:: BESEA

USER MANUAL :: ENGLISH

INTRODUCING BOUYANCY COMFORT

Welcome, new Poseidon divers. Here at POSEIDON we are very pleased that you have chosen one of the world's foremost buoyancy compensators. POSEIDON has been developing diving equipment for divers since 1958. Professional divers, military divers, and tech divers choose POSEIDON equipment because of the high demands they place on our products - the same demands you have! Your new Besea 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

POSEIDON
DIVING SYSTEMS

A word from the designers and engineers behind Besea:
"We realised that your experience from your BCD purchase is far more than how it performs under the surface. In fact, performance under the surface is not a challenge, since gravity is removed. The most inconvenience occurs on land; carrying, rinsing, drying, packing, waiting, boating… We therefore wanted to give B.C. the meaning Buoyancy Comfort

The Buoyancy Comfort strategy therefore became to make something exceptionally suitable to be used over the entire dive by both men and women, including all time spent above surface. Borrowing technology from e.g. backpacks, suitcases, other water sports, climbing, we hoped that the properties achieved using the Besea above surface would follow you down under. The first test dive gave us all the answers we wanted. We named it BESEA, since becoming one with the sea is a great step towards "THE ULTIMATE DIVE".

TABLE OF CONTENTS

APPROVALS/CERTIFICATIONS

The Besea Harness Advanced/Sport and the Besea wings W40, W50,W100, and D100 are approved according to the EU Directive for Personal Protective Equipment, 89/686/EEC and meets or exceed the requirements of:

EN 1809:1997
EN 250:2000

Type examination certificate number 0078/806/136/1204/0023, 0078/806/136/1204/0024, 0078/806/136/1204/0025, issued by;

Institute National de Plongée Professionnelle
Entrée nº3 - Port de la pointe Rouge
13008 Marseille
France

Notified body number 0078.

Independent performance testing according to directive and standards is conducted at accredited laboratories INPP, Institute National de Plongée Professionnelle, Marseilles.

Poseidon Industri AB is certified according to ISO 9001

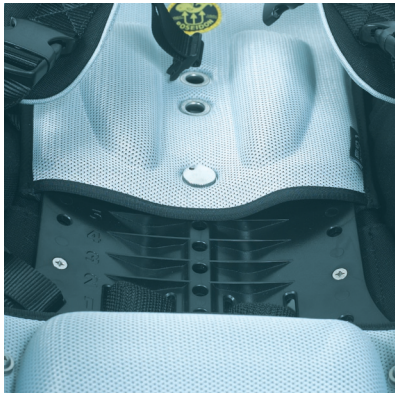
GENERAL SAFETY REGULATIONS

WARNING	Read user's manual before use
WARNING	This is not a lifejacket: it does not guarantee a head up position of the wearer at the surface.
WARNING	Safe use of this product requires instruction in buoyancy control from a certified instructor
WARNING	Inspect all components of this product for proper operation, damage, wear or leakage before each use
WARNING	Do not inhale gases from inside bladder
WARNING	Rinse with fresh water thoroughly and drain after use
WARNING	Store partially inflated
WARNING	The information tag attached to the Besea Wing (under the zipper next to the ▷ symbol) contains the above information and shall not be removed from the bladder
WARNING	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.
WARNING	Check that weights can be dropped off freely. If Besea integrated weights are not used, make absolutely sure the weight belt is not entangled when put on. If it is entangled it can be prevented from dropping off freely, and your emergency ascent can be jeopardised.

WARNING	You must be familiar with the procedure to drop weights in case of an emergency ascent. Practice this procedure prior to your first use of your Besea in a perfectly safe environment, i.e. in confined water which is not deeper than 3 meters.
WARNING	Modifications of the product beyond what is described in this manual are prohibited. Modifications can impair the function of the Besea, and transfers the responsibility to the person who does the modification.
WARNING	Maximum load on any stainless steel D-rings is 2000 N, please refer to technical data.
WARNING	Before use of the Besea in any configuration, you must have proper dive training and hold a certificate for diving from a recognised training organisation. As part of this training, you must have learnt how to establish neutral buoyancy, how to adjust the amount of ballast weights, safe descent and ascent techniques, inflating and deflating a BCD, donning and doffing both above and under the surface. With your new Besea you must practice these procedures again, and adjust the amount of ballast weights you may be used to.
WARNING	Retain this manual for your reference. Review this manual periodically, and prior to diving.
WARNING	Improper use, or misuse, of this harness or buoyancy compensator could result in serious injury or even death.
WARNING	Diving deeper than 50m the requirement of EN 1809 for time to completely inflate bladder will be exceeded.

NITROX SAFETY REGULATIONS

WARNING	Besea Wings are not oxygen cleaned directly from the box. Prior to use with anything else than air according to EN 12021 having an oxygen content in excess of 22% oxygen, the inflator and feeding hose must be cleaned and serviced for oxygen use.
WARNING	If the Besea prior to the use with Nitrox have been used with other gasses, it may be contaminated and must be re-cleaned before use.
WARNING	Cylinder valves shall always be opened slowly, to avoid compression shocks to the SCUBA equipment.
WARNING	The Besea products are approved for being fed with a breathing gas mixture always giving a pO_2 greater than 0.16 bar and a maximum oxygen concentration of 40% by volume.
WARNING	Using Nitrox there are special restrictions concerning maximum depth and exposure time, which is dependent on the actual oxygen concentration. Special personal training and certification is required.



DEFINITIONS/ABBREVIATIONS

OptiFit™

Besea comes in a wide range of sizes, but is only one product. This product can be adapted for an optimized fit for any body. Instead of ”one-size-fits-all”, which often mean one size doesn’t fit anyone very well, we have “one-product-to-be-optimized-to-fit-all”. The secret is the size adjustment possibilities where the combination of the SpineAdjust™ system and the variable adjustment of the waist belt gives anyone a perfect fit. Together with the ergonomically shaped shoulder straps, the lumbar support system and the anatomically correct HybroBack™ anyone from the smallest woman to the biggest guy can make Besea fit perfectly.

HybroBack™

The back portion of the Besea harness is a hybrid between an upper soft back of primarily fabric materials and a lower hard back made of an extremely robust and sturdy ABS material. The combination of a soft upper back and a stiff lower back ensures the distribution of the weight carried to be absorbed by the lumbar support system and prevents load to be transferred to the shoulder area.

SpineAdjust™

Using no tools other than your hand, the length can be altered to fit from XXS to XXL. For optimised comfort Besea shall be adjusted in a way so that the lumbar support cushion is placed where the back meet the seat. Carrying load with your hips is essential for comfort, well known by all who ever have tried hiking. The SpineAdjust™ serves a dual purpose, where the other is that it also determines the correct width/spacing between the shoulder straps. Having the lumbar support cushion fixed in the correct spot, a lowered (shorter) back results in greater spacing and vice versa.

VentoMesh™

To make Besea comfortable, robust and easy to dry and clean we had to invent a new combination of materials. This combination is called VentoMesh™ and consists of a polymer mesh which is laminated onto Lycra®. All inside panels on Besea which can come in contact directly with your body or suit is covered with this combination, called VentoMesh™ . The key feature is that it is easy to dry and at the same time comfortable. It is smooth and forgiving to your suit or your skin, yet exposing a sufficient grip.

40cc-System™

A lot of peripheral equipment can be added to the Besea harness. All accessories have one thing in common - the way they are attached. On the Harness Advanced, we have added 60 holes. The secret is that the distance between the holes is always 40 mm both horizontally and vertically. This means that the SprintRelease™ and the TwistLock™ detachment systems and D-rings can be installed wherever there is a 40cc-System™ hole, i.e. on the shoulders straps, waist belt, lower back, in any position you want.

ClamRetract™

Most technical wings on the market today have some kind of retraction system. The idea with such a system is to 1) Assist to deflate the bladder – no trapped air. 2) Make the bladder smaller when not inflated to reduce drag, 3) Control the order of volumes being inflated, 4) Control the shape and buoyancy distribution when inflated, 5) ensure that all volumes of the bladder have a relative overpressure meaning dumping is efficient and water cannot enter back into the bladder. The mechanism to retract is very often some kind of elastic cord wrapped around the legs of the wing. This way either the achievable maximum capacity or the minimum drag is strongly limited. With a fairly small diameter of the retraction cord ring around the wing's leg, the retraction is sufficient but due to the maximum elongation of the cord, the

maximum capacity is limited. On the other hand, if a greater cord diameter is chosen, it allows for greater maximum buoyancy but the wing will never be smaller than the free diameter (cord exerting no force) of the retraction cord ring, i.e. you simply have no retraction at the low end of wing volumes and consequently none of the five functions described above. The solution to this is ClamRetract™ The idea is that a long string of retraction cord is placed in a horse-collar shaped channel along, instead of around, the legs, well protected on the inside of the outer bag to expose no risk whatsoever to get snagged.
From fully deflated to fully inflated, the length of the outer periphery of the horse-collar shape is only increased with some 150%, which enables to efficiently make use of the retraction cord's elasticity over the entire volume range (inflated to deflated). The wing leg will not deform like as usual an intestine, but more like a clam closing its shells until it becomes almost flat thus having zero volume. The retraction cord will in addition also always pull the wing in a direction towards the centre, which means in under the cylinders which is in fact what all divers are asking for. ClamRetract™ is here to stay!
ClamRetract™ is made non user adjustable, since this comes with hidden hazards which have proven to be lethal. As said before, the correct retraction forces are serving five essential functions. Excessive retraction forces can result in inability to inflate efficiently and lead to drowning, and too small forces can result in insufficient deflating and thereby lead to DCS. The correct ClamRetract™ forces are developed and tested carefully by Poseidon, authorized independent laboratories, and test divers under safe conditions.

WARNING	Unauthorised adjustment of retraction cord can reduce the maximum possible lift capacity and is strongly prohibited.

EasyGrip™

EasyGrip™ handles are developed and tested to be easy and quick to use also wearing thick gloves. Sufficient size, simple geometry, and robust material is the key to a safe function. EasyGrip™ handles ensures the safe operation of the integrated weight pockets.

SprintRelease™

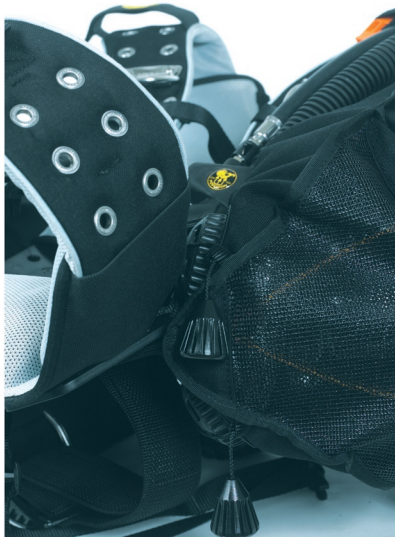
This is a system used for the weight pockets and the way they are released. SprintRelease™ makes sure that the pockets can be dumped no matter in what position you are. Upside down, horizontal, vertical, upright etc. It does not rely on the actual condition of e.g. Velcro®, but is a reliable mechanical construction which will function without any special attention to it over the lifetime of the Besea.

TwistLock™

TwistLock™ was invented due to the bad pockets which often are integrated with conventional BCD's. To call it a truly functional pocket, you must be able to easily put your hand into it, and, you should be able to see what's in it with your mask on. That means, it shall be positioned right in front of your face. Using the TwistLock™ attachment system, you simply twist off the pocket from the locking mechanism, take a look at its contents and pick out whatever you were looking for. Then twist it back securely in place again.

PocketRetract™

The PocketRetract™ system is an automatic size adjustment system used on all pockets that are made to carry weights. The pocket has side retraction panels and adjusts automatically in size depending on if the pocket is full or empty. This way the pocket is never bigger then it has to be. It also holds the weights in place in a better way.



MDV

Manual Deflation Valve. A manually operated valve which permits deflation of the BCD. This includes the APRV:s (see below), the shoulder valve of the inflator when applicable, and the oral inflation/deflation button on the inflator. The corresponding term in EN 1809:1997 is MDD (Manual Deflation Device).

APRV

Automatic Pressure Relief Valve. A valve which automatically prevents overpressurisation possibly harmful to the BCD. Often referred to as OPV (Over Pressure Valve) or dump-valve. The corresponding term in EN 1809:1997 is APRD (Automatic Pressure Relief Device).

PRODUCT DESCRIPTIONS

There are currently four main product models in the Besea family.

Besea W40
Besea W50
Besea W100
Besea D100

The Besea system is versatile due to its modular structure, and all models consist of a harness and a wing. The harness can be used separately, and any wing can be used with any of the two harnesses.

Harness Besea Sport

x OptiFit™
x HybroBack™
x SpineAdjust™
VentoMesh™
40cc system™

The harness' Sport or Advanced is a combination of the very best among conventional BCD's and the very best among backpacks for hiking. In fact, when used on land and on the boat the harness shall provide a comfortable relieve of the weight of the cylinders. High-class backpacks have excellent constructions for this particular purpose, and it is obvious that similar ideas can be recognised on the Besea as well. The weight of the cylinders is transferred directly into the rigid lower part of the back, and further lead to the soft padding of the lumbar support cushion to be dissolved. The upper and softer part of the back ensures the cylinder will not tilt backwards, and the stress on shoulders and sensible ganglia is dramatically reduced.

The pre-bent shoulder straps are as welcoming as they appear to be. This means you need not search for them after having hung

one over the shoulder. It has already itself found its correct position and all you need to do is to lock the quick release buckle. This feature is especially efficient under the surface while donning and doffing. No more searching for loose bands behind your back while performing the previously so troublesome don/doff procedure in the sea.

Some details make a great difference. E.g. the carrying handle which is placed on one side, makes you carry your equipment like an ordinary suit-case while transporting on land. This causes less wear both on the equipment and on you. Experience the difference! Another example is the crotch strap, which with the hanger can be used to secure regulator hoses, console hoses, etc. during transportation and prolonging the life of your other equipment due to less wear.

The sport model is prepared to be fitted with the pinbolt kit for fastening of twin cylinders.

Please refer to technical data for detailed information.

Harness Besea Advanced

- x OptiFit™
- x HybroBack™
- x SpineAdjust™
- x VentoMesh™
- x 40cc system™

The advanced model is an extended version of the sport model developed for really extended use. It exhibits entirely 1000 Denier Ballistic materials and all webbing is Nylon. All inside surfaces are covered with VentoMesh™, and even the waist belt is padded and pre curved.

The 40cc system™ enables mounting of quick release integrated weight pockets, accessory pocket(s), and D-rings in a variety of positions.

Crotch strap with tow ring comes as standard, as do an extra tank band for redundancy. The advanced model is prepared to be fitted with the pinbolt kit for fastening of twin cylinders.

Please refer to technical data for detailed information.

Wing Besea W40

The W40 wing is an ideal wing for the average diver. The outer bag made of 600 Denier Ballistic works as a shell to protect the inner bladder from being punctured. It has an extensive area at the bottom with reinforced mesh in a dual cross-layer construction to provide an effective drainage of water, yet protecting the inner bladder.

W40 comes with a standard work horse inflator, which has proven its ability over the years with Poseidon. W40 can be attached to either harness.

The inner bladder is made of laminated PA/PE sandwiched TPU. This gives the optimum combination of weld seam strength and salt water ageing resistance.

The lift capacity of W40 is 202 N and is made for a diver and equipment with a negative weight in water that does not in total exceed 17 kg

WARNING	The size and buoyancy of cylinders which are compatible with the W40 is limited. Refer to Technical Data at the end of this manual for determination of compatibility. Too negatively buoyant cylinders can prevent floatation and/or ascent and cause serious injury or even death.

Please refer to technical data for detailed information.

Wing Besea W50

W50 is a sport-wing made for both beginners and for more experienced divers. The material used is 1000 Denier Ballistic, partly backed for increased puncture resistance and a more effective retracted shape. Equipped with ClamRetract™ it gives the bladder superior deflation capabilities as well as a great volume increase. Deflated W50 has the smallest size (drag) of all bladder models for Besea. Four APRV:s and an inflator with a mechanism in Nikel-plated Brass make sure that air can be inflated and deflated in a controlled and safe way. The shape of the bladder is made to compensate for the weight of the cylinder when submerged and to give you total freedom to move in any direction. The air passage behind the neck is narrow not to push your head forward or not to be in conflict with regulator and hoses when inflated. W50 can be attached to either harness

The inner bladder is made of laminated PA/PE sandwiched TPU. This gives the optimum combination of weld seam strength and salt water ageing resistance.

The lift capacity of W50 is 225 N and is made for a diver and equipment with a negative weight in water that does not in total exceed 19 kg.

WARNING	The size and buoyancy of cylinders which are compatible with the W50 is limited. Refer to Technical Data at the end of this manual for determination of compatibility. Too negatively buoyant cylinders can prevent floatation and/or ascent and cause serious injury or even death.

Please refer to technical data for detailed information.

Wing Besea W100/D100

For diving when heavy equipment is brought, the increased volume of the W100 or D100 makes either of them the correct choice. The lift capacity of W100 and D100 is 353 N and is made for a diver and equipment with a negative weight in water that does not in total exceed 32 kg. The spacing between the legs of the bladder is increased compared to W40/W50 to accommodate twin cylinders without affecting the bladder function.

To increase reliability through reducing failure points, both W100 and D100 are equipped with elbow connections from the inflator to the bladder.

D100 is a dual bladder construction with two independent and identical systems of inflators, APRV:s and PU bladders in the same 1000 Denier Ballistic shell.

Otherwise, both W100 and D100 have the same features and construction as the W50.

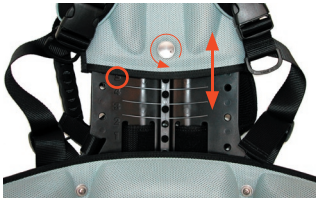
WARNING	The size and buoyancy of cylinders which are compatible with the W100/D100 is limited. Refer to Technical Data at the end of this manual for determination of compatibility. Too negatively buoyant cylinders can prevent floatation and/or ascent and cause serious injury or even death.

WARNING	(D100 only) Use only one, preferably on the left side, inflator for buoyancy compensating, leaving the secondary only for the case of an emergency due to failure/puncture of the primary inflator-bladder system. Using both may result in difficulties while attempting to completely deflate entire bladder, which can cause serious injury or even death.

Please refer to technical data for detailed information.

SIZE ADJUSTMENT

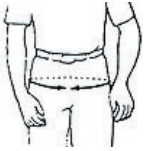
There are two independent adjustments that shall be done for adjusting the Besea to fit you perfectly. Using the SpineAdjust™ to adjust the length of the back of the harness according to the length of your back, and adjusting the waist belt. Use chart below.

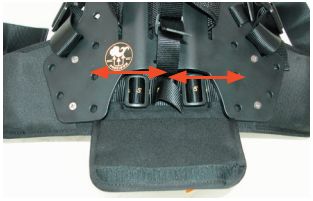


Measure torso length according to figure above. Translate the torso length to size number according to chart on the right. Adjust the harness to fit your size. The size is the first digit exposed by the upper back, see circle in picture.

SpineAdjust™

Torso (cm)	Size
<46	1
46-48	2
48-50	3
50-52	4
52-54	5
54-56	6
>56	7





Measure hips circumference according to figure above. Translate the measure to size number according to chart on the right. Adjust the waist belt to fit your size. The size are the digits exposed inside the ladder locks.

Waist belt

Hips (cm)	Size
<76	1
76-80	2
80-84	3
84-88	4
88-92	5
92-96	6
>96	7

CYLINDER MOUNTING

	Besea W40	Besea W50	Besea W100	Besea D100
Item no.	000-60	000-55	000-54	000-56
Max cylinder volume, single, steel, 232 bar/3365 psi	22 litre 1342 cu.in	22 litre 1342 cu.in	22 litre 1342 cu.in	22 litre 1342 cu.in
Max cylinder volume, single, steel, 300 bar/4351 psi	12 litre 732 cu.in.	12 litre 732 cu.in.	12 litre 732 cu.in.	12 litre 732 cu.in.
Max cylinder volume, single, aluminium	12 litre 732 cu.in.	12 litre 732 cu.in.	12 litre 732 cu.in.	12 litre 732 cu.in.
Max cylinder volume, twin, steel, 232 bar/3365 psi	2x6 litre 2x366 cu.in.	2x6 litre 2x366 cu.in.	2x22 litre 2x1342 cu.in	2x22 litre 2x1342 cu.in
Max cylinder volume, twin, steel, 300 bar/4351 psi	2x6 litre 2x366 cu.in.	2x6 litre 2x366 cu.in.	2x10 litre 2x610 cu.in	2x10 litre 2x610 cu.in
Max cylinder volume, twin, aluminium	2x6 litre 2x366 cu.in.	2x6 litre 2x366 cu.in.	2x12 litre 2x732 cu.in.	2x12 litre 2x732 cu.in.
Maximum buoyancy	202 N 20.6 kg-f 45.4 lbs-f	225 N 22.9 kg-f 50.6 lbs-f	353 N 36.0 kg-f 79.3 lbs-f	353 N 36.0 kg-f 79.3 lbs-f

Using Tank Bands

Soak the tank bands before undertaking the steps below.
Place the cylinder on the back of the harness. Its position will affect your diving attitude which you may want to optimise after some experience.
Tighten the tank bands by pulling the loose end.
Enter the loose end through the open slot in the buckle, and then close the buckle
Secure the loose end with the Velcro®
Harness Sport: Tighten the tilt protection band by pulling the loose end.
Harness Advanced: repeat the procedure described above with the other band.

Note. First time lacing the buckle, please refer to lacing diagram on the left.

WARNING	Securing the cylinders with dry tank bands can result in losing the cylinders during the dive, due to the elongation of the band material when wetted.

Using Pinbolt-kit

Please refer to the instructions supplied with the pinbolt kit.

Pinbolt kit can be mounted either through the standard steel bands holding the cylinders together, or using the butterfly washers at any location between the cylinders. The advantage with the butterfly washers is that it becomes easy to detach the cylinders using the wing nut when e.g. packing your gear or filling gas.

WARNING	The use of home made pin-bolt attachment systems may damage your harness. Such damages will not be covered by Poseidon's warranty terms.

DONNING

If a wing is used with the harness, connect the quick connector of the inflator feed hose to the inflator mechanism.

Ensure you have adjusted the Besea size to fit perfectly (see section size adjustment). Undo waistbelt buckle, crotchstrap buckle and one shoulderstrap buckle. Hang the Besea on your one shoulder, preferably on the side where you have no instruments on your wrist, or APRV:s on your drysuit. Lean forward and the pre-curved waistbelt will grab around your hips. Then tighten the waistbelt, until you feel that you comfortably can carry the load with your waistbelt/lumbar support only. Finally, tighten the other shoulderstrap and adjust.

Put your weights into your weight pockets and lock the buckle.

PRE DIVE CHECKS

WARNING	Do not dive with a Besea that is damaged, leaks air, or does not function properly. Before each use inspect for proper operation, leakage, or damage. Terminate any dive as safely and quickly as possible if the Besea becomes damaged, leaks air, or does not function properly.
WARNING	Always perform a pre-dive and post-dive inspection of the Besea. Have your dive partner perform a crosscheck as well. The pre-dive and post-dive Besea examinations help identify equipment problems before unsafe conditions exists.
WARNING	Ensure you are using a regulator set at min/max working IP = 7 – 13 bar
WARNING	Make absolutely sure your weight system is not entangled, and can be dropped off freely.

Check that your Besea is free from visible damages, such as e.g. cuts, punctures, frayed seams, excessive abrasion, and loose/ missing hardware.
Open your cylinder valve.
Check the correct operation of the inflator mechanism by pressing the inflation button to inflate the bladder, check for leakages, and then shortly press the deflation button.
Check the manual deflation device mechanism by pulling the inflator corrugated hose. (does not apply to models with elbow connection to the bladder)
Check that you can reach both APRV:s on the right and left side respectively. Pull the knob and make sure the correct operation of the APRV.
Check that you can reach the handles of your QR weight system to release your own weights.
If a crotch strap is used, check that it is locked and that is does not prevent the release of weights.
Inflate the bladder sufficiently to keep you floating directly after entering the water.

DIVING

WARNING	Do not use your Besea as an assist or "lift bag" for bringing objects to the surface. These objects may be lost during the ascent, creating a sudden increase in buoyancy and loss of buoyancy control.
WARNING	Do not inhale gases from inside bladder
WARNING	Keep sand and other contaminations out of the oral inflation mouthpiece and valve button. Under certain conditions contamination can cause the valve to not close completely. If this occurs while diving, shake the valve while operating it several times. If the valve leaks or remains inoperable immediately terminate the dive. Diving with a leaking BC or with valves that do not operate properly may result in loss of buoyancy control that could result in serious injury or even death.

WARNING	Be aware that the mesh at the bottom of the wing needed for effective draining of water, do expose an increased risk for bladder puncture. Make sure to protect this from coming in contact with sharp objects.

Buoyancy compensating is achieved by inflating and deflating the BESEA bladder.
Inflating the bladder using the power inflator is done by depressing the inflator button using short bursts. Continuous depressing of the button can cause you to become excessively buoyant.
Orally inflating of the bladder is achieved by exhaling a small amount of air into the inflator. Place your lips on the inflator mouthpiece and exhale while depressing the oral inflation button. After exhaling release the oral inflation button to prevent air from escaping.

Deflating the bladder is done by using either the inflator's oral inflation button or any of the APRV:s.
For deflation using the inflator oral inflation button, hold the inflator in an upright position so that it becomes the highest point of the bladder and depress the oral inflation button.
Deflation of the bladder using an APRV is done by activating the valve that is placed on the highest portion of the bladder depending on the diver's attitude during the actual period of time. The two APRV:s placed on the rear lower portion of the bladder are activated by pulling the knob. For activating the inflator integrated MDV pull the inflator as if to extend the corrugated hose.

WARNING	Avoid attempting to deflate an already empty bladder as this will allow seawater to enter. A flooded bladder can cause buoyancy difficulties.

In case of inflator malfunction or freezing, the inflator might continuously inflate the bladder. Start by detaching the inflator hose and continuously deflate the bladder by depressing the oral inflation button while holding the inflator at the highest possible position to increase deflation effectiveness.

AFTER DIVE

After finishing your dive start with undoing your weight belt. Then undo in the following order crotch strap, waist belt, and one shoulder strap. Let a buddy help you to lift off your Besea and your cylinders and put it lying on the ground or on the deck.

It is strongly recommended to use the carrying handle for transportation/carrying of the Besea, still having the cylinders attached. Regulator hoses and demand valves can be secured and protected during transportation as shown in the picture on the left.

Dismount the cylinders from the harness.

Let water out from your Besea that may have entered the bladder during your dive. Inflate the bladder, either orally or by using the inflator. With the Besea almost fully inflated, rotate it back and forth a few times so that the entrapped water collects inside. Then let the water out through the inflator, by holding the Besea up side down, with the inflator at the lowest point and depressing the oral inflation button.

Rinse your Besea in fresh water both internally and externally after every dive. After seawater have been emptied as described above, fill approximately 1-2 litres of fresh water into the bladder via the inflator. Partly inflated, rinse the bladder internally and then let the water out as described above

MAINTENANCE

No other maintenance procedures that you can do yourself other than those described in section After Dive is needed. If your Besea is heavily contaminated and dirty, or after your last dive for the season, it is possible to wash the Besea in a washing machine. Valves and inside PU bladder shall NOT be washed in a washing machine. Unscrew all APRV:s and the inflator from the bladder. Unzip the bladder and remove the inside PU bladder. Tumble drying is prohibited.

Always let your Besea dry completely before storage over a longer period of time. Always store the Besea partially inflated.

Store in a place which is not exposed to extreme temperatures or direct sunlight. Do not rest heavy objects on the BC.

Expected lifetime for inside PU bladder is 10 years, but can vary depending on usage. Poseidon recommends replacing the bladder after maximum 10 years from the date of manufacture, or earlier depending on condition and usage.

Avoid prolonged or repeated exposure to chlorinated water, such as in swimming pools. Wash your BC immediately after any use in chlorinated water. Chlorinated water can oxidize fabrics and materials on your BC, shortening its life, and cause colours to fade. Damage and fading from prolonged exposure to chlorinated water is specifically not covered under warranty.

ACCESSORIES

Crotch strap Besea

The crotch strap includes a Stainless Steel tow ring for scootering. Its length can be adjusted to fit anyone and is very easy to mount to the harness. The crotch strap is included with the Harness Advanced.

Tank Band Besea 100 Advanced

The Tank Band Besea 100 Advanced can be purchased as an accessory if lost, worn out, or divers using the Harness Sport prefer to equip it with an extra band for extra safety.

Accessory pocket

TwistLock™ together with the 40cc system™ ensures the pocket is located where you want it. Simply twist the pocket 90º and you can hold it in your hand. The pocket is equipped with a small D-ring so that you can secure the pocket to the harness with a lanyard or a yo-yo, to prevent you from dropping it. On the inside, there are two extra lanyards to secure your contents for the same reason.

Locking the pocket back in place is as easy as releasing it. Just slide the tap into the female part of the TwistLock™, and twist it back.

Using the oversized flap cover, the pocket can be kept almost flat if it only contains smaller items. The pocket is also made of 1000 Denier Ballistic for maximum durability.

WARNING	Do not put lead weights in the accessory pocket. It can cause the cover to open or TwistLock™ to rotate to an open position, thus loosing ballast and resulting in an uncontrolled ascent. A maximum of 0.5 kg of negative buoyancy is allowed inside the accessory pocket.

D-ring kit Besea

The D-ring kit can be fit in a variety of locations on the harness Advanced due to the 40c-c system. On Harness Sport it can be fitted to the back only.

Pinbolt kit

The Pinbolt kit is used for mounting twin cylinders onto the Besea. The kit can be fitted on both Advanced or Sport harness and the stainless steel backplate. This kit is constructed to fit all twin cylinders systems featuring Stainless Steel tank twining bands.

Weightpocket Besea QR

The quick release weight pocket system features a unique attachment system, which is perfectly reliable over time and above all, ensures that weight will be detached from you being in any position/attitude when you pull the handles. It is securely connected to your Besea and can carry the maximum amount of weight without any risk of separation, yet a tuned pull of the handles will release the weights.

It can be positioned in a variety of places due to the overall 40cc System™, using the advanced harness. This enables you to find a place for them which, at maximum, assist you in finding a comfortable and peaceful attitude when diving.

The inner pocket is secured in place with a ITW Nexus WSR side release buckle, with no risk of being inadvertently opened. The inner pocket is equipped with a large handle so that they easily can be handed over to the boat personnel on the boat after a finished dive.

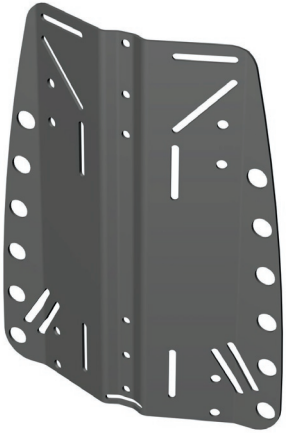
Normally, using soft lead weights, you can put 6 kg in each pocket.

Weight Plate Besea 40cc

The Weight Plate is needed in order to attach the quick release weight pocket system when the Sport Harness is used. It features a series av slots which are used in order to attach the pockets directly to the webbing part of the waist belt.
This accessory can also be used by divers who like to use the quick release weight pocket system in conjunction with a regular webbing weight belt.

Pinbolt kit Butterfly

The Pinbolt kit Butterfly has the same features as the Pinbolt kit 001-19 plus the fact that the attachment points to the cylinders can be chosen to be on any location between the cylinders thanks to the butterfly washers. Another advantage with the butterfly washers is that it becomes easy to detach the cylinders using the wing nut when e.g. packing your gear or filling gas.



Backplate

The stainless steel backplate is made of AISI 316 and can be connected as a support system to the different Besea harnesses. Stainless steel backplates are mainly used by technical divers who carry heavy equipment or divers who would like to exchange parts of the lead ballast weights with the weight of the steel backplate on the back.
The Metal backplate is compatible with all the Besea bladders and can be used in conjunction with the harnesses or with the continuous loop.

MISCELLANEOUS

Buoyancy control / Adjusting the amount of ballast weight

Ensuring the wing has sufficient lift capacity and that the amount of ballast weight is correctly chosen shall be performed in confined water. Consult your SCUBA instructor for additional help in setting up your equipment and weight.

Wing capacity

With all your standard equipment put on and cylinders at maximum filled, make sure the Besea wing can keep you floating so that you can hold your air-ways well above the surface.

Ballast weights

With all your standard equipment put on and cylinders close to empty (10-20 bar), dump all gas from the Besea bladder. If you cannot submerge, add 1 kg at the time to your ballast weights and repeat the test procedure. If submerging takes place before the bladder is completely emptied, you may remove ballast weight instead.

Buoyancy calculation

All different Besea wings are constructed for different purposes, to enable certain kinds of diving, and to ensure a maximum level of safety. The lift capacity must ensure that at least 3 kg of positive buoyancy is achieved when inflated, even if releasing ballast weights is forgotten.

Please refer to and use the "worst case" dimensioning aid table below. Put your own equipment's negative and positive buoyancy in the A and B columns below and calculate your own need for minimum bladder lift capacity.

Piece of equipment	A) Sinking		B) Floating		Typical figures
Cylinder*	-		+		+0.4 to +15 kg
Steel backplate	-		+		+2 to +4 kg
Canister	-		+		0 to +3 kg
Torch	-		+		-0.5 to +0.5 kg
Tools	-		+		0 to +4 kg
Ballast weights	-		+		0 to +16 kg
The human body	-		+		-2 to +2 kg
Drysuit	-		+		+1 to +7 kg
Wetsuit	-		+		+1 to +5 kg
Safety margin	-		+	3 kg	
Sum of all A)	-				
Sum of all B)			+		
*Sum of A) + Sum of B)***					
*** this represents your need for minimum bladder lift capacity*					

* The table below shows some approximate figures for submerged weight for full cylinders.

Faber, 300 bar, steel	
volume (l)	Submerged weight (kg)
2	2
8	6
10	7
12	8
2x4	7
2x6	9
2x8	13
2x10	15
Luxfer, 200 bar, aluminium	
volume (l)	Submerged weight (kg)
10	1.6

12	2
2x12	4
2x10	3
11	1.6
Faber, 232 bar, steel	
volume (l)	Submerged weight (kg)
15	5.6
16	6
17	6
18	7
19	6
20	6
22	6
Faber, 200 bar, steel	
volume (l)	Submerged weight (kg)
20	3.4
18	3.4
16	2.7
12	0.4

TECHNICAL DATA

General	Besea W40	Besea W50	Besea W100	Besea D100
Item no.	000-60	000-55	000-54	000-56
Max cylinder volume, single, steel, 232 bar/3365 psi	22 litre 1342 cu.in	22 litre 1342 cu.in	22 litre 1342 cu.in	22 litre 1342 cu.in
Max cylinder volume, single, steel, 300 bar/4351 psi	12 litre 732 cu.in.	12 litre 732 cu.in.	12 litre 732 cu.in.	12 litre 732 cu.in.
Max cylinder volume, single, aluminium	12 litre 732 cu.in.	12 litre 732 cu.in.	12 litre 732 cu.in.	12 litre 732 cu.in.
Max cylinder volume, twin, steel, 232 bar/3365 psi	2x6 litre 2x366 cu.in.	2x6 litre 2x366 cu.in.	2x22 litre 2x1342 cu.in	2x22 litre 2x1342 cu.in
Max cylinder volume, twin, steel, 300 bar/4351 psi	2x6 litre 2x366 cu.in.	2x6 litre 2x366 cu.in.	2x10 litre 2x610 cu.in	2x10 litre 2x610 cu.in
Max cylinder volume, twin, aluminium	2x6 litre 2x366 cu.in.	2x6 litre 2x366 cu.in.	2x12 litre 2x732 cu.in.	2x12 litre 2x732 cu.in.
Maximum buoyancy	202 N 20.6 kg-f 45.4 lbs-f	225 N 22.9 kg-f 50.6 lbs-f	353 N 36.0 kg-f 79.3 lbs-f	353 N 36.0 kg-f 79.3 lbs-f
Buoyancy uninflated	2.2 kg-f 4.8 lbs-f	2.4 kg-f 5.3 lbs-f	2 kg-f 4.4 lbs-f	2.2 kg-f 4.8 lbs-f
Dry weight	2.6 kg 5.7 lb	3.6 kg 7.9 lbs	4 kg 8.8 lbs	5 kg 11 lbs
Eyelet material	AISI 316	AISI 316	AISI 316	AISI 316

Fabric material	600 Denier Ballistic	1000 Denier Ballistic	1000 Denier Ballistic	1000 Denier Ballistic
Approved gasses	Air acc. to EN 12021 up to Nitrox 40% (EAN 40)			
CE	Yes	Yes	Yes	Yes
EN 250:2000	Yes	Yes	Yes	Yes
EN 1809:1997	Yes	Yes	Yes	Yes
Approved diving depth (see WARNING below)	200m 656 ft	200m 656 ft	200m 656 ft	200m 656 ft
Size range	XXS-XXL	XXS-XXL	XXS-XXL	XXS-XXL
Working surface temperature	-20ºC to +50ºC -4ºF to +122ºF	-20ºC to +50ºC -4ºF to +122ºF	-20ºC to +50ºC -4ºF to +122ºF	-20ºC to +50ºC -4ºF to +122ºF
Working water temperature	-3ºC to +40ºC +27ºF to +104ºF	-3ºC to +40ºC +27ºF to +104ºF	-3ºC to +40ºC +27ºF to +104ºF	-3ºC to +40ºC +27ºF to +104ºF
Warranty	24 months	24 months	24 months	24 months
Min/Max IP @ surface	7 to 13 bar 101 to 188 psi	7 to 13 bar 101 to 188 psi	7 to 13 bar 101 to 188 psi	7 to 13 bar 101 to 188 psi
Harness	Harness Besea Sport	Harness Besea Advanced	Harness Besea Advanced	Harness Besea Advanced
Item no.	000-81	000-80	000-80	000-80
Webbing mtrl	PP	Nylon	Nylon	Nylon
40c-c system	No	Yes	Yes	Yes
Ultimate strength upper tank band	n/a	>1177 N >120 kg-f >264 lbf	>1177 N >120 kg-f >264 lbf	>1177 N >120 kg-f >264 lbf
Ultimate strength lower tank band	>1765 N >180 kg-f >397 lbf	>1765 N >180 kg-f >397 lbf	>1765 N >180 kg-f >397 lbf	>1765 N >180 kg-f >397 lbf
Ultimate strength shoulderstraps	>4707 N >480 kg-f >1058 lbf	>4707 N >480 kg-f >1058 lbf	>4707 N >480 kg-f >1058 lbf	>4707 N >480 kg-f >1058 lbf

Maximum carrying load harness	980 N 100 kg-f 220 lb-f	980 N 100 kg-f 220 lb-f	980 N 100 kg-f 220 lb-f	980 N 100 kg-f 220 lb-f
Number of tank-bands	1	2	2	2
Quick release buckles	2 ITW WSR 1 ITW DWSR	2 ITW WSR 1 ITW DWSR	2 ITW WSR 1 ITW DWSR	2 ITW WSR 1 ITW DWSR
Padded waist belt	No	Yes	Yes	Yes
SpineAdjust™	Yes	Yes	Yes	Yes
OptiFit™	Yes	Yes	Yes	Yes
HybroBack™	Yes	Yes	Yes	Yes
VentoMesh™	No	Yes	Yes	Yes
Number of D-rings	2	2	2	2
D-ring material	Reinf. PA6	AISI 316	AISI 316	AISI 316
Maximum load stainless steel D-ring	n/a	2000 N 449 lbf 204 kg-f	2000 N 449 lbf 204 kg-f	2000 N 449 lbf 204 kg-f
Ultimate strength plastic D-ring	>686 N >70 kg-f >154 lbf	n/a	n/a	n/a
Maximum load plastic D-ring	343 N 35 kg-f 77 lb-f	n/a	n/a	n/a
Chest strap	Yes	Yes	Yes	Yes
Crotch strap	No	Yes	Yes	Yes
Tow ring	No	Yes	Yes	Yes
Ultimate strength carrying handle	2942 N 300 kg-f 661 lb-f	2942 N 300 kg-f 661 lb-f	2942 N 300 kg-f 661 lb-f	2942 N 300 kg-f 661 lb-f
Buoyancy cell	Wing Besea W40	Wing Besea W50	Wing Besea W100	Wing Besea D100
Item no.	000-71	000-38	000-36	000-40
Type	Sport Wing	Advanced Wing	Power Wing	Dual Bladder Wing

Time to establish full buoyancy	<15 sec	<15 sec	<15 sec	<15 sec
Time to reach 10% buoyancy, dump	<13 sec	<13 sec	<13 sec	<13 sec
Material bladder	Laminated PA/PE Sandwich TPU	Laminated PA/PE Sandwich TPU	Laminated PA/PE Sandwich TPU	Laminated PA/PE Sandwich TPU
Inflator type	Base	X01 Pro	X01 Pro	X01 Pro
Inflator mechanism	Plastic	Nikel plated Brass	Nikel plated Brass	Nikel plated Brass
Inflator flow	188l/min @ 9bar 6.64ft^3/min @ 130 psi	266l/min @ 9bar 9.4ft^3/min @ 130 psi	266l/min @ 9bar 9.4ft^3/min @ 130 psi	266l/min @ 9bar 9.4ft^3/min @ 130 psi
Inflator length	600 mm 23.6 in	600 mm 23.6 in	600 mm 23.6 in	600 mm 23.6 in
Inflator shoulder connection type	R.E.V. (MDV)	R.E.V. (MDV)	Elbow	Elbow
Feed hose material	Rubber	SBR/NR/CR	SBR/NR/CR	SBR/NR/CR
Quick connection	std	wing	wing	wing
ClamRetract™	No	Yes	Yes	Yes
Automatic Pressure Relief Valves (APRV)	2	2	2	4
Manual Deflation Valves (MDV)	4	4	3	6
IP hose burst pressure	>100 bar >1450 psi	>100 bar >1450 psi	>100 bar >1450 psi	>100 bar >1450 psi
Bladder burst pressure	>0.65 bar >9.4 psi	>0.65 bar >9.4 psi	>0.65 bar >9.4 psi	>0.65 bar >9.4 psi
Bladder leakage test pressure, 100%	0.2 bar 2.9 psi	0.2 bar 2.9 psi	0.2 bar 2.9 psi	0.2 bar 2.9 psi
APRV cracking pressure	0.25 bar 3.6 psi	0.25 bar 3.6 psi	0.25 bar 3.6 psi	0.25 bar 3.6 psi
Accessories				

Crotch strap Besea	Accessory	Included	Included	Included
Item no	000-19	000-19	000-19	000-19
Material	Nylon	Nylon	Nylon	Nylon
Width	25.4 mm 1 in.	25.4 mm 1 in.	25.4 mm 1 in.	25.4 mm 1 in.
Tow ring included	Yes	Yes	Yes	Yes
Tank band Besea 100 Advanced	Accessory	Included	Included	Included
Item no	000-30	000-30	000-30	000-30
Material	Nylon	Nylon	Nylon	Nylon
Width	50.8 mm 2 in.	50.8 mm 2 in.	50.8 mm 2 in.	50.8 mm 2 in.
Length	1000 mm 39.4 in	1000 mm 39.4 in	1000 mm 39.4 in	1000 mm 39.4 in
Buckle materials	AISI 316 / Plastic	AISI 316 / Plastic	AISI 316 / Plastic	AISI 316 / Plastic
WeightPocket Besea QR	Accessory	Accessory	Accessory	Accessory
Item no	000-47	000-47	000-47	000-47
Maximum load	2x6 kg 2x13 lbs	2x6 kg 2x13 lbs	2x6 kg 2x13 lbs	2x6 kg 2x13 lbs
Release mecha-nism	SprintRelease™	SprintRelease™	SprintRelease™	SprintRelease™
EasyGrip™	Yes	Yes	Yes	Yes
PocketRetract™	Yes	Yes	Yes	Yes
Direct fit, 40 cc	No*	Yes	Yes	Yes
Accessory pocket Besea M	n/a	Accessory	Accessory	Accessory
Item no.	n/a	000-50	000-50	000-50
TwistLock	n/a	Yes	Yes	Yes
Internal volume	n/a	2 litre 122 cu.in.	2 litre 122 cu.in.	2 litre 122 cu.in.

Max negative buoyancy contents	n/a	0.5 kg 1.1 lbs	0.5 kg 1.1 lbs	0.5 kg 1.1 lbs
D-ring kit Besea	Accessory	Accessory	Accessory	Accessory
Item no	000-53	000-53	000-53	000-53
Material	AISI 316	AISI 316	AISI 316	AISI 316
Maximum load	2000 N 204 kg-f 449 lbf	2000 N 204 kg-f 449 lbf	2000 N 204 kg-f 449 lbf	2000 N 204 kg-f 449 lbf
Pinbolt kit Besea Butterfly	Accessory	Accessory	Accessory	Accessory
Item no	000-93	000-93	000-93	000-93
Material	AISI 316	AISI 316	AISI 316	AISI 316
Ultimate strength upper pinbolt	>200 kg-f >1961 N >441 lb-f	>200 kg-f >1961 N >441 lb-f	>200 kg-f >1961 N >441 lb-f	>200 kg-f >1961 N >441 lb-f
Ultimate strength lower pinbolt	>350 kg-f >3432 N >771 lb-f	>350 kg-f >3432 N >771 lb-f	>350 kg-f >3432 N >771 lb-f	>350 kg-f >3432 N >771 lb-f
Pinbolt kit Besea	Accessory	Accessory	Accessory	Accessory
Item no	001-19	001-19	001-19	001-19
Material	AISI 316	AISI 316	AISI 316	AISI 316
Ultimate strength upper pinbolt	>200 kg-f >1961 N >441 lb-f	>200 kg-f >1961 N >441 lb-f	>200 kg-f >1961 N >441 lb-f	>200 kg-f >1961 N >441 lb-f
Ultimate strength lower pinbolt	>350 kg-f >3432 N >771 lb-f	>350 kg-f >3432 N >771 lb-f	>350 kg-f >3432 N >771 lb-f	>350 kg-f >3432 N >771 lb-f

* Do need accessory 001-13 Weight Plate Besea 40cc to be fitted.

WARNING Diving deeper than 50m the requirement of EN 1809 for time to completely inflate bladder will be exceeded.

MARKINGS

1. CE
Poseidon guarantees that the product is in compliance with the requirements, and that Poseidon fulfils its obligations, of the PPE Directive 89/686/EEC. The directive can be obtained through the web at www.newapproach.org

2. EN 1809, EN 250
Besea has been tested by an independent institute according to the requirements of the European harmonised standards "EN 1809:1997, Diving Accessories – Buoyancy Compensators – Functional and Safety Requirements" and "EN 250:2000, Respiratory Equipment – Open-circuit self-contained compressed air breathing apparatus – requirements, testing, marking." These standards are obtained through your national organisation for standardisation.

3. Laundry instructions
Besea can be washed in a washing machine at maximum 40ºC. Inflator, APRV:s, and TPU bladder must be removed first.

4. Info triangle
Shows where to find important information, the Info tag

5. Info tag

6. Manufacturer

7. Model name

8. Size

9. Year of manufacture (on info tag, see point 5)

TROUBLESHOOTING

Effect	Examine	Reason	Action
Bubbles are coming from the inflator or APRV/wing joint!	Is the nut tightened?	Loose valve nut	Check all valve nuts. Tighten firm by hand if necessary.
	Do the bubbles remain after tightening?	Internal leakage	Immediately terminate your dive and ascent. Have the Besea serviced by an authorised service centre
Bubbles are coming from the bladder!	Does it stop after a few minutes?	Trapped air between inner PU bladder and outer Ballistic shell	None
	Is it a continuous stream of bubbles?	The inner PU bladder may be punctured	Immediately terminate your dive and ascent. Have the Besea serviced by an authorised service centre
The inflator is continuously feeding the wing!	Does it stop after inflator has reached well above freezing temperature?	The inflation mechanism is/ was frozen probably due to a too high water content of the breathing gas.	Immediately disconnect the hose from the inflator. Deflate bladder to avoid a rapid ascent. Terminate your dive and ascent. Have your gas examined.
	Does the problem remain also in room temperature?	Damaged o-ring or jammed mechanism due to salt/calcium formation.	Immediately disconnect the hose from the inflator. Deflate bladder to avoid a rapid ascent. Terminate your dive and ascent. Have the Besea serviced by an authorised service centre

It is impossible to fill the bladder!	Is the feed hose connected to the 1:st stage?	Disconnected	Connect
	Is the feed hose connected to the inflator?	Disconnected	Connect
	Is the cylinder valve opened?	Unopened	Open
	Is the feed button stuck and impossible to operate?	Feed button either frozen or jammed by salt/calcium formation	Terminate your dive and ascent. It is possible to inflate the bladder orally. Have the Besea serviced by an authorised service centre
	Does it feed, but ARRV:s are opening before full inflation?	APRV covers are loose	Check all valve nuts. Tighten firm by hand if necessary.
		ClamRetract™ cords are too tightened	Have the Besea serviced by an authorised service centre

SERVICING

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 Besea should be inspected yearly by one of POSEIDON´s authorised service locations. Look for the POSEIDON Authorised Dealer sign. Inspection does not include a service overhaul, which only takes place if damages or malfunctions are discovered when inspected.

If you are using Besea with gasses having elevated oxygen content (Nitrox), you must inform the servicing location about it. They will then always undertake a re-cleaning of the inflator and your inflator feed hose.

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

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