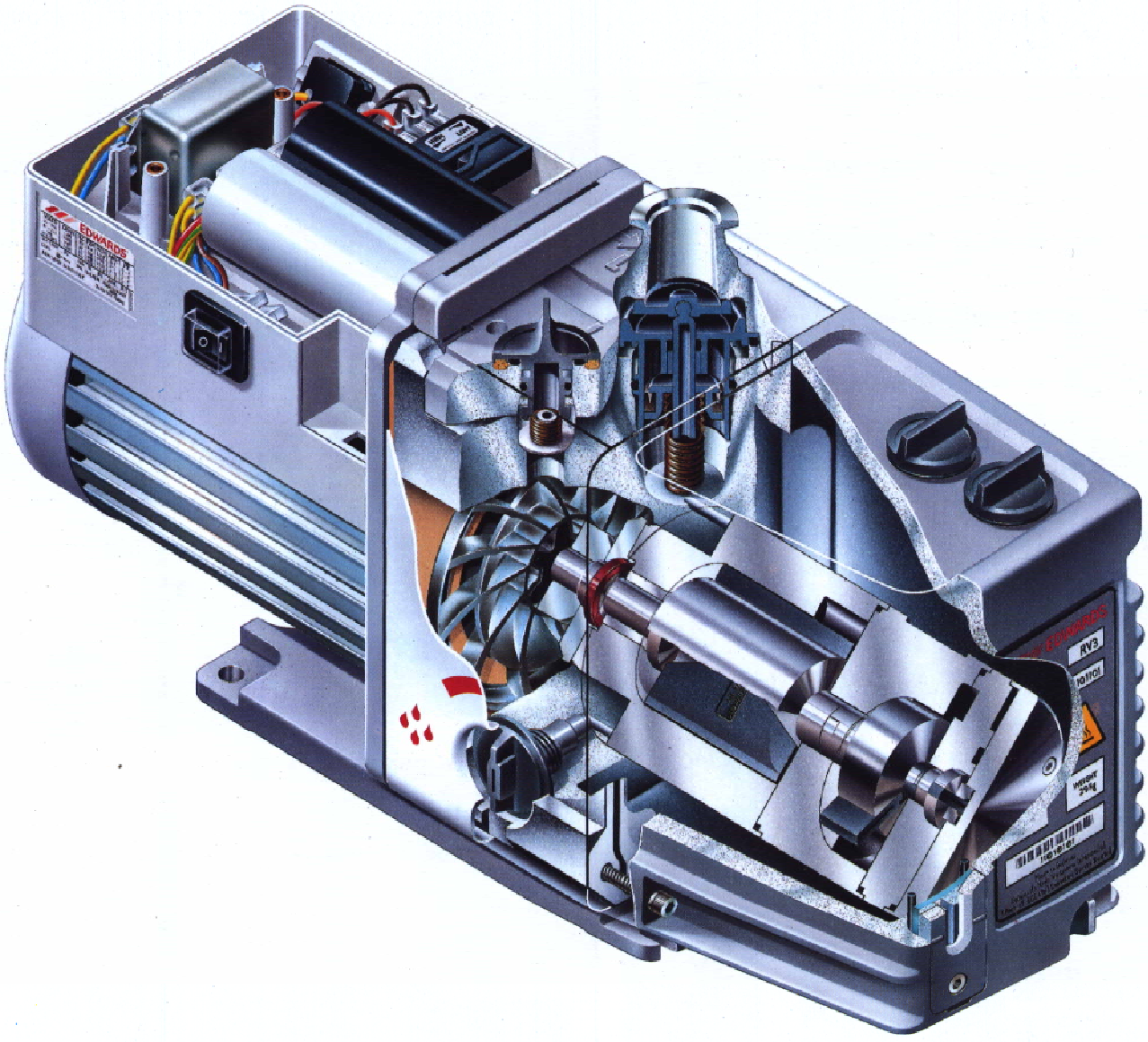
EDWARDS RV ROTARY VACUUM PUMPS.

BOC
Edwards Vacuum Technology

The vacuum pumps you said you wanted.

"BREAK THE

We answered with the first dual-mode vacuum pump.



Dual-mode • Easy-to-use gas ballast • Fast acting inlet valve for system protection • High torque, dual voltage/dual frequency motor • On/off switch • IEC socket • Electronic start relay • 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.

MOULD:' You said.

Always at the forefront of technological advance and conscious of our customers' needs, Edwards has broken new ground yet again.

To meet your demands for high throughputs with high ultimate vacuum we've developed a totally new concept in vacuum pumps.

The world's first dual-mode vacuum pump.

Not simply a cosmetic extension of existing designs, this mould-breaking pump is built to answer the demands of the market.

You told us you wanted a high performance pump with a broad performance envelope and low noise levels. You also wanted a pump that was easy to use and maintain.

We answered with the RV dual-mode rotary vacuum pump.

Its unique dual-mode action allows the user to easily configure the unit to pump very high gas loads and also achieve excellent vacuum - all from a single pump. And it's quieter.

This radical operation is matched by innovative design features such as a pumping mechanism incorporating advanced new materials, a fully-featured Edwards motor and the incorporation of a fast-acting inlet valve to seal the pump for suck-back protection.

To build a pump this advanced, Edwards has invested heavily in state of the art manufacturing and assembly technology in a dedicated IS09001 factory.

In every respect, our new RV range gives you what you asked for.

One pump offers high vacuum or high throughput performance.

"QUIET:'

You said. And we obi

Each RV pump is noise tested in our quiet room using a noise spectrum analyser.

- ***48 dBA.***
- ***Intrusive frequencies minimised.***
- ***Every pump tested by a noise analyser***

In tandem with greatly increased capability, our new RV pumps take into account the growing need for quieter levels of operation.

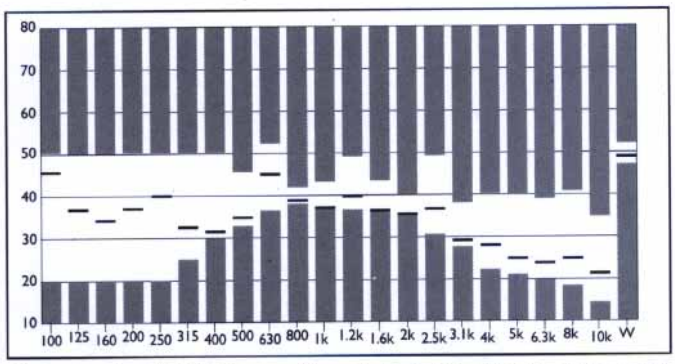
Nowhere is this more necessary than in today's sophisticated electron microscopy and analytical laboratories where ever quieter environments are called for, particularly where the pump is the only noise source.

To meet these stringent demands, before designing our new pumps, we embarked on an extensive programme of noise research with the

iged.

aim of reducing both overall noise levels of pumps and improving the subjective quietness by reducing those frequencies that are both intrusive and irritating.

The result is that all our RV pumps are significantly quieter. Noise levels of 48dBA 5OHz are typically half the noise of a conventional

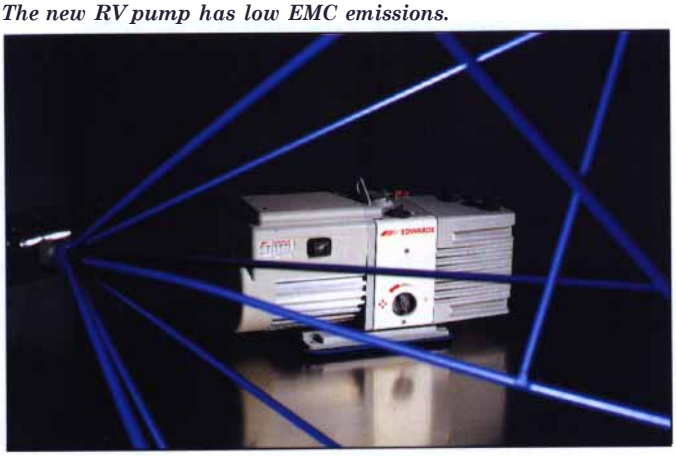


Noise levels of 48dBA are achieved. Individual frequencies must fall within the pass "mask" before a pump is released.

pump and have been achieved by extensive work on the drive train and motor.

Each RV pump is individually tested in a quiet room, using a noise spectrum analyser. This not only measures the average noise level but also checks that individual frequencies are within prescribed limits.

The new RV pump has low EMC emissions.



"VERSATILE."

This control allows you to select high vacuum or high throughput.

- ***Choose high vacuum or high throughput from the same pump.***
- ***Achieve high ultimates in either mode.***
- ***Re-configure the pump at will.***

Edwards RV pumps have the unique ability to deliver excellent ultimate vacuum in both high vacuum and high throughput modes with or without gas ballast. This gives the user an unrivalled opportunity to select the optimum pumping performance without compromising the application.

This versatile performance also signals the

Configured in high throughput mode, Edwards RV is suitable for a wide range of general laboratory applications including freeze drying.

You said. So we *gave* you *control.*

end of the traditional choice dilemma associated with conventional vacuum pumps.

In its high vacuum mode, Edwards RV is ideal for analytical instruments, electron microscopes, physics research, backing turbo pumps, tv tube pumping and leak detection applications. Configure the same pump in the high throughput mode, and it becomes suitable for mass spectrometer inlet systems, distillation, laboratory furnaces, backing vapour pumps, solvent concentration, freeze drying and other drying applications.

The simple to use mode selector and accessible, three-position gas ballast control allow the pump to be reconfigured at any time, even when the pump is running.

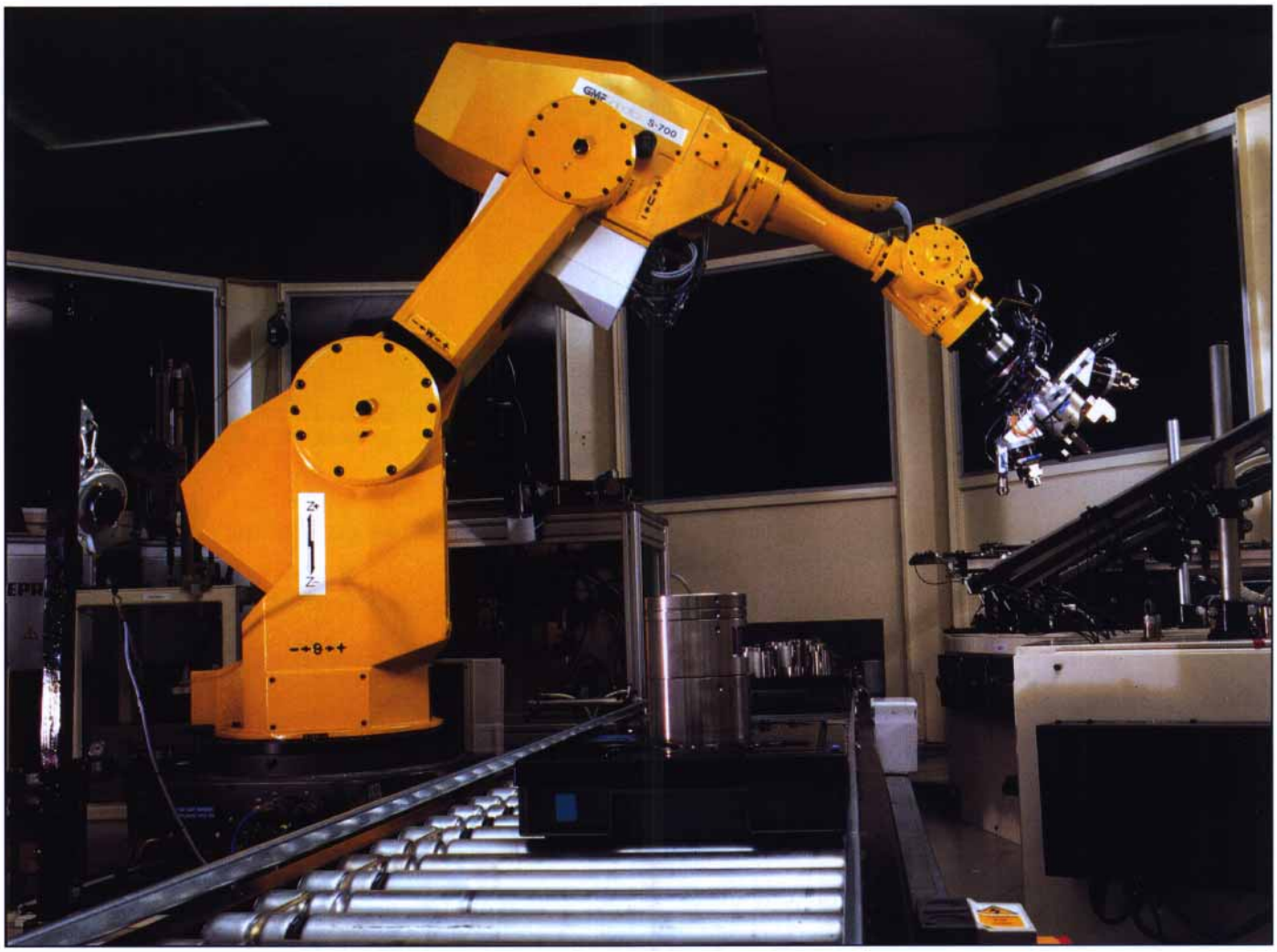
This future-proof technology means that changes in pumping requirements can easily be accommodated.

In high vacuum mode, Edwards RV is ideal for backing turbo molecular pumps.

Mode selector position	Gas-ballast control		
	Closed (position '0')	Low flow (position 'I')	High flow (position 'II')
High Vacuum mode	**Ultimate total pressure**		
	2×10^{-3}mbar	3×10^{-2}mbar	1.2x IO-'mbar (RV3) Ix 10^{-1}mbar (RV5) 6x 10^{-2}mbar (RV8, I2)
	Maximum water vapour pumping rate (Iph pumps)		
Use for the best ultimate pressure		0.06 kg h^{-1} (all pumps)	0.22 kg h^{-1} (RV3, 5 & 8) 0.29 kg h^{-1} (RVI2)
High Throughput mode	**Ultimate total pressure**		
	3×10^{-2}mbar	6x 10^{-2}mbar (RV3, 5) 4x 10^{-2}mbar (RV8,12)	1.2x IO-'mbar (RV3) Ix IO-'mbar (RV5) 6x 10^{-2}mbar (RV8, I2)
	Maximum water vapour pumping rate (Iph pumps)		
Use for continuous inlet pressure above 50 mbar		0.06 kg h^{-1} (all pumps)	0.22 kg h^{-1} (RV3, 5 & 8) 0.29 kg h^{-2} (RVI2)

"MORE."

You said. Our new dual-



One of the world's most advanced robotic cells assembles Edwards RVpumps.

Each Edwards RV pump is comprehensively tested before leaving the factory.

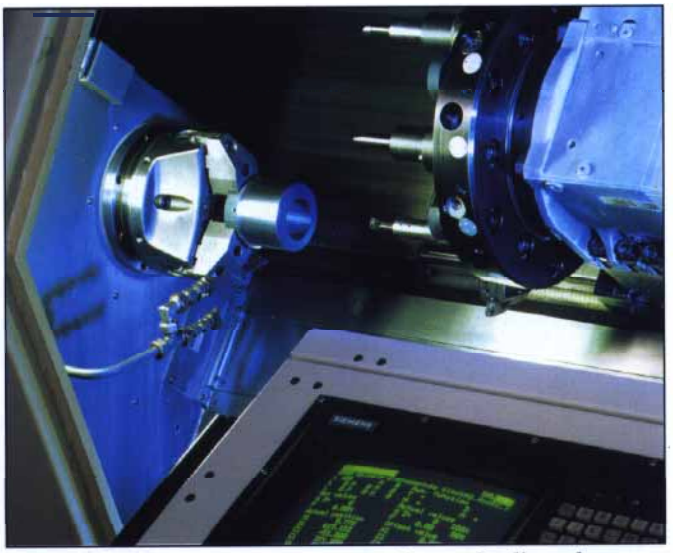
- ***Leading edge manufacturing technology.***
- ***Built in IS09001 quality environment.***
- ***Environmentally friendly.***

The dual-mode action of our RVpumps is a major breakthrough but we didn't stop there.

modepumps go one better.

We've developed a radical new production philosophy and matched this with a massive investment in leading edge manufacturing technology.

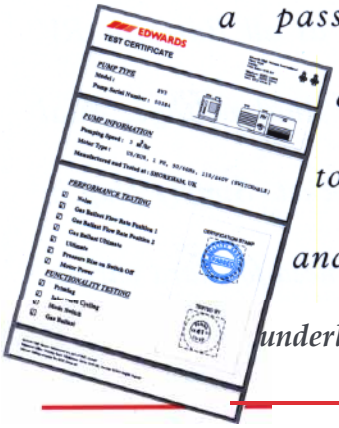
For example, our multi-axis turning centres manufacture all key components of the cartridge from a solid bar. This eliminates casting defects and problems of poor vacuum caused by porosity.



Accuracy and consistency are ensured by our leading edge multi-axis turning centres.

The cartridge is then assembled in our own robotic assembly cell, especially developed for the RV series and one of the most advanced in the world. This removes errors and inconsistencies from the assembly process.

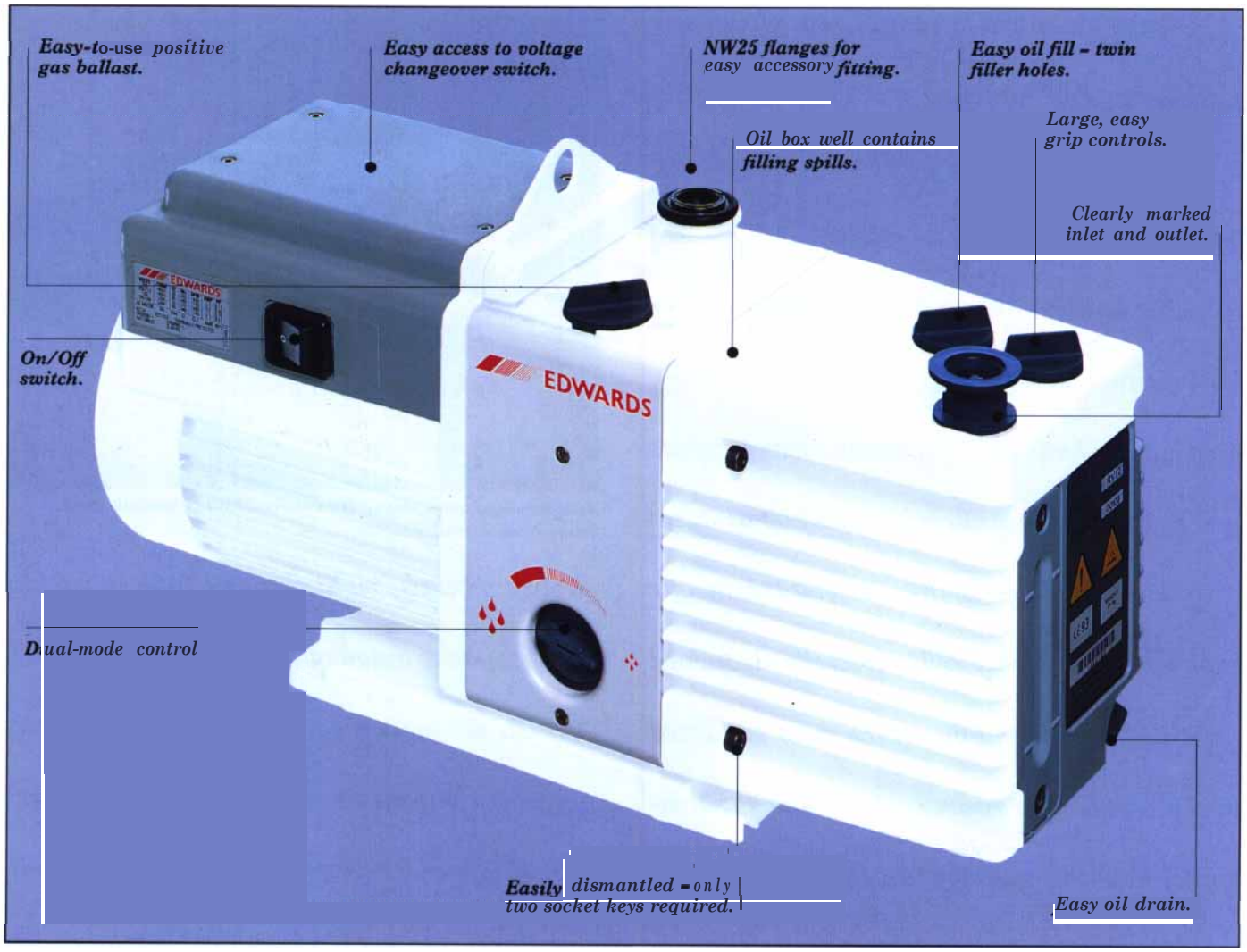
Computerised testing then ensures that no RV pump leaves our factory without a pass certificate. Whilst an absolute adherence to quality programmes and ISO9001 certification underlines our commitment to a quality product, right through from materials specification to automated test.



At the same time, we took the opportunity to ensure components are cleaned in an environmentally friendly cleaning system. In addition, to balance the needs of working environments and our wider global environment, we have made our pumps greener than ever by incorporating polymer blades (right), water-based paints and recyclable packaging.

"EASY:'

You said. And we made

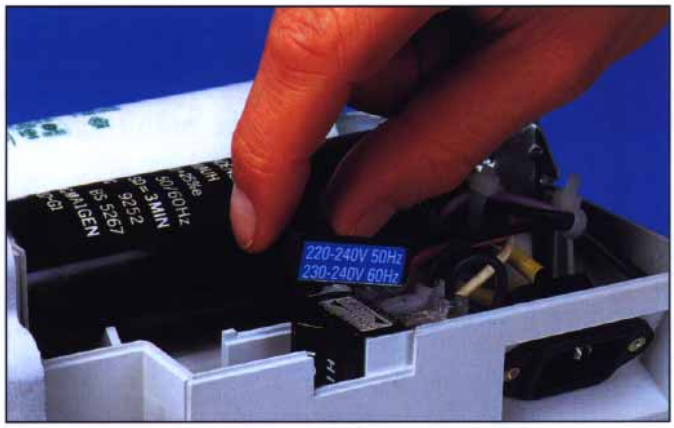


- ***Simple to install.***
- ***Simple to use.***
- ***Simple to service and maintain.***

Our new RV pump is designed to answer your need for a pump that not only delivers high performance but is also easy to install, use and maintain.

Installation' is easy as all Edwards RV pumps feature a special dual voltage, dual frequency motor with a socket. Simply plug in the appropriate cable. No need for hard wiring. An onloff switch controls the pump.

it simple.



The motor is easily configured at the flick of a switch for international use.

Motor voltage is determined by a simple rocker switch, enabling the pump to be configured for use internationally.

All controls are clearly marked and have large finger grips for ease of use. The sight glass is clearly visible and both inlet and outlet are fitted with standard NW25 flanges to allow for the easy connection of accessories.

Access to the pumping mechanism is easy.

Large diameter oil passages allow easy maintenance and any filling spillage is contained by the oil box well.

No special tools are required for servicing. The shaft seal can be changed or repositioned without dismantling the pump. If the pump is taken apart for cleaning, the cartridge easily slots back together with self-setting rotors. In addition, we provide service kits of guaranteed Edwards parts.

Special oil pumping aids are a feature of the high performance shaft seals.

Accessories and Spares.

Inlet catchpot *– Traps any liquid droplets and prevents them from entering the pump.*

Inlet dust filter *– Protects the pump against abrasive dust.*

Inlet desiccant trap *– Use when pumping limited quantities of water vapour at high pumping speeds to a low vapour pressure.*

Inlet chemical trap *– Protects the pump against chemically active gases.*

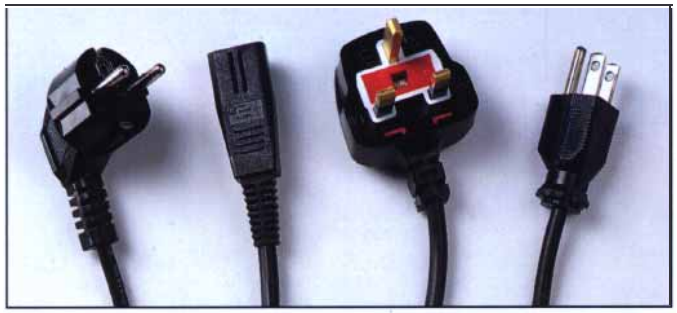
Solenoid operated gas-ballast valve *– Provides automatic onloff control of the gas-ballast and isolates the gas-ballast inlet when the pump is switched off.*

Foreline trap *– Use on a clean pumping system to prevent back-migration of pump-oil vapour into the vacuum system.*

A comprehensive range of inlet, exhaust and remote control accessories is available.

Outlet mist filter *– Separates and traps oil droplets in the pump outlet to prevent oil mist discharge.*

Gas-ballast adaptor *– Fit the gas-ballast adaptor in place of the gas-ballast control on the pump. The adaptor enables the fitting of a solenoid operated gas-ballast valve or a controlled supply of inert gas to the pump.*

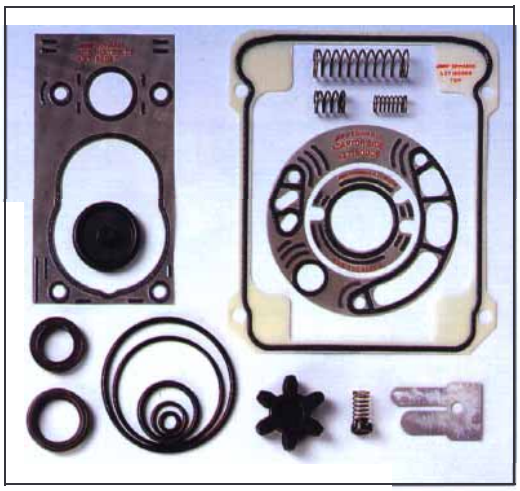


Edwards offers a wide choice of power lead terminations.

Gravity oil drain kit *– The oil drain kit fits between the drain port of the outlet mist filter and the oil filler-plug on the pump. Oil returns from the mist filter to the pump when the pump is switched off or when the gas-ballast control is closed (in the 'O' position).*

Vibration isolators *– Reduce vibration when the pump is floor or frame mounted and help to reduce strain on connections when the mounting area is uneven.*

Oil drain extension *– Fits the oil drain port on the pump to make oil draining easier.*



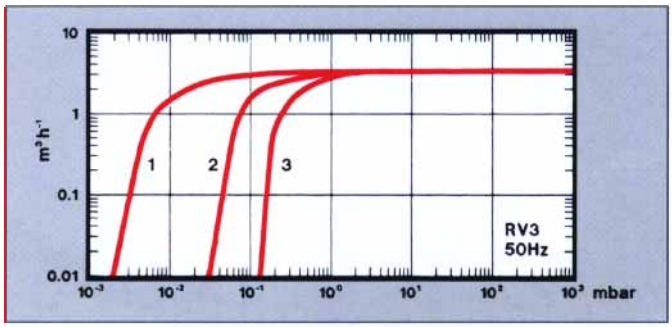
Servicing is simple with Edwards kits of guaranteed parts.

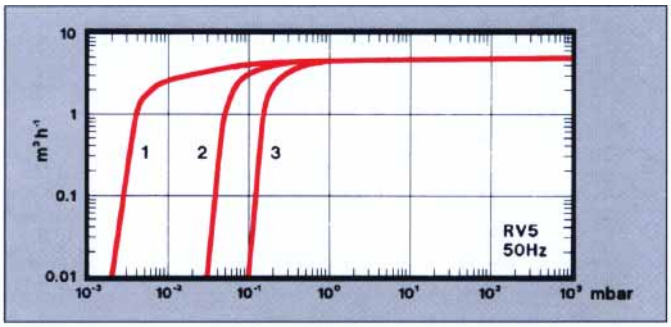
Technical Data.

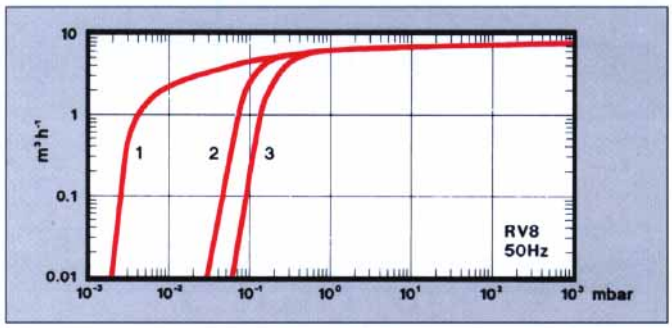
The Edwards RV pump conforms to the following standards:- IEC 1010; IP44; CSA; CE; manufacturing unit certified to ISO9001 (BS5750).

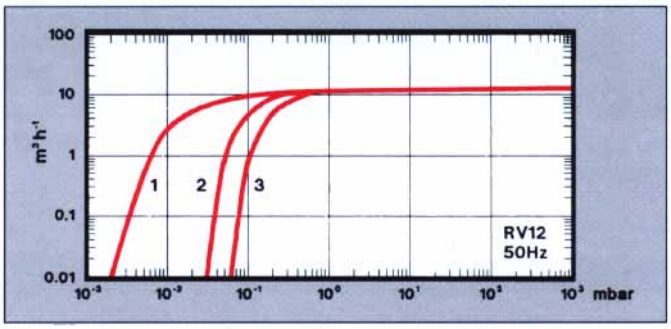
			RV3	RV5	RV8	RV12
Displacement (swept volume) m^3h^{-1}						
	50Hz		3.7	5.8	9.7	14.2
	60Hz		4.5	7.0	11.7	17.0
Speed (Pneurop) m^3h^{-1}						
	50Hz		3.3	5.1	8.5	12.0
	60Hz		3.9	6.2	10.0	14.2
Ultimate vacuum (total pressure) mbar – high vacuum mode						
	gas ballast 0		$2x10^{-3}$	$2x10^{-3}$	$2x10^{-3}$	$2x10^{-3}$
	gas ballast I		$3x10^{-2}$	$3x10^{-2}$	$3x10^{-2}$	$3x10^{-2}$
	gas ballast II		$1.2x10^{-1}$	$1x10^{-1}$	$6x10^{-2}$	$6x10^{-2}$
Ultimate vacuum (total pressure) mbar – high throughput mode						
	gas ballast 0		$3x10^{-2}$	$3x10^{-2}$	$3x10^{-2}$	$3x10^{-2}$
	gas ballast I		$6x10^{-2}$	$6x10^{-2}$	$4x10^{-2}$	$4x10^{-2}$
	gas ballast II		$1.2x10^{-1}$	$1x10^{-1}$	$6x10^{-2}$	$6x10^{-2}$
Ultimate vacuum (partial pressure) mbar – high vacuum mode						
	gas ballast 0		10^{-4}	10^{-4}	10^{-4}	10^{-4}
Maximum water vapour pumping rate kgh^{-1} lph (3ph)						
	gas ballast I		0.06 (0.04)	0.06 (0.04)	0.06 (0.04)	0.06 (0.04)
	gas ballast II		0.22 (0.12)	0.22 (0.12)	0.22 (0.2)	0.29 (0.25)
Maximum permitted pressure at outlet – bar gauge						
			I	I		
Inlet connection			NW25	NW25	NW25	NW25
Outlet connection			NW25	NW25	NW25	NW25
Max. weight kg (without oil)			21.6	21.5	26.0	26.3
Noise dB (A)	50Hz I ph		48	48	48	48
Motor power (W)	50Hz		250	250	450	450
Motor power (W)	60Hz		300	300	550	550
Oil capacity (litre)	max.		0.7	0.7	0.75	1.0
Oil capacity (litre)	min.		0.42	0.42	0.45	0.65
Edwards oil			see ordering information			

Technical Data.







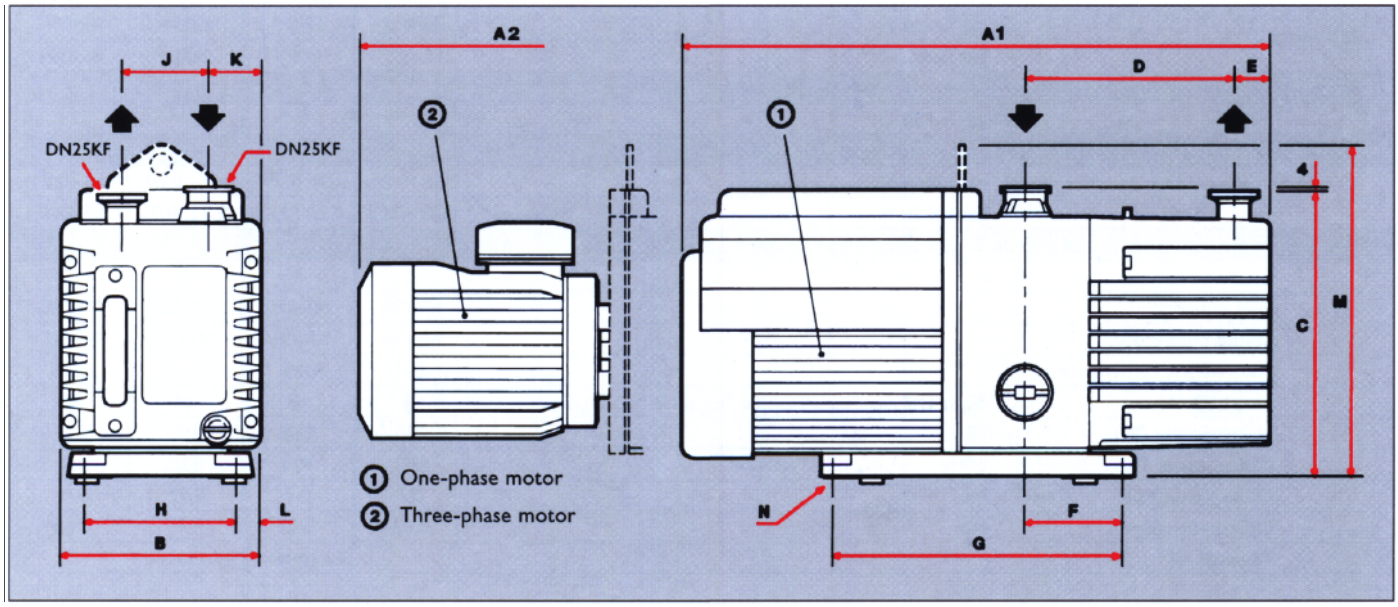


I. High Vacuum ultimate total pressure, GB=O 2. High Throughput ultimate total pressure, GB=O also 2. High Vacuum ultimate total pressure, GB=I 3. HV and HT ultimate total pressure, GB=II

Pumping speed (totalpressure)

PUMP	A	B	c	D	E	F	G	I	H	J	K	L	m	N
RV3	430	158	221	127	29	78	230	120		69	42	19	-	09
RV5	430	158	221	127	29	78	230	120		69	42	I9	-	09
RV8	470	158	221	I61	35	78	230	120		69	42	I9	261	09
RV12	490	158	221	I81	35	78	230	120		69	42	I9	261	09

Dimensions (mm)



Ordering Information.

	Description	Ordering Number	
RV Pumps	RV Series rotary vane pump (Requires oil)	115/220-240V,1ph,50/60Hz	200~230/380-460V,3ph,50/60Hz
	Model RV3 (Requires line cord set for I ph pump)	A652-01-903	A652-01-905
	Model RV5 (Requires line cord set for Iph pump)	A653-01-903	A653-01-905
	Model RV8 (Requires line cord set for I ph pump)	A654-01-903	A654-01-905
	Model RV12 (Requires line cord set for 1ph pump)	A655-01-903	A655-01-905
pH line cord set	Line cord set, 2m long, IEC socket one end, other end terminating in:		
	Three pin plug UK	A505-05-000	
	N. Europe plug	A505-06-000	
	USA/Japan plug	A505-07-000	
	No plug	A505-08-000	
Oil	Ultragrade 19, I litre	HIIO-25-015	
Inlet accessories	ITO20K condensate catchpot	A441-I0-000	
	ITD20K water vapour trap (desiccant)	A445-I0-000	
	ITC2OK chemical trap	A444-15-000	
	ITF2OK dust trap	A442-15-000	
	FL20K oil vapour (foreline) trap	AI33-05-000	
Outlet access.	EMFI0 oil mist filter (RV3/5/8)	A462-26-000	
	EMF20 oil mist filter (RVI2)	A462-29-000	
	Mist filter gravity drain kit	A505-0I-000	
Other accessories	Vibration isolators (set of 4)	A248-01-404	
	Oil drain extention	A505-03-000	
	EBV20 solenoid operated gas ballast valve		
	220-24OV, I ph, 50/60Hz	A500-06-930	
	IIO-I2OV, I ph, 50/60Hz	A500-06-984	
	Gas ballast adaptor	A505-02-000	
	NW25 to I in. i.Ø tube (stainless steel)	CI05-04-225	
	NW25 to I5 mm o.Ø tube (aluminium)	CI05-04-226	
	NW25 clamping ring (stainless steel)	CI05-14-401	
	Centring ring (polymer/nitrile)	CI05-I4-393	
Spares	Clean and overhaul kit (RV3/5/8/12)	A652-01-131	
	Blade kit (RV3)	A652-01-130	
	Blade kit (RV5)	A653-01-130	
	Blade kit (RV8)	A654-01-130	
	Blade kit (RVI2)	A655-0I-I30	

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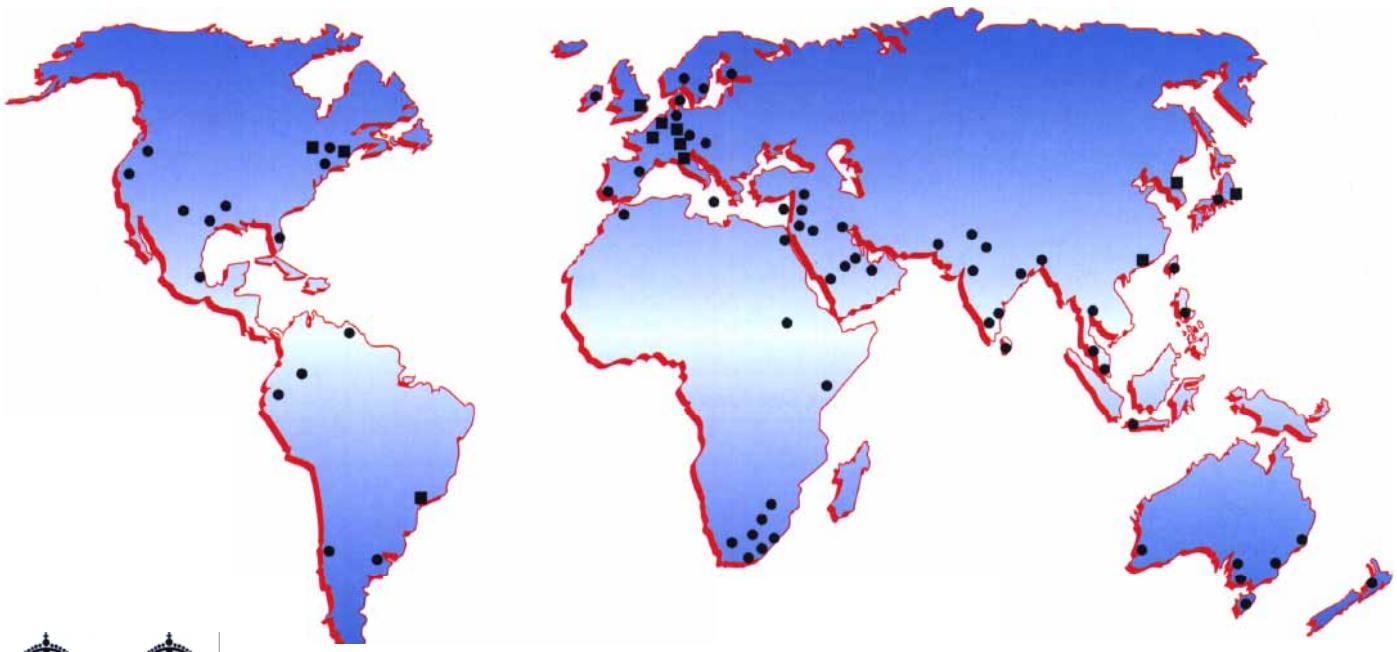

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Publication No: 10-A652-00-895