

# Small Wet/Dry Pumps



<a href="#">Small Pumps and Pumping Systems</a>	2
<a href="#">Small Pumps: Application and Accessory Information</a>	3
<a href="#">Small Pumps and Accessories: Frequently Asked Questions</a>	4
<a href="#">XDS Scroll Pumps</a>	5
<a href="#">E2M0.7 and 1.5 Oil Sealed Rotary Vane Pumps</a>	16
<a href="#">RV Rotary Vane Pumps</a>	20
<a href="#">EM18 and 28 Oil Sealed Rotary Vane Pumps</a>	28
<a href="#">Small ATEX Certified Pumps</a>	32
<a href="#">Electrical Data</a>	36
<a href="#">Small Pump Accessories</a>	36
<a href="#">E-LAB Rotary Pumps</a>	41
<a href="#">Diaphragm Pumps</a>	43

# Small Pumps and Pumping Systems

1

Page  
2

To meet the diverse needs of applications ranging from analytical instrumentation, wet chemistry, R & D to light industrial, Edwards offers a comprehensive range of different pumping technologies. Refer to the application and accessory guide to select pumps and accessories for your application.

## Oil Free Scroll Pumps

Scroll pumps are an excellent alternative to rotary vane pumps where oil free pumping is desirable. The innovative XDS pumps in particular use a bearing shield to isolate the vacuum environment from all forms of lubricant not only making them *totally dry*, but also protecting the bearing from any process gases. Vapour handling is enabled by an gas ballast; this allows the range of pumps to satisfy many applications that were previously off limits to scroll pumps.

- $\leq 2 \times 10^{-2}$  mbar /  $\leq 1.5 \times 10^{-2}$  Torr
- 5 to  $35 \text{ m}^3\text{h}^{-1}$  / 2.9 to  $20.6 \text{ ft}^3\text{min}^{-1}$



## Oil Sealed Rotary Vane Pumps



- $\leq 10^{-3}$  mbar /  $\leq 10^{-3}$  Torr
- 0.9 to  $32.3 \text{ m}^3\text{h}^{-1}$  / 0.5 to  $19.5 \text{ ft}^3\text{min}^{-1}$

This wide range of rugged pumps offers an excellent ultimate with good pumping speed. RV pumps have superior vapour handling capabilities, while operating quietly.

## Oil Free Diaphragm Pumps

- $\leq 2$  mbar /  $\leq 1.5$  Torr
- 0.6 to  $2.0 \text{ m}^3\text{h}^{-1}$  / 0.35 to  $1.2 \text{ ft}^3\text{min}^{-1}$

The D-LAB diaphragm pumps are made of corrosion resistant materials, to withstand attack from chemicals. They are ideal for applications such as gel drying and other wet chemistry processes. The XDD1 diaphragm pumps provide oil free backing for compound turbomolecular pumps.

## Easy to Service

All Edwards pumps are designed for easy routine maintenance. Key components are easily accessible and, with RV and XDS pumps, no special tools are required. Service kits of guaranteed parts are available for routine service by the user. Worldwide support from the Edwards service organization is also available.

## Quality Manufacture

Edwards pumps are manufactured on state of the art machine tools for high consistency of components. For example, RV rotors are manufactured in a robotic cell to remove errors and inconsistencies from the manufacturing process.



## Applications

Edwards high performance pumps are used in many industrial and laboratory applications, including the following:

- Electron microscopes, mass spectrometry, residual gas analysers and surface analysis
- Epoxy degassing, powder materials processing
- Solvent concentration
- Sterilization, distillation and centrifuges
- Gel dryers and glove boxes
- Atomic emission spectrometers, nuclear physics, fusion technology and space research
- Vacuum ovens
- TV tube evacuation
- Automotive system filling
- Freeze drying
- Vacuum metallurgy

# Small Pumps: Application and Accessory Information

Use the information in the list below to select the best pump and accessories for your application. The information is given as a guide only; the optimum set-up may depend on your specific method of operation. Note that you need to buy the accessories separately, unless otherwise stated.

## ATEX and Flammable Gases

The following standard pump models have an **internal** ATEX classification of Ⓔ II 3 G c IIB T4:

- E2M0.7, E2M1.5
- E1M18, E2M18 & E2M28
- RV3, RV5, RV8, RV12
- XDS5, XDS10, XDS35i

The following standard pump models operating on hydrocarbon oil can be supplied with flameproof motors providing an **external** classification of Ⓔ II 2 G IIB T4 (or IIC):

- RV3, RV5, RV8, RV12
- E1M18, E2M18



## Gel Dryers

Recommended pump: XDS or D-Lab.

Suggested accessories for D-Lab: Separator.

Optional accessories for D-Lab: Condenser, gas ballast valve.

## Rotary Evaporation and Vacuum Ovens

Recommended pump: XDS or D-Lab.

Suggested accessories for D-Lab: Separator.

Optional accessories for D-Lab: Condenser, gas ballast valve.

## Centrifugal Concentration

Recommended pump: XDS.

## Vacuum Filtration

Recommended pump: XDS or D-Lab.

Suggested accessories for D-Lab: Separator.

Optional accessories for D-Lab: Condenser, gas ballast valve.

## Distillation/Extraction Apparatus

Recommended pump: XDS or D-Lab.

Suggested accessories for D-Lab: Separator.

Optional accessories for D-LAB: Condenser, gas ballast valve.

## Freeze Dryers

Recommended pump: XDS or Rotary pumps.

Suggested accessories: Mist filters, oil return.

## MS Inlet Systems (like Electro-Spray)

Recommended pump: XDS35i or E2M28.

Suggested accessories for rotary pumps: Mist filter, oil return.

Suggested accessories for XDS: Silencer.

## Load Locks, Fume Hoods and Glove Boxes

Recommended pump: XDS or Rotary pumps.

Suggested accessories for rotary pumps: Mist filter, oil return.

Suggested accessories for XDS: Silencer.

## Ultra High Speed Centrifuges

Recommended pump: XDS or Rotary pumps.

Suggested accessories: Mist filter

Suggested accessories for rotary pumps: Mist filters, oil return.

## Leak Detection, Electron Microscopes, Mass Spectrometers and Lasers

Recommended pump: XDS or Rotary pumps.

Suggested accessories for rotary pumps: FL20K, Mist filter.

Suggested accessories for XDS: Silencer.

## Surface Science and Particle Size Analysers

Recommended pump: XDS or Rotary pumps.

Suggested accessories for rotary pumps: FL20K, Mist filter.

Suggested accessories for XDS: Silencer.

## High Energy Physics

Recommended pump: XDS or Rotary pumps.

Suggested accessories for rotary pumps: FL20K, Mist filter.

Suggested accessories for XDS: Silencer.

## Helium or Rare Gas Recirculation

Recommended pumps: XDS

## Backing Turbomolecular Pumps

Recommended pump: XDS, XDD1 or Rotary pumps.

Suggested accessories for rotary pumps: FL20K, Mist filter.

Suggested accessories for XDS: Silencer.

## Backing Diffusion Pumps

Recommended pump: XDS or Rotary pumps.

Suggested accessories for rotary pumps: FL20K, Mist filter.

Suggested accessories for XDS: Silencer.

## Refrigeration, Air Conditioning Systems

Recommended pump: XDS or Rotary pumps.

Suggested accessories for rotary pumps: FL20K, Mist filter.

Suggested accessories for XDS: Silencer.

## Vacuum Furnace

Recommended pump: XDS or Rotary pumps.

Suggested accessories for rotary pumps: ITF20K, Mist filter.

Suggested accessories for XDS: Silencer.

## Azide Forming Applications

Recommended pump: XDS or Rotary pumps.

Suggested accessories for rotary pumps: Mist filter.

Suggested accessories for XDS: Silencer.

## Notes

- FL20K is an inlet trap, to prevent oil back-streaming.
- ITF20K is an inlet trap, to capture dust particles.
- The gas ballast facility allows atmospheric air into the pump, minimising the formation of condensates (which contaminate the oil in rotary pumps).
- An oil return kit is available for E2M0.7, E2M1.5, RV, EM18 and E2M28 pumps to allow oil to be returned from the mist filter to the pump. A gas ballast oil return is also available to allow oil to return and have gas ballast flow.

# Small Pumps and Accessories: Frequently Asked Questions

1

Page  
4

## Oil Mist

**Question:** What accessory do I use to trap oil mist (which all oil sealed pumps emit during pump down or with gas ballast)?

**Answer:** To meet regulations and preserve pump oil, fit a recommended Edwards oil mist filter (EMF) to the pump outlet, and connect the exhaust to an exhaust line.

**Question:** If I operate an RV pump continuously or with high inlet pressure, what accessories do I need?

**Answer:** Fit an Edwards mist filter (EMF) and a gas ballast oil return (GBOR) kit. Then the pump can be operated with the mode switch open and gas ballast oil return. The oil condensed in the filter will be continuously returned to the pump oil box.

## Vapour Processes

**Question:** Which pump and accessories should I use if my process generates vapours which could condense in the pump?

**Answer:** You can choose either an XDS pump, or rotary pump. Gas ballast should be used with both pumps; to sweep the vapour through the pump. This prevents condensation and oil contamination.

Operate the pump with gas ballast for at least an hour before and after use. Choose the size of pump taking into account the vapour pumping rate.

If you selected a rotary pump, then you should fit a gas ballast oil return kit and mist filter. Change the oil frequently and keep an oil change reminder tag on the pump.

D-Lab would also be a suitable alternative depending on required pumping speed.

## Dust and Particle Processes

**Question:** Which pump and accessory should I use if my process generates dust or grit, which could clog or damage the pump?

**Answer:** Use a rotary pump fitted with an inlet dust filter. We do not recommend the use of scroll pumps or XDD1 pumps for these applications.

## Special Chemical Cleaning Processes

**Question:** Which pump and accessory should I use if my process generates oxygen or ozone?

**Answer:** Use a rotary pump adapted to run with Fomblin® oil or XDS. Contact Edwards for more information.

**Question:** Are there any special considerations if my pump will be used in the vicinity of organic gases, like propane?

**Answer:** Use a rotary pump fitted with a flameproof motor. Contact Edwards for more information.

## Contamination

**Question:** Which pump and accessories should I use if I must ensure that my process and process chamber (operated below 0.1 mb) are not contaminated with oil from the pump?

**Answer:** Use an XDS scroll pump.

Alternatively, you can use a rotary pump with a FL20K foreline trap fitted to the system inlet. The trap contains activated alumina which traps the oil molecules. To maintain the alumina charge, bake the charge basket or replace as required.

**Question:** How can I reduce the noise level of my pump?

**Answer:** If the noise is only obvious during pumping down then fitting the exhaust with a silencer (XDS pumps), or fitting an exhaust line will reduce the level.

An alternative is to fit an acoustic enclosure. Contact Edwards for more information.



# XDS5 Scroll Vacuum Pump

The XDS pumps are an innovative design which use a bearing shield to isolate the vacuum environment from all forms of lubricant, not only making it totally dry, but hermetically sealed. The shield also protects the bearing from any process vapours.

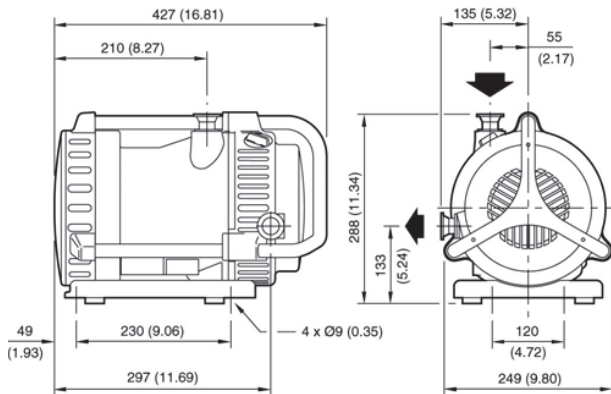
Gas ballast allows vapour to be handled and opens up the range of applications to many that were previously unsuited to scroll pumps. The XDS5 pump is designed for pumping condensable vapours and uses materials selected for a wide range of laboratory wet chemistry applications.



## Features & Benefits

- Lubricant-free within the vacuum envelope and hermetically sealed means totally clean and dry vacuum to prevent cross contamination
- No atmosphere to vacuum shaft seals means bearings are completely isolated, which prevents process attack and means the bearings run cooler and last longer
- No oil changes required eliminating costs of contaminated oil disposal
- Simple single sided scroll design means routine maintenance is done in minutes for low cost of ownership and maximum up-time
- Gas ballast feature to enable pumping of vapours

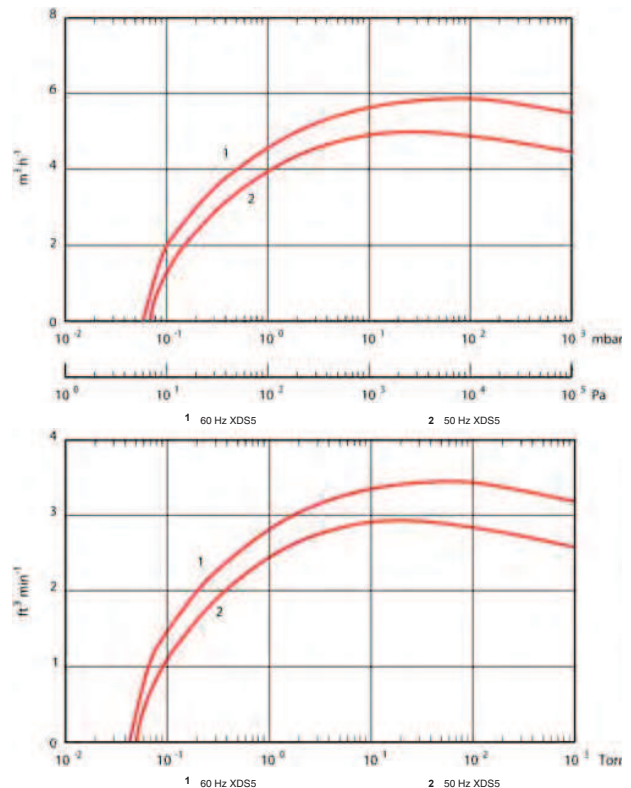
## Dimensions



## Applications

- General clean pumping applications
- Scanning Electron Microscopes - SEM
- Beam lines and high energy physics
- Backing turbo pumps
- Centrifuges, ultra-high speed

## Performance Curves



## Technical Data

Displacement	
50Hz	5.7 m <sup>3</sup> h <sup>-1</sup> / 3.4 ft <sup>3</sup> min <sup>-1</sup>
60Hz	6.7 m <sup>3</sup> h <sup>-1</sup> / 4.0 ft <sup>3</sup> min <sup>-1</sup>
Peak pumping speed <sup>1</sup>	
50Hz	4.8 m <sup>3</sup> h <sup>-1</sup> / 2.8 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	6.0 m <sup>3</sup> h <sup>-1</sup> / 3.5 ft <sup>3</sup> min <sup>-1</sup>
Ultimate vacuum (Total pressure)	
50Hz	7 x 10 <sup>-2</sup> mbar / 5.3 x 10 <sup>-2</sup> Torr
60 Hz	6 x 10 <sup>-2</sup> mbar / 4.5 x 10 <sup>-2</sup> Torr
Max inlet pressure for water vapour	
	50 mbar / 38 Torr
Max water vapour pumping rate – GB I	
	70 gh <sup>-1</sup>
Max water vapour pumping rate – GB II	
	200 gh <sup>-1</sup>
Max allowed outlet pressure	
	0.2 bar gauge / 2.9 psig*
Max allowed inlet and gas ballast pressure	
	0.5 bar gauge / 7 psig
Motor power 1-ph and 3-ph	
	0.3kW
Power Connector 1-ph	
	IEC EN60320 C13
Nominal rotation speed 50/60 Hz	
	1500 / 1800 rpm
Weight	
	23 kg / 51 lb
Inlet flange	
	NW25
Exhaust flange	
	NW25
Noise level	
	55 dBA @ 50 Hz
Vibration	
	<4.5 mms <sup>-1</sup> (rms)
Leak tightness (static)	
	<1 x 10 <sup>-6</sup> mbar ls <sup>-1</sup>
Operating temperature range	
	10 to 40 °C / 50 to 104 °F

<sup>1</sup> Pumping speed measured to PNEUROP 6602.  
\* 1 bar gauge/14 psig for short period of time only

## Ordering Information

Product Description	Order No.
XDS5 1-phase 115/230 V (set to 230 V) for Europe and UK.	A72401903
XDS5 1-phase 100/200 V (set to 200 V) for Japan.	A72401904
XDS5 3-phase 200/380/415/460 V set to high volts	A72401905
XDS5 1-phase 115/230 V (set to 115 V) for North America.	A72401906
Accessories & Spares	Order No.
Gas Ballast Adapter with 0.25mm hole	A50626801
Exhaust silencer XDS5/10	A50597000
Silencer spares kit	A50597800
2m electrical supply cable for 1-ph pumps, UK, Three-pin plug	A50505000
2m electrical supply cable for 1-ph pumps, North European plug	A50506000
2m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2m electrical supply cable for 1-ph pumps, no plug	A50508000
Spares Kit Tip Seal XDS5-5C/10-10C	A72601805

# XDS10 Scroll Vacuum Pump

The XDS pumps are an innovative design which use a bearing shield to isolate the vacuum environment from all forms of lubricant, not only making it totally dry, but hermetically sealed. The shield also protects the bearing from any process vapours.

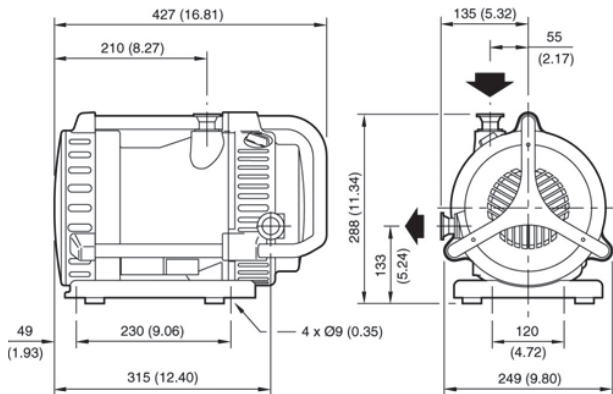
Gas ballast allows vapour to be handled and opens up the range of applications to many that were previously unsuited to scroll pumps. The XDS10 pump is designed as a dry option for general laboratory applications including backing turbo pumps. It is also used with electron microscopes and mass spectrometers.



## Features & Benefits

- Lubricant-free within the vacuum envelope and hermetically sealed means totally clean and dry vacuum to prevent cross contamination
- No atmosphere to vacuum shaft seals means bearings are completely isolated, which prevents process attack and means the bearings run cooler and last longer
- No oil changes required eliminating costs of contaminated oil disposal
- Simple single sided scroll design means routine maintenance is done in minutes for low cost of ownership and maximum up-time
- Gas ballast feature to enable pumping of vapours

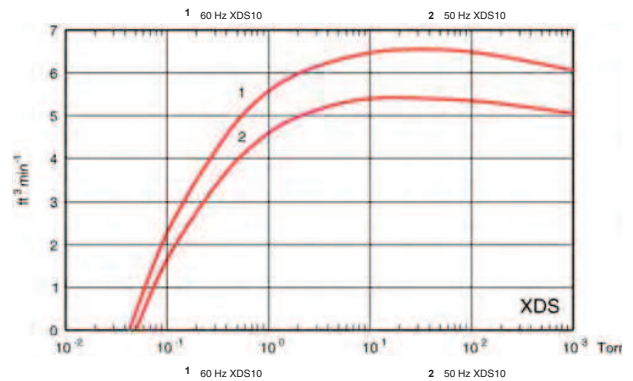
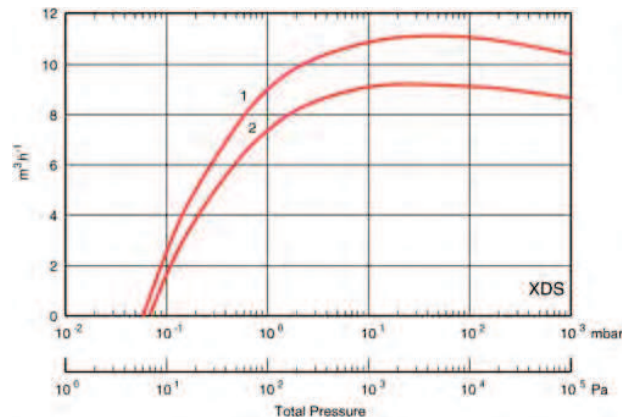
## Dimensions



## Applications

- General clean pumping applications
- Sputtering
- Beam lines and high energy physics
- Backing turbo pumps
- Load locks, fume hoods and glove boxes

## Performance Curves



## Technical Data

Displacement	
50Hz	11.3 m <sup>3</sup> h <sup>-1</sup> / 6.7 ft <sup>3</sup> min <sup>-1</sup>
60Hz	13.4 m <sup>3</sup> h <sup>-1</sup> / 7.9 ft <sup>3</sup> min <sup>-1</sup>
Peak pumping speed <sup>1</sup>	
50Hz	9.3 m <sup>3</sup> h <sup>-1</sup> / 5.5 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	11.1 m <sup>3</sup> h <sup>-1</sup> / 6.5 ft <sup>3</sup> min <sup>-1</sup>
Ultimate vacuum (Total pressure)	
50Hz	7 x 10 <sup>-2</sup> mbar / 5.3 x 10 <sup>-2</sup> Torr
60 Hz	6 x 10 <sup>-2</sup> mbar / 4.5 x 10 <sup>-2</sup> Torr
Max inlet pressure for water vapour	
	35 mbar / 23 Torr
Max water vapour pumping rate – GB I	
	70 gh <sup>-1</sup>
Max water vapour pumping rate – GB II	
	200 gh <sup>-1</sup>
Max allowed outlet pressure	
	0.2 bar gauge / 2.9 psig*
Max allowed inlet and gas ballast pressure	
	0.5 bar gauge / 7 psig
Motor power 1-ph and 3-ph	
	0.3kW
Power connector 1-ph	
	IEC EN60320 C13
Nominal rotation speed 50/60 Hz	
	1500 / 1800 rpm
Weight	
	24.5 kg / 54 lb
Inlet flange	
	NW25
Exhaust flange	
	NW25
Noise level	
	55 dBA @ 50 Hz
Vibration	
	<4.5 mms <sup>-1</sup> (rms)
Leak tightness (static)	
	<1 x 10 <sup>-6</sup> mbar ls <sup>-1</sup>
Operating temperature range	
	10 to 40 °C / 50 to 104 °F

<sup>1</sup> Pumping speed measured to PNEUROP 6602.  
\* 1 bar gauge/14 psig for short period of time only

## Ordering Information

Product Description	Order No.
XDS10 1-phase 115/230 V (set to 230 V) for Europe and UK.	A72601903
XDS10 1-phase 100/200 V (set to 200 V) for Japan.	A72601904
XDS10 3-phase 200/380/415/460 V set to high volts	A72601905
XDS10 1-phase 115/230 V (set to 115 V) for North America.	A72601906
Accessories & Spares	Order No.
Gas Ballast Adapter with 0.25mm hole	A50626801
Exhaust silencer XDS5/10	A50597000
Silencer spares kit	A50597800
2m electrical supply cable for 1-ph pumps, UK, Three-pin plug	A50505000
2m electrical supply cable for 1-ph pumps, North European plug	A50506000
2m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2m electrical supply cable for 1-ph pumps, no plug	A50508000
Spares Kit Tip Seal XDS5-5C/10-10C	A72601805



# XDS35i Scroll Vacuum Pump

The XDS35i pump has the same innovative bearing shield design as the XDS5 and XDS10. This isolates the vacuum environment from all forms of lubricant, not only making it totally dry but hermetically sealed. The shield also protects the bearing from any process vapours. Gas ballast allows vapour to be handled and opens up the range of applications to many that were previously unsuited to scroll pumps. The inverter drive controls the motor characteristics and ensures the pump always runs at optimum speed.



1  
Page  
9

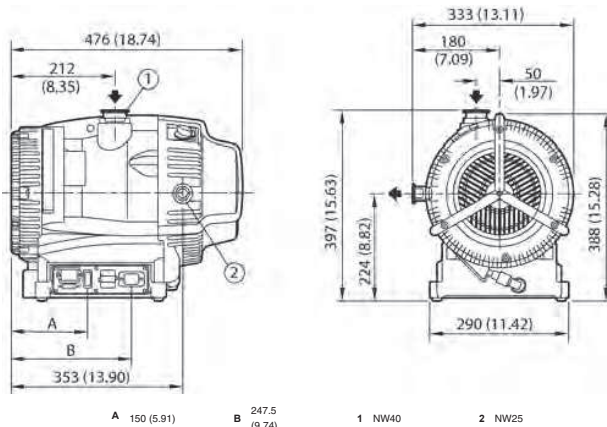
## Features & Benefits

- Lubricant-free within the vacuum envelope and hermetically sealed means totally clean and dry vacuum to prevent cross contamination
- No atmosphere to vacuum shaft seals means bearings are completely isolated, this prevents process attack and means bearings run cooler and last longer
- No oil changes required eliminating costs of contaminated oil disposal
- Simple single sided scroll design means maintenance is done in minutes for low cost of ownership and maximum up-time
- Inverter drive for consistent pumping speed at 50/60Hz

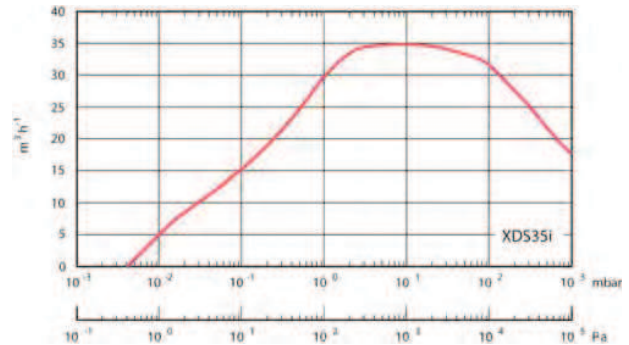
## Applications

- Clean pumping applications
- Automotive
- Beam lines and high energy physics
- Centrifuges, ultra high speed
- Coating

## Dimensions



## Performance Curves



## Technical Data

Displacement 50 or 60Hz	43 m <sup>3</sup> h <sup>-1</sup> / 25 ft <sup>3</sup> min <sup>-1</sup>
Peak pumping speed 50 or 60Hz	35 m <sup>3</sup> h <sup>-1</sup> / 21 ft <sup>3</sup> min <sup>-1</sup>
Ultimate vacuum (Total pressure)	1 x 10 <sup>-2</sup> mbar / 8 x 10 <sup>-3</sup> Torr
Max inlet pressure for water vapour	35 mbar / 23 Torr
Max water vapour pumping rate – GB I	70 gh <sup>-1</sup>
Max water vapour pumping rate – GB II	240 gh <sup>-1</sup>
Max allowed outlet pressure	0.2 bar gauge / 2.9 psig*
Max allowed inlet and GB pressure	0.5 bar gauge / 7 psig
Motor power	0.52kW
Power connector	IEC EN60320 C19
Nominal rotation speed	1750 rpm
Weight	48 kg / 105 lb
Inlet flange	NW40
Exhaust flange	NW25
Noise level	57 dB (A)
Vibration	<4.5mms <sup>-1</sup> (rms)
Leak tightness (static)	<1 x 10 <sup>-6</sup> mbar ls <sup>-1</sup>
Operating temperature range	10 to 40 °C / 50 to 104 °F

\* 1 bar gauge / 14 psig for short period of time only.

## Ordering Information

Product Description	Order No.
XDS35i 100-120/200-230V, 1-ph, 50/60Hz with an IEC60320 connector, factory set to 230V	A73001983
Accessories & Spares	Order No.
Gas Ballast Adapter with 0.25mm hole	A50626801
Exhaust silencer XDS35i	A50597001
Silencer spares kit	A50597801
2m Electrical supply cable, UK, three-pin plug	A50505003
2m Electrical supply cable, North European plug	A50506003
2m Electrical supply cable, North America/Japan plug	A50507003
2m Electrical supply cable, no plug	A50508003
Tip seal kit XDS35i	A73001801

# XDS46i Scroll Vacuum Pump

The XDS46i pump is a development on the XDS35i and thus shares many of the same features and benefits but with a peak speed boosted to 40m<sup>3</sup>/hr. The XDS46i is optimised for maximum pumping speed at inlet pressures between 1 mbar and 10 mbar making it ideally suited for LCMS and ICPMS applications requiring a higher pumping speed than that offered by the XDS35i. Recent improvements in tip seal technology have lead to reduced tip seal wear therefore giving a longer time between service interventions. The inverter drive controls the motor characteristics and ensures the pump always runs at optimum speed and allows the user to control the pump remotely.



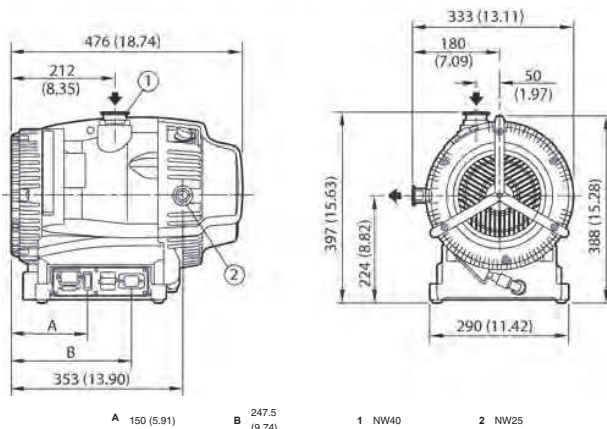
## Features & Benefits

- Lubricant-free within the vacuum envelope and hermetically sealed means totally clean and dry vacuum to prevent cross contamination
- No atmosphere to vacuum shaft seals means bearings are completely isolated, this prevents process attack and means bearings run cooler and last longer
- No oil changes required eliminating costs of contaminated oil disposal
- Simple single sided scroll design means maintenance is done in minutes for low cost of ownership and maximum up-time
- Inverter drive for consistent pumping speed at 50/60Hz

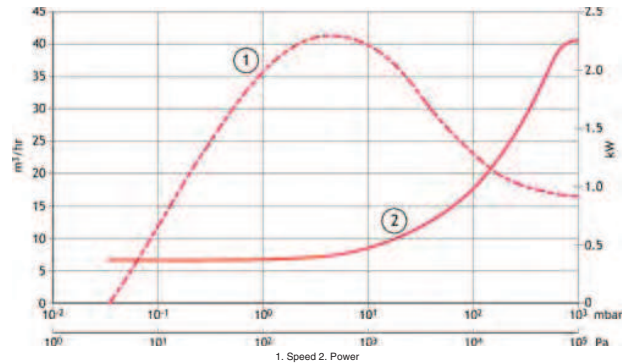
## Applications

- LCMS inlet
- ICPMS inlet
- Coating

## Dimensions



## Performance Curves



## Technical Data

Displacement 50 or 60Hz	60 m <sup>3</sup> h <sup>-1</sup> / 35 ft <sup>3</sup> min <sup>-1</sup>
Peak pumping speed 50 or 60Hz	40 m <sup>3</sup> h <sup>-1</sup> / 23.5 ft <sup>3</sup> min <sup>-1</sup>
Ultimate vacuum (Total pressure)	5 x 10 <sup>-2</sup> mbar / 3.75 x 10 <sup>-2</sup> Torr
Max continuous inlet pressure	40 mbar / 30 Torr
Max continuous outlet pressure	0.2 bar gauge / 2.9 psig
Max allowed inlet and GB pressure	0.5 bar gauge / 7 psig
Motor power	0.52kW
Power connector	IEC EN60320 C19
Nominal rotation speed	1750 rpm
Weight	48 kg / 105 lb
Inlet flange	NW40
Exhaust flange	NW25
Noise level	55.4 dB (A)
Vibration	<4.5ms <sup>-1</sup> (rms)
Leak tightness (static)	<1 x 10 <sup>-6</sup> mbar ls <sup>-1</sup>
Operating temperature range	10 to 40 °C / 50 to 104 °F

## Ordering Information

Product Description	Order No.
XDS46i 100-120/200-230V, 1-ph, 50/60Hz with an IEC60320 connector, factory set to 230V	A73101983
Accessories & Spares	Order No.
Gas Ballast Adapter with 0.25mm hole	A50626801
Exhaust silencer XDS35i	A50597001
Silencer spares kit	A50597801
2m Electrical supply cable, UK, three-pin plug	A50505003
2m Electrical supply cable, North European plug	A50506003
2m Electrical supply cable, North America/Japan plug	A50507003
2m Electrical supply cable, no plug	A50508003
Tip seal kit XDS46i	A73101801



# XDS100B Scroll Booster Vacuum Pump

The XDS100B is a scroll booster, with a pumping mechanism designed specifically for high pumping speed. Like all booster pumps, it needs to be used in conjunction with a primary pump and is ideally matched with Edwards XDS35i or XDS46i scroll pumps. The XDS100B is optimised for maximum pumping speed at inlet pressures between 1 mbar and 10 mbar making it ideally suited for ultra high throughput LCMS applications. The advanced pump design has resulted in virtually no tip seal wear thus reducing service intervention and maximising uptime.

The inverter drive allows the pump to be connected to a single phase supply and controls the motor characteristics and ensures the pump always runs at optimum speed and allows the user to control the pump remotely.



1

Page  
13

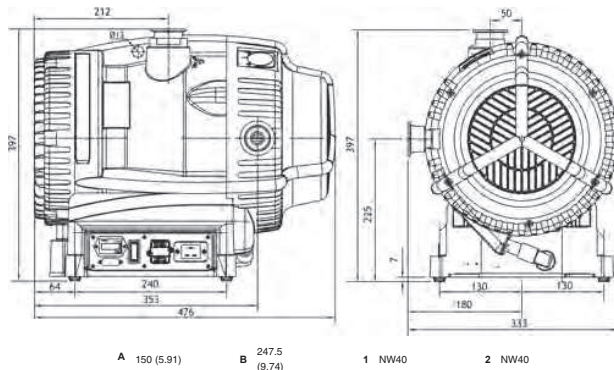
## Features & Benefits

- Lubricant-free within the vacuum envelope and hermetically sealed means totally clean and dry vacuum to prevent cross contamination
- No atmosphere to vacuum shaft seals means bearings are completely isolated, this prevents process attack and means bearings run cooler and last longer
- No oil changes required eliminating costs of contaminated oil disposal
- Simple single sided scroll design means maintenance is done in minutes for low cost of ownership and maximum up-time
- Inverter drive for consistent pumping speed at 50/60Hz

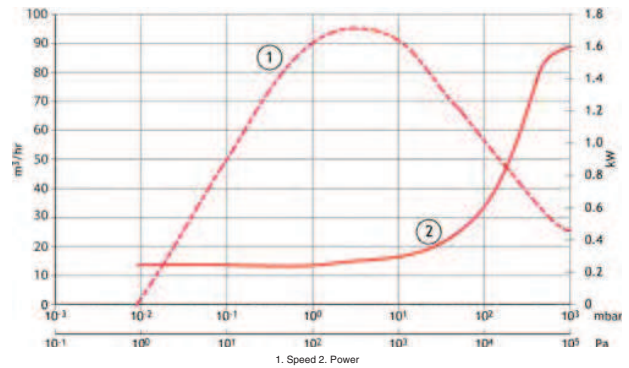
## Applications

- High throughput – LCMS

## Dimensions



## Performance Curves



## Technical Data

Pumping speed 50 or 60Hz	95 m <sup>3</sup> h <sup>-1</sup> / 56 ft <sup>3</sup> min <sup>-1</sup>
Ultimate vacuum (Total pressure)*	<1 x 10 <sup>-2</sup> mbar / <8 x 10 <sup>-3</sup> Torr
Max continuous inlet pressure	20 mbar / 15 Torr
Max continuous outlet pressure	60 mbar / 45 Torr
Max permitted inlet pressure for short duration	0.5 bar gauge / 7 psig
Max chamber volume to pump down from atmosphere	100 litres
Max chamber volume for cyclic duty – max 6 per hour	50 litres
Motor power	0.52kW
Nominal rotation speed	1750 rpm
Weight	48 kg / 105 lb
Inlet flange	NW40
Exhaust flange	NW40
Noise level	52.1 dB (A)
Vibration	<4.5mms <sup>-1</sup> (rms)
Leak tightness (static)	<1 x 10 <sup>-6</sup> mbar ls <sup>-1</sup>
Operating temperature range	10 to 40 °C / 50 to 104 °F

\* Ultimate pressure is backing pump dependant

## Ordering Information

Product Description	Order No.
XDS100B 1-ph, 100-120/200-230V Set to 230V	A73201983
Accessories & Spares	Order No.
2m Electrical supply cable, UK, three-pin plug	A50505003
2m Electrical supply cable, North European plug	A50506003
2m Electrical supply cable, North America/Japan plug	A50507003
2m Electrical supply cable, no plug	A50508003
Tip seal kit XDS100B	A73201801

# XDS-NGB Scroll Vacuum Pumps

XDS-NGB pumps are standard XDS pumps but with the gas ballast feature removed. They are for applications where it is advantageous to have the control knob and machining removed so that it cannot be accidentally opened. Example applications include rare gas recirculation and gas recovery.

Note: Mains leads must be ordered separately, please see the catalogue entry for the relevant standard XDS pump for the correct mains lead.



## Features & Benefits

- Lubricant-free within the vacuum envelope and hermetically sealed means totally clean and dry vacuum to prevent cross contamination
- No atmosphere to vacuum shaft seals means bearings are completely isolated, which prevents process attack and means the bearings run cooler and last longer
- No oil changes required eliminating costs of contaminated oil disposal
- Simple single sided scroll design means routine maintenance is done in minutes for low cost of ownership and maximum up-time
- No gas ballast to eliminate accidental opening and resultant ingress of air

## Technical Data

Technical Data and Dimensions are as per the standard XDS pumps but ignoring the water vapour handling capability and gas ballast facility.

## Applications

- Rare gas recirculation
- Gas recovery

## Ordering Information

Product Description	Order No.
XDS5-NGB 1-ph 115/230V set to 230V for Europe and UK	A72405903
XDS5-NGB 1-ph 100/200V set to 200V for Japan	A72405904
XDS5-NGB 3-ph 200/380/415/460V set to high volts	A72405905
XDS5-NGB 1-ph 115/230V set to 115V for North America	A72405906
XDS10-NGB 1-ph 115/230V set to 230V for Europe and UK	A72605903
XDS10-NGB 1-ph 100/200V set to 200V for Japan	A72605904
XDS10-NGB 3-ph 200/380/415/460V set to high volts	A72605905
XDS10-NGB 1-ph 115/230V set to 115V for North America	A72605906
XDS35i-NGB 1-ph 100-120/200-230V set to 230V	A73005983
Accessories & Spares	Order No.
NW25 inlet/exhaust filter with 5µm element	NRD380000
NW40 inlet filter with 5µm element	NRD383000
NW40 low profile inlet filter with 5µm element	NRD386000
Replacement 1µm element for NW25 filter	NRD382000
Replacement 1µm element for NW40 filter	NRD385000
Replacement 1µm element for NW40 low profile filter	NRD388000
Replacement 5µm element for NW25 filter	NRD381000
Replacement 5µm element for NW40 filter	NRD384000
Replacement 5µm element for NW40 low profile filter	NRD387000
Spares Kit Tip Seal XDS5-5C/10-10C	A72601805
Tip seal kit XDS35i	A73001801

# E2M0.7 Two Stage Rotary Vane Pump

1

Page  
16



The E2M0.7 is a small two stage oil sealed rotary vane pump that features a very low sound level of only 43 dB(A), compact dimensions, low energy consumption and low operating temperature. It will appeal to scientific instrument manufacturers and laboratory users for backing small turbomolecular or diffusion pumps as well as general laboratory applications.

Fitted in a cabinet, the pump will be virtually inaudible and the low operating temperature will minimize the heat load on the equipment. Vertical vacuum inlet with horizontal option.

Supplied with: Ultragrade 15 oil, NW O-ring and centering ring, 2 Allen keys and spare seals for oil drain and filler plugs.

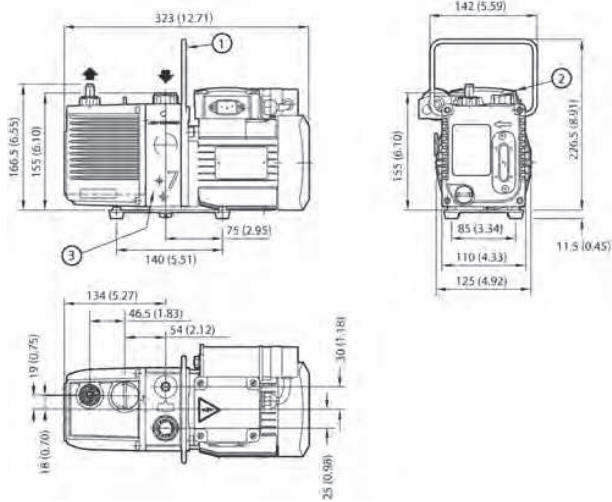
## Features & Benefits

- Very low sound level of only 43 dB(A).
- The pump is designed for reliable, long-term operation.
- Compact dimensions.
- Low energy consumption.
- Low operating temperature will minimize the heat load on the equipment.

## Applications

- Analytical instruments
- Leak detectors, Helium
- Research and development
- Backing Turbomolecular pumps

## Dimensions

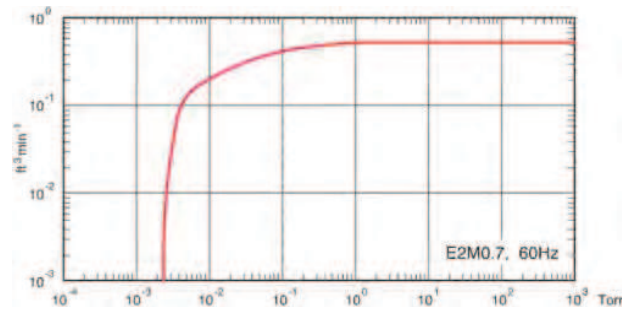
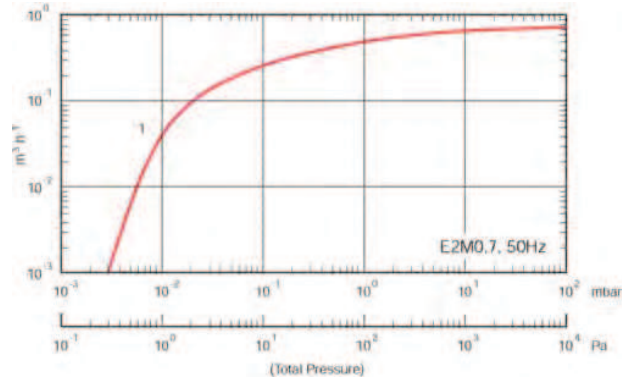


1 Handle (can be removed)

2 220-240 V motor

3 Alternative inlet position

## Performance Curves





## Technical Data

Displacement (swept volume) 50 Hz	$0.9 \text{ m}^3 \text{ h}^{-1} / 0.5 \text{ ft}^3 \text{ min}^{-1}$
Displacement (swept volume) 60 Hz	$1.1 \text{ m}^3 \text{ h}^{-1} / 0.6 \text{ ft}^3 \text{ min}^{-1}$
Speed (Pneurop 6602) 50 Hz	$0.75 \text{ m}^3 \text{ h}^{-1} / 0.4 \text{ ft}^3 \text{ min}^{-1}$
Speed (Pneurop 6602) 60Hz	$0.95 \text{ m}^3 \text{ h}^{-1} / 0.5 \text{ ft}^3 \text{ min}^{-1}$
Ultimate vacuum (total pressure)	
without gas ballast	$3 \times 10^{-3} \text{ mbar} / 2.3 \times 10^{-3} \text{ Torr}$
with full gas ballast	$2.0 \times 10^{-1} \text{ mbar} / 1.5 \times 10^{-1} \text{ Torr}$
Inlet connection	NW10 flange
Outlet connection	Nozzle 11 mm external Ø removable from 3/8 inch BSP tapped hole
Maximum permitted pressure at outlet	0.5 bar gauge / 7 psig
Maximum inlet pressure for water vapour	15 mbar / 11 Torr
Maximum water vapour pumping rate	$8 \text{ g h}^{-1}$
Motor power	0.09 kW
Nominal rotational speed 50/60Hz	1400/1700 rpm
Power connector	IEC EN60320 C13
Operating temperature range	12 - 40 °C
Weight, without oil	10 kg / 22 lbs
Noise	43 dB(A) @ 50 Hz
Oil capacity - maximum	0.28 litre
Oil capacity - minimum	0.2 litre
Recommended oil (supplied)	Ultragrade 15

## Ordering Information

Product Description	Order No.
E2M0.7 200-230V, 1-ph, 50/60Hz, IEC 60320 connectors	A37141919
E2M0.7 100-120V, 1-ph, 50/60Hz, IEC 60320 connectors	A37141902
Accessories & Spares	Order No.
Model EMF3 mist filter	A46220000
2m electrical supply cable for 1-ph pumps, UK, Three-pin plug	A50505000
2m electrical supply cable for 1-ph pumps, North European plug	A50506000
2m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2m electrical supply cable for 1-ph pumps, no plug	A50508000
Spares Kit C&O E2M0.7/1/1.5	A37101131
Spares Kit Blade E2M0.7/1.5	A37101132
NW10/10 Centring Nitrile S/S Pk1	C10511396
NW10 O Ring Viton Pk 5	H02124032
NW10 x 3/8 Bsp Adapter	A25908064

# E2M1.5 Two Stage Rotary Vane Pump

1

Page  
18



The E2M1.5 is a two stage oil sealed rotary vane pump suitable for many bench type applications. The pump features an alternative inlet connection position at the side of the pump so that overall installation height can be reduced to a minimum when required.

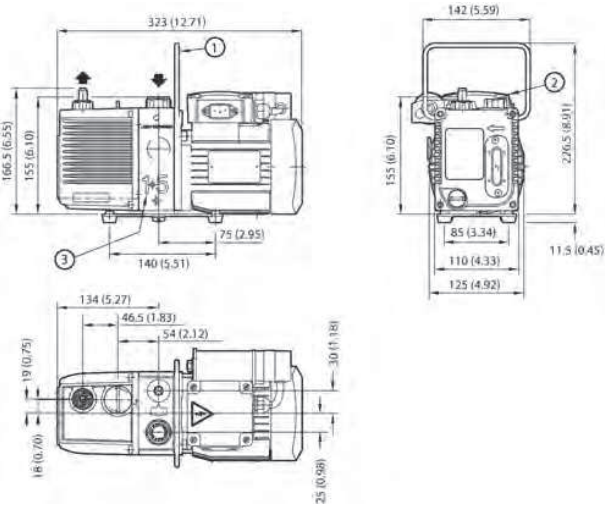
The interstage version features an additional pumping port to provide a rough vacuum for auxiliary duties.

Supplied with: Ultrgrade 15 oil, NW O-ring, centering ring, 2 Allen keys and spare seals for oil drain and filler plugs.

## Features & Benefits

- The pump is designed for reliable, long-term operation.
- Compact dimensions.
- Low energy consumption.
- The interstage version features an additional pumping port to provide a rough vacuum for auxiliary duties.
- The pump is a free-standing unit.

## Dimensions

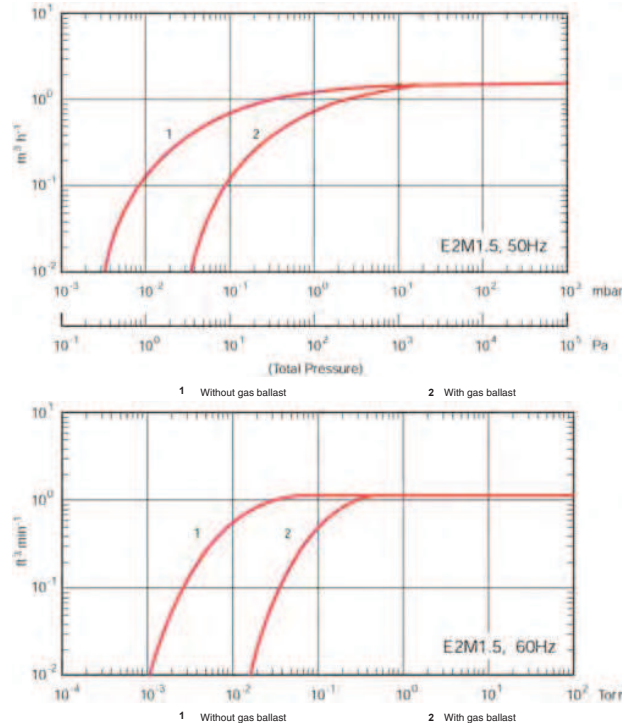


- 1 Handle (can be removed)      2 220-240 V motor      3 Alternative inlet position

## Applications

- Analytical instruments
- Laboratory bench top vacuum
- Leak detectors, Helium
- Research and development
- Backing turbomolecular pumps

## Performance Curves



## Technical Data

Displacement (swept volume) 50 Hz	$1.8 \text{ m}^3 \text{ h}^{-1} / 1 \text{ ft}^3 \text{ min}^{-1}$
Displacement (swept volume) 60 Hz	$2.2 \text{ m}^3 \text{ h}^{-1} / 1.3 \text{ ft}^3 \text{ min}^{-1}$
Speed (Pneurop 6602) 50 Hz	$1.6 \text{ m}^3 \text{ h}^{-1} / 0.8 \text{ ft}^3 \text{ min}^{-1}$
Speed (Pneurop 6602) 60 Hz	$2.0 \text{ m}^3 \text{ h}^{-1} / 1.2 \text{ ft}^3 \text{ min}^{-1}$
Ultimate vacuum (total pressure)	
without gas ballast	$3 \times 10^{-3} \text{ mbar} / 2.3 \times 10^{-3} \text{ Torr}$
with gas ballast	$2.5 \times 10^{-2} \text{ mbar} / 1.9 \times 10^{-2} \text{ Torr}$
Inlet connection	NW10 flange
Outlet connection	Nozzle 11 mm external diameter removable from hole tapped 3/8 inch BSP
Maximum permitted pressure at outlet	0.5 bar gauge / 7 psig
Maximum inlet pressure for water vapour	15 mbar / 11 Torr
Maximum water vapour pumping rate	$16 \text{ g h}^{-1}$
Motor power 50/60 Hz (IP54)	0.16 kW
Nominal rotation speed 50/60Hz	2800/3400 rpm
Power connector	IEC EN60320 C13
Operating temperature range	12 - 40 °C
Weight	10 kg / 22 lbs
Noise	54 dB (A) @ 50 Hz
Oil capacity - max	0.28 litre
min	0.2 litre
Recommended oil (supplied)	Ultragrade 15

## Ordering Information

Product Description	Order No.
E2M1.5 200-230V, 1-ph, 50/60Hz, IEC 60320 connectors	A37132919
E2M1.5 100-120V, 1-ph, 50/60Hz, IEC 60320 connectors	A37132902
E2M1.5 interstage 200-230V, 1-ph, 50/60Hz, IEC 60320 connectors	A37104919
E2M1.5 interstage 100-120V, 1-ph, 50/60Hz, IEC 60320 connectors	A37104902
Accessories & Spares	Order No.
Model EMF3 mist filter	A46220000
2m electrical supply cable for 1-ph pumps, UK, Three-pin plug	A50505000
2m electrical supply cable for 1-ph pumps, North European plug	A50506000
2m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2m electrical supply cable for 1-ph pumps, no plug	A50508000
Spares Kit C&O E2M0.7/1/1.5	A37101131
Spares Kit Blade E2M0.7/1.5	A37101132
NW10/10 Centring Nitrile S/S Pk1	C10511396
NW10 O Ring Viton Pk 5	H02124032
NW10 x 3/8 Bsp Adapter	A25908064

# RV3 Two Stage Rotary Vane Pump



Edwards RV pumps have become the industry standard for scientific primary pumping applications. RV pumps are uniquely capable of delivering high or low throughputs with high ultimate vacuum. This, combined with ultra-low noise levels, makes them ideal for a wide range of applications including GCMS and other small bench top type applications.

All pumps are approved to UL and CSA standards by an external test house. Edwards has a global network, providing world-wide support for product applications and service.

Supplied with: 1 litre of Ultragrade 19 oil, inlet filter and O-ring. Fomblin must be purchased separately for PFPE RV pumps.

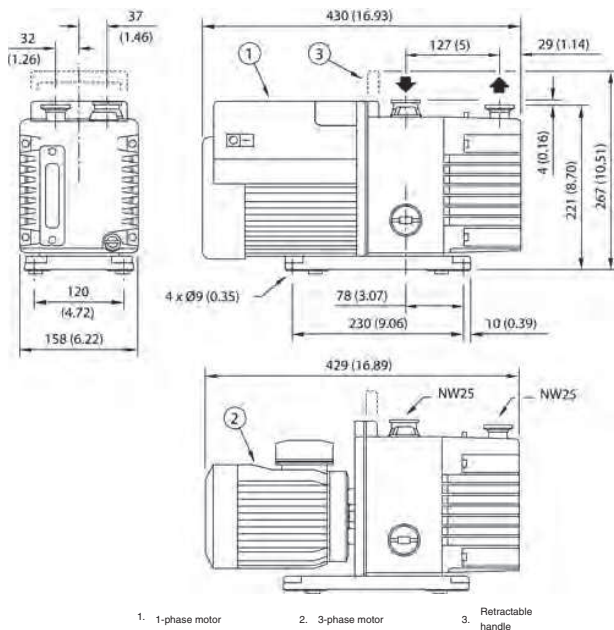
## Features & Benefits

- 48 dBA and intrusive frequencies minimised.
- Dual mode. Suitable for high throughput and high vacuum applications.
- Easy-to-use gas ballast.
- Fast acting inlet valve for system protection.
- High torque, dual voltage/dual frequency motor, electronic start relay.

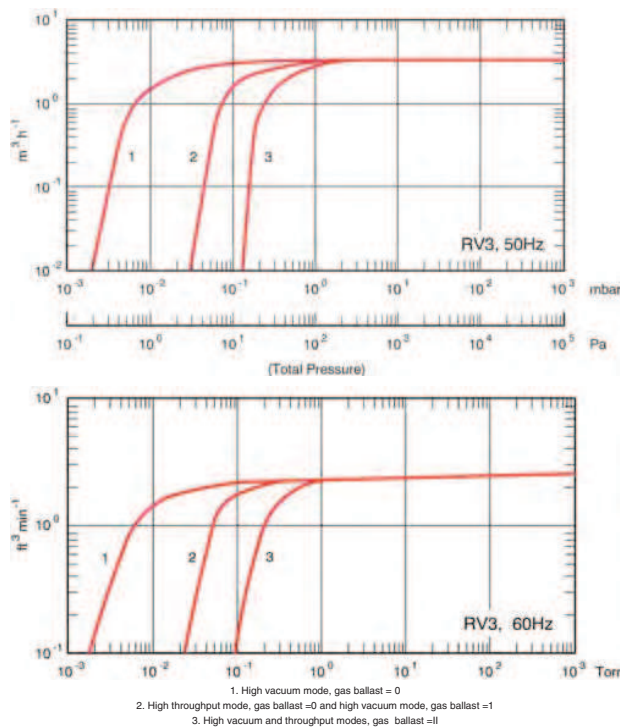
## Applications

- Analytical instruments
- Laboratory bench top vacuum
- Turbomolecular backing pumps
- Freeze drying
- Research and development

## Dimensions



## Performance Curves





## Technical Data

Displacement	
50Hz	$3.7 \text{ m}^3 \text{ h}^{-1} / 2.2 \text{ ft}^3 \text{ min}^{-1}$
60Hz	$4.5 \text{ m}^3 \text{ h}^{-1} / 2.6 \text{ ft}^3 \text{ min}^{-1}$
Speed (Pneurop 6602)	
50Hz	$3.3 \text{ m}^3 \text{ h}^{-1} / 2 \text{ ft}^3 \text{ min}^{-1}$
60Hz	$3.9 \text{ m}^3 \text{ h}^{-1} / 2.3 \text{ ft}^3 \text{ min}^{-1}$
Ultimate pressure	$2.0 \times 10^{-3} \text{ mbar} / 1.5 \times 10^{-3} \text{ Torr}$
Ultimate pressure GB I	$3.0 \times 10^{-2} \text{ mbar} / 2.3 \times 10^{-2} \text{ Torr}$
Ultimate pressure GB II	$1.2 \times 10^{-1} \text{ mbar} / 9.1 \times 10^{-2} \text{ Torr}$
Max inlet pressure for water vapour	80 mbar / 60 Torr
Max water vapour pumping rate – GB I	60 g/h
Max water vapour pumping rate – GB II	220 g/h
Max allowed outlet pressure	1 bar gauge / 14 psig
Max allowed inlet and gas ballast pressure	0.5 bar gauge / 7 psig
Motor power 50/60Hz	450 / 550W
Power connector 1-ph	IEC EN60320 C13
Nominal rotation speed 50/60Hz	1500 / 1800rpm
Weight (without oil)	25 kg / 55 lb
Oil capacity min/max	0.42/0.7 litres
Recommended oil	Ultragrade 19
Inlet flange	NW25
Exhaust flange	NW25
Noise level	48 dBA @ 50 Hz
Operating temperature range	12 – 40 °C

## Ordering Information

Product Description	Order No.
RV3 115/230V, 1-ph, 50/60Hz, Factory set to 230V for Europe	A65201903
RV3 100/200V, 1-ph, 50/60Hz, Factory set to 200V for Japan	A65201904
RV3 200-220/380-415V, 3-ph, 50Hz and 200-230/460V, 3-ph, 60Hz Factory set to 380/460V	A65201905
RV3 115/230V, 1-ph, 50/60Hz, Factory set to 115V for USA	A65201906
PFPE RV3 115/230V, 1-ph, 50/60 Hz, Factory set to 230V for Europe	A65209903
PFPE RV3 100/200V, 1-ph, 50/60Hz, Factory set to 200V for Japan	A65209904
PFPE RV3 200-220/380-415V, 3-ph, 50Hz and 200-230/460V, 3-ph, 60Hz, Factory set to 380/460V	A65209905
PFPE RV3 115/230V, 1-ph, 50/60Hz, Factory set to 115V for USA	A65209906
Accessories & Spares	Order No.
2m electrical supply cable for 1-ph pumps, UK, Three-pin plug	A50505000
2m electrical supply cable for 1-ph pumps, North European plug	A50506000
2m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2m electrical supply cable for 1-ph pumps, no plug	A50508000
RV gas-ballast adaptor	A50502000
RV exhaust nozzle kit	A50509000
Model EMF10 mist filter	A46226000
Clean and overhaul kit	A65201131
Clean and overhaul kit (Nitrile)	A65201137
Blade Kit RV3	A65201130
Outer Shaft Seal Kit RV	A65201134
Spares Kit Inlet Valve RV3/5/8/12	A65201036
Spares Kit Cartridge RV3	A65201032

# RV5 Two Stage Rotary Vane Pump

1

Page  
22



Edwards RV pumps have become the industry standard for scientific primary pumping applications. RV pumps are uniquely capable of delivering high or low throughputs with high ultimate vacuum. This, combined with ultra-low noise levels, makes them ideal for a wide range of applications including GCMS and other small bench top type applications.

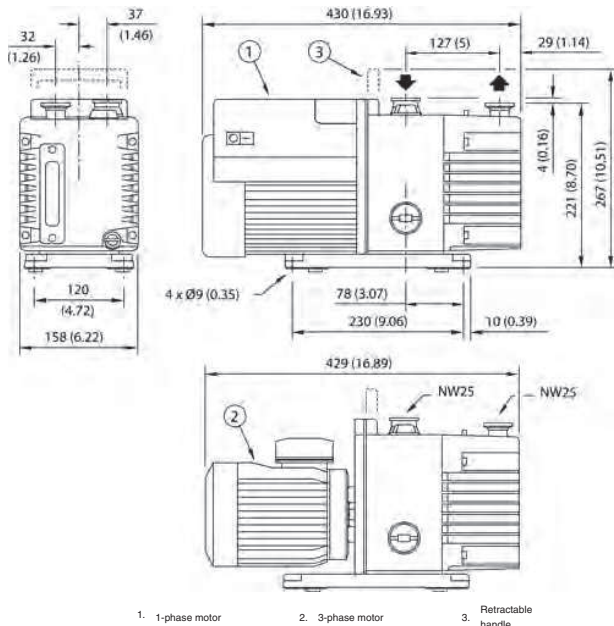
All pumps are approved to UL and CSA standards by an external test house. Edwards has a global network, providing world-wide support for product applications and service.

Supplied with: 1 litre of Ultragrade 19 oil, inlet filter and O-ring. Fomblin must be purchased separately for PFPE RV pumps.

## Features & Benefits

- 48 dBA and intrusive frequencies minimised.
- Dual mode. Suitable for high throughput and high vacuum applications.
- Easy-to-use gas ballast.
- Fast acting inlet valve for system protection.
- High torque, dual voltage/dual frequency motor, electronic start relay.

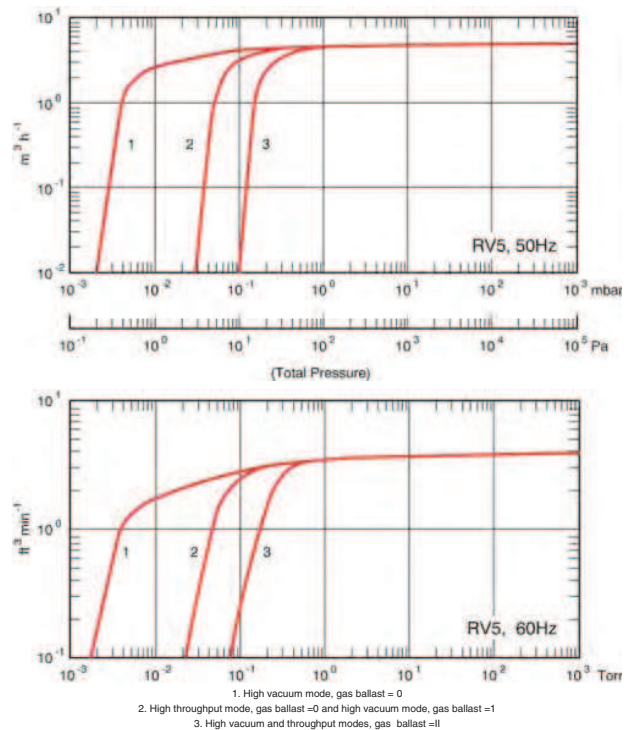
## Dimensions



## Applications

- Analytical instruments
- Centrifuges, ultra-high speed
- Coating
- Degassing/curing - oil, epoxy resin
- Distillation/extraction/filtration

## Performance Curves



## Technical Data

Displacement	
50Hz	$5.8 \text{ m}^3 \text{ h}^{-1} / 3.4 \text{ ft}^3 \text{ min}^{-1}$
60Hz	$7.0 \text{ m}^3 \text{ h}^{-1} / 4.1 \text{ ft}^3 \text{ min}^{-1}$
Speed (Pneurop 6602)	
50Hz	$5.1 \text{ m}^3 \text{ h}^{-1} / 3.0 \text{ ft}^3 \text{ min}^{-1}$
60Hz	$6.2 \text{ m}^3 \text{ h}^{-1} / 3.7 \text{ ft}^3 \text{ min}^{-1}$
Ultimate pressure	$2.0 \times 10^{-3} \text{ mbar} / 1.5 \times 10^{-3} \text{ Torr}$
Ultimate pressure GB I	$3.0 \times 10^{-2} \text{ mbar} / 2.3 \times 10^{-2} \text{ Torr}$
Ultimate pressure GB II	$1.0 \times 10^{-1} \text{ mbar} / 7.5 \times 10^{-2} \text{ Torr}$
Max inlet pressure for water vapour	50 mbar / 38 Torr
Max water vapour pumping rate – GB I	60 g/h
Max water vapour pumping rate – GB II	220 g/h
Max allowed outlet pressure	1 bar gauge / 14 psig
Max allowed inlet and gas ballast pressure	0.5 bar gauge / 7 psig
Motor power 50/60Hz	450 / 550W
Power connector 1-ph	IEC EN60320 C13
Nominal rotation speed 50/60Hz	1500 / 1800rpm
Weight (without oil)	25 kg / 55 lb
Oil capacity min/max	0.42/0.7 litres
Recommended oil	Ultragrade 19
Inlet flange	NW25
Exhaust flange	NW25
Noise level	48 dBA @ 50 Hz
Operating temperature range	12 – 40 °C

## Ordering Information

Product Description	Order No.
RV5 115/230V, 1-ph, 50/60Hz, Factory set to 230V for Europe	A65301903
RV5 100/200V, 1-ph, 50/60Hz, Factory set to 200V for Japan	A65301904
RV5 200-220/380-415V, 3-ph, 50Hz and 200-230/460V, 3-ph, 60Hz, Factory set to 380/460V	A65301905
RV5 115/230V, 1-ph, 50/60Hz, Factory set to 115V for USA	A65301906
PFPE RV5 115/230V, 1-ph, 50/60Hz, Factory set to 230V for Europe	A65309903
PFPE RV5 100/200V, 1-ph, 50/60Hz, Factory set to 200V for Japan	A65309904
PFPE RV5 200-220/380-415V, 3-ph, 50Hz and 200-230/460V, 3-ph, 60Hz, Factory set to 380/460V	A65309905
PFPE RV5 115/230V, 1-ph, 50/60Hz, Factory set to 115V for USA	A65309906
Accessories & Spares	Order No.
2m electrical supply cable for 1-ph pumps, UK, Three-pin plug	A50505000
2m electrical supply cable for 1-ph pumps, North European plug	A50506000
2m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2m electrical supply cable for 1-ph pumps, no plug	A50508000
RV gas-ballast adaptor	A50502000
RV exhaust nozzle kit	A50509000
Model EMF10 mist filter	A46226000
Clean and overhaul kit	A65201131
Clean and overhaul kit (Nitrile)	A65201137
Spares Kit Blade RV5	A65301130
Outer Shaft Seal Kit RV	A65201134
Spares Kit Inlet Valve RV3/5/8/12	A65201036
Spares Kit Cartridge RV5	A65301032

# RV8 Two Stage Rotary Vane Pump

1

Page  
24



Edwards RV pumps have become the industry standard for scientific primary pumping applications. RV pumps are uniquely capable of delivering high or low throughputs with high ultimate vacuum. This, combined with ultra-low noise levels, makes them ideal for a wide range of applications including GCMS and other small bench top type applications.

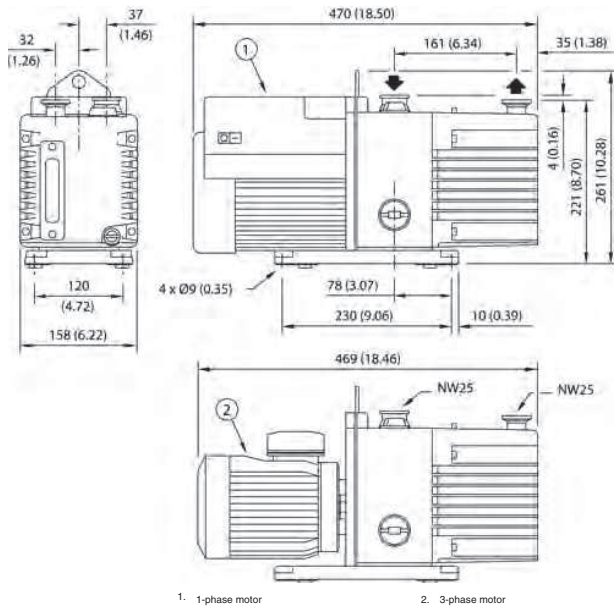
All pumps are approved to UL and CSA standards by an external test house. Edwards has a global network, providing world-wide support for product applications and service.

Supplied with: 1 litre of Ultragrade 19 oil, inlet filter and O-ring. Fomblin must be purchased separately for PFPE RV pumps.

## Features & Benefits

- 48 dBA and intrusive frequencies minimised.
- Dual mode. Suitable for high throughput and high vacuum applications.
- Easy-to-use gas ballast.
- Fast acting inlet valve for system protection.
- High torque, dual voltage/dual frequency motor, electronic start relay.

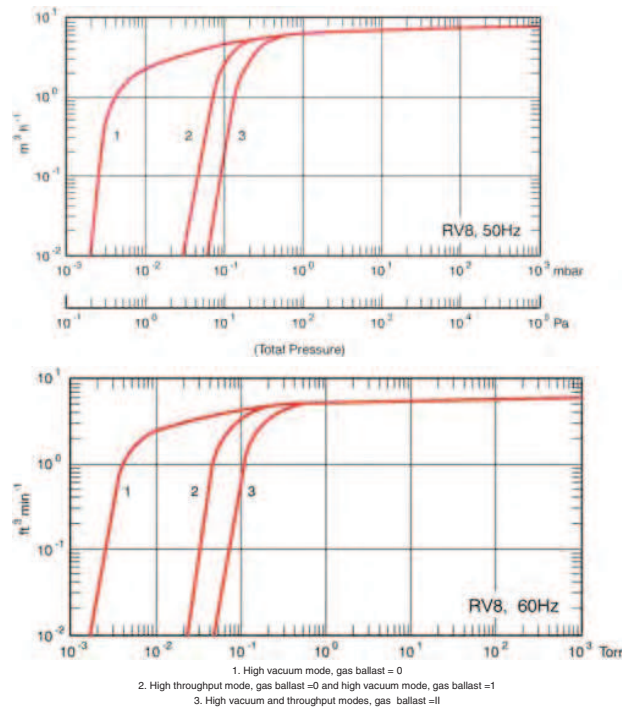
## Dimensions



## Applications

- Analytical instruments
- Centrifuges, ultra-high speed
- Coating
- Degassing/curing - oil, epoxy resin
- Distillation/extraction/filtration

## Performance Curves





## Technical Data

Displacement	
50Hz	$9.7 \text{ m}^3 \text{ h}^{-1} / 5.7 \text{ ft}^3 \text{ min}^{-1}$
60Hz	$11.7 \text{ m}^3 \text{ h}^{-1} / 6.9 \text{ ft}^3 \text{ min}^{-1}$
Speed (Pneurop 6602)	
50Hz	$8.5 \text{ m}^3 \text{ h}^{-1} / 5 \text{ ft}^3 \text{ min}^{-1}$
60Hz	$10 \text{ m}^3 \text{ h}^{-1} / 5.9 \text{ ft}^3 \text{ min}^{-1}$
Ultimate pressure	$2 \times 10^{-3} \text{ mbar} / 1.5 \times 10^{-3} \text{ Torr}$
Ultimate pressure GB I	$3 \times 10^{-2} \text{ mbar} / 2.3 \times 10^{-2} \text{ Torr}$
Ultimate pressure GB II	$6 \times 10^{-2} \text{ mbar} / 4.6 \times 10^{-2} \text{ Torr}$
Max inlet pressure for water vapour	38 mbar / 28.5 Torr
Max water vapour pumping rate – GB I	60 g/h
Max water vapour pumping rate – GB II	220 g/h
Max allowed outlet pressure	1 bar gauge / 14 psig
Max allowed inlet and gas ballast pressure	0.5 bar gauge / 7 psig
Motor power 50/60Hz	450 / 550W
Power connector 1-ph	IEC EN60320 C13
Nominal rotation speed 50/60Hz	1500 / 1800rpm
Weight (without oil)	28 kg / 61.6 lb
Oil capacity min/max	0.45 / 0.75 litres
Recommended oil	Ultragrade 19
Inlet flange	NW25
Exhaust flange	NW25
Noise level	48 dBA @ 50 Hz
Operating temperature range	12 – 40 °C

## Ordering Information

Product Description	Order No.
RV8 115/230V, 1-ph, 50/60Hz, Factory set to 230V for Europe	A65401903
RV8 100/200V, 1-ph, 50/60Hz, Factory set to 200V for Japan	A65401904
RV8 200-220/380-415V, 3-ph, 50Hz and 200-230/460V, 3-ph, 60Hz, Factory set to 380/460V	A65401905
RV8 115/230V, 1-ph, 50/60Hz, Factory set to 115V for USA	A65401906
PFPE RV8 115/230V, 1-ph, 50/60Hz, Factory set to 230V for Europe	A65409903
PFPE RV8 100/200V, 1-ph, 50/60Hz, Factory set to 200V for Japan	A65409904
PFPE RV8 200-220/380-415V, 3-ph, 50Hz, and 200-230/460V, 3-ph, 60Hz, Factory set to 380/460V	A65409905
PFPE RV8 115/230V, 1-ph, 50/60Hz, Factory set to 115V for Europe	A65409906
Accessories & Spares	Order No.
2m electrical supply cable for 1-ph pumps, UK, Three-pin plug	A50505000
2m electrical supply cable for 1-ph pumps, North European plug	A50506000
2m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2m electrical supply cable for 1-ph pumps, no plug	A50508000
RV gas-ballast adaptor	A50502000
RV exhaust nozzle kit	A50509000
Model EMF10 mist filter	A46226000
Clean and overhaul kit	A65201131
Clean and overhaul kit (Nitrile)	A65201137
Spares Kit Blade RV8	A65401130
Outer Shaft Seal Kit RV	A65201134
Spares Kit Inlet Valve RV3/5/8/12	A65201036
Spares Kit Cartridge RV8	A65401032



# RV12 Two Stage Rotary Vane Pump

1

Page  
26



Edwards RV pumps have become the industry standard for scientific primary pumping applications. RV pumps are uniquely capable of delivering high or low throughputs with high ultimate vacuum. This, combined with ultra-low noise levels, makes them ideal for a wide range of applications including GCMS and other small bench top type applications.

All pumps are approved to UL and CSA standards by an external test house. Edwards has a global network, providing world-wide support for product applications and service.

Supplied with: 1 litre of Ultragrade 19 oil, inlet filter and O-ring. Fomblin must be purchased separately for PFPE RV pumps.

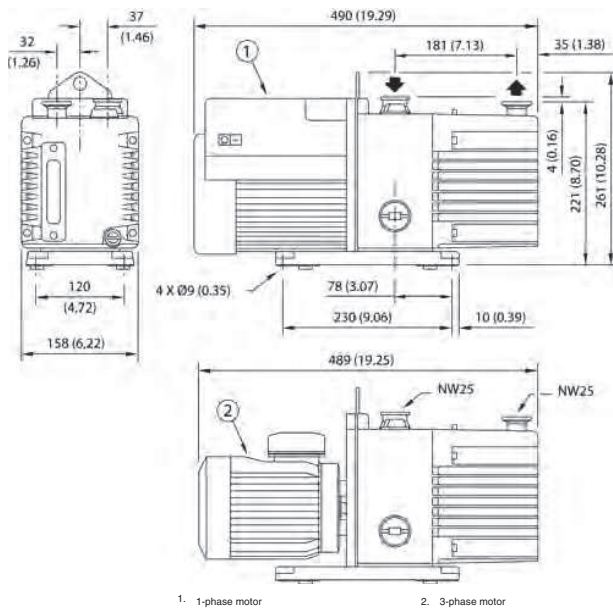
## Features & Benefits

- 48 dBA and intrusive frequencies minimised.
- Dual mode. Suitable for high throughput and high vacuum applications.
- Easy-to-use gas ballast.
- Fast acting inlet valve for system protection.
- High torque, dual voltage/dual frequency motor, electronic start relay.

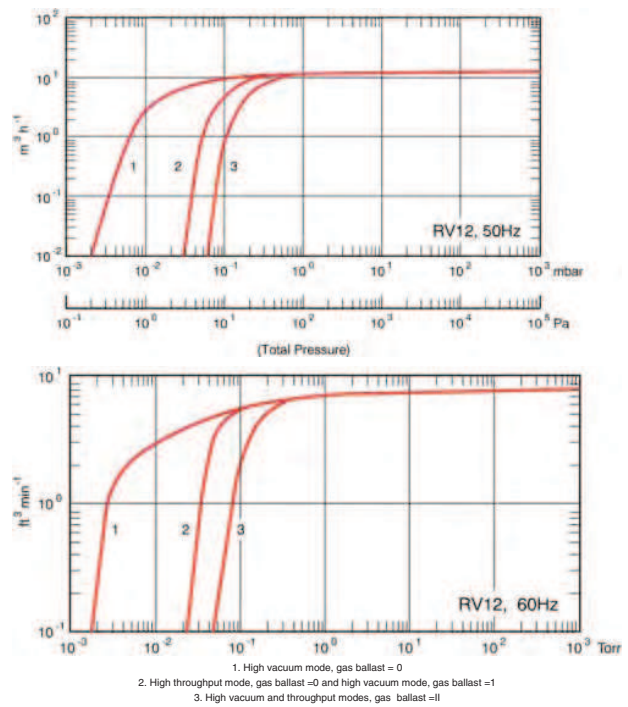
## Applications

- Analytical instruments
- Centrifuges, ultra-high speed
- Coating
- Degassing/curing - oil, epoxy resin
- Distillation/extraction/filtration

## Dimensions



## Performance Curves



## Technical Data

Displacement	
50Hz	14.2 m <sup>3</sup> h <sup>-1</sup> / 8.4 ft <sup>3</sup> min <sup>-1</sup>
60Hz	17 m <sup>3</sup> h <sup>-1</sup> / 10 ft <sup>3</sup> min <sup>-1</sup>
Speed (Pneurop 6602)	
50Hz	12 m <sup>3</sup> h <sup>-1</sup> / 7.1 ft <sup>3</sup> min <sup>-1</sup>
60Hz	14.2 m <sup>3</sup> h <sup>-1</sup> / 8.4 ft <sup>3</sup> min <sup>-1</sup>
Ultimate pressure	2 x 10 <sup>-3</sup> mbar / 1.5 x 10 <sup>-3</sup> Torr
Ultimate pressure GB I	3 x 10 <sup>-2</sup> mbar / 2.3 x 10 <sup>-2</sup> Torr
Ultimate pressure GB II	6 x 10 <sup>-2</sup> mbar / 4.6 x 10 <sup>-2</sup> Torr
Max inlet pressure for water vapour	32 mbar / 24 Torr
Max water vapour pumping rate – GB I	60 g/h
Max water vapour pumping rate – GB II	220 g/h
Max allowed outlet pressure	1 bar gauge / 14 psig
Max allowed inlet and gas ballast pressure	0.5 bar gauge / 7 psig
Motor power 50/60Hz	450 / 550W
Power connector 1-ph	IEC EN60320 C13
Nominal rotation speed 50/60Hz	1500 / 1800rpm
Weight (without oil)	29 kg / 63.8 lb
Oil capacity min/max	0.65 / 1 litres
Recommended oil	Ultragrade 19
Inlet flange	NW25
Exhaust flange	NW25
Noise level	48 dBA @ 50 Hz
Operating temperature range	12 – 40 °C

## Ordering Information

Product Description	Order No.
RV12 115/230V, 1-ph, 50/60Hz, Factory set to 230V for Europe	A65501903
RV12 100/200V, 1-ph, 50/60Hz, Factory set to 200V for Japan	A65501904
RV12 200-220/380-415V, 3-ph, 50Hz and 200-230/460V, 3-ph, 60Hz, Factory set to 380/460V	A65501905
RV12 115/230V, 1-ph, 50/60Hz, Factory set to 115V for USA	A65501906
PFPE RV12 115/230V, 1-ph, 50/60Hz, Factory set to 230V for Europe	A65509903
PFPE RV12 100/200V, 1-ph, 50/60Hz, Factory set to 200V for Japan	A65509904
PFPE RV12 200-220/380-415V, 3-ph, 50Hz and 200-230/460V, 3-ph, 60Hz, Factory set to 380/460V	A65509905
RV12 PFPE Two Stage Rotary Vane Pump 115/230V 1ph 50/60Hz, Factory set to 115V for USA	A65509906
Accessories & Spares	Order No.
2m electrical supply cable for 1-ph pumps, UK, Three-pin plug	A50505000
2m electrical supply cable for 1-ph pumps, North European plug	A50506000
2m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2m electrical supply cable for 1-ph pumps, no plug	A50508000
RV gas-ballast adaptor	A50502000
RV exhaust nozzle kit	A50509000
Model EMF20 mist filter	A46229000
Clean and overhaul kit	A65201131
Clean and overhaul kit (Nitrile)	A65201137
Spares Kit Blade RV12	A65501130
Outer Shaft Seal Kit RV	A65201134
Spares Kit Inlet Valve RV3/5/8/12	A65201036
Spares Kit Cartridge RV12	A65501032

# E1M18 One Stage, E2M18 Two Stage Rotary Vane Pumps



The EM range of oil-sealed rotary pumps - renowned for their high ultimate vacuum, rapid pumping speed, quiet operation and ability to handle vapour - have become the industry standard for laboratory and light industrial applications.

The E1M18 and E2M18 pumps are direct drive, sliding vane pumps. The pump is oil sealed and designed for reliable, long-term operation. The pump is a freestanding unit with the drive provided through a flexible coupling by either a single-phase or three-phase (four-pole) motor.

Supplied with: Ultragrade 19 oil, NW25 O-ring and centering ring. Fomblin must be purchased separately for PFPE pumps.

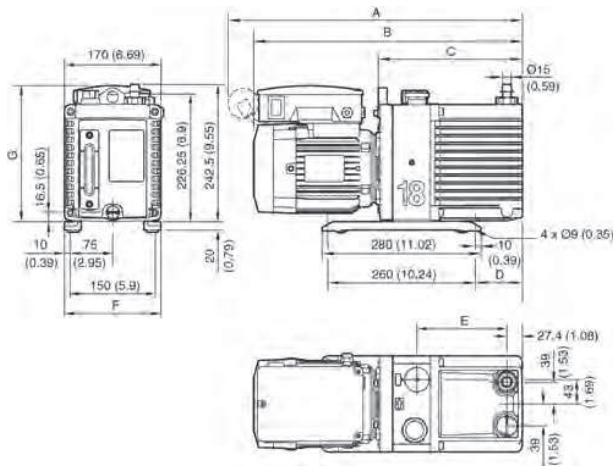
## Features & Benefits

- The pump is designed for reliable, long-term operation.
- Thermal overload device prevents overheating (single phase only).
- The drive is provided through a flexible coupling by a single-phase or three-phase (four pole) motor.
- The motors are totally enclosed and are cooled by the motor-cooling fan.
- Pressure die cast oil box with integral oil seals prevents oil leaks.

## Applications

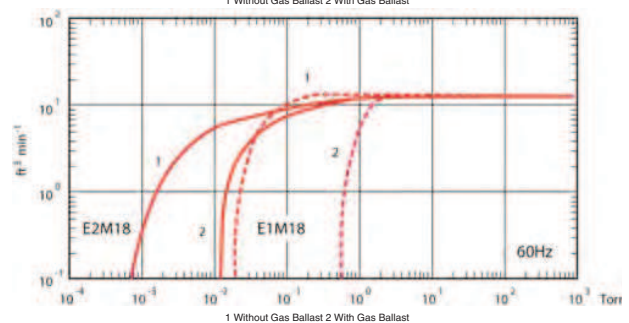
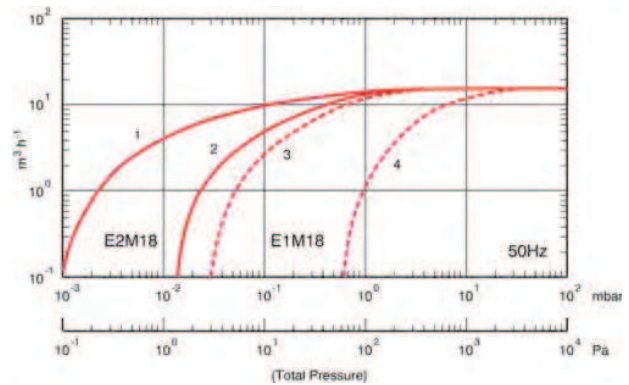
- Analytical instruments
- Leak detectors, Helium
- Research and development
- Backing Turbomolecular pumps

## Dimensions



Order No.	A	B	C	D	E	F	G
A34310940	-	474	247	83	159	171.4	217
A34315904	518	474	247	83	159	171.4	241
A34317984	-	504	247	83	159	171.4	251
A36310940	-	520	295	131	207	171.4	217
A36315904	564	520	295	131	207	171.4	241
A36317984	-	550	295	131	207	171.4	251

## Performance Curves



## Technical Data

	<b>E1M18</b>	<b>E2M18</b>
Displacement (50Hz)	20.5 m <sup>3</sup> h <sup>-1</sup> /	20.5 m <sup>3</sup> h <sup>-1</sup> /
	12.1 ft <sup>3</sup> min <sup>-1</sup>	12.1 ft <sup>3</sup> min <sup>-1</sup>
Displacement (60Hz)	25.0 m <sup>3</sup> h <sup>-1</sup> /	25.0 m <sup>3</sup> h <sup>-1</sup> /
	14.7 ft <sup>3</sup> min <sup>-1</sup>	14.7 ft <sup>3</sup> min <sup>-1</sup>
Speed (Pneurop 6602) 50 Hz	17.0 m <sup>3</sup> h <sup>-1</sup> /	17.0 m <sup>3</sup> h <sup>-1</sup> /
	10 ft <sup>3</sup> min <sup>-1</sup>	10 ft <sup>3</sup> min <sup>-1</sup>
Speed (Pneurop 6602) 60Hz	20.4 m <sup>3</sup> h <sup>-1</sup> /	20.4 m <sup>3</sup> h <sup>-1</sup> /
	12.1 ft <sup>3</sup> min <sup>-1</sup>	12.1 ft <sup>3</sup> min <sup>-1</sup>
Ultimate vacuum (total pressure)		
without gas purge	3 x 10 <sup>-2</sup> mbar /	1 x 10 <sup>-3</sup> mbar /
	2.2 x 10 <sup>-2</sup> Torr	7.4 x 10 <sup>-4</sup> Torr
with gas purge	6.5 x 10 <sup>-1</sup> mbar	1.5 x 10 <sup>-1</sup> mbar
	/4.8 x 10 <sup>-1</sup> Torr	/1.1 x 10 <sup>-2</sup> Torr
Inlet connection	NW25	NW25
	Nozzle 15 mm external Ø	Nozzle 15 mm external Ø
Outlet connection	removable from 3/4 in BSP tapped hole	removable from 3/4 in BSP tapped hole
Max permitted pressure at outlet	0.5 bar gauge /	0.5 bar gauge /
	7 psig	7 psig
Max inlet pressure	50 mbar /	20 mbar /
for water vapour	38 Torr	15 Torr
Max water vapour pumping rate	0.65 kg h <sup>-1</sup>	0.3 kg h <sup>-1</sup>
Operating temp range	13-40°C	13-40°C
Nominal Rotation speed 50/60Hz	1440/1720 rpm	1440/1720 rpm
Power connector 1-ph*	IEC EN60320 C19	IEC EN60320 C19
Motor power 50 Hz	0.55 kW	0.55 kW
Motor power 60 Hz	0.75 kW	0.75 kW
Weight	37 kg / 82 lbs	39 kg / 86 lbs
Noise @ 50Hz	57 dB(A)	57 dB(A)
Oil capacity - max	1.4 litre	1.05litre
Oil capacity - min	0.9 litre	0.75litre
Recommended oil (supplied)	Ultragrade 19	Ultragrade 19

\* Pumps listed with IEC connector only

## Ordering Information

<b>Product Description</b>	<b>Order No.</b>
E1M18 200-230/380-415V, 3-ph, 50Hz or 200-230/460V, 3-ph, 60Hz	A34310940
E1M18 100/200V, 1-ph, 50Hz or 100-105/200-210V, 1-ph, 60Hz	A34315904
E1M18 115/200-230V, 1-ph, 50/60Hz with IEC60320 connector, factory set to 230V	A34317984
PFPE E1M18 115/200-230V, 1-ph, 50/60Hz with IEC60320 connector	A34325984
E2M18 200-230/380-415V, 3-ph, 50Hz or 200-230/460V, 3-ph, 60Hz	A36310940
E2M18 100/200V, 1-ph, 50Hz or 100-105/200-210V, 1-ph, 60Hz	A36315904
E2M18 115/200-230V, 1-ph, 50/60Hz with IEC60320 connector	A36317984
E2M18 PFPE 200-230/380-415 V, 3-ph, 50 Hz or 200-230/460 V, 3-ph, 60 Hz	A36321940
E2M18 PFPE 115/200-230 V, 1-ph, 50/60 Hz with IEC60320 connector fitted	A36325984
<b>Accessories &amp; Spares</b>	<b>Order No.</b>
Model EMF20 mist filter	A46229000
2m Electrical supply cable, UK, three-pin plug	A50505003
2m Electrical supply cable, North European plug	A50506003
2m Electrical supply cable, North America/Japan plug	A50507003
2m Electrical supply cable, no plug	A50508003
Spares Kit C&O E1M18/E2M18	A36301131
Spares Kit Blade E1M18	A34301041
Spares Kit Blade E2M18	A36301020
NW25 to 28mm bore tube adaptor	C10520201
3/4" BSP to NW25 outlet adaptor	C10501414



# E2M28 Two Stage Rotary Vane Pump

1

Page  
30



The EM range of oil-sealed rotary pumps - renowned for its high ultimate vacuum, rapid pumping speed, quiet operation and ability to handle vapour - has become the industry standard laboratory and light industrial applications.

The E2M28 pump is a two-stage, direct drive, sliding vane pump. The pump is oil sealed and designed for reliable, long-term operation in both laboratory and industrial environments. The pump is a freestanding unit with the drive provided through a flexible coupling by either a single-phase or three-phase (four-pole) motor.

Supplied with: Ultragrade 19 oil, NW25 O-ring and centering ring, lifting plate. Fomblin must be purchased separately for PFPE pumps.

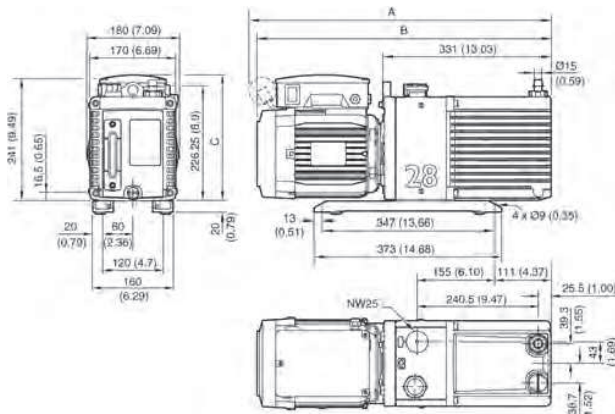
## Features & Benefits

- The pump is designed for reliable, long-term operation.
- Thermal overload device prevents overheating (single phase only).
- The pump is a free-standing unit.
- The drive is provided through a flexible coupling by a single-phase or three-phase (four pole) motor.
- The motors are totally enclosed and are cooled by the motor-cooling fan.

## Applications

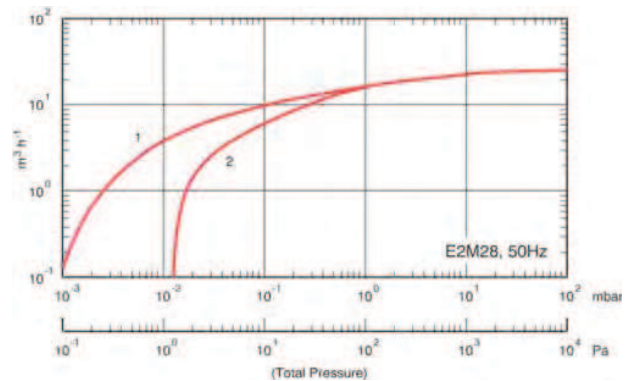
- Analytical instruments - LCMS
- Automotive
- Beam lines and high energy physics
- Centrifuges, ultra-high speed
- Coating

## Dimensions

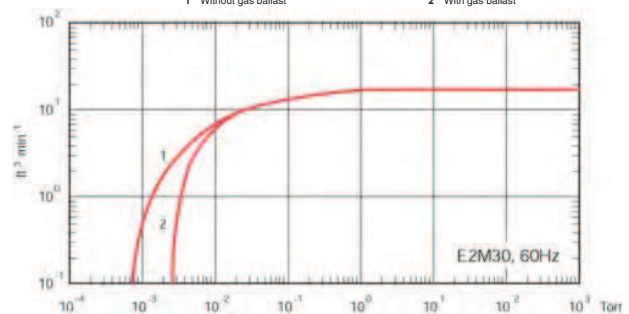


Ordering No.	A	B	C
A373-10-940	-	553	217
A373-15-904	598	584	251
A373-17-984	-	584	251

## Performance Curves



1 Without gas ballast      2 With gas ballast



1 Without gas ballast      2 With gas ballast



## Technical Data

Displacement (swept volume) 50 Hz	32.2m <sup>3</sup> h <sup>-1</sup> / 19 ft <sup>3</sup> min <sup>-1</sup>
Displacement (swept volume) 60 Hz	38.9 m <sup>3</sup> h <sup>-1</sup> / 22.3 ft <sup>3</sup> min <sup>-1</sup>
Speed (Pneurop 6602) 50 Hz	27.5 m <sup>3</sup> h <sup>-1</sup> / 16.2 ft <sup>3</sup> min <sup>-1</sup>
Speed (Pneurop 6602) 60Hz	33.0 m <sup>3</sup> h <sup>-1</sup> / 19.5 ft <sup>3</sup> min <sup>-1</sup>
Ultimate vacuum (total pressure)	
without gas ballast	1 x 10 <sup>-3</sup> mbar / 7.5 x 10 <sup>-4</sup> Torr
with gas ballast	1.5 x 10 <sup>-2</sup> mbar / 1.1 x 10 <sup>-2</sup> Torr
Inlet connection	NW25 flange
Outlet connection	Nozzle 15 mm external Ø removable from 3/4 in BSP tapped hole
Max allowed pressure at outlet	0.5 bar gauge / 7 psig
Max inlet pressure for water vapour	30 mbar / 23 Torr
Max water vapour pumping rate	0.7 kg h <sup>-1</sup>
Operating temperature range	13 – 40 °C
Nominal rotation speed	1440 / 1720 rpm
Motor power 50 Hz	0.75 kW
Motor power 60 Hz	0.90 kW
Power Connector 1-ph*	IEC EN60320 C19
Weight	40 kg / 88 lbs
Noise	57 dB(A) @ 50 Hz
Oil capacity - max	1.5 litre
Oil capacity - min	1.2 litre
Recommended oil (supplied)	Ultragrade 19

\* Pumps listed with IEC connector only

## Ordering Information

Product Description	Order No.
E2M28 200-230/380-415 V, 3-ph, 50 Hz or 200-230/460 V, 3-ph, 60 Hz	A37310940
E2M28 100/200 V, 1-ph, 50 Hz or 100-105/200-210 V, 1-ph, 60 Hz	A37315904
E2M28 115/200-230 V, 1-ph, 50/60 Hz with IEC60320 connector fitted	A37317984
E2M28 PFPE 200-230/380-415 V, 3-ph, 50 Hz or 200-230/460 V, 3-ph, 60 Hz	A37321940
E2M28 PFPE 115/200-230 V, 1-ph, 50/60 Hz with IEC60320 connector fitted	A37325984
Accessories & Spares	Order No.
Model MF30 mist filter	A46233000
2m Electrical supply cable, UK, three-pin plug	A50505003
2m Electrical supply cable, North European plug	A50506003
2m Electrical supply cable, North America/Japan plug	A50507003
2m Electrical supply cable, no plug	A50508003
Spares Kit C&O E2M28	A37301131
Blade kit E2M28	A37301134
NW25 to 28mm bore tube adaptor	C10520201
3/4" BSP to NW25 outlet adaptor	C10501414

# RV ATEX Two Stage Rotary Vane Pump

1

Page  
32

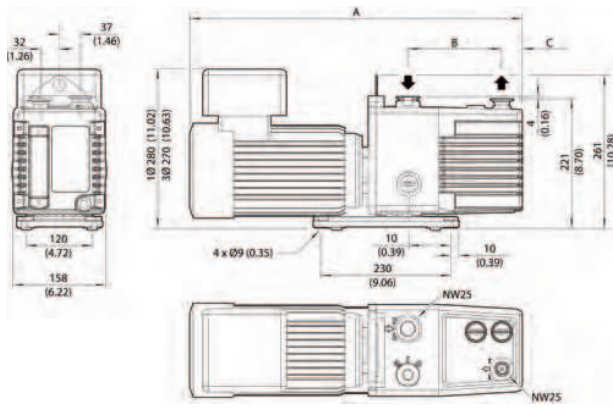


ATEX RV pumps have an **external** ATEX classification of Ex II 2G IIC T4 or Ex II 2G IIB T4 and are suitable for use in potentially explosive atmospheres. They share the same **internal** ATEX classification as our standard RV pumps, namely Ex II 3G c IIB T4. ATEX pumps with flameproof motors require the user to provide 2 off hazardous area cable glands and cables. In addition, connection of the thermistors to an appropriate safety circuit must be made to switch off the pump if overheating occurs. The pumps are supplied with the Gas Ballast port plugged. When pumping flammable gases or vapours you must fit an inert gas purge to this port to dilute such gases or vapours below the lower explosive limit. Supplied with 1 litre of Ultragrade 19 oil, inlet filter and O-ring.

## Features & Benefits

- ATEX rated spot voltage motor.
- Dual mode. Suitable for high throughput and high vacuum applications.
- Fast acting inlet valve for system protection.
- Efficient high pressure lubrication.
- Oil-tight with printed gaskets, effective shaft seals.

## Dimensions

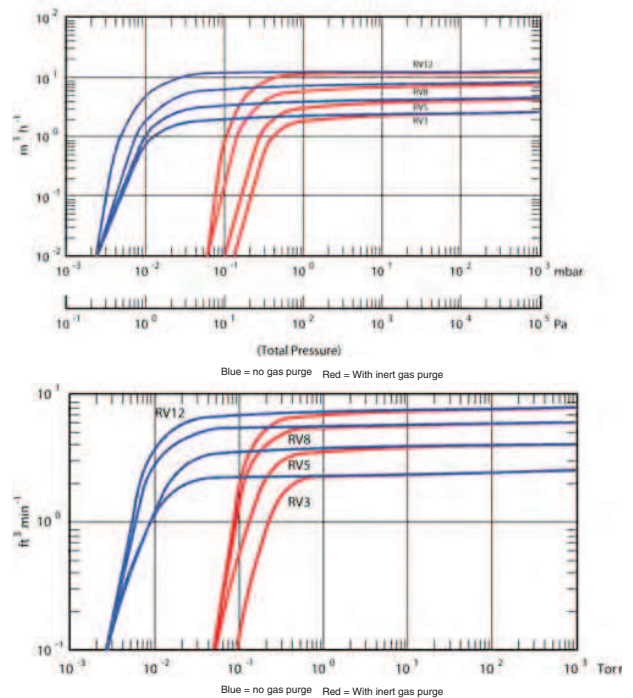


Pump	A	B	C
RV3	520 (20.47)	127 (5)	29 (1.06)
RV5	520 (20.47)	127 (5)	29 (1.06)
RV8	560 (22.05)	161 (6.34)	35 (1.38)
RV12	580 (22.83)	181 (7.13)	35 (1.38)

## Applications

- Hazardous area pumping

## Performance Curves



## Technical Data

Displacement	
RV3 50Hz	3.7 m <sup>3</sup> h <sup>-1</sup> / 2.2 ft <sup>3</sup> min <sup>-1</sup>
RV3 60Hz	4.5 m <sup>3</sup> h <sup>-1</sup> / 2.6 ft <sup>3</sup> min <sup>-1</sup>
RV5 50Hz	5.8 m <sup>3</sup> h <sup>-1</sup> / 3.4 ft <sup>3</sup> min <sup>-1</sup>
RV5 60Hz	7 m <sup>3</sup> h <sup>-1</sup> / 4.1 ft <sup>3</sup> min <sup>-1</sup>
RV8 50Hz	9.7 m <sup>3</sup> h <sup>-1</sup> / 5.7 ft <sup>3</sup> min <sup>-1</sup>
RV8 60Hz	11.7 m <sup>3</sup> h <sup>-1</sup> / 6.9 ft <sup>3</sup> min <sup>-1</sup>
RV12 50Hz	14.2 m <sup>3</sup> h <sup>-1</sup> / 8.4 ft <sup>3</sup> min <sup>-1</sup>
RV12 60Hz	17 m <sup>3</sup> h <sup>-1</sup> / 10 ft <sup>3</sup> min <sup>-1</sup>
Speed (Pneurop 6602)	
RV3 50Hz	3.3 m <sup>3</sup> h <sup>-1</sup> / 2 ft <sup>3</sup> min <sup>-1</sup>
RV3 60Hz	3.9 m <sup>3</sup> h <sup>-1</sup> / 2.3 ft <sup>3</sup> min <sup>-1</sup>
RV5 50Hz	5.1 m <sup>3</sup> h <sup>-1</sup> / 3 ft <sup>3</sup> min <sup>-1</sup>
RV5 60Hz	6.2 m <sup>3</sup> h <sup>-1</sup> / 3.6 ft <sup>3</sup> min <sup>-1</sup>
RV8 50Hz	8.5 m <sup>3</sup> h <sup>-1</sup> / 5 ft <sup>3</sup> min <sup>-1</sup>
RV8 60Hz	10 m <sup>3</sup> h <sup>-1</sup> / 5.9 ft <sup>3</sup> min <sup>-1</sup>
RV12 50Hz	12 m <sup>3</sup> h <sup>-1</sup> / 7.1 ft <sup>3</sup> min <sup>-1</sup>
RV12 60Hz	14.2 m <sup>3</sup> h <sup>-1</sup> / 8.4 ft <sup>3</sup> min <sup>-1</sup>
Max allowed outlet pressure	1 bar gauge / 14 psig
Max allowed inlet and gas purge pressure	0.5 bar gauge / 7 psig
Nominal rotation speed 50/60Hz	1430 / 1710 rpm
Motor power 50/60Hz	550W
Weight (without oil)	
RV3	28 kg / 61.6 lb
RV5	28 kg / 61.6 lb
RV8	31 kg / 68.2 lb
RV12	32 kg / 70.4 lb
Inlet flange	NW25
Exhaust flange	NW25
Operating temperature range	12 – 40 °C

## Ordering Information

Product Description	Order No.
ATEX RV3 230V, 1-ph, 50Hz Ex II 2G IIB T4	A65218991
ATEX RV3 230V, 1-ph, 50Hz Ex II 2G IIC T4	A65218989
ATEX RV3 400V, 3-ph, 50Hz Ex II 2G IIB T4	A65218993
ATEX RV3 400V, 3-ph, 50Hz Ex II 2G IIC T4	A65218992
ATEX RV3 115V, 1-ph, 60Hz Ex II 2G IIB T4	A65218987
ATEX RV3 115V, 1-ph, 60Hz Ex II 2G IIC T4	A65218986
ATEX RV3 230V, 1-ph, 60Hz Ex II 2G IIB T4	A65218988
ATEX RV3 230V, 1-ph, 60Hz Ex II 2G IIC T4	A65218990
ATEX RV5 230V, 1-ph, 50Hz Ex II 2G IIB T4	A65318991
ATEX RV5 230V, 1-ph, 50Hz Ex II 2G IIC T4	A65318989
ATEX RV5 400V, 3-ph, 50Hz Ex II 2G IIB T4	A65318993
ATEX RV5 400V, 3-ph, 50Hz Ex II 2G IIC T4	A65318992
ATEX RV5 115V, 1-ph, 60Hz Ex II 2G IIB T4	A65318987
ATEX RV5 115V, 1-ph, 60Hz Ex II 2G IIC T4	A65318986
ATEX RV5 230V, 1-ph, 60Hz Ex II 2G IIB T4	A65318988
ATEX RV5 230V, 1-ph, 60Hz Ex II 2G IIC T4	A65318990
ATEX RV8 230V, 1-ph, 50Hz Ex II 2G IIB T4	A65418991
ATEX RV8 230V, 1-ph, 50Hz Ex II 2G IIC T4	A65418989
ATEX RV8 400V, 3-ph, 50Hz Ex II 2G IIB T4	A65418993
ATEX RV8 400V, 3-ph, 50Hz Ex II 2G IIC T4	A65418992
ATEX RV8 115V, 1-ph, 60Hz Ex II 2G IIB T4	A65418987
ATEX RV8 115V, 1-ph, 60Hz Ex II 2G IIC T4	A65418986
ATEX RV8 230V, 1-ph, 60Hz Ex II 2G IIB T4	A65418988
ATEX RV8 230V, 1-ph, 60Hz Ex II 2G IIC T4	A65418990
ATEX RV12 230V, 1-ph, 50Hz Ex II 2G IIB T4	A65518991
ATEX RV12 230V, 1-ph, 50Hz Ex II 2G IIC T4	A65518989
ATEX RV12 400V, 3-ph, 50Hz Ex II 2G IIB T4	A65518993
ATEX RV12 400V, 3-ph, 50Hz Ex II 2G IIC T4	A65518992
ATEX RV12 115V, 1-ph, 60Hz Ex II 2G IIB T4	A65518987
ATEX RV12 115V, 1-ph, 60Hz Ex II 2G IIC T4	A65518986
ATEX RV12 230V, 1-ph, 60Hz Ex II 2G IIB T4	A65518988
ATEX RV12 230V, 1-ph, 60Hz Ex II 2G IIC T4	A65518990

# E1M18 One Stage, E2M18 Two Stage ATEX Rotary Vane Pumps

1

Page  
34

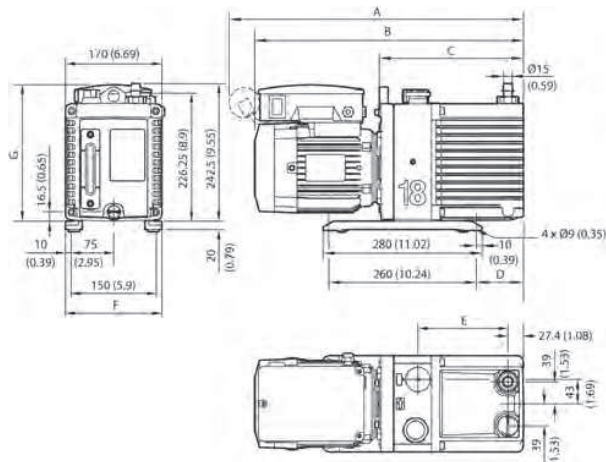


ATEX EM18 pumps have an **external** ATEX classification of Ex II 2G IIC T4 or Ex II 2G IIB T4 and are suitable for use in potentially explosive atmospheres. They share the same **internal** ATEX classification as our standard EM18 pumps, namely Ex II 3G c IIB T4. ATEX pumps with flameproof motors require the user to provide 2 off hazardous area cable glands and cables. In addition, connection of the thermistors to an appropriate safety circuit must be made to switch off the pump if overheating occurs. The pumps are supplied with the gas ballast port plugged. When pumping flammable gasses or vapours you must fit and inert gas purge to this port to dilute such gasses or vapours below the lower explosive limit. Supplied with ultragrade 19 oil, NW25 O-ring and centering ring.

## Features & Benefits

- Approved to external ATEX standards Ex II 2G IIC T4 and Ex II 2G IIB T4, which enables use in hazardous environments.

## Dimensions

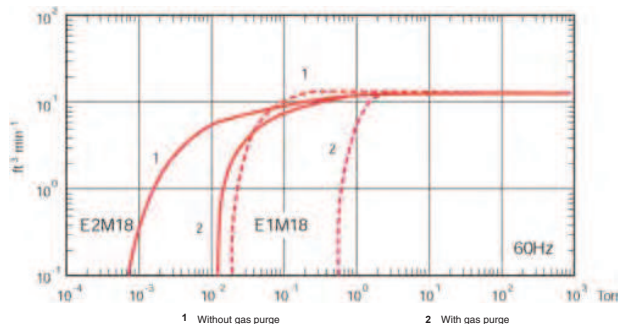


	Order No.	A	B	C	D	E	F	G
E1M18	A34310940	-	474	247	83	159	171.4	217
	A34315904	518	474	247	83	159	171.4	241
	A34317984	-	504	247	83	159	171.4	251
E2M18	A36310940	-	520	295	131	207	171.4	217
	A36315904	564	520	295	131	207	171.4	241
	A36317984	-	550	295	131	207	171.4	251

## Applications

- Hazardous area pumping

## Performance Curves



## Technical Data

	E1M18	E2M18
Displacement (50Hz)	20.5 m <sup>3</sup> h <sup>-1</sup> /	20.5 m <sup>3</sup> h <sup>-1</sup> /
	12.1 ft <sup>3</sup> min <sup>-1</sup>	12.1 ft <sup>3</sup> min <sup>-1</sup>
Displacement (60Hz)	25.0 m <sup>3</sup> h <sup>-1</sup> /	25.0 m <sup>3</sup> h <sup>-1</sup> /
	14.7 ft <sup>3</sup> min <sup>-1</sup>	14.7 ft <sup>3</sup> min <sup>-1</sup>
Speed (Pneurop 6602) 50 Hz	17.0 m <sup>3</sup> h <sup>-1</sup> /	17.0 m <sup>3</sup> h <sup>-1</sup> /
	10 ft <sup>3</sup> min <sup>-1</sup>	10 ft <sup>3</sup> min <sup>-1</sup>
Speed (Pneurop 6602) 60Hz	20.4 m <sup>3</sup> h <sup>-1</sup> /	20.4 m <sup>3</sup> h <sup>-1</sup> /
	12.1 ft <sup>3</sup> min <sup>-1</sup>	12.1 ft <sup>3</sup> min <sup>-1</sup>
Ultimate vacuum (total pressure)		
without gas purge	3 x 10 <sup>-2</sup> mbar /	1 x 10 <sup>-3</sup> mbar /
	2.2 x 10 <sup>-2</sup> Torr	7.4 x 10 <sup>-4</sup> Torr
with gas purge	6.5 x 10 <sup>-1</sup> mbar	1.5 x 10 <sup>-1</sup> mbar
	/4.8 x 10 <sup>-1</sup> Torr	/1.1 x 10 <sup>-2</sup> Torr
Inlet connection	NW25	NW25
	Nozzle 15 mm external Ø	Nozzle 15 mm external Ø
Outlet connection	removable from 3/4 in BSP tapped hole	removable from 3/4 in BSP tapped hole
Max permitted pressure at outlet	0.5 bar gauge /	0.5 bar gauge /
	7 psig	7 psig
Max inlet pressure	50 mbar /	20 mbar /
for water vapour	38 Torr	15 Torr
Max water vapour pumping rate	0.65 kg h <sup>-1</sup>	0.3 kg h <sup>-1</sup>
Operating temp range	13-40°C	13-40°C
Nominal Rotation speed 50/60Hz	1440/1720 rpm	1440/1720 rpm
Motor power 50 Hz	0.55 kW	0.55 kW
Motor power 60 Hz	0.75 kW	0.75 kW
Weight	37 kg / 82 lbs	39 kg / 86 lbs
Noise @ 50Hz	57 dB(A)	57 dB(A)
Oil capacity - max	1.4 litre	1.05litre
Oil capacity - min	0.9 litre	0.75litre
Recommended oil (supplied)	Ultragrade 19	Ultragrade 19

## Ordering Information

Product Description	Order No.
E1M18 ATEX 230V, 1ph, 50Hz Ex II 2G IIB T4	A34318991
E1M18 ATEX 230V, 1ph, 50Hz Ex II 2G IIC T4	A34318989
E1M18 ATEX 400V, 3ph, 50Hz Ex II 2G IIB T4	A34318993
E1M18 ATEX 400V, 3ph, 50Hz Ex II 2G IIC T4	A34318992
E1M18 ATEX 115V, 1ph, 60Hz Ex II 2G IIB T4	A34318987
E1M18 ATEX 115V, 1ph, 60Hz Ex II 2G IIC T4	A34318986
E1M18 ATEX 230V, 1ph, 60Hz Ex II 2G IIB T4	A34318988
E1M18 ATEX 230V, 1ph, 60Hz Ex II 2G IIC T4	A34318990
E2M18 ATEX 230V, 1ph, 50Hz Ex II 2G IIB T4	A36318991
E2M18 ATEX 230V, 1ph, 50Hz Ex II 2G IIC T4	A36318989
E2M18 ATEX 230V, 1ph, 50Hz Ex II 2G IIB T4	A36318993
E2M18 ATEX 230V, 1ph, 50Hz Ex II 2G IIC T4	A36318992
E2M18 ATEX 230V, 1ph, 50Hz Ex II 2G IIB T4	A36318987
E2M18 ATEX 230V, 1ph, 50Hz Ex II 2G IIC T4	A36318986
E2M18 ATEX 230V, 1ph, 50Hz Ex II 2G IIB T4	A36318988
E2M18 ATEX 230V, 1ph, 50Hz Ex II 2G IIC T4	A36318990
Accessories & Spares	Order No.
2m Electrical supply cable, no plug	A50508003
2m Electrical supply cable, North America/Japan plug	A50507003
2m Electrical supply cable, North European plug	A50506003
2m Electrical supply cable, UK, three-pin plug	A50505003
3/4" BSP to NW25 outlet adaptor	C10501414
NW25 O Ring Viton Pk 5	H02124035
NW25 to 28mm bore tube adaptor	C10520201
NW25/25 Centring Nitrile S/S Pk1	C10514396
Spares Kit Blade E1M18	A34301041
Spares Kit Blade E2M18	A36301020
Spares Kit C&O E1M18/E2M18	A36301131
Ultragrade 19 Oil 4 Litres	H11025013



# Electrical Data

# Small Pump Accessories

1

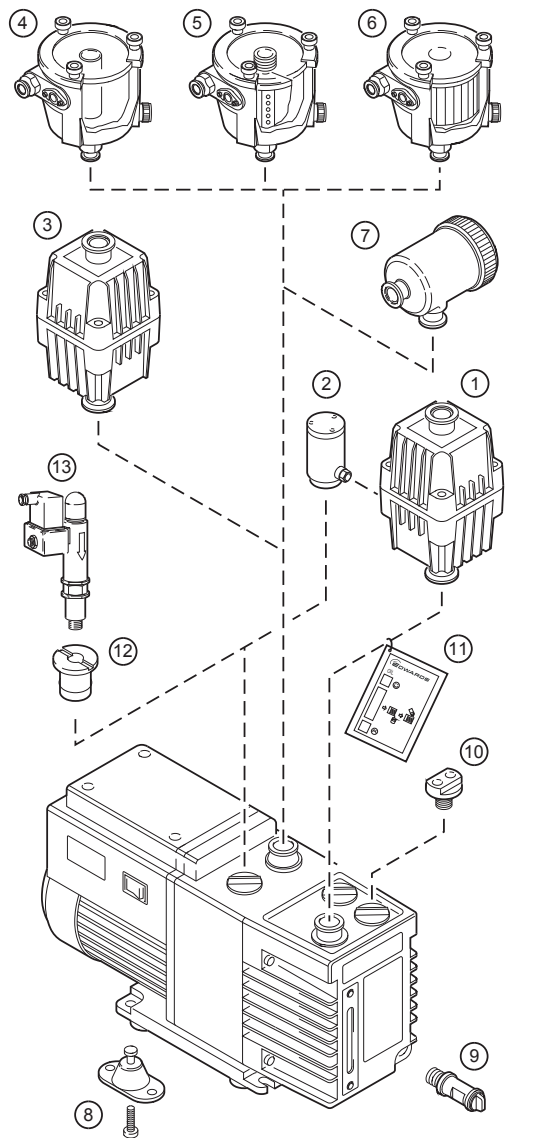
Page 36

The table shows current data and suggests a suitable fuse rating. Starting current is drawn for less than one second and slow blow fuses should be used to prevent unnecessary rupture during starting. Pump outfits are rated for operation above 12°C. Pump starting at temperatures lower than 12°C will increase the current drawn due to the higher start torque required. This may cause the motor thermal overload to trip.

Three-phase motors should be protected by a starter consisting of a suitably rated contactor and thermal overload. The trip current regulator on the thermal overload should be set according to the starter manufacturer's instructions.

Electrical Supply	Full load current (A)		Start current (A)		Suggested fuse rating (A)
	50 Hz	60 Hz	50 Hz	60 Hz	
<b>E2M0.7</b>					
200-240 V 1-ph 50/60 Hz	1.0	1.0	2.8	2.3	6
100-120 V 1-ph 50/60 Hz	1.8	1.9	5.7	5.3	10
<b>E2M1.5</b>					
200-240 V 1-ph 50/60 Hz	1.4	1.3	5.5	5.2	6
100-120 V 1-ph 50/60 Hz	3.1	2.6	12.0	11.2	10
<b>RV3 and RV5</b>					
220-240 V 1-ph 50/60 Hz	2.7	2.1	17.0	17.0	5
110-120 V 1-ph 50/60 Hz	4.4	4.4	30.8	30.8	10
200 V 1-ph 50/60 Hz	2.9	2.4	17.6	17.2	5
200-220 V 3-ph 50/60 Hz	1.7	1.7	10.2	10.2	2.5
380-415/460 V 3-ph 50/60 Hz	1.0	1.0	5.7	7.0	2.5
<b>RV8 and RV12</b>					
220-240 V 1-ph 50/60 Hz	3.4	3.4	17.0	18.0	5
110-120 V 1-ph 50/60 Hz	7.8	6.9	34.0	30.8	13
200 V 1-ph 50/60 Hz	4.0	4.0	17.6	17.2	5
200-220 V 3-ph 50/60 Hz	2.5	2.9	14.0	12.0	4.0
380-415/460 V 3-ph 50/60 Hz	1.5	1.5	9.0	8.7	2.5
<b>E1M18 and E2M18</b>					
220-240 V 1-ph 50/60 Hz	4.6	5.0	33.0	33.0	15
110-120 V 1-ph 50/60 Hz	11.0	10.0	42.0	32.0	30
200 V 1-ph 50/60 Hz	6.0	5.5	44.0	44.0	15
100 V 1-ph 50/60 Hz	12.0	11.0	88.0	88.0	30
200-230 V 3-ph 50/60 Hz	3.3	2.3	16.1	15.9	10
380-415/460 V 3-ph 50/60 Hz	1.9	1.6	10.2	10.6	6
<b>E2M28</b>					
220-240 V 1-ph 50/60 Hz	6.0	6.5	27.0	32.0	15
110-120 V 1-ph 50/60 Hz	12.0	12.0	36.0	50.0	30
200 V 1-ph 50/60 Hz	6.5	5.5	40.0	40.0	20
100 V 1-ph 50/60 Hz	12.0	12.0	80.0	80.0	30
200-230 V 3-ph 50/60 Hz	3.8	3.9	22.8	22.0	16
380-415/460 V 3-ph 50/60 Hz	2.3	2.3	14.3	14.6	10
<b>XDS5 and XDS10</b>					
220-240 V 1-ph 50/60 Hz	3.6	3.2	-	-	5
110-120 V 1-ph 50/60 Hz	7.2	6.4	-	-	10
200 V 1-ph 50/60 Hz	4.0	3.7	-	-	5
100 V 1-ph 50/60 Hz	8.0	7.5	-	-	10
200-230 V 3-ph 50/60 Hz	1.77	1.80	-	-	5
380-415/460 V 3-ph 50/60 Hz	0.96	1.00	-	-	3
<b>XDS35i</b>					
200-230 V 1-ph 50/60 Hz	5.0	5.0	-	-	16 (13 UK)
100-120 V 1-ph 50/60 Hz	8.5	8.5	-	-	20
<b>XDS46i and XDS100B</b>					
200-230 V 1-ph 50/60 Hz	6.6	6.6	-	-	16 (13 UK)
100-120 V 1-ph 50/60 Hz	10.6	10.6	-	-	20

This diagram shows the accessories available for oil-sealed pumps. Refer to the following pages for details of each accessory. Note that the E-LAB2 pump is supplied with all required accessories.



- 1 Outlet mist filter\*
- 2 Oil return kit†
- 3 Small volume inlet liquid catchpot
- 4 ITO20K inlet liquid catchpot
- 5 ITC20K inlet chemical trap
- 6 ITF20K inlet dust filter
- 7 FL20K foreline trap
- 8 Vibration isolators
- 9 Oil drain kit‡
- 10 OB20 oil box purge adaptor
- 11 Oil change reminder card
- 12 RV gas ballast adaptor\*\*
- 13 EBV20 solenoid operated gas ballast valve

\* EMF filter shown

† RV adjustable gas ballast oil return kit shown

‡ RV pump extension kit shown

\*\* Not required for EM pumps

## Outlet Mist Filters

Benefits of the mist filter include:

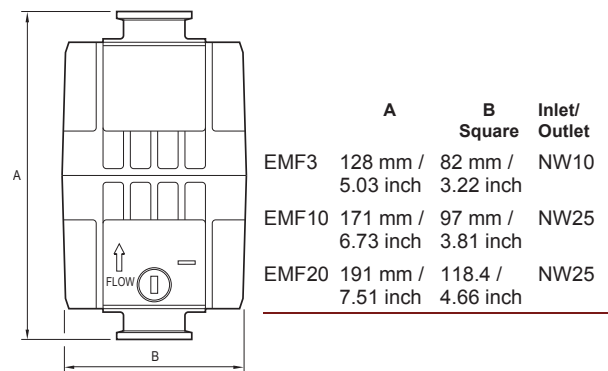
- Protection from oil mist emissions as required by COSHH and health and safety regulations
- Use of optional oil return kits results in reduced oil level maintenance and savings in pump oil
- If the oil element becomes blocked, an integral pressure relief valve opens

**EMF Filters** The EMF3, EMF10 and EMF20 mist filters are suitable for all small rotary vane pumps up to E2M18. (The EMF20 can be used with an E2M28 on low pressure/throughput applications; contact Edwards). They are very efficient at 99.999% DOP test and are also azide proof. The white bottom half of the body is semi-transparent, allowing the oil level to be monitored. The EMF filters have a unique odour element which neutralizes the smell of oil mist.

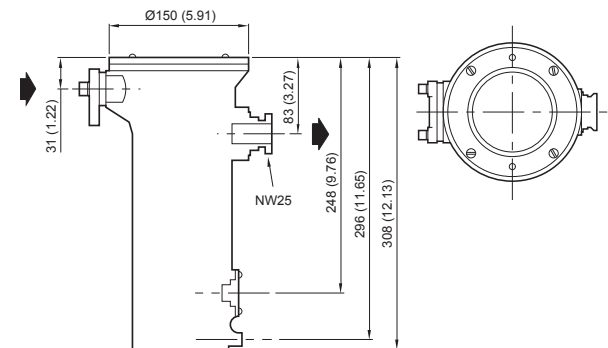
**MF30 Filter** The MF30 is suitable for E2M28 pumps. It is very efficient at 99.85% DOP test. You can monitor the oil level through the sight-glass provided.

## Dimensions

### EMF Filters



### MF30 Filters



## Ordering Information

Product Description	Order No.
Model EMF3 mist filter (0.315 kg)*	A46220000
Model EMF10 mist filter (0.500 kg)†	A46226000
Model EMF20 mist filter (0.700 kg)†	A46229000
Model MF30 mist filter (1.30 kg)‡	A46233000
* Supplied with NW10 clamp, centring-ring and O-ring, NW10 to 3/4 inch BSP adaptor.	
† Supplied with NW25 clamp, centring-ring and O-ring, NW25 to 3/4 inch BSP adaptor.	
‡ Supplied with NW25 elbow, NW25 clamp, NW25 to 3/4 inch BSP adaptor and NW25 Co-Seal.	
Spares	Order No.
Odour element (pack of 5)	
EMF3	A22304081
EMF10	A22304079
EMF20	A22304077
Oil element	
EMF3	A22304197
EMF10	A22304198
EMF20	A22304199
MF30	A22304057
Body seal	
EMF3	A27159538
EMF10	A27159535
EMF20	A27159534

## Oil Return Kits

**Oil return kits** These conserve the pump oil, by returning the oil trapped in the mist filter to the pump. The gas ballast oil return kit, for example, allows extended operation of the pump with gas ballast.

## Ordering Information

Product Description	Order No.
Clean application oil return kit (RV, Speedivac 2 to E2M0.7, E2M1.5)	A50419000
Adjustable gas ballast oil return kit (RV)	A50523000
Clean application oil return kit (E1M18 to E2M28)	A50420000

## Inlet Liquid Catchpots

These catchpots minimize the entry of condensable vapours into the pump. Benefits of the catchpots include:

- Capture condensable vapours, which would otherwise condense in the pipelines or in the pump
- Prevents froth or spray from the process from carrying over to the pump
- Corrosion-resistant body
- Visual indication of trapped liquid level
- Hand-tightened drain plug, for easy drainage

## Ordering Information

Product Description	Order No.
ITO20K inlet catchpot, 1.84 litres capacity, weight 3.2 kg	A44110000
Small volume inlet catchpot 0.1 litre capacity, weight 0.3 kg	A44105000
Both supplied with NW25 clamp, centring-ring and O-ring.	

## ITD20K Inlet Desiccant Trap

The ITD desiccant trap is intended for use when pumping limited quantities of water vapour at high pumping speeds to a low vapour pressure using phosphorous pentoxide ( $P_2O_5$ ) as the desiccant.  $P_2O_5$  (not supplied by Edwards) absorbs more than 20% (by weight) of water whilst still maintaining a low vapour pressure.

The trap body is an aluminium casting which contains a tray assembly made of stainless steel. The condition of the desiccant can be observed through a glass cover fitted to the top of the trap.

### Ordering Information

Product Description	Order No.
ITD20K Inlet Desiccant Trap	A44510000

## ITC20K Inlet Chemical Traps

The ITC series of chemical traps provides the following benefits:

- Protection against various aggressive vapours, which may attack the pump or pump oil
- Prevent high molecular weight vapours (such as might arise in a resin treatment plant), from reaching the pump. These vapours could cause lacquering or clogging
- The standard sorbent (activated charcoal), has relatively high trapping properties (absorbs around 25% of its own weight), even when large amounts of water vapour are being pumped
- When filled with activated alumina on two-stage pumps, backstreaming of pump oil can be controlled
- See also ITO catchpots for design advantages of the body

### Ordering information

Product Description	Order No.
ITC20K inlet chemical trap charcoal charge 0.4 kg, weight 3.5 kg	A44410000
Sorbent charge not supplied. Supplied with NW25 clamp, centring-ring and O-ring.	
Spares	Order No.
0.5 kg activated charcoal	H12205001
3 kg activated charcoal	H12205002
0.45 kg activated alumina	H02600050
0.2 kg activated alumina	H02600056

## ITF20K Inlet Dust Filter

The ITF inlet dust filters prevent the entry of dust particles into the pump. The impedance of a clean filter reduces the pumping speed of a  $20\text{ m}^3\text{h}^{-1}$  pump by about 20% at 1 mbar and 25% at 10 mbar.

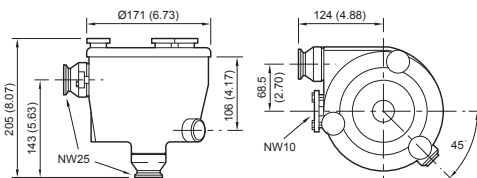
Depending on your application, you can normally clean the filter element with a vacuum cleaner or a clean air blast, and then re-use the element.

The benefits of the ITF filters include:

- Thick aluminium casting, to withstand abrasion
- Tangential entry port, to promote centrifugal separation of dust particles
- Filter efficiency better than 96% (tested to BS2831, dust number 2).

### Dimensions

ITO20K, ITC20K and ITF20K



## Ordering Information

Product Description	Order No.
ITF20K inlet dust filter (3.4) kg	A44215000
ITF20K element and gasket kit (0.3 kg)	A44201800

## EBV Gas Ballast Control Valves

Fit the EBV 20 valve to allow remote operation of the pump's gas ballast control.

### Ordering Information

Product Description	Order No.
EBV20 110 V 1-ph 50/60 Hz	A50006984
EBV20 (0.5 kg) 220 - 240 V 50/60 Hz	A50006930
Suits the E2M0.7 to E2M28 including RV.	
For RV and XDS pumps an adaptor is required	A50502000
For the E1M18/E2M28 an adapter is required	A50006003

## Acoustic Enclosures (small pump accessories section)

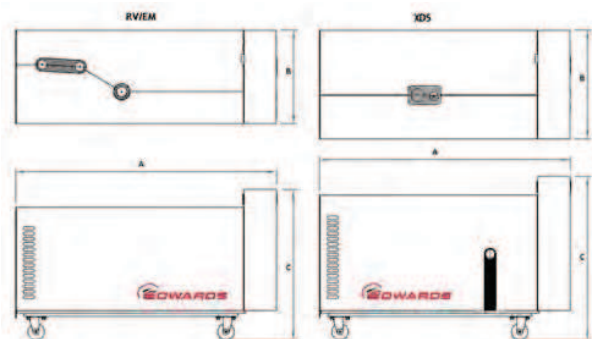
Designed for use in a laboratory or an industrial environment, Edwards new acoustic enclosures are compatible with all EM, RV and XDS pumps ranging up to the E2M28 series/XDS46i.

The acoustic enclosure reduces the noise level by up to 9dBA and incorporates internal fans to ensure adequate air cooling is provided to the pump. They are also CSA/UL compliant.

The design of the enclosure allows for it to be easily assembled or disassembled without tooling. A removable front panel also allows for quick access to the oil sight glass and if required a side panel can be removed allowing access to the oil filler cap (EM/RV only). The enclosure is powered via a power cable fitting into an IEC 320 socket.

- Simple slot together assembly means no tools are required
- Designed to attenuate the noise of an E2M28 by 7dBA or an XDS35i/46i by 9dBA
- Integrated cooling fans to maintain optimum pump running temperature
- Castor wheels with brakes for easy manoeuvrability
- Fully compatible with Edwards inlet traps, exhaust mist filters and XDS silencer with extension spools (available separately)
- Over temperature buzzer alarm with battery back-up

### Dimensions



Dimension	RV/EM	XDS
A	790 mm	778 mm
B	285 mm	442 mm
C	460 mm	580 mm

## Technical Data

Mass (RV-EM/XDS)	23 kg/ 37 kg
Electrical supply for cooling fans	
Voltage	100-120 V/200-240 V
Fuse rating	5 A Type T 20 mm
Connector	IEC320 socket
Approximate noise reduction	
RV	7dBA
E2M28	7dBA
XDS5/10	8dBA
XDS35i/46i	9dBA

## Ordering Information

Product Description	Order No.
RV/EM acoustic enclosure 100-120V	A50635906
RV/EM acoustic enclosure 200-240V	A50635903
XDS acoustic enclosure 100-120V	A50636906
XDS acoustic enclosure 200-240V	A50636903
Accessories & Spares	Order No.
2m Electrical supply cable, UK 3 pin plug	A50505000
2m Electrical supply cable, N. Europe plug	A50506000
2m Electrical supply cable, USA/Japan plug	A50507000
2m Electrical supply cable, no plug	A50508000
NW25 Aluminium nipple 100mm long	C10514409
NW40 Aluminium nipple 130mm long	C10516409

## FL20K Foreline Trap

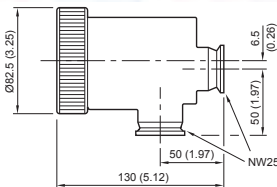
The FL20K foreline trap has been developed for use in clean pumping systems, to prevent the back-migration of rotary pump oil mist into the system. The activated alumina sorbent has the following benefits:

- Exceptional trapping properties for oil mist (99.7%)
- A very long life before it is saturated
- Can be rejuvenated by baking the basket containing the sorbent for 2 hours at 250 °C – 300 °C.

The FL20K is most useful with two-stage rotary pumps, operating below 1 mbar. To maximize sorbent life, install the FL20K near the vacuum system. In common with other types of sorbent, activated alumina absorbs water. This does not affect the oil vapour trapping properties but may tend to prolong the roughing time on successive pump downs. To minimize vapour absorption, we recommend you fit a valved by-pass line.

The trap body is made of aluminium and is fitted with a removable basket containing the sorbent.

## Dimensions



## Ordering Information

Product Description	Order No.
FL20K foreline trap (Supplied with 0.2 kg sorbent charge)	A13305000
Sorbent charge 0.1 kg, weight 1.0 kg	
By-pass valve	C07902000
Spares	Order No.
0.45 kg activated alumina	H02600050
0.2 kg activated alumina	H02600056

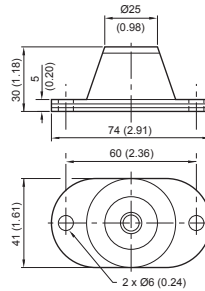
## Vibration Isolators

You may need to fit vibration isolators to your pump if you mount it into a frame or a system, if the mounting points are not level or if you need to minimize the transmission of vibration and noise in your application. You must fit flexible bellows or other flexible pipes to the pump inlet and outlet.

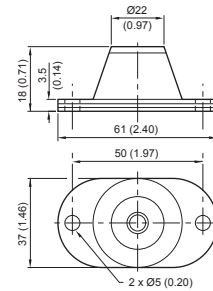
The height of the isolators reduces by about 1 mm when the pump is fitted.

## Dimensions

E2M0.7, E2M1.5



RV Pumps, E1M18/E2M18, E2M28, XD5/10 and XDS35i



## Ordering Information

Product Description	Order No.
Vibration isolators	
E2M0.7, E2M1.5 (0.3 kg)	A24801407
RV, E1M/E2M18, XDS (0.45 kg)	A24801404
E2M28 (0.45 kg)	A24801412
XDS35i (0.45 kg)	A24801408

## Oil Box Drain Kits

Two kits are available:

- RV easy oil box drain kit. This kit includes an oil drain extension tube for use when the oil is gravity drained. Fits E2M0.7, E2M1.5, RV, E1M18, E2M18, E2M28.
- ODP20, for use with the E1M18, E2M18 and E2M28 pumps. This accessory provides alternative methods for draining oil where access to the pump drain plug is difficult, or where there is no room for a receptacle under the drain outlet. The pack includes an oil drain extension tube for use when oil is gravity drained, and a pressure drain device with which the oil can be discharged at a high level.

## Ordering Information

Product Description	Order No.
RV easy oil box drain kit	A50503000
ODP20 oil box drain kit	A50002000

## Exhaust Silencers

For use on XDS pumps that are not connected to a house exhaust system. These silencers also offer exhaust filtration.

## Ordering Information

Product Description	Order No.
Exhaust silencer	
XDS5/10	A50597000
XDS35i	A50597001



## OB20 Oil Box Purge Adaptor

This stainless steel adaptor enables a flow of dry inert gas to be introduced into the oil box to provide large scale dilution of process gases which cannot be dealt with sufficiently by the standard gas ballast facility. The adaptor replaces the oil filler plug, on the RV and E1M18/E2M18 pumps only.

### Ordering Information

Product Description	Order No.
OB20 oil box purge adaptor	A50034000

## Oil Change Reminder Tag

The oil change reminder tag is a useful reminder for users to change the oil when it starts to go brown. Brown oil indicates that the oil is contaminated or degraded, and must be changed to prevent mechanical wear or failure of the pump. Tie the tag onto the pump exhaust so that it hangs over the oil box.

### Ordering Information

Product Description	Order No.
Oil change reminder tag (pack of 10)	A20003017

## Water Jet Pump 0.23 m<sup>3</sup>h<sup>-1</sup>

Fits laboratory tap and ordinary water supply for simplest production of rough vacuum for distillation, filtration, aeration etc. An integral non-return valve prevents system flooding from fluctuating water pressures.

### Technical Data

Material of construction	Corrosion resistant plastic equivalent to stainless steel
Recommended water pressure	1.4 bar / 20 lbs inch <sup>-1</sup>
Operational water temperature	15°C / 59°C
Pumping speed (air)	0.23 m <sup>3</sup> h <sup>-1</sup> – 3.9 l min <sup>-1</sup>
Ultimate vacuum	16 – 19 mbar / 12-14.25 Torr
Time to evacuate volume of 5 litres down to 60 mbar	3 min approx
Water consumption	625 l h <sup>-1</sup> / 2.75 gal (US) min <sup>-1</sup>
Connections	
Water	12 mm tubing
Vacuum	riffled to suit 7 mm bore tubing
Drain	3/8 inch (9.5 mm) tubing
Weight	34 g
Size	60 W x 110 L / 2.5 inch x 4.3 inch

### Ordering Information

Product Description	Order No.
Water jet pump	C41001000
Fluoroelastomer ball/pin assembly for non-return valve	C03901010



# E-Lab 2 Two Stage Rotary Vane Pump

The E-LAB 2 pump includes all the components needed for laboratory applications such as wet chemistry and sample preparation. Based on Edwards proven past experience with vacuum pumps and developments in accessories, the E-LAB 2 pump allows continuous running, even in the presence of water and solvents.

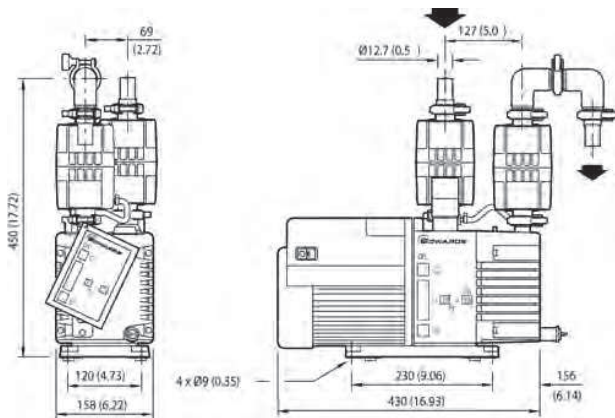
Supplied with: Outlet mist filter, oil return kit, inlet trap, oil change tag, nozzles, elbow, all fittings, 1 litre of oil and instruction manual. Assembly necessary.



## Features & Benefits

- The E-LAB 2 pump includes all the components needed for laboratory applications such as wet chemistry and sample preparation.
- One part number covers all the package – easy to order and set-up.
- Unique high performance pump
- Pumping speed and ultimate vacuum superior to diaphragm pumps
- Good water vapour handling

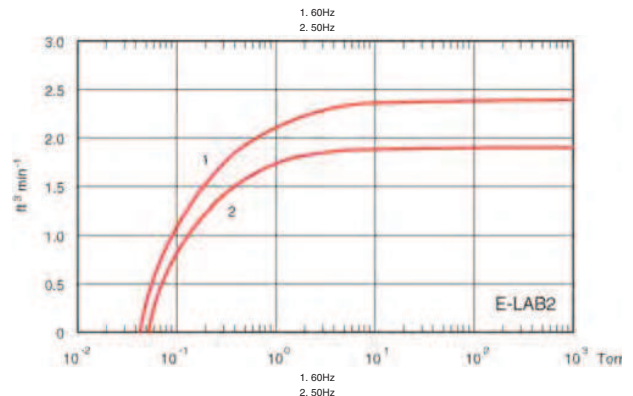
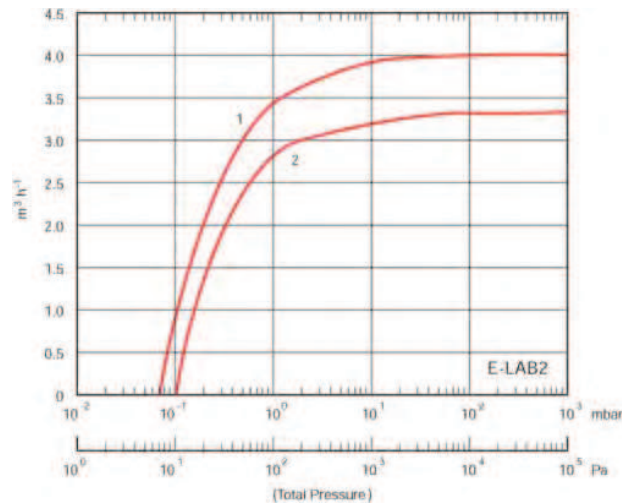
## Dimensions



## Applications

- Rotary evaporators
- Centrifugal concentrators
- Vacuum ovens
- Distillation/extraction apparatus
- Fume hoods/glove boxes

## Performance Curves



## Technical Data

Displacement	
50Hz operation	3.7 m <sup>3</sup> h <sup>-1</sup> / 2.3 ft <sup>3</sup> min <sup>-1</sup>
60Hz operation	4.5 m <sup>3</sup> h <sup>-1</sup> / 2.6 ft <sup>3</sup> min <sup>-1</sup>
Speed (Pneurop 6602)	
50 Hz operation	3.3 m <sup>3</sup> h <sup>-1</sup> / 1.9 ft <sup>3</sup> min <sup>-1</sup>
60 Hz operation	3.9 m <sup>3</sup> h <sup>-1</sup> / 2.3 ft <sup>3</sup> min <sup>-1</sup>
Ultimate vacuum (total pressure)	1 x 10 <sup>-1</sup> mbar / 7.6 x 10 <sup>-2</sup> Torr
Inlet/Outlet connection	1/2 inch id hose adaptor
Max allowed outlet pressure	1 bar gauge / 14 psig
Max allowed inlet pressure	0.5 bar gauge / 7 psig
Max water vapour inlet pressure	40 mbar / 30 Torr
Max water vapour pumping rate	95 g h <sup>-1</sup>
Mist filter oil trap efficiency	99.999%
Motor power 50/60Hz	450 / 550W
Power connector	IEC EN60320 C13
Operating temperature range	12 - 40 °C
Weight, pump only, without oil	25 kg / 55 lbs
Noise	50 dB(A) @ 50 Hz
Oil capacity	
Max	0.7 litre
Min	0.42 litre
Recommended oil	Ultragrade 19

## Ordering Information

Product Description	Order No.
E-Lab 2 115/230V, 1-ph, 50/60Hz, Factory set to 230V	A65207903
E-Lab 2 115/230V, 1-ph, 50/60Hz, Factory set to 115V	A65207906
Accessories & Spares	Order No.
2m electrical supply cable for 1-ph pumps, UK, Three-pin plug	A50505000
2m electrical supply cable for 1-ph pumps, North European plug	A50506000
2m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2m electrical supply cable for 1-ph pumps, no plug	A50508000
Clean and overhaul kit	A65201131
Blade Kit RV3	A65201130
Outer Shaft Seal Kit RV	A65201134
Spares Kit Inlet Valve RV3/5/8/12	A65201036
Filter Oil Element EMF10	A22304198
Odour Removal Element EMF10 Pk5	A22304079

# D-LAB Diaphragm Vacuum Pump

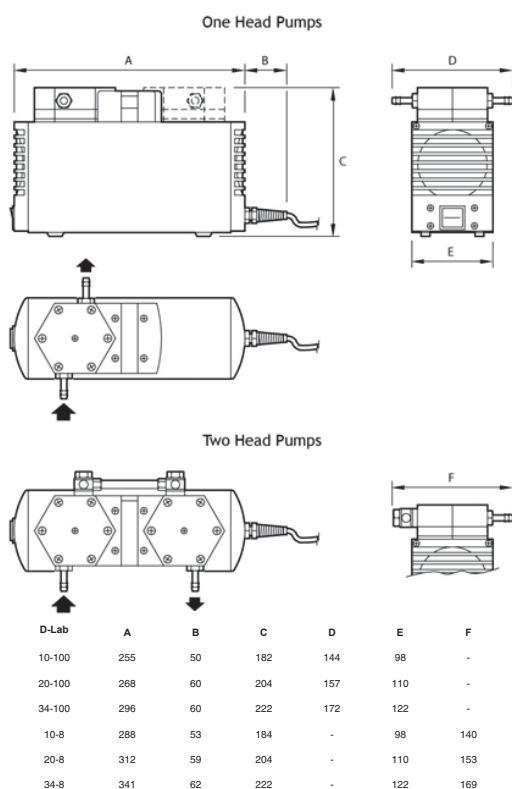
The D-LAB membrane pumps with their chemically resistant Teflon® heads, diaphragms and Kalrez® valves offer the chemical or pharmaceutical laboratory user a wide range of choice, either used as stand-alone pumps or as part of a sophisticated system. The one head, 100 mbar ultimate vacuum pumps are suitable for use with drying equipment or for replacing water-jet pumps, whilst the two head, 8 mbar ultimate vacuum pumps are suitable for rotary evaporation, gas transfer and a wide range of medium vacuum applications. 110V pumps are supplied with USA plug; 220-240V pumps are supplied with an IEC connector but mains cable with correct plug must be ordered separately.



## Features & Benefits

- Teflon® heads and diaphragms
- One and two head versions
- 3 Sizes
- Compact, space-saving design
- Low noise

## Dimensions



## Applications

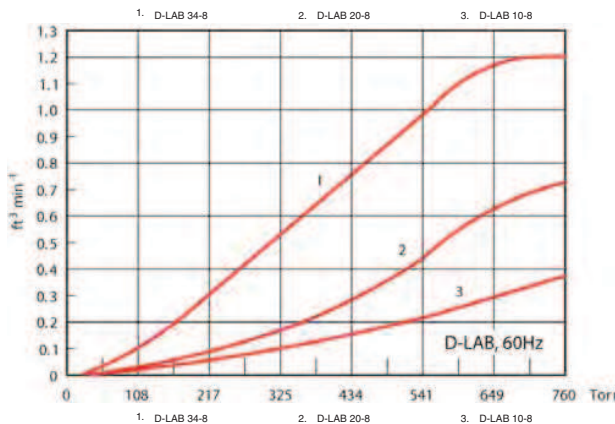
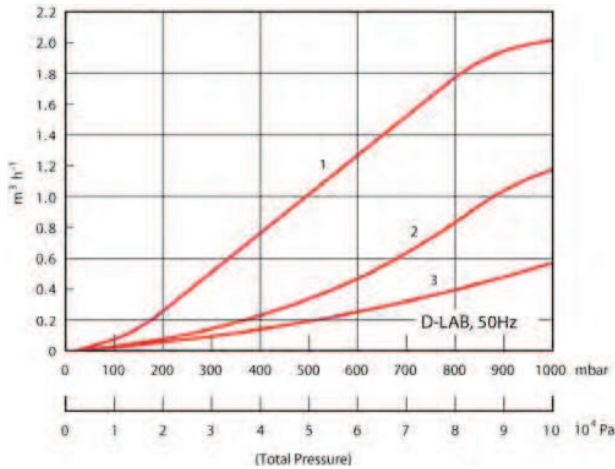
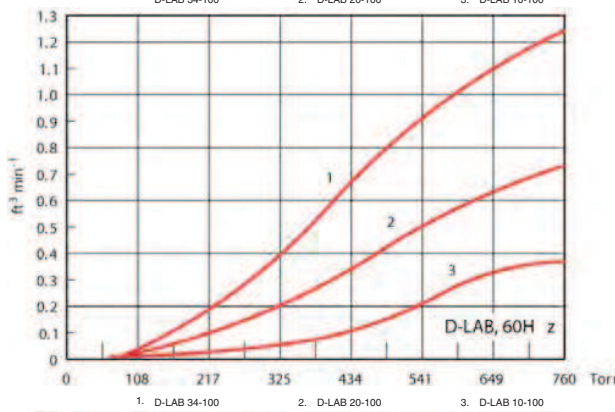
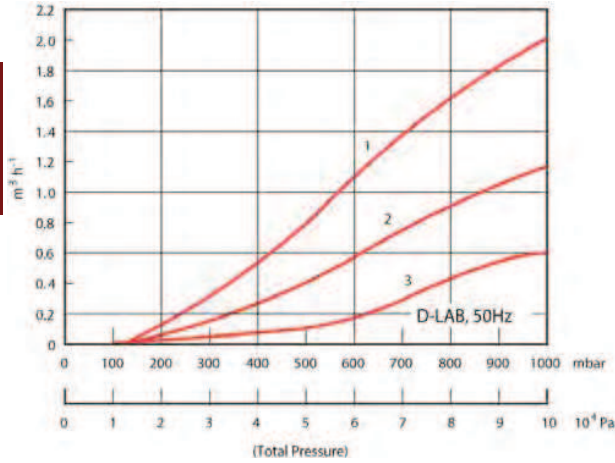
- Rotary evaporation
- Gel drying
- Vacuum desiccation
- Vacuum filtration
- Vacuum degassing

## Technical Data

Pumping speed (air)	
10-100, 10-8	0.6 m <sup>3</sup> h <sup>-1</sup> , 10 lmin <sup>-1</sup>
20-100, 20-8	1.2 m <sup>3</sup> h <sup>-1</sup> , 20 lmin <sup>-1</sup>
34-100, 34-8	2 m <sup>3</sup> h <sup>-1</sup> , 34 lmin <sup>-1</sup>
Ultimate vacuum	
10-100, 20-100, 34-100	100 mbar 50Hz, 75 mbar 60Hz
10-8, 20-8, 34-8	8 mbar 50Hz, 6 mbar 60Hz
Inlet and outlet connection	Riffled nozzle, suitable for 9 mm i.d. hose
Maximum inlet pressure	1 bar
Motor power and current	
10-100, 110V 60Hz	110 W 1.3 A
10-100, 220-240V 50Hz	100 W 0.6 A
20-100, 110V 60Hz	145 W 1.9 A
20-100, 220-240V 50Hz	130 W 0.9 A
34-100, 110V 60Hz	220 W 3.2 A
34-100, 220-240V 50Hz	180 W 1.4 A
10-8, 100V 60Hz	110 W 1.3 A
10-8, 220-240V 50Hz	90 W 0.6 A
20-8, 110V 60Hz	130 W 1.2 A
20-8, 220-240V 50Hz	120 W 0.9 A
34-8, 110V 60Hz	250 W 3.2 A
34-8, 220-240V 50Hz	200 W 1.5 A
Enclosure rating	IP44
Operating temperature	5 - 40 °C
Weight	
10-100	5.8kg / 12.8lbs
20-100	7.1kg / 15.6lbs
34-100	10.3kg / 22.7lbs
10-8	6.9kg / 15.2lbs
20-8	9.3kg / 20.5lbs
34-8	12.6kg / 27.7lbs

# Performance Curves

# Ordering Information



Product Description	Order No.
D-LAB 10-100, 110V, 60Hz, 1-ph	A48015941
D-LAB 10-100, 220-240, 50Hz, 1-ph	A48015960
D-LAB 20-100, 110V 60Hz, 1-ph	A48017941
D-LAB 20-100, 220-240~50Hz, 1-ph	A48017960
D-LAB 34-100, diaphragm pump, 110~60Hz, 1-ph	A48021941
D-LAB 34-100, 220-240~50Hz, 1-ph	A48021960
D-LAB 10-8, 110 V 1-phase 60 Hz	A48016941
D-LAB 10-8, 220-240~50Hz, 1-ph	A48016960
D-Lab 20-8, 110 V 1-phase 60 Hz	A48018941
D-Lab 20-8, 220-240V 50Hz, 1-ph	A48018960
D-LAB 34-8, diaphragm pump, 110V 60Hz, 1-ph	A48022941
D-LAB 34-8, diaphragm pump, 220-240 V 1-phase 50 Hz	A48022960

Accessories & Spares	Order No.
D-Lab Base Plate 10+20-X	A48015134
Baseplate For D-Lab Pumps 34-100,34-8.	A48021134
D-Lab Separator	A48015136
Condenser For D-Lab Pumps	A48015137
2m electrical supply cable for 1-ph pumps, UK, Three-pin plug	A50505000
2m electrical supply cable for 1-ph pumps, North European plug	A50506000
2m electrical supply cable for 1-ph pumps, no plug	A50508000
Gas Ballast For D-Lab Pumps 10-100,10-8	A48015135
D-Lab Gas Ballast 20+34-8	A48017135
D-Lab Controller 230V	A48015138
D-Lab Controller 100/110V	A48015139
Service kit for D-LAB 10-100	A48015815
Service Kit D-Lab 20-100	A48017815
Service Kit D-Lab 34-100	A48021815
Service Kit D-Lab 10-8	A48016815
Service Kit D-Lab 20-8	A48018815
Service Kit D-Lab 34-8	A48022815



# XDD1 Diaphragm Vacuum Pump

The Edwards XDD1 diaphragm pumps are used for backing small compound turbomolecular pumps in clean, high vacuum applications. They comply with EN61010, EN1012, CSA/UL and are designed to be free standing bench top units.

The a.c. voltage motor can be used on worldwide supplies ranging from 100 to 115 V, and 200 to 230 V. The d.c. voltage motor runs on 24 V via a 15 pin DIN connector. By selecting the appropriate mode the pump speed can be controlled by the user to provide variable pumping speed. This version is suited to the customer who is building their own a system. Pumps are not supplied with connection cables. A suitable cable should be ordered with the pump.



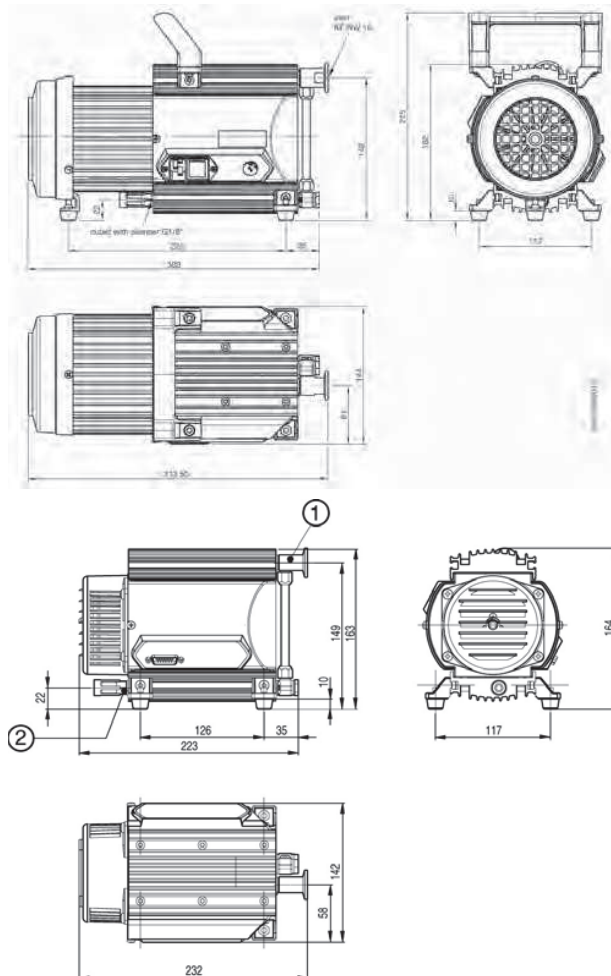
## Features & Benefits

- Dry pumping, oil free turbomolecular backing pump with no oil disposal issues
- Compact and lightweight with a small footprint
- Worldwide a.c. voltage or 24 V d.c.
- On/off switch
- EN 60320 connector on AC pumps

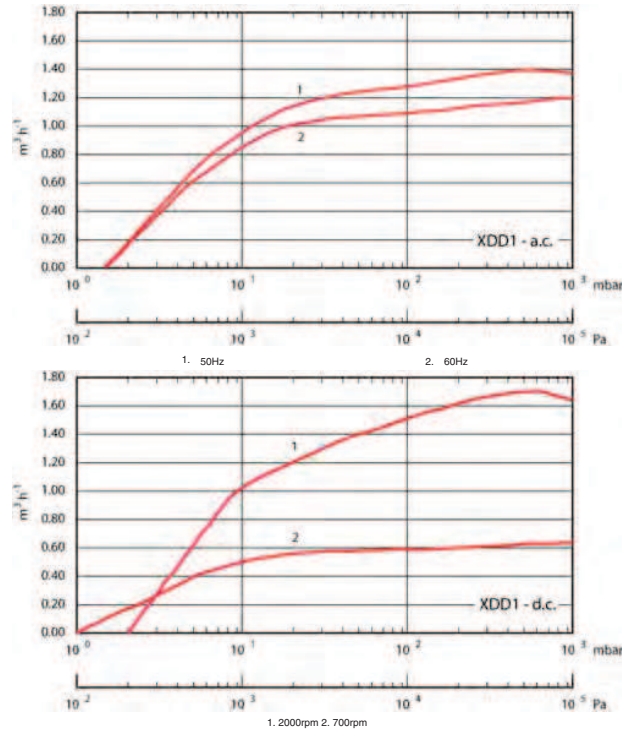
## Applications

- RGA
- Mass spectrometers
- Cryostat and Dewar evacuation
- Ion pump evacuation
- Surface science

## Dimensions



## Performance Curves



## Technical Data

Pumping Speed	
a.c.	1.2 m <sup>3</sup> h <sup>-1</sup> 50Hz, 1.5 m <sup>3</sup> h <sup>-1</sup> 60Hz
d.c.	0.6 m <sup>3</sup> h <sup>-1</sup> 600 rpm, 1.6 m <sup>3</sup> h <sup>-1</sup> 2200rpm
Ultimate vacuum (typical)	<2 mbar
Ambient temperature limit	10 to 40 °C
Inlet connection	NW16
Exhaust connection	The pump is fitted with a silencer which can be removed and an exhaust line connected with a 1/8 inch BSP fitting
Max allowed inlet pressure	1 bar Abs
Power connector	IEC EN60320 C13
Motor power	
a.c.	80 W
d.c.	64 W
Weight	
a.c.	6.5 kg
d.c.	4.1 kg

## Ordering Information

Product Description	Order No.
XDD1 Diaphragm Pump 100-115V/200-230V 50/60 Hz	A74602983
XDD1 Diaphragm Pump 24 V d.c.	A74602991
Accessories & Spares	Order No.
2m electrical supply cable for 1-ph pumps, UK plug 3A	A50516000
2m electrical supply cable for 1-ph pumps, no plug	A50508000
2m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2m electrical supply cable for 1-ph pumps, North European plug	A50506000
XDD/DX/EXDC Extension Cable 1m	D39700835
XDD/DX/EXDC Extension Cable 2m	D39700836
XDD/DX/EXDC Extension Cable 5m	D39700837
XDD1 diaphragm service kit	A74601800