

NEXTorr® HV 100



HIGHLIGHTS

General Features

- > Extremely compact and low weight
- > High and constant pumping speed for all active gases
- > Pumping speed for noble gases and methane
- > High sorption capacity in high vacuum
- > Fast pump-down after air venting and without baking
- > Suitable for viton-sealed and harsh systems
- > Minimal power requirement during operation
- > Reduced magnetic interference
- > Able to indicate system pressure

Applications

- > Improvement of the ultimate vacuum in HV and UHV systems
- > Particle accelerators, synchrotron radiation sources
- > Scanning/Transmission electron microscopes
- > Portable vacuum instrumentation and suitcases
- > Surface analysis systems
- > Process pumps for vacuum devices and deposition chambers
- > Thin films deposition systems
- > Pumping, storing and releasing hydrogen isotopes

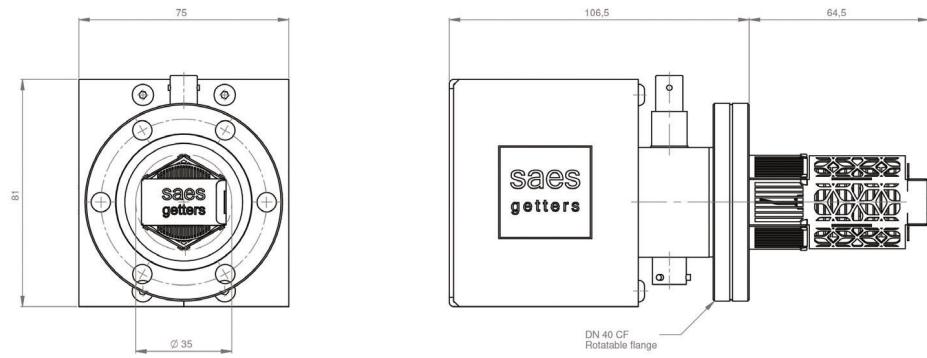
The NEXTorr® HV 100 is a compact High Vacuum (HV) pump that efficiently integrates a sputter ion pump (SIP) and a Non Evaporable Getter (NEG) pump into a vacuum solution featuring high pumping speeds and capacities with a low weight and small footprint.

The NEG element is based on SAES® ZAO® sintered porous getter disks, providing high pumping performance for all the getterable gases (H₂, H₂O, N₂, O₂, CO, CO₂, etc.), while the sputter ion pump ensures the pumping of non-getterable species, such as CH₄ and noble gases.

The pump is specifically designed and engineered to operate in the high vacuum regime (i.e. 10⁻⁷–10⁻⁹ Torr). After a standard activation (500°C x 1 h), the NEG element is operated permanently warm at ≈200°C. By keeping the NEG warm, the gas sorption capacity is enhanced, making the pump suited to cope with vacuum chamber air permeation and sudden gas bursts typical of HV systems.

The opposite side of the same flange hosts a noble diode ion pump. 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.

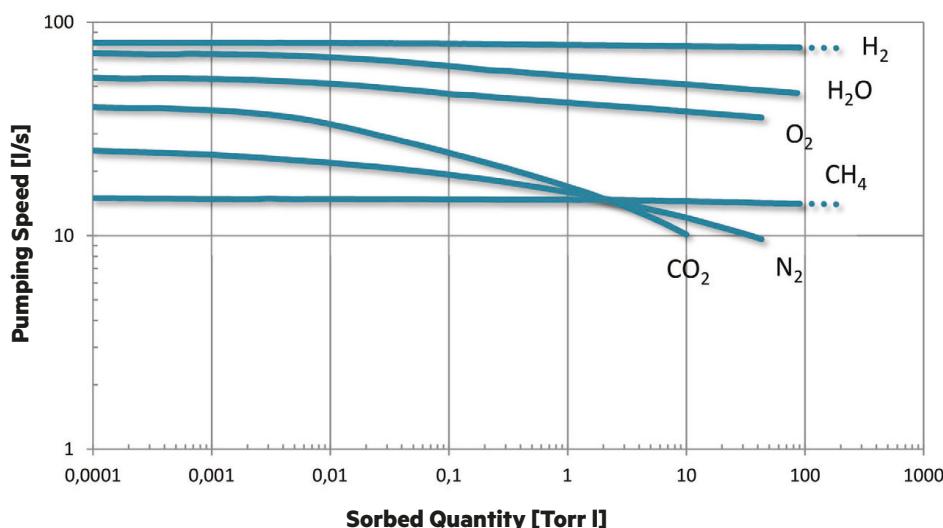
The noble diode ion pump can efficiently work in presence of non-negligible Argon throughputs typical of elastomer-sealed HV systems.



Total pump weight (magnets included)	2.2 kg
Type of pump	Noble Diode
Flange type	CF35

NEXTorr® HV 100

NEXTorr HV 100 sorption test (According to ASTM F798-97)



Initial pumping speed (l/s)	Gas	NEG activated	NEG saturated
	H ₂	80	5
	H ₂ O ¹	70	3
	O ₂	55	3
	CO ₂ ⁴	40	5
	N ₂	25	3
	CH ₄		15
	Argon ²		7 (0.7)

Sorption capacity (Torr-l)	Gas	Single-run capacity ³
	H ₂	910
	H ₂ O ¹	86
	O ₂	43
	CO ₂ ⁴	10
	N ₂	43
	CH ₄	50,000 hours at 10 ⁻⁶ Torr

NEG section	Getter alloy type	ZAO
	Alloy composition	Zr V Ti Al
	Getter mass (g)	45.5
	Getter surface (cm ²)	136
	Activation power (W) ⁵	45
	Working power (W) ⁵	5.4

Ion section	Voltage applied	DC +5 kV
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¹ The values for H₂O are estimated.

² Measured at 3×10⁻⁶ Torr. Unsaturated ion pump (saturated ion pump).

³ The single-run capacity is intended as the recommended absorbed quantity per run allowing to perform more than 20 sorption cycles. In case of operation under lower gas loads or at RT, the pump can be reactivated 100 times or more. (This limit does not apply for H₂).

⁴ The values for CO can be assumed very similar to those reported for CO₂.

⁵ It is referred to the "nude" configuration (NEG element completely immersed in the vacuum chamber).

The SAES manufacturing companies are ISO9001 certified, the Asian and Italian companies are also ISO14001 certified.

Full information about our certifications for each company of the Group are available on our website at:

www.saesgroup.com

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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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Ordering information		
Product	Product description	Code
NEXTorr Pump	NEXTorr HV 100	5H0209
Pump Body	SPECIAL BODY CF35/CF35 L=126	4H0470
ION Pump controller	SIP POWER	3B0506
NEG Pump controller	NEG POWER MINI#	3B0110
ION cable	IP CABLE 3 MT*	3B0568
NEG cable	NEG CABLE 3P5A 3 MT*	3B0598

(#) NEG POWER models which can simultaneously activate up to four pumps are available.

(*) Longer cables are available on request.

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

saes

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