

Gas-Purged Bearing Assembly Product Guide

This product information document describes how to install the Gas-Purged Bearing Assembly onto a compatible rotating shaft. Its unique design allows free electrode rotation while also sealing the electrochemical cell from outside conditions. The Gas-Purged Bearing Assembly is a recommended accessory for rotating electrode experiments that require an inert atmosphere.

1. Description

The Gas-Purged Bearing Assembly (part #: AC01TPA6M) is uniquely designed to permit the rotation of an electrode in an electrochemical cell while effectively sealing the cell in order to maintain an inert atmosphere. It features a precision-machined 15 mm ID hole with a white, ceramic bearing (for rotating shaft insertion) and a 24/25 taper joint (for connection to the electrochemical cell, see: Figure 1). The bearing itself allows an electrode to rotate freely through any 24/25 port. The rest of the bearing assembly helps to maintain an inert atmosphere inside the cell in three ways. First, the 24/25 taper joint has an O-ring that is designed to fit snugly in any 24/25 port. Second, only a precision-machined 15 mm OD electrode shaft can be inserted into the cell through the 15.0 mm ID hole of the bearing assembly; this minimizes space between the rotating shaft and the bearing assembly. Third, the cell is purged by applying a positive pressure of inert gas through a small port on the side of the bearing assembly.

The bearing assembly and its tapered outer body are fabricated from polyether ether ketone (PEEK), a polymer with good chemical and thermal resistance. The bearing itself is ceramic and is also resistant to chemical attack. As a result, the bearing assembly can be used in most aqueous and non-aqueous solutions (besides concentrated acids).



CHEMICAL COMPATIBILITY:

PEEK dissolves in concentrated acid solutions like sulfuric and nitric acid.



Figure 1. Gas-Purged Bearing Assembly

2. Shaft Compatibility

The Gas-Purged Bearing Assembly is compatible with precision-machined 15 mm OD shafts. Pine Research Instrumentation manufactures three such shafts: the RDE/RRDE Shaft for MSR Rotators (part #: AFE6MB), the Single RCE Shaft for MSR Rotators (part #: AFE9MBA), and the Double RCE Shaft for MSR Rotators (part #: AFE9MBDA). The RDE/RRDE shaft is used for rotating disk electrode (RDE) and rotating ring-disk electrode (RRDE) experiments and accommodates a variety of electrode tips (see: Figure 2). The Single and Double RCE shafts are used for rotating cylinder experiments (RCE) and accept 15 mm OD cylinder inserts (see: Figure 3). All three shafts have a stainless steel rod for connection to the electrode tip/insert and a retaining ring to keep the bearing assembly in place.



Figure 2. Precision 15 mm RDE/RRDE Shaft for MSR Rotators



Figure 3. Precision 15 mm Single and Double RCE Shafts for MSR Rotators



INFO:

Not all shafts will fit through the Gas-Purged Bearing Assembly! It is only compatible with precision-machined 15 mm OD shafts.

3. Installation Instructions

3.1 Installation onto the Rotating Shaft

To install the Gas-Purged Bearing Assembly onto the shaft, slide the tapered end of the bearing assembly over the 1/4" stainless steel end of the precision 15 mm shaft (see: Figure 4). Continue sliding the bearing assembly onto the PEEK shroud of the shaft until it comes into contact with the retaining ring of the shaft (see: Figure 4). The retaining ring keeps the bearing assembly in place during its installation into the MSR Rotator.



INFO:

The Gas-Purged Bearing Assembly must be installed onto the shaft BEFORE the shaft is installed into the rotator.

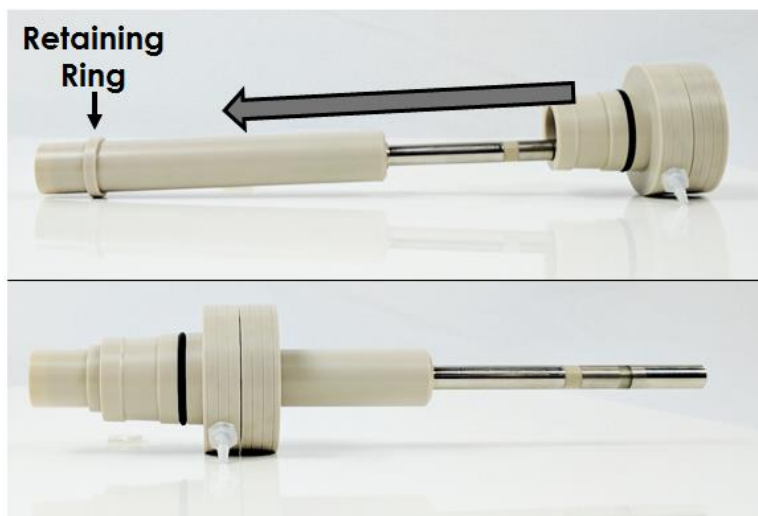


Figure 4. Installation of the Bearing Assembly onto the RDE/RRDE Shaft

3.2 Installation into the Cell

Installation of the shaft and bearing assembly into the cell is as simple as inserting the assembly (electrode end first) through the 24/25 taper joint on a standard electrochemical cell. The tapered end of the Gas-Purged Bearing Assembly creates a snug seal with the 24/25 joint when inserted properly (see: Figure 5).



INFO:

Further information about installing the rotating shaft in the rotator can be found on our knowledgebase:

<https://www.pineresearch.com/shop/knowledgebase/>

Search "MSR User Manual."

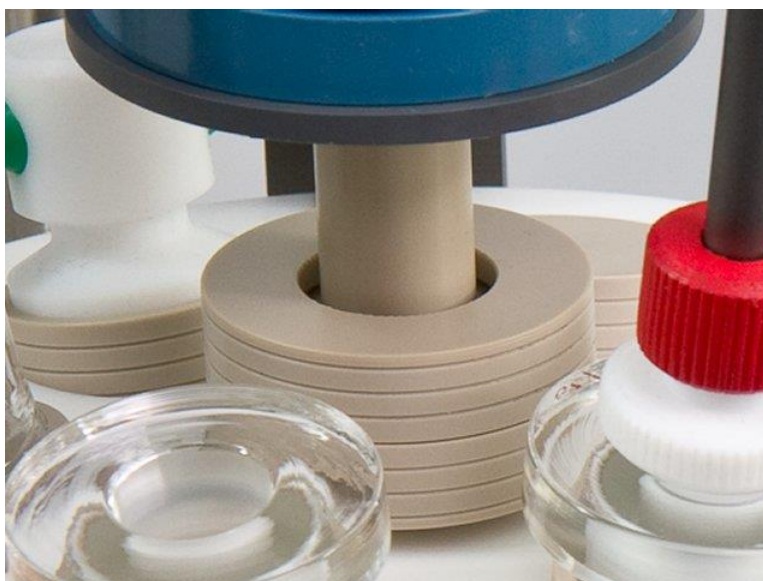


Figure 5. Gas-Purged Bearing Assembly Installed into a Cell

4. Contact Us/Support

If you have any questions or would like to inquire about the Gas-Purged Bearing Assembly described in this document, please contact us via the means provided below:

4.1 Email

Reach us by emailing the entire sales department: pinewire@pineresearch.com.

4.2 Website

There is a contact us form on our website. There may also be additional resources (such as YouTube videos) for some of the products mentioned here: <http://www.pineresearch.com/>.