



# *nEXT*

*THE NEW EXPERIENCE  
IN TURBOPUMPS*



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# nEXT TURBO

## 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.*

### Features & Benefits

- *State-of-the-art rotor design to deliver exceptional pumping speeds and compression ratios.*
- *Field-proven reliability in the most demanding environments.*
- *Standard fit in many of the leading scientific instruments with over 100,000 turbopumps installed.*
- *Fully end-user self-serviceable in minimum time without complex tooling or major disassembly... you can do it.*

# nEXT - The new experience in turbopumps

Backwards compatible  
EXT and DX ranges  
performance in a small  
envelope

Compact design allows for close  
pitch positioning in multiple pump  
installations

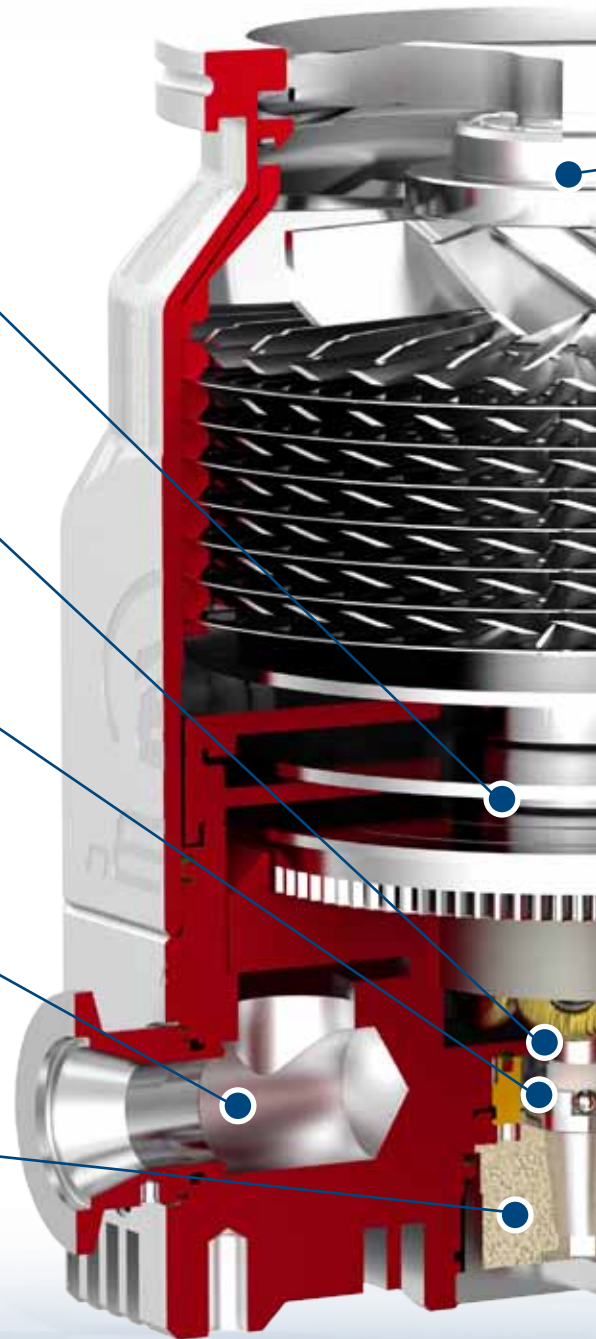
Multiple drag stages for higher  
compression ratios and greater  
backing pressure tolerance

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

Patented ceramic bearing suspension  
system provides a simple bearing  
changes in under five minutes in the  
field, with minimum disassembly and  
no need to rebalance the rotor

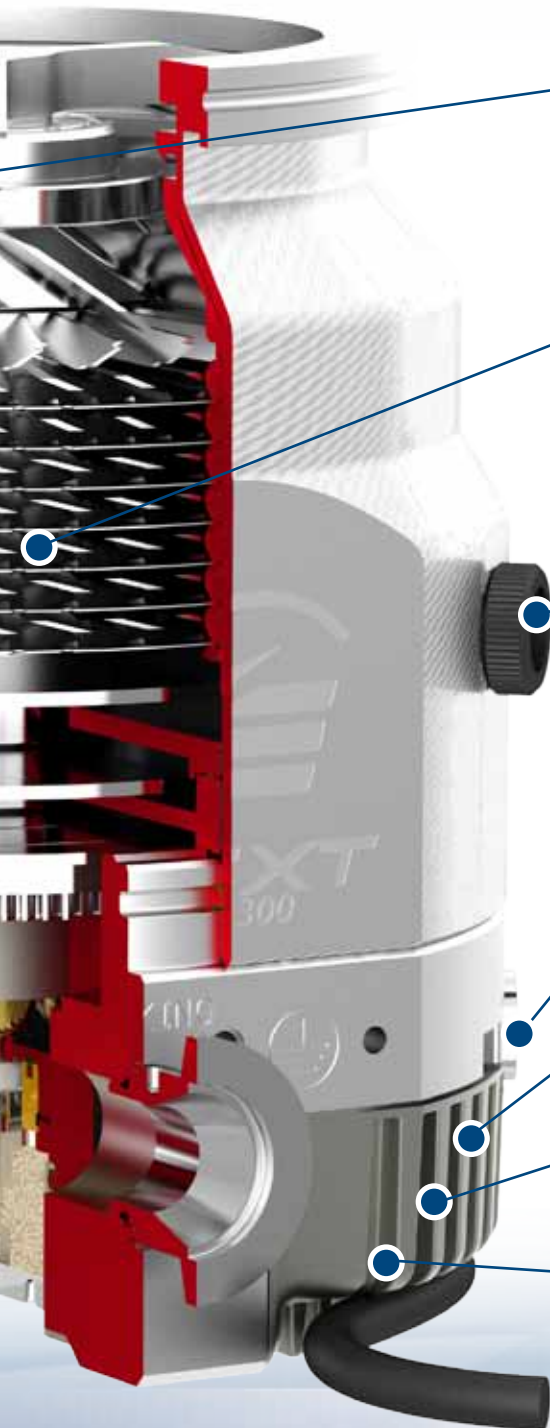
Regenerative stage 'Boost' port  
option for reduced pump numbers  
in differentially pumped systems for  
maximum system rationalisation

User replaceable oil cartridge for a  
speedy interim service



Compatible with existing  
controllers offering superior  
performance in smaller space

Compatible with Edwards TIC  
Controllers



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

# *nEXT - The new experience in turbopumps*

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

nEXT is available in three sizes:



**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 turbo-molecular 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.

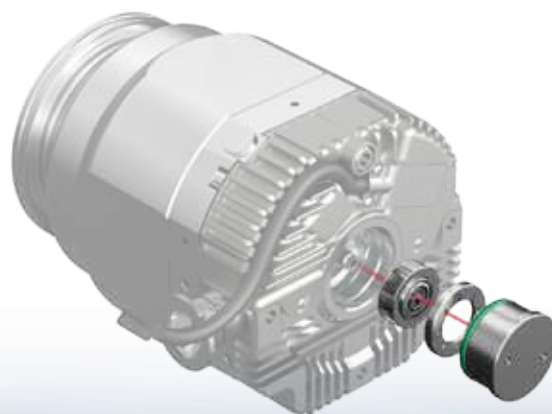
## Service

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. A bearing and oil lubrication service can be performed with minimum disassembly in less than 10 minutes, using basic workshop tools and an Edwards tool kit.

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.



# nEXT - The new experience in turbopumps

## 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)

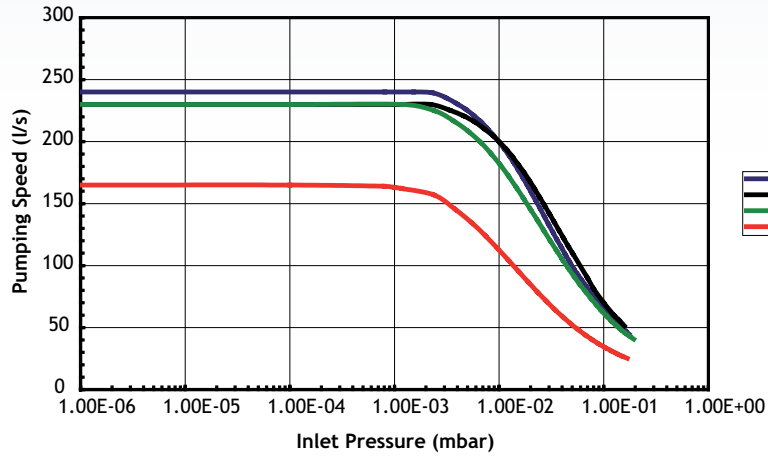
\* a smaller backing pump may be used depending on application.



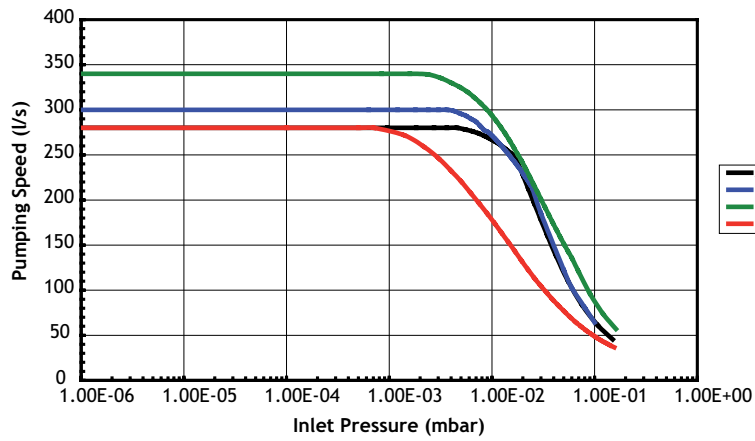
# Pumping Speed Curves



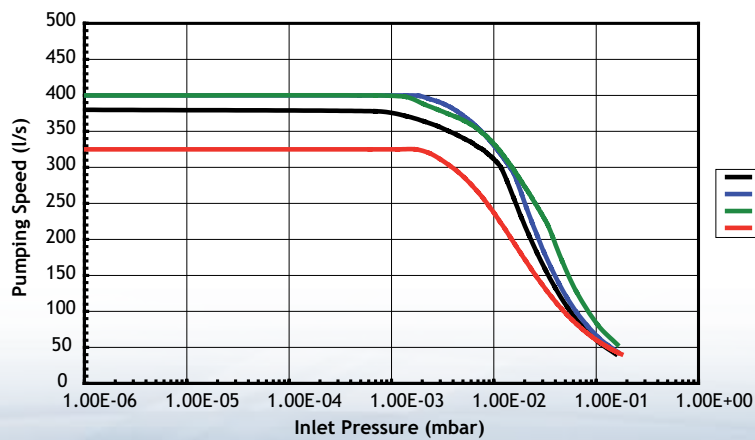
nEXT240D Pumping Speed



nEXT300D Pumping Speed

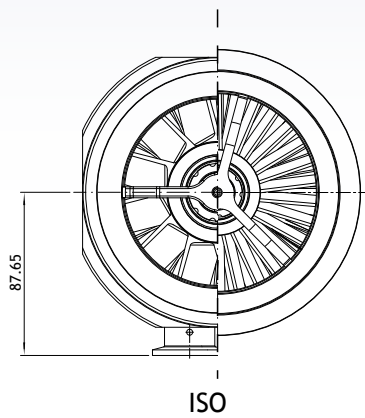


nEXT400D Pumping Speed

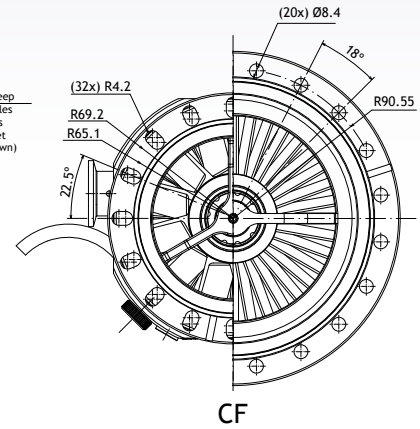
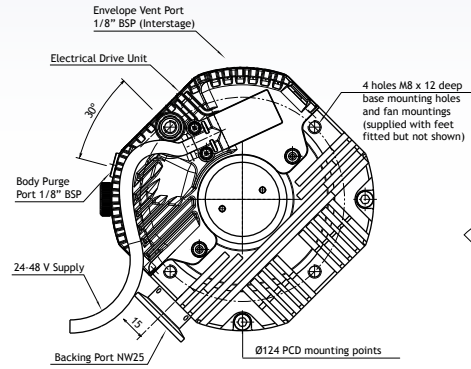


# nEXT - The new experience in turbopumps

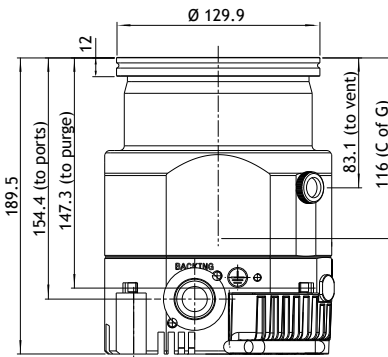
## Dimensions



ISO

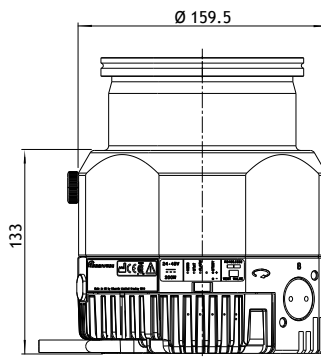


CF

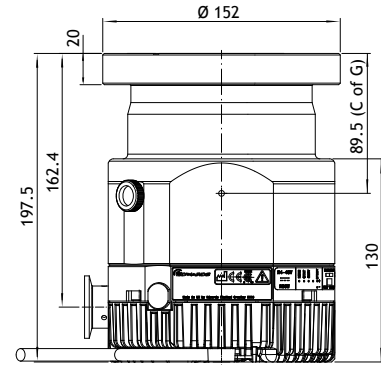


nEXT240

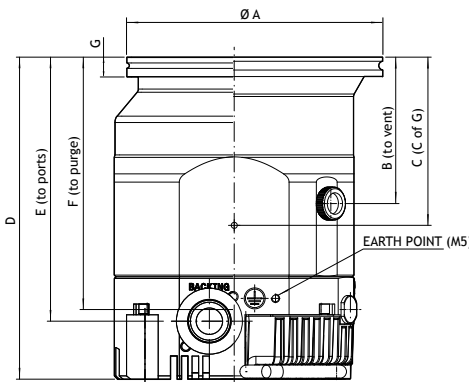
ISO



ISO

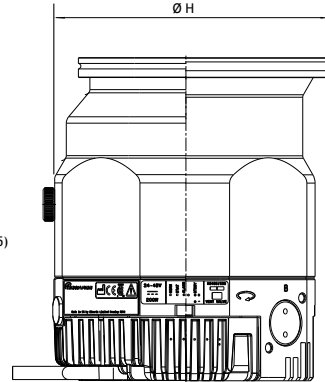


CF

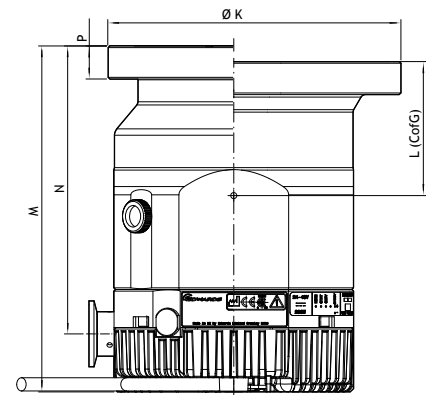


nEXT300/400

ISO



ISO



CF

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



## nEXT part numbers

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.

## 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.

A selection of common Accessories is shown below:

Order No.	Description	Order No.	Description
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	D39721000	TIC (Turbo & Instruments) 100 W
B80000815	nEXT Water Cooling Block	D39722000	TIC (Turbo & Instruments) 200 W

For a full list of available accessories, please contact Edwards or visit our website.

Edwards – the company you have known and trusted for nearly 100 years - continues to deliver innovative vacuum pumps and related systems. We strive to lower your cost of ownership, increase your productivity and enhance your final product quality. Edwards products are based on a solid foundation of manufacturing excellence, field-proven technologies and are supported by a renowned global services network.

Edwards stands behind each product with exceptional integrity and strength, supporting our customers beyond standard expectations. Edwards is essential to your process.

### **PRODUCTS:**

- Dry Vacuum Pumps
- Oil-sealed Vacuum Pumps
- Turbomolecular Pumps
- Exhaust Management
- Integrated Vacuum and Abatement
- Liquid Abatement
- Chillers
- Vacuum System Components

### **SERVICES:**

- Equipment Service and Repair
- Product Exchange
- Refurbished Equipment
- Field and On-site Services
- Remote e-Diagnostics
- Product Training

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