

# Martin 16 Power-Assist System – Mk IV

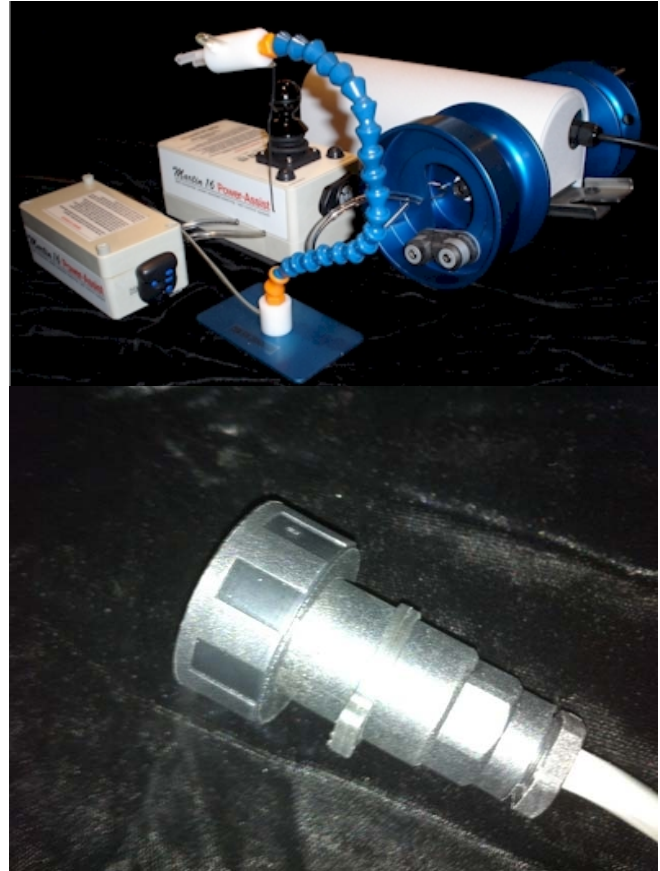
*Self-contained, portable, power-assisted steering and sail sheeting system*

## BULGIN Connectors – care and maintenance

The Mk IV Power Assist System module interconnect cables use a robust, water-proof connector system called the BULGIN Buccaneer. The BULGIN Buccaneer incorporates a screw-on retainer nut that assures that the connections do not come apart while sailing.

The BULGIN Buccaneer connectors are:

- 1) a SIX-pin male connector on each of the
  - a. Mk IV Joystick Module
  - b. Mk IV S&P Module
  - c. Mk IV Windlass
  - d. Mk IV Battery Charger
- 2) A SIX-pin female connector (2) on
  - a. Mk IV Battery Module
- 3) a THREE-pin male connector on
  - a. ST 4000+ helm drive
  - b. Auxiliary drive(s)
- 4) a THREE-pin female connector on
  - a. Mk IV Joystick Module – helm drive port
  - b. Mk IV S&P Module – helm drive port
  - c. Auxiliary drive port(s)



The BULGIN connectors are keyed so that they cannot be connected incorrectly; any Mk IV Module interconnect cable (male) connector may be plugged into any compatible (female) connector. The SIX-pin connector supplies 12V power (pin 1 and 2) and three CONTROL conductors (pin 4, 5, and 6) to interconnect the WINDLASS with either 1) Mk IV Joystick Module or 2) Mk IV Sip & Puff Module.

To make a connection, the male connector is inserted into the female connector. The connector is “keyed” so that the pins will engage in one orientation only. Rotate the male connector until the “keys” match, and the male and female connector faces engage so that they are “flush” with one another; when engaged correctly, there is NO GAP between the faces of the two halves of the connector.

When the connector is seated (NO GAP), the connector retainer nut may be aligned and screwed down by hand, until snug. This retainer nut must be in place to assure that the connector will not come apart while sailing.

**CAUTION:** the retainer nut should thread and screw on easily, it should not be forced; damage to the retainer nut threads, or female connector threads will occur.

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## **BULGIN Connectors – preventative maintenance**

*The BULGIN Buccaneer is a robust, water-proof connector system that, with care and preventative maintenance, will provide reliable service indefinitely.*

*Under normal use, the male and female connector halves will mate easily, with NO GAP between the faces of the connector. In this position, the retainer nut will align and screw on easily until snug, assuring that the connector will not come apart while sailing.*

*Over time, with exposure to salt water and environmental contaminants, (dust, dirt, mud, etc.) the connector pins, threads, and face of the connector may become fouled and make insertion more difficult and/or foul the fine threads of the retainer nut so that it does not screw on easily.*

**CAUTION:** *if force must be used to seat the connector faces, or thread and screw on the retainer, preventative maintenance is necessary:*

- 1) Clean and rinse both the male and female connectors with fresh water and a toothbrush
- 2) “Dress” both the male and female connector pins and faces with moisture displacing silicon grease (Fuchs Lubritech – Chemplex 710)
- 3) connect and then disconnect the “dressed” connectors several times to spread the silicon grease and establish correct connection. Make certain that the retainer nut will align and screw on without force.



*As a preventative measure, inspect the Power Assist System connectors after use and, as necessary, clean and dress the connectors with silicon grease before storing the system. This routine maintenance will protect the connectors from salt water corrosion and assure that they work the next time out.*

**CAUTION:** *if you have cleaned and dressed the connectors with silicon grease, and the connector does not 1) seat easily with NO GAP between the faces, or the retainer nut does not thread and screw on easily, mechanical maintenance is necessary.  
DO NOT FORCE THE CONNECTOR.*

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## BULGIN Connectors – mechanical maintenance

**CAUTION:** if you have cleaned and dressed the connectors with silicon grease, and the connector does not 1) seat easily with NO GAP between the faces, or 2) the retainer nut does not thread and screw on easily, mechanical maintenance is necessary: DO NOT FORCE THE CONNECTOR.

The BULGIN Buccaneer is a modular connector system, assembled from interchangeable components. There are two common conditions where a Buccaneer connector may become mechanically altered so that it will not align and fit together correctly. Both of these conditions can be easily corrected as follows:

### 1. Connector “core” is loose and no longer correctly “keyed”:

With repeated use, the male or female “core” of the connector can become loose and rotate off of its “keyed” position. When this occurs, the core will become elevated and not parallel to the connector body. In this condition, the connector halves will not mate easily or completely; when you insert the male connector, you will see a gap between the faces of the connector halves. With a gap present, the retainer nut will not align and screw on easily.

*This condition is most common on the female connectors on the Battery Module. It can also occur on the female helm drive connector on the Joystick or S&P Module.*

*When the connector “core” is no longer keyed and seated:*

- 1) loosen the castle nut that retains the core of the connector,
- 2) rotate the core to re-engage the “key”,
- 3) re-tighten the castle nut,
- 4) confirm correct seating and retainer nut connection

You will require a Buccaneer “dust cap” to loosen and then re-tighten the castle nut (the dust cap has the “castle nut wrench” built in to it). There are several dust caps shipped with your system; any of these will work.

Insert the castle nut wrench (on the dust cap) over the connector core, and loosen the castle nut enough to allow the core to rotate freely. Once “keyed” the core will not rotate. So, if the core does rotate, rotate it one way and then the other until you find the “keyed” location (there is only one keyed location). When it drops into the “keyed” position, hold the core in this position and re-tighten the castle nut with your finger or a small screw driver. Confirm that the core is still keyed (will not rotate) and then tighten the castle nut with the dust cap. When tight, view the connector from the side and confirm that the face of the core is aligned and parallel to the face of the connector body. If it is not parallel, then the core is not “keyed” and you should repeat this procedure.



**CAUTION:** if you cannot successfully “key” the core of the connector so that the connector halves mate properly (without a gap), replace the damaged connector(s)

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## 2. Connector “retainer band” is on the wrong side of the retainer nut:

The male connectors all have a rubber “retainer band” that keeps the retainer nut captive on the barrel of the connector.

With repeated use, this retainer band may become loose and allow the retainer nut to come free from the connector barrel, and “float” along the power cable. The retainer band can get on the “wrong side” of the retainer nut, and jammed up against the connector barrel, preventing the retainer nut from seating properly. With the retainer band under the retainer nut, you cannot get the retainer nut thread to engage. FORCING THE RETAINER NUT WILL DAMAGE THE RETAINER NUT THREADS.

This condition is most common on the male cable connectors on 1) Mk IV Joystick Module power cable, 2) Windlass power cable, or 3) S&P Module power cable. It can also occur on the ST4000+ power cable connector.



When the retainer band is on the wrong side of the retainer nut:

- 1) work the retainer band off of the barrel of the connector,
- 2) pass the retainer band through the retainer nut,
- 3) slide the retainer nut back on to the barrel of the connector,
- 4) restore the retainer band on to the barrel of the connector, to retain the retainer nut on the barrel
- 5) reconnect the connector halves and confirm that the retainer nut will now align and screw on easily.

**CAUTION:** once you have confirmed that the retainer band is on the correct side of the retainer nut, if you cannot align and easily screw on the retainer nut, the threads of the male connector retainer nut and/or the female connector base may be permanently damaged. Replace the damaged connector(s)



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