

:: XSTREAM



# Poseidon XSTREAM for XSTREAM use

**Welcome, new Poseidon divers. Here at POSEIDON we are very pleased that you have chosen one of the world's foremost diving regulators.**

**POSEIDON has been developing regulators for divers since 1958.**

**Professional divers, military divers, and techdivers choose POSEIDON equipment because of the high demands they place on our products - the same demands you have!**

**Your new regulator has been designed to provide you with a life time of pleasure as a POSEIDON diver.**

Our objective is that the equipment you are wearing should not be noticeable, instead it should be at one with the experience and give you total freedom to achieve what every diver dreams about, the ultimate dive. To be at one with the water. To have full control and at the same time feel the weightlessness when, meter by meter you descent into a world of your own.

Nothing shall disturb your concentration. No wheels or levers that need adjusting. No regulators that resist your breathing when you have reached your target depth. No suits that limit your freedom of movement or get damaged at the slightest encounter.

This vision has accompanied Poseidon since the legendary diving enthusiast and engineer, Ingvar Elfström started the company in the late 50's. The same ideas motivate us now.

The name Poseidon represents constant development and improvement of diving equipment where everything is positioned correctly and everything functions, even in the most extreme situations.

Products developed in cold Scandinavian waters that are among the toughest you can dive in. If they work here, they will work anywhere. Poseidon's devoted followers are convincing proof of that. Thank you for your confidence.

Yours faithfully

## APPROVALS/CERTIFICATIONS

The Xstream regulator series is approved according to the EU Directive for Personal Protective Equipment, 89/686/EEC and meets or exceeds the applicable (see Technical Data for full detail) requirements of :



**EN 250:2000 for cold water diving**

**NORSOK U-101 for diving in excess of 50m depth (excluding requirements for CO2 content and temperature of inspired gas)**

**EN 738-1 for oxygen pressure shocks**

**Type approval certificate no 020341, 020342 and 020343 is issued by SGS United Kingdom Ltd., Ellesmere Port, CH65 3EN, UK. Notified body number 0120**

**Production quality assessment according to article 11 B of 89/686/EEC is assessed by SGS YICS Ltd., Portland Road, East Grinstead, RH19 4ET, England.**

**Independent performance testing according to directive and standards is conducted at accredited laboratories Diving and Naval Medicine Centre, Swedish Armed Forces, and Det Norske Veritas, Norway.**

**Poseidon Industri AB is certified according to ISO 9001**





## DEFINITIONS/ABBREVIATIONS

**Oxygen:** any gas mixture containing greater than 21% oxygen up to 99.95% oxygen.

**Trimix:** a gaseous mix containing Oxygen, Nitrogen and Helium.

**EAN 50:** any gas mixture containing greater than 21% oxygen up to 50%. Enriched Air Nitrox.

**IP:** Interstage pressure; the pressure existing between the 1st stage and the 2nd stage valve.

**HP:** High pressure; the pressure inside the SCUBA cylinders, normally ranging between 300 bar (4351 psi) to 10 bar (145 psi)

**Scfm:** standard cubic feet per minute.

**l/min STPD:** standard temperature and pressure dry gas.

**T.D.A:** Thermo Dynamic Anti-Freeze

## GENERAL SAFETY REGULATIONS

Although the regulator is functional with pure oxygen and has excellent breathing characteristics down to 200m (656 ft), the usage is restricted by human limitations, or, by limitations set out by the dive training organisation, whichever is lower.



Poseidon only warrants the regulator performance as specified herein, and cannot be held responsible for improper preparations, incorrect gas mixing and planning, or diving beyond individual medical, psychological and physical limitations.

**Limitations of use:**

**Xstream Duration models no higher oxygen content than 50% by volume**

**Xstream Deep models only for use with air or Trimix with a maximum oxygen content of 21%, and a maximum Helium content of 77%**

**Xstream Dive and octopus only for use with air and a maximum depth of 50 meters.**

**Maximum depth never more than 200 meters (656 ft), but normally limited by medical effects of the gas.**

**The oxygen partial pressure must normally not exceed 1.4 bar (20.3 psi), under the foreseeable maximum diving depth. Only if established oxygen exposure tables are strictly adhered to, and a responsible organisation is planning dives with increased exposures, elevated levels can be accepted for a shorter period of time.**

**The oxygen partial pressure must never be lower than 0.2 bar (2.9 psi), under the foreseeable minimum diving depth.**



The nitrogen partial pressure must not exceed 3.2 bar (46.4 psi), under the foreseeable maximum diving depth.

Inhaling cold gas and exhaling warmed gas, represents energy losses of the human body (thermal imbalance, hypothermia). This effect increases with increasing depth and can result in a sudden unconsciousness. Diving to extreme depths this effect must be considered, calculated and planned for and preventive actions must be taken, such as proper thermal protection and pre-heated gas

Xstream is for unlimited use in water temperatures from water freezing temperature  $t_{ice} + 1^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  (122°F). The freezing temperature depends on salt content.

Diving with gas blends other than air, or deeper than 18 m (59 ft), or in overhead environment, requires special training regarding practices, equipment, physical and medical understanding.

This manual assumes the reader has some basic knowledge in those respects.

Diving is a strenuous physical activity. Its difficulty may be increased by conditions such as cold water, poor visibility, hard work, and increased depth. Always try to exercise prudent judgement when determining whether or not to dive. Never dive when tired or in poor health.

Diving deeper than 50m (164 ft) using gasses other than air is more demanding on the equipment. Most equipment on the market is only approved for use within EN 250 limits. Although Xstream Deep is certified to 200m (656 ft) depth and Xstream Deco is for use with pure oxygen, you must always make sure all of your equipment is suitable.

Do not use gas mixtures containing Helium for dry suit inflation. Helium has very low insulating properties, and contri-

but to a more rapid cooling of the body. Preferably Argon shall be used, but must never be inhaled. Insulating or actively heating of the body surface has very little effect on the hypothermia described above.





## OXYGEN SAFETY REGULATIONS

Oxygen alert and oxygen handling recommendations in this manual applies to all parts and products intended for use with greater than 21% oxygen by volume.

All accessories and other SCUBA equipment connected to Xstream must be approved by the manufacturer for use with the same oxygen content which is used with the Xstream.

Cylinder valves must always be opened carefully and slowly, to avoid pressure shocks.

Oxygen can cause serious medical effects or even death if used incorrectly. Use recognised tables for oxygen exposure.

Xstream Deco/Deco EN 144-3 is approved for oxygen service directly from the box, i.e. it is cleaned to NASA Specification [1] Cleaning test Level 100 (particle contamination) and NVR levels less than ASTM G63 Level C, <50 mg/m<sup>2</sup> (hydrocarbons).

Xstream Duration/Duration EN 144-3 is approved for EAN 50 service, i.e. it is cleaned to the same level as Xstream Deco Regulators and all other equipment for oxygen service must be identified as such

Xstream Deco/Deco EN 144-3 and Duration/Duration EN 144-3 must never be used with contaminated gas. Refere to Breathing gas section.





## PRODUCT DESCRIPTIONS

The Xstream regulator models have been developed based on experience gained from deep diving, cave diving, wreck diving and cold water diving.

The different types all share some common requirements on safety through functionality, simplicity and performance.

### XSTREAM 2:ND STAGE

A number of features greatly improve safety and ease of use:

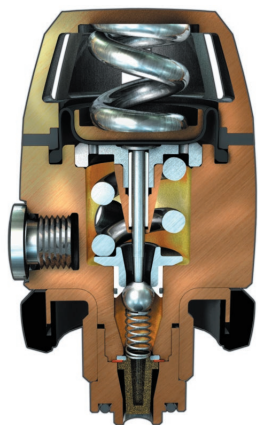
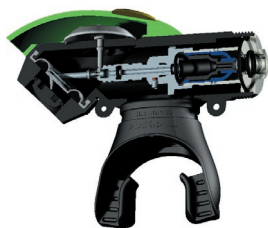
If debris has degraded the function of the exhalation check-valve, it can easily be reached and corrected by just twisting off the diffuser. It is the only part which needs to be disassembled, and if it gets lost during the operation, the regulator will continue to function but must only be used for immediate ascent.

In case of a malfunction in the 1st stage causing excessive intermediate pressure, the safety valve integrated in the hose will bleed off the excessive gas. This system both indicates to you that something is wrong so that you can take action, and because of the up-stream servo-valve technique, allows the regulator to continue to breath normally. (conventional downstream regulators are likely to free-flow in such a situation)

Integrated surgical hose fixing points safely secures the regulator to the diver, but in an emergency allows a distressed buddy to retrieve the regulator without undue stress to the diver.

The dead air space is low at just 49.5 ml (3 in<sup>3</sup>) making CO<sub>2</sub>





Patented

figures (hypercapnia) minimal. Inhalation resistance is incredibly low and unaffected by depth and breathing pattern. Because of the unique Poseidon valve technology, there is no need for external adjustments.

Xstream is fitted with the new ergonomic mouthpiece Poseidon AIR, with asymmetrical lugs for the most comfortable bite.

All diaphragms are protected so that a strong current or using a scooter or tug does not affect either inhalation or exhalation.

A minimal number of moving parts, coupled with thermodynamic engineering, ensures the safe use in an extremely cold environment.

### XSTREAM 1:ST STAGE

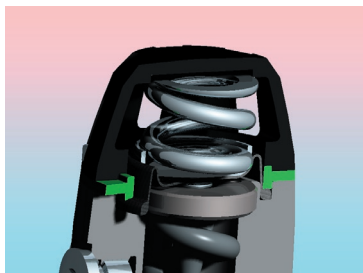
The first stage is a balanced rolling diaphragm ball valve producing extreme leaktightness.

Conventional designs are sensitive to wear, misalignment, and manufacturing precision. A ball always finds its correct place.

Combined with the 2nd stage, the enormous capacity of the 1st stage make the regulator meet the EN 250 breathing performance requirements even at as low as 16 bar (232 psi) cylinder pressure. This means that you gain an extra 34 bar (493 psi) of gas compared to most other regulators!

The Xstream construction requires less o-rings than any other regulator. Except for sealing the blind screws (3-4), there is just 1 sealing o-ring (semi-static) in the bottom-mounted versions and 2 in the side mounted.

The hose routing is developed to be optimised for a redundant system, using two regulators. The HP ports are positioned to accommodate the use of gas monitoring computers e.g. first stage mounted HP sender/receive units.



## POSEIDON T.D.A

Xstream has a built-in Poseidon T.D.A, ThermoDynamic Anti-freeze, which requires no maintenance. It is always there, doing the job. It is thermodynamically protecting the parts which must not freeze.



It is identified by the large slots in the cover, allowing the heat energy of the water to reach the spring. The cold from the inside is consequently insulated from the spring, via an insulation barrier and insulating diaphragm. It is constructed without compromise to any detail to prevent cold reaching the sensitive area. Using Poseidon T.D.A, a regulator can free-flow air in fresh water of 0°C (32°F) for at least 10 minutes and afterwards still be completely unaffected

## DEEP 1:ST STAGE (TRIMIX, AIR)

All materials in Xstream Deep are chosen and tested to be optimised for Helium and high flow. This requires special attention to leak tightness, since Helium gas has such a low density.

All o-rings are of the highest Nitrile quality, and rated for use down to -40°C (-40°F)

Deep 1st stage comes in two different versions. One side mounted and one bottom mounted. Both versions are certified to 200m (656 ft) depth, and colour-coded black which in most countries represents a bottom gas mix.

### WARNING!

Deep must never be used with an oxygen content > 21%, or a helium content > 77%.



### **DECO/DECO EN 144-3 1:ST STAGE (OXYGEN, EAN, AIR)**

**O<sub>4</sub>** stands for oxygen engineered, oxygen compatible, oxygen clean and oxygen approved. Xstream Deco is O<sub>4</sub>. It is not just a viton configured air regulator, but in detail engineered for pure oxygen.

The Xstream Deco cannot be made as a side mounted version, since 90 degree turns of high pressure, high velocity oxygen represents an elevated risk for heating of the gas due to resonance effects. The connection stem is sealed with a pure copper washer sintered onto the filter.

It has been tested for 360 bar (5221 psi) adiabatic compression oxygen shocks of less than 20 ms (heated to 60°C/140°F) according to EN 738-1. To make the test even more severe than required, it is tested with 99.95% purity of oxygen.

Directly from the box, it is cleaned to NASA Specification [1] Cleaning test Level 100 (particle contamination) and NVR levels less than ASTM G63 Level C, <50 mg/m<sup>2</sup> (hydrocarbons).

The Xstream Deco is available as Deco EN 144-3. This configuration comply with the new European standard EN 144-3 for outlet connections for Oxygen/Nitrox gases.

### **DURATION/DURATION EN 144-3 1:ST STAGE (EAN, AIR)**

Duration shares the performance and specifications from Deco, but is identified by colour, and approved for use with EAN mixes up to 50% oxygen

The side mounted hand-wheel versions represents a higher risk for ignition using elevated oxygen contents, due to the 90 degree turn of the high pressure gas flow.

If you prefer the 3 IP ports and such a configuration of your equipment and you do not plan to use mixtures greater than 50% - Duration is the regulator for you.

The green colour coded Duration is offered for your safety at the dive site and during the dive, avoiding the risk of mixing up regulators for different gasses

Both Duration models (side and bottom mountd) are available in EN 144-3 configuration.



## DIVE 1:ST STAGE (AIR)

Dive shares the performance and specifications from the other Xstream 90 models. It is identified by the chrome plated T.D.A. top and the number of outlets: 5 low pressure and 2 high pressure.

Xstream Dive is delivered with a 70 cm hose, but all hoses available for the Xstream regulator also fits the Xstream regulator.



## XSTREAM LP HOSES

All Xstream hoses are made of high quality SBR/NR, and are available in different lengths. For deep dives or in particularly cold conditions a long hose 2.15m (7 ft) has the benefit of warming the gas by as much as 12°C (22°F) under certain conditions.

Using a long hose requires some basic knowledge in its use and routing, to take the full advantages.

Poseidon does not recommend the use of hose protectors on Poseidon IP hoses.

Hose protectors have been shown to mislead the user to neglect the necessary pre-dive hose inspection. Therefore, Poseidon hoses are fitted with wear preventing end crimps, which in addition can be inspected for the full engagement of the hose to the insert at any time through the inspection hole.

The hose end at the 2nd stage includes the safety valve. As a visible indication of a fault, the excessive gas will bleed to the ambient environment.

The hose is available in the following lengths as standard  
2.15m (7ft.)

1.60m (5.3 ft)

0.90m (3 ft)

0.70m (2.3 ft)



## USAGE

### MOUNTING THE HOSE

First time mounting the hose of the length you have chosen, start with unscrewing the blind-screw (5mm allen-key) where you want the 2nd stage. Be careful not to contaminate either the open port or the hose end. Screw the hose in place using a 13mm box spanner. Continue with attaching the 2nd stage. Just screw the nut over the 2nd stage housing, and secure it firmly by hand.

#### OXYGEN ALERT!

If you have a Deco or Duration model, be absolutely sure not to touch the o-ring or other inner connection areas with your fingers, since fingerprints are a combustible contamination.

### PRE DIVE

The procedure described below only describes the manner in which the regulator is assembled, and does not replace all of the various procedures you have learned in your diving training program.

Xstream must always be used with minimum the following SCUBA equipment :

- Compressed gas cylinder(s) conforming to national regulations
- Frame or holding device for the cylinder(s) with the possibility to mount the harness
- A safety system, including at least one of the following:
  - A submersible pressure gauge
  - A reserve valve
  - An active low pressure warning device

1) Always check the gas-content of the cylinder before attaching the regulator.

2) Before attaching the regulator, carefully open the cylinder valve, using gas flow to clear the outlet, then close the valve. Never direct the gasstream to bare skin or clothes (porous materials)



3) Remove the protective cap on the first stage. Check that the O-ring on the regulator's connection is intact and clean, then mount the regulator on the cylinder valve. Turn the handwheel/ yoke-knob until you feel that the regulator is securely fastened.

### OXYGEN ALERT!

Inspect the o-ring, and make sure it is absolutely free from particles and/or grease. Do not touch the o-ring. Grease and particles can cause a fire.

4) Slowly open the cylinder valve all the way, then turn the knob back half turn. When the 2nd stage is pressurised and the servo mechanism engages a maximum of 3 litres of gas vents from the 2nd stage.

### OXYGEN ALERT!

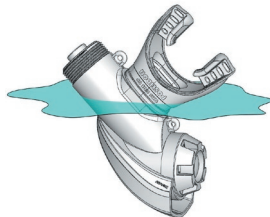
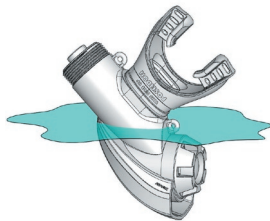
Slow opening of the cylinder valve is the best way to protect the system from compression shocks. Rapid openings represents the highest risk for fire due to compression shock. To ensure a slow opening it is good practice to use both hands, one on top of the other.

### WARNING!

Always open the cylinder, and isolator valves if used, first fully and then a 1/2 turn back. Partly opened valves increases the pressure drop over the valve and can reduce the performance. On some brands, valves that are almost closed can even shut off during a dive due to internal flexing of materials.

5) Press a few times on the purge button on the second stage so as to blow out possible debris.

6) Check the pressure gauge to see that the tank is full,



whilst purging, by watching the almost zero deflection of the needle this indicates that the air is flowing correctly with no restrictions.

7) Test breathe through the regulator and the octopus. If the gas smells or tastes bad do not dive with it.

**Tip!** You can test the regulator's correct setting by partly immersing the 2nd stage in water, see picture. The servo valve should crack open when the regulator is immersed in between the two positions shown.

**Tip!** At dives where the water conditions are very cold or there is an apparent risk for hypothermia, i.e. at Trimix dives or water temperatures  $< 10^{\circ}\text{C}$  ( $50^{\circ}\text{F}$ ), it is recommended to use the surgical cord around the neck for the regulator being used. The mouth region can become numb from cold and you risk losing the regulator.

## DIVING

What is most distinctive about the Xstream is that it is easy to use – there aren't any valves or switches to change the flow of gas, reducing breathing performance, etc. You can leave the function and performance of the regulator in our hands and concentrate on what you want to do - dive.

### OXYGEN ALERT!

If on any occasion the gas tastes bad, especially the taste of chlorine, always immediately switch to another safe gas source. Bad taste can be a sign of an internal combustion, and lethal gasses can be present.

### WARNING!

If on any occasion the safety valve located on the back of the 2nd stage starts bleeding, there is a 1st stage failure. Due to the construction, you can still breathe normally from the regulator. To avoid excessive use of gas, if possible switch to another gas source. Ascend, never dive with a malfunctioning unit



## AFTER DIVE

The regulator should always be rinsed while it is still mounted on the tank.

The regulator should be under pressure, i.e. mounted onto the cylinder, otherwise water can enter either the first or the second stage and cause the build up of ice during your next dive!



1) The regulator should be rinsed in fresh water after every dive so as to avoid salt crystal formation around the functional parts.

2) After rinsing, close the cylinder valve and purge the regulator.

3) Unscrew the regulator from the tank. Check that the protective cap is free from water and debris, then mount the protective cap onto the connection.

The regulator should not be stored in direct sunlight and/or at high temperatures. Make sure it is never subjected to mechanical shocks or impacts.

### OXYGEN ALERT!

Never unscrew a pressurised regulator from the tank. This can create a jet of gas over the o-ring and cause a fire.

### WARNING!

Never use the 1st stage housing to unscrew the regulator from the tank. This can fully or partly unscrew the connection stem from the housing, and create a future hazard. Always use the handwheel.

### OXYGEN ALERT!

Do not smoke in an area where oxygen is present. Never lubricate the regulator and keep hands and tools clean and absolutely free from grease.



## ACCESSORIES

<b>OXYGEN ALERT!</b>	All accessories which may be “wetted” by gas containing > 21% oxygen must be approved and maintained for oxygen use.
<b>WARNING!</b>	Notice that EN 250 marked equipment must only be used with air according to EN 12021. Violation can cause a fire and/or the equipment may not function properly.
<b>WARNING!</b>	The use of accessories which have not been recommended, can seriously impair the function of your equipment. Pressure-gauge hoses without a restriction in the connection can, if the hose is punctured, allow a powerful jet of gas to escape.

Xstream can be combined with the following equipment/ accessories, given that the manufacturers’ instructions for use are strictly adhered to:

Xstream EN 144-3 rebuild kit

Xstream hoses

Xstream (neck strap) surgical cord

Poseidon Jetstream 2<sup>nd</sup> stage and hose, EN 250

Poseidon Jetstream 1<sup>st</sup> stage, EN 250

All CE marked or EN 250 designated cylinder valves

Yoke clamp

All CE marked approved pressure-gauge hoses, rated for WP 300 bar using UNF 7/16” connection.

All CE marked pressure gauges, diving computers, and HP transmitters/senders rated for WP 300 bar (4351 psi)

All CE marked IP-hoses for BCD’s and dry-suits. Xstream feeds 7.5-9.5 bar (109-138 psi) to BCD or dry-suit.

All CE and EN 250 marked mouthpieces

## DIVING GAS

**WARNING!**

Water in the tank is the most common reason for regulator freeze-ups. Inspect your tanks regularly and fill gas only from sources guaranteed to be free from moisture.

**WARNING!**

Gas mixing requires special training and knowledge. Poseidon can not be held responsible for an incorrect gas mix. Always follow established calculation methods and mixing procedures for mixing a breathable gas. These are not described herein.

**Approved gas mixes for Xstream Deep:**

Maximum level of:	
Oxygen	21% by volume
Helium	77% by volume
CO	15 ppm
CO <sub>2</sub>	500 ppm
Water dew point	-35°C (-31°F)
Lubricants (droplets/mist)	0.5 mg / m <sup>3</sup>
Water	25 mg / m <sup>3</sup>

If air is used it shall be according to EN 12021.



### Approved gas mixes for Xstream Deco/Duration:

Maximum level of:	
Oxygen	99.95% by volume Deco 50% by volume Duration
CO	2 ppm
CO2	500 ppm
Water dew point	-45°C (-50°F)
Lubricants (droplets/mist)	0.5mg/ m <sup>3</sup>
Water	25 mg/ m <sup>3</sup>
Gaseous hydrocarbons	15 ppm
Condensed hydrocarbons	0.1 mg/m <sup>3</sup>
Solid particles	2 microns

### Approved gas mixes for Dive:

Maximum level of:	
Oxygen	21% by volume
CO	15 ppm
CO2	500 ppm
Water dew point	-35°C (-31°F)
Lubricants (droplets/mist)	0.5 mg / m <sup>3</sup>
Water	25 mg / m <sup>3</sup>

## TECHNICAL DATA

Maximum depth	Operational	Certified to 200 m (656 ft)	
Typical Work of Breathing 50m on air, 62.5 l/min		1.5 J/l (see diagrams below)	
Typical Work of breathing 200m on Trimix, 62.5 l/min		1.7 J/l (see diagrams below)	
Approved gas	Dive	Air	
	Deep	Air / Trimix	
	Duration	Air / EAN 50	
	Deco	Air / Oxygen	
Maximum working pressure		300 bar (4351 psi)	

Cold water performance	Exceeding EN 250 requirements for cold water use	
Approvals	Type Approved acc. to EU Directive Personal Protective Equipment 89/686/EEC	
Applicable Standards	EN 738-1, clause 6.6, 6.6.2 NORSOK U-101 clause 5.2-5.5, 5.9 EN 250:2000	
Cleaned to hydrocarbon levels < 50mg/m <sup>2</sup> & particle level X	Dive	No
	Deep	No
	Duration	Yes
	Deco	Yes
O-ring materials	Dive	Nitrile, EPDM
	Deep	Nitrile, EPDM
	Duration	Viton, EPDM
	Deco	Viton, EPDM

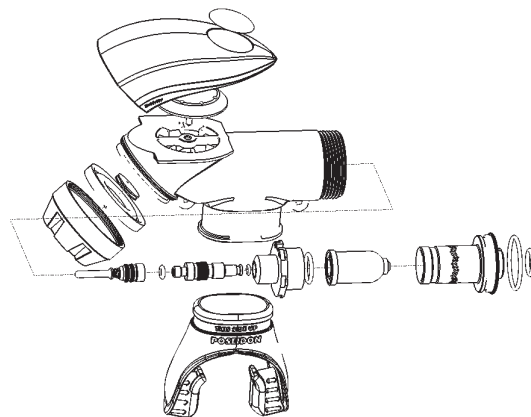
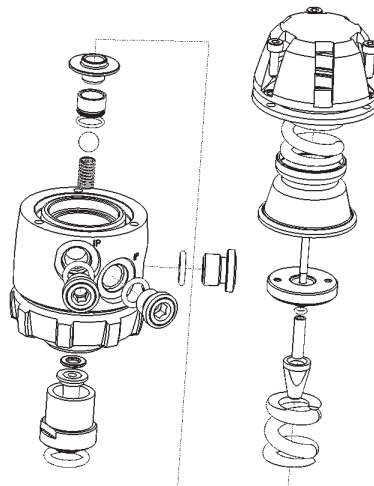
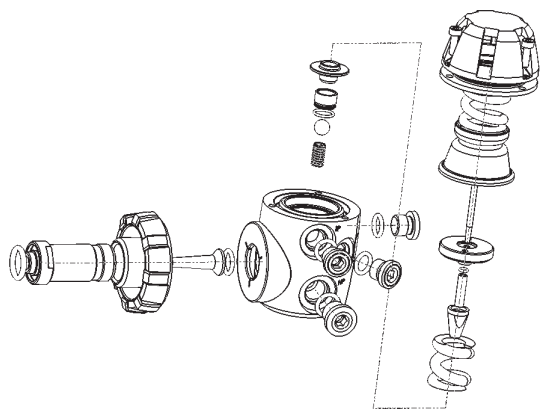


<b>Lubricants</b>	Poseidon 1; BAM appr. 270 bar @ 100°C Poseidon 2; BAM appr. 140 bar @ 100°C Poseidon R; silicone oil.	
<b>Colour</b>	<b>Dive</b>	Grey/Yellow
	<b>Deep</b>	Black
	<b>Duration</b>	Green
	<b>Deco</b>	White
<b>Warranty</b>	24 months	
<b>2<sup>nd</sup> stage</b>		
<b>Flow Rate</b>	>2150 l/min STPD (>76 scfm)	
<b>Inner Volume</b>	49.5 ml (3 in <sup>3</sup> )	
<b>Weight</b>	152 g (5.4 oz)	
<b>Technique</b>	Upstream servo-valve	
<b>Safety valve opening pres.</b>	18 +/- 1 bar (261 +/- 14 psi)	
<b>Swivelling</b>	Around axis, can be used either side	
<b>Material</b>	ASA, Brass, TPU, Silicone, PU	
<b>Venturi assist</b>	Automatic	
<b>Inhalation control</b>	Automatic	
<b>Surgical cord</b>	Silicone	
<b>Dismountable w/o tools</b>	Yes	
<b>Anatomic Mouthpiece</b>	"Poseidon AIR"	
<b>1st stage</b>		
<b>Flowrate (l/min)</b>	>4000 l/min (>141 scfm)	
<b>Nominal inter-stage pres.</b>	8.5 bar (123 psi)	
<b>Anti-Freeze protection</b>	Built in T.D.A	
<b>Technique</b>	Rolling diaphragm	
<b>Valve technique</b>	Ball valve	
<b>Seat material</b>	Zytel	
<b>Test pressure</b>	450 bar (6526 psi)	

<b>Ports</b>	<b>Dive</b>	5 IP (UNF 3/8") / 2 HP (UNF 7/16")
	<b>Deep Duration Deco</b>	2 IP (UNF 3/8") / 1 HP (UNF 7/16")
	<b>Deep 90 Dur. 90</b>	3 IP (UNF 3/8") / 1 HP (UNF 7/16")
	<b>Connection</b>	Deep Dive
<b>Connection</b>		DIN 477, G5/8" – Yoke adapter available
	<b>Duration/Duration EN 144-3</b>	DIN 477, G5/8" / EN 144-3, M26x2
	<b>Deco/Deco EN 144-3</b>	DIN 477, G5/8" / EN 144-3, M26x2
<b>Material</b>	Brass, plastics, stainless steel	
<b>Hose</b>		
<b>Standard lengths hose</b>	0.7 m (2.3 ft), 0.9 m (3 ft), 1.6 m (5.2 ft), 2.15 m (7 ft)	
<b>Burst pressure</b>	>100 bar (1450 psi)	
<b>Pull strength</b>	>1000 Newton (225 lbf)	
<b>Material</b>	SBR/NR	
<b>Safety inspection holes</b>	Both ends	
<b>Wear protecting crimps</b>	Both ends	

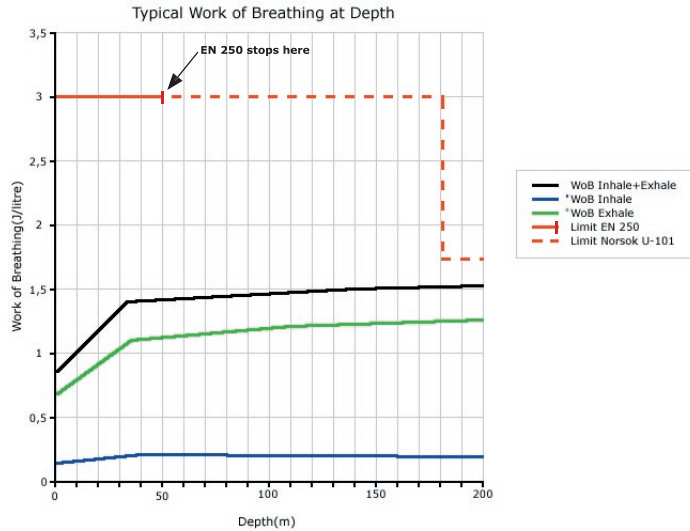


## EXPLODED VIEWS



MISCELLANEOUS

## BREATHING PERFORMANCE



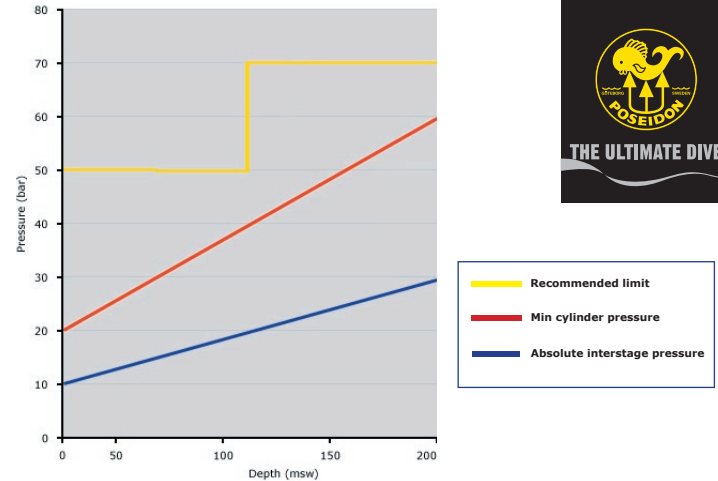
The diagram above shows a calculated graph for Work of Breathing in Joules/litre at  $Q_{\text{average}} = 62.5$  litres/min.

The equation behind it, is extracted from hundreds of tests, from which coefficients for gas dependency, average flow dependency, and depth dependency is calculated.

Its maximum inaccuracy is within +/- 10%

The equation assumes the most dense gas possible to safely breath is used, i.e. a maximum tolerable  $pO_2$ ,  $pN_2$  at any depth. Adding more Helium will lower the figures.

It is important to understand that this equation does not apply to any other regulator, since the coefficients and characteristics are strongly dependent on the regulator construction.



Full regulator capacity is obtained as long as the cylinder pressure is twice the absolute interstage pressure, given the cylinder valve pressure drop is within EN 250 limits. Taking into account the normal variations in interstage pressure and adding a safety margin, the required minimum cylinder pressure during diving is:

50 bar cylinder pressure from 0 msw to 100 msw

70 bar cylinder pressure from 101 msw to 200 msw

It is a good practise to always plan your dive according to the "1/3-rule", planning to use 2/3 of the cylinder capacity.



## TROUBLESHOOTING

Effect	Examine	Reason	Action
Safety valve is opening	Is it only when hose is pulled?	If yes, it is its normal function	None
	Is it spontaneously opening	If yes, it may be a 1st stage error	Terminate dive and have the regulator serviced
Immersed in water, small bubbles are coming from the mouth-piece	Do they stop after the regulator is rinsed	If yes, the valve was probably jammed with salt crystals	Make sure always to rinse the regulator after every dive, using fresh water
	Check the cracking pressure (see section 6.2)	If the cracking pressure is too low, the valve is slightly opened	Have the regulator correctly set by an authorised dealer
	The bubbles remain, cracking pressure is correct	The servo valve is severely jammed by salt crystals	Have the regulator cleaned by an authorised dealer

The regulator free flows breaking the surface	Check the cracking pressure (see section 6.2)	If the cracking pressure is too low, it increases the risk for free-flow	Have the regulator correctly set by an authorised dealer
		If the regulator hits the surface at a certain attitude, it can start a free-flow	Either immerse slowly, keep regulator in your mouth, or hold your hand over the free mouth-piece while entering the water
Leakages at extremely cold conditions		Incorrect o-rings	Have the regulator serviced by an authorised dealer, require o-ring replacement
There is a sound from the regulator	The sound is occurring even while diving	Incorrect lubricants have been used	Have the regulator correctly lubricated by an authorised dealer
Gas vents from 2 <sup>nd</sup> stage on opening the cylinder valve	Does it stop within 1-2 seconds?	If yes, it is normal that max. 3 litres of air is used to engage the servo-mechanism	
		If no, the cracking pressure is too low, which increases the risk for free-flow	



## OXYGEN STATEMENT

In diving operations, the use of oxygen is essential for the human metabolism. In addition, oxygen concentration levels greater than in air, can improve safety, especially but not only, by lowering the risk for DCS and Nitrogen narcosis.

The Poseidon Xstream Deco/Deco EN 144-3 is approved for use with gaseous oxygen up to 99.95 % purity at maximum 300 bar supply pressure and a maximum gas temperature of 60 °C

The Poseidon Xstream Duration/Duration EN 144-3 is approved for use with gaseous oxygen up to 50 % purity at maximum 300 bar supply pressure and a maximum gas temperature of 60 °C

Using gaseous mixtures containing oxygen at high pressure always presents a certain level of risk for equipment failure due to combustion. Greater concentration oxygen, greater pressure, greater temperature, respectively represents factors that contributes to increase the mentioned risk.

Therefore, Poseidon has taken every precaution using "state of the art" technology, expertise, industrial standards, and knowledge to lower the risk as far as possible. Both Xstream Deco and Xstream Duration are engineered for oxygen use, assembled and cleaned in a clean room environment, made up by materials chosen to expose lowest possible risk x failure-effect product, and are tested and approved for oxygen use.

It is strictly prohibited to use the Poseidon Xstream Deco/Duration with oxygen (ref. "definitions") without being fully trained and certified in the use of oxygen by a recognised training agency. Failure to have such training and certification could lead to death or serious personal injury.

It is likewise absolutely essential that the end user strictly follows the mandatory guidelines given in the users manual

for the Xstream models. Regular maintenance, servicing and cleaning is a prerequisite for keeping the risk as low as possible.

Servicing and cleaning must be carried out by an authorised oxygen service dealer. Poseidon has developed and verified a servicing and cleaning method, which guarantee acceptable levels of contaminations. Poseidon can not be held responsible for the effects of other un-verified cleaning and servicing methods.

Failure to adhere to these mandatory requirements transfers the responsibility to the owner.

Poseidon will continue to develop products and components which further readuses the risks involved with oxygen use. Releasing such products and components is not an admittance that previously released items must be recalled. It is in everyone's interest to always strive for lowering risks.





## ANNUAL SERVICE

It is extremely important for your safety that you keep your equipment in good condition. You need not carry out any other maintenance than described in previous section. The regulator should be serviced annually and this must only be carried out at one of POSEIDON's authorised service locations. Look for the POSEIDON Authorised Service Center sign.



Because of the robustness and simplicity of the Xstream construction, the amount of servicing is kept to a minimum. Normally, on an annual basis, only a service Level A is required, which is a functional check, visual inspection according to a checklist, and filter replacement.

On a regular basis, different for different models or if any faults are detected, a service Level B is required, which is a complete overhaul.

You can do some fault correcting servicing and/or preventive servicing yourself. Following the instructions which comes with the spare-part, you are allowed to:

- Replace the diffuser
- Replace the mouthpiece
- Replace the hose

Modifications of the product are prohibited. Modifications can impair the function of the regulator, and transfers the responsibility to the person who does the modification. Adding decals and other outer means for oxygen/Nitrox identification, as well as marking with a pen is not regarded as modifications.

**WARNING!**

**Do not lubricate the regulator beyond that done by Poseidon or your authorised Poseidon dealer. Spraying lubricants into the 2<sup>nd</sup> stage can cause deterioration of materials or be a trap for dust particles**



**”WE INTEND TO CONTINUE TO PRODUCE  
DIVING EQUIPMENT AS LONG AS A SINGLE  
DROP OF WATER REMAINS IN THE OCEANS”**

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