

⚠ WARNING

Turn OFF and disconnect power to the VQM® Controller before beginning this filament replacement procedure.

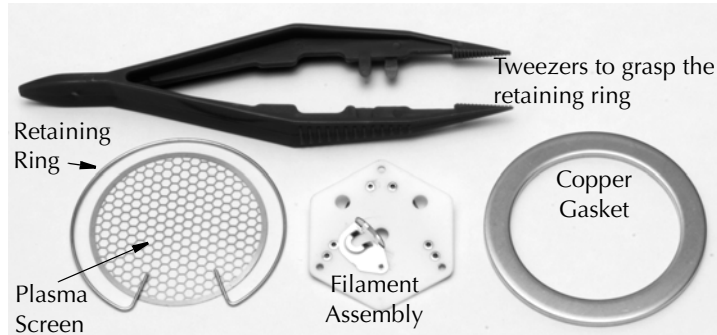
⚠ CAUTION

1. The components of the MS Gauge are fragile. Be especially careful when disassembling and reassembling the gauge.
2. Do NOT scratch the ConFlat knife edge on the gauge.
3. The components of the filament replacement kit are UHV compatible – perform the replacement procedure in a proper cleanroom environment.

Components of the Filament Replacement Kit

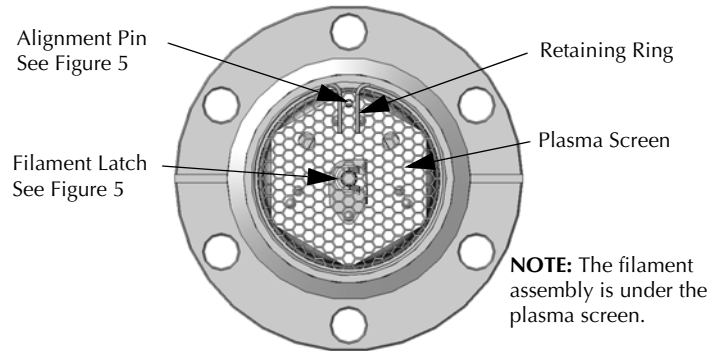
Figure 1 Replacement Kit

NOTE: The filament replacement kit includes a custom pair of tweezers that are notched to grasp the retaining ring.



1

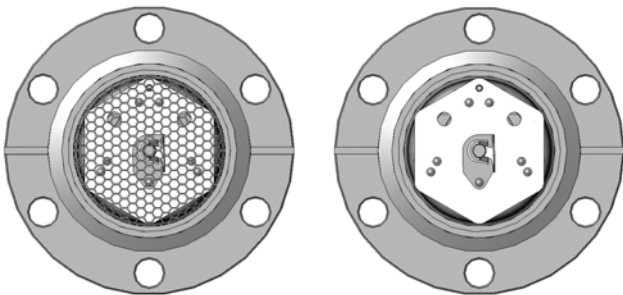
Figure 3 MS Gauge Components - Viewed from the Port End of the Gauge



3. Remove the retaining ring. Use the tweezers provided in the kit to squeeze the tabs together and carefully lift the retaining ring from the gauge. Be careful not to scratch the ConFlat knife edge when removing the retaining ring.

4. Remove the plasma screen.

Figure 4 Retaining Ring and Plasma Screen Removed



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Filament Replacement Instructions

⚠ CAUTION

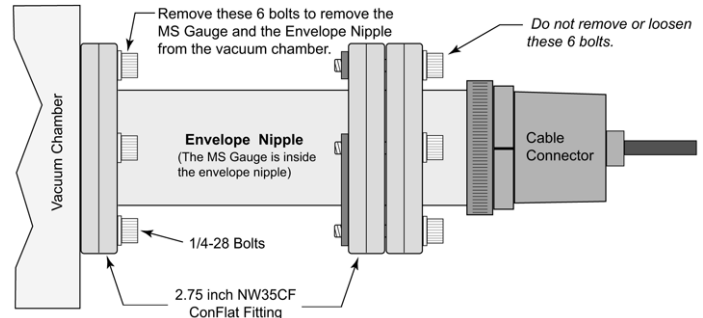
Be sure to read through and understand the scope of this procedure before beginning.

NOTE:

Use clean, vacuum component compatible gloves while replacing the filament.

1. Turn OFF power to the VQM System and vent the vacuum chamber to atmosphere. Disconnect the cable from the MS Gauge and remove the 6 bolts that attach the MS Gauge to the vacuum chamber. See Figure 2.

Figure 2 Remove the MS Gauge from the Vacuum Chamber

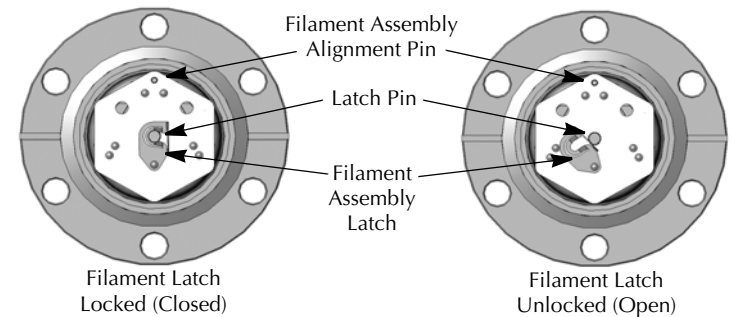


2. Look closely at the port of the MS Gauge and make note of the position of the components as shown in Figure 3. Orient the gauge as shown in Figure 3.

2

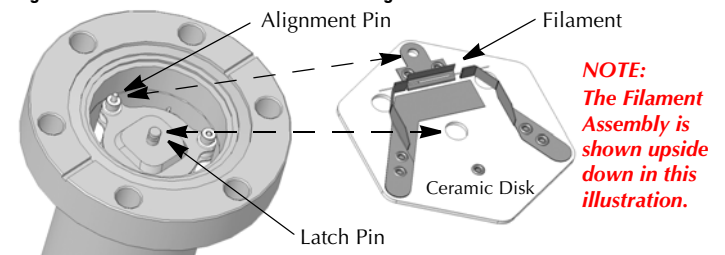
5. Use tweezers or small needle nose pliers to rotate the latch counterclockwise and unlatch the filament assembly so it can be removed from the gauge. Do not use excessive force when unlocking or locking the filament latch.

Figure 5 Filament Assembly Latch



6. Use tweezers or small needle nose pliers to carefully lift the filament assembly from the gauge. Note the position of the alignment pin and the center pin (latch pin). Also note the position of the filament (which is near the alignment pin hole in the ceramic disk) and the filament port which is in the gauge assembly. Figure 6.

Figure 6 Position of the Filament and Alignment Pins



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7. Insert the replacement filament assembly. See Figure 5 and Figure 6.

Make sure the ceramic disk of the filament assembly fits down onto the latch pin so the latch closes easily.

Note that the filament assembly is shown upside down in Figure 6. Be sure to insert the new filament in the exact position as the one you just removed. See Figure 5.



CAUTION

Trying to insert the replacement filament when not properly oriented will cause damage to the replacement filament. If the ceramic disk becomes trapped in the notch of the latch pin, the latch will not close. Do NOT force the latch to close. Carefully reposition the ceramic disk so it is properly seated at the bottom of the latch pin.

8. Rotate the latch clockwise to lock the replacement filament in place. Use tweezers or small needle nose pliers. Make sure the latch is in the closed position as shown in Figure 5.
9. Install the new plasma screen. Be careful to not damage the plasma screen or scratch the ConFlat knife edge on the gauge.
10. Install the new retaining ring. Use the tweezers provided in the kit to squeeze the retaining ring together and carefully place the retaining ring in the groove above the plasma screen.
11. Install the gauge on the vacuum chamber. Be sure to use the new copper gasket provided in the kit.
12. Connect the gauge interconnect cable.



CAUTION

Be sure to pump down the vacuum chamber to 1×10^{-5} Torr or lower before turning ON the VQM Controller. The MS Gauge filament may be damaged at system pressures higher than 1×10^{-5} Torr.

13. Connect power to the VQM Controller.
14. Turn ON power to VQM Controller and perform the Initial Operation Procedures outlined below. Refer to Chapter 8 of the Instruction Manual for the VQM System.
The Instruction Manual can be downloaded at: www.mksinst.com
 - a. Pump down the vacuum chamber to $<1 \times 10^{-5}$ Torr. See Initial Pumpdown, Section 8.3.1.
 - b. Perform the Filament Outgassing procedure.
 - c. Perform the Electron Multiplier Preconditioning procedure.
 - d. Perform the Auto Tune procedure.
 - e. Perform the Electron Multiplier Gain Adjustment procedure. See Section 8.3.5.
 - f. Perform the Mass Axis Calibration procedure.
 - g. Use the Tune screen to flash (save) the new settings to the EEPROM in the VQM Controller.
 - h. The VQM System is now ready to perform Mass Scanning.

Series 835

Granville-Phillips® VQM® Mass
Spectrometer Gauge Filament
Replacement Instructions



More detailed instructions regarding installation, operation, and service of the Series 835 VQM System are provided in the Instruction Manual (part number 835000) which can be downloaded at: www.mksinst.com

Replacement Instructions

Instruction manual part number 830233
Rev. F- August 2014

Series 835

Granville-Phillips® VQM® Mass
Spectrometer Gauge Filament
Replacement Instructions



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