

## Keep Your Bunk DRY!

By Alex and Jack Wilken

After a long day sailing in the cold winter weather, we all look forward to a warm, dry bunk. But, keeping your bunk dry in a boat can be challenging, particularly in the Pacific Northwest. This article will focus on combating the interior condensation that contributes to a soggy bunk, not on leaks, which we covered in our article in the October 2016 issue of *48° North*.

Condensation is formed when the air can no longer sustain the level of moisture in it. As air temperature drops, the amount of water it can hold also drops. So, if warm, moist air touches a cold hull or bulkhead, etc., the air will cool, and the water will condense on the cold surface. The temperature at which water vapor in the air condenses is known as the *dew point*.

It's hard enough keeping a boat condensation free, but adding human occupants compounds the challenge, because every time we exhale, we add moisture to the air. If the cabin we are sleeping in is not ventilated, there is nowhere for the moisture to escape.

These factors acting in concert can result in surfaces that drip, drain, or dribble into your bunk, making for a berth that is not only uncomfortably damp, but can grow mold and turn an unfortunate situation into a nightmare.

There are two basic weapons against condensation: insulation and circulation. If water is forming on a surface, you may need to insulate it or ventilate the area better. The path to a dry bunk might involve either, or both in conjunction.

### Insulation

The most common places on boats that need insulation are bulkheads, overhead surfaces, and hatches and windows. So, your first step in tackling a condensation issue is to locate your condensation-prone areas.

Hatches and windows, for example, are often single pane on boats, and thus become excellent condensing surfaces. If you're sleeping in the v-berth, there's also a good chance there's a hatch right above your pillow! Consider insulating a hatch by covering it. The cover could be outside or inside the hatch, and might be as simple as a blanket. If you cover a hatch from the outside and leave it slightly cracked open, you increase ventilation and minimize heat loss. This set-up is a good way to ensure condensation forms outside, where it can't get to your bunk.

Other areas that need improved insulation may require a more involved project, one that has many variables - from the surface that needs to be insulated to the material used for insulation. Depending on those factors, you may look at recovering a surface with something like vinyl or thermo-insulating paints; or

utilizing a heavier insulation like the bewildering array of foam options (compressible or hard, closed cell or open), but make sure to check with the manufacturer that any foam product you use will not hold moisture.

A good example of an effective, but more time-consuming insulation project would be to install a foam-lined vinyl headliner. Though it's a big project, it would significantly improve insulation in a part of the boat very susceptible to condensation.

### Ventilation

Ventilation and circulation are, in some respects, the most important factor in preventing condensation. You can insulate all you want, but if the moisture has nowhere to escape, eventually the air will no longer be able to hold it and it will condense on a surface.

Your first ventilation question is: how does air escape from your boat's interior? Items like hatch fans or dorades may already be installed, but are they working properly? Are they in the cabins where you sleep? If you don't have them, installing some of these options will be a good strike against condensation and toward a drier bunk.

Circulation, however, is not just about letting moisture escape to the outside, but about preventing it from being trapped in a particular space. As an example, ventilating the underside of a mattress is a prime concern when it comes to a dry bunk. The underside of the mattress, often cooler and without air flow, can become damp and grow mold. It is no fun pulling back a heavy mattress to get under a bunk and finding mold.

There are many ways to help create air flow under and around the mattress (Figure 1). You could install slats to allow air in, or drill holes in the bunk boards. There are also products you could put underneath the mattress, such as: Hypervent, a non-compressible open material that allows dry air to flow underneath the mattress; some people swear by bubble wrap; and there are more robust systems, like a product called the Froli sleep system (Figure 2) which not only helps with air flow but also provides spring to the mattress. Don't forget to

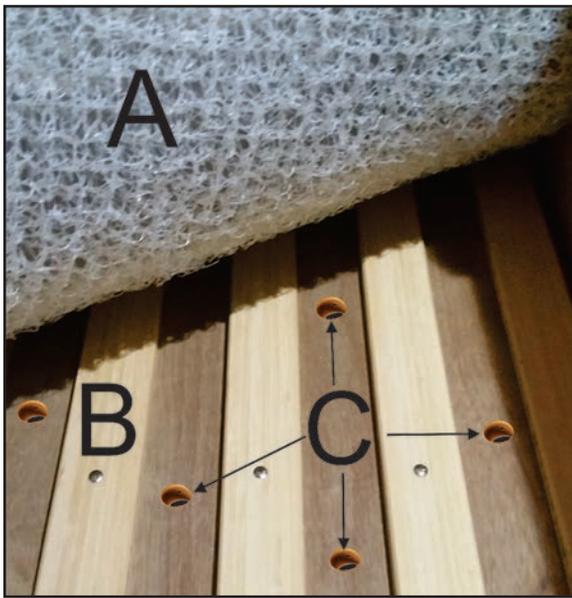


Figure 1: Hypervent, 'A', or other non-compressing material allows air flow underneath a mattress. Slats, 'B', allow ventilation, too. Holes, 'C', are so the air can exchange with the space below the bunk, essential to prevent cold air from being trapped.



Figure 2: The Froli sleep system creates ventilation as well as a spring for the bunk. We admit we have not tried it yet, but we also admit we find it interesting.

ensure air flow around the edge of the mattress. You can use similar methods as you do underneath, like the effective and aesthetically pleasing solution of wooden slats in two layers to create air space for circulation.

Fans aid in circulation and speed evaporation. Heaters help keep the air above dew point and, if properly placed, can also create circulation. As hot air rises, cold air descends and the warmer air can carry more moisture up and away if it has a way to escape. A low power heater under a bunk, if

there is a way for the air circulate, can greatly reduce condensation.

### Complementary Tools

A condensation prevention plan will involve other tools. If you've done what you can to increase ventilation, the only way to reduce humidity in a cabin is to remove the moisture from the air by using a dehumidifying device. Electric dehumidifiers, while effective, have some downsides like noise, depletion of electricity and precious space, and need to be emptied. There are other types of dehumidifiers that do not require electricity and are silent. Most of these absorb moisture and hold it chemically. Some need to be refilled with new desiccants, while others can be recharged in some way effectively cooking the moisture out of the desiccant with electrical or other heat sources as the manufacturer specifies.

Measuring and monitoring humidity in a cabin can give more definite information help assess the risk of condensation. By looking up the dew point, you can know how saturated the air is.

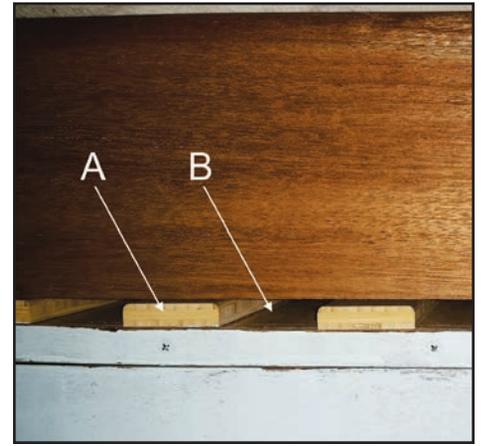


Figure 3: This bunkboard has been placed on top of the slats, 'A', to create spaces for air to circulate, 'B'. The same method may be used alongside your mattress.

Though it can be difficult, don't settle for anything less than a dry bunk this winter! Now, you have some tips and tricks to keep your bunk snug and warm until you sail away to a tropical paradise.

Jack and Alex Wilken are experienced boat builders and have cruised extensively. They hold USCG Captain's Licenses and are the owners of Seattle Boat Works.

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