FORESPAR®

INSTALL INFO

LIGHTNING MASTER

1. Mount the dissipater on the masthead on the main column of the spar, not out on the crane forward or aft. Mount the dissipater vertically as far as possible, extending slightly away from any antennas, and so as not to foul masthead equipment. Simply screw (machine screws are best) the dissipater to the side of the spar providing a tight metal-to-metal (remove any intervening paint) contact. Paint may be reapplied over this connection.
2. Assure a continuous electrical path to ground (the water) from the dissipater. The aluminum spar column is a good pathway as long as the mast is properly grounded from the base (mast step) to the water. This will be the pathway of a discharge (strike) in the event the dissipater is overwhelmed.
3. **OPTIONAL** - Electrically bond together all other metal masses on the boat. (See installation detail below)

Lightning Master® static dissipaters employ the point discharge principle to reduce the likelihood of a direct strike to your boat. As a thunderstorm travels through the atmosphere, it induces an opposite charge on the surface of the earth beneath it. When this static ground charge reaches your boat, the storm cloud concentrates that change on your boat. If the storm manages to concentrate enough potential on your boat to overcome the electrical resistance of the air that is electrically broken down, a potential reducing arc (a lightning strike) occurs. As the strike propagates, the likelihood of any given structure on the surface of the earth being struck is a function of the total ground charge potential upon that structure and the formation of electrical streamers drawn from that structure.

Lightning Master® static dissipaters work to control both the build-up of the static ground charge and the formation of streamers. As the potential builds, it is leaked off the hundreds of extremely (electrically) small radius electrodes of the dissipater.

INSTALLATION DETAIL

The static dissipater should be installed as high as possible on the boat. Static ground charge is an ion field charge which flows over objects on the earth in response to the attraction of the opposite charge on the base of the storm cloud.

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INSTALL INFO

LIGHTNING MASTER

INSTALL DETAIL (CONT)

The higher the elevation on the structure, the higher the electrical potential. Therefore, the higher the dissipater can be mounted, the higher the potential of the dissipater and the more effectively it will discharge the ground charge. Also, objects on the ground tend to be struck on points, corners, and edges. This is because ground charge tends to accumulate on points, corners, and edges. Streamers tend to form from those points as well. To retard the formation of streamers, dissipaters should be placed at those accumulation points.

On a sailboat, the solution is simple. The dissipater(s) should be mounted on the masthead(s). The stays and shrouds convey the ground charge from the boat to the top of the mast where it accumulates. The dissipater will leak off the ground charge from that point and retard the formation of streamers as well. On a powerboat, more than one dissipater may be needed to bleed-off the ground charge from the radar arch, cabin top or tuna tower. Imagine turning your boat upside down and dipping it in syrup. The points from which the syrup drips will be the points the static charge will tend to accumulate and upon which the dissipater(s) should be mounted.

The dissipater must be electrically bounded to the boat and must be provided with a continuous, unbroken electrical path to ground (water). There must be a good metal-to-metal bond between the dissipater and the metallic fitting to which it is mounted. To assure this contact, remove any paint between the fitting and the attachment surface of the dissipater and secure with stainless steel fasteners. One way to provide the path to ground is through the standing rigging (with no antenna insulators) directly to the external metal keel via the keel bolts or to the propeller shaft by bonding to the engine block. This path to ground provides the path for the ground charge to equalize through the dissipater and, in the unlikely event of a strike, a relatively low resistance path for the current flow of the strike to ground. On a powerboat, a dedicated electrical path may be required. If it is necessary to install wiring for this purpose, bonding wire should be at least number six (6) solid copper wires, or equivalent, and should be run as straight as possible with a minimum of curves and no sharp bends.

The primary reason for bonding is personal safety. If a person is leaning against the stern pulpit and holding the wheel when a direct (or nearby) strike occurs and there is no bonding between those masses, the individual may become the path of equalization, perhaps with disastrous results!

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FORESPAR®

INSTALL INFO

LIGHTNING MASTER

INSTALL DETAIL (CONT)

The bonding wire provides an alternate, lower resistance path of equalization. The secondary reason is equipment protection. If there is no bounding between masses when a strike occurs, the path to equalization often becomes your electrical or antenna wiring, causing damage to the equipment attached. Or, if acing takes place between masses across open spaces, fiberglass wood, etc., it can cause a possible fire hazard.

The above steps will provide a good basis for effective lightning protection on your boat. However, it must be remembered that nothing is 100% effective in preventing lightning and you should take any and all steps for personal safety during an electrical storm.