MSR Rotator Brush Replacement Information

Complete Instructions

1. Background Information

The Pine Research Modulated Speed Rotator (MSR) is a solid-state-controlled servo-system designed to rotate an electrode in an electrochemical cell. This guide describes how to change the contact brushes on the MSR rotator.

For more information about the proper use of the MSR rotator, consult the Modulated Speed Rotator User Manual, available from Pine. Note that the knowledgebase on the Pine Research website provides additional information about the MSR rotator. Visit our website for additional information about the MSR Rotator.

INFO:

For additional information about the MSR Rotator, including user guide, instructions, applications, and more, visit the knowledgebase on our website:

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

2. Brush Replacement Options

The brushes contact the rotating shaft, slowly wearing during normal use, and periodically, the brushes must be replaced. A simple brush replacement kit is available, or in the case of serious damage to the entire brush assembly, the brush and its PTFE holder can be replaced.

There are two sets of instructions in this document. The first set of instructions describes how to replace the internal part of the brush assembly. The second set of instructions describes how to replace the entire brush assembly. In most cases, it is only necessary to replace the internal part of the brush assembly.

3. Internal Brush Replacement

DISCONNECT POWER:

Before replacing a brush, turn off the power to the rotator and disconnect the power cord from the power source.

Figure 3-1. Part Number ACAR063RM, Internal Brush Replacement

The standard brush replacement kit (part number ACAR063RM) contains a small hex key, a new brush, and a new set screw installed in the brush (see: Figure 3-1).

2741 Campus Walk Avenue | Building 100 | Durham, NC 27705 | USA
Phone: +1 919.782.8320 | E-mail: pinewire@pineresearch.com | http://www.pineresearch.com

A special brush replacement kit (part number ACAR063LHM) should be used when the rotator is routinely operated in low humidity conditions such as inside a glove box.

Remove the entire brush assembly from the rotator by unscrewing it as shown below. It should be possible to remove the brush assembly by hand (see: Figure 3-2). In some cases, such as when a brush assembly has never been removed after years of use, you may require some basic hand tools to remove/break the tight seal of the brush assembly. Use caution not to damage the housing with tools if you intend to reuse it.

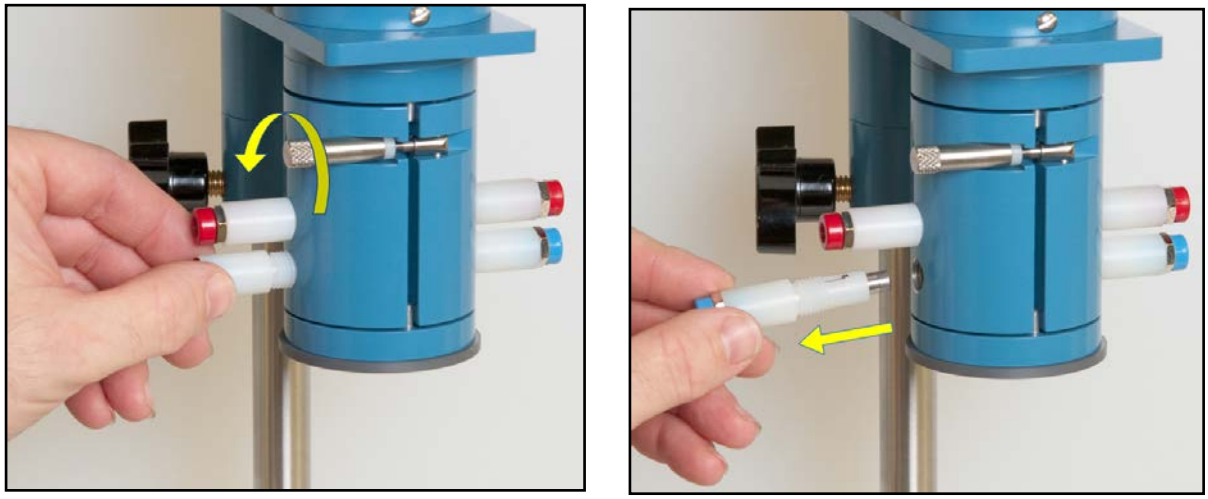

Figure 3-2. Removal of Old Brush Assembly by Turning (Left) and Pulling Out (Right).

Use the small hex key to remove the set screw. Note that the required hex key (0.035") is included with the brush replacement kit (see: Figure 3-3).

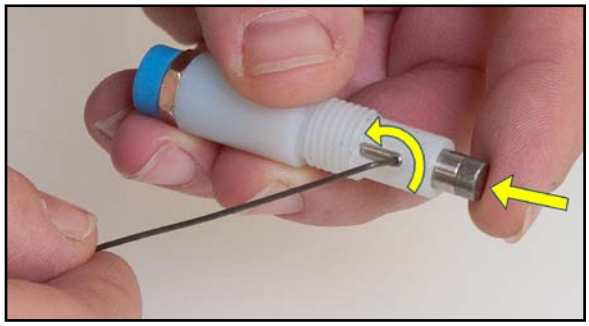

Figure 3-3. Removal of the Brush Set Screw.

INFO:

The brush is spring-loaded. When you remove the set screw, the brush will tend to fly out of the brush holder. Use a finger to hold it in place as you are removing the set screw.

After removing the set screw, remove and discard the old brush, but do not discard the empty brush holder. The new replacement brush includes a set screw which is already installed. Temporarily remove this set screw. Be careful not to misplace the set screw (see: Figure 3-4).

Carefully slide the new spring-loaded brush into the brush holder. Be careful to properly align the set screw hole with the slot on the side of the brush holder. While squeezing the new brush into the brush holder, use the hex key to reinstall the set screw. Tighten the set screw until it stops turning (see: Figure 3-5).

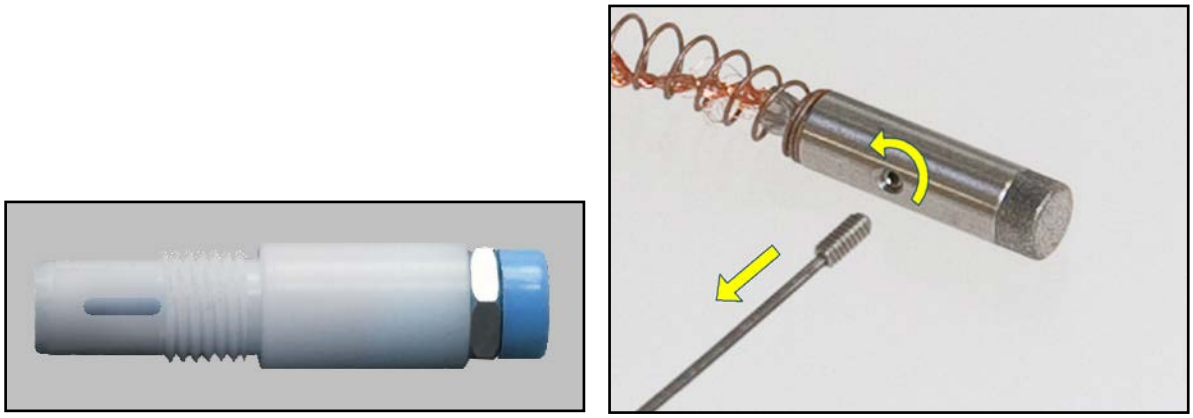

Figure 3-4. Empty Brush Housing (Left) and the Removal of New Set Screw (Right).

INFO:

The set screw should protrude slightly into the slot, and the brush should be free to travel to the extent permitted by the width of the slot.

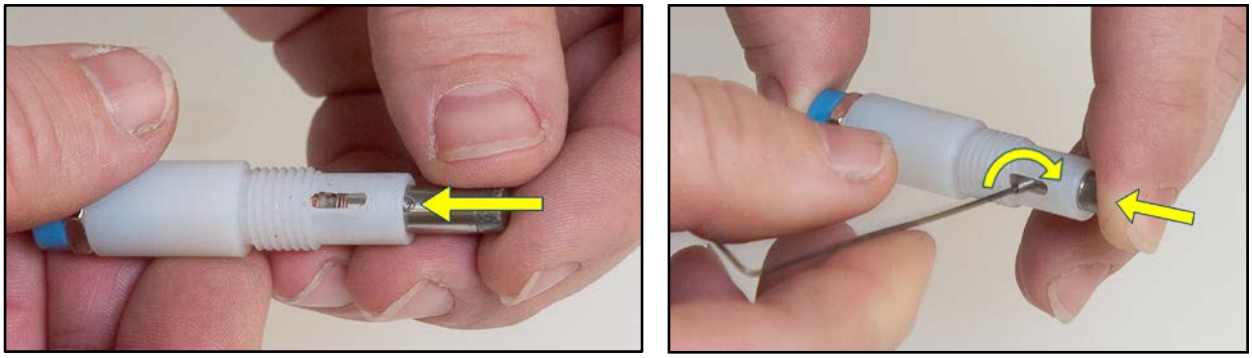

Figure 3-5. Installation of New Internal Brush Assembly (Left) and Set Screw (Right).

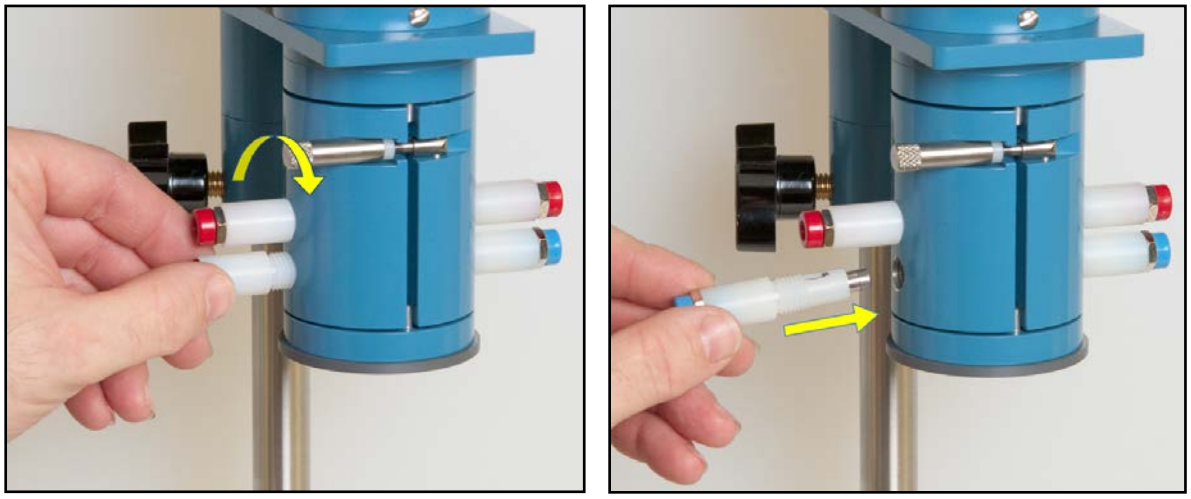

Figure 3-6. Insertion of Newly Replaced Brush Assembly.

Reinstall the brush assembly by threading it back into the side of the rotator. Hand-tighten the brush assembly. Do not use tools to tighten the assembly (see: Figure 3-6).

INTENTIONAL WEAR PERIOD:

After installing a new brush, install a shaft and allow the rotator to run at 1000 RPM for at least eight (8) hours. This rotation period wears a concave groove into the new brush. This intentional wear actually improves the electrical contact between the brush and the shaft.

4. Complete Brush Assembly Replacement

In the event that the main body of the brush assembly is damaged, it may be necessary to replace the entire brush assembly.

DISCONNECT POWER:

Before replacing a brush, turn off the power to the rotator and disconnect the power cord from the power source.

Remove the entire brush assembly from the rotator by unscrewing it as shown below. It should be possible to remove the brush assembly by hand (see: Figure 4-1). In some cases, such as when a brush assembly has never been removed after years of use, you may require some basic hand tools to remove/break the tight seal of the brush assembly. Use caution not to damage the housing with tools if you intend to reuse it.

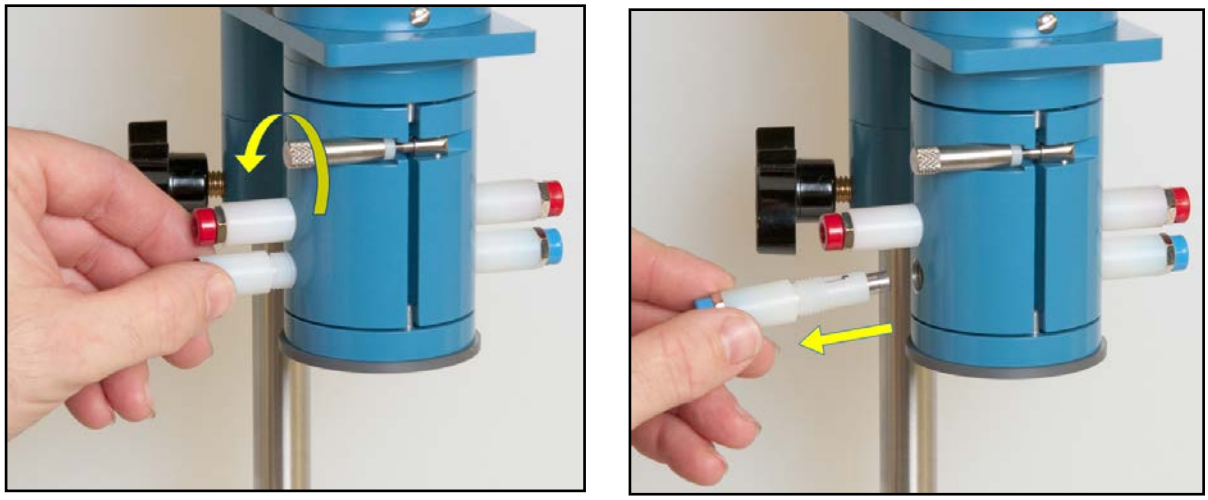

Figure 4-1. Removal of Old Brush Assembly by Turning (Left) and Pulling Out (Right).

Install the new brush assembly by threading it by hand into the side of the rotator. Do not use tools to tighten the brush assembly, even if tools were necessary to remove the brush assembly in the previous step (see: Figure 4-2).

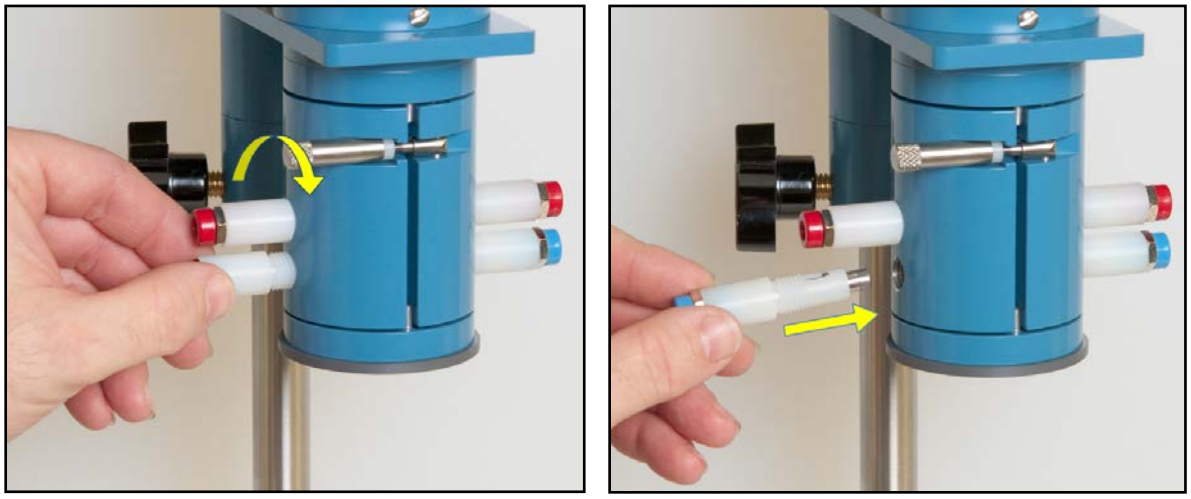

Figure 4-2. Insertion of Newly Replaced Brush Assembly.

INTENTIONAL WEAR PERIOD:

After installing a new brush, install a shaft and allow the rotator to run at 1000 RPM for at least eight (8) hours. This rotation period wears a concave groove into the new brush. This intentional wear actually improves the electrical contact between the brush and the shaft.

5. Support

If you have any questions about the MSR Rotator brush replacements described in this document, please contact us via the means provided below:

5.1 Email

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

5.2 Website

There is a contact us form on our website. There may also be additional resources for the products mentioned here: http://www.pineresearch.com