

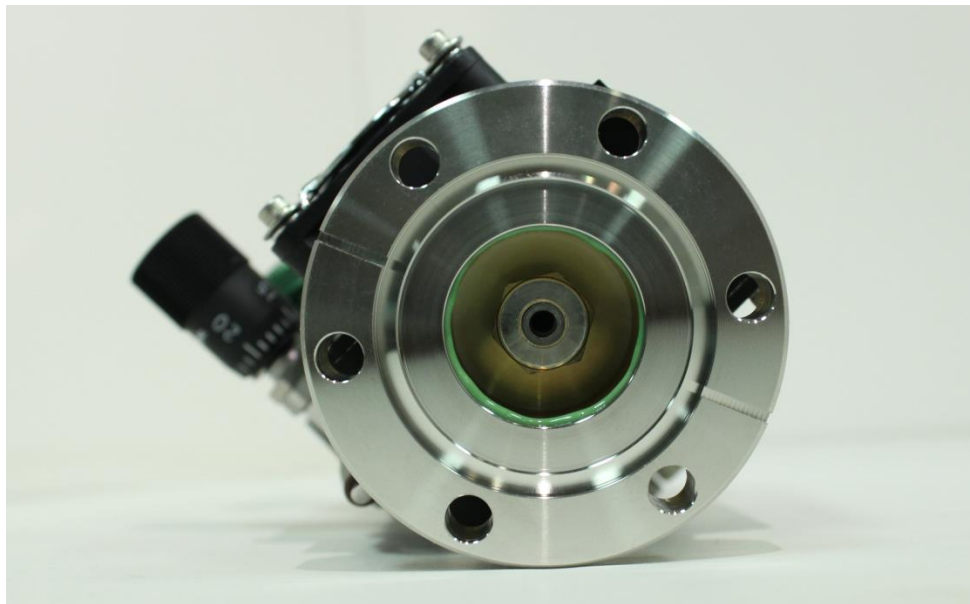


# EUV-XL-L

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## Operating Manual

REV 1.0  
8/26/2014



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## Description

The Resonance EUV windowless source is an RF-excited flow lamp with a capillary bore in an EMI-shielded enclosure. This lamp mounts to a 2.75 inch or larger CF type flange. The lamp assembly has an integral RF exciter that is powered by a small wall plug power supply. This supply is sufficient to produce emissions from the principal neutral rare gas species in the range of  $10^{15}$  photons per second per steradian. This light source employs a “reverse flow” feature that directs the gas away from the vacuum chamber. This feature reduces gas use and produces a higher intensity.

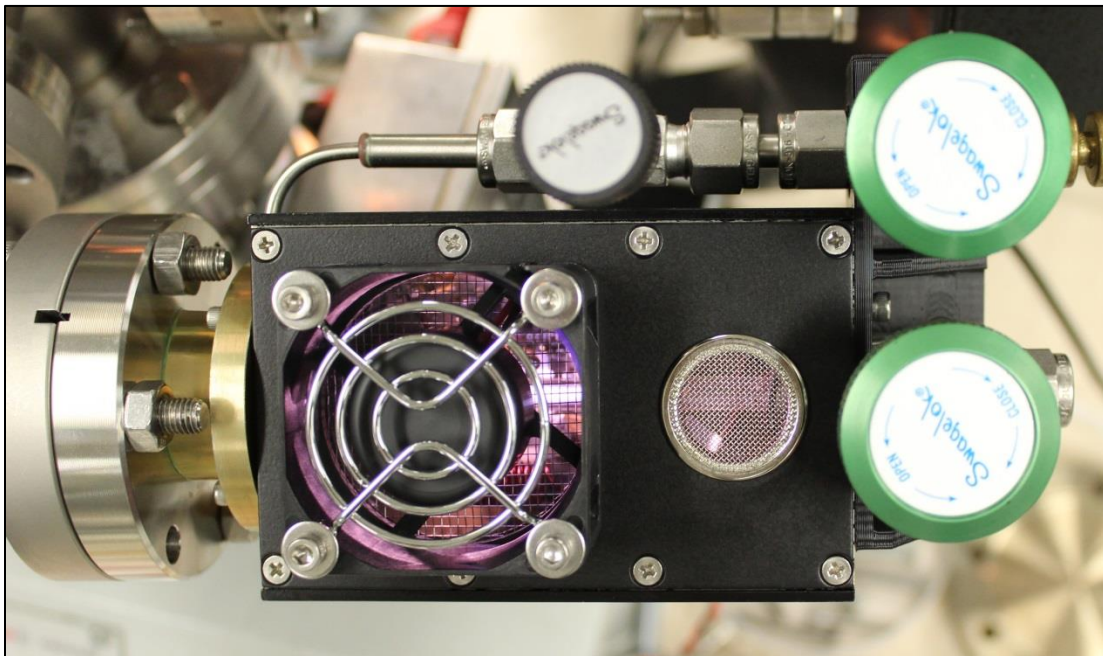


Figure 1: EUV-XL-L attached to vacuum system and operating with He.

# Specifications

## Electrical/Optical/General Specifications

Specification	Minimum	Typical	Maximum	Units
Flow Gas User Selected		Helium		
Peak Wavelengths	-	30, 58	-	Nm
Full Spectral Range	-	28 to 7000	-	Nm
58nm Intensity	$5 \times 10^4$	$1 \times 10^{15}$ @ 58nm	$2 \times 10^{15}$	Photons/sec/steradian
Full Angle Output Cone	15	28	35	Degrees
Window Material (optional window)		MgF <sub>2</sub>		
Clear Aperture (dependent on configuration)	0.3	0.4	0.45	Cm
Certification	Calibration of Irradiance in Vacuum			
Input Power	10	15	24	Watts
Input Voltage	70	115	260	VAC
Input Line Frequency	50	60	65	Hz
Mounting Flange	2.75 inch CF is standard, lamp can be sealed to HV system			
Cooling	Forced air cooling with internal fan			
Intensity Monitor	Intensity monitor available as an option			
System	Complete system includes RF power supply, EMI shielded enclosure, vacuum flange.			

# Operating Procedures

## Normal Operation

The flow lamp can be operated with any non-corrosive gas to obtain EUV spectra. Typically, the supply line is pressurized to a few PSI above ambient pressure (10 to 100 kPa). To operate:

1. Connect gas supply line

Connect the input (the green valve) to green valve that is connected to the metering valve. Make sure the second Green valve is closed

2. Pump out the gas supply line

Open the input valves (green and the black metering valve) to pump out the supply line up to the pressure gauge head. The pressure should fall to better than  $10^{-1}$ Torr in the mono/spectrometer at this stage.

3. Purge the supply line with gas

The main cylinder valve to the gas supply should be opened and the two valves (green and black metering valves) closed.

4. Adjust the flow of gas

In normal operation (with Ar, Xe, Kr, Ne, He, or N<sub>2</sub>) the green valve connected to the metering valve should be opened and the metering valve set so that the flow of gas is quite small (10 to 35 small div). This will maintain pressure at a few Torr in the flow lamp and less than  $10^{-1}$ Torr in the mono/spectrometer.

## Operating Procedures

5. Switch on the RF in the flow lamp and start the lamp

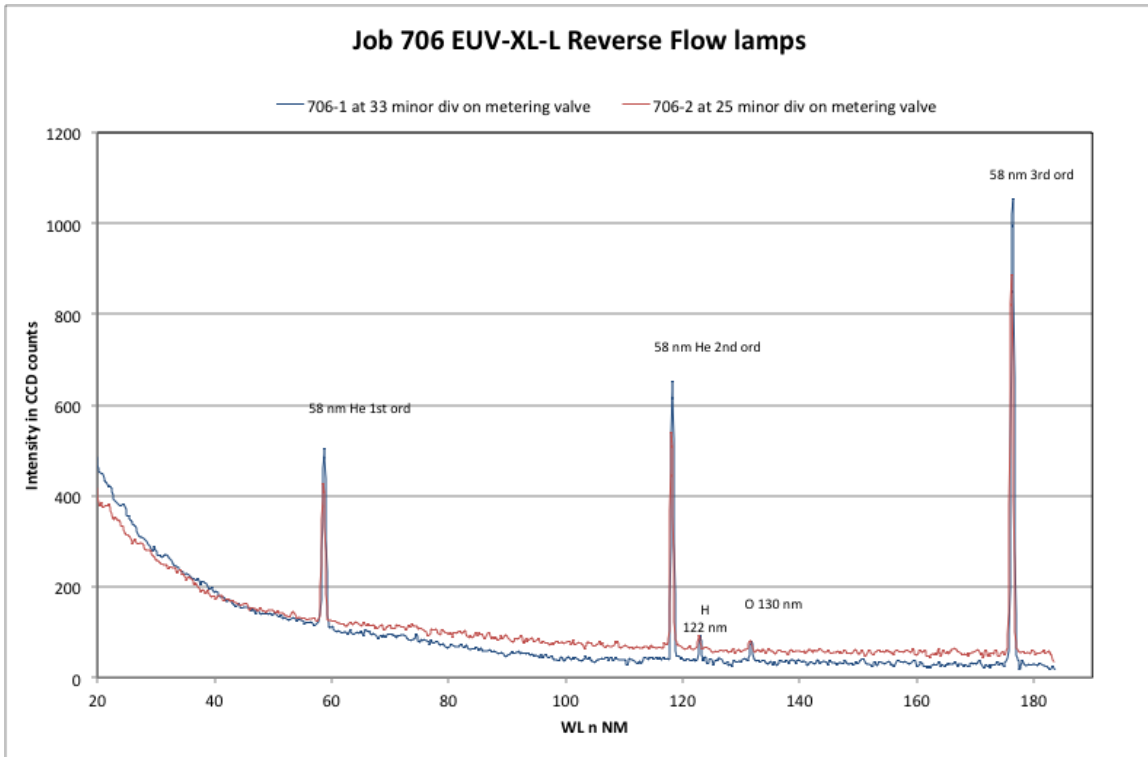
After the gas is flowing the RF should be switched on by plugging in the wall unit. If a power supply is used the voltage should be set to 24 volts and the current should be in the 0.2 to 0.75-amp range.

The plasma will be self-starting. If the lamp will not start, verify that the power supply is properly connected and functional and that there is a sufficient vacuum (the lamp will not start when this pressure is  $> \sim 1$  Torr). If the lamp still will not start, a Tesla coil (set on low) can be touched to the glass tube inside the lamp housing.

6. Optimize the intensity

Once the plasma is ignited, adjust the gas flow using the metering valve to quickly optimize the intensity.

# Calibration in Normal Operating Mode



## Contact

Resonance Ltd. stands behind every product we sell. We welcome feedback and encourage any of our customers to contact us with questions, or concerns. You may contact us through e-mail, our website, telephone, or fax!

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