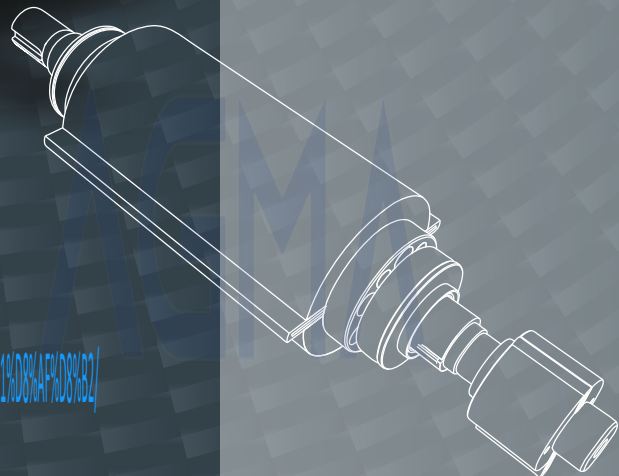
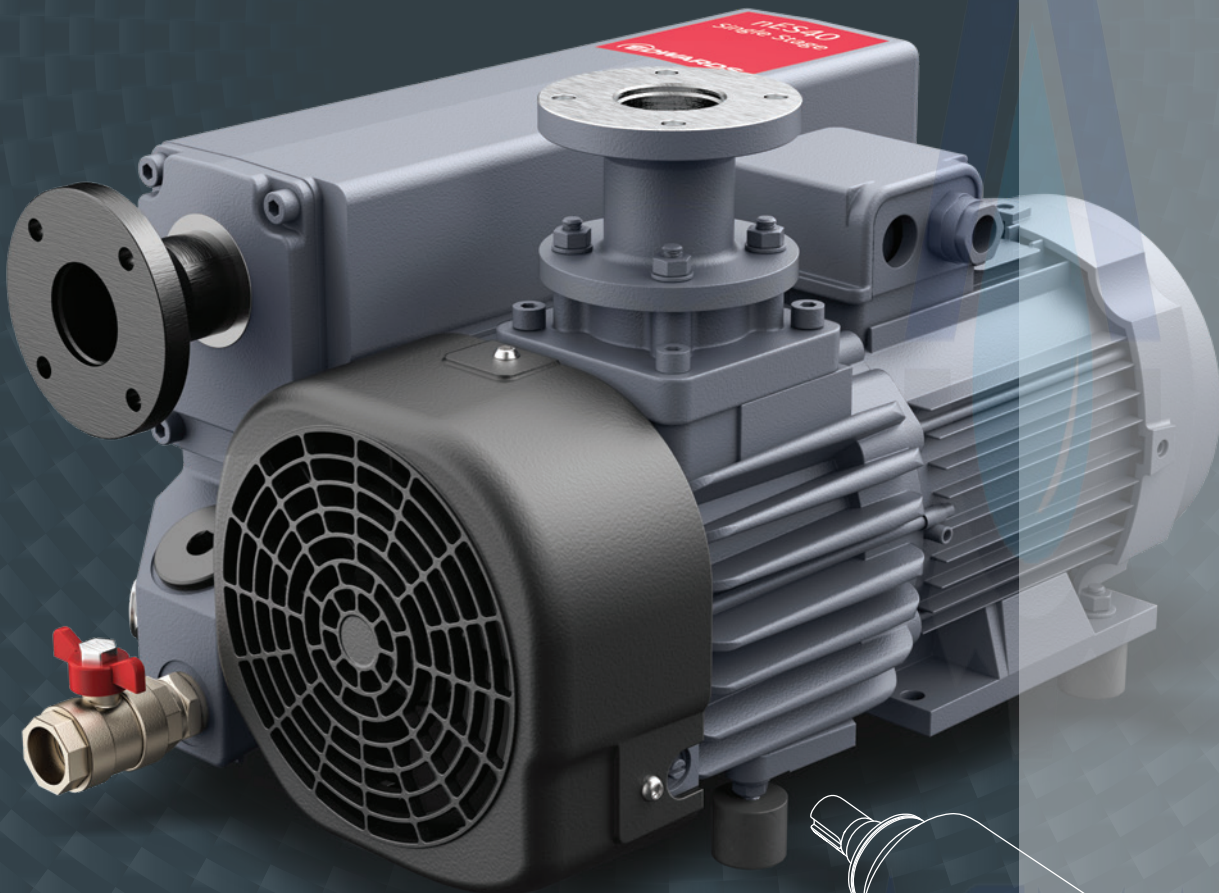


nES SERIES SINGLE STAGE ROTARY VANE PUMPS



EDWARDS THE PARTNER OF CHOICE

Edwards is a world leader in the design, technology and manufacture of vacuum pumps for industrial applications with over 100 years' history.

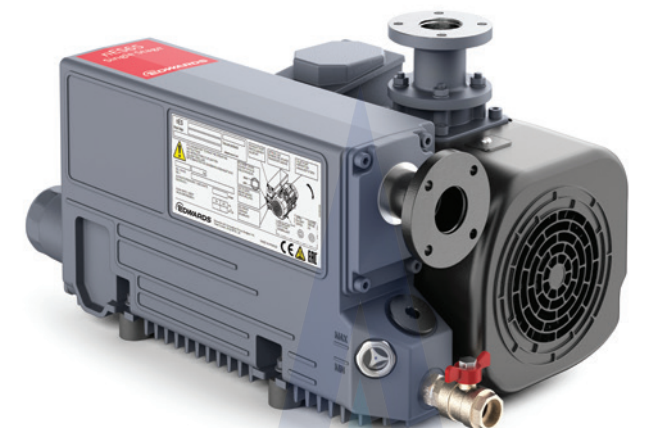
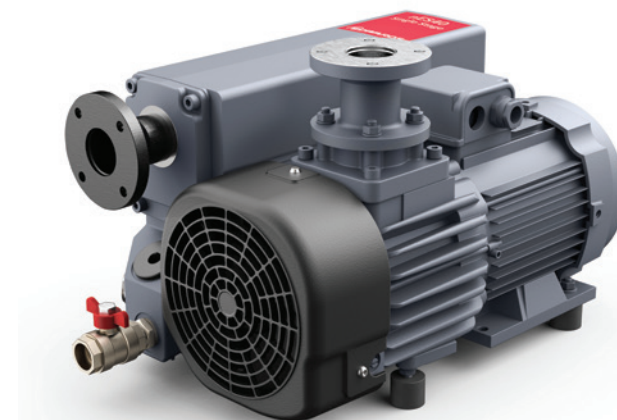
We believe in delivering results that bring value to our customers by using our breadth of industry experience to identify and apply solutions. Using the most innovative and up-to date modelling techniques, we can optimise the pumping configuration for customers to provide a system design giving the maximum performance in the most reliable and cost-effective way.

nES SERIES

NEXT-GENERATION SINGLE STAGE ROTARY VANE PUMPS

The Edwards nES single stage series represents the next advancement in oil-sealed rotary vane vacuum pumps for use in a wide range of industries and applications.

Offering high reliability, low life cycle cost and proven performance, the nES series provides an ideal solution to suit a broad range of requirements.



FEATURES

PROVEN PERFORMANCE

The Edwards nES series delivers consistent pumping performance with excellent vacuum stability, thanks to optimised oil distribution. A high pumping speed at low pressures provides an ideal solution for a wide range of applications.

LOW LIFE CYCLE COST

Efficient cooled motors, low pump temperature and minimum maintenance provide an excellent life cycle cost.



HIGH RELIABILITY

The pump mechanism provides high robustness and reliability, ensuring maximum productivity. Engineered with high-quality components and an effective oil return system, the nES series is designed to maximise process efficiency.



LOWER EMISSIONS

The nES series is compact in design and clean in operation with highly efficient integrated mist filters, optimised oil retention, low noise and vibration level to minimise environmental impact.



nES300



nES750



nES220

nES PUMP TECHNOLOGY

PUMP MECHANISM

The pump mechanism is designed to provide optimum pumping performance without fluctuation in vacuum levels.

EFFICIENT COOLING

The efficient cooling system enables low operating temperatures and increased oil life, improving reliability.

OIL RETURN SYSTEM

The optimised return and separation system supports a stable pumping performance and minimises oil loss. Use of the ULTRAGRADE Performance 70 oil enables optimum pumping performance, while the use of the ULTRAGRADE Endurance Extend 110 oil provides extended service intervals.

GAS BALLAST

The gas ballast mechanism facilitates effective pumping and management of condensable vapours.

DRIVE TECHNOLOGY

The motors are highly efficient, meeting latest efficiency standards and UL and European standards.

INSTALLATION FLEXIBILITY

The pumps are compatible with both ISO and G connections, providing flexibility in installation.

ADVANTAGES



High pumping speed at low pressure



Stable vacuum performance with no pressure fluctuation



Low noise and vibration



Efficient oil distribution system



High reliability through proven technology



Compact design with integrated motor



Simplified maintenance - ensuring high productivity

TECHNICAL DATA

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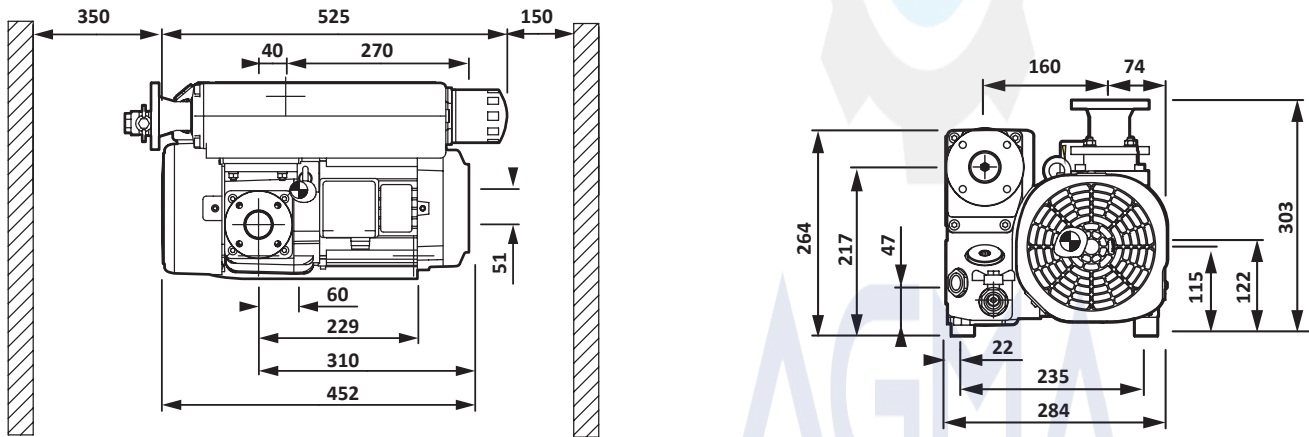
	Units	nES40	nES65	nES100	nES220
Maximum displacement (50 Hz)	m³h⁻¹/cfm	44.0/25.9	59.0/34.8	98.0/57.4	200/117
Maximum displacement (60 Hz)	m³h⁻¹/cfm	53.0/31.2	71.0/41.8	117/68.9	240/141
Pumping speed (50 Hz)	m³h⁻¹/cfm	38.5/22.7	54.0/31.8	87.5/51.5	179/105
Pumping speed (60 Hz)	m³h⁻¹/cfm	47.0/27.7	64.0/37.7	105/61.8	214/125
Ultimate vacuum without gas ballast	mbar/torr	0.5/0.4	0.5/0.4	0.5/0.4	0.08/0.06
Ultimate vacuum with gas ballast	mbar/torr	1.5/1.1	1.5/1.1	1.5/1.1	0.7/0.5
Inlet connection	ISO/G	40 ISO-F/G1 ¼	40 ISO-F/G1 ¼	40 ISO-F/G1 ¼	63 ISO-F/G2
Outlet connection	ISO/G	40 ISO-F/G1 ¼	40 ISO-F/G1 ¼	40 ISO-F/G1 ¼	63 ISO-F/G2
Max. permitted outlet pressure	bar (abs)	1.15	1.15	1.15	1.15
Max. water vapour pumping rate (50 Hz)	kg h⁻¹/lb h⁻¹	0.76/1.67	1.0/2.2	1.60/3.5	1.3/2.8
Max. water vapour pumping rate (60 Hz)	kg h⁻¹/lb h⁻¹	0.90/2.0	1.25/2.75	1.70/3.75	1.8/4.0
Dimensions (LxWxH) approximate	mm	540x284x303	586x320x314	721x400x319	984x606x407
Weight approximate	kg/lb	41/86	58/122	104/230	180/397
Motor protection rating		IP55	IP55	IP55	IP55
Motor rated power (50 Hz)	kW	1.3	1.8	3	4.4
Motor rated power (60 Hz)	kW/hp	1.3/2	1.8/3	3.6/5	5.5/7.5
Cooling		air	air	air	air
Noise level (50 Hz) air/water	dB(A)	58	60	61	69
Noise level (60 Hz) air/water	dB(A)	60	64	64	73
Oil refill capacity	litre	1	2	2	7.5
Recommended oil	Edwards ULTRAGRADE Performance 70 or ULTRAGRADE Endurance Extend 110				

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DIMENSIONS

nES40



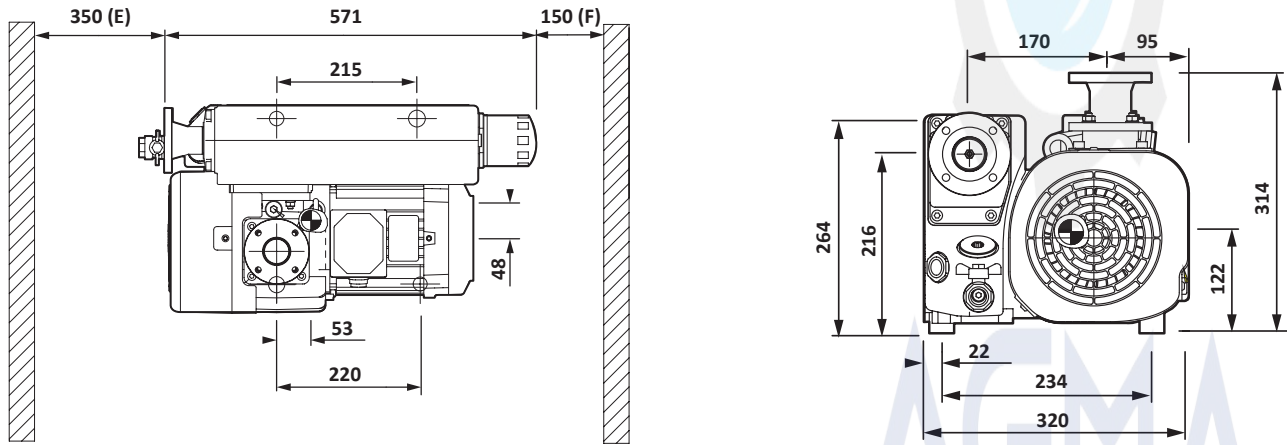
	Units	nES300	nES300S	nES630	nES750
Maximum displacement (50 Hz)	m³h⁻¹/cfm	280/165	330/194	700/412	840/494
Maximum displacement (60 Hz)	m³h⁻¹/cfm	340/200	385/227	840/494	-
Pumping speed (50 Hz)	m³h⁻¹/cfm	240/141	284/167	640/377	755/444
Pumping speed (60 Hz)	m³h⁻¹/cfm	290/171	330/194	755/444	-
Ultimate vacuum without gas ballast	mbar/torr	0.08/0.06	0.08/0.06	0.08/0.06	0.08/0.06
Ultimate vacuum with gas ballast	mbar/torr	0.7/0.5	0.7/0.5	0.7/0.5	0.7/0.5
Inlet connection	ISO/G	63 ISO-F/G2	63 ISO-F/G2	100 ISO-K/100 PN10	100 ISO-K/100 PN10
Outlet connection	ISO/G	63 ISO-F/G2	63 ISO-F/G2	100 ISO-K/100 PN10	100 ISO-K/100 PN10
Max. permitted outlet pressure	bar (abs)	1.15	1.15	1.15	1.15
Max. water vapour pumping rate (50 Hz)	kg h⁻¹/lb h⁻¹	1.3/2.8	1.3/2.8	17/37.5	24/53
Max. water vapour pumping rate (60 Hz)	kg h⁻¹/lb h⁻¹	1.8/4.0	1.8/4.0	24/53	-
Dimensions (LxWxH) approximate	mm	1130x555x450	1117x565x450	1563x909x740	1563x909x740
Weight approximate	kg/lb	244/539	244/539	760/1678	760/1678
Motor protection rating		IP55	IP55	IP55	IP55
Motor rated power (50 Hz)	kW	5.5	6	18.5	18.5
Motor rated power (60 Hz)	kW/hp	6.6/10	7.2/10	18.5/25	-
Cooling		air	air	air/water	air/water
Cooling water flow (if applicable)	L/h	-	-	750	750
Noise level (50 Hz) air/water	dB(A)	72	72	72/72	75/72
Noise level (60 Hz) air/water	dB(A)	76	76	75/72	-
Oil refill capacity	litre	8.5-11.5	8.5-11.5	20-23	20-23
Recommended oil	Edwards ULTRAGRADE Performance 70 or ULTRAGRADE Endurance Extend 110				

For water cooled versions: inlet/outlet connection M22 x 150 female, water supply pressure 2/8 bar, max water temperature 30°C

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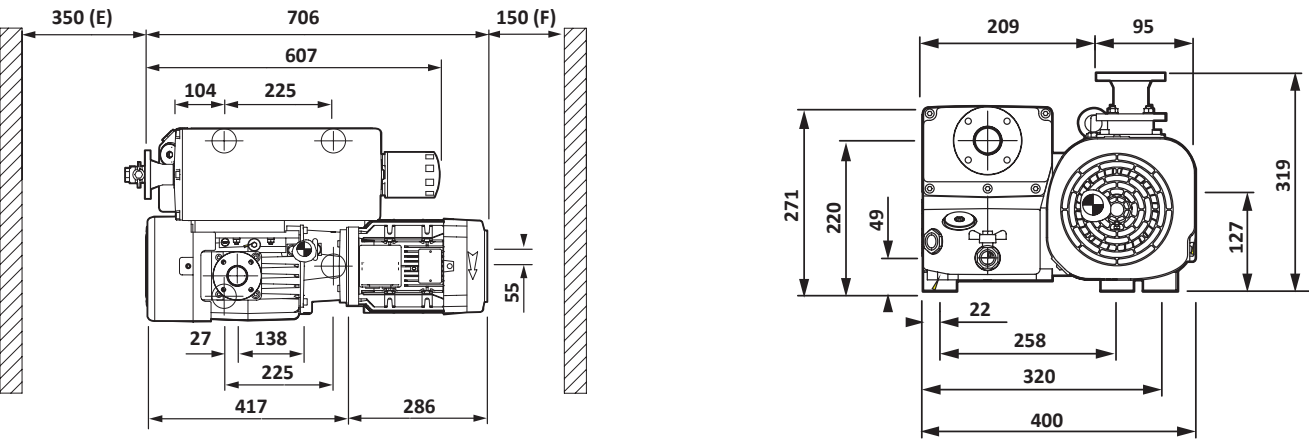
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nES65

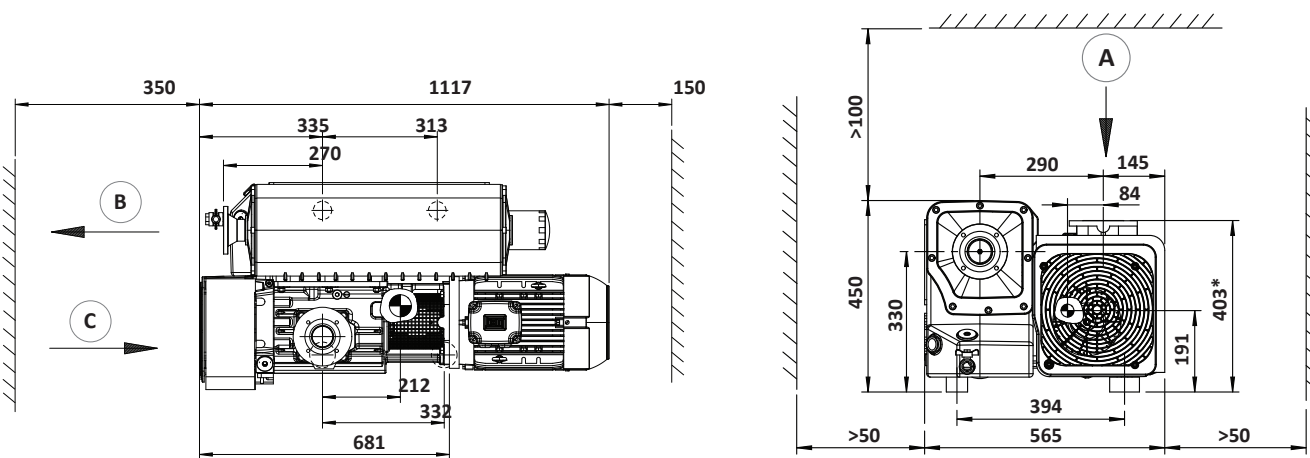


DIMENSIONS

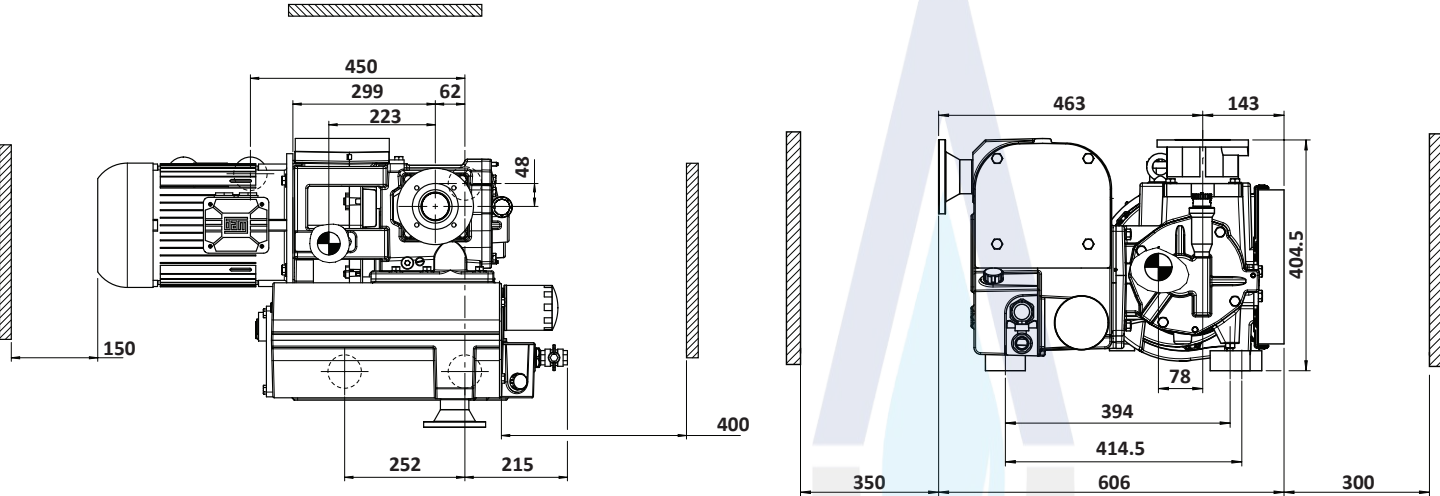
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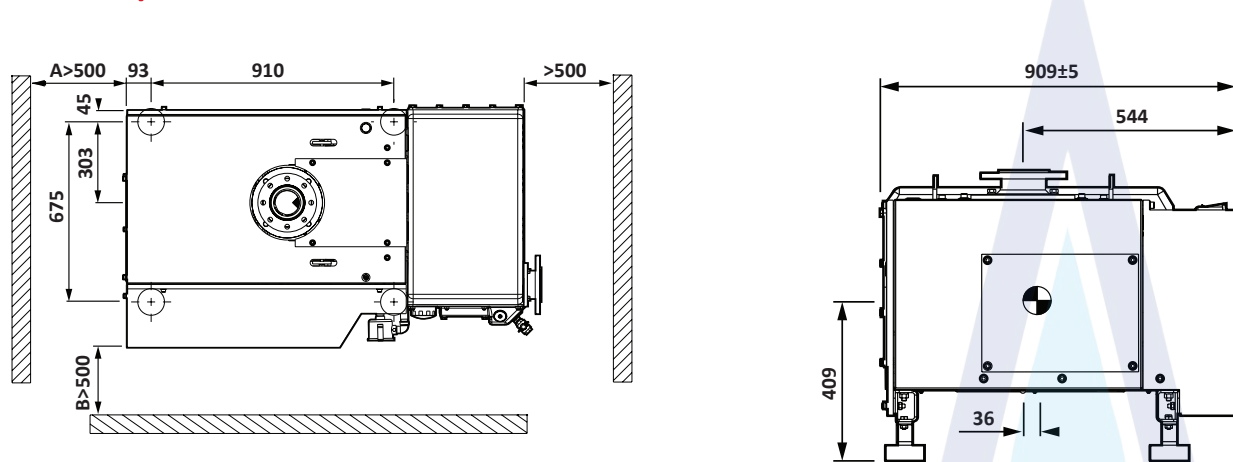
nES300S



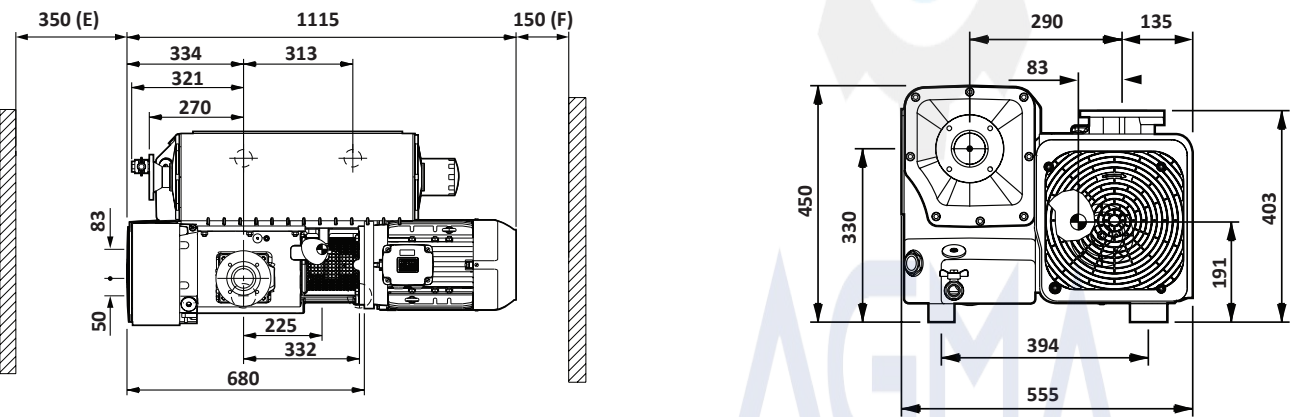
nES220



nES630/nES750

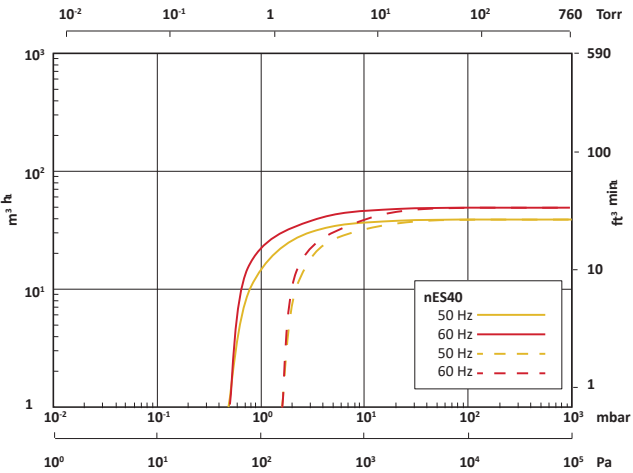


nES300

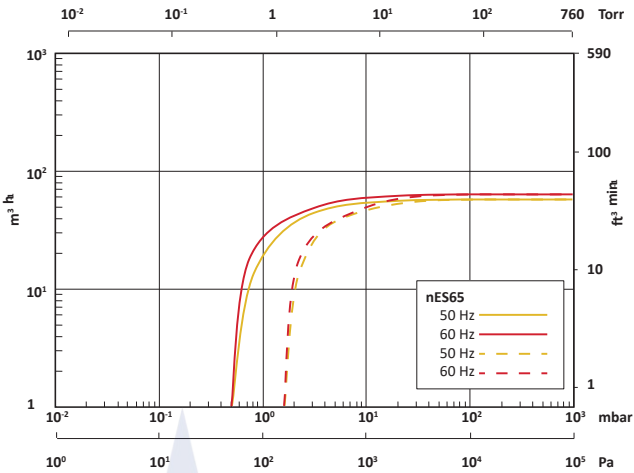


PERFORMANCE CURVES

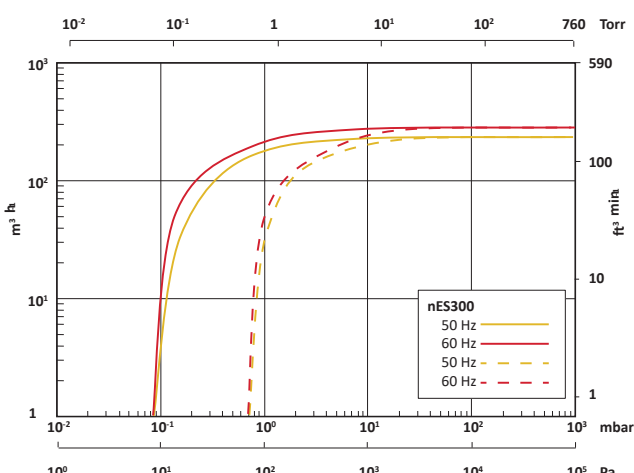
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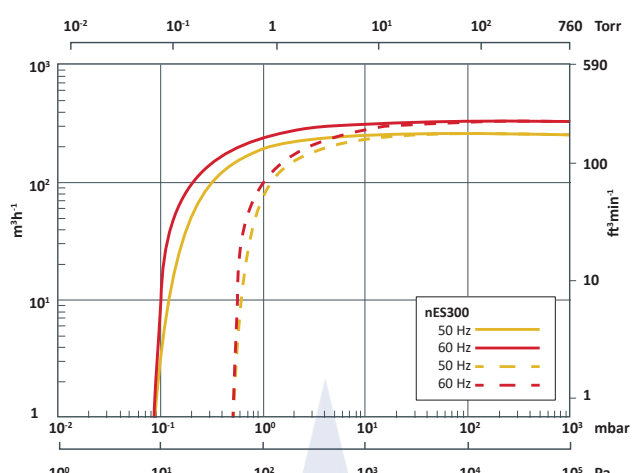
nES65



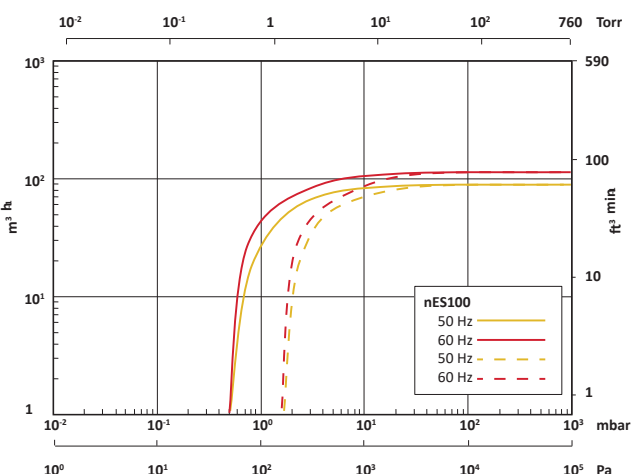
nES300



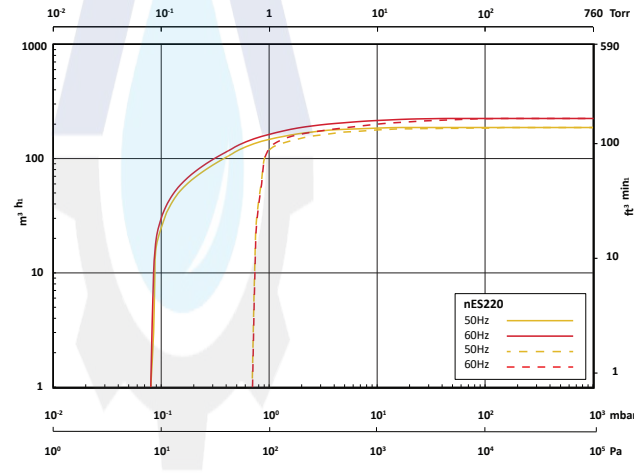
nES300S



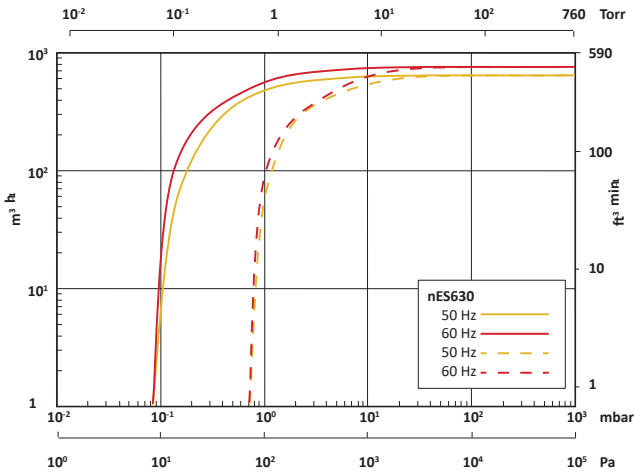
nES100



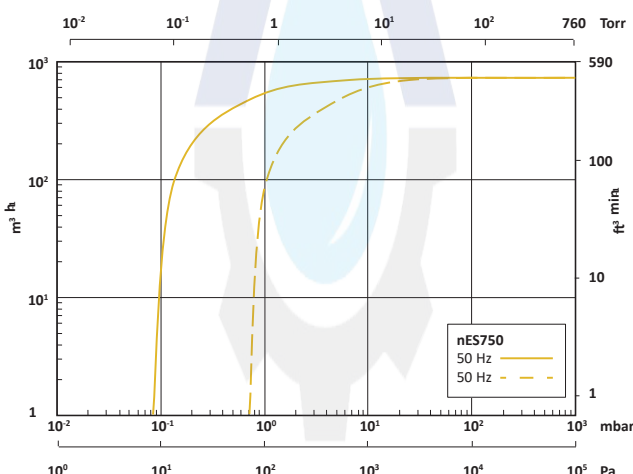
nES220



nES630



nES750



Without gas ballast With gas ballast

APPLICATIONS

The nES series single stage pumps offer an ideal combination of vacuum performance and stability with convenience and investment affordability in a wide range of industrial applications.

Coating

- Load locks of glass coater and large in-line coaters
- Web and roll coating
- Optical, ophthalmic and display coating
- Surface coating like plasma deposition and reflective or decorative

Heat treatment

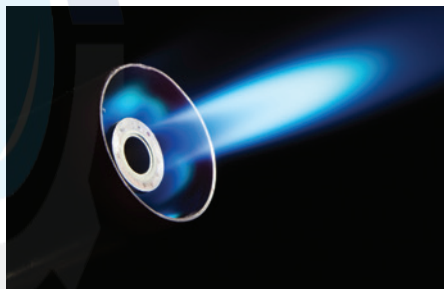
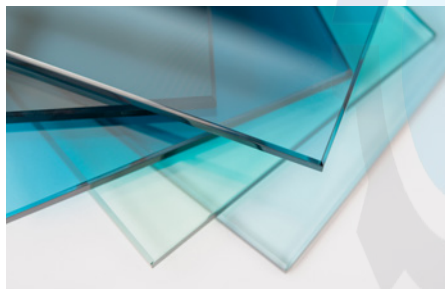
- Tempering
- Quenching
- Annealing
- Vacuum brazing

Drying

- Transformer drying
- Automotive drying and filling systems
- Refrigeration and air conditioning
- Battery and capacitor drying

General industrial

- E-beam and plasma welding
- Plasma surface treatments
- Oil/resin degassing
- Biogas treatment
- Rubber, silicone and composite
- Leak detection
- Vacuum forming
- Industrial gas production
- Vacuum insulated panels and glass



nES PUMP AND BOOSTER COMBINATIONS

Edwards offers a range of nES rotary vane pumps and mechanical boosters, complete with combination kits to mount the mechanical booster. The fitting of a mechanical booster to an nES rotary vane pump significantly increases the pumping speed and vacuum performance of your system as well as the ultimate vacuum attainable.

Edwards can assist you in the selection of the combination most suited to your requirement.

EH range

The EH range of mechanical boosters (250–4200 m³h⁻¹, 150–2500 cfm), with its unique hydrokinetic drive allowing continuous operation from atmospheric pressure to ultimate vacuum, cuts pump downtimes by up to 50%.

Systemisation

Our comprehensive range of nES pumps and EH mechanical boosters, complete with combination kits, allows the user to specify a complete system. Specifying a combination is simply a process of selecting the nES pump and the required mechanical booster that will enable us to build a complete systemised unit ready to use.

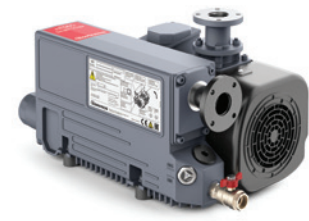
Depending on the type of nES and booster pump combination, the assembled unit will either be a Frame Mount or a Direct Mount unit. Alternatively, combination kits are available to allow the nES pump and EH mechanical booster to be assembled at the customer's site.

The nES series is also available without motor (40–300 m³/h). Bare shaft pumps are provided with IEC or NEMA motor flange. Please contact Edwards for additional information.

nES40



nES65



nES100



nES220



nES300/nES300S



nES630



nES750



ORDERING INFORMATION

Model	Motor rating	Voltage	Cooling	Part number
nES40	Wide range	220-230 V & 380-400 V +-10%; 50 Hz 220-230 V & 380-400 V & 440-460 V +-10%; 60 Hz	Air	A35104940
	Asia	220-230 V & 380-400 V +-10%; 50 Hz 220-230 V & 380-400 V & 440-460 V +-10%; 60 Hz	Air	A35124940
	Canada	575 V +-10%; 60 Hz	Air	A35104957
nES65	Wide range	220-230 V & 380-400 V +-10%; 50 Hz 220-230 V & 380-400 V & 440-460 V +-10%; 60 Hz	Air	A35304940
	Asia	220-230 V & 380-400 V +-10%; 50 Hz 220-230 V & 380-400 V & 440-460 V +-10%; 60 Hz	Air	A35324940
	Canada	575 V +-10%; 60 Hz	Air	A35304957
nES100	Wide range	220-240 V & 380-415 V +-10%; 50 Hz 220-230 V & 380-400 V & 460 V +-10%; 60 Hz	Air	A35404940
	Asia	220-240 V & 380-415 V +-10%; 50 Hz 220-230 V & 380-400 V & 460 V +-10%; 60 Hz	Air	A35424940
	Canada	575 V +-10%; 60 Hz	Air	A35402957
nES220	Wide range	200-240 V & 380-415 V +-10%; 50 Hz 200-230 V & 380-400 V & 440-460 V +-10%; 60 Hz	Air	A35554950
	Asia	200-240 V & 380-415 V +-10%; 50 Hz 200-230 V & 380-400 V & 440-460 V +-10%; 60 Hz	Air	A35574950
nES300	Wide range	200-240 V & 380-415 V +-10%; 50 Hz 200-230 V & 380-400 V & 460 V +-10%; 60 Hz	Air	A35604950
	Asia	200-240 V & 380-415 V +-10%; 50 Hz 200-230 V & 380-400 V & 460 V +-10%; 60 Hz	Air	A35624950
nES300S	Wide range	200-240 V & 380-415 V +-10%; 50 Hz 200-230 V & 380-400 V & 460 V +-10%; 60 Hz	Air	A35654950
	Asia	200-240 V & 380-415 V +-10%; 50 Hz 200-230 V & 380-400 V & 460 V +-10%; 60 Hz	Air	A35674950
nES630	Wide range	200-240 V & 380-415 V +-10%; 50 Hz 200-230 V & 380-400 V & 460 V +-10%; 60 Hz	Air	A35904950
			Water	A35905950
	Asia	200-240 V & 380-415 V +-10%; 50 Hz 200-230 V & 380-400 V & 460 V +-10%; 60 Hz	Air	A35924950
			Water	A35925950
	Canada	575 V +-10%; 60 Hz	Air	A35904937
nES750	Wide range	200-240 V & 380-415 V +-10%; 50 Hz	Air	A36904954
			Water	A36905954
	Asia	200-240 V & 380-415 V +-10%; 50 Hz	Air	A36924954
			Water	A36925954

SWITCHES, SENSORS AND GAUGES

	Temperature switch	Temperature sensor (PT100)	Oil level switch	Exhaust filter manometer
nES40/65	A35104200	A35900380	A35104205	A35104220
nES100	A35104200	A35900380	A35104205	A35104220
nES220	A35104200	A35900380	A35104205 + GK6542106*	A35104220
nES300/300S	A35104200	A35900380	A35104205	A35104220
nES630/750	A35104204	A35900380	A35104209	A35104220

*End-plate with accessory fitting holes and plugs. Only if required.

nES-EH FITTING KITS

	EH500 (ISO63)	EH1200 (ISO100)	EH2600 (ISO100)
nES100 (ISO40)	A35902100*	-	-
nES220 (ISO63)	A35104101	A35902103	-
nES300 (ISO63)	A35104101	A35104104	-
nES630/750 (ISO100)	-	A35104108	A35104108

*Includes nES100 base-frame

SERVICE AND SUPPORT

Keeping an nES pump working at the top level is paramount, and Edwards offers a **wide range of maintenance service plans**, tailored to your customer’s needs. From **Field Service intervention** to **Managed Maintenance contracts**, Edwards will take care of the vacuum pump to ensure **the best performance and longevity of the product** for an optimum total cost of ownership. Further than genuine spare parts, kits and oil, we can provide the following fast and effective service solutions for the nES series pumps:

- Edwards' highly trained Service Technicians can carry out **the commissioning, health check, routine maintenance, troubleshooting and repair of vacuum equipment**, anywhere in the world. We invest in the tools, training and inventory that enable our team of service engineers to deliver quality service in a safe and consistent manner, according to manufacturing recommendations, using genuine Edwards spare parts and oils.
- **Through Managed Maintenance contracts**, Edwards will take over the maintenance planning and responsibility for servicing your nES pumps. Regular scheduled maintenance can identify potential problems before they occur, and plans can be structured around different levels of care. Managed maintenance also enables cost management and will help you to avoid the risk and expense associated with unplanned downtime.
- **With the pump overhaul service** in Edwards’ Service Technology Centres located around the world, no matter the condition of your nES pump, our highly trained specialists can handle it, even if coming from harsh environments or critical applications.





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nES SINGLE STAGE EX SERIES ROTARY VANE PUMPS FOR EXPLOSIVE ENVIRONMENTS



TECHNICAL DATA

	Units	nES40ex	nES65ex	nES100ex	nES200ex	nES300ex	nES630ex
Maximum displacement (50 Hz)	m ³ h ⁻¹ / cfm	44.0 / 25.9	59.0 / 34.8	98.0 / 57.4	180 / 106	280 / 165	700 / 412
Maximum displacement (60 Hz)	m ³ h ⁻¹ / cfm	53.0 / 31.2	71.0 / 41.8	117 / 68.9	220 / 130	340 / 200	-
Pumping Speed (50 Hz)	m ³ h ⁻¹ / cfm	38.5 / 22.7	54.0 / 31.8	87.5 / 51.5	170 / 100	240 / 141	640 / 377
Pumping Speed (60 Hz)	m ³ h ⁻¹ / cfm	47.0 / 27.7	64.0 / 37.7	105 / 61.8	200 / 118	290 / 171	-
Ultimate vacuum (total pressure) no gas ballast	mbar / torr	0.5 / 0.4	0.5 / 0.4	0.5 / 0.4	0.15 / 0.13	0.15 / 0.13	0.15 / 0.13
Ultimate vacuum (total pressure) with gas ballast	mbar / torr	1.5 / 1.1	1.5 / 1.1	1.5 / 1.1	0.7 / 0.5	0.7 / 0.5	0.7 / 0.5
Inlet connection	ISO / ANSI	DN40 / ANSI 1"1/2	DN40 / ANSI 1"1/2	DN40 / ANSI 1"1/2	DN50 / ANSI 2"	DN50 / ANSI 2"	DN100 ISO-K / ANSI 4"
Outlet connection	ISO / ANSI	DN40 / ANSI 1"1/2	DN40 / ANSI 1"1/2	DN40 / ANSI 1"1/2	DN50 / ANSI 2"	DN50 / ANSI 2"	DN100 ISO-K / ANSI 4"
Max permitted outlet pressure	bar (abs)	1.15	1.15	1.15	1.15	1.15	1.15
Max water vapour pumping rate (50 Hz)	kg h ⁻¹ / lb h ⁻¹	0.76 / 0.80	1.0 / 1.1	1.60 / 1.69	3.4 / 3.6	1.3 / 1.4	17 / 18
Max water vapour pumping rate (60 Hz)	kg h ⁻¹ / lb h ⁻¹	0.90 / 0.95	1.25 / 1.32	1.70 / 1.80	5.4 / 5.7	1.8 / 1.9	-
Dimensions (L, W, H)	mm	686 / 356 / 303	748 / 386 / 349	810 / 434 / 319	1084 / 535 / 435	1143 / 573 / 450	1568 / 989 / 740
Weight	kg / lb	67 / 148	86 / 190	104 / 230	142 / 313	244 / 539	695 / 1534
Motor Protection rating		IP55	IP55	IP55	IP55	IP55	IP65
Motor Power (50 Hz)	kW / hp	1.5 / 2.0	2.2 / 3.0	3.0 / 5.0	5.5 / 8	7.5 / 10	18.5 / 26
Motor Power (60 Hz)	kW / hp	1.8 / 3.0	2.6 / 4.0	3.6 / 6.0	6.6 / 10	9 / 13	-
Noise level (50 Hz)	dB(A)	58	60	61	69	72	72
Noise level (60 Hz)	dB(A)	60	64	64	73	76	-
Oil Refill Capacity	litre	1	2	2	5 - 9	8.5–11.5	20 - 23
Recommended oil	Ultragrade Endurance Extend 110						

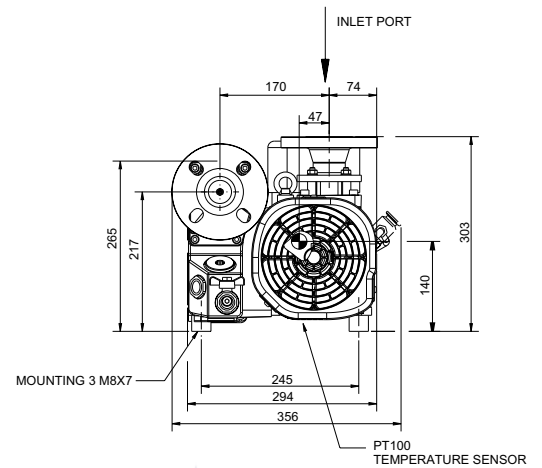
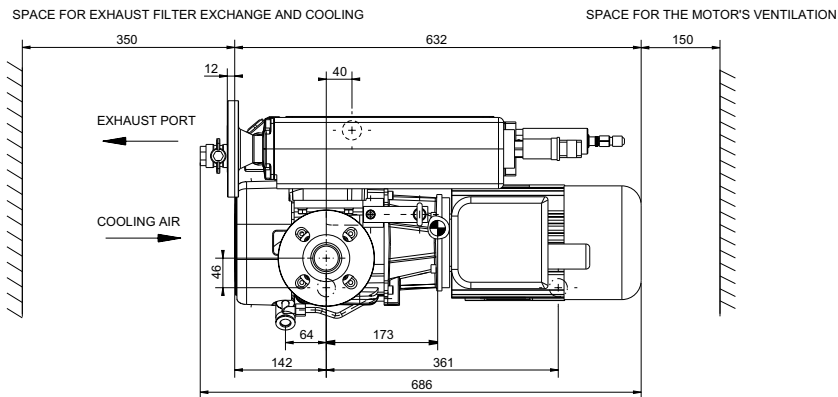
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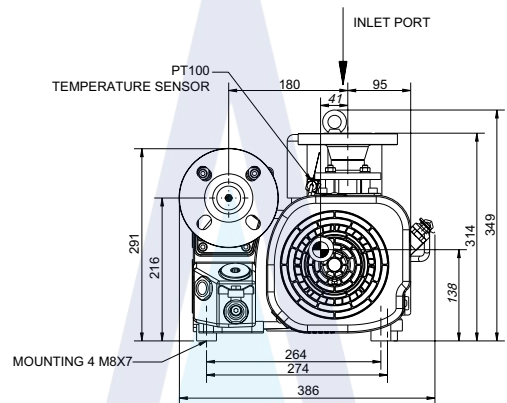
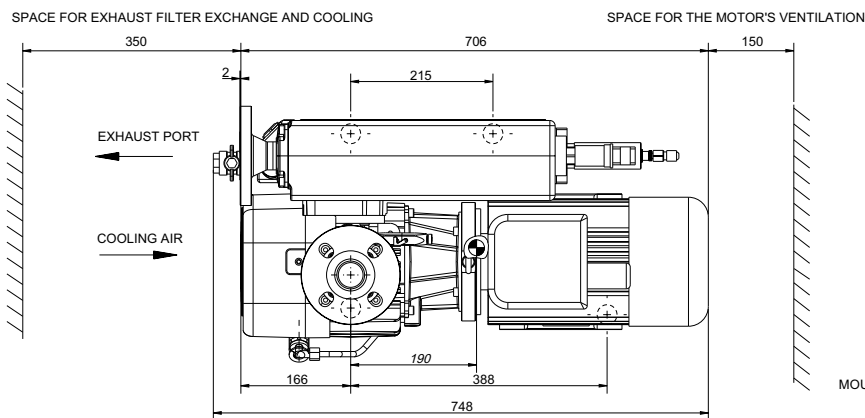


DRAWINGS AND DIMENSIONS

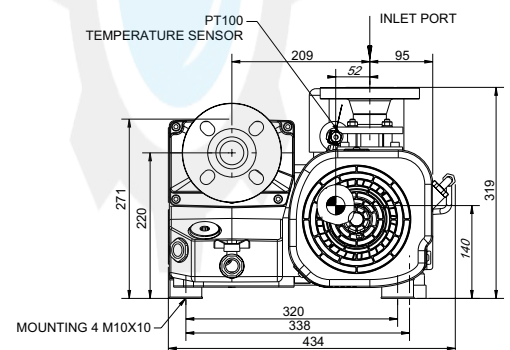
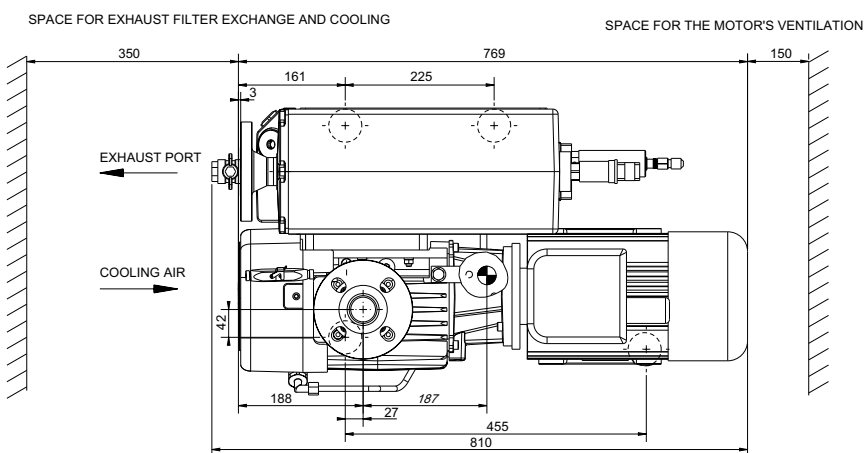
nES40ex



nES65ex

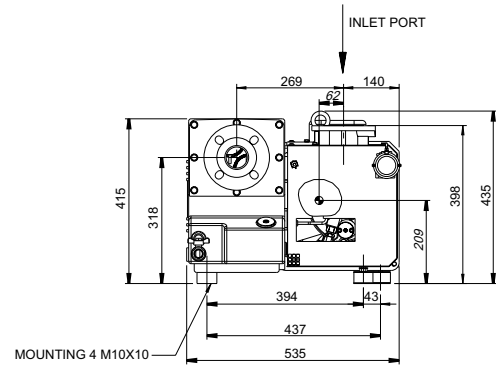
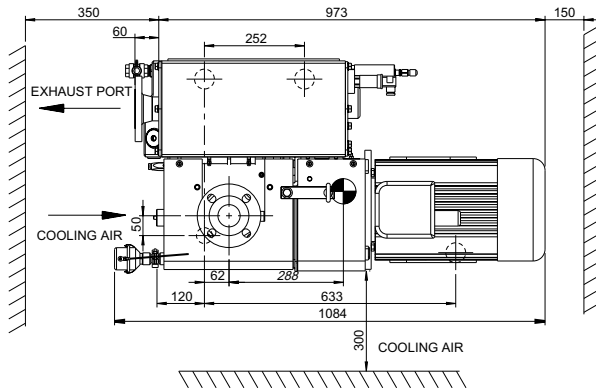


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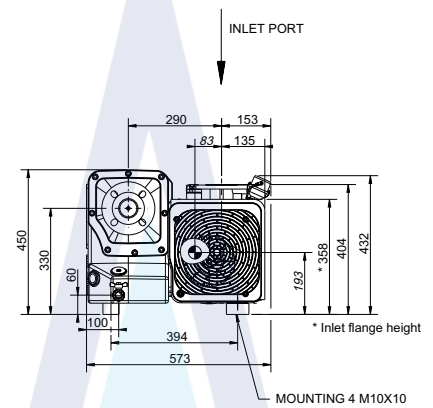
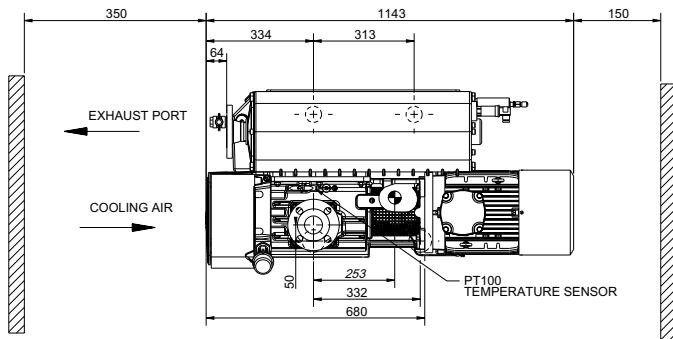
nES200ex

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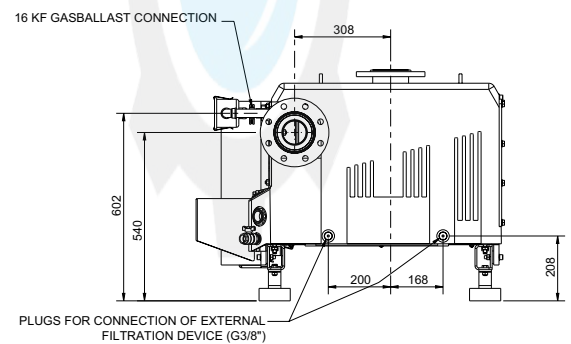
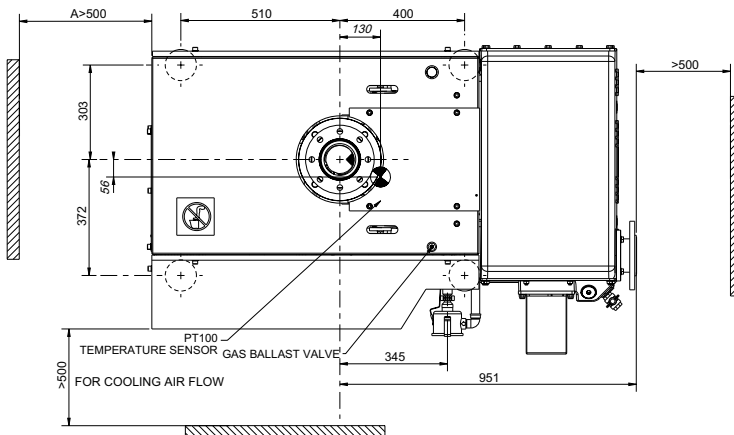
nES300ex

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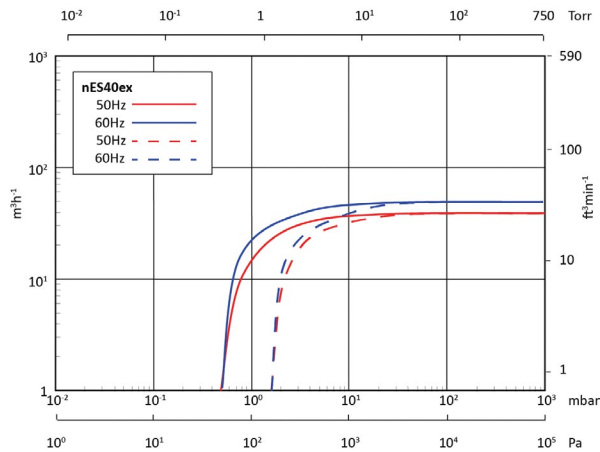
nES630ex

A: SPACE TO ACCESS TO ELECTRICAL CONNECTION

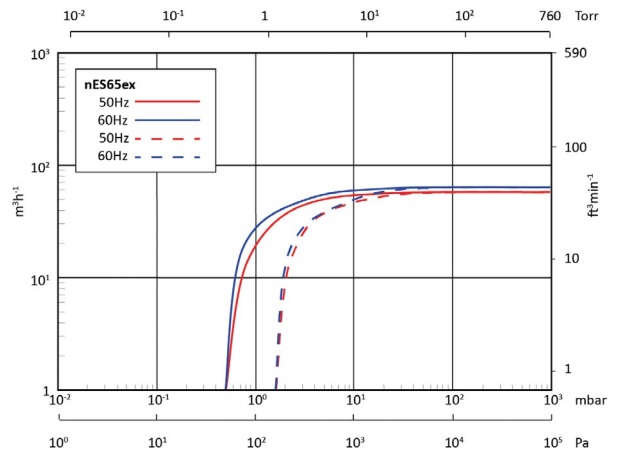


PERFORMANCE CURVES

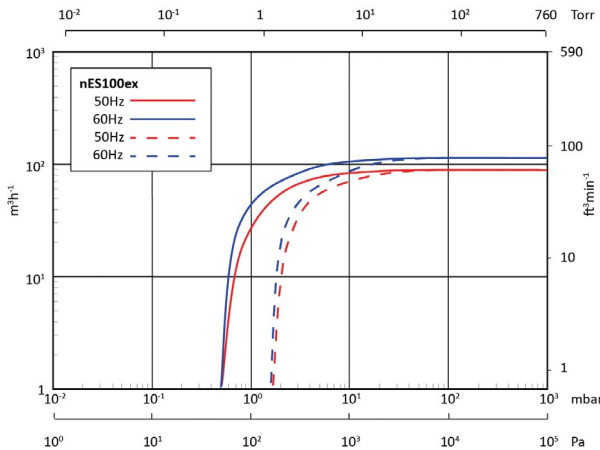
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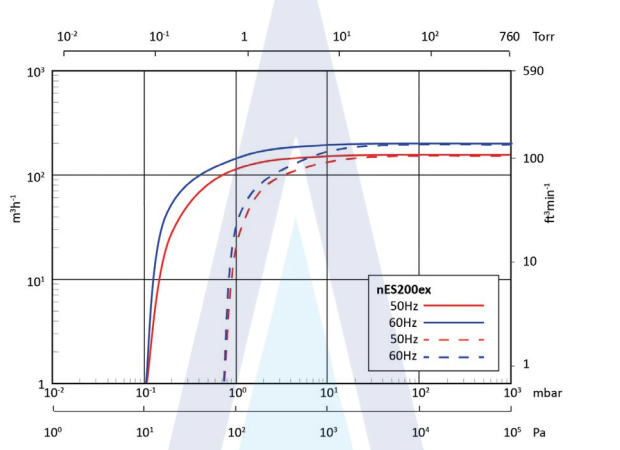
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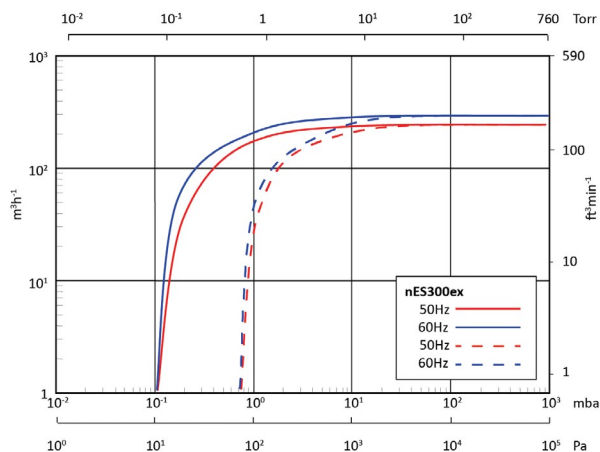
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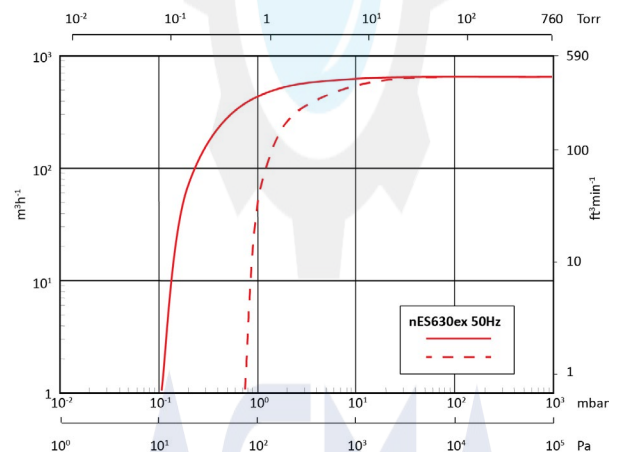
nES200ex



nES300ex



nES630ex



Without gas ballast

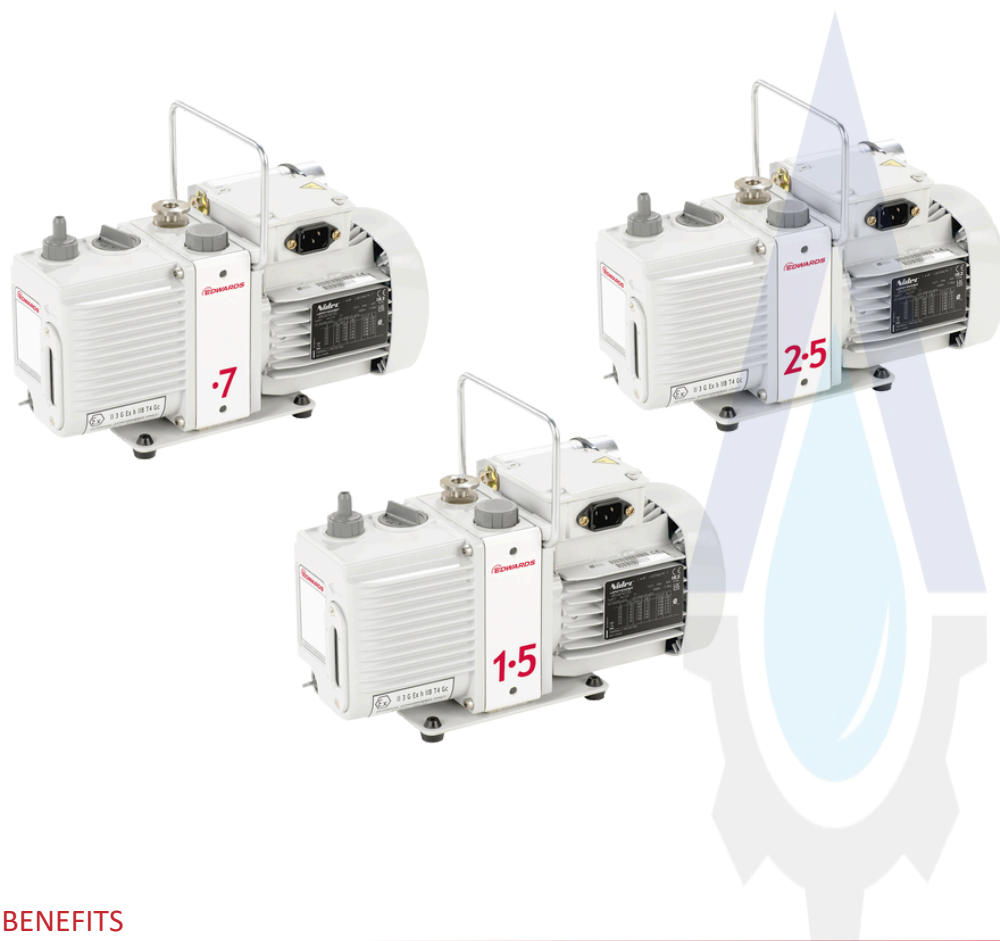


With gas ballast

E2M0.7, E2M1.5 & E2M2.5 OIL SEALED ROTARY VANE PUMP

edwardsvacuum.com

Edwards EM pumps are designed for reliable, long term operation and the E2M2.5 is no exception. The latest addition to the Edwards family of Small EM oil sealed rotary vane pumps offers increased pumping speed but in the same compact form extending the choice for system maker and end user. Based on our proven E2M1.5 range of pumps the E2M2.5 offers 2.5 m³h⁻¹ pumping speed; for those applications where space is tight but a little more speed would be beneficial. The pumps are suitable for a wide range of scientific and laboratory applications and backing small turbomolecular pumps.



FEATURES AND BENEFITS

- Simple installation and operation with no customer wiring
- Pumping speeds from 0.7 to 2.5 m³h⁻¹
- Alternate side inlet connection port so that overall installation height can be reduced to a minimum
- Internal ATEX classification of Ex II 3 G Exh IIB T4 Gc
- Approved to EN61010, CSA22.2 and UL61010
- Fully RoHS compliant

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09306644427 Afshar

TECHNICAL SPECIFICATIONS

Vacuum data	Hz	Unit	E2M0.7	E2M1.5	E2M2.5
Peak pumping speed	50	m ³ h ⁻¹	0.75	1.6	2.5
	60	cfm	0.5	1.2	1.8
Ultimate pressure w/o gas ballast	50	mbar	3.0x10 ⁻³	1.5x10 ⁻³	3.0x10 ⁻³
	60	Torr	2.3x10 ⁻³	1.1x10 ⁻³	2.3x10 ⁻³
Ultimate pressure with gas ballast	50	mbar	2.0x10 ⁻¹	2.5x10 ⁻²	
	60	Torr	1.5x10 ⁻¹	1.9x10 ⁻²	
Water vapour tolerance	n/a	mbar	15	15	15
	n/a	Torr	11	11	11
Water vapour capacity	n/a	g/h	8	16	16

Motor data	Hz	Unit	E2M0.7	E2M1.5	E2M2.5
Mechanical power	50	kW	0.09	0.16	0.16
	60	kW	0.09	0.16	0.16
Nominal rotation speed	50	rpm	1400	2800	2800
	60	rpm	1700	3400	3400
Power connector (1)	n/a	n/a	IEC EN60320 C13		

Physical data	Unit	E2M0.7	E2M1.5	E2M2.5
Weight	lb	22	22	22
	kg	10	10	10
Oil type (recommended)		Ultragrade performance 15		
Oil type (max.)	litre	0.32		
Oil type (min.)	litre	0.2		

(1) pumps listed with IEC connector only

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DIMENSIONS

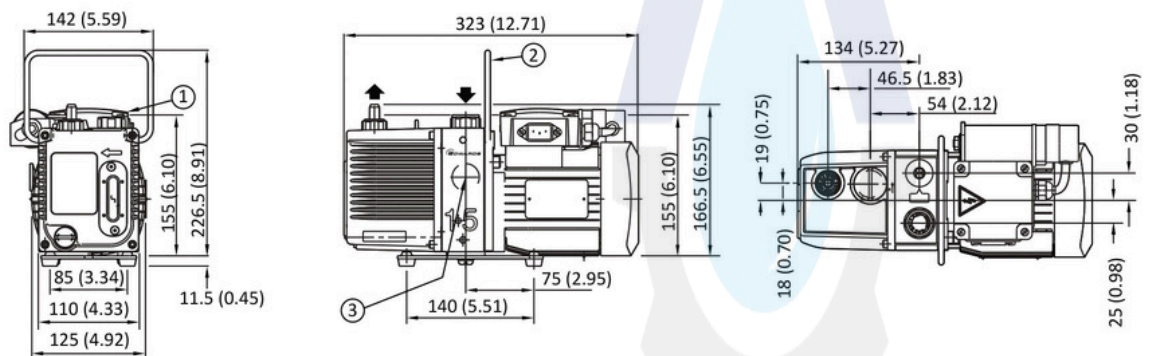
1 100-120 V motor version shown*

2 Handle (can be removed)

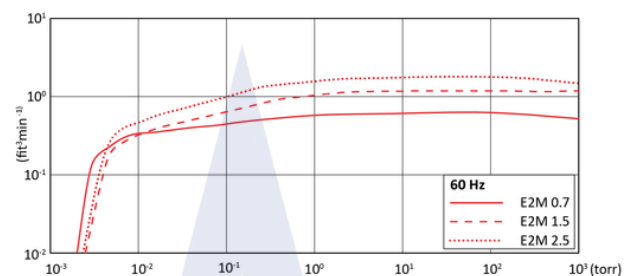
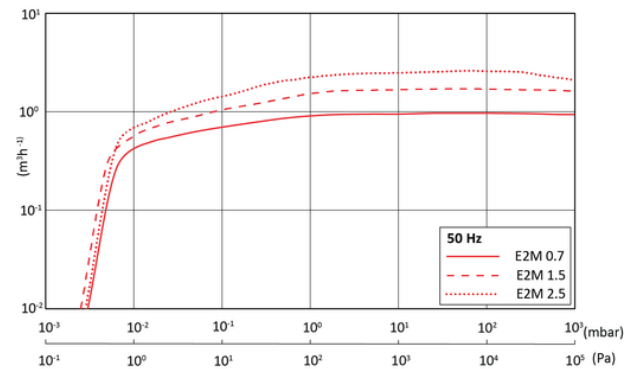
3 Alternative inlet port position

All measurements indicated are shown in mm (inches)

*High Volts also available with smaller capacitor



PERFORMANCE



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EDWARDS THE PARTNER OF CHOICE

Edwards is a world leader in the design, technology and manufacture of vacuum pumps for industrial applications with over 100 years' history.

We believe in delivering results that bring value to our customers by using our breadth of industry experience to identify and apply solutions. Using the most innovative and up-to date modelling techniques, we can optimise the pumping configuration for customers to provide a system design giving the maximum performance in the most reliable and cost-effective way.

E2M TWO-STAGE ROTARY VANE PUMPS

Industrial E2M vacuum pumps (40 to 275 m³/h) are rugged two-stage rotary vane pumps with a well-proven design. They feature advanced lubrication circuits to ensure smooth operation; and are available with optional heavy-duty accessories to suit a broad range of applications.

Specially designed for demanding applications, E2M pumps have demonstrated reliable long-term performance, are renowned for achieving low ultimate pressure and have high pumping speeds.

FEATURES & BENEFITS



PEACE OF MIND

- With robust design and 30 years of proven performance in high-end markets
- Excellent sealing of the vacuum stage to maintain low and stable ultimate pressure
- Low surface temperature for maximum uptime
- Adjustable gas ballast for fine-tuning your process with built-in dust filter and purge gas connection



SAFE OPERATION

- Forced oil lubrication to ensure safe operation of the pump mechanism at any inlet pressure
- Smart oil distributor designed to ensure delivery of constant oil flow to the vacuum stage during operation. Internal oil pressure control possible with a pressure gauge
- Designed to prevent solid contamination with built-in oil filter. Additional external oil filtration possible



CONTAMINATION-FREE PROCESS

- Efficient inlet isolation valve to prevent oil suck-back
- Designed to prevent oil back-streaming
- Optional exhaust mist filters to capture oil vapours at the exhaust



E2M VARIANTS

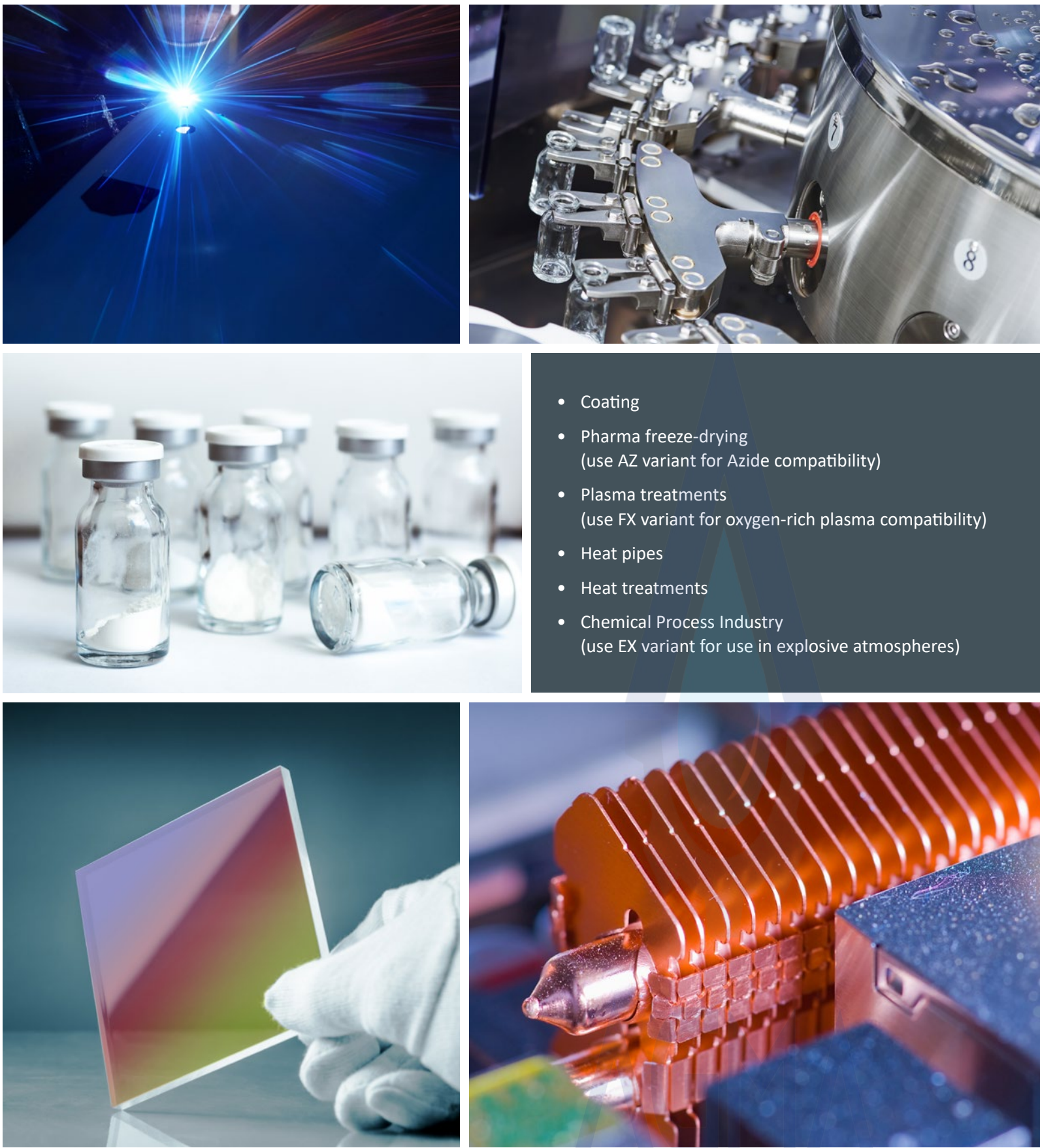
HC	Standard pumps with hydrocarbon oil	AZ	Special variants free of yellow metals, Azide compatible
FX	PFPE prepared pumps for pumping oxygen mixtures with oxygen concentration >21%	EX	ATEX certified pumps for use in and with explosive atmospheres



E2M WITH EH BOOSTER COMBINATION

Combine the E2M with an EH booster to obtain additional pumping speed and improved ultimate pressure. Our unique pumping system EM275/EH4200 offers enormous suction speed to pump down large chambers quickly at very low pressure.

APPLICATIONS



- Coating
- Pharma freeze-drying (use AZ variant for Azide compatibility)
- Plasma treatments (use FX variant for oxygen-rich plasma compatibility)
- Heat pipes
- Heat treatments
- Chemical Process Industry (use EX variant for use in explosive atmospheres)

TECHNICAL DATA

		E2M 40	E2M 80	E2M 175	E2M 275
Max displacement (50 Hz)	m³h ⁻¹	42.5	80	175	292
Max displacement (60 Hz)	m³h ⁻¹	50.5	96	214	350
Pumping speed (50 Hz)	m³h ⁻¹	37	74	160	255
Pumping speed (60 Hz)	m³h ⁻¹	44	90	196	306
Ultimate total pressure without gas ballast	mbar	3.0E-03	3.0E-03	3.0E-03	3.0E-03
Ultimate vacuum with gas ballast	mbar	5.0E-03	5.0E-03	5.0E-03	5.0E-03
Inlet connection	ISO-F / NW	40	40	63	63
Outlet connection	NW	25	25	40	40
Max permitted outlet pressure	bar (g)	0.5	0.5	0.5	0.5
Max water vapour tolerance	mbar	7	5	4(20*)	2(12*)
Max water vapour capacity	kg h ⁻¹	0.2	0.3	2.4	2.5
Max gas ballast flow	m3h ⁻¹	1.7	1.4	3	3
Dimensions (LxWxH)	mm	780x240x395	889x266x429	1055x388x533	1165x388x533
Weight Approximate	Kg	75	104	198	216
Motor protection rating	IP	55	55	55	55
Motor rated power (50 Hz)	kW	1.1	2.2	5.5	7.5
Motor rated power (60 Hz)	kW	1.5	3	6.5	8.5
Noise level (50 Hz)	dB(A)	65	65	75	75
Oil refill capacity (Max)	litre	2.2/4	4/6.3	16/25	18/28
Recommended oil		Ultragrade 70 (E2M HC, AZ & EX) / PFPE lubricant (E2M FX)			

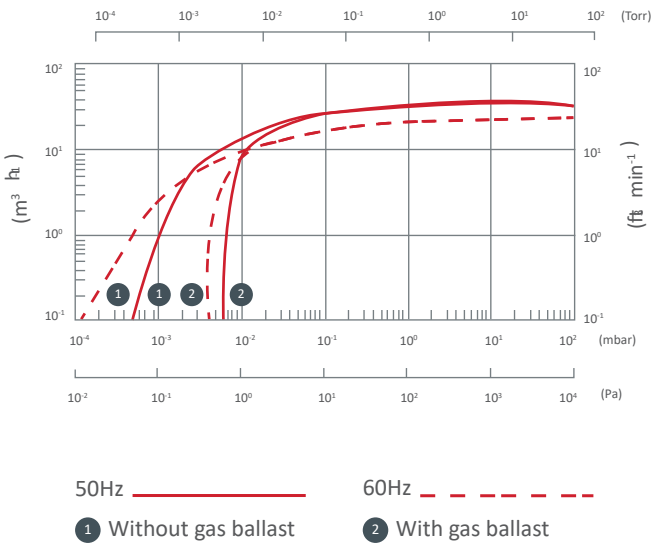
* with optional thermostatic water flow valve

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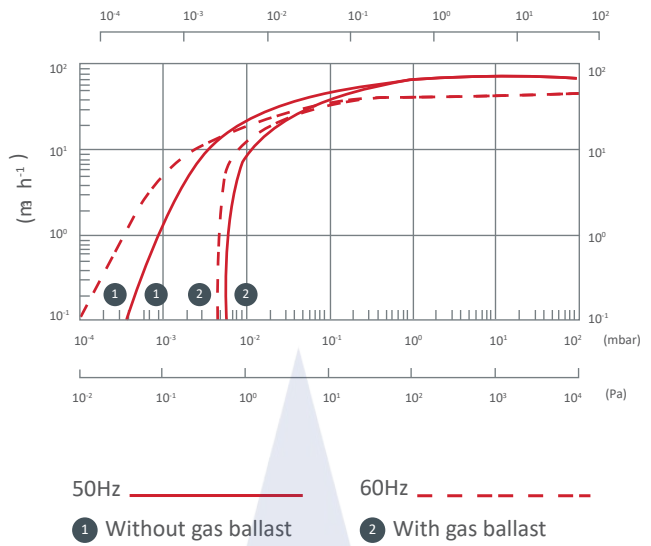
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PERFORMANCE CURVES

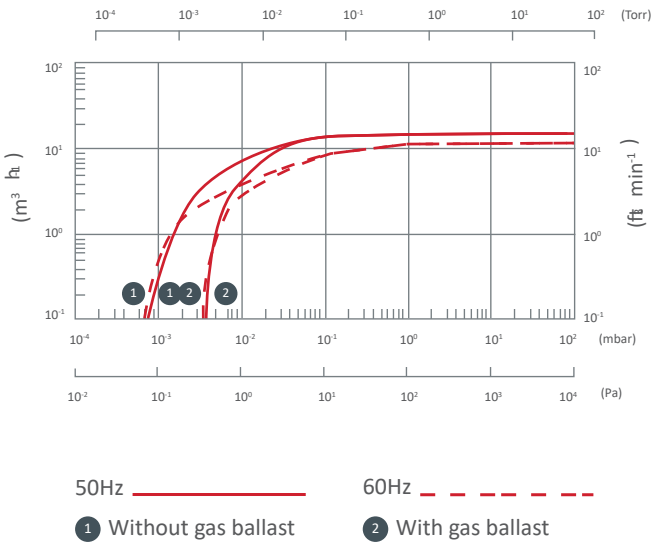
E2M40



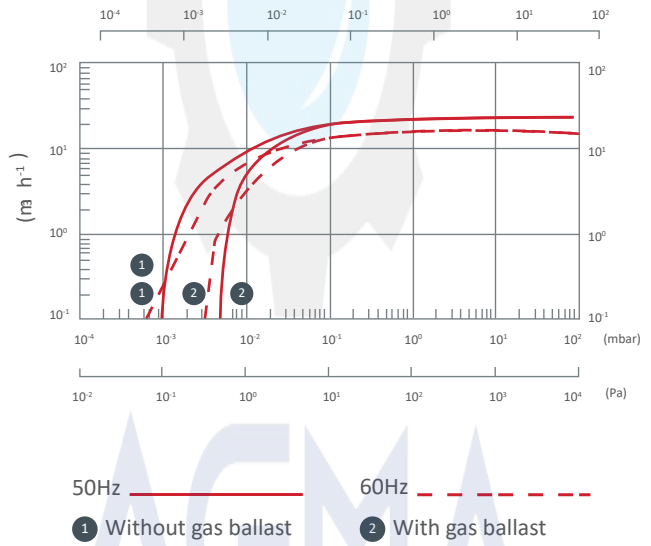
E2M80



E2M175

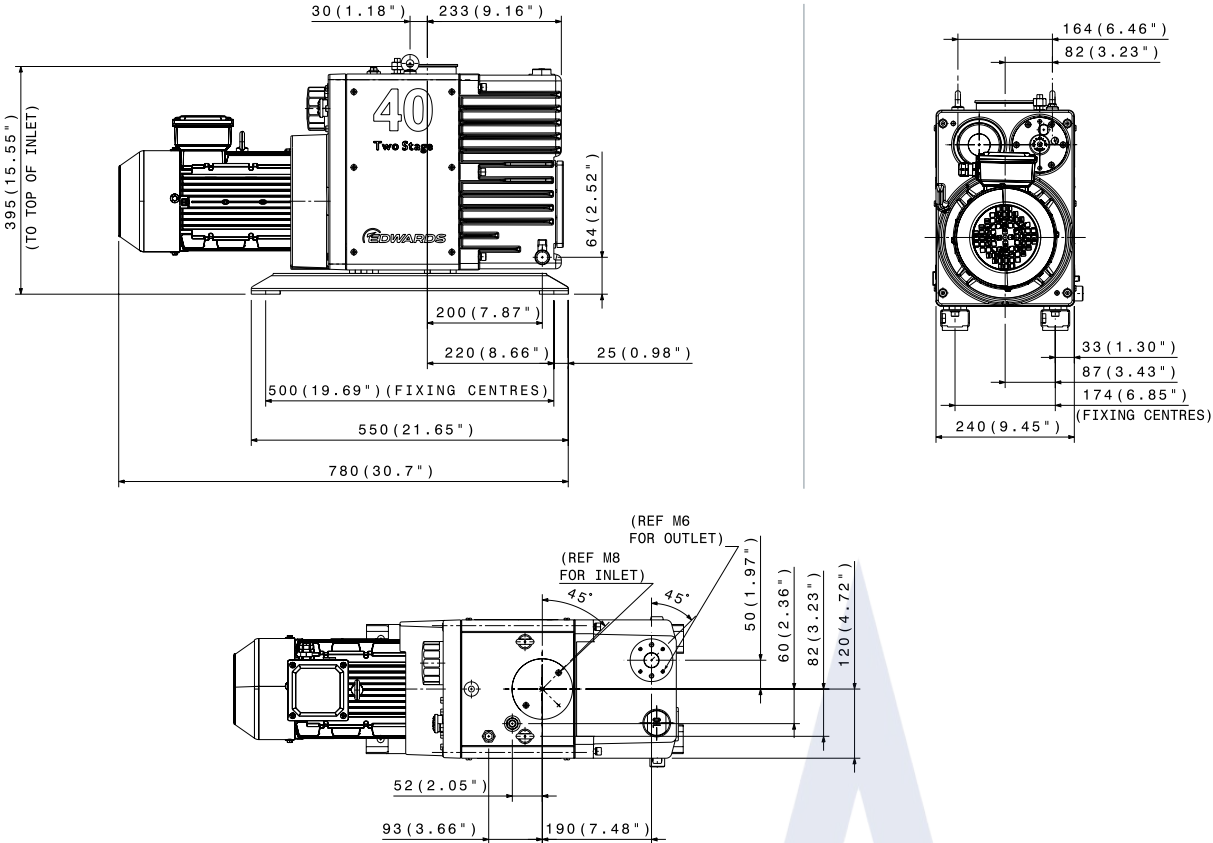


E2M275

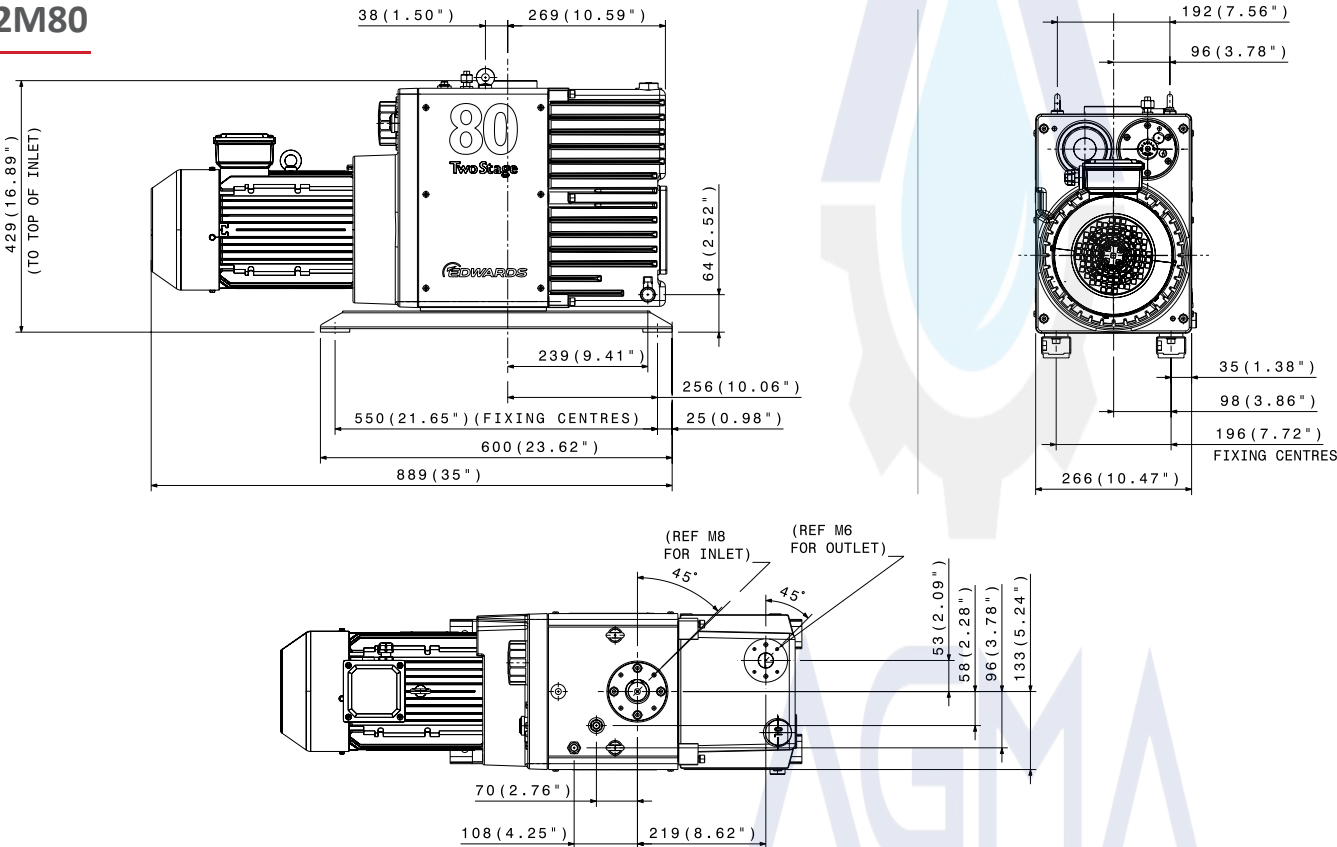


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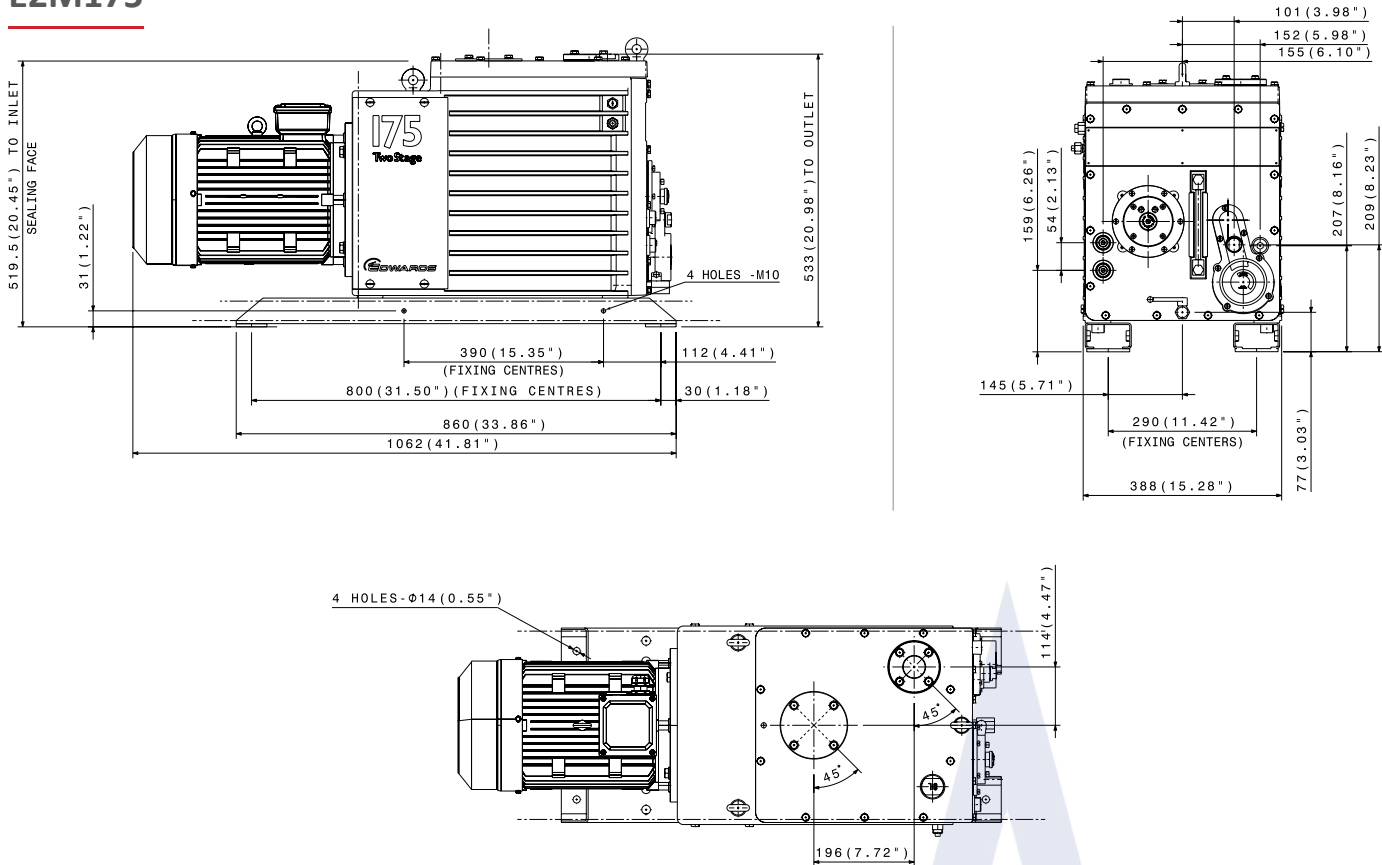
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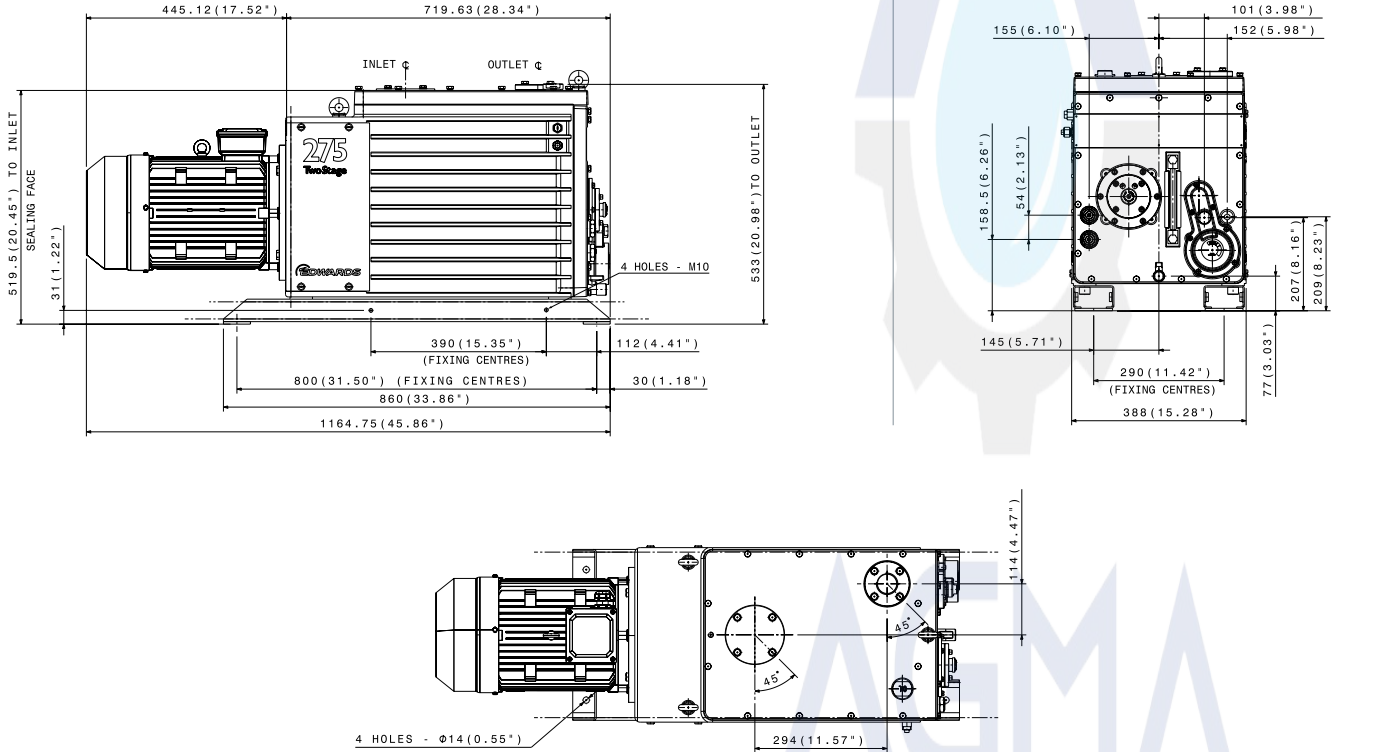
E2M80



E2M175



E2M275



SERVICE AND SUPPORT

To ensure your pump maintains optimal performance and reliability, we offer a wide range of service solutions, tailored to meet your needs. From Field Service intervention to Managed Maintenance agreements, we will take care of your pump to ensure that it continues to deliver clean, consistent, efficient performance, with lower running cost and optimum total cost of ownership for its entire operating life.

Selecting original spare parts, maintenance kits and grease, means that every critical part performs as it was intended. Form, fit and function are guaranteed. Our services engineers only fit 100% genuine parts to ensure you receive the best result from each and every service.



ORDERING INFORMATION

Mat. Number	Description
E2M HC Series (standard pumps with hydrocarbon oil)	
A36404934	E2M 40 HC IE3 ASIA 50/60 Hz
A36504934	E2M 80 HC IE3 ASIA 50/60 Hz
A36604934	E2M 175 HC IE3 ASIA 50/60 Hz
A36704934	E2M 275 HC IE3 ASIA 50/60 Hz
A36404940	E2M 40 HC IE3 EU/US 50/60 Hz
A36504940	E2M 80 HC IE3 EU/US 50/60 Hz
A36604940	E2M 175 HC IE3 EU/US 50/60 Hz
A36704940	E2M 275 HC IE3 EU/US 50/60 Hz

Mat. Number	Description
E2M FX Series (compatible with oxygen concentration >21%)	
A36417934	E2M 40 FX IE3 ASIA 50/60 Hz
A36417940	E2M 40 FX IE3 EU/US 50/60 Hz
A36517934	E2M 80 FX IE3 ASIA 50/60 Hz
A36517940	E2M 80 FX IE3 EU/US 50/60 Hz
A36617934	E2M 175 FX IE3 ASIA 50/60 Hz
A36617940	E2M 175 FX IE3 EU/US 50/60 Hz
A36717934	E2M 275 FX IE3 ASIA 50/60 Hz
A36717940	E2M 275 FX IE3 EU/US 50/60 Hz

Note: PFPE lubricant to be purchased separately

Mat. Number	Description
E2M AZ Series (Azide compatible)	
A36407934	E2M 40 AZ IE3 ASIA 50/60 Hz
A36407940	E2M 40 AZ IE3 EU/US 50/60 Hz
A36507934	E2M 80 AZ IE3 ASIA 50/60 Hz
A36507940	E2M 80 AZ IE3 EU/US 50/60 Hz
A36607934	E2M 175 AZ IE3 ASIA 50/60 Hz
A36607940	E2M 175 AZ IE3 EU/US 50/60 Hz
A36707934	E2M 275 AZ IE3 ASIA 50/60 Hz
A36707940	E2M 275 AZ IE3 EU/US 50/60 Hz

Mat. Number	Description
E2M EX Series (ATEX cat 3 internal / cat 2 external)	
A36418993	E2M 40T4 220/240V or 380/415V 50 Hz 3Ø
A36518993	E2M 80T4 220/240V or 380/415V 50 Hz 3Ø
A36618993	E2M 175T3 220/240V or 380/415V 50 Hz 3Ø
A36718993	E2M 275T3 220/240V or 380/415V 50 Hz 3Ø

E2M ACCESSORIES

E2M 40/80		
A44202000	Inlet dust filter	ITF100
A44302000	High capacity inlet dust filter	ITM100
A44102000	Inlet catchpot	ITO100
A44402000	Inlet chemical trap	ITC100
A46203000	Outlet mist filter (clean)	MF100
A46211000	Outlet mist filter (toxic)	MF100AE
A50004000	Outlet mist filter oil return kit	
A46103000	Outlet catchpot	CP100
A50017930	Electric GB EM40/80	EBV300D
A24801405	Vibration isolators	

E2M175/275		
A44203000	Inlet dust filter	ITF300
A44303000	High capacity inlet dust filter	ITM300
A44103000	Inlet catchpot	ITO300
A44403000	Inlet chemical trap	ITC300
A46204000	Outlet mist filter (clean)	MF300
A50005000	Outlet mist filter oil return kit	
A46104000	Outlet catchpot	CP300
A24801406	Vibration isolators	
A50001000	Thermostatic valve	TCU300

E2S TWO-STAGE ROTARY VANE PUMPS



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SIMPLE, YET POWERFUL ROTARY VANE PUMP

E2S range - E2S45, E2S65 and E2S85 - is our modern series of industrial two-stage oil-sealed rotary vane vacuum pumps for medium vacuum. E2S perfectly balances performance, cost and usability. A reliable piece of engineering, simply made and well-suited for many standard applications. It pumps down fast, handles vapours and contributes to minimising noise level in your workplace.

BOOST YOUR PRODUCTION NOT YOUR EXPENSES



SPECIALISED PERFORMANCE

- High pumping speed to reduce cycle times and gain productivity
- Hydro mode with improved vapour handling capability to fit with humid applications
- Low noise level matching with lab environment expectations



MODERN DESIGN MADE SIMPLE

- Economical product with clean layout
- Built-in oil filter to protect pump mechanism from contaminants and prevent oil leaks
- Innovative design to increase cooling performance keeping high vapour tolerance
- No complex mechanical arrangement to keep technology simple



GREAT USABILITY

- Effective product design to accommodate users' needs
- Easy and pleasant to use and service. On-site cleaning to maximise uptime
- Efficient over-temperature protection and low oil level detection (optional features)
- Increased safety against operator misuse

E2S VARIANTS

- E2S45
- E2S65
- E2S85



WOULD YOU NEED MORE SPEED?

Standard combinations of E2S two-stage rotary pumps and EH mechanical boosters are available for high capacity demands.

Maximum pumping speed of standard E2S/EH systems at 50Hz

	EH250	EH500	EH1200
E2S45	230	X	X
E2S65	240	365	X
E2S85	250	385	770

Ultimate vacuum: 3x10⁻⁴ mbar

Factory pre-assembled, these pumping systems are compact, mobile and easy to use. With a direct start from atmospheric pressure our E2S85-EH1200 stack provides up to 900 m³/h effective speed and allows to reach high vacuum range with an ultimate vacuum of 3x10⁻⁴ mbar.



APPLICATIONS



- Vacuum degassing and drying
- Heat treatments and vacuum ovens
- Vacuum insulation
- Plasma treatments (except O2 plasma)
- Leak testing
- Gas production and handling
- Research and development
- Backing of high vacuum pumps or systems

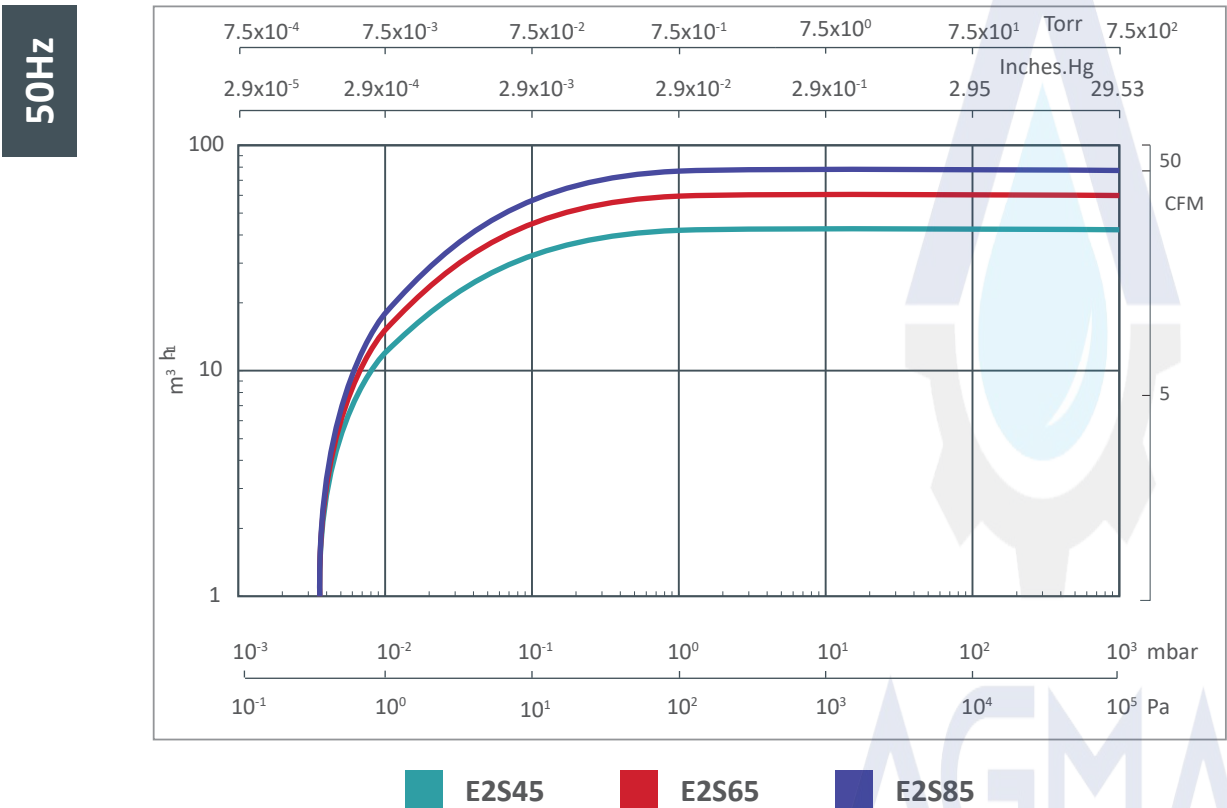
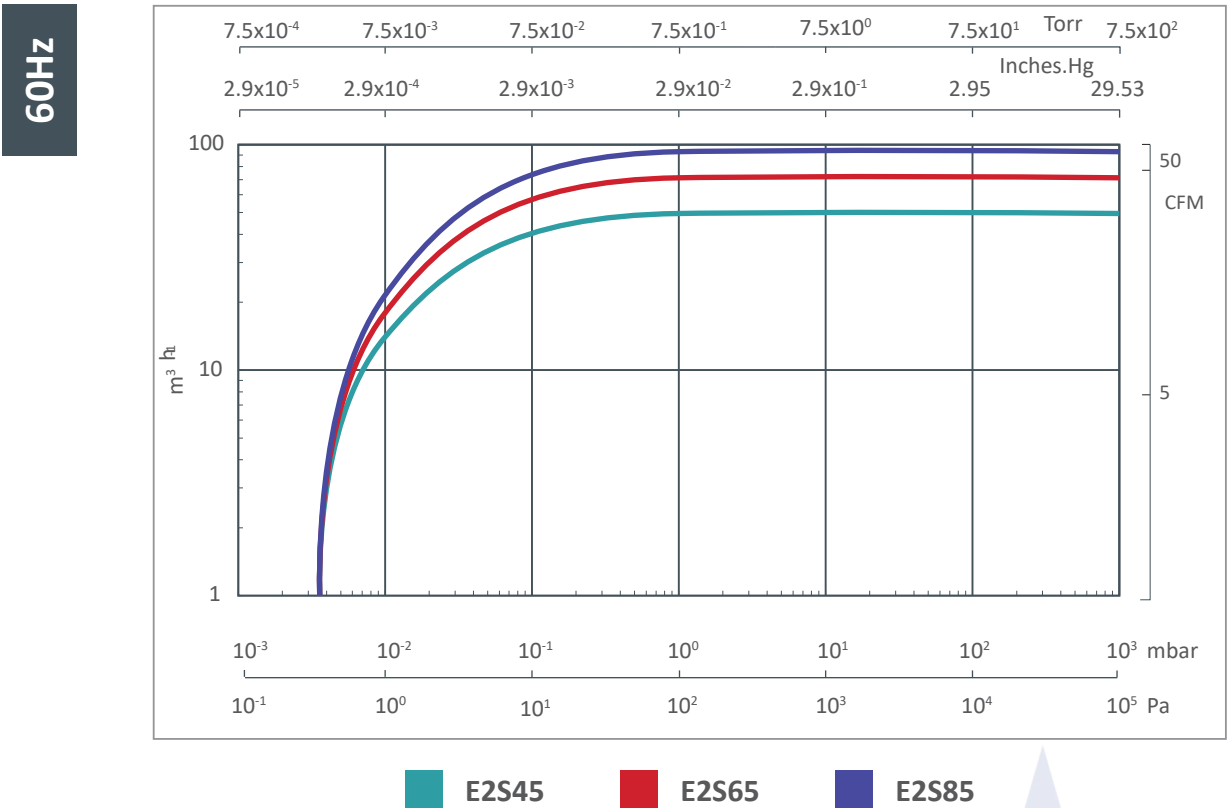


TECHNICAL DATA

		E2S45	E2S65	E2S85
Max. displacement (50Hz)	m³h⁻¹	47	64	87
	cfm	28	38	51
Max. displacement (60Hz)	m³h⁻¹	56	77	105
	cfm	33	45	62
Pumping speed (50Hz)	m³h⁻¹	42	57	78
	cfm	25	34	46
Pumping speed (60Hz)	m³h⁻¹	50	69	94
	cfm	29	41	55
Ultimate total pressure without gas ballast	mbar	3.0E-03	3.0E-03	3.0E-03
	torr	2.25E-03	2.25E-03	2.25E-03
Ultimate vacuum with gas ballast (position 1)	mbar	6.0E-03	6.0E-03	6.0E-03
	torr	4.5E-03	4.5E-03	4.5E-03
Inlet connection	ISO-F / NW	40	40	40
Outlet connection	mm	25	25	25
Max. permitted outlet pressure	bar (g)	0.5	0.5	0.5
	psi (g)	7.3	7.3	7.3
Max. water vapour tolerance	mbar	20	15	13
	torr	15	11	10
Max. water vapour capacity (50Hz)	kg h⁻¹	0.62	0.66	0.73
	lb h⁻¹	1.4	1.5	1.6
Max. water vapour capacity (60Hz)	kg h⁻¹	0.74	0.8	0.87
	lb h⁻¹	1.6	1.8	1.9
Weight Approximate	Kg	80	90	100
Motor protection rating	IP	55	55	55
Motor rated power (50Hz)	kW	1.1	1.5	2.2
	Hp	1.5	2	3
Motor rated power (60Hz)	kW	1.3	1.8	2.6
	Hp	1.7	2.4	3.5
Noise level (50Hz)	dB(A)	58	60	60
Noise level (60Hz)	dB(A)	60	62	62
Oil refill capacity (Max.)	litre	4.3	4.8	5.5
	gal	1.1	1.3	1.5
Cooling type	cooling	Air	Air	Air
Recommended oil		Ultragrade Performance 70		

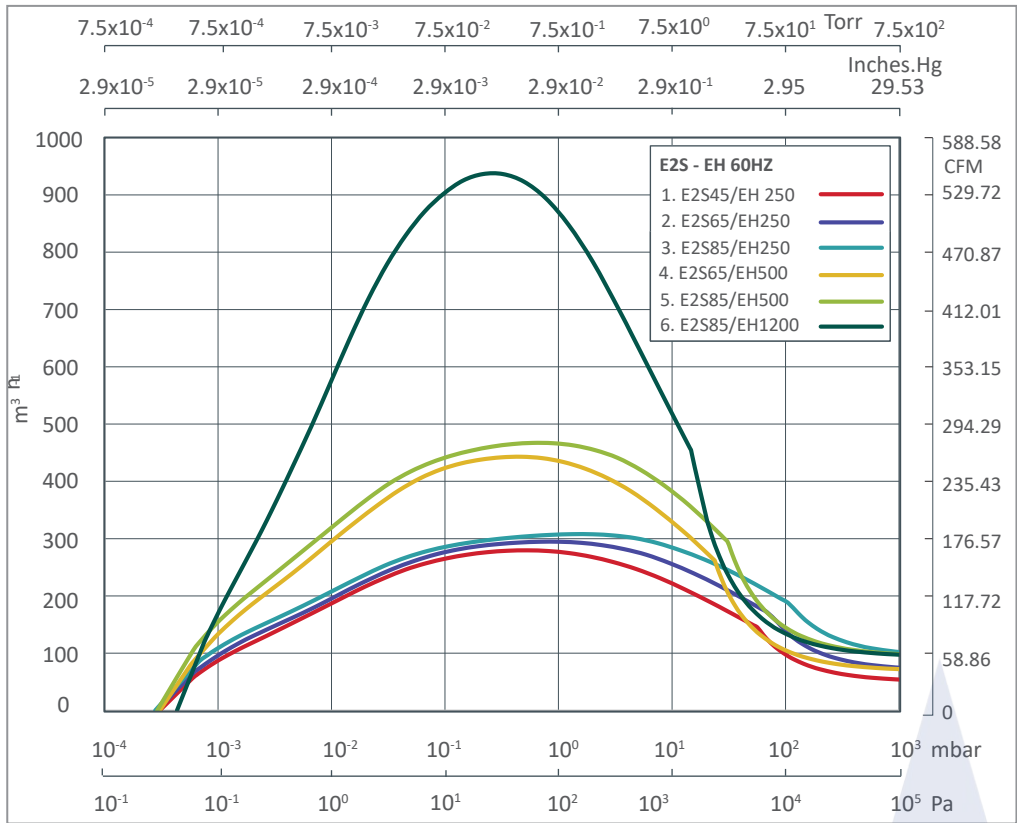
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PERFORMANCE CURVES

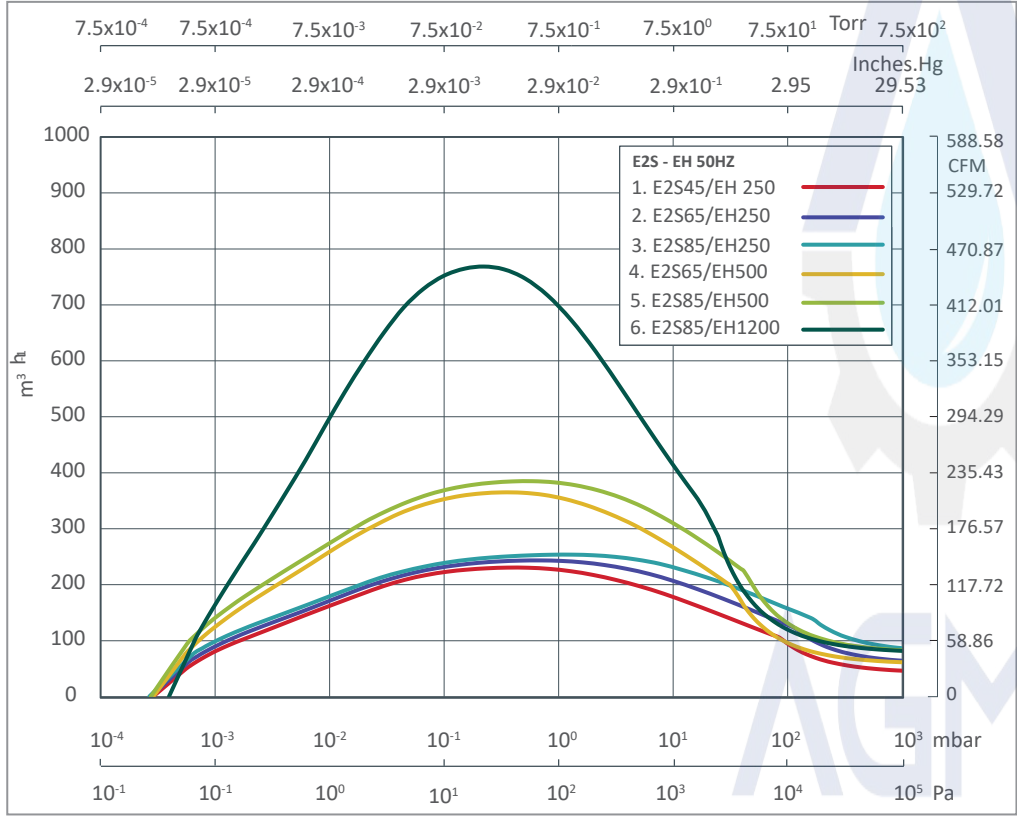


PERFORMANCE CURVES | E2S PUMP+EH BOOSTER COMBINATION

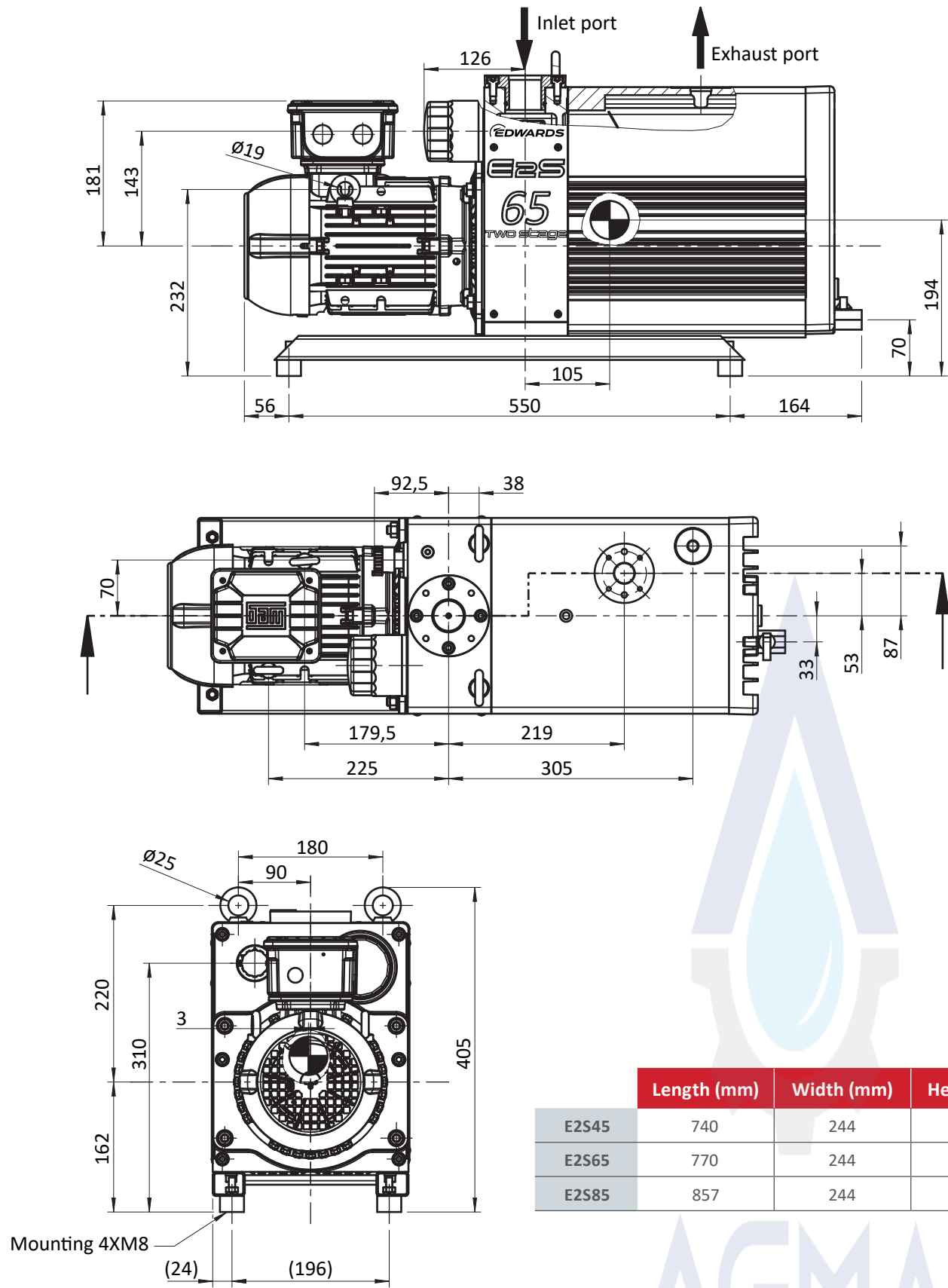
E2S-EH 60Hz



E2S-EH 50Hz



DIMENSIONS



	Length (mm)	Width (mm)	Height (mm)
E2S45	740	244	405
E2S65	770	244	405
E2S85	857	244	405

SERVICE AND SUPPORT

To ensure your pump maintains optimal performance and reliability, we offer a wide range of service solutions, tailored to meet your needs. From Field Service intervention to Managed Maintenance agreements, we will take care of your pump to ensure that it continues to deliver clean, consistent, efficient performance, with lower running cost and optimum total cost of ownership for its entire operating life.

Selecting original spare parts, maintenance kits and grease, means that every critical part performs as it was intended. Form, fit and function are guaranteed. Our services engineers only fit 100% genuine parts to ensure you receive the best result from each and every service.



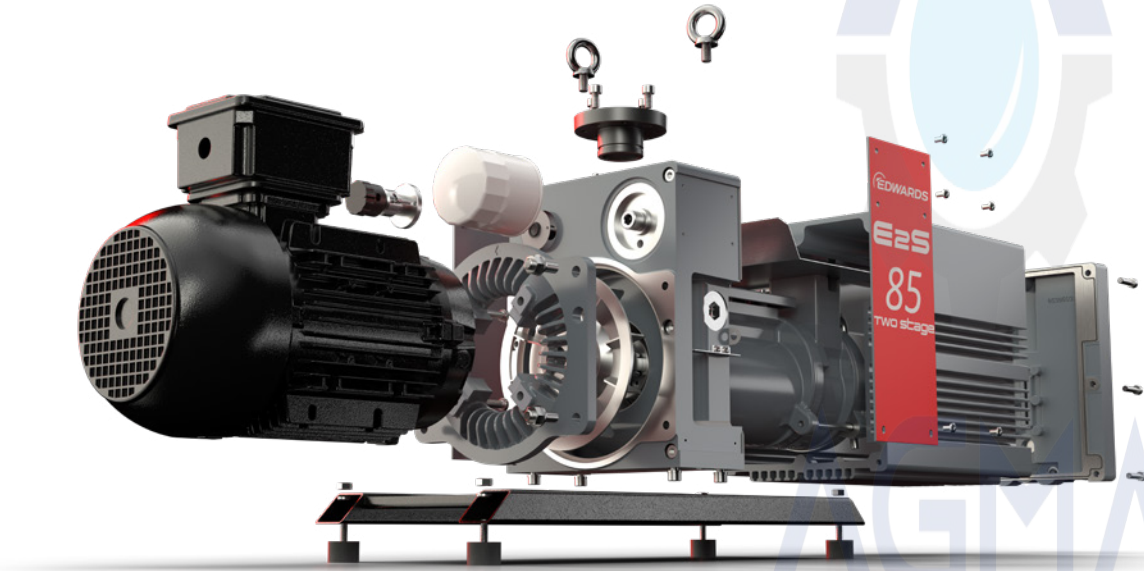
ORDERING INFORMATION

Mat. Number	Description	Mat. Number	Description	Cooling
E2S		E2S-EH packages with 400V/50Hz EH booster		
A35324950	E2S45 EU/US 50/60Hz	A35320250	E2S45/EH250 EU/CN 50Hz system	Air/Air
A35324934	E2S45 ASIA 50/60Hz	A35420250	E2S65/EH250 EU/CN 50Hz system	Air/Air
A35424950	E2S65 EU/US 50/60Hz	A35520250	E2S85/EH250 EU/CN 50Hz system	Air/Air
A35424934	E2S65 ASIA 50/60Hz	A35420500	E2S65/EH500 EU/CN 50Hz system	Air/Air
A35524950	E2S85 EU/US 50/60Hz	A35520500	E2S85/EH500 EU/CN 50Hz system	Air/Air
A35524934	E2S85 ASIA 50/60Hz	NRV355210	E2S85/EH1200 EU/CN 50Hz system	Air/Water

Mobility kit available separately.

E2S ACCESSORIES

Instrumentation		Gas ballast	
A35924247	Oil level monitor E2S	A35924546	Electric gas ballast E2S with solenoid valve
A35924246	Temperature switch E2S	A35924546	Permanent gas ballast E2S without solenoid valve
Exhaust elements		Booster fitting kits (spool + supporting bracket)	
1019040A20	E2S45 exhaust oil mist filter	A35924131	EH250 fitting kit for E2S 45-65-85
1019090A20	E2S 65-85 exhaust oil mist filter	A35924142	EH500 fitting kit E2S 65-85
Inlet elements		A35924153	EH1200 adapter spool E2S85
A44202000	Inlet dust filter ITF100	NRV355212	EH1200 frame for E2S85
A44302000	High capacity inlet dust filter ITM100	Mobility kits	
A44102000	Inlet catchpot ITO100	NRV355222	Mobility kit for E2S 45-65-85 with EH250-500
A44402000	Inlet chemical trap ITC100	NRV355232	Mobility kit for E2S85 with EH1200 (castors)



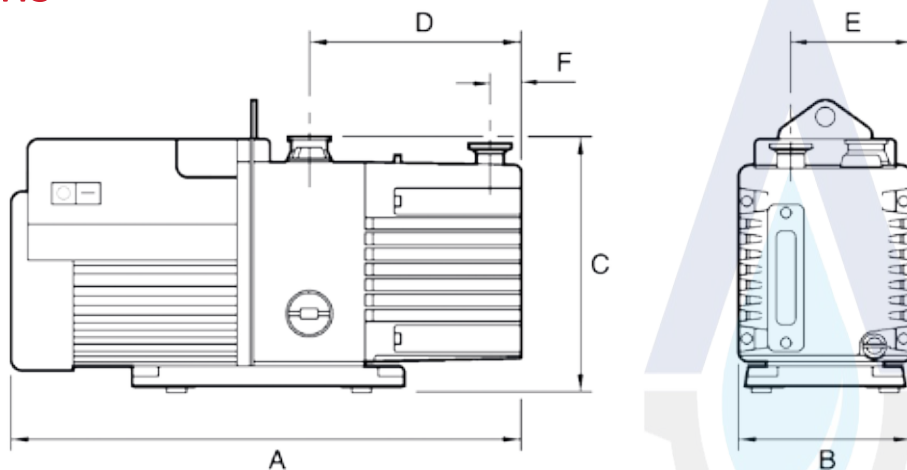
RV OIL SEALED ROTARY VANE PUMPS



AGMA



Dimensions



	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)

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

Technical data

	Hz	Units	RV3	RV5	RV8	RV12
Peak pumping speed	60	cfm	2.3	3.6	5.9	8.4
	50	m³/h	3.3	5.1	8.5	12
Ultimate pressure (Total)	60	Torr	1.5 x 10 ⁻³ (1.5 x 10 ⁻² with Fomblin®)			
	50	mbar	2.0 x 10 ⁻³ (2.0 x 10 ⁻² with Fomblin®)			
Ultimate pressure GB I (Total)	50/60	Torr	2.3 x 10 ⁻²			
		mbar	3.0 x 10 ⁻²			
Ultimate pressure GB II (Total)	50/60	Torr	9.1 x 10 ⁻²	9.1 x 10 ⁻²	4.6 x 10 ⁻²	9.1 x 10 ⁻²
		mbar	1.2 x 10 ⁻¹	1.2 x 10 ⁻¹	6.0 x 10 ⁻²	1.2 x 10 ⁻¹
High throughput mode	50/60	Torr	2.3 x 10 ⁻²			
		mbar	3.0 x 10 ⁻²			
Water vapour tolerance		Torr	60	38	38	24
		mbar	80	50	60	32
Water vapour capacity - GB I		g/h	60	60	60	60
Water vapour capacity - GB II		g/h	220	220	220	290

Motor data

Motor rating 1 phase (nominal)	60	W	550			
	50	W	450			
Motor rating 3 phase	60	W	300	300	550	550
	50	W	250	250	450	450
Nominal rotation speed	60	rpm	1800			
	50	rpm	1500			

Physical data

Weight		lb	55	55	61.6	63.8
		kg	25	25	28	29
Oil capacity		litres	0.7	0.7	0.75	1
Oil type (Ultragrade)			19			
Inlet flange			NW25			
Exhaust flange			NW25			
Noise level	50 Hz	dB(A)	48			
Noise level (with Acoustic Enclosure)*	50 Hz	dB(A)	41			
Operating temperature range		°C	12 to 40			

* approximate noise reduction of 7 dB(A)

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Ordering information

	Product description	Order No.	Order No.
		Ultragrade Oil	PFPE prepared*
RV3	115/230V, 50/60Hz set to 230V	A65201903	A65209903
	100/200V, 50/60Hz set to 200V	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 set to 200V	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 set to 200V	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 set to 200V	A65501904	A65509904
	200-220/380-415V, 50Hz 200-230/460V, 60Hz, 3 phase	A65501905	A65509905
	115/230V, 50/60Hz set to 115V	A65501906	A65509906

*PFPE fluid not included

	Product description	Order No.
Cord sets	UK, three pin plug	A50505000
	North European plug	A50506000
	North American plug	A50507000
	No plug	A50508000
Oil	Ultragrade 19, 1 litre bottle	H11025015
	Fomblin® YVAC 06/6 1kg (532 ml)	H11301019
	Ultragrade 19 oil 4 litre	H11025013
Inlet accessories	Foreline trap - FL20K	A13305000
Outlet accessories	Oil mist filter - EMF10	A46226000
	Oil mist filter - EMF20	A46229000
Oil return kits	Clean application (no gas ballast)	A50419000
	Adjustable gas ballast	A50523000
Vibration isolators		A24801404
Spares kits	Clean and overhaul kit	A65201131
Acoustic enclosure	Low volts 110-120V	NRD317000
Acoustic enclosure	High volts 200-240V	NRD318000

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



nRVi OIL SEALED ROTARY VANE PUMP

edwardsvacuum.com

Introducing the new nRVi series of oil sealed rotary vane pumps, designed to deliver an enhanced and consistent performance worldwide, with the latest in communication technology. Edwards' field proven drive has been combined with the industry leading RV range, bringing oil sealed vacuum pump technology into the 21st century.

Adding the new drive, based on Edwards technology, allows better installation and remote start/stop for improved control functionality. With autosensing wide range voltage operation users are assured that, regardless of the power supply (50 Hz or 60 Hz), the higher pumping speed would be achieved, for example turning an Edwards RV12 with a pumping speed of $12\text{ m}^3\text{h}^{-1}$ into an nRV14i with speed of greater than $14\text{ m}^3\text{h}^{-1}$ and deliver an uprated and consistent performance worldwide.



Features and benefits

- Four pump choices from 3.9 to $14.2\text{ m}^3\text{h}^{-1}$
- Tried and trusted RV reliability and performance with field proven drive design
- Universal voltage operation using Edwards Intellectual Property for safe and reliable dual voltage operation: $100 - 127\text{ V AC RMS } 50/60\text{ Hz}$ and $200 - 240\text{ V AC RMS } 50/60\text{ Hz}$
- An enhanced EMC variant for high-voltage operation ($200 - 240\text{ V}$), meeting the European harmonic emission requirements of EN61000-3-2
- Use of STANDBY mode allows for speed control for application tuning and/or power saving
- Manual control, simple remote control and serial communications control
- Auxiliary valve control
- Optional AUTO-START functionality to replicate traditional Direct-On-Line (DOL) applications

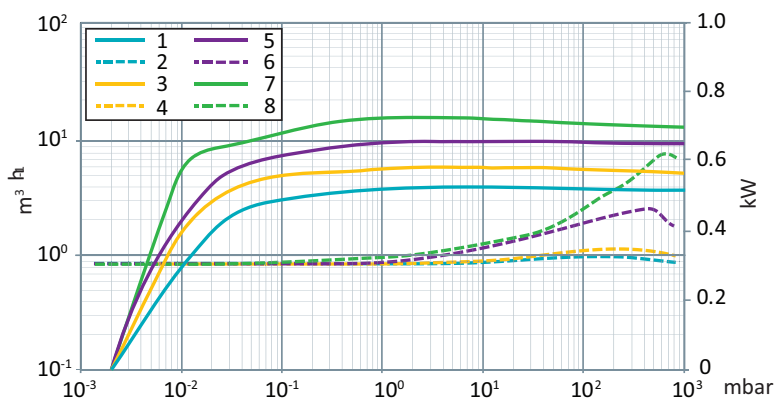
TECHNICAL DATA

	Units	nRV4i	nRV6i	nRV10i	nRV14i
Pumping Speed	$\text{m}^3/\text{h} / \text{ft}^3/\text{h}$	3.9/2.3	6.2/3.7	10/5.9	14.2/8.4
Ultimate Pressure No Gas Ballast	mbar/Torr	$2 \times 10^{-3} / 1.5 \times 10^{-3}$			
Ultimate with Gas Ballast 1	mbar/Torr	$3 \times 10^{-2} / 2.3 \times 10^{-2}$			
Ultimate with Gas Ballast 2	mbar/Torr	$1.2 \times 10^{-1} / 9.1 \times 10^{-2}$		$6.0 \times 10^{-2} / 4.6 \times 10^{-2}$	$1.2 \times 10^{-1} / 9.1 \times 10^{-2}$
Water Vapour Tolerance (Gas Ballast 2)	g/hr	220			290
Inlet Port		NW25			
Outlet Port		NW25			
Power Supply		100 -240 V AC +/- 10% 50/60 Hz			
Power Connection		IEC 60320 C19			
On/Off Control		Manual and Remote Parallel			
Serial Communications		RS232 and RS485			
Noise (Pressure)	dB(A)	<55			
Ambient Temperature Range	$^{\circ}\text{C}$	12 to 40			
Cooling		Air Cooled			
Weight without oil	kg/lb	27.8/61.1		30.3/66.7	31.5/69.3
Oil Type		Ultragrade 19			
Oil Capacity min-max	litre	0.42-0.7		0.45-0.75	0.65-1.0

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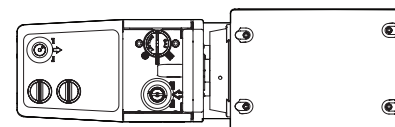
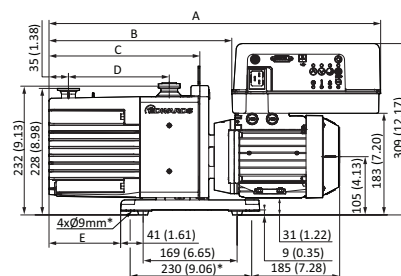
PERFORMANCE GRAPH



Note - all stated voltage ranges are +/- 10%

1. nRV4i
2. nRV4i supply power (kW)
3. nRV6i
4. nRV6i supply power (kW)
5. nRV10i
6. nRV10i supply power (kW)
7. nRV14i
8. nRV14i supply power (kW)

DIMENSIONS – MM (INCHES)



Pump	Dimensions				
	A	B	C	D	E
nRV4i	537	269	211	121	69
nRV6i	537	269	211	121	69
nRV10i	577	309	251	161	109
nRV14i	597	329	271	181	129

Publication Number: 3601 0267 01

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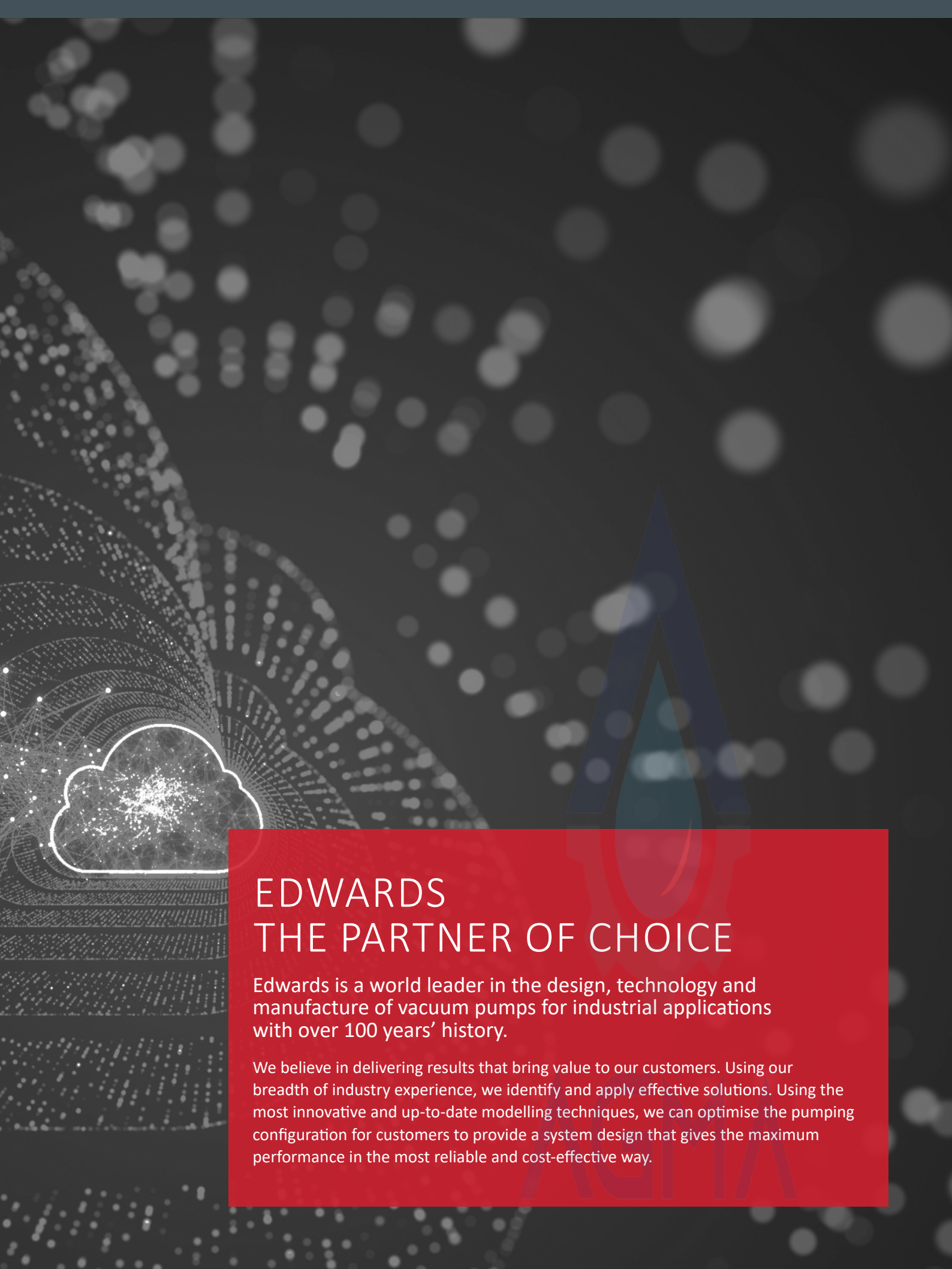
Edwards Ltd, registered in England and Wales
No. 6124750, registered office: Manor Royal, Crawley, West Sussex RH10 9LW, United Kingdom.



EOSi OIL-SEALED SCREW VACUUM PUMPS WITH EJGO CONTROLLER

EOS350-5400i





EDWARDS THE PARTNER OF CHOICE

Edwards is a world leader in the design, technology and manufacture of vacuum pumps for industrial applications with over 100 years' history.

We believe in delivering results that bring value to our customers. Using our breadth of industry experience, we identify and apply effective solutions. Using the most innovative and up-to-date modelling techniques, we can optimise the pumping configuration for customers to provide a system design that gives the maximum performance in the most reliable and cost-effective way.

INNOVATION AND INTELLIGENCE

EOS350-5400i range of oil-sealed rotary screw vacuum pumps are efficient, quiet and are equipped with Edwards' new generation intelligent controller - EJGO. As ever at the forefront of technology with Variable Speed Drive (VSD), the EOSi range delivers impressive on-demand performance capacity and optimises energy consumption. EJGO brings cutting-edge control and connectivity to optimise and monitor EOSi operations.



Increased efficiency

Plug and play screw technology for easy installation Variable Speed Drive (VSD) and innovative motor design



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



Versatility and flexibility

Temperature management control enables superior water handling capability. Various configurations are available to meet the needs of your applications



Reduced environmental impact

Ultra-high oil retention at all operating pressures



Small footprint

Reduces space used in utility room or production floor



Quiet operation

Low noise levels for a safer working environment



Improved maintenance

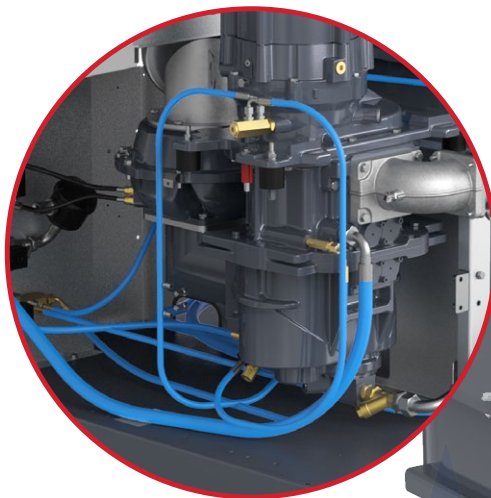
The highly efficient oil separator design extends service intervals and reduces maintenance cost



NEW GENERATION EOS1400-2000i - WITH VERTICAL DRIVE CHAIN, SMALLER FOOTPRINT AND EJGO INTELLIGENT CONTROL

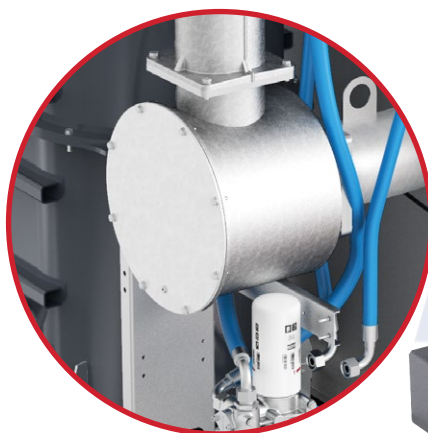
PUMP MODULE

- ▶ Highly efficient oil-sealed rotary screw
- ▶ Robust design
- ▶ Longer element life due to robust design



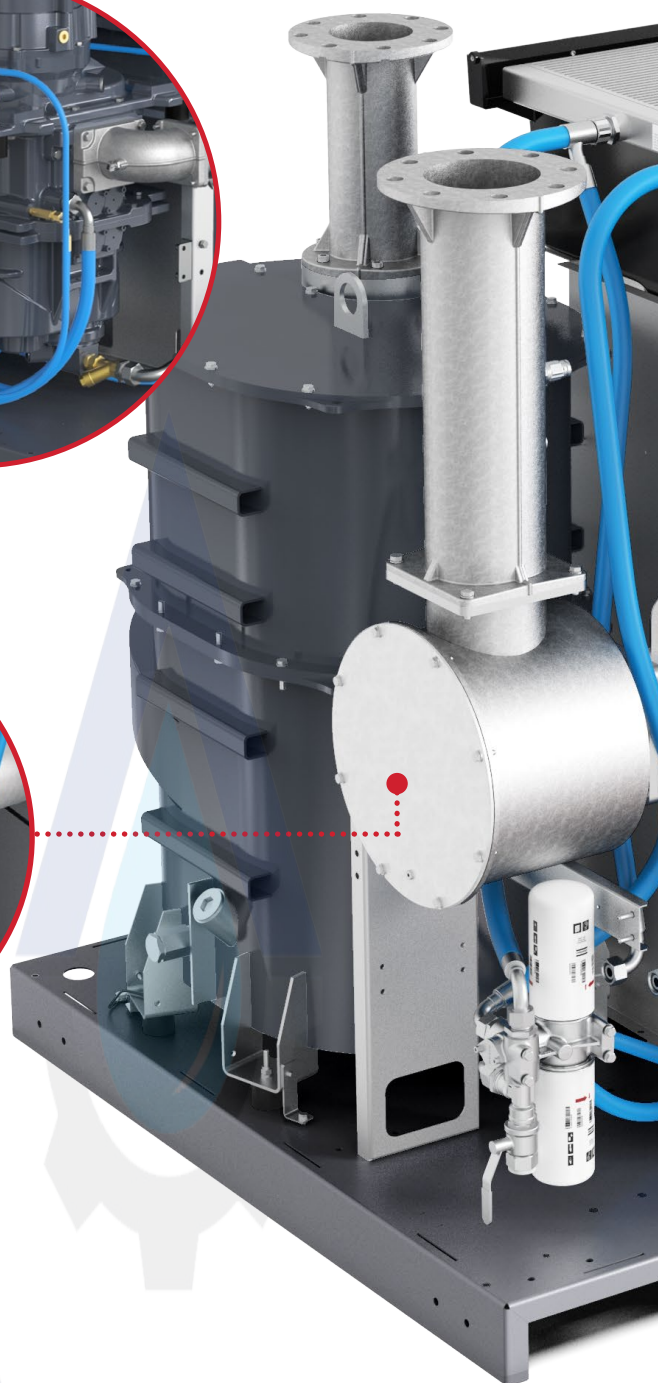
INLET FILTER AND CONTROL VALVE

- ▶ Inlet filter inside the machine provides protection with 99%+ removal efficiency standard to 5 microns
- ▶ Control valve isolation with the customer system and provide vacuum control



GUARANTEED OIL RETENTION

- ▶ Optimum design for maximum oil retention
- ▶ Longer life because of managed performance means the vacuum pump never overloads the separators
- ▶ Innovative design retains oil at 1.5mg/m³ on EOS1400-2000i, even when under the greatest load
- ▶ Minimal oil carryover from overloaded oil separators as compared to conventional fixed speed vacuum pumps



AGMA



EASY TO USE, SIMPLE TO MAINTAIN

- ▶ The top cover of the oil separator has a unique hinge mechanism
- ▶ It slips the cover to the side, allowing the oil separator filter to be changed easily and quickly
- ▶ A cleverly designed exhaust pipe enables the condensates to be collected in the discharge pipework at the outlet

EJGO - INTELLIGENT CONTROL SYSTEM

EJGO is a control and monitoring system for your vacuum pumps. It is easy-to-use, and offers comprehensive control for your vacuum installation, leading to energy savings.

It can also integrate with your plant management system and connect to network thanks to the flexible connectivity that support fieldbus communication and network protocols



EOSi: OPTIMISED TO MATCH YOUR APPLICATION

The EOSi range features a variety of options - air-cooled and water-cooled, Standard, Q, W or QW to enable you select the optimal choice for your application.



Standard

This pump is designed to deliver the exact performance to match your demand, at the minimum possible lifecycle cost. With the intelligent control you can potentially save 50%* or more energy compared with conventional solutions.



W

Whilst the standard EOSi pumps are able to reliably pump water vapour loads similar to equivalent rotary vane pumps, the W version is designed to pump significantly higher water vapour loads and can offer superior comparative performance where required on applications such as pipeline drying and freeze-drying.



Q

The Q version is designed for cycling applications, where chamber pumpdown time is important. The responsive inverter control and special software enables even faster chamber pumpdown with optimal energy efficiency.



QW

The QW version combines the special design of the Q version with the water vapour handling capabilities of the W version.

KEY OPTIONS AND RETROFIT KITS

- ▶ Best fit to every need
- ▶ Make retrofits possible to meet the application changes

- **Quick pumpdown version**

Faster pumpdown time

- **Relative pressure control**

Setup for inlet pressure setpoint control relatively compared to actual atmospheric pressure

- **Wet version retrofit**

High water handling capacity

- **High ambient version**

Up to 50 °C ambient temperature
(Available for EOS1400-2000i)

- **Energy recovery retrofit**

Available for EOS1400-2000i and EOS3800-5400i

Recover up to 80% of this heat

- **Overboost function**

Allows to increase the flow below 200 mbar(a) during a short period

Boost the performance for cycling application

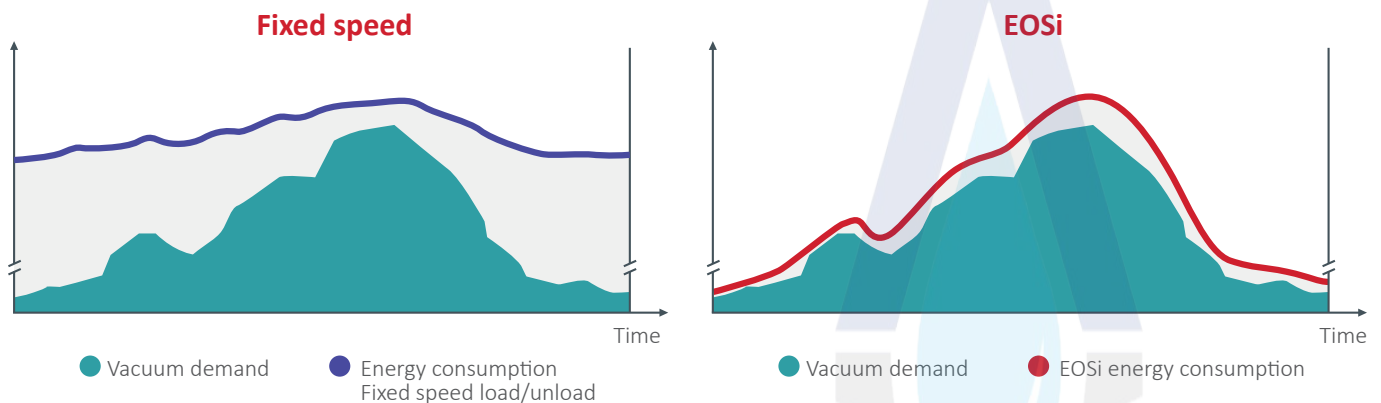
- **Booster control**

Controls the added booster

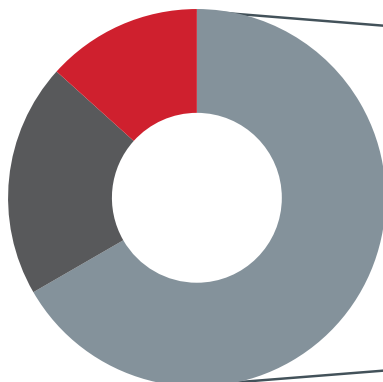
EOSi: DESIGNED TO DELIVER ENERGY SAVINGS

With intelligent controller EJGO and the high efficiency inverter, the EOSi can maintain a set point pressure during process and adjust its speed to meet the demand at that setpoint. With an extensive flow range (10%-100%), potential energy saving of 50% or more can be achieved using EOSi technology compared with conventional technology.

We've designed the pump to limit the motor speed when the process starts. This helps reduce the power consumption required to kick-start the process. EOSi has a smaller motor size compared to a fixed speed machine. Eliminating peak current also benefits the electrical installation (cable and fuse size). In most product environments, a vacuum system is not required to perform to its fullest for the entire time – whether that is during a process cycle, during a pumpdown cycle or during machine idling time. The intelligent EOSi delivers peak performance only when required, thereby ensuring significant energy savings and lower maintenance cost.



Fixed Speed Vacuum Pump



EOSi



50%*
SAVINGS

● Energy ● Maintenance ● Investment

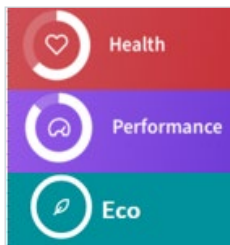
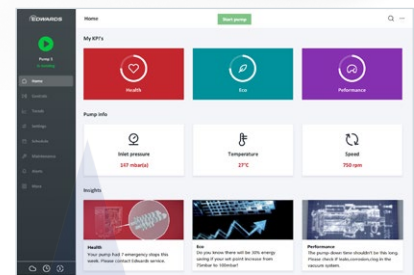
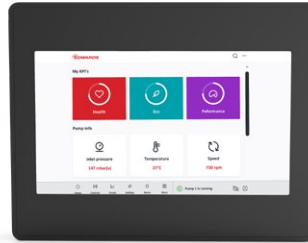
**In most applications compared to traditional fixed speed vacuum technologies based on measurement with our Vbox energy audit tool.*

EJGO INTELLIGENT CONTROLLER

EJGO is Edwards' new generation controller which takes vacuum control to the next level.

USER-FRIENDLY INTERFACE

- ▶ Front panel
 - Clear and ease of use
 - Basic and reliable
- ▶ 7" HMI
 - Graphic design and configurable homepage
 - Completed onboard control
- ▶ Web browser (PC, tablet, mobile)
 - Monitor and take control from any connected device
 - Remote control possible when the pump is connected to network or cloud

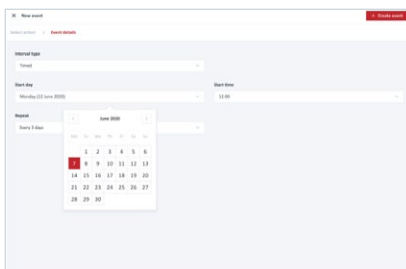


KPI INSIGHT AND MANAGEMENT

- ▶ Assess your pump health, vacuum performance and operating economy
- ▶ KPI score and insight cards give deep understanding of the systems beyond on/off and pressure setpoint

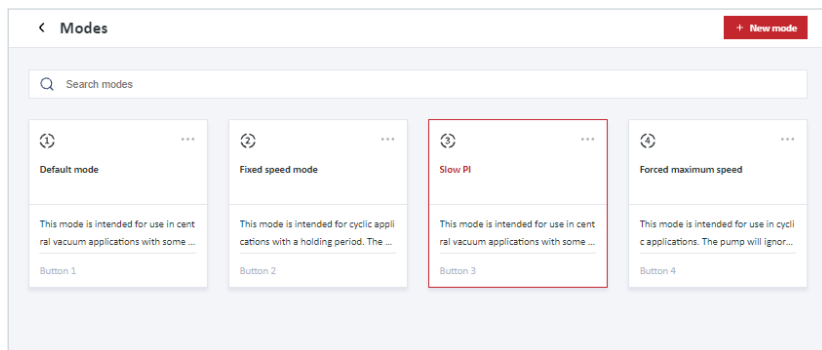
TREND MAP FOR DATA MONITORING

- ▶ Monitor pump operation continuously and get all the information for everyday management
- ▶ Graphic curve of pump parameters including Inlet Pressure, Motor Speed, Power Consumption, Outlet Temperature and more. (Day, week, month)
- ▶ In-depth examination of data and comparison of multiple metrics/cycles



INTELLIGENT SCHEDULING

- ▶ Plan a series of events into calendar, not limited to pump start/stop, purge cycle and auto clean
- ▶ Easily set up actions that repeat continually to fit the process



OPERATING MODE MANAGEMENT

- ▶ Default and other setting modes to fit different applications. E.g., forced maximum speed mode, fixed speed mode to get pump down optimisation
- ▶ Customise operation modes according to process requirement



NOTIFICATION AND AUTOMATIC UPDATE

- ▶ Safety: warning, fault, and shutdown indications and screen view
- ▶ Cloud access allow email notification in case of pump failure
- ▶ Automatic software update



SECURITY

- ▶ TPM2 chip and ECC certificate used on the controller
- ▶ Operation system and application software is signed and encrypted
- ▶ Partitioned memory to protect sensitive data
- ▶ Different levels set-up and user authentication required for identity management



Ethernet cable

CONNECTIVITY AND FIELD BUS COMMUNICATION

- ▶ Various options for network connection. E.g., stand alone, internal enterprise network only or fully connected to cloud
- ▶ Support all Ethernet-based protocols and connect directly even without gateway



WiFi bolt fitted



- ▶ Gateway as options to enable communication with the other protocols



GENIUS box



EOS350-5400i RANGE OF OIL-SEALED ROTARY SCREW VACUUM PUMPS



EOS350i
EOS585i
EOS730i
EOS900i

EOS1400i
EOS1700i
EOS2000i



EOS3800i
EOS4600i
EOS5400i

EOS350-900i

Oil-sealed screw pumps range at 350m³/hr to 900m³/hr capacity with Variable Speed Drive (VSD) technology and EJGO intelligent control. The EJGO controller offers more derating functions to increase the pump uptime including current speed derating, outlet temperature derating, outlet pressure derating, and weak grid derating.



TECHNICAL SPECIFICATION

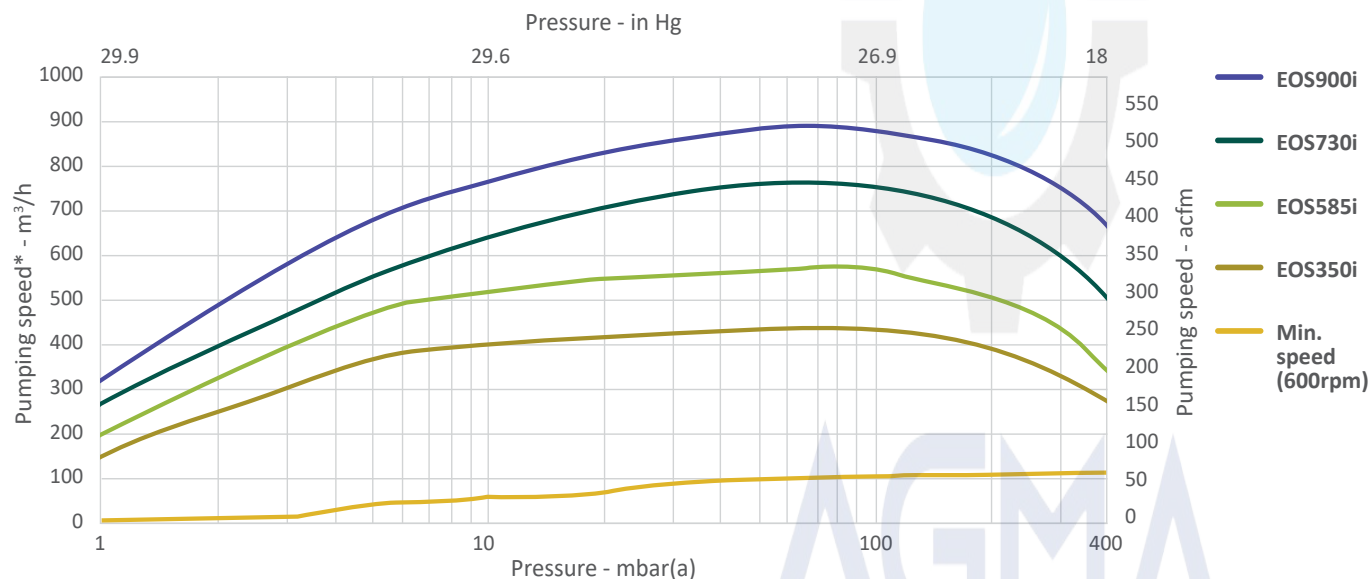
	Units	EOS350i	EOS585i	EOS730i	EOS900i
Nominal displacement	m ³ /h / cfm	400 / 240	560 / 330	730 / 430	900 / 530
Ultimate vacuum	mbar / torr	0.35 / 0.26	0.35 / 0.26	0.35 / 0.26	0.35 / 0.26
Frequency range	Hz	20-116	20-150	29-200	20-233
Inlet connection	-	DN 80	DN 80	DN 80	DN 80
Outlet connection	-	DN 60	DN 60	DN 60	DN 60
Shaft power	kW	5.5	7.5	11	15
Permissible ambient temperature	°C	0-46	0-46	0-46	0-46
Noise level range	dB(A)	51-65	51-68	51-73	51-76
Oil quantity	L	16	16	16	16
Dimensions (L x W x H)	mm	1266 x 934 x 1083	1266 x 934 x 1083	1266 x 934 x 1083	1266 x 934 x 1083
Weight	kg	495	500	510	520
Electrical specification	380-460V 50Hz/60Hz CSA/UL				

Air-cooled and water-cooled versions are available for models.

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PERFORMANCE CURVE



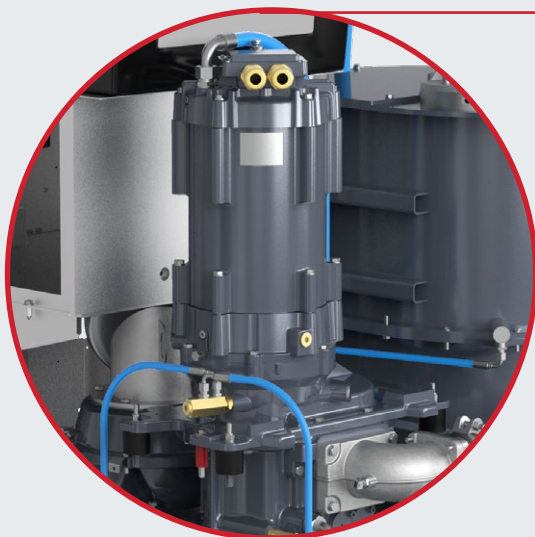
*Pumping speed at element inlet at steady state- according ISO 21360-1:2012 (E).

EOS1400-2000i

The new generation oil-sealed screw vacuum pumps. An innovation which brings together an efficient new element and IE5 Permanent magnet motor, provides a significant enhanced performance. And the new EJGO controller takes the pump to a new level of intelligence.



NEW GENERATION

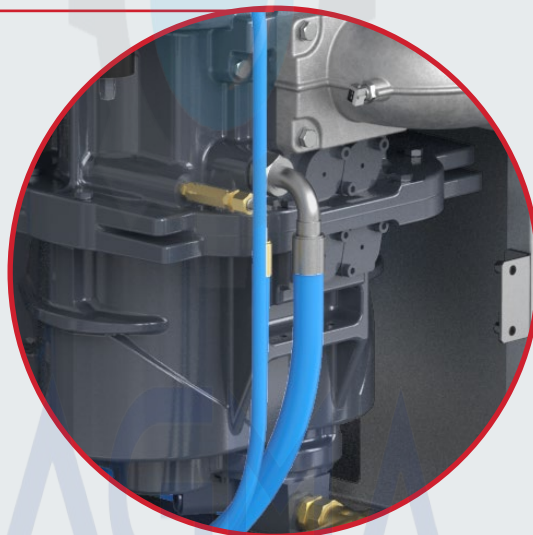


PERMANENT MAGNET ASSISTED SYNCHRONOUS RELUCTANCE MOTOR

- ▶ The ultra-premium efficiency – IE5
- ▶ Efficient at all the speeds to minimise energy loss
- ▶ Optimal cooling by oil of the pump without the need for an extra fan, resulting in less power consumption and less noise
- ▶ Oil lubricated bearing, no re-greasing needed, leading to reduced maintenance
- ▶ IP66 design- total protection from dust

OPTIMAL PERFORMANCE SCREW ELEMENT

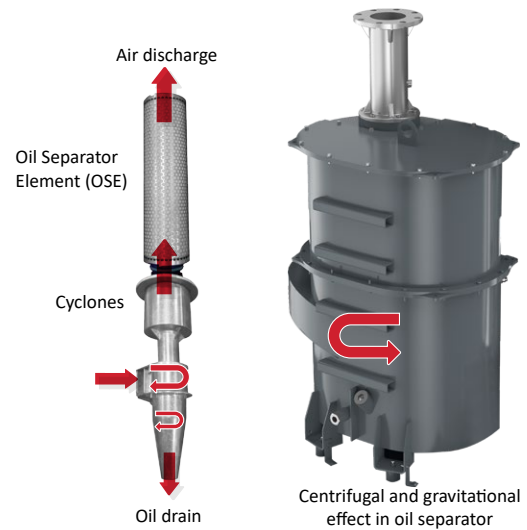
- ▶ Innovative screw profile improves pumping performance
- ▶ 4 blow-off valves to allow increased pumping speed at high pressures with lowest power consumption
- ▶ Extend overhaul interval to 1000 hours for normal applications



EXCELLENT OIL RETENTION

► Excellent oil retention

- 3 stage oil separation- Centrifugal and gravitational effect, cyclones filtration and OSE (Oil Separator Element)
- Booster control
- Optimal exhausted air quality and environment friendly
- Low back pressure for lower power consumption
- OSE can be changed without disassembling the exhaust piping



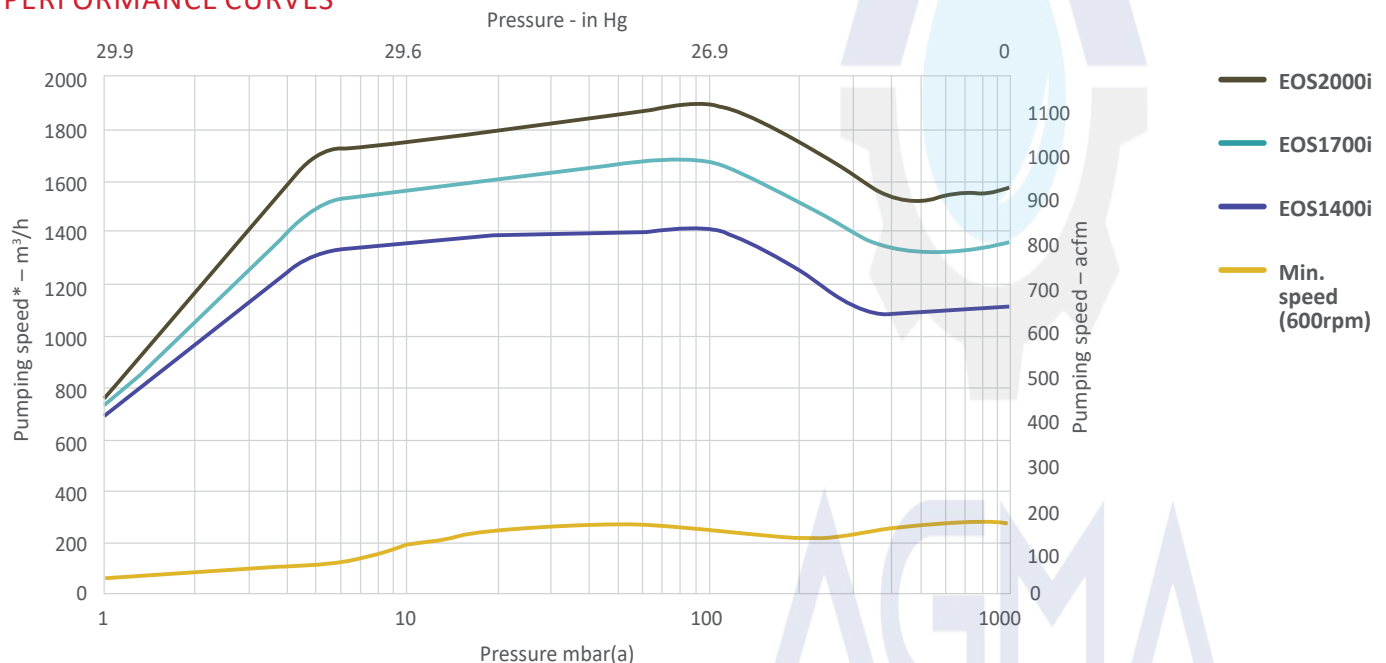
TECHNICAL SPECIFICATION

	Units	EOS1400i	EOS1700i	EOS2000i
Nominal displacement	m ³ /h / cfm	1400 / 824	1620 / 953	1818 / 1070
Ultimate vacuum	mbar / torr	0.35 / 0.26	0.35 / 0.26	0.35 / 0.26
Frequency range	Hz	20-166	20-200	20-233
Inlet connection	-	DN150	DN150	DN150
Outlet connection	-	DN125	DN125	DN125
Shaft power	kW	22	30	37
Permissible ambient temperature	°C	0-46	0-46	0-46
Noise level range	dB(A)	55-74	58-77	58-78
Oil quantity	L	45	45	45
Dimensions (L x W x H)	mm	1460 x 1361 x 1665	1460 x 1361 x 1665	1460 x 1361 x 1665
Weight	kg	1180	1190	1200
Electrical specification	380-460V 50Hz/60Hz CSA/UL			

Air-cooled available for all the machines.

<https://agmacorp.com/product/%D9%BE%D9%85%D9%BE-%D9%88%DA%A9%DB%8C%D9%88%D9%85-%D8%A7%D8%AF%D9%88%D8%A7%D8%B1%D8%AF%D8%B2/>
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PERFORMANCE CURVES



*Pumping speed at element inlet at steady state- according ISO 21360-1:2012 (E).

EOS3800-5400i

Optimised temperature control with Quarter Mixing Valve combined with a VSD fan for the air-cooled versions which allow to control electronically the temperature of the pump with high accuracy and additional energy savings.



QUARTER MIXING VALVE (QMV)

- ▶ Electronically controlled pump temperature
- ▶ Temperature sensor in the pump inlet for the QMV algorithm
- ▶ Optimised temperature control with high accuracy
- ▶ Contributes to efficient water handling capability

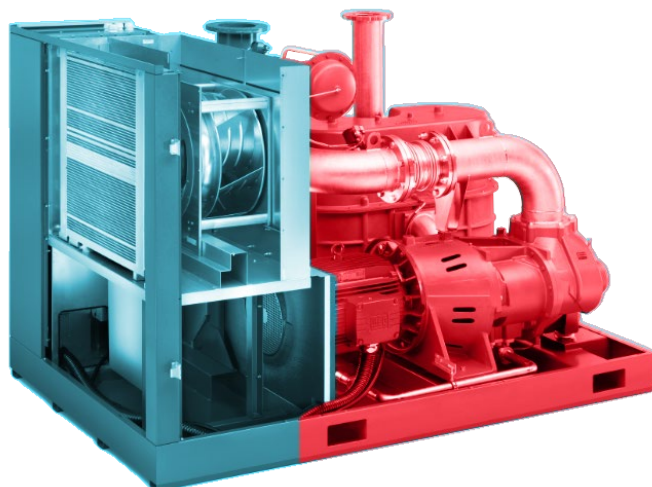
CENTRIFUGAL VSD FAN

- ▶ Variable Speed Drive (VSD) controlled
- ▶ With oil temperature algorithm to allow on-demand cooling
- ▶ Additional energy savings
- ▶ More durable and resistant to harsh environments



ENCLOSURE WITH HOT-COOL ZONES

The EOS3800-5400i range features an enclosure with a hot-cool design. It isolates all heat producing and temperature critical components (oil separator and element) from all other components. As cool running means higher reliability, this feature extends the lifetime of electronic components and leads to a longer Mean Time Between Maintenance (MTBM).



TECHNICAL SPECIFICATION

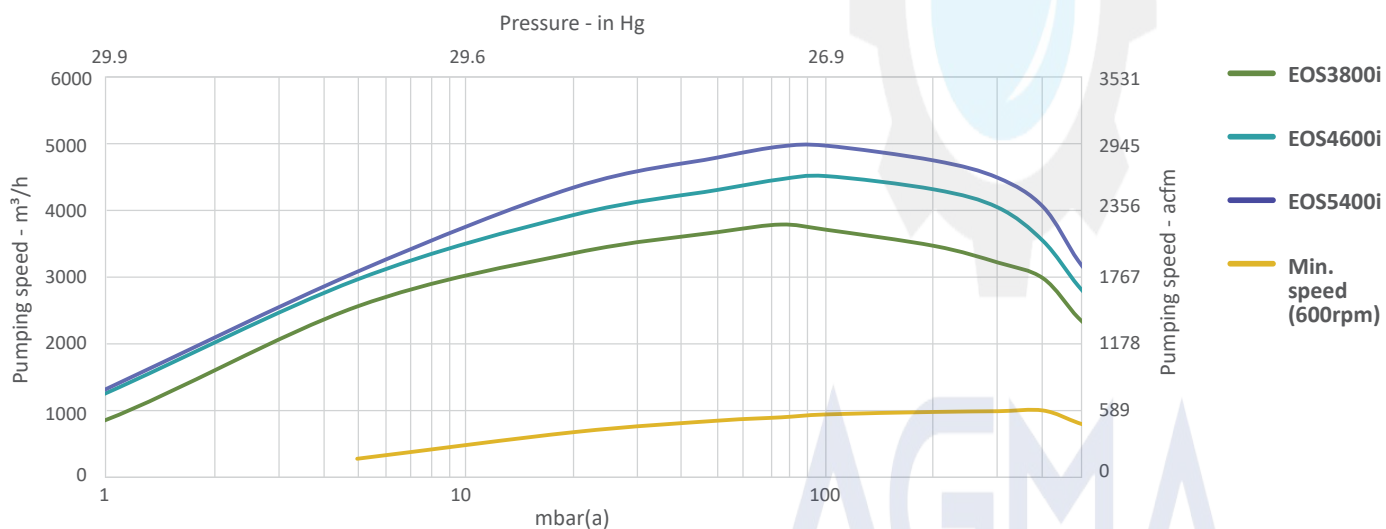
	Units	EOS3800i	EOS4600i	EOS5400i
Nominal displacement	m ³ /h / cfm	3828 / 2253	4478 / 2636	5004 / 2945
Ultimate vacuum	mbar / torr	0.35 / 0.26	0.35 / 0.26	0.35 / 0.26
Frequency range	Hz	25-97	25-117	25-133
Inlet connection	-	DN200(PN10)	DN200 (PN10)	DN200 (PN10)
Outlet connection	-	DN150 (PN10)	DN150 (PN10)	DN150 (PN10)
Shaft power	kW	55	75	90
Ambient temperature	°C	0-46	0-46	0-46
Noise level range	dB(A)	83 (+/-3)	84 (+/-3)	85 (+/-3)
Oil quantity	L	85	85	85
Dimensions (L x W x H)	mm	2850 x 1939 x 1893	2850 x 1939 x 1893	2850 x 1939 x 1893
Weight	kg	3945	3980	4000
Electrical specification	380-460V,3ph, 50Hz/60Hz, CSA/UL			

Air-cooled and water-cooled versions are available for all the machines.

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PERFORMANCE CURVE



CENTRAL VIEW OF EVERYTHING

Edwards' revolutionary central controller allows you to monitor and control multiple EOSi vacuum pumps simultaneously. Two EJGO MC models are available in standard and premium versions tailored to applications as needed.



Without screen - Web access supported



With 10" touch HMI - Onboard control

SOFTWARE OPTIONS, TAILORED TO YOUR APPLICATION

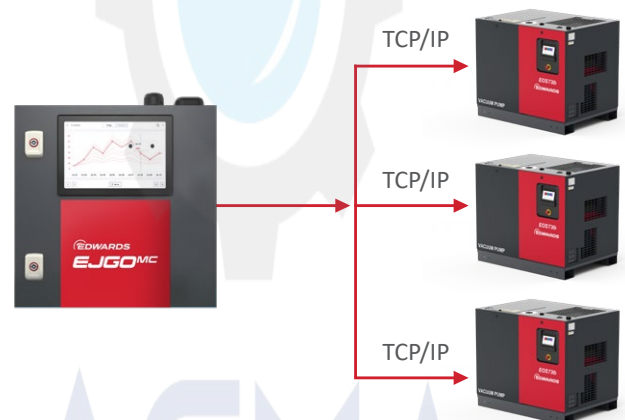
Standard version

- ▶ Up to 8 Variable Speed Drive (VSD) or Fixed Speed (FS) pumps
- ▶ ~10% energy saving vs traditional sequencer

Premium version

- ▶ Up to 20 Variable Speed Drive (VSD) or Fixed Speed (FS) pumps
- ▶ Innovative algorithm to maximise energy saving
- ▶ ~20% energy saving vs traditional sequencer

CENTRAL VACUUM SYSTEM



APPLICATIONS

► Holding and lifting

- Pick and place (e.g., electronics, flat-panel display, automotive glass)
- Paper conveying (e.g., envelope manufacture, printing)
- General packaging
- Load lock (e.g., CNC/machining, woodworking)



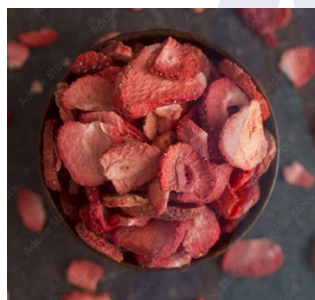
► Forming and shaping

- Plastic (e.g., bathtubs, shower trays, white goods internals, extrusion)
- Thermoplastic packaging
- Glass bottle
- Lamination



► Food processing and preserving

- Meat and poultry packaging (e.g., flat, vacuum packs, controlled/modified atmosphere packing)
- Freeze drying
- Canning



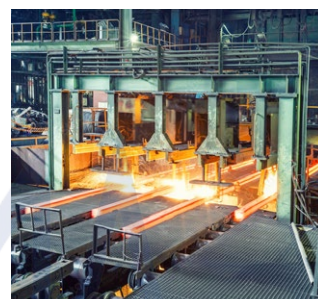
► General industrial application

- Furnaces – Heat Treatment and Metallurgy
- Altitude simulation
- Coating
- Pneumatic conveying
- General evacuation duties



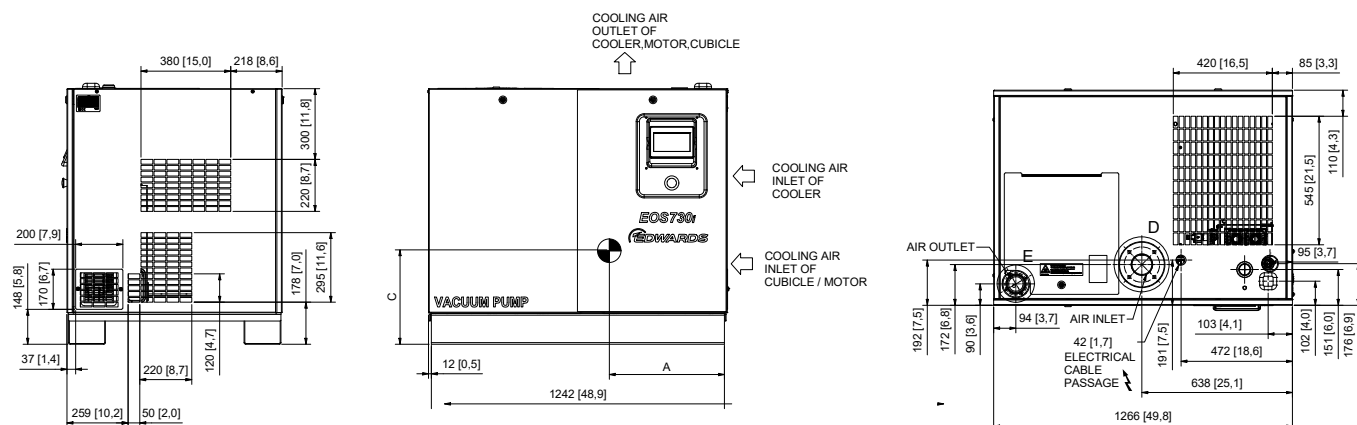
► Wet application

- Food cooling
- Ceramic tile and brick degassing
- Pipeline drying

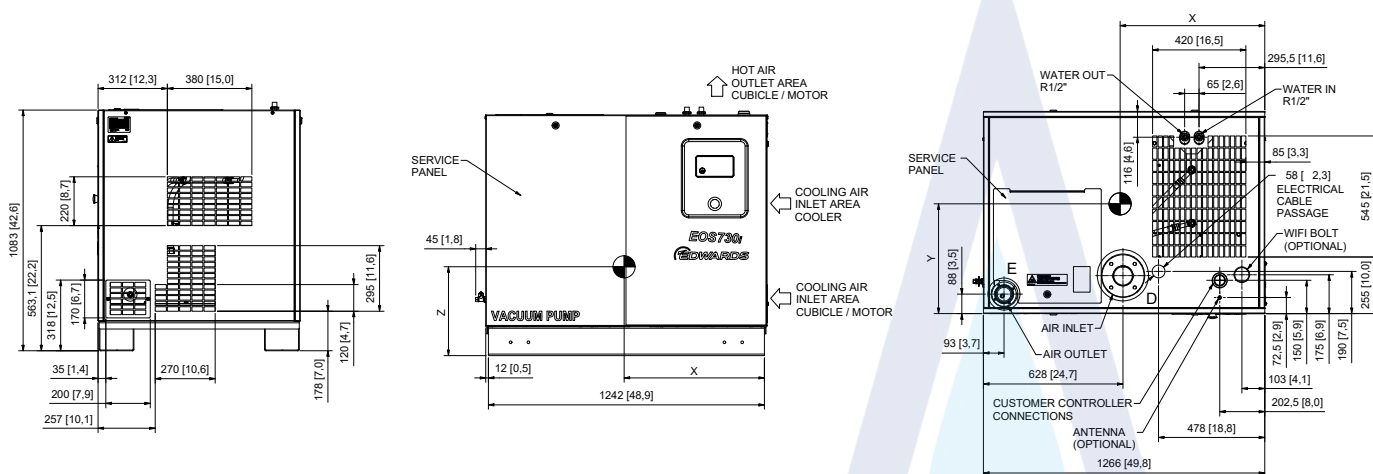


DIMENSIONS

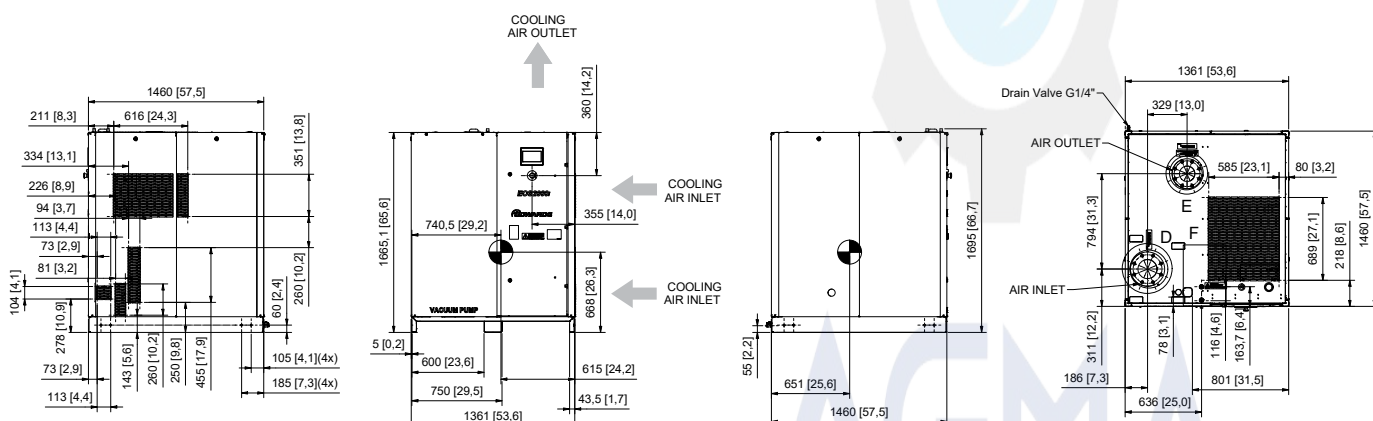
EOS350-900i (7" HMI)



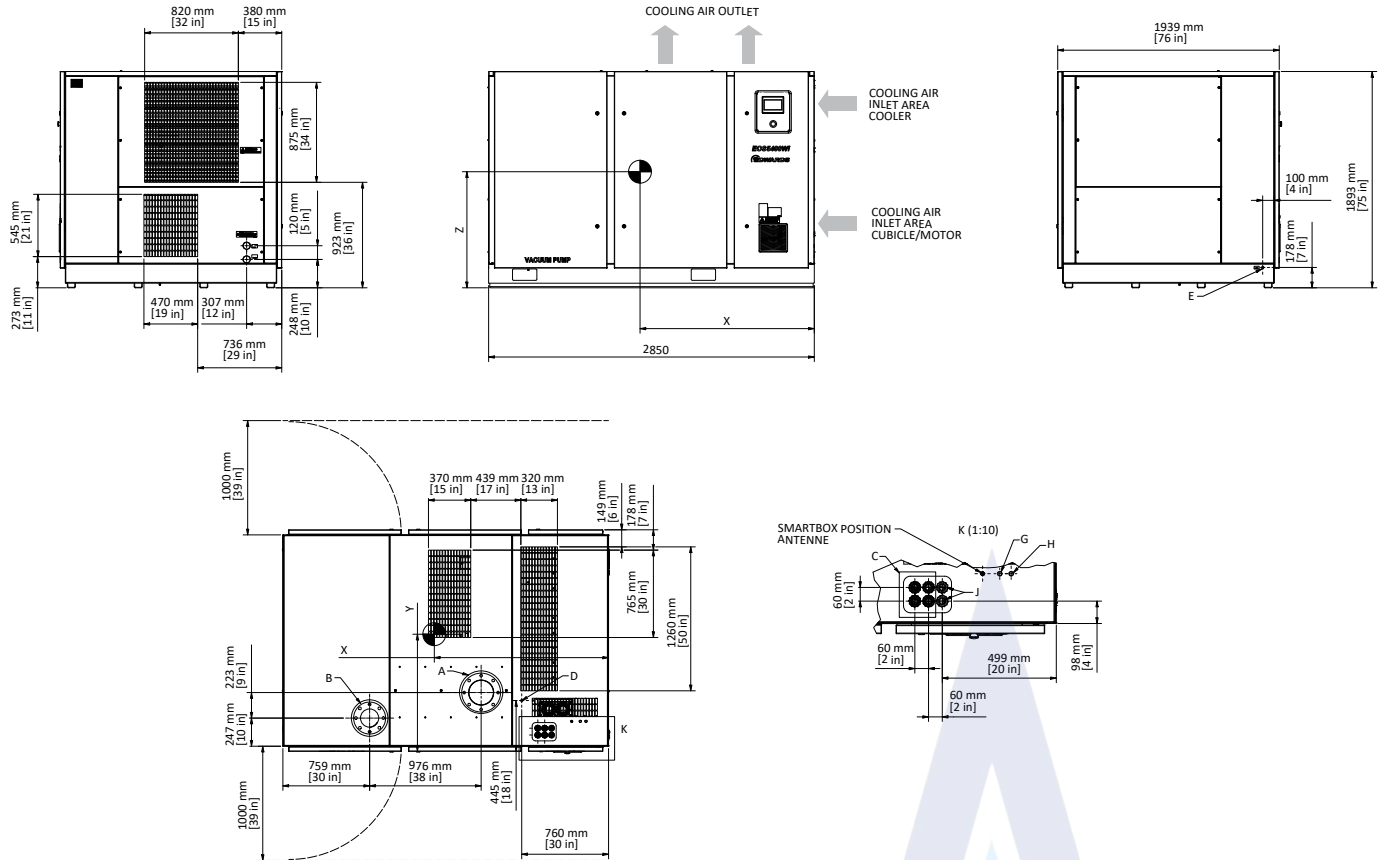
EOS350-900i (Front Panel)



EOS1400-2000i (7" HMI)



EOS3800-5400i (7" HMI)



SERVICE AND SUPPORT

Maintaining your EOSi vacuum pump is simple. Energy efficiency control means that the service interval stands extended. Should you forget, service intervals can be monitored briefly in the intuitively integrated EJGO interface. Optimum performance ensures maximum lifetime of the vacuum pump. And you can get notified when service is due. Intelligent design makes the EOSi range incredibly easy to access and work on. Further, it shortens the time taken to complete inspections and common tasks.

Frequent attention to the service requirements of your system greatly increases the period between major overhauls. This ensures clean and efficient operation. To maintain the best possible performance of your EOSi system, we recommend original Edwards parts. To support this, a comprehensive range of spares and lubricants is available.

Contact your local Edwards sales office to discuss your specific requirements.





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EOS1300-1900i ROTARY SCREW VACUUM PUMPS

edwardsvacuum.com

Edwards EOS1300-1900i range is a new generation range of quiet, oil-sealed rotary screw vacuum pumps

With Variable Speed Drive (VSD) technology and intelligent control, the EOS1300-1900i range delivers impressive on-demand performance capability and optimises energy consumption. The highly efficient oil separator design extends service intervals and reduces maintenance costs. Temperature management control enables unrivalled water handling capability to provide you with the versatility and flexibility you need for your application.



State-of-the-art screw technology, Variable Speed Drive (VSD) and innovative motor design

Increased efficiency

Class-leading pumping speed and fast chamber pumpdown performance capability

Improved productivity

Closed loop pressure control and active power management

Intelligent control

Automatic performance matched to vacuum demand

Low cost of ownership

Noise levels approximately half that of comparable technologies

Quiet operation

Ultra-high oil retention at all operating pressures

Reduced environmental impact

Features and benefits

Pump module

- Highly efficient oil-sealed rotary screw
- Outstanding performance
- Robust design
- Element life is significantly longer than screw compressors and vane pumps

Energy recovery options

- Available for larger motor sizes
- Helping you to fulfil your energy management and environmental commitments according to ISO 50001/14001

Easy to use, simple to maintain

- The top cover of the oil separator has a unique hinge mechanism
- It slips the cover to the side allowing the oil separator filter to be changed easily and quickly
- A cleverly designed exhaust pipe enables the condensates to be collected in the discharge pipework at the outlet

Guaranteed oil retention

- Optimum design for maximum oil retention
- Longer life because of managed performance means the vacuum pump never overloads the separators
- Innovative design retains oil at $<3 \text{ mg/m}^3$ even when under the greatest load
- In conventional fixed speed vacuum pumps overloaded oil separators lead to oil carryover

Inlet control valve

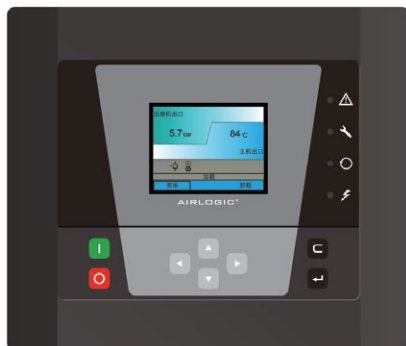
Provides modulating vacuum control in conjunction with the VSD drive to minimise energy consumption

Enclosure with hot-cool zones

The EOS1300-1900i range features an enclosure with a hot-cool design. It isolates all heat producing and temperature critical components (oil separator and element) from all other components. As cool running means higher reliability this feature extends the lifetime of electronic components and leads to a longer Mean Time Between Maintenance (MTBM)

Airlogic® monitoring system

Airlogic® is a state-of-the-art monitoring system for your vacuum pumps. It is simple and comprehensive and leads to energy savings. It can also integrate with your plant management system thanks to a remote monitoring option.



Easy to use

- 3.5-inch high-definition color display with clear pictograms, 32 language settings
- Additional LED indicator for service
- Graphical display of key parameters (day, week, month)

Plant management system

Airlogic® installed on different vacuum pumps can be monitored in cascade. Remote monitoring can be added as an option (Modbus/Profibus/Ethernet protocols)

Comprehensive

You get all the information for the everyday management of your vacuum pump as well as the alarms, safety shutdowns and maintenance:

- Monitoring: Vacuum pump operating status, recording of running/stopped hours, programmable timers, temperature/pressure read-outs, set point control and other settings
- Safety: Warning indications, fault and shutdown indications
- Service: Service operations, remote control (optional)

Intelligent monitoring system

Airlogic® is a flexible solution for data monitoring: easy to install and customise and user-friendly

TECHNICAL SPECIFICATIONS

	EOS1300i	EOS1600i	EOS1900i
Peak pumping speed (m ³ /h/cfm)	1250 / 740	1590 / 940	1810 / 1070
Ultimate vacuum (mbar/Torr)	0.35 / 0.26	0.35 / 0.26	0.35 / 0.26
Inlet connection	DN 150	DN 150	DN 150
Outlet connection	DN 100	DN 100	DN 100
Shaft power (kW)	22	30	37
Permissible ambient temperature (°C)	0 - 46	0 - 46	0 - 46
Noise level range (dB(A))	65-75	65-79	65-80
Oil quantity (l)	40	40	40
Dimension L x W x H (mm)	1420 x 1590 x 1470	1420 x 1590 x 1470	1420 x 1590 x 1470
Weight (kg)	1058	1058	1073
Electrical specification	380 / 460V 50 / 60Hz CSA / UL		

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