

a clear edge

RV oil-sealed rotary vane pumps



Vacuum science... product solution.

a clear edge

dedicated to science

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 coaters

Sample preparation

Gel dryers, glove boxes, rotary evaporators, centrifuges

Research and development

Chamber evacuation, coating systems, turbopump backing

High energy physics

Beam lines, accelerators, mobile pump carts, turbopump 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

RV oil-sealed rotary vane pumps

Edwards 30 years of experience in scientific applications affords us a deep understanding of research practices and the role that vacuum plays within them, enabling us to develop and support class-leading vacuum products that underpin our customers entire research process.

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 200,000 units sold, 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

Gas ballast

Two position gas ballast allows either 60g/hr or a class leading 220g/hr (290g/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 change from high (220-240V) to low (110-120V) 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 due to dump valve

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

Oil

Edwards RV pumps are supplied with an initial charge of Ultragrade 19 oil. This premium quality 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.

Designed for easy maintenance

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

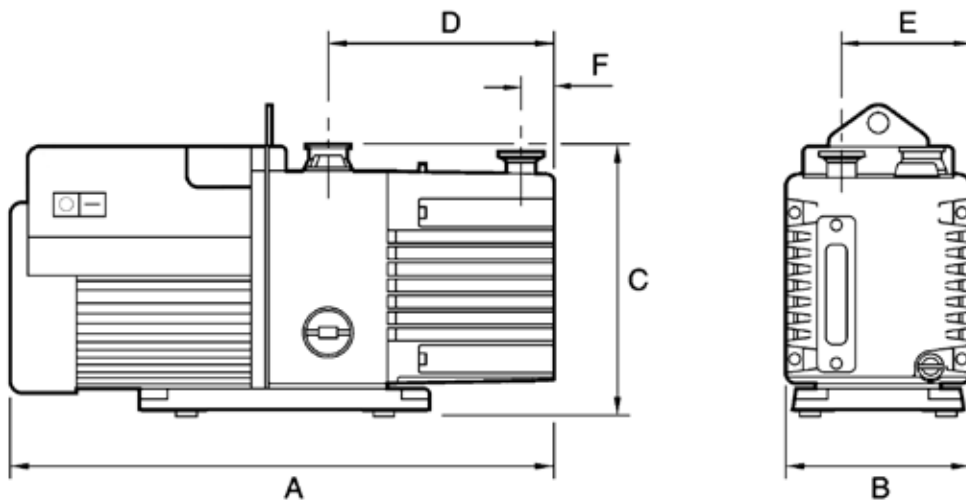
Mode switch

The unique patented 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 |
|--|-------|-------------------|--------------------------------------|------------------------|------------------------|------------------------|
| VACUUM DATA | | | | | | |
| Peak pumping speed | 60 | cfm | 2.3 | 3.6 | 5.9 | 8.4 |
| | 50 | m ³ /h | 3.3 | 5.1 | 8.5 | 12 |
| Ultimate pressure (Total) | 60 | Torr | 1.5 x 10 ⁻³ | | | |
| | | | 1.5 x 10 ⁻² with Fomblin® | | | |
| Ultimate pressure (Total) | 50 | mbar | 2.0 x 10 ⁻³ | | | |
| | | | 2.0 x 10 ⁻² with Fomblin® | | | |
| Ultimate pressure GB I (Total) | 50/60 | Torr | 2.3 x 10 ⁻² | | | |
| | | mbar | 3.0 x 10 ⁻² | | | |
| Ultimate pressure GB II (Total) | 50/60 | Torr | 9.1 x 10 ⁻² | 9.1 x 10 ⁻² | 4.6 x 10 ⁻² | 9.1 x 10 ⁻² |
| | | mbar | 1.2 x 10 ⁻¹ | 1.2 x 10 ⁻¹ | 6.0 x 10 ⁻² | 1.2 x 10 ⁻¹ |
| High throughput mode | 50/60 | Torr | 2.3 x 10 ⁻² | | | |
| | | mbar | 3.0 x 10 ⁻² | | | |
| Water vapor tolerance | | Torr | 60 | 38 | 38 | 24 |
| | | mbar | 80 | 50 | 60 | 32 |
| Water vapor capacity - GB I | | g/h | 60 | | | |
| Water vapor capacity - GB II | | g/h | 220 | 220 | 220 | 290 |
| MOTOR DATA | | | | | | |
| 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 | | | |
| PHYSICAL DATA | | | | | | |
| 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 | dB(A) | 48 | | | |
| Noise level (with Acoustic Enclosure)* | 50 | 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 | A65201904 | A65209904 |
| | 200-220/380-415V, 50Hz 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 | A65301904 | A65309904 |
| | 200-220/380-415V, 50Hz 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 | A65401904 | A65409904 |
| | 200-220/380-415V, 50Hz 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 | A65501904 | A65509904 |
| | 200-220/380-415V, 50Hz 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 liter bottle | H11025015 |
| | Fomblin YVAC 06/6 1kg (532 ml) | H11301019 |
| 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 | A50635906 |
| | High volts 200-240V | A50635903 |

Pumps fitted with ATEX approved motors are available, contact Edwards for details

Pumps are supplied with initial charge of Ultragrade oil



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