

# NEXTorr® D 500-5



## HIGHLIGHTS

### General Features

- High pumping speed for all active gases
- Pumping speed for noble gases and methane
- Constant pumping speed for active gases in UHV-XHV
- No intrinsic pressure limitations
- Minimal power requirement during operations
- Extremely compact and light pump
- Reduced magnetic interference
- Able to measure pressure lower than  $10^{-9}$  mbar

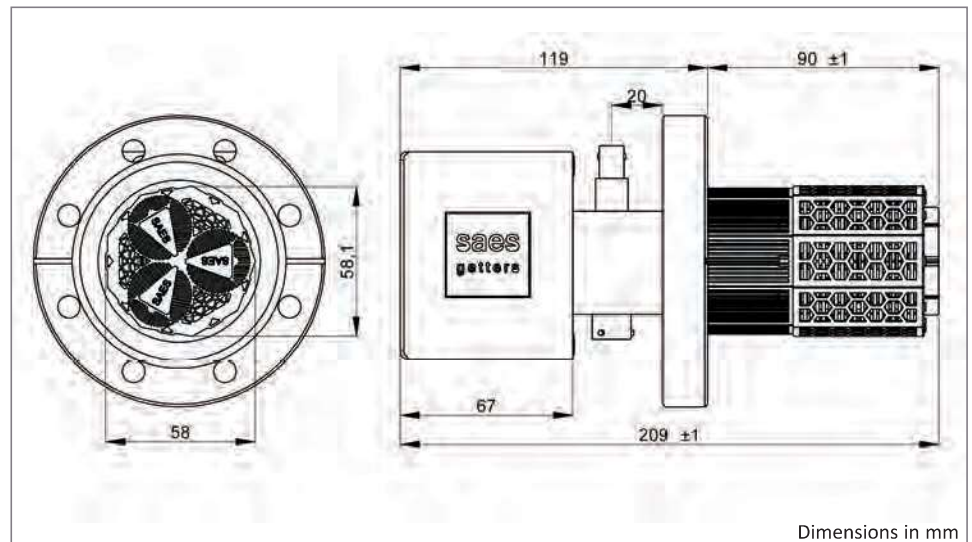
### Applications

- Improvement of the ultimate vacuum in UHV-XHV systems
- Reduction of the footprint and weight of vacuum systems
- Scanning /transmission electron microscopes
- Surface science equipments
- Portable analysers vacuum instrumentations
- General purpose UHV systems
- Particle accelerators, synchrotron radiation sources and related equipments

The NEXTorr® D 500-5 is an extremely compact pump able to sorb gases very effectively and with large capacity down to the XHV level.

The getter cartridge is made of porous sintered getter disks (St 172) stacked in a highly efficient gas trapping structure featuring pumping speed in excess of 500 l/s ( $H_2$ ). The cartridge is integrated into a CF 63 flange containing a heating element for the getter activation. After the activation is carried out ( $500^\circ C \times 1 h$ ), the pump removes gases at room temperature without any need for electric power to operate. On the other side of the same flange, a diode ion pump featuring 6 l/s (Ar) is connected. Gas flows from the vacuum system to the ion pump through an optimized conductance. The optimized conductance and the special internal design of the ion pump allow the maximum exploitation of the ion pump sorption performance.

The configuration of the ion pump with respect of the getter cartridge provides additional pumping synergies. Gases released by the ion pump during the operation, are intercepted and removed by the getter element, with a substantial reduction of back-streaming effects. For the same reasons, increased pumping efficiency for  $H_2$  and  $CH_4$  are obtained. Fine titanium particles which are known to be continuously emitted by ion pumps during operation are also effectively trapped by the getter element, reducing potential contamination of the vacuum system.



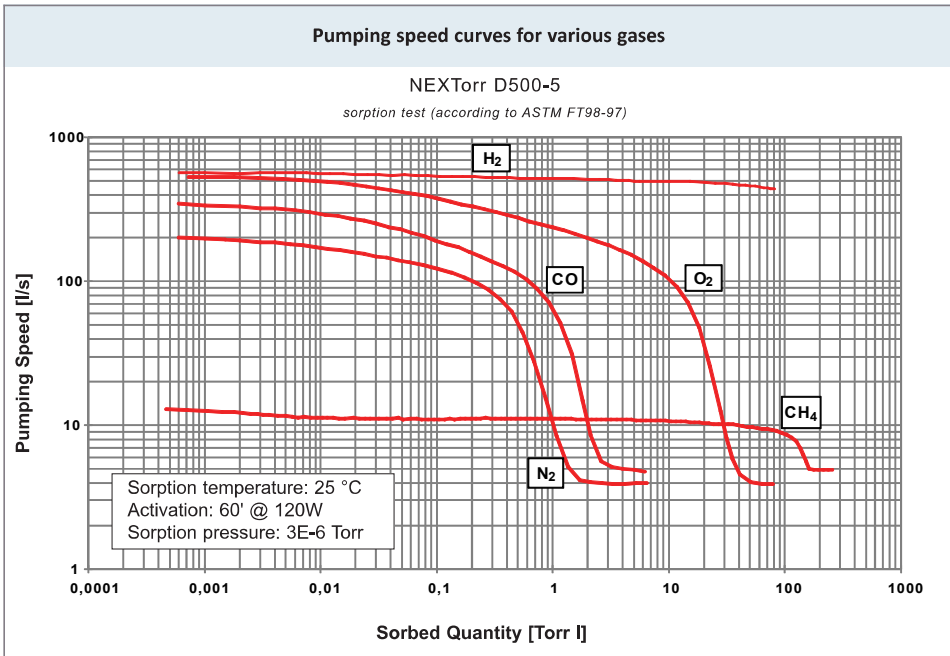
Dimensions in mm

Total pump weight (magnets included)	3.1 kg
Total pump volume	0.7 litre
Type of ion pump	Diode
Operation Voltage Ion Element	5.0 kVdc
Operation Voltage NEG Element	24 Vdc

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# NEXTorr® D 500-5



Initial pumping speed (l/s)	Gas	NEG activated	NEG saturated
	O <sub>2</sub>	500	4
	H <sub>2</sub>	500	6
	CO	340	5
	N <sub>2</sub>	200	4
	CH <sub>4</sub>	13	5
	Argon <sup>1</sup>	6 (0.3)	6 (0.3)
Sorption capacity (Torr·l)	Gas	Single run capacity <sup>2</sup>	Total capacity <sup>3</sup>
	O <sub>2</sub>	17	>2500
	H <sub>2</sub>	680	N/A <sup>4</sup>
	CO	1.4	>600
	N <sub>2</sub>	0.8	>125
	CH <sub>4</sub>	137	50,000 hours at 10 <sup>-6</sup> Torr
NEG section	Getter alloy type		St 172
	Alloy composition		ZrVFe
	Getter mass (g)		68 g
	Getter surface (cm <sup>2</sup> )		570
ION section	Voltage applied		DC+5kV
	Number of Penning cells		4
	Standard bake-out temperature		150 °C

- 1 Measured at 3x10<sup>-6</sup> Torr. Unsaturated pump (saturated pump).
- 2 Capacity values with the NEG element at room temperature, corresponding to a drop of the pumping speed to 10% of its initial value. A drop to 50% has been considered in the case of CH<sub>4</sub>.
- 3 Total capacity values for each single gas obtained after many reactivations (getter fully consumed). Capacity values for the various gases are not additive (a getter fully reacted with one gas specie will not sorb another gas).
- 4 After the getter element has reached its room temperature H<sub>2</sub> capacity (680 Torr·l) it can be "regenerated". The regeneration process extracts the H<sub>2</sub> stored in the getter. After being regenerated, the pump can start pumping H<sub>2</sub> again.

## Ordering Information

Product	Product description	Code
NEXTorr PUMP	NEXTorr D 500-5	5H0172
Pump power supply	NEXTorr PS NIOPS-04	3B0415
Power supply cables	NEXTorr KIT OF CABLES-04-06	3B0416
Power supply input cable	NIOPS INPUT CABLE	3B0398
Output cable ION element	NIOPS04-06 - OUTPUT CABLE ION - 3 MT	3B0418
Output cable NEG element	NIOPS04-06 - OUTPUT CABLE NEG - 3 MT	3B0419

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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