

Galaxy[™]

Ion Pump Elements



Galaxy technology provides a new approach to stable pumping of air and argon, with reasonable cost for new pumps and rebuilding/retrofitting of existing pumps.

The new ion pump technology has:

- 1 The air, hydrogen and water-vapor pumping speed and capacity of a standard diode.
- 2 The air/argon stability of triode, Starcell[™] and differential/noble ion elements.
- 3 Lower price than the differential ion/noble diode which contain expensive tantalum.
- 4 Longer life and better low pressure operation than the triode.

Examples of good applications:

- 1 Purchase new ion pumps for stable pumping of air, especially at low pressures. (High Energy Physics, Electron Microscopes)
2. Rebuild/retrofit triode pumps to get better physical ruggedness, lifetime and low pressure operation.
3. Rebuild differential ion and noble ion pumps at reduced cost.

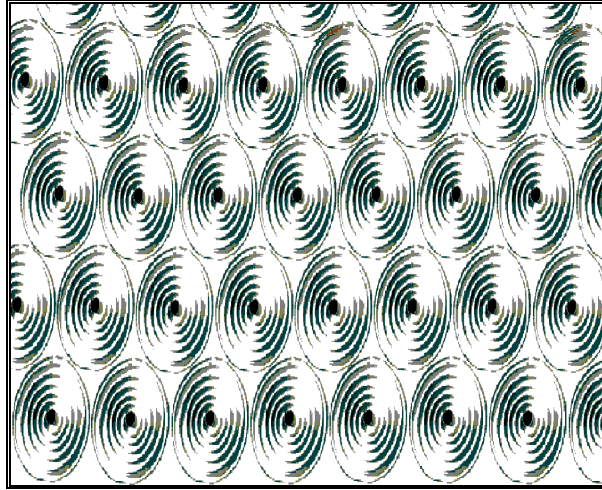


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Summary of Galaxytm Specifications

The new Galaxy ion pump technology uses two titanium cathodes penetrated with spiral patterns which are axially co-located beneath the anode cells. Noble gas ions, such as argon, strike the spiral elements at grazing incidence, resulting in sputtering and neutralization. The neutralized atoms are permanently buried in inactive areas of the pump. An image of a Galaxy cathode is shown below.



1. **Pumping speed for active gases:** The Galaxy pumping speed and capacity for air, hydrogen and water is the same as for the standard diode (two flat titanium cathodes).
2. **Stability for air pumping:** The Galaxy pumping speed for air is stable for all pressures and extended times measured.
3. **Pumping speed for argon:** The Galaxy pumping speed for argon is ~ 10% of its pumping speed for air. This represents ~ 65-70% of the pumping speed for argon of the same geometry DI (Differential Ion), Noble Diode, Starcell or Triode ion pumps. Galaxy operation for argon is stable for all pressures and times measured, except at argon operating pressures above about 2×10^{-5} Torr.
4. **Lifetime:** Accelerated and extrapolated lifetime tests with air and argon indicate that the lifetime of the Galaxy elements is in the same range quoted for other ion pump element technologies, i.e. 40,000 to 50,000 hours at an operating pressure of 1×10^{-6} torr.

Galaxy elements plus new and rebuilt ion pumps are available from Duniway Stockroom Corp. for:

Varian-style pumps (Part Number: **EL-LG-GX**)
PE-style pumps (Part Number: **NEW-GXY-2000**)
Starcell pumps (Part Number: **EL-ST-GX**)

Please inquire for other configurations and special applications.

Galaxy cathodes, elements and pumps are covered by US Patent #6004104

Galaxy is a trademark of Duniway Stockroom Corp.
Starcell is a trademark of Varian, Inc.