a clear edge

ES single stage oil sealed rotary vane pumps

EDWARDS

Vacuum science... product solution.

a clear edge

maximise your productivity and performance

Enhanced performance

Class leading ultimate vacuum level and extended operating pressure range.

Stability

Perfectly 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.

Edwards ES pump range – the next generation of rotary vane pumps

The Edwards ES range of pumps represents a significant advancement in single stage oil sealed rotary vane pumps.

- Suitable for a **wider range of industrial applications**, with good water vapour handling.
- Runs cooler than comparable pumps, giving longer oil lifetime – **low cost of ownership**.
- Minimal oil emission, **environment friendly**.
- Quieter than most comparable single stage rotary vane pumps.
- Optimised oil return system – **improved product quality with consistent process results**.
- In-built ISO and BSP connections – **ease of integration**.
- Easy oil and filter changes – **easy to maintain**.
- Can be serviced on site by the user – **higher productivity**.
- Fully assembled package with EH boosters – suits a variety of performance requirement, **simple and easy**.

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 has around 1,000,000 rotary vane pumps installed across the world. 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. 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.

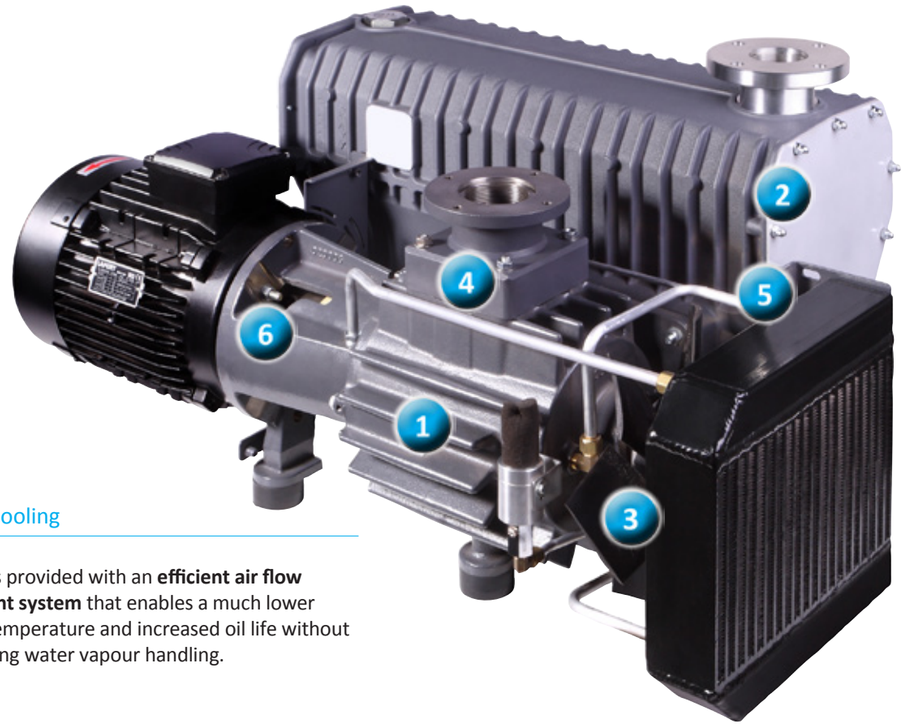
ES pump technology

1 Refined internal mechanism

The improved pump mechanism is designed with attention to detail that guarantees **a class leading ultimate vacuum level without the pressure fluctuations** that are often seen in single stage pumps.

2 Oil mist filter

The improved integrated exhaust mist filter is very effective in preventing oil mist from being exhausted into the laboratory. It is user serviceable and **gives the pump a much cleaner and quieter operation**. This effective oil mist filter along with an improved oil baffle reduces oil loss to almost zero.



3 Air cooling

The pump is provided with an **efficient air flow management system** that enables a much lower operating temperature and increased oil life without compromising water vapour handling.

4 Standard inlet

The inlet connections are ISO flanges with internal BSP threads providing the user with **installation flexibility**.

5 Oil return system

The enhanced **oil return system gives an excellent vacuum stability**. Use of Edwards Ultragrade® 20 oil not only gives an improved vacuum performance but also enables the pump to withstand high operating temperature without oil degradation thus extending intervals between oil changes.

6 Direct drive technology

The directly driven motor offers a **compact and quieter pump that requires less maintenance**. The motors are UL approved and meet European standards EN60034. These motors are highly efficient, meeting the latest energy efficiency standards.

The Edwards ES range is avaliable in pumping speeds from 65 to 630m^3h^{-1}

ES65

ES5100

ES200

ES300

ES630

Other technology benefits

- The pump is supported on vibration isolators thus protecting it against any sort of vibrations in the form of shock or noise.
- Gas ballast is fitted as standard, in order to allow pumping of condensable vapours including water and solvents.
- Use of industry standard materials such as cast iron for rotor/stator as well as glass filled polymer blades offers excellent protection against wear and tear.
- Easy to fit accessories are available as kits which can be directly screwed on to the pump. This includes oil level switch, PT100 and a 120 °C temperature sensor.
- Inlet filters and catch pots are available to protect the pump against excessive dust or condensable vapours.
- ES series has 2 standard available kits to support a self-service approach.
  - The usual maintenance kits consist of the basic consumable items such as oil, filters and ballast elements and these are recommended to be changed at approximately 3000 hours intervals.
  - The preventative maintenance kits consist of the additional parts required to conduct a full specification service such as bearings, interior seals and rotary vane blades.

Applications

ES Pumps and Booster packages offer the 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

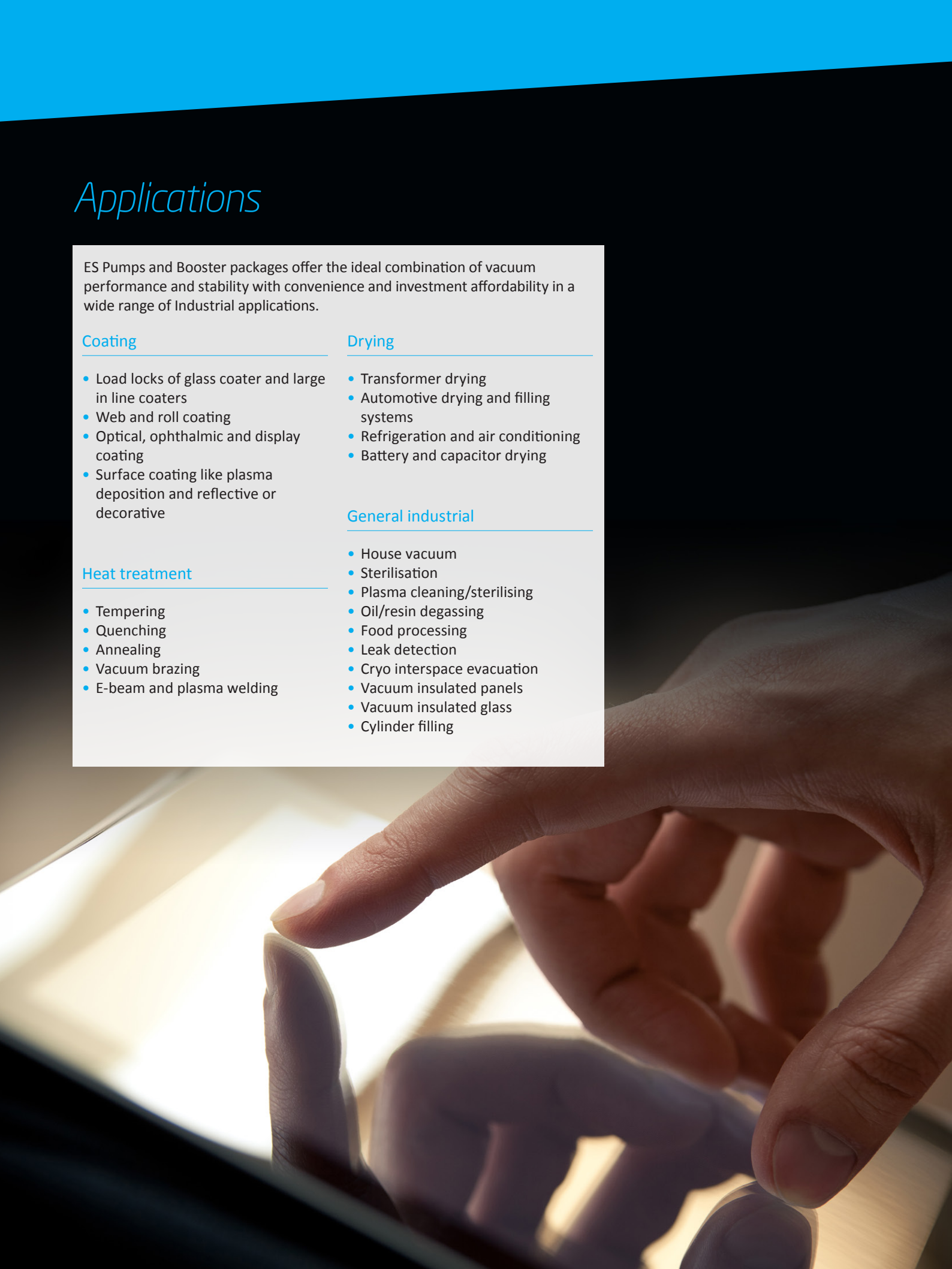
- Tempering
- Quenching
- Annealing
- Vacuum brazing
- E-beam and plasma welding

Drying

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

General industrial

- House vacuum
- Sterilisation
- Plasma cleaning/sterilising
- Oil/resin degassing
- Food processing
- Leak detection
- Cryo interspace evacuation
- Vacuum insulated panels
- Vacuum insulated glass
- Cylinder filling



Technical data

	units	ES65	ES100	ES200	ES300	ES630
Pumping Speed 50 Hz	m^3h^{-1} / cfm	59/35	90/53	190/112	275/162	575/338
Pumping Speed 60 Hz	m^3h^{-1} / 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 vater vapour pumping rate (50Hz)	kgh^{-1} / lbh^{-1}	1.3/2.8	2.6/5.7	2.2/4.8	2.3/5.1	5.6/12.3
Max vater vapour pumping rate (60Hz)	kgh^{-1} / lbh^{-1}	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	kg / lb	77/169	88/194	144/317	180/369	506/1115
Motor Protection rating		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 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

ES pump and booster combinations

Edwards is able to offer a range of ES rotary vane pumps and mechanical boosters, complete with combination kits to mount the mechanical booster. The fitting of a mechanical booster to an ES rotary vane pump significantly increases the pumping speed and vacuum performance of your system, as well as increasing the ultimate vacuum attainable by approximately one decade of pressure. Edwards' applications specialists are able to assist in the selection of the combination most suited to your requirements. Individual data sheets are available on request for all combinations showing the pumping speed of each combination together with an installation drawing to assist in the design of your system.

EH range

The EH range of mechanical boosters (250-4200 m^3h^{-1}, 150-2500 cfm), with their unique hydrokinetic drive allowing continuous operation from atmosphere to ultimate vacuum, cuts pump down times by up to 50%.

Systemisation

Our comprehensive range of ES pumps and mechanical boosters, complete with combination kits allows the user to specify a complete system. Specifying a combination is simply a process of selecting the ES pump and the required mechanical booster which would enable us to build a complete systemised unit ready to use. Depending on the type of ES and booster pump combination, the assembled unit will either be a Frame Mount or a Direct Mount unit with base runners. Alternatively combination kits can be available as a kit of parts that allows them to be easily assembled, together with the ES pump and mechanical booster, on site.

ES pump/EH booster possible combinations

	EH250	EH500	EH1200	EH2600	EH4200
ES65					
ES100	Direct mount				
ES200					
ES300				Frame mount	
ES630					

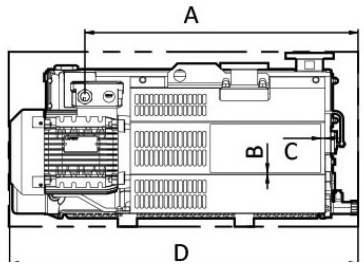
Note: other combinations are available on request

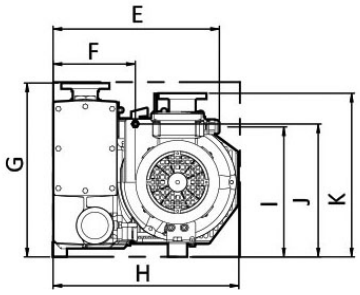
Direct mount

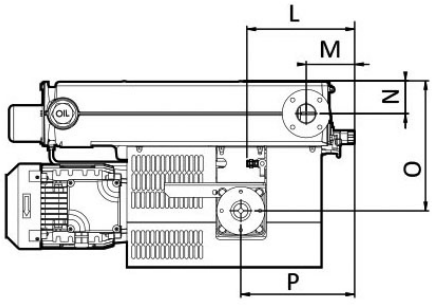
Frame mount

Dimensions

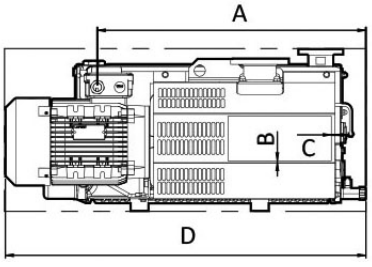
ES65

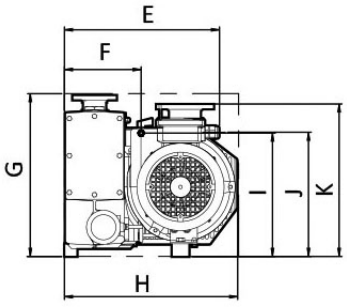


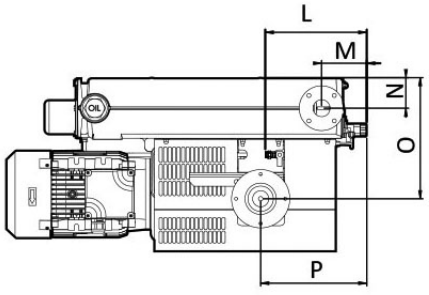




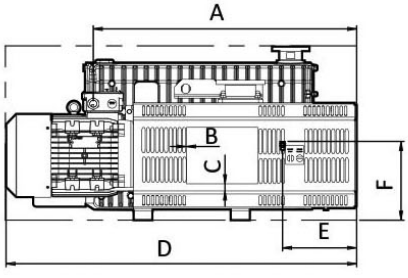
ES100

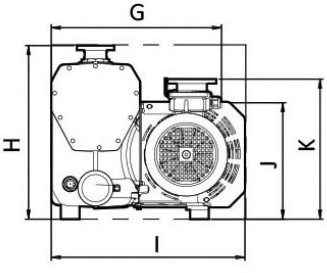


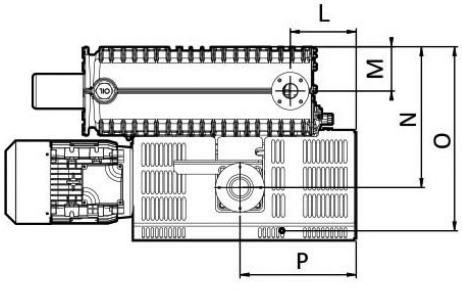




ES200



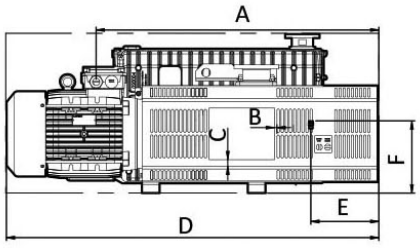


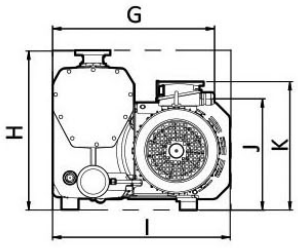


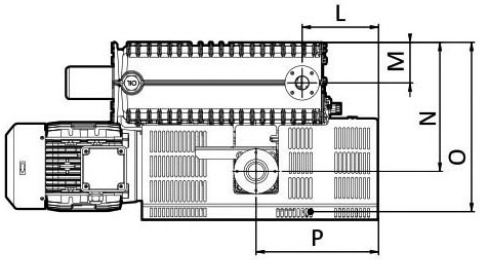
mm (inches)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
ES65	568 (22.36)	3.8 (0.15)	8.6 (0.34)	725 (28.54)	346 (13.62)	171 (6.73)	361 (14.21)	387 (15.24)	270 (10.63)	276 (10.87)	340 (13.39)	224 (8.82)	101 (3.98)	68 (2.68)	270 (10.63)	237 (9.33)
ES100	599 (23.58)	3.8 (0.15)	8.6 (0.34)	804 (31.65)	346 (13.62)	171 (6.73)	361 (14.21)	387 (15.24)	275 (10.83)	277 (10.91)	340 (13.39)	226 (8.9)	101 (3.98)	68 (2.68)	270 (10.63)	237 (9.33)
ES200	702 (27.64)	2.8 (0.11)	19 (0.75)	935 (36.81)	198 (7.8)	210 (8.27)	454 (17.87)	462 (18.19)	517 (20.35)	310 (12.2)	373 (14.69)	176 (6.93)	118 (4.65)	373 (14.69)	490 (19.29)	310 (12.2)

Dimensions

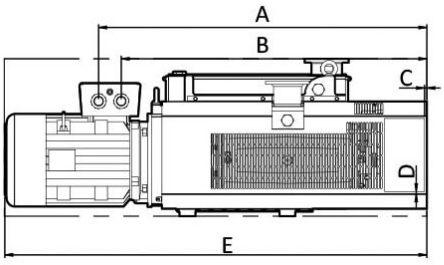
ES300

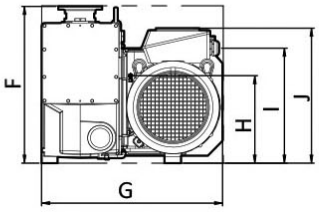


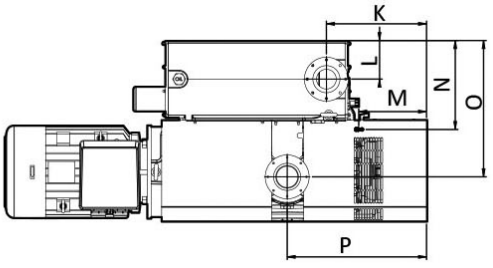




ES630

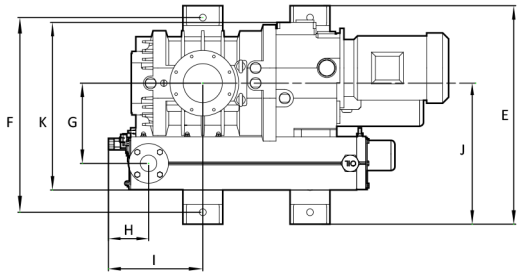


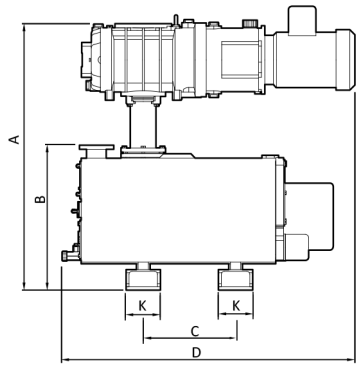




mm (inches)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
ES300	822 (32.36)	7.4 (0.29)	19 (0.75)	1083 (42.64)	198 (7.8)	210 (8.27)	471 (18.54)	462 (18.19)	517 (20.35)	323 (12.72)	373 (14.69)	222 (8.74)	118 (4.65)	375 (14.76)	492 (19.37)	356 (14.02)
ES630	1234 (48.58)	1149 (45.24)	9 (0.35)	8 (0.31)	1587 (62.48)	589 (23.19)	681 (26.81)	329 (12.95)	432 (17.01)	507 (19.96)	377 (14.84)	145 (5.71)	225 (8.86)	334 (13.15)	512 (20.16)	524 (20.63)

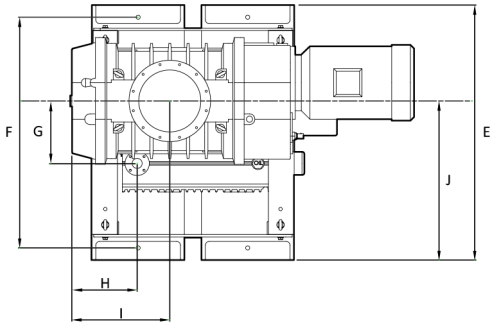
ES/EH combinations direct mount

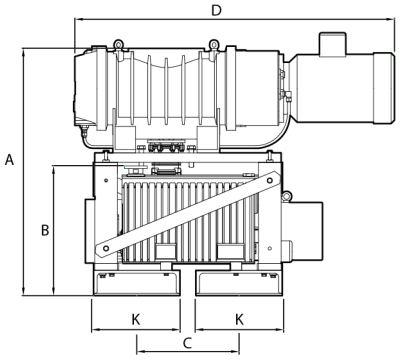




mm (inches)	A	B	C	D	E	F	G	H	I	J	K
ES100/EH250	744 (29.29)	424 (16.69)	269 (10.59)	790 (31.1)	550 (21.65)	490 (19.29)	202 (7.95)	99 (3.9)	137 (5.39)	355 (13.98)	80(3.14)
ES100/EH500	780 (30.71)	424 (16.69)	269 (10.59)	853 (33.58)	550 (21.65)	490 (19.29)	202 (7.95)	101 (3.98)	237 (9.33)	355 (13.98)	80(3.14)
ES200/EH500	813 (32.01)	521 (20.51)	260 (10.24)	934 (36.77)	584 (22.99)	490 (19.29)	257 (10.12)	176 (6.93)	310 (12.2)	425 (16.73)	80(3.14)
ES200/EH1200	758 (29.84)	521 (20.51)	260 (10.24)	979 (38.54)	615 (24.21)	490 (19.29)	257 (10.12)	176 (6.93)	310 (12.2)	425 (16.73)	80(3.14)
ES300/EH500	812 (31.97)	521 (20.51)	307 (12.09)	1043 (41.06)	584 (22.99)	490 (19.29)	257 (10.12)	222 (8.74)	256 (10.08)	425 (16.73)	80(3.14)
ES300/EH1200	758 (29.84)	521 (20.51)	307 (12.09)	1043 (41.06)	615 (24.21)	490 (19.29)	257 (10.12)	222 (8.74)	256 (10.08)	425 (16.73)	80(3.14)
ES630/EH1200	1058 (41.57)	649 (25.55)	376 (14.8)	1580 (62.2)	772 (30.39)	620 (24.41)	367 (14.45)	375 (14.76)	522 (20.55)	582 (22.91)	80(3.14)

ES/EH combinations frame mount

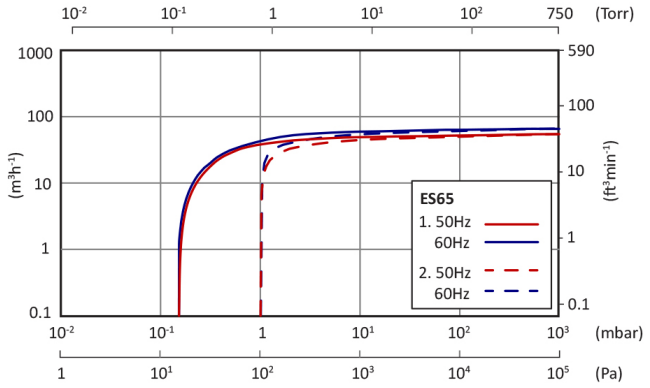




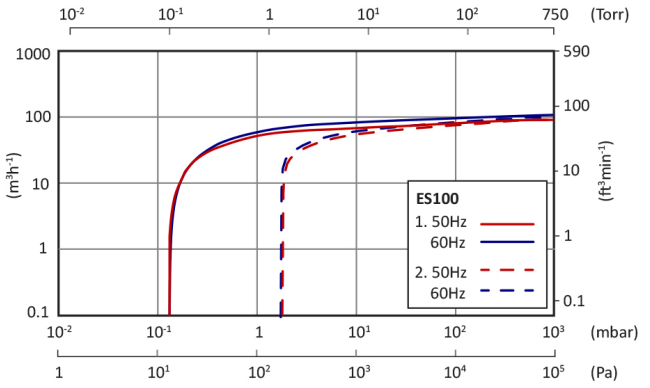
mm (inches)	A	B	C	D	E	F	G	H	I	J	K
ES300/EH2600	1091 (42.95)	573 (22.56)	450 (17.72)	1269 (49.96)	1050 (41.34)	950 (37.4)	257 (10.12)	222 (8.74)	356 (14.02)	655 (25.79)	345(13.55)
ES300/EH4200	1091 (42.95)	573 (22.56)	450 (17.72)	1406 (55.35)	1050 (41.34)	950 (37.4)	257 (10.12)	268 (10.55)	402 (15.83)	655 (25.79)	345(13.55)
ES630/EH2600	1218 (47.95)	701 (27.6)	513 (20.2)	1580 (62.2)	1180 (46.46)	1080 (42.52)	367 (14.45)	375 (14.76)	522 (20.55)	775 (30.51)	345(13.55)
ES630/EH4200	1218 (47.95)	701 (27.6)	513 (20.2)	1580 (62.2)	1180 (46.46)	1080 (42.52)	367 (14.45)	375 (14.76)	522 (20.55)	775 (30.51)	345(13.55)

Performance curves

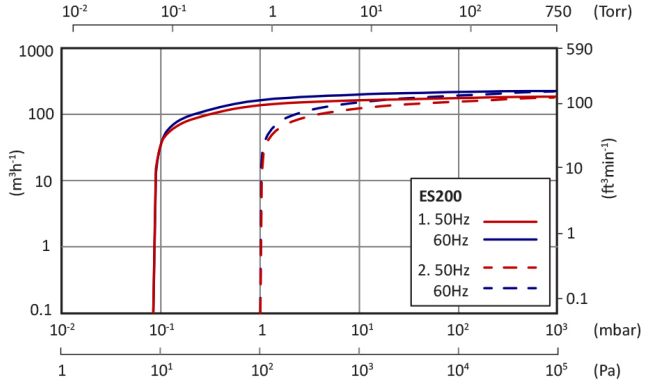
ES65



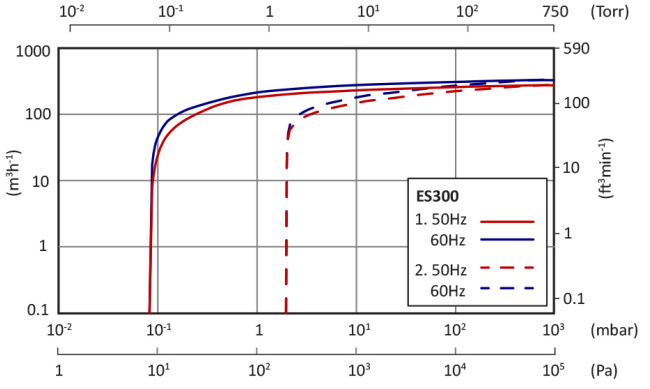
ES100



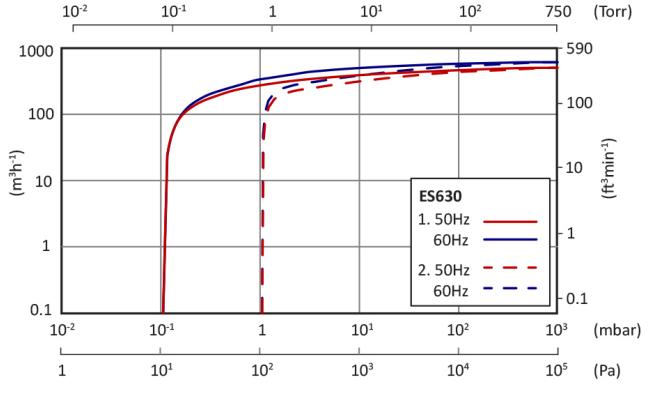
ES200



ES300



ES630

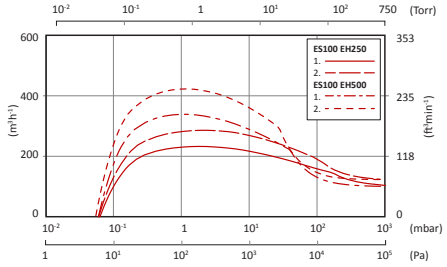


1. Without Gas Ballast
2. With Gas Ballast

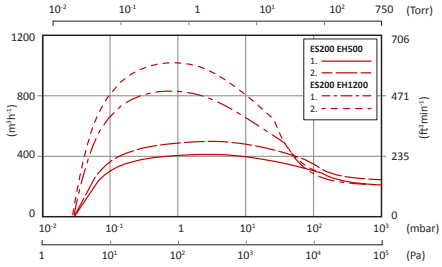
Performance curves

ES/EH combinations with gas ballast

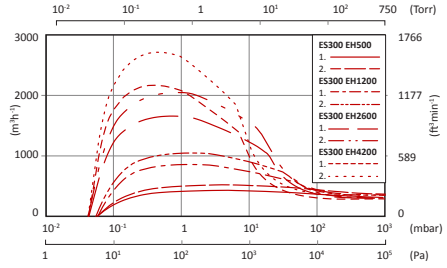
ES100



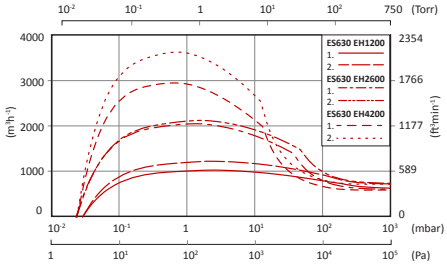
ES200



ES300



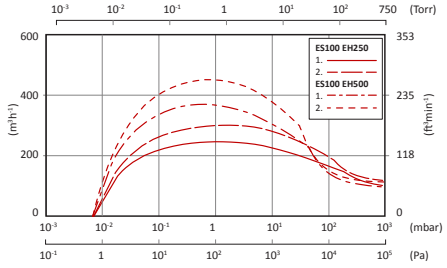
ES630



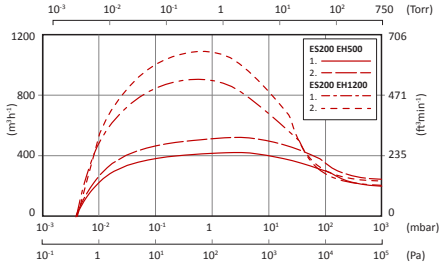
1. 50Hz
2. 60Hz

ES/EH combinations without gas ballast

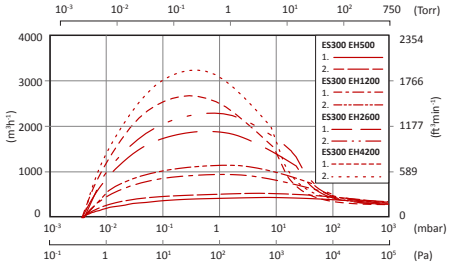
ES100



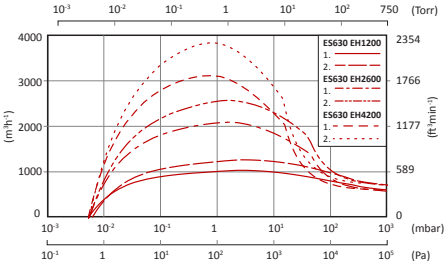
ES200



ES300



ES630



1. 50Hz
2. 60Hz

Ordering information

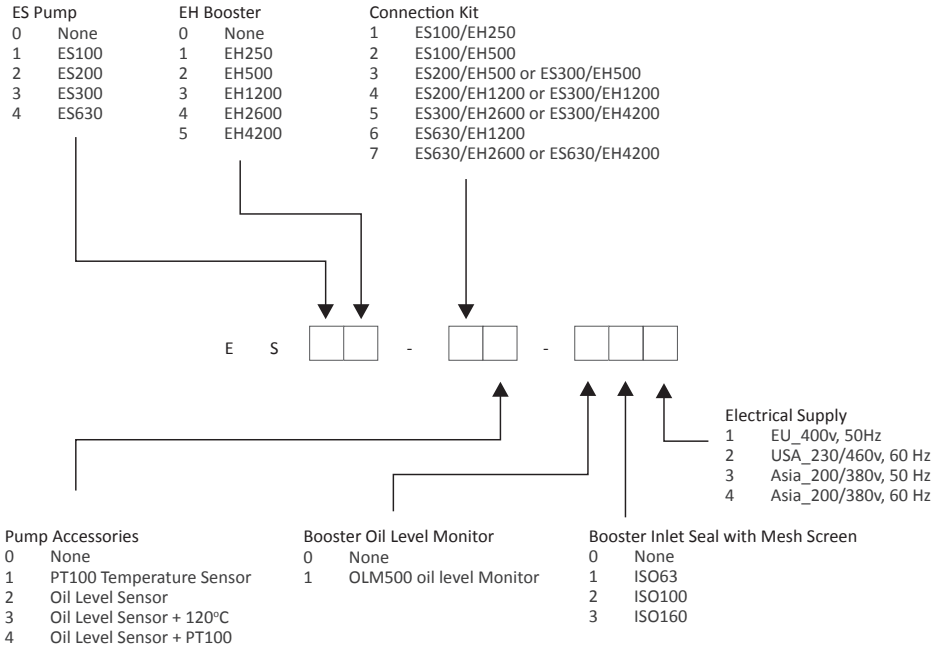
ES range

Part Number	Description
A35245934	ES65 – 200/380V 50/60Hz
A35245935	ES65 – 400V 50Hz
A35245982	ES65 – 208/230/460V 60Hz
A35250934	ES100 – 200/380V 50/60Hz
A35250935	ES100 – 400V 50Hz
A35250982	ES100 – 208/230/460V 60Hz
A35255934	ES200 – 200/380V 50/60Hz
A35255935	ES200 – 400V 50Hz
A35255982	ES200 – 208/230/460V 60Hz
A35260934	ES300 – 200/380V 50/60Hz
A35260935	ES300 – 400V 50Hz
A35260982	ES300 – 208/230/460V 60Hz
A35265934	ES600 – 200/380V 50/60Hz
A35265935	ES600 – 400V 50Hz
A35265982	ES600 – 208/230/460V 60Hz

Accessories

Description	Ordering number
ES65/ES100 Oil Level Sensor	A35266810
ES65/ES100 Oil level & 120oC sensor	A35266811
ES65/ES100 Oil level sensor & PT100	A35266812
ES65/ES100 PT100 Temperature sensor	A35266813
ES200/ES300 Oil level sensor	A35277810
ES200/ES300 Oil level & 120oC sensor	A35277811
ES200/ES300 Oil level sensor & PT100	A35277812
ES200/ES300 PT100 Temperature sensor	A35277813
ES630 Oil level sensor	A35288810
ES630 Oil level & 120oC sensor	A35288811
ES630 Oil level sensor & PT100	A35288812
ES630 PT100 Temperature sensor	A35288813
ITO100 Inlet Catchpot	A44102000
ITO300 Inlet Catchpot	A44103000
ITO800 Inlet Catchpot	A44104000
ITM100 Inlet Dust Filter	A44302000
ITM300 Inlet Dust Filter	A44303000
ITM800 Inlet Dust Filter	A44304000

ES/EH combinations ordering number matrix



Service and support

The ES range of single stage oil sealed rotary vane pumps is designed with a number of features which enable both routine maintenance and full service intervention to be conducted with minimal specialised tooling and knowledge. Routine maintenance activities can be performed with the pump left in its installation environment, and full service can be performed in any workshop used for typical industrial site equipment maintenance.

For those customers who prefer a self-managed service philosophy, Edwards provides the following great value options for the ES Range:-

- **Dedicated spares kits** containing everything required in one simple package for either maintenance level or full service level tasks.
- **Full product strip and rebuild procedures** in a maintenance manual, and short, illustrative videos.
- **Low cost dedicated tooling** to perform removal and replacement of the critical bearing and shaft seals.
- **Customer training events** delivered by a fully qualified Edwards engineer at your site to leave you capable of fully independent servicing of your product.

For those customers who desire more support from Edwards, we provide the following fast and effective service solutions for the ES Range:-

- **Field service engineering support** for those customers with limited technical capability, or those who wish to only trust Edwards qualified service teams with their service activities.
- A range of **flexibly priced field service offerings** will be available throughout our global support network covering all major industrial regions world-wide.

Global contacts

Belgium

Brussels +32 2 300 0730

Brazil

Sao Paulo +55 11 3952 5000

China

Shanghai (toll free) 400 111 9618

France

Paris +33 1 4121 1256

Germany

Munich 0800 000 1456

India

Pune +91 20 4075 2222

Israel

Qiryat Gat +972 8 681 0633

Italy

Milan +39 02 48 4471

Japan

Yachiyo +81 47 458 8831

Korea

Bundang +82 31 716 7070

Singapore

Singapore +65 6546 8408

Taiwan R.O.C.

Jhunan Town +886 3758 1000

United Kingdom

Crawley +44 1293 528844

UK (local rate) 08459 212223

United States

Niagara (toll free) 1 800 848 9800

www.edwardsvacuum.com

info@edwardsvacuum.com

Publication Number: A35240895. Issue A.