Your best way to vacuum with condensable and corrosive vapours

Chemistry Hybrid Pump
RC 6
Your best way to vacuum with condensable and corrosive vapours:

Chemistry Hybrid Pump RC 6

Combines the advantages of a chemistry diaphragm pump and the ultimate vacuum of a two-stage rotary vane pump ($2 \times 10^{-3}$ mbar)

**Typical applications:**
Freeze drying, distillation, drying ovens, rotary evaporators, concentrators, etc.

**Anti-corrosion design combination** of a two-stage rotary vane pump and a chemistry diaphragm pump built of corrosion-resistant materials

**Vacuum monitor** for the operating vacuum inside the oil case. Also serves as maintenance alert for diaphragm pump.

**New motor** with electronic startup; for reduced current draw

**Bi-material chemistry diaphragm pump:**
Highest mechanical and chemical stability

**Entirely new XS rotary vane pump unit:**
Whisper-quiet and easy to maintain

**Oil mist filter** with pressure relief valve at the outlet
Chemistry Hybrid Pump RC 6: Benefits at a glance

- Vacuum performance of a two-stage rotary vane pump
  high pumping speed and low ultimate vacuum (5.9 m³/h; 2 x 10⁻³ mbar)
- Corrosion attack reduced to a minimum
  when working with corrosive vapours
- Drastically reduced amount of waste oil
  through extended oil change and maintenance intervals
- Solvent recovery next to 100%
  easy and effective by means of a vapour condenser (optional) at the outlet
- Low life cycle costs
  e. g. no need for a cold trap in most cases

Solving the condensation problem – by applied thermodynamics

1. Vapour is aspirated at low pressure and ambient temperature.

2. Vapour is heated to approx. 60°C by heat exchange and compression within pump.

3. Condensation problem with "normal" rotary vane pumps:
   On the way to atmospheric pressure, the saturation vapour pressure (transition to liquid state) is reached inside the oil-filled section.
   Result: Condensation and corrosion inside the pump; contamination of the oil.

Chemistry Hybrid Pump: The diaphragm pump continuously evacuates the vapours from the oil case of the rotary vane pump. Under intended operating conditions, no condensation takes place inside the oil-filled part and, in particular, within the oil case. (Any condensation taking place inside the oil-free diaphragm pump is much less problematic.) Less condensation means less corrosion and cleaner oil for longer life. For example, in the case of acid vapours, the evacuation of the oil case to 20 mbar reduces corrosion by a factor of about 50.

Chemistry Hybrid Pump RC 6: The practical implementation

- Rotary Vane Pump
- Chemistry Diaphragm Pump

The chemistry diaphragm pump continuously evacuates the oil case and the second stage of the rotary vane pump.
Chemistry Hybrid Vacuum Pump RC 6

Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. pumping speed 50/60 Hz m³/h</td>
<td>5.9/6.9</td>
</tr>
<tr>
<td>Ultimate vacuum (partial) without gas ballast mbar</td>
<td>4 x 10⁻⁶</td>
</tr>
<tr>
<td>Ultimate vacuum (total) without gas ballast mbar</td>
<td>2 x 10⁻³</td>
</tr>
<tr>
<td>Ultimate vacuum (total) with gas ballast mbar</td>
<td>1 x 10⁻²</td>
</tr>
<tr>
<td>Water vapour tolerance mbar</td>
<td>*</td>
</tr>
<tr>
<td>Oil capacity (B-Oil) min. l</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td>max. l</td>
</tr>
<tr>
<td>Inlet connection</td>
<td>Small flange DN 16</td>
</tr>
<tr>
<td>Outlet connection</td>
<td>Hose nozzle DN 10</td>
</tr>
<tr>
<td>Motor power kW</td>
<td>0.37</td>
</tr>
<tr>
<td>Nominal rpm 50/60 Hz min⁻¹</td>
<td>1500/1800</td>
</tr>
<tr>
<td>Dimensions (L x B x H) mm</td>
<td>510 x 305 x 230</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP 40</td>
</tr>
<tr>
<td>Weight (ready for use) kg</td>
<td>24.2</td>
</tr>
</tbody>
</table>

*(Water) vapour tolerance cannot be determined according to PNEUROP, since the prescribed testing procedure is not applicable to the RC 6. Due to the reduced pressure inside the oil case, the vapour tolerance is significantly higher than with common oil-sealed rotary vane pumps.

Items supplied: Chemistry Hybrid Pump RC 6 with on/off switch, overload circuit breaker, centring and clamping ring and particulate filter for inlet, oil mist filter with pressure relief valve for outlet, PVC silencer cap for outlet, oil case vacuum monitor, mains cable, operating instructions, 0.5 l oil in bottle. Materials wetted by pumped media within the chemistry diaphragm pump: ETFE (partly carbon-fibre reinforced) and PTFE (partly carbon-fibre reinforced).

Ordering Information

- 230 V – 50–60 Hz with mains cable CEE 69 85 60
- 230 V – 50–60 Hz with mains cable CH 69 85 61
- 230 V – 50–60 Hz with mains cable UK 69 85 62
- 100–120 V – 50–60 Hz with mains cable US 69 85 63

Chemistry Vacuum Pumping Unit PC 8 / RC 6

Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacuum pump</td>
<td>Chemistry Hybrid Pump RC 6</td>
</tr>
<tr>
<td>Vacuum performance</td>
<td>see Chemistry Hybrid Pump RC 6</td>
</tr>
<tr>
<td>Dimensions (L x B x H) mm</td>
<td>510 x 380 x 430</td>
</tr>
<tr>
<td>Weight approx. kg</td>
<td>31.4</td>
</tr>
</tbody>
</table>

Items supplied: Pumping unit, completely mounted, with Chemistry Hybrid Pump RC 6, exhaust vapour condenser, condensate catchpot (1 l) on pumping unit console, on/off switch, mains cable with plug, oil, operating instructions.

Ordering Information

- 230 V – 50–60 Hz with mains cable CEE 69 85 70
- Mains cable for Vacuum Pumping Unit CH 67 60 21
- Mains cable for Vacuum Pumping Unit UK 67 60 20

Accessories

Ordering Information

- PIRANI vacuum gauge VAP 5-Set 68 28 58
- Ball valve VKE 16 (KF NW 16, stainless steel) 67 55 04
- Butterfly valve VS 16C (KF NW 16, stainless steel, FPM sealing ring) 66 50 07
- Separator AK PC 8 69 99 80
- Emission condenser EK PC 8 69 99 75
- Catchpot for PC 8 (volume: 1 l) 69 99 76
- Base module PC 8 (without pump, including emission condenser EK PC 8 and catchpot) 69 99 49

Technology for Vacuum Systems