

Aquavolta Cavallo 450 / 1000

The perfect combination of H₂ inhalation,
gassing and for hydrogen-rich water.



Incl. Aquavolta® Turbo
H₂-Wasser-Booster



Users Manual
Karl Heinz Asenbaum, Yasin Akgün &
Michael Weller (Version 240122)



Henry
Cavendish
(1731 - 1810)

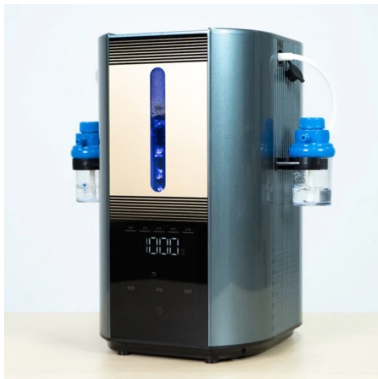
The English aristocrat Henry Cavendish (1731 - 1810), one of the richest people of his time, could afford to live as a secluded scientist and researched completely crazy things:

He discovered a gas called "**inflammable air**", which he described in his treatise on artificial airs ("factitious airs") and which was later called "hydrogen". It consists of 2 hydrogen atoms (H_2) and is therefore the smallest molecule in the world.

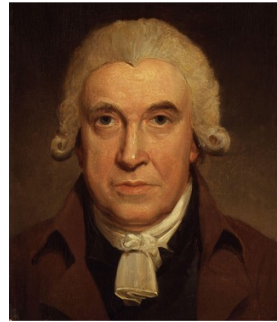
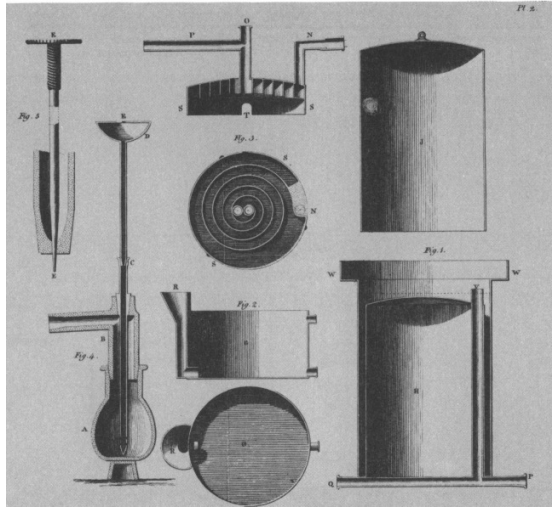
Hydrogen atoms make up 75 % of the total mass in our solar system and as many as 93 % of all atoms there are hydrogen atoms. Why is there so much less hydrogen on our Earth, with 0.12 % of the total mass, than in the rest of the universe? Because it is extremely volatile if it is not held in a chemical compound. And this brings us to the second theme of Henry Cavendish's life, **gravity**. He was the scientist who proved the existence of gravity in the first place.

- Hydrogen is 15 times lighter than air. The gas disappears into space at around 5 metres per second. This is because gravity does not grab hold of it. This is why there is only 2.9 % hydrogen in the earth's crust and not 75 % as in the universe (without dark matter). And this is despite the fact that there seems to be so much hydrogen floating around in our oceans as H_2O (water).
- But hydrogen from water is released by living organisms on earth with the help of the sun and is prevented from escaping in the organism by chemical bonds. Humans consist largely of water, i.e. burnt hydrogen. But pure hydrogen can be extracted from water. Just like your Aquavolta® Cavallo can.
- By the way: A human being consists of 99% H atoms. As long as we are alive. Because hydrogen is so small that it takes up much less space in our bodies despite being so numerous.

H_2 Air

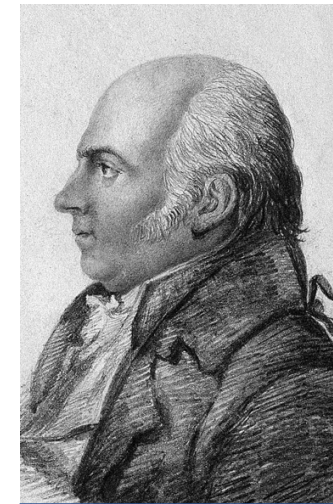
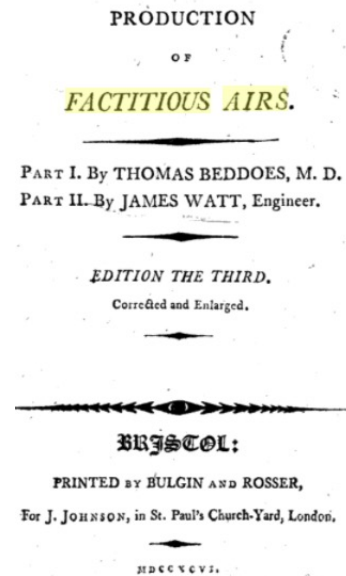


The beginnings of hydrogen medicine



James Watt's
H₂-inhaler
(1796)

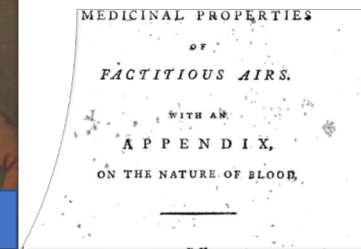
The world's first hydrogen inhalation device was developed in **1796** by the inventor of the steam engine, **James Watt**, for the English pulmonologist Dr **Thomas Beddoes**, the inventor of so-called "pneumatic" medicine. His contemporary **Tiberius Cavallo**, who gave his name to the **Aquavolta® Cavallo**, reported on this as early as **1798** in his book on the "medicinal properties of artificial air". Air mixtures containing up to 25 % hydrogen were administered for asthma and catarrh. Today, less than 4 % is used.



Thomas Beddoes
(1794)



Tiberius Cavallo (1798)



Hydrogen medicine only spread in England. The first patient known to have been treated with hydrogen gas was an asthma patient named Mr Shephard. It was not until the 21st century that hydrogen inhalation was rediscovered and scientifically investigated.

H₂ Water

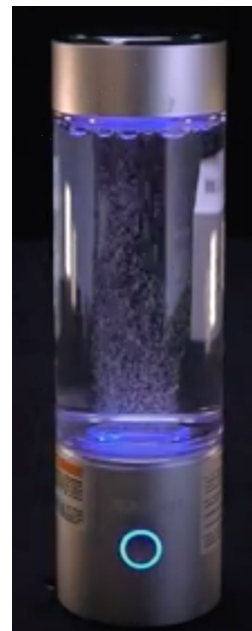
Before hydrogen inhalation was rediscovered at the beginning of the 21st century, the healing effects of hydrogen-rich water were the subject of scientific debate. Since the 1930s, inventors in Germany and Japan had been experimenting with water that had undergone electrolysis. This allows the pH value of the water to be changed, the redox potential to be shifted in a positive or negative direction and the gases dissolved in the water can also be remixed. Some have even speculated about a change in the cluster structure of the water. Since the 1970s, a global market has developed in Japan and Korea for so-called **water ionisers**, which treat water using diaphragm electrolysis. There were many studies in which the healing effect of such electrolyte waters was investigated and confirmed, but for a long time it was not known why this healing effect took place.

It was not until 2007 that it gradually became clear **that only the hydrogen dissolved in the water was responsible for the healing effects. This put an end to all other explanations such as "high pH value", "hexagonal clusters" or "negative redox potential"**. The industry initially developed water ionisers that could build up particularly large amounts of hydrogen in the water. However, the diaphragm electrolysis cells of the water ionisers were not well suited for this, as they produced unpleasantly high pH values the more hydrogen they produced. This is why a **modern type of electrolysis cell (PEM membrane)**, which is also installed in your **Aquavolta® Turbo H₂ booster, prevailed**. It enables a **four times higher hydrogen concentration** and does not change the pH value of the water at all. This also makes it possible to choose the individual flavour of the water filled in and its mineral composition.

Unlike a water ioniser, the Aquavolta® H₂ Turbo Booster is mobile, fits in almost any handbag and is powered by a powerful rechargeable battery.



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Modern H₂ medicine since 2007

Main applications of hydrogen gas

1. **Hydrogen orally:** By drinking water that is significantly enriched with hydrogen gas. Normal drinking water contains practically no hydrogen. Rare medicinal springs contain less than 0.1 mg/l hydrogen. Hydrogen water for therapeutic purposes contains at least 0.5 mg/l of dissolved hydrogen gas.
2. **Hydrogen inhalation:** H₂ gas is added to the breathing air in a non-flammable or explosive percentage in order to introduce much larger quantities into the circulation than when drinking.
3. Baths in hydrogen-rich water.

Aquavolta® Cavallo component system Inhaler - Diffusion rod - H₂ -Water booster



Hydrogen medicine began in England in the 17th century and consisted exclusively of inhalation methods. In the 20th century, ideas for the production of artificial healing waters based on water electrolysis were developed in Germany and Japan. The gases H₂ and O₂ produced by electrolysis were dissolved in so-called "ionised water". The term "alkaline active water" was coined for the hydrogen-rich artificial healing water. You can find the whole story in the book "Electroactivated Water" by Karl Heinz Asenbaum. Free download via the QR code.

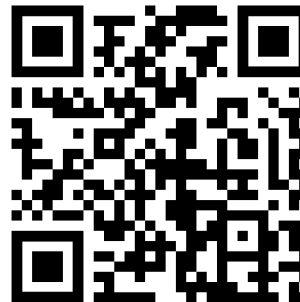


There are still too few clinical studies on humans to include H₂ medicine in the canon of conventional medicine. The Aquavolta® Cavallo is therefore primarily a system for therapeutic professionals.

If you are a medical layperson, please note that we do not make any medical claims here.

General information

- Thank you very much for purchasing this hydrogen inhaler. The only difference between the Cavallo 450 and 1000 models is that they have more powerful electrolysis cells with different outputs of the gases H_2 and O_2 . The same operating instructions therefore apply to both.
- Please read the operating instructions carefully before using the product for the first time in order to use it correctly and safely.
- Please keep the manual with your important documents for future reference.
- Please also take a look at the [explanatory videos](#) on the website, which you can open using the QR code shown.



- Please understand that the company is not liable for failures and accidents caused by improper installation or use of this product.
- **Important: Only laboratory water (double distilled water) may be used. Tap water, mineral water, reverse osmosis water and filtered water must not be used.**

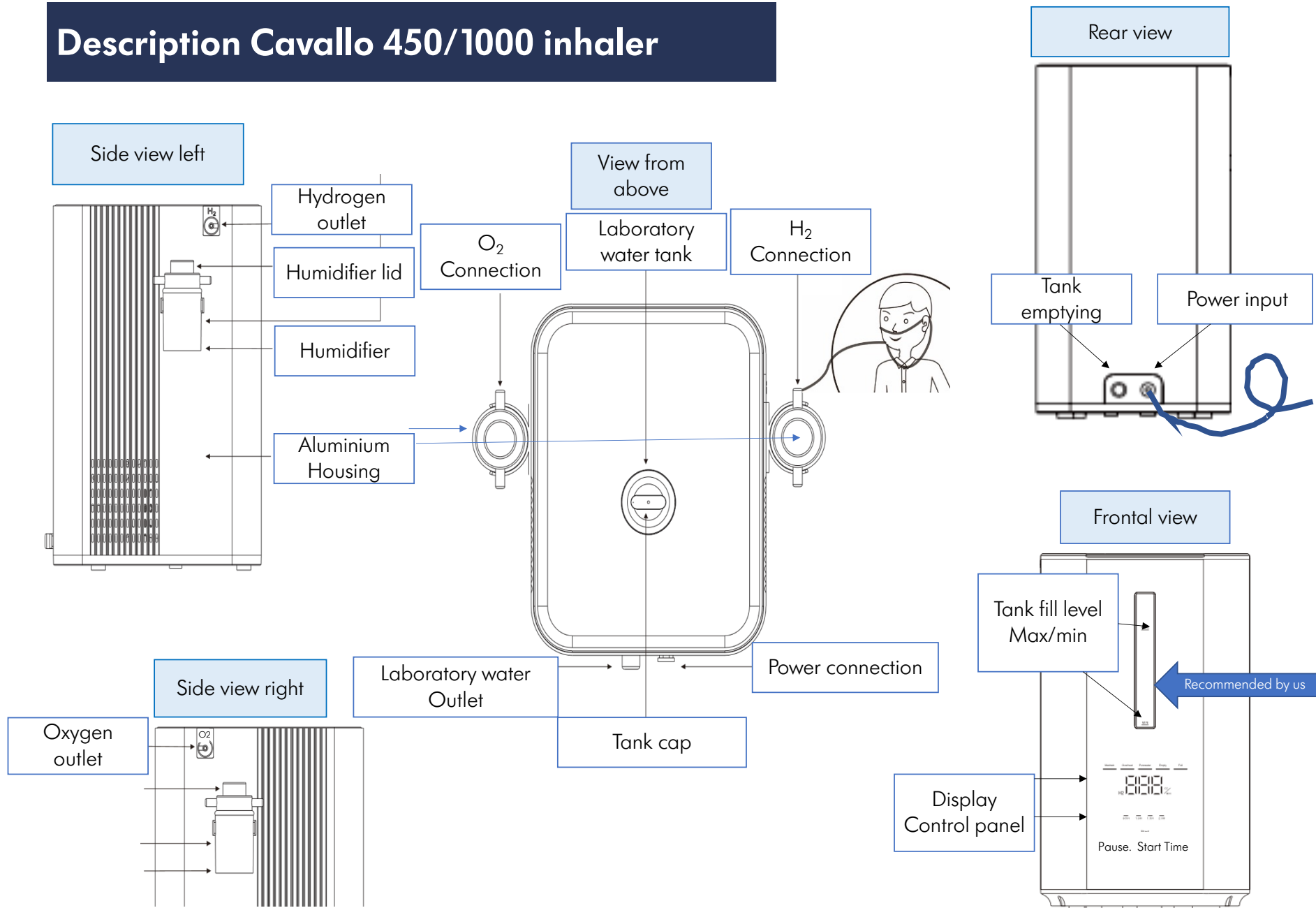
Scope of delivery of the Aquavolta® Cavallo component system



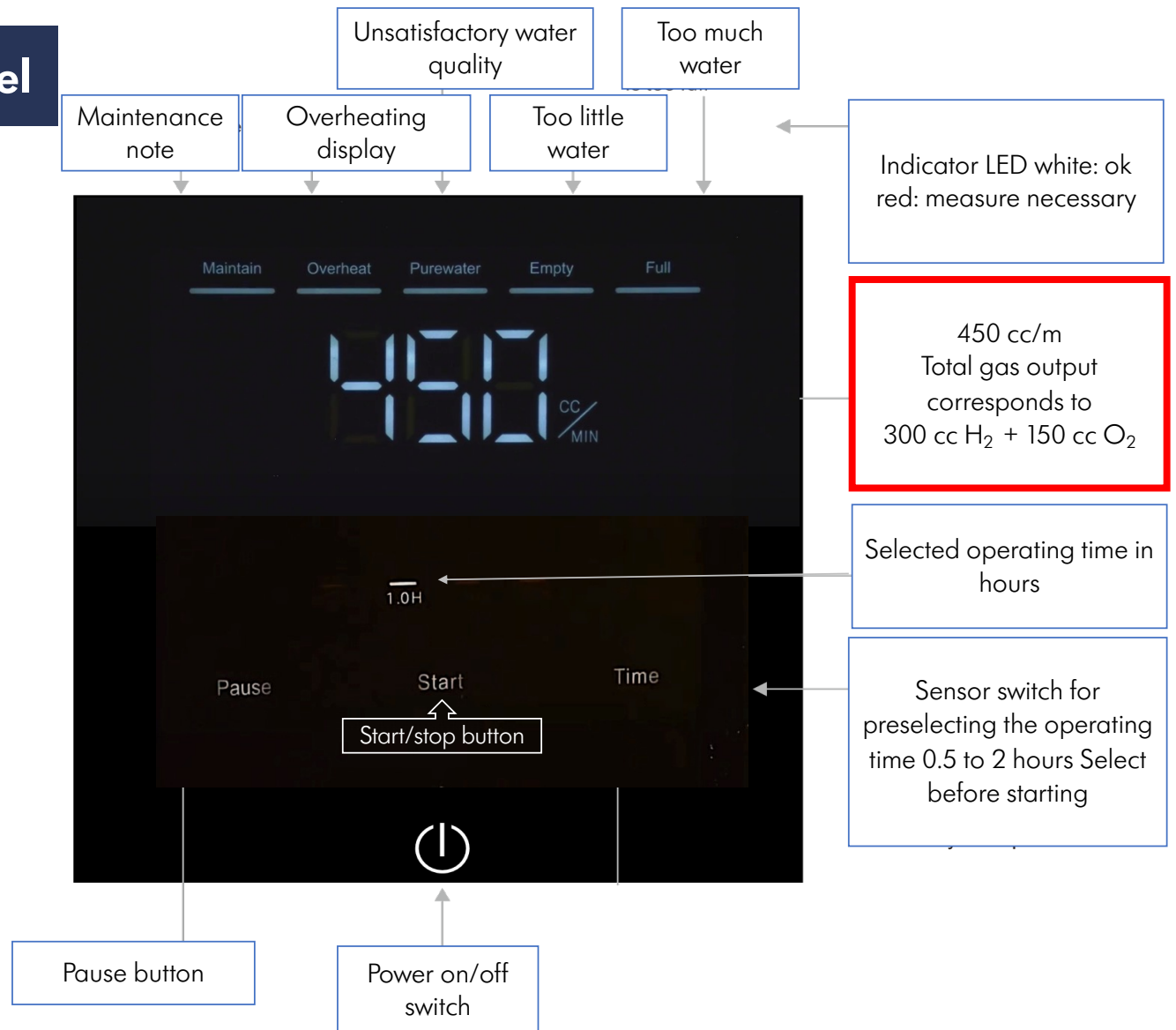
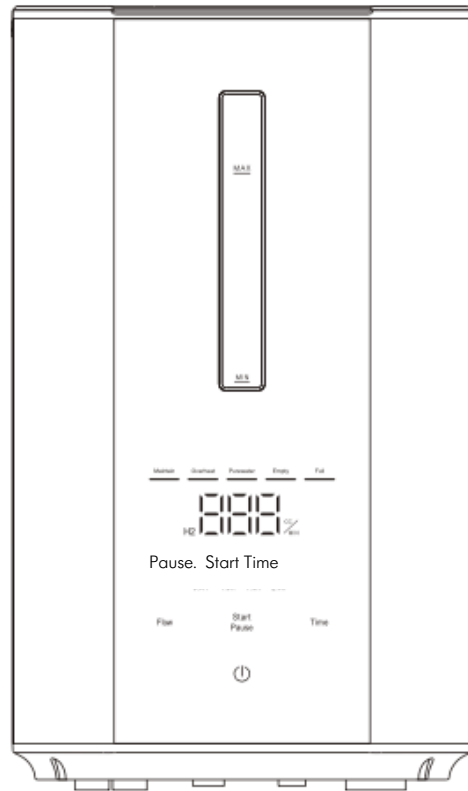
1. Depending on the model you order, either Cavallo 450 l/min (brown metallic) or 1000 ml/min (blue metallic) The gas output is 2/3 hydrogen gas and 1/3 oxygen gas.
2. 2 x humidifying containers
3. 2 x hoses for humidification tank
4. 2 x mounting clamps
5. Phillips screwdriver (not supplied)
6. Various connecting hoses
7. Basic breathing cannula equipment. Each user should mark their individual breathing cannula.
8. Various replacement nasal probes (it is not always necessary to replace the entire breathing cannula).
9. 1 x diffusion rod for H₂ outlet for gassing all types of drinks, soups and smoothies
10. 1 x canister of double distilled laboratory water
11. 1 x hose coupling for H /O₂₂ mixed gas use
12. 1 x Aquavolta® Turbo H₂ Water booster
13. 1 x Aquaphor® Jug filter for pre-treatment of the water for the Aquavolta® Turbo H₂ Water Booster



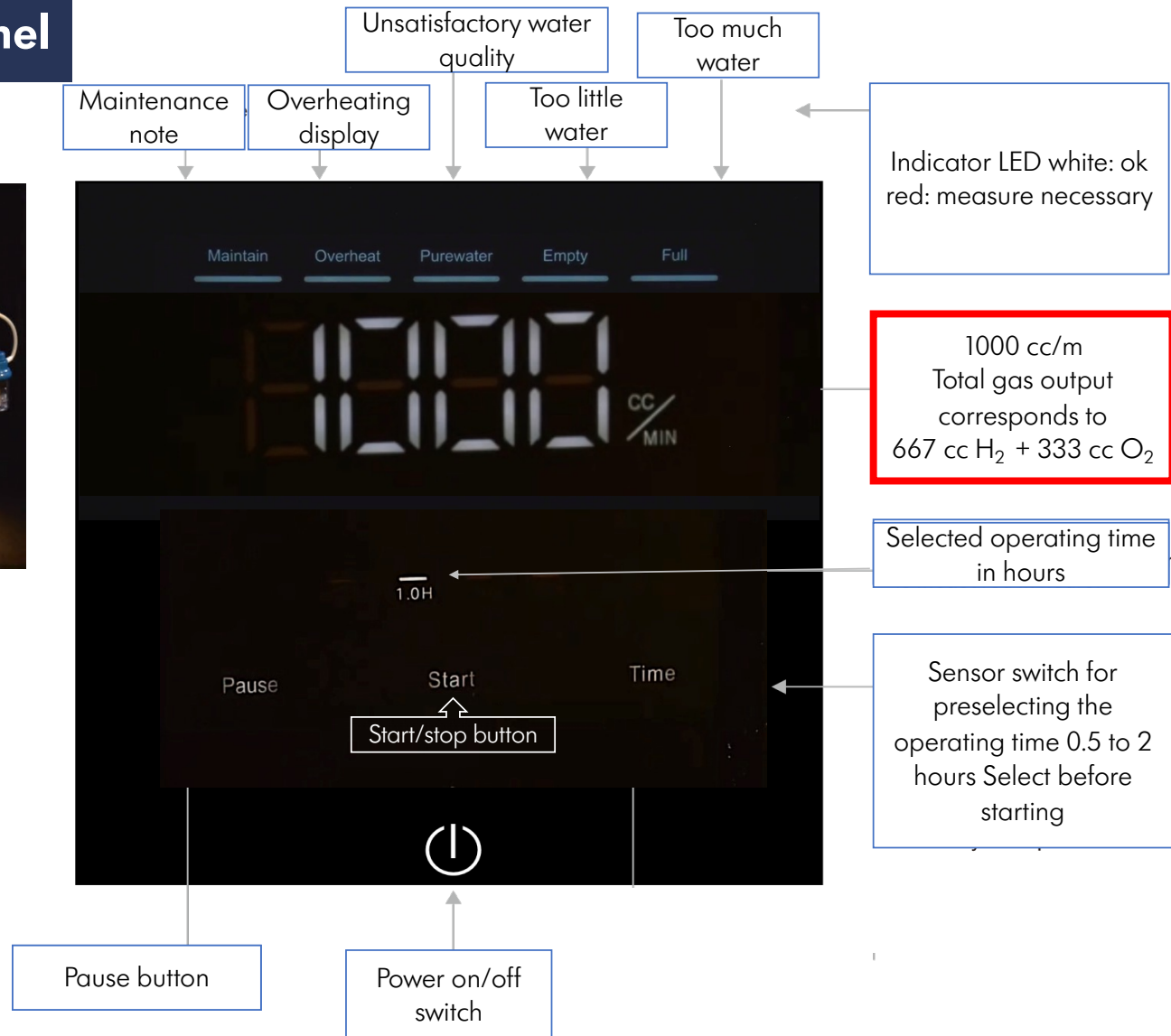
Description Cavallo 450/1000 inhaler



Cavallo 450 control panel



Cavallo 1000 control panel



Notes on operation

- Never open the clean water tank lid when the appliance is in operation.
- Each breathing cannula should be assigned to a specific person by labelling.
- If the appliance is used for a longer period of time, the outer surface of the appliance heats up, which is a normal phenomenon.
- If the appliance has not been used for more than 1 month, please empty the water from the tank and add new laboratory water.
- If the "Purewater" indicator is red, this means that the water quality in the tank is too poor. Please empty the water tank and fill with new laboratory water.
- If the "Empty" indicator is red, this means that the water level in the clean water tank is too low. First drain off all the water and refill the tank.
- If the "Full" indicator is red, this means that there is too much water in the water treatment tank. At this point, drain some of the water until the "Full" indicator is white.
- If the "Maintain" indicator is red, this means that the entire water supply must be cleaned. At this point, please drain the water from the water tank and rinse it several times with fresh laboratory water. If the maintenance indicator is still illuminated, the appliance should be sent to the factory for repair.
- If the appliance is tilted by 45 degrees during use, operation is stopped automatically.

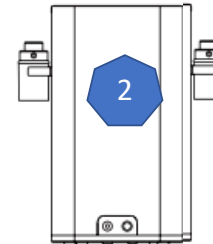
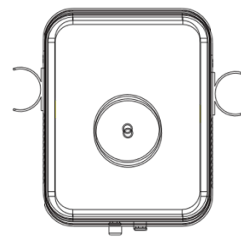
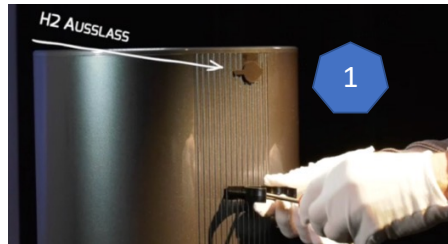
Safety instructions

- Always observe **the safety instructions** in this manual. H₂ gas is highly flammable **and may also be explosive** if sufficient oxygen is present.
- If you have not fully read and understood the operating instructions or do not have them to hand, ask your dealer for them before using the appliance and study them until you have fully understood everything. Online access to the operating instructions can be found on the website www.aquacentrum.com/cavallo under "Downloads"
- The appliance must not be used by persons (including children) with physical, sensory or mental disabilities.
- It must be ensured that such persons do not gain access to the device.
- Every user must have knowledge and experience of the gases used and be aware of their risks.
- The appliance must not be used above 2000 metres above sea level.
- Only use the appliance in a ventilated room and keep fire, sparks and heat strictly away from it.
- Ensure that the power plug is firmly seated. Never touch it with wet hands.
- Never place the appliance under water and do not use it in rooms with high humidity.
- If the appliance overheats, it switches off automatically.
- When wiping the appliance, make sure that there are no drops of water on the ventilation grille in particular.
- If the appliance does not restart despite following the correct procedure, please contact your dealer's service centre. Under no circumstances should you open the appliance yourself.
- If you feel uncomfortable using the product, stop using it for the time being. and
- call your dealer.
- **Danger: The use of naked flames or smoking in the room in which you are using it is strictly prohibited. Ventilate the room after each use of the inhaler.**

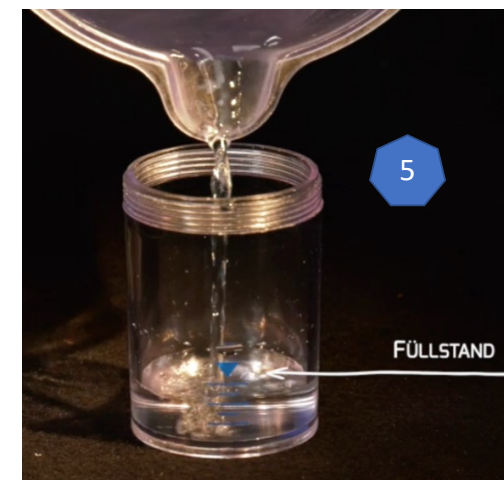
Safety instructions 2

- Never use flammable materials in the vicinity of this appliance.
- Never use this appliance on uneven surfaces or in the vicinity of small children. Otherwise, the appliance may be knocked over by vibrations, which may result in injury or appliance failure.
- When cleaning the appliance, never spray water directly onto the appliance parts, as this may cause short circuits or malfunctions.
- Never immerse the appliance in water or spray water on the appliance as this may cause a short circuit or failure.
- Never use this product near a fire as it may cause an explosion.
- Never bring the hydrogen outlet of this appliance close to the burning cigarette, otherwise an explosion may occur.

Basic assembly of the Cavallo 450/1000 inhaler



1. attach the humidifying bottle clamps to the device with a screw
 - 2 Attach the two humidification vessels in the brackets sideways.
 3. connect the H₂ outlet and the O₂ outlet to the corresponding humidifier using the hoses. pay attention to the **direction of the arrow** on the humidifier.
 4. open the lid of the humidification bottles.
 5. then fill with laboratory water between the minimum/maximum markings. Tip: The less water you fill in, the quieter the humidifier will bubble.
- To connect the nasal cannula, you must decide whether you want to inhale pure H₂, pure O₂ or H /O₂₂ gas (also known as oxyhydrogen gas).
The respective gas mixes with your breathing air in a non-critical manner.
Nevertheless, any use of fire or sparks directly at the breathing cannula must be absolutely avoided.



The following options are available for mixing with the breathing air:

Cavallo 450 Cavallo 1000

H₂ Gas 300 cc/minute H₂ Gas 667 cc/minute

O₂ Gas 150 cc/minute O₂ Gas 333 cc/minute

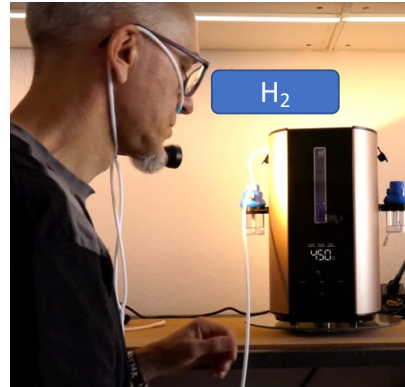
H /O₂₂ Mixed gas 450 cc/minute H /O₂₂ Mixed gas 1000 cc/minute

The connection options are shown on the next page.

The 3 inhalation options of the Cavallo 450/1000 Hydrogen inhaler

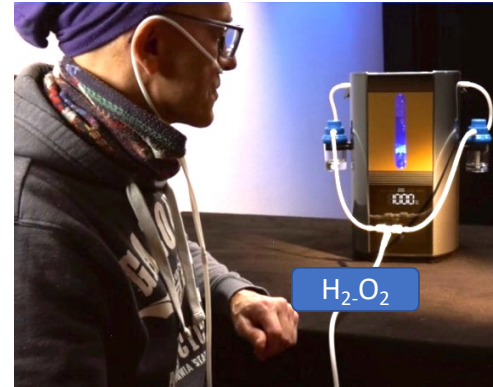


You have 2 humidified safety gas outlets on your device, which you can use according to your individual choices.

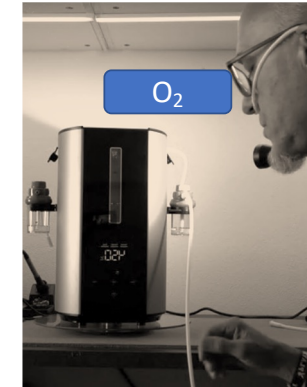


If you connect the nasal cannula to the humidifier of the H₂ outlet, H₂ is added to your breathing air at 300 or 667 cc/min depending on the device output.

The oxygen gas escapes into the room air on the right.



With this configuration, oxyhydrogen gas (H₂/O₂) is blown into the nasal cannula, but it mixes with the inhalation air to a harmless concentration. This coupling is used to couple the outlets

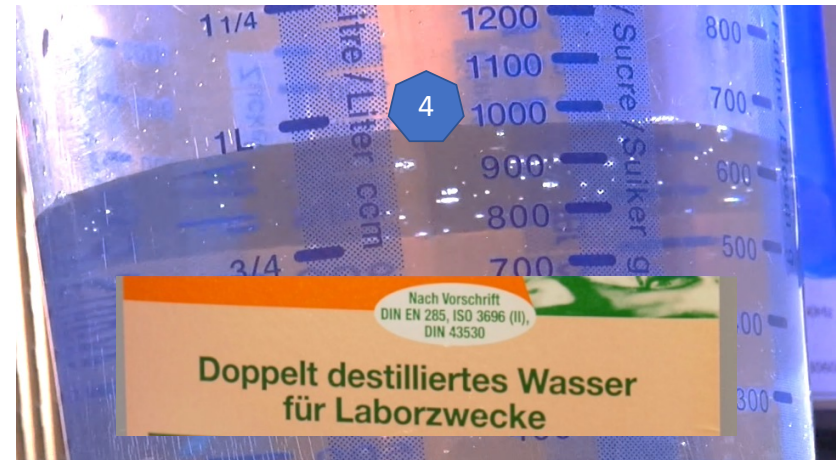
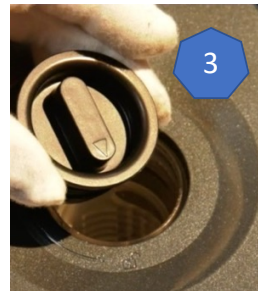
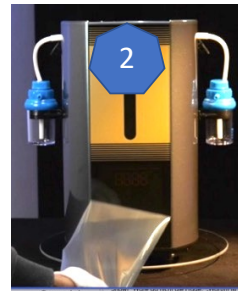


With this configuration at the O₂ outlet, 150 or 333 cc of oxygen per minute is added to the breathing air. This is usually too little to be interesting.

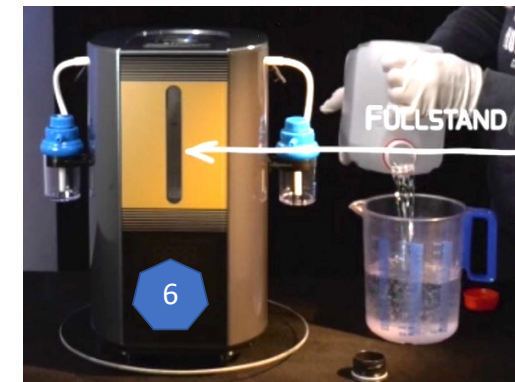
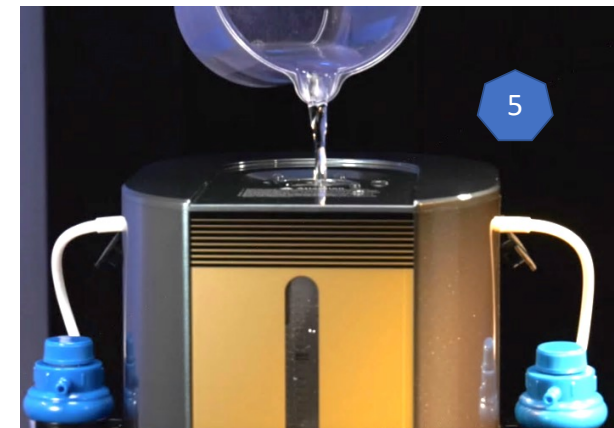
Hydrogen and oxygen, the two gases that our device produces from H₂O, have opposing effects. Oxygen has an oxidising effect, while hydrogen has an antioxidant capacity. **A mixture with more oxygen therefore initially seems pointless in order to produce healing effects.**

Nevertheless, there are scientifically investigated applications of an H₂/O₂ combination where significant effects have been shown, e.g. in cases of lung failure. However, they did not investigate what would have happened without oxygen. We therefore do not yet know whether pure H₂ is better. **in every case Our device is therefore equally open to all common H₂ and H₂/O₂ philosophies.**

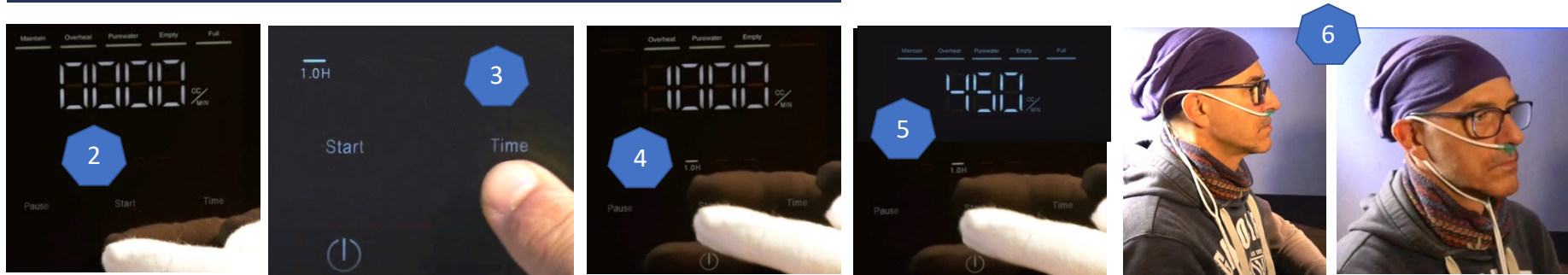
Operational preparation



1. Remove the top protective film
2. Remove the protective film from the front
3. Open the tank cap.
4. Only use double-distilled laboratory water.
5. As only a small amount of water is used and it still needs to be changed frequently, we recommend filling the tank with only 1 litre of laboratory water.
6. However, the level indicator should always be well above the minimum. After filling, you should close the tank lid again and wait at least 15 minutes so that the membrane is thoroughly soaked.
7. Insert the mains plug into a 220 V socket.



Carrying out the inhalation



1. Attach the nasal cannula to the desired gas outlet as described on [page 16](#).
2. Press and hold "Power" for 2 seconds to switch the device to standby. The device displays 0000 cc/min.
3. Press "Time" several times to set the operating time of the appliance in half-hour increments up to a maximum of 2 hours.
4. On the Cavallo 1000 model, press "Start" to start gas production of 1000 cc/min.
5. On the Cavallo 450 model, press "Start" to start gas production of 450 cc/min.
6. Place the nasal cannula bundled either at the back of the head or neck as shown and start inhalation with calm, natural breaths. The device stops automatically after the set time. You can inhale while sleeping, at work, playing, gaming or watching TV...



Drain and replace tank water

1. A cap nut for the water outlet is located next to the power cable inlet at the rear.
2. Have a sufficient measuring cup ready to collect the water to be drained and first open the cap nut. Then pull out the green silicone plug (2) underneath.
3. Always drain all the water and then close the tank again with the plug and nut. Simply pour the lab water away or use it to water plants.

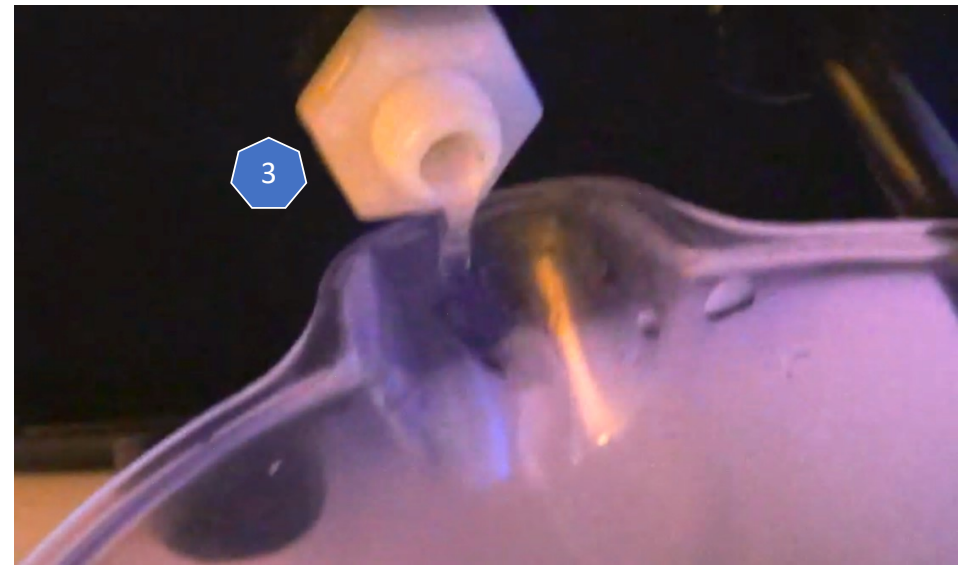
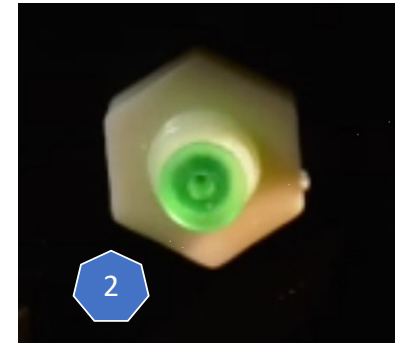
Before transporting the appliance beyond the tipping point, the tank must be drained without refilling.

- When the red indicator light is "Full", **only excess** water needs to be drained.

In which cases must the tank filling be completely renewed?

- If the filled laboratory water has been in the tank for longer than 3 months.
- When the indicator light "Maintain", Purewater" or red lights up.

With the "Overheat" indicator light, you only need to allow the appliance to cool down.





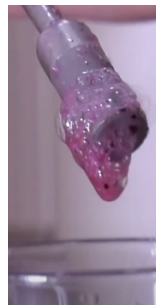
The diffusion rod for the H₂ output

The diffusion rod from the accessories is connected directly to the H₂ outlet humidifier using one of the hoses. This causes the gas to dissolve in 1-3 minutes in the liquid in which the diffusion rod is immersed.



Caution. The diffusion rod is not used to prepare hydrogen-water. That's why you have the Aquavolta Turbo H₂ Booster! See page 25.

A smoothie, coffee, soup and drinks H₂ infuser



The diffusion rod from the accessories is connected directly to the H₂ outlet humidifier using one of the hoses. This causes the gas to dissolve in 1-3 minutes in the liquid in which the diffusion rod is immersed.

Oxidation factors tumble in minutes

By **foaming** smoothies etc. with H₂ gas, the hydrogen cannot escape so easily into air or water and the redox potential drops sharply due to O₂ displacement.



Smoothie, for example:
ORP (oxidation-reduction potential)

Before After mV
+290 -534 mV

Gain: 824 mV ORP

Immense increase in electrons!



The nasal cannula



The nasal cannula should be worn using one of the methods shown in the left-hand illustration and the other end inserted into the hydrogen outlet of the selected humidification bottle.

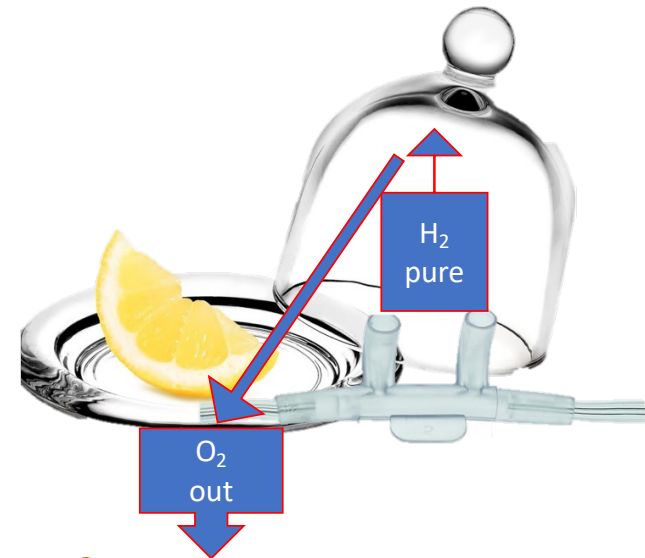
- Nasal cannulae are consumables that should be **changed at least once a month**.
- Every user needs their own nasal cannula!
- How often you should change the nasal cannula also depends on the underlying disease and other circumstances.
- Replacement nasal probes are included. It is not always necessary to replace the entire breathing cannula.
- In the case of acute colds, the nasal cannula should be changed more frequently.
- During operation, vapour or condensation may be released from the nasal cannula. Please simply shake it out.
- Never connect the nasal cannula directly to the device, but always insert the humidifier between the device and the machine. Otherwise water could enter your airways.

Food additive E 949: H₂ -feeding into storage bell jar



The oxygen (O₂) in our atmosphere, which accounts for 21 %, causes food to age more quickly. The less O₂ gets into the food, the better. This is why the food industry uses "protective gases" to remove O₂ from packaging. Hydrogen (H₂) with the number E 949 is one of the authorised protective gases. Hydrogen is a very special protective gas because it acts as a selective antioxidant. It only prevents the "bad" oxygen radicals of the hydroxyl type. **With the Cavallo 450 or 1000, you can produce 1 litre of E 949 H₂ oxidation shielding gas within 3 minutes or 1 minute.**

Place an (unused!) nasal cannula under the lid of a hooded tray in which you want to refresh food, in line with the Aquavolta slogan "Recharge Your Life!". **Due to its lightness, the hydrogen gas will displace all other gases from above, including the unloved oxygen.** Glass tray covers retain the hydrogen longer than plastic. To reduce the redox potential by 15 - 20 millivolts, which corresponds to a doubling of the electron supply, the treatment should be carried out for around one hour.



AQUAVOLTA®
RECHARGE YOUR LIFE

Technical data



- Product name Aquavolta® Cavallo 450
- Gas output H₂ 300 ml per min / O₂ 150 ml per min
- Electrolyte type PEM/SPE
- Electrolyte Laboratory water (double distilled water)
- Power supply 220 V AC
- Power consumption 140 W
- Net weight 3.5 kg
- Total weight 4 kg
- Dimensions 282 x 221 x 375 mm (L x W x H)

- Product name Aquavolta® Cavallo 1000
- Gas output H₂ 667 ml per min / O₂ 323 ml per min
- Electrolyte type PEM/SPE
- Electrolyte Laboratory water (double distilled water)
- Power supply 220 V AC
- Power consumption 140 W
- Net weight 4.2 kg
- Total weight 4,7kg
- Dimensions 282 x 221 x 375 mm (L x W x H)

Included free of charge

In the still young science of hydrogen medicine, there is widespread agreement that **in** addition to the inhalation of hydrogen gas, the **oral intake of hydrogen-rich water** also has significant benefits. To enjoy the benefits of this other intake route, customers of the Aquavolta® Cavallo receive a free Aquavolta® Turbo Hydrogen Booster as a gift. This device comes with a **separate manual**.

In principle, you could also produce hydrogen-rich water using an H₂ inhaler by bubbling the hydrogen produced through the drinking water for a longer period of time using the diffusion rod supplied.

However, this process is so unproductive and performance-limited that we do not want to impose it on our customers. This is because a hydrogen booster such as the Aquavolta® Turbo can dissolve more than twice as much H₂ gas in water in 5 minutes as an inhaler can in an hour.



AQUAVOLTA®
Turbo
Hydrogen-water
Booster 6th generation

Expert group information

History and background of hydrogen therapy

- Interview with Tyler Le Baron (2017):

<https://www.aquacentrum.de/hydrogen-water-tyler-le-baron-munich-karl-heinz-asenbaum/>



- Interview with Shigeo Ohta (2017):

https://www.youtube.com/watch?v=hOqxANl-pRM&index=1&list=PLS2_rQEROX8MycX4VrgY59rdlNGSQFIXg



- Complete video playlist Karl Heinz Asenbaum:

https://www.youtube.com/playlist?list=PLS2_rQEROX8MycX4VrgY59rdlNGSQFIXg



Videos and texts about the Aquavolta® Cavallo:

www.aquacentrum.de/cavallo



Videos and texts on the Aquavolta® H₂ -Turbo:

www.aquacentrum.de/turbo



How much hydrogen?

Firstly, there is **no such thing as too much**. Hydrogen that is not needed is excreted a few mainly through respiration.



1. When drinking hydrogen-saturated water (1.6 mg H₂ /litre), the amount of hydrogen gas absorbed is limited by the amount of water you drink each day, i.e. between 1 and 3 litres. A **daily dose of 3 mg H₂ per day** has been established by leading scientists as a therapeutic measure.
2. The **inhalation function** of the AquaVolta® Cavallo offers 300 or 667 ml of the purest hydrogen gas per minute, which corresponds to around **27 mg or 54 mg of hydrogen**. But that is not too much! Since a breath consists of one third inhalation, one third pause and another third exhalation, the therapeutic level of 3 mg per day would be reached after just a few seconds of inhalation. However, hydrogen, like other gases, is not drawn 100 per cent from the breathing volume. The manufacturer of the AquaVolta® Cavallo recommends an **inhalation time of at least 30 minutes** to achieve the best results.

A significant **difference between inhaling and drinking hydrogen water** lies in the different absorption routes.

- When **drinking**, the majority of the hydrogen is channelled into the body together with the water from the **small intestine** via the blood and interstitial fluid. During this process, the lungs are at the end of the hydrogen cycle through the body and excrete the hydrogen that has not been consumed en route by breathing it out again.
- During **inhalation**, the nasal cavity with the **olfactory nerve and its direct connection to the brain** is at the beginning of the hydrogen cycle. Equally important is the **bronchial passage** before the **blood** absorbs the hydrogen and passes it on primarily to the **liver, heart and brain**.

Both methods of hydrogen absorption therefore complement each other perfectly.

Stimulant effect of H₂

Here you can find out why we recommend both inhaling and drinking hydrogen water:

Prof Dr Shigeo Ohta (father of modern hydrogen therapy):

"At the very beginning, I was only interested in acute illnesses such as strokes or heart attacks, because hydrogen is effective very quickly within 10 to 20 minutes. But we also found out that drinking hydrogen water is sometimes more effective than inhaling hydrogen gas. That made me curious. Because the drinking effect lasted a long time, at least a day. But we had also noticed that hydrogen evaporates very quickly. So the hydrogen effect lasted longer than the hydrogen was present." ■

From: Interview with Tyler Le Baron. Quoted from: Karl Heinz Asenbaum, Electroactivated water, 10th ed. 2019, p. 127



+ Studienlinks -->



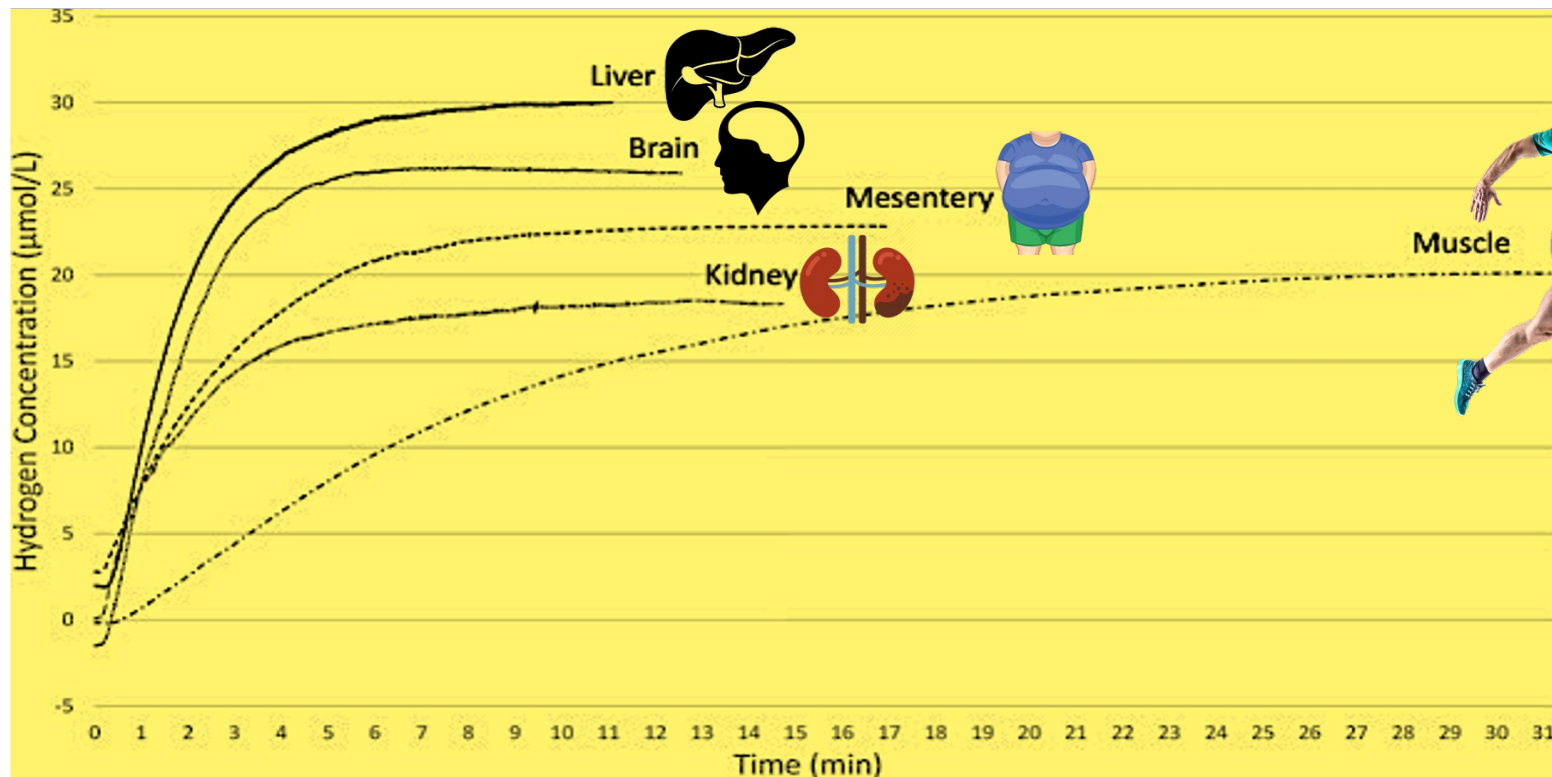
How quickly does H₂ inhalation reach which organ?

Hydrogen gas distribution in organs after inhalation:

Real-time monitoring of tissue hydrogen concentration in rats

Yamamoto R, Homma K, Suzuki S, Sano M, Sasaki J. Hydrogen gas distribution in organs after inhalation: Real-time monitoring of tissue hydrogen concentration in rat. Sci Rep. 2019;9(1):1255. published 2019 Feb 4. doi:10.1038/s41598-018-38180-4

Picture below: Hydrogen distribution curve after inhalation of 3 % H₂ breath until saturation. Compared to the other organs, the hydrogen concentration in the thigh muscle increased gradually. The liver had the highest C_{max}, while the kidney had the lowest. Liver, n = 6, brain, n = 8, abdominal fat, n = 4, kidney, n = 5, thigh muscle, n = 5.

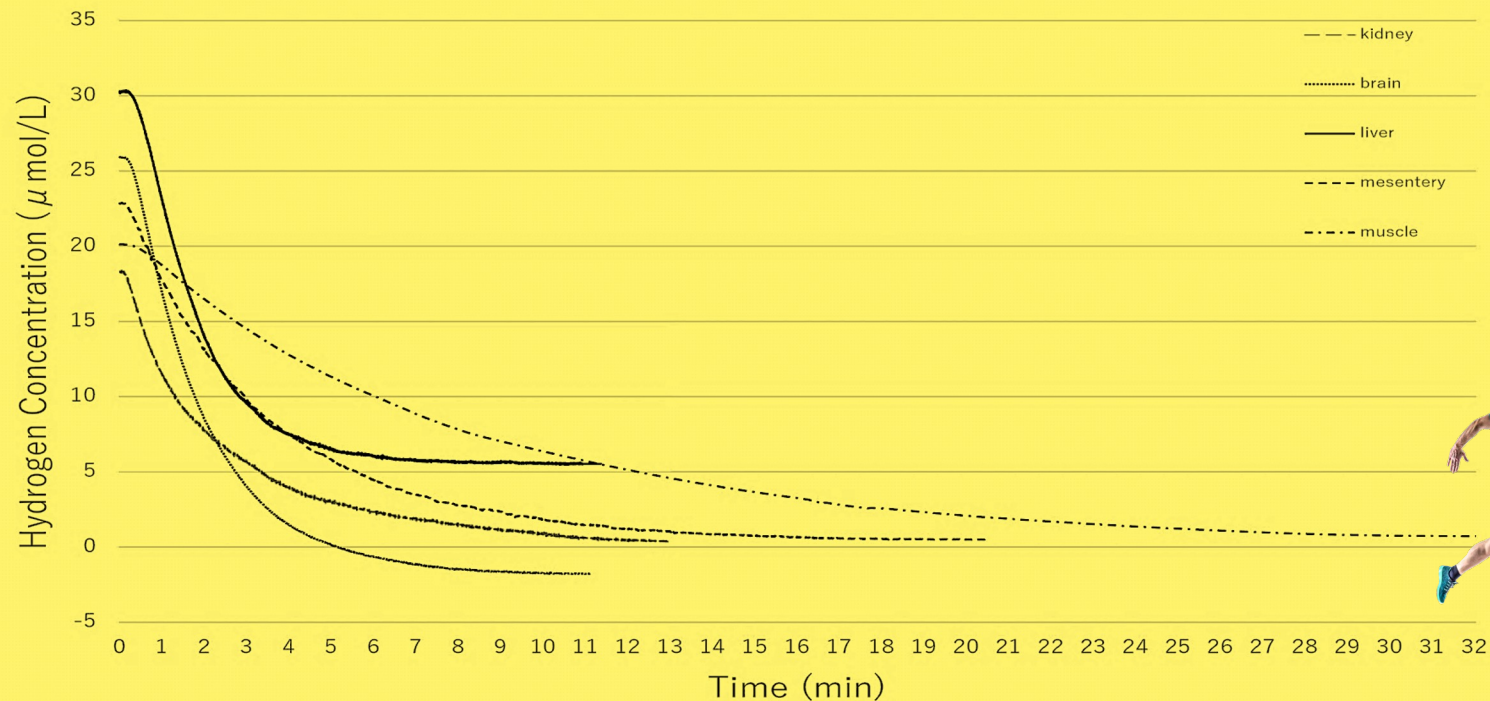


How long does the maximum H₂ blood level last where?

Hydrogen gas distribution in organs after inhalation: Real-time monitoring of tissue hydrogen concentration in rats

Yamamoto R, Homma K, Suzuki S, Sano M, Sasaki J. Hydrogen gas distribution in organs after inhalation: Real-time monitoring of tissue hydrogen concentration in rat. Sci Rep. 2019;9(1):1255. published 2019 Feb 4. doi:10.1038/s41598-018-38180-4

Picture below: After cessation of inhalation, the hydrogen concentration in each organ returned to baseline. The hydrogen concentration in the thigh muscle decreased gradually compared to the other organs, while the concentration in the brain, liver, kidneys and abdominal fat decreased at a similar rate.



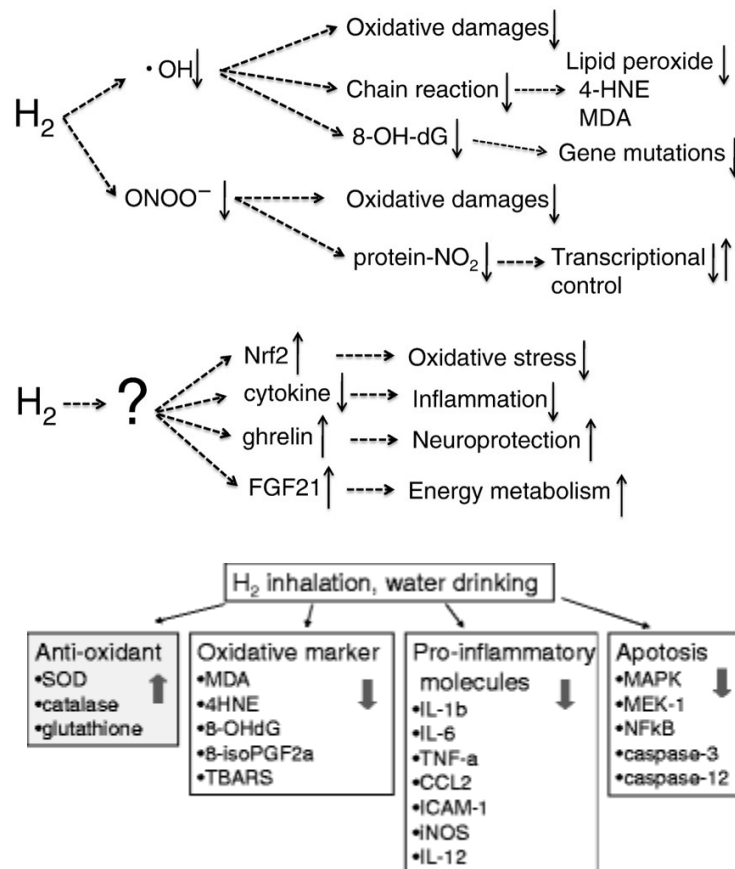
Comparison of H₂ inhalation and H₂ drinking (2017)

Molecular hydrogen: a preventive and therapeutic medical gas for various diseases

Ge L, Yang M, Yang NN, Yin XX, Song WG. Molecular hydrogen: a preventive and therapeutic medical gas for various diseases. *Oncotarget*. 2017;8(60):102653-102673. published 2017 Sep 21. doi:10.18632/oncotarget.21130

- "Inhaled H₂ acts rapidly and can be used to treat acute oxidative stress," "Inhalation of H₂ caused no observable side effects and had no effect on blood pressure [[1](#)] or other blood parameters such as temperature, pH and pO₂ [[52](#)]. In patients with acute cerebral infarction, inhalation of H₂ was safe and effective [[53](#)]. Recent findings suggest that H₂ treatment is neuroprotective in patients with cerebral I/R injury [[54](#)]. H₂ also attenuates surgical-induced cognitive impairment [[55](#)], reduces lung graft injury [[56](#)] and radiation-induced skin injury in rats [[57](#)] and lipopolysaccharide-induced acute lung injury in mice [[14](#)]."
- Oral ingestion of hydrogen-rich water (HW): "Unlike gaseous H₂, solubilised H₂ [H₂ dissolved water or hydrogen-rich water (HW)] is portable, safe and easy to administer [[58](#)]. H₂ can be dissolved in water up to 0.8 mM (1.6 mg/l) under atmospheric pressure at room temperature without changing the pH, and 0.8 mM HW effectively improved obesity in the mouse model [[59](#)].... In vitro experiments showed that carbohydrate polymers, including glycogen and starch, have an affinity for H₂ [[60](#)], and some studies have shown that drinking HW has beneficial effects on disease models such as Parkinson's disease [[61](#)] and oral palate soreness [[62](#)], radiation-induced oxidative injury [[63](#)], periodontal tissue aging [[64](#)], and depressive behaviour [[65](#)]."

H₂ Physiological effect models (2014/2019)



Graphic: Shigeo Ohta, Molecular Hydrogen as a Preventive and Therapeutic Medical Gas: Initiation, Development and Potential of Hydrogen Medicine, 2014. <https://doi.org/10.1016/j.pharmthera.2014.04.006>

1. Antioxidant mechanisms against hydroxyl radicals and peroxynitrite anions. This reduces oxidative damage, lipid peroxides and gene mutations. Damage caused by nitrogen dioxide is reduced.
2. As yet unclear mechanism for upregulation of Nrf2, ghrelin and FGF21 and reduction of oxidative stress. Inflammatory cytokines and the stimulation of GHRELIN and FGF21.

Graphic: Nakayama M, Kabayama S, Ito S, The hydrogen molecule as an antioxidant therapy: clinical application in haemodialysis and perspectives, Renal Replacement Therapy 2016

Hydrogen medicine: status of basic research 2019

Further important notes

1. It is normal for there to be some water in the tank of a **new device**. If the device is not used for a longer period of time (> 4 weeks), please empty the water tank completely and fill it with at least 200 ml of fresh laboratory water to keep the membrane of the electrolytic cell moist, otherwise it may dry out and lose its functionality.
2. Only bi-distilled water (laboratory water) is permitted for the appliance.
3. The recommended inhalation duration for beginners is 30 minutes per day.
4. If you feel unwell in any way during inhalation, stop immediately.
5. Children may only use the appliance under the constant supervision of an adult.
6. Always keep the ventilation slots clear.
7. **The room in which you use the appliance must be well ventilated at all times and be at least 30 cubic metres in size. The use of any kind of open fire or spark generators in this room is strictly prohibited.**

Service + warranty

Your retailer is responsible and the point of contact for warranty services. This applies in particular to warranties that exceed the two-year statutory warranty. All warranty commitments are therefore listed on the purchase receipt (invoice) from your retailer.

Manufacturer (general importer and service centre):

Aquacentrum, owner Yasin Akgün

Münchener Str. 4 a

D-85748 Garching near Munich

www.aquacentrum.de

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