



# Hot Tub Leak Troubleshooting Guide

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### Basic General Information

Before we jump into the troubleshooting steps, here’s some basic general information to first be aware of.

#### A. Consider the size of the leak.

- a. Small leak = slow drip(s), loss of **less than** approximately 3” of water per day
- b. Big leak = visible steady-run streams that are coming off the bottom and are small in diameter (less than 1/3” diameter). The **tub is losing several inches of water depth per day**, but still has more than half its water volume without topping off.
- c. Extreme leak = Water is coming out of the side of the tub from between staves and/or the water level will leak down 1/2 or more of the overall tub depth in less than a day without almost continuously adding significant amounts of water after initial fill.

#### B. Consider the potential causes and solutions.

- a. Make sure you’re familiar with the [Hot Tub Assembly & Installation Key Fundamentals \(click/tap here\)](#).
- b. If you have a **tub that was just installed and it has a “small” or “big” leak** its causes are likely related to band tightness or leaking plumbing. If your **just-installed tub has an “extreme” leak** it was assembled and/or installed incorrectly and has something wrong related to floor support/assembly, stave placement, a major plumbing leak, and/or the bands are severely under-tightened.
- c. If your **tub was sealed for a period of time and now has begun leaking afterwards**, something changed. And here again, if it’s an extreme leak, you likely have something wrong with the main support of the tub. Perhaps something cracked or settled. Or maybe you left the tub empty for a long time and didn’t retighten the bands (a big no-no to not retighten them prior to re-filling).
- d. The overall point here is to form a plan of attack by first considering these questions:
  - i. How big is my leak?
  - ii. Did the tub ever seal, or has it been leaking since new?
  - iii. Were the bands tightened at the last water fill?
  - iv. Has the tub had time to swell and seal (if it’s a small or big leak?) OR (if it’s an extreme leak) what is wrong with the foundational area of the tub?

Now that you have some basic information in mind, let’s proceed with the troubleshooting steps:



## Troubleshooting Steps

### 1. New Hot Tub with an “extreme” leak:

- 1.1. If your tub has an “extreme leak” (as defined above), and it is a new or nearly new installation, the tub is definitely installed and/or assembled incorrectly. Refer back to the [Hot Tub Assembly & Installation Key Fundamentals \(click/tap here\)](#) and the [Assembly Installation & Maintenance Manual – Cedar Hot Tubs \(click/tap here\)](#).
- 1.2. Then do some investigation to discover the mistake(s). You will need a strong flashlight and a handheld mirror (such as the one we provided when your tub was new) so you can look all around and under the tub. Use the flashlight and mirror to do a thorough inspection of the tub when it is full of water to find the leaks and determine the cause.
  - 1.2.1. Is the concrete or ground flat, firm, and stable? Or is there broken concrete, uneven/settling ground, etc.?
  - 1.2.2. Are the chine joists intact and properly oriented? There should be at least a 45° angle between the floor seam(s)/wood grain and the chine joists (they should **not** be close to parallel), they should be spread out to max. spacing, but not in contact with the staves, and they should be evenly spaced.
    - 1.2.2.1. Also, the ends of the chine joists should not be in contact with the inner faces of any of the staves. The tub should be centered over the chine joists so there are small gaps on both ends of each chine joist with relation to the adjacent staves.
  - 1.2.3. Is the Hot Tub floor installed properly? There should be no gaps between the floor sections. The floor assembly should be flat overall (i.e. no bends at the section seams).
  - 1.2.4. If there are foundational issues the tub will likely need to be drained and moved, so that the problem can be fixed.
  - 1.2.5. Next inspect the staves. Look most at the bottom ends of the staves. They should be hovering above the ground and **not supporting any weight**. They should not have any gaps between them. Again, a mirror, a light, kneeling and bending one’s face close to the ground, and patience are essential ingredients to performing this inspection properly. Removal of surrounding obstacles may also be necessary.
    - 1.2.5.1. NOTE: You may see that there are some parts of the bottoms of the staves breaking off. This is usually normal. The edge of the hot tub floor is wedge shaped. The staves have big grooves (“dados”) that fit over the edge of the floor and get tighter as they are malleted and compressed further onto the floor edge. Parts of the bottom of the stave on the inner half of the stave thickness (i.e. the portion of the stave directly below the dado) sometimes crack and can even break/fall off. As long as the entire part of the stave below the dado doesn’t break and fall off, this is normal and nothing to be concerned about. The tub will still seal.
    - 1.2.5.2. WARNING: If the tub was ever filled with water while the staves were supporting the weight instead of/in addition to the chine joists, even if this was later remedied, the damage may be done and your tub may no longer seal. If this mistake was made, please contact us.
    - 1.2.5.3. If a bench block screw is wedging two staves apart this will cause a leak. The screw should be removed, the block repositioned to avoid the seam and the screw replaced.



- 1.2.6. If all of this checks out, next inspect the plumbing. Check for loose or broken plumbing fittings. Leaking plumbing is frequently overlooked and misdiagnosed as a leak in the wood portion of the tub. Over the course of hours a lot of water can be pumped out of a tub through even a seemingly small leak. If this is near porous rock/gravel, or a drain the water can sometimes more-or-less vanish. Turn the pump on and inspect every plumbing joint while it's under pressure. If you have suction through the floor of your tub, here again inspection with a mirror and a light from underneath the tub is crucial.
  - 1.2.6.1. If your tub has a tapered rubber plug style drain, ensure it is in good condition and seated properly. Leaking simply due to drain plug issues can be easily overlooked.
  - 1.2.6.2. Check the drain, jets, suction, lights, unions, all glue joints. Tighten or repair any of these that show signs of leaking.
  - 1.2.6.3. Note that special wrenches are available to tighten the thru-wall fittings from inside the tub without cutting any exterior plumbing. Contact us if you are in need of this tool, however if your tub is circa. 2023 or later you received one with your new tub.

## 2. **Old Hot Tub with a new “extreme” leak:**

- 2.1. If your tub has an “extreme leak” (as defined above), and it wasn't recently installed, and it was once a tub that didn't leak, something changed.
- 2.2. You will need a strong flashlight and a handheld mirror (such as the one we provided when your tub was new) so you can look all around and under the tub. Use the flashlight and mirror to do a thorough inspection of the tub when it is full of water to find the leaks and determine the cause
- 2.3. Is the concrete or ground flat, firm, and stable? Or is there broken concrete, uneven/settling ground, etc.? Did the chime joists tip over or something like that?
- 2.4. Are there broken staves? If so, contact us.
- 2.5. Has the tub begun to Rot? With older tubs, the wood may have deteriorated, especially if persistent slow leaks, dampness entrapping debris, etc. were left unattended for long periods of time. The area a tub will usually first rot is where the stave dado meets the bottom of the floor.

## 3. **Hot Tub with a “big” leak (but not an “extreme”) leak:**

- 3.1. Ask yourself, “has the tub been full of water (not partially full) for at least 24 hours?”
  - 3.1.1. If not, wait until the tub has had 24 consecutive hours with the tub continuously full. If you have to top it off, do so. If you can have warm water, that's a bonus (warmth causes things to swell faster). Wait and see if it seals. It usually will. It just needs some time to swell. It may drip for 2 weeks before it fully seals, but after 24 - 48 hours drips should be noticeably and significantly diminished. If you have to top it off to keep it full, do so.
  - 3.1.2. If so, inspect as per steps 1.2 through 1.2.6.3 above.
  - 3.1.3. **Band Tightening Procedure:** If that checks out, re-tighten the bands according to this procedure: (Even if you just tightened the bands the last time you drained the tub, check them again.)
    - 3.1.3.1. Drain the tub. NEVER attempt to tighten the bands when the tub is full of water!
    - 3.1.3.2. Ensure the bottom band is as tight as you can get it and the bands as you move upward are just slightly less and less tight with the top one being about 90% as tight as the top one (so still really tight).



- 3.1.3.3. Use specific sized box end wrenches. You want good sized ones that are about 12 - 18" long, not undersized adjustable wrenches, vice-grips or anything like that. The tub may creak and groan as you tighten it, that's fine. The band retainers may dig into the wood a bit. You can use a tool such as channel lock pliers to keep it straight to lessen the effect, but some scraping and digging into the wood is normal. Make sure the band retainer blocks contact the staves in the middle of them (horizontally speaking). They should straddle the seams between the staves.
- 3.1.3.4. If your tub was purchased as a kit, the staves should've been pounded onto the tub floor with a rubber mallet while the bottom band was being tightened the first time. If your tub is leaking, repeat this approach for the first two tightening cycles afterwards. Meaning if you filled the tub and are now at this step at the first or second draining of the tub, get a helper and have them rap on the lower band, in the middle of every stave while you are tightening. They should go all around the tub, back-and-forth at least 4 times and until the lower band will no longer become any tighter.
- 3.1.3.5. Continue to check band tension every time the tub is drained, even if it's not leaking. The wood continues to conform under the tension and it's important to keep the bands tensioned. It's vaguely reminiscent of guitar or fiddle strings. There's much more tension applied to hot tub bands, of course, but the same importance to the overall function is required to give care and attention to keeping the tub bands nice and tight on an ongoing basis, as necessary.
  - 3.1.3.5.1. Once malleting has been performed a total of 3 times (including the time the tub was first assembled), then there's no need to continue this and you can focus just on re-tightening the bands at each tub drain until the bands are no longer able to be further tightened. Note that once the tub is left dry for more than 2 weeks, the need to re-tighten the bands at every tub drain until they can't be tightened anymore, will have to be repeated.

#### 4. **Hot Tub with a "small" leak:**

- 4.1. If you have a small leak, on a tub that has been continuously full for at least 2 weeks, and have found no obvious cause for the leak, now it's time to think about curing the leak with a simple wood flour treatment.
  - 4.1.1. **BACKGROUND INFO:** Wood flour is extremely fine 'sawdust' produced by sanding, and it is one of the simplest and most effective ways to stop small leaks that persist after the 2 week swelling period. This is a technique borrowed from wooden boat builders. The flow of water through the leak will draw sawdust into the gap. Like the rest of the tub, the sawdust swells as it absorbs water, and will help to stop the leak. Included with your tub was a bag of fine cedar flour. If you can't find it or need more, you may be able to find some locally at a woodshop or we can send some to you.
- 4.2. Drain the tub.
- 4.3. Check the band tension. Even if you just tightened the bands the last time you drained the tub, check them again. To do so follow steps [3.1.3 through 3.1.3.5.1](#) above.
- 4.4. Next, remove the filter element and re-install top/ring.
- 4.5. Add a little water to the tub so that the water is only 3" - 4" deep.



- 4.6. Take about 1 to 2 cups of cedar flour (about a heaping handful or two) and spread a layer on the water's surface in the area of the leaks.
- 4.7. If practical, let it sit a night or a day or so. If not, try to wait at least 30 - 60 minutes until the flour absorbs water and starts to sink to the bottom of the water.
- 4.8. Then fill the tub up.
  - 4.8.1. NOTE: When filling, put the hose away from the flour and try not to allow the turbulence of the water to wash it away from the area it's needed.
- 4.9. Turn the system on, and turn the heat up. Let the tub system run on its normal automatic cycles.
  - 4.9.1. NOTES:
    - 4.9.1.1. Every time the pump runs it will stir up some of the cedar flour that has settled and help it keep it suspended in the water. The strategy here is to let the leaking water slowly carry suspended wood particles into the leak, where they get stuck and swell. Sort of like how blood flow in a cut is stopped through coagulation, but this version takes more time.
    - 4.9.1.2. The reason for having the heat turned up is warmth will help the leak channels expand so they can more easily accept the cedar flour and become blocked.
- 4.10. Once or twice per day, check the drips and see if they have slowed or stopped.
  - 4.10.1. After the first day, if they don't seem to be sealed, or nearly sealed, check to see if there are accumulations of flour on the floor away from the leaks and away from the pump suction. If so, stir them up into the water with something that has a long handle. If it seems wise you can also add an additional heaping handful of flour. Spread it out in the area above where the leaks are. Don't overdo it. Time and proper agitation/circulation of the flour already added is more of an asset in this than copious additional amounts of flour are.
- 4.11. Continue with the system running normally and at high temperature **for up to a week**, or until the leaks seal, whichever happens first.
- 4.12. Once the tub is sealed and has stayed sealed for about two days, re-install the filter cartridge, run the tub for about a day, and then clean and replace the filter. Repeat the filter cleaning again about 4 days later. We do not generally advise the use of silicone caulking. Any leaks too big to seal with wood flour usually indicate either a broken component or an installation error, and in either case the underlying cause should be found and fixed properly. Silicone may interfere with the natural swelling and sealing of the wood, or may trap moisture in places that promote rot.
- 4.13. If for some reason the tub hasn't sealed after a week, get in touch with us. Scheduling a tub-side video chat with us will likely be the next step so that we can help figure out what was the more imperative cause of the leak that was missed.