

*a clear edge*

*nEXT turbopumps*



Vacuum science... product solution.

# *a clear edge*

*innovative thinking, practical solutions*

## *Applications*

You can be assured Edwards has the application expertise and vacuum solution to meet your needs.

### Mass spectrometry

GCMS, LCMS, ICPMS, MALDI, inorganic MS, RGA, surface science, leak detectors

### Electron microscopy

TEM, SEM, SPM, sample prep benches

### Research and development

Chamber evacuation, coating systems, turbopump systems

### High energy physics

Beam Lines, accelerators, mobile pump carts, turbopump backing, laser evacuation, medical systems

### Industrial

Glove boxes, coating systems, XRD/XRF systems, lamp evacuation

### Semiconductor

Load locks and transfer chambers

### Solar

Photovoltaics, solar thermal technology

# *nEXT - The new experience in turbopumps*

**Edwards, a world leader in vacuum technology, is proud to present the nEXT generation of turbopump.**

Built on over two decades of experience based on our tried and trusted EXT and STP ranges, nEXT sets the new benchmark for scientific turbopumps.

nEXT offers you the best turbopump for performance, reliability and end-user serviceability.



## **fast**

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State-of-the-art rotor design to deliver exceptional pumping speeds and compression ratios

## **robust**

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Field-proven reliability in the most demanding environments

## **simple**

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Standard fit in many of the leading scientific instruments with over 100,000 turbo pumps installed

## **economical**

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Fully end-user self-serviceable in minimum time without complex tooling or major disassembly... you can do it

## Technology

The compact design allows for close pitch positioning in multiple pump installations. Backwards compatible with existing EXT and DX ranges offering superior performance in a smaller space envelope. Compatible with Edwards TIC Controllers

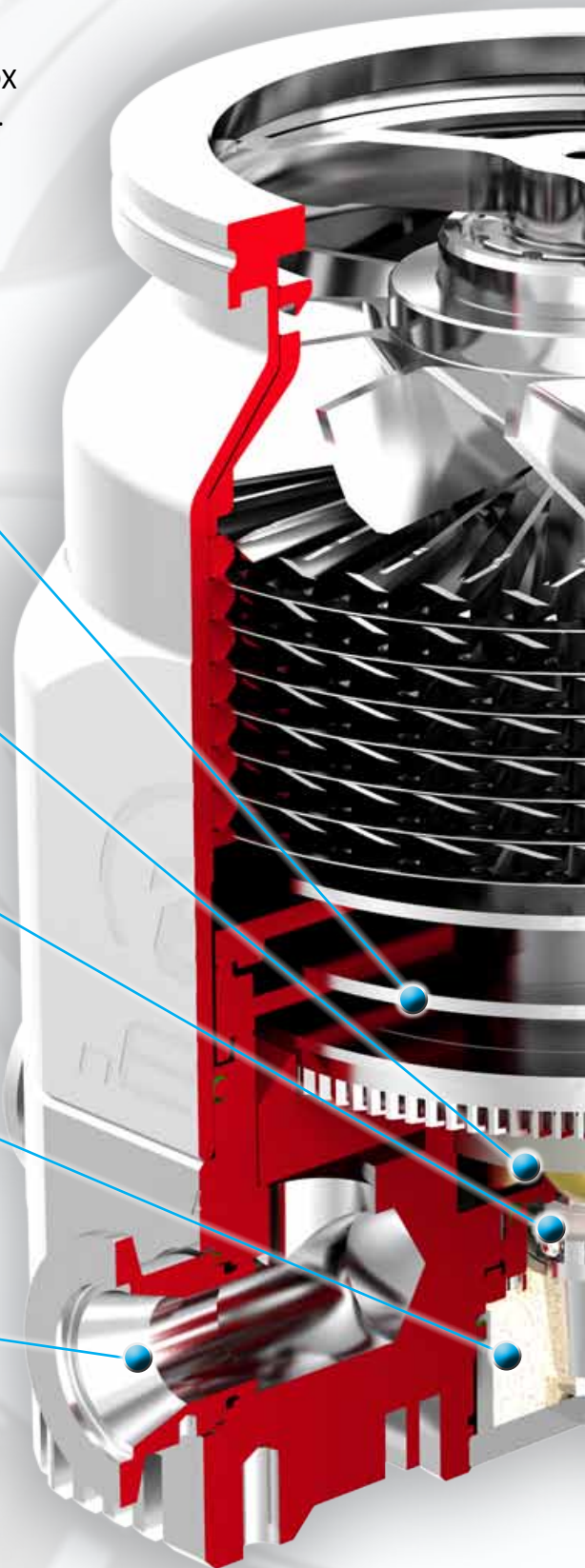
Multiple drag stages for higher compression ratios and greater backing pressure tolerance

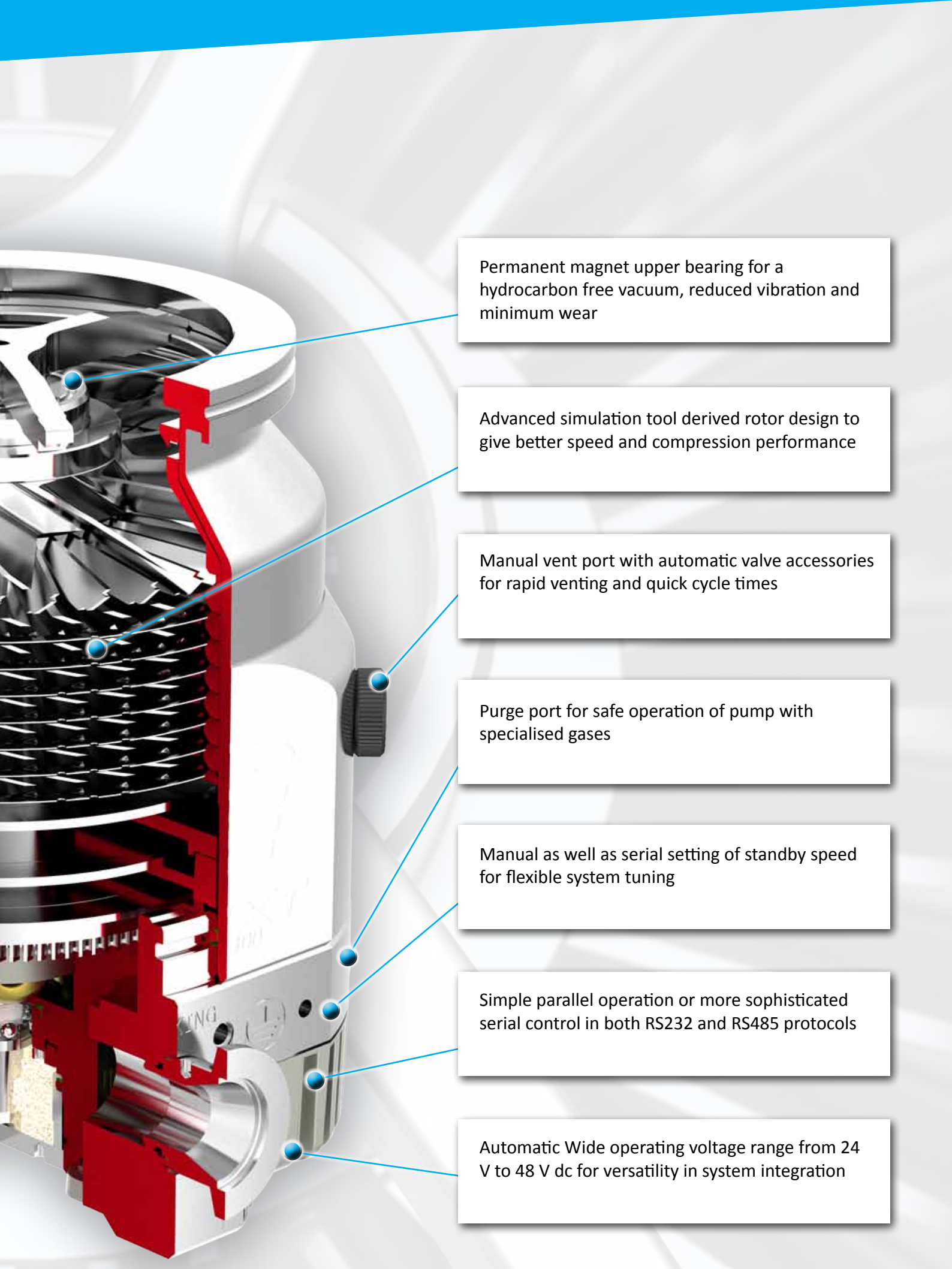
Sensorless drive for high efficiency and compactness with reduced stray magnetic fields

Patented bearing suspension system minimises noise and vibration transmitted to vacuum system.

User replaceable oil cartridge for a speedy interim service

Regenerative stage 'Boost' port option for reduced pump numbers in differentially pumped systems for maximum system rationalisation





Permanent magnet upper bearing for a hydrocarbon free vacuum, reduced vibration and minimum wear

Advanced simulation tool derived rotor design to give better speed and compression performance

Manual vent port with automatic valve accessories for rapid venting and quick cycle times

Purge port for safe operation of pump with specialised gases

Manual as well as serial setting of standby speed for flexible system tuning

Simple parallel operation or more sophisticated serial control in both RS232 and RS485 protocols

Automatic Wide operating voltage range from 24 V to 48 V dc for versatility in system integration

## Advanced technology

nEXT has been designed to combine all the latest technological advances in turbo pumps with some new thinking in design for manufacture, delivering truly class leading product to market.

nEXT is available in three sizes

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**nEXT240**  
*DN100 ISO-K or  
DN100 ISO CF*

**nEXT300**  
*DN100 ISO-K or  
DN100 ISO CF*

**nEXT400**  
*DN160 ISO-K or  
DN160 ISO CF*

The pump name refers to the true peak pumping speed for nitrogen gas.

The nEXT platform brings a high level of modularity to offer maximum flexibility for customer application and requirements. Each pump is available in two different internal configurations to offer differing performance

Duplex - "D" - variants with both turbomolecular and drag stages for improved tolerance to higher backing line pressures.

Triplex - "T" - variants with turbo, drag and Edwards unique fluid dynamic stages for the ultimate in compression ratio and Boost technology for maximum vacuum system rationalisation.

## Boost technology

“T” variants of nEXT employ a unique viscous pumping stage which can be used to ‘boost’ the performance of the backing pump. This offers a much simplified vacuum solution with greatly improved pumping speeds and system power reduction. The example in the image below shows how the boost ports can be used to replace a primary pump on a differentially pumped system.

To take maximum advantage of boost technology, please contact Edwards.



## Service

New technologies employed in nEXT have enabled the pumps to be serviced by the end user in the field. An interim oil lubrication change can be performed, where access allows in-situ, typically in less than 5 minutes with the minimum of specialist tooling. This simple intervention will greatly extend the lifetime of the pump in the field.

nEXT pumps will advise the user when a service is due and what level of intervention is required. The request for service is by a simple flashing LED sequence on the pumps and by serial comms notification.

Flexibility is again key as these simple services can be performed either by the end user, on site by an Edwards Field Service Technician, or the pump can be returned to an Edwards service hub.

Using remote diagnostics a user can interrogate the pump to determine how long it is to the next service so that a proactive approach to preventative maintenance can be planned.



## Technical data

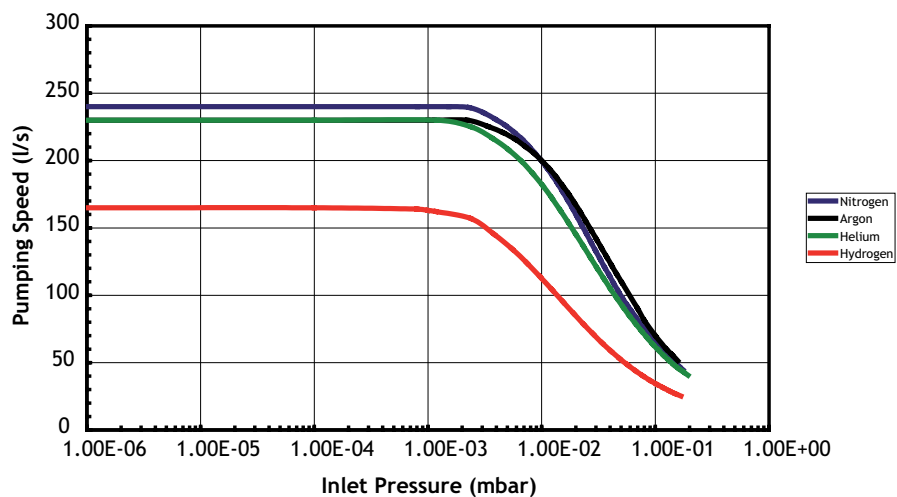
		nEXT240	nEXT300	nEXT400
Inlet flange		DN100 ISO-K or DN100CF	DN100 ISO-K or DN100CF	DN160 ISO-K or DN160-CF
Inlet pumping speed (l/s)	N <sub>2</sub>	240	300	400
	He	230	340	390
	H <sub>2</sub>	165	280	325
Compression ratio (D)	N <sub>2</sub>	>1 x 10 <sup>11</sup>	>1 x 10 <sup>11</sup>	>1 x 10 <sup>11</sup>
	He	3 x 10 <sup>5</sup>	1 x 10 <sup>6</sup>	1 x 10 <sup>8</sup>
	H <sub>2</sub>	1 x 10 <sup>4</sup>	5 x 10 <sup>4</sup>	5 x 10 <sup>5</sup>
Compression ratio (T)	N <sub>2</sub>	>1 x 10 <sup>11</sup>	>1 x 10 <sup>11</sup>	>1 x 10 <sup>11</sup>
	He	1 x 10 <sup>6</sup>	3 x 10 <sup>6</sup>	>1 x 10 <sup>8</sup>
	H <sub>2</sub>	1.5 x 10 <sup>4</sup>	1 x 10 <sup>5</sup>	1 x 10 <sup>6</sup>
Interstage pumping speed (l/s)	N <sub>2</sub>	13	13	13
	He	13	13	13
	H <sub>2</sub>	11	11	11
Backing/interstage/boost ports		NW25	NW25	NW25
Vent/purge port		1/8" BSPP	1/8" BSPP	1/8" BSPP
Critical backing pressure D (mbar)		9.5	9.5	10
Critical backing pressure T (mbar)		20	20	20
Maximum continuous inlet flow (nitrogen, sccm)				
Water cooling (40°C ambient)		45	95	105
Forced air cooling (35°C ambient)		30	115	90
Natural convection (30°C ambient)		10	35	45
Maximum continuous backing pressure (mbar)				
Water cooling (40°C ambient)		6	6.8	7.5
Forced air cooling (35°C ambient)		4.8	7	7.5
Natural convection (30°C ambient)		1	2.8	4
Recommended backing pump*		RV12/XDS10	RV12/XDS10	RV12/XDS10
Peak booster speed m <sup>3</sup> h <sup>-1</sup> (T variants)				
RV12	N <sub>2</sub>	26	26	26
XDS10	N <sub>2</sub>	24	24	24
Normal rotational speed (rpm)		60,000	60,000	60,000
Start time to 90% speed (sec) D (T)		115 (150)	145 (190)	180 (210)
Sound pressure level at 1 m (dBA)		<45 (+/-3)	<45 (+/-3)	<45 (+/-3)
Mass (kg) D (T)	ISO	5.7 (6)	5.7 (6)	6.5 (6.8)
	CF	8.8 (9.1)	8.5 (8.8)	9.5 (9.8)

\* a smaller backing pump may be used depending on application.

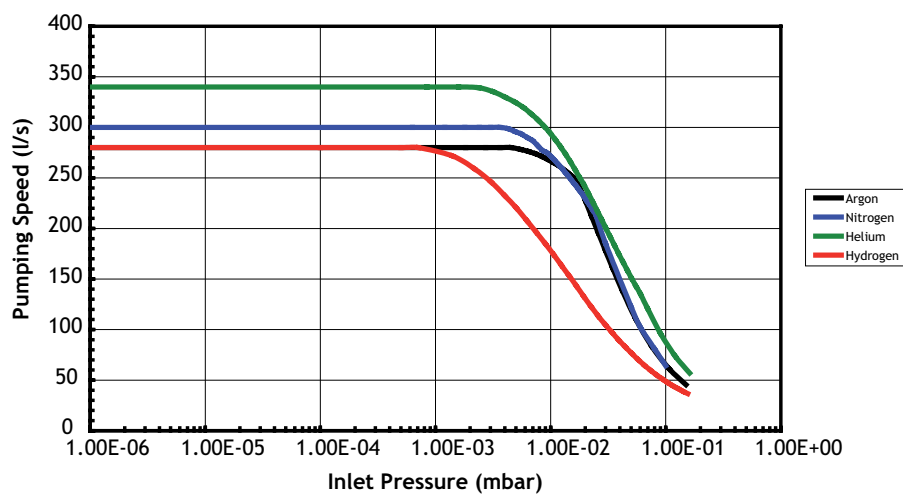


# Performance

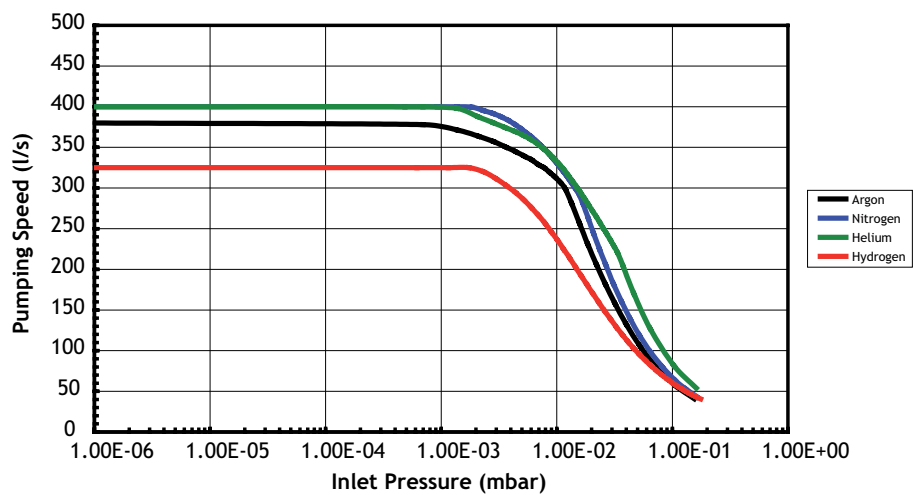
### nEXT240D Pumping Speed



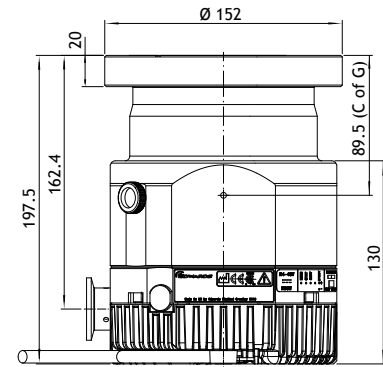
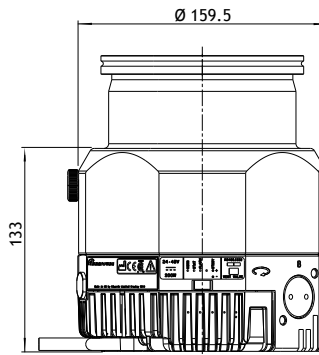
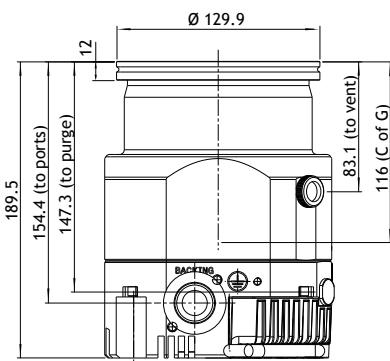
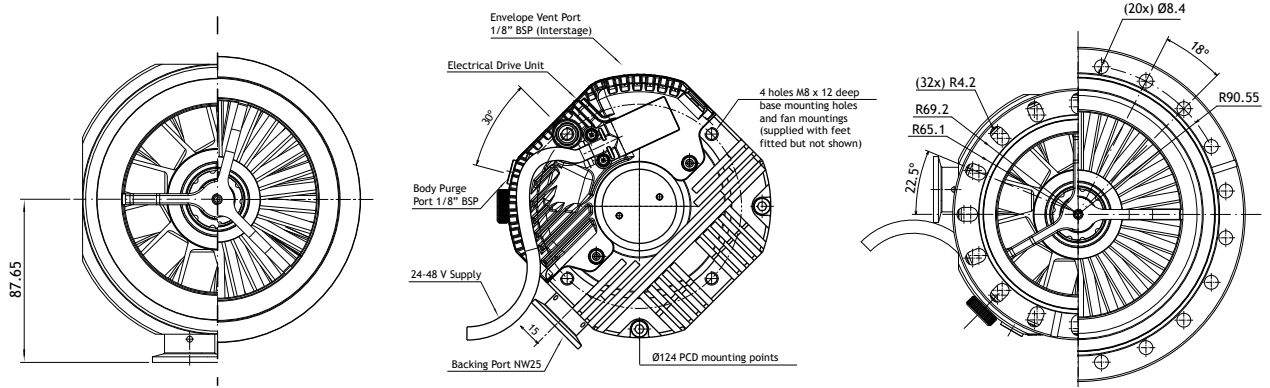
### nEXT300D Pumping Speed



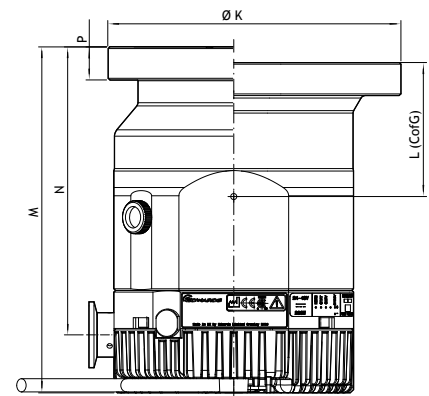
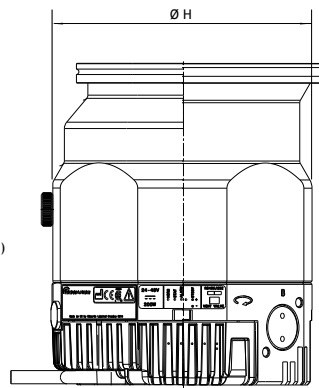
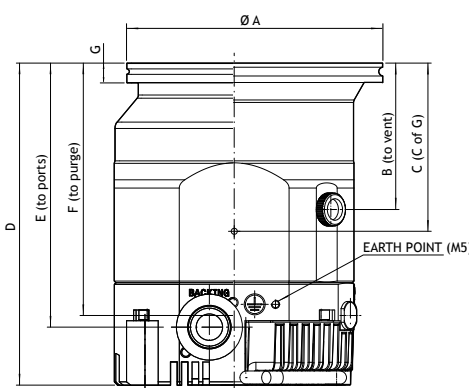
### nEXT400D Pumping Speed



# Dimensions



**nEXT240**



**nEXT300/400**

	A	B	C	D	E	F	G	H	J	K	L	M	N	P
nEXT300	129.9	88.7	117	195	159.5	152.8	12	159.9	87	152	81.1	200	164.9	20
nEXT400	179.9	88.7	102	195	159.5	152.8	12	159.9	87	202.4	100.4	209.5	174.4	20

## Controllers and accessories

The TIC turbo and instrument controller automatically recognises and supports 1 turbo-molecular pump from the nEXT range, plus 3 Edwards's active gauges. Cooling and vent valve support is provided directly from the controller. Backing pump power is provided for a compact 24V diaphragm pump (on 200W versions only), or where greater pumping speeds are required, mains backing pumps (up to RV12/XDS10) may be controlled via an optional relay box.

The relay box can also be used to control a mains heater band and backing line isolation valve. Time delays and normal speed signals may be used to control events such as turbo start and there is a comprehensive selection of protection and safety interlock features.

The TIC turbo controller may be either rack or bench mounted and provides a useful hub for the flexible operation of a wide range of vacuum system configurations.

The TAG (Turbo & Active Gauge) controller is a small, compact, low cost pumping system Controller, which is suitable for a wide range of vacuum applications. It is a 24V controller that is compatible with all Edwards DX and nEXT turbopumps. It contains no power source and thus you either need to supply your own power or buy the optional power supply. In addition to a turbopump it can control a backing pump, a vent valve, an air cooler and an Edwards active gauge.

The TAG Controller is controlled by an easy to use interface. A large clear LED display shows the pump speed or vacuum pressure. The compact size of the controller is ideal for use on bench-tops or suitable mobile platforms.

A selection of common Accessories is shown below - for a full list of available accessories, please contact Edwards or visit our website:

Order No.	Description	Order No.	Description
D39721000	TIC (Turbo & Instruments) 100 W	D39592000	TAG Turbo and Active Gauge Controller
D39722000	TIC (Turbo & Instruments) 200 W	D39592800	200 W power supply
B58066010	TAV 5 Vent Valve	D39700835	Turbo extension cable 1 m
B58066020	TAV 6 Vent Valve	D39700836	Turbo extension cable 2 m
B58053175	nEXT Radial Fan	D39700837	Turbo extension cable 5 m
B58053185	nEXT Axial Fan		
B80000815	nEXT Water Cooling Block		



## Ordering information

A selection of some of the more common part numbers are shown below.

Description		Order No.	Order No.
Pump	Flange	Max power - 80W	Max power - 160W
nEXT240D	DN100 ISO-K	B81200101	B81200100
	DN100 ISO-CF	B81200201	B81200200
nEXT300D	DN100 ISO-K	B82200101	B82200100
	DN100 ISO-CF	B82200201	B82200200
nEXT400D	DN160 ISO-K	B83200301	B83200300
	DN160 ISO-CF	B83200401	B83200400

Note that all nEXT pumps are supplied with a coarse inlet screen. Fine grade screens are available upon request. Interstage and/or T variants both with selectable port positions available upon request.

# Global contacts

## Belgium

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## Brazil

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Sao Paulo +55 11 3952 5000

## China

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Shanghai (toll free) 400 111 9618

## France

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## Germany

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Munich 0800 000 1456

## India

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## Israel

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## Italy

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Yachiyo +81 47 458 8831

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Bundang +82 31 716 7070

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## United Kingdom

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UK (local rate) 08459 212223

## United States

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Niagara (toll free) 1 800 848 9800