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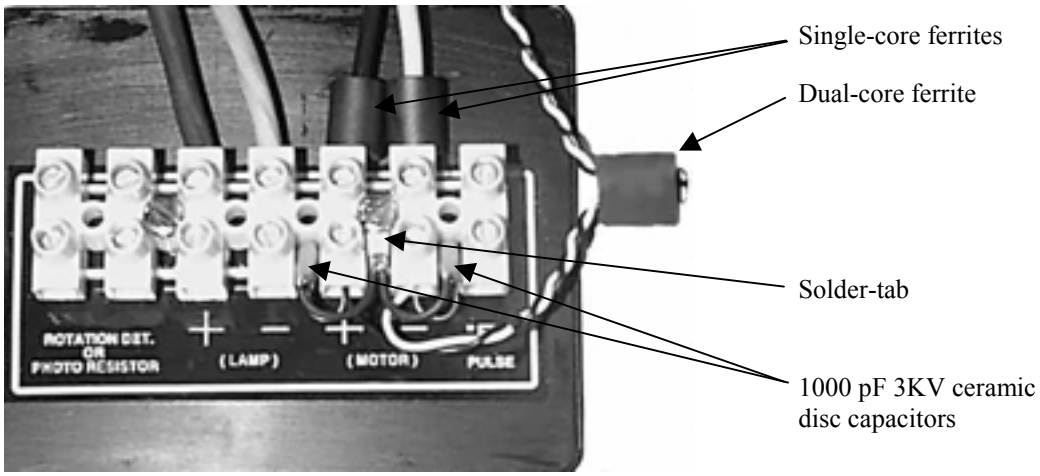
Ocean Engineering Technical Data Sheet
VRB-25 Rotating Beacon—EMI Suppression

The VRB-25 rotating beacon is susceptible to electro-magnetic interference (EMI) from nearby transmitting devices commonly found on aids to navigation, such as VHF-FM radios, and RACONs, and to transients caused by nearby lightning strikes. Although the motor controller is mounted inside a metal housing, the power leads serve as an "antenna," which pickup the interfering signal and transport it to the motor controller. A VRB-25 rotating beacon which is repeatedly found stopped, or overspeeding may be experiencing EMI. To prevent EMI, all power leads for a VRB-25 rotating beacon should be run in grounded metallic conduit. For long runs, use rigid steel conduit; for short runs and for connecting rigid conduit to the beacon, use stainless steel liquid tight flexible conduit.

An RF Filter has been developed to further eliminate EMI problems. The RF Filter is comprised of two 1000 pF, 3KV ceramic disc capacitors, two single-core ferrites (for the 12-volt input leads), a double-core ferrite for the motor leads, and a solder-tab. The solder-tab is installed on one of the mounting bolts for the VRB-25 terminal, and is used as a common for the two capacitors. One capacitor is installed from the positive motor lead to the solder-tab, the second from the negative motor lead to the solder-tab. A completed installation is shown below. The rotation detection and lamp leads, and supply capacitor are disconnected to simplify the picture.



VRB-25 rotating beacons serial #25-257 and above come equipped with the RF Filter. Filter kits have been distributed for each beacon manufactured without the RF Filter. The kits come with the two capacitors already soldered to the solder-tab, and a replacement mounting bolt. Installation instructions are also provided. Note that some VRB-25 rotating beacons have the supply capacitor, which is connected across the motor controller leads, installed at the terminal strip, and others have the supply capacitor at the motor controller. For further information or assistance the Signal & Power Team POC is Mr. Carl K. Andersen, 202-267-1872, candersen@comdt.uscg.mil.