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How To Repair a Leaking Powerstrip.

1) Identify the leak and go to the appropriate chapter below. If you are not fully capable of safely going on the roof to inspect the source of the water hire a qualified person. Note water makes roof surfaces slippery. Never go on a roof if it is wet. Never step on a wet solar panel. You can walk on Powerstrips without damaging them but beware they are slippery when wet.

CHAPTER 1: PLUMBING FITTING LEAK:

If the leak is a plumbing fitting or a pvc plumbing connection where glued to the male or female end of the Powerstrip header pipe then this can be repaired the same way any pvc plumbing fitting leak can be repaired. Pool stores have collars and 2 part epoxies that are waterproof and made for this kind of thing. A good trick we have used is to seal off the vacuum breaker so it doesn't let air in. By doing this you create a vacuum in the system meaning air is drawn in through the leak. Plug the vacuum breaker hole with a 1/2" threaded plug, run solar, then shut the pump off so water would normally fall back to pool level but it can't because there is no place for air to enter except at the leak. Apply grey pvc cement to the leak and the suction draws the glue into the leak. As the water level in the panels drops the suction decreases and eventually the cement will stop flowing into the leak. Let it dry 24 hours before putting water to it. Look for the cause of the plumbing leak. It could be that the fitting cannot move as the piping it is attached to tries to move with temperature. This in combination with high heat can cause pvc pipe fittings to fail even if glued properly and with primer. Incorporate flexible pvc pipe (spa piping) into the critical areas like the 90 degree bend at the end of a long run of pipe to correct.

CHAPTER 2: LEAK IN THE POWERSTRIP FIN TUBE

If there is water coming from the Powerstrip NOT at the header pipe manifold location but somewhere on just the flexible fin tubing the repair is simple and straightforward and does not require drying or draining the system. In fact you don't even necessarily have to shut solar off to do this. Just buy some 1/4" PVC drip irrigation tubing at Home Depot.



Make sure it is vinyl or PVC (same thing) and not polypropylene or polyethylene. It measures 9/32"OD and the ID isn't much smaller than the Powerstrip fin tubing ID (inside diameter).

Simply cut the fin tube where the leak has occurred and splice it back together with about 1.5" of the drip irrigation tubing. Simply apply CA (cyanoacrylate) adhesive to the splicer all the way around and shove it into the fin tube. It dries instantly and can be done wet. Moisture is actually what cures the adhesive. Hot Sun supplies CA adhesive to join headers to fin tubing. It's a mid viscosity blend. You can buy Krazy glue gel or SuperGlue gel in 3ml tubes and that's enough for a few splices. You can also now buy Gorilla Superglue at Home Depot. Its 0.71 oz and its enough for about 20 splices. Be careful with CA adhesive. Don't breathe the fumes and don't get the fumes in your eyes. Don't hold the connection tight after gluing because you could find your finger glued to the solar panel. Acetone is the solvent for CA adhesives.



Gorilla CA adhesive

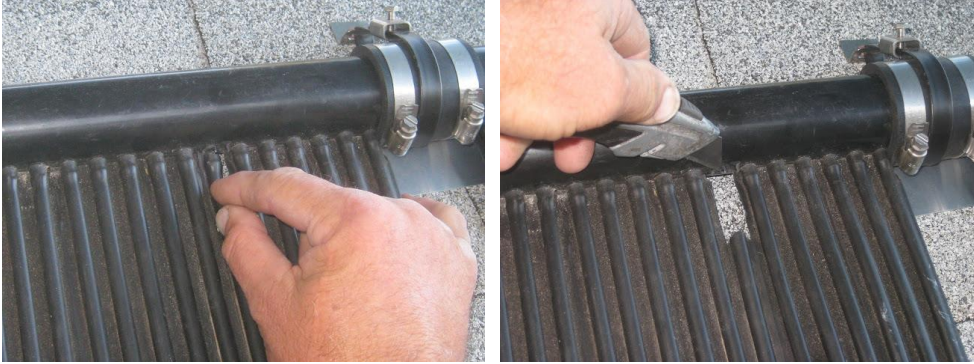


Hot Sun CA adhesive

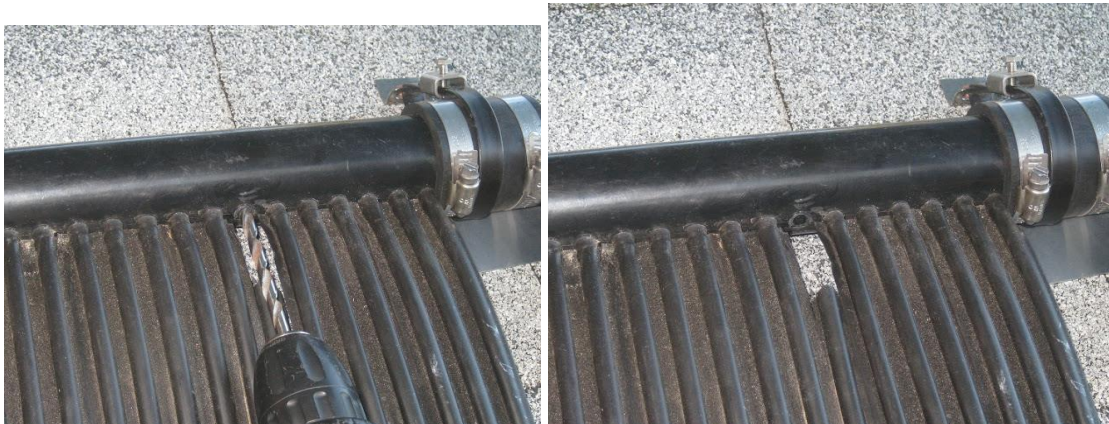
If you have a split in the fin tubing this can be caused by the collector collapsing when going under suction pressure. Watch the system as it is turned off to see if the fin tubes are collapsing. To prevent this add a vacuum breaker on the return side at the top. Fix any

leaks as above and the problem should not get worse. Cracks along the surface not causing a leak should not get worse over time if the tubes are not stressed by repeated collapsing and inflating over and over over years.

CHAPTER 3: BROKEN NIPPLE AT HEADER



If it gets stepped on or impacted hard the nipple coming out of the header can break. Push on it to see if it is separated from the header. If that is the leak remove that nipple. Break it right off and cut the fin tubing off as close to the end of the broken nipple as possible.



Drill a hole to match the size of the replacement nipple. Hot Sun can supply 1/4" OD black rigid pvc nipples. Don't use the drip irrigation splice material. Its too flexible. Hot Sun can mail these nipples anywhere on the planet. Our service and support extends only to the planet earth.

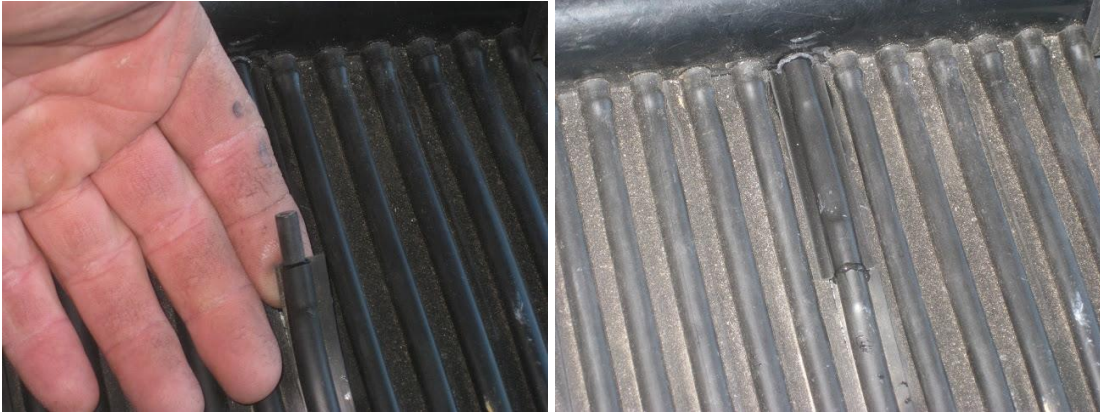


Glue the repair nipple into the hole using pvc cement on a Q- tip. Apply pvc primer and cement as always to both parts first all the way around. Twist as you insert and don't stress it after its been inserted until its had a chance to set up.



Next glue the loose fin tube that you cut close to the original nipple right onto the repair nipple the same way you would a brand new header. Use CA adhesive from us or Gorilla brand super glue (Home Depot) or Crazy glue gel or Superglue gel) Apply CA only to the nipple not the inside of the fin tube. Push fin tube on and you're done. There will be a

gap where the fin tube was cut short. If you don't like the gap cut the fin tube back and do an extra splice as shown in the photos. Note the splice is PVC drip irrigation tubing. Drip irrigation tubing is great for splicing fin tube to fin tube because its larger ID so it doesn't restrict flow and its only semi rigid. The repair nipple does work as a splicer but not the other way around.



4) MAJOR HEADER PIPE DAMAGE

If the system froze solid with water in it or has suffered cracking then you have to replace the whole header. New modern mounting methodology involves securing manifolds top and bottom or left and right meaning you can stretch the fin tubes and force the system into the slightly smaller size. Every case is a little different. Please consult with Hot Sun as needed.