

# SMALL EM OIL SEALED ROTARY VANE PUMPS





# EDWARDS THE PARTNER OF CHOICE

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

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

# PERFORMANCE YOU CAN RELY ON

Edwards EM pumps are designed for reliable, long term operation

**Our EM range of small oil sealed rotary vane pumps are renowned for achieving high ultimate vacuum and rapid pumping speeds, with quiet operation and exceptional reliability. These pumps have become the industry standard in a range of scientific and laboratory applications, and are ideal for backing small turbomolecular pumps.**

- Single and two stage design options
- Pumping speeds from 0.7 to 28 m<sup>3</sup>h<sup>-1</sup>
- Simple installation and operation with no customer wiring
- Alternate side inlet connection port so that overall installation height can be reduced to minimum (0.7 and 1.5 variants only)
- Internal ATEX classification of Ex II 3 G c IIB T4
- Approved to EN61010, CSA22.2 and UL61010
- Fully RoHS compliant



## Quiet operation

Better working environment



## Flexibility of use

Free standing unit and compact design



## Reliable performance

Proven in a range of laboratory and industrial applications



## Gas ballast valve

Large vapour handling capacity

# EM Rotary Vane Pump Technology



- 1 **Easy control:** motor on/off switch
- 2 **Wide voltage motors:** all major countries covered with less variants
- 3 **Large water vapour handling capacity:** gas ballast valve
- 4 **Low surface temperature:** forced air cooling
- 5 **No oil leaks:** integrated oil-seals, pressure die cast oil box
- 6 **Visual inspection of oil level and condition:** O ring sealed sight glass
- 7 **No customer wiring:** integral IEC connector



E2M0.7



E2M1.5



E2M28



E1M18



E2M18

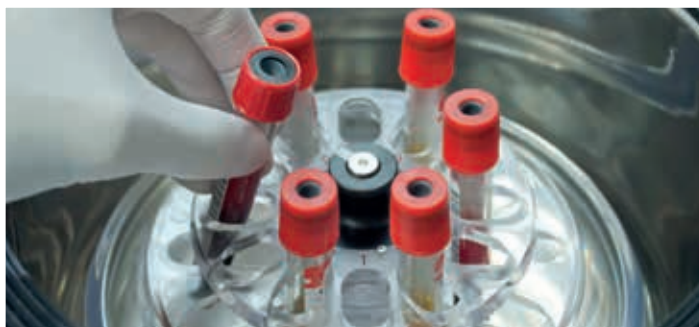


# Applications

EM pumps are suitable for a wide range of applications requiring low and medium vacuum:

INSTRUMENTATION	E2M0.7 E2M1.5	E1M18 E2M18	E2M28
Analytical instruments - GCMS	•		
Analytical instruments - LCMS		•	•
Automotive		•	•
Beam lines and high energy physics		•	•
Centrifuges, ultra-high speed		•	•
Coating		•	•
Cryogenics		•	•
Degassing/curing - oil, epoxy resin		•	•
Distillation/extraction/filtration		•	•
Freeze drying		•	•
Furnaces		•	•
Gas bottle filling/emptying			•
Gel drying		•	•
Glove boxes, ovens		•	•
Laboratory bench top vacuum	•	•	•

GENERAL	E2M0.7 E2M1.5	E1M18 E2M18	E2M28
Lasers, gas recovery and re-circulation			•
Leak detectors, Helium	•	•	•
Load locks and transfer chambers		•	•
Refrigeration manufacture		•	•
Research and development	•	•	•
Rotary, centrifugal evaporators		•	•
Scanning electron microscopes - SEM	•	•	
SEM/FIB (Ion beam repair)		•	
Solvent recovery		•	•
Surface science instruments		•	•
Turbomolecular backing pumps	•	•	•



# Technical data

	Hz	Units	E2M0.7	E2M1.5	E1M18	E2M18	E2M28
<b>Vacuum Data</b>							
Peak pumping speed	50	m <sup>3</sup> h <sup>-1</sup>	0.75	1.6	17	17	27.5
	60	cfm	0.5	1.2	12.1	12.1	19.5
Ultimate pressure w/o gas ballast	50	mbar	3.0x10 <sup>-3</sup>	3x10 <sup>-3</sup>	3x10 <sup>-2</sup>	1x10 <sup>-3</sup>	1x10 <sup>-3</sup>
	60	Torr	2.3x10 <sup>-3</sup>	2.3x10 <sup>-3</sup>	2.2x10 <sup>-2</sup>	7.4x10 <sup>-4</sup>	7.5x10 <sup>-4</sup>
Ultimate pressure with gas ballast	50	mbar	2x10 <sup>-1</sup>	2.5x10 <sup>-2</sup>	6.5x10 <sup>-1</sup>	1.5x10 <sup>-2</sup>	1.5x10 <sup>-2</sup>
	60	Torr	1.5x10 <sup>-1</sup>	1.9x10 <sup>-2</sup>	4.8x10 <sup>-1</sup>	1.1x10 <sup>-2</sup>	1.1x10 <sup>-2</sup>
Ultimate pressure with Fomblin®	50	mbar	n/a	n/a	3x10 <sup>-1</sup>	1x10 <sup>-2</sup>	1x10 <sup>-2</sup>
	60	Torr	n/a	n/a	2.3x10 <sup>-1</sup>	7.5x10 <sup>-3</sup>	7.5x10 <sup>-3</sup>
Water vapour tolerance	n/a	mbar	15	15	50	20	30
	n/a	Torr	11	11	38	15	23
Water vapour capacity	n/a	g/h	8	16	650	300	700

	Hz	Units	E2M0.7	E2M1.5	E1M18	E2M18	E2M28
<b>Motor Data</b>							
Motor power	50	kW	0.09	0.16	0.55		0.75
	60	kW	0.09	0.16	0.75		0.90
Nominal rotation speed	50	rpm	1400	2800		1440	
	60	rpm	1700	3400		1720	
Power connector <sup>(1)</sup>	n/a	n/a	IEC EN60320 C13		IEC EN60320 C19		

	Hz	Units	E2M0.7	E2M1.5	E1M18	E2M18	E2M28
<b>Physical Data</b>							
Weight	n/a	lb	22		82	86	97
	n/a	kg	10		37	39	44
Oil type (recommended)	n/a		Ultragrade 15			Ultragrade 19	
Oil capacity (maximum)	n/a	litre	0.28		1.4	1.05	1.5
Oil capacity (minimum)	n/a	litre	0.2		0.9	0.75	1.2
Inlet flange	n/a		NW10			NW25	
Exhaust flange <sup>(2)</sup>			Nozzle 11mm external Ø removable from 3/4 in BSP tapped hole			Nozzle 15 mm external diameter removable from 3/4 in BSP tapped hole	
Operating temperature range	n/a	°C	12-40			13-40	
Noise level at 50 Hz	n/a	dB(A)	43	54		57	
Noise with acoustic enclosure <sup>(3)</sup>	n/a	dB(A)	36	47		50	

<sup>(1)</sup> pumps listed with IEC connector only

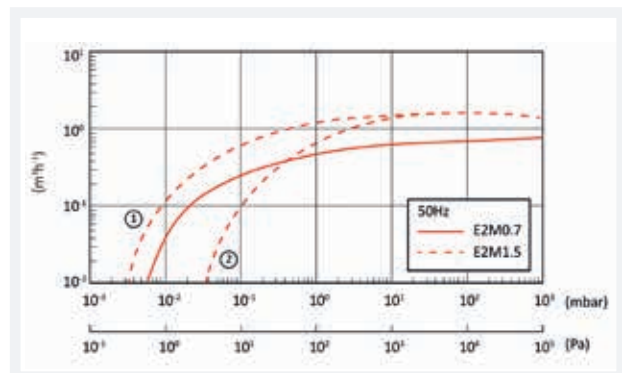
<sup>(2)</sup> PFPE variants are supplied with NW25 outlet connection

<sup>(3)</sup> approx. noise reduction 7 dB(A)

# Performance Curves

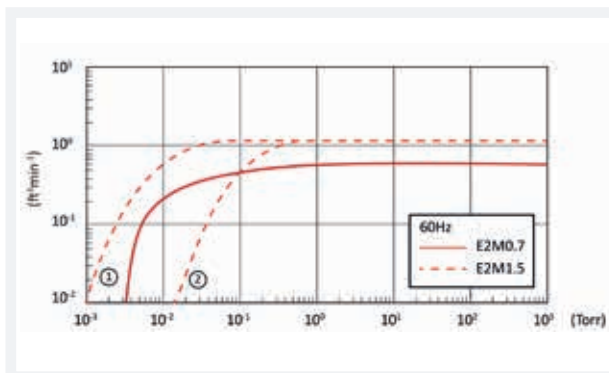
## E2M0.7 and E2M1.5

50 Hz



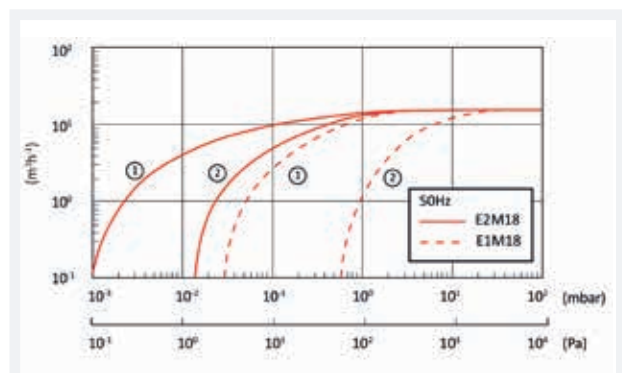
## E2M0.7 and E2M1.5

60 Hz



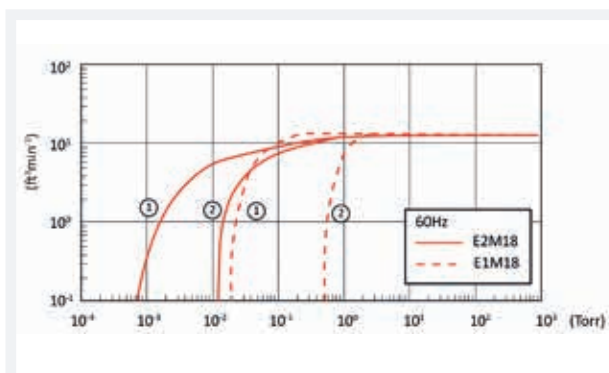
## E1M18 and E2M18

50 Hz



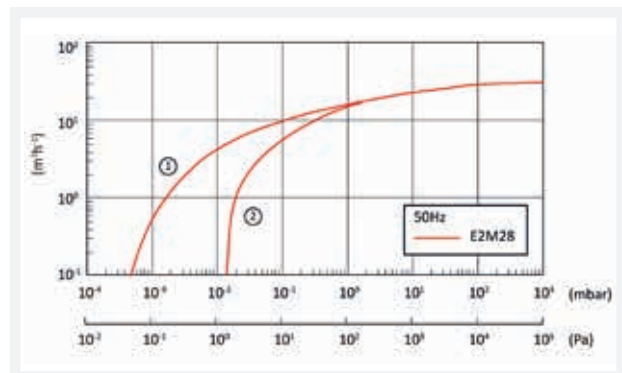
## E1M18 and E2M18

60 Hz



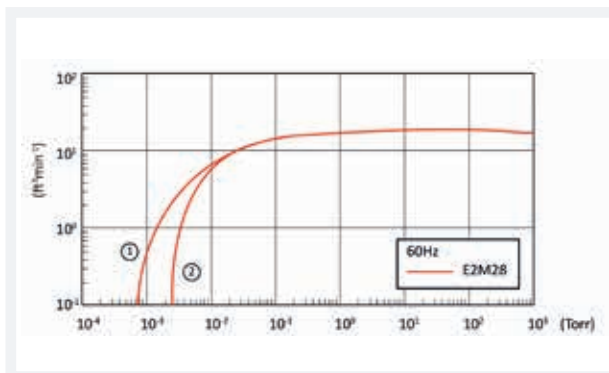
## E2M28

50 Hz



## E2M28

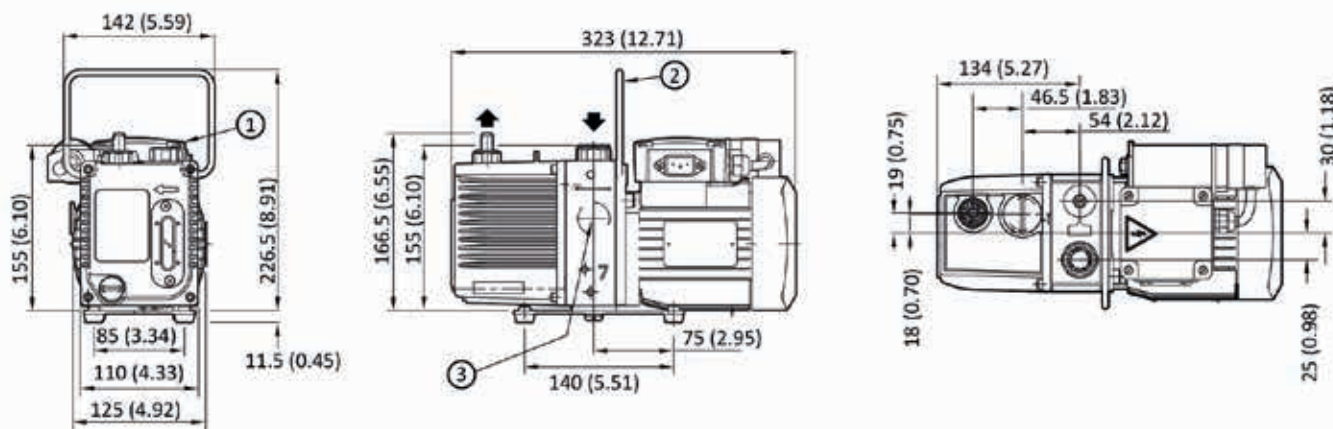
60 Hz



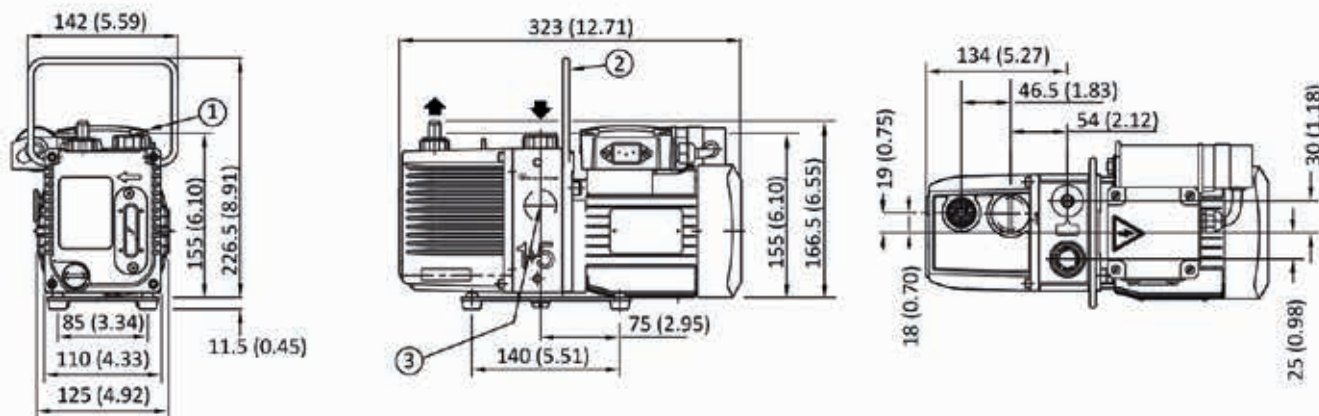
1. Gas Ballast off
2. Gas Ballast on

# Dimensions

## E2M0.7



## E2M1.5

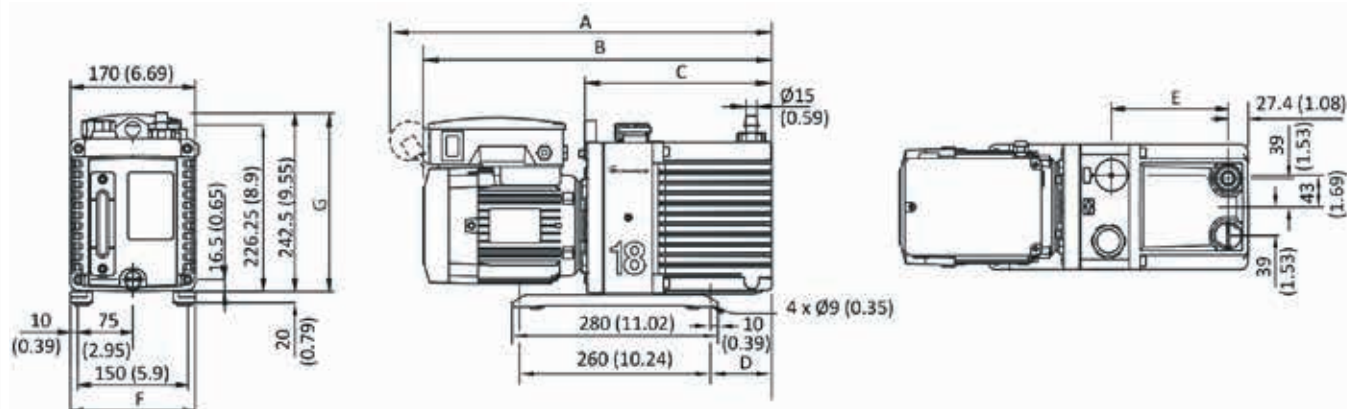


All measurements indicated are shown in mm (inches)

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

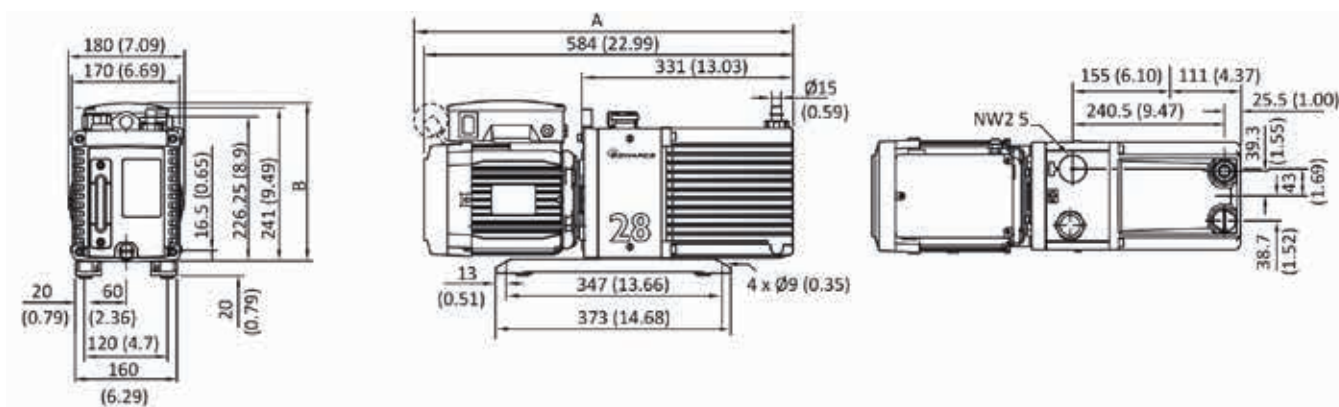


## E1M18 one stage - E2M18 two stage Dimensions



Ordering 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

## E2M28



Ordering No.	A	B
A37315904	598	251
A37317984	-	251
A37333940	-	229

All measurements indicated are shown in mm (inches)

# Ordering information

## Product Range

E2M0.7 E2M1.5	E2M0.7 200-230V, 1-ph, 50/60Hz, IEC 60320 connector	A37141919
	E2M0.7 100-120V, 1-ph, 50/60Hz, IEC 60320 connector	A37141902
	E2M1.5 200-230V, 1-ph, 50/60Hz, IEC 60320 connector	A37132919
	E2M1.5 100-120V, 1-ph, 50/60Hz, IEC 60320 connector	A37132902
	E2M1.5 interstage 200-230V, 1-ph, 50/60Hz, IEC 60320 connector	A37104919
	E2M1.5 interstage 100-120V, 1-ph, 50/60Hz, IEC 60320 connector	A37104902
E1M18 / E2M18	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 factory set to 200V	A34315904
	E1M18 115/200-230V, 1-ph, 50/60Hz with IEC60320 connector, factory set to 230V	A34317984
	E1M18 FX 115/200-230V, 1-ph, 50/60Hz with IEC60320 connector, factory set to 230V	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 factory set to 200V	A36315904
	E2M18 115/200-230V, 1-ph, 50/60Hz with IEC60320 connector, factory set to 230V	A36317984
	E2M18 FX 200-230/380-415V, 3-ph, 50Hz or 200-230/460V, 3-ph, 60Hz	A36321940
	E2M18 FX 100/200V, 1-ph, 50Hz or 100-105/200-210V, 1-ph, 60Hz factory set to 200V	A36325904
	E2M18 FX 115/200-230V, 1-ph, 50/60Hz with IEC60320 connector, factory set to 230V	A36325984
	E2M28 115/200-230 V, 1-ph, 50/60 Hz with IEC60320 connector, factory set to 230V	A37317984
	E2M28 HC IE3 EU/US 50/60Hz, 380-400V 3-ph, 50Hz or 230/460V 3-ph, 60Hz	A37333940
E2M28	E2M28 HC IE3 Asia 50/60Hz, 200V 3-ph, 50/60Hz or 380V 3-ph, 60Hz	A37333934
	E2M28 100/200V, 1-ph, 50Hz or 100-105/200-210V, 1-ph, 60Hz factory set to 200V	A37315904
	E2M28 FX IE3 EU/US 50/60Hz, 380-400V 3-ph, 50Hz or 230/460V 3-ph, 60Hz	A37343940
	E2M28 FX IE3 Asia 50/60Hz, 200V 3-ph, 50/60Hz or 380V 3-ph, 60Hz	A37343934
	E2M28 FX 115/200-230V, 1-ph, 50/60Hz with IEC60320 connector, factory set to 230V	A37325984

Each EM pump is supplied with 1 litre of Ultragrade 15 or 19 oil, O ring and centering ring, two Allen keys and spare seals for oil drain and filter plugs.  
For PFPE prepared FX pumps Fomblin® to be ordered separately.  
3-phase and Japanese 100/200V motor to be hard wired.

## Accessories and Spares

E2M0.7 / E2M1.5	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
	Ultragrade 15 Oil 1 litre	H11026015
	Clean and overhaul kit E2M0.7/1.5	A37101131
	Spares Kit Blade E2M0.7/1.5	A37101132
	NW10 Centring Nitrile S/S Pack 1	C10511396
	NW10 O Ring Viton Pack 5	H02124032
E1M18 / E2M18 / E2M28	NW10 x 3/8" BSP Adapter	A23908064
	EMF20 mist filter (suitable for E2M28 on low throughput applications)	A46229000
	MF30 mist filter	A46233000
	2m electrical supply cable for 1-ph pumps, UK, Three-pin plug	A50505003
	2m electrical supply cable for 1-ph pumps, North European plug	A50506003
	2m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507003
	2m electrical supply cable for 1-ph pumps, no plug	A50508003
	Ultragrade 19 Oil 1 litre	H11025015
	Fomblin® YVAC 06/6 fluid 1 kg (532 ml)	H11301019
	Clean and overhaul kit E1M18/E2M18 (suitable for use with hydrocarbon and PFPE prepared pumps)	A36301131
	Spares Kit Blade E1M18	A34301041
	Spares Kit Blade E2M18	A36301020
	NW25 to 28mm bore tube adaptor	C10520201
	¾" BSP to NW25 outlet adaptor	C10501414
	E2M28 Clean and overhaul kit (suitable for use with hydrocarbon and PFPE prepared pumps)	A37301131
	Blade Kit E2M28/30	A37301135
	Acoustic Enclosure 110-120V	NRD317000
	Acoustic Enclosure 200-240V	NRD318000

## Service you can trust

At Edwards we pride ourselves on developing service solutions that deliver optimum performance and up-time for our customers. Convenience, quality and value are at the heart of everything we do. Whether you are looking for immediate help and advice, or require a long-term total service partner, we make the performance of your business our priority.

## Well-maintained systems last longer

Maximise the lifetime of your product by servicing your own products regularly using original parts and tooling. Edwards can support you with spares, maintenance kits, tools and training. Combining the reliability of original spare parts with quality tools means you are well on the way to achieving years of trouble-free operation.

## Prolonged peace of mind

Extending the new equipment warranty gives you a simple opportunity to add peace of mind to your purchase of new equipment, should a fault occur as a result of a manufacturing defect, equipment is expressly repaired or replaced. Cover is available on many of our products allowing the original factory warranty to be extended from 12 months to 2 years and beyond.

## Your global partner

We understand the importance of local support. Edwards has a number of major service facilities located throughout the world, each location is supported by an extensive team of engineers and technicians to provide local, rapid response and great value service. All our service operations are conducted at the highest international standards in accordance with ISO9001 (Quality), ISO14001 (Environmental), and OHSAS18001 (Workplace safety).





## GLOBAL CONTACTS

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