

AK HydroVolt Connectors

HydroVolt is designed to be the most rugged and reliable, low cost underwater electrical connector available. HydroVolt connectors are only slightly more expensive than other low cost connectors, yet are much more rugged and reliable. Furthermore, we guarantee that they will mate perfectly to the "industry standard" line.

HydroVolt fills a niche between low cost connectors and much more expensive rugged connectors. The line has unique features and benefits only available in much more expensive connector lines. And it has features, such as color-coded receptacle leads, that no other line carries, regardless of cost.





Molding Bending Strain Relief

HydroVolt inline connectors have an integrally molded bending strain relief. Frequently the cable is flexed right at the cable/connector joint. This is because of the sharp change in the modulus of flexure between the cable and connector. A bending strain relief spreads this change over a distance 'relieving' the tendency to bend at one specific point. Image shows comparison between typical competitors connectors and HydroVolt on right.



Color Coded Leads

HydroVolt bulkhead connectors and overmold plugs have color coded leads. The leads are the same color as their mate (the SO cable on the in-line connector). This makes conductor tracing easier and more reliable. Non-HydroVolt connectors use a numbered tag on each conductor (which are all the same color, white).



Bulkhead Pressure Block

HydroVolt bulkhead connectors have a true pressure block machined into the metal shell. In case of a catastrophic failure, such as part of the bulkhead being sheared off, a pressure block, can sometimes prevent water intrusion into the pressure vessel. Image shows comparison between typical competitors connectors and HydroVolt on right.



Improved Overmold Connector

HydroVolt has an improved overmold connector which has a much longer sealing area. Additionally, the sealing area has an O-Ring upset to further improve sealing of the boot. Image shows comparison between typical competitors connectors and HydroVolt on right.



Stronger Neck on Bulkhead

A neck is necessary on this style of connector in order to accommodate the industry standard locking sleeve. On non-HydroVolt connectors, it is smaller than necessary. Unfortunately, the head of the bulkhead can therefore be torn off during aggressive disconnection. The neck on the HydroVolt bulkhead, however, is heavier, and stronger. Damage to the neck of the bulkhead is a frequent complaint for non-HydroVolt type connectors. Image shows comparison between typical competitors connectors and HydroVolt on right.

HydroVolt: Feature & Benefits

Crimped Contacts

HydroVolt connectors have crimped contacts. Crimped contacts (rather than soldered) are less susceptible to bending fatigue failures. This type of failure occurs because the solder forces the stranded conductor to become a solid conductor at the joint. Connectors are frequently flexed and sometimes pulled by their cable which causes subtle bending and flexing at the contact joint. Crimped joints hold up to flexing better than soldered joints.

Gold Plated Contacts

HydroVolt connectors have gold they reduce the electrical resistance between the pin and socket. Contact resistance can be important in video and digital signal operations. Two, they are not susceptible to normal atmospheric corrosion. Contact corrosion increases contact resistance. Copper and brass contacts corrode right on the shelf. If stored near salt water, such as on a ship, the corrosion can happen quickly. HydroVolt contacts are plated to ASTM B488-01 Type II, which is superceding MIL45204C type II grade C.

Pin Shoulder Radius

The HydroVolt contact pin and insulation shoulder are both radius' d. This makes it easier to mate in darkness or on rough seas. It also reduces the tendency for the shoulder to fray at the pin/shoulder interface, because there is no sharp edge.

HydroVolt: Product Range



Bulkheads:

Bulkhead connector receptacles are designed to be mounted to your pressure vessel. They are capable of handling 10,000 psi pressure differential (open face). Bulkheads are available in aluminum, brass, or stainless steel. Other materials can be made by special request.



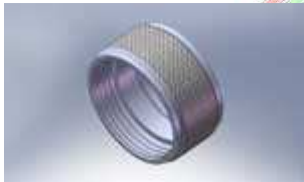
Inlines:

Inline connector plugs are available as pigtails or can be molded onto your cable. The standard pigtail length is 1 meter. However, you may specify any length. Inline connectors plug into a bulkhead receptacle or another inline connector.



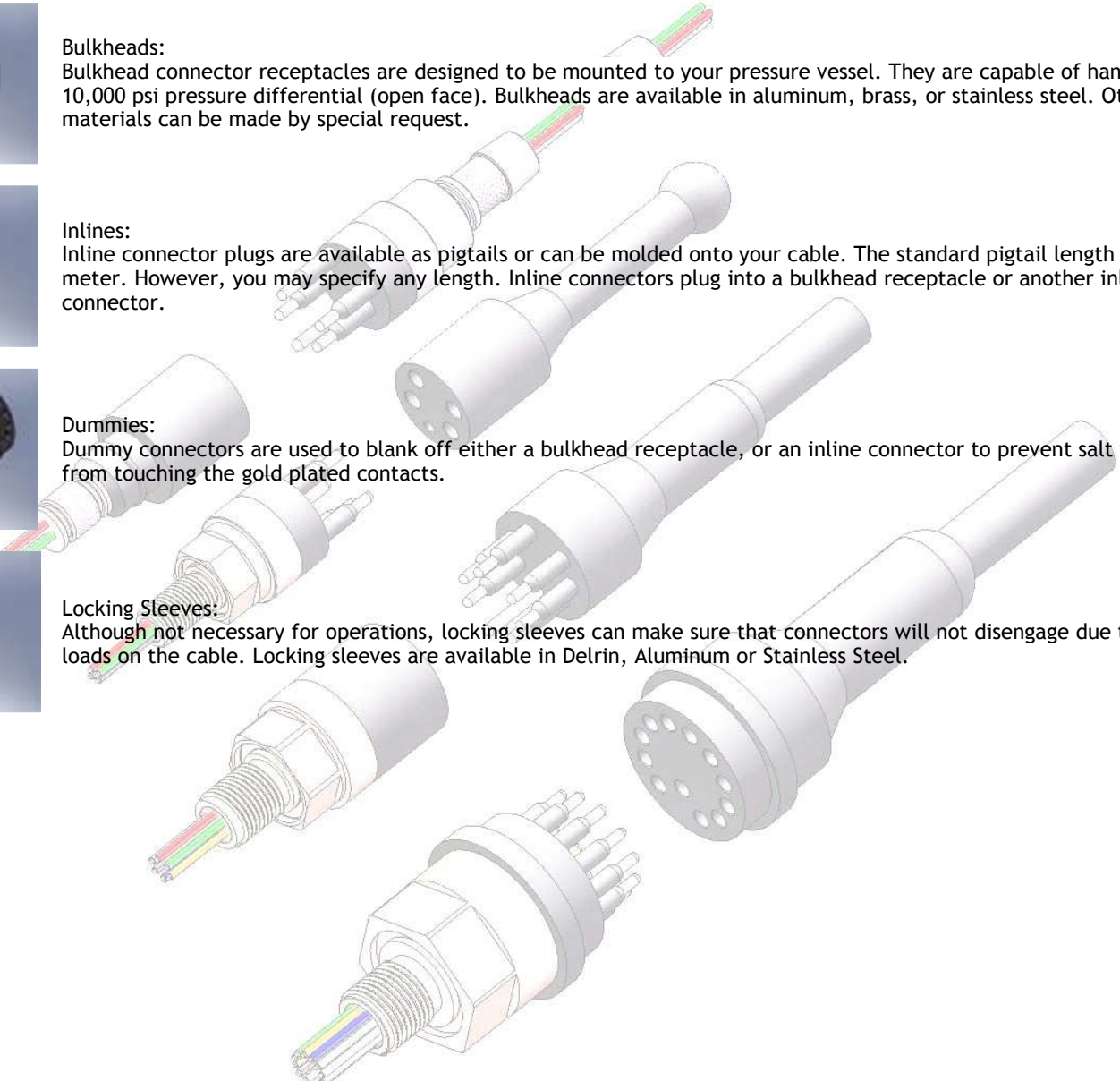
Dummies:

Dummy connectors are used to blank off either a bulkhead receptacle, or an inline connector to prevent salt water from touching the gold plated contacts.



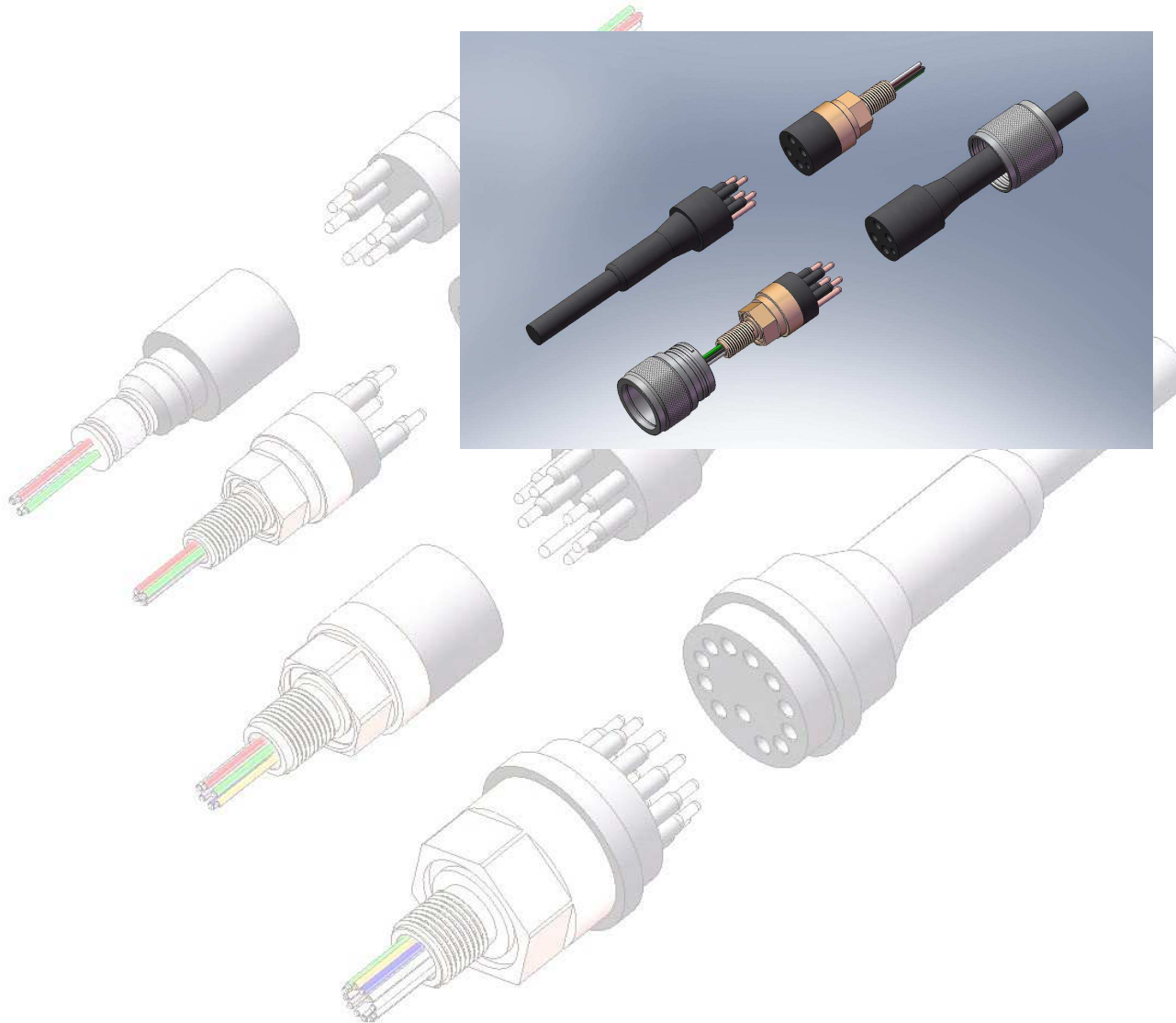
Locking Sleeves:

Although not necessary for operations, locking sleeves can make sure that connectors will not disengage due to pulling loads on the cable. Locking sleeves are available in Delrin, Aluminum or Stainless Steel.



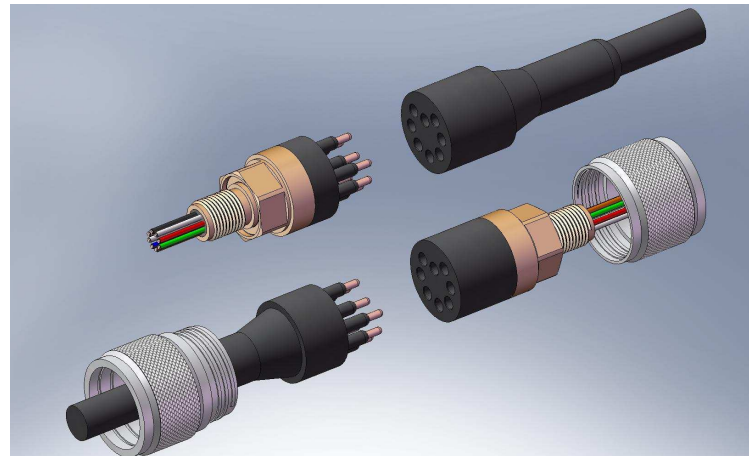
HydroVolt: A - Size, 1" (25mm) dia

HydroVolt A - size has a 1.00 inch (25mm) diameter form factor. It is the smallest standard size. Contact patterns available include 2, 3, 4, and 5.



HydroVolt: B - Size, 1.25" (32mm) dia

HydroVolt B - size has a 1.25 inch (32mm) diameter form factor. It is the intermediate standard size. Contact patterns available include 6, 8, and 10.

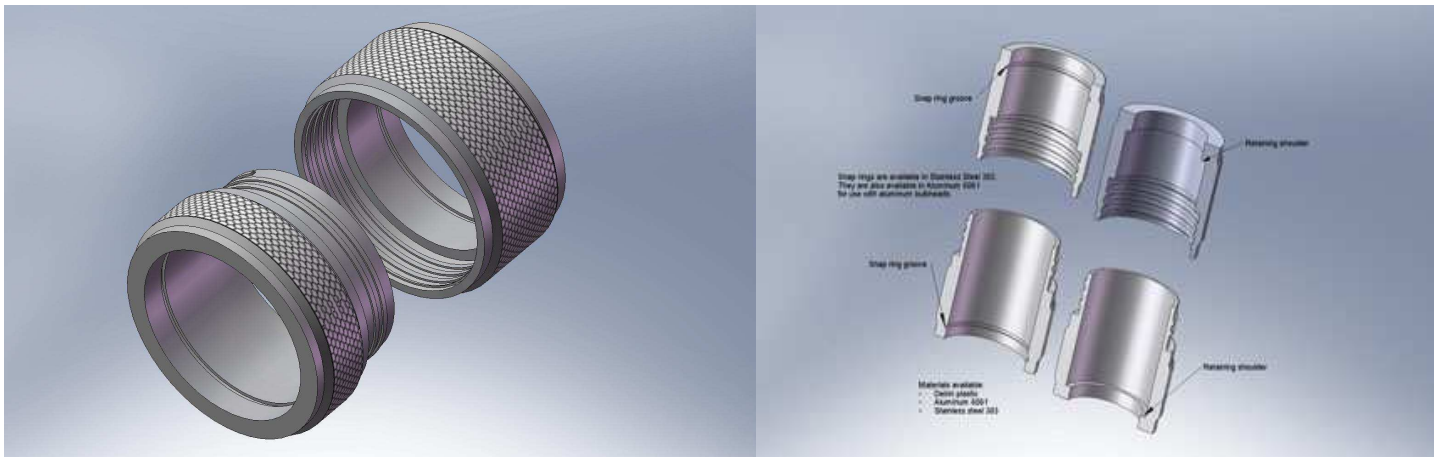


HydroVolt: C - Size, 1.60" (41mm) dia

HydroVolt C - size has a 1.60 inch (41mm) diameter form factor. It is the largest standard size. Contact patterns available include 12 and 16.



HydroVolt Locking Sleeves



Locking sleeves are not necessary for the functionality of HydroVolt connectors. However, some customers prefer the assurance that the connectors will not become disengaged by pulling on a cable.

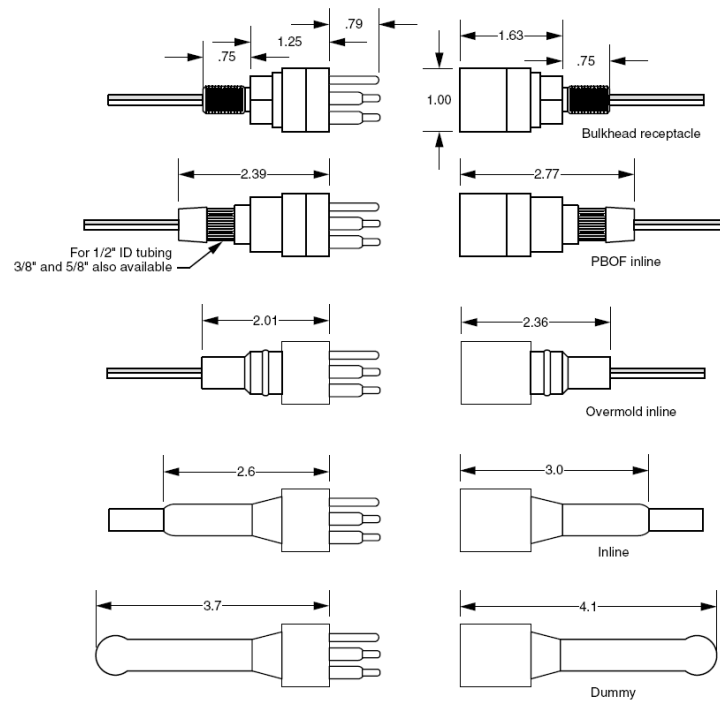
Locking sleeves are available in several different materials. Delrin, Aluminum 6061, and Stainless Steel 303. We manufacture our own locking sleeves on a Mori Seiki turning center and so we can easily make them with other materials specified by the customer.

Standard locking sleeves are available with the traditional snap ring groove. They are very convenient for adding a locking sleeve after a bulkhead has been installed, or anytime on a cable assembly. We have snap rings made from Stainless Steel 302, and also Aluminum 6061 (mostly for use with aluminum bulkheads). Aluminum snap rings are much better in contact with aluminum bulkheads for galvanic corrosion reasons. Please see the Technical Notes page for more information about galvanic corrosion.

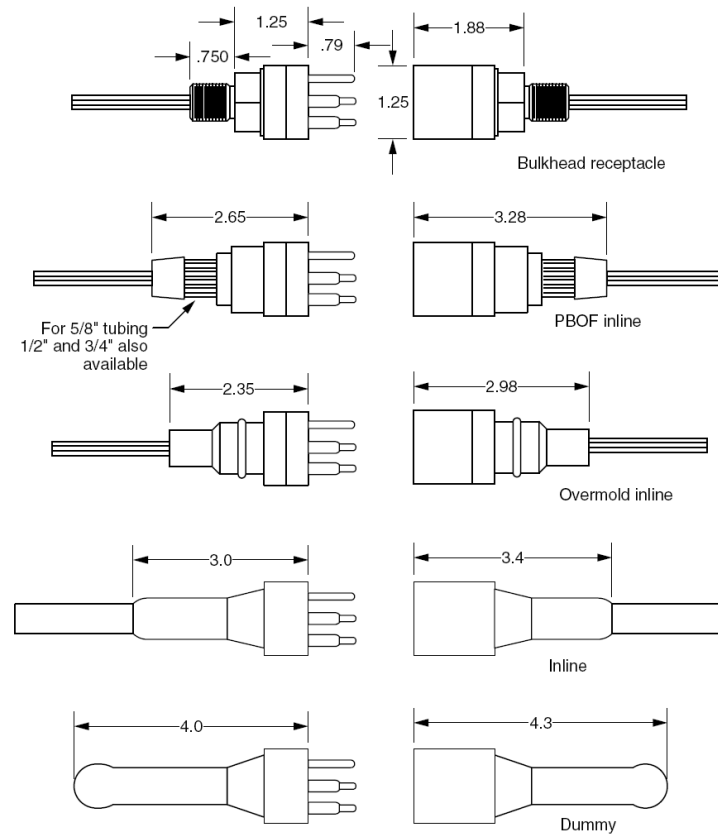
A note about Stainless Steel (SS):

Series 300 stainless steels are the highest quality and most corrosion resistant of the stainless steels. They are much more corrosion resistant than the 400 series, for example: Why do we use 303 on the locking sleeves and 302 on the snap rings? Type 303 is easier to machine than other 300 series SS. There is a lot of machining to make a locking sleeve. However, 302 can be work hardened to have better spring properties need for snap rings.

HydroVolt Dimensions: HydroVolt: A - Size, 1" (25mm) dia



HydroVolt: B - Size, 1.25" (32 mm) dia – Dimensions



HydroVolt: C - Size, 1.60" (41 mm) dia

