edwardsvacuum.com

VACUUM EQUIPMENT FOR ANALYTICAL APPLICATIONS

EDWARDS

EDWARDS THE PARTNER OF CHOICE

Edwards is a world leader in the design, technology and manufacture of vacuum pumps, with over 100 years' history and more than 80 years' manufacturing experience.

We believe in delivering results that bring value to our customers by using our breadth of industry experience to identify and apply solutions to your problems. Using the most innovative and up-to-date modelling techniques and know-how, we can optimise the pumping configuration to achieve the maximum performance in the most reliable and cost-effective way.

This brochure contains the most common Edwards products used in analytical equipment. There are many more products available via our product catalogue, website or by contacting your local sales representative.

CONTENTS

ULTIMATE VACUUM SOLUTIONS

We are the technology leader in vacuum pumps, gauging and systems.

At Edwards we understand the ever-evolving challenges within the scientific field. Through this knowledge and our extensive experience of working with the leading OEMs we have developed high quality vacuum pumps and controllers to achieve clean and reliable vacuum environments. Our in-house modelling capabilities can support your system development cycle, helping you to achieve the most appropriate solution and avoiding costly trial and error processes.

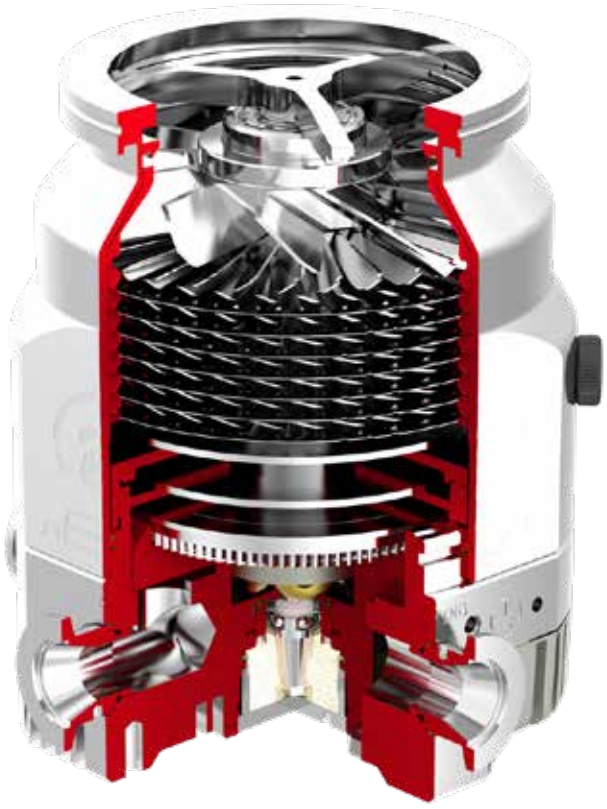
With a broad range of products, pumping from atmospheric pressure to ultra-high vacuum, you can be assured Edwards has the right solution for you.

	nEXT turbomolecular pumps	Turbomolecular pumping stations	STP magnetically levitated turbomolecular pumps	XDD1 dry diaphragm pumps	nXDS/XDS dry scroll pumps	nXLi air cooled single phase dry pump	EM/RV rotary vane pumps	Ion getter pumps	Titanium sublimation pumps	Non-evaporable getter pumps	Measurement and control	Leak detection and measurement	Components and hardware
Page number	**6**	**16**	**20**	**24**	**26**	**34**	**36**	**44**	**47**	**48**	**52**	**62**	**64**
Application													
Mass Spectrometry													
GCMS	●	●		●	●		●				●	●	●
LCMS	●	●			●	●	●	●			●	●	●
ICPMS	●				●	●	●	●			●	●	●
HLD	●			●			●				●	●	●
MALDI	●				●		●				●	●	●
RGA	●	●		●	●		●				●	●	●
Surface Science													
STM	●	●			●			●	●	●	●	●	●
AFM	●	●			●			●	●	●	●	●	●
SPM	●	●			●			●	●	●	●	●	●
TEM	●		●	●	●		●	●	●	●	●	●	●
SEM	●		●	●	●		●	●	●	●	●	●	●
EPMA											●	●	●
Sample preparation	●	●			●		●				●	●	●
Material Characterisation													
XRD	●	●			●		●				●	●	●
XRF	●	●			●		●				●	●	●
OES	●	●		●	●						●	●	●
FT-IR					●						●	●	●
Thermal	●	●		●	●		●				●	●	●
Sorption	●	●		●	●		●				●	●	●
Leak detection	●	●		●	●	●	●				●	●	●

nEXT TURBOMOLECULAR PUMPS

nEXT turbomolecular pumps are hybrid bearing pumps with a compound drag stage and integrated controllers for pumping speeds from 47 to 400 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 allows direct control via I/O or RS232/485 serial communications for easy integration with a PLC controller or alternatively it interfaces directly with our TIC and TAG controllers.



nEXT300 turbomolecular pump shown

PRODUCT FEATURES

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.

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.

Technical data

		Units	nEXT85 DN40	nEXT85 DN63	nEXT85 DN100	nEXT240	nEXT300	nEXT400
Vacuum data								
Peak pumping speed	N_2	ls^{-1}	47	84	86	240	300	400
	Ar		44	80	84	230	280	380
	He		61	78	80/78 (D/H)	230	340	390
	H_2		49/44 (D/H)	60/54 (D/H)	60/54 (D/H)	165	280	325
Compression ratio	N_2		$> 10^{11}$			$> 10^{11}$ (D&T)		
	Ar		$> 10^{11}$			$> 10^{11}$ (D&T)		
	He		$8 \times 10^6/2 \times 10^7$ (D/H)			$3 \times 10^5/10^6$ (D/T)	$10^6/3 \times 10^6$ (D/T)	$10^8/>10^8$ (D/T)
	H_2		$2 \times 10^5/5 \times 10^5$ (D/H)			$10^4/10^5$ (D/T)	$5 \times 10^4/10^5$ (D/T)	$5 \times 10^5/10^6$ (D/T)
Ultimate vacuum (CF)		mbar	$<5 \times 10^{-10}$					
Maximum backing pressure	N_2	mbar	18			9.5/20 (D/T)		
Interstage pumping speed	N_2	ls-1	3.5/3 (D/H)			13		
	He		6/4.5 (D/H)			13		
	H_2		7/5 (D/H)			11		
Peak boost port pumping speed (nitrogen)	RV12	m^3h^{-1}	N/A			26		
	nXDS10i					24		
Motor data								
Maximum power consumption		W	80 (range 50 - 120)			160 (range 50 - 200)		
Operating voltage		V d.c.	24 - 48					
Nominal rotational speed		rpm	90,000			60,000		
Physical data								
Weight (ISO/CF)		kg	3	3/4.5		6/9		7/10
Inlet connection			NW40	ISO63 or CF63	ISO100	ISO100 or CF100		ISO160 or CF160
Backing connection			NW16			NW25		
Interstage/Boost port connection			NW16			NW25		
Magnetic field tolerance		mT	5					
Run-up time		secs	115				145	175
Orientation of installation			Flange upright through to horizontal +/- 2°					
Cooling method			Ambient/Air/Water					
Maximum system flange temperature during bakeout (CF only)			Water cooled/forced air cooled 120/115°C					
Bearing technology			Permanent magnetic upper; oil lubricated ceramic lower					
User-serviceable bearings			Yes					
Controller type			Integrated					
Interfaces			RS232, 485, I/O					
Optional interfaces			External Profibus					

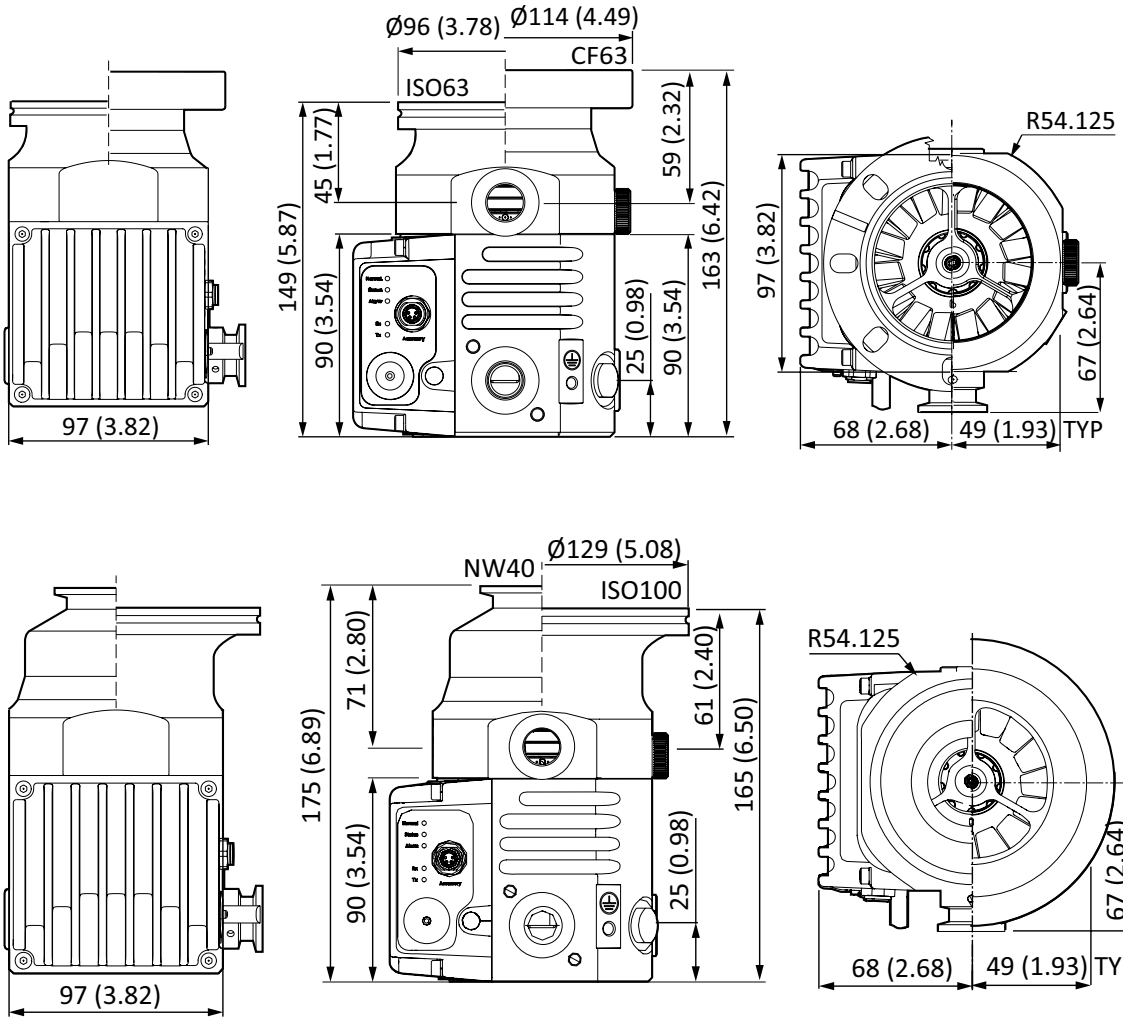
nEXT85

nEXT240

nEXT300

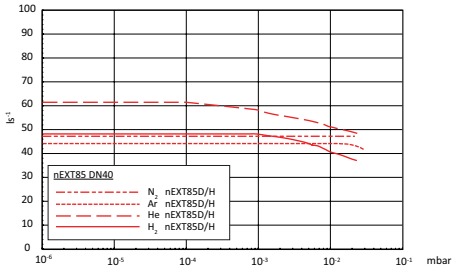
nEXT400

Dimensions (nEXT85)

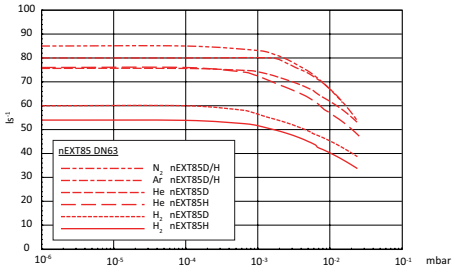


Performance (nEXT85)

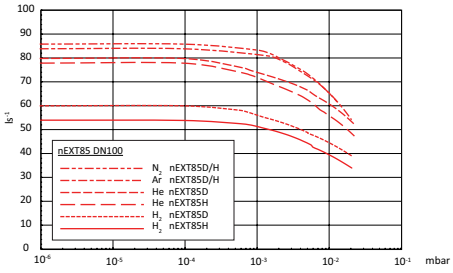
nEXT85



nEXT85



nEXT85



Ordering information (nEXT85)

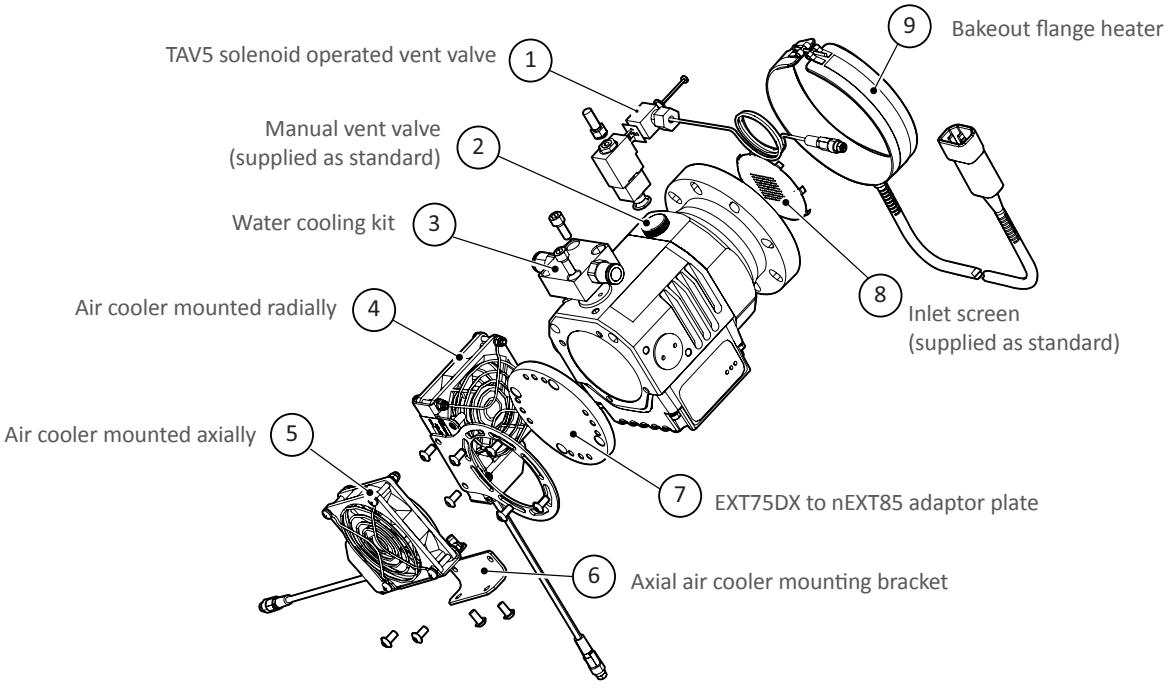
Pumps:

Product description	Order no.
nEXT85D NW40	B8G210A01
nEXT85D ISO63	B8G210B01
nEXT85D CF63	B8G210C01
nEXT85D ISO100	B8G210101
nEXT85D ISO100 NW25 BACKING	B8G240101
nEXT85ID ISO63 NW16 INTERSTAGE	B8G211B01
nEXT85ID ISO63 NW25 INTERSTAGE	B8G214B01
nEXT85H NW40	B8G410A01
nEXT85H ISO63	B8G410B01
nEXT85H CF63	B8G410C01
nEXT85H ISO100	B8G410101
nEXT85IH CF63 NW16 INTERSTAGE	B8G411C01

Backing port NW16 unless stated otherwise

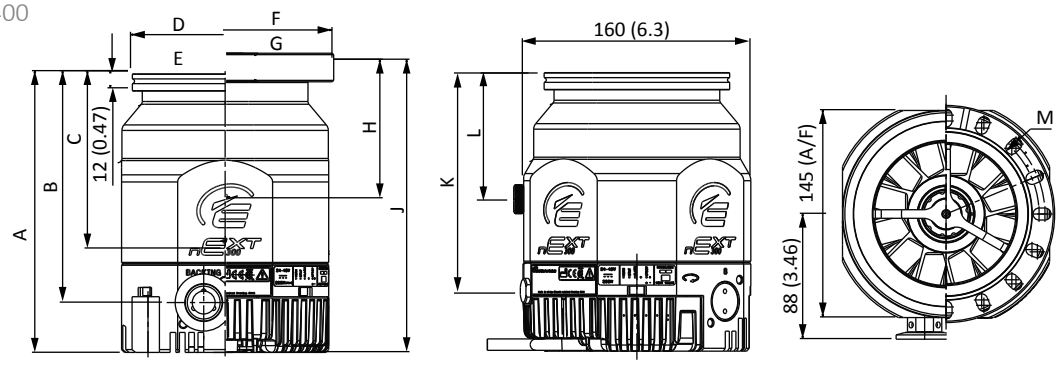
Accessories and spares:

	Product description	Order no.
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
Vibration Isolators	ISO63	B58115000
	CF63	B58101000
Bakeout	CF63 flange heater 110 V	B8G200823
	CF63 flange heater 240 V	B8G200824
Controller	TAG controller	D39592000
	TAG power supply	D39592800
	TIC100 turbo and instrument controller	D39721000
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	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	Accessory “Y” adaptor	B8G200837
	Accessory extension	B8G200836
	Vent port adaptor	B58066011
	PRX10 purge restrictor	B58065001
	nEXT85 base mount to adapt from EXT75DX	B8G200838
Service	Bearing replacement kit	B8G200827
	Oil cartridge kit	B8G200828
	Bearing and oil cartridge kit	B8G200811
	Bearing replacement tool kit	B8G200845



Dimensions (nEXT240/300/400)

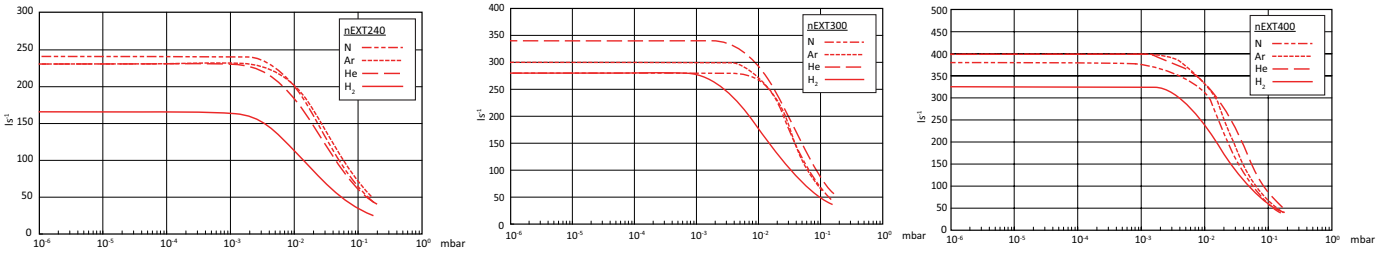
nEXT240/300/400



	nEXT240	nEXT300	nEXT400
A	189	195	195
B	155	160	160
C (C of G)	116	117	102
D	130	130	180
E	ISO100	ISO100	ISO160
F	152	152	202

	nEXT240	nEXT300	nEXT400
G	CF100	CF100	CF160
H (C of G)	90	100	81
J	197	210	200
K	147	153	153
L	83	87	89
M	(16)Ø8.4	(16)Ø8.4	(20)Ø8.4

Performance (nEXT240/300/400)



Boost technology (nEXT240/300/400)

For our Analytica Instrument Customers the “T” variants of nEXT 240,300,400 employ a unique viscous pumping stage which can be used to ‘boost’ the performance of the backing pump. This offers a much simplified vacuum solution with greatly improved pumping speeds and system power reduction. The example in the image below shows how the boost ports can be used to replace a primary pump on a differentially pumped system.

Customers in general laboratory and R&D applications will also benefit from the improved compression achieved with the “T” variant. To take maximum advantage of boost technology, please contact Edwards.

Ordering information (nEXT240/300/400)

Pumps:

Product description	Order no.
nEXT240D ISO100 80W	B81200101
nEXT240D CF100 80W	B81200201
nEXT240D ISO100 160W	B81200100
nEXT240D CF100 160W	B81200200
nEXT240T B90 ISO100 160W	B81321100
nEXT240T B180 ISO100 160W	B81322100
nEXT300D ISO100 80W	B82200101
nEXT300D CF100 80W	B82200201
nEXT300D ISO100 160W	B82200100
nEXT300D CF100 160W	B82200200
nEXT300ID I225 ISO100 160W	B82212100
nEXT300T B90 ISO100 160W	B82321100
nEXT300T B90 CF100 160W	B82321200
nEXT300T B180 ISO100 160W	B82322100
nEXT300T B180 CF100 160W	B82322200
nEXT300IT I225 B90 ISO100 160W	B82345100
nEXT400D ISO160 80W	B83200301
nEXT400D CF160 80W	B83200401
nEXT400D ISO160 160W	B83200300
nEXT400D CF160 160W	B83200400
nEXT400T B90 ISO160 160W	B83321300
nEXT400T B90 CF160 160W	B83321400
nEXT400T B180 ISO160 160W	B83322300

Number after B indicates Boost port location relative to backing port
Number after I indicates Interstage port location relative to backing port

Accessories and spares:

	Product description	Order no.
Cooling	nEXT radial air cooler	B58053175
	nEXT axial air cooler	B58053185
	nEXT water cooler	B80000815
Venting	TAV5 solenoid operated vent valve	B58066010
Vibration Isolators	ISO100	B58120000
	CF100	B58105000
	CF160	B58110000
Bakeout	CF100 100-120 V flange heater	B58052773
	CF100 200-240 V flange heater	B58052774
	CF160 100-120 V flange heater	B58052775
	CF160 200-240 V flange heater	B58052776
Controller	TAG controller	D39592000
	TAG power supply	D39592800
	TIC200 turbo and instrument controller	D39722000
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	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
Service	Oil cartridge tool kit	B80000812
	Bearing tool kit	B80000805
	Oil cartridge	B80000811
	Bearing and oil cartridge	B80000810

LOW VIBRATION/STRAY MAG FIELD TURBOMOLECULAR PUMPS

nEXT240/300/400 pumps are also available in a special low vibration and low stray magnetic field version. These pumps have a modified lower bearing, extra balancing steps during manufacture and especially selected magnets to reduce stray fields.

The result is a set of pumps that is extremely well suited to electron microscopy applications, but also any other applications where these factors are critical. However, these pumps can only be operated upright and the lower bearing is not user serviceable as we cannot guarantee the vibration in these instances.

Contact us for ordering information

PRODUCT FEATURES

MODIFIED LOWER BEARING ARRANGEMENT

Optimised bearing cartridge to further reduce transmitted vibration

MATCHED MAGNETS FOR UPPER BEARING

Magnets used in the upper bearing are matched so that opposing fields cancel each other out, reducing stray fields

EXTRA ROTOR BALANCING

For L variant pumps the turbo rotor undergoes additional balance steps in order to reduce vibration

MULTIPLE CONFIGURATIONS AVAILABLE

L variant pumps are available in D or T configurations and can be ordered with interstage ports or alternative power to meet specific customer requirements

Vibration and magnetic field data

		Units	nEXT240L	nEXT300L	nEXT400L
VACUUM DATA					
Peak pumping speed	N_2	ls^{-1}	240	300	400
	Ar		230	280	380
	He		230	340	390
	H_2		165	280	325
Compression ratio	N_2		> 10^{11} (D&T)		
	Ar		> 10^{11} (D&T)		
	He		3 x 10^5 /10^6 (D/T)	10^6 /3 x 10^6 (D/T)	10^8/>10^8 (D/T)
	H_2		10^4/10^5 (D/T)	5 x 10^4/10^5 (D/T)	5 x 10^5/10^6 (D/T)
Ultimate vacuum (CF)		mbar	<5 x 10^{-10}		
Maximum backing pressure	N_2	mbar	9.5/20 (D/T)		
Interstage pumping speed	N_2	ls^{-1}	13		
	He		13		
	H_2		11		
MOTOR DATA					
Maximum power consumption		W	160 (range 50 – 200)		
Operating Voltage		V d.c.	24 - 48		
Nominal rotational speed		rpm	60,000		
PHYSICAL DATA					
Weight (ISO/CF)		kg	6/9		7/10
Inlet connection			ISO100 or CF100		ISO160 or CF160
Backing connection			NW25		
Interstage/Boost port connection			NW25		
Magnetic field tolerance		mT	5		
Run-up time		secs	115	145	175
Orientation of installation			Flange upright only		
Cooling method			Ambient/Air/Water		
Maximum system flange temperature during bakeout (CF only)			Water cooled/forced air cooled 120/115°C		
Bearing technology			Permanent magnetic upper; oil lubricated ceramic lower		
User-serviceable bearings			No		
Controller type			Integrated		
Interfaces			RS232, 485, I/O		
Optional interfaces			External Profibus		

VIBRATION DATA – ALL L VARIANTS (MEASURED AT INLET)*					
Frequency range		Radial		Axial	
		Deterministic	Random	Deterministic	Random
40 to 280Hz	mms^{-2} rms	5	5	8	12
280 to 990Hz		7	10	4	5
990 to 1900Hz		100	N/A	100	N/A

STRAY MAGNETIC FIELD DATA – ALL L VARIANTS					
Max field strength at 200mm from centre		Tangential	Axial	Radial	Total
	µG-pk	450	450	450	1150
	nT-pk	45	45	45	115

** Indicative data, measured values can differ depending on test method, contact Edwards for details.*

CUSTOM TURBOMOLECULAR PUMPS

With Edwards you can quickly and flexibly create the perfect vacuum solution for your needs.

When an off the shelf pump will not meet your requirements for space or performance, our Applications & Derivatives team will develop a bespoke vacuum solution to turn the proposed modelled system into reality.

At Edwards a partnership approach is taken to system design, and it all starts with a vacuum expert using TransCalc HSM to optimise your vacuum system. Developed in-house, TransCalc HSM is a unique program used to simulate the complete vacuum system from atmosphere to ultra-high vacuum (UHV). This software has been developed to give rapid simulation of the behaviour of the proposed vacuum solution to ensure it perfectly meets your requirements. Accurate computer simulation offers you the chance to streamline your development cycle, avoiding a costly iterative approach and delivering a quicker time to market.

Contact us for ordering information

PRODUCT FEATURES

SPLIT FLOW PUMPS

custom built split flow pumps feature multiple inlets to deliver high performance when space is at a premium

CONFIGURED TO YOUR NEEDS

bespoke vacuum solutions optimally designed to deliver the precise performance demanded by your application

RIGHT SOLUTION

advanced in house TransCalc HSM modelling software not only ensures the correct pumping solution, but can also help you optimise your vacuum system design

PEACE OF MIND

comprehensive field proven product and applications know-how

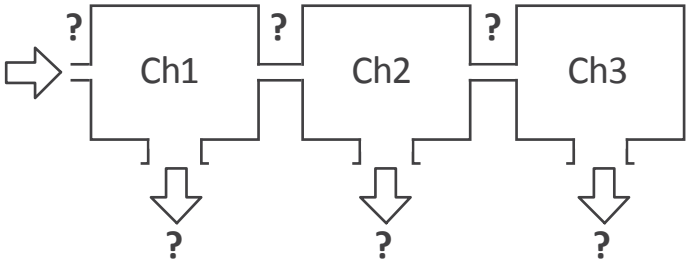
TransCalc HSM enables the rapid modelling of vacuum systems in order to decide on variables such as inter-chamber aperture sizes and pump combinations without the need of an extended trial and error process.

A typical example of how TransCalc HSM would be used to optimise your system follows three simple steps:

STEP 1: Define the system with unknowns

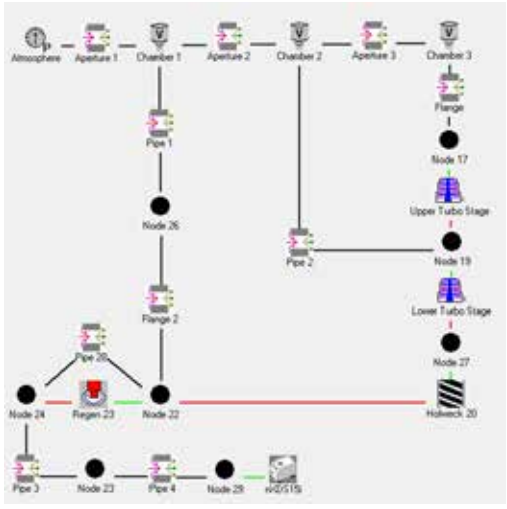
You provide us with your vacuum system requirements.

CUSTOM TURBOMOLECULAR PUMPS



STEP 2: A TransCalc HSM model is built

An Edwards vacuum expert will produce models of solutions that match your requirements. A variety of alternative configurations will be considered to deliver reduced power consumption or increased gas throughput.



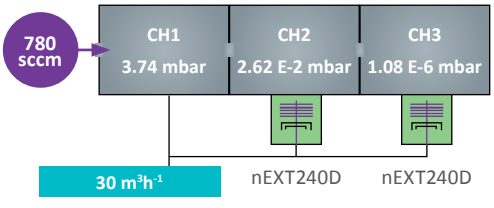
Screenshot taken from TransCalc HSM

STEP 3: The simulation is run and will provide the modelling data in a concise format

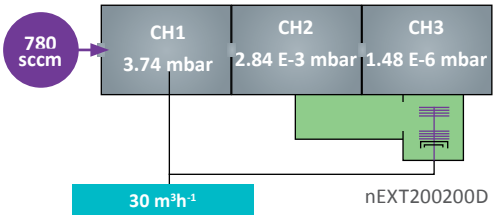
Performance Data	Throughput (sccm)	Aperture 1 Diameter (mm)	Chamber 1 (mbar)	Aperture 2 Diameter (mm)	Chamber 2 (mbar)	Aperture 3 Diameter (mm)	Chamber 3 (mbar)	Total Power (W)
Twin discrete nEXT240D	778	0.30	3.74	1.00	2.62E-03	1.00	1.08E-06	71.3
nEXT splitflow	778	0.30	3.74	1.00	2.84E-03	1.00	1.48E-06	48.8
nEXT splitflow + boost	778	0.30	2.41	1.00	1.81E-03	1.00	9.39E-07	62.0
nEXT splitflow + boost = aperture	1562	0.43	3.73	1.00	2.83E-03	1.00	1.47E-06	81.4

You can then decide which solution best satisfies the priorities of your application; be it cost, power consumption or absolute performance.

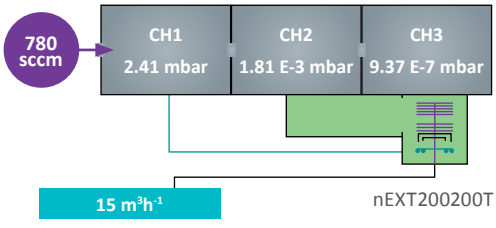
Twin discrete nEXT240D



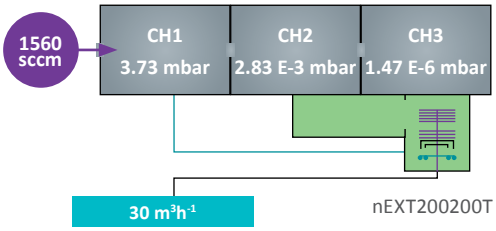
nEXT splitflow



nEXT splitflow + boost



nEXT splitflow + boost + aperture



T-STATION 85 TURBOMOLECULAR PUMPING STATION

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}.

The T-Station 85 comes 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.

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 turbomolecular pump, XDD1 dry diaphragm pump and E2M1.5 backing pump are all user serviceable.

INTEGRATED AIR COOLER

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

RUGGED METAL FRAME

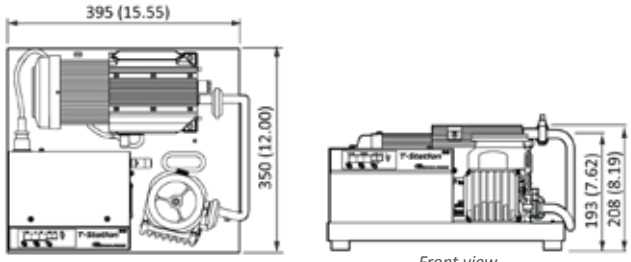
All metal frame means rugged design that can take abuse without cracking or breaking.

INLET FLANGE OPTIONS

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

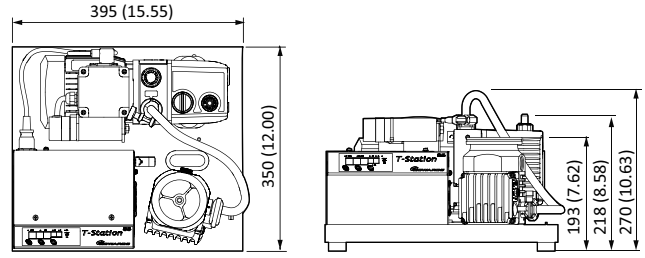
Dimensions

T-Station 85D with XDD1 backing pump



Top view *Front view*

T-Station 85W with E2M1.5 backing pump



Top view *Front view*

Technical data

		T-Station 85
Pumping speed for N_2	NW40	47 ls^{-1}
	ISO/CF63	84 ls^{-1}
Compression ratio for N_2		>1 x 10^{11}
Backing pump speed, 50 Hz (60 Hz)	E2M1.5 (TS85W)	1.6 m^3h^{-1} (1.2 cfm)
	XDD1 (TS85D)	1.2 m^3h^{-1} (0.9 cfm)
Ultimate vacuum (CF)		<5 x 10^{-10} mbar
Inlet connection		NW40, ISO63 or CF63
Exhaust connection	E2M1.5 (TS85W)	11mm OD nozzle or 3/8" BSP
	XDD1 (TS85D)	Fitted silencer or 1/8" BSP
Weight	E2M1.5 system (TS85W)	21 kg max
	XDD1 system (TS85D)	17 kg max
Noise level at ultimate		≤56 dB(A)
Leak tightness (static)		<1 x 10^{-6} mbar ls^{-1}
Operating temperature range		12 to 40 °C

Ordering information

Pumping station:

Product description	Order no.
T-Station 85H Wet NW40 200-240V	TS85W1001
T-Station 85H Wet ISO63 200-240V	TS85W2001
T-Station 85H Wet CF63 200-240V	TS85W3001
T-Station 85H Dry NW40 200-240V	TS85D1001
T-Station 85H Dry ISO63 200-240V	TS85D2001
T-Station 85H Dry CF63 200-240V	TS85D3001
T-Station 85H Wet NW40 100-120V	TS85W1002
T-Station 85H Wet ISO63 100-120V	TS85W2002
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
	N/O TAV5 vent valve connector fitted	B8G200834
	N/C TAV5 vent valve connector fitted	B8G200835
	APG100 XLC NW16 Pirani Gauge	D02603000
	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.

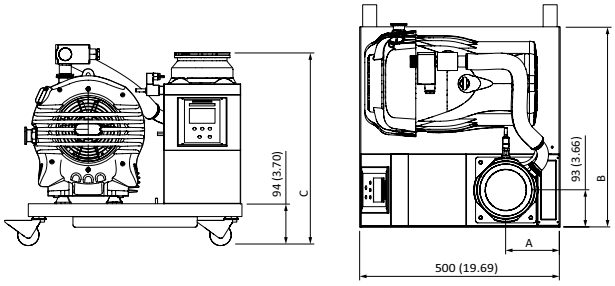
CHOICE OF BACKING PUMPS

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

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^3h^{-1} (1.2 cfm)
	RV	5.1 m^3h^{-1} (3.6 cfm)
	RV12	12 m^3h^{-1} (8.4 cfm)
	XDD1	1.2 m^3h^{-1} (0.9 cfm)
	nXDS6i	6.2 m^3h^{-1} (3.6 cfm)
	nXDS10i	11.4 m^3h^{-1} (6.7 cfm)
	nXDS15i	15.1 m^3h^{-1} (8.9 cfm)
	nXDS20i	22 m^3h^{-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)
Leak tightness (static)		<1 x 10^{-6} mbar ls^{-1}
Operating temperature range		12 to 40 °C

(1) 380 mm refers to small platforms with XDD1 backing pumps

Ordering information

Pumping station:

T S □□-□□-0 0 □

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

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

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

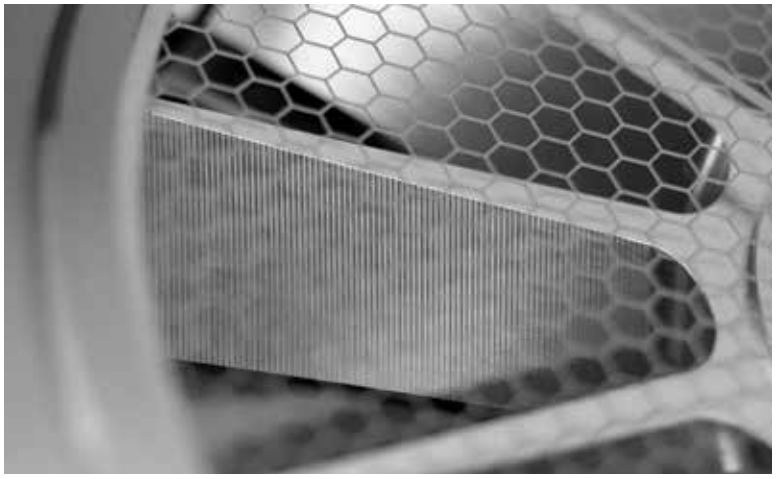
Vent Option
0 Manual Vent
1 TAV5 Vent Valve

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

Accessories:

Product description	Order no.
APG100 XLC NW16 Pirani Gauge	D02603000
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

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 are 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 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	STP301 DN100	STPL301 DN100	STP451 DN160	STP451L DN160	STPiX455 DN100	STPiXU457 DN100	STPiX457 DN160	STPiXU457 DN160
Vacuum data										
Pumping speed	N_2	ls^{-1}	300	260	480	450	300		450	420
	H_2		300	290	460	410	300		460	410
Compression ratio	N_2		$>10^8$							
	H_2		2×10^4				1×10^4			
Ultimate vacuum (CF)		mbar	$<1 \times 10^{-10}$				$<1 \times 10^{-9}$			
Maximum flow rate	N_2	sccm	-				120			
Maximum inlet pressure		mbar	6.7×10^{-4}				3.2×10^{-3}			
Maximum backing pressure		mbar	0.13				0.67			
Motor data										
Maximum power consumption		W	350				240			
Nominal rotational speed		rpm	48,000				55,000			
Physical data										
Weight		kg	11	13	12	14	16	19	16	19
Vibration		µm	<0.01		<0.01		<0.005	<0.0001	<0.005	<0.0001
Inlet connection			ISO100 or CF100		ISO160 or CF160		ISO100 or CF100		ISO160 or CF160	
Backing connection			NW25							
Run-up time		secs	180				480			
Magnetic field tolerance axial/radial		mT	15/3							
Orientation of installation			Any							
Cooling method			Ambient/Air/Water				Ambient/Air			
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				External			
Interfaces			RS232, I/O							
Optional interfaces			Profibus				Profibus, EtherCAT			

STP301

STP451

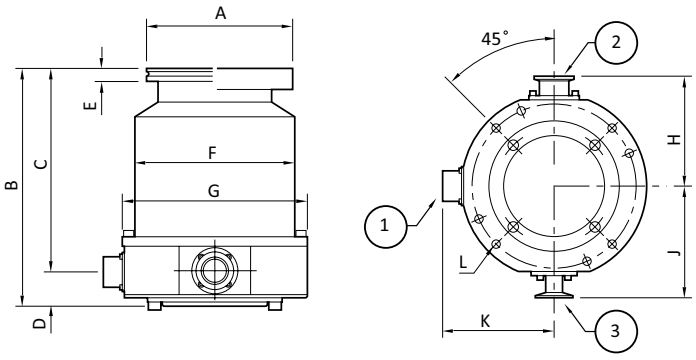
STPL301

STPL451

STPiX457

STPiXU457

Dimensions

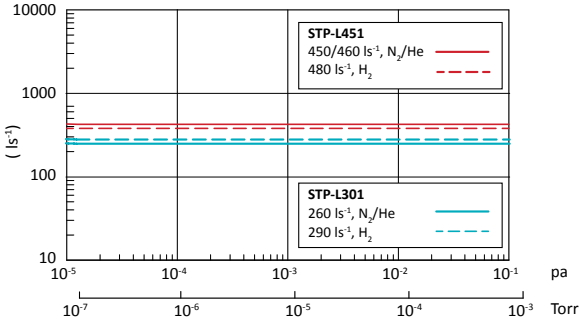


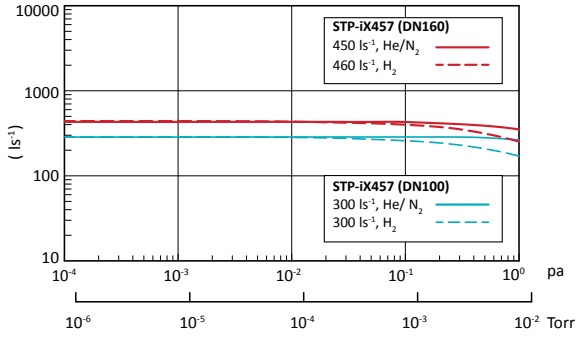
Note: STP301 pump shown

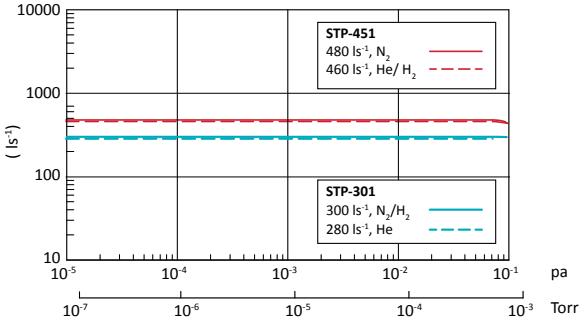
1. Electrical connector
2. Outlet port
3. Purge port

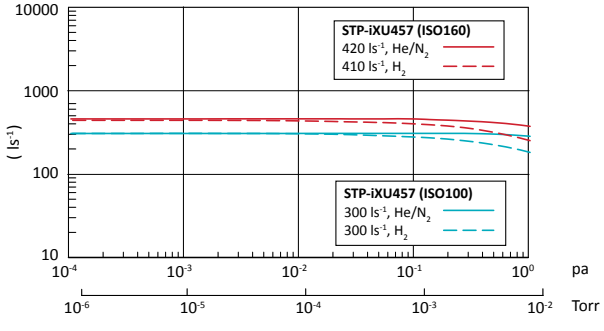
	A	B	C	D	E	F	G	H	J	K	L
STP301	Ø130 ISO100	230	197	33	12	Ø156	Ø180	108	110	100	8 x M8 x 16
	Ø152 DN100CF				22						
STP451	Ø180 IS0160	200	167		12						
	Ø203 DN160CF				22						
STPL301	Ø130 ISO100	240	207		12	Ø180	Ø180	108	110	100	8 x M8 x 16
	Ø152 DN100CF	260	227		22						
STPL451	Ø180 IS0160	250	217		12	Ø214					
	Ø203 DN160CF	270	237		22						
STPiX457	Ø130 ISO100	286	264	22	12	Ø152	Ø180	108	124	101	4 x M10 x 18
	Ø152 DN100CF				22						
	Ø180 IS0160	256	234		12						
	Ø203 DN160CF				22						
STPiXU457	Ø130 ISO100	321	299		12	Ø180	Ø180	108	124	101	4 x M10 x 18

Performance









Ordering information

Pumps:

Product description	Order number
STP301	
STP301 ISO100	YT21B0350
STP301 CF100	YT21B0010
STPL301 ISO100	YT47B0030
STPL301 CF100	YT470Z000
STP451	
STP451 ISO160	YT21B0460
STP451 CF160	YT21B0080
STPL451 ISO160	YT47B0150
STPL451 CF160	YT74B0010
STPiX457	
STPiX457 ISO100	YT860Z120
STPiX457 CF100	YT860Z150
STPiX457 ISO160	YT860Z130
STPiX457 CF160	YT860Z160
STPiXU457	
STPiXU457 ISO100	YT862Z160
STPiXU457 CF100	YT862Z120
STPiXU457 ISO160	YT862Z140
STPiXU457 CF160	YT862Z150

Accessories and spares:

Pump		Product description	Order number
STP301/451	Controller (1)	SCU350 100-240V	YT21Z0Z01
		SCU350 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
STPiX457	Power supply with display(1)	iPD240 AC power supply 240V	YT86W0Z00
	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
	Cooling*	24Vdc air cooler	YT860U201
		100-240V air cooler	YT860U301
	Vent valve*	Vent valve	YT860T211
All	Bakeout	CF100 100-120 V flange heater	B58052773
		CF100 200-240 V flange heater	B58052774
		CF160 100-120 V flange heater	B58052775
		CF160 200-240 V flange heater	B58052776

** 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

XDD1 DRY DIAPHRAGM PUMP

XDD1 diaphragm pumps are compact and efficient pumps, used for backing small compound turbomolecular pumps in clean, high vacuum applications, and also designed to be free standing bench top units. A typical ultimate pressure of better than 5 x 10^{-8} mbar can be achieved when using an XDD1 to back a 70 ls^{-1} turbomolecular pump. The XDD1 pumps are intended for use on non-aggressive, safe area applications.

Under normal conditions the XDD1 is virtually maintenance free, the lifetime of the diaphragms and valves is typically > 10,000 operating hours, depending on the application.

PRODUCT FEATURES

DRY PUMPING, LUBRICANT FREE TECHNOLOGY
eliminating the need for costly oil changes and disposal

LIGHTWEIGHT AND COMPACT
with a small footprint allowing flexibility of use.

IDEAL BACKING PUMP
for small turbomolecular pumps.

COMPLIES
with EN61010, EN1012, CSA/UL standards.

WORLDWIDE
115/230 V or 24 V options.

IEC 60320 C13 CONNECTOR
on a.c. pumps.

Technical data

a.c.		d.c.	
Pumping speed			
50Hz	1.2 m^3h^{-1}	600 rpm	0.6 m^3h^{-1}
60Hz	1.4 m^3h^{-1}	1700 rpm (Factory setting)	1.4 m^3h^{-1}
		2400 rpm	1.8 m^3h^{-1}
Motor power	**Weight**	**Motor power**	**Weight**
80 W	6.5 kg	64 W	4.5 kg

Performance	
Ultimate vacuum (typical)	<2 mbar
Ambient temperature limit	10 to 40 °C
Inlet connection	NW16
Exhaust connection	The pump is fitted with a silencer which can be removed and an exhaust line connected with a 1/8 inch BSP fitting
Max allowed inlet pressure	1 bar (abs)
Power connector (a.c.)	IEC EN60320 C13

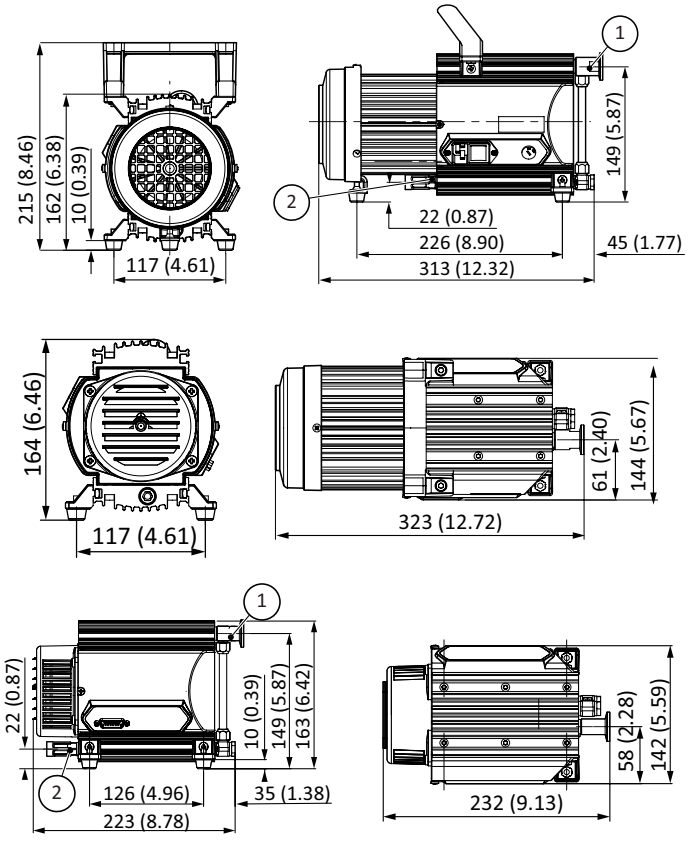
Accessories & spares

Product description	Order number
2m electrical supply cable for 1-ph pumps, UK plug 3A	A50516000
2m electrical supply cable for 1-ph pumps, no plug	A50508000
2m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2m electrical supply cable for 1-ph pumps, North European plug	A50506000
XDD/DX/EXDC extension cable 1m	D39700835
XDD/DX/EXDC extension cable 2m	D39700836
XDD/DX/EXDC extension cable 5m	D39700837
XDD1 diaphragm service kit	A74601800

Ordering information

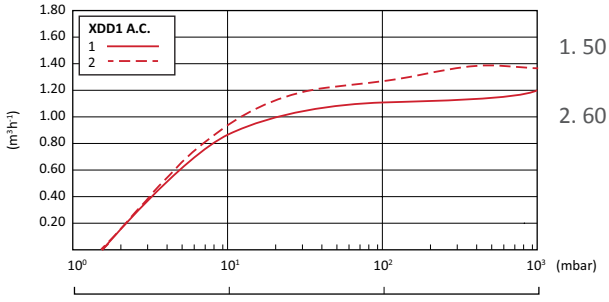
Product description	Order number
XDD1 Diaphragm Pump 100-115V/200-230V 50/60 Hz	A74602983
XDD1 Diaphragm Pump 24 V d.c. Mk3	A74603991

Dimensions

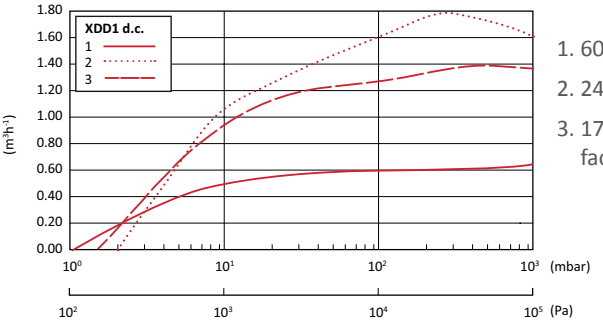


1. Inlet, 2. Outlet

Performance



1. 50 Hz
2. 60 Hz



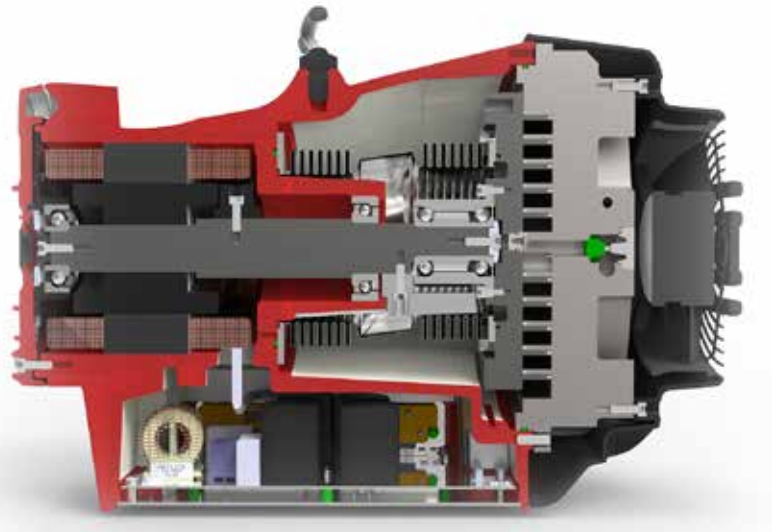
1. 600 rpm
2. 2400 rpm
3. 1700 rpm factory set

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.

SMART 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

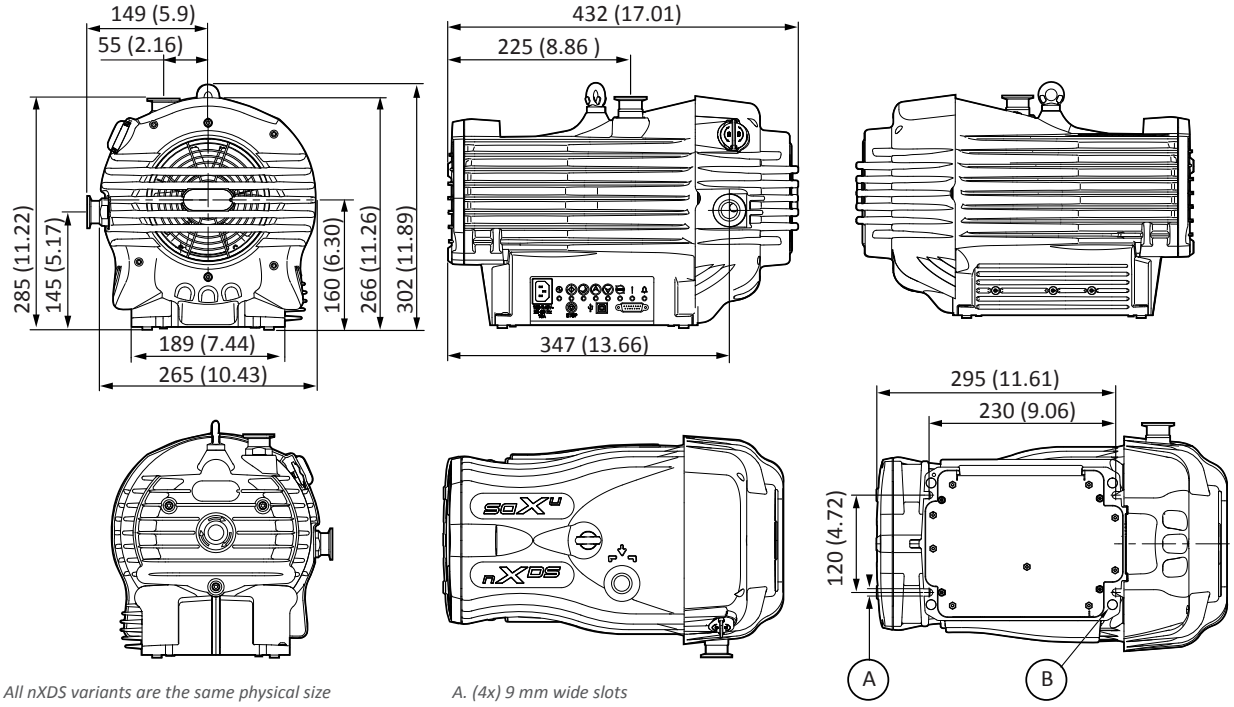
Allows pumping of vapours including water vapour at up to 240 gh^{-1}.

Technical data

	Units	nXDS6i	nXDS10i	nXDS15i	nXDS20i
Vacuum data					
Peak pumping speed	m^3h^{-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)	5 to 40 (41 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

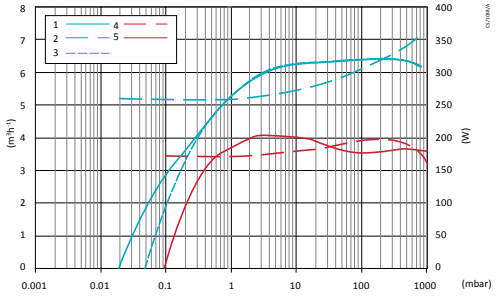


All nXDS variants are the same physical size
Dimensions in millimetres (inches)

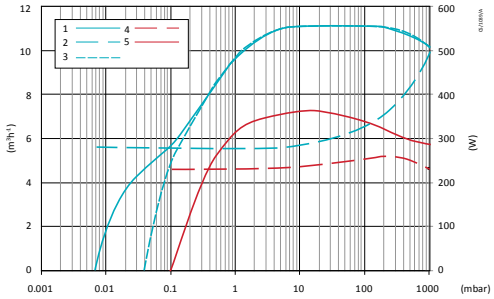
A. (4x) 9 mm wide slots
B. (4x) Rubber feet

Performance

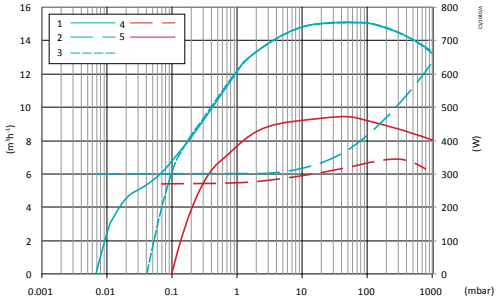
nXDS6i



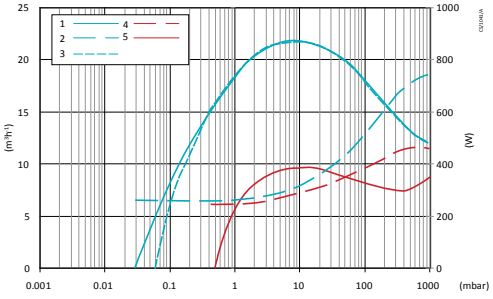
nXDS10i



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 number
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 number
Accessories	TIC (Turbo) 200 W	D39712000
	TIC (Turbo and Instruments) 200 W	D39722000
	Inlet/exhaust filter NW25	A50597805
	Gas ballast adaptor blank	A73501806
	Gas ballast adaptor with 0.25 mm restrictor	A73501809
	Gas ballast adaptor with no restrictor	A73501811
	Silencer NW25	A50597000
	Vibration isolators (pack of 4)	A24801441
	Acoustic enclosure 110-120 V	NRY5C0000
	Acoustic enclosure 200-240 V	NRD797000
Spares	Tip seal kit	A73501801
	Bearing replacement kit [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
Cord sets	UK, three pin plug	A50505000
	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.

The XDS35i family of scroll pumps offer proven dry, clean vacuum solutions for a wide range of applications, with smart drive technology to look after the pump and provide worldwide performance.

Now, a combination of the patented double start scroll form technology and by-pass valves have enabled Edwards to offer the XDS35i Enhanced range of pumps to complement our original family.

XDS35i and XDS35i Enhanced pumps are available as standard pumps with gas ballast, versions of the pump with no Gas Ballast (well suited for rare gas recirculation and gas recovery applications) and the C versions of the pumps featuring Chemraz® internal valves and stainless steel fittings for extra protection from the pumped media.

The XDS46i shares many of the same features of the XDS35i but with a peak speed of 40 m^3h^{-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.

Chemraz® is a registered trademark of Greene Tweed

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.

SMART 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 enables the pump down of 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

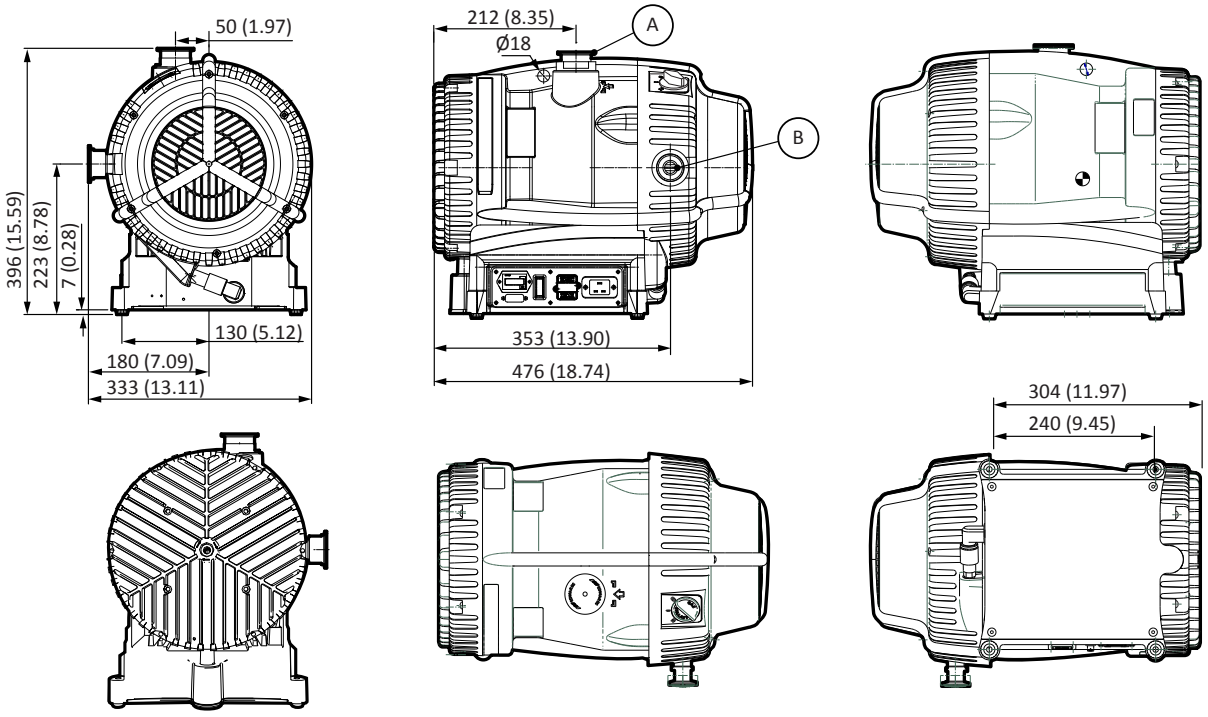
Technical data

	Units	XDS35i	XDS35i Enhanced	XDS46i
Vacuum data				
Peak pumping speed	m^3h^{-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)		
Max inlet pressure for water vapour	mbar (Torr)	35 (23)		40 (30)
Water vapour handling capacity GBII	gh^{-1}	240		
Maximum continuous inlet pressure [2]	mbar a (Torr a)	40 (30)	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)		
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)		

(1) Measured as total pressure.
(2) These pumps are designed to pump down from atmospheric pressure, but prolonged operation at inlet pressures higher than specified may reduce bearing life.
(3) For UK 240 V use 13 A fuse.



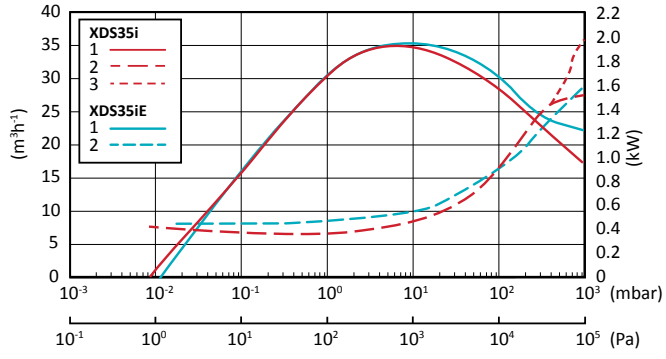
Dimensions



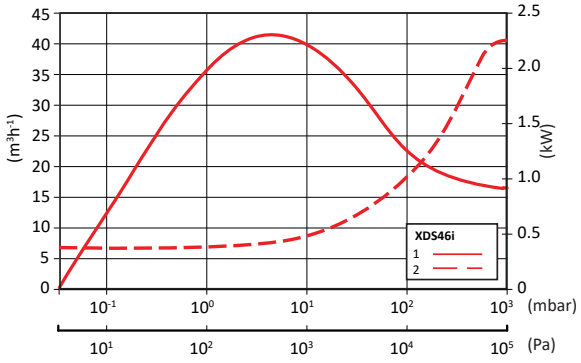
A. NW40
B. NW25

Performance

XDS35i, XDS35iE



XDS46i



1. Speed
2. Power
3. Transient power

Ordering information

Pumps:

Product description		Order number
Standard product	XDS35i	A73001983
	XDS35iE	A73003983
	XDS46i	A73101983
Corrosion resistant variants (C)	XDS35iC	A73006983
	XDS35iCE	A73008983
	XDS46iC	A73106983
Variants without gas ballast (NGB)	XDS35iE NGB	A73007983
	XDS35i-NGB	A73005983

Accessories and spares:

Product description		Order number
Accessories	Exhaust silencer XDS35i	A50597001
	Gas ballast adapter with 0.25 mm restrictor	A50626801
	Gas ballast adaptor with no restrictor	A50502000
	Vibration isolator (pack of 4)	A24801408
	Inlet/exhaust filter NW25	A50597805
	Inlet/exhaust filter NW40	A50597806
	XDS acoustic enclosure 110-120 V	NRY5C0000
	XDS acoustic enclosure 200-240 V	NRD797000
Spares	Tip-seal kit XDS35i	A73001801
	Tip-seal kit XDS46i	A73101801
	Silencer spares kit	A50597801
	XDS filter 5 micron element kit	A50597802
	XDS filter 1 micron element kit	A50597803
	Tip-seal kit XDS35i for std and NGB pumps	A73001801
	Tip seal kit for XDS35i for C variants	A73008801
	Tip-seal kit XDS46i	A73101801
	XDS35iE by-pass valve kit for std and NGB pumps	A73003804
	XDS35iCE by-pass valve kit for C variant	A73008804
	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

nXLi AIR COOLED SINGLE-PHASE DRY PUMP

Edwards is delighted to introduce the new air cooled nXLi dry pump range, designed to deliver a consistent performance worldwide with complete user flexibility in mind. This new single-phase pump is available in two options: nXL110i and nXL200i. Both are optimised for LCMS and ICPMS duties and are capable of handling gas loads of up to 25 slm. nXLi can also be used on chambers up to 100 litres, at continuous inlet pressures up to 15 mbar with occasional pump down.

PRODUCT FEATURES

AIR COOLED SINGLE-PHASE DRY PUMP

offering two pumping speed options of either 110m^3hr^{-1} or 200$^3hr^{-1}$ in the pressure range of 1 to 10mbar

COMPACT AND QUIET

small footprint and quiet operation for an improved work environment and better use of lab space

OIL FREE NON-CONTACTING MECHANISM

no oil to dispose of and maintenance free ensures extended operation and maximum up time

FLEXIBILITY OF CONTROL

Manual control, simple remote control and serial communications (RS485 with Modbus command set) allow more control options for the system builder

PROVEN RELIABILITY

based on Edwards iXL range of semiconductor dry pump technology for peace of mind with a proven track record of performance

ENHANCED EMC VARIANT

high volt variant to meet the EU harmonic emissions requirement of EN61000-3-2

5 YEAR SERVICE INTERVAL

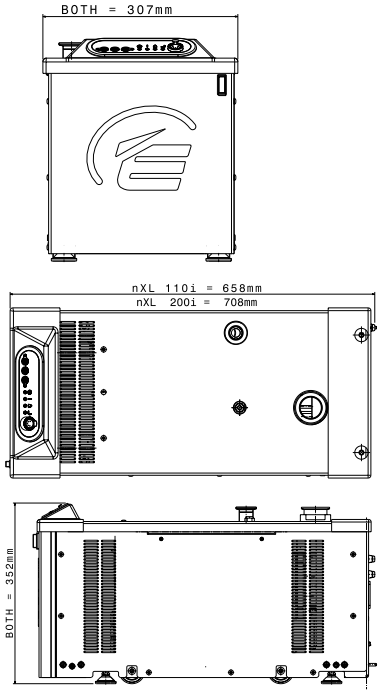
Long service interval minimises down time reducing cost of ownership

Technical data

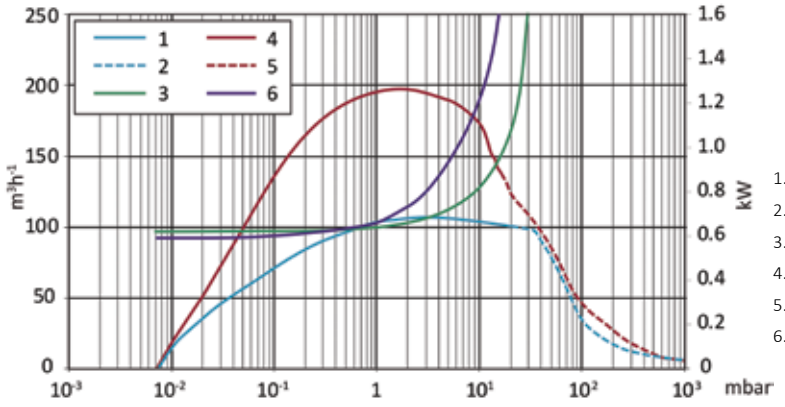
	Units	nXL110i	nXL200i
Pumping Speed (Pneurop 6602)	m^3h^{-1}	110	200
Ultimate Vacuum (Total Pressure)	mbar	<2 x 10^{-2}	
Displacement (50/60Hz)	m^3h^{-1}	131	283
Inlet Flange*		NW40	
Outlet Flange*		NW25	
Maximum Permitted Outlet Pressure	bar gauge/ psig	0.5 / 7.0	
Operating Temperature Range	°C	10 - 40	
Nominal Rotational Speed	rpm	9000	
Power Connector 1-ph		IEC EN60320 C19	
Power at Ultimate	kW	0.65	
Power at Typical Application Condition (2 - 10 mbar)	kW	0.7 - 0.9	
Flow at Typical Application Condition	slm	3-15	6-22
Max Power During Ramp Up	kW	1.1	
Leak Tightness	mbar ls^{-1}	1.0 x 10^{-5}	
Weight	kg	75	81
Noise (Pressure)	dB(A)	56.7	
Vibration at Inlet Flange	mms^{-1} (rms)	<2.5	

**Alternative connections available upon request*

Dimensions



Performance



1. nXL110i
2. nXL110i in transient overload protection
3. nXl110i supply power (kW)
4. nXL200i
5. nXL200i in transient overload protection
6. nXl200i supply power (kW)

Order information

Product description	Order number
nXL110i NW40 200-230V 50/60 Hz	A77012320
nXL110i NW50 200-230V 50/60 Hz	A77012420
nXL200i NW40 200-230V 50/60 Hz	A77022320
nXL200i NW50 200-230V 50/60 Hz	A77022420

Accessories and spares

Product description	Order number
2m electrical supply cable, UK, three pin plug	A50505003
2m electrical supply cable, North European Plug	A50506003
2m electrical supply cable, North America/Japan plug	contact Edwards
2m electrical supply cable, right angled connector, UK, three pin plug	A50505006
2m electrical supply cable, right angled connector, North European plug	A50506006
2m electrical supply cable, right angled connector, North America/Japan plug	contact Edwards
Digital operator	D37520056

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)	m^3h^{-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)	$3.0x10^{-3}$ ($2.3x10^{-3}$)			$1x10^{-3}$ ($7.4x10^{-4}$)	
Ultimate pressure with gas ballast	mbar (Torr)	$2x10^{-1}$ ($1.5x10^{-1}$)	$2.5x10^{-2}$ ($1.9x10^{-2}$)	$6.5x10^{-1}$ ($4.8x10^{-1}$)	$1.5x10^{-2}$ ($1.1x10^{-2}$)	
Ultimate pressure with PFPE oil	mbar (Torr)	$3x10^{-1}$ ($2.3x10^{-1}$)			$1x10^{-2}$ ($7.5x10^{-3}$)	
Water vapour tolerance	mbar (Torr)	15 (11)		50 (38)	20 (15)	30 (23)
Water vapour 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 [1]		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 flange		NW10		NW25		
Exhaust flange [2]		Nozzle 11mm external Ø removable from 3/4 in BSP tapped hole		Nozzle 15 mm external diameter removable from 3/4 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	12-40		13-40		

(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

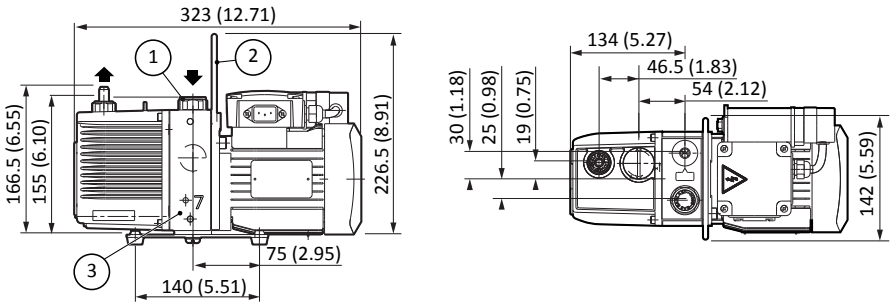
E2M18

E2M28

Dimensions

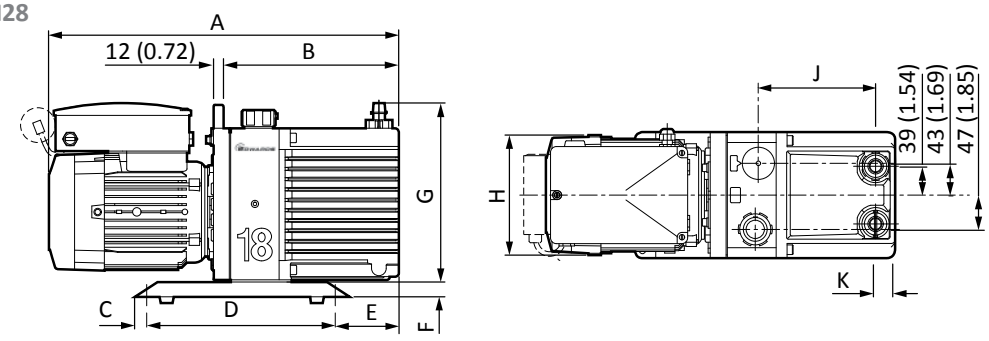
E2M0.7/E2M1.5

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



E1M18/E2M18 and E2M28

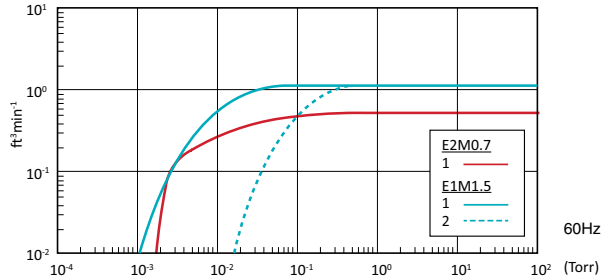
Single phase pump shown,
3 phase pump is similar.

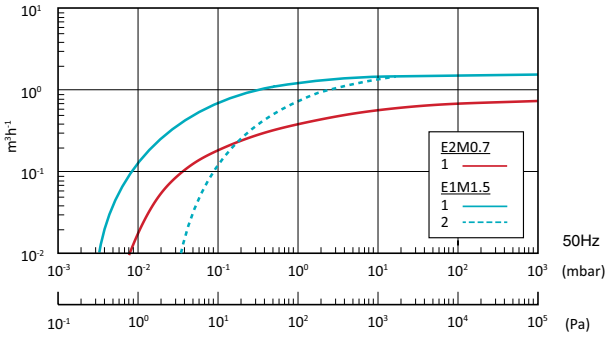


	A	B	C	D	E	F	G	H	J	K
E1M18	504 (19.84)	247 (9.72)	10 (0.39)	260 (10.24)	83 (3.27)	20 (0.79)	251 (9.88)	170 (6.69)	159 (6.26)	27.4 (1.08)
E2M18	550 (21.65)	295 (11.61)	10 (0.39)	260 (10.24)	131 (5.16)	20 (0.79)	251 (9.88)	170 (6.69)	207 (8.15)	27.4 (1.08)
E2M28	584 (22.99)	331 (13.03)	13 (0.51)	347 (13.66)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

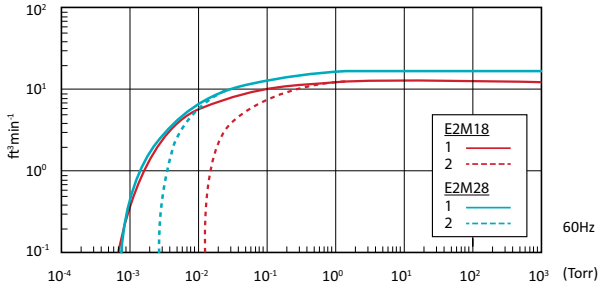
Performance

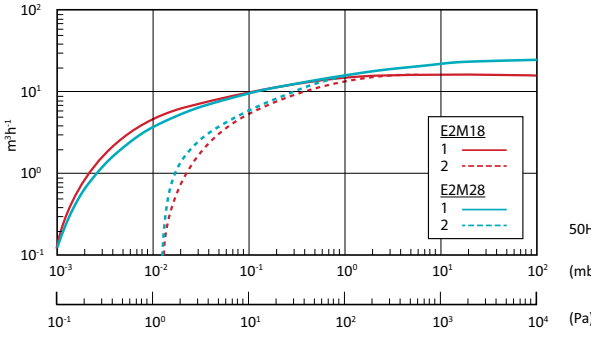
E2M0.7 and E2M1.5





E1M18/E2M18 and E2M28





1. without gas ballast
2. with gas ballast

Order 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 200-230/380-415V, 3-ph, 50Hz or 200-230/460V, 3-ph, 60Hz	A34310940	-
E1M18 115/200-230V, 1-ph, 50/60Hz with IEC60320 connector, factory set to 230V	A34317984	A34325984
E2M18 200-230/380-415V, 3-ph, 50Hz or 200-230/460V, 3-ph, 60Hz	A36310940	A36321940
E2M18 115/200-230V, 1-ph, 50/60Hz with IEC60320 connector	A36317984	A36325984
E2M28 HC IE3 EU/US 50/60Hz, 380-400V 3-ph, 50Hz or 230/460V 3-ph, 60Hz	A37333940	A37343940
E2M28 HC 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

Accessories and spares:

Product	Product description		Order no.
E2M0.7/1.5	Accessories	Oil mist filter - EMF3	A46220000
		NW10 x 3/8” BSP adapter	A23908064
		Vibration isolator (pack of 4)	A24801407
	Spares	Clean and overhaul kit - E2M0.7/1.5	A37101131
		Spares kit blade - E2M0.7/1.5	A37101132
	Oil	Ultragrade 15, 1 litre bottle	H11026015
		Ultragrade 15, 4 litre bottle	H11026013
	Cord sets	UK, three pin plug	A50505000
		North European plug	A50506000
		North America/Japan plug	A50507000
		No plug	A50508000
E1M18/ E2M18/ E2M28	Accessories	Oil mist filter - EMF20 (1)	A46229000
		Oil mist filter - MF30	A46233000
		NW25 to 28mm bore tube adaptor	C10520201
		¾” BSP to NW25 outlet adaptor	C10501414
		E1M18/E2M18 Vibration isolator (pack of 4)	A24801404
		E2M28 Vibration isolator (pack of 4)	A24801412
		Acoustic Enclosure 110-120 V	NRD317000
		Acoustic Enclosure 200-240 V	NRD318000
	Spares	Clean and overhaul kit - E1M18/E2M18	A36301131
		Spares kit blade - E1M18	A34301041
		Spares kit blade - E2M18	A36301020
		Clean and overhaul kit - E2M28	A37301131
		Blade kit - E2M28/30	A37301135
	Oil	Ultragrade 19, 1 litre bottle	H11025015
		Ultragrade 19, 4 litre bottle	H11025013
		Fomblin® YVAC 06/6 fluid 1 kg (532 ml)	H11301019
		Fomblin® YVAC 06/6 fluid 5 kg (2660 ml)	H11301020
	Cord sets	UK, three pin plug	A50505003
		North European plug	A50506003
		North America/Japan plug	A50507003
		No plug	A50508003

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

RV ROTARY VANE PUMPS

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

With their unique mode selector, one pump can be used for both high throughput and high vacuum applications; self-centring mechanism, no dowels to set and can replace any component; high vapour pumping capability and broad range of accessories makes RV pumps the best long term proposition for laboratory applications.

Edwards new nRV14i two stage oil sealed rotary vane pump has been designed to deliver an enhanced and a consistent performance worldwide. By incorporating Edwards drive technology, with the industry leading RV pump, oil sealed vacuum technology has been brought into the 21st century.

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
at just 48 dB(A).

O RING SEALED SIGHT GLASS
allows visual inspection of oil level condition.

FORCED AIR COOLING
ensures low pump surface temperature.

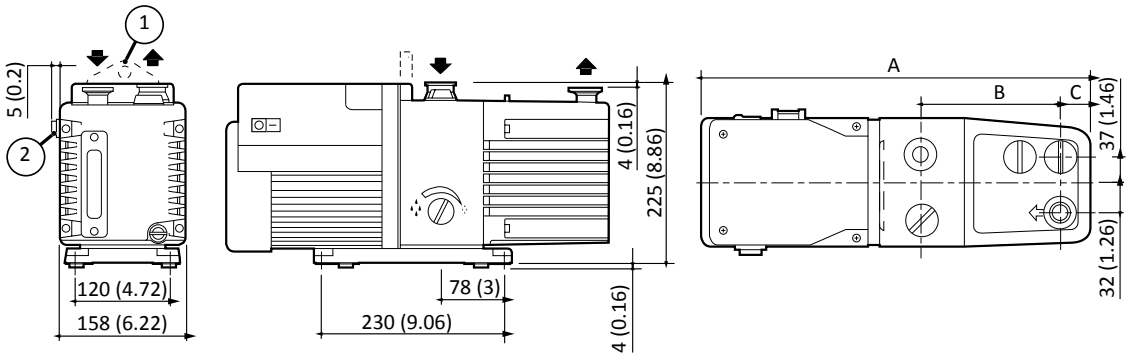
FLEXIBLE CONTROL -ENJOY THE DIFFERENCE
control is at the core of nRVi, either manual, simple I/O remote or serial communications may be utilised to provide real control and better installation for the system builder. Standby mode allows the user to set the pumping speed and tune performance.

Technical data

	Units	RV3	RV5	RV8	RV12	nRV14i
Vacuum data						
Peak pumping speed, 50 Hz (60 Hz)	m^3h^{-1} (cfm)	3.3 (2.3)	5.1 (3.6)	8.5 (5.9)	12 (8.4)	14.2 (8.4)
Ultimate vacuum [1]	mbar (Torr)	2.0×10^{-3} (1.5×10^{-3}); 2.0×10^{-2} (1.5×10^{-2}) with PFPE oil				
Ultimate vacuum with gas ballast 1	mbar (Torr)	3.0×10^{-2} (2.3×10^{-2})				
Ultimate vacuum with gas ballast 2	mbar (Torr)	1.2×10^{-1} (9.1×10^{-2})		6.0×10^{-2} (4.6×10^{-2})	1.2×10^{-1} (9.1×10^{-2})	
Ultimate vacuum in high throughput mode	mbar (Torr)	3.0×10^{-2} (2.3×10^{-2})				
Water vapour tolerance	mbar (Torr)	80 (60)	50 (38)	60 (45)	32 (24)	32 (24)
Water vapour handling capacity	gh^{-1}	220			290	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)		N/A
Nominal rotational speed, 50 Hz (60 Hz)	rpm	1470 (1760)				1800
Physical data						
Weight	kg (lb)	25 (55)		28 (61.6)	29 (63.8)	31.5 (69.3)
Oil type (recommended)		Ultragrade 19				
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				54.5
Noise level with Acoustic Enclosure (50 Hz)	dB(A)	41				48
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



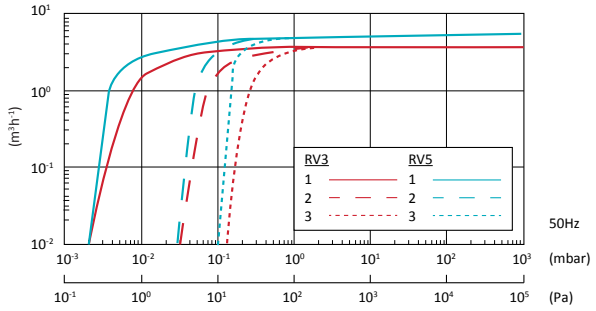
1. Lifting bracket (RV8 and RV12 pumps only; a lifting handle is fitted to the RV3 and RV5 pumps).
2. On-off switch (single-phase pumps only).

	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)

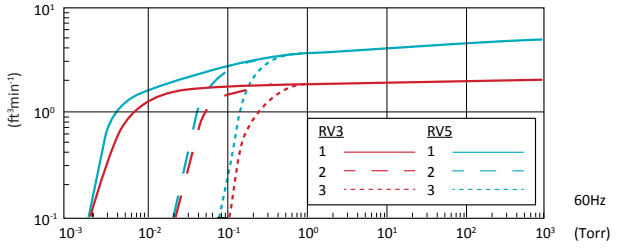
Single phase pump diagram shown, 3 phase pumps look different but share the same dimensions.
Dimensions shown in mm(inch).

Performance

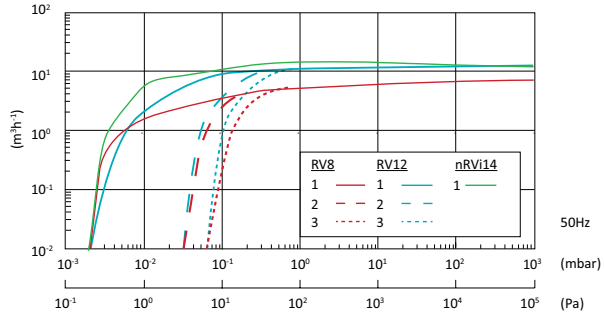
RV3/RV5 50 Hz



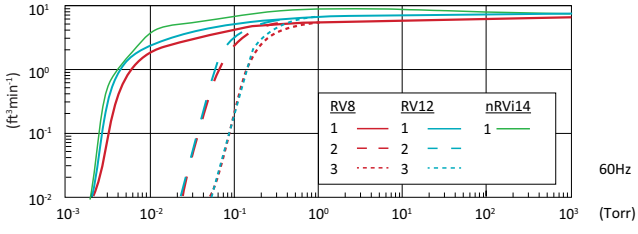
RV3/RV5 60 Hz



RV8/RV12/nRV14i 50 Hz



RV8/RV12/nRV14i 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

Order information

Pumps:

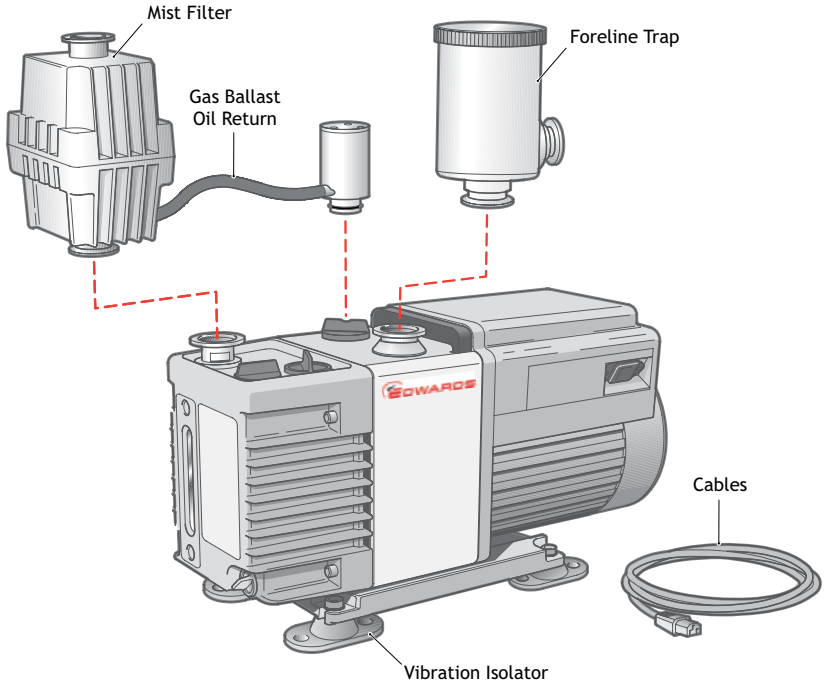
Product description		Order no.	Order no.
		Ultragrade Oil	PFPE prepared [1]
RV3	115/230V, 50/60Hz set to 230V	A65201903	A65209903
	100/200V, 50/60Hz	A65201904	A65209904
	200-220/380-415V, 50Hz 200-230/460V, 60Hz, 3 phase	A65201905	A65209905
	115/230V, 50/60Hz set to 115V	A65201906	A65209906
RV5	115/230V, 50/60Hz set to 230V	A65301903	A65309903
	100/200V, 50/60Hz	A65301904	A65309904
	200-220/380-415V, 50Hz 200-230/460V, 60Hz, 3 phase	A65301905	A65309905
	115/230V, 50/60Hz set to 115V	A65301906	A65309906
RV8	115/230V, 50/60Hz set to 230V	A65401903	A65409903
	100/200V, 50/60Hz	A65401904	A65409904
	200-220/380-415V, 50Hz 200-230/460V, 60Hz, 3 phase	A65401905	A65409905
	115/230V, 50/60Hz set to 115V	A65401906	A65409906
RV12	115/230V, 50/60Hz set to 230V	A65501903	A65509903
	100/200V, 50/60Hz	A65501904	A65509904
	200-220/380-415V, 50Hz 200-230/460V, 60Hz, 3 phase	A65501905	A65509905
	115/230V, 50/60Hz set to 115V	A65501906	A65509906
nRV14i	100-127/200-240V 1-ph 50/60 Hz	A65921983	-

(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/nRV14i 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
	Fomblin YVAC 06/6 5 kg	H11301020
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.



GAMMA VACUUM

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 exclusively 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	$<1 \times 10^{-11}$						
Starting pressure	mbar	$<1 \times 10^{-3}$						
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
Mini 0.2l/s
3S 3l/s
5S 5l/s
10S 10l/s
25S 20l/s
45S 40l/s
75S 75l/s

Element
CV Conventional diode
DI Noble diode
CX Diode XHV
DX Noble diode XHV
TR Triode

Flange
1V Perpendicular DN16
1H Inline DN16
1D Double DN16
2V Vertical DN40
2H Horizontal DN40
2D Double DN40
4V Vertical DN63
4D DN63/DN40
6S Single DN100
62 DN100/DN40

Feedthrough
MN Mini
5K 5kV SHV
SC 10kV SAFECONN
OP Perkin Elmer
OV Old Varian
VR Varian StarCell®
FI Fisher Interlock

Heater
N None
1 110V
2 208-240V

Integrated TSP/NEG
N None
TSP TSP single filament
N0 50l/s NEG (25/45/75)
N1 100l/s NEG (25/45/75)
N2 200l/s NEG (45/75)
N3 300l/s NEG (75)

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	$<1 \times 10^{-11}$								
Starting pressure	mbar	$<1 \times 10^{-3}$								
Lifetime (hrs at 1×10^{-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
100L 100l/s
200L 200l/s
300L 300l/s
400L 400l/s
400LX 400l/s
600L 600l/s
600LX 600l/s
800LX 800l/s
1200LX 1200l/s

Element
CV Conventional diode
DI Noble diode
CX Diode XHV
DX Noble diode XHV
TR Triode

Flange
6S Single DN100
6D 2x DN100 (top/bottom)
8S Single DN160
8D 2x DN160 (top/bottom)
8P 2x DN160 (top/side)
10S Single DN200
10D 2x DN200 (top/bottom)
10P 2x DN200 (top/side)

Feedthrough
SC 10kV SAFECONN
OP Perkin Elmer
OV Old Varian
VR Varian StarCell®
FI Fisher Interlock

Heater
N None
1 110V
2 208-240V

Integrated TSP/NEG
N None
TC TSP & Cryoshroud (not 100L)
TA TSP & Ambient Shield
NG 400l/s NEG

**STARCELL® is a registered trademark of Agilent Technologies*

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 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

			H_2		CO		H_2O	
	Area	Temperature	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 H_2O 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, but typically ranges from 50 to 3,500 ls^{-1} of hydrogen. As NEGs become saturated with gases, they can be reactivated without venting to atmosphere. Their prime advantage is their ability to pump for extended periods without the need for power.

NEGs are ideal for pump down, stay down applications and can be used to boost the performance of an ion pump or as a standalone pump. They are ideal for UHV applications due to their compact size and high H_2 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.

N50

N100

N200

N300

N400

Technical data

	Units	N50	N100	N200	N300	N400
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	cm2	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	GN50	400 ls^{-1} NEG cartridge pump 2-3/4" CFF	GN400
100 ls^{-1} NEG cartridge pump 2-3/4" CFF	GN100	1 metre cable with XLR connectors	XLRS1N100
200 ls^{-1} NEG cartridge pump 2-3/4" CFF	GN200	3 metre cable with XLR connectors	XLRS3N100
300 ls^{-1} NEG cartridge pump 2-3/4" CFF	GN300	6 metre cable with XLR connectors	XLRS6N100

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 and NEGq controller

The TSPq/NEGq 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/NEGq controller can operate up to 8 TSP filaments or 2 NEG pumps.

Technical data

	Units	SPCe	QPC	TSPq	NEGq
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	1
Open circuit voltage		3000-7000 V d.c. (+/- configurable)		17 V a.c.	35 V a.c.
Current (maximum)	mA	50	125	55000	8000
Watts (maximum)	W	50	125	800	220
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	1-2 XLR
Display type		LCD	1/4 VGA colour touchscreen LCD	1/4 VGA 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	NEG enable
		High voltage enable	High voltage enable		
		Fowler-Nordheim calibration			
		High-pot capability			

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 x 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 Aglient/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 x 10^7	325
Fiberglass braid (6)	2 x 10^7	250
Silicone rubber (2, 5, 7, 8)	2 x 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
SPC Small Pump Controller
QPC Quad Pump Controller
TSP TSP Controller
NEG NEG Controller

HV polarity
P Positive (CV/DI)
N Negative (TR)

Connections/Channels
1 One Output (ALL)
2 Two Outputs (QPC/TSP/NEG)
3 Three Outputs (QPC)
4 Four Outputs (QPC)
0 Remote Connection (TSP/NEG)

Communications
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)

TSP/NEG control
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
SCP SAFECONN (Silicone)
FB Fischer Interlock (Silicone)
10K 10kV SHV (PTFE)
N None (ALL)

Cable type
SC Silicon
TF PTFE

Cable length
3 3 m
6 6 m
10 10 m
30 30 m
50 50 m
75 75 m
100 100 m

Pump connector
SC SAFECONN (Silicone)
FI Fischer Interlock (Silicone)
SCO Original SAFECONN (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)

VACUUM MEASUREMENT

Edwards offers a complete range of active and digital gauges covering pressures from atmospheric to 5x10^{-10}mbar. 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

Active gauges are 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:

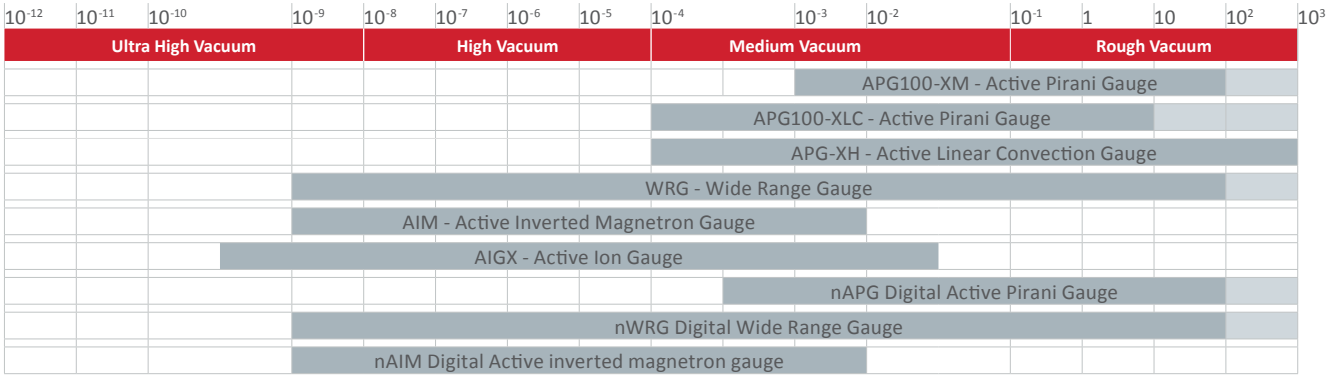
- Low power surface mount integrated circuit electronics used for a compact unit
- Long flexible cables can be used as they only contain a drive voltage and high voltage output signals rather than low voltage signals that could be prone to interference
- Non-specific controllers eg TIC and ADC can be used that can control multiple gauges without needing to specify exact gauges to use at time of ordering

Digital

Digital gauges are similar to Active in that they are self-contained including driving electronics, however they take this one step further and eliminate the need for a separate controller. The Digital gauges simply need a supply voltage in the range of 15 to 48Vdc and then are serial comms enabled, so can be directly interrogated via a PC or PLC using either RS232 or RS485 communications. The benefits are:

- Elimination of an external controller reduces overall costs, where serial communications can be used
- Units are compact and efficient due to the use of low power surface mount integrated circuit electronics
- Long standard flexible serial cables can be used (although an external power supply will be required)

Pressure range table



Indicates the primary accuracy range for the specified gauge.

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

APG100-Active Pirani Gauge

APG100 series Active Pirani Vacuum Gauges are available in 2 models. The APG100-XM is the standard model and measures to 10^{-3} mbar, the APG100-XLC is a corrosion resistant version with measurement to 10^{-4} mbar.

Both gauges feature compact size for easy installation, a linear output and a replaceable sensor tube. These gauges are compatible with all Edwards TIC instrument controllers and other Active gauge controllers and displays.

Features and benefits

- Cable connections and gauge adjustment conveniently located, thereby minimising the space envelope required for access
- Sensor tube can be baked to 150 °C
- Adjustable set-point for simple process control and interlocking
- CSA, C/US Approved
  - Meets safety requirements for electrical equipment for measurement
- Linear output- 1 Volt per decade for easy interface with vacuum control systems
- NW16, NW25 and DN16CF flange options for easy connection to vacuum systems
- LED status indicator shows normal and fault conditions
- Remote calibration possible
- Replaceable sensor tube/electronics lead to a low cost of ownership
- Tool-less replacement of spare parts

Technical data

Performance	
Pressure range	APG100-XM = 10^{3} to 10^{-3} mbar APG100-XLC = 10^{3} to 10^{-4} mbar
Accuracy	APG100-XM = <100 mbar APG100-XLC = <10 mbar typically +/- 15%
Max overpressure	10 bar absolute (145 psi)
Temperature range	
Operating	+5 to +60 °C
Storage	-30 to +70 °C
Maximum bakeout temperature with electronics removed	150 °C
Maximum altitude	3000m
Electrical supply voitage	15 to 30 V d.c. nominal
Power consumption	1 W
Rating	30 V d.c. 100 mA
Dimension mm (inch) (NW25)	40 (1.57) x 83 (3.27) x 41 (1.61)

Order information

Active Pirani Gauges	Order number
APG100-XM atmosphere to 10^{-3} mbar NW16 flange	D02601000
APG100-XM atmosphere to 10^{-3} mbar NW25 flange	D02602000
APG100-XM DN16CF	NRD710000
APG100-XLC atmosphere to 10^{-4} mbar corrosion resistant NW16 flange	D02603000
APG100-XLC atmosphere to 10^{-4} mbar corrosion resistant NW25 flange	D02604000
APG100-XLC DN16CF	NRD712000
Spare sensor tubes	
Spare sensor for APG100-XM NW16 flange	D02601801
Spare sensor for APG100-XM NW25 flange	D02602801
Spare sensor for APG100-XLC NW16 flange	D02603801
Spare sensor for APG100-XLC NW25 flange	D02604801
Spare electronic modules	
Spare APG100-XM electronics module	D02601800
Spare APG100-XLC electronics module	D02603800

APGX H- Active Linear Convection Gauge

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. The gauge incorporates a setpoint and two LEDs, which indicate setpoint and gauge status.

Features and benefits

- Wide measuring range
  - 1333 to 3 x 10^{-4} mbar (1000 to 2.3 x 10^{-4} Torr)
- Consistent measuring accuracy
  - Use of convection technology ensures consistent measuring accuracy (typically ±15%) and repeatability (±5%) to top of range
- Reduced cost of ownership
  - Replaceable tubes are available
- Standard analog output
  - Log linear in range 2.5 to 9.125 V (1V/decade)
  - Compatible with our ADC, AGD and TIC controllers
- Calibration data held in tube
  - Tubes are shipped pre-calibrated
- Easy installation in restricted spaces
  - Maintains accuracy in any orientation across the whole measuring range
- Compact instrument
  - Significantly smaller than leading competitor convection gauges
- Local status indication
  - LEDs indicate setpoint and gauge status at the gauge head
- CSA, C/US approved

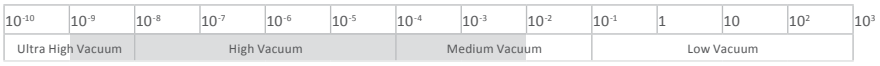
Technical data

Performance	
Pressure range	1333 to 3 x 10^{-4} mbar
Accuracy	Typically +/- 15%
Max overpressure	10 bar absolute (145 psi)
Power supply	14.5 to 30 V d.c.
Power consumption	1.5 W maximum
Output signal	1.9 V to 9.12 SV d.c.
Enclosure rating	IP40
Dimension mm (NW25)	75 x 56 x 56
Temperature range	
Operating	+5 to +60 °C
Storage	-30 to +70 °C
Maximum bakeout temperature with electronics removed	70 °C

Order information

APGX H - Active Linear Convection Gauges	Order number
APGX-H NW16 aluminium	D02391000
APGX-H NW16 stainless steel	D02395000
APGX-H NW25 stainless steel	D02392000
APGX-H 1/8" NPT stainless steel	D02396000
APGX-H electronics module	D02391800
NW16 AL tube	D02391801
NW16 ST/ST tube	D02395801
NW25 ST/ST tube	D02392801
1/8" NPT ST/T tube	D02396801
APGX-H filter pack 5 (not NPT version)	D02391805

AIM- Active Inverted Magnetron Gauge



Edwards Active Inverted Magnetron (AIM) Gauges provide accurate measurement over the vacuum range of 1 x 10^{-2} to 1 x 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.

Features and benefits

- Drive electronics combined in the gauge head
  - Reduce the system cost
  - Save valuable rack space
- Wide-range, regulated, internal power supply
  - Runs from standard d.c. power supplies +13.5 to +36 V
  - Tolerant to voltage fluctuations
- Standard analog output 0 to +10 V d.c. and gauge identifier
  - Easy to interface with a computer or PLC
  - Fault output indication
- Low output impedance and integral Faraday shield
  - Provide high level of noise immunity
  - Permit long cable runs (up to 100 m)
- Interchangeable body tube
  - Rapid tube replacement without pre-calibration
  - Electrode service kit allows user cleaning and maintenance
- Bakeable Tube
  - The DN40CF tube is bakeable to 300 °C (with the electronics removed)
- Unique striker design
- Ensures rapid striking even at high vacuum or in contaminating conditions
- CSA, C/US Approved
  - Meets safety requirements for electrical equipment for measurement

Technical data

Performance	
Pressure range	10^{-2} to 10^{-9} mbar
Accuracy	Typically +/- 30%
Max overpressure	10 bar absolute (145 psi)
Power supply	+13.5 to +36 V d.c. (max 1 V ripple)
Power consumption	2 W maximum
Output signal	2 to 10 V d.c.
Enclosure rating	IP40
Dimension mm (NW25)	79 x 79 x 116
Temperature range	
Operating	+5 to +60 °C
Storage	0 to +70 °C
Maximum bakeout temperature with electronics removed	NW25 70 °C DN40CF 300 °C

Order information

Active Inverted Magnetron Gauges	Order number
AIM-X-NW25	D14642000
AIM-XL-NW25	D14645000
AIM-X-DN40CF	D14662000
AIM-XL-DN40CF	D14665000
Replacement body tube assembly	
NW25	D14545801
DN40CF	D14661801
Body tube service kt	
NW25	D14545802
DN40CF	D14661802

AIGX- Active Ion Gauge

The Active Ion Gauge (AIGX) is a compact active ion gauge with dual yttria coated iridium filaments, a wide measuring range from 6.6 x 10^{-2} to 6.6 x 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.

Features and benefits

- Full 8-decade measurement capability, to 6.6 x 10^{-10} mbar (5 x 10^{-10} Torr)
- Two versions available, each with three vacuum coupling variants:
  - 'D' versions have a 9-pin 'D' connector and standard interface
  - 'S' versions have enhanced functionality and are fully compatible with the range of Edwards controllers
- Up to a thirty-fold reduction in charged particle process contamination compared to leading competitors
- Automatic filament protection against switching on at atmosphere and running or degassing at high pressure
- Gauge sensitivity remains constant over the whole measuring range, thus maintaining output accuracy at higher pressures
- Continuous pressure measurement output during degas
- Innovative design eliminates the effects of X-ray limits
- Bi-colour LED gives local indication of gauge status.
- Wide input voltage range
- Electronics very easily removable for bakeout at up to 200 °C
- 'S' versions provided with seamless automatic emission current switching, for prolonged filament life
- 'S' versions provided with diagnostic outputs indicating 'emission off', 'broken filament' and 'overpressure trip' to help with troubleshooting
- 'S' versions provided with a push-button adjustable set point

Technical data

Performance	
Pressure range	6.6 x 10^{-2} to 6.6 x 10^{-10} mbar
Accuracy	Typically +/- 15%
Max overpressure	10 bar absolute (145 psi)
Power supply	+14.5 to +30.0 d.c.
Power consumption	Normal operation: 7W (max) Degas: 14W (max)
Output signal	0.7 V to 8.7 V
Enclosure rating	IP30
Dimension mm (NW25)	70 x 70 x 96
Temperature range	
Operating	0 to +40 °C
Storage	-30 to +70 °C
Maximum bakeout temperature with electronics removed	200 °C

Order information

AIGX - Active Ion Gauge	Order number
AIGX-S NW25	D04850000
AIGX-S DN16CF	D04851000
AIGX-S DN40CF	D04852000
AIGX-D NW25	D04860000
AIGX-D DN16CF	D04861000
AIGX-D DN40CF	D04862000
Spare electronics module	
AIGX-S - replacement electronics module	D04850800
AIGX-D - replacement electronics module	D04860800

WRG- Wide Range Gauge

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.

Features and benefits

- Single push-button atmosphere setting
- Ultra compact, featuring recessed electrical connector
- Easy service; both Pirani and magnetron elements are individually replaceable
- Low magnetic field version (SL) available for particularly sensitive applications e.g. mass spectrometry and microscopy
- Comprehensive failure mode diagnostics facility
- Compatible with Edwards TIC, TAG and ADC controllers
- D-type version including cable strain relief and enhanced ingress protection (IP44)
- Magnetron uses an advanced technique for highly reliable striking, even at high vacuum or in relatively contaminated conditions
- Automatic vacuum setting of Pirani gauge element
- Easily programmed set point covering entire measuring range
- Extended service intervals and gauge lifetime, through reduction of HT voltage after ignition and low discharge current
- Microprocessor signal processing gives seamless transition between Pirani and magnetron outputs as well as linear output (log pressure scale)

Technical data

Performance	
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)
Power supply	+14.5 to + 36 V d.c.
Power consumption	2 W maximum
Output signal	1.8 to 10.2 V d.c.
S' and 'SL' versions	IP 40
D' version	IP 44
Dimension mm (NW25)	65 x 65 x 106
Temperature range	
Operating	+5 to +60 °C
Storage	0 to +70 °C
Maximum bakeout temperature with electronics removed	70 °C

Order information

Wide Range Gauges	Order number
WRG NW25 stainless steel	D14701000
WRG DN40CF stainless steel	D14703000
WRG-SL NW25 low stray magnetic field	D14711000
WRG-D-NW25	D14702000
Electronics and magnet housing	
WRG-S	D14701800
WRG-SL	D14711800
WRG-D	D14702800
Replacement body tube assembly	
NW25	D14701801
DN40CF	D14703801
Electrode assembly kit	D14701802
Pirani tube replacement kit	D14701803
Full body tube service kit	D14701804

Active gauge cables

Connection cable options	Order number
0.5 m	D40001005
1 m	D40001010
3 m	D40001030
5 m	D40001050

Connection cable options	Order number
10 m	D40001100
15m	D40001150
25m	D40001250
50m	D40001500

Cables include FCC68/RJ45 compatible connections at both ends.

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.

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

Enhanced Active Digital Controller

The Enhanced Active Digital Controller (ADC) 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.

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

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.

- 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

Controller	Order number	Max no. of gauges	No. of setpoints	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				

nAPG Digital Active Pirani Gauge

Edwards nAPG series Digital Active Pirani vacuum gauges are available in two models. The nAPG-M is the standard model and measures from atmosphere to 10^{-3} mbar, the nAPG-LC is a corrosion resistant version with measurement from atmosphere to 10^{-4} mbar.

Both gauges feature compact size for easy installation, a serial output and a replaceable sensor tube. They are also CSA and C/US approved as well as fully RoHS compliant due to their lead-free construction.

Features and benefits

- Wide-range supply voltage allows operation from 15 to 48 V DC
- Gauge naming allows user to store gauge identification data
- Sensor tube can be baked to 150 °C
- Adjustable open collector set-point output for simple process control and interlocking
- NW16 flange for easy connection to vacuum systems – NW25 flange options on request
- Serial communications based on a simple ASCII, low latency, query and command protocol that can operated in a point to point or multi-drop system with minimum overhead
- Remote calibration possible
- Cable connections and gauge adjustment conveniently located, thereby minimising the space envelope required for access
- CSA and C/US approved, meets the safety requirements for electrical equipment for measurement
- RS485 or RS232 versions
- 9600 to 38400 baud, 8bits, 1 start bit, 1 stop bit, no parity

Technical data

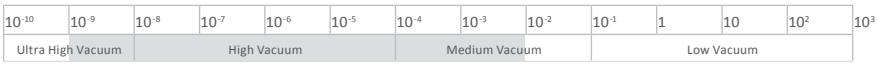
Performance	
Measurement range	nAPG-M Atmosphere to 10^{-3} mbar
	nAPG-LC Atmosphere to 10^{-4} mbar
Accuracy	
nAPG-M Typically	±15% at <100 mbar
nAPG-LC Typically	±15% at <10 mbar
Maximum over-pressure	10 bar absolute
Operating and storage conditions	
Temperature range	
Operating	5 to 60 °C
Storage	30 to 70 °C
Bake-out with electronics removed	150 °C
Humidity	80% RH up to 31 °C decreasing linearly to 50% RH at 40 °C and above
Maximum altitude	3000 m
Filament temperature	100 °C above ambient
Electrical data	
Electrical supply voltage	15 to 48 V DC nominal
Power consumption	1 W
Set-point	open collector transistor
Rating	48 V DC 100 mA

Order information

nAPG Digital Active Pirani Gauge	Order number
nAPG-M RS485 NW16 flange	D02690000
nAPG-M RS232 NW16 flange	D02690500
nAPG-LC RS485 NW16 flange	D02691000
nAPG-LC RS232 NW16 flange	D02691500
Other flange sizes available upon request	

Accessories and spares	Order number
Spare sensor tube for nAPG-M NW16 flange	D02601801
Spare sensor tube for nAPG-LC NW16 flange	D02603801

nAIM Digital Active Inverted Magnetron Gauge



Edwards nAIM series Digital Active Inverted Magnetron Vacuum Gauges combine the gauge-head and controller in one compact active unit. These are new digital versions of gauges that have proved to be rugged and reliable in a wide range of applications ranging from scientific instruments to industrial processes.

The nAIM gauges feature compact size for easy installation, a serial output and a replaceable sensor tube. They are also CSA and C/US approved as well as fully RoHS compliant due to their lead-free construction.

Features and benefits

- Wide-range supply voltage allows operation from 15 to 48 V DC
- Gauge naming allows user to store gauge identification data
- Rapid tube replacement without pre-calibration
- Low external magnetic field version (L) for sensitive analytical instruments available upon request
- Serial communications based on a simple ASCII, low latency, query and command protocol that can operated in a point to point or multi-drop system with minimum overhead
- Adjustable open collector set-point output for straightforward process control and interlocking
- CSA and C/US approved, meets the safety requirements for electrical equipment for measurement
- RS485 or RS232 versions
- 9600 to 38400 baud, 8bits, 1 start bit, 1 stop bit, no parity

Technical data

Performance	
Measurement range	10^{-2} to 10^{-9} mbar
Accuracy typically	±30%
Maximum over-pressure	10 bar absolute
Operating and storage conditions	
Temperature range	
Operating	5 to 60 °C
Storage	0 to 70 °C
Humidity	80% RH up to 31 °C decreasing linearly to 50% RH at 40 °C and above
Maximum altitude	3000 m
Electrical data	
Electrical supply voltage	15 to 48 V DC nominal
Power consumption	2 W
Set-point	open collector transistor
Rating	48 V DC 100 mA

Order information

nAIM Digital Active Inverted Magnetron Gauge	**Order number**
nAIM RS485 NW25 flange	D14690010
nAIM-I RS485 NW25 flange	D14690030
nAIM RS232 NW25 flange	D14690510
nAIM-I RS232 NW25 flange	D14690530
Other flange sizes and low field version (L) available upon request	

Accessories and spares	**Order number**
Spare body tube assembly for nAIM-M NW25 flange	D14545801

nWRG Digital Wide Range Gauge

Edwards nWRG series Digital Wide Range vacuum gauges offer single port pressure measurement in the range atmosphere to 10^{-9} mbar. These are new digital versions of gauges that have proved to be rugged and reliable in a wide range of applications ranging from scientific instruments to industrial processes.

The nWRG gauges feature compact size for easy installation, a serial output and a replaceable sensor tube. They are also CSA and C/US approved as well as fully RoHS compliant due to their lead-free construction.

Features and benefits

- Wide-range supply voltage allows operation from 15 to 48 V DC
- Gauge naming allows user to store gauge identification data
- Automatic vacuum setting of Pirani gauge element
- Unique striker design ensures rapid striking even at high vacuum or in contaminating conditions
- Low external magnetic field version (L) for sensitive analytical instruments available upon request
- Serial communications based on a simple ASCII, low latency, query and command protocol that can operated in a point to point or multidrop system with minimum overhead

Technical data

Performance	
Measurement range	Atmosphere to 10^{-9} mbar
Accuracy Typically	±15% <100 mbar ±30% <10^{-3} mbar
Maximum over-pressure	6 bar absolute
Operating and storage conditions	
Temperature range	
Operating	5 to 60 °C
Storage	0 to 70 °C
Bake-out with electronics removed	150 °C
Humidity	80% RH up to 31 °C decreasing linearly to 50% RH at 40 °C and above
Maximum altitude	3000 m
Electrical data	
Electrical supply voltage	15 to 48 V DC nominal
Power consumption	2 W
Set-point	open collector transistor
Rating	48 V DC 100 mA

Order information

nWRG Digital Wide Range Gauge	Order number
nWRG RS485 NW25	D14790010
nWRG RS232 NW25	D14790510
Other flange sizes and low field version (L) available upon request	

Accessories and spares	Order number
Replacement body tube assembly NW25 flange	D14701801

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: FLEX, WET and 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 $<5x10^{-12}$mbar ls^{-1} in vacuum mode and $<7x10^{-9}$mbar ls^{-1} in sniffer mode.

CUSTOMISABLE FOR ANY APPLICATION

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

PARTIAL FLOW KIT

Allows effective pump down of large of contaminate flows compatible with WET 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 STABILTIY

Ensured by class leading 180° mass spectrometer.

Technical data

ELD500 Leak Detector	Units	WET	DRY	FLEX
Lowest detectable helium leak rate				
Vacuum operation	mbar ls^{-1}	≤ 5 x 10^{-12}	≤ 3 x 10^{-11}	≤ 5 x 10^{-12}
Sniffer operation	mbar ls^{-1}	≤ 7x10^{-9}	≤ 7x10^{-9}	≤ 7x10^{-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^3h^{-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 WET, 200-240V,50/60Hz	D13510903
ELD500 WET, 100-120V, 50/60Hz	D13510904
ELD500 WET, 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 auto-start cable	D13550631
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
CL - calibrated leak He 8	D13550943

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
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	10^{-7} mbar	10 bar
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

(1) Depends on size

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	-10 to 100 °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.

Stainless steel equivalents		
AISI number	**DIN standard**	**Composition**
304L	1.4306	X2 CrNi 19 10
316L	1.4404	X2 CrNiMo 17 13 2

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

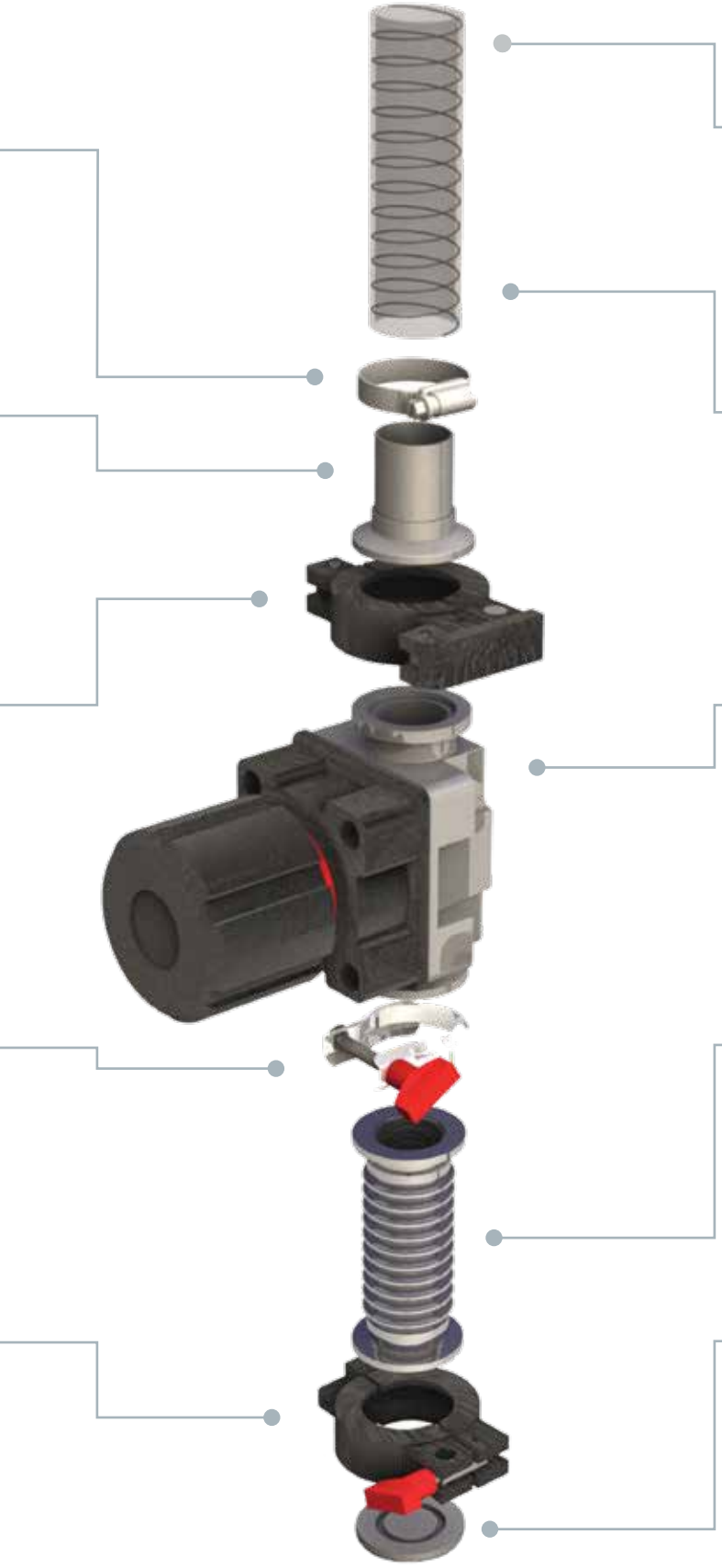
Flange size	Order number	
	Aluminium	Polymer
NW10/16	C10512402	C10512303
NW20/25	C10514402	C10514303
NW32/40	C10516402	C10516303

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)

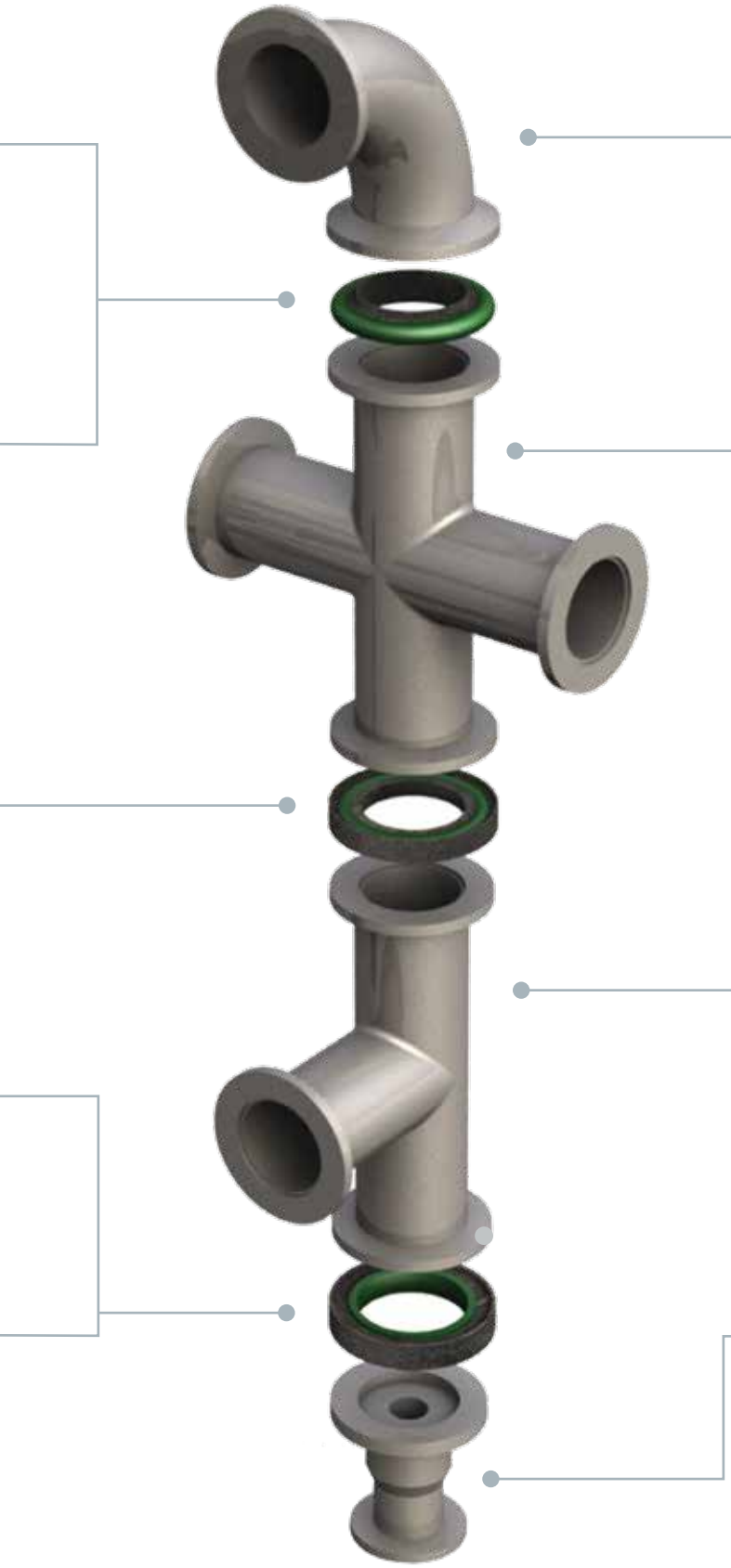
Flange size	Order number
NW10/16	C10512490
NW20/25	C10514490
NW32/40	C10516490

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	C10511412	C10511421
NW16	80 mm	C10512412	C10512421
NW25	100 mm	C10514412	C10514421
NW40	130 mm	C10516412	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 'ReManufacturered' 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).

edwardsvacuum.com

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