



There's Nothing Fishy About Healthy Fish.

There's danger in the waters. Viral hemorrhagic septicemia (VHS) is a serious disease of fresh and saltwater fish that has recently been found widely throughout the Great Lakes region of the United States and Canada. VHS is not a threat to human health.

VHS spreads among fish through urine and reproductive fluids released into the water, and also through the eating of other infected fish. Infected fish and water can easily spread the virus if they are released into a new body of water. Appropriate hygienic or other routine biosecurity precautions are necessary to protect aquatic animal health and prevent further spread of the disease.



**STOP AQUATIC
HITCHHIKERS!**

Prevent the transport of nuisance species.
Clean all recreational equipment.

www.ProtectYourWaters.net

The Healthy Way

- Thoroughly clean and dry fishing equipment, bait buckets, boats, and trailers before using them again.
- Empty all water from equipment before transporting.
- Remove all mud, plants, and aquatic life from equipment.
- Do not move fish or plants from one body of water to another.
- Do not introduce fish of an unknown health status into populations of farmed fish.



To learn more, visit

www.aphis.usda.gov/healthyfish

FREE INFO CIRCLE 94 ON THE READER SERVICE CARD ON PG. 49

 **United States Department of Agriculture**
Animal and Plant Health Inspection Service

Shine Some Light

How to install an LED light

BY CAPT. GARY P. JOYCE

Our project was to retrofit LEDs on my project boat, a 1988 Grady-White Offshore 240, and our first step was to fit a light for the port boarding ladder. We were going to have to run cable for the light from the breaker (fuse) panel, located on the starboard side of the helm, to the port side of the transom.

Mounting LEDs is about as simple as it gets, deciding where, how and why you're going to mount a light somewhere is another story, so thorough planning is a must.

The lights we used are made by Lumitec and are designed for surface usage, though they are completely sealed and can be submerged. Make sure whichever brand of LED you choose is designed for surface (i.e., non-underwater) lighting, unless, of course, you're mounting them underwater.

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PROJECT 4-1-1

Time Needed: Barring having to trace down and clean out old wiring, this is a 60-minute job, max. Count the wire cleanup and it'll go three hours.

Necessary Skill Level: Beginner's project. Familiarity with electrical tools, concepts and safety is a must, however.

Total Cost: Less than \$75.

Necessary Equipment/Tools:

The snake is indispensable
25 feet of duplex cable (this is a heavy-duty coated sleeve with the two conducting wires inside, making a single line); tinned
Wire stripper, crimper and cutter (and the stainless screwdriver for finishing work)
End fittings (butt connectors, etc.)
Heat-shrink tubing and heat source
Plastic electrical ties and hangers (to hold the cable)
Drill/cordless driver-drill with bits (1/16 bit for starter holes, 1/8-inch to drill through-holes for the light's wiring)

over the connectors), crimp on fittings or an in-line connector (or, if you've got the skill, solder the wires together). Then carefully heat the shrink tubing, fold the wires and cable tie them together, so there is no pull on the fitting. The cable end will be securely fastened at a cable hanger after it passes through the hull, so that any pull on the line is absorbed by the hanger, not the electrical connection.



5 The latest flush-mount boarding ladder light is now ready for moonlight excursions. **BW**



1 In any retrofit there's always a mess to be cleaned up before you start installing something new. Check to ensure existing wires aren't connected to something needed before being dismantled (a voltmeter comes in handy for this). The Lumitec lamps we were using draw 90 milliamps; that's point-zero-nine (.09) amp, so we started them from an already in-use breaker without worrying about overloading. A piggyback connector was used to wire the LED line and the existing line to the single fuse/breaker block.



2 Push the wire through the existing channel, rather than pull it. Here, the first section of electrician's snake – with the duplex cable firmly taped to it – is starting its journey aft down the existing electrical duct. As the snake proceeds, a new section is screwed on, etc.

3 Mount the light on the plate, first locating and drilling two holes for



3 the positive and negative wires to pass through, then letting the flush-mount light find where it wanted to settle before marking its fitting holes. The wires from the LED were not uniformly located, so each fitting is slightly different, but the object is to allow the wires to pass through the mounting surface and the fitting to lie flush against that surface.

Note: The light is flush mounted and screwed into the plastic board. This is when you use your stainless steel screwdriver.

4 Do a staggered splice so that the wire splices don't line up against each other (i.e., cut the positive wire off the feed line longer than the negative wire, and vice versa with the wire coming off the fitting). Attach the wires from the LED fitting to the main cable with a small cable tie. Place shrink tubing



on the wires before the connectors go on (and make sure the shrink tubing will slide