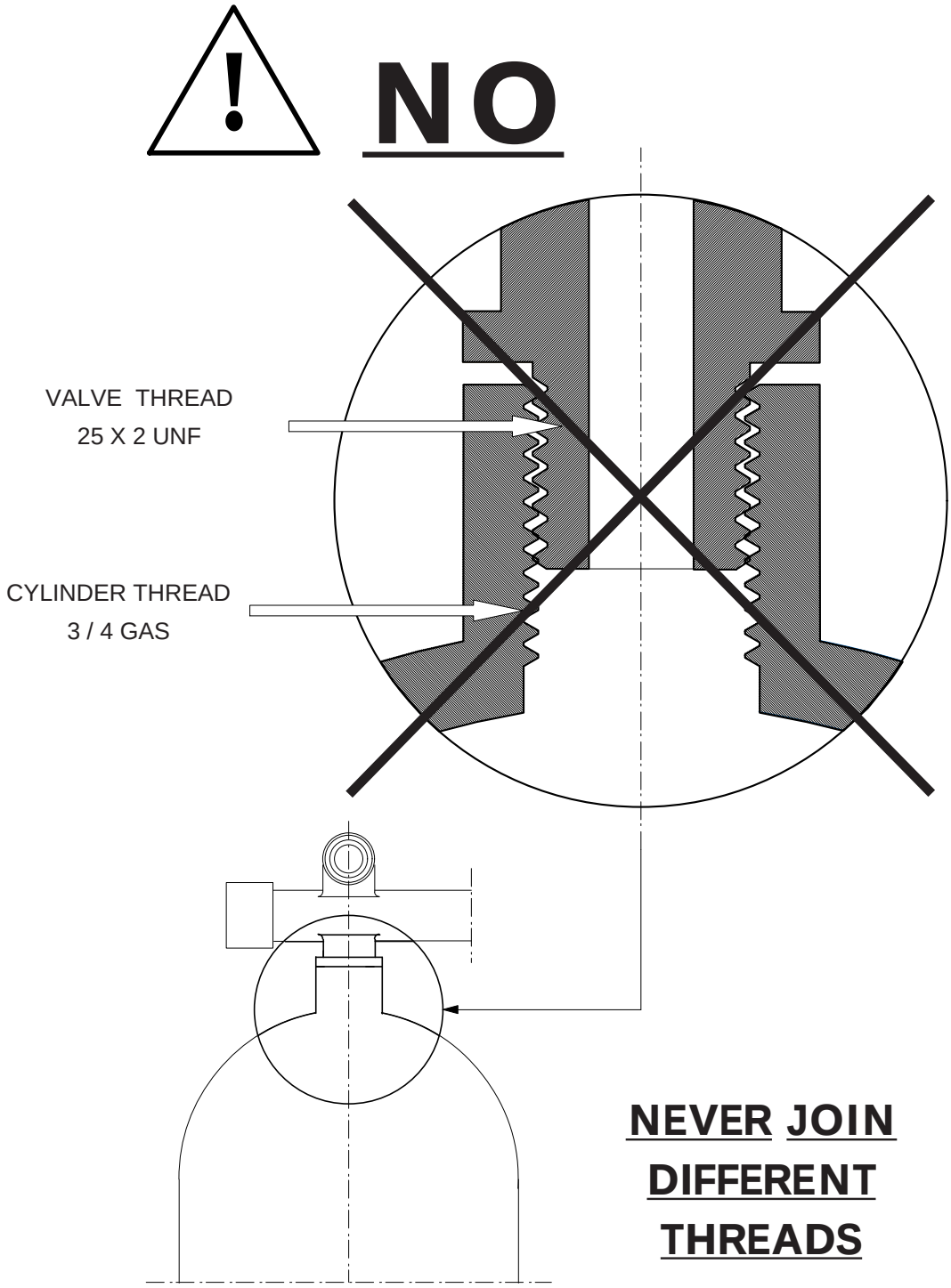
After every dive check the entire external surface carefully for scratches or nicks that have damaged the paint work, then touch-up with anti-rust paint to preserve the external surface from corrosion.

If you think you are not going to use the cylinder for several weeks, let all the residual air out **slowly**; if the flow of air is too strong condensation will form inside.

A inspection of the cylinder inside and out is strongly advised every 100 refills, or at least every 1 year to check for the first signs of corrosion.

Put the inspection certificate in a safe place: you will have to produce it together with the cylinder for the periodical inspections required by law.

ASSEMBLY OF THE CYLINDER VALVES



WARNING!

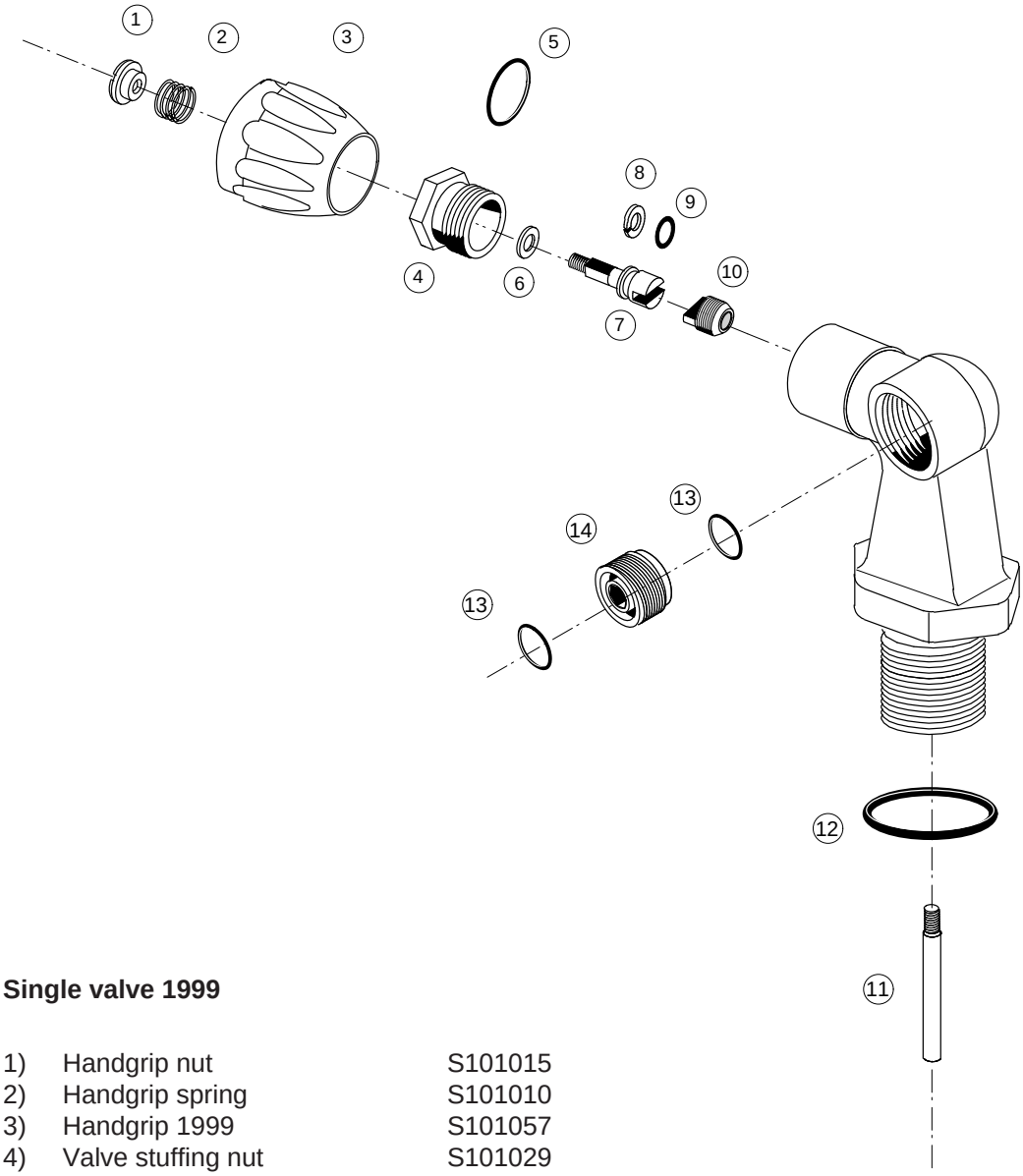
Only qualified personnel is authorized to Carry out maintenance or replace valves.

When a valve has to be replaced, check that the threads of the valve and cylinder are the same.

NEVER force the valves and cylinder together

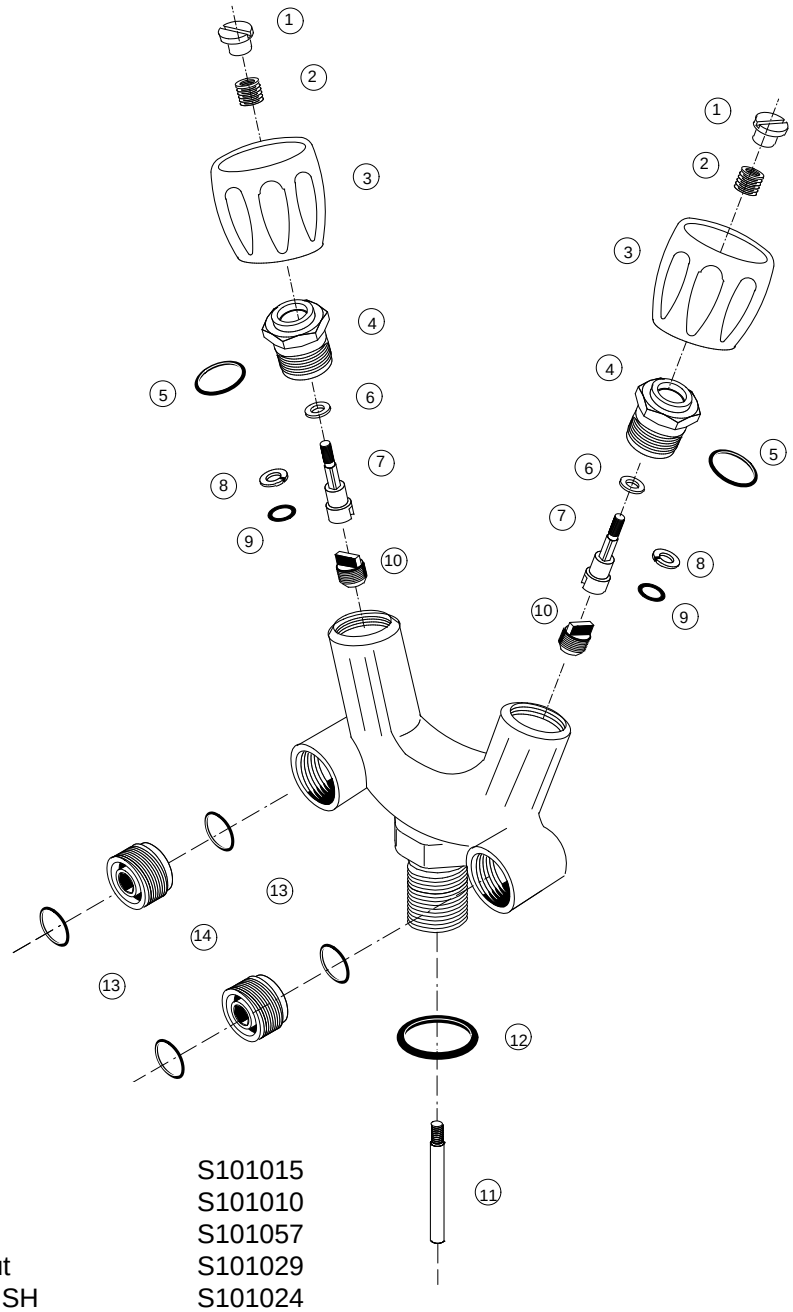
The SEAC SUB cylinders and valve threads are type M25X2; in the past other companies have produced valves with _ gas threads.These are still available on the market: these two thread types are NOT compatible!

Explosions causing serious accidents, even death, can occur if you do not to follow the above instructions carefully.
You may also damage your equipment permanently and irreparably if these instruction are not carried out.



Single valve 1999

1)	Handgrip nut	S101015
2)	Handgrip spring	S101010
3)	Handgrip 1999	S101057
4)	Valve stuffing nut	S101029
5)	O-Ring 2056 70 SH	S101024
6)	Teflon washer	S101011
7)	Valve stem	S101014
8)	Antiextruder ring BK2031	S101020
9)	O-Ring 2031 70 SH	S101017
10)	Complete valve 1/4"	S101050
11)	Small dipping tube	S101016
12)	O-Ring 4093 90 SH	S101019
13)	O-Ring 3050 90 SH	S110011
14)	DIN adaptor	S101027



Double valve 2001

1)	Handgrip nut	S101015
2)	Handgrip spring	S101010
3)	Handgrip 1999	S101057
4)	Valve stuffing nut	S101029
5)	O-Ring 2056 70 SH	S101024
6)	Teflon washer	S101011
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