

AquaCure Operation Manual Update Notes (version 220911)

Startup and Maintenance rinses

First, for initial startup, do the HOT tap water rinsing detail below, to dissolve and clear any crystallization that may have formed during storage and shipping.

For maintenance, I first said yearly maintenance rinses. That was based on people using the AquaCure about 20 minutes a day, like the ER50 was used.

Then (because people are using the AquaCure for more than 20 minutes a day), I said rinse every 200 hours but some AquaCures accumulate more sludge than others so I now say 100 hours.

My (now) recommended cleaning procedure is:

Rinse the machine with HOT tap water (120 to 140 degrees Fahrenheit water) a couple of times BEFORE putting in the very first lye solution, to remove any lye crystallization that has occurred during storage and shipping.

Then, about every 100 hours of operation, (might need to be more often if water impurities make more sludge) Because some machines make more sludge.

One way to REDUCE sludge formation is to keep the liquid level HIGH (between $\frac{3}{4}$ and full). When the electrolyzer fluid level gets less than $\frac{3}{4}$, there is less and less active surface area on the plates and the amperage density rises to keep producing the same gas volume. Greater amperage density (for several reasons) makes more sludge.

Keeping the machine nearly full has the additional advantage of helping keep it cooler. Cooler gasses hold less water moisture and water moisture is what the lye 'rides out' on. So a cool machine loses less lye.

Also the machine is more efficient and the electrodes last years longer when kept nearly full.

To drain, first dump the lye solution into a plastic bucket or stainless steel pot (save it, don't pour it down the drain).

Do NOT use aluminum containers or utensils, Lye eats aluminum.

Second, put about 3/4 liter (quart) of hot (not boiling) water (can be hot tap water) into the AquaCure and slowly lift the AquaCure front and back, alternatively, to slowly 'swish' the water up and down in the sight tube.

Note that side to side motion and moving quickly (in attempt to 'slosh') does NOTHING to clear crystallization from the tubes and orifices.

Note that when lifting and lowering the machine, you need to do it SLOWLY, because it takes TIME for the fluids to flow through the small hoses.

To clean the sight tube of lye crystals and/or SOAP formation, it's better to ROCK the machine by alternatively LIFTING the front and back (not quickly and up to 60 degrees) off the table so that the hot water can completely surge up into and down the sight tube. Swishing the sight tube clean with hot water. No need to lift the machine itself off the table, just one end, then the other.

Then as the hot water cools (it only stays hot for a minute), dump the rinse water out (down the sink OK), and repeating as many times as needed until the water comes out clear (no sludge or debris). AND the floating ball comes free and floats at the same level as the water in the electrolyzer. AND the sight tube is clear of lye or soap 'fog'.

Here's a video to help you. AquaCure Rinsing Technique
<https://youtu.be/oac55Wgflvs>

When Rinsing:

To dissolve soap formations you need water in the 120° F to 140°F range. The water must be hot, warm water does little. Remember to trade out the hot water within a minute or so (at first) because it will cool quickly as it heats up the components.

You Fill the AquaCure to FULL with HOT water. Then alternately and SLOWLY lift the front and back of the machine up to 60 degrees to 'wash' the HOT water up and down in the Sight Tube.

You need to change out the HOT water frequently because it cools off quickly and warm water does little to dissolve soap.

NOTE: If the HOT water doesn't 'reach' the tight tube, doesn't wash' up and down in the sight tube, it CANNOT clean the sight tube; if you are not getting the water washing up and down in the sight tube, it's likely due to a plug or restriction and that needs to be fixed 'manually'; ask for instructions.

Note: I occasionally get an 'air bubble' in the tube (so it will seem that the sight tube and/or ball is not 'registering' the actual fluid level correctly).

Generally air bubbles will eventually clear on their own, but you can 'hurry' the process by filling the AquaCure with solution. Then alternately and VERY SLOWLY lift the front and back of the machine up to 60 degrees to 'wash' the solution up and down in the Sight Tube, washing out the air bubble(s) and the ball should float properly.

NOTE: If your ball is sticking or sinking, it's usually because the ball has lye or soap deposits on it, which cause it to sink or stick to the tube wall, a good rinsing will usually free it.

Rinse again and again until the ball floats free.

If the ball will not float free, then you need to mechanically clean the tube, ask for instructions.

NOTE: Vinegar or citric acid **are NOT needed** for flushing, plain hot tap water is OK.

There are no 'deposits' for such cleaning agents to dissolve as lye itself is a great 'soap'.

NOTE: We **no longer recommend ever** putting citric acid in the AquaCure, because trace oils in the citric acid cause foaming and **oil combined with lye forms soap** which clouds the sight tube and can cause internal plugging issues.

Third, let the lye solution (you initially poured out) sit for a few hours (usually overnight) and all the sludge will settle to the bottom.

You can then suck the clarified (it'll be yellow tinted) lye solution out of the container using a hose on a syringe (a turkey baster works too) and/or carefully pour off the clarified lye solution back into the AquaCure.



ONLY about 1.25 liter at first, don't overfill the machine.

Pouring in less lye solution is OK, in any case we do **not want more than 80 grams of lye** in the machine at any given time.

NOTE: We no longer recommend using disposable coffee filters because many of them introduce

impurities into the solution. The exception would be the re-useable stainless steel or gold plated coffee filters; but even them cannot filter the micro-sludge.

Personally I no longer use coffee filters at all, because if I just let it sit still long enough (maybe takes a few days), the sludge all settles to the bottom and the solution is a clear yellow.

We recommend making two solutions, so one can settle while they use the other... So they do not need to wait a day or two without their machine. I think this is a great idea.

I prefer to store the solution in Mason jars with plastic lids. These are sold in the canning department of many grocery stores.

https://www.amazon.com/EASY-BUSY-Kitchen-oz-Quart-Containers-Reusable/dp/B07HYMHPQ9/ref=pd_di_sccai_2/142-3172414-6222846

We recommend keeping / reusing the old lye because it is 'conditioned' and more efficient than 'new' lye.

It does not matter if it's discolored (the **yellow tint is perfect** for 'conditioned' electrolyte). What matters is to remove the debris and sludge; the itself solution will last for years. I'm still using a lye solution I mixed in 1986. Throwing it away is a WASTE and costly because of buying more lye.

At this point your sight tube should be working.

However, don't depend on the 'floating ball' because sometimes it doesn't float. Look for the fluid meniscus (liquid level line).

Note: If your gas production has been reducing, it may be because your lye solution has gotten weak.

You will lose a tiny amount of lye over time (for reasons like water vapor and maintenance rinses) so you can add an ounce of lye (about 28 grams or 2 tablespoons) **when the solution is out of the machine**, but ONLY if you need it (the gas production reduces or quits if you don't have enough lye).

The AquaCure will work just fine with 60 grams of lye in it and doesn't start to significantly reduce gas production until there is less than 30 grams in the machine.

You do not want the lye solution to become too concentrated (max 80 grams in the machine). Too much lye in the machine leads to excessive crystallization which clouds the sight tube and can cause internal plugging of small orifices.

We recommend the model EA-H160 to have a solution of 1 ounce of lye (about 28 grams) and the model AC50 to have maximum 3 ounces of lye (about 84 grams). These are for initial fill ONLY.

Regular fills of water are distilled water ONLY.

NOTE: Sludge normally forms as a side effect of electrolysis and is not your 'fault'. Although if you do not use PURE (distilled) water, the sludge will form MUCH faster. Also, you get MUCH LESS sludge formation if you keep the AquaCure liquid level topped up, not allowing it to get less than $\frac{3}{4}$ Full.

NOTE: That you should be using ONLY the water from the Humidifier tank to refill your AquaCure, NOT

fresh distilled water.

The water in the Humidifier tank contains any trapped lye and by using that water, you are putting the trapped lye back into the machine.

The AquaCure works BEST (most efficient, makes the least sludge, stays cooler and lasts longer) if kept at $\frac{3}{4}$ to Full. Keep topping it up from the Humidifier Tank.

If there is excess water in the Humidifier after re-filling the AquaCure, dump the excess down the sink, so that you **always re-start with a full fresh charge of distilled water in the Humidifier**. Some people were just replacing the amount taken out and that results in too much lye in the Humidifier (it keeps concentrating). The Humidifier can only do it's job of absorbing lye if the water is kept pure.

When dumping the excess water, we recommend that you rinse the Humidifier tank (with warm tap water) until the slippery feeling is gone. Do NOT put the Humidifier Tank or the Drinking Water Bubbler in a dishwasher, **they will melt**.

Always refill the Humidifier with pure distilled water so that it can efficiently trap lye. The Humidifier water needs to be regularly changed (because only fresh pure water can absorb lye).

Further FAQ:

You write: "you can add an ounce of lye when the solution is out of the machine, but ONLY if you need it." By 1 oz do you mean 1 oz volume (6 teaspoons)?

GW/ Correct.

Q: How do I determine whether I need to add 1 oz of lye?

GW/ When the gas production has visibly reduced and you do not have a gas leak. Most times more lye is NOT needed. The initial charge should last for up to 5 years before more is needed.

Generally, the electrolyte (lye) should last for years (theoretically forever) because it's a catalyst and does not get 'consumed' by the electrolysis process.

A catalyst simply 'helps' the process happens and is supposed to stay in the machine, just like the wires, chambers, etc.

But a tiny amount rides out on water moisture (which we trap in the Humidifier) but MOST of the lye is lost during the maintenance rinses... so eventually a bit more needs to be added (like maybe an ounce in 5 years).

Q: Would the 1 oz of lye be added exactly as the manual and video explain for a brand new (empty) AquaCure, except that only 1 ounce of lye is added, and it's put into the existing lye solution rather than into plain distilled water?

GW/ Correct.

Q: How would one know if gas production were reduced?

GW/ It will be visible. Gradually less bubbles to the point there are almost none.

Take care though, because a gas leak will reduce bubbles too and you don't want to add lye if the machine doesn't need it because you'll then have too much, which leads to crystallization.

The Key Difference is if you look down the fill stem while the machine is running (assuming you have enough fluid inside to be ¼" ABOVE the holes in the white plastic block down inside AND the problem isn't the machine telling you that you have a condition like high pressure (green light out) or low or high fluid level (red light on))...

If there are lots of bubbles INSIDE the machine, then you have gas production, so you'll be looking for a gas leak.

If there are no bubbles, then you likely have a low lye concentration in the solution (or, vary rarely, a bad electrical connection).

If using a hydrometer to measure specific gravity of the lye solution, it should read about 1.05 @ 20°C.

https://www.amazon.com/Chefast-Hydrometer-Test-Wine-Kombucha/dp/B0735B5YND/ref=sr_1_3_sspa

Anything close to that is fine (1.03 to 1.07); it does not need to be exact and naturally varies anyway, as the liquid level drops in the machine, the remaining solution becomes more concentrated.

FAQ: Reading the hour meter

Ignore the last two digits on the right, they are tenths and hundreds of an hour (yes I know, crazy, but that's the way they do it). So the last 2 numbers (on the right) are % of an hour, not hours or minutes.

So a reading of 00564.66

Would be five hundred sixty four hours and 66% of an hour.

The last two digits are NOT MINUTES. They are % of an hour. So 50 would be 50% of an hour or 30 minutes. It would go to 99% (60 minutes) before turning to 1 hour.

And YES, in the more modern hour meter, **the red light is supposed to be flashing** when gas is being produced. I do not know why they chose red but it's a Good Thing to see it flashing.

And to be clear... The hour meter reads correct time whenever the electrolyzer is making gas. It does not matter if the PWM is set at 1% or 100%, an hour is an hour.

Tower Cap Upgrade

Next install the Tower Cap.

FAQ: Note that we added a UNION under the Tower Cap.

1. Easier to remove the Tower Cap come time to do maintenance rinses.
2. Less prone to (virtually eliminates) vapor lock.
3. If installed correctly, solves the Tower Cap Base leakage issue when people tightened the old style too much and DESTROYED the rubber seal.
4. Extra height to further increase the gas/vapor separation efficiency.
5. Allows the Tower Cap to face any direction you choose

Properly Install the Tower Cap
<https://youtu.be/Pr98DMe94No>

Make sure your Tower Cap base Union is sealed properly and that you remove the Tower Cap using the Union ring, so you do not need to keep re-applying the Teflon Tape.

DO NOT 'torque' on the Tower Cap to seal the base fitting; doing so will 'lock up' the Union, requiring wrenches to loosen it.

You put the Teflon Tape on the Water Fill stem threads FIRST, lots of wraps.

Make sure you use PLENTY of Teflon Tape to seal the Union Base Threads (like 12-15 clockwise wraps) to prevent leakage. Video, applying Teflon Tape on AquaCure Fill Stem <https://youtu.be/sFXJaOSwwZs>

Only this bottom piece needs to be really tight and sealed with Teflon Tape, and it's supposed to stay on the machine when you remove the Tower Cap for machine servicing.

Then you take the bottom piece off the Tower Cap by undoing the big ring (DON'T LOSE THE O-RING) and screw it onto the Water Fill Stem, tight. As tight as you can by hand, maybe using a glove or cloth so that the threads don't bite into your hand. We now include a strap wrench with the AquaCure kit to assist in tightening the lower piece.

The Union is separated by turning the large ring counter-clockwise (hold the lower piece so it doesn't move).

Then you put the Tower Cap on the installed fitting, making sure that the O-ring is in its groove and tighten just enough to seal, just finger tight is enough. Do NOT tighten by turning the Tower Cap, ONLY by turning the big ring!

When installing as I just suggested, you can turn the Tower Cap any direction you choose (to make the Tower Cap to Humidifier hose line up nicely, before you finger tighten the big ring to seal the O-ring in place.

When removing the Tower Cap, for maintenance rinsing, you'd leave the lower part of the union attached. Just undo the Big ring and lift the Tower Cap off. Make sure the Union's O-ring is properly placed in the upper groove when re-attaching the Tower Cap.

It's the O-ring that actually does the sealing in the Union. It does NOT need to be wrench tight!!! Finger tight is good enough; the O-ring seals when only slightly compressed.

Note that the 'threads' on the Union base are NOT 'defective' or 'damaged'. They are 'rethreaded' because the Union comes with 3/4 NPT thread and the threads of the AquaCure water fill stem are 20 mm. Note that a bit of tape may be left in the Tower Cap after we test it in the factory.

Do NOT just screw the Tower Cap on without screwing the bottom piece on first... Doing it that way often (usually does) cause the Union to get tightened TOO MUCH... The big ring then cannot be undone by hand and the Union becomes 'useless' (non-functional) and needs wrenches to undo.

To FIX the 'stuck' big Union ring (loosen it) here, we would get two large pliers, known in the 'industry' as Plumbers Pliers or 'channel lock pliers'.

https://www.northerntool.com/shop/tools/product_36472_36472

Then hold the bottom piece with one plier as we grip the Big ring with the other plier.

Alternatively the lower piece can be gripped with lock jaw pliers
<https://www.toolstation.com/milwaukee-torque-lock-locking-pliers/p22784>

and the Big ring turned with a strap wrench
<https://www.walmart.com/ip/Oem-4in-Strap-Wrench/145740118>

All these types of wrenches can be bought in almost any hardware store or Walmart.

IMPORTANT NOTE The O-ring I speak of is NOT the Big ring on the Union. The O-ring is a black ring INSIDE the Union that you won't see until you undo the Big ring. Don't lose the O-ring when you take the Union apart. It IS what actually 'seals' in the union.

The NEW electronic Timer switch

AquaCure New Timer Switch
<https://youtu.be/POJ4GxuddxM>

Hold Mode (Continuous Mode): To turn the New Timer Switch on for extended Periods of time, press and hold the (big/bottom) ON/OFF button for about 5 seconds, until it's Blue Led flashes and turns ON. The timing function is now by-passed and the switch will stay on until shut off, by again pushing the Big Button.

The Timer also has a default 'energy saving' mode, which has the button LED flash 3x and shut off. It doesn't save 'load' energy, it saves 'switch' energy.

We re-set it to normal service mode, which keeps the switches LED's lit up, because we find that convenient. But to 'keep' it in that mode, you need to leave the main power switch turned on.

Yellow (ReFill) Light coming on



People buying our newest AquaCure are noticing the addition of a Yellow LED just below the FULL (at the $\frac{3}{4}$ full).

We have long been recommending that (for best operation of the AquaCure) that people keep the AquaCure filled from $\frac{3}{4}$ full to full... But many were still running it to the low liquid level emergency shutoff (red Low LED/alarm).

Running the AquaCure that low causes:

1. Lye lost to increased temperature (because the electrolyzer doesn't cool as efficiently with low liquid level and the resulting hotter gas has more water moisture and lye rides out on the water moisture.
2. Low liquid level is also hard on the electrodes. As the water level drops, more and more of the electrodes are exposed and ALL of the electrolysis is concentrated on less and less electrode surface area.
3. Low liquid level also increases sludge formation.
4. When running low, the sight tube also tends to get clouded or plugged.

So we've been advising people to keep the liquid level between $\frac{3}{4}$ full and full... But some people didn't seem to know where $\frac{3}{4}$ full is, **so we added the yellow light.**

The ONLY reason the yellow light is there is to tell you when the AquaCure is optimally refilled. It is for convenience.

Every time the yellow light comes on, put in two syringe full of water, from the Humidifier tank, into your Tower Cap check valve.

TIP: If you slightly over-fill with water, you can temporarily raise the front of the machine to 'fake' reduce the fluid level (the alarm will stop) and set the machine back down once you've used the excess water (turned it into gas).

Dump the rest of the un-used water out of the Humidifier tank and refill the Humidifier tank with fresh distilled water. This will assure that the Humidifier will most efficiently filter any residual lye out of the gas.

You can use the AquaCure with the yellow light on; it's not dangerous but it's not optimal, that's why we ADDED the yellow light. People were running the machine too low for optimal operation.

Do NOT be concerned if your machine occasionally runs lower, like if you are using it all night. Just try to keep it full.

Note: when inhaling for many hours, you can cut the % (from the Operation Manual Chart) in half, (because once the blood is saturated, you exhale any excess). So you only need to inhale enough to KEEP the blood saturated.

Lower % allows the AquaCure to operate longer without using as much water.

More helpful links:

Apply Teflon Tape on AquaCure Fill Stem

<https://youtu.be/sFXJaOSwwZs>

AquaCure AC50 Setup and Operation Video

<https://youtu.be/723gzax3z7Y>

AquaCure AC50 Operation Manual

<https://eagle-research.com/wp-content/uploads/2019/08/AC50-Operation-Manual190414.pdf>

AquaCure AC50 Operation Manual UPDATE notes

<https://eagle-research.com/wp-content/uploads/2021/11/AquaCure-Operation-Manual-Update-Notes.pdf>

Setup your AquaCureAC50 torch attachment:

<https://youtu.be/v2ufQWJ0I0Q>

H2 Hubb AquaCure AC50, Unboxing, Setup and Test videos:

Unboxing https://www.youtube.com/watch?v=i5CAuVYU_a4&t=368s

Setup <https://www.youtube.com/watch?v=PAmDyKdai4Y>

Test gas production <https://www.youtube.com/watch?v=w1GOztHEOgk>

See Brown's Gas testimonials / studies / etc. here:

<http://eagle-research.life>

AquaCure Brochure

<https://eagle-research.com/wp-content/uploads/2020/02/AC-Brochure-small-v4generic.pdf>

Brown's Gas for Health (legacy page)

<https://eagle-research.com/browns-gas-for-health>

What is Brown's Gas?

<https://eagle-research.com/q-what-is-browns-gas-bg/>

Purchase your AquaCure model AC50 here:

<https://eagle-research.com/product/ac50/>

May the blessings be

🙏 George Wiseman

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