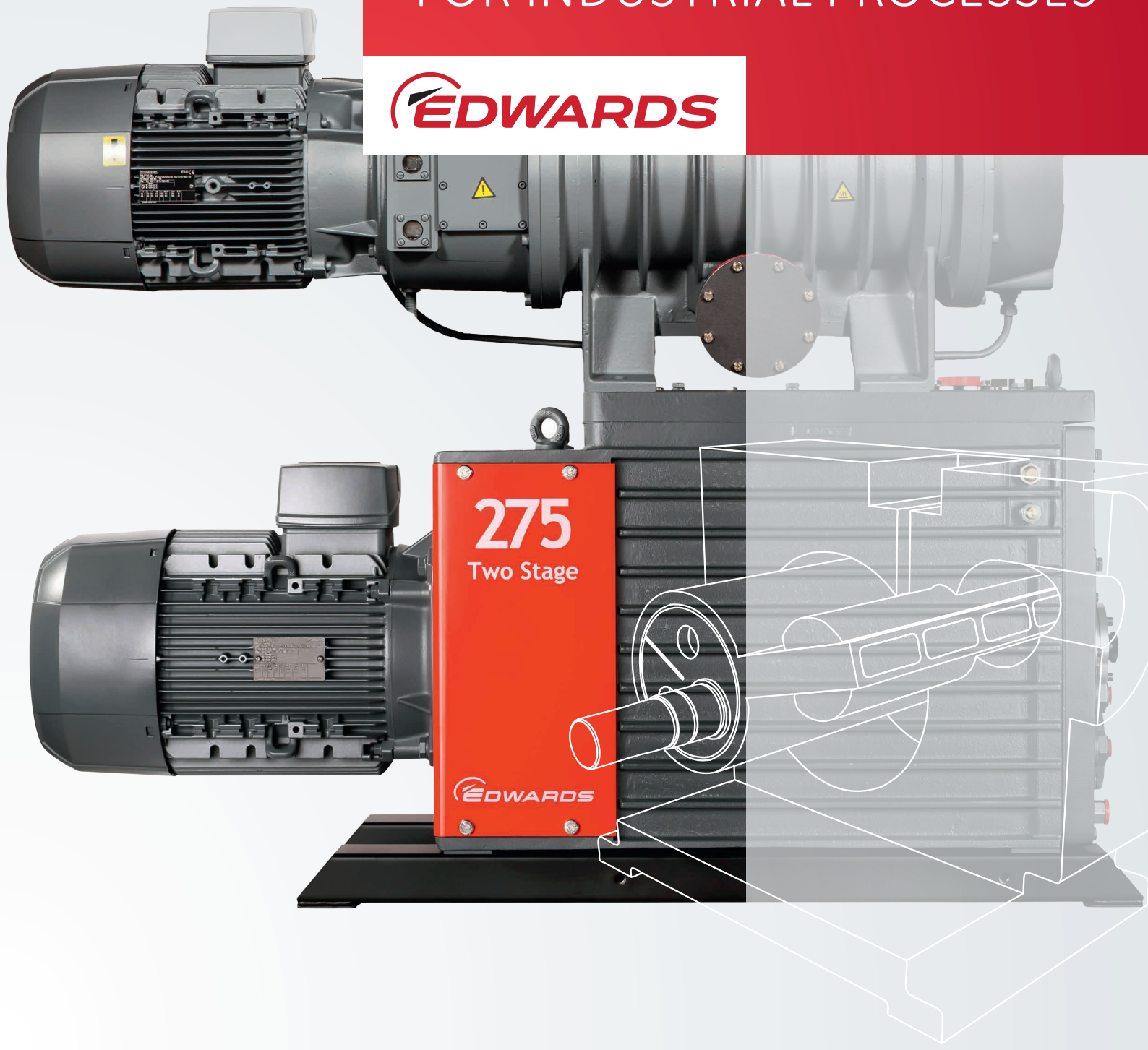


# OIL SEALED VACUUM PUMP AND BOOSTER SOLUTIONS FOR INDUSTRIAL PROCESSES

 **EDWARDS**





## EDWARDS - THE PARTNER OF CHOICE

Edwards is a world leader in the design, technology and manufacture of vacuum pumps for industrial applications with over 95 years' history and more than 75 years' manufacturing experience.

Edwards believes in delivering results that bring value to our customers by using our breadth of industry experience to identify and apply solutions to your problems.

# Wide range of pumping solutions for industrial processes

In today's globally competitive environment, the need for manufacturing and process equipment to deliver maximum performance and reliability is greater than ever. Whether you operate at low pressure, handle large gas loads or simply need to increase the capacity of your existing system, Edwards can help meet your pumping requirements.

Edwards provides a comprehensive range of oil sealed rotary pumps, oil sealed piston pumps, oil sealed screw and mechanical booster pumps to the industrial user to suit a wide range of applications. The pumps and accessories can be supplied either as individual components or as fully systemised, factory tested combinations.

Our range of oil sealed pumps and boosters include:

- **E2M range** Two stage oil sealed rotary vane pump available in displacement from 42 to 350 m<sup>3</sup>h<sup>-1</sup>. Recommended for applications when better ultimate vacuum down to 10<sup>-3</sup> mbar is needed.
- **ES range** Single stage oil sealed rotary vane pump. Provides a good ultimate vacuum and is available in displacement from 64 to 769 m<sup>3</sup>h<sup>-1</sup>.
- **Microvac range** Rotary piston pump available in displacement from 255 to 1020 m<sup>3</sup>h<sup>-1</sup>. Time Proven robust and reliable piston pump technology. Simple operation with low cost life cycle.
- **EOSi range** of quiet, oil sealed rotary screw pumps with Variable Speed drive (VDS) technology and intelligent control to provide on demand performance and optimised energy consumption.

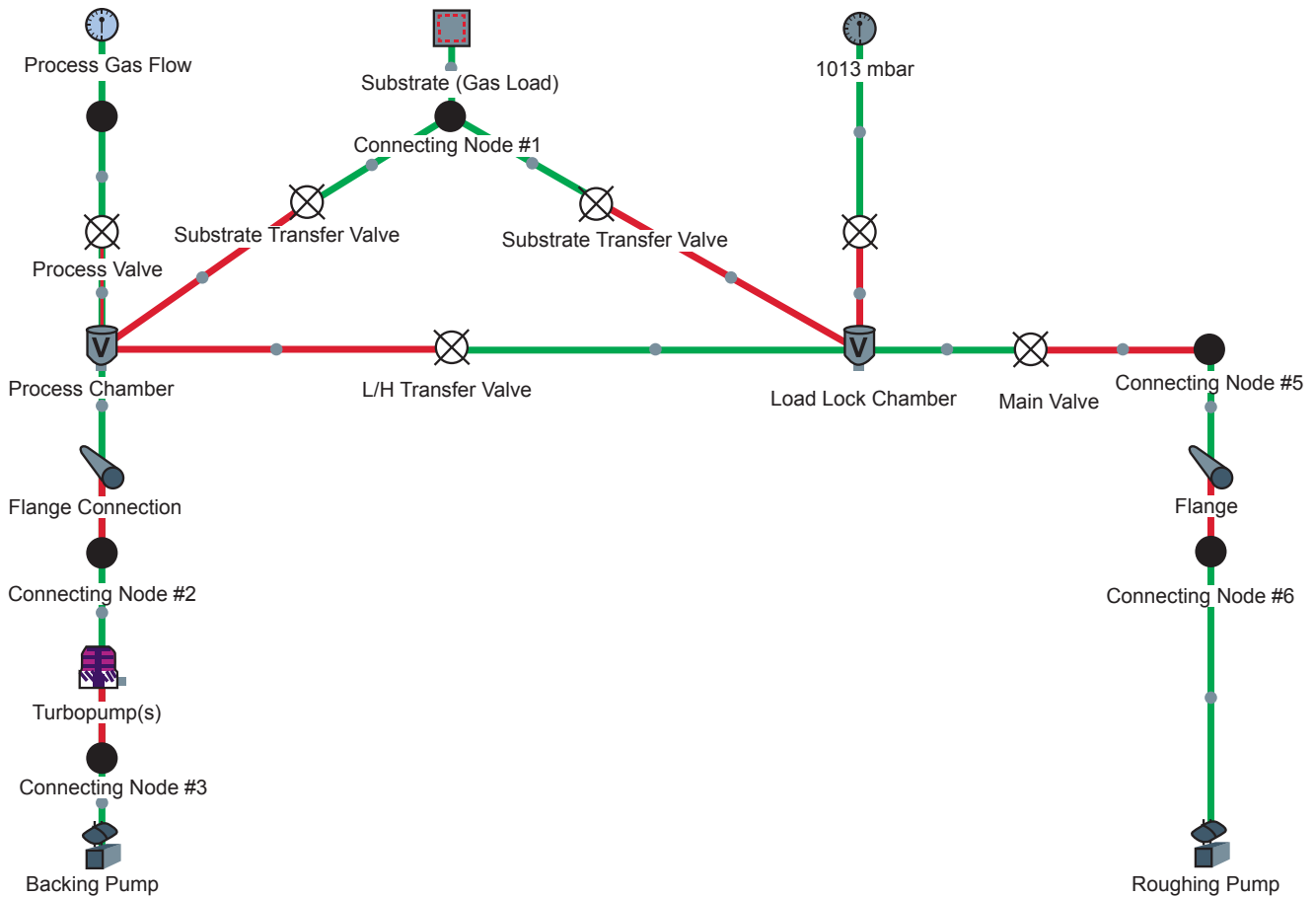
The mechanical booster pump range includes:

- **EH boosters** Mechanical boosters with displacement from 310 to 4985 m<sup>3</sup>h<sup>-1</sup>. Unique hydrokinetic drive coupling for efficient and effective power transmission without the need for bypass lines, inverters or pressure switches. Typically used in combination with ES, EM and Microvac pumps.
- **6" boosters** Mechanical boosters with displacement from 1040 to 6630 m<sup>3</sup>h<sup>-1</sup>. Available in vertical or horizontal orientations, bypass, process isolation, motorized and bare shaft models. Typically used in combination with the Microvac pumps.
- **HV8000 booster** Mechanical boosters with a displacement of 7200 m<sup>3</sup>h<sup>-1</sup> for larger scale industrial applications.
- **Pump combinations** A wide range of displacement available from speeds of 240 m<sup>3</sup>h<sup>-1</sup> to 8640 m<sup>3</sup>h<sup>-1</sup>. Through the use of our proprietary "Pump Calc" software and our vacuum expertise, identifying the right pumping solution for you has never been easier.

# Vacuum expertise and application solutions

Using the most innovative and up-to-date modelling techniques, and selecting the right pumps from a wide range of dry and wet products, we can optimise the pumping configuration to provide a system design giving the maximum performance in the most reliable and cost-effective way.

As experts in vacuum technology, Edwards has a full understanding of vacuum processes and the importance of correct pump selection and sizing. Using our proprietary modelling software, Edwards Application Experts can help design your vacuum system for optimal performance.



Example of a Transcalc model for loadlock. This scheme represents a typical process coating system where substrates are introduced first to a load-lock and then to the process chamber and then in reverse, removed from the system.

# E2M range – two stage oil sealed rotary vane pumps

The E2M Two Stage Oil Sealed Rotary Vane Pump is the tried and tested solution for applications when better ultimate vacuum down to  $10^{-3}$  mbar is needed. Available in sizes from 40 to 275  $\text{m}^3\text{h}^{-1}$  it features a robust design for reliable and stable high vacuum performance.

## Reliability

Reliable and stable process - effective lubrication even under high gas loads

## Robust

No contamination of process - oil and air suck-back protection

## Performance

Long and trouble free life - industrial roller bearings on drive shaft



## Technical data

	Units	E2M40	E2M80	E2M175	E2M275
Pumping Speed 50 Hz	$\text{m}^3\text{h}^{-1}/\text{cfm}$	37/21.8	74/43.6	160/94	255/150
Pumping Speed 60 Hz	$\text{m}^3\text{h}^{-1}/\text{cfm}$	44/25.9	90/53	196/115	306/180
Ultimate vacuum (total pressure) no gas ballast	mbar/torr	$1 \times 10^{-3}/7.7 \times 10^{-4}$	$1 \times 10^{-3}/7.7 \times 10^{-4}$	$1 \times 10^{-3}/7.7 \times 10^{-4}$	$1 \times 10^{-3}/7.7 \times 10^{-4}$
Ultimate vacuum (total pressure) with gas ballast	mbar/torr	$7 \times 10^{-3}/5.4 \times 10^{-3}$	$7 \times 10^{-3}/5.4 \times 10^{-3}$	$7 \times 10^{-3}/5.4 \times 10^{-3}$	$5 \times 10^{-3}/3.8 \times 10^{-3}$
Ultimate Vacuum (total Pressure ) no Gas Ballast with Fomblin R	mbar/torr	$1 \times 10^{-2}/7.7 \times 10^{-3}$	$1 \times 10^{-2}/7.7 \times 10^{-3}$	$1 \times 10^{-2}/7.7 \times 10^{-3}$	N/A
Inlet Connection		ISO40	ISO40	ISO63	ISO63
Outlet Connection		25 mm flange suitable for NW25	25 mm flange suitable for NW25	ISO40	ISO40
Max outlet pressure	bar gauge	0.5	0.5	0.5	0.5
Max inlet pressure for water vapour	mbar/torr	7/5.3	5/3.8	20/15	12/9.0
Max water vapour pumping rate	$\text{kg h}^{-1}/\text{lb h}^{-1}$	0.2/0.4	0.3/0.7	0.3/0.7	2.3/5.1
Weight	$\text{kg h}^{-1}/\text{lb h}^{-1}$	81.5/179.3	125/275	230/507	253 / 557
Dimensions (L,W,H)	mm	690, 240, 395	815, 266, 429	1140, 404, 534	1185, 404, 534
Motor Protection rating		IP55	IP55	IP55	IP55
Motor Power 50Hz	kW/hp	1.1/1.5	2.2/3	5.5/7.5	7.5/10.0
Motor Power 60Hz	kW/hp	1.5/2.0	3.0/4.0	6.5/8.5	8.5/11.0
Noise level	bB(A)	65	70	75	75
Oil capacity min/max	litre	2.2/4.0	4/6.3	16/25	18/28
PFPE oil capacity min/max	litre	2.2/4.0	2.2/4	6.5/18	N/A
Water cooling requirement	$\text{l min}^{-1}$	N/A air cooled	N/A air cooled	1.3	2
Recommended oil		Ultragrade® 70, Fomblin® Y06/6	Ultragrade® 70, Fomblin® Y06/6	Ultragrade® 70, Fomblin® Y06/6	Ultragrade® 70, Fomblin® Y06/6
Ambient temp range (operational)	°C	12 to 40	12 to 40	12 to 40	12 to 40

## Ordering information

Oil Type	Voltage	E2M40	E2M80	E2M175	E2M275
"Hydrocarbon oil Oil supplied with pump"	ASIA 50/60HZ 200V 50/60HZ, 380V 60HZ IE3	A36404934	A36504934	A36604934	A36704934
	EU/US 50/60HZ 380-400V 50HZ, 230 / 460V 60HZ IE3	A36404940	A36504940	A36604940	A36704940
"PFPE Prepared FX (Oil to be ordered separately)"	ASIA 50/60HZ 200V 50/60HZ, 380V 60HZ IE3	A36417934	A36517934	A36617934	A36717934
	EU/US 50/60HZ 380-400V 50HZ, 230 / 460V 60HZ IE3	A36417940	A36517940	A36617940	A36717940

For Azide, ATEX version contact Edwards

## Applications:

- Furnaces and metallurgy
- Optical and display coating
- Pharmaceutical freeze drying
- Refrigeration and air conditioning system evacuation
- Transformer and cable drying
- Brake line evacuation
- Industrial leak detection
- Plasma Coating and Cleaning

# ES range – single stage oil sealed rotary vane pumps

The ES Single Stage Oil Sealed Rotary Vane Pump range provides a good ultimate vacuum performance in sizes from 65 to 630 m<sup>3</sup>h<sup>-1</sup>. ES represents a step ahead in single stage oil technology with class leading ultimate vacuum level and extended operating pressure range.

## Enhanced performance

Class leading ultimate vacuum level and extended operating pressure range

## Stability

Stable vacuum performance with no pressure fluctuations

## Convenience

Combined ISO/BSP connection, easily serviceable on site

## Flexibility

Use individually or with mechanical booster pumps, for a wide range of applications



## Technical data

	Units	ES65	ES100	ES200	ES300	ES630
Maximum Displacement 50Hz	(m <sup>3</sup> h <sup>-1</sup> /cfm)	64/38	96/56	198/117	293/172	635/374
Maximum Displacement 60Hz	(m <sup>3</sup> h <sup>-1</sup> /cfm)	77/45	115/68	240/141	354/208	769/453
Pumping Speed 50 Hz	m <sup>3</sup> h <sup>-1</sup> /cfm	59/35	90/53	190/112	275/162	575/338
Pumping Speed 60 Hz	m <sup>3</sup> h <sup>-1</sup> /cfm	70/41	105/62	225/132	320/188	674/397
Ultimate vacuum (total pressure) no gas ballast	mbar/torr	0.15/0.11	0.15/0.11	0.08/0.06	0.08/0.06	0.1/0.08
Ultimate vacuum (total pressure) with gas ballast	mbar/torr	1.0/0.8	2.0/1.5	1.0/0.8	2.0/1.5	1.0/0.8
Inlet Connection		ISO40/1" BSP	ISO63/2" BSP	ISO63/2" BSP	ISO63/2" BSP	ISO100/3" BSP
Outlet Connection		ISO40/11/2" BSP	ISO40/11/2" BSP	ISO40/2" BSP	ISO40/2" BSP	ISO100/3" BSP
Max permitted outlet pressure	bar gauge	0.5	0.5	0.5	0.5	0.5
Max water vapour pumping rate (50Hz)	kg h <sup>-1</sup> /lb h <sup>-1</sup>	1.3/2.8	2.6/5.7	2.2/4.8	2.3/5.1	5.6/12.3
Max water vapour pumping rate (60Hz)	kg h <sup>-1</sup> /lb h <sup>-1</sup>	1.6/3.5	4.3/9.4	2.8/6.1	3/6.6	8.1/17.8
Dimensions (L,W,H)	mm	725*387*361	804*387*361	935*517*462	1083*517*462	1587*681*589
Weight		77/169	88/194	144/317	180/369	506/1115
Motor Protection rating	kg/lb	IP55	IP55	IP55	IP55	IP55
Motor Power 50Hz	kW/hp	1.5/2.0	2.3/3	4.5/6.0	6/8.0	12.5/16.7 Motor Power
Motor Power 60Hz	kW/hp	1.8/2.4	3/4.0	5.8/7.7	7.5/10.0	15/20.1
Noise level (50Hz)	dB(A)	64	65	67	69	75
Noise level (60Hz)	dB(A)	66	67	69	71	77
Oil Refill Capacity	litre	4	4	5	5	15
Recommended oil		Ultragrade 20	Ultragrade 20	Ultragrade 20	Ultragrade 20	Ultragrade 20

## Ordering information

Oil Type	Voltage	ES65	ES100	ES200	ES300	ES630
"Hydrocarbon oil Oil supplied with pump"	ASIA 200V (50/60Hz) & 380V (60Hz) IE3	A35247934	A35252934	A35257934	A35262934	A35267934
	EU/USA/CHINA 380-400V(50Hz) & 230/460V (60Hz) IE3	A35247940	A35252940	A35257940	A35262940	A35267940

## Applications:

- Annealing
- Tempering
- Quenching
- Cell Formation
- Electrode Drying Process
- Packaging Processes
- Refrigeration/Air Conditioning Drying
- Automotive Drying/Filling
- Transformer Drying Vapour phase
- Display Coating
- Optical Ophthalmic Coating
- Roll Web Coating
- Plasma Deposition
- Reflective Decorative Coating
- Glass Coating
- Leak detection
- Gas Cylinder Filling
- Vacuum Insulation panels/glass
- Oil/Resin Degassing
- Plasma Cleaning Sterilising

# Microvac range – oil sealed rotary piston pumps

Stokes Microvac rotary piston pumps from Edwards are available in displacement from 255 to 1020 m<sup>3</sup>h<sup>-1</sup>/ 150 to 600 ft<sup>3</sup> min<sup>-1</sup>. Through expert engineering design, the current 'J' series promises to deliver reduced noise, improved sealing, optimal performance, with minimal maintenance and low operating costs.

## Reliable

Dependability - low rotational speed enables longest pump life cycle

## Robust

Easy on-site maintenance - robust simple mechanism for high reliability and ease of rebuild

## Flexible

Configured for you - choice of pumping combinations available with a wide range of mechanical booster options

## Reassurance

Peace of mind - over 80 years of time tested proven performance with experienced service and technical support



## Technical data

	Units	212J	412J	612J
Displacement 50 Hz/60 Hz	m <sup>3</sup> h <sup>-1</sup> /CFM	255/150	510/300	1020/600
Pumping Speed 50 Hz/60 Hz	m <sup>3</sup> h <sup>-1</sup> /CFM	234/138	442/260	884/520
Ultimate Vacuum (total Pressure) no Gas Ballast	mbar/torr	<3.3x10 <sup>-2</sup> / $< 2.5 \times 10^{-2}$	<3.3x10 <sup>-2</sup> / $< 2.5 \times 10^{-2}$	<3.3x10 <sup>-2</sup> / $< 2.5 \times 10^{-2}$
Ultimate Vacuum (total Pressure) with Gas Ballast		<2.6x10 <sup>-1</sup> / $< 2 \times 10^{-1}$	<2.6x10 <sup>-1</sup> / $< 2 \times 10^{-1}$	<2.6x10 <sup>-1</sup> / $< 2 \times 10^{-1}$
Inlet Connection		3 inch ASA/ANSI flange	4 inch ASA/ANSI flange	6 inch ASA/ANSI flange
Outlet Connection		2 inch ASA/ANSI or 3 inch NPT	3 inch ASA/ANSI or 3 inch NPT	3 inch ASA/ANSI or 3 inch NPT *2
Max outlet pressure	bar/psig	483/7	483/7	483/7
Max water vapour pumping rate	kg <sup>h</sup> <sup>-1</sup> /lb <sup>h</sup> <sup>-1</sup>	5/11	10.45/23	20.9/46
Weight	kg/lb	431/950	794/1750	1724/3800
Motor Speed	rpm	1800	1800	1800
Motor Power 50Hz TEFC	kW/hp	5.5/7.5 IEC (CE)	11/15 IEC (CE)	11/15 IEC (CE) *2
Motor Power 60Hz	kW/hp	5.5/7.5	7.7/10	7.7/10 *2
Noise level	dB(A)	< 77	<85	<85
Oil capacity	litre/gal	15/4	46/12	92/24
Water cooling req @ 30°C / 85 F	lmin <sup>1</sup> /galmin	5.7/1.5	5.7/1.5	7.6/2.0 *2
Water inlet connection	NPT	0.5	0.5	0.5 * 2
Recommended oil		V Lube F	V Lube F	V Lube F

## Ordering information

Oil Type	Voltage	212J	412J	612J	412ESI
"Hydrocarbon oil (Oil supplied with pump)"	230 / 460V 3-ph 60Hz 230/460V Coil	900-212-014	900-412-014	900-612-014	NR4Q9000
	230 / 460V 60Hz 15 hp 230/460V Coil		900-412-015		
	Explosion proof 460V Class 1 Div 1 Group C&D 460V coil	916-212-014	916-412-014		
	575 V 60 Hz 575 V Coil	919-212-014	919-412-014		
	230 / 460V 60Hz 110 V Coil	931-212-014	931-412-014		
	380 V 60 Hz 380 V Coil	945-212-014	945-412-014		
	230 / 460V 3-ph 60Hz 230/460V Coil with Water Miser	970-212-014	970-412-014		
	400V 3-ph 50Hz 380V Coil ( CE)	900212014501	900412014501		
	400V 3-ph 50Hz 415V Coil ( CE)	900212014502	900412014502		
	400V 3-ph 50Hz 380V Coil with Water Miser( CE)	900212014503	900412014503		
	400V 3-ph 50Hz 415V Coil with Water Miser( CE)	900212014504	900412014504		

## Applications:

- Automotive
- Coating
- Chemical Processing
- General Applications
- Heat Treatment
- Leak Detection
- Metallurgy
- Melting
- PET Processing
- Pharmaceuticals
- Transformer Drying

# EOSi- Rotary Screw Vacuum pump

Edwards EOSi range is a new generation range of quiet, oil sealed rotary screw vacuum pumps. With Variable Speed Drive (VSD) technology and intelligent control, the EOSi range delivers impressive on-demand performance capability and optimises energy consumption.

## Increased efficiency

Class leading ultimate vacuum level and extended operating pressure range

## Improved productivity

Class-leading pumping speed and fast chamber pumpdown performance capability

## Intelligent control

Closed loop pressure control and active power management

## Low cost of ownership

Automatic performance matched to vacuum demand

## Quiet operation

Noise levels approximately half that of comparable technologies

## Reduced environmental impact

Ultra-high oil retention at all operating pressures



## Technical data

	Units	EOS 350i	EOS 585i	EOS 730i	EOS 900i	EOS 1300i	EOS 1600i	EOS 1900i
Peak pumping speed	m <sup>3</sup> h <sup>-1</sup> /cfm	400/240	560/330	730/430	900/530	1250/740	1590/940	1810/1070
Ultimate vacuum	mbar/Torr	0.35/0.26	0.35/0.26	0.35/0.26	0.35/0.26	0.35/0.26	0.35/0.26	0.35/0.26
Inlet connection	-	DN 80	DN 80	DN 80	DN 80	DN 150	DN 150	DN 150
Outlet connection	-	DN 60	DN 60	DN 60	DN 60	DN 100	DN 100	DN 100
Shaft power	kW	5.5	7.5	11	15	22	30	37
Permissible ambient temperature	°C	0 - 46	0 - 46	0 - 46	0 - 46	0 - 46	0 - 46	0 - 46
Noise level range	dB(A)	51-65	51-65	51-73	51-76	65-75	65-79	65-80
Oil quantity	l	16	16	16	16	40	40	40
Dimensions	mm	1266 x 934 x 1083			1266 x 1590 x 1470			
Weight	kg	500	500	510	520	1058	1058	1073

Electrical specification: 380/460V 50/60Hz IP54 enclosure CSA/UL.

## Ordering information

Part Number	Product Description	Part Number	Product Description	Part Number	Product Description
A50862000	EOS 350i 380-460V 3PH	A50864200	EOS 730Wi 380-460V 3PH	A50867100	EOS 1600i 380-460V 3PH
A50862100	EOS 350Wi 380-460V 3PH	A50864300	EOS 730Qi 380-460V 3PH	A50867200	EOS 1600Wi 380-460V 3PH
A50862200	EOS 350Qi 380-460V 3PH	A50864400	EOS 730QWi 380-460V 3PH	A50867300	EOS 1600Qi 380-460V 3PH
A50862300	EOS 350QWi 380-460V 3PH	A50865100	EOS 900i 380-460V 3PH	A50867400	EOS 1600QWi 380-460V 3PH
A50863100	EOS 585i 380-460V 3PH	A50865200	EOS 900Wi 380-460V 3PH	A50868100	EOS 1900i 380-460V 3PH
A50863200	EOS 585Wi 380-460V 3PH	A50866100	EOS 1300i 380-460V 3PH	A50868200	EOS 1900Wi 380-460V 3PH
A50863300	EOS 585Qi 380-460V 3PH	A50866200	EOS 1300Wi 380-460V 3PH		
A50863400	EOS 585QWi 380-460V 3PH	A50866300	EOS 1300Qi 380-460V 3PH		
A50864100	EOS 730i 380-460V 3PH	A50866400	EOS 1300QWi 380-460V 3PH		

## Applications:

- Food freeze drying
- Altitude simulation
- Drying
- Load lock
- Pipeline drying
- Central vacuum systems
- Pneumatic conveying
- General packaging
- Plastics (e.g. bath tubs, shower trays, white goods internals)
- Packaging materials (e.g. thermoformed parts)
- Lamination
- Meat packaging (flat, vacuum packs, controlled atmosphere packaging)
- Roof tile and brick manufacture
- Food cooling
- General evacuation duties
- Coating



# EH range – mechanical booster pumps

The **EH Mechanical Booster** range gives our customers reassurance and peace of mind thanks to its large installed base, both in Industrial and Chemical markets. EH pumps, available in sizes from 250 to 4200m<sup>3</sup>h<sup>-1</sup> displacement, feature the unique hydrokinetic drive, providing an efficient power transmission with benefits in economy, performance and compactness.

## Performance

Increased productivity - fast pump-down time due to unique hydrokinetic drive

## Simplicity

Simple installation - continuous operation at all pressures

## Reliability

Robust and safe operation - automatic overload protection, reliable shaft-seal design

## Reassurance

Peace of mind - industry proven, with a large installed base



## Technical data

	Units	EH250	EH500	EH1200	EH2600	EH4200
Displacement 50 Hz	m <sup>3</sup> h <sup>-1</sup> /cfm	310/185	505/300	1195/715	2590/1525	4140/2440
Displacement 60 Hz	m <sup>3</sup> h <sup>-1</sup> /cfm	375/220	605/335	1435/845	3110/1830	4985/2935
Inlet Connection		ISO63	ISO100	ISO160	ISO160	ISO250
Outlet Connection						
Pressure differential across pump 50 Hz	mbar/torr	0-180/0-140	0-110/0-83	0-90/0-68	0-120/0-90	0-70/0-52
Pressure differential across pump 60 Hz	mbar/torr	0-150/0-115	0-90/0-68	0-75/0-56	0-67/0-50	0-50/0-38
Weight	kg/lb	69/152	106/233	149/328	401/882	481/1058
Dimensions (L, W, H)	mm	705, 305, 272	791, 305, 265	953, 380, 334	1156, 522, 479	1336, 522, 479
Motor Power 50Hz	kW/hp	2.2/3	2.2/3	3.0/4	11.0/15	11.0/15
Motor Power 60Hz	kW/hp	2.2/3	2.2/3	3.0/4	11.0/15	11.0/15
Oil capacity Gear Case	litre	N/A	N/A	1.25	3.5	3.5
Oil capacity coupling cover	litre	1.5	1.5	2.4	6.5	6.5
Oil capacity shaft seal reservoir	litre	0.125	0.125	0.125	0.15	0.15
Water cooling req	lhr <sup>1</sup> /gal min <sup>-1</sup>	N/A air cooled	N/A air cooled	120/0.53	250/1.1	250/1.1
Recommended oil		Ultragrade® 20 Fomblin® Y16/6	Ultragrade® 20 Fomblin® Y16/6	Ultragrade® 20 Fomblin® Y16/6	Ultragrade® 20 Fomblin® Y16/6	Ultragrade® 20 Fomblin® Y16/6

## Ordering information

Oil Type	Voltage	EH250	EH500	EH1200	EH2600	EH4200
"Hydrocarbon oil Oil supplied with pump"	Asia 50HZ 200V 50HZ IE3	A30105934	A30205934	A30505934	A30705934	A30905934
	EU/CN 50HZ 380-400V 50HZ IE3	A30105945	A30205945	A30505945	A30705945	A30905945
	Asia 60HZ 200V 60HZ, 380V 60HZ IE3	A30106934	A30206934	A30506934	A30706934	A30906934
	US 60HZ 230 / 460V 60HZ IE3	A30106946	A30206946	A30506946	A30706946	A30906946
"PFPE Prepared FX (Oil to be ordered separately)"	Asia 50HZ 200V 50HZ IE3	A30107934	A30207934	A30507934	A30707934	A30907934
	EU/CN 50HZ 380-400V 50HZ IE3	A30107945	A30207945	A30507945	A30707945	A30907945
	Asia 60HZ 200V 60HZ, 380V 60HZ IE3	A30108934	A30208934	A30508934	A30708934	A30908934
	US 60HZ 230 / 460V 60HZ IE3	A30108946	A30208946	A30508946	A30708946	A30908946

For Chemical, ATEX versions, contact Edwards

## Applications:

- Semiconductor processing
- Vacuum distillation
- Vacuum packaging
- Steel degassing
- Thin film coating
- Vacuum metallurgy
- Low density wind tunnels
- Space simulation
- Vacuum impregnation
- Oil drying and degassing
- Pharmaceutical freeze drying
- CO<sub>2</sub> lasers

# Stokes 6" range - mechanical booster pumps

The **Stokes 6"** Series features a rugged design for robust and reliable operation. Available in sizes from 1040 to 6630 m<sup>3</sup>h<sup>-1</sup> displacement is configurable to customer needs: bare shaft or direct drive, 1800-3600 rpm, vertical or horizontal gas flow orientation with bypass versions available.

## Robust

Increased lifetime, reliability and simple to use - large diameter shafts, ring feeder keyless gear locking system and dynamically balanced impellers

## Reliable

Increased productivity - 5 seal design for optimal process protection available

## Versatile

Configured for your needs - bare shaft or direct drive, 1800-3600 rpm. Vertical or horizontal gas flow orientation with bypass versions available



## Technical data

	Units	607	607 PIB (Process Isolation)	615	615 PIB (Process Isolation)	615 BP (Bypass)	615 BP PIB (Bypass) Process Isolation	622	622 (Process Isolation)	
Displacement 1800 rpm	m <sup>3</sup> h <sup>-1</sup> /CFM	1040/612	n/a	2210/1300	n/a	2210/2000	n/a	n/a	n/a	
Displacement 2750 rpm	m <sup>3</sup> h <sup>-1</sup> /CFM	1589/935	1589/935	3375/2000	3375/2000	3375/2000	3375/2000	5100/3000	5100/3000	
Displacement 3000 rpm	m <sup>3</sup> h <sup>-1</sup> /CFM	1733/1020	1733/1020	3685/2170	3685/2170	3685/2170	3685/2170	5525/2350	5525/2350	
Displacement 3600 rpm	m <sup>3</sup> h <sup>-1</sup> /CFM	2080/1224	2080/1224	4420/2600	4420/2600	4420/2600	4420/2600	6630/3900	6630/3900	
Inlet Connection/Outlet Connection		6 inch ASA / ANSI	6 inch ASA / ANSI	8 inch ASA / ANSI	8 inch ASA / ANSI	8 inch ASA / ANSI	8 inch ASA / ANSI	8 inch ASA / ANSI	8 inch ASA / ANSI	
Max pressure differential	mbar/torr	506/380	506/380	506/380	506/380	n/a	n/a	333/250	333/250	
Max temperature rise	°C/F	135/275	135/275	135/275	135/275	135/275	135/275	121/250	121/250	
Max discharge temperature	°C/F	191/375	191/375	191/375	191/375	191/375	191/375	177/350	177/350	
Weight bare shaft	kg/lb	215/475	215/475	234/515	234/515	284/625	284/625	335/740	335/740	
Weight TEFC direct drive	kW/hp	408/900	345/760	390/860	297/875	530/1170	538/1185	617/1360	625/1370	
Motor Power 50Hz	kW/hp	7.5/10 @ 3000 rpm	7.5/10 @ 3000 rpm	7.5/10 @ 3000 rpm	11/15 @ 3000 rpm	18/25 @ 3000 rpm	18/25 @ 3000 rpm	18/25 @ 3000 rpm	18/25 @ 3000 rpm	
Motor Power 60Hz	kW/hp	3.7/5 15 /20	7.5/10	7.5/10 @ 1800 rpm 11/15 @ 3600 rpm	11/15 @ 3600 rpm	7.5/10 @ 1800 rpm 18 /25 @ 3600rpm	18/25 @ 3600rpm	18/25 @ 3600rpm	18/25 @ 3600rpm	
Oil capacity (horizontal flow)	litre/gal	1.9/0.51	1.9/0.51	1.9/0.51	1.9/0.51	1.9/0.51	1.9/0.51	1.9/0.51	1.9/0.51	
Oil capacity (vertical flow)	litre/gal	4.1/1.1	4.1/1.1	4.1/1.1	4.1/1.1	4.1/1.1	4.1/1.1	4.1/1.1	4.1/1.1	
Water cooling req @ 30°C/85 F	lmin <sup>-1</sup> /galmin <sup>-1</sup>	air cooled	7.6-11.4/2-3	air cooled	7.6-11.4/2-3	air cooled	7.6-11.4/2-3	air cooled	7.6-11.4/2-3	
Water inlet connection		NPT								
Recommended oil		V Lube H	V Lube H	V Lube H	V Lube H	V Lube H	V Lube H	V Lube H	V Lube H	

## Ordering information

Part Number	Product Description	Part Number	Product Description
900607MHR934	607 MHR IE3 ASIA 50/60HZ	90061B5HR940	61B 5HR IE3 EU/US/CN 50/60HZ
900607MHR940	607 MHR IE3 EU/US/CN 50/60HZ	90061B5HR934	61B 5HR IE3 ASIA 50/60HZ
900607MVR934	607 MVR IE3 ASIA 50/60HZ	90061B5VR940	61B 5VR IE3 EU/US/CN 50/60HZ
900607MVR940	607 MVR IE3 EU/US/CN 50/60HZ	90061B5VR934	61B 5VR IE3 ASIA 50/60HZ
9006075HR940	607 5HR IE3 EU/US/CN 50/60HZ	900-61B-MVR	61B BP VGF Bare Shaft
9006075HR934	607 5HR IE3 ASIA 50/60HZ	900-61B-MHR	61B BP HGF Bare Shaft
9006075VR940	607 5VR IE3 EU/US/CN 50/60HZ	90061BMV10EE	61B BP VGF 10hp EE 230/460V 60Hz
9006075VR934	607 5VR IE3 ASIA 50/60HZ	90061BMV25EE	61B BP VGF 25hp EE 230/460V 60Hz
900-607-MVR	607MVR VGF Bare Shaft	90061B5V25EE	61B PIB BP VGF 25hp 230-460V 60Hz
900-607-MHR	607MHR HGD Bare Shaft	90061BMH10EE	61B BP HGF 10hp EE 230/460V 60Hz
900607MV05EE	607 VGF 5hp EE 230-460V 60Hz	90061BMH25EE	61B BP HGF 25hp EE 230/460V 60Hz
900607MV20EE	607 VGF 20hp EE 230-460V 60Hz	90061B5H25EE	61B PIB BP HGF 25hp 230-460V 60Hz
9006075V10EE	607 PIB VGF 10hp 230-460V 60Hz	90061BMHR934	61B MHR IE3 ASIA 50/60HZ
900607MH05EE	607 HGF 5hp EE 230-460V 60Hz	90061BMHR940	61B MHR IE3 EU/US/CN 50/60HZ
900607MH20EE	607 HGF 20hp EE 230-460V 60Hz	90061BMVR934	61B MVR IE3 ASIA 50/60HZ
9006075H10EE	607 PIB HGF 10hp 230-460V 60Hz	90061BMVR940	61B MVR IE3 EU/US/CN 50/60HZ
900615MHR934	615 MHR IE3 ASIA 50/60HZ	9006225HR940	622 5HR IE3 EU/US/CN 50/60HZ
900615MHR940	615 MHR IE3 EU/US/CN 50/60HZ	9006225HR934	622 5HR IE3 ASIA 50/60HZ
900615MVR934	615 MVR IE3 ASIA 50/60HZ	9006225VR940	622 5VR IE3 EU/US/CN 50/60HZ
900615MVR940	615 MVR IE3 EU/US/CN 50/60HZ	9006225VR934	622 5VR IE3 ASIA 50/60HZ
9006155HR940	615 5HR IE3 EU/US/CN 50/60HZ	900-622-MVR	622 VGF Bare Shaft
9006155HR934	615 5HR IE3 ASIA 50/60HZ	900-622-MHR	622 HGF Bare Shaft
9006155VR940	615 5VR IE3 EU/US/CN 50/60HZ	900622MV25EE	622 VGF 25hp 230-460 60Hz
9006155VR934	615 5VR IE3 ASIA 50/60HZ	9006225V25EE	622 PIB VGF 25hp 230-460 60Hz
900-615-MVR	615MVR VGF Bare Shaft	900622MH25EE	622 HGF 25hp 230-460V 60Hz
900-615-MHR	615MHR HGF Bare Shaft	9006225H25EE	622 PIB HGF 25hp 230-460V 60Hz
900615MV10EE	615 VGF 10hp EE 230-460V 60Hz	900622MHR934	622 MHR IE3 ASIA 50/60HZ
900615MV15EE	615 VGF 15hp EE 230-460V 60Hz	900622MHR940	622 MHR IE3 EU/US/CN 50/60HZ
9006155V15EE	615 PIB VGF 15hp EE 230-460V 60Hz	900622MVR934	622 MVR IE3 ASIA 50/60HZ
900615MH10EE	615 HGF 10hp EE 230-460V 60Hz	900622MVR940	622 MVR IE3 EU/US/CN 50/60HZ
900615MH15EE	615 HGF 15hp EE 230-460V 60Hz		
9006155H15EE	615 PIB HGF 15hp 230-460V 60Hz		

Note: for PFPE variants please contact Edwards

VGf - Vertical Gas Flow

HGF - Horizontal Gas Flow

EE - Energy Efficient Motor

## Applications:

- Automotive
- Chemical processing
- Heat treatment
- Leak detection
- Metallurgy
- PET processing
- Pharmaceuticals
- Thermal processing
- Transformer drying and cable fluid conditioning
- Vacuum coating
- Vacuum melting

# HV 8000 – mechanical booster pump

Edwards HV 8000 high vacuum direct drive mechanical booster pumps are available in horizontal or vertical flow options with nominal pumping speed displacement of 8640 m<sup>3</sup>h<sup>-1</sup> (5089 ft<sup>3</sup> min<sup>-1</sup>) at 60 Hz.

## Performance

Stable process for consistent output - suitable for continuous operation over wide pressure ranges on heavy duty large scale applications

## Reliability

No unplanned downtime - high performance water cooled mechanical shaft seal, large diameter shaft and large helical gears

## Adaptability

Easy integration and safe - optional water cooled exhaust gas after cooler, shaft seal safety purge, temperature monitoring and VFD available

## Flexibility

Configured to your needs - can be supplied with standard motor or without motor to allow a local motor to be fitted. Horizontal or vertical flow to suit application and system design



## Technical data

	Units	HV8000
Displacement 50 Hz	m <sup>3</sup> h <sup>-1</sup> /CFM	7200/4241
Displacement 60 Hz	m <sup>3</sup> h <sup>-1</sup> /CFM	8640/5089
Standard backing set speed requirements	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	2600/1530
Inlet Connection		10" class 150 ASME B16.5
Outlet Connection		10" class 150 ASME B16.5
Inlet / outlet cooling water connection		Rp 1/2 ISO 7-1 (1/2 BSP)
End cover purge gas inlet		Rp 3/8 ISO 7-1 (3/8 BSP)
Pressure differential across pump 50 Hz	mbar/torr	190/143
Pressure differential across pump 60 Hz	mbar/torr	120/90
Max cooling water supply pressure	bar/psi	4.0/58
Max cooling water supply temp	°C/F	35/95
Cooling water flow rate	lmin <sup>-1</sup> /US gal min <sup>-1</sup>	15/3.96
Noise level	dB(A)	82
Weight (without motor)	kg/lb	580/1279
Weight (with standard motor) kg	kg/lb	720/1587
Motor Protection rating		
Motor Power 50Hz Hydrocarbon	kW/hp	15/20
Motor Power 60Hz Hydrocarbon	kW/hp	18.5/25
Oil capacity (vertical gas flow)	litre/gal	8.3/2.18
Water cooling req	lmin <sup>-1</sup>	N/A air cooled
Recommended oil		Mobil SHC 629
Dimensions Horizontal flow L x W x H	mm	1737 x 530 x 820
Dimensions Vertical flow L x W x H	mm	1737 x 670 x 638

## Ordering information

Part Number	Product Description
A31103934	HV8K VF IE3 ASIA 50/60HZ 18.5KW
A31103940	HV8K VF IE3 EU/USA 50/60HZ 18.5KW
A31104934	HV8K HF IE3 ASIA 50/60HZ 18.5KW
A31104940	HV8K HF IE3 EU/USA 50/60HZ 18.5KW

ATEX motor versions available on request

# Pump combinations

Edwards' comprehensive range of pumps forms the basis for the manufacture of factory tested combination systems, with displacements from 310 m<sup>3</sup>h<sup>-1</sup> to 30000 m<sup>3</sup>h<sup>-1</sup>/180 ft<sup>3</sup>min<sup>-1</sup> to 17700 ft<sup>3</sup>min<sup>-1</sup>. With a wide and robust range of accessories to choose from, the pumping system can be optimised for your application. Edwards' systemisation service offers fully factory tested combinations with appropriate accessories.

EH pump can be combined with Microvac pump with an ASA inlet adapter. PFPE Prepared versions of EH / EM combinations are available on request. Fomblin® fluid to be ordered separately. Microvac rotary piston pump and booster combinations available with horizontal or vertical gas flow boosters. Microvac 1700 booster/rotary piston pump packages also available. Contact Edwards to define pumping combination requirements and selection of suitable accessories.

Allowed combinations of Edwards boosters & Primary pumps	212J	412J	E2M40	E2M80	E2M175	E2M275	ES100	ES200	ES300	ES630
No Booster	✓	✓								
EH250	✓		✓	✓			✓			
EH500	✓	✓	✓	✓	✓	✓	✓	✓	✓	
EH1200	✓	✓		✓	✓	✓		✓	✓	✓
EH2600		✓			✓	✓			✓	✓
EH4200		✓				✓			✓	✓
607	✓	✓								
615	✓	✓								
61B	✓	✓								
622		✓								

## Pump accessories

### Inlet dust filters

Available with pleated paper/polyester or metal mesh element to trap out particulates before they reach the pump. Suitable for trapping out particulates down to 5 microns

### Inlet catchpots

Designed to minimise the entry of condensable vapours into the pump

### Inlet chemical trap

Supplied with activated charcoal to provide protection against aggressive vapours and high molecular weight vapours. Activated alumina may also be used to create a large foreline trap to control any back-streaming at low inlet pressures

### Outlet oil mist filters

Removes and collects oil mist from the exhaust line. ES pumps have integral oil mist filters

### External oil filters

Remove particulate or acidic contaminants from the oil in the pump

### Gas ballast valves

Auto control of gas ballast

### Sensors and other

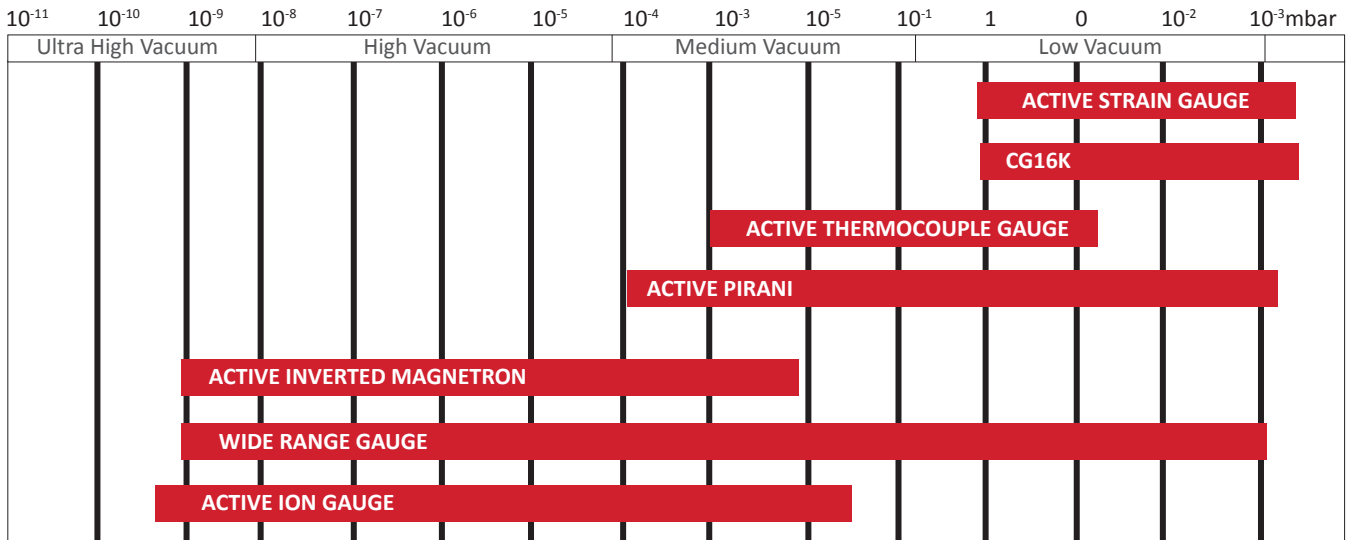
Temperature sensor, oil level monitors, water miser, vibration isolators

### Measuring instruments

Range of instruments to measure vacuum over the range 2000 to 7 x 10<sup>-10</sup> mbar

# Measurement and control

Edwards offers a wide choice of vacuum measurement and control products – from dial gauges to microprocessor based gauge controllers. Within each product range, there is a family of models designed to meet the widest user specification.



# Valves for vacuum systems

Edwards applies the same energy and commitment to its valves. The result is an extensive range of valves, with a choice of actuation methods, materials and size. Materials of construction have been uncompromisingly selected for performance in high vacuum.

# Fittings and flanges

Edwards vacuum fittings are designed to be leak-tight in vacuum applications. However, they are not intended to provide full structural support. When designing vacuum systems, it is essential that consideration be given to the static and dynamic loads imposed on each connection. If necessary, additional mechanical support should be provided.



Fittings and Flanges



Valves



Measurement and control instruments

# Service and Support

Our customers' business success depends on maximum equipment uptime and minimum total cost of ownership, and we constantly strive to support those two key conditions. As a global leader in vacuum technology and processes, we understand how vacuum pumps and systems perform in real life. Our wide portfolio of services is designed with our customers in mind: to help keep your process equipment running in the most economically and environmentally efficient way.



## Services include:

- Overhaul and repair using genuine Edwards OEM parts
- OEM spares and kits available for immediate despatch
- Remanufactured products available for cost-effective expansion and backups
- Global network of expert field service engineers available to respond quickly to unexpected equipment failures
- Extended warranty, to help manage the cost of the unexpected

Our Expert Advantage Service Plans provide our customers with the ongoing support necessary to continuously improve your operational efficiency and meet your business objectives. As service offerings may vary slightly from product to product, please contact your Edwards representative to discuss your specific requirements.





## GLOBAL CONTACTS

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