

RF ION SOURCE

Model SO-173 (short bottle)



Features

- 600 hours lifetime
- Low gas consumption
- Currents up to 0.7 mA
- Reliable and easy operation
- Different configurations available
- Low energy spread

General description

The RF ion source Model SO-173 short bottle is a long life ion source for general purposes. It is a heavy-duty prolific source for hydrogen and other gaseous ions. The source bottle contains a gas, which is excited by an RF (Radio Frequency) oscillator capacitive coupled to the bottle. The plasma is confined and positioned by an axial magnetic field produced by a permanent magnet placed symmetrically around the bottle. The source output is optimized by control of the source gas pressure and oscillator loading. The source bottle is standard fitted with a stainless steel source canal, available in different aperture sizes (tantalum canals are available on request).

The RF ion source Model SO-173 is suitable for single ended accelerators with high-pressure insulation gas as well as tandem injectors in combination with a charge exchange canal at atmospheric pressure.

The short bottle RF ion source is available in two configurations:

CX-SO-173-005, which is equipped with a Pyrex source bottle provided with a tungsten extraction pin. To protect the extraction pin from electron erosion caused by back streaming electrons, a quartz baffle is installed at the top of the bottle. The ion source has a 2.10 mm stainless steel lined aluminum source canal.

CX-SO-173-006, which has the same configuration as the CX-SO-173-005, but is equipped with a 1.60 mm stainless steel lined aluminum source canal for excellent focusing.

HIGH VOLTAGE ENGINEERING

Particle Accelerators Systems for the scientific, educational and industrial research communities



HIGH VOLTAGE ENGINEERING EUROPA B.V.

Amsterdamseweg 63, 3812 RR Amersfoort, P.O. Box 99, 3800 AB Amersfoort, The Netherlands
Phone: +31 33 4619741 Fax: +31 33 4615291 E-mail: info@highvolteng.com Web: www.highvolteng.com



PERFORMANCE

Minimum ion beam currents for all configurations, canal diameter 2,1 mm

Hydrogen	250 μ A *	* This current may increase, up to 0.7 mA, depending on the RF source configuration. Currents for other gases than Hydrogen can be decreased by approximately $M^{-1/2}$
Helium	125 μ A	
Nitrogen	60 μ A	
Oxygen	60 μ A	
Neon	50 μ A	
Argon	40 μ A	
Krypton	25 μ A	
Iodine	20 μ A	
Xenon	20 μ A	

SPECIFICATIONS

Proton yield	: 75%
Energy spread	: 100 eV typical
Ion species	: H, Ar, He, Ne, Xe, Kr, CO ₂ , I, B, BF ₃
Beam emittance	: the beam emittance depends on the source canal but is expected lower than 1.2π mm mrad MeV ^{1/2}

POWER REQUIREMENTS

Probe power supply	: 3kV / 3mA DC
Extraction power supply	: 20kV / 5mA DC
Oscillator power supply	: 350V / 400mA DC

The Model RF SO-173 ion source normally operates at +20 kV with respect to (terminal) ground. Therefore the source must be insulated from (terminal) ground. The source power supplies must be connected to a 20 kV isolation transformer.

Options

1. Ion source power supply package complete with isolation transformer, fiber optic linked remote control and power supply mount for tandem accelerator systems.
2. Ion source power supply package complete with remote control panel for single ended accelerator systems.
3. Extraction gap assembly and extraction power supply.
4. Spare part kits

Sales offices in Europe and Japan

RFS-3

HIGH VOLTAGE ENGINEERING EUROPA B.V. reserves the right to change specifications and features without prior notice unless part of a quotation or order.

