

# RV 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.**

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

# PERFORMANCE YOU CAN RELY ON

The RV series is the ultimate range of small oil sealed rotary vane pumps

The result of more than 75 years' experience and a clean sheet design programme, these rugged vacuum pumps offer an excellent ultimate vacuum with good pumping speeds as well as superior vapour handling capabilities and quiet operation.

High vapour handling

**Quicker process**

Superior particulate handling

**High reliability**

Fast acting, automatic inlet valve for best in class anti-suck back protection

**Safe process and systems**

Mode selector and two position gas ballast

**Configured to meet your vacuum needs**

Designed for easy maintenance

**No unplanned downtime**

Quiet running

**Better work environment**

## Applications

You can be assured Edwards has the application expertise and the RV pump or integrated system solution to meet your needs.

### Mass spectrometry

- GCMS, LCMS, ICPMS, MALDI, RGA, surface science, leak detectors

### Electron microscopy

- TEM, SEM, sample coatiers

### Sample preparation

- Gel dryers, glove boxes, rotary evaporators, centrifuges

### Research and development

- Chamber evacuation, coating systems, turbomolecular pump backing

### High energy physics

- Beam lines, accelerators, mobile pump carts, turbomolecular pump backing, laser evacuation

### Industrial

- Glove boxes, coating systems, freeze drying, gas bottle filling/emptying, refrigeration system manufacture, degassing/curing (oil, epoxy resin)

### Chemical

- Gel dryers, glove boxes, rotary evaporators, centrifuges, distillation/extraction/filtration

# Features and benefits

## Gas ballast

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. This can be combined with an oil return accessory and an oil mist filter to enable continuous pumping with no loss of lubrication. Gas ballast can be automated by fitting the optional solenoid operated gas ballast valve.

## Motor

Universal motor to cover the widest possible voltage and frequency range from a single motor. The single phase motor has an external switch to change from high to low voltage range. A universal 3 phase motor is also available on all models and for special applications, pumps with flameproof ATEX approved motors can be offered.

## Inlet

Best in class anti-suckback protection

- Smooth controlled opening by oil pressure to eliminate pressure surges
- Rapid closing within 0.4 seconds of pump stopping

All Edwards RV pumps are supplied with an inlet seal and integrated inlet mesh filter.

## Designed for easy maintenance

- One size hex-head wrench to dismantle all parts
- All parts self-aligning so no jigs or special assemblies required
- Polymer blades with no springs or pins for easier assembly and greater reliability
- Shaft seals can be replaced from the motor side without dismantling the pump mechanism
- No O-rings between the slices for easier assembly

## Oil

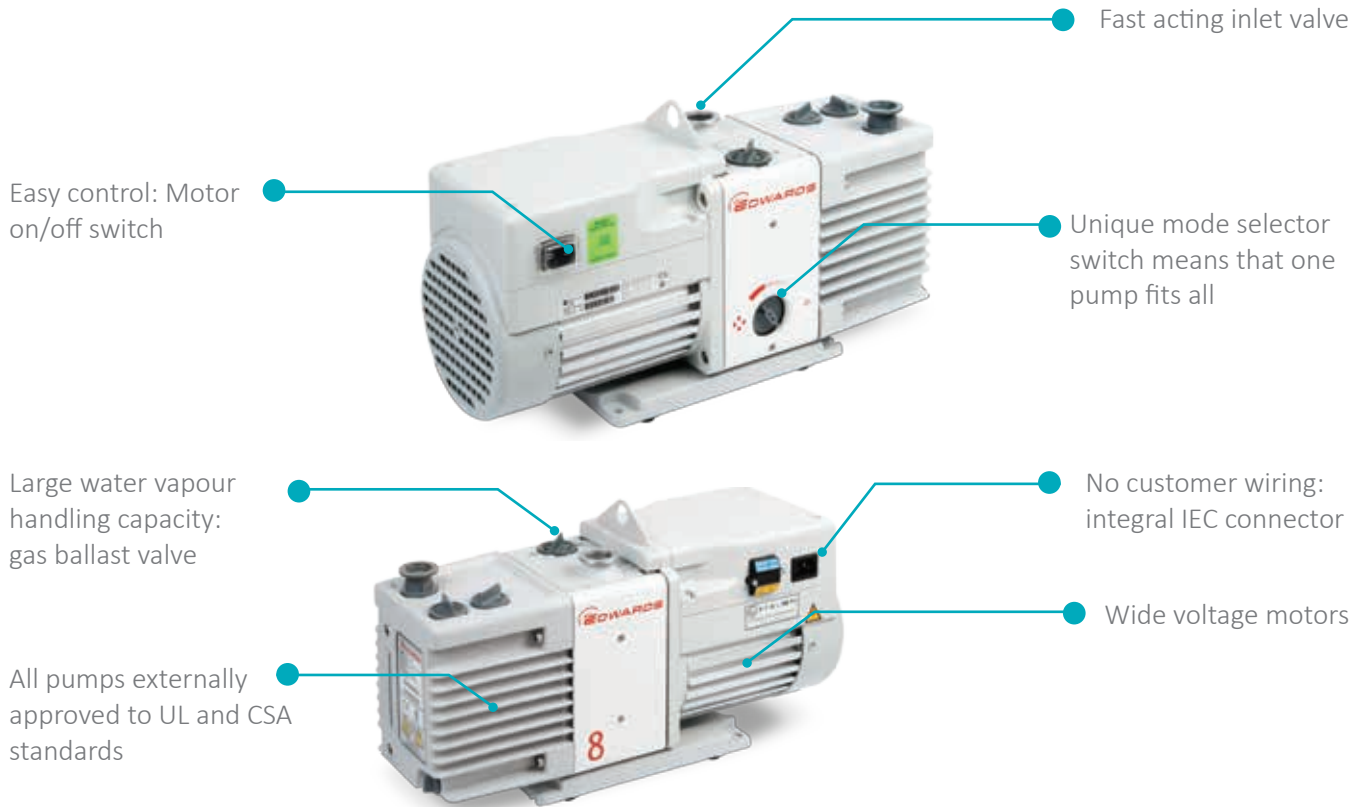
Edwards RV pumps are supplied with an initial charge of Ultragrade 19 oil. This premium quality oil has been specifically formulated with a unique package of additives to give the best vacuum performance of any mineral oil. As such it combines an extremely tightly controlled vapour pressure with a high resistance to oxidation for a long life. For oxygen rich applications PFPE prepared pumps are also available. Fomblin® must be purchased separately for PFPE prepared pumps.

## Mode switch

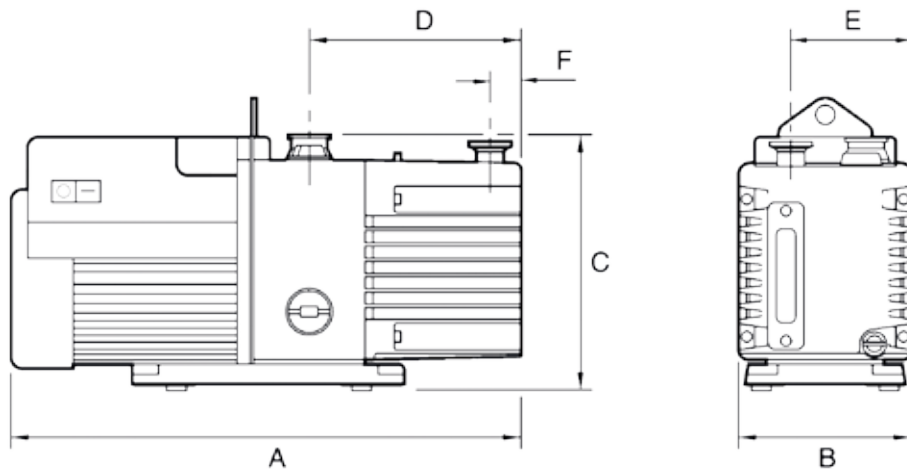
The unique mode selector switch means that one pump fits all, so you only need one model for both high throughput and high vacuum applications.

In high throughput mode the selector switch increases the oil flow to the high vacuum stage allowing the pump to operate continuously with high inlet pressures without any wear or loss of lubrication.





## Dimensions



|      | A           | B          | C          | D          | E          | F         |
|------|-------------|------------|------------|------------|------------|-----------|
| RV3  | 430 (16.93) | 158 (6.22) | 225 (8.86) | 156 (6.41) | 111 (4.37) | 29 (1.14) |
| RV5  | 430 (16.93) | 158 (6.22) | 225 (8.86) | 156 (6.41) | 111 (4.37) | 29 (1.14) |
| RV8  | 470 (18.50) | 158 (6.22) | 225 (8.86) | 196 (7.72) | 111 (4.37) | 35 (1.38) |
| RV12 | 490 (19.29) | 158 (6.22) | 225 (8.86) | 216 (8.50) | 111 (4.37) | 35 (1.38) |

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

# Technical data

|  | Hz    | Units             | RV3   | RV5                    | RV8                    | RV12                   |
|--|-------|-------------------|---|------------------------|------------------------|------------------------|
| Peak pumping speed                     | 60    | cfm               | 2.3   | 3.6                    | 5.9                    | 8.4                    |
|  | 50    | m <sup>3</sup> /h | 3.3   | 5.1                    | 8.5                    | 12                     |
| Ultimate pressure (Total)              | 60    | Torr              | 1.5 x 10 <sup>-3</sup> (1.5 x 10 <sup>-2</sup> with Fomblin®) |                        |                        |                        |
|  | 50    | mbar              | 2.0 x 10 <sup>-3</sup> (2.0 x 10 <sup>-2</sup> with Fomblin®) |                        |                        |                        |
| Ultimate pressure GB I (Total)         | 50/60 | Torr              | 2.3 x 10 <sup>-2</sup>  |                        |                        |                        |
|  |       | mbar              | 3.0 x 10 <sup>-2</sup>  |                        |                        |                        |
| Ultimate pressure GB II (Total)        | 50/60 | Torr              | 9.1 x 10 <sup>-2</sup>  | 9.1 x 10 <sup>-2</sup> | 4.6 x 10 <sup>-2</sup> | 9.1 x 10 <sup>-2</sup> |
|  |       | mbar              | 1.2 x 10 <sup>-1</sup>  | 1.2 x 10 <sup>-1</sup> | 6.0 x 10 <sup>-2</sup> | 1.2 x 10 <sup>-1</sup> |
| High throughput mode                   | 50/60 | Torr              | 2.3 x 10 <sup>-2</sup>  |                        |                        |                        |
|  |       | mbar              | 3.0 x 10 <sup>-2</sup>  |                        |                        |                        |
| Water vapour tolerance                 |       | Torr              | 60  | 38                     | 38                     | 24                     |
|  |       | mbar              | 80  | 50                     | 60                     | 32                     |
| Water vapour capacity - GB I           |       | g/h               | 60  | 60                     | 60                     | 60                     |
| Water vapour capacity - GB II          |       | g/h               | 220   | 220                    | 220                    | 290                    |
| <b>Motor data</b>                      |       |                   |   |                        |                        |                        |
| Motor rating 1 phase (nominal)         | 60    | W                 | 550   |                        |                        |                        |
|  | 50    | W                 | 450   |                        |                        |                        |
| Motor rating 3 phase                   | 60    | W                 | 300   | 300                    | 550                    | 550                    |
|  | 50    | W                 | 250   | 250                    | 450                    | 450                    |
| Nominal rotation speed                 | 60    | rpm               | 1800  |                        |                        |                        |
|  | 50    | rpm               | 1500  |                        |                        |                        |
| <b>Physical data</b>                   |       |                   |   |                        |                        |                        |
| Weight                                 |       | lb                | 55  | 55                     | 61.6                   | 63.8                   |
|  |       | kg                | 25  | 25                     | 28                     | 29                     |
| Oil capacity                           |       | litres            | 0.7   | 0.7                    | 0.75                   | 1                      |
| Oil type (Ultragrade)                  |       |                   | 19  |                        |                        |                        |
| Inlet flange                           |       |                   | NW25  |                        |                        |                        |
| Exhaust flange                         |       |                   | NW25  |                        |                        |                        |
| Noise level                            | 50 Hz | dB(A)             | 48  |                        |                        |                        |
| Noise level (with Acoustic Enclosure)* | 50 Hz | dB(A)             | 41  |                        |                        |                        |
| Operating temperature range            |       | °C                | 12 to 40  |                        |                        |                        |

\* approximate noise reduction of 7 dB(A)

# Ordering information

|      | Product description                                   | Order No.      | Order No.      |
|------|---|----------------|----------------|
|      |   | Ultragrade Oil | PFPE prepared* |
| RV3  | 115/230V, 50/60Hz set to 230V                         | A65201903      | A65209903      |
|      | 100/200V, 50/60Hz set to 200V                         | A65201904      | A65209904      |
|      | 200-220/380-415V, 50Hz<br>200-230/460V, 60Hz, 3 phase | A65201905      | A65209905      |
|      | 115/230V, 50/60Hz set to 115V                         | A65201906      | A65209906      |
| RV5  | 115/230V, 50/60Hz set to 230V                         | A65301903      | A65309903      |
|      | 100/200V, 50/60Hz set to 200V                         | A65301904      | A65309904      |
|      | 200-220/380-415V, 50Hz<br>200-230/460V, 60Hz, 3 phase | A65301905      | A65309905      |
|      | 115/230V, 50/60Hz set to 115V                         | A65301906      | A65309906      |
| RV8  | 115/230V, 50/60Hz set to 230V                         | A65401903      | A65409903      |
|      | 100/200V, 50/60Hz set to 200V                         | A65401904      | A65409904      |
|      | 200-220/380-415V, 50Hz<br>200-230/460V, 60Hz, 3 phase | A65401905      | A65409905      |
|      | 115/230V, 50/60Hz set to 115V                         | A65401906      | A65409906      |
| RV12 | 115/230V, 50/60Hz set to 230V                         | A65501903      | A65509903      |
|      | 100/200V, 50/60Hz set to 200V                         | A65501904      | A65509904      |
|      | 200-220/380-415V, 50Hz<br>200-230/460V, 60Hz, 3 phase | A65501905      | A65509905      |
|      | 115/230V, 50/60Hz set to 115V                         | A65501906      | A65509906      |

\*PFPE fluid not included

|                     | Product description                | Order No. |
|---------------------|------------------------------------|-----------|
| Cord sets           | UK, three pin plug                 | A50505000 |
|                     | North European plug                | A50506000 |
|                     | North American plug                | A50507000 |
|                     | No plug                            | A50508000 |
| Oil                 | Ultragrade 19, 1 litre bottle      | H11025015 |
|                     | Fomblin® YVAC 06/6 1kg (532 ml)    | H11301019 |
|                     | Ultragrade 19 oil 4 litre          | H11025013 |
| Inlet accessories   | Foreline trap - FL20K              | A13305000 |
| Outlet accessories  | Oil mist filter - EMF10            | A46226000 |
|                     | Oil mist filter - EMF20            | A46229000 |
| Oil return kits     | Clean application (no gas ballast) | A50420000 |
|                     | Adjustable gas ballast             | A50523000 |
| Vibration isolators |                                    | A24801404 |
| Spares kits         | Clean and overhaul kit             | A65201131 |
| Acoustic enclosure  | Low volts 110-120V                 | NRD317000 |
| Acoustic enclosure  | High volts 200-240V                | NRD318000 |

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





## GLOBAL CONTACTS

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Edwards Ltd, registered in England and Wales  
 No. 6124750, registered office: Innovation Drive,  
 Burgess Hill, West Sussex, RH15 9TW, UK.

### EMEA

|                |  |
|----------------|--|
| <b>UK</b>      | +44 1293 528844<br>(local rate) 08459 212223 |
| <b>Belgium</b> | +32 2 300 0730                               |
| <b>France</b>  | +33 1 4121 1256                              |
| <b>Germany</b> | 0800 000 1456                                |
| <b>Italy</b>   | + 39 02 48 4471                              |
| <b>Israel</b>  | + 972 8 681 0633                             |

### ASIA PACIFIC

|                  |                  |
|------------------|------------------|
| <b>China</b>     | +86 400 111 9618 |
| <b>India</b>     | +91 20 4075 2222 |
| <b>Japan</b>     | +81 47 458 8836  |
| <b>Korea</b>     | +82 31 716 7070  |
| <b>Singapore</b> | +65 6546 8408    |
| <b>Taiwan</b>    | +886 3758 1000   |

### AMERICAS

|               |                  |
|---------------|------------------|
| <b>USA</b>    | +1 800 848 9800  |
| <b>Brazil</b> | +55 11 3952 5000 |