

VACUUM EQUIPMENT FOR RESEARCH AND DEVELOPMENT

 **EDWARDS**





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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Leak detection solution



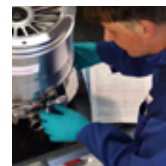
72 COMPONENTS AND HARDWARE

Vacuum components and hardware for configuring your vacuum system



78 SERVICE AND SUPPORT

Cost-effective service and support from the experts





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 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

	nXDS/XDS dry scroll pumps	nXRi multistage roots pumps	EM/RV rotary vane pumps	nEXT turbomolecular pumps	Turbomolecular pumping stations	STP magnetically levitated turbomolecular pumps	EPX high vacuum primary pumps	Ultra high vacuum pumps	Measurement and control	Leak detection and measurement	Components and hardware
Page number	6/10	14	18/22	26	36	44	48	50	58	68	72
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	•	•	•						•	•	•

nXDS DRY SCROLL PUMPS

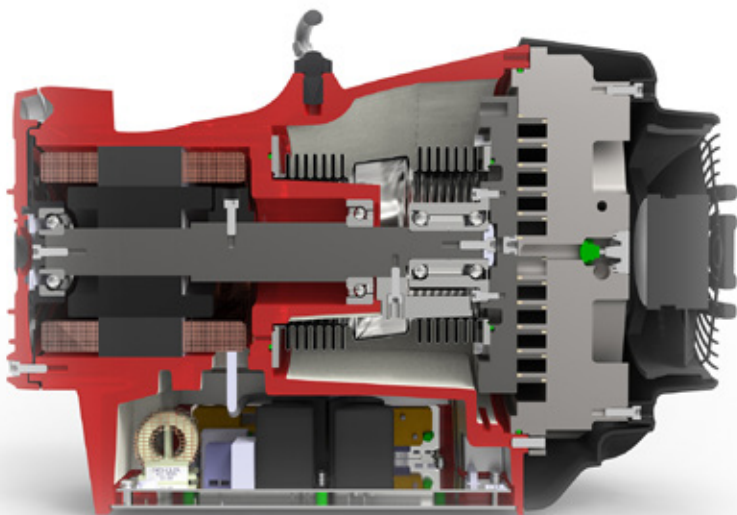


With exceptional pumping capability, ultimate vacuum performance and state-of-the-art design features, the nXDS dry scroll pump is the best performing pump in its class.

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

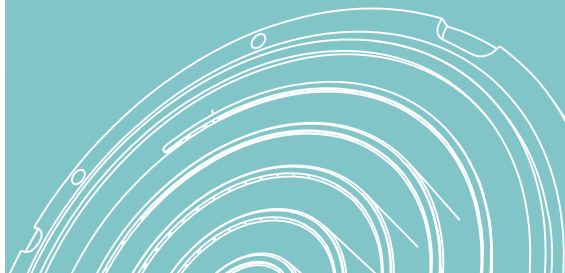
deliver higher speeds and a decade lower ultimate pressures than first generation scroll pumps with ultimate from only 7×10^{-3} mbar

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 gh^{-1} .



Technical data

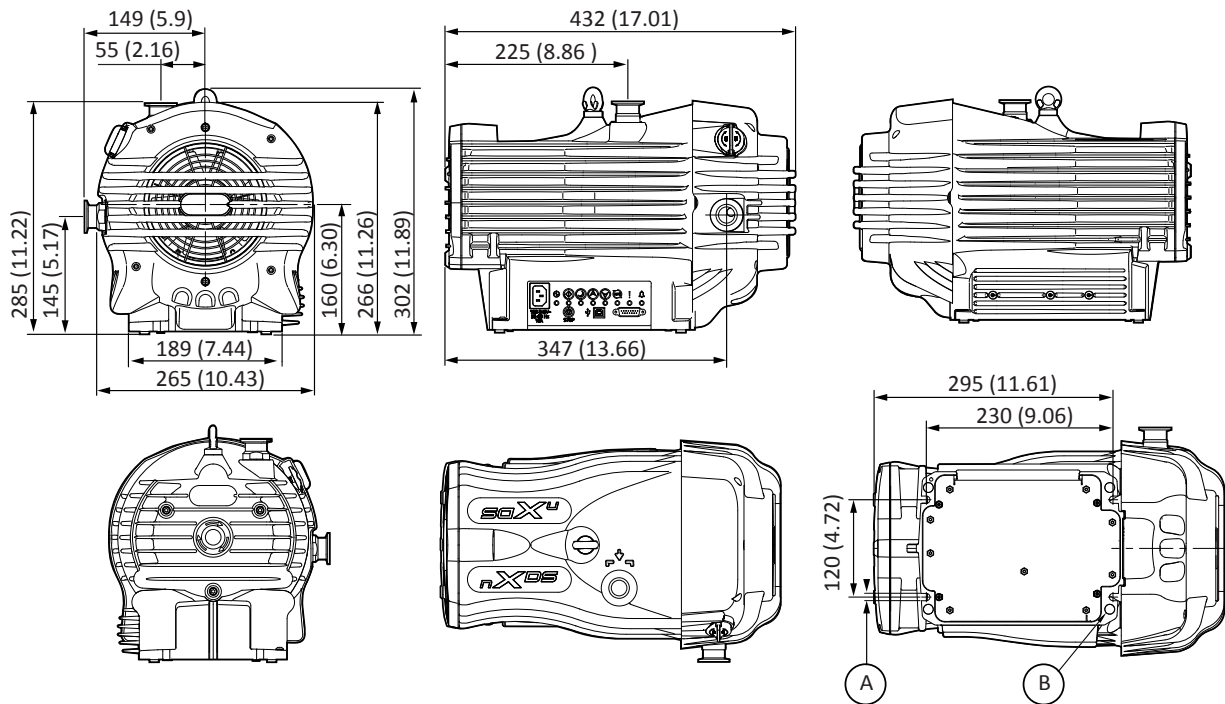
	Units	nXDS6i	nXDS10i	nXDS15i	nXDS20i
VACUUM DATA					
Peak pumping speed	m³h ⁻¹ (cfm)	6.2 (3.6)	11.4 (6.7)	15.1 (8.9)	22.0 (13.0)
Ultimate vacuum ⁽¹⁾	mbar (Torr)	0.02 (0.015)	0.007 (0.005)		0.03 (0.022)
Ultimate vacuum with gas ballast	mbar (Torr)	0.05 (0.038)	0.04 (0.03)		0.06 (0.045)
Water vapour tolerance	mbar (Torr)	35 (26)			20 (15)
Water vapour handling capacity	gh ⁻¹	110	145	240	220
Maximum continuous inlet pressure ⁽²⁾	mbar a (Torr a)	200 (150)			50 (38)
Maximum gas ballast/purge pressure	bar gauge (psig)	0.5 (7)			
MOTOR DATA					
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)			
PHYSICAL DATA					
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 ⁻¹ (rms)	< 4.5			
Leak tightness (static)	mbar ls ⁻¹	< 1 x 10 ⁻⁶			
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

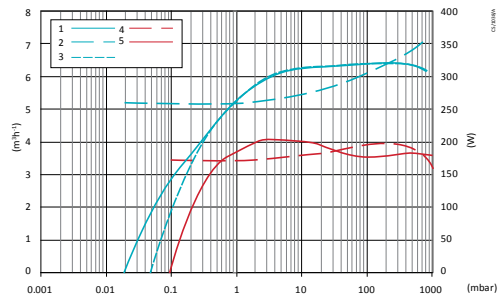


All nXDS variants are the same physical size
Dimensions in millimetres (inches)

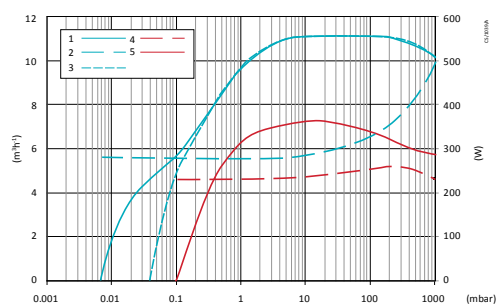
A. (4x) 9 mm wide slots
B. (4x) Rubber feet

Performance

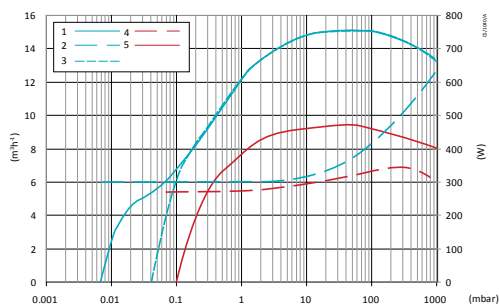
nXDS6i



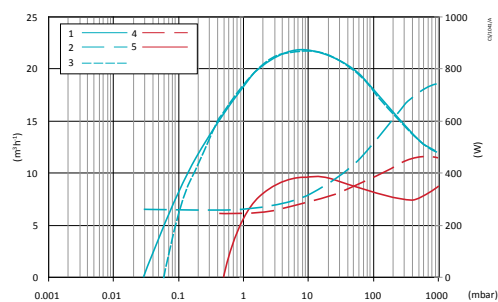
nXDS10i



nXDS15i



nXDS20i



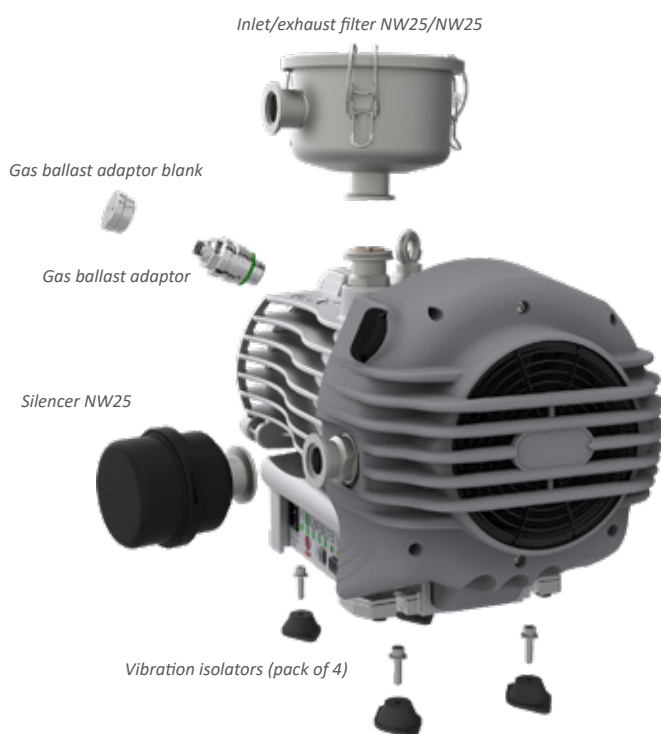
1. Normal pumping speed
2. Normal full power
3. Normal GB speed
4. Min standby power
5. Min standby speed

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

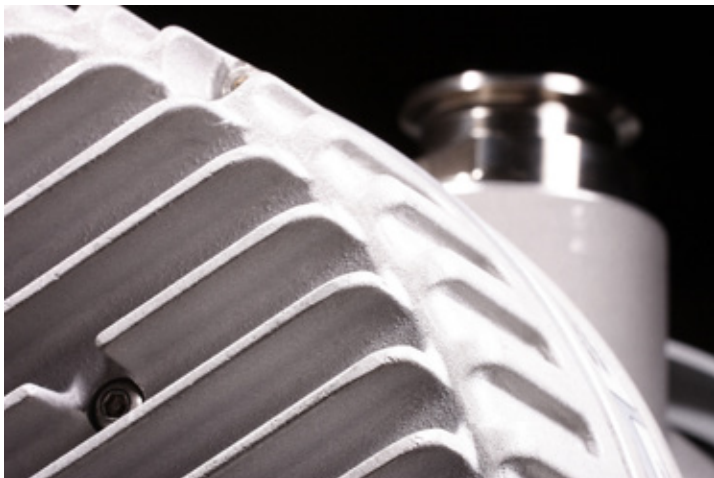


Accessories and spares:

	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	NR5C0000
	Acoustic enclosure 200-240 V	NRD797000
Spares	Tip seal kit	A73501801
	Bearing replacement kit ⁽¹⁾	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
	UK, three pin plug	A50505000
Cord sets	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 gh^{-1} .

UNIQUE AXIAL AIR GAP MOTOR

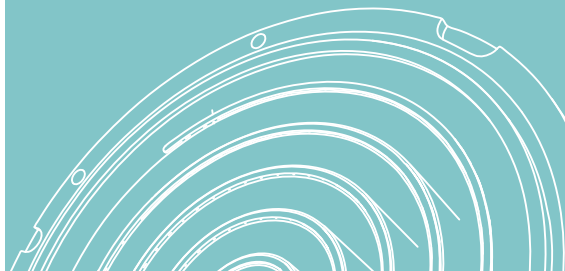
Reduces overall pump size and gives low power and noise.

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
VACUUM DATA				
Peak pumping speed	m³h ⁻¹ (cfm)	35 (21)		40 (23.5)
Ultimate vacuum ⁽¹⁾	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 ⁻¹	240		
Maximum continuous inlet pressure ⁽²⁾	mbar a (Torr a)	40 (30) ⁽²⁾	1000 (760)*	40 (30)
Maximum gas ballast/purge pressure	bar gauge (psig)	0.5 (7)		
MOTOR DATA				
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 ⁽³⁾ (20)		16 ⁽³⁾ (15)
PHYSICAL DATA				
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 ⁻¹ (rms)	< 4.5		
Leak tightness (static)	mbar ls ⁻¹	< 1 x 10 ⁻⁶		
Operating temperature range	°C (°F)	5 to 40 (41 to 104)		

* Use at higher inlet pressure speeds up tip seal wear

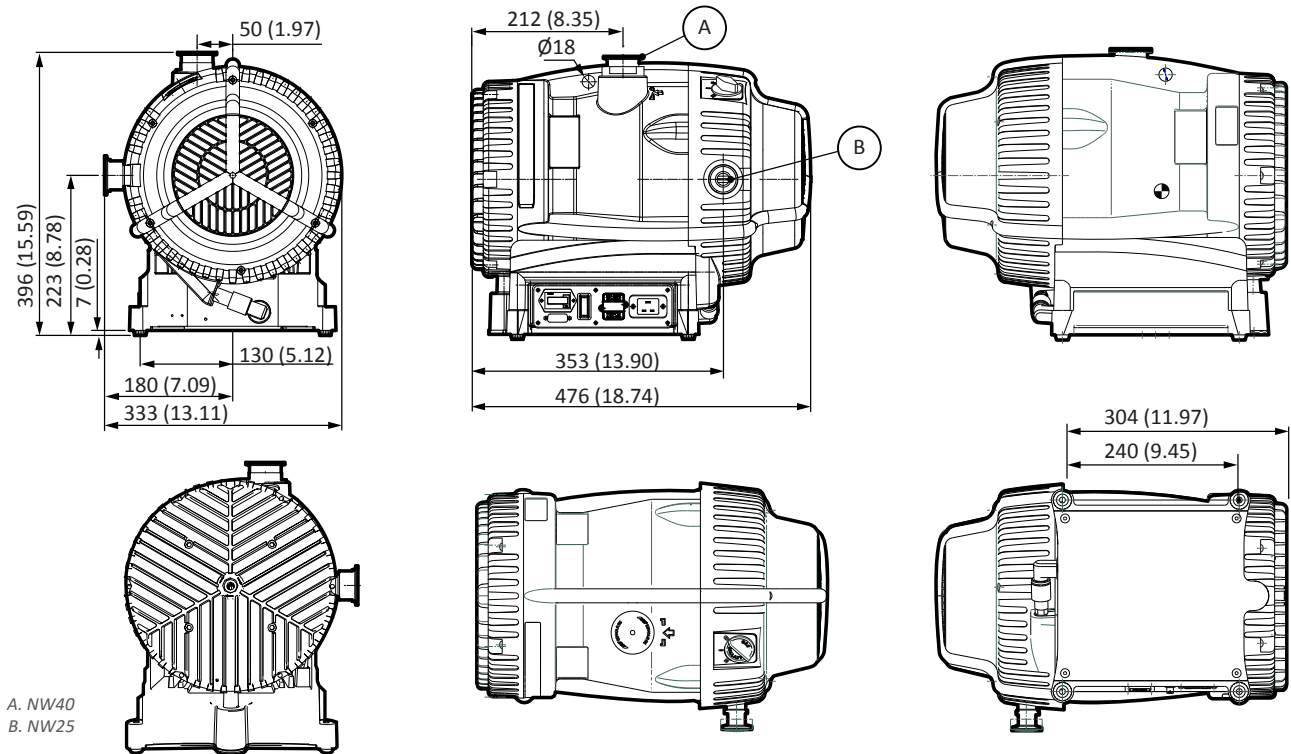
(1) measured as total pressure

(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

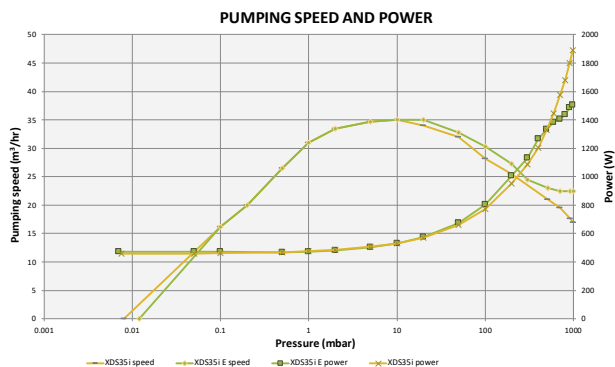


Dimensions

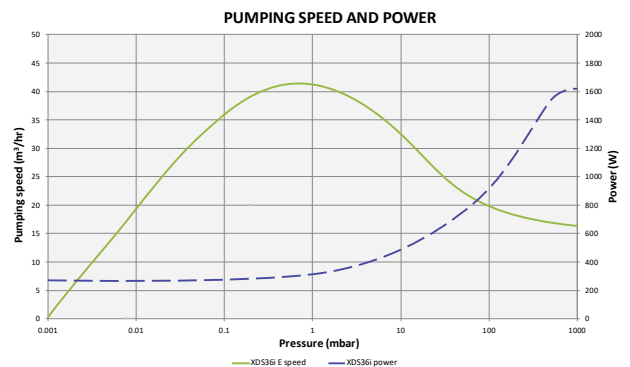


Performance

XDS35i



XDS46i



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	NRV5C0000
	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 m³h⁻¹. 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 120m³h⁻¹

ZERO CONTAMINATION

Experience the difference

Clean processes and clean results are guaranteed

Non-contact design with no particle generation

ENERGY EFFICIENCY

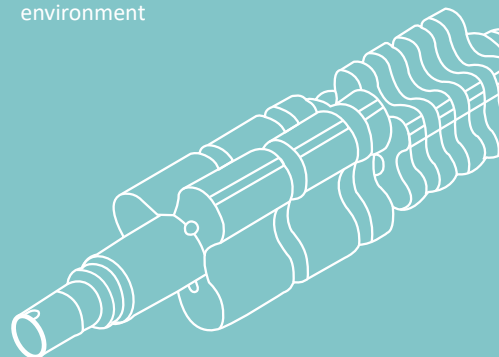
Reduce your costs

With lower input power and zero maintenance

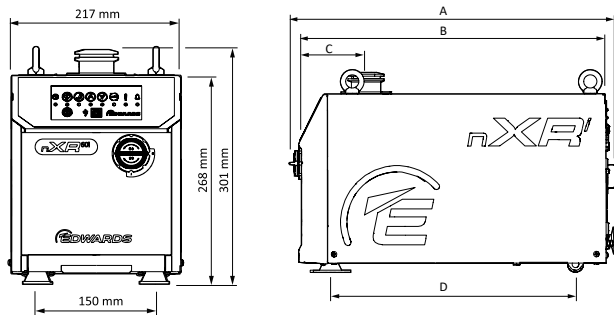
Power only 450W at ultimate across all models

LOW NOISE DESIGN

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



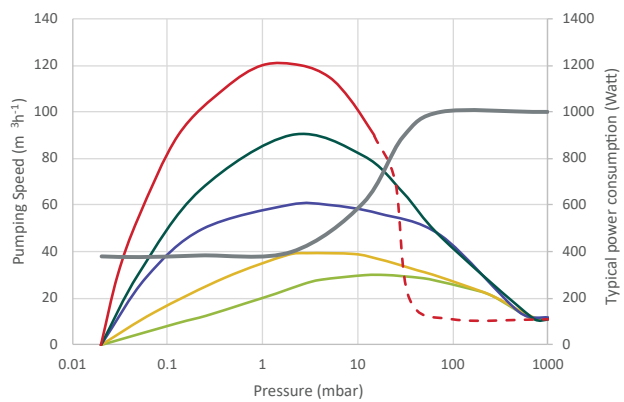
Dimensions



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

Performance

nXRi



— nXR30i
 — nXR60i
 — nXR120i (dashed: non-continuous)
 — nXR40i
 — nXR90i
 — Typical power consumption



Technical data

	Units	nXR30i	nXR40i	nXR60i	nXR90i	nXR120i
VACUUM DATA						
Peak pumping speed	m³h ⁻¹	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 ⁻¹	300				
Maximum permitted outlet pressure	bar gauge	0.2				
Maximum continuous inlet pressure*	mbar	1013				20
MOTOR DATA						
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				
PHYSICAL DATA						
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 ⁻¹ (rms)	< 2				
Leak tightness	mbar ls ⁻¹	< 1x10 ⁻⁶				
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

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

EM OIL SEALED ROTARY VANE PUMPS



EM single and two stage oil sealed rotary vane pumps are renowned for achieving high ultimate vacuum and rapid pumping speeds, with quiet operation and compact size. These pumps have been proven to provide long term reliable performance over many years in a range of scientific and laboratory applications, and are the ideal partner for your turbomolecular pump.



PRODUCT FEATURES

HIGH QUALITY OILS

with additives to prolong life whilst not impacting vapour pressure.

LARGE WATER VAPOUR HANDLING CAPACITY

gas ballast valve.

NO CUSTOMER WIRING

integral IEC connector.

VISUAL INSPECTION OF OIL LEVEL AND CONDITION

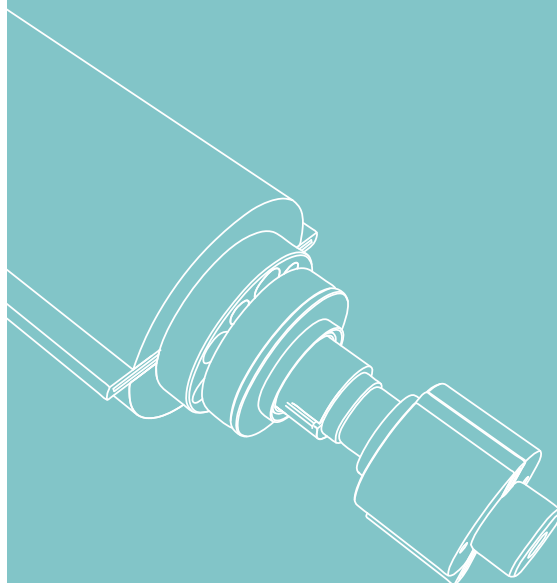
O ring sealed sight glass.

LOW SURFACE TEMPERATURE

forced air cooling.

WIDE VOLTAGE MOTORS

all major countries covered with less variants.



Technical data

	Units	E2M0.7	E2M1.5	E1M18	E2M18	E2M28
VACUUM DATA						
Peak pumping speed, 50 Hz (60 Hz)	m³h ⁻¹ (cfm)	0.75 (0.5)	1.6 (1.2)	17 (12.1)	17 (12.1)	27.5 (19.5)
Ultimate vacuum ⁽¹⁾	mbar (Torr)	3 x 10 ⁻³ (2.3 x 10 ⁻³)		3 x 10 ⁻² (2.3 x 10 ⁻²)	1 x 10 ⁻³ (7.5 x 10 ⁻⁴)	
Ultimate pressure with gas ballast	mbar (Torr)	2 x 10 ⁻¹ (1.5 x 10 ⁻¹)	2.5 x 10 ⁻² (1.9 x 10 ⁻²)	6.5 x 10 ⁻¹ (4.8 x 10 ⁻¹)	1.5 x 10 ⁻² (1.1 x 10 ⁻²)	
Ultimate pressure with PFPE oil	mbar (Torr)			3 x 10 ⁻¹ (2.3 x 10 ⁻¹)	1 x 10 ⁻² (7.5 x 10 ⁻³)	1 x 10 ⁻² (7.5 x 10 ⁻³)
Water vapour tolerance	mbar (Torr)	15 (11)		50 (38)	20 (15)	30 (23)
Water vapour handling capacity	gh ⁻¹	8	16	650	300	700
Maximum continuous inlet pressure	mbar a (Torr a)	1013 (760)				
Maximum gas ballast/purge pressure	bar gauge (psig)	0.5 (7)				
MOTOR DATA						
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 ⁽²⁾		IEC EN60320 C13		IEC EN60320 C19		
Recommended fuse, 230 V (115 V)	A	6 (10)		15 ⁽³⁾ (25)		
PHYSICAL DATA						
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 ⁽⁴⁾		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 ⁻¹ (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



E2M0.7



E2M1.5



E1M18



E2M18

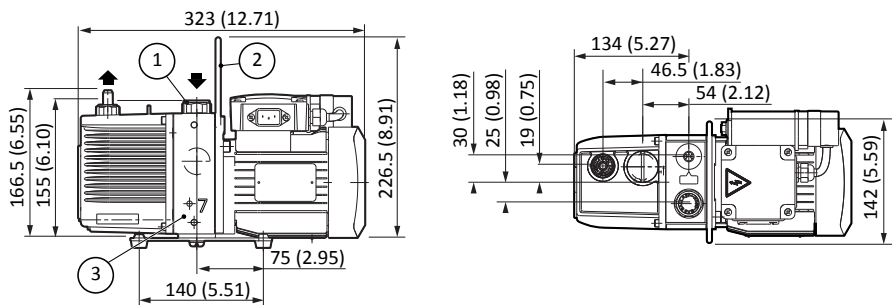


E2M28

Dimensions

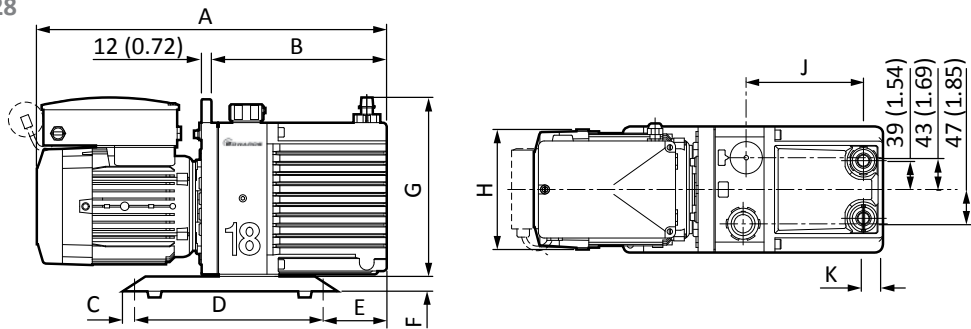
E2M0.7/E2M1.5

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



E1M18/E2M18 and E2M28

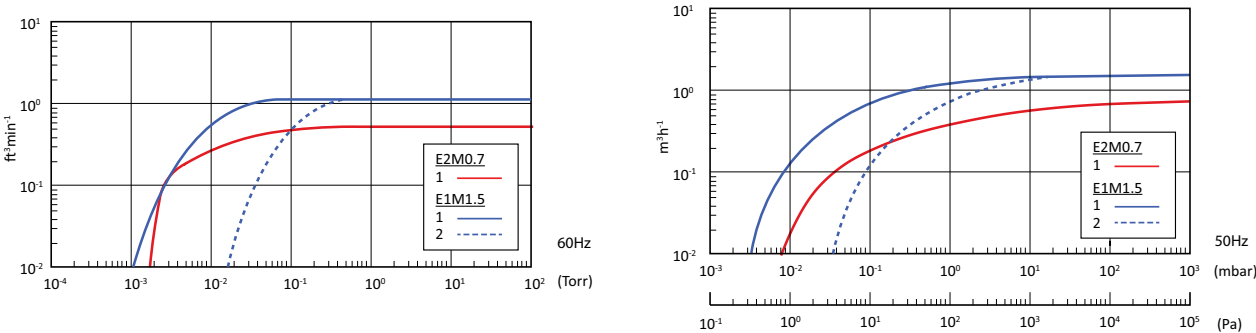
Single phase pump shown,
3 phase pump is similar.



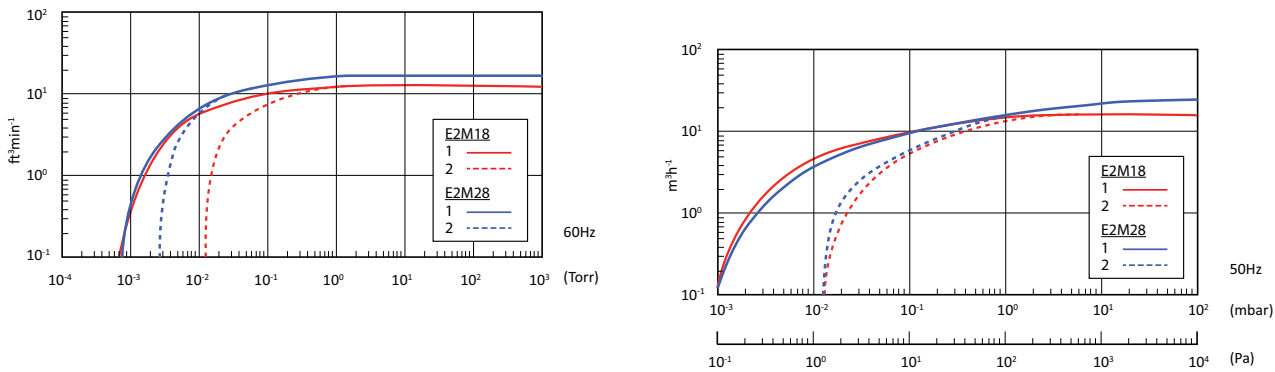
	A	B	C	D	E	F	G	H	J	K
E1M18	504 (19.84)	247 (9.72)	10 (0.39)	260 (10.24)	83 (3.27)	20 (0.79)	251 (9.88)	170 (6.69)	159 (6.26)	27.4 (1.08)
E2M18	550 (21.65)	295 (11.61)	10 (0.39)	260 (10.24)	131 (5.16)	20 (0.79)	251 (9.88)	170 (6.69)	207 (8.15)	27.4 (1.08)
E2M28	584 (22.99)	331 (13.03)	13 (0.51)	347 (13.66)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



1. without gas ballast
2. with gas ballast

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
		NW10 x 3/8" BSP adapter
		Vibration isolator (pack of 4)
	Spares	Clean and overhaul kit - E2M0.7/1.5
		Spares kit blade - E2M0.7/1.5
	Oil	Ultragrade 15, 1 litre bottle
		Ultragrade 15, 4 litre bottle
	Cord sets	UK, three pin plug
		North European plug
		North America/Japan plug
		No plug
E1M18/ E2M18/ E2M28	Accessories	Oil mist filter - EMF20 ⁽¹⁾
		Oil mist filter - MF30
		NW25 to 28mm bore tube adaptor
		¾" BSP to NW25 outlet adaptor
		E1M18/E2M18 Vibration isolator (pack of 4)
		E2M28 Vibration isolator (pack of 4)
		Acoustic Enclosure 110-120 V
		Acoustic Enclosure 200-240 V
	Spares	Clean and overhaul kit - E1M18/E2M18
		Spares kit blade - E1M18
		Spares kit blade - E2M18
		Clean and overhaul kit - E2M28
		Blade kit - E2M28/30
	Oil	Ultragrade 19, 1 litre bottle
		Ultragrade 19, 4 litre bottle
		Fomblin® YVAC 06/6 fluid 1 kg (532 ml)
		Fomblin® YVAC 06/6 fluid 5 kg (2660 ml)
		KRYTOX 1506 1 kg (PFPE fluid is approx. 0.5 litres)
	Cord sets	UK, three pin plug
		North European plug
		North America/Japan plug
		No plug

(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^{-1} 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

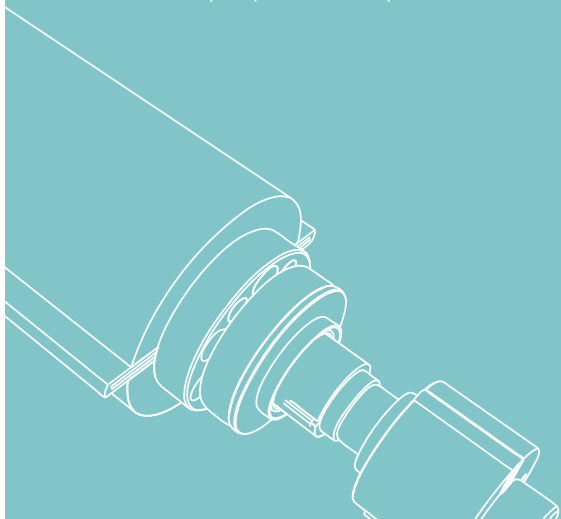
from 48dB(A)

O RING SEALED SIGHT GLASS

allows visual inspection of oil level condition.

FORCED AIR COOLING

ensures low pump surface temperature.



Technical data

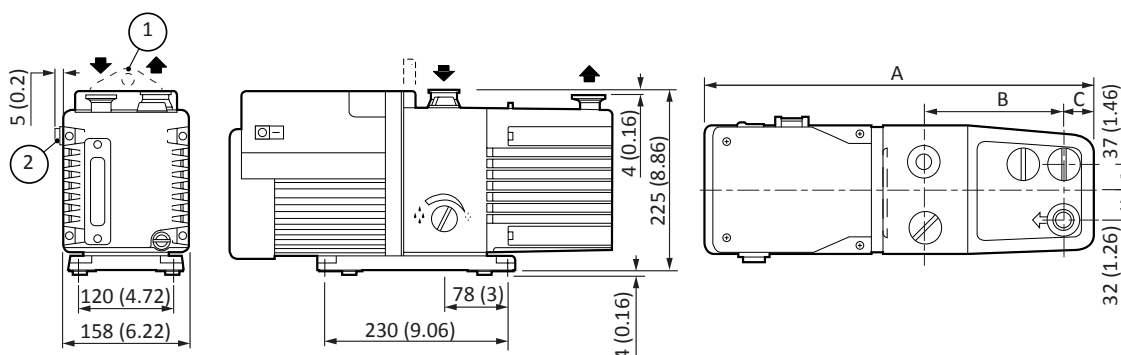
	Units	RV3	RV5	RV8	RV12
VACUUM DATA					
Peak pumping speed, 50 Hz (60 Hz)	m ³ h ⁻¹ (cfm)	3.3 (2.3)	5.1 (3.7)	8.5 (5.9)	12 (8.4)
Ultimate vacuum ⁽¹⁾	mbar (Torr)	2.0 x 10 ⁻³ (1.5 x 10 ⁻³); 2.0 x 10 ⁻² (1.5 x 10 ⁻²) with PFPE oil			
Ultimate vacuum with gas ballast 1	mbar (Torr)	3.0 x 10 ⁻² (2.3 x 10 ⁻²)			
Ultimate vacuum with gas ballast 2	mbar (Torr)	1.2 x 10 ⁻¹ (9.1 x 10 ⁻²)	1 x 10 ⁻¹ (7.5 x 10 ⁻²)	6.0 x 10 ⁻² (4.6 x 10 ⁻²)	6.0 x 10 ⁻² (4.6 x 10 ⁻²)
Ultimate vacuum in high throughput mode	mbar (Torr)	3.0 x 10 ⁻² (2.3 x 10 ⁻²)			
Water vapour tolerance	mbar (Torr)	80 (60)	50 (28.5)	38 (45)	32 (24)
Water vapour handling capacity	gh ⁻¹	220			290
Maximum continous inlet pressure ⁽²⁾	mbar a (Torr a)	1013 (760)			
Maximum gas ballast/purge pressure	bar gauge (psig)	0.5 (7)			
MOTOR DATA					
Motor rating 1 phase (nominal), 50 Hz (60 Hz)	W	450 (550)			
Motor rating 3 phase, 50 Hz (60 Hz)	W	250 (300)		450 (550)	
Nominal rotational speed, 50 Hz (60 Hz)	rpm	1470 (1760)			
PHYSICAL DATA					
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 ⁻¹ (rms)	< 4.5			
Operating temperature range	°C (°F)	12 to 40 (54 to 104)			

(1) measured as total pressure

(2) pump should be operated in high throughput mode for continuous operation above 100 mbar



Dimensions



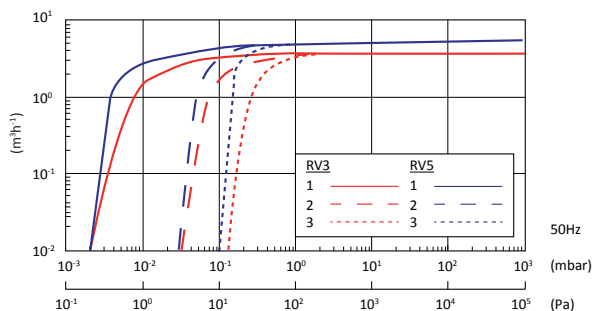
1. Lifting bracket (RV8 and RV12 pumps only; a lifting handle is fitted to the RV3 and RV5 pumps).
2. On-off switch (single-phase pumps only).

	A	B	C	D	E	F
RV3	430 (16.93)	158 (6.22)	225 (8.86)	156 (6.41)	111 (4.37)	29 (1.14)
RV5	430 (16.93)	158 (6.22)	225 (8.86)	156 (6.41)	111 (4.37)	29 (1.14)
RV8	470 (18.50)	158 (6.22)	225 (8.86)	196 (7.72)	111 (4.37)	35 (1.38)
RV12	490 (19.29)	158 (6.22)	225 (8.86)	216 (8.50)	111 (4.37)	35 (1.38)

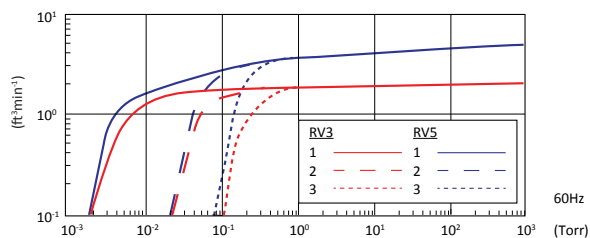
Single phase pump diagram shown, 3 phase pumps look different but share the same dimensions.
Dimensions shown in mm (inch).

Performance

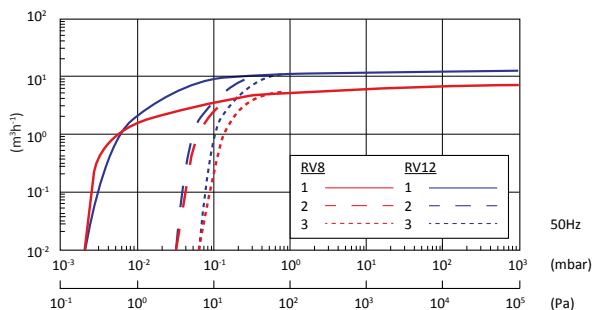
RV3/RV5 50 Hz



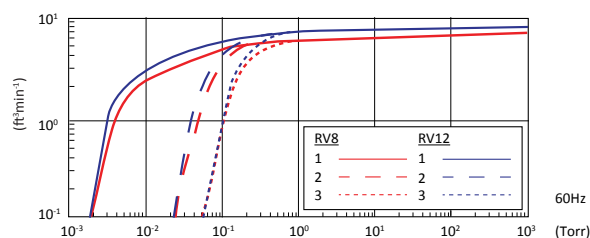
RV3/RV5 60 Hz



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:

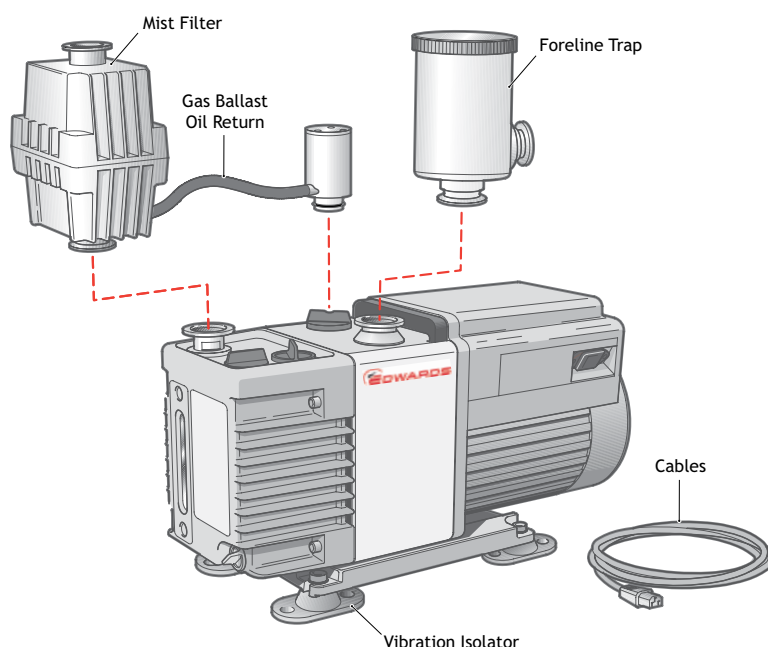
PRODUCT DESCRIPTION		ORDER NO.	ORDER NO.
		Ultragrade Oil	PFPE prepared ⁽¹⁾
RV3	115/230V, 50/60Hz set to 230V	A65201903	A65209903
	100/200V, 50/60Hz	A65201904	A65209904
	200-220/380-415V, 50Hz	A65201905	A65209905
	200-230/460V, 60Hz, 3 phase IE2		
	115/230V, 50/60Hz set to 115V	A65201906	A65209906
	100/200V, 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	A65301905	A65309905
	200-230/460V, 60Hz, 3 phase IE2		
	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	A65422905	A65429905
	460V, 60Hz, 3 phase IE2		
	200-208V, 50Hz	A65422925	A65429925
RV12	200-230V, 60Hz, 3 phase IE2		
	100/200V, 1 phase 50/60 Hz set to 100V	A65401907	
	115/230V, 50/60Hz set to 230V	A65501903	A65509903
	100/200V, 50/60Hz	A65501904	A65509904
	380-415V, 50Hz	A65522905	A65529905
	460V, 60Hz, 3 phase IE2		
RV12	200-208V, 50Hz	A65522925	A65529925
	200-230V, 60Hz, 3 phase IE2		
	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.

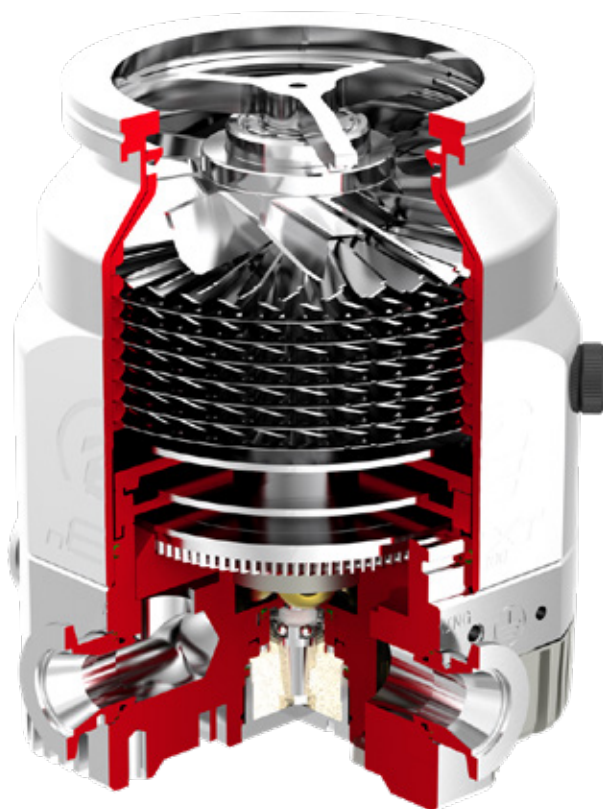


nEXT TURBOMOLECULAR PUMPS



nEXT turbomolecular pumps are hybrid bearing pumps with a compound drag stage and integrated controllers for pumping speeds from 47 to 1250 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.



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.

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		
VACUUM DATA					
Inlet flange		DN63 ISO-K or DN63 CF	NW40	DN63 ISO-K or DN63 CF	DN100 ISO-K
Inlet pumping speed ls ⁻¹	N ₂	55	47	84	86
	Ar	55	44	80	84
	He	41	61	78	80/78 (D/H)
	H ₂	27	49/44 (D/H)	60/54 (D/H)	60/54 (D/H)
	N ₂ /Ar	>1 x 10 ¹¹			
	He	6.9 x 10 ⁵	8 x 10 ⁶		
	H2	2.9 x 10 ⁴	2 x 10 ⁵		
Compression ratio (T/H)	N ₂ /Ar	NA	>1 x 10 ¹¹		
	He	NA	2 x 10 ⁷		
	H2	NA	5 x 10 ⁵		
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			
MOTOR DATA					
Normal rotational speed (rpm)		90,000			
Start time to 90% speed (sec) D/H (T)		90			
PHYSICAL DATA					
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.



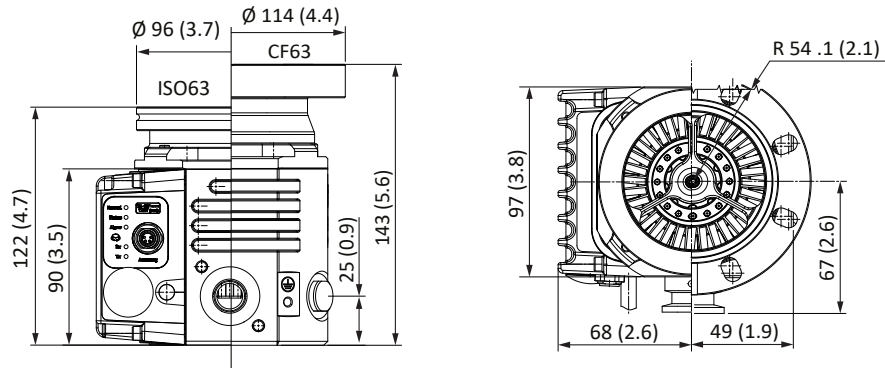
nEXT55



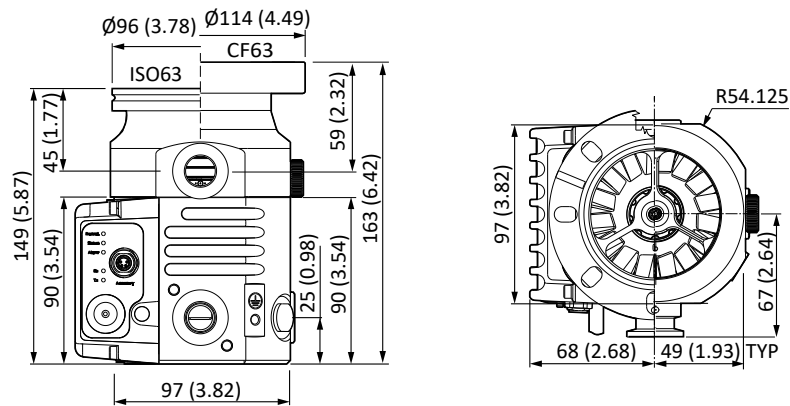
nEXT85

Dimensions

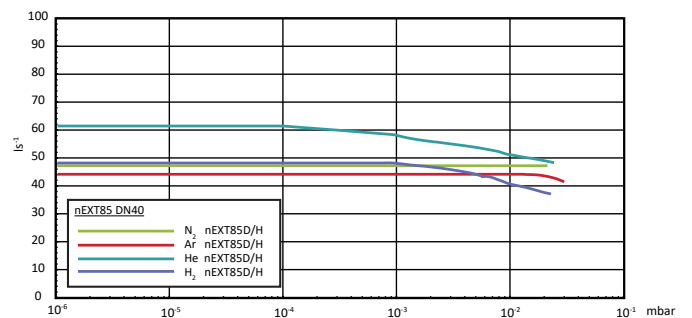
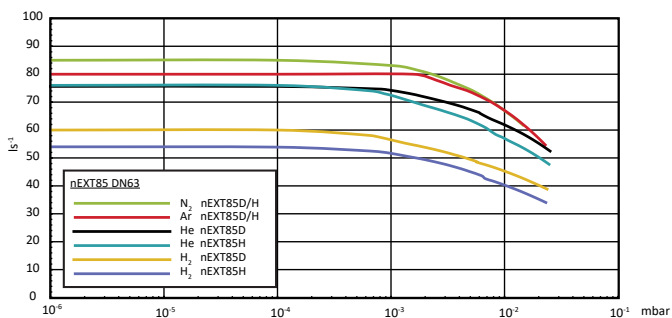
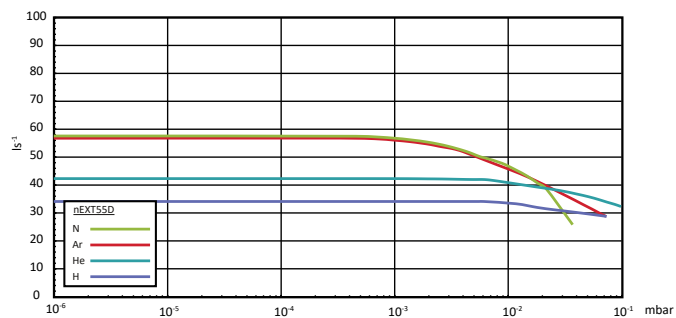
nEXT55



nEXT85



Performance



Technical data

		nEXT240	nEXT300	nEXT400
VACUUM DATA				
Inlet flange		DN100 ISO-K or DN100 CF	DN100 ISO-K or DN100 CF	DN160 ISO-K or DN160 CF
Inlet pumping speed ls ⁻¹	N ₂	240	300	400
	Ar	230	280	380
	He	230	340	390
	H ₂	165	280	325
Compression ratio (D)	N ₂ /Ar	>1 x 10 ¹¹	>1 x 10 ¹¹	>1 x 10 ¹¹
	He	3 x 10 ⁵	1 x 10 ⁶	1 x 10 ⁸
	H ₂	1 x 10 ⁴	5 x 10 ⁴	5 x 10 ⁵
Compression ratio (T/H)	N ₂ /Ar	>1 x 10 ¹¹	>1 x 10 ¹¹	>1 x 10 ¹¹
	He	1 x 10 ⁶	3 x 10 ⁶	>1 x 10 ⁸
	H ₂	1.5 x 10 ⁴	1 x 10 ⁵	1 x 10 ⁶
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
MOTOR DATA				
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)
PHYSICAL DATA				
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



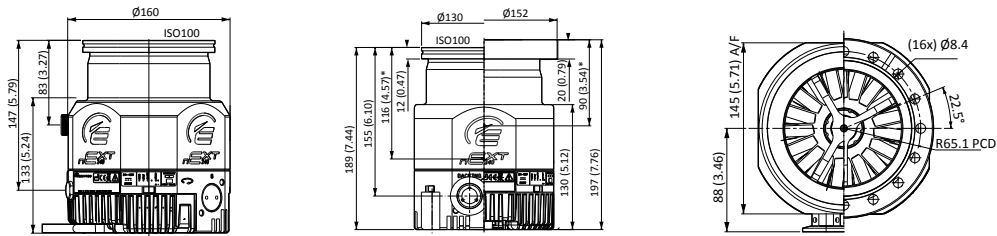
nEXT300



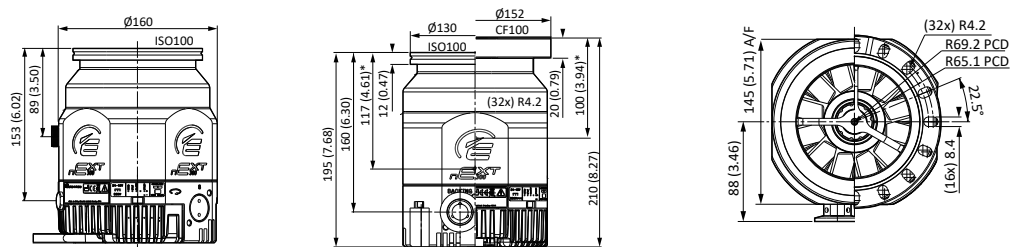
nEXT400

Dimensions

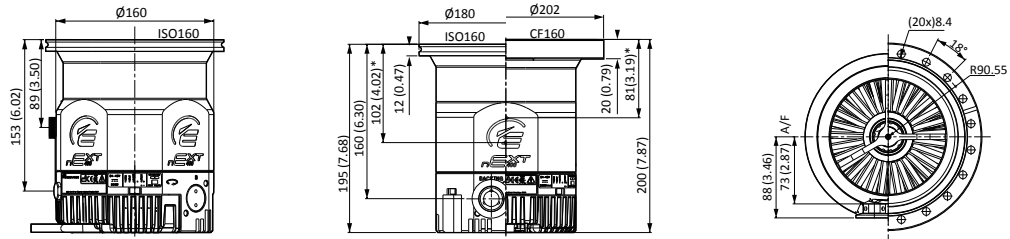
nEXT240



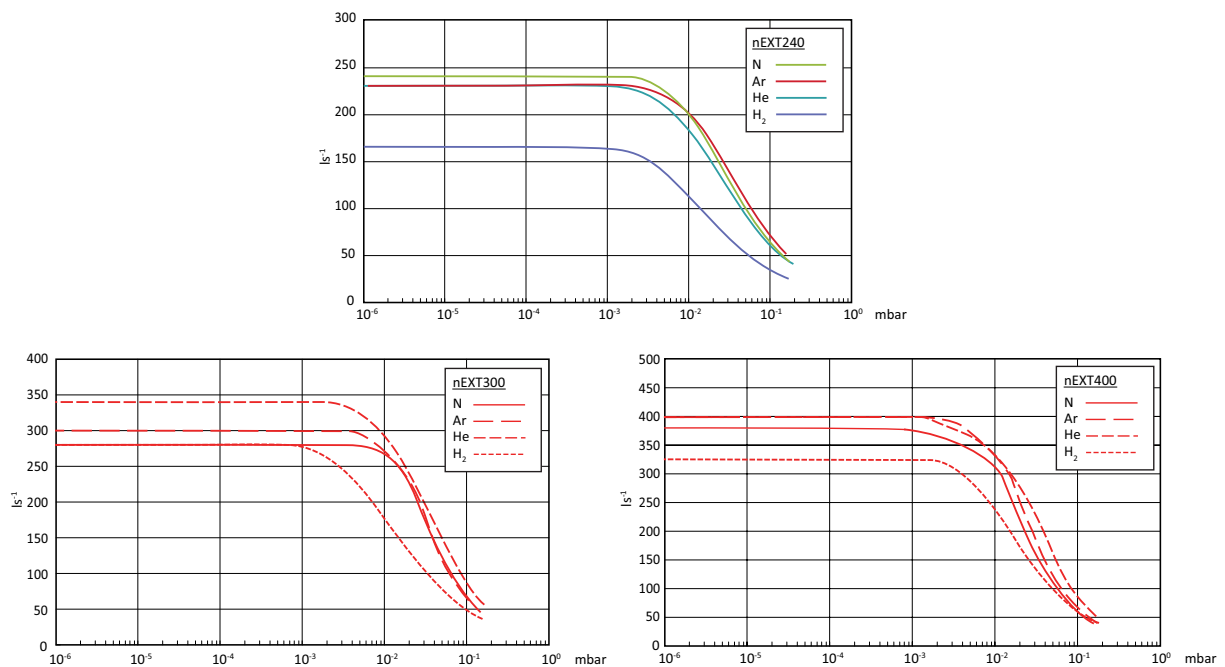
nEXT300



nEXT400



Performance



Technical data

		nEXT730D(H)		nEXT930D		nEXT1230H			
VACUUM DATA									
Inlet flange			DN 160 ISO-K	DN 160 CF	DN 200 ISO-K	DN 200 CF	DN 200 CF	DN 200 ISO-F	DN 200 ISO-K
Main inlet pumping speed									
Inlet pumping speed ls ⁻¹	N ₂	730(720)	730(680)	925		1250			
	Ar	665(655)	665(610)	865		1150			
	He	820(850)	820(790)	905		1350			
	H ₂	715(755)	715(710)	735		1150			
Gas throughput									
Gas throughput mbar ls ⁻¹	N ₂	14(4)		14		12			
	Ar	3.5(2.6)		3.5		4			
	He	21(7)		21		>20			
	H ₂	>>14(17)		>> 14		>20			
Peak compression ratio backing port to main inlet port									
Compression ratio	N ₂	>1x10 ¹¹ (>1x10 ¹³)		> 1x10 ¹¹		> 1x10 ¹¹			
	Ar	>1x10 ¹¹ (>1x10 ¹³)		> 1x10 ¹¹		> 1x10 ¹¹			
	He	1.2x10 ⁸ (5x10 ⁹)		1.2x10 ⁸		4x10 ⁸			
	H ₂	4.0x10 ⁶ (3x10 ⁸)		4.0x10 ⁶		1x10 ⁷			
Ultimate pressure**	mbar	<3.5x10 ⁻⁹ (<7x10 ⁻⁹)	<6x10 ⁻¹⁰ (1x10 ⁻¹⁰)	< 3.5x10 ⁻⁹	< 6x10 ⁻¹⁰	<5x10 ⁻¹⁰	"indicate higher pressure for ISO-K and ISO-F"		
Max. permissible backing pressure	mbar	15(12)		15					
Recommended cooling method		Water*							
Optional cooling		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	100					n/a		
Permissible cooling water temperature	°C	15 to 35							
Vent/purge port		G 1/8"							
Purge gas flow	"mbar · ls ⁻¹	0.4 24							
Recommended backing pump*		nXRi, XDS35i, E2M28**							
MOTOR DATA									
Normal rotational speed		49200				42 000			
Start time to 90% speed (sec) D/H		2.5							
Max. power consumption		500 (default), 600 (max.)				660 (default), 800 (max.)			
Power consumption at ultimate pressure		40				50			
PHYSICAL DATA									
Type of protection	IP	54							
"Noise level with convection cooling with radial air cooler"	dB(A)	< 40 <50		< 40 <55	< 40 <55	< 44 <55			
Mass (kg) D/H	kg	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



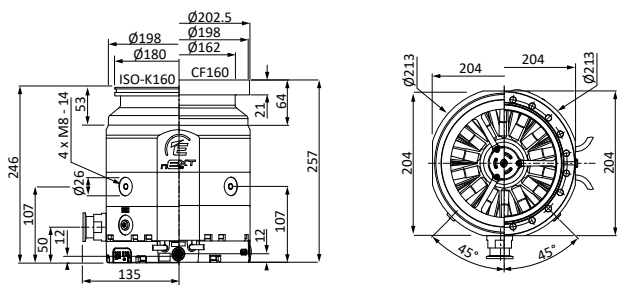
nEXT930



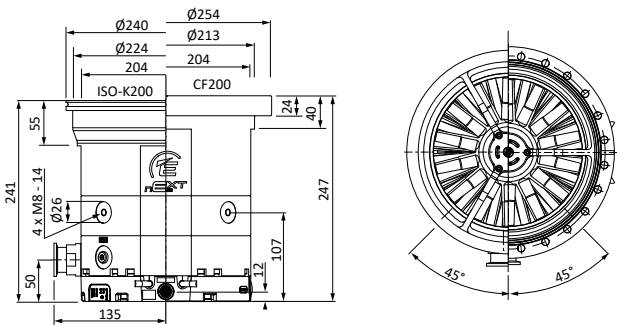
nEXT1230

Dimensions

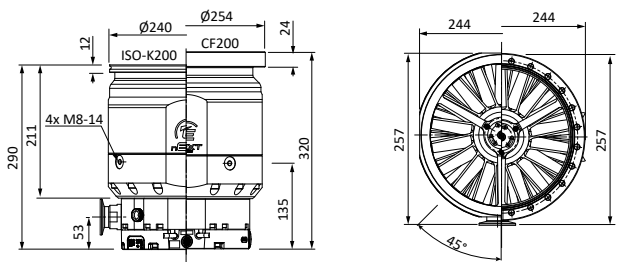
nEXT730



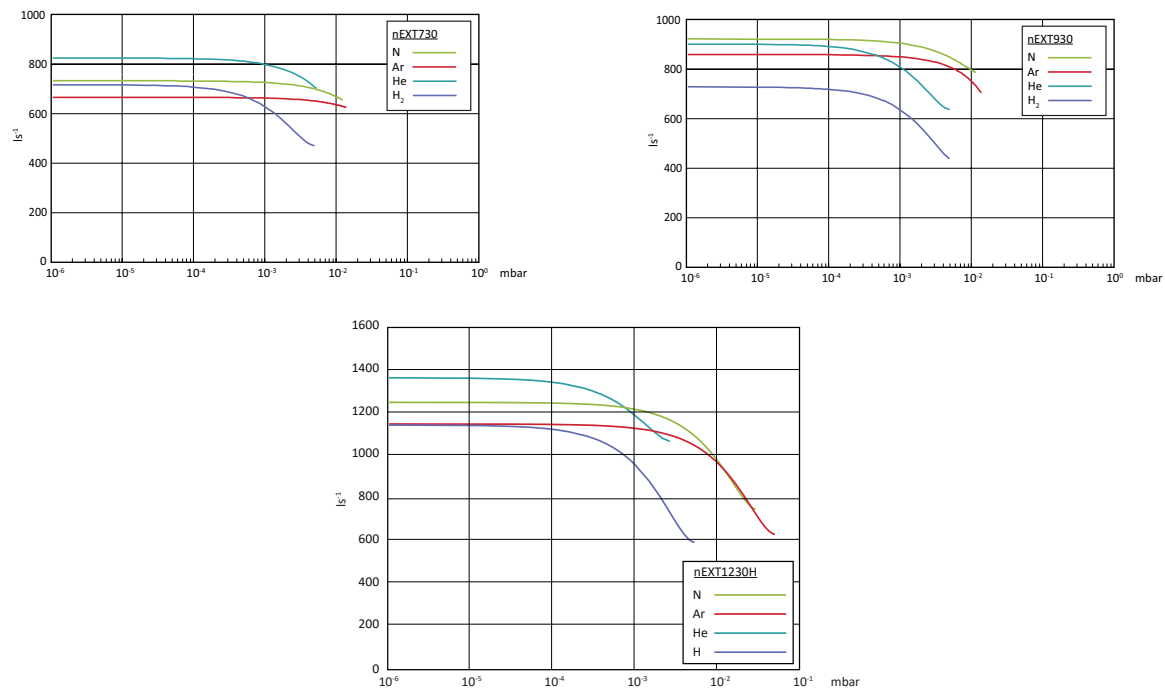
nEXT930



nEXT1230



Performance



Ordering information all the models

Pumps:

PRODUCT DESCRIPTION	ORDER NUMBER
nEXT55D NW40 NW16 80W	B8E210A01
nEXT55D CF63 NW16 80W	B8E210C01
nEXT55D ISO63 NW16 80W	B8E210B01
nEXT55D ISO100 NW16 80W	B8E210101
nEXT85D ISO63 NW16 80W	B8G210B01
nEXT85D CF63 NW16 80W	B8G210C01
nEXT85D ISO100 NW16 80W	B8G210101
nEXT85D NW40 NW16 80W	B8G210A01
nEXT85D ISO100 NW25 80W	B8G240101
nEXT85iD ISO63 NW16/16 80W	B8G211B01
nEXT85iD ISO63 NW16/25 80W	B8G214B01
nEXT85H ISO63 NW16 80W	B8G410B01
nEXT85H CF63 NW16 80W	B8G410C01
nEXT85H NW40 NW16 80W	B8G410A01
nEXT85iH CF63 NW16/16 80W	B8G411C01
nEXT85H ISO100 NW16 80W	B8G410101
nEXT240D ISO-K100 160W	B81200100
nEXT240D CF100 160W	B81200200
nEXT240T ISO-K100 160W	B81300100
nEXT240T CF100 160W	B81300200
nEXT300D ISO-K100 160W	B82200100
nEXT300D CF100 160W	B82200200
nEXT300T ISO-K100 160W	B82300100
nEXT300T CF100 160W	B82300200
nEXT400D ISO-K160 160W	B83200300
nEXT400D CF160 160W	B83200400
nEXT400T ISO-K160 160W	B83300300
nEXT400T CF160 160W	B83300400
nEXT730D ISO-K160 NW25	B8J200300
nEXT730D CF160 NW25	B8J200400
nEXT730H ISO-K160 BP NW25	B8J400300
nEXT730H CF160 BP NW25	B8J400400
nEXT930D ISO-K200 NW25	B8K200D00
nEXT930D CF200 NW25	B8K200F00
nEXT1230H CF200 NW40	B8N4A0F00
nEXT1230H ISO-F200 NW40	B8N4A0E00
nEXT1230H ISO-K200 NW40	B8N4A0D00
nEXT1230H CF200 NW40 INV	B8N4A0FU0
nEXT1230H ISO-F200 NW40 INV	B8N4A0EU0



Ordering information

Accessories and spares:

PUMP		PRODUCT DESCRIPTION	ORDER NUMBER
nEXT55/85	Controller ⁽¹⁾	TAG controller	D39592000
		TAG power supply	D39592800
		TIC 200 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 ⁽¹⁾	TAG controller	D39592000
		TAG power supply	D39592800
		TIC100 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
		TIC100 turbo and instrument controller	D39721000
	Cooling	Air cooling nEXT730/930 /1230 radial	B8J200800
		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
		ISO160 fine inlet screen	B80000826
	Service	Bearing replacement kit (nEXT730/930D)	B8J200827
		Bearing replacement tooling (nEXT730/930)	B8J200845
	Power supply to pump	nEXT 1m open end cable	B8J200815
		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
All	Extension cables	1 m pump to controller cable	D39700835
		3 m pump to controller cable	D39700836
		5 m pump to controller cable	D39700837
	Power cables ⁽¹⁾	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

To connect a 3rd party power supply to the pump

(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 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 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 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, 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

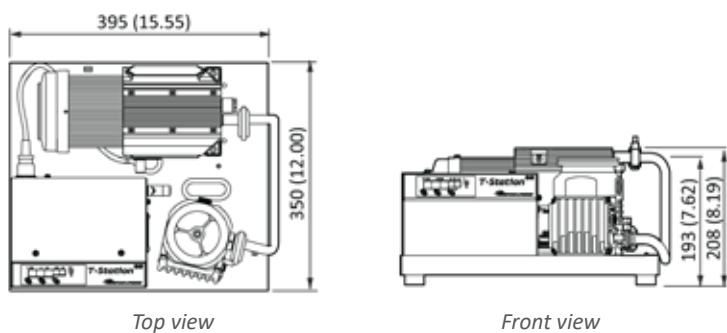
Available with either an NW40, ISO63 or CF63 inlet flange to suit your application.

Technical data

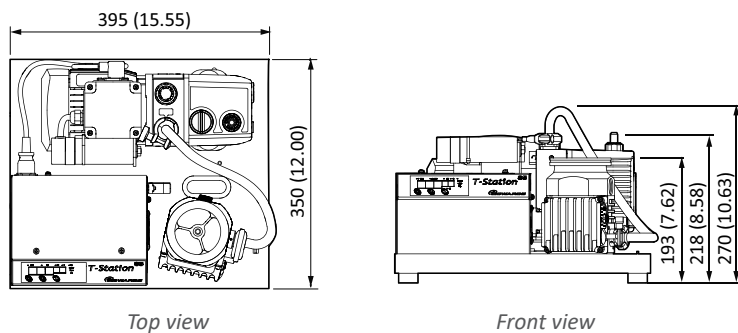
	Units	T-Station 85	T-Station 300
PUMPING SPEED FOR N ₂			
NW40	ls ⁻¹	47	
ISO/CF63	ls ⁻¹	84	
ISO/CF100	ls ⁻¹	-	300
COMPRESSION RATIO FOR N ₂			
NW40	ls ⁻¹	>1X10 ¹¹	
ISO/CF63	ls ⁻¹	>1X10 ¹¹	
ISO/CF100	ls ⁻¹	>1X10 ¹¹	
BACKING PUMP SPEED 50HZ			
E2M1.5 (TS85W/TS300)	m³/h	1.6	1.6
XDD1 (TS85D/TS300)	m³/h	1.2	1.2
ULTIMATE VACUUM			
NW40	mbar	<5 X 10 ⁻⁹	
ISO63	mbar	<5 X 10 ⁻⁹	
ISO100	mbar		<6 X 10 ⁻⁸
CF63/100	mbar	<5 X 10 ⁻¹⁰	
EXHAUST FLANGE			
E2M1.5 (TS85W/TS300)	11 mm OD nozzle or 3/8" BSP		
XDD1 (TS85D/TS300)	Fitted silencer or 1/8" BSP		
MASS			
E2M1.5 (TS85W)	kg	21	
XDD1 (TS85D)	kg	18	
E2M1.5 ISO100 (TS300)	kg		26
E2M1.5 CF100 (TS300)	kg		29
XDD1 ISO100 (TS300)	kg		22
XDD1 CF100 (TS300)	kg		25
Noise level	db(A)	<56 ± 3dB(A) Declared dual number noise emission values in accordance with ISO4871	
OPERATING TEMPERATURE			
E2M1.5	°C	+12 to +40	
XDD1	°C	+12 to +40	

Dimensions

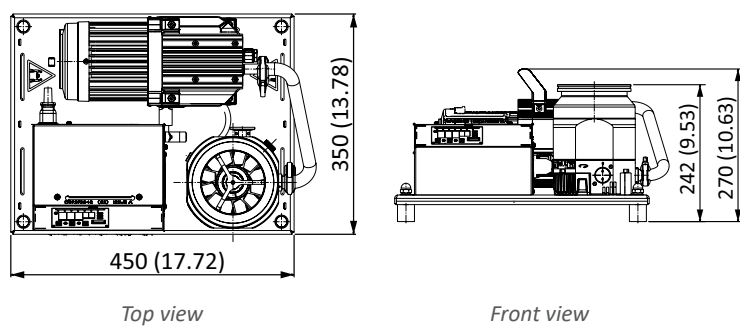
T-Station 85D with XDD1 backing pump



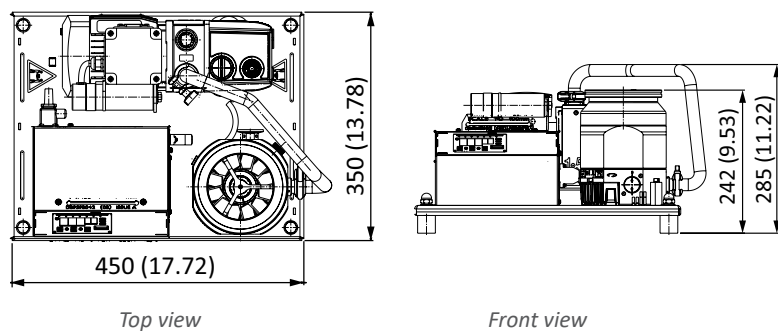
T-Station 85W with E2M1.5 backing pump



T-Station 300 Dry with XDD1 backing pump



T-Station 300 Wet with E2M1.5 backing pump



Ordering information

Pumping station:

PRODUCT DESCRIPTION	ORDER NO.	PRODUCT DESCRIPTION	ORDER NO.
T-Station 85H Wet NW40 200-240V	TS85W1001	T-Station 300D Wet ISO100 200-240V	TS300W4001
T-Station 85H Wet ISO63 200-240V	TS85W2001	T-Station 300D Wet CF100 200-240V	TS300W5001
T-Station 85H Wet CF63 200-240V	TS85W3001	T-Station 300D Dry ISO100 200-240V	TS300D4001
T-Station 85H Dry NW40 200-240V	TS85D1001	T-Station 300D Dry CF100 200-240V	TS300D5001
T-Station 85H Dry ISO63 200-240V	TS85D2001	T-Station 300D Wet ISO100 100-120V	TS300W4002
T-Station 85H Dry CF63 200-240V	TS85D3001	T-Station 300D Wet CF100 100-120V	TS300W5002
T-Station 85H Wet NW40 100-120V	TS85W1002	T-Station 300D Dry ISO100 100-120V	TS300D4002
T-Station 85H Wet ISO63 100-120V	TS85W2002	T-Station 300D Dry CF100 100-120V	TS300D5002
T-Station 85H Wet CF63 100-120V	TS85W3002		
T-Station 85H Dry NW40 100-120V	TS85D1002		
T-Station 85H Dry ISO63 100-120V	TS85D2002		
T-Station 85H Dry CF63 100-120V	TS85D3002		

Accessories and spares:

	PRODUCT DESCRIPTION	ORDER NO.
Accessories	EMF3 mist filter for E2M1.5	A46220000
	TAV5 solenoid operated vent valve	B58066010
	APG200 - XLC - NW16	D1G2011100
	AIM X NW25 Inverted Magnetron Gauge	D14642000
	WRG-S NW25 Wide Range Gauge	D14701000
	APGX-H NW25 Convection Gauge	D02391000
Cord sets	2 m electrical supply cable UK plug	A50505000
	2 m electrical supply cable EU plug	A50506000
	2 m electrical supply cable North America/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 ls^{-1} and a choice of oil sealed or dry backing pumps ranging from 1 to 20 m^3h^{-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 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.

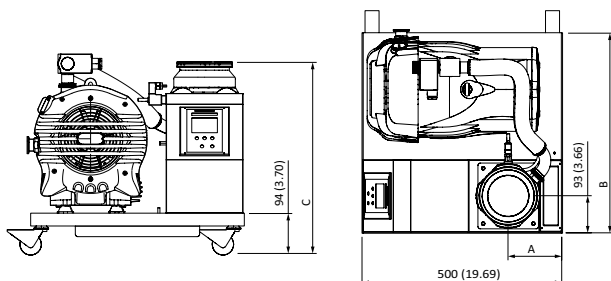
CHOICE OF BACKING PUMPS

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

LOW VIBRATION

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

Dimensions



	A	B ⁽¹⁾	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

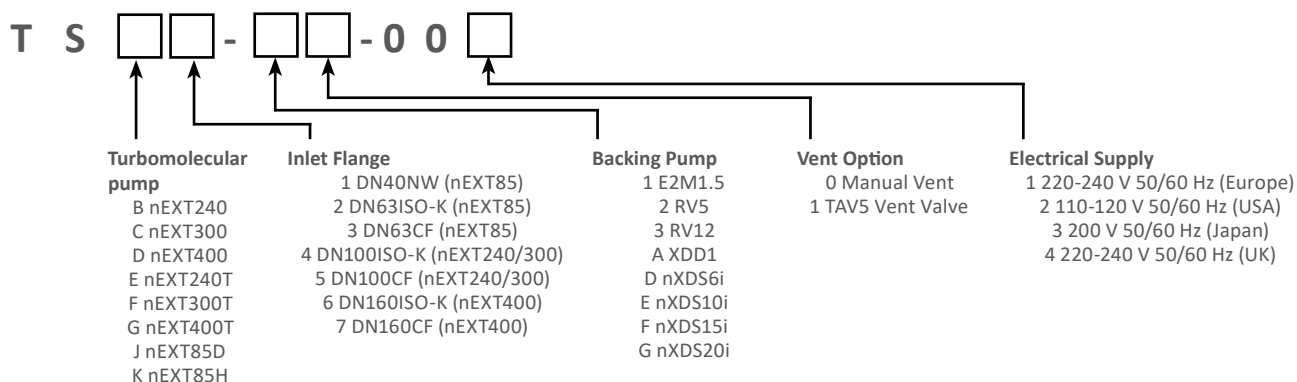
(1) 380 mm refers to small platforms with XDD1 backing pumps
500 mm refers to large platforms with nXDS/RV backing pumps

Technical data

nEXT TURBO STATION		
Peak pumping speed for N ₂	NW40	47 ls ⁻¹
	ISO/CF63	84 ls ⁻¹
	ISO/CF100	240 or 300 ls ⁻¹
	ISO/CF160	400 ls ⁻¹
Compression ratio for N ₂		>1 x 10 ¹¹
Backing pump speed, 50 Hz (60 Hz)	E2M1.5	1.6 m ³ h ⁻¹ (1.2 cfm)
	RV	5.1 m ³ h ⁻¹ (3.6 cfm)
	RV12	12 m ³ h ⁻¹ (8.4 cfm)
	XDD1	1.2 m ³ h ⁻¹ (0.9 cfm)
	nXDS6i	6.2 m ³ h ⁻¹ (3.6 cfm)
	nXDS10i	11.4 m ³ h ⁻¹ (6.7 cfm)
	nXDS15i	15.1 m ³ h ⁻¹ (8.9 cfm)
	nXDS20i	22 m ³ h ⁻¹ (13.0 cfm)
Ultimate vacuum (CF)		<5 x 10 ¹⁰ mbar
Inlet connection		NW40, ISO63, CF63, ISO100, CF100, ISO160 or CF160
Exhaust connection	E2M1.5	NW16
	XDD1	Fitted silencer or 1/8" BSP
	RV/nXDS	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:



Accessories:

PRODUCT DESCRIPTION	ORDER NO.
APG200 - XLC - NW16	D1G2011100
AIM X NW25 Inverted Magnetron Gauge	D14642000
WRG-S NW25 Wide Range Gauge	D14701000
APGX-H NW25 Convection Gauge	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 ls^{-1} and choice of dry backing nXRi multistage roots pumps that enables the range to pump from 30 to 90 m^3h^{-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 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 m^3h^{-1} .

LOW VIBRATION

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


Technical data


	nEXT240	nEXT300	nEXT400	nEXT730	nEXT930
PUMPING STATION					
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 ₂	240	300	390	730	930
Ultimate pressure mbar	6 x 10 ⁻⁸ 5 x 10 ⁻¹⁰	6 x 10 ⁻⁸ 5 x 10 ⁻¹⁰	1 x 10 ⁻⁸ 1 x 10 ⁻¹⁰	2 x 10 ⁻⁸ 3 x 10 ⁻¹⁰	2 x 10 ⁻⁸ 3 x 10 ⁻¹⁰
Mains supply V	110 / 230	110 / 230	110 / 230	110 / 230	110 / 230

'PLUG AND PUMP' TURBOMOLECULAR PUMPING STATION

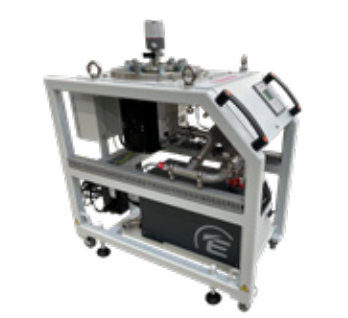
Everything about our range of nEXT turbomolecular pumping stations has been developed to provide a comprehensive vacuum solution with the latest technological advances for easy installation and operation.

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

1 CHOOSE YOUR TURBOPUMP


2 CHOOSE YOUR BACKING PUMP


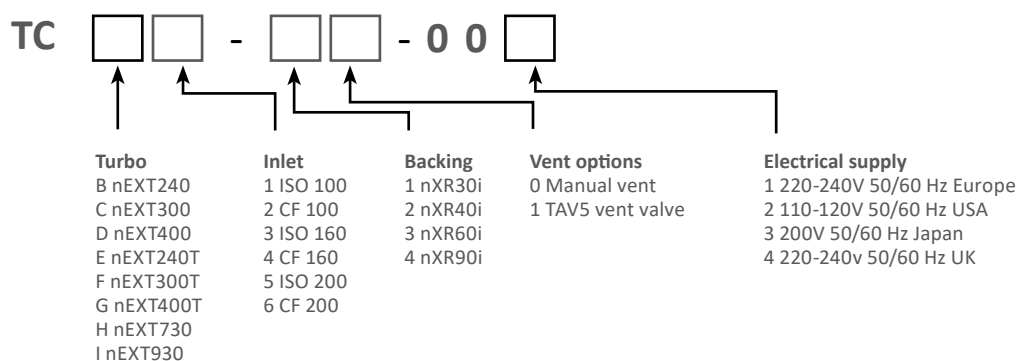
nXR30i (30 m³h⁻¹) nXR40i (40 m³h⁻¹)
nXR60i (60 m³h⁻¹) nXR90i (90 m³h⁻¹)

3 SELECT YOUR VOLTAGE


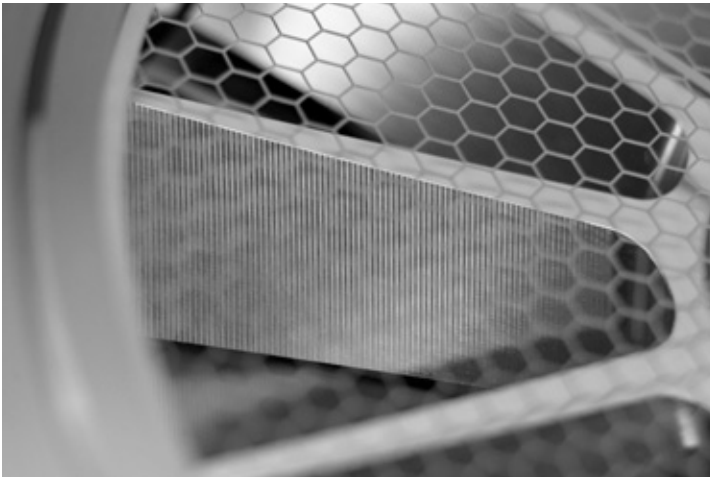
Vacuum isolation valve VIV and the APG200 fitted as a standard accessory

Ordering information

nEXT turbomolecular pumping cart xl:



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

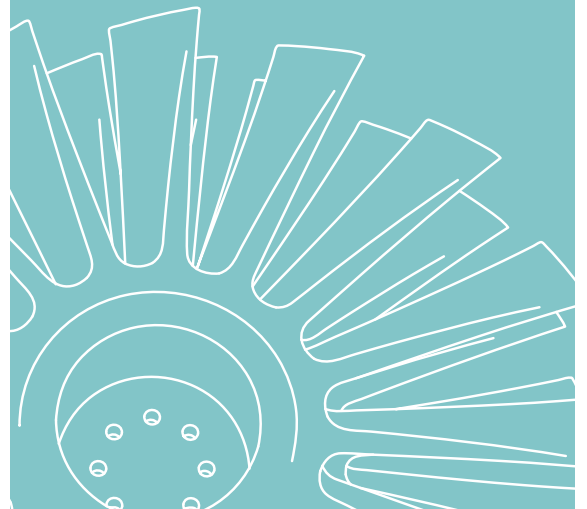
Edwards 5-axis pumps are able to adjust the magnetic field dynamically to take out rotor imbalances.

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
VACUUM DATA										
Pumping speed	N ₂	ls ⁻¹	300	480	650	1000	300	450	2300	2700
	H ₂		300	460	550	800	300	460	2600	2700
Compression ratio	N ₂		>10 ⁸							
	H ₂		2 x 10 ⁻⁴		>10 ⁵		1 x 10 ⁻⁴		6x10 ⁻⁴	
Ultimate pressure (CF)		mbar	<1 x 10 ⁻¹⁰						<1 x 10 ⁻⁹	
Maximum flow rate	N ₂	sccm	-				100 if ambient temperature is at 25°C		With no TMS	
Maximum inlet pressure		mbar	6.7 x 10 ⁻⁴		1.3 x 10 ⁻⁴		3.2 x 10 ⁻³		-	
Maximum backing pressure		mbar	0.13				0.67		1.33	
MOTOR DATA										
Maximum power consumption		VA	350		800		240		With no TMS	
Nominal rotational speed		rpm	48,000		35,000		55,000		27,000	
PHYSICAL DATA										
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

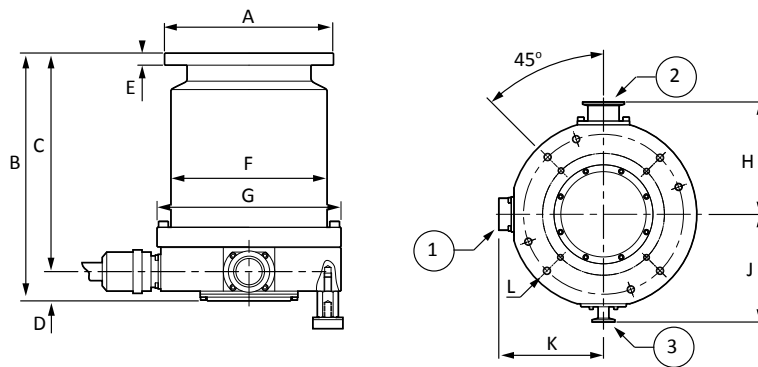


STP-iX457



STP-iX3006

Dimensions

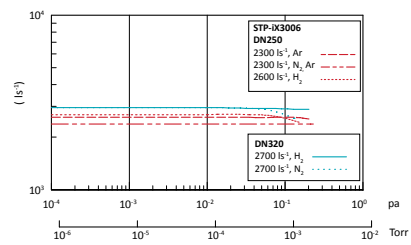
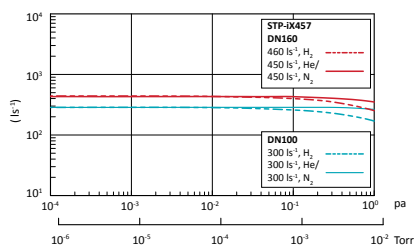
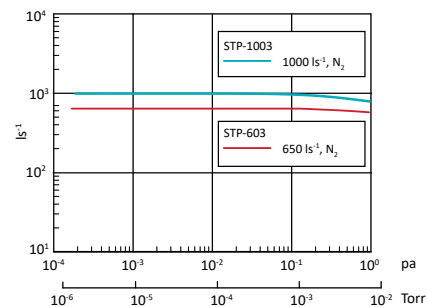
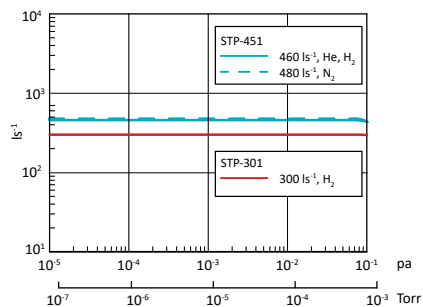


Note: STP-603 pump shown

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						
	Ø203 DN160CF				22						
STP-603	Ø225 ISO160F	330	291	39	16	Ø208	Ø245	147.5	142	137.5	8 x M10 x 24
	Ø203 DN160CF				22						
STP-1003	Ø285 ISO200F	310	271		16						
	Ø253 DN200CF				25						
STP-iX457	Ø130 ISO100	286	197	89	12	Ø152	Ø180	108	123.5	101	4 x M10 x 18
	Ø152 DN100CF				21						
	Ø180 ISO160	256	167		12						
	Ø203 DN160CF				22						
STPi-X3006	Ø335 ISO250F	435	322	113	15	Ø358	Ø358	210	182	150	6 x M16 x 30
	Ø305 DN250CF	440	327		28						
	Ø425 ISO320F	396	283		18						

Performance



Ordering information

Pumps:

PRODUCT DESCRIPTION	ORDER NUMBER
STP-301	
STP-301 ISO100	YT21B0350
STP-301 CF100	YT21B0010
STP-451	
STP-451 ISO160	YT21B0460
STP-451 CF160	YT21B0080
STP-iX457 without cooling	
STP-iX457 ISO100	YT860Z120
STP-iX457 CF100	YT860Z150
STP-iX457 ISO160	YT860Z130
STP-iX457 CF160	YT860Z160
STP-iX457 with air cooling	
STP-iX457 ISO100	YT865Z000
STP-iX457 CF100	YT865Z070
STP-iX457 ISO160	YT865Z020
STP-iX457 CF160	YT865Z080
STP-603	
STP-603 ISO160	YT39B0030
STP-603 CF160	YT390Z005
STP-1003	
STP-1003 ISO200	YT390Z001
STP-1003 CF200	YT39B0010
STP-iXR3006	
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 ⁽¹⁾	SCU-350 100-240V	YT21Z0Z01
		SCU-350 100-240V with RS232	YT21ZEZ20
	Pump to controller cables ⁽¹⁾	3m cable	B70700010
		5m cable	B70700000
		10m cable	B70700130
		20m cable	B70700150
		30m cable	PT21Y0B00
	Mains cables ⁽¹⁾	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 ⁽¹⁾	iPD240 AC power supply 240V	YT86W0Z10
	Pump to power supply cables ⁽¹⁾	2.5m cable	YT86Y0B15
		5m cable	YT86Y0B20
		10m cable	YT86Y0B30
		15m cable	YT86Y0B40
		20m cable	YT86Y0B50
	Mains cables ⁽¹⁾	3m	PT64Y1A10
		5m	PT64Y1A20
		10m	PT64Y1A30
	Vent valve*	Vent valve	YT860T211
STP-603/1003	Controller ⁽¹⁾	SCU-800 100-120/200-240V with RS232/485	YT49Z2Z00
	Pump to controller cables ⁽¹⁾	3m cable	B75130050
		5m cable	B75130020
		10m cable	B75130060
		20m cable	B75130190
		30m cable	B75130210
	Mains cables ⁽¹⁾	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	YT79U1Z00
		iDT001 with 5m cable	YT79U1Z40
		iDT001 with 10m cable	YT79U1Z50
		iDT001 with 15m cable	YT79U1Z10
	Mains cables ⁽¹⁾	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

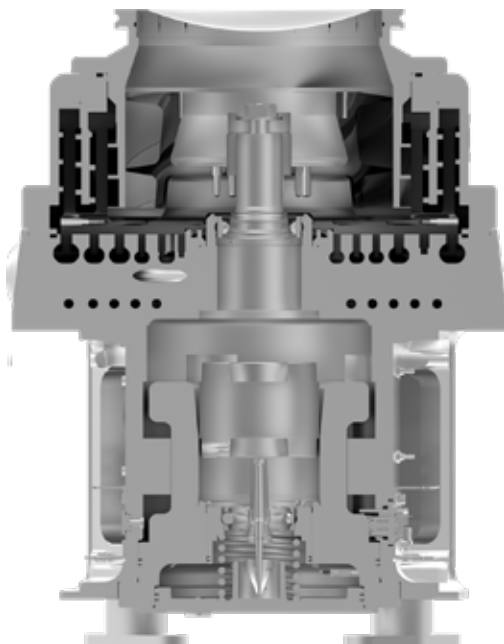
(1) denotes required accessory, others are optional depending on application.

EPX HIGH VACUUM PRIMARY PUMP



The EPX series uses a unique, patented, single-shaft regenerative and Holweck® stage mechanism that makes them capable of pumping from atmosphere to ultimate pressures of $<1 \times 10^{-4}$ mbar or $<1 \times 10^{-6}$ mbar depending on model.

They are ideal for applications where a better base pressure is required than can be delivered by a typical primary pump and when used as a backing pump enable much lower UHV pressures to be achieved. They are also suitable for applications that cycle frequently from atmosphere to low pressures as they can operate continuously at all inlet pressures.



PRODUCT FEATURES

HOLWECK AND REGENERATIVE STAGES

For wide range performance with low heat and vibration.

ADDITIONAL HELICAL ROTOR STAGE (EPX500 ONLY)

For increased speed and 1×10^{-6} mbar capability.

COMPACT FOOTPRINT

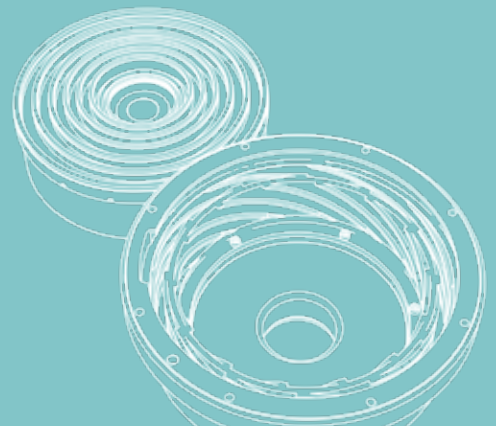
EPX is smaller than the equivalent turbomolecular pump and primary pump combination.

ULTRA CLEAN MECHANISM

EPX pumps have no oil or grease under vacuum and present no other source of potential contamination.

WATER COOLED

For a low environmental heat load.

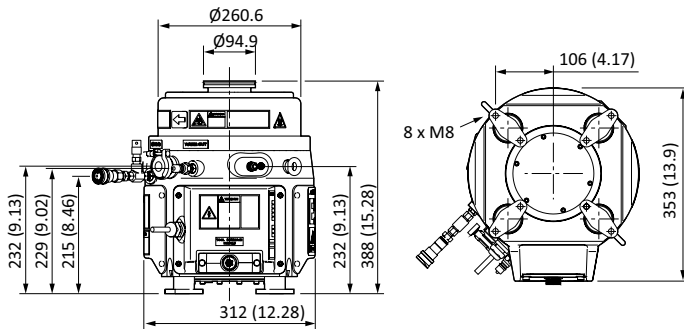


Technical data

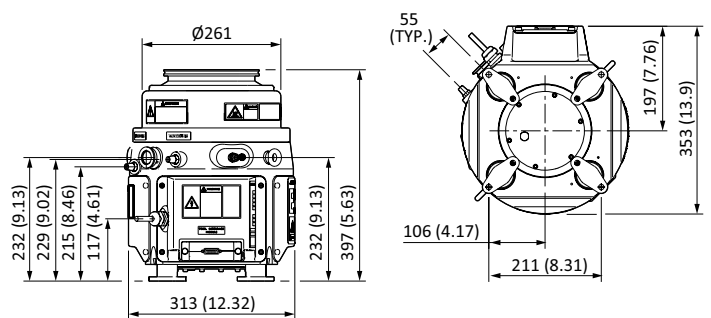
	Units	EPX180LE	EPX500LE
VACUUM DATA			
Peak pumping speed	m³h ⁻¹ (cfm) [ls ⁻¹]	175 (106) [50]	500 (295) [140]
Ultimate vacuum	mbar (Torr)	<1 x 10 ⁻⁴ (<7 x 10 ⁻⁵)	<1 x 10 ⁻⁶ (<7 x 10 ⁻⁷)
Maximum exhaust pressure	bar gauge (psig)	0.2 (2.9)	
Typical nitrogen consumption	slm	0	0
Cooling water consumption	lh ⁻¹	120	
Supply voltage	V	200/208/400 3 phase (+/- 10%)	
Supply frequency	Hz	50/60	
Power at ultimate	kW	1.4	1.4
MOTOR DATA			
Maximum power	kW	3.0	
PHYSICAL DATA			
Weight	kg (lb)	45 (98)	46 (102)
Inlet/outlet connection		ISO63/NW25	ISO160/NW25
Water connection		3/8" Quick	
Noise	dB(A)	<56	
Vibration at inlet flange	mms ⁻¹ (rms)	<1.3	

Dimensions

EPX180



EPX500

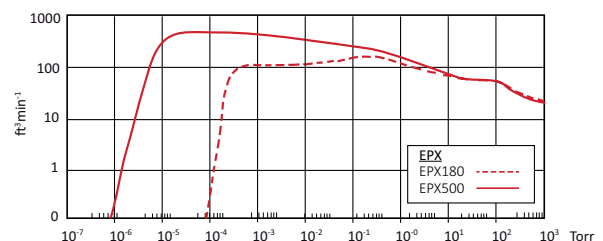
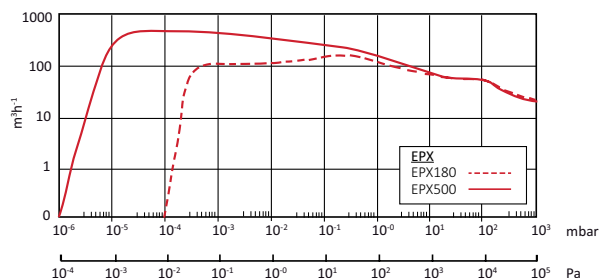


Ordering information

Pumps:

PRODUCT DESCRIPTION	ORDER NUMBER
EPX180LE 208V No TIM 3/8 water connectors	A41943012
EPX180LE 400V No TIM 3/8 water connectors	A41943014
EPX180LE 208V MCM TIM 3/8 water connectors	A41943712
EPX180LE 400V MCM TIM 3/8 water connectors	A41943714
EPX500LE 208V No TIM 3/8 water connectors	A41953012
EPX500LE 400V No TIM 3/8 water connectors	A41953014
EPX500LE 208V MCM TIM 3/8 water connectors	A41953712
EPX500LE 400V MCM TIM 3/8 water connectors	A41953714
Dry pump profibus module	D39752000

Performance



GAMMA UHV PUMPS AND ACCESSORIES



Capture pumping technologies create high vacuum (HV) and ultra-high vacuum (UHV) environments for a variety of applications, ranging from portable mass spectrometers to large scale particle accelerators. They can create the highest possible vacuum at an economical cost.

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



PRODUCT FEATURES

MECHANICAL VIBRATION ELIMINATED

Capture pumps have no moving parts. Vibration from moving parts and electrical noise is eliminated.

HIGH RADIATION TOLERANCE

Capture pumps are built with radiation tolerant materials in excess of 10^8 Gray. Connectors and cables are also built with radiation tolerant materials for years of continuous operation.

HIGH TEMPERATURE TOLERANCE

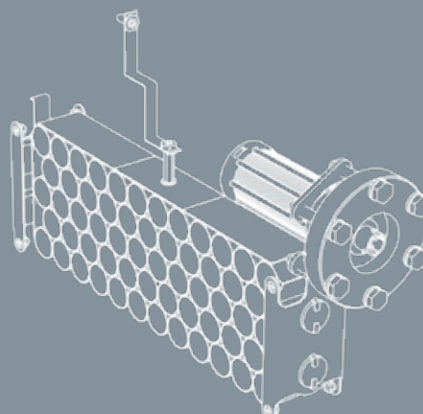
Without any special consideration, capture pumps can be baked to 250 °C. Removing the magnets allows for hotter bakes up to 450 °C. Long hot bakes are critical to every UHV system.

REGULAR MAINTENANCE ELIMINATED

Capture 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. They use minimal or no power for years of low cost operation.



Technical data: Smaller Pumps

	UNITS	MINI	3S	5S	10S	25S	45S	75S
PUMPING SPEED	L/S	0.2	2 - 3	4 - 5	8 - 10	15 - 20	30 - 40	40 - 75
PORT OPTION								
Copper tube			CU					
DN16 (1.33") ⁽¹⁾		1V	1V, 1H OR 1D					
DN40 (2.75") ⁽²⁾				2V	2H	2V, 2H OR 2D		2V OR 2D
DN63 (4.5") ⁽³⁾						4V OR 4D		
DN100 (6") ⁽⁴⁾								6S OR 62
ELEMENT CHOICE								
TiTan CV (Diode)			•	•	•	•	•	•
TiTan DI (Noble Diode)		•	•	•	•	•	•	•
TiTan CVX (Diode XHV)						•	•	•
TiTan DIX (Noble Diode XHV)						•	•	•
TiTan TR (Triode)						•	•	•
FEEDTHROUGH CHOICE								
MN Mini		•						
5K 5kV SHV			•	•				
SC 10kV SAFECONN				•	•	•	•	•
OP Perkin Elmer						•	•	•
OV Old Varian			•		•	•	•	•
VR Varian StarCell®						•	•	•
FI Fisher Interlock					•	•	•	•
OTHER DATA								
Internal heater option					•	•	•	•
Internal TSP/NEG option ⁽⁵⁾						•	•	•
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 ⁻¹¹						
Starting pressure	MBAR	<1 X 10 ⁻³						
Lifetime (hrs at 1 x 10 ⁻⁶ 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
PUMPING SPEED	L/S	80 - 100	160 - 200	240 - 300	320 - 400	320 - 400	480 - 600	480 - 600	640 - 800	960 - 1200
PORT OPTION										
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	
ELEMENT CHOICE										
TiTan CV (Diode)		•	•	•	•	•	•	•	•	•
TiTan DI (Noble Diode)		•	•	•	•	•	•	•	•	•
TiTan CVX (Diode XHV)		•	•	•	•	•	•	•	•	•
TiTan DIX (Noble Diode XHV)		•	•	•	•	•	•	•	•	•
TiTan TR (Triode)		•	•	•	•	•	•	•	•	•
FEEDTHROUGH CHOICE										
SC 10kV SAFECONN		•	•	•	•	•	•	•	•	•
OP Perkin Elmer		•	•	•	•	•	•	•	•	•
OV Old Varian		•	•	•	•	•	•	•	•	•
*VR Varian StarCell®		•	•	•	•	•	•	•	•	•
FI Fisher Interlock		•	•	•	•	•	•	•	•	•
OTHER DATA										
Internal heater option		•	•	•	•	•	•	•	•	•
Internal TSP/NEG option ⁽⁴⁾		•	•	•	•	•	•	•	•	•
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 ⁻¹¹								
Starting pressure	MBAR	<1 X 10 ⁻³								
Lifetime (hrs at 1 x 10 ⁻⁶ mbar)	HOURS	DIODE/NOBLE DIODE 50,000; TRIODE 80,000								
Operating bake temperature	°C	250								
Maximum bake temperature ⁽⁵⁾	°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 molecules 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 $10,000 \text{ ls}^{-1}$ for hydrogen.



PRODUCT FEATURES

TSP FILAMENT CARTRIDGE

The filament cartridge is mounted on a 2- 3/4" 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 1578 cm² (245 in²) of liquid nitrogen cooled surface area that provides pumping speeds up to 12,000 ls⁻¹ 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 827cm² (128 in²) of ambient temperature surface area that provides pumping speeds up to 2200 ls⁻¹ for hydrogen (see table). The shield is mounted on an 8 in. CFF (DN160) or a 6 in. CFF (DN100).

Technical data

	AREA	TEMPERATURE	H ₂		CO		H ₂ O	
			RATE	SPEED	RATE	SPEED	RATE	SPEED
TYPICAL TSP PUMPING SPEEDS	cm ² /inch ²	°C	ls ⁻¹ / cm ²	ls ⁻¹	ls ⁻¹ / cm ²	ls ⁻¹	ls ⁻¹ / cm ²	ls ⁻¹
Liquid cryoshroud (8")	709/110	20	2.6	1843	8.2	5814	7.3	5176
	1578/245 ⁽¹⁾	-195	17	12053	11	7799	14.6	23039
Ambient sputter shield (8")	827/128	20	2.6	2150	8.2	6780	7.3	6037
Ambient sputter shield (6")	621/96	20	2.6	1614	8.2	5092	7.3	4533

(1) applies to H₂O speed only

Ordering information

PRODUCT DESCRIPTION	ORDER NUMBER	PRODUCT DESCRIPTION	ORDER NUMBER
TSP cartridge 3 filaments 2-3/4" CFF	G360819	1.5 metre cable with MS connectors	MSHC1MS
TSP ambient sputter shield 6" CFF	G360190	3 metre cable with MS connectors	MSHC3MS
TSP ambient sputter shield 8" CFF	G360044	6 metre cable with MS connectors	MSHC6MS
TSP liquid cryoshroud 8" CFF	G360051	10 metre cable with MS connectors	MSHC10MS

NON-EVAPORABLE GETTER PUMPS (NEG)

NEGs are reactive metals that have been pressed onto solid substrates 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 H₂ 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.



50NP



100NP



200NP



300NP



400NP

Technical data

	UNITS	50NP	100NP	200NP	300NP	400NP
Flange		DN40 (2.75") CFF				
Total mass	kg (lbs)	0.48 (1.05)	0.54 (1.19)	0.75 (1.65)	0.8 (1.79)	0.85 (1.88)
Alloy composition		Zr (70%),V (24.6%), Fe (5.4%)				
Getter mass	g	31.5	58	108	144	180
Getter surface	cm ²	187	348	642	856	1070
H ₂ pumping speed	ls ⁻¹	55	106	208	312	412
CO pumping speed	ls ⁻¹	27	51	94	125	156
H ₂ sorption capacity	Torr l	630	1170	2160	2880	3600
CO (25 °C) sorption capacity	Torr l	0.1	0.2	0.4	0.6	0.8
CO total sorption capacity	Torr l	284	526	972	1296	1620
Insertion length	mm	46	61	89	110	130
Diameter	mm	34				

Ordering information

PRODUCT DESCRIPTION	ORDER NUMBER	PRODUCT DESCRIPTION	ORDER NUMBER
50 ls ⁻¹ NEG cartridge pump 2-3/4" CFF	50NP	400 ls ⁻¹ NEG cartridge pump 2-3/4" CFF	GN400NP
100 ls ⁻¹ NEG cartridge pump 2-3/4" CFF	100NP	1 metre cable with XLR connectors	FI4S1MSS
200 ls ⁻¹ NEG cartridge pump 2-3/4" CFF	200NP	3 metre cable with XLR connectors	FI4S3MSS
300 ls ⁻¹ NEG cartridge pump 2-3/4" CFF	300NP	6 metre cable with XLR connectors	FI4S6MSS

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™ 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	TSPq
INPUT POWER				
Voltage		90-240 V a.c. or 24 V d.c.		90-130 or 200-240 V
Frequency	Hz	48-62		
OUTPUT POWER				
Independent outputs		1	1 to 4	1
Open circuit voltage		3000-7000 V d.c. (+/- configurable)		17 V a.c.
Current (maximum)	mA	50	125	55000
Watts (maximum)	W	50	125	800
Resolution		1 nA	1 nA	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	1/4 VGA touchscreen LCD
Readouts		Pressure, current, voltage and programmable options		Current, on-time and programmable options
ANALOG OUTPUTS				
Voltage		Linear, configurable		
Current/pressure		Linear or logarithmic, configurable		
Setpoints		One relay, one TTL	Four relay, four TTL	
Communications		Local/Remote/Full		
		Ethernet		
		Serial: 232, 422, 485		
Weight	kg (lbs)	1.5 (3.3)	9.5 (21)	16.8 (37)
Size		2U high, 1/4 rack wide	3U high, 1/2 rack wide	
		313 mm (12.3") deep	438 mm (17.2") deep	
Additional features		SAFECONN	SAFECONN	Manual, programmed or remote control
		AUTOSTART/AUTORUN	AUTOSTART/AUTORUN	TSP enable
		High voltage enable	High voltage enable	
		Fowler-Nordheim calibration		
		High-pot capability		

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 2×10^5 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 ⁸	250
Brass/nickel (8)	>10 ⁸	327
Beryllium/copper/gold (8)	>10 ⁸	643
Spring steel/nickel (8)	>10 ⁸	1427
PEEK (8)	5×10^7	325
Fiberglass braid (6)	2×10^7	250
Silicone rubber (2, 5, 7, 8)	2×10^5	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:

Type	HV polarity	Connections/Channels	Communications	TSP/NEG control
SPC Small Pump Controller QPC Quad Pump Controller TSP TSP Controller NEG NEG Controller	P Positive (CV/DI) N Negative (TR)	1 One Output (ALL) 2 Two Outputs (QPC/TSP/NEG) 3 Three Outputs (QPC) 4 Four Outputs (QPC) 0 Remote Connection (TSP/NEG)	E Ethernet (SPCe/TSP/NEG) S Serial (SPCe) S Serial/Ethernet (QPC) 2 RS232 (TSP/NEG) 4 RS422 (TSP/NEG) H RS485 Half (TSP/NEG) F RS485 Full (TSP/NEG)	NA Not Available (SPCe) NI Not Installed (QPC) N None (TSP/NEG) ST Remote TSP Control (TSP) DT Dual Remote TSP Control (TSP) SN Remote NEG Control (NEG) DN Dual Remote NEG Control (NEG)
↓	↓	↓	↓	↓
Not needed for TSP /NEG	Not needed for TSP /NEG	Not needed for TSP /NEG		
↑	↑	↑	↑	↑
HV channels 1 One HV Channel (SPCe/QPC) 2 Two HV Channels (QPC) 3 Three HV Channels (QPC) 4 Four HV Channels (QPC)	Connector style S 10kV SHV F Fischer	Input voltage U1 110V, USA (ALL) U2 220V, USA (ALL) E2 230V, Europe (ALL) K2 240V, UK (ALL) A2 230V, Australia (ALL) B Bare 24V wire (SPCe/QPC)	Remote enable S Standard (SPCe/QPC) N None (TSP/NEG) H High Voltage Enable (TSP/NEG)	

Ion pump cables:

Controller connector	Cable type	Cable length	Pump connector
SCP SAFECOMM (Silicone) FB Fischer Interlock (Silicone) 10K 10kV SHV (PTFE) N None (ALL)	SC Silicon TF PTFE	3 3 m 6 6 m 10 10 m 30 30 m 50 50 m 75 75 m 100 100 m	SC SAFECOMM (Silicone) FI Fischer Interlock (Silicone) SCO Original SAFECOMM (Silicone) OV Original Varian (Silicone) VR Varian Starcell (Silicone) 5K 5kV SHV (Silicone) 10K 10kV SHV (ALL) VM90 Mini FT Connector (Silicone) OP Perkin Elmer (PTFE) N None (ALL)

MEASUREMENT AND CONTROL

Edwards has recently added a new line of passive gauges alongside the existing range of active gauges. Each type has its own benefits making them suitable for different applications. The below should give some guidance as to which may be more suited to your application:

Active gauges are a complete self-contained head and driver electronics in a compact unit. These gauges typically need 24Vdc and then provide a 0-10V output that relates to the pressure. This output can be S-shaped or Linear depending on the chosen unit. The benefits of active gauges are:



Passive gauges completely separate the measuring part from the driver electronics. The head that is attached to the system only contains the items needed for the physical measurement and all other electronics is contained in the controller. As such the controller and cable have to be specific to the desired gauge. The benefits are:



PRODUCT FEATURES

ACTIVE

PASSIVE

Pressure range table

10 ⁻¹²	10 ⁻¹¹	10 ⁻¹⁰	10 ⁻⁹	10 ⁻⁸	10 ⁻⁷	10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²	10 ⁻¹	1	10	10 ²	10 ³
Ultra High Vacuum				High Vacuum				Medium Vacuum			Rough Vacuum				
									Barocel 7000 Series Capacitance Gauges						
								APG200-XLC - Active Pirani Gauge							
								APGX-H - Active Linear Convection Gauge							
			WRG - Wide Range Gauge												
		WRH Active Hot Cathode Pirani Gauge													
			AIM - Active Inverted Magnetron Gauge												
			AIGX - Active Ion Gauge												
								PRG20K - Passive Pirani Gauge							
			CPG35K - Passive Penning Gauge												
	IG40 BA - Passive Ion Gauge														
IG40 EX - Passive Extractor Gauge															

Indicates the primary accuracy range for the specified gauge.

Indicates pressure range where the gauge can be used but will not provide accurate readings.

ACTIVE GAUGE HEADS AND CONTROLLERS

APG200- Pirani Gauge

10 ⁻¹⁰	10 ⁻⁹	10 ⁻⁸	10 ⁻⁷	10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²	10 ⁻¹	1	10	10 ²	10 ³
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.

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

APGX H- Active Linear Convection Gauge

10 ⁻¹⁰	10 ⁻⁹	10 ⁻⁸	10 ⁻⁷	10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²	10 ⁻¹	1	10	10 ²	10 ³
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 10⁻⁴ 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 ⁻⁴ 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		

AIM- Active Inverted Magnetron Gauge

10 ⁻¹⁰	10 ⁻⁹	10 ⁻⁸	10 ⁻⁷	10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²	10 ⁻¹	1	10	10 ²	10 ³
Ultra High Vacuum	High Vacuum				Medium Vacuum			Low Vacuum					

Edwards Active Inverted Magnetron (AIM) Gauges provide accurate measurement over the vacuum range of 1×10^{-2} to 1×10^{-9} mbar. These gauges have proved to be rugged and reliable in a wide range of applications, ranging from scientific instruments to industrial processes.

The AIM-X Gauge is an inverted magnetron gauge head and gauge controller combined into a single compact unit, and features a linear output for easy integration with a computer or PLC.

The XL variants have a very low external magnetic field, these are ideally suitable for use with sensitive analytical instruments or in applications where the gauge needs to be mounted in close proximity to a turbomolecular pump.



TECHNICAL DATA	AIM
Pressure range	10 ⁻² to 10 ⁻⁹ mbar
Accuracy	Typically +/- 30%
Max overpressure	10 bar absolute (145 psi)
Temperature range	
Operating	+5 to +60 °C
Storage	0 to +70 °C
Maximum bakeout temperature with electronics removed	NW25 70 °C DN40CF 300 °C

PRODUCT DESCRIPTION	ORDER NUMBER
AIM-X-NW25	D14642000
AIM-XL-NW25	D14645000
AIM-X-DN40CF	D14662000
AIM-XL-DN40CF	D14665000

AIGX- Active Ion Gauge

10 ⁻¹⁰	10 ⁻⁹	10 ⁻⁸	10 ⁻⁷	10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²	10 ⁻¹	1	10	10 ²	10 ³
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 6.6×10^{-2} to 6.6×10^{-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	6.6×10^{-2} to 6.6×10^{-10} mbar
Accuracy	Typically +/- 15%
Max overpressure	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^{-10}	10^{-9}	10^{-8}	10^{-7}	10^{-6}	10^{-5}	10^{-4}	10^{-3}	10^{-2}	10^{-1}	1	10	10^2	10^3
Ultra High Vacuum	High Vacuum			Medium Vacuum			Low Vacuum						

The Wide Range Gauge (WRG) family offers the capability of single port pressure measurement in the range atmosphere to 10^{-9} mbar, with a linear output. It's a compact solution, halving the space and connectivity hardware requirement, which can be all important in many applications. The WRG has many novel features, including a patented striker, push-button calibration and set point controls and comprehensive diagnostics. The WRG is a cost-effective vacuum management solution when used either with an Edwards controller or directly integrated into the vacuum system controls.



TECHNICAL DATA	WRG
Pressure range	10^3 to 10^{-9} mbar
Accuracy	Typically +/- 15% at <100 mbar +/- 30% at $<10^{-3}$ mbar
Max overpressure	10 bar absolute (145 psi)
Temperature range	
Operating	+5 to +60 °C
Storage	0 to +70 °C
Maximum bakeout temperature with electronics removed	70 °C

PRODUCT DESCRIPTION	ORDER NUMBER
WRG NW25 stainless steel	D14701000
WRG DN40CF stainless steel	D14703000
WRG-SL NW25 low stray magnetic field	D14711000

WRH- Active Hot Cathode Pirani Gauge

10^{-10}	10^{-9}	10^{-8}	10^{-7}	10^{-6}	10^{-5}	10^{-4}	10^{-3}	10^{-2}	10^{-1}	1	10	10^2	10^3
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^{-10} 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 – $5e^{-10}$ mbar
Accuracy	1000 to 10 mbar $\pm 30\%$, 10 to $1e^{-8}$ mbar: $\pm 10\%$
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^{-10}	10^{-9}	10^{-8}	10^{-7}	10^{-6}	10^{-5}	10^{-4}	10^{-3}	10^{-2}	10^{-1}	1	10	10^2	10^3
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



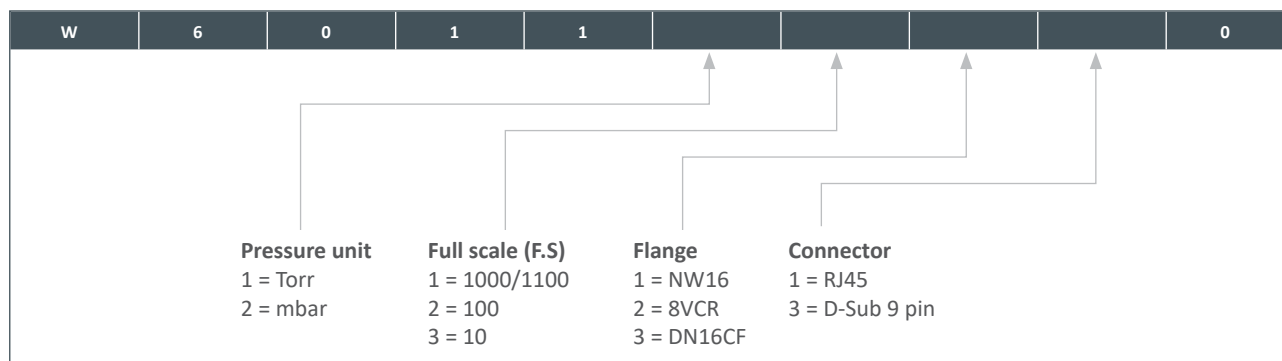
7045, 7100

TECHNICAL DATA	7025M	7025	7045	7100
Pressure range	1300 to 5×10^{-2}	1300 to 1×10^{-5}	1300 to 1×10^{-5}	1300 to 1×10^{-5}
Accuracy (% of reading)	1	0.2-0.5	0.15	0.2-0.4
Bust 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

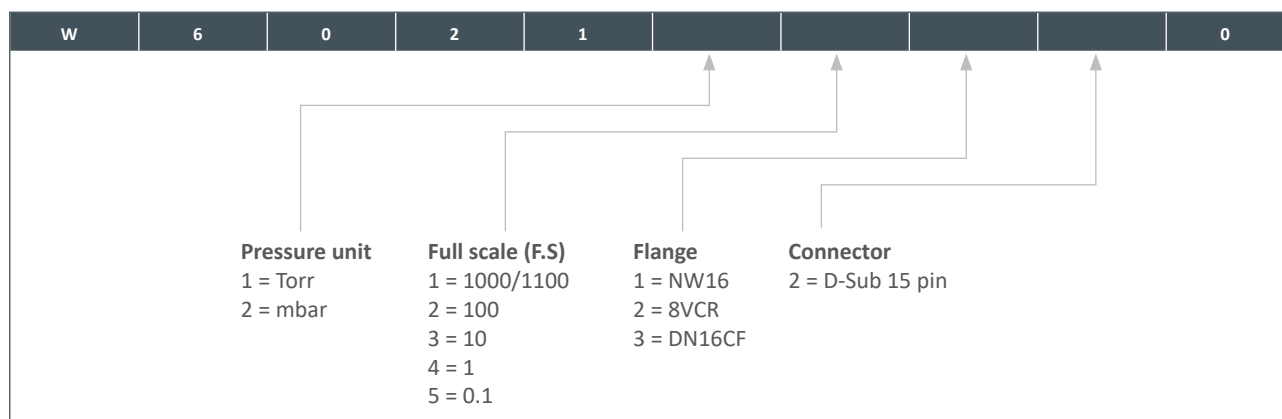
PRODUCT DESCRIPTION	ORDER NUMBER
TIC adaptor cable	D40003050

Ordering information

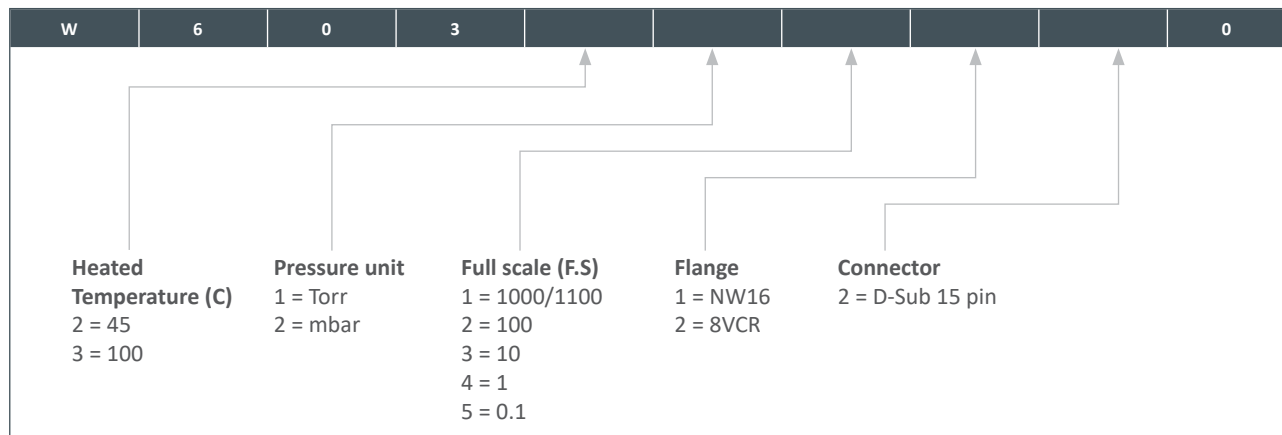
Barocel 7025m selection tree



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
0.5 m	D40001005
1 m	D40001010
3 m	D40001030
5 m	D40001050
10 m	D40001100
15m	D40001150
25m	D40001250
50m	D40001500

CONTROLLER	ORDER NUMBER	MAX NO. OF GAUGES	NO. OF SET-POINTS	WINDOWS SOFTWARE	DATA LOGGING
TIC controller (3 gauge)	D39700000	3	3	Yes	Yes
TIC controller (6 gauge)	D39701000	6	6	Yes	Yes
Active digital controller (ADC)	D39590000	1	0	No	No
Enhanced digital controller (eADC)	D39591500	2	2	No	No
UK power cable for TIC/ADC	D40013025	-	-	-	-
EU power cable for TIC/ADC	D40013030	-	-	-	-
US power cable for TIC/ADC	D40013120	-	-	-	-

Cables include FCC68/RJ45 compatible connections at both ends.

PASSIVE GAUGE HEADS AND CONTROLLERS

PRG20K- Pirani Gauge Sensors

10^{-12}	10^{-11}	10^{-10}	10^{-9}	10^{-8}	10^{-7}	10^{-6}	10^{-5}	10^{-4}	10^{-3}	10^{-2}	10^{-1}	1	10	10^2	10^3
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	10^3 to 0.5×10^{-4} mbar
Accuracy	$<10^{-2}$ mbar $\pm 20\%$ 10^{-2} to 10^2 mbar $\pm 15\%$
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	5×10^4 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^{-12}	10^{-11}	10^{-10}	10^{-9}	10^{-8}	10^{-7}	10^{-6}	10^{-5}	10^{-4}	10^{-3}	10^{-2}	10^{-1}	1	10	10^2	10^3
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 1×10^{-9} to 10^{-2} mbar (0.75×10^{-9} to 10^{-2} 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^{-2} to 10^{-9} mbar
Accuracy	10^{-4} to 10^{-8} mbar $\pm 30\%$
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	10^6 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 ⁻¹²	10 ⁻¹¹	10 ⁻¹⁰	10 ⁻⁹	10 ⁻⁸	10 ⁻⁷	10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²	10 ⁻¹	1	10	10 ²	10 ³
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 10⁻² to 2 x 10⁻¹¹ mbar (1.5 x 10⁻¹¹ Torr) with it's protection shield welded in place. The Extractor sensing system has a measurement range from 10⁻⁴ to 2 x 10⁻¹² mbar (1.5 x 10⁻¹² Torr), alongside a significant reduction of X-ray and ion desorption effects.



TECHNICAL DATA	IG40 BA	IG40 EX
Pressure range	10 ⁻² to 2x10 ⁻¹¹ mbar	10 ⁻² to 2x10 ⁻¹² mbar
Accuracy	±2%, ±5x10 ⁻¹³ mbar	±2%, ±3x10 ⁻¹³ 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 ⁶ Grays	10 ⁶ 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

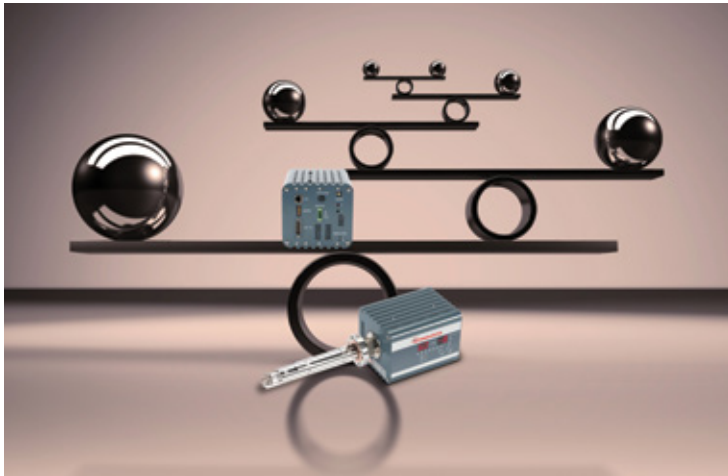
- Compact 3 channel operating unit for a pressure range for passive sensors of -10^{-9} to 1000 mbar PGC201 -10^{-12} to 1000 mbar PGC202
- Automatic switchover from Pirani operation to Penning cold cathode operation (PGC201)
- UHV sensors either Bayard-Alpert measurement system IG40 BA or Extractor 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
PHYSICAL DATA				
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 ⁻⁵	400/1x10 ⁻⁵	1x10 ⁻⁵	400/1x10 ⁻⁵
Minimum detectable partial pressure (mbar)	1x10 ⁻¹⁰	1x10 ⁻¹⁴ /1x10 ⁻¹⁰	1x10 ⁻¹⁰	1x10 ⁻¹⁴ /1x10 ⁻¹⁰
Max operating pressure (mbar)	1x10 ⁻⁴	1x10 ⁻⁴	1x10 ⁻⁴	1x10 ⁻⁴
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
PHYSICAL DATA		
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 ⁻⁴	400/2.5x10 ⁻⁴
Minimum detectable partial pressure (mbar)	1x10 ⁻¹⁵ /1x10 ⁻¹¹	1x10 ⁻¹⁵ /1x10 ⁻¹¹
Max operating pressure (mbar)	1x10 ⁻⁴	1x10 ⁻⁴
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 ls^{-1} in vacuum mode and $<7 \times 10^{-9}$ mbar ls^{-1} 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 ⁻¹	$\leq 5 \times 10^{-12}$	$\leq 3 \times 10^{-11}$	$\leq 5 \times 10^{-12}$
Sniffer operation	mbar ls ⁻¹	$\leq 7 \times 10^{-9}$	$\leq 7 \times 10^{-9}$	$\leq 7 \times 10^{-9}$
Maximum measurable helium leak rate				
Vacuum operation	mbar ls ⁻¹	> 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 ³ h ⁻¹	2.5/3	1.6/1.8	N/A
Helium pumping speed in the fine mode	ls ⁻¹	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 for a complete list if there are any components which are not listed here.

Technical data

OPERATING PRESSURE RANGE (ABSOLUTE)	MINIMUM	MAXIMUM
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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 ⁻⁷ mbar	1 bar
Stainless steel clamping ring and Co-seal	10 ⁻⁷ mbar	10 bar
Stainless steel clamp and metal seal	10 ⁻⁸ mbar	3 bar
Stainless steel clamp and Co-seal (all sizes)	10 ⁻⁷ mbar	10 bar
Polymer and aluminium clamps and Co-seal NW10 to NW25	10 ⁻⁷ mbar	10 bar
NW40 to NW50	10 ⁻⁷ mbar	10 bar
NW trapped O ring	10 ⁻⁷ mbar	10 bar
ISO trapped O ring	10 ⁻⁷ mbar	1 bar
O ring and centring ring (vacuum use only)	10 ⁻⁷ mbar	1 bar
Bellows	10 ⁻⁷ mbar	1 bar
Flexible pipelines ⁽¹⁾	10 ⁻⁷ mbar	1.5 bar
Braided flexible pipelines ⁽¹⁾	10 ⁻⁷ mbar	10 bar
<i>(1) Depends on size</i>		

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:
Nitrile Butadiene Acrylonitrile copolymer	Many hydrocarbons fats, oils greases, hydraulic fluids	Ozone, ketones, esters, aldehydes, chlorinated and nitro hydrocarbons
Neoprene 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
Fluoroelastomer Fluorocarbon polymer	All aliphatic, aromatic and halogenated hydrocarbons, acids, animal and vegetable fats	Ketones, low molecular weight esters and nitro containing compounds
Aluminium	Organic acids, fatty acids, freons, nitric acid	Strong acids, alkalis chlorinated solvents, mercury
Stainless Steel	Organic acids, alkalis, nitric acid. Sulphuric acid (10%)	Oxidizing chlorines, some organic acids, hydrochloric acid, hydrofluoric acid
Polymer 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

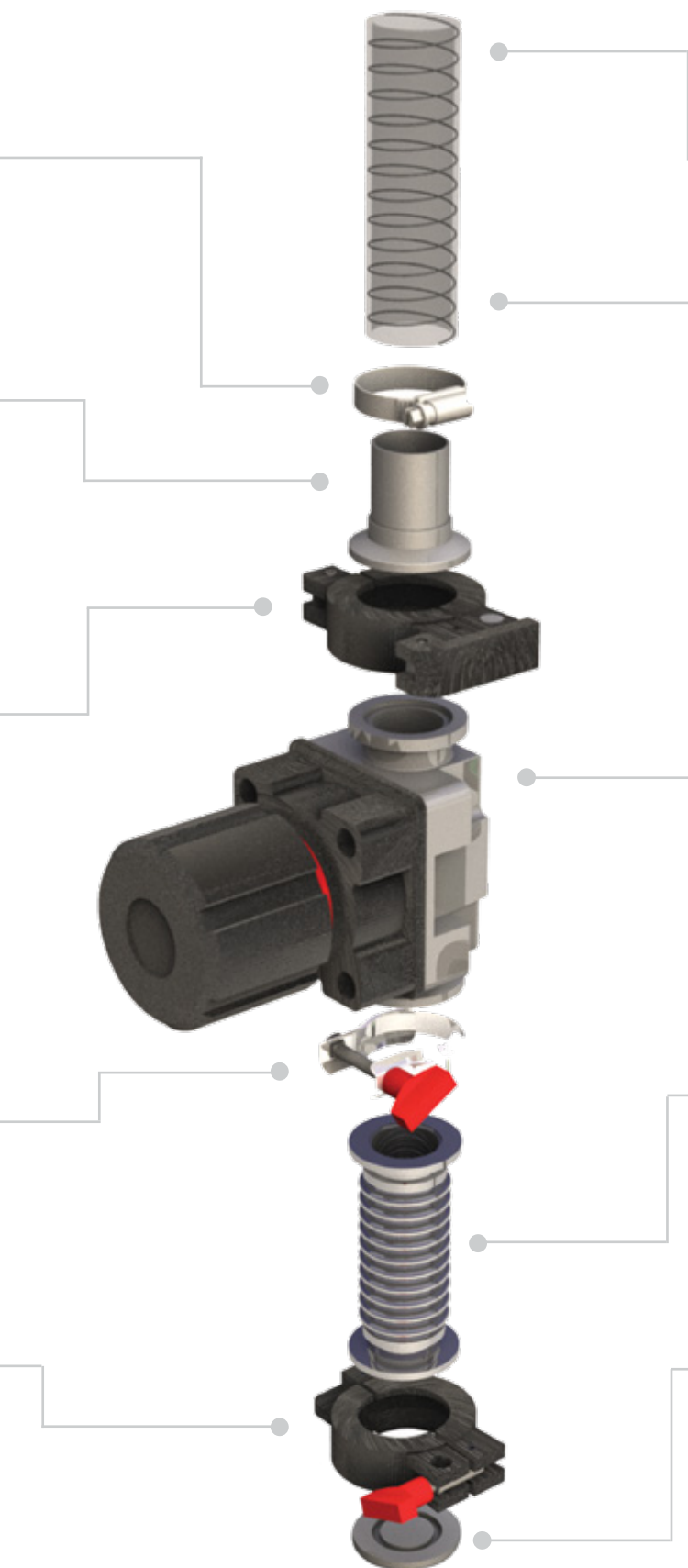
Flange size	Order number	
	Aluminium	Polymer
NW10/16	C10512402	C10512303
NW20/25	C10514402	C10514303
NW32/40	C10516402	C10516303

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)

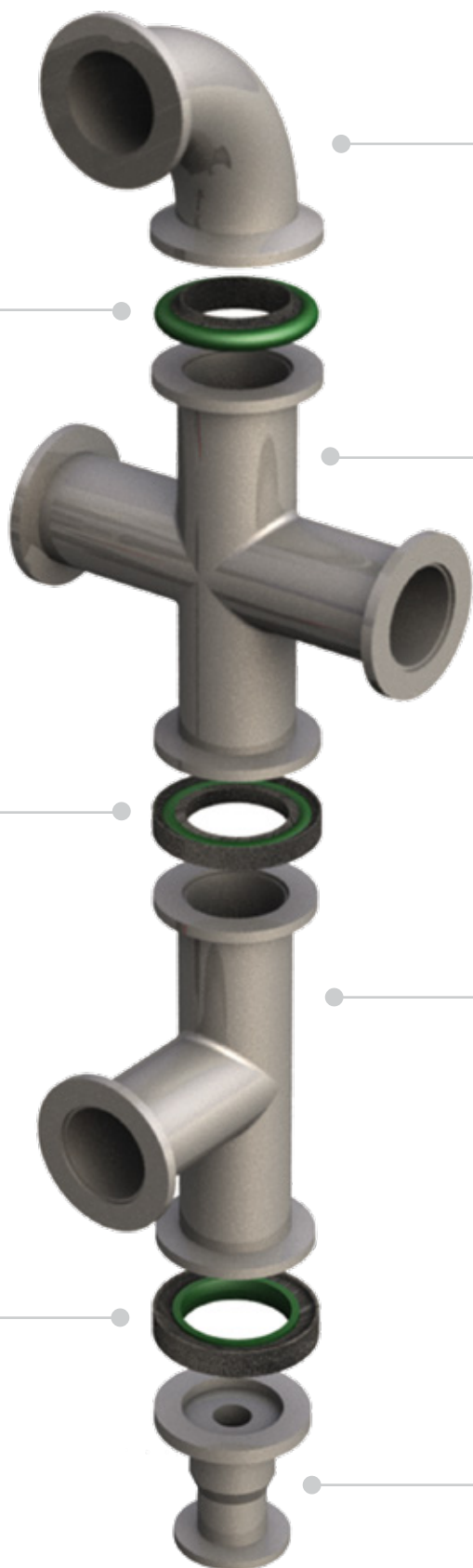
Flange size	Order number
NW10/16	C10512490
NW20/25	C10514490
NW32/40	C10516490

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).

NOTES

NOTES



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