

# VACUUM EQUIPMENT FOR RESEARCH AND DEVELOPMENT





## DEDICATED TO SCIENCE

Complete vacuum solutions for laboratory and R&D applications.

At Edwards we have a deep understanding of research processes and the role that vacuum plays at every stage. This experience, coupled with innovative technologies and collaborative engineering, enables us to offer a comprehensive range of vacuum solutions that enhance performance across a broad range of scientific applications.

From the smallest school laboratory, to international R&D projects, our products and application know-how are facilitating educational development and scientific evolution across the globe.

This brochure contains the most common Edwards products used in a typical R&D or laboratory facility. There are many more products available via our website or by contacting your local sales representative.

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## OUR VACUUM PRODUCTS

We offer the broadest range of both dry and oil sealed primary pumps which have become the industry standard due to their high reliability, performance capabilities and serviceability. For applications requiring high vacuum our comprehensive range of hybrid bearing and magnetically levitated turbomolecular pumps are available with pumping speeds from 47 to 4300  $\text{ls}^{-1}$ .

When a ready to go high vacuum pumping solution is required, we have a range of turbomolecular pumping stations, combining a backing pump, turbomolecular pump and controller into a compact package; or our unique single-shaft regenerative and Holweck primary pump which operates from atmosphere to  $10^{-6}$  mbar in a single unit.

For applications involving UHV and XHV we offer the broadest range of capture pumps including ion pumps, titanium sublimation pumps and non-evaporable getter pumps, achieving pressures of  $10^{-11}$  mbar or lower.

# VACUUM PRODUCTS FOR KEY APPLICATIONS

	Dry scroll pumps	Multistage roots pumps	Rotary vane pumps	Turbomolecular pumps	Turbomolecular pumping stations	Magnetically levitated turbomolecular pumps	Ultra high vacuum pumps	Measurement and control	Leak detection and measurement	Components and hardware
Page number	6	17	21	29	39	47	51	60	70	74
APPLICATION										
Backing diffusion pumps	•		•					•	•	•
Backing turbomolecular pumps	•	•	•		•			•	•	•
Centrifugal concentration	•		•					•	•	•
Coating technology	•		•	•	•	•		•	•	•
Distillation and extraction apparatus	•	•	•					•	•	•
Electron microscopes	•	•	•	•	•	•	•	•	•	•
Freeze dryers	•		•					•	•	•
Fume hoods and glove boxes	•	•	•					•	•	•
Gas recovery and recirculation	•	•	•	•	•	•		•	•	•
Gel dryers	•	•	•					•	•	•
High energy physics	•	•	•	•	•	•	•	•	•	•
Initial pump down and regeneration of cryopumps	•	•	•	•	•	•		•	•	•
Lasers	•		•	•	•	•	•	•	•	•
Leak detectors	•		•	•	•			•	•	•
Load locks	•		•		•			•	•	•
Mass spectrometers	•	•	•	•	•	•	•	•	•	•
Mass spectrometry inlet systems	•		•					•	•	•
Molecular beam epitaxy	•		•	•	•	•	•	•	•	•
Particle size analysers	•		•	•				•	•	•
Refrigeration and air conditioning	•	•	•					•	•	•
Rotary evaporation	•	•	•					•	•	•
Sample preparation	•	•	•					•	•	•
Surface science	•		•	•	•	•	•	•	•	•
UHV and XHV systems	•	•	•	•	•	•	•	•	•	•
Ultra high-speed centrifuges	•		•					•	•	•
Vacuum filtration	•	•	•					•	•	•
Vacuum ovens	•	•	•					•	•	•

# mXDS DRY SCROLL PUMPS



Extending the Edwards small dry pump portfolio, mXDS3 continues our scroll pump experience. A small dry alternative to oil sealed rotary vane pumps and diaphragm pumps of a similar capacity.

The mXDS3 dry scroll pump delivers  $3\text{m}^3\text{h}^{-1}$  pumping speed together with an ultimate pressure of 0.1 mbar making it well suited for backing turbomolecular pumps.

mXDS3 are offered as standard or configured with an inlet valve accessory and exhaust silencer/filter to become the mXDS3s. Both offer the same vacuum performance and feature an IEC connector for main supply and an on/off switch for easy control.

This compact dry pump offers flexibility to the system designer and end user alike with a wide range of accessories available to choose from to meet your configuration requirements.



## PRODUCT FEATURES

### DRY PUMP

no oil to check, replace and dispose of making this pump more environmentally friendly.

### EXCELLENT PERFORMANCE

with a pumping speed of  $3\text{m}^3\text{h}^{-1}$  and a good ultimate vacuum 0.1mbar makes these pumps well suited for backing turbomolecular pumps.

### FLEXIBLE

typically can be mounted horizontally but can also be mounted vertically, giving flexibility to the system builder.

### COMPACT

at only 8kg it is well suited for integration into OEM and analytical instruments, small system builder and laboratories.

### QUIET OPERATION

with low noise level, it makes for a better-quality working environment.

### LOW MAINTENANCE

tip seal change when required (typically 2 years).

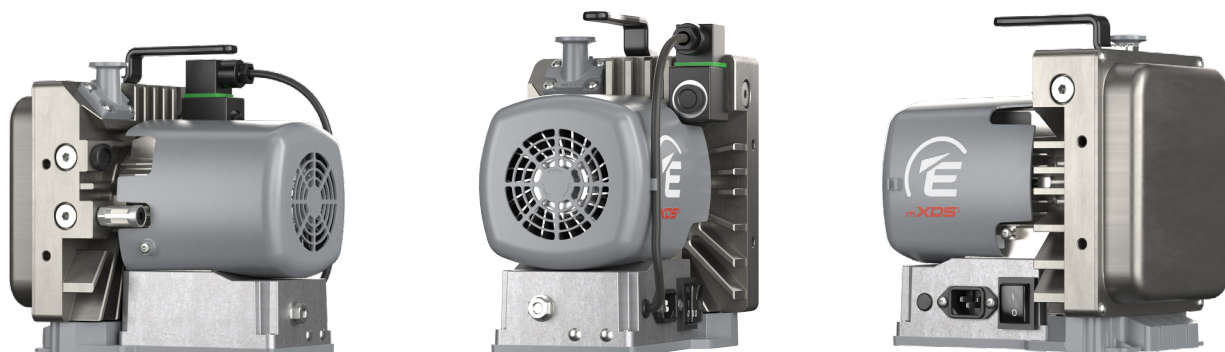
## Technical data

	Units	mXDS3	mXDS3s
<b>VACUUM DATA</b>			
Ultimate vacuum with closed gas ballast	mbar (Torr)	0.1 (0.075)	
Ultimate vacuum with gas ballast (1 turn)	mbar (Torr)	0.15 (0.113)	
Peak pumping speed (50Hz)	m <sup>3</sup> h <sup>-1</sup>	3	
Peak pumping speed (60Hz)	m <sup>3</sup> h <sup>-1</sup>	3.5	
Maximum continuous inlet pressure *	mbar l	1000	
Typical initial pressure rise on power loss (no inlet valve, with no inlet or gas ballast flow)	mbar l	5	
Water vapour handling capacity	gh <sup>-1</sup>	Up to 20	
Maximum gas ballast/purge pressure	bar gauge	0.5	
<b>MOTOR DATA</b>			
Supply voltage	V	100 +/- 6% 1 phase	
		115 +/- 10% 1 phase	
		200 +/- 10% 1 phase	
		230 +/- 10% 1 phase	
Supply frequency	Hz	50/60	
Nominal rotation speed		3000 rpm @ 50 Hz / 3600 rpm @ 60 Hz	
Power consumption at ultimate	W	180	210
Power connector		IEC EN60320 C13	
Recommended fuse, 230 V (115 V)	A	10 (13)	
<b>PHYSICAL DATA</b>			
Weight	kg	7.8	8
Overall dimensions (LxWxH)	mm	224 x 158 x 231	
Inlet connection		DN 16 ISO-KF	
Outlet connection	inch	1/8 inch BSP suitable for 6x8mm hose	1/8 inch BSP suitable for 6x8mm hose. Exhaust filter supplied
Noise level at ultimate	dB(A)	54.0 ±2.5	
Vibration measured at plane of bearing	mms <sup>-1</sup> (rms)	Class 1C <4.5 (rms radial)	
Leak tightness	mbar ls <sup>-1</sup>	1x10 <sup>-4</sup>	
Operating temperature range	°C	+5 to +40	

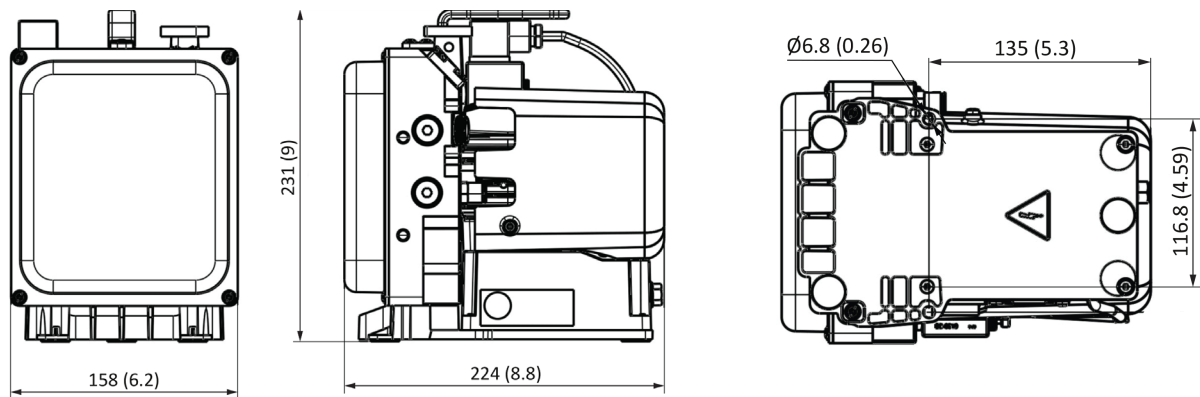
(1) These pumps are designed to pump down from atmospheric pressure, but prolonged operation at high inlet pressures may reduce bearing life.

(2) These pumps are intended to exhaust to atmospheric pressure. High exhaust pressure may reduce tip-seal life.

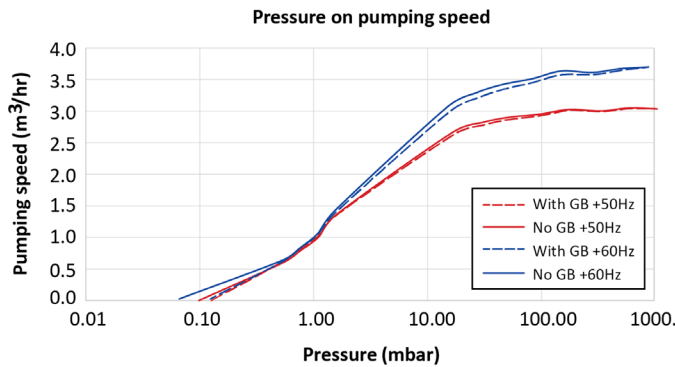
(3) Large volumes may be pumped, but prolonged operation at high inlet pressures may reduce bearing life.



## Dimensions



## Performance



## Ordering information

### Pumps:

PRODUCT DESCRIPTION	ORDER NO.
<b>Pumps:</b>	
High Volts 230V	mXDS3 230V 1ph 50/60Hz A74401903
	mXDS3s 230V 1ph 50/60Hz A74402903
High Volts 200V	mXDS3 200V 1ph 50/60Hz A74401904
	mXDS3s 200V 1ph 50/60Hz A74402904
Low Volts 115V	mXDS3 115V 1ph 50/60Hz A74401906
	mXDS3s 115V 1ph 50/60Hz A74402906
Low Volts 100V	mXDS3 100V 1ph 50/60Hz A74401907
	mXDS3s 100V 1ph 50/60Hz A74402907

### Accessories and spares:

PRODUCT DESCRIPTION	ORDER NO.
Inlet valve 100 - 120V	A74402920
Inlet valve 200 - 240V	A74402921
Delay relay	A74402922
Gas ballast or exhaust push-in fitting 1/8 inch BSP	A74402925
Gas ballast fine restrictor	A74402926
Inlet push-in fitting 1/4 inch BSP	A74402927
Accessories	
Inlet 1/4 inch BSP adaptor	A74402928
mXDS base mounting plate	A74402929
Bracket for vertical mounting	A74402930
Exhaust silencer / gas ballast filter 1/8 inch BSP	A74402931
Vibration isolator kit	A74402932
Adhesive rubber pads (pack of 4)	A74402933
Inlet filter DN25 ISO KF	A50597805
Cord sets	
Lead assembly, 10 amax, C13, UK	A50505000
Lead assembly, 10 amax, C13, europe	A50506000
Lead assembly, 10 amax, C13, USA	A50507000
Lead assembly, 10 amax, C13, no plug	A50508000
Spares	
Tip seal kit	GK7440001
Bearing replacement kit	GK7440002
Gas ballast and exhaust kit	GK7440003
Inlet KF16 adaptor kit	GK7440004



# nXDS DRY SCROLL PUMPS

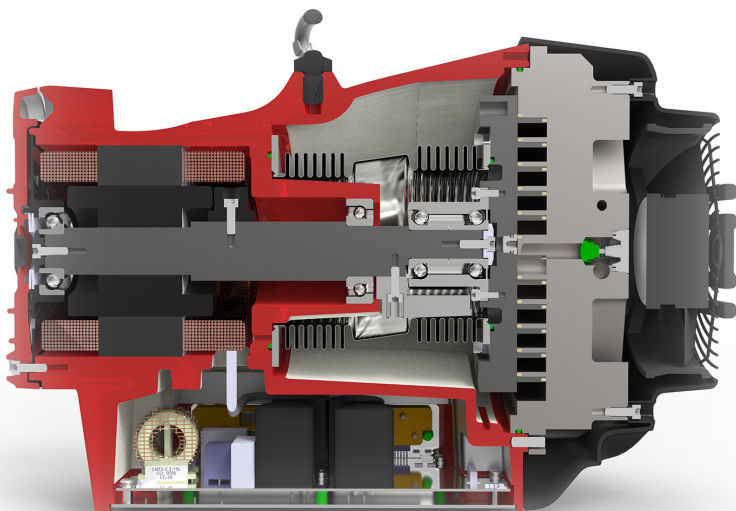


With exceptional pumping capability, ultimate vacuum performance and state-of-the-art design features, the nXDS dry scroll pump is the best performing pump in its class.

nXDS improves on other scroll pumps by offering increased pumping speeds, combined with lower ultimate pressures, low power consumption and reduced noise. The gas ballast allows for pumping of condensable vapours, including water, solvents, dilute acids and bases. nXDS pumps feature the very latest in tip seal technology, giving a significantly longer life between tip seal changes.

nXDS-C has been modified so that it is more suitable for use on vapour handling processes and may be used in some applications involving corrosive substances. This chemically resistant version is fitted with Chemraz® internal valve pads and stainless steel fittings.

nXDS-R has the gas ballast blanked off so it cannot be accidentally opened. This is useful for applications such as rare gas recirculation or gas recovery.



## PRODUCT FEATURES

### TEMPERATURE CONTROLLED FAN

allows reduced fan speed under low load conditions for reduced acoustic noise from only 52 dB(A).

### BEARING SHIELD

ensures separation between process gases and bearing lubrication to ensure clean vacuum and no possibility of contamination to lubrication from process gases, which prolongs bearing life.

### INVERTER DRIVE

means consistent performance globally, ease of control, lower power consumption and automatic voltage adjustment delivering the ultimate in user experience.

### ENHANCEMENTS IN SCROLL DESIGN

deliver higher speeds and a decade lower ultimate pressures than first generation scroll pumps with ultimate from only  $7 \times 10^{-3}$  mbar

### IMPROVED TIP SEAL TECHNOLOGY

delivers a step change in life, with a typical tip seal life of more than 2 years on most applications.

### HIGH FLOW GAS BALLAST FEATURE

allows pumping of vapours including water vapour at up to  $220 \text{ gh}^{-1}$ .

## Technical data

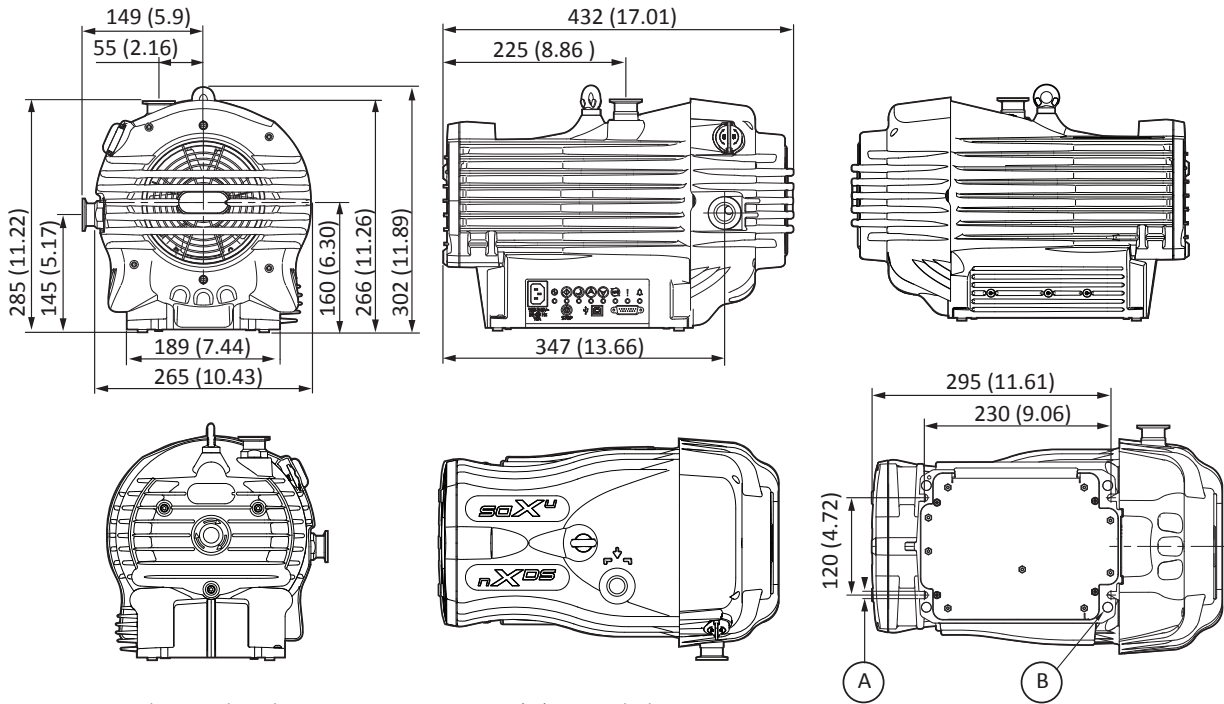
	Units	nXDS6i	nXDS10i	nXDS15i	nXDS20i
<b>VACUUM DATA</b>					
Peak pumping speed	m <sup>3</sup> h <sup>-1</sup> (cfm)	6.2 (3.6)	11.4 (6.7)	15.1 (8.9)	22.0 (13.0)
Ultimate vacuum <sup>(1)</sup>	mbar (Torr)	0.02 (0.015)	0.007 (0.005)		0.03 (0.022)
Ultimate vacuum with gas ballast	mbar (Torr)	0.05 (0.038)	0.04 (0.03)		0.06 (0.045)
Water vapour tolerance	mbar (Torr)	35 (26)		20 (15)	
Water vapour handling capacity	gh <sup>-1</sup>	110	145	240	220
Maximum continuous inlet pressure <sup>(2)</sup>	mbar a (Torr a)	200 (150)			50 (38)
Maximum gas ballast/purge pressure	bar gauge (psig)	0.5 (7)			
<b>MOTOR DATA</b>					
Supply voltage	V	100-127/200-240 (+/-10%)			
Supply frequency	Hz	50/60			
Nominal rotational speed	rpm	1800			
Minimum standby rotational speed	rpm	1200			
Speed control resolution	%	1			
Power at ultimate	W	260	280	300	260
Motor power	W	660			
Power connector		IEC EN60320 C13			
Recommended fuse, 230 V (115 V)	A	10 (13)			
<b>PHYSICAL DATA</b>					
Weight	kg (lb)	26.2 (58)	25.8 (57)	25.2 (56)	25.6 (56)
Inlet connection		NW25			
Exhaust connection		NW25			
Noise level at ultimate	dB(A)	52			
Noise level with acoustic enclosure	dB(A)	47			
Vibration at inlet flange	mms <sup>-1</sup> (rms)	< 4.5			
Leak tightness (static)	mbar ls <sup>-1</sup>	< 1 x 10 <sup>-6</sup>			
Operating temperature range	°C (°F)	10 to 40 (50 to 104)			

(1) Measured as total pressure.

(2) These pumps are designed to pump down from atmospheric pressure, but prolonged operation at inlet pressures higher than specified may reduce bearing life.



# Dimensions

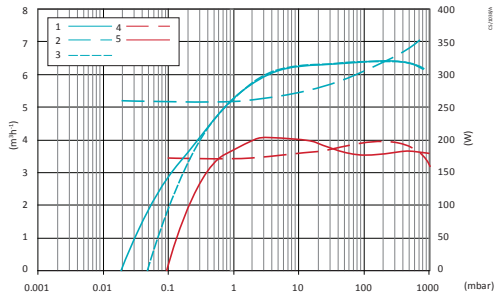


All nXDS variants are the same physical size  
Dimensions in millimetres (inches)

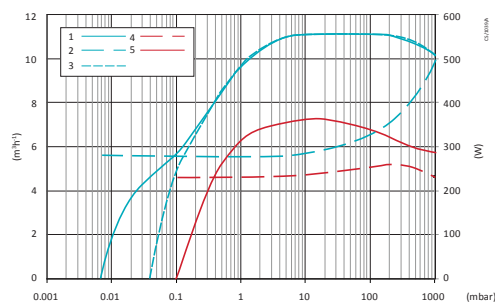
A. (4x) 9 mm wide slots  
B. (4x) Rubber feet

# Performance

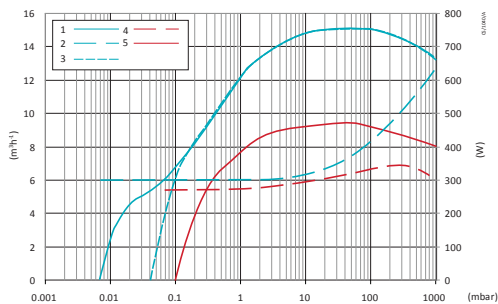
nXDS6i



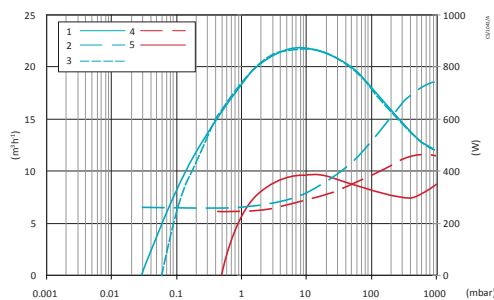
nXDS10i



nXDS15i



nXDS20i



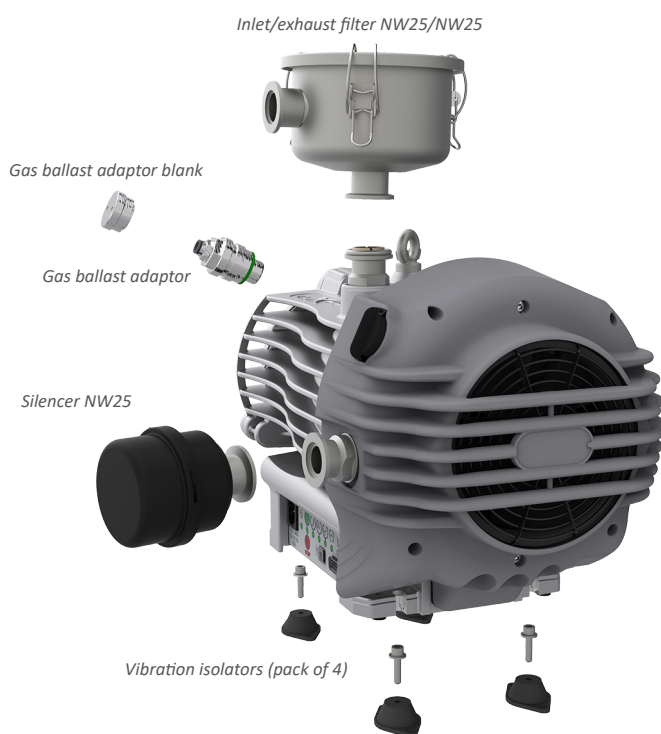
1. Normal pumping speed
2. Normal full power
3. Normal GB speed
4. Min standby power
5. Min standby speed

## Ordering information

### Pumps:

PRODUCT DESCRIPTION		ORDER NO.
Standard product	nXDS6i	A73501983
	nXDS10i	A73601983
	nXDS15i	A73701983
	nXDS20i	A73801983
Corrosion resistant variants (C)	nXDS6iC	A73502983
	nXDS10iC	A73602983
	nXDS15iC	A73702983
	nXDS20iC	A73802983
Variants without gas ballast (R)	nXDS6iR	A73503983
	nXDS10iR	A73603983
	nXDS15iR	A73703983
	nXDS20iR	A73803983

### nXDS with common accessories

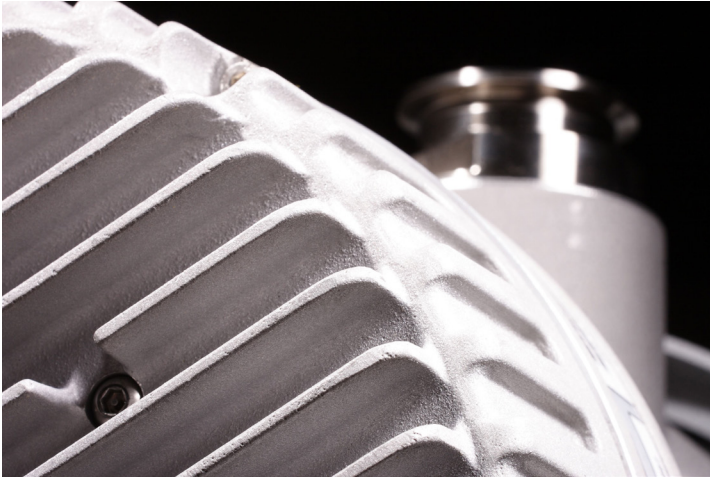


### Accessories and spares:

PRODUCT DESCRIPTION	ORDER NO.	
Accessories	Inlet/exhaust filter NW25	A50597805
	Gas ballast adaptor blank	A73501806
	Gas ballast adaptor with 0.25 mm restrictor	A73501809
	Gas ballast adaptor with no restrictor	A73501811
	Silencer NW25	A50597000
	Vibration isolators (pack of 4)	A24801441
	Acoustic enclosure 110-120 V	NRY5C0000
	Acoustic enclosure 200-240 V	NRD797000
Spares	Tip seal kit	A73501801
	Bearing replacement kit <sup>(1)</sup>	A73501802
	Exhaust and ballast valve kit (standard and R version)	A73501803
	Exhaust and ballast valve kit (C version only)	A73501804
	Chemical adaptor kit for nXDS6i, 10i or 15i	A73501807
	Chemical adaptor kit for nXDS20i	A73501808
	Inlet/exhaust filter spares - 5 micron element	A50597802
	Inlet/exhaust filter spares - 1 micron element	A50597803
	Silencer spares kit	A50597800
	Cooling fan	A73501707
	Gas ballast control knob	A73501059
	Cord sets	UK, three pin plug
North European plug		A50506000
North American plug		A50507000
No plug		A50508000

(1) Tooling and training required.

# XDS DRY SCROLL PUMPS



XDS dry scroll pumps have become industry standard when dry pumping is essential, proving to be a robust and clean vacuum pump solution in a range of applications and processes, with smart drive technology to look after the pump and provide world-wide performance.

The XDS35i and XDS35i Enhanced have an innovative bearing shield that isolates the vacuum environment from all forms of lubricant, making it not only lubricant-free but hermetically sealed. XDS35iNGB variant has had the gas ballast feature removed for applications such as rare gas recirculation and gas recovery.

The C variant has been modified so that it is more suitable for use on vapour handling processes and may be used in some applications using corrosive substances. The C version is fitted with Chemraz® internal valve pads and stainless steel exhaust port.

The XDS46i shares many of the same features of the XDS35i but with a peak speed of  $40 \text{ m}^3\text{h}^{-1}$ . The pump has been optimised for maximum pumping speed at inlet pressures between 1 mbar and 10 mbar, making it ideally suited for backing turbomolecular pumps.



## PRODUCT FEATURES

### BEARING SHIELD

Ensures separation between process gases and bearing lubrication to ensure clean vacuum and no possibility of contamination to lubrication from process gases, which prolongs bearing life.

### INVERTER DRIVE

Means consistent performance globally, pump overload protection and remote start/stop capability.

### HIGH FLOW GAS BALLAST FEATURE

Allows pumping of vapours including water vapour at up to  $240 \text{ gh}^{-1}$ .

### UNIQUE AXIAL AIR GAP MOTOR

Reduces overall pump size and gives low power and noise.

### SIMPLE SINGLE SIDED SCROLL DESIGN

Allows maintenance to be done in minutes for low cost of ownership and maximum up-time.

### TAKE ANOTHER STEP

The Enhanced versions offer up to 20% lower peak power requirements during initial pump down which means it has the ability to pump down large volume chambers with no loss of performance and has up to 25% more pumping speed at these roughing pressures which helps on higher frequency cycling applications as well.

## Technical data

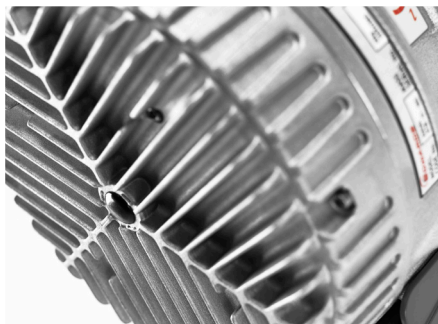
	Units	XDS35i	XDS35i Enhanced	XDS46i
<b>VACUUM DATA</b>				
Peak pumping speed	m <sup>3</sup> h <sup>-1</sup> (cfm)	35 (21)		40 (23.5)
Ultimate vacuum <sup>(1)</sup>	mbar (Torr)	0.01 (0.008)	0.03 (0.02)	0.05 (0.04)
Ultimate vacuum with gas ballast 1	mbar (Torr)	0.02 (0.015)	0.04 (0.03)	0.08 (0.06)
Ultimate vacuum with gas ballast 2	mbar (Torr)	10 (7.5)		
Water vapour tolerance	mbar (Torr)	35 (23)		40 (30)
Water vapour handling capacity	gh <sup>-1</sup>	240		
Maximum continuous inlet pressure <sup>(2)</sup>	mbar a (Torr a)	40 (30) <sup>(2)</sup>	1000 (760)*	40 (30)
Maximum gas ballast/purge pressure	bar gauge (psig)	0.5 (7)		
<b>MOTOR DATA</b>				
Supply voltage	V	100-120/200-240 (+/- 10%)		
Supply frequency	Hz	50/60		
Nominal rotation speed	rpm	1750		
Power at ultimate	W	440		380
Motor power	W	520		
Power connector		IEC EN60320 C19		
Recommended fuse, 230 V (115 V)	A	16 <sup>(3)</sup> (20)		16 <sup>(3)</sup> (15)
<b>PHYSICAL DATA</b>				
Weight	kg (lb)	48 (105)		
Inlet connection		NW40		
Exhaust connection		NW25		
Noise level at ultimate	dB(A)	57		55.4
Noise level with acoustic enclosure	dB(A)	48		46.4
Vibration at inlet flange	mms <sup>-1</sup> (rms)	< 4.5		
Leak tightness (static)	mbar ls <sup>-1</sup>	< 1 x 10 <sup>-6</sup>		
Operating temperature range	°C (°F)	5 to 40 (41 to 104)		

\* Use at higher inlet pressure speeds up tip seal wear

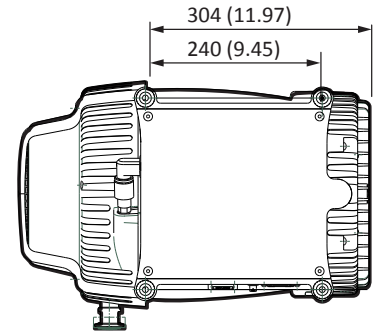
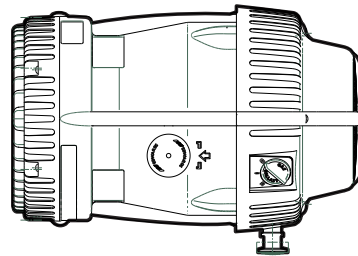
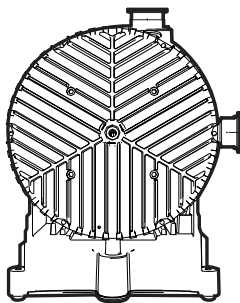
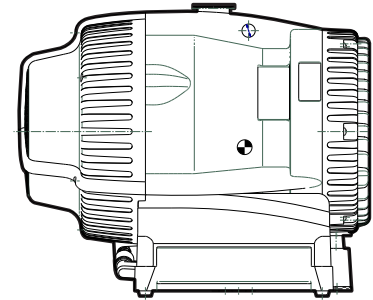
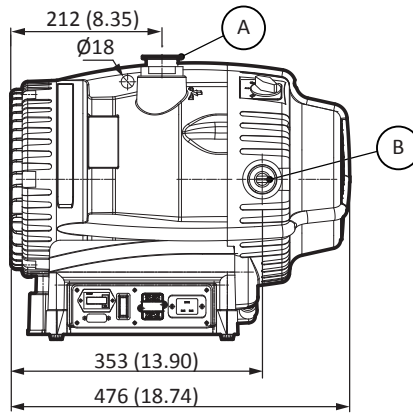
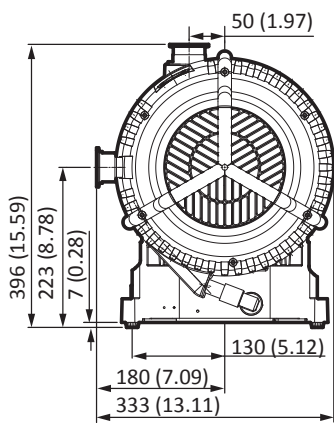
(1) measured as total pressure

(2) These pumps are designed to pump down from atmospheric pressure, but prolonged operation at inlet pressures higher than specified may reduce bearing life.

(3) for UK 240 V use 13 A fuse



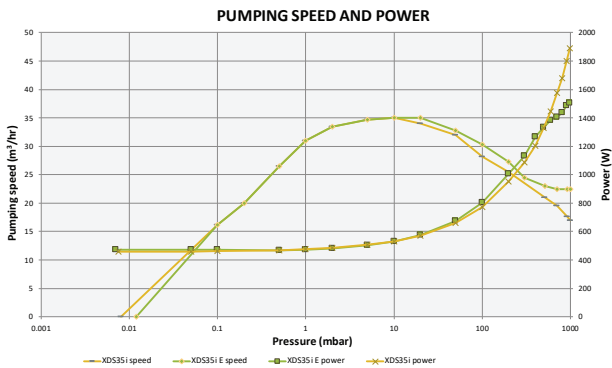
# Dimensions



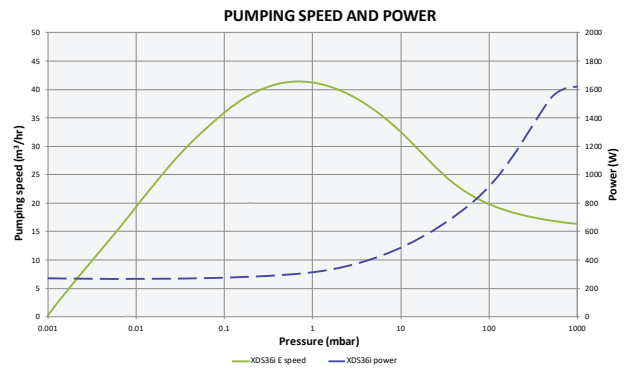
A. NW40  
B. NW25

# Performance

## XDS35i



## XDS46i



The graph shows typical pump performance. Note that peak power for XDS35i is supplied for a short period of time before the intelligent drive reduces the power and speed. XDS35i Enhanced, with its bypass valves, is not limited and will pump down continuously at full speed.

# Ordering information

## Pumps:

PRODUCT DESCRIPTION	ORDER NO.
XDS35i 100-120/200-230V 1PH 50/60Hz	A73001983
XDS35i NGB 100-120/200-230V 50/60Hz	A73005983
XDS35iC 100-120/200-230V 1PH 50/60Hz	A73006983
XDS35iE 100-120/200-230V 1PH 50/60Hz Enhanced	A73003983
XDS35iE NGB 100-120/200-230V 50/60Hz Enhanced	A73007983
XDS35iCE 100-120/200-230V 1PH 50/60Hz Enhanced	A73008983
XDS46iC Corrosion resistant variants (C)	A73101983
XDS46iC Variants without gas ballast (NGB)	A73106983

## Accessories and spares:

	PRODUCT DESCRIPTION	ORDER NO.
Accessories	Exhaust silencer XDS35i	A50597001
	Gas ballast adaptor with 0.25 mm restrictor	A50626801
	Gas ballast adaptor with no restrictor	A50502000
	Vibration isolator (pack of 4)	A24801408
	Inlet/exhaust filter NW25	A50597805
	Inlet/exhaust filter NW40	A50597806
	XDS acoustic enclosure 110-120 V	NRY5C0000
	XDS acoustic enclosure 200-240 V	NRD797000
Spares	Tip-seal kit XDS35i	A73001801
	Tip-seal kit XDS46i	A73101801
	Silencer spares kit	A50597801
	XDS filter 5 micron element kit	A50597802
	XDS filter 1 micron element kit	A50597803
Cord sets	UK, three pin plug	A50505003
	North European plug	A50506003
	North America/Japan plug	A50507003
	No plug	A50508003





# nXRi MULTISTAGE ROOTS DRY VACUUM PUMP



Edwards has revolutionised the vacuum pump market with the nXRi high performance, compact dry pump. It delivers unrivalled pumping speeds in the most compact package, with pumping speeds of 30 to 120 m<sup>3</sup>h<sup>-1</sup>. The nXRi's lower input power and zero maintenance create real performance improvements and cost benefits across a range of applications.

Analytical Instrument OEMs benefit from the ease of integration into most vacuum systems for a ready to go vacuum solution, perfect for mass spectrometry, electron microscopy and leak detection. R&D customers will enjoy the design flexibility, oil-free and low maintenance features.



## PRODUCT FEATURES

### COMPACT FOOTPRINT

Optimise your space

Designed with size in mind and weighing in at under 30 kg

Up to 6x more capacity than similar sized pumps

### UNRIVALLED PERFORMANCE

When you need it

Range consists of 5 models with pumping speeds from 30 to 120m<sup>3</sup>h<sup>-1</sup>

### ZERO CONTAMINATION

Experience the difference

Clean processes and clean results are guaranteed

Non-contact design with no particle generation

### ENERGY EFFICIENCY

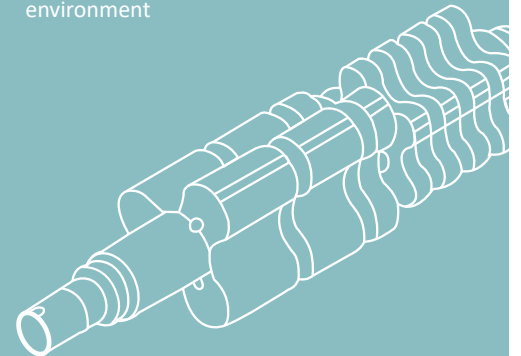
Reduce your costs

With lower input power and zero maintenance

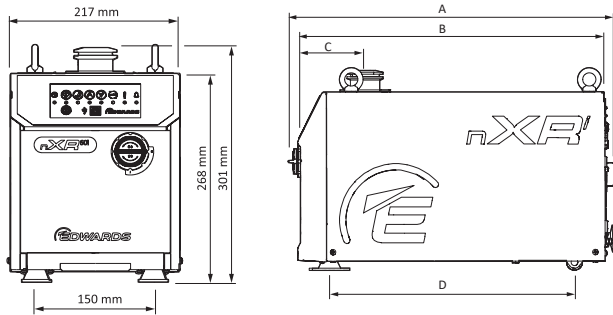
Power only 450W at ultimate across all models

### LOW NOISE DESIGN

Only 55dB(A) at ultimate for a quieter lab environment

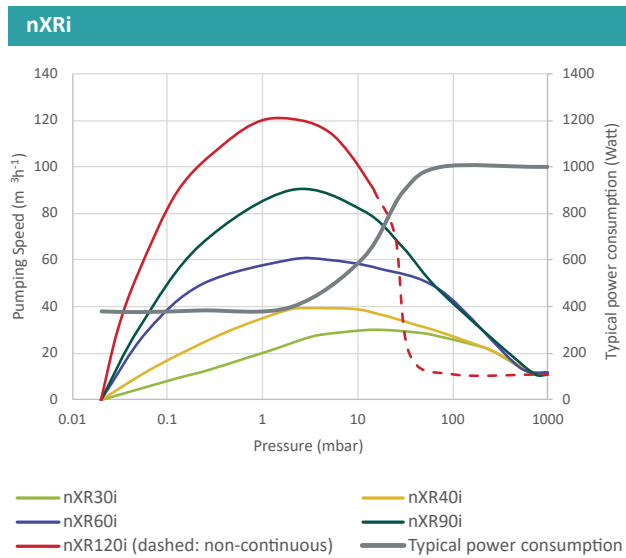


## Dimensions



nXR30/40i	nXR60/90/120i	
A	478 mm	494 mm
B	443 mm	461 mm
C	103 mm	107 mm
D	339 mm	370 mm

## Performance



## Technical data

	Units	nXR30i	nXR40i	nXR60i	nXR90i	nXR120i
<b>VACUUM DATA</b>						
Peak pumping speed	m <sup>3</sup> h <sup>-1</sup>	30	40	60	90	120
Ultimate vacuum (total pressure)	mbar (Torr)	<0.03 (0.022)				
Ultimate vacuum with gas ballast	mbar (Torr)	<0.1 (0.075)				
Water vapour handling capacity	gh <sup>-1</sup>	300				
Maximum permitted outlet pressure	bar gauge	0.2				
Maximum continuous inlet pressure	mbar	1013				20
<b>MOTOR DATA</b>						
Supply voltage	V	100-127/200-240 (+/-10%), switchable				
Supply frequency	Hz	50/60				
Nominal rotational speed	rpm	15000				
Minimum standby rotational speed	rpm	7500				
Power at ultimate	W	450				
Power connector		1-ph IEC EN60320 C19				
Recommended fuse, 230V (115V)	A	10 (15)				
<b>PHYSICAL DATA</b>						
Weight	kg (lbs)	27 (60)		29 (64)		
Inlet connection		NW25		NW40		
Exhaust connection		NW25				
Noise level at ultimate vacuum	dB(A)	55				
Vibration at inlet flange	mms <sup>-1</sup> (rms)	< 2				
Leak tightness	mbar ls <sup>-1</sup>	< 1x10 <sup>-6</sup>				
Operating temperature range	°C (°F)	5 to 40 (41 to 104)				

## Ordering information

### Pumps:

PRODUCT DESCRIPTION	ORDER NUMBER
nXR30i NW25 Multi Stage Roots Dry Pump 100-127/200-240V 50/60 Hz	A90301983
nXR40i NW25 Multi Stage Roots Dry Pump 100-127/200-240V 50/60 Hz	A90401983
nXR60i NW40 Multi Stage Roots Dry Pump 100-127/200-240 V, 50/60 Hz	A90502983
nXR90i NW40 Multi Stage Roots Dry Pump 100-127/200-240 V, 50/60 Hz	A90602983
nXR120i NW40 Multi Stage Roots Dry Pump 100-127/200-240V 50/60 Hz	A90702983

### Accessories

PRODUCT DESCRIPTION	ORDER NUMBER
2m electrical supply cable, NEMA 5-15P, North America/Japan (100-120 V)	A50507003
2m electrical supply cable, NEMA 6-15P, North America (200-240 V)	A50507006
2m electrical supply cable, UK, three pin plug	A50505003
2m electrical supply cable, Europe	A50506003
2m electrical supply cable, China	A50509003
Gas ballast blank plug	A73501806
Gas ballast adaptor for inert gas (1/4" quick connect)	A73501811
Floor/cart mounting kit	A90590000



## Technical data

	Units	E2M0.7	E2M1.5	E1M18	E2M18	E2M28	
<b>VACUUM DATA</b>							
Peak pumping speed, 50 Hz (60 Hz)	m <sup>3</sup> h <sup>-1</sup> (cfm)	0.75 (0.5)	1.6 (1.2)	17 (12.1)	17 (12.1)	27.5 (19.5)	
Ultimate vacuum <sup>(1)</sup>	mbar (Torr)	3 x 10 <sup>-3</sup> (2.3 x 10 <sup>-3</sup> )		3 x 10 <sup>-2</sup> (2.3 x 10 <sup>-2</sup> )	1 x 10 <sup>-3</sup> (7.5 x 10 <sup>-4</sup> )		
Ultimate pressure with gas ballast	mbar (Torr)	2 x 10 <sup>-1</sup> (1.5 x 10 <sup>-1</sup> )	2.5 x 10 <sup>-2</sup> (1.9 x 10 <sup>-2</sup> )	6.5 x 10 <sup>-1</sup> (4.8 x 10 <sup>-1</sup> )	1.5 x 10 <sup>-2</sup> (1.1 x 10 <sup>-2</sup> )		
Ultimate pressure with PFPE oil	mbar (Torr)			3 x 10 <sup>-1</sup> (2.3 x 10 <sup>-1</sup> )	1 x 10 <sup>-2</sup> (7.5 x 10 <sup>-3</sup> )	1 x 10 <sup>-2</sup> (7.5 x 10 <sup>-3</sup> )	
Water vapour tolerance	mbar (Torr)	15 (11)		50 (38)	20 (15)	30 (23)	
Water vapour handling capacity	gh <sup>-1</sup>	8	16	650	300	700	
Maximum continuous inlet pressure <sup>(5)</sup>	mbar a (Torr a)	50 (38)		100 (75)			
Maximum gas ballast/purge pressure	bar gauge (psig)	0.5 (7)					
<b>MOTOR DATA</b>							
Supply voltage	V	100-120/200-240 (+/- 10%)		115/200-230 (+/- 10%)			
Supply frequency	Hz	50/60					
Motor power, 50 Hz (60 Hz)	W	90 (90)	160 (160)	550 (750)		750 (900)	
Nominal rotation speed, 50 Hz (60 Hz)	rpm	1400 (1700)	2800 (3400)	1440 (1720)			
Power connector <sup>(2)</sup>		IEC EN60320 C13		IEC EN60320 C19			
Recommended fuse, 230 V (115 V)	A	6 (10)		15 <sup>(3)</sup> (25)			
<b>PHYSICAL DATA</b>							
Weight	kg (lb)	10 (22)		37 (82)	39 (86)	44 (97)	
Oil type (recommended)		Ultragrade 15		Ultragrade 19			
Oil capacity (min - max)	litre	0.2 - 0.28		0.9 - 1.4	0.75 - 1.05	1.2 - 1.5	
Inlet connection		NW10		NW25			
Exhaust connection <sup>(4)</sup>		Nozzle 11 mm external Ø removable from 3/8 in BSP tapped hole		Nozzle 15 mm external Ø removable from 3/8 in BSP tapped hole			
Noise level at ultimate (50 Hz)	dB(A)	43	54	57			
Noise with acoustic enclosure	dB(A)	36	47	50			
Vibration at inlet flange	mms <sup>-1</sup> (rms)	No data			< 4.5		
Operating temperature range	°C (°F)	12 to 40 (54 to 104)		13 to 40 (55 to 104)			

(1) measured as total pressure

(2) pumps listed with IEC connector only

(3) for UK 240 V use 13 A fuse

(4) PFPE variants are supplied with NW25 outlet connection

(5) These oil sealed rotary vane pumps are designed to evacuate chamber from atmospheric pressure down to ultimate vacuum. Please note there is a maximum inlet pressure that these pumps can operate at continuously



E2M0.7



E2M1.5



E1M18



E2M18

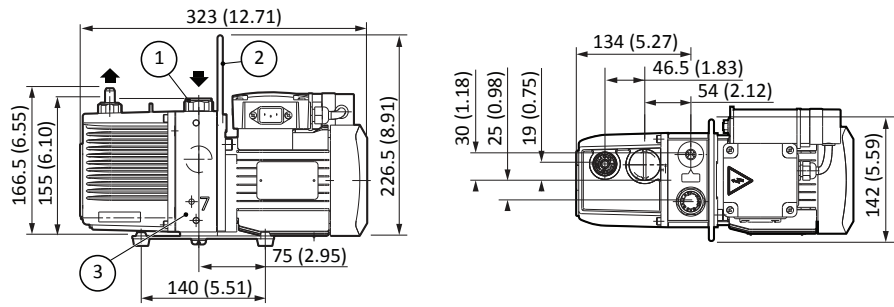


E2M28

# Dimensions

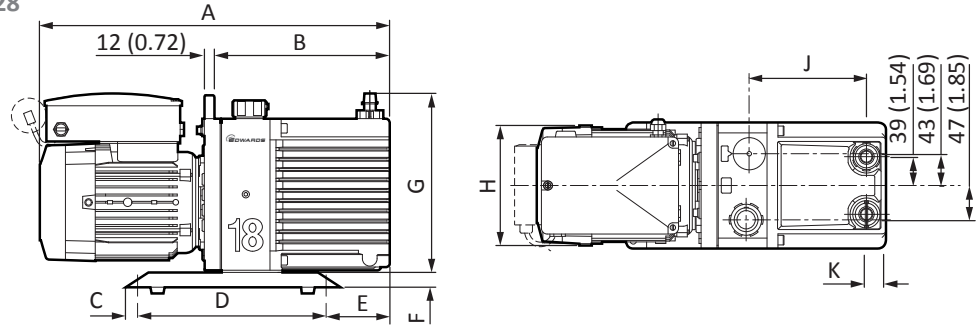
## E2M0.7/E2M1.5

- 1. 220-240 V motor
- 2. Handle (can be removed)
- 3. Alternative inlet port position



## E1M18/E2M18 and E2M28

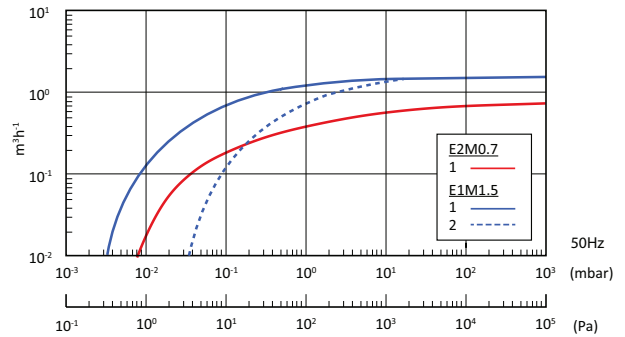
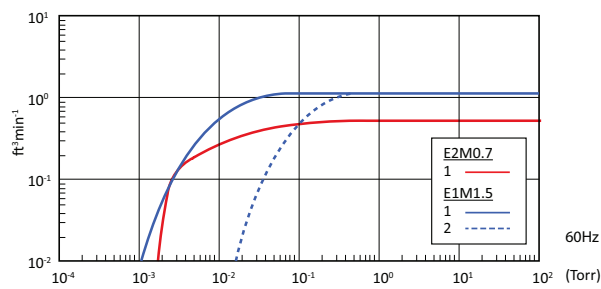
Single phase pump shown,  
3 phase pump is similar.



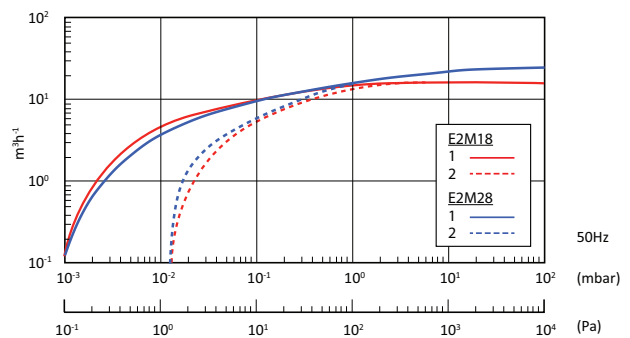
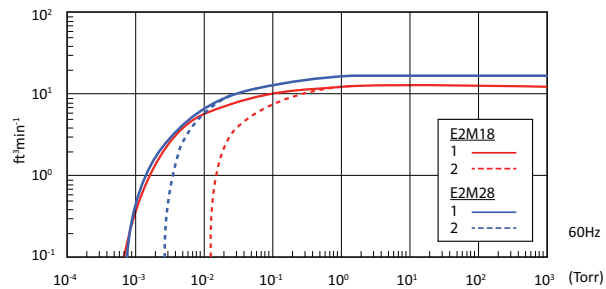
	A	B	C	D	E	F	G	H	J	K
E1M18	504 (19.84)	247 (9.72)	10 (0.39)	260 (10.24)	83 (3.27)	20 (0.79)	251 (9.88)	170 (6.69)	159 (6.26)	27.4 (1.08)
E2M18	550 (21.65)	295 (11.61)	10 (0.39)	260 (10.24)	131 (5.16)	20 (0.79)	251 (9.88)	170 (6.69)	207 (8.15)	27.4 (1.08)
E2M28	584 (22.99)	331 (13.03)	13 (0.51)	347 (13.66)	111 (4.37)	20 (0.79)	251 (9.88)	170 (6.69)	240.5 (9.47)	25.5 (1.00)

# Performance

## E2M0.7 and E2M1.5



## E1M18/E2M18 and E2M28



## Ordering information

### Pumps:

PRODUCT DESCRIPTION	ORDER NO.	
	ULTRAGRADE	PFPE
E2M0.7 200-230V, 1-ph, 50/60Hz, IEC 60320 connectors	A37141919	-
E2M0.7 100-120V, 1-ph, 50/60Hz, IEC 60320 connectors	A37141902	-
E2M1.5 200-230V, 1-ph, 50/60Hz, IEC 60320 connectors	A37132919	-
E2M1.5 100-120V, 1-ph, 50/60Hz, IEC 60320 connectors	A37132902	-
E1M18 380-415V, 50Hz 460V, 60Hz, 3-ph IE2	A34310905	
E1M18 200-220V 50Hz 200-230V 60Hz, 3-ph IE2	A34310925	
E1M18 115/200-230V, 1-ph, 50/60Hz with IEC60320 connector, factory set to 230V	A34317984	A34325984
E2M18 380-415V, 50Hz 460V, 60Hz, 3-ph IE2	A36310905	A36321905
E2M18 200-220V 50Hz 200-230V 60Hz, 3-ph IE2	A36310925	A36321925
E2M18 115/200-230V, 1-ph, 50/60Hz with IEC60320 connector	A36317984	A36325984
E2M28 IE3 EU/US 50/60Hz, 380-400V 3-ph, 50Hz or 230/460V 3-ph, 60Hz	A37333940	A37343940
E2M28 IE3 Asia 50/60Hz, 200V 3-ph, 50/60Hz or 380V 3-ph, 60Hz	A37333934	A37343934
E2M28 115/200-230 V, 1-ph, 50/60 Hz with IEC60320 connector	A37317984	A37325984

For PFPE prepared pumps. PFPE fluid, Fomblin® or Krytox need to be ordered separately.

### Accessories and spares:

PRODUCT	PRODUCT DESCRIPTION	ORDER NO.	
E2M0.7/1.5	Accessories	Oil mist filter - EMF3	A46220000
		NW10 x 3/8" BSP adapter	A23908064
		Vibration isolator (pack of 4)	A24801407
	Spares	Clean and overhaul kit - E2M0.7/1.5	A37101131
		Spares kit blade - E2M0.7/1.5	A37101132
	Oil	Ultragrade 15, 1 litre bottle	H11026015
		Ultragrade 15, 4 litre bottle	H11026013
	Cord sets	UK, three pin plug	A50505000
		North European plug	A50506000
		North America/Japan plug	A50507000
		No plug	A50508000
	E1M18/ E2M18/ E2M28	Accessories	Oil mist filter - EMF20 <sup>(1)</sup>
Oil mist filter - MF30			A46233000
NW25 to 28mm bore tube adaptor			C10520201
3/4" BSP to NW25 outlet adaptor			C10501414
E1M18/E2M18 Vibration isolator (pack of 4)			A24801404
E2M28 Vibration isolator (pack of 4)			A24801412
Acoustic Enclosure 110-120 V			NRD317000
Acoustic Enclosure 200-240 V			NRD318000
Spares		Clean and overhaul kit - E1M18/E2M18	A36301131
		Spares kit blade - E1M18	A34301041
		Spares kit blade - E2M18	A36301020
		Clean and overhaul kit - E2M28	A37301131
Oil		Blade kit - E2M28/30	A37301135
		Ultragrade 19, 1 litre bottle	H11025015
		Ultragrade 19, 4 litre bottle	H11025013
		Fomblin® YVAC 06/6 fluid 1 kg (532 ml)	H11301019
		Fomblin® YVAC 06/6 fluid 5 kg (2660 ml)	H11301020
Cord sets		KRYTOX 1506 1 kg (PFPE fluid is approx. 0.5 litres)	H11307018
		UK, three pin plug	A50505003
		North European plug	A50506003
	North America/Japan plug	A50507003	
	No plug	A50508003	

(1) suitable for EM18 and E2M28 on low throughput applications



# RV ROTARY VANE PUMPS



RV oil sealed pumps have been the industry standard rotary vane pump for laboratory applications for many years thanks to design features that make them low cost to operate and maintain versus other rotary pumps.

With their unique mode selector, one pump can be used for both high throughput and high vacuum applications. Self-centring pumping mechanism simplifies servicing the pumps. Coupled with high vapour pumping capability and broad range of accessories this makes RV pumps a great long term proposition for laboratory applications.



## PRODUCT FEATURES

### UNIQUE MODE SELECTOR SWITCH

enables high vacuum and high throughput operation from a single pump.

### HIGH GAS BALLAST FLOW RATE

for up to 220 gh<sup>-1</sup> water vapour pumping capacity.

### FAST ACTING INLET VALVE

with controlled opening for system protection.

### HIGH QUALITY OILS

with additives to prolong life whilst not impacting vapour pressure.

### LOW NOISE

from 48dB(A)

### O RING SEALED SIGHT GLASS

allows visual inspection of oil level condition.

### FORCED AIR COOLING

ensures low pump surface temperature.



## Technical data

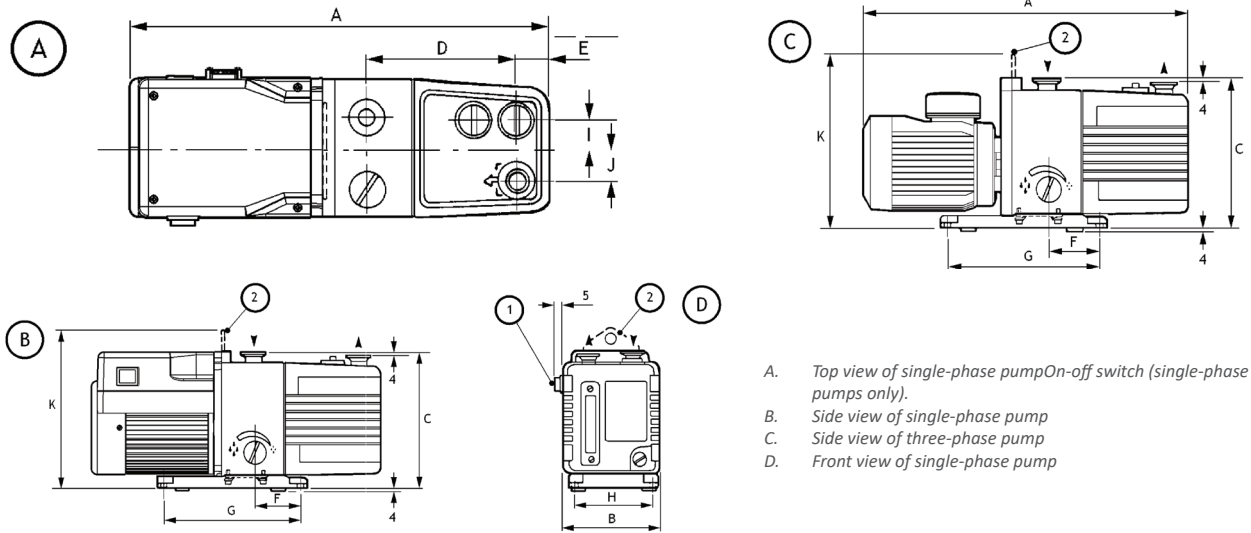
	Units	RV3	RV5	RV8	RV12
<b>VACUUM DATA</b>					
Peak pumping speed, 50 Hz (60 Hz)	m <sup>3</sup> h <sup>-1</sup> (cfm)	3.3 (2.3)	5.1 (3.7)	8.5 (5.9)	12 (8.4)
Ultimate vacuum <sup>(1)</sup>	mbar (Torr)	2.0 x 10 <sup>-3</sup> (1.5 x 10 <sup>-3</sup> ); 2.0 x 10 <sup>-2</sup> (1.5 x 10 <sup>-2</sup> ) with PFPE oil			
Ultimate vacuum with gas ballast 1	mbar (Torr)	3.0 x 10 <sup>-2</sup> (2.3 x 10 <sup>-2</sup> )			
Ultimate vacuum with gas ballast 2	mbar (Torr)	1.2 x 10 <sup>-1</sup> (9.1 x 10 <sup>-2</sup> )	1 x 10 <sup>-1</sup> (7.5 x 10 <sup>-2</sup> )	6.0 x 10 <sup>-2</sup> (4.6 x 10 <sup>-2</sup> )	6.0 x 10 <sup>-2</sup> (4.6 x 10 <sup>-2</sup> )
Ultimate vacuum in high throughput mode	mbar (Torr)	3.0 x 10 <sup>-2</sup> (2.3 x 10 <sup>-2</sup> )			
Water vapour tolerance	mbar (Torr)	80 (60)	50 (38)	38 (28.5)	32 (24)
Water vapour handling capacity	gh <sup>-1</sup>	220			290
<b>Maximum continuous inlet pressure <sup>(2)</sup></b>					
High Vac mode	mbar (Torr)	up to 50 (38)			
High Throughput mode	mbar (Torr)	up to 500 (380)			
Maximum gas ballast/purge pressure	bar gauge (psig)	0.5 (7)			
<b>MOTOR DATA</b>					
Mechanical Power 1 phase (nominal), 50 Hz (60 Hz)	W	370 (440)			
Mechanical Power 3 phase, 50 Hz (60 Hz)	W	250 (300)	450 (550)		
Nominal rotational speed, 50 Hz (60 Hz)	rpm	1470 (1760)			
<b>PHYSICAL DATA</b>					
Weight	kg (lb)	25 (55)	28 (61.6)	29 (63.8)	
Oil type (recommended)		Ultragrade 19/KRYTOX 1506/Fomblin® YVAC 06/6 fluid			
Oil capacity (min - max)	litres	0.42 - 0.7	0.45 - 0.75	0.65 - 1.0	
Inlet connection		NW25			
Exhaust connection		NW25			
Noise level at ultimate (50 Hz)	dB(A)	48			
Noise level with Acoustic Enclosure (50 Hz)	dB(A)	41			
Vibration at inlet flange	mm <sup>-1</sup> (rms)	< 4.5			
Operating temperature range	°C (°F)	12 to 40 (54 to 104)			

(1) measured as total pressure

(2) These oil sealed rotary vane pumps are designed to evacuate chambers from atmospheric pressure down to ultimate vacuum. Please note there is a maximum pressure that these pumps can operate at continuously



# Dimensions



A. Top view of single-phase pump  
 B. Side view of single-phase pump  
 C. Side view of three-phase pump  
 D. Front view of single-phase pump

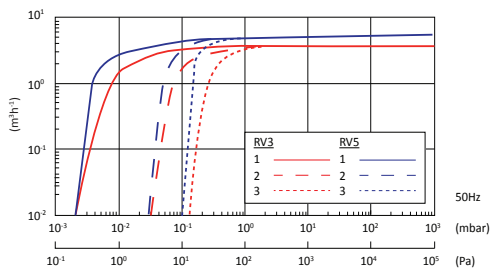
1. Lifting bracket (RV8 and RV12 pumps only; a lifting handle is fitted to the RV3 and RV5 pumps).
2. On-off switch (single-phase pumps only).

	A	B	C	D	E	F	G	H	I	J	K
RV3	430	158	225	127	29	78	230	120	37	32	-
RV5	430	158	225	127	29	78	230	120	37	32	-
RV8	470	158	225	161	35	78	230	120	37	32	261
RV12	490	158	225	181	35	78	230	120	37	32	261

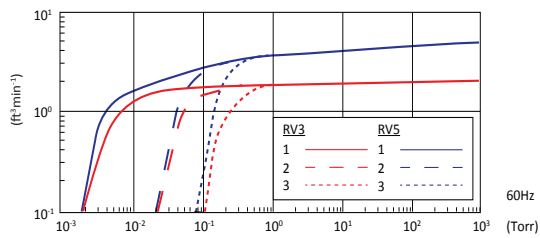
Single phase pump diagram shown, 3 phase pumps look different but share the same dimensions. Dimensions shown in mm.

# Performance

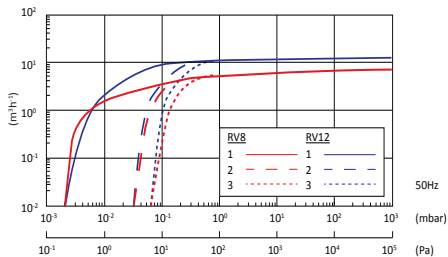
RV3/RV5 50 Hz



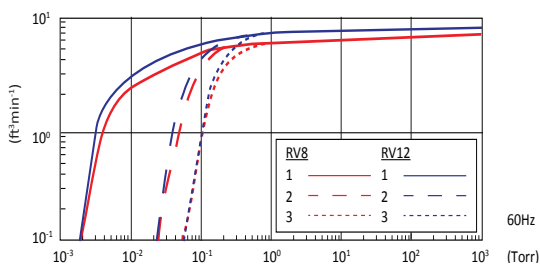
RV3/RV5 60 Hz



RV8/RV12 50 Hz



RV8/RV12 60 Hz



1. High vacuum mode, gas ballast = 0
2. High throughput mode, gas ballast = 0, High vacuum mode, gas ballast = I
3. High throughput and vacuum mode, gas ballast = II

# Ordering information

## Pumps:

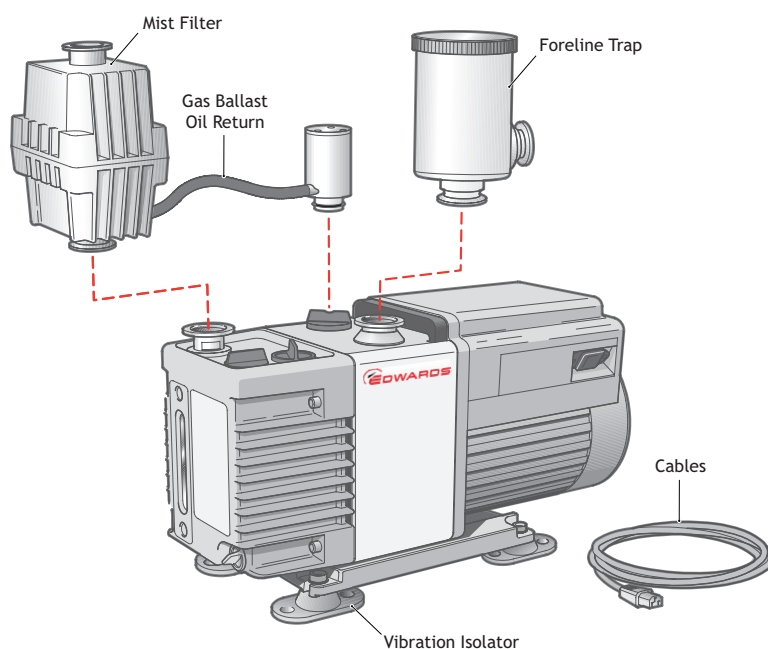
PRODUCT DESCRIPTION		ORDER NO.	ORDER NO.
		Ultragrade Oil	PFPE prepared <sup>(1)</sup>
RV3	115/230V, 50/60Hz set to 230V	A65201903	A65209903
	100/200V, 50/60Hz	A65201904	A65209904
	200-220/380-415V, 50Hz 200-230/460V, 60Hz, 3 phase IE2	A65201905	A65209905
	115/230V, 50/60Hz set to 115V	A65201906	A65209906
	100/200V, 1 phase 50/60 Hz set to 100V	A65201907	
RV5	115/230V, 50/60Hz set to 230V	A65301903	A65309903
	100/200V, 50/60Hz	A65301904	A65309904
	200-220/380-415V, 50Hz 200-230/460V, 60Hz, 3 phase IE2	A65301905	A65309905
	115/230V, 50/60Hz set to 115V	A65301906	A65309906
	100/200V, 1 phase 50/60 Hz set to 100V	A65301907	
RV8	115/230V, 50/60Hz set to 230V	A65401903	A65409903
	100/200V, 50/60Hz	A65401904	A65409904
	115/230V, 50/60Hz set to 115V	A65401906	A65409906
	380-415V, 50Hz 460V, 60Hz, 3 phase IE2	A65422905	A65429905
	200-208V, 50Hz 200-230V, 60Hz, 3 phase IE2	A65422925	A65429925
	100/200V, 1 phase 50/60 Hz set to 100V	A65401907	
RV12	115/230V, 50/60Hz set to 230V	A65501903	A65509903
	100/200V, 50/60Hz	A65501904	A65509904
	380-415V, 50Hz 460V, 60Hz, 3 phase IE2	A65522905	A65529905
	200-208V, 50Hz 200-230V, 60Hz, 3 phase IE2	A65522925	A65529925
	115/230V, 50/60Hz set to 115V	A65501906	A65509906
	100/200V, 1 phase 50/60 Hz set to 100V	A65501907	

(1) PFPE fluid not included

## Accessories and spares:

	PRODUCT DESCRIPTION	ORDER NO.
Accessories	Foreline trap - FL20K	A13305000
	Oil mist filter - EMF10	A46226000
	Oil mist filter - EMF20	A46229000
	Clean application oil return kit	A50419000
	Adjustable gas ballast oil return kit	A50523000
	Vibration isolators (pack of 4)	A24801404
	Acoustic enclosure 110-120V	NRD317000
	Acoustic enclosure 200-240V	NRD318000
Spares	Clean and overhaul kit	A65201131
	RV3 blade kit	A65201130
	RV5 blade kit	A65301130
	RV8 blade kit	A65401130
	RV12 blade kit	A65501130
Oil	Ultragrade 19, 1 litre bottle	H11025015
	Ultragrade 19, 4 litre bottle	H11025013
	Fomblin® YVAC 06/6 1 kg (532 ml)	H11301019
	KRYTOX 1506 1 kg pack	H11307018
Cord sets	UK, three pin plug	A50505000
	North European plug	A50506000
	North American plug	A50507000
	No plug	A50508000

Pumps fitted with ATEX approved motors are available, contact Edwards for details  
Pumps are supplied with initial charge of Ultragrade oil.

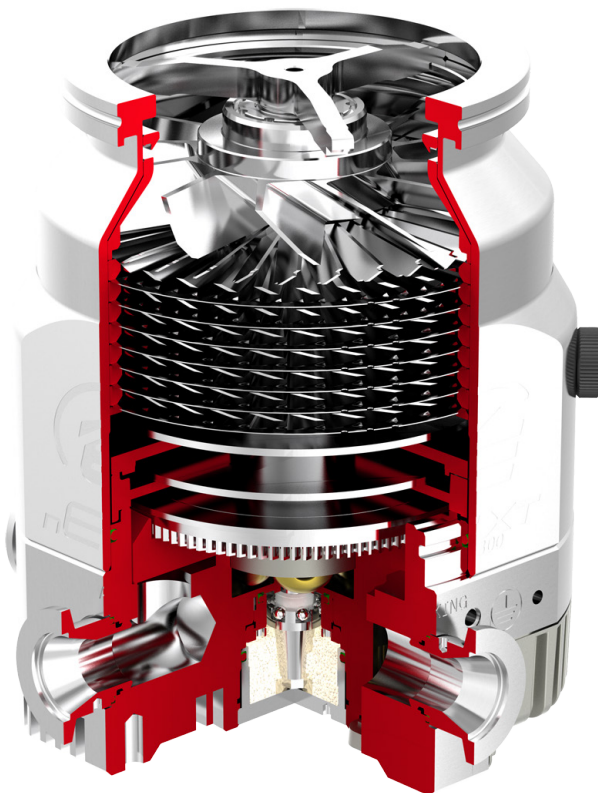


# nEXT TURBOMOLECULAR PUMPS



nEXT turbomolecular pumps are hybrid bearing pumps with a compound drag stage and integrated controllers for pumping speeds from 47 to 1250  $\text{ls}^{-1}$ . They all feature a permanent magnetic upper bearing, which eliminates hydrocarbons at the top of the rotor and an oil lubricated lower bearing for reliable high speed operation.

The on-board controller interfaces directly with our TIC and TAG controllers to provide low cost system integration. The nEXT models also allow user serviceability by way of a user changeable bearing cartridge for low cost of ownership.



nEXT300 turbomolecular pump shown

## PRODUCT FEATURES

### UPPER MAGNETIC BEARING

ensures clean vacuum, low power and low vibration.

### INLET SCREEN

supplied as standard (not shown).

### OPTIMISED ROTOR DESIGNS

deliver high speeds and high compression.

### RANGE OF VARIANTS SUITABLE FOR MANY APPLICATIONS

D = standard nEXT pump variant.

H = optimised rotor design for high light gas compression

T = additional regenerative stage for increased compression and higher backing pressure capability.

Q = high throughput specifically for Nitrogen and Argon gases

### MANUAL VENT VALVE

offers a safe place to vent system with no risk of damage to pump and can be replaced with a solenoid valve for fully automated venting.

### INTEGRATED CONTROLLER

offers direct I/O or serial control or can be connected to one of our TAG or TIC controllers for easy systemisation.

### FULLY USER-SERVICEABLE

oil cartridge and bearings can be changed in the field with minimal tooling.

# Technical data

		nEXT55		nEXT85		
<b>VACUUM DATA</b>						
Inlet flange		NW40	DN63 ISO-K or DN63 CF	NW40	DN63 ISO-K or DN63 CF	DN100 ISO-K
Inlet pumping speed ls <sup>-1</sup>	N <sub>2</sub>	35	55	47	84	86
	Ar	35	55	44	80	84
	He	26	41	61	78	80/78 (D/H)
	H <sub>2</sub>	17	27	49/44 (D/H)	60/54 (D/H)	60/54 (D/H)
Peak compression ratio backing port to main inlet port (D)	N <sub>2</sub> /Ar	>1 x 10 <sup>11</sup>				
	He	6.9 x 10 <sup>5</sup>		8 x 10 <sup>6</sup>		
	H <sub>2</sub>	2.9 x 10 <sup>4</sup>		2 x 10 <sup>5</sup>		
Compression ratio (T/H)	N <sub>2</sub> /Ar	NA		>1 x 10 <sup>11</sup>		
	He	NA		2 x 10 <sup>7</sup>		
	H <sub>2</sub>	NA		5 x 10 <sup>5</sup>		
Backing/interstage/boost ports		NW16				
Vent/purge port		1/8" BSPP				
Critical backing pressure (D/H)	mbar	18				
Critical backing pressure (T)	mbar	NA				
Water cooled/forced air cooled max. bake out	°C	120/115°				
Recommended backing pump*		nXDS15				
<b>MOTOR DATA</b>						
Normal rotational speed (rpm)		90,000				
Start time to 90% speed (sec) D/H (T)		90				
<b>PHYSICAL DATA</b>						
Mass (kg) D/H (T)	ISO	2.47		2.9	3.0	3.2
	CF	3.5			4.4	

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



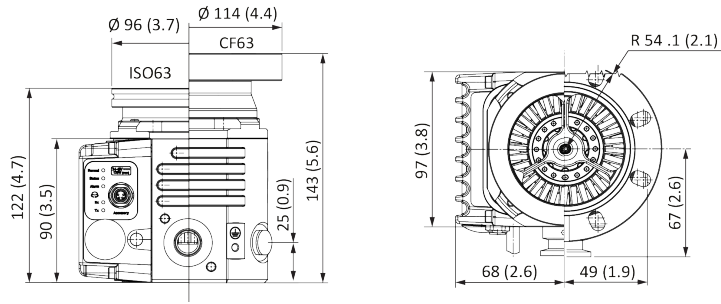
nEXT55



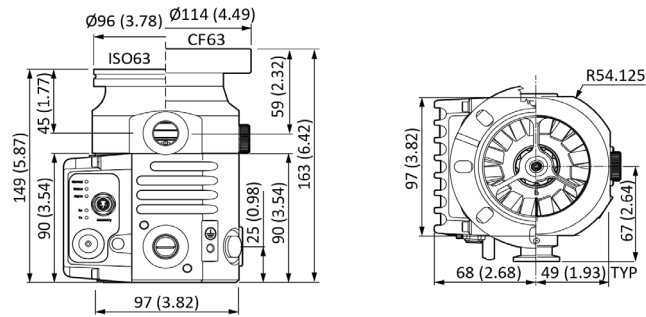
nEXT85

# Dimensions

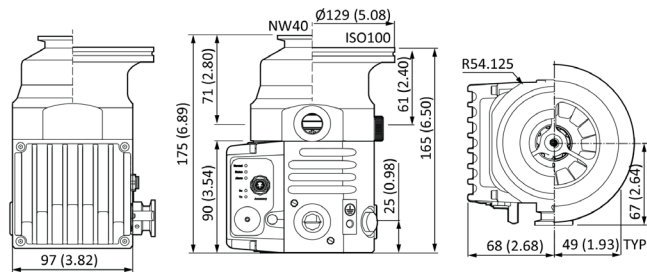
## nEXT55



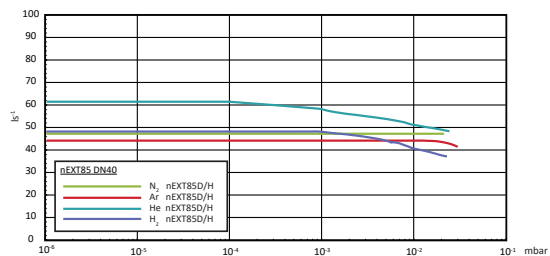
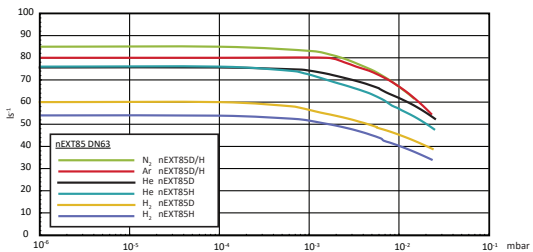
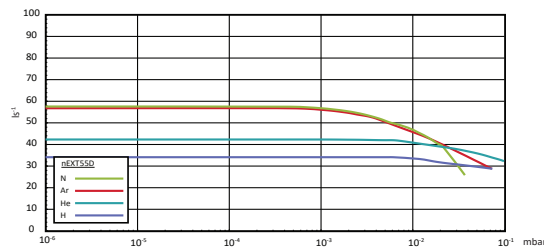
## nEXT85



## nEXT85



# Performance



## Technical data

		nEXT240	nEXT300	nEXT400
<b>VACUUM DATA</b>				
Inlet flange		DN100 ISO-K or DN100 CF	DN100 ISO-K or DN100 CF	DN160 ISO-K or DN160 CF
Inlet pumping speed ls <sup>-1</sup>	N <sub>2</sub>	240	300	400
	Ar	230	280	380
	He	230	340	390
	H <sub>2</sub>	165	280	325
Compression ratio (D)	N <sub>2</sub> /Ar	>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/H)	N <sub>2</sub> /Ar	>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>
Backing/interstage/boost ports		NW25	NW25	NW25
Vent/purge port		1/8" BSPP	1/8" BSPP	1/8" BSPP
Critical backing pressure (D/H)	mbar	9.5	9.5	10
Critical backing pressure (T)	mbar	20	20	20
Water cooled/forced air cooled max. bake out	°C	120/115°	120/115°	120/115°
Recommended backing pump*		RV12/nXDS10i	RV12/nXDS10i	RV12/nXDS10i
<b>MOTOR DATA</b>				
Normal rotational speed (rpm)		60,000	60,000	60,000
Start time to 90% speed (sec) D/H (T)		115 (150)	145 (190)	180 (210)
<b>PHYSICAL DATA</b>				
Mass (kg) D/H (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.



nEXT240



nEXT300

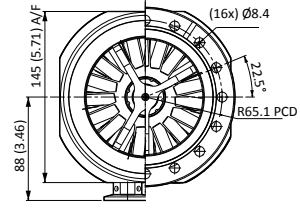
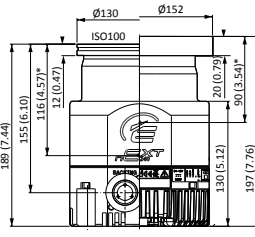
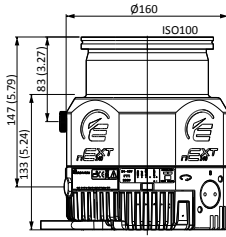


nEXT400

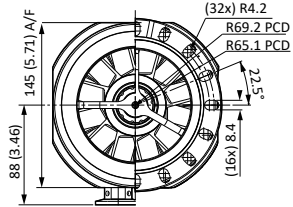
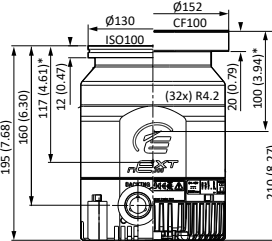
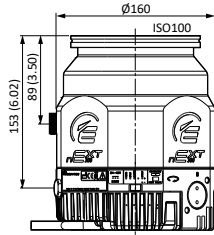


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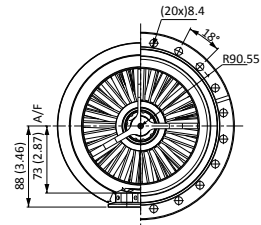
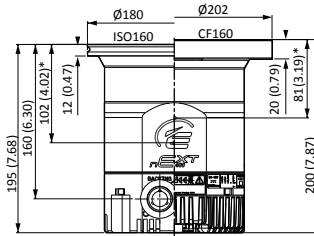
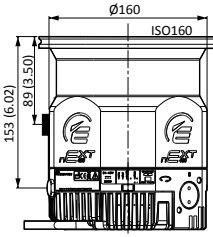
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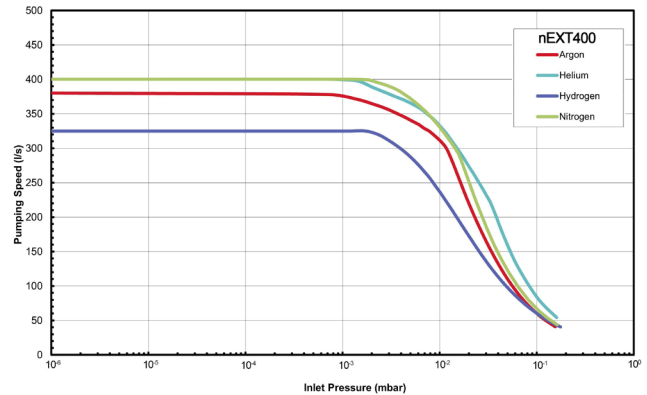
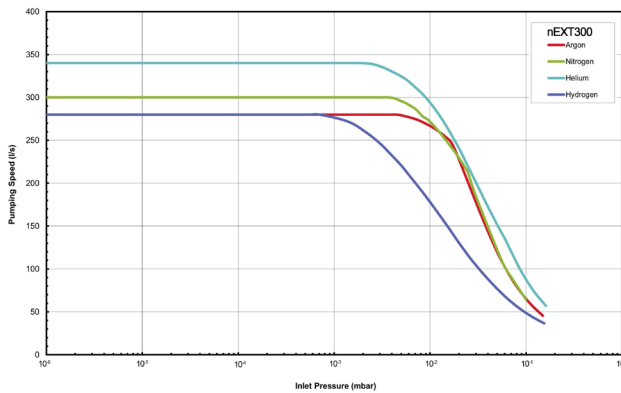
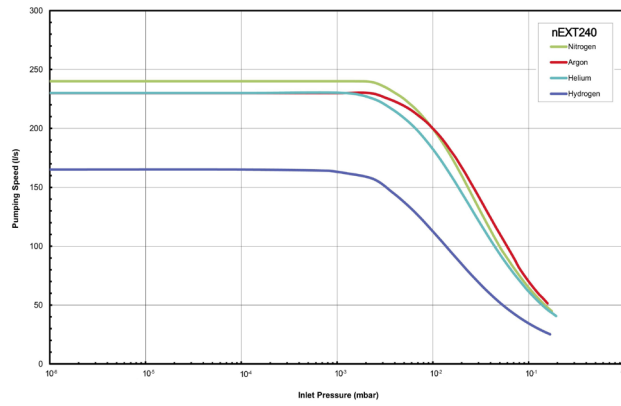
nEXT300



nEXT400



# Performance



# Technical data

		nEXT730Q	nEXT730D(H)		nEXT930Q	nEXT930D		nEXT1230H			
<b>VACUUM DATA</b>											
Inlet flange		DN 160 ISO-K	DN 160 ISO-K	DN 160 CF	DN 200 ISO-K	DN 200 ISO-K	DN 200 CF	DN 200 CF	DN 200 ISO-F	DN 200 ISO-K	
<b>Main inlet pumping speed</b>											
Inlet pumping speed ls <sup>-1</sup>	N <sub>2</sub>	730	730(720)	690(680)	925	870			1250		
	Ar	665	665(655)	620(610)	865	810			1150		
	He	820	820(850)	760(790)	905	840			1350		
	H <sub>2</sub>	715	715(755)	670(710)	735	690			1150		
<b>Gas throughput</b>											
Gas throughput mbar ls <sup>-1</sup>	N <sub>2</sub>	>40	14(4)	>40	14				9		
	Ar	6.8	3.5(2.6)	6.8	3.5				3		
	He	>50	21(7)	>50	21				>20		
	H <sub>2</sub>	>50	>14(17)	>50	> 14				>20		
<b>Peak compression ratio backing port to main inlet port</b>											
Compression ratio	N <sub>2</sub>	>1x10 <sup>8</sup>	>1x10 <sup>11</sup> (>1x10 <sup>13</sup> )		>1x10 <sup>8</sup>	> 1x10 <sup>11</sup>		> 1x10 <sup>11</sup>			
	Ar	>1x10 <sup>8</sup>	>1x10 <sup>11</sup> (>1x10 <sup>13</sup> )		>1x10 <sup>8</sup>	> 1x10 <sup>11</sup>		> 1x10 <sup>11</sup>			
	He	1x10 <sup>5</sup>	1.2x10 <sup>8</sup> (5x10 <sup>9</sup> )		1x10 <sup>5</sup>	1.2x10 <sup>8</sup>		4x10 <sup>8</sup>			
	H <sub>2</sub>	1x10 <sup>4</sup>	4.0x10 <sup>6</sup> (3x10 <sup>8</sup> )		1x10 <sup>4</sup>	4.0x10 <sup>6</sup>		1x10 <sup>7</sup>			
Ultimate pressure**	mbar	>1x10 <sup>-7</sup>	<7x10 <sup>-9</sup>	<3x10 <sup>-10</sup> (<1x10 <sup>-10</sup> )	<1x10 <sup>-7</sup>	<7x10 <sup>-9</sup>	3x10 <sup>-10</sup>	<5x10 <sup>-10</sup>	indicate higher pressure for ISO-K and ISO-F		
Max. permissible backing pressure	mbar	6	15(12)		6	15		15			
Recommended cooling method		Water*	Convection*		Water*	Convection*		Water*			
Optional cooling		n/a	Air or Water*		n/a	Air or Water*		Forced air cooling*			
Cooling water connection		Plug-in connection for 6x1 hose/alternative G 1/8"									
Cooling water consumption	l/h	60									
Critical Cooling Water Pressure	bar(g)	6							15		
"Water cooled/forced air cooled max. bake out"	°C	n/a	100		n/a	100		100	n/a		
Permissible cooling water temperature	°C	15 to 35									
Vent/purge port		G 1/8"									
Purge gas flow	mbar-ls <sup>-1</sup> sccm						0.4 24				
Recommended backing pump*		nXRi, XDS35i, E2M28**									
<b>MOTOR DATA</b>											
Normal rotational speed	rpm	49200						42000			
Start time to 90% speed (sec) D/H	min	2.5									
Max. power consumption	W	500 (default), 600 (max.)						660 (default), 800 (max.)			
Power consumption at ultimate pressure	W	40						50			
<b>PHYSICAL DATA</b>											
Type of protection	IP	54									
"Noise level with convection cooling with radial air cooler"	dB(A)	< 40 n/a	< 40 <55	< 40 n/a	< 40 <55	< 40 n/a	< 40 <55	< 44 <55			
Mass (kg) D/H	kg	15.4	14.6	19.6	15.4	21.7	32.6	24.9	23.7		

\*Depending on the ambient temperature, the gas type and throughput, performance may be limited by the cooling method.

\*\*Please contact the supplier to discuss your specific system details and the achievement of ultimate pressure.



nEXT730



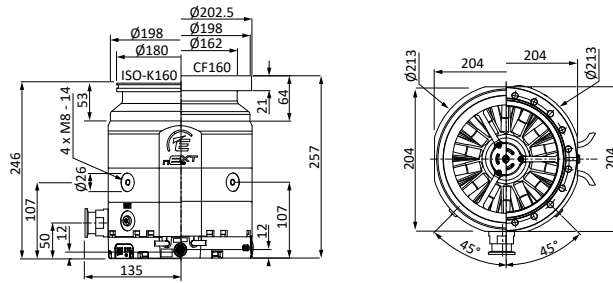
nEXT930



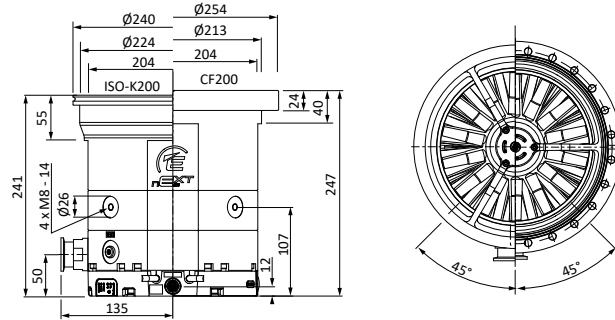
nEXT1230

# Dimensions

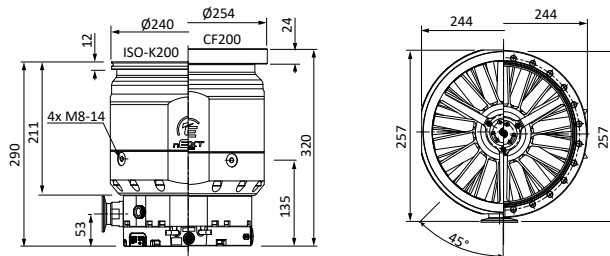
nEXT730Q/730D/730H



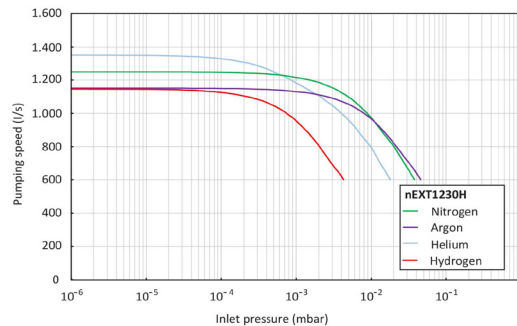
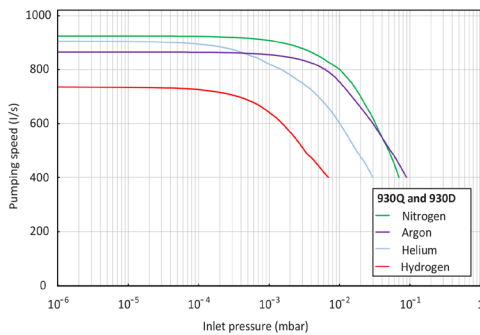
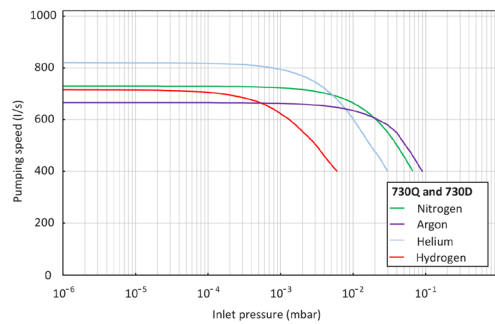
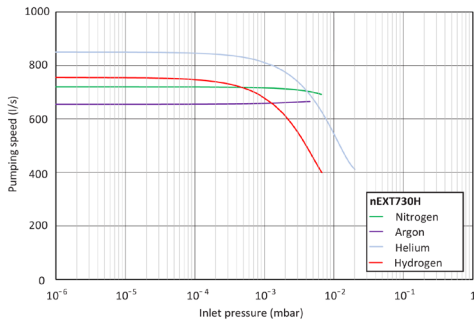
nEXT930Q/930D



nEXT1230H



# Performance



# Ordering information all the models

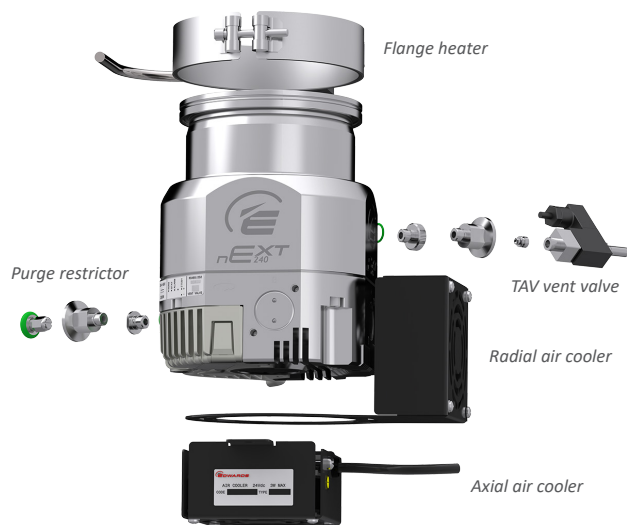
## Pumps:

PRODUCT DESCRIPTION	ORDER NUMBER
nEXT55D NW40 NW16 80W AO	B8A210A01
nEXT55D NW40 NW16 80W	B8E210A01
nEXT55D ISO63 NW16 80W AO	B8A210B01
nEXT55D ISO63 NW16 80W	B8E210B01
nEXT55D CF63 NW16 80W AO	B8A210C01
nEXT55D CF63 NW16 80W	B8E210C01
nEXT55D ISO100 NW16 80W AO	B8A210101
nEXT55D ISO100 NW16 80W	B8E210101
nEXT85D NW40 NW16 80W AO	B8C210A01
nEXT85H NW40 NW16 80W AO	B8C410A01
nEXT85D NW40 NW16 80W	B8G210A01
nEXT85H NW40 NW16 80W	B8G410A01
nEXT85D ISO63 NW16 80W AO	B8C210B01
nEXT85H ISO63 NW16 80W AO	B8C410B01
nEXT85D ISO63 NW16 80W	B8G210B01
nEXT85H ISO63 NW16 80W	B8G410B01
nEXT85D CF63 NW16 80W AO	B8C210C01
nEXT85H CF63 NW16 80W AO	B8C410C01
nEXT85D CF63 NW16 80W	B8G210C01
nEXT85H CF63 NW16 80W	B8G410C01
nEXT85D ISO100 NW16 80W AO	B8C210101
nEXT85H ISO100 NW16 80W AO	B8C410101
nEXT85D ISO100 NW16 80W	B8G210101
nEXT85D ISO100 NW25 80W	B8G240101
nEXT85H ISO100 NW16 80W	B8G410101
nEXT240D ISO-K100 160W	B81200100
nEXT240T ISO-K100 160W	B81300100
nEXT240D CF100 160W	B81200200
nEXT240T CF100 160W	B81300200
nEXT300D ISO-K100 160W	B82200100
nEXT300T ISO-K100 160W	B82300100
nEXT300D CF100 160W	B82200200
nEXT300T CF100 160W	B82300200
nEXT400D ISO-K160 160W	B83200300
nEXT400T ISO-K160 160W	B83300300
nEXT400D CF160 160W	B83200400
nEXT400T CF160 160W	B83300400
nEXT730Q ISO-K160 NW25	B8J100300
nEXT730D ISO-K160 NW25	B8J200300
nEXT730H ISO-K160 NW25	B8J400300

PRODUCT DESCRIPTION	ORDER NUMBER
nEXT730D CF160 NW25	B8J200400
nEXT730H CF160 NW25	B8J400400
nEXT930Q ISO-K200 NW25	B8K100D00
nEXT930D ISO-K200 NW25	B8K200D00
nEXT930D CF200 NW25	B8K200F00
nEXT1230H ISO-F200 NW40	B8N4A0E00
nEXT1230H ISO-K200 NW40	B8N4A0D00
nEXT1230H ISO-F200 NW40 INV	B8N4A0EU0
nEXT1230H ISO-K200 NW40 INV	B8N4A0DU0
nEXT1230H CF200 NW40 INV	B8N4A0FU0
nEXT1230H CF200 NW40	B8N4A0F00

AO = any orientation

INV = inverted



# Ordering information

## Accessories and spares:

PUMP		PRODUCT DESCRIPTION	ORDER NUMBER
nEXT55/85	Controller <sup>(1)</sup>	TAG controller	D39592000
		TAG power supply	D39592800
		TIC 100 turbo and instrument controller	D39721000
	Cooling	WCX85 water cooling kit (4 position)	B8G200833
		ACX85 air cooler connector fitted	B8G200820
	Venting	N/O TAV5 vent valve connector fitted	B8G200834
		N/C TAV5 vent valve connector fitted	B8G200835
	Bakeout	CF63 flange heater 110 V	B8G200823
		CF63 flange heater 240 V	B8G200824
	Service	Oil cartridge kit	B8G200828
		Bearing and oil cartridge kit	B8G200811
		Bearing replacement tool kit	B8G200845
	Miscellaneous	Accessory "Y" adaptor	B8G200837
		Accessory cable 90 degree/extension	B8G200836
		Accessory connector bare wired	B8G200839
		nEXT85/EXT75DX base mounting adaptor	B8G200838
nEXT240/ 300/400	Controller <sup>(1)</sup>	TAG controller	D39592000
		TAG power supply	D39592800
		TIC 200 turbo and instrument controller	D39722000
	Cooling	nEXT radial air cooler	B58053175
		nEXT axial air cooler	B58053185
		nEXT water cooler	B80000815
	Bakeout	CF100 flange heater 100-120 V	B58052773
		CF100 flange heater 200-240 V	B58052774
		CF160 flange heater 100-120 V	B58052775
		CF160 flange heater 200-240 V	B58052776
	Venting	TAV5 solenoid operated vent valve	B58066010
	Service	Oil cartridge tool kit	B80000812
		Bearing tool kit	B80000805
		Oil cartridge	B80000811
		Bearing and oil cartridge	B80000810

## Ordering information

### Accessories and spares:

PUMP		PRODUCT DESCRIPTION	ORDER NUMBER	
nEXT730/ 930/1230	Controllers	TAG controller	D39592000	
		TAG power supply	D39592800	
		TIC200 turbo and instrument controller	B39722000	
	Cooling	Air cooling nEXT730/930 /1230 radial	B8J200801	
		Water cooling nEXT730/930, 1/4"	B8J200820	
	Venting	N/O TAV5 vent valve connector fitted	B8G200834	
		N/C TAV5 vent valve connector fitted	B8G200835	
		Vent port adaptor	B58066011	
	Inlet screens	Center ring w. prot. screen DN200 ISO-K coarse	B8J200807	
		Center ring w. prot. screen DN200 ISO-K fine	B8J200808	
		Coarse inlet screen DN 200 CF	B8J200809	
		Fine inlet screen DN 200 CF	B8J200810	
		CF160 coarse inlet screen	B80000823	
		CF160 fine inlet screen	B80000824	
		ISO160 coarse inlet screen	B80000825	
	Service	ISO160 fine inlet screen	B80000826	
		Bearing replacement kit (nEXT730/930D)	B8J200827	
	Power supply to pump	Bearing replacement tooling (nEXT730/930)	B8J200845	
		nEXT 1m open end cable	B8J200815	To connect a 3rd party power supply to the pump
		nEXT 3m open end cable	B8J200816	
		nEXT 5m open end cable	B8J200817	
		EPS 800	B8J200819	
		nEXT 3m extension cable for EPS 800	B8J200824	
		nEXT 5m extension cable for the EPS 800	B8J200825	
	Mains input cable	3m EU (mains cable) EPS 800, IP54 protected	B8J200829	
		3m US (mains cable) EPS 800, IP54 protected	B8J200830	
		3m UK (mains cable) EPS 800, IP54 protected	B8J200831	
	Miscellaneous	Accessory "Y" adaptor	B8G200837	
		Accessory cable 90 degree/extension	B8G200836	
		Accessory connector bare wired	B8G200839	
		EPS 800 mount kit to place the power supply directly on the pump	B8J200832	
	Extension cables	1 m pump to controller cable	D39700835	
		2 m pump to controller cable	D39700836	
5 m pump to controller cable		D39700837		
Power cables <sup>(1)</sup>	2 m electrical supply cable UK plug	D40013025		
	2 m electrical supply cable EU plug	D40013030		
	2 m electrical supply cable US plug	D40013120		
Miscellaneous	Vent port adaptor	B58066011		
	PRX10 purge restrictor	B58065001		
	TIC relay	D39711805		

(1) Denotes need second annotation 730 and bigger pumps need their own power supply required accessory. Others optional depending on application.

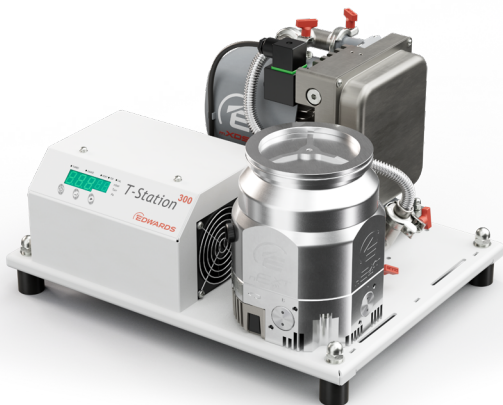
# T-STATION TURBOMOLECULAR PUMPING STATIONS



The Edwards turbomolecular pumping stations are a comprehensive range of products providing versatile vacuum solutions in many different applications. All our nEXT turbomolecular pumping stations are supplied fully assembled and ready to run straight out of the box with nEXT turbomolecular pumps and backing pumps that are user serviceable. There are 2 models in the turbomolecular pumping stations range the entry level T-Station 85 and the higher capacity T-Station 300.

Our T-Station 85 is a low cost, compact turbomolecular pumping station that seamlessly combines an nEXT85H turbomolecular pump with either a dry diaphragm or oil sealed backing pump, and a simple controller, providing pumping speeds of 47 to 84  $\text{ls}^{-1}$ . Our T-Station 300 builds on the existing popular T-Station 85 platform, by replacing the nEXT85H with the nEXT300 turbomolecular pump providing a solution for customers and applications that require a higher pumping speed up to 300  $\text{ls}^{-1}$ .

Both the T-Station 85 and the 300 come with an integrated Turbo and Active Gauge controller which enables single button start/stop of the system. With the ability to control one of our active gauges, vent valve control and delayed start of the turbomolecular pump to either time or pressure if a gauge is fitted, the T-Station 85 ideal for general laboratory needs and the T-Station 300 extending the performance envelope for the R&D sector.



## PRODUCT FEATURES

### CUSTOM INTEGRATED CONTROLLER FEATURES:

Single dedicated button to start/stop pumps; Easy to read accurate display; Ability to select vent mode where a TAV5 vent valve is fitted for automated venting with no user intervention.

### HIGH CAPACITY BACKING PUMPS

E2M1.5, mXDS3s or XDD1 high capacity backing pumps giving the choice between an oil sealed pump or a totally dry diaphragm pump.

### COMPACT LOW PROFILE

Base plate includes rubber feet and cut-outs in the sides for manual handling, giving a compact low profile but stable design that cannot be knocked over.

### USER SERVICEABLE

The nEXT85 and nEXT300 turbomolecular pumps, mXD3s dry scroll pump, XDD1 dry diaphragm pump and E2M1.5 backing pump are all user serviceable.

### INTEGRATED AIR COOLER

Acts to cool internal power supply and pump/controller for quiet operation avoiding multiple fans.

### RUGGED METAL FRAME

All metal frame means rugged design that can take abuse without cracking or breaking.

### INLET FLANGE OPTIONS

Available with either an NW40, ISO63 or CF63 inlet flange to suit your application.

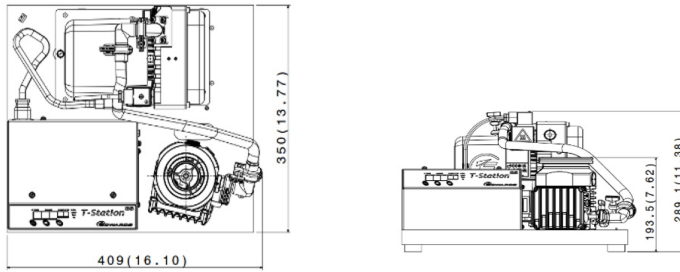
# Technical data

	Units	T-Station 85	T-Station 300
<b>PUMPING SPEED FOR N<sub>2</sub></b>			
NW40	ls <sup>-1</sup>	47	
ISO/CF63	ls <sup>-1</sup>	84	
ISO/CF100	ls <sup>-1</sup>	-	300
<b>Compression Ratio for N<sub>2</sub></b>		>1X10 <sup>11</sup>	
<b>BACKING PUMP SPEED 50HZ</b>			
mXDS3s	m <sup>3</sup> /h	3	
E2M1.5	m <sup>3</sup> /h	1.6	
XDD1	m <sup>3</sup> /h	1.2	
<b>ULTIMATE VACUUM</b>			
T-Station 85H dry ISO63	mbar	<5x10 <sup>-8</sup>	
T-Station 85H dry CF63	mbar	<5x10 <sup>-9</sup>	
T-station 300 ISO100	mbar		<6 X 10 <sup>-8</sup>
T-station 300 CF100	mbar		<5x10 <sup>-10</sup>
T-Station 85H wet ISO63	mbar	<5x10 <sup>-9</sup>	
T-Station 85H wet CF63	mbar	<5x10 <sup>-10</sup>	
<b>Inlet flange</b>		DN 16 ISO - KF	
<b>EXHAUST FLANGE</b>			
mXDS3s		1/8 BSP or 6x8mm	
E2M1.5		11 mm OD nozzle or 3/8" BSP	
XDD1		Fitted silencer or 1/8 inch BSP	
<b>MASS</b>			
mXDS3s	kg	19 max	26 max
E2M1.5	kg	21 max	
XDD1	kg	18 max	
E2M1.5 CF100	kg		29 max
XDD1 CF100	kg		24 max
<b>Noise level</b>	db(A)	54.0 +/- 2.5	
<b>OPERATING TEMPERATURE RANGE</b>			
Dry Vacuum pumps	°C	+5 to +40	
Wet Vacuum pumps	°C	+12 to +40	

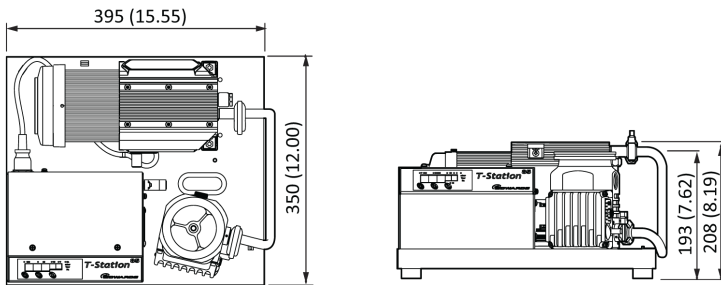


# Dimensions

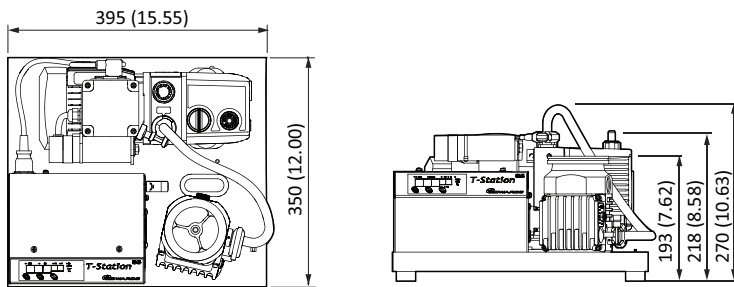
Tstation 85 Drv with mXDS3s backing pump



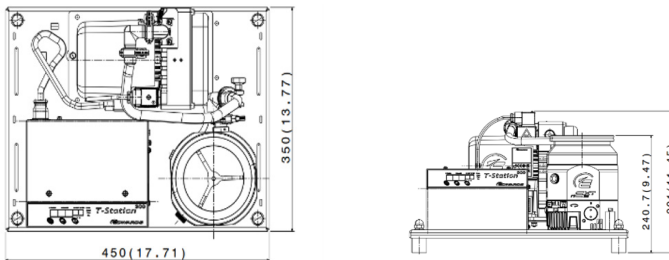
T-Station 85D with XDD1 backing pump



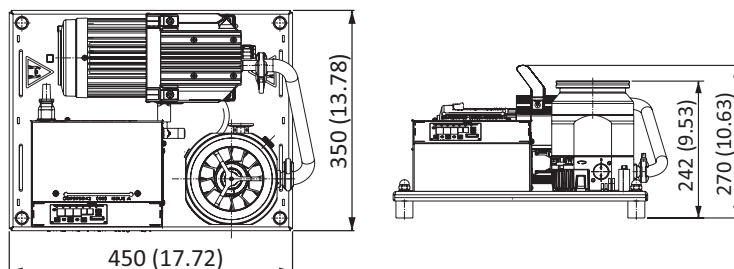
T-Station 85W with E2M1.5 backing pump



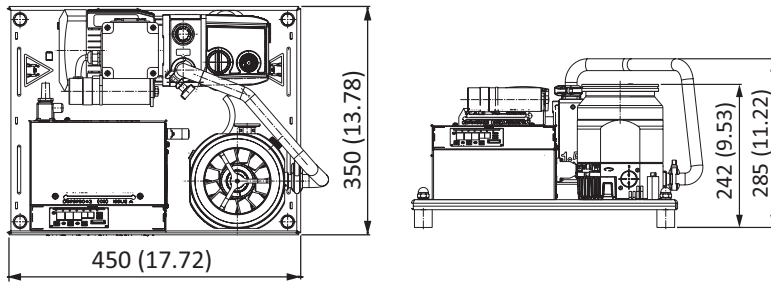
Tstation 300 Dry with mXDS3s backing pump



T-Station 300 Dry with XDD1 backing pump



## T-Station 300 Wet with E2M1.5 backing pump



## Ordering information

### T-station 85

PRODUCT DESCRIPTION	ORDER NO.
T-Station 85H Dry NW40 mXDS3s 230V	TS85M1003
T-Station 85H Dry NW40 mXDS3s 115V	TS85M1006
T-Station 85H Dry ISO63 mXDS3s 230V	TS85M2003
T-Station 85H Dry ISO63 mXDS3s 115V	TS85M2006
T-Station 85H Dry CF63 mXDS3s 230V	TS85M3003
T-Station 85H Dry CF63 mXDS3s 115V	TS85M3006
T-Station 85H Dry NW40 200-230V	TS85D1001
T-Station 85H Dry NW40 100-120V	TS85D1002
T-Station 85H Dry ISO63 200-230V	TS85D2001
T-Station 85H Dry ISO63 100-120V	TS85D2002
T-Station 85H Dry CF63 200-230V	TS85D3001
T-Station 85H Dry CF63 100-120V	TS85D3002
T-Station 85H Wet NW40 200-230V	TS85W1001
T-Station 85H Wet NW40 100-120V	TS85W1002
T-Station 85H Wet ISO63 200-230V	TS85W2001
T-Station 85H Wet ISO63 100-120V	TS85W2002
T-Station 85H Wet CF63 200-230V	TS85W3001
T-Station 85H Wet CF63 100-120V	TS85W3002

### T-station 300

PRODUCT DESCRIPTION	ORDER NO.
T-Station 300 Dry ISO100 mXDS3s 230V	TS300M2003
T-Station 300 Dry ISO100 mXDS3s 115V	TS300M2006
T-Station 300 Dry CF100 mXDS3s 230V	TS300M3003
T-Station 300 Dry CF100 mXDS3s 115V	TS300M3006
T-Station 300D Dry ISO100 200-230V	TS300D4001
T-Station 300D Dry ISO100 100-120V	TS300D4002
T-Station 300D Dry CF100 200-230V	TS300D5001
T-Station 300D Dry CF100 100-120V	TS300D5002
T-Station 300D Wet ISO100 200-230V	TS300W4001
T-Station 300D Wet ISO100 100-120V	TS300W4002
T-Station 300D Wet CF100 200-230V	TS300W5001
T-Station 300D Wet CF100 100-120V	TS300W5002

### Accessories and spares:

	PRODUCT DESCRIPTION	ORDER NO.
Accessories	EMF3 mist filter for E2M1.5	A46220000
	TAV5 solenoid operated vent valve	B58066010
	APG200 - XLC active Pirani gauge NW16	D1G2011100
	AIM200 - X - active inverted magnetron gauge NW25	D2G0021100
	WRG200 - X - active wide range gauge NW25	D3G0021100
	APGX-H active linear convection gauge NW16	D02391000
Cord sets	2 m electrical supply cable UK plug	A50505000
	2 m electrical supply cable EU plug	A50506000
	2 m electrical supply cable USA/Japan plug	A50507000
	2m electrical supply cable no plug	A50508000
	0.5 m Gauge cable	D40001005
	1 m Gauge cable	D40001010

# nEXT TURBOMOLECULAR PUMPING STATIONS



nEXT turbomolecular pumping stations are configurable with turbomolecular pump speeds ranging from 47 to 400  $\text{ls}^{-1}$  and a choice of oil sealed or dry backing pumps ranging from 1 to 20  $\text{m}^3\text{h}^{-1}$ . All our nEXT turbomolecular pumping stations feature an integrated TIC turbo and instrument controller offering full control of the package via a simple intuitive interface.

The nEXT turbomolecular pumping stations are supplied fully assembled and ready to run straight out of the box and include common accessories such as mist filters and mains cables as appropriate to the chosen pumps. As fully featured high end stations they include RS232 serial communications and Windows® software for monitoring and control.



## PRODUCT FEATURES

### RANGE OF TURBOMOLECULAR PUMP OPTIONS

Choice of turbomolecular pump with speeds ranging from 47 to 400  $\text{ls}^{-1}$  and inlet flanges from DN40 to DN160.

### FULLY CONTROLLABLE

TIC turbo and instrument controller offers full control of pumps and up to 3 Active gauges as well as offering full serial remote communications.

### VENT VALVE OPTION

Optional turbomolecular pump vent valve can be ordered as part of cart assembly.

### USER SERVICEABLE

All nEXT turbomolecular pumps and backing pumps are fully user serviceable.

### ROBUST METAL FRAME

All metal frame with locking castors for a robust but easily mobile system. Bench mounting kit included for safe bench top operation.

### CHOICE OF BACKING PUMPS

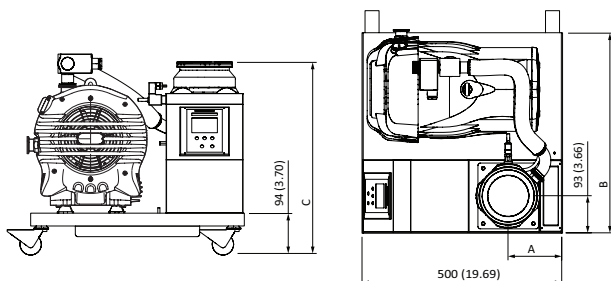
Choice of oil sealed and dry backing pumps with capacities ranging from 1 to 20  $\text{m}^3\text{h}^{-1}$ .

### LOW VIBRATION

Backing pump mounted on anti-vibration mounts for low levels of transmitted vibration.



## Dimensions



	A	B <sup>(1)</sup>	C
nEXT85 NW40	144	380/500	427
nEXT85 ISO63	144	380/500	401
nEXT85 CF63	144	380/500	415
nEXT240 ISO100	135.5	380/500	443.2
nEXT240 CF100	135.5	380/500	451.2
nEXT300 ISO100	135.5	380/500	448.7
nEXT300 CF100	135.5	380/500	463.2
nEXT400 ISO160	135.5	380/500	448.7
nEXT400 CF160	135.5	380/500	453.7

(1) 380 mm refers to small platforms with XDD1 backing pumps  
500 mm refers to large platforms with nXDS/RV backing pumps

## Technical data

		nEXT TURBO STATION
Peak pumping speed for N <sub>2</sub>	NW40	47 ls <sup>-1</sup>
	ISO/CF63	84 ls <sup>-1</sup>
	ISO/CF100	240 or 300 ls <sup>-1</sup>
	ISO/CF160	400 ls <sup>-1</sup>
Compression ratio for N <sub>2</sub>		>1 x 10 <sup>11</sup>
Backing pump speed, 50 Hz (60 Hz)	E2M1.5	1.6 m <sup>3</sup> h <sup>-1</sup> (1.2 cfm)
	RV	5.1 m <sup>3</sup> h <sup>-1</sup> (3.6 cfm)
	RV12	12 m <sup>3</sup> h <sup>-1</sup> (8.4 cfm)
	XDD1	1.2 m <sup>3</sup> h <sup>-1</sup> (0.9 cfm)
	nXDS6i	6.2 m <sup>3</sup> h <sup>-1</sup> (3.6 cfm)
	nXDS10i	11.4 m <sup>3</sup> h <sup>-1</sup> (6.7 cfm)
	nXDS15i	15.1 m <sup>3</sup> h <sup>-1</sup> (8.9 cfm)
nXDS20i	22 m <sup>3</sup> h <sup>-1</sup> (13.0 cfm)	
Ultimate vacuum (CF)		<5 x 10 <sup>10</sup> mbar
Inlet connection		NW40, ISO63, CF63, ISO100, CF100, ISO160 or CF160
Exhaust connection	E2M1.5	NW16
	XDD1 RV/nXDS	Fitted silencer or 1/8" BSP NW25
Weight	E2M1.5/XDD1	24.9 to 35 kg
	RV/nXDS	41.2 kg to 55 kg
Noise level at ultimate		≤ 56 dB(A)
Operating temperature range		12 to 40 °C

## Ordering information

### Pumping station:

T S [ ] [ ] - [ ] [ ] - 0 0 [ ]

#### Turbomolecular pump

B nEXT240  
C nEXT300  
D nEXT400  
E nEXT240T  
F nEXT300T  
G nEXT400T  
J nEXT85D  
K nEXT85H

#### Inlet Flange

1 DN40NW (nEXT85)  
2 DN63ISO-K (nEXT85)  
3 DN63CF (nEXT85)  
4 DN100ISO-K (nEXT240/300)  
5 DN100CF (nEXT240/300)  
6 DN160ISO-K (nEXT400)  
7 DN160CF (nEXT400)

#### Backing Pump

1 E2M1.5  
2 RV5  
3 RV12  
A XDD1  
D nXDS6i  
E nXDS10i  
F nXDS15i  
G nXDS20i

#### Vent Option

0 Manual Vent  
1 TAV5 Vent Valve

#### Electrical Supply

1 220-240 V 50/60 Hz (Europe)  
2 110-120 V 50/60 Hz (USA)  
3 200 V 50/60 Hz (Japan)  
4 220-240 V 50/60 Hz (UK)

### Accessories:

PRODUCT DESCRIPTION	ORDER NO.
APG200 - XLC active Pirani gauge NW16	D1G2011100
AIM200 - X - active inverted magnetron gauge NW25	D2G0021100
WRG200 - X - active wide range gauge NW25	D3G0021100
APGX-H active linear convection gauge NW16	D02391000
0.5 m Gauge cable	D40001005
1 m Gauge cable	D40001010

# nEXT TURBOMOLECULAR PUMPING STATION TIC CART XL



nEXT turbomolecular pumping station tic cart xl are configurable with pump speeds ranging from 240 to 930  $\text{ls}^{-1}$  and choice of dry backing nXRi multistage roots pumps that enables the range to pump from 30 to 90  $\text{m}^3\text{h}^{-1}$ . All our nEXT turbomolecular pumping stations feature an integrated TIC turbo and instrument controller offering full control of the package via a simple intuitive interface.

The nEXT turbomolecular pumping stations are supplied fully assembled and ready to run straight out of the box providing a customer friendly interface using only one power cable. As fully featured high end stations they include RS232 serial communications and Windows® software for monitoring and control.



## PRODUCT FEATURES

### RANGE OF TURBOMOLECULAR PUMP OPTIONS

Choice of turbomolecular pump with speeds ranging from 240 to 930  $\text{ls}^{-1}$  and inlet flanges from DN100 to DN200.

### FULLY CONTROLLABLE

TIC turbo and instrument controller offers full control of pumps and up to 3 Active gauges as well as offering full serial remote communications.

### VENT VALVE OPTION

Optional turbomolecular pump vent valve can be ordered as part of cart assembly.

### USER SERVICEABLE

All nEXT turbomolecular pumps and backing pumps are fully user serviceable.

### ROBUST METAL FRAME

All metal frame with locking castors for a robust but easily mobile system.

### CHOICE OF BACKING PUMPS

Choice of dry backing pumps with capacities ranging from 30 to 90  $\text{m}^3\text{h}^{-1}$ .

### LOW VIBRATION

Backing pump mounted on anti-vibration mounts for low levels of transmitted vibration.

## Technical data

	nEXT240	nEXT300	nEXT400	nEXT730	nEXT930
<b>PUMPING STATION</b>					
Inlet connection	DN100/ISO-K/ DN100CF	DN100/ISO-/ DN100CF	DN160 ISO-K/ DN160-CF	ISO-K 160/ CF 160	ISO-K 200/ CF 200
Forevacuum connection	DN 25 ISO-KF (NW25)	DN 25 ISO-KF (NW25)	DN 25 ISO-KF (NW25)	DN 25 ISO-KF (NW25)	DN 25 ISO-KF (NW25)
Inlet pumping speed N <sub>2</sub>	240	300	390	730	930
Ultimate pressure mbar	6 x 10 <sup>-8</sup> 5 x 10 <sup>-10</sup>	6 x 10 <sup>-8</sup> 5 x 10 <sup>-10</sup>	1 x 10 <sup>-8</sup> 1 x 10 <sup>-10</sup>	2 x 10 <sup>-8</sup> 3 x 10 <sup>-10</sup>	2 x 10 <sup>-8</sup> 3 x 10 <sup>-10</sup>
Mains supply V	110 / 230	110 / 230	110 / 230	110 / 230	110 / 230

## 'PLUG AND PUMP' TURBOMOLECULAR PUMPING STATION

Everything about our range of nEXT turbomolecular pumping stations has been developed to provide a comprehensive vacuum solution with the latest technological advances for easy installation and operation.

A simplified ordering matrix and expanded range, to include turbopumps with speeds from 240 ls<sup>-1</sup> to 930 ls<sup>-1</sup>, enables you to select the most appropriate combination for your application, fully assembled and ready to go.

**1 CHOOSE YOUR TURBOPUMP**

nEXT240 (240 ls<sup>-1</sup>)    nEXT300 (300 ls<sup>-1</sup>)  
nEXT400 (400 ls<sup>-1</sup>)    nEXT730 (730 ls<sup>-1</sup>)  
nEXT930 (930 ls<sup>-1</sup>)

**2 CHOOSE YOUR BACKING PUMP**

nXR30i (30 m<sup>3</sup>h<sup>-1</sup>) nXR40i (40 m<sup>3</sup>h<sup>-1</sup>)  
nXR60i (60 m<sup>3</sup>h<sup>-1</sup>) nXR90i (90 m<sup>3</sup>h<sup>-1</sup>)

**3 SELECT YOUR VOLTAGE**

Vacuum isolation valve VIV and the APG200 fitted as a standard accessory

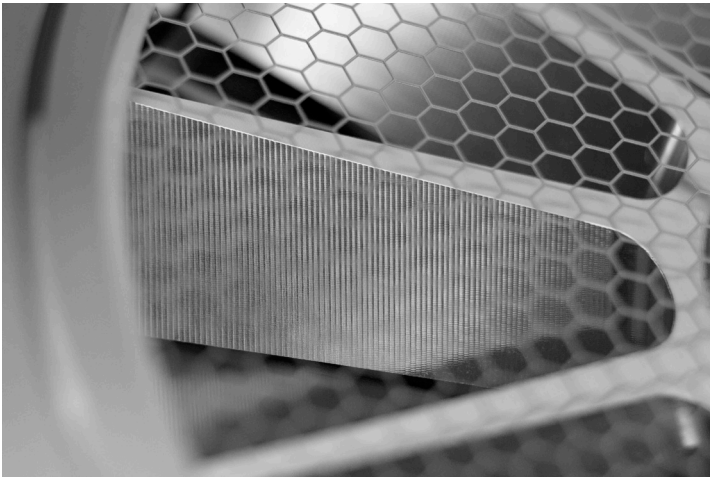
## Ordering information

nEXT turbomolecular pumping cart xl:

**TC**   -   - 0 0

<p><b>Turbo</b></p> <p>B nEXT240 C nEXT300 D nEXT400 E nEXT240T F nEXT300T G nEXT400T H nEXT730 I nEXT930</p>	<p><b>Inlet</b></p> <p>1 ISO 100 2 CF 100 3 ISO 160 4 CF 160 5 ISO 200 6 CF 200</p>	<p><b>Backing</b></p> <p>1 nXR30i 2 nXR40i 3 nXR60i 4 nXR90i</p>	<p><b>Vent options</b></p> <p>0 Manual vent 1 TAV5 vent valve</p>	<p><b>Electrical supply</b></p> <p>1 220-240V 50/60 Hz Europe 2 110-120V 50/60 Hz USA 3 200V 50/60 Hz Japan 4 220-240v 50/60 Hz UK</p>
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# STP MAGLEV TURBOMOLECULAR PUMPS



STP maglev turbomolecular pumps are the first choice for applications demanding high up-time, hydrocarbon-free pumping, minimal maintenance and low vibration. The multi-axis magnetic bearing system is used to suspend the rotor during operation, ensuring there is no risk of contamination while minimising noise and vibration.

The STP maglev turbomolecular pump range has a market leading reputation for quality and reliability and is the preferred choice for many of the most challenging semiconductor applications. For laboratory applications this makes STP maglev turbomolecular pumps extremely reliable and normally maintenance free.



## PRODUCT FEATURES

### VIBRATION FREE

Magnetic levitation means no friction and thus extremely low vibration, in addition this remains constant and does not change as parts wear.

### OIL FREE

The use of magnetic bearings eliminates all hydrocarbon lubricants.

### AUTOMATIC BALANCING SYSTEM

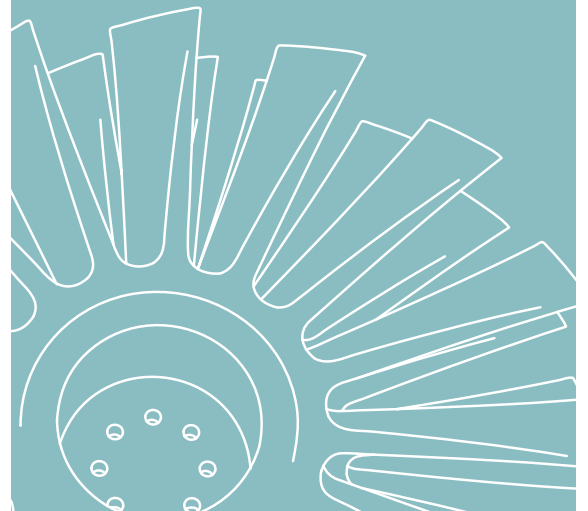
Edwards 5-axis pumps are able to adjust the magnetic field dynamically to take out rotor imbalances.

### MAINTENANCE FREE

Zero friction means no wear and thus no routine maintenance is required in normal operation.

### CORROSION RESISTANCE

Most models of Edwards STP maglev turbomolecular pumps are also available in a special corrosion resistant version with nickel coated rotors and a nitrogen purge facility, making them ideal for chemical laboratory applications.



# Technical data

		Units	STP-301 DN100	STP-451 DN160	STP-603 DN160	STP-1003 DN200	STP-iX457 DN100	STP-iX457 DN160	STP-iX3006 DN250	STP-iX3006 DN320	
<b>VACUUM DATA</b>											
Pumping speed	N <sub>2</sub>	ls <sup>-1</sup>	300	480	650	1000	300	450	2300	2700	
	H <sub>2</sub>		300	460	550	800	300	460	2600	2700	
Compression ratio	N <sub>2</sub>	>10 <sup>8</sup>									
	H <sub>2</sub>	2 x 10 <sup>4</sup>			>10 <sup>5</sup>			1 x 10 <sup>4</sup>		6x10 <sup>4</sup>	
Ultimate pressure (CF)		mbar	<1 x 10 <sup>-10</sup>						<1 x 10 <sup>-9</sup>		
Maximum flow rate	N <sub>2</sub>	sccm	-				100 if ambient temperature is at 25°C			With no TMS	
Maximum inlet pressure		mbar	6.7 x 10 <sup>-4</sup>		1.3 x 10 <sup>-4</sup>		3.2 x 10 <sup>-3</sup>		-		
Maximum backing pressure		mbar	0.13				0.67		1.33		
<b>MOTOR DATA</b>											
Maximum power consumption		VA	350		800		240		With no TMS		
Nominal rotational speed		rpm	48,000		35,000		55,000		27,000		
<b>PHYSICAL DATA</b>											
Weight		kg	11	12	31		16		84	87	
Vibration		µm	<0.01				<0.005		-		
Inlet connection			ISO100 or CF100	ISO160 or CF160	ISO160 or CF160	ISO200 or CF200	ISO100 or CF100	ISO160 or CF160	ISO250 or CF250	ISO320 or CF320	
Backing connection			NW25		NW40		NW25		NW40		
Run-up time		secs	180		360		≤480		≤840		
Magnetic field tolerance axial/radial		mT	15/3								
Orientation of installation			Any								
Cooling method			Ambient/Air/Water				Ambient/Air		Water		
Maximum flange temperature during bakeout (CF only)		°C	120								
Bearing technology			3 axis magnetically levitated			5 axis magnetically levitated					
Controller type			External				Integrated				
Power supply type			External							-	
Interfaces			RS232 (Optional), I/O			RS232, I/O					
Optional interfaces			Profibus		Profibus, EtherCAT		-		Profibus, EtherCAT		



STP-301



STP-451



STP-603



STP-1003



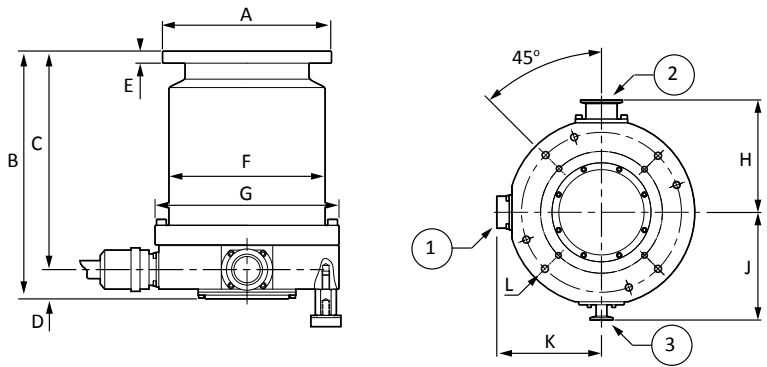
STP-iX457



STP-iX3006



# Dimensions

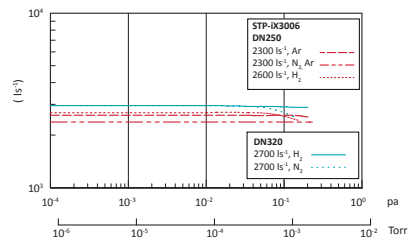
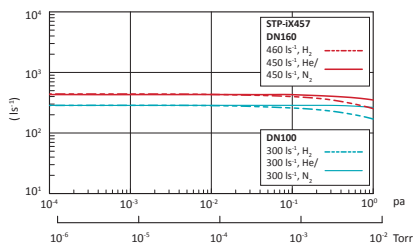
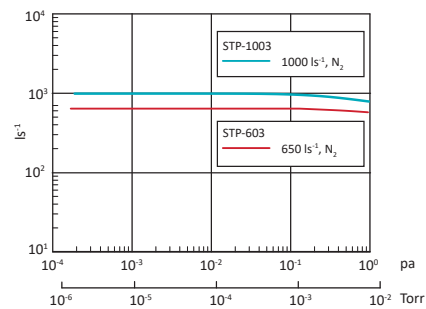
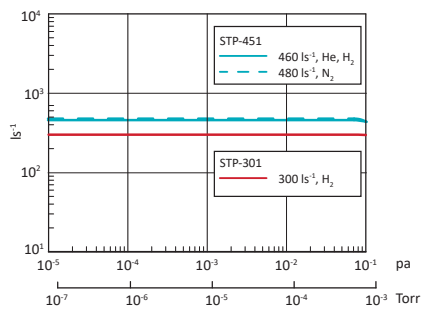


Note: STP-603 pump shown

- 1. Electrical connector
- 2. Outlet port
- 3. Purge port

	A	B	C	D	E	F	G	H	J	K	L
STP-301	Ø130 ISO100	230	197	33	12	Ø156	Ø180	108	110	99.5	8 x M8 x 16
	Ø152 DN100CF				21						
STP-451	Ø180 ISO160	200	167	33	12	Ø208	Ø245	147.5	142	137.5	8 x M10 x 24
	Ø203 DN160CF				22						
STP-603	Ø225 ISO160F	330	291	39	16	Ø152	Ø180	108	123.5	101	4 x M10 x 18
	Ø203 DN160CF				22						
STP-1003	Ø285 ISO200F	310	271	89	16	Ø358	Ø358	210	182	150	6 x M16 x 30
	Ø253 DN200CF				25						
	Ø305 DN250CF				28						
STP-iX457	Ø130 ISO100	286	197	113	12	Ø358	Ø358	210	182	150	6 x M16 x 30
	Ø152 DN100CF				21						
	Ø180 ISO160	12									
STPi-X3006	Ø203 DN160CF	256	167		22						
	Ø335 ISO250F	435	322		15						
	Ø425 ISO320F	396	283		18						

# Performance



## Ordering information

Pumps:

PRODUCT DESCRIPTION	ORDER NUMBER
<b>STP-301</b>	
STP-301 ISO100	YT21B0350
STP-301 CF100	YT21B0010
<b>STP-451</b>	
STP-451 ISO160	YT21B0460
STP-451 CF160	YT21B0080
<b>STP-iX457 without cooling</b>	
STP-iX457 ISO100	YT860Z120
STP-iX457 CF100	YT860Z150
STP-iX457 ISO160	YT860Z130
STP-iX457 CF160	YT860Z160
<b>STP-iX457 with air cooling</b>	
STP-iX457 ISO100	YT865Z000
STP-iX457 CF100	YT865Z070
STP-iX457 ISO160	YT865Z020
STP-iX457 CF160	YT865Z080
<b>STP-603</b>	
STP-603 ISO160	YT39B0030
STP-603 CF160	YT390Z005
<b>STP-1003</b>	
STP-1003 ISO200	YT390Z001
STP-1003 CF200	YT39B0010
<b>STP-iXR3006</b>	
STP-iX3006 ISO250	YT830Z010
STP-iX3006 CF250	YT830Z050
STP-iX3006 ISO320	YT830Z030
STP-iX3006 CF320	TBA

Accessories and spares:

PUMP		PRODUCT DESCRIPTION	ORDER NO.
STP-301/451	Controller <sup>(1)</sup>	SCU-350 100-240V	YT21Z0Z01
		SCU-350 100-240V with RS232	YT21ZEZ20
	Pump to controller cables <sup>(1)</sup>	3m cable	B70700010
		5m cable	B70700000
		10m cable	B70700130
		20m cable	B70700150
		30m cable	PT21Y0B00
	Mains cables <sup>(1)</sup>	3m	B70700090
		5m	B70700040
		10m	PT21Y0A00
	Cooling	115V air cooler	YT011A003
		220-240V air cooler	YT011A005
Water cooling kit		YT21CA001	
STP-iX457	Power supply with display <sup>(1)</sup>	iPD240 AC power supply 240V	YT86W0Z10
	Pump to power supply cables <sup>(1)</sup>	2.5m cable	YT86Y0B15
		5m cable	YT86Y0B20
		10m cable	YT86Y0B30
		15m cable	YT86Y0B40
		20m cable	YT86Y0B50
	Mains cables <sup>(1)</sup>	3m	PT64Y1A10
		5m	PT64Y1A20
		10m	PT64Y1A30
	Vent valve*	Vent valve	YT860T211
	STP-603/1003	Controller <sup>(1)</sup>	SCU-800 100-120/200-240V with RS232/485
Pump to controller cables <sup>(1)</sup>		3m cable	B75130050
		5m cable	B75130020
		10m cable	B75130060
		20m cable	B75130190
		30m cable	B75130210
Mains cables <sup>(1)</sup>		3m	PT49Y0A05
		5m	PT49Y0A00
		10m	PT49Y0A01
Cooling		100-115V air cooler	YT01BA210
		220-240V air cooler	YT011A020
		Water cooling kit	YT170A001
STP-iX3006		Display unit	iDT001 with 3m cable
	iDT001 with 5m cable		YT79U1Z40
	iDT001 with 10m cable		YT79U1Z50
	iDT001 with 15m cable		YT79U1Z10
	Mains cables <sup>(1)</sup>	3m	YT79Y0A01
		5m	YT79Y0A00
		10m	YT79Y0A03

\* Only 1 accessory can be controlled by the pump, so if fitting both air cooler and vent valve we recommend fitting vent valve to pump and using a mains air cooler  
(1) denotes required accessory, others are optional depending on application.

# GAMMA UHV PUMPS AND ACCESSORIES



Getter pumping technologies create ultra-high vacuum (UHV) environments for a variety of applications, ranging from electron microscopes to large scale particle accelerators. They can create the lowest pressure levels at an economical cost.

Edwards offers a range of Ion Pumps, Titanium Sublimation Pumps, Non-Evaporable Getter Pumps, HyTan NEG-Ion Pumps and accessories through Gamma Vacuum.



## PRODUCT FEATURES

### MECHANICAL VIBRATION ELIMINATED

Getter pumps have no moving parts that could produce vibrations.

### HIGH RADIATION TOLERANCE

Getter pumps are built with radiation tolerant materials that can withstand radiation levels as large as  $10^8$  Gray. Connectors and cables are also built with radiation tolerant materials for years of continuous operation.

### HIGH TEMPERATURE TOLERANCE

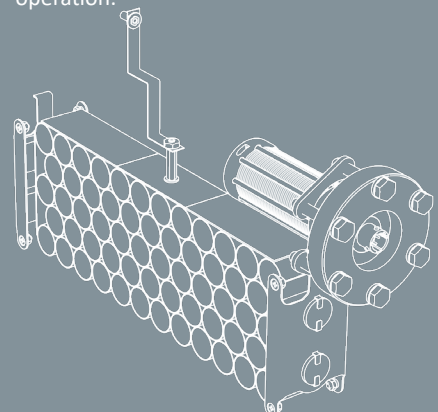
Without any special consideration, ion pumps can be baked to 250 °C. Removing the magnets allows for hotter bakes up to 450 °C. Long hot bakes are critical to every UHV system.

### REGULAR MAINTENANCE ELIMINATED

Ion pumps require virtually no maintenance and avoid costly vacuum events because they are sealed from atmosphere, saving time, money and resources.

### LOW INITIAL AND OPERATIONAL COSTS

Initial cost is typically less than comparable specifications of other types of vacuum pumps. Getter pumps use minimal or no power for years of low cost operation.



# Technical data: Smaller Pumps

	UNITS	MINI	3S	5S	10S	25S	45S	75S
<b>PUMPING SPEED</b>	L/S	0.2	2 - 3	4 - 5	8 - 10	15 - 20	30 - 40	40 - 75
<b>PORT OPTION</b>								
Copper tube			CU					
DN16 (1.33") <sup>(1)</sup>		1V	1V, 1H OR 1D					
DN40 (2.75") <sup>(2)</sup>				2V	2H	2V, 2H OR 2D		2V OR 2D
DN63 (4.5") <sup>(3)</sup>						4V OR 4D		
DN100 (6") <sup>(4)</sup>								6S OR 62
<b>ELEMENT CHOICE</b>								
TiTan CV (Diode)			•	•	•	•	•	•
TiTan DI (Noble Diode)		•	•	•	•	•	•	•
TiTan CVX (Diode XHV)						•	•	•
TiTan DIX (Noble Diode XHV)						•	•	•
TiTan TR (Triode)						•	•	•
<b>FEEDTHROUGH CHOICE</b>								
MN Mini		•						
5K 5kV SHV			•	•				
SC 10kV SAFECONN				•	•	•	•	•
OP Perkin Elmer						•	•	•
OV Old Varian			•		•	•	•	•
VR Varian StarCell®						•	•	•
FI Fisher Interlock					•	•	•	•
<b>OTHER DATA</b>								
Internal heater option					•	•	•	•
Internal TSP/NEG option <sup>(5)</sup>						•	•	•
Weight	KG (LBS)	0.35 (0.8)	0.45 (1.0)	2.3 (5)	6 (13)	9 (20)	16 (34)	22 (48)
Shipping weight	KG (LBS)	3.5 (7.7)	0.9 (2.0)	2.8 (6)	8 (17)	11 (24)	18 (39)	25 (55)
Ultimate pressure	MBAR	<1 X 10 <sup>-11</sup>						
Starting pressure	MBAR	<1 X 10 <sup>-3</sup>						
Lifetime (hrs at 1 x 10 <sup>-6</sup> mbar)	HOURS	DIODE/NOBLE DIODE 50,000; TRIODE 80,000						
Operating bake temperature	°C	100	95	200	250			
Maximum bake temperature (6)	°C	100	450					
Dimensions (L x W x D)	MM	38 X 38 X 51	138 X 41 X 50	106 X 85 X 81	200 X 153 X 79	202 X 125 X 130	209 X 251 X 130	277 X 242 X 130

1 - 1V = 1" perpendicular to feedthrough; 1H = 1" inline with feedthrough; 1D = 1" double ports (perpendicular and inline)

2 - 2V = 2" top port; 2H = 2" side port; 2D = 2" double ports (top and side)

3 - 4V = 4" top port; 4D = 4" top port and 2" side port

4 - 6S = single 6" port; 62 = 6" top port and 2" side port

5 - Extra side or bottom port required

6 - Magnets removed

## Ordering information

Ion pumps and integrated TSP/NEG:

Ion pump	Element	Flange	Feedthrough	Heater	Integrated TSP/NEG
Mini 0.2l/s	CV Conventional diode	1V Perpendicular DN16	MN Mini	N None	N None
3S 3l/s	DI Noble diode	1H Inline DN16	5K 5kV SHV	1 110V	TSP TSP single filament
5S 5l/s	CX Diode XHV	1D Double DN16	SC 10kV SAFECONN	2 208-240V	N0 50l/s NEG (25/45/75)
10S 10l/s	DX Noble diode XHV	2V Vertical DN40	OP Perkin Elmer		N1 100l/s NEG (25/45/75)
25S 20l/s	TR Triode	2H Horizontal DN40	OV Old Varian		N2 200l/s NEG (45/75)
45S 40l/s		2D Double DN40	VR Varian StarCell®		N3 300l/s NEG (75)
75S 75l/s		4V Vertical DN63	FI Fisher Interlock		
		4D DN63/DN40			
		6S Single DN100			
		62 DN100/DN40			

## Technical data: Larger Pumps

	UNITS	100L	200L	300L	400L	400LX	600L	600LX	800LX	1200LX
<b>PUMPING SPEED</b>	L/S	80 - 100	160 - 200	240 - 300	320 - 400	320 - 400	480 - 600	480 - 600	640 - 800	960 - 1200
<b>PORT OPTION</b>										
DN100 (6") (1)		6S OR 6D								
DN160 (8") (2)			8S OR 8D			8S, 8D OR 8P	8S OR 8D	8S, 8D OR 8P		8S OR 8D
DN200 (10") (3)							10S OR 10D	10S, 10D OR 10P		10S OR 10D
<b>ELEMENT CHOICE</b>										
TiTan CV (Diode)		•	•	•	•	•	•	•	•	•
TiTan DI (Noble Diode)		•	•	•	•	•	•	•	•	•
TiTan CVX (Diode XHV)		•	•	•	•	•	•	•	•	•
TiTan DIX (Noble Diode XHV)		•	•	•	•	•	•	•	•	•
TiTan TR (Triode)		•	•	•	•	•	•	•	•	•
<b>FEEDTHROUGH CHOICE</b>										
SC 10kV SAFECONN		•	•	•	•	•	•	•	•	•
OP Perkin Elmer		•	•	•	•	•	•	•	•	•
OV Old Varian		•	•	•	•	•	•	•	•	•
*VR Varian StarCell®		•	•	•	•	•	•	•	•	•
FI Fisher Interlock		•	•	•	•	•	•	•	•	•
<b>OTHER DATA</b>										
Internal heater option		•	•	•	•	•	•	•	•	•
Internal TSP/NEG option <sup>(4)</sup>		•	•	•	•	•	•	•	•	•
Weight	KG (LBS)	29 (65)	50 (112)	66 (145)	67 (148)	95 (210)	103 (226)	122 (270)	127 (280)	206 (452)
Shipping weight	KG (LBS)	47 (105)	69 (152)	89 (195)	85 (188)	113 (250)	127 (280)	141 (310)	145 (320)	254 (560)
Ultimate pressure	MBAR	<1 X 10 <sup>-11</sup>								
Starting pressure	MBAR	<1 X 10 <sup>-3</sup>								
Lifetime (hrs at 1 x 10 <sup>-6</sup> mbar)	HOURS	DIODE/NOBLE DIODE 50,000; TRIODE 80,000								
Operating bake temperature	°C	250								
Maximum bake temperature <sup>(5)</sup>	°C	450								
Dimensions (L x W x D)	MM	326 X 128 X 252	325 X 413 X 233	325 X 413 X 337	325 X 413 X 413	537 X 413 X 233	325 X 513 X 513	537 X 413 X 336	537 X 413 X 413	650 X 513 X 513

1 - 6S = single 6" port; 6D = double 6" ports (top and bottom)

2 - 8S = single 8" port; 8D = double 8" ports (top and bottom); 8P = double 8" ports (top and side)

3 - 10S = single 10" port; 10D = double 10" ports (top and bottom); 10P = double 10" ports (top and side)

4 - Extra side or bottom port required

5 - Magnets removed

## Ordering information

Ion pumps and integrated TSP/NEG:



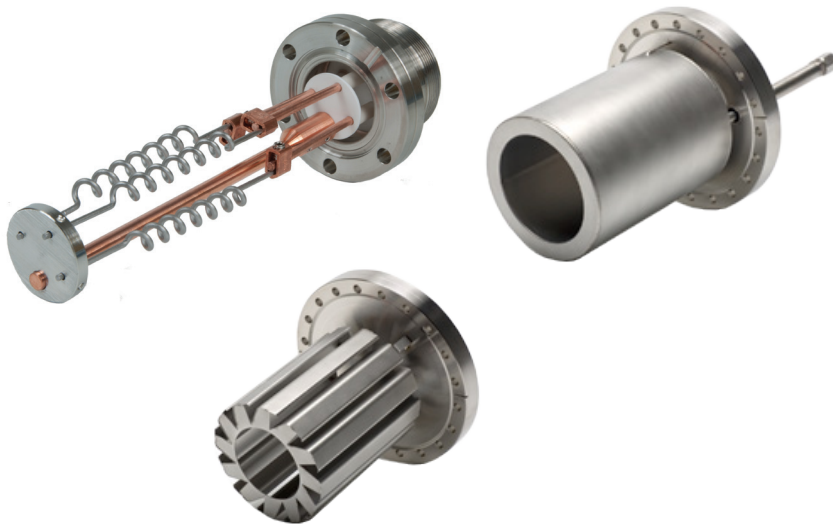
Ion pump		Element		Flange		Feedthrough		Heater		Integrated TSP/NEG	
100L	100l/s	CV	Conventional diode	6S	Single DN100	SC	10kV SAFECONN	N	None	N	None
200L	200l/s	DI	Noble diode	6D	2x DN100 (top/bottom)	OP	Perkin Elmer	1	110V	TC	TSP & Cryoshroud (not 100L)
300L	300l/s	CX	Diode XHV	8S	Single DN160	OV	Old Varian	2	208-240V	TA	TSP & Ambient Shield
400L	400l/s	DX	Noble diode XHV	8D	2x DN160 (top/bottom)	VR	Varian StarCell®			NG	400l/s NEG
400LX	400l/s	TR	Triode	8P	2x DN160 (top/side)	FI	Fisher Interlock				
600L	600l/s			10S	Single DN200						
600LX	600l/s			10D	2x DN200 (top/bottom)						
800LX	800l/s			10P	2x DN200 (top/side)						
1200LX	1200l/s										

\*STARCELL® is a registered trademark of Agilent Technologies

# TITANIUM SUBLIMATION PUMPS (TSP)

Titanium Sublimation Pumps (TSPs) are often used in combination with ion pumps or independently to remove reactive gases from the vacuum environment. Combined with an ion pump, the TSP allows for low ultimate pressures in a shorter amount of time. All TSP components are bakeable to 400 °C.

TSPs operate by heating a titanium filament and subliming (converting from solid to gas phase) titanium molecules onto a surface. Sublimed titanium layers are then available to chemically react with reactive gases, like oxygen and nitrogen, and disassociate and diffuse hydrogen. TSPs can operate from  $10^{-5}$  to  $10^{-12}$  mbar and have pumping speeds in excess of 10,000 l/s for hydrogen.



## PRODUCT FEATURES

### TSP FILAMENT CARTRIDGE

The filament cartridge is mounted on a 2.75" CFF (DN40). The feedthrough supports three titanium-molybdenum filaments and a return path for ground isolation. Each filament contains 1.5 grams of usable titanium and averages 20 hours of operation.

### LIQUID CRYOSHROUD

The liquid cryoshroud consists of a double walled, type 304L stainless steel cylinder with two liquid nitrogen feedthroughs (.375 in. diameter) with flare type fittings. It provides 1600 cm<sup>2</sup> (250 in.<sup>2</sup>) of liquid nitrogen cooled surface area that provides pumping speeds up to 12,000 l/s for hydrogen (see table). The shroud is mounted on an 8 in. CFF (DN160).

### AMBIENT SPUTTER SHIELD

The ambient sputter shield economically maximizes surface area when cooling is not practical or possible. It provides 830 cm<sup>2</sup> (130 in.<sup>2</sup>) of ambient temperature surface area that provides pumping speeds up to 2200 l/s for hydrogen (see table). The shield is mounted on an 8 in. CFF (DN160) or a 6 in. CFF (DN100).

## Technical data

TYPICAL TSP PUMPING SPEEDS	AREA cm <sup>2</sup> /inch <sup>2</sup>	TEMPERATURE °C	H <sub>2</sub>		CO		H <sub>2</sub> O	
			RATE ls <sup>-1</sup> / cm <sup>2</sup>	SPEED ls <sup>-1</sup>	RATE ls <sup>-1</sup> / cm <sup>2</sup>	SPEED ls <sup>-1</sup>	RATE ls <sup>-1</sup> / cm <sup>2</sup>	SPEED ls <sup>-1</sup>
Cryoshroud (8")	710 / 110	20	2.6	1800	8.2	5800	7.3	5200
	1600 / 250	-195	17	12000	11	7800	14.6	23000
Ambient shroud (8")	830 / 130	20	2.6	2200	8.2	6800	7.3	6000
Ambient shroud (6")	620 / 100	20	2.6	1600	8.2	5100	7.3	4500

(1) applies to H<sub>2</sub>O speed only

## Ordering information

PRODUCT DESCRIPTION	ORDER NUMBER	PRODUCT DESCRIPTION	ORDER NUMBER
TSP cartridge 3 filaments 2.75" CFF	G360819	1.5 metre cable with MS connectors	MSHC1MS
TSP ambient shroud 6" CFF	G360190	3 metre cable with MS connectors	MSHC3MS
TSP ambient shroud 8" CFF	G360044	6 metre cable with MS connectors	MSHC6MS
TSP Cryoshroud 8" CFF	G360051	10 metre cable with MS connectors	MSHC10MS

# NON-EVAPORABLE GETTER PUMPS (NEG)

NEGs are reactive metals that have been pressed or sintered into discs. The amount of material used controls the speed and capacity of the NEG pump. As NEGs become saturated with gases, they can be reactivated without venting to atmosphere. Their prime advantage is their ability to pump for extended periods without the need for power.

NEGs are ideal for pump down, stay down applications and can be used to boost the performance of an ion pump or as a standalone pump. They are ideal for UHV applications due to their compact size and high H<sub>2</sub> pumping speed. They are not suitable for applications that cycle up to atmospheric pressure regularly as this will saturate the surface and they can only be reactivated a finite number of times.



## Technical data

		UNITS	50NP	100NP	200NP	300NP	400NP 410NP	50NS	100NS	200NS	300NS	400NS 410NS
Pumping Speed <sup>(*)</sup>	H <sub>2</sub>	l/s	55	110	210	310	420	60	120	230	360	470
	CO		27	51	94	125	156	20	36	66	88	110
	N <sub>2</sub>		9	17	32	43	54	16	30	54	72	90
Sorptions Capacity	H <sub>2</sub>	torr-l	310	580	1080	1400	1800	200	360	700	900	1100
	CO		0.1	0.2	0.4	0.6	0.8	0.035	0.065	0.15	0.20	0.26
	N <sub>2</sub>		0.03	0.07	0.14	0.2	0.27	0.012	0.026	0.06	0.08	0.11
Getter Mass		g	31	58	112	144	180	20	36	70	90	110
Total Mass		kg	0.48	0.54	0.75	0.8	0.85	0.47	0.52	0.71	0.75	0.78
Length		mm	46	61	89	110	133	46	61	89	110	133
Diameter		mm	34									

\*Pumping speeds reference initial speed values at 25° C in exposed configuration

## Ordering information

PRODUCT DESCRIPTION	PART NUMBER	PRODUCT DESCRIPTION
Pressed	50NP	NEG Pump, 50 l/s, Pressed Discs
	100NP	NEG Pump, 100 l/s, Pressed Discs
	200NP	NEG Pump, 200 l/s, Pressed Discs
	300NP	NEG Pump, 300 l/s, Pressed Discs
	400NP	NEG Pump, 400 l/s, Pressed Discs
	410NP	NEG Pump, 400 l/s, Pressed Discs, 4 Pins
Sintered	50NS	NEG Pump, 50 l/s, Sintered Discs
	100NS	NEG Pump, 100 l/s, Sintered Discs
	200NS	NEG Pump, 200 l/s, Sintered Discs
	300NS	NEG Pump, 300 l/s, Sintered Discs
	400NS	NEG Pump, 400 l/s, Sintered Discs
	410NS	NEG Pump, 400 l/s, Sintered Discs, 4 Pins

# HyTan NEG-Ion Pumps

HyTan NEG-Ion Pumps redefine UHV (ultra-high vacuum) pumping with a blend of NEG and ion pump proficiencies. NEG pumps offer high pumping speeds for H<sub>2</sub>, but also chemically active gases like N<sub>2</sub>, O<sub>2</sub>, and CO, while ion pumps effectively handle all gas species, particularly noble gases and methane. By combining their strengths, HyTan NEG-Ion Pumps achieve unmatched gas removal efficiency across the UHV application spectrum. Maximizing both performance and space, HyTan NEG-Ion Pumps employ an innovative approach by inserting all pump components into the user's vacuum chamber. This streamlined design reduces the pump's external footprint, making it the smart choice for systems with limited external space. HyTan NEG-Ion Pumps also boast a modular construction. Easily swap modules to adjust pumping speeds and adapt to evolving system requirements.



## Technical data

	100HS				100HP				200HS				200HP				500HS				500HP						
	1 CV	1 DI	3 CV	3 DI	1 CV	1 DI	3 CV	3 DI	1 CV	1 DI	3 CV	3 DI	1 CV	1 DI	3 CV	3 DI	1 CV	1 DI	3 CV	3 DI	1 CV	1 DI	3 CV	3 DI			
Pumping Speed <sup>(1)</sup> (l/s)	H <sub>2</sub>				120				230				220				450				520						
	CO				40				100				100				200				210						
	N <sub>2</sub>				15				50				55				100				100						
	Ar <sup>2</sup>				-	0.1	-	0.3	-	0.1	-	0.3	-	0.1	-	0.3	-	0.1	-	0.3	-	0.1	-	0.3	-	0.1	-
Sorption Capacity <sup>(3)</sup> (torr*l)	H <sub>2</sub>				310				360				580				700				1100						
	CO				0.22				0.065				0.33				0.15				0.54						
	N <sub>2</sub>				0.28				0.026				0.41				0.06				0.69						
Getter Mass (g)	20				31				35				58				70				112						
Total Mass (kg)	0.65		0.78		0.66		0.79		0.67		0.80		0.69		0.82		0.72		0.85		0.76		0.89				
Length (mm)	100		135		100		135		115		150		115		150		144		179		144		179				
Maximum baking temperature (°C)	300				300				300				300														
Flange	DN 40 CFF				DN 40 CFF				DN 40 CFF				DN 40 CFF														
Conditioning power at 4A (W) <sup>(4)</sup>	12				16				22																		
Activation power at 8A (W) <sup>(4)</sup>	70				100				150																		

(1) Pumping speeds reference initial speed values at 25° C in exposed configuration

(2) CV elements have a very small pumping speed for noble gases like argon and can cope with small amounts. For larger argon amounts, we recommend using DI elements which are noble-gas stable. The given argon pumping speed only refers to a saturated ion pump module (equilibrium state) – the initial pumping speed will be larger.

(3) Capacities are reported for the NEG modules. Reported capacities are the quantity of gas pumped before the speed is reduced to 5% of its initial value. Combinations with ion pump modules will increase functional capacity. This effect is shown by the sorption curves.

(4) Power values provided only refer to the NEG module without the cable. The additional power consumption due to the cable must be provided by the NEG power supply. NEG operation should be controlled by current. Activation currents provided achieve full activation in 1 hour for an installation with no shrouding, i.e., no parts close to the NEG module inside the vacuum chamber.

## Ordering information

**Ion pump module**

- 1CV- Conventional diode, 1 l/s nitrogen pumping speed
- 1DI- Noble diode, 1 l/s nitrogen pumping speed
- 3CV- Conventional diode, 3 l/s nitrogen pumping speed
- 3DI- Noble diode, 3 l/s nitrogen pumping speed

**NEG pump module**

- 100HP- Pressed NEG discs- 100 l/s hydrogen pumping speed
- 100HS- Sintered NEG discs- 100 l/s hydrogen pumping speed
- 200HP- Pressed NEG discs- 200 l/s hydrogen pumping speed
- 200HS- Sintered NEG discs- 200 l/s hydrogen pumping speed
- 500HP- Pressed NEG discs- 500 l/s hydrogen pumping speed
- 500HS- Sintered NEG discs- 500 l/s hydrogen pumping speed

Flange  
2- 2.75 CFF (DN 40 CFF)

Options  
N- None

**Ion pump feedthrough**  
5K- 5kV SHV  
SC- 10kV SAFECONN

For example:  
100HP-1DI-2-SC-N is a HyTan pump consisting of a 100 l/s NEG pump module with pressed discs and a hydrogen pumping speed of 100 l/s, an ion pump module with a noble diode and a nitrogen pumping speed of 1 l/s. It uses the SAFECONN feedthrough.



# DIGITEL™ GAMMA PUMP CONTROLLERS

The DIGITEL™ family of ion pump controllers offers the right balance of performance, power and protection.

## Digitel™ SPcE small pump controller

The SPcE is a versatile way to fully operate a single ion pump. An LCD pressure/current/voltage display along with standard serial communications makes the SPcE able to accommodate the needs of basic and advanced users.

## Digitel™ QPC quad pump controller

The new QPC controller offers adjustable output voltage, nano ampere resolution plus up to four independent power supplies, allowing for high current control of up to four ion pumps independently. It has an easy-to-read colour touchscreen LCD display that simultaneously displays pressure, current, and voltage and includes serial and ethernet communications as standard.

## Digitel™ MPCq multiple pump controller

With a larger color touchscreen and improved resolution, the MPCq controller is a rack mountable 19" unit offering ethernet connectivity. All parameters can be adjusted from the front panel, and with up to 4 analogue outputs, supporting modbus communication, and profibus interface as an option, this controller is user-friendly with its improved interface.

## Digitel™ TSPq controller

The TSPq controller has an easy-to-read touchscreen LCD display that displays all manual or programmed firing parameters. Manual operation is as simple as pressing one button. Programming is just as easy by viewing all programming options on one screen. The TSPq controller can operate up to 8 TSP filaments.



## Technical data

	UNITS	SPcE	QPC	MPCq	TSPq
<b>INPUT POWER</b>					
Voltage		90-240 V a.c. or 24 V d.c.		120 Vac or 240 Vac, +/- 10%	90-130 or 200-240 V
Frequency	Hz	48-62		50-60	48-62
<b>OUTPUT POWER</b>					
Independent outputs		1	1 to 4	1 or 2	1
Open circuit voltage		3000-7000 V d.c. (+/- configurable)		+/- 5.6kV or +/-7.0kV	17 V a.c.
Current (maximum)	mA	50	125	500	55000
Watts (maximum)	W	50	125	500	800
Resolution		1 nA	1 nA	0.1 uA	0.1 A
High voltage connections		1 10 kV SHV or Fischer	1-4 10 kV SHV or Fischer		1-2 MS style, configurable
Display type		LCD	1/4 VGA colour touchscreen LCD	7" TFT WVGA 800 x 480 Color LCD	1/4 VGA touchscreen LCD
Readouts		Pressure, current, voltage and programmable options		Pressure, current, voltage, and configurable options	Current, on-time and programmable options
<b>ANALOG OUTPUTS</b>					
Voltage		Linear, configurable			
Current/pressure		Linear or logarithmic, configurable			
Setpoints		One relay, one TTL	Four relay, four TTL	8 total: Four relays and four TTL, user configurable	
Communications		Local/Remote/Full		Serial, Profibus optional	Local/Remote/Full
		Ethernet			
		Serial: 232, 422, 485		Serial standards supported: RS-232, RS-485FD, RS-485HD	Serial: 232, 422, 485
Weight	kg (lbs)	1.5 (3.3)	9.5 (21)	Max. 25.4 (56)	16.8 (37)
Size		2U high, 1/4 rack wide	3U high, 1/2 rack wide	3U high, full rack wide	3U high, 1/2 rack wide
		313 mm (12.3") deep	438 mm (17.2") deep	476 mm (18.7 in.) deep	438 mm (17.2") deep
Additional features		SAFECONN			Manual, programmed or remote control
		AUTOSTART/AUTORUN			TSP enable
		High voltage enable			
		Fowler-Nordheim calibration		Remote TSP control	
		High-pot capability		Internal TSP supply	

# ION PUMP CABLES

## SAFECONN™ High voltage interlock

The integrated SAFECONN™ high voltage interlock system was introduced by Gamma Vacuum to create a safe environment when working with the high voltage cables of an ion pump.

Materials carry up to 10kV of DC current at temperatures up to 250° C. Radiation tolerance is balanced with material flexibility to provide a 90° turning radius while maintaining exposures up to  $2 \times 10^5$  Gray.

The silicone cable carries high voltage and an isolated 5-volt signal for the safety circuit. When properly connected, the 5-volt circuit is satisfied and only then can the DIGITEL™ controllers enable high voltage by the end user or through remote commands.

Once high voltage is enabled, the controller automatically disables high voltage when the cable is disconnected from the ion pump or controller.

The system is electrically isolated to eliminate noise potential that could interfere with other electrical equipment on the same vacuum system.

The SAFECONN safety connection guarantees ground, high voltage, and then safety interlock connectivity when connecting to prevent accidental arcing.

The SAFECONN system guarantees the safety of the operator and equipment from the hazards of working with high voltage by eliminating electrical shocks and false positive vacuum

## Standard SAFECONN Connector Options



**Controller Connector Options**  
Compatible with Gamma Vacuum or Agilent/Varian Interlock System

**Pump End Options**  
Compatible with current or legacy Gamma Vacuum or Agilent/Varian Feedthroughs (non- SAFECONN connectors available)

## Technical data

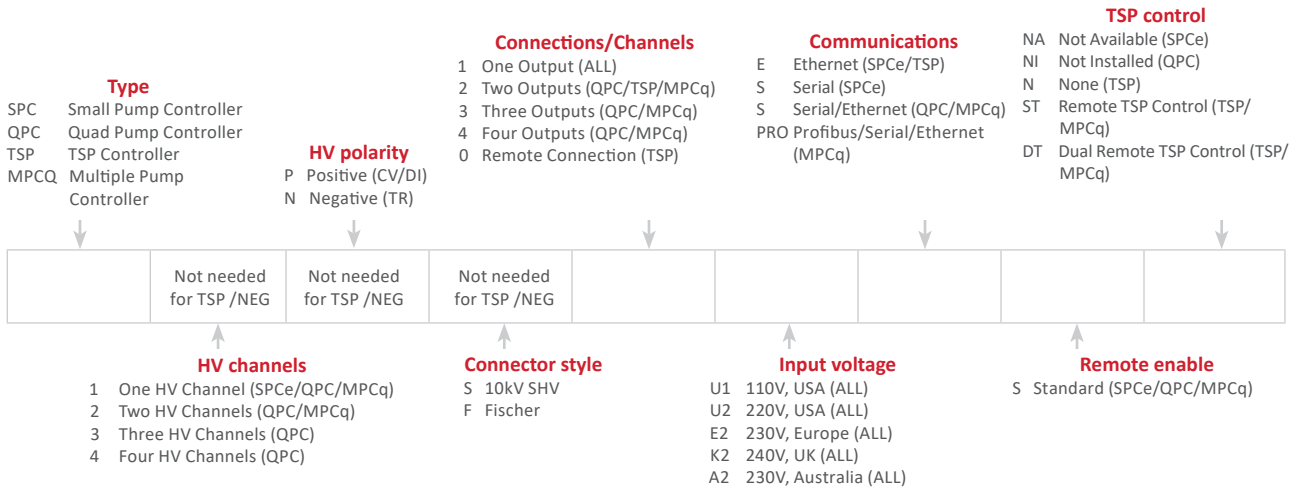
MATERIAL (REFERENCE)	RADIATION (GRAY, TOLERANCE)	TEMPERATURE (°C, MAX)
Copper (1, 3, 4)	>10 <sup>8</sup>	250
Brass/nickel (8)	>10 <sup>8</sup>	327
Beryllium/copper/gold (8)	>10 <sup>8</sup>	643
Spring steel/nickel (8)	>10 <sup>8</sup>	1427
PEEK (8)	$5 \times 10^7$	325
Fiberglass braid (6)	$2 \times 10^7$	250
Silicone rubber (2, 5, 7, 8)	$2 \times 10^5$	250

## Specification

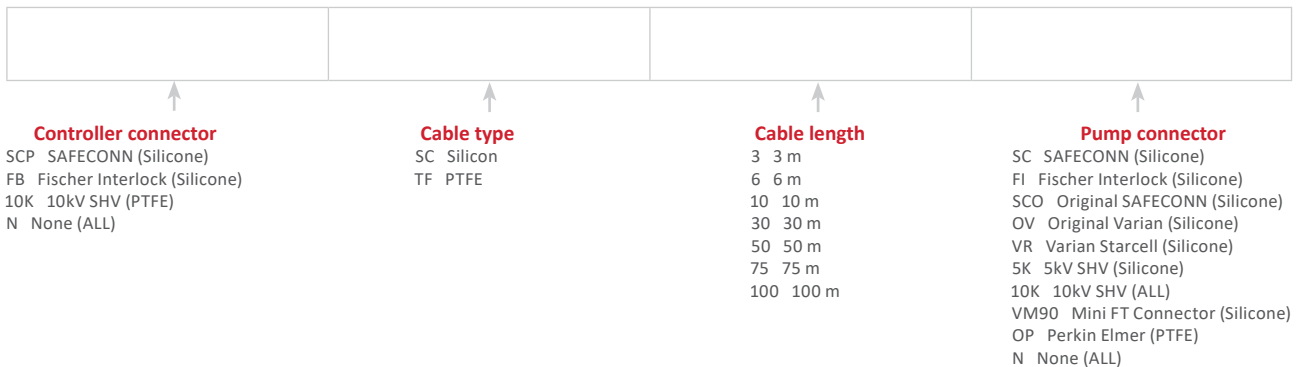
DESCRIPTION	UNIT	VALUE
Bend Radius	mm (in)	12.7 (0.5)
Diameter, nominal	mm (in)	8.0 (0.3)
Minimum removal clearance	mm (in)	127 (5.0)

# Ordering information

Controllers:



Ion pump cables:





# ACTIVE GAUGE HEADS AND CONTROLLERS

## APG200- Pirani Gauge

10 <sup>-10</sup>	10 <sup>-9</sup>	10 <sup>-8</sup>	10 <sup>-7</sup>	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>	10 <sup>-2</sup>	10 <sup>-1</sup>	1	10	10 <sup>2</sup>	10 <sup>3</sup>
Ultra High Vacuum		High Vacuum			Medium Vacuum			Low Vacuum					

Edwards new APG200 series high performance compact Pirani Gauge is the perfect vacuum measurement solution across a spectrum of applications due to its compact size, LED light ring, integrated set points and flexibility of connections/outputs. The gauge also has 3 levels of corrosion protection XLC, XMP and X, due to the filament materials used.

Edwards production facility in the UK has been making and designing vacuum gauging for decades. With this experience we have been able to develop a gauge that has a 25% reduced package size, with no loss in performance. And by owning not only the measuring technology, but also the electronic development and manufacture we have been able to maximise the features we can offer.

With a range of upgrades and feature enhancements, the APG200 is suitable for all vacuum markets, from Analytical instruments who can take advantage of the reduced size and flexible outputs, to Semiconductor for whom the new interfaces and light rings enable better maintenance of systems, to Research and development for whom the local pressure indication helps to monitor experiments away from the main interfaces.



TECHNICAL DATA	APG200	PRODUCT DESCRIPTION	ORDER NUMBER
Pressure range	APG200 XM / XMP atmosphere to 5x10 <sup>-4</sup> mbar (3.75x10 <sup>-4</sup> torr) APG200 LC atmosphere to 1x10 <sup>-4</sup> mbar (7.5x10 <sup>-5</sup> torr)	APG200-XM-NW16	D1G1011100
Accuracy APG200 XM/XMP	Atmosphere to 100 mbar +/-50% 100 to 1x10 <sup>-3</sup> mbar +/-15%. 1x10 <sup>-3</sup> mbar to 5x10 <sup>-4</sup> mbar +/-50%	APG200-XM-NW25	D1G1021100
APG200 XLC	100 to 10 mbar +/-50% 10 to 1x10 <sup>-3</sup> mbar +/-15%. 1x10 <sup>-3</sup> mbar to 5x10 <sup>-4</sup> mbar +/-50%	APG200-XLC-NW16	D1G2011100
Max overpressure	10 bar absolute (145 psi)	APG200-XLC-NW25	D1G2021100
Operating temperature range	5 to 60 °C	nAPG200-XM-RS485-NW16-9 Pin DSUB	D1G1010200
Storage temperature	-30 to +70 °C	nAPG200-XM-RS232-NW16-9 Pin DSU	D1G1015200
Maximum bakeout temperature with electronics removed	150 °C	nAPG200-XLC-RS485-NW16-9 Pin DSUB	D1G2010200
		nAPG200-XLC-RS232-NW16-9 Pin DSUB	D1G2015200

## APGX H- Active Linear Convection Gauge

10 <sup>-10</sup>	10 <sup>-9</sup>	10 <sup>-8</sup>	10 <sup>-7</sup>	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>	10 <sup>-2</sup>	10 <sup>-1</sup>	1	10	10 <sup>2</sup>	10 <sup>3</sup>
Ultra High Vacuum		High Vacuum			Medium Vacuum			Low Vacuum					

The Active Linear Convection Vacuum Gauge has a wide measuring range from 1333 to 3 x 10<sup>-4</sup> mbar. The use of convection technology ensures accuracy and sensitivity are maintained to the top of the pressure range compared to conventional Pirani gauges, which lose accuracy above 100 mbar. The gauge is compact and may be mounted in any orientation, simplifying installation where space is limited.



TECHNICAL DATA	APGX H	PRODUCT DESCRIPTION	ORDER NUMBER
Pressure range	1333 to 3 x 10 <sup>-4</sup> mbar	APGX-H NW16 aluminium	D02391000
Accuracy	Typically +/- 15%	APGX-H NW16 stainless steel	D02395000
Max overpressure	10 bar absolute (145 psi)	APG100-XM DN16CF	NRD710000
Temperature range		APG100-XLC DN16CF	NRD712000
Operating	+5 to +60 °C	APGX-H NW25 stainless steel	D02392000
Storage	-30 to +70 °C	APGX-H 1/8" NPT stainless steel	D02396000
Maximum bakeout temperature with electronics removed	70 °C		

## AIM200- Active Inverted Magnetron Gauge

10 <sup>-10</sup>	10 <sup>-9</sup>	10 <sup>-8</sup>	10 <sup>-7</sup>	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>	10 <sup>-2</sup>	10 <sup>-1</sup>	1	10	10 <sup>2</sup>	10 <sup>3</sup>
Ultra High Vacuum		High Vacuum			Medium Vacuum			Low Vacuum					

Edwards Active Inverted Magnetron Gauge AIM200 is rugged and reliable and due to its compact size, 3600 LED light ring, integrated set-points and flexibility of connections/outputs, is suitable for a wide range of applications from scientific instruments to industrial processes.

The AIM200 gauge head and gauge controller have been combined into a single compact unit, and features a very low stray magnetic field, coupled with reduced footprint and improved striking mechanism makes it the perfect choice for use within analytical applications where the gauge needs to be mounted in close proximity to sensitive equipment.

Discover enhanced versatility with our EX NW25 variant featuring an extended tube, enabling compatibility with C-clamps, expanding application possibilities.



TECHNICAL DATA	AIM
Pressure range	10 <sup>-2</sup> to 10 <sup>-9</sup> mbar
Accuracy	Typically +/- 30%
Max overpressure	10 bar absolute (145 psi)
Operating temperature	0 to 50 °C
Storage temperature	-30 to +70 °C
Maximum bakeout temperature with electronics removed	150 °C

PRODUCT DESCRIPTION	ORDER NUMBER
AIM200 - NW25 - S matched output	D2G0021150
AIM200 - NW25	D2G0021100
AIM200-X-NW40	D2G0031100
AIM200 - DN40CF	D2G0041100
nAIM200-X-RS485-NW25-9 Pin DSUB	D2G0020200
nAIM200-X-RS485-DN40CF-9 Pin DSUB	D2G0040200
nAIM200-X-RS232-NW25-9 Pin DSUB	D2G0025200
nAIM200-X-RS232-DN40CF-9 Pin DSUB	D2G0045200

## AIGX- Active Ion Gauge

10 <sup>-10</sup>	10 <sup>-9</sup>	10 <sup>-8</sup>	10 <sup>-7</sup>	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>	10 <sup>-2</sup>	10 <sup>-1</sup>	1	10	10 <sup>2</sup>	10 <sup>3</sup>
Ultra High Vacuum		High Vacuum			Medium Vacuum			Low Vacuum					

The Active Ion Gauge (AIGX) is a compact active ion gauge with dual yttria coated iridium filaments, a wide measuring range from  $6.6 \times 10^{-2}$  to  $6.6 \times 10^{-10}$  mbar and a 1 Volt/decade linear output. The AIGX incorporates all benefits of the industry standard active gauging concept, with integral electronics and replaceable tube. The gauge has a degas facility and includes features to protect and extend the life of the filaments. The AIGX benefits from extremely low emissions of charged particles, which makes it an excellent choice for processes where background noise is undesirable.



TECHNICAL DATA	AIGX
Pressure range	$6.6 \times 10^{-2}$ to $6.6 \times 10^{-10}$ mbar
Accuracy	Typically +/- 15%
Admissible Pressure	10 bar absolute (145 psi)
Temperature range	
Operating	0 to +40 °C
Storage	-30 to +70 °C
Maximum bakeout temperature with electronics removed	200 °C

PRODUCT DESCRIPTION	ORDER NUMBER
AIGX-S NW25	D04850000
AIGX-S DN16CF	D04851000
AIGX-S DN40CF	D04852000

## WRG- Wide Range Gauge

10 <sup>-10</sup>	10 <sup>-9</sup>	10 <sup>-8</sup>	10 <sup>-7</sup>	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>	10 <sup>-2</sup>	10 <sup>-1</sup>	1	10	10 <sup>2</sup>	10 <sup>3</sup>
Ultra High Vacuum	High Vacuum			Medium Vacuum			Low Vacuum						

The Active Wide Range Gauge WRG200 offers the capability of single port pressure measurement in the range atmosphere to 10<sup>-9</sup> mbar with a linear output.

The WRG200 is a compact and efficient solution that significantly reduces the required space and hardware for connectivity. Its compact design makes it ideal for various applications. This gauge has undergone numerous technical improvements such as its innovative striker design, a 3600 LED light ring, easy push-button calibration, integrated set-point controls, and comprehensive diagnostics.

The WRG200 offers cost-effectiveness as a vacuum management solution, either when used with an Edwards controller or directly integrated into the system controls. This gauge is perfect for monitoring pressure in systems that are rapidly pumped down from atmospheric pressure to high vacuum levels.

Explore added flexibility with its extended tube that fits C-clamps for wider applications.



TECHNICAL DATA	WRG
Pressure range	10 <sup>3</sup> to 10 <sup>-9</sup> mbar
Accuracy	Typically +/- 15% at <100 mbar +/- 30% at <10 <sup>-3</sup> mbar
Max overpressure	10 bar absolute (145 psi)
Operating temperature	0 to 50°C
Storage temperature	-30°C to +70°C
Maximum bakeout temperature with electronics removed	150°C

PRODUCT DESCRIPTION	ORDER NUMBER
WRG200 - NW25	D3G0021100
WRG200-X-NW40	D3G0031100
WRG200 - DN40CF	D3G0041100
nWRG200-X-RS485-NW25-9 Pin DSUB	D3G0020200
nWRG200-X-RS485-NW40-9 Pin DSUB	D3G0030200
nWRG200-X-RS485-DN40CF-9 Pin DSUB	D3G0040200
nWRG200-X-RS232-NW25-9 Pin DSUB	D3G0025200
nWRG200-X-RS232-NW40-9 Pin DSUB	D3G0035200
nWRG200-X-RS232-DN40CF-9 Pin DSUB	D3G0045200

## WRH- Active Hot Cathode Pirani Gauge

10 <sup>-10</sup>	10 <sup>-9</sup>	10 <sup>-8</sup>	10 <sup>-7</sup>	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>	10 <sup>-2</sup>	10 <sup>-1</sup>	1	10	10 <sup>2</sup>	10 <sup>3</sup>
Ultra High Vacuum	High Vacuum			Medium Vacuum			Low Vacuum						

The Active Hot Cathode Wide Range Gauge (WRH) offers the ability to measure from atmosphere to 10<sup>-10</sup> mbar with a single gauge, with accuracy and repeatability.

The WRH gauge utilises 2 measurement methods (bayard-alpert & pirani) in a single package, giving you everything you need to measure and control your system. With analogue and RS485 output available via the D-SUB connector, 2 onboard relays and easy calibration, control and monitoring is simple. Utilising the included software, you can easily track and log your system's performance and also make adjustments to the gauges behaviour, such as setting the set points or changing the output scaling. This gauge is the perfect companion for many applications, from R&D institutes to high end mass spectrometry and through to general industry.



TECHNICAL DATA	WRH
Pressure range	1000 – 5e <sup>-10</sup> mbar
Accuracy	1000 to 10 mbar ± 30%, 10 to 1e <sup>-8</sup> mbar: ± 10%
Max overpressure	4 bar abs
Temperature range	
Operating	+5 to +60 °C
Storage	40 to +65 °C
Maximum bakeout temperature with electronics removed	Max. 180°C at the flange (voltage supply switched-off)

PRODUCT DESCRIPTION	ORDER NUMBER
WRH-NW25	D14750100
WRH-NW40	D14750110
WRH-DN40CF	D14750120
WRH TIC adaptor cable	D14750300

# Barocel 7000 Series Capacitance Gauges

10 <sup>-10</sup>	10 <sup>-9</sup>	10 <sup>-8</sup>	10 <sup>-7</sup>	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>	10 <sup>-2</sup>	10 <sup>-1</sup>	1	10	10 <sup>2</sup>	10 <sup>3</sup>
Ultra High Vacuum		High Vacuum			Medium Vacuum			Low Vacuum					

## Edwards Barocel 7000 series is our most accurate offering ever in vacuum gauging

Barocel Gauges have been introduced based on customers needs for ever more accurate measurement and control of systems. With ambient and heated offerings we can offer superior performance and reliability that means you can fit and forget it.



7025m



7025



7045, 7100

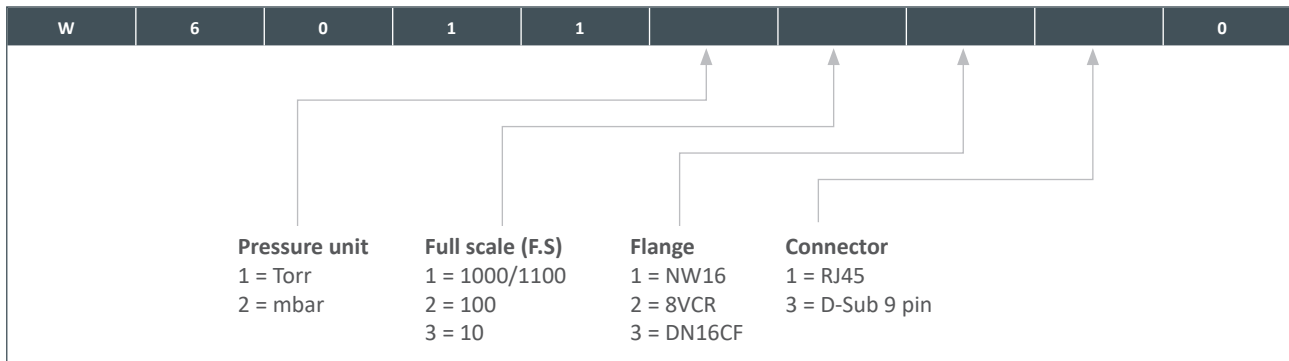
TECHNICAL DATA	7025M	7025	7045	7100
Pressure range	1300 to 5 x 10 <sup>-2</sup>	1300 to 1 x 10 <sup>-5</sup>	1300 to 1 x 10 <sup>-5</sup>	1300 to 1 x 10 <sup>-5</sup>
Accuracy (% of reading)	1	0.2-0.5	0.15	0.2-0.4
Burst pressure (bar) absolute	6	5	6	6
Max overpressure	0 to +70	+5 to +50	+10 to +40	+10 to +50
Operating temp range	Storage temp	-40 to +65	-20 to +65	-20 to +65

PRODUCT DESCRIPTION	ORDER NUMBER
TIC adaptor cable	D40003050

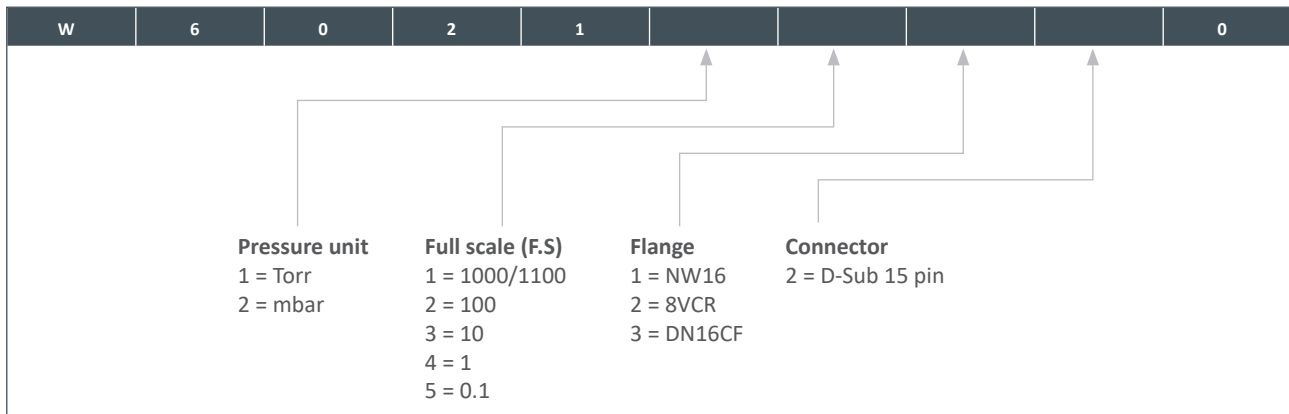


## Ordering information

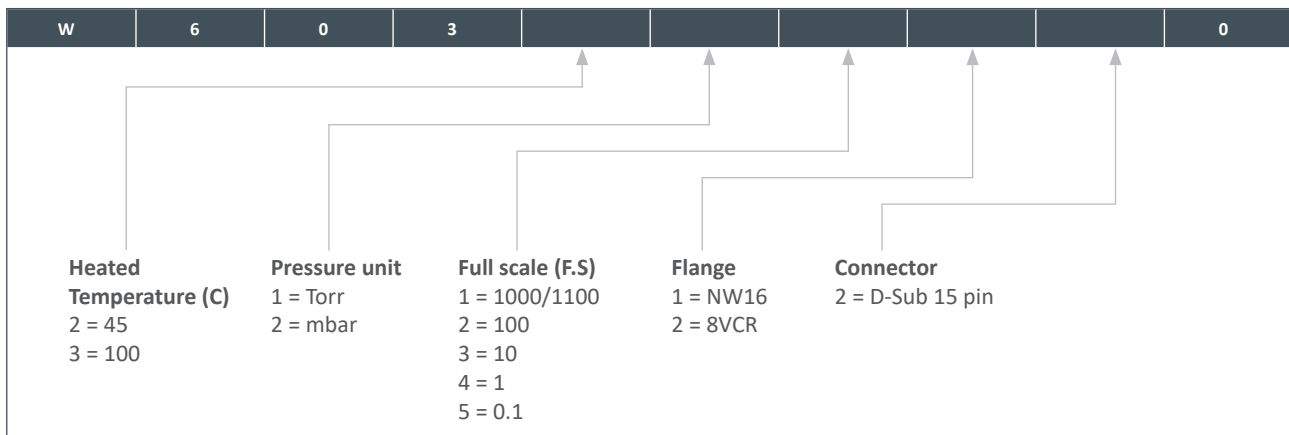
Barocel 7025m selection tree



Barocel 7025 selection tree



Barocel 7045/7100 selection tree



# ACTIVE GAUGE CONTROLLERS

## Active Digital Controller

The Active Digital Controller (ADC) is a compact single gauge controller and display. It features a bright LED display and simple push button controls. The ADC automatically recognises compatible Edwards gauges, loads the appropriate look-up table and displays the pressure in commonly used vacuum units.



## Enhanced Active Digital Controller

The Enhanced Active Digital Controller (eADC) is a compact dual gauge controller and display. It features a bright LED display and simple push button controls for two compatible Edwards gauges. The Enhanced ADC automatically loads the appropriate look-up table and displays the pressure in commonly used vacuum units.



## TIC Controller

The TIC Instrument Controller offers comprehensive control and display of up to 6 compatible Edwards gauges. Intuitive user interface, 6 set points and full Windows Software for control and data logging functionality.



### PRODUCT FEATURES

#### ACTIVE DIGITAL CONTROLLER

- Plug and measure operation
- Bright LED display for clear visibility
- Choice of display units - mbar, Torr, Pascal
- Supports APG100, APGXH, WRG and ASG2 gauges

#### ENHANCED ACTIVE DIGITAL CONTROLLER

- Controls two active gauges
- 2 set-point relays
- Simple push button control
- RS232 interface and analog output
- Supports APG100, APGXH, WRG, AIM and ASG2 gauges

#### TIC CONTROLLER

- Universal controller for up to 6 active gauges
- Compact design
- Clear, easy-to-use graphical user interface
- Serial communication Windows™ PC program including data logger, plus analogue outputs
- RS232 interface and analogue output
- Supports APG100, APGXH, WRG, AIM and AIGX gauges and Barocel 7000 series (variant dependent) and ASG2

## Active gauge cables

CONNECTION CABLE OPTIONS	ORDER NUMBER	CONTROLLER	ORDER NUMBER	MAX NO. OF GAUGES	NO. OF SET-POINTS	WINDOWS SOFTWARE	DATA LOGGING
0.5 m	D40001005	TIC controller (3 gauge)	D39700000	3	3	Yes	Yes
1 m	D40001010	TIC controller (6 gauge)	D39701000	6	6	Yes	Yes
3 m	D40001030	Active digital controller (ADC)	D39590000	1	0	No	No
5 m	D40001050	Enhanced digital controller (eADC)	D39591500	2	2	No	No
10 m	D40001100	UK power cable for TIC/ADC	D40013025	-	-	-	-
15m	D40001150	EU power cable for TIC/ADC	D40013030	-	-	-	-
25m	D40001250	US power cable for TIC/ADC	D40013120	-	-	-	-
50m	D40001500						

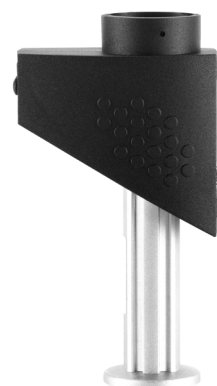
Cables include FCC68/RJ45 compatible connections at both ends.

## PASSIVE GAUGE HEADS AND CONTROLLERS

### PRG20K- Pirani Gauge Sensors

10 <sup>12</sup>	10 <sup>11</sup>	10 <sup>10</sup>	10 <sup>9</sup>	10 <sup>8</sup>	10 <sup>7</sup>	10 <sup>6</sup>	10 <sup>5</sup>	10 <sup>4</sup>	10 <sup>3</sup>	10 <sup>2</sup>	10 <sup>1</sup>	1	10	10 <sup>2</sup>	10 <sup>3</sup>
Ultra High Vacuum			High Vacuum				Medium Vacuum			Low Vacuum					

The Pirani Gauge Sensors are available in 3 models. The PRG20K-NW16 AI is an aluminium sensing cell with tungsten filament. The PRG20K-DN16CF SS is a stainless steel sensing cell with tungsten filament and is overpressure resistant. The PRG20KCR-NW16 SS is a stainless steel sensing cell with platinum filament and ceramics feed through, which is well suited for corrosive processes and water vapour atmospheres.



TECHNICAL DATA	PRG20K
Pressure range	10 <sup>3</sup> to 0.5x10 <sup>-4</sup> mbar
Accuracy	<10 <sup>-2</sup> mbar ±20% 10 <sup>-2</sup> to 10 <sup>2</sup> mbar ±15%
Max overpressure	3 bar (aluminium tube) 10 bar (stainless tube)
Temperature range	
Operating	0 to +40 °C
Storage	-20 to +70 °C
Maximum bakeout temperature	80 °C
Radiation tolerance	5x10 <sup>4</sup> Grays

PRODUCT DESCRIPTION	ORDER NUMBER
PRG20K - NW16 AI	D03000200
PRG20K - DN16CF SS	D03000210
PRG20KCR - NW16 SS	D03000220
PRG cable 5m	D03000201

PRODUCT DESCRIPTION	ORDER NUMBER
PRG cable 10m	D03000202
PRG cable 20m	D03000203
PRG cable 30m	D03000204
PRG cable 50m	D03000205

### CPG35K - Penning Gauge Sensors

10 <sup>12</sup>	10 <sup>11</sup>	10 <sup>10</sup>	10 <sup>9</sup>	10 <sup>8</sup>	10 <sup>7</sup>	10 <sup>6</sup>	10 <sup>5</sup>	10 <sup>4</sup>	10 <sup>3</sup>	10 <sup>2</sup>	10 <sup>1</sup>	1	10	10 <sup>2</sup>	10 <sup>3</sup>
Ultra High Vacuum			High Vacuum				Medium Vacuum			Low Vacuum					

The Penning Gauge Sensors are available in 4 models. All 4 have a measurement range of 1 x 10<sup>-9</sup> to 10<sup>-2</sup> mbar (0.75 x 10<sup>-9</sup> to 10<sup>-2</sup> Torr) and are insensitive to air rushes and vibration. These passive sensors use cold cathode ionization technology according to Penning. The cathode plate is exchangeable, and demonstrates improved ignition through the use of titanium cathodes. The CPG35KB is bakeable to 200 °C.



TECHNICAL DATA	CPG35K
Pressure range	10 <sup>-2</sup> to 10 <sup>-9</sup> mbar
Accuracy	10 <sup>-4</sup> to 10 <sup>-8</sup> mbar ±30%
Max overpressure	10 bar
Temperature range	
Operating	+5 to +80 °C
Storage	-20 to +70 °C
Maximum bakeout temperature	Standard gauge 80 °C bakeable gauge 200 °C
Radiation tolerance	10 <sup>6</sup> Grays

PRODUCT DESCRIPTION	ORDER NUMBER
CPG35K - NW40	D03000100
CPG35K - DN40CF	D03000110
CPG35K - NW25	D03000130
CPG35KB - DN40CF	D03000140

PRODUCT DESCRIPTION	ORDER NUMBER
CPG cable 5m	D03000101
CPG cable 10m	D03000102
CPG cable 20m	D03000103
CPG cable 30m	D03000104
CPG cable 50m	D03000105

# IG40- Ion Gauge Sensors

10 <sup>-12</sup>	10 <sup>-11</sup>	10 <sup>-10</sup>	10 <sup>-9</sup>	10 <sup>-8</sup>	10 <sup>-7</sup>	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>	10 <sup>-2</sup>	10 <sup>-1</sup>	1	10	10 <sup>2</sup>	10 <sup>3</sup>
Ultra High Vacuum			High Vacuum				Medium Vacuum			Low Vacuum					

Using hot cathode ionization technology, both the Bayard-Alpert and Extractor gauges have highly accurate individually calibrated sensing systems and exchangeable cathodes. The Bayard-Alpert sensing system has a measurement range from 10<sup>-2</sup> to 2 x 10<sup>-11</sup> mbar (1.5 x 10<sup>-11</sup> Torr) with its protection shield welded in place. The Extractor sensing system has a measurement range from 10<sup>-4</sup> to 2 x 10<sup>-12</sup> mbar (1.5 x 10<sup>-12</sup> Torr), alongside a significant reduction of X-ray and ion desorption effects.



TECHNICAL DATA	IG40 BA	IG40 EX
Pressure range	10 <sup>-2</sup> to 2x10 <sup>-11</sup> mbar	10 <sup>-2</sup> to 2x10 <sup>-12</sup> mbar
Accuracy	±2%, ±5x10 <sup>-13</sup> mbar	±2%, ±3x10 <sup>-13</sup> mbar
Max overpressure	2 bar	2 bar
Temperature range		
Operating	+20 to +80 °C	+20 to +80 °C
Storage	+20 to +50 °C	+20 to +50 °C
Maximum bakeout temperature	With cable 250 °C Without cable 400 °C	With cable 250 °C Without cable 400 °C
Radiation tolerance	10 <sup>6</sup> Grays	10 <sup>6</sup> Grays

PRODUCT DESCRIPTION	ORDER NUMBER
IG40 BA DN40CF	D03000300
IG40 EX DN40CF	D03000310

PRODUCT DESCRIPTION	ORDER NUMBER
IG40 BA / EX cable 5 m bakeable	D03000301
IG40 BA / EX cable 10m bakeable	D03000302
IG40 BA / EX cable 50m bakeable	D03000305

## PASSIVE GAUGE CONTROLLERS

### PGC201 Pirani and Penning Controller/PGC202 Pirani and Ion Controller

Edwards PGC201 controller covers the pressure range between  $10^{-9}$  and 1000 mbar by combining two measurement principles from the PRG and CPG gauges. The PGC202 combines PRG gauges and IG40 BA or IG40 EX gauges for measurements of vacuum pressures in the range between  $10^{-12}$  and 1000 mbar. Both these controllers provide monitoring and control functions for the connected gauges.



#### PRODUCT FEATURES

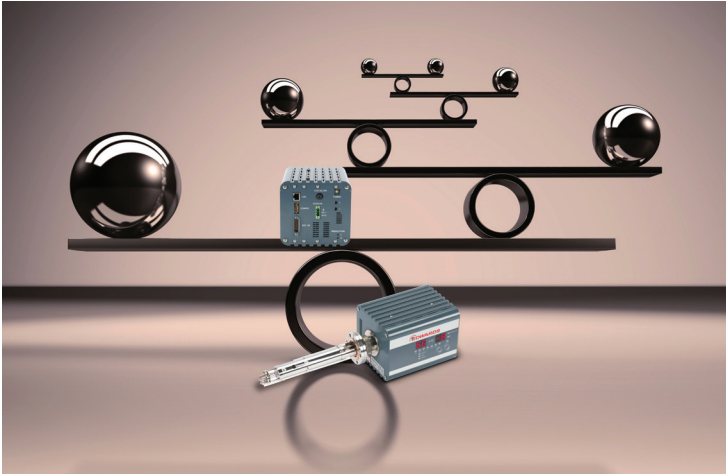
- Compact 3 channel operating unit for a pressure range for passive sensors of  $-10^{-9}$  to 1000 mbar PGC201  $-10^{-12}$  to 1000 mbar PGC202
- Automatic switchover from Pirani operation to Penning cold cathode operation (PGC201)
- UHV sensors either Bayard-Alpert measurement system IG40 BA or Extractor measurement system IG40 EX (PGC202)
- Measurement cable lengths up to 50 meters
- Easy to operate

CONTROLLERS	PRODUCT DESCRIPTION	ORDER NUMBER
Pirani/Penning	PGC201	D03000400
Pirani/Ion	PGC202	D03000410

### Connectable sensors

PIRANI	PENNING GAUGE (ONLY PGC201)	ION GAUGE (ONLY PGC202)
PRG20K - NW16 AI	CPG35K - NW25	IG40 BA DN40CF
PRG20K - DN16CF SS	CPG35K - NW40	IG40 EX DN40CF
PRG20KCR - NW16 SS	CPG35K - DN40CF	
	CPG35KB - DN40CF	

# PRA & WRA RESIDUAL GAS ANALYSERS (RGA)



The Edwards RGAs are quadrupole mass spectrometers with a high performance analyser tube consisting of the ion source, the quadrupole filter and the detector. Exposed to vacuum, the gas molecules are ionized by the RGA.

Dependent on the weight or mass of the molecules, the ions have a different mass to charge ratio. By varying the voltage, the RGA can measure the different masses:

Only ions with the specific mass to charge ratio find their way into the detector where the ionized gas molecules are then measured. With this procedure, the RGA shows the composition of the gas in the system/ chamber/process.

We offer two variants, giving you the perfect choice for your various needs.

**PRA:** Our Primary Residual Gas Analyser is the perfect solution for all “basic” applications and processes, to do quick and convenient analysis.

**WRA:** Our Wide Range Residual Gas Analyser, for advanced and more demanding processes and analysis allowing higher analyzer temperatures and bake out temperatures of up to 300°C. To match advanced needs, the WRA offers a better sensitivity to detect even the smallest traces of molecules.



## PRODUCT FEATURES

### AVAILABLE IN 2 VARIANTS

PRA – the perfect starting point for “basic” applications and processes

WRA – 1-200 or 1-300 amu, for more demanding processes and analysis

Total pressure measurement for full process control

Dual filament for highest reliability and up-time

### ALL RGAS HAVE FULL ETHERNET PROTOCOL

Degas function

Protection of ion source and EM

Customer replaceable parts

## Technical data

	PRA100	PRA100S	PRA200	PRA200S
<b>PHYSICAL DATA</b>				
Mass range (amu)	1-100	1-100	1-200	1-200
Mass filter type	QMS	QMS	QMS	QMS
Detector type	Faraday cup	EM/Faraday cup	Faraday cup	EM/Faraday cup
Sensitivity (A/mbar)	1x10 <sup>-5</sup>	400/1x10 <sup>-5</sup>	1x10 <sup>-5</sup>	400/1x10 <sup>-5</sup>
Minimum detectable partial pressure (mbar)	1x10 <sup>-10</sup>	1x10 <sup>-14</sup> /1x10 <sup>-10</sup>	1x10 <sup>-10</sup>	1x10 <sup>-14</sup> /1x10 <sup>-10</sup>
Max operating pressure (mbar)	1x10 <sup>-4</sup>	1x10 <sup>-4</sup>	1x10 <sup>-4</sup>	1x10 <sup>-4</sup>
Filament material	Ir/Y2O3	Ir/Y2O3	Ir/Y2O3	Ir/Y2O3
Operating temp (°C)	40	40	40	40
Max analyser temp (°C)	120	120	120	120
Max bake out temp (elec removed) (°C)	250	250	250	250
Connection flange	DN40CF	DN40CF	DN40CF	DN40CF
Power input	DC24V +-10% 50W	DC24V +-10% 50W	DC24V +-10% 50W	DC24V +-10% 50W
Weight (kg)	2.6	2.84	2.6	2.84
IP	30	30	30	30
Serial communication	RS485	RS485	RS485	RS485
Resolution	M/DeltaM=1M(10%PH)	M/DeltaM=1M(10%PH)	M/DeltaM=1M(10%PH)	M/DeltaM=1M(10%PH)

	WRA200S	WRA300S
<b>PHYSICAL DATA</b>		
Mass range (amu)	1-200	1-300
Mass filter type	QMS	QMS
Detector type	EM/Faraday cup	EM/Faraday cup
Sensitivity (A/mbar)	400/2.5x10 <sup>-4</sup>	400/2.5x10 <sup>-4</sup>
Minimum detectable partial pressure (mbar)	1x10 <sup>-15</sup> /1x10 <sup>-11</sup>	1x10 <sup>-15</sup> /1x10 <sup>-11</sup>
Max operating pressure (mbar)	1x10 <sup>-4</sup>	1x10 <sup>-4</sup>
Filament material	Ir/Y2O3	Ir/Y2O3
Operating temp (°C)	40	40
Max analyser temp (°C)	250	250
Max bake out temp (elec removed) (°C)	300	300
Connection flange	DN40CF	DN40CF
Power input	DC24V +-10% 50W	DC24V +-10% 50W
Weight (kg)	3.21	3.21
IP	30	30
Serial communication	RS485	RS485
Resolution	M/DeltaM=1M(10%PH)	M/DeltaM=1M(10%PH)

## Ordering information

PRODUCT DESCRIPTION	ORDER NUMBER
PRA100	D05001101
PRA100S	D05001102
PRA200	D05001201
PRA200S	D05001202
PRA100/200 analyzer tube	D05001016
PRA100S/200S analyzer tube	D05001015
PRA ion source	D05001013
WRA200S	D05002202
WRA300S	D05002302
WRA-S analyzer tube	D05002015
WRA200S/300S filament kit	D05002014
WRA200S/300S ion source	D05002013
WRA200S/300S SEM	D05002012

# ELD500 PRECISION LEAK DETECTOR



The ELD500 precision leak detector is designed for fast, accurate leak detection in a wide range of applications, fully mobile and with an easy to control interface. Featuring with low energy consumption, extended warranty and even longer life ion source, Edwards ELD500 leak detector ensures exceptional low cost of ownership with no compromise on performance.

Available in three variants: ELD500, ELD500 FLEX, and ELD500 DRY, Edwards ELD500 leak detector is versatile. All models feature a rugged turbomolecular pump optimised for the rigours of portable leak detection, ideal across all applications.



## PRODUCT FEATURES

### FLEXIBLE REMOTE CONTROL OPTIONS

Colour touch screen control with local graphical display and audible leak detection. Wireless models allow simultaneous control of up to 10 leak detectors.

### MOBILE SOLUTION

Low weight and integrated carry handles which allow it to be bench top or trolley mounted.

### HIGH SENSITIVITY

Measurement of leaks for Helium of  $<5 \times 10^{-12}$  mbar l s<sup>-1</sup> in vacuum mode and  $<7 \times 10^{-9}$  mbar l s<sup>-1</sup> in sniffer mode.

### CUSTOMISABLE FOR ANY APPLICATION

- ELD500 version with an integrated oil sealed rotary vane pump
- ELD500 DRY version with an integrated helium optimised diaphragm pump
- ELD500 FLEX version without a primary pump

### PARTIAL FLOW KIT

Allows effective pump down of large of contaminate flows compatible with ELD500 and FLEX variants.

### ACCURATE PIN-POINTING OF LEAKS

Standard sniffer line enables operation up to 4m from the ELD500. Longer sniffer lines of up to 50m can be used with the sniffer extender interface.

### LONG TERM STABILITY

Ensured by class leading 180° mass spectrometer.



## Technical data

ELD500 LEAK DETECTOR	UNITS	ELD500	ELD500 DRY	ELD500 FLEX
Lowest detectable helium leak rate				
Vacuum operation	mbar ls <sup>-1</sup>	≤ 5 x 10 <sup>-12</sup>	≤ 3 x 10 <sup>-11</sup>	≤ 5 x 10 <sup>-12</sup>
Sniffer operation	mbar ls <sup>-1</sup>	≤ 7x10 <sup>-9</sup>	≤ 7x10 <sup>-9</sup>	≤ 7x10 <sup>-9</sup>
Maximum measurable helium leak rate				
Vacuum operation	mbar ls <sup>-1</sup>	> 0.1	> 0.1	> 0.1
Measurement ranges	decades	12	12	12
Maximum permissible inlet pressure	mbar	15	15	15
Pumping speed during pumpdown, 50 Hz/60 Hz	m <sup>3</sup> h <sup>-1</sup>	2.5/3	1.6/1.8	N/A
Helium pumping speed in the fine mode	ls <sup>-1</sup>	3.1	3.1	3.1
Time constant for leak rate signal	s	< 1	< 1	< 1
Time until ready for operation	min	≤ 2	≤ 2	≤ 2
Power consumption	VA	420	350	200
Inlet flange		NW25	NW25	NW25
Dimensions (WxHxD)	mm	495x456x314	495x456x314	495x456x314
Weight	kg	40	35.5	30

## Ordering information

PRODUCT DESCRIPTION	ORDER NUMBER
ELD500, 200-240V,50/60Hz	D13510903
ELD500, 100-120V, 50/60Hz	D13510904
ELD500, 100-120V, 60Hz	D13510906
ELD500 DRY, 200-240V,50/60Hz	D13520903
ELD500 DRY, 100-120V, 50/60Hz	D13520904
ELD500 DRY, 100-120V, 60Hz	D13520906
ELD500 FLEX, 100-240V,50/60Hz	D13530000
ELD500 RC - wired - remote control	D13550100
ELD500 RC - wireless - remote control	D13550110
ELD500 RC - wired - 8m extension cable	14022
ELD500 RC - wireless - extra transmitter	D13550130
ELD500 SL - standard sniffer line 4m	D13550300
ELD500 SL - extended SL Interface	D13550200
ELD500 SL - extended sniffer line 5m	14008
ELD500 SL - extended sniffer line 20m	14009
ELD500 SL - extended sniffer line 50m	12183
ELD500 partial flow adaptor	D13550400
ELD500 transport case	D13550500
ELD500 mobile trolley	D13550630
ELD500 SG - helium spray gun	16555
CL-internal calibrated leak	D13550910
CL-cal leak bspk. 0.5 - 1E-7. screw skt	D13550930
CL-calibrated leak HE 4 to 6	D13550950
Cable Auto-Start (nXDS/nXRi)	D13550631



# Vacuum components and flange fittings

When you buy vacuum pump components from Edwards, you can expect the quality and service that only a leading international supplier can provide. We understand that flanges and fittings are critical to the performance of your vacuum system, and supply only high quality products which meet the highest specification.

#### Convenience of supply:

Single source supplier, able to provide the complete system solution either online or via local supply centres.

#### High quality and reliability:

Precision material control ensures a dependable vacuum performance on sensitive or demanding applications.

#### Comprehensive choice:

Complete range for all common flange sizes in aluminium and stainless steel.

## NW flange assembly

NW fittings, otherwise known as ISO-KF, are the industry standard for many applications in the low to high vacuum range. They are ideal for achieving dependable cost effective performance down to  $10^{-7}$  mbar across a range of applications from light to harsh duty. A simple fastening method means that systems can be easily assembled and a leak tight vacuum seal is quickly achieved.

- Manufactured to ISO 2861 and DIN 28403 standards
- Nominal diameters 10 mm to 50 mm
- Use with either elastomer or formed aluminium seals
- Choice of clamp type depending on application, access, convenience and cost
- For use in high-vacuum applications: pressures  $>10^{-7}$  mbar

*This brochure details our most popular flange components and valves. Please refer to our full Product Catalogue or visit [www.edwardsvacuum.com](http://www.edwardsvacuum.com) for a complete list if there are any components which are not listed here.*

## Technical data

OPERATING PRESSURE RANGE (ABSOLUTE)	MINIMUM	MAXIMUM
-------------------------------------	---------	---------

Products are designed for vacuum applications however some will withstand a small over-pressure, this is indicated in the table below where appropriate

"C" clamp and centring ring	10 <sup>-7</sup> mbar	1 bar
Stainless steel clamping ring and Co-seal	10 <sup>-7</sup> mbar	10 bar
Stainless steel clamp and metal seal	10 <sup>-8</sup> mbar	3 bar
Stainless steel clamp and Co-seal (all sizes)	10 <sup>-7</sup> mbar	10 bar
Polymer and aluminium clamps and Co-seal NW10 to NW25	10 <sup>-7</sup> mbar	10 bar
NW40 to NW50	10 <sup>-7</sup> mbar	10 bar
NW trapped O ring	10 <sup>-7</sup> mbar	10 bar
ISO trapped O ring	10 <sup>-7</sup> mbar	1 bar
O ring and centring ring (vacuum use only)	10 <sup>-7</sup> mbar	1 bar
Bellows	10 <sup>-7</sup> mbar	1 bar
Flexible pipelines <sup>(1)</sup>	10 <sup>-7</sup> mbar	1.5 bar
Braided flexible pipelines <sup>(1)</sup>	10 <sup>-7</sup> mbar	10 bar

(1) Depends on size

STAINLESS STEEL EQUIVALENTS		
AISI number	DIN standard	Composition
304L	1.4306	X2 CrNi 19 10
316L	1.4404	X2 CrNiMo 17 13 2

### OPERATING TEMPERATURE

Polymer Co-seal	-10 to 80 °C
Aluminium Co-seal and nitrile seal	-10 to 100 °C
Aluminium Co-seal and fluoroelastomer seal	-10 to 150 °C
Polymer centring ring and nitrile O ring	-10 to 100 °C
Polymer centring ring and fluoroelastomer seal	-10 to 125 °C
Nitrile O ring	-10 to 100 °C
Fluoroelastomer O ring	-10 to 150 °C
Polymer clamp	
Constant vacuum use	-10 to 100 °C
Intermittent vacuum use	-10 to 125 °C
Stainless steel clamping ring	-10 to 125 °C
Aluminium swing/hinge clamp	-10 to 200 °C
Stainless steel clamp	-10 to 200 °C

The maximum temperature for continuous operation with fluoroelastomer is 150 °C. It may be intermittently baked at 200 °C.

## Chemical resistance

MATERIAL	GENERALLY RESISTANT TO:	GENERALLY ATTACKED BY:
<b>Nitrile</b> Butadiene Acrylonitrile copolymer	Many hydrocarbons fats, oils greases, hydraulic fluids	Ozone, ketones, esters, aldehydes, chlorinated and nitro hydrocarbons
<b>Neoprene</b> Chloroprene polymer	Moderate chemicals and acids, ozone, oily fats, greases, many oils and solvents	Strong oxidizing acids and esters, ketones, chlorinated aromatic and nitro hydrocarbons
<b>Fluoroelastomer</b> Fluorocarbon polymer	All aliphatic, aromatic and halogenated hydrocarbons, acids, animal and vegetable fats	Ketones, low molecular weight esters and nitro containing compounds
<b>Aluminium</b>	Organic acids, fatty acids, freons, nitric acid	Strong acids, alkalis chlorinated solvents, mercury
<b>Stainless Steel</b>	Organic acids, alkalis, nitric acid. Sulphuric acid (10%)	Oxidizing chlorines, some organic acids, hydrochloric acid, hydrofluoric acid
<b>Polymer</b> Liquid crystal polymer	Organic acids, glycols, chlorinated solvents, ketones, mineral and oxidising acids, caustic solutions freons	Sodium hydroxide, sulphuric acid (70%)

This information is provided as a general guide only. Further guidance should be sought with respect to specific chemicals and their applications.

Our components and flange fittings are designed to be leak-tight across the range of vacuum applications, and not intended to provide full structural support. When designing any vacuum system, it is essential that consideration is given to the static and dynamic loads imposed on each connection. If necessary, additional mechanical support should be provided and built into the design. Regular inspection including leak-checking and, where appropriate, periodic replacement of components should be considered to ensure system efficiency and safety is maintained.

# CLAMPS, TUBES, VALVES AND HOSE ADAPTORS

Clamps shown include our standard stainless steel clamping ring and our premium products - swing clamps and hinge clamps - both of which are available in polymer and aluminium and are easier to use than the clamping ring.

The speedivalve is our best-selling manually operated valve and is simple to use. It incorporates indication of status and is available with either nitrile or fluoroelastomer diaphragm.

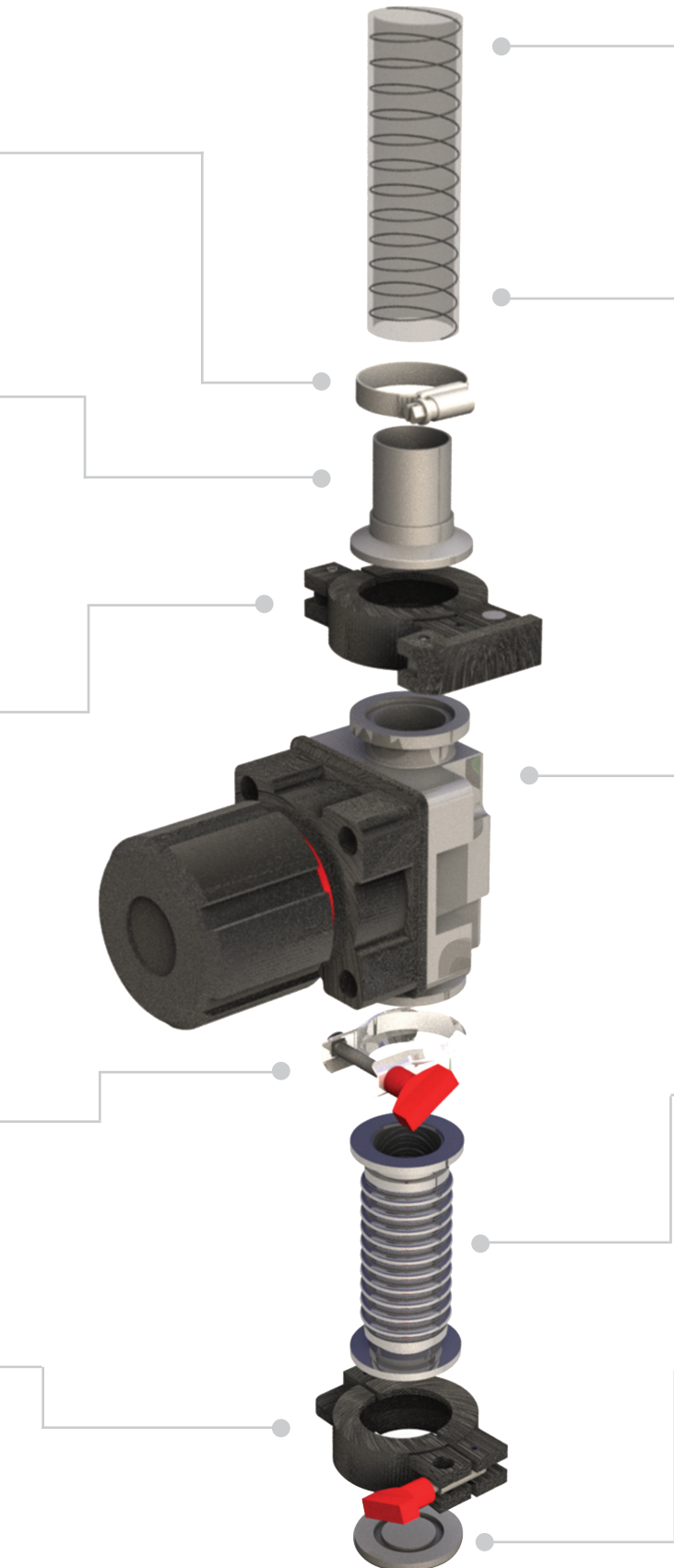
PVC hose clamp		
Tube to fit	Clip ID	Order number
NW10/16	25 mm	C10512408
NW20/25	36 mm	C10514408
NW32/40	50 mm	C10516408

PVC hose adaptor		
Flange size	Hose ID in (mm)	Order number
NW10	1/2 in (12.7)	C10504081
NW16	1/2 in (12.7)	C10504104
NW16	3/4 in (19.1)	C10504105
NW25	1 in (25.4)	C10504225
NW40	1 1/2 in (38.1)	C10504326

Hinged clamp		
Flange size	Order number	
	Aluminium	Polymer
NW10/16	C10512402	C10512303
NW20/25	C10514402	C10514303
NW32/40	C10516402	C10516303

Stainless steel clamping ring	
Flange size	Order number
NW10/16	C10512401
NW20/25	C10514401
NW32/40	C10516401

Swing clamp		
Flange size	Order number	
	Aluminium	Polymer
NW10/16	C10512403	C10512304
NW20/25	C10514403	C10514304
NW43/40	C10516403	C10516404



**Reinforced PVC tube 1 m lengths**

D	Order number	
	Rest of World	N. America
1/2 in	N/A	A63012220
3/4 in	H02100016	U3002173
1 in	H02100017	A63012343
1 1/2 in	H02100018	430000484

**Reinforced PVC tube with NW flanges and hose clamps**

Flange	Order number	
	500 mm	1000 mm
NW16	C10512055	C10512155
NW25	C10514055	C10514155
NW40	C10516055	C10516155

**SP Speedivalve diaphragm isolation valve**

Flange size	Order number	
	Nitrile diaphragm	Fluoroelastomer diaphragm
NW10	C33105000	C33155000
NW16	C33205000	C33255000
NW25	C33305000	C33355000
NW40	C33405000	C33455000

**Flexible pipelines**

Flange size	Order number	
	250 mm long	500 mm long
NW10	C10511285	C10511286
NW16	C10512285	C10512286
NW25	C10514285	C10514286
NW40	C10516285	C10516286

**Blanking flange**

Flange size	Order number	
	Aluminium	Stainless steel
NW10	C10511368	C10511366
NW16	C10512368	C10512366
NW25	C10514368	C10514366
NW40	C10516368	C10516366

# O RINGS, ELBOWS, CROSS PIECES, T PIECES AND REDUCERS

This page shows some of our other common hardware components and, in particular, our range of NW O ring based seals. These include our standard O ring with centering ring available in either nitrile or fluoroelastomer and with polymer, aluminium and stainless steel carriers.

Material selection depends on application and outgassing, operating temperature and leak tightness requirements. Co-Seals keep the carrier out of the vacuum and thus have the added benefit of eliminating crevices and trapped volumes that can lead to instability and gas bursts. The centering rings are only designed for vacuum applications. Where some positive pressure may be seen (such as exhaust lines), Co-Seals and trapped O rings should be used. They have carriers which support the O ring on both sides, making them ideal for both vacuum and positive pressure use.

## Centering ring (Nitrile O ring)

Flange size	Order number		
	Polymer carrier	Aluminium carrier	Stainless steel carrier
NW10	C10511393	C10511398	C10511396
NW16	C10512393	C10512398	C10512396
NW25	C10514393	C10514398	C10514396
NW40	C10516393	C10516398	C10516396

## Centering ring (Fluoroelastomer O ring)

Flange size	Order number		
	Polymer carrier	Aluminium carrier	Stainless steel carrier
NW10	C10511394	C10511397	C10511395
NW16	C10512394	C10512397	C10512395
NW25	C10514394	C10514397	C10514395
NW40	C10516394	C10516397	C10516395

## Trapped O ring (Fluoroelastomer)

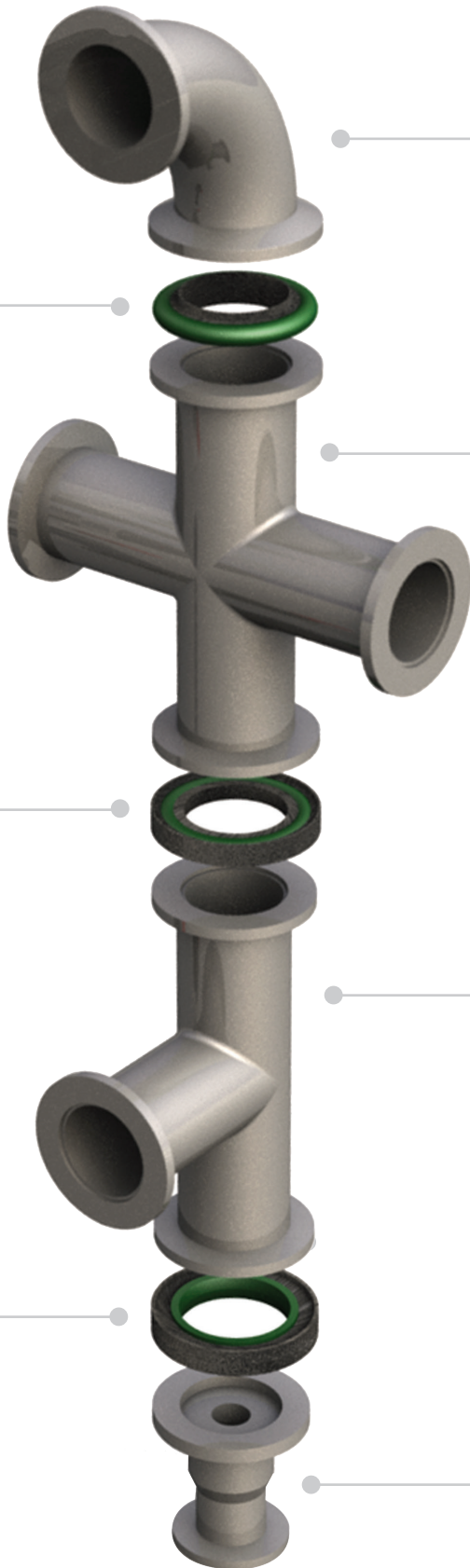
Flange size	Order number
NW10/16	C10512490
NW20/25	C10514490
NW32/40	C10516490

## Co-Seal (Nitrile O ring)

Flange size	Order number	
	Polymer carrier	Aluminium carrier
NW10/16	B27158426	B27158480
NW20/25	B27158447	B27158490
NW32/40	B27158454	B27158500

## Co-Seal (Fluoroelastomer O ring)

Flange size	Order number	
	Polymer carrier	Aluminium carrier
NW10/16	B27158427	B27158481
NW20/25	B27158448	B27858491
NW32/40	B27158453	B27858501



**90° elbow**

Flange size	Order number	
	Aluminium	Stainless steel
NW10	C10511410	C10511420
NW16	C10512410	C10512420
NW25	C10514410	C10514420
NW40	C10516410	C10516420

**Cross piece**

Flange size	Length	Order number	
		Aluminium	Stainless steel
NW10	60 mm	C10511412	C10511422
NW16	80 mm	C10512412	C10512422
NW25	100 mm	C10514412	C10514422
NW40	130 mm	C10516412	C10516422

**T-piece**

Flange size	Length	Order number	
		Aluminium	Stainless steel
NW10	60 mm	C10511411	C10511421
NW16	80 mm	C10512411	C10512421
NW25	100 mm	C10514411	C10514421
NW40	130 mm	C10516411	C10516421

**Reducing piece**

Flange size	Order number	
	Aluminium	Stainless steel
NW25/10	C10514436	C10514446
NW25/16	C10514437	C10514447
NW40/16	C10516438	C10516448
NW40/25	C10516439	C10516449



## Support you can trust

At Edwards we pride ourselves on developing service solutions that deliver optimum performance and up-time to our customers. Convenience, quality and value are at the heart of everything we do. Whether you are looking for immediate help and advice or require a long-term total service partner, we make the performance of your business our priority.





## Well-maintained systems last longer

Maximise the lifetime of your product by servicing your own products regularly using original parts and tooling. Edwards can support you with spares, maintenance kits, tools and training. Combining the reliability of original spare parts with quality tools means you are well on the way to achieving years of trouble-free operation.

## Comprehensive repair solutions

When products require more than just routine maintenance, Edwards offer a complete suite of Repair, Overhaul and 'ReManufacturing' solutions. All are covered by the assurance of the manufacturer's guarantee. We offer a fixed price servicing for swift response and simple budgeting, or a more flexible pricing, structured to reflect the specific needs of the repair. All 'ReManufacturing' services are completed to the highest standards using the proven assembly and test procedures developed in our factories.

If turnaround is critical a service exchange product can usually be dispatched to you from local stock within hours.



## Effective managed maintenance

For any business the ability to plan ahead is key. Managed Maintenance is about easy access to the right services at the right time. Regular scheduled maintenance is crucial to identifying potential problems before they occur. Avoiding unplanned downtime is essential to achieving outstanding operational performance and lowering the total cost of ownership (TCO). Our qualified service engineers can help you monitor and maintain your vacuum system to avoid one-off costly repairs while managing service on a fixed budget as part of a Managed Maintenance agreement.

## Economy without compromise

'Edwards CERTIFIED' are genuine Edwards products 'ReManufactured' to provide a cost-effective route to expand, upgrade or replace your installations without compromising quality, reliability or performance. Like our service exchange product, 'Certified' products are tested as new and are supported by a 12 month warranty, and come with original accessories and manuals required to aid installation.



## Prolonged peace of mind

Extending the new equipment warranty gives you a simple opportunity to add peace of mind to your purchase of new equipment, should a fault occur as a result of a manufacturing defect, equipment is expressly repaired or replaced. Cover is available on many of our products allowing the original factory warranty to be extended from 12 months to 2 years and beyond.

## Your global partner

We understand the importance of local support. Edwards has a number of major service facilities located throughout the world, each location is supported by an extensive team of engineers and technicians to provide local, rapid response and great value service. All our service operations are conducted at the highest international standards in accordance with ISO9001 (Quality), ISO14001 (Environmental), and OHSAS18001 (Workplace safety).







Publication Number: 3601 0014 01  
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