

NEXTorr® D500-StarCell®



HIGHLIGHTS

General Features

- Compact and low weight
- High and constant pumping speed for all active gases in UHV-XHV
- StarCell ion element
- Pumping speed for noble gases and methane
- Long lasting in UHV-XHV
- Negligible power consumption in operation
- Reduced magnetic interference
- Able to indicate system pressure
- Maintenance-free

Applications

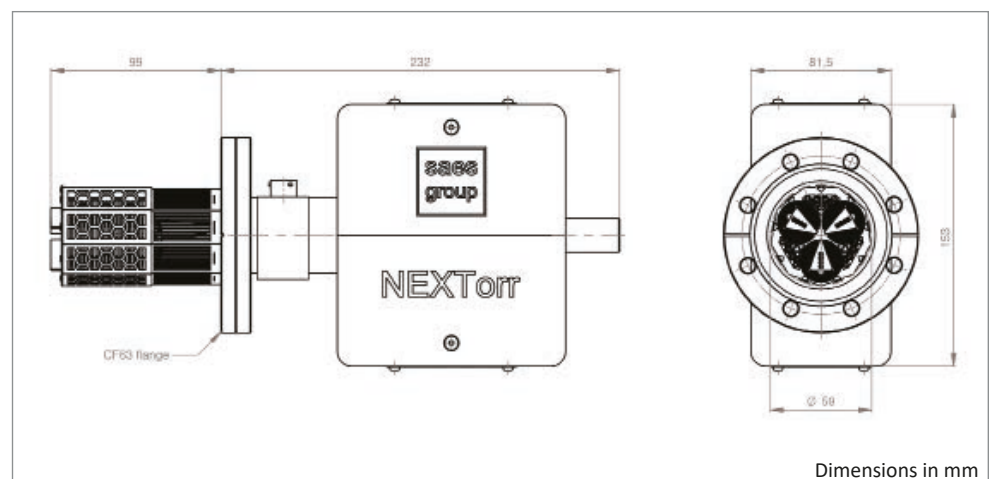
- Improvement of the ultimate vacuum in UHV-XHV systems
- Particle accelerators, synchrotron radiation sources
- Atom/Ion Trap systems, atomic clocks/fountains, interferometers
- Scanning/Transmission electron microscopes
- Portable vacuum instrumentation and suitcases
- Surface analysis systems
- General purpose UHV systems

The NEXTorr® D500-StarCell® is a compact Ultra High Vacuum pump that efficiently integrates a StarCell sputter ion pump (SIP) and a Non Evaporable Getter (NEG) pump into a vacuum solution featuring high pumping speeds and capacities with a low weight and small footprint.

The NEG element of the NEXTorr D 500-StarCell is based on high performance sintered porous getter disks (St 172), stacked in an optimized gas trapping structure, and featuring pumping speed in excess of 500 l/s (H₂).

The NEG cartridge is integrated onto a CF 63 flange containing a heater for the getter activation (500°C x 1 h). Once activated, the NEG will operate at room temperature without the use of power. The pump is equipped with a K-type thermocouple electrically insulated within an alumina tube for optimal temperature control during the conditioning and activation.

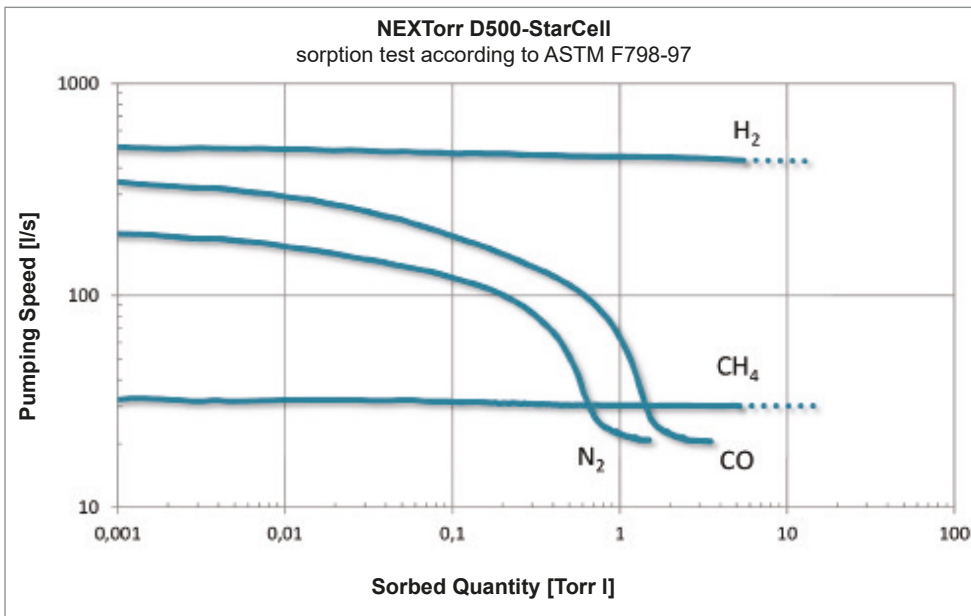
The opposite side of the same flange hosts a StarCell ion pump featuring 21 l/s for Ar and 30 l/s for CH₄. Gas flows from the vacuum system to the ion pump through a path optimized for conductance. The design of the pump provides additional pumping synergies: gases eventually released by the ion pump during operation are intercepted and removed by the NEG element, thus minimizing back-streaming effects; even fine Titanium particles, known to be potentially emitted by ion pumps, are effectively trapped by the NEG, reducing the risk of contamination of the vacuum system.



Total pump weight (magnets included)	7.1 kg
Type of ion pump	StarCell
Flange size	CF63

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NEXTorr® D500-StarCell®



Initial pumping speed (l/s)	Gas	NEG activated	NEG saturated
	H ₂	500	30
	H ₂ O ¹	450	25
	CO	340	20
	N ₂	200	20
	CH ₄	30	
	Argon ²	21 (12)	

Sorption capacity (Torr-l)	Gas	Single run capacity ^{3,4}
	H ₂	680
	H ₂ O ¹	70
	CO	2.5
	N ₂	1.3
	CH ₄	80,000 hours at 10 ⁻⁶ Torr

NEG section	Getter alloy type	St 172
	Alloy composition	Zr V Fe
	Getter mass (g)	68
	Getter surface (cm ²)	570
	Activation power (W) ⁵	120
ION section	Voltage applied	DC -7 kV

- 1 The values for H₂O are estimated.
- 2 Measured at 1x10⁻⁷ Torr. Unsaturated ion pump (saturated ion pump).
- 3 Single-run capacity is reached when pumping speed is equal to the pumping speed of the ion element only (this limit does not apply for H₂).
- 4 > 100 reactivations (sorption cycles) are possible.
- 5 It is referred to the "nude" configuration (NEG element completely immersed in the vacuum chamber).

Ordering Information

Product	Product description	Code
NEXTorr PUMP	NEXTorr D500-StarCell	5H0219
ION Pump controller	IPC MINI SINGLE CONTROLLER#	3B0543
NEG Pump controller	NEG POWER MINI#	3B0110
ION cable	HV BAKEABLE CABLE 4 MT* [§]	3B0546
NEG cable	NEG CABLE 6P5A 3 MT* [§]	3B0854

(#) Controllers which can simultaneously drive up to four pumps are available.

(*) Longer cables are available on request.

(§) Bakeable up to 250 °C, and radiation resistant (1000 Mrad).

The NEXTorr® product line incorporates and exploits the patented concept of a combined pumping system comprising a getter pump and an ion pump, and have global Intellectual Property Rights coverage with patents already granted in the US (8,287,247), Europe (2,409,034), Japan (5,372,239), China (102356236).

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D.VS.159.2.20



SAES
www.saesgroup.com
neg_technology@saes-group.com