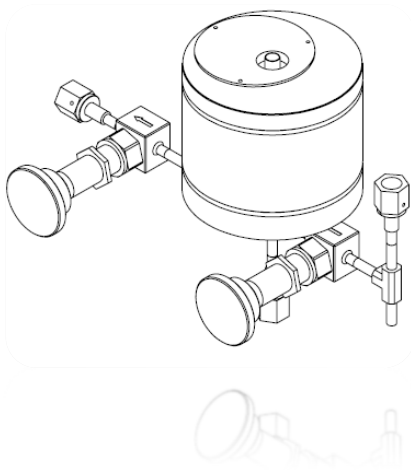


Isotope Separation System Ionization Chamber (ISS-IC)

❖ Features & Benefits



Designed for ISS:	Small 500 cc package designed for installation in an ISS
Two types of Anode:	20 cc wire cage for product side and solid anode for raffinate side of an ISS
Low T2 Retention:	Polished chambers to minimize tritium retention
Pressure Vessel:	Registered to ASME Section VIII Div 1

❖ Typical Uses

- Tritium monitor on the product side of an ISS
- Tritium monitor on the raffinate side of an ISS

Overview

The Isotope Separation System Ionization Chamber (ISS-IC) is designed to operate as the product side and raffinate side tritium monitor for a TCAP ISS. The compact 500 cc design allows for installation in small volume gloveboxes.

The product side ion chamber has a 20 cc wire cage that acts as a virtual wall for the measurement volume. This provides for a large measurement range from Curies to pure tritium while minimizing background effects from surface retention.

The raffinate side ion chamber has a solid anode to provide the maximum chamber volume of 500 cc for more sensitive measurements.

The valve placement and VCR4 fittings for both chambers have been optimized for installation in a small footprint ISS located within a glovebox.

An internet enabled, power of ethernet electrometer (iTM) may be easily installed onto the ionization chambers to provide the anode bias and measure the current from the ionization chambers.

Design Benefits

The ISS-IC is designed for use as an in-line process monitor for small footprint Isotopic Separation Systems. All ionization chambers are registered pressure vessels to comply with the process pressure envelope. The units are helium leak tight to 1×10^{-9} scc/sec at the operating temperatures as high as 150°C. All units come standard with VCR4 female fittings to provide leak tight installation.

❖ Specifications

Ionization Chamber	
Sizes	500 cc containment volume
Types	Product: Virtual wall (wire cage inside) Raffinate: Solid anode
Gas Conditioner	Electrostatic precipitator
Interior	Electro-polished
Operating Pressure	Product: 130 psig Raffinate: 200 psig
Max Design Temperature	93 °C
Humidity	0% - 90% non condensing
Max Bakeable Temperature	250 °C @ atm, electronics removed
Connection Fittings	VCR4 Female
Ideal Ionization Bias voltage	-100 VDC
Wetted Materials	316L Stainless Steel, High Density Ceramic

❖ Drawings

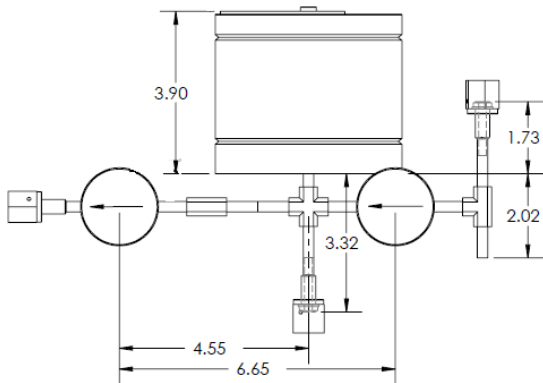


Figure 1: Product Side Ion Chamber

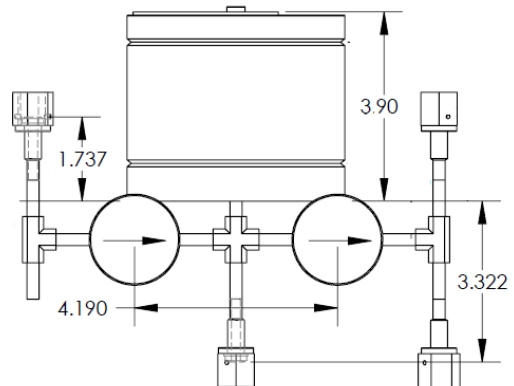


Figure 2: Raffinate Side Ion Chamber