

# SMALL OIL SEALED PUMPS

## PERFORMANCE YOU CAN RELY ON

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# E2M0.7 AND 1.5 OIL SEALED ROTARY VANE PUMPS

## PERFORMANCE YOU CAN RELY ON



E2M0.7 and E2M1.5 two stage oil sealed rotary vane pumps are renowned for achieving high ultimate vacuum and rapid pumping speeds, with quiet operation and compact size. Providing long term reliability, these pumps have become the industry standard in range of scientific and laboratory applications, and the ideal partner for your turbomolecular pump.

The drive is provided through an Oldham coupling by a single phase motor. The motor is totally enclosed and cooled by the motor-cooling fan which directs the air along the motor fins. A thermal overload device is fitted to the motor which switches off the pump if the motor gets too hot, this will automatically reset when the motor cools down and restarts the pump.



### Features and Benefits

- **Pumping speeds** of either 0.7 to 1.5 m<sup>3</sup>h<sup>-1</sup>.
- **Industry proven** long term reliable performance.
- Free standing, compact design providing **flexibility of use**.
- **Alternate side inlet connection port** so that overall installation height can be reduced to minimum when required.
- **Low noise**, with the E2M0.7 at just 43 dB(A).
- **Low energy consumption**, with the E2M0.7 at 0.09 kW.
- **O ring sealed sight glass** allows visual inspection of oil level and condition.
- **Gas ballast valve** for large water vapour handling capacity.
- **Simple installation and operation** with no customer wiring.
- **Forced air cooling** ensures low pump surface temperature.
- **Internal ATEX classification** of Ex II 3 G c IIB T4.
- **Approved** EN61010, CSA22.2 and UL61010.

### Applications

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

### Pump Range

#### EM

- E2M0.7
- E2M1.5

# Performance Curves

## E2M0.7 Rotary vane pump

### E2M0.7



Displacement	
50 Hz	0.9 m <sup>3</sup> h <sup>-1</sup> /0.5 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	1.1 m <sup>3</sup> h <sup>-1</sup> /0.6 ft <sup>3</sup> min <sup>-1</sup>
Speed	
50 Hz	0.75 m <sup>3</sup> h <sup>-1</sup> /0.4 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	0.95 m <sup>3</sup> h <sup>-1</sup> /0.5 ft <sup>3</sup> min <sup>-1</sup>

#### Product description

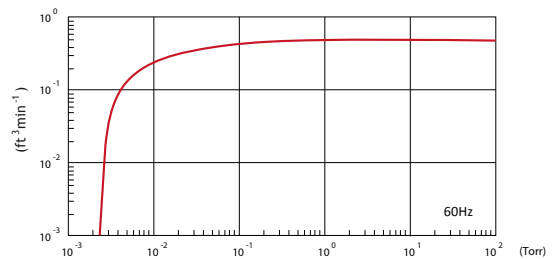
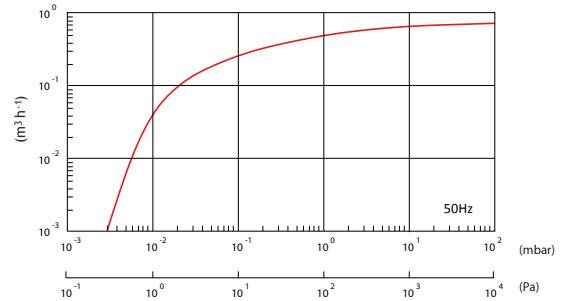
#### Order no:

E2M0.7 200-230 V, 1-ph, 50/60 Hz, IEC 60320 connectors [A37141919](#)

E2M0.7 100-120 V, 1-ph, 50/60 Hz, IEC 60320 connectors [A37141902](#)

Each EM0.7 pump is supplied with 1 litre of Ultragrade 15 oil, O ring and centering ring, two Allen keys and spare seals for oil drain and filter plugs.

### E2M0.7 Performance Curve



## E2M1.5 Rotary vane pump

### E2M1.5



Displacement	
50 Hz	1.8 m <sup>3</sup> h <sup>-1</sup> /1 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	2.2 m <sup>3</sup> h <sup>-1</sup> /1.3 ft <sup>3</sup> min <sup>-1</sup>
Speed	
50 Hz	1.6 m <sup>3</sup> h <sup>-1</sup> /0.8 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	2.0 m <sup>3</sup> h <sup>-1</sup> /1.2 ft <sup>3</sup> min <sup>-1</sup>

#### Product description

#### Order no:

E2M1.5 200-230 V, 1-ph, 50/60 Hz, IEC 60320 connectors [A37132919](#)

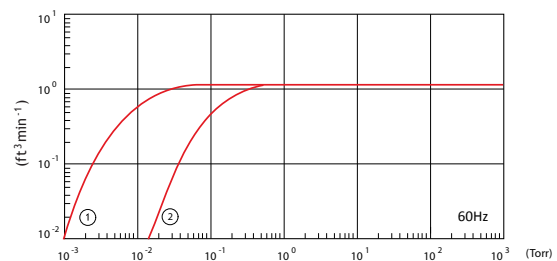
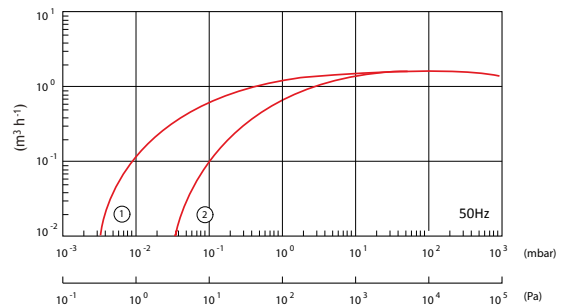
E2M1.5 100-120 V, 1-ph, 50/60 Hz, IEC 60320 connectors [A37132902](#)

E2M1.5 interstage 200-230 V, 1-ph, 50/60 Hz, IEC 60320 connectors [A37104919](#)

E2M1.5 interstage 100-120 V, 1-ph, 50/60 Hz, IEC 60320 connectors [A37104902](#)

Each EM1.5 pump is supplied with 1 litre of Ultragrade 15 oil, O ring and centering ring, two Allen keys and spare seals for oil drain and filter plugs.

### E2M1.5 Performance Curve

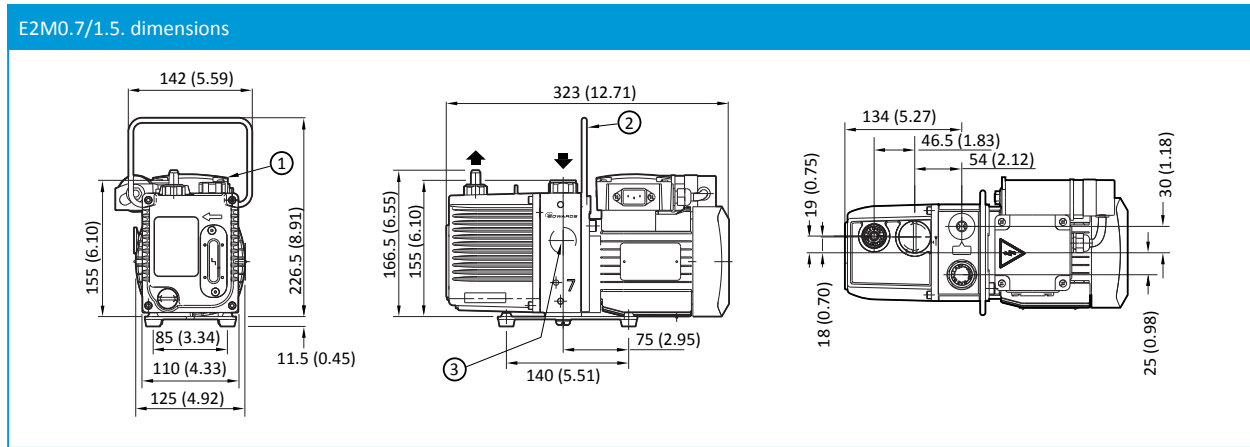


1 Without Gas Ballast

2 With Gas Ballast



# Dimensions



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

# Technical Data



	Units	E2M0.7	E2M1.5
Displacement (swept volume)			
50 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	0.9/0.5	1.8/1
60 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	1.1/0.6	2.2/1.3
Speed (Pneurop 6602)			
50 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	0.75/0.4	1.6/0.8
60 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	0.95/0.5	2.0/1.2
Ultimate vacuum (total pressure)			
without gas ballast	mbar/Torr	3.0 x 10 <sup>-3</sup> /2.3 x 10 <sup>-3</sup>	3 x 10 <sup>-3</sup> /2.3 x 10 <sup>-3</sup>
with full gas ballast	mbar/Torr	2.0 x 10 <sup>-1</sup> /1.5 x 10 <sup>-1</sup>	2.5 x 10 <sup>-2</sup> /1.9 x 10 <sup>-2</sup>
Inlet connection		NW10 flange	
Outlet connection		Nozzle 11 mm external Ø removable from 3/8" BSP tapped hole	
Maximum permitted pressure at outlet		0.5 bar gauge/7 psig	
Maximum inlet pressure for water vapour	mbar/Torr	15/11	
Maximum water vapour pumping rate	gh <sup>-1</sup>	8	16
Motor power	kW	0.09	0.16
Nominal rotational speed 50/60 Hz	rpm	1400/1700	2800/3400
Power connector		IEC EN60320 C13	
Operating temperature range	°C	12-40	
Weight, without oil	kg/lbs	10/22	
Noise	dB(A)	43 @ 50 Hz	54 @ 50 Hz
Noise with acoustic enclosure	dB(A)	E2M0.7 36 dB(A) @ 50 Hz	E2M1.5 47 dB(A) @ 50 Hz
Oil capacity – maximum	litre	0.28	
Oil capacity – minimum	litre	0.2	
Recommended oil (supplied)		Ultragrade 15	

## Service, Spares and Accessories

Product description	Order no:
Model EMF3 mist filter	A46220000
Ultragrade 15 oil 1 litre	H11026015
Ultragrade 15 oil 4 litre	H11026013
2 m electrical supply cable for 1-ph pumps, UK, three-pin plug	A50505000
2 m electrical supply cable for 1-ph pumps, North European plug	A50506000
2 m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2 m 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 Centring Nitrile S/S Pk1	C10511396
NW10 O Ring Viton Pk 5	H02124032
NW10 x 3/8" BSP adapter	A25908064

### Service

Edwards products, spares and accessories are available from Edwards companies in Belgium, Brazil, China, France, Germany, Israel, Italy, Japan, Korea, Singapore, United Kingdom, U.S.A. and a worldwide network of distributors. The majority of these centres employ Service Engineers who have undergone comprehensive Edwards training courses. Order spare parts and accessories from your nearest Edwards company or distributor.

When you order, please state for each part required:

- Model and item number of your equipment.
- Serial number (if any).
- Item number and description of the part.



# RV OIL SEALED ROTARY VANE PUMPS

## PERFORMANCE YOU CAN RELY ON



The RV series of small oil sealed rotary vane pumps deliver excellent ultimate vacuum pressure, high pumping speeds and superior vapour handling capabilities with quiet operation. With over 300,000 units produced, these pumps offer proven performance that sets the industry standard for R&D and scientific pumping applications.

All RV pumps are approved to UL and CSA standards by an external test house and feature our unique mode selector switch, meaning one model is suitable for both high vacuum or high throughput applications. In summary, you can rest assured that when you choose an Edwards RV oil sealed rotary vane pump you are choosing a product you can rely on from a company you can trust.



### Features and Benefits

- **High reliability** – generous lubrication of moving parts.
- **Safe process and systems** – fast acting inlet valve for best in class anti-suck back protection.
- **Configured to meet your vacuum needs** – mode selector and two position gas ballast.
- **No unplanned downtime** – designed for easy maintenance.
- **Better work environment** – quiet running and intrusive frequencies minimised.
- **Two position gas ballast** allows either 60 g/hr or a class leading 220 g/hr (290 g/hr on RV12) of water vapour to be handled.
- **Universal motor** to cover the widest possible voltage and frequency range from a single variant.
- **Smooth controlled inlet valve opening** by oil pressure to eliminate pressure surges.
- **Rapid closing inlet valve** within 0.4 seconds of pump stopping.

### Applications

- Analytical instruments.
- Laboratory bench top vacuum.
- Backing turbomolecular pumps.
- Freeze drying.
- Research and development.

### Pump Range

#### RV3

- RV3
- PFPE RV3

#### RV8

- RV8
- PFPE RV8

#### RV5

- RV5
- PFPE RV5

#### RV12

- RV12
- PFPE RV12

# Performance Curves

## RV3 Oil Sealed Rotary Pump

### RV3



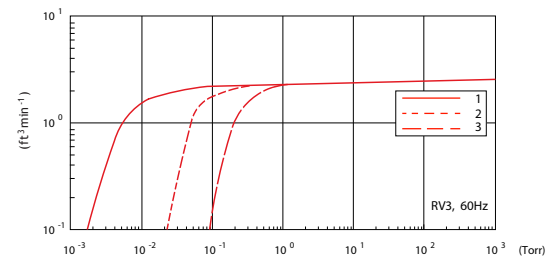
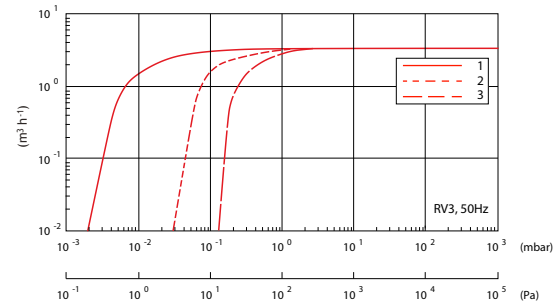
Displacement	
50 Hz	3.7 m <sup>3</sup> h <sup>-1</sup>
	2.2 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	4.5 m <sup>3</sup> h <sup>-1</sup>
	2.6 ft <sup>3</sup> min <sup>-1</sup>
Speed (Pneurop 6602)	
50 Hz	3.3 m <sup>3</sup> h <sup>-1</sup>
	2.0 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	3.9 m <sup>3</sup> h <sup>-1</sup>
	2.3 ft <sup>3</sup> min <sup>-1</sup>

### Ordering information

Product description	Order no:
RV3 115/230 V, 1-ph, 50/60 Hz, factory set to 230 V for Europe	A65201903
RV3 100/200 V, 1-ph, 50/60 Hz, factory set to 200 V for Japan	A65201904
RV3 200-220/380-415 V, 3-ph, 50 Hz and 200-230/460 V, 3-ph, 60 Hz factory set to 380/460 V	A65201905
RV3 115/230 V, 1-ph, 50/60 Hz, factory set to 115 V for USA	A65201906
PFPE RV3 115/230 V, 1-ph, 50/60 Hz, factory set to 230 V for Europe	A65209903
PFPE RV3 100/200 V, 1-ph, 50/60 Hz, factory set to 200 V for Japan	A65209904
PFPE RV3 200-220/380-415 V, 3-ph, 50 Hz and 200-230/460 V, 3-ph, 60 Hz, factory set to 380/460 V	A65209905
PFPE RV3 115/230 V, 1-ph, 50/60 Hz, factory set to 115 V for USA	A65209906

Each RV pump is supplied with 1 litre of Ultragrade 19 oil, inlet filter and O ring. For PFPE prepared pumps Fomblin® oil to be ordered separately.

### RV3 Performance Curve



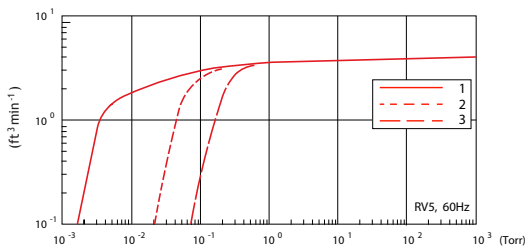
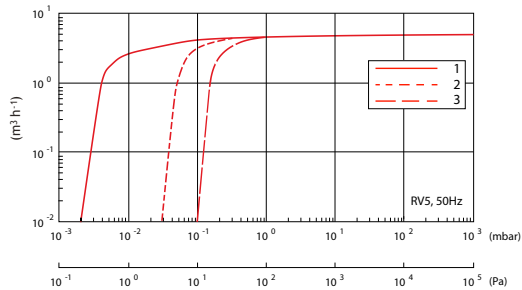
- |   |  |
|---|--|
| 1 | High vacuum mode, gas ballast = 0  |
| 2 | High throughput mode, gas ballast mode = 0 and High vacuum mode, gas ballast = I |
| 3 | High vacuum and throughput mode, gas ballast = II                                |



## RV5 Oil Sealed Rotary Pump

### RV5 Performance Curve

RV5



1	High vacuum mode, gas ballast = 0
2	High throughput mode, gas ballast mode = 0 and High vacuum mode, gas ballast = I
3	High vacuum and throughput mode, gas ballast = II

Displacement	
50 Hz	5.8 m <sup>3</sup> h <sup>-1</sup> 3.4 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	7.0 m <sup>3</sup> h <sup>-1</sup> 4.1 ft <sup>3</sup> min <sup>-1</sup>
Speed (Pneurop 6602)	
50 Hz	5.1 m <sup>3</sup> h <sup>-1</sup> 3.0 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	6.2 m <sup>3</sup> h <sup>-1</sup> 3.7 ft <sup>3</sup> min <sup>-1</sup>



### Ordering information

Product description	Order no:
RV5 115/230 V, 1-ph, 50/60 Hz, factory set to 230 V for Europe	A65301903
RV5 100/200 V, 1-ph, 50/60 Hz, factory set to 200 V for Japan	A65301904
RV5 200-220/380-415 V, 3-ph, 50 Hz and 200-230/460 V, 3-ph, 60 Hz, factory set to 380/460 V	A65301905
RV5 115/230 V, 1-ph, 50/60 Hz, factory set to 115 V for USA	A65301906
PFPE RV5 115/230 V, 1-ph, 50/60 Hz, factory set to 230 V for Europe	A65309903
PFPE RV5 100/200 V, 1-ph, 50/60 Hz, factory set to 200 V for Japan	A65309904
PFPE RV5 200-220/380-415 V, 3-ph, 50 Hz and 200-230/460 V, 3-ph, 60 Hz, factory set to 380/460 V	A65309905
PFPE RV5 115/230 V, 1-ph, 50/60 Hz, factory set to 115 V for USA	A65309906

Each RV pump is supplied with 1 litre of Ultragrade 19 oil, inlet filter and O ring. For PFPE prepared pumps Fomblin® oil to be ordered separately.



# Performance Curves

## RV8 Oil Sealed Rotary Pump

### RV8



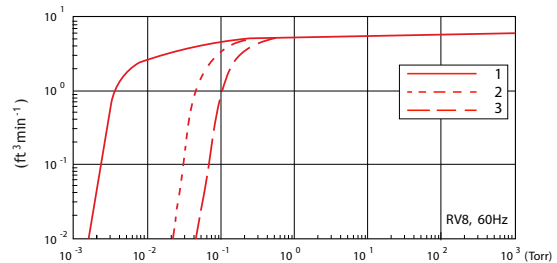
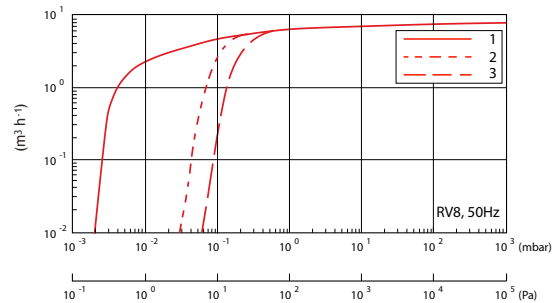
Displacement	
50 Hz	9.7 m <sup>3</sup> h <sup>-1</sup>
	5.7 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	11.7 m <sup>3</sup> h <sup>-1</sup>
	6.9 ft <sup>3</sup> min <sup>-1</sup>
Speed (Pneurop 6602)	
50 Hz	8.5 m <sup>3</sup> h <sup>-1</sup>
	5.0 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	10 m <sup>3</sup> h <sup>-1</sup>
	5.9 ft <sup>3</sup> min <sup>-1</sup>

### Ordering information

Product description	Order no:
RV8 115/230 V, 1-ph, 50/60 Hz, factory set to 230 V for Europe	A65401903
RV8 100/200 V, 1-ph, 50/60 Hz, factory set to 200 V for Japan	A65401904
RV8 200-220/380-415 V, 3-ph, 50 Hz and 200-230/460 V, 3-ph, 60 Hz, factory set to 380/460 V	A65401905
RV8 115/230 V, 1-ph, 50/60 Hz, factory set to 115 V for USA	A65401906
PFPE RV8 115/230 V, 1-ph, 50/60 Hz, factory set to 230 V for Europe	A65409903
PFPE RV8 100/200 V, 1-ph, 50/60 Hz, factory set to 200 V for Japan	A65409904
PFPE RV8 200-220/380-415 V, 3-ph, 50 Hz, and 200-230/460 V, 3-ph, 60 Hz, factory set to 380/460 V	A65409905
PFPE RV8 115/230 V, 1-ph, 50/60 Hz, factory set to 115 V for Europe	A65409906

Each RV pump is supplied with 1 litre of Ultragrade 19 oil, inlet filter and O ring. For PFPE prepared pumps Fomblin® oil to be ordered separately.

### RV8 Performance Curve



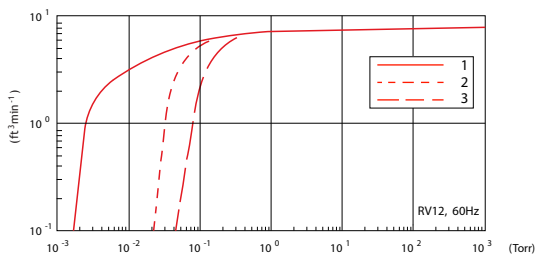
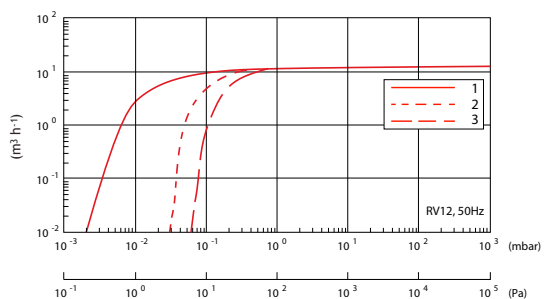
- 1 High vacuum mode, gas ballast = 0
- 2 High throughput mode, gas ballast mode = 0 and High vacuum mode, gas ballast = I
- 3 High vacuum and throughput mode, gas ballast = II



## RV12 Oil Sealed Rotary Pump

### RV12 Performance Curve

RV12



1	High vacuum mode, gas ballast = 0
2	High throughput mode, gas ballast mode = 0 and High vacuum mode, gas ballast = I
3	High vacuum and throughput mode, gas ballast = II

#### Displacement

50 Hz 14.2 m³h<sup>-1</sup>

8.4 ft³min<sup>-1</sup>

60 Hz 17 m³h<sup>-1</sup>

10 ft³min<sup>-1</sup>

#### Speed (Pneurop 6602)

50 Hz 12 m³h<sup>-1</sup>

7.1 ft³min<sup>-1</sup>

60 Hz 14.2 m³h<sup>-1</sup>

8.4 ft³min<sup>-1</sup>

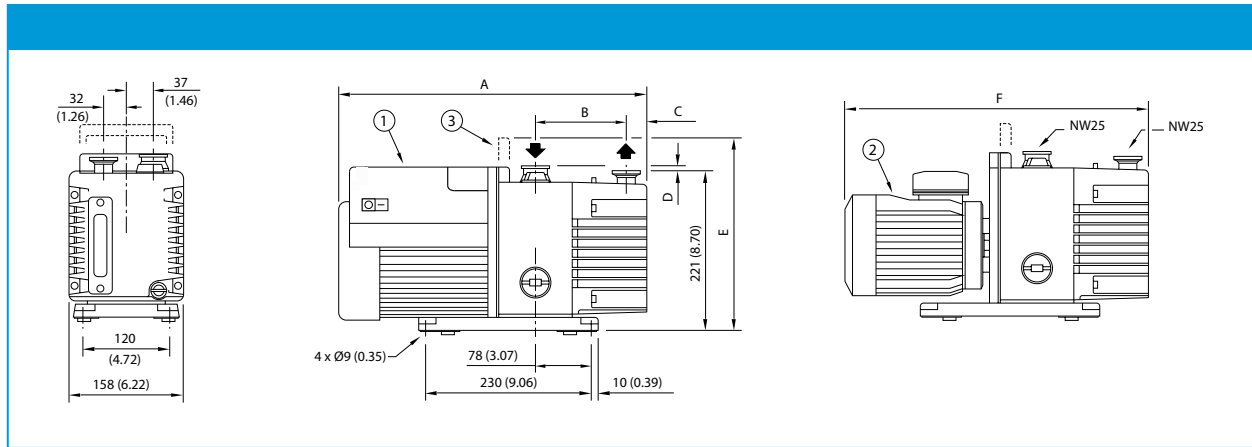


### Ordering information

Product description	Order no:
RV12 115/230 V, 1-ph, 50/60 Hz, factory set to 230 V for Europe	A65501903
RV12 100/200 V, 1-ph, 50/60 Hz, factory set to 200 V for Japan	A65501904
RV12 200-220/380-415 V, 3-ph, 50 Hz and 200-230/460 V, 3-ph, 60 Hz, factory set to 380/460 V	A65501905
RV12 115/230 V, 1-ph, 50/60 Hz, factory set to 115 V for USA	A65501906
PFPE RV12 115/230 V, 1-ph, 50/60 Hz, factory set to 230 V for Europe	A65509903
PFPE RV12 100/200 V, 1-ph, 50/60 Hz, factory set to 200 V for Japan	A65509904
PFPE RV12 200-220/380-415 V, 3-ph, 50 Hz and 200-230/460 V, 3-ph, 60 Hz, factory set to 380/460 V	A65509905
PFPE RV12 two stage Rotary vane pump 115/230 V 1-ph 50/60 Hz, factory set to 115 V for USA	A65509906

Each RV pump is supplied with 1 litre of Ultragrade 19 oil, inlet filter and O ring. For PFPE prepared pumps Fomblin® oil to be ordered separately.

# Dimensions



	RV3/5	RV8	RV12
A	430 (16.93)	470 (18.50)	490 (19.29)
B	127 (5)	161 (6.34)	181 (7.13)
C	29 (1.14)	35 (1.38)	35 (1.38)
D	4 (0.16)	4 (0.16)	4 (0.16)
E	267 (10.51)	261 (10.28)	261 (10.28)
F	429 (16.89)	469 (18.46)	489 (19.25)

Dimensions in mm (inch).

- ① 1-Phase motor
- ② 3-Phase motor
- ③ Retractable handle RV3 and 5 only. RV8 and 12 have lifting eye



## Technical Data



	Units	RV3	RV5	RV8	RV12
Displacement					
50 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	3.7/2.2	5.8/3.4	9.7/5.7	14.2/8.4
60 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	4.5/2.6	7.0/4.1	11.7/6.9	17/10
Speed (Pneurop 6602)					
50 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	3.3/2	5.1/3.0	8.5/5	12/7.1
60 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	3.9/2.3	6.2/3.7	10/5.9	14.2/8.4
Ultimate pressure	mbar/Torr	2.0 x 10 <sup>-3</sup> /1.5 x 10 <sup>-3</sup>			
Ultimate pressure GB I	mbar/Torr	3.0 x 10 <sup>-2</sup> /2.3 x 10 <sup>-2</sup>			
Ultimate pressure GB II	mbar/Torr	1.2 x 10 <sup>-1</sup> / 9.1 x 10 <sup>-2</sup>	1.0 x 10 <sup>-1</sup> / 7.5 x 10 <sup>-2</sup>	6 x 10 <sup>-2</sup> /4.6 x 10 <sup>-2</sup>	
Ultimate Pressure with Fomblin®	mbar/Torr	2 x 10 <sup>-2</sup> /1.5 x 10 <sup>-2</sup>			
Max inlet pressure for water vapour	mbar/Torr	80/60	50/38	38/28.5	32/24
Max water vapour pumping rate – GB I	gh <sup>-1</sup>	60			
Max water vapour pumping rate – GB II	gh <sup>-1</sup>	220			
Max allowed outlet pressure	bar gauge/psig	0.2/2.8			
Max allowed inlet and gas ballast pressure	bar gauge/psig	0.5/7			
Motor power 50/60 Hz	W	450/550			
Power connector 1-ph		IEC EN60320 C13			
Nominal rotation speed 50/60 Hz	rpm	1500/1800			
Weight (without oil)	kg/lb	25/55		28/61.6	29/63.8
Oil capacity min/max	litres	0.42/0.7		0.4/0.75	0.65/1
Recommended oil		Ultragrade 19			
Inlet flange		NW25			
Exhaust flange		NW25			
Noise level	dB(A)	48 @ 50 Hz			
Operating temperature range	°C	12-40			

## Service

Edwards products, spares and accessories are available from Edwards companies in Belgium, Brazil, China, France, Germany, Israel, Italy, Japan, Korea, Singapore, United Kingdom, U.S.A. and a worldwide network of distributors. The majority of these centres employ Service Engineers who have undergone comprehensive Edwards training courses. Order spare parts and accessories from your nearest Edwards company or distributor.

When you order, please state for each part required:

- Model and item number of your equipment.
- Serial number (if any).
- Item number and description of the part.

# Service, Spares and Accessories

Also see p60.

## RV Accessories

Product description	Order no:
2 m electrical supply cable for 1-ph pumps, UK, three-pin plug	A50505000
2 m electrical supply cable for 1-ph pumps, North European plug	A50506000
2 m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2 m electrical supply cable for 1-ph pumps, no plug	A50508000
Ultragrade 19 oil 1 litre	H11025015
Ultragrade 19 oil 4 litre	H11025013
Model EMF10 mist filter	A46226000
Gas Ballast adaptor	A50502000
Clean application oil return kit	A50419000
Adjustable gas ballast oil return kit	A50523000
RV easy oil box drain kit	A50503000
Exhaust nozzle kit 3/4" to 15 mm	A50509000

## Acoustic Enclosure

Product description	Order no:
RV acoustic enclosure 110-120 V	NRD317000
RV acoustic enclosure 200-240 V	NRD318000

## Vibration Isolator

Product description	Order no:
RV Vibration isolator (0.45 kg)	A24801404

## Spares Kits

Product description	Order no:
Spares Kit Cartridge RV3	A65201032
Spares Kit Cartridge RV5	A65301032
Spares Kit Cartridge RV8	A65401032
Spares Kit Cartridge RV12	A65501032
Spares Kit Blade RV3	A65201130
Spares Kit Blade RV5	A65301130
Spares Kit Blade RV8	A65401130
Spares Kit Blade RV12	A65501130
Spares Kit Inlet valve RV3/5/8/12	A65201036
Spares Kit clean and overhaul kit	A65201131
Spares Kit clean and overhaul kit (Nitrile)	A65201137
Spares Kit outer shaft seal kit RV	A65201134



# RV ATEX OIL SEALED ROTARY VANE PUMPS

## PERFORMANCE YOU CAN RELY ON



ATEX RV pumps have an external ATEX classification of Ex II 2G IIC 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 gasses or vapours you must fit an inert gas purge to this port to dilute such gases or vapours below the lower explosive limit.



### Features and 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.
- Clamped-in sight glass.
- Oil box well contains filling spills.
- Hi-tech polymer blades, large diameter, easy-clean oil passages.
- Consistent, built-in quality, cast bar construction.

# Performance Curves

## RV ATEX Oil sealed rotary pump

### RV ATEX



	RV3	RV5	RV8	RV12
<b>Displacement</b>				
50 Hz	3.7 m <sup>3</sup> h <sup>-1</sup> 2.2 ft <sup>3</sup> min <sup>-1</sup>	5.8 m <sup>3</sup> h <sup>-1</sup> 3.4 ft <sup>3</sup> min <sup>-1</sup>	9.7 m <sup>3</sup> h <sup>-1</sup> 5.7 ft <sup>3</sup> min <sup>-1</sup>	14.2 m <sup>3</sup> h <sup>-1</sup> 8.4 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	4.5 m <sup>3</sup> h <sup>-1</sup> 2.6 ft <sup>3</sup> min <sup>-1</sup>	7.0 m <sup>3</sup> h <sup>-1</sup> 4.1 ft <sup>3</sup> min <sup>-1</sup>	11.7 m <sup>3</sup> h <sup>-1</sup> 6.9 ft <sup>3</sup> min <sup>-1</sup>	17 m <sup>3</sup> h <sup>-1</sup> 10 ft <sup>3</sup> min <sup>-1</sup>
<b>Speed (Pneurop 6602)</b>				
50 Hz	3.3 m <sup>3</sup> h <sup>-1</sup> 2.0 ft <sup>3</sup> min <sup>-1</sup>	5.1 m <sup>3</sup> h <sup>-1</sup> 3.0 ft <sup>3</sup> min <sup>-1</sup>	8.5 m <sup>3</sup> h <sup>-1</sup> 5.0 ft <sup>3</sup> min <sup>-1</sup>	12 m <sup>3</sup> h <sup>-1</sup> 7.1 ft <sup>3</sup> min <sup>-1</sup>
60 Hz	3.9 m <sup>3</sup> h <sup>-1</sup> 2.3 ft <sup>3</sup> min <sup>-1</sup>	6.2 m <sup>3</sup> h <sup>-1</sup> 3.7 ft <sup>3</sup> min <sup>-1</sup>	10 m <sup>3</sup> h <sup>-1</sup> 5.9 ft <sup>3</sup> min <sup>-1</sup>	14.2 m <sup>3</sup> h <sup>-1</sup> 8.4 ft <sup>3</sup> min <sup>-1</sup>

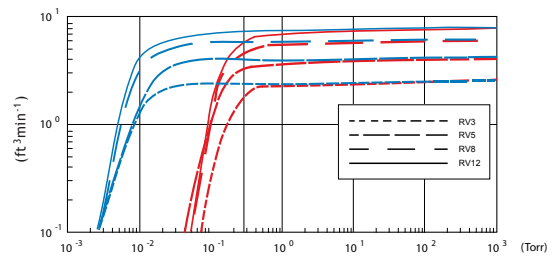
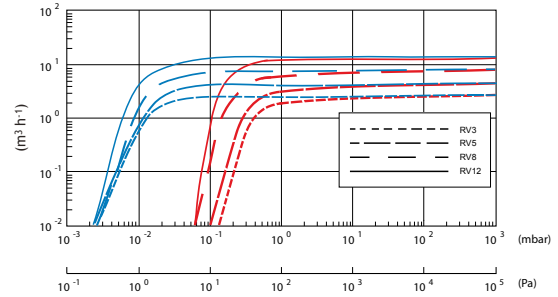
### Ordering information

Product description	Order no:
ATEX RV3 115V, 1-ph, 60 Hz ExII 2G IIC T4 *	A65219986
ATEX RV3 230 V, 1-ph, 50 Hz Ex II 2G IIC T4	A65218989
ATEX RV3 400 V, 3-ph, 50 Hz Ex II 2G IIC T4	A65218992
ATEX RV5 115V, 1-ph, 60 Hz ExII 2G IIC T4 *	A65319986
ATEX RV5 230 V, 1-ph, 50 Hz Ex II 2G IIC T4	A65318989
ATEX RV5 400 V, 3-ph, 50 Hz Ex II 2G IIC T4	A65318992
ATEX RV8 115V, 1-ph, 60 Hz ExII 2G IIC T4 *	A65419986
ATEX RV8 230 V, 1-ph, 50 Hz Ex II 2G IIC T4	A65418989
ATEX RV8 400 V, 3-ph, 50 Hz Ex II 2G IIC T4	A65418992
ATEX RV12 115V, 1-ph, 60 Hz ExII 2G IIC T4 *	A65519986
ATEX RV12 230 V, 1-ph, 50 Hz Ex II 2G IIC T4	A65518989
ATEX RV12 400 V, 3-ph, 50 Hz Ex II 2G IIC T4	A65518992

\* 750W motor

Each ATEX RV pump is supplied with 1 litre of Ultragrade 19 oil, inlet filter and O ring.

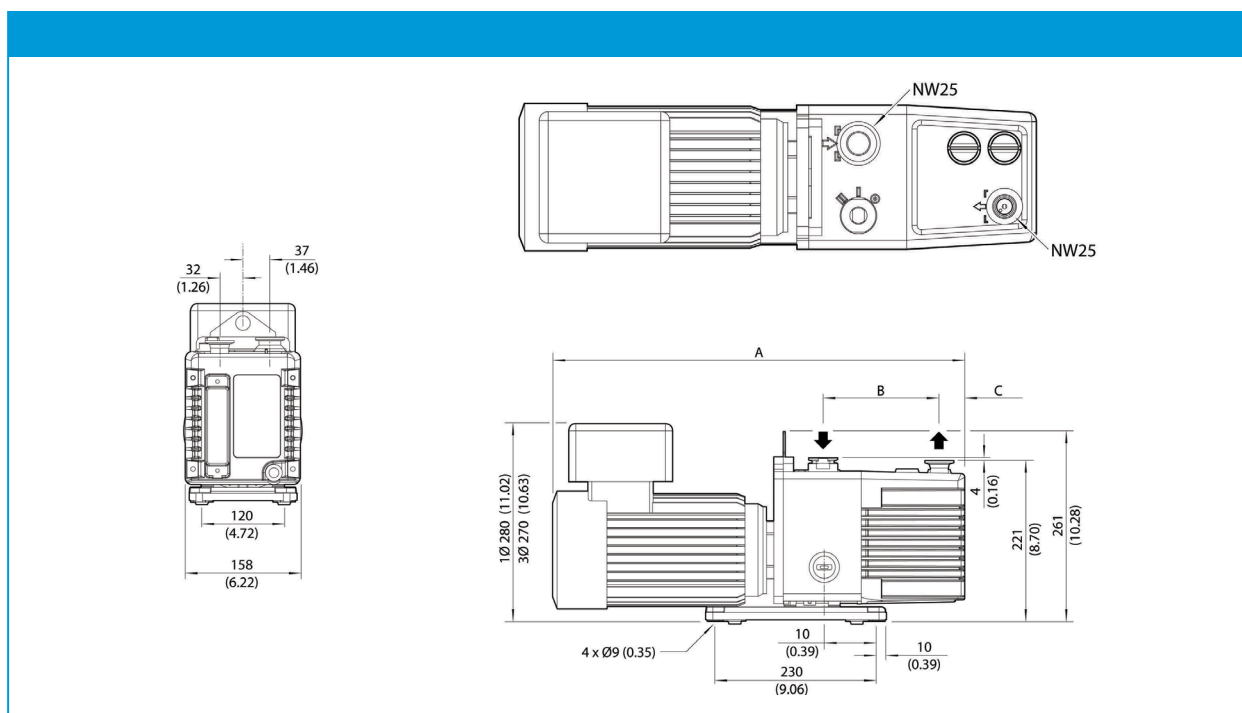
### RV ATEX Performance Curve



Blue No gas purge

Red With inert gas purge

## Dimensions



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

Dimensions in mm (inch).

## Technical Data



	Units	RV3 ATEX	RV5 ATEX	RV8 ATEX	RV12 ATEX
Displacement					
50 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	3.7/2.2	5.8/3.4	9.7/5.7	14.2/8.4
60 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	4.5/2.6	7/4.1	11.7/6.9	17/10
Speed (Pneurop 6602)					
50 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	3.3/2	5.1/3	8.5/5	12/7.1
60 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	3.9/2.3	6.2/3.6	10/5.9	14.2/8.4
Max allowed outlet pressure	bar gauge/psig	0.2/2.8			
Max allowed inlet and gas purge pressure	bar gauge/psig	0.5/7			
Nominal rotation speed 50/60 Hz	rpm	1430/1710			
Motor power 50/60 Hz	W	550 (750 for 115V 1ph 60Hz)			
Weight (without oil)	kg/lb	28/61.6		31/68.2	
Inlet flange		NW25			
Exhaust flange		NW25			
Operating temperature range	°C	12-40			



# EM18 AND 28 OIL SEALED ROTARY VANE PUMPS

## PERFORMANCE YOU CAN RELY ON



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 pump is a freestanding unit with the drive provided through a flexible coupling by either a single-phase or three-phase (four pole) motor.



### Features and 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.
- **Full height O ring sealed oil sight glass** for easy checking of oil level and condition.
- **Large sight glass** and operating oil range.
- **IE3 energy efficient 3 phase motor** used with E2M28.

### Applications

- Analytical instruments.
- Leak detectors, helium.
- Research and development.
- Backing turbomolecular pumps.
- Automotive.
- Beam lines and high energy physics.
- Centrifuges, ultra-high speed.
- Coating.

### Pump Range

#### EM

- E1M18 single stage.
- E1M18 FX single stage.
- E2M18 two stage.
- E2M18 FX two stage.
- E2M28 two stage.
- E2M28 FX two stage.

# Performance Curves

## E1M18 One stage, E2M18 two stage rotary vane pumps

### E1/E2M18



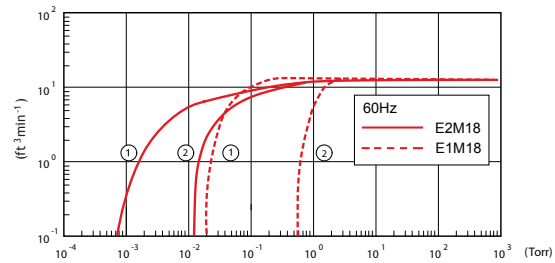
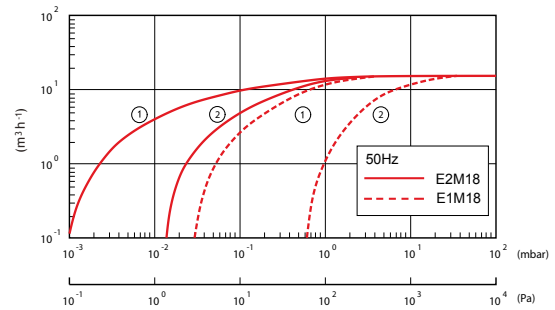
Displacement	
50 Hz	20.5 m <sup>3</sup> h <sup>-1</sup> (12.1 ft <sup>3</sup> min <sup>-1</sup> )
60 Hz	25 m <sup>3</sup> h <sup>-1</sup> (14.7 ft <sup>3</sup> min <sup>-1</sup> )
Speed (Pneurop 6602)	
50 Hz	17 m <sup>3</sup> h <sup>-1</sup> (10 ft <sup>3</sup> min <sup>-1</sup> )
60 Hz	20.4 m <sup>3</sup> h <sup>-1</sup> (12.1 ft <sup>3</sup> min <sup>-1</sup> )

### Ordering information

Product description	Order no:
E1M18 200-230/380-415 V, 3-ph, 50 Hz or 200-230/460 V, 3-ph, 60 Hz	A34310940
E1M18 100/200 V, 1-ph, 50 Hz or 100-105/200-210 V, 1-ph, 60 Hz	A34315904
E1M18 115/200-230 V, 1-ph, 50/60 Hz with IEC60320 connector, factory set to 230V	A34317984
E1M18 FX 115/200-230 V, 1-ph, 50/60 Hz with IEC60320 connector	A34325984
E2M18 200-230/380-415 V, 3-ph, 50 Hz or 200-230/460 V, 3-ph, 60 Hz	A36310940
E2M18 100/200 V, 1-ph, 50 Hz or 100-105/200-210 V, 1-ph, 60 Hz	A36315904
E2M18 115/200-230 V, 1-ph, 50/60 Hz with IEC60320 connector	A36317984
E2M18 FX 200-230/380-415 V, 3-ph, 50 Hz or 200-230/460 V, 3-ph, 60 Hz	A36321940
E2M18 FX 100/200 V, 1-ph, 50 Hz or 100-105/200-210 V, 1-ph, 60 Hz	A36325904
E2M18 FX 115/200-230 V, 1-ph, 50/60 Hz with IEC60320 connector fitted	A36325984

Each EM pump is supplied with 1 litre of Ultragrade 19 oil, O ring and centering ring, two Allen keys and spares seal for oil drain and filter plugs. For PFPE prepared FX pumps Fomblin® to be ordered separately.

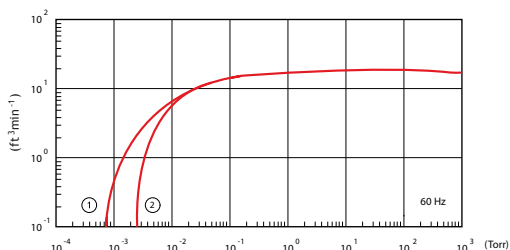
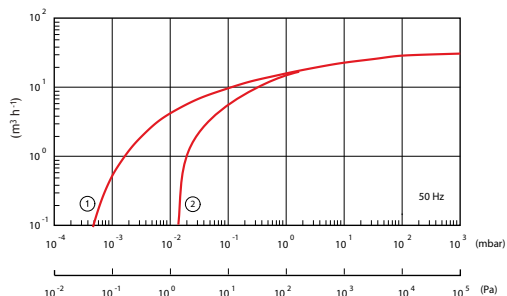
### E1/E2M18 Performance Curve



- |   |                     |
|---|---------------------|
| 1 | Without gas ballast |
| 2 | With gas ballast    |

## E2M28 two stage Rotary vane pump

### E2M28 Performance Curve



- |   |                     |
|---|---------------------|
| 1 | Without gas ballast |
| 2 | With gas ballast    |

### E2M28

#### Displacement

50 Hz	32.2 m <sup>3</sup> h <sup>-1</sup> (19 ft <sup>3</sup> min <sup>-1</sup> )
60 Hz	38.9 m <sup>3</sup> h <sup>-1</sup> (22.3 ft <sup>3</sup> min <sup>-1</sup> )

#### Speed (Pne urop 6602)

50 Hz	27.5 m <sup>3</sup> h <sup>-1</sup> (16.2 ft <sup>3</sup> min <sup>-1</sup> )
60 Hz	33 m <sup>3</sup> h <sup>-1</sup> (19.5 ft <sup>3</sup> min <sup>-1</sup> )



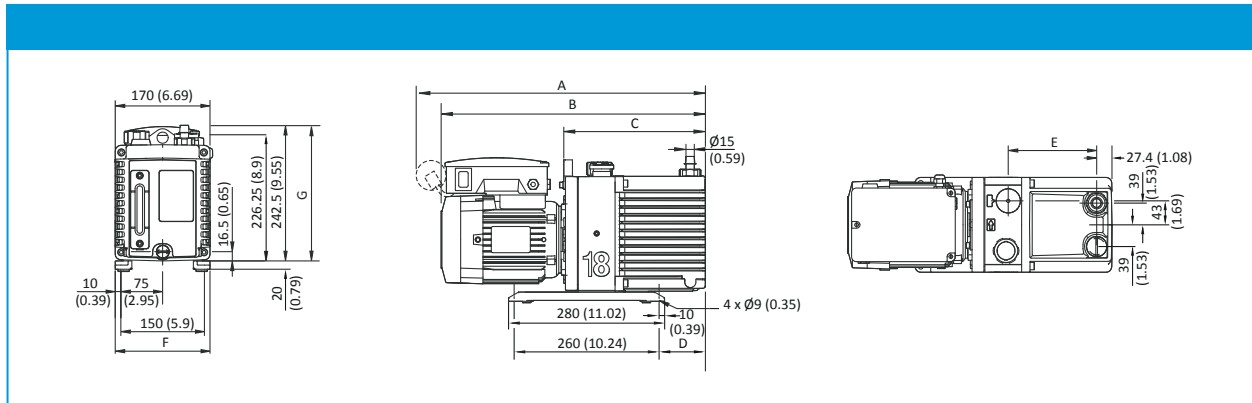
### Ordering information

Product description	Order no:
E2M28 115/200-230V, 1ph, 50/60 Hz with IEC60320 connector fitted	A37317984
E2M28 100/200V, 1ph, 50 Hz or 100-105/200-210V, 1ph 60Hz	A37315904
E2M28 HC 3PH IE3 ASIA 50/60HZ 200V 50/60HZ, 380V 60HZ	A37333934
E2M28 HC 3PH IE3 EU/US 50/60HZ 380-400V 50HZ, 230 / 460V 60HZ	A37333940
E2M28 FX 115/200-230V, 1ph, 50/60 Hz with IEC60320 connector fitted	A37325984
E2M28 FX 3PH IE3 ASIA 50/60HZ 200V 50/60HZ, 380V 60HZ	A37343934
E2M28 FX 3PH IE3 EU/US 50/60HZ 380-400V 50HZ, 230 / 460V 60HZ	A37343940

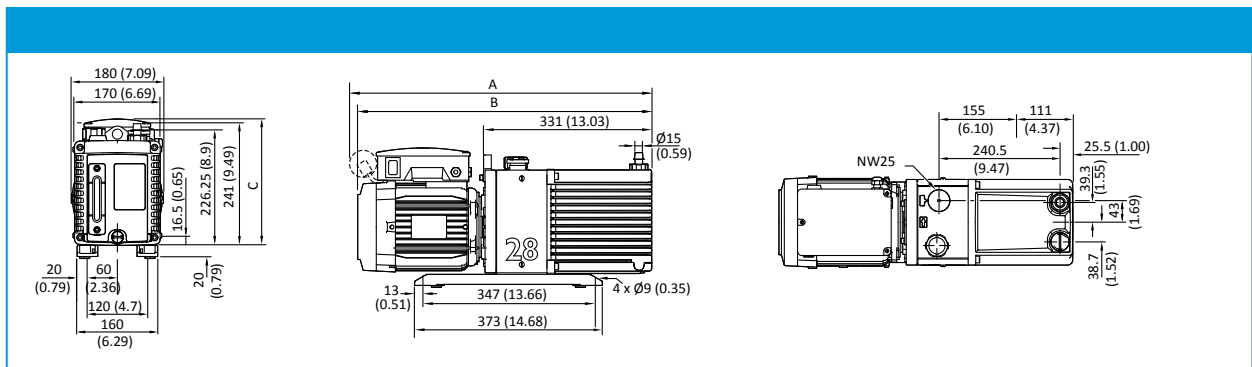
Each EM pump is supplied with 1 litre of Ultragrade 19 oil, O ring and centering ring, two Allen keys and spares seal for oil drain and filter plugs. For PFPE prepared FX pumps Fomblin® to be ordered separately.



# 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



Order no:	A	B	C
A37333940	-	625	229
A37315904	598	584	251
A37317984	-	584	251

# Technical Data



	Units	E1M18	E2M18	E2M28
<b>Displacement</b>				
50 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	20.5/12.1		32.2/19
60 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	25.0/14.7		38.9/22.3
<b>Speed (Pneurop 6602)</b>				
50 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	17.0/10		27.5/16.2
60 Hz	m <sup>3</sup> h <sup>-1</sup> /ft <sup>3</sup> min <sup>-1</sup>	20.4/12.1		33.0/19.5
<b>Ultimate vacuum (total pressure)</b>				
without gas ballast	mbar/Torr	3 x 10 <sup>-2</sup> /2.2 x 10 <sup>-2</sup>	1 x 10 <sup>-3</sup> /7.4 x 10 <sup>-4</sup>	1 x 10 <sup>-3</sup> /7.5 x 10 <sup>-4</sup>
with gas ballast	mbar/Torr	6.5 x 10 <sup>-1</sup> /4.8 x 10 <sup>-1</sup>	1.5 x 10 <sup>-1</sup> /1.1 x 10 <sup>-2</sup>	1.5 x 10 <sup>-2</sup> /1.1 x 10 <sup>-2</sup>
with Fomblin®	mbar/Torr	3 x 10 <sup>-1</sup> /2.56 x 10 <sup>-2</sup>	1 x 10 <sup>-2</sup> /7.5 x 10 <sup>-3</sup>	1 x 10 <sup>-2</sup> /7.5 x 10 <sup>-3</sup>
Inlet connection		NW25		
Outlet connection*		Nozzle 15 mm external Ø removable from 3/4 in BSP tapped hole		
Max permitted pressure at outlet	bar gauge/psig	0.5/7		
Max inlet pressure for water vapour	mbar/Torr	50/38	20/15	30/23
Max water vapour pumping rate	kg h <sup>-1</sup>	0.65	0.3	0.7
Operating temp range		13-40 °C		
Nominal Rotation speed 50/60 Hz	rpm	1440/1720 rpm		
Power connector 1-ph**		IEC EN60320 C19		
Motor power 50 Hz	kW	0.55 kW		0.75 kW
Motor power 60 Hz	kW	0.75 kW		0.90 kW
Weight	kg/lbs	37/82	39/86	44/97
Noise @ 50 Hz	dB(A)	57		
Oil capacity – max	litre	1.4	1.05	1.5
Oil capacity – min	litre	0.9	0.75	1.2
Recommended oil (supplied)		Ultragrade 19		

\* The FX are supplied with NW25 outlet connection

\*\* pumps listed with IEC connector only



# Service, Spares and Accessories

## EM Accessories

Product description	Order no:
2 m electrical supply cable, UK, three-pin plug	A50505003
2 m electrical supply cable, North European plug	A50506003
2 m electrical supply cable, North America/Japan plug	A50507003
2 m electrical supply cable, no plug	A50508003
EMF20 mist filter (suitable for E2M28 on low throughput applications)	A46229000
Ultragrade 19 oil 1 litre	H11025015
Ultragrade 19 oil 4 litre	H11025013
Model MF30 mist filter	A46233000
NW25 to 28mm bore tube adaptor	C10520201
¾" BSP to NW25 outlet adaptor	C10501414

## Spares Kits

Product description	Order no:
Spares kit C&O E1M18/E2M18	A36301131
Spares kit Blade E1M18	A34301041
Spares kit Blade E2M18	A36301020
Spares kit Blade E2M28/30	A37301135
Spares kit clean and overhaul kit E2M28	A37301131

## Service

Edwards products, spares and accessories are available from Edwards companies in Belgium, Brazil, China, France, Germany, Israel, Italy, Japan, Korea, Singapore, United Kingdom, U.S.A. and a worldwide network of distributors. The majority of these centres employ Service Engineers who have undergone comprehensive Edwards training courses. Order spare parts and accessories from your nearest Edwards company or distributor.

When you order, please state for each part required:

- Model and item number of your equipment.
- Serial number (if any).
- Item number and description of the part.

# EM18 AND E2M18 ATEX OIL SEALED ROTARY VANE PUMPS

## PERFORMANCE YOU CAN RELY ON

ATEX EM18 pumps have an external ATEX classification of Ex II 2G IIC 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.

## Performance Curves

### E1M18 One Stage, E2M18 two stage Rotary vane ATEX pumps

#### E1/E2M18 ATEX

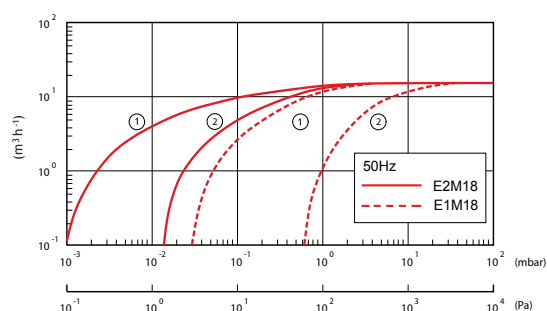


Displacement	
50 Hz	20.5 m <sup>3</sup> h <sup>-1</sup> (12.1 ft <sup>3</sup> min <sup>-1</sup> )
60 Hz	25 m <sup>3</sup> h <sup>-1</sup> (14.7 ft <sup>3</sup> min <sup>-1</sup> )
Speed (Pneurop 6602)	
50 Hz	17 m <sup>3</sup> h <sup>-1</sup> (10 ft <sup>3</sup> min <sup>-1</sup> )
60 Hz	20.4 m <sup>3</sup> h <sup>-1</sup> (12.1 ft <sup>3</sup> min <sup>-1</sup> )

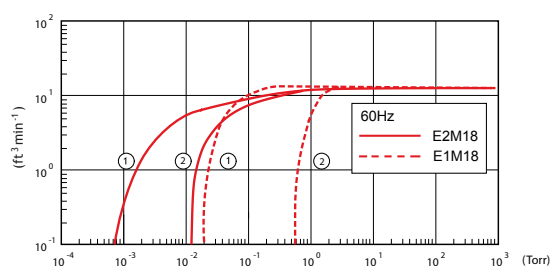
#### Ordering information

Product description	Order no:
E1M18 ATEX 115 V, 1ph, 60 Hz Ex II 2G IIC T4	A34318986
E1M18 ATEX 230 V, 1ph, 50 Hz Ex II 2G IIC T4	A34318989
E1M18 ATEX 400 V, 3ph, 50 Hz Ex II 2G IIC T4	A34318992
E2M18 ATEX 115 V, 1ph, 60 Hz Ex II 2G IIC T4	A36318986
E2M18 ATEX 230 V, 1ph, 50 Hz Ex II 2G IIC T4	A36318989
E2M18 ATEX 400 V, 3ph, 50 Hz Ex II 2G IIC T4	A36318992

#### E1/E2M18 ATEX Performance Curve

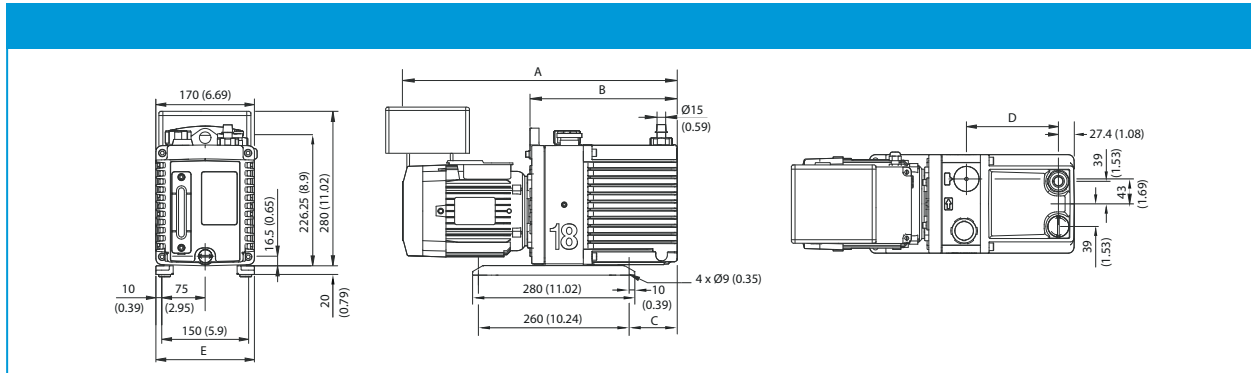


- 1 Without gas ballast
- 2 With gas ballast



- 1 Without gas ballast
- 2 With gas ballast

## Dimensions



	A	B	C	D	E
E1M18	526	247	83	159	171.4
E2M18	576	295	131	207	171.4

## Technical Data

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