

Liquivision Nirvana-Classic Fluid Goggles Instruction Manual



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1 Introduction

1.1 Warranty

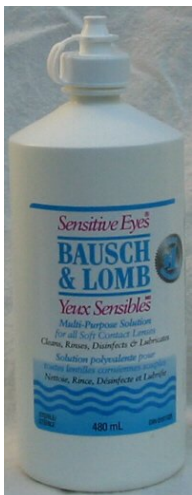
Your fluid goggles are warrantied against defects in manufacture for 1 year following the date of purchase.

1.2 Disclaimer

Scuba diving and freediving can be dangerous activities. We are not responsible for any injuries that you may incur while using fluid goggles. The long term effects of exposing the eye to fluids are unknown. Walking on land with fluid goggles on can be dangerous due to a slight magnification effect. You use the goggles at your own risk. If you do not accept these terms, please return your goggles.

1.3 Seawater or Saline

We recommend filling the goggles with **sterile** saline solution normally used for soft contact lenses. Examples of good solutions include:



Bausch & Lomb
Sensitive Eyes



Bausch & Lomb
Renu



One saline solution that you
should not use is:
CIBA-Vision Softwear

While the fluid goggles will work with sea water or lake water, it hurts slightly and it is not very good for the eyes. However, if you are used to opening your eyes in the ocean, you can use sea water. However, you should not use ordinary contact lenses if you fill the goggles with sea or lake water because the contact lenses will become contaminated. You can also fill the goggles with home-made solution. This is very effective and inexpensive. To make homemade solution, mix 1L of PURIFIED water with 1g of sea salt. Make fresh solution every couple of days.

1.4 Contact Lenses

If you wear ordinary soft contact lenses, you can use the fluid goggles while wearing your contact lenses. In fact, fluid goggles may actually be slightly more comfortable while using ordinary soft contact lenses. Soft contact lenses have almost no effect when inside fluid, so if you wear soft contacts while wearing your goggles, you will not notice much difference. For example, a -8D soft contact lens has an effect of about -0.5D when in the goggle.

If you wear your contact lenses while wearing fluid goggles, you should NOT fill the goggles with sea water or lake water, because they will contaminate your contact lenses.

1.5 Adjusting Fluid Goggles

Fluid goggles are more complicated than masks. In order to see properly, the goggles must be adjusted very precisely. If you do not understand how to adjust your goggles, you will not see properly, or you

may barely see anything at all. It takes some practice to learn to adjust the goggles, but this manual should explain everything you need to know.

If you let your friends try your goggles, you must adjust the goggles in order for your friends to see properly. Then, when you use the goggles, you must adjust them again, so you can see properly.

1.6 Care of Fluid Goggles

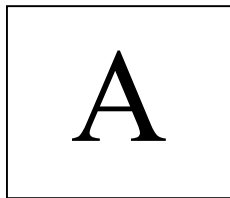
Fluid goggles are more fragile than ordinary masks. They must be handled with care and cleaned with fresh water after every use. If you throw your goggles around and drop them frequently, they could become scratched, damaged or destroyed. The inside of the goggle is very sensitive to scratching; never clean the inside of the goggle with anything except water and the skin of your fingers. Even your fingernails can scratch the inside of the goggle. Always store your goggles in their case when not in use.

With proper care, your fluid goggles should last for years.

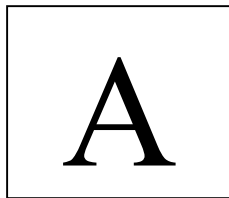
2 Definitions

2.1 Magnification

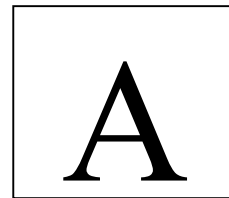
Magnification refers to how big objects appear, in comparison to how big they really are. For example, when using a normal mask underwater, objects appear approximately 33% larger than they really are; so, with a normal mask, magnification is about 1.33. Fluid goggles magnify objects slightly more than mask do. The magnification of fluid goggles is about 10% more than an ordinary mask. The main difference is that fluid goggles magnify objects about 10% *even when on land*. This can make it difficult to walk along **uneven terrain** while wearing goggles; because objects are slightly magnified, there is a danger you might slip. It is possible to get used to this effect, but you must always be *very careful* when walking along dangerous areas while wearing the goggles.



Mag = 1.00



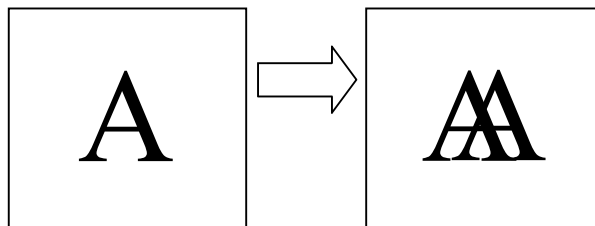
Mag = 1.33
Mask



Mag = 1.46
Fluid Goggles

2.2 Horizontal Double vision

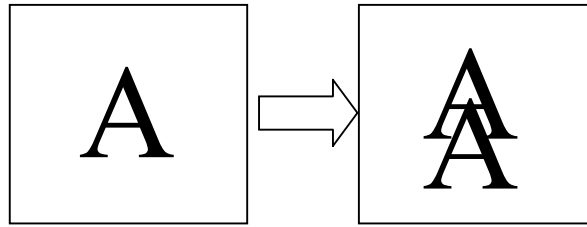
If your fluid goggles are not adjusted properly, you may experience horizontal double vision. Horizontal double vision refers to the state when you see two images beside each other, as shown below.



Horizontal Double Vision

2.3 Vertical Double vision

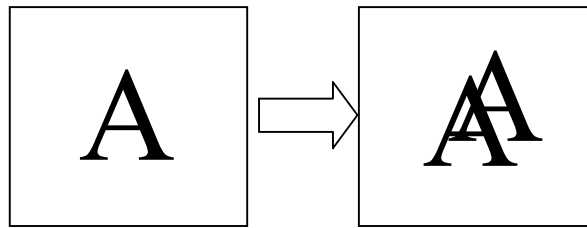
If your fluid goggles are not adjusted properly, you may experience vertical double vision. Vertical double vision refers to the state when you see two images on top of each other, as shown below.



Vertical Double Vision

2.4 Vertical + Horizontal Double Vision

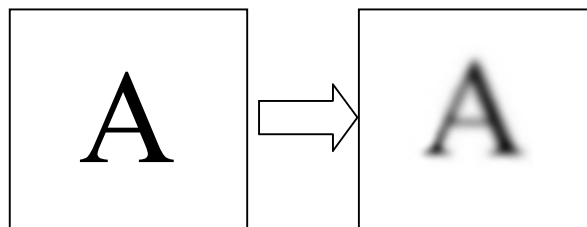
If your fluid goggles are not adjusted properly, you may experience vertical and horizontal double vision. Vertical and horizontal double vision refers to the state when you see two images diagonally displaced, as shown below.



Vertical + Horizontal Double Vision

2.5 Blurry Vision

If your fluid goggles are not adjusted properly, you may experience blurry vision. Blurry vision refers to the state when the image is out of focus or 'blurry', as shown below.

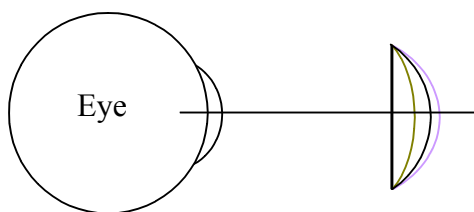
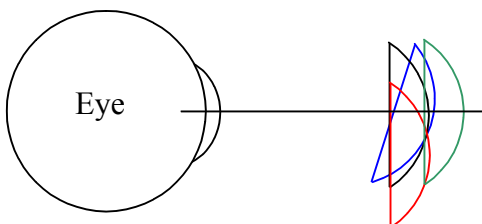
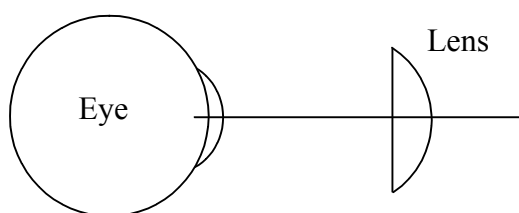


Blurry Vision

2.6 Types of Blur

If you experience blurry vision, it can be caused by several factors (each factor is illustrated below in the same color as it is written):

1. Looking through the wrong part of the lens
2. Looking through the lens at the wrong angle
3. Incorrect placement of the lens; too far or too close to the eye
4. Incorrect power of the lens (nearsighted)
5. Incorrect power of the lens (farsighted)



3 How to Put on Fluid Goggles

3.1 Practice on Dry Land

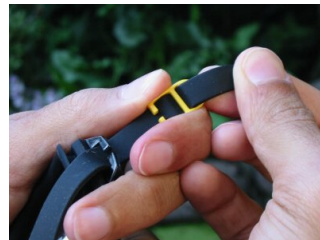
- It is important that you learn how to use your fluid goggles on DRY LAND !!
- The best place to practice is in the bathroom, in front of the sink and mirror
- You will need a bottle of saline, as described earlier (i.e. Bausch & Lomb, SOLO-Care, Renu)

Note: Wearing a wetsuit hood will affect the adjustment of the fluid goggles. You can adjust the goggles without wearing your wetsuit hood, but when you put your goggles on outside your hood, you may need to make minor adjustments.

Please follow the steps below in order. Do not skip any steps!

3.2 Adjust the Strap

First, adjust the length of the strap. The goggles should be quite loose on your face; they should be tight enough to keep a seal on your eyes, but not much tighter. If the goggles are too tight, your vision will be distorted and the goggles will be uncomfortable. If the goggles are too loose, then slight movements of your head could cause saline to leak out of the goggles while you are on land. The pictures below show how to adjust the strap.



3.3 Fill One Eye

In the beginning, you must learn to see out of one eye only. Follow these steps:

- Stand in front of the mirror
- Open your bottle of saline, and place it in front of you
- Put the goggles on
- Without fluid in the goggles, you cannot see anything
- Reach for the bottle of saline, and hold it with your right hand, upside down (see picture below)
- Using your left hand, hold the right eyepiece of the goggles
- Gently open the top of the eyepiece, breaking the seal of the goggle on your face
- While doing so, press the bottom of the eyepiece against your face
- Place the tip of the saline bottle in the top of the goggle eyepiece
- Squeeze the bottle, so saline flows into the goggle

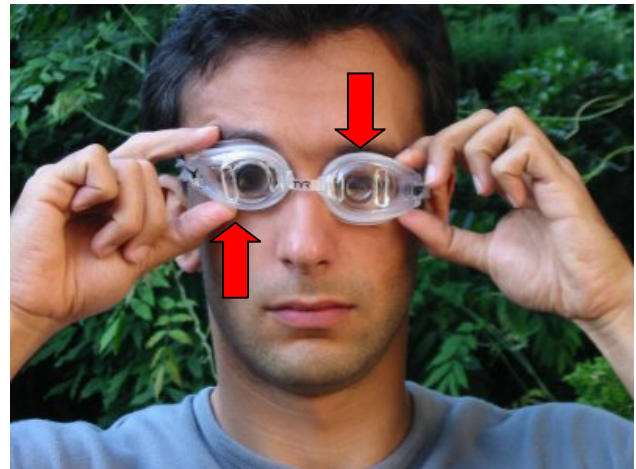
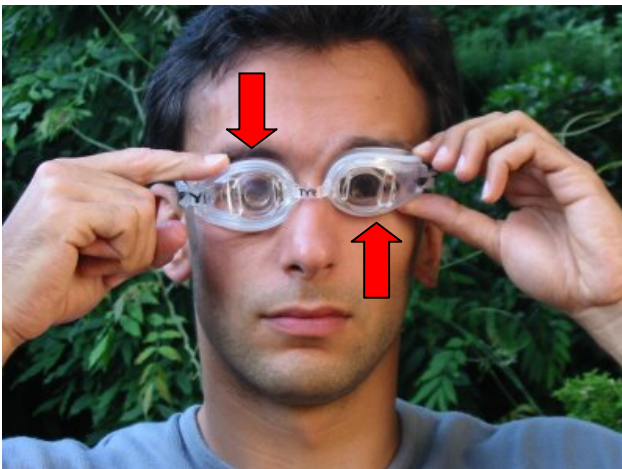
- If you feel saline flowing down your face or onto your chest, your are not holding the goggle or the saline properly; try again!
- The right eyepiece of the goggle will slowly fill with saline
- When the right eyepiece is full, the saline will start flowing down your face
- Close the goggle, keeping your eyes closed
- Shake your head left and right; if you feel movement in the fluid by your right eye, there is probably a bubble in the goggle; try filling it some more (it takes some practice)
- Now, cover your left eye, and open your right eye
- You should be able to see somewhat clearly (the goggles are not adjusted yet)
- Keeping your left hand over your left eye, pick up the saline bottle with your right hand, and try to read the label on the bottle
- Move the bottle down, and keeping your head straight, look down
- Move the bottle up above your head, and keeping your head straight, look up
- Move the bottle to the right, and keeping your head straight, look to the right
- Move the bottle to the left, and keeping your head straight, look to the left
- Move the bottle up very close, and see if it becomes more clear or less clear
- Place the bottle on the counter, and walk backwards, away from the bottle; see if the bottle becomes more clear or less clear
- Practice all of those things; you will find that the bottle is most clear at one place only. It could be close or far, to the right or to the left, slightly up or slightly down
- Now, try to move the goggle eyepiece on your face, towards your nose, away from your nose, up, and down, and see if you can make the bottle clear while looking straight at it
- If you still cannot see very clearly, try pressing the goggle against your eye
- You can also try loosening the strap, so the goggle is more loose against your eye
- The distance between your eye and the lens in the goggle will affect the clarity of your vision
- Also, if you wear soft contact lenses, by taking your contacts off, or putting them on, you can slightly change the power of the goggle; try it
- Once you are comfortable seeing with one eye, proceed to the next section



3.4 Stereo Vision : Both Eyes

Now that you are comfortable seeing through one eye, and you have located the region of maximum clarity, you are ready to try to see from both eyes.

- Fill one eye, as before
- Now fill the other eye
- Place the bottle of saline in front of you about 2-3m away
- Do you see one bottle or two bottles?
- Do you have horizontal double vision, vertical double vision, or both?
- If you see perfectly, then you're done
- If you have double vision, you must first try to determine the type of double vision and the cause
- Following the pictures below, squeeze the goggles toward each other, towards your nose; does this make the double vision worse or better?
- Now pull the goggles away from each other, towards your ears; does this make the double vision worse or better?
- Move the left eyepiece up, and the right eyepiece down; does this make it worse or better?
- Move the right eyepiece up, and the left eyepiece down; does this make it worse or better?



3.5 Horizontal Double Vision

There are three ways to correct horizontal double vision

1. Adjust the nose bridge [see picture below]
2. Adjust the strap
3. Move the strap



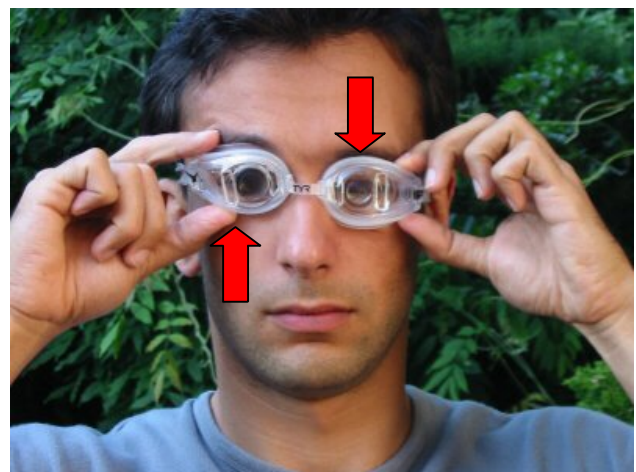
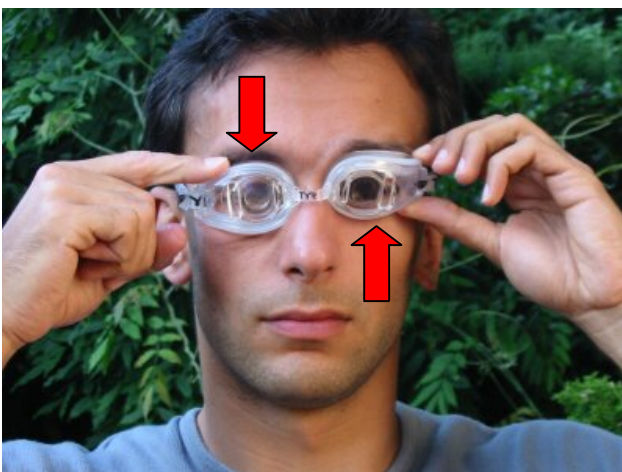
If you press the goggles towards your nose, and this improves your vision, you can shorten the nose bridge, or loosen the strap. If you pull the goggles away from each other, you can lengthen the nose bridge, or tighten the strap.

Adjusting the nose bridge causes a large change in the separation of the goggles. Tightening or loosening the strap causes a smaller change in the separation of the goggles.

The smallest change in the separation can be done by simply moving the strap. This works best while using a wetsuit hood. The strap 'sticks' to the wetsuit hood, so if you slide your fingers under the strap and change its placement on your head, you can adjust the separation of the goggles very slightly.

3.6 Vertical double vision

Vertical double vision is caused by the goggles not being properly placed on your face. To correct it, move the left eyepiece up, and the right eyepiece down, or vice-versa, until the double vision fades. Then, move the eyepieces again, in the same direction, but MUCH MORE, move them TOO FAR. When you release the eyepieces, they should sit properly. If this still does not work, try taking the goggles off and putting them on more carefully.



4 Using Fluid Goggles in the Ocean

4.1 Magnification Can be Dangerous

Fluid goggles slightly magnify objects even on land. This makes it hard to walk along dangerous areas. If you must walk along dangerous areas while wearing the goggles, bend down and walk with your legs and hands at the same time! A better idea is to put the goggles on just before you get in the water. Walk along any dangerous areas with the goggles around your neck, then put them on just before you get in the water. You'll need to bring saline with you.

4.2 Bring Saline if Possible

Because it is safer to put the goggles on just before you get in the water, it is useful to have a bottle of saline with you. Also, if your goggles are not tight enough, they could leak on the surface, causing air bubbles in the goggles. It is always possible to eliminate the air bubbles by allowing sea or lake water in the goggle, but it is better to refill the goggle with saline. To do that you need saline with you. The best choice is to use a small net or pocket on the float, and keep a small bottle of saline in it. This also allows you to take the goggles off for a few minutes, and then put them back on again, while still in the water.

4.3 Using a Snorkel

The goggles need to be precisely adjusted on your face to see properly. If you attach a snorkel to the goggles, it will pull at the goggles and distort your vision completely. There are two ways to use a snorkel with fluid goggles:

1. Use a rubber or neoprene headband, and attach the snorkel to the headband
2. Hold your snorkel in your hand

4.4 Cold Water Dangers

The water in the goggles does not insulate as well as the air in a mask. This means that your eyes get colder than they will in a mask. Also, because the goggles are small, more of your face will touch the water. Both of those facts can increase the diving reflex, which is good. The bad part is that in very cold water, the cold on your eyes may be painful. If you use goggles in very cold water (< 10C), close your eyes when you place your face in the water, and wait for about 3 minutes. Then open your eyes and try diving. If after 5 minutes your eyes still hurt from the cold, please stop using the goggles for the day, and switch to a mask.

4.5 Scratch Resistance

The goggles are more prone to scratching than masks. Be careful not to scratch the goggles. Keep the goggles in their case when not in use. The inside of the goggle is especially prone to scratching; nothing should ever touch the inside of your goggle except the skin on your fingers (even your fingernails can scratch the inside of the goggle).

4.6 Rinse Goggles After Use

Each time you use the goggles, it is important to wash the inside of the goggle with fresh water, several times. Otherwise, saline or sea water will 'stick' between the lens and the inside of the goggle. When this water dries, salt will 'cake' on the lens. The next time you use the goggle, parts of your vision could be blurry because of the salt inside the goggle. Eventually the salt will dissolve; it does not damage the goggle, but to avoid this effect it is best to always rinse the goggles with fresh water before storing them at the end of the day.