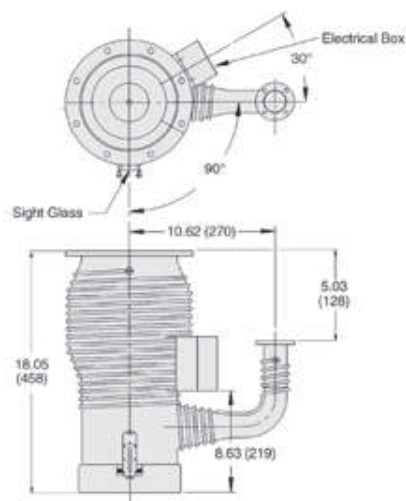


## PUMP MODELS

### ▶ Agilent VHS-4



Dimensions: inches (millimeters)

### Technical Specifications

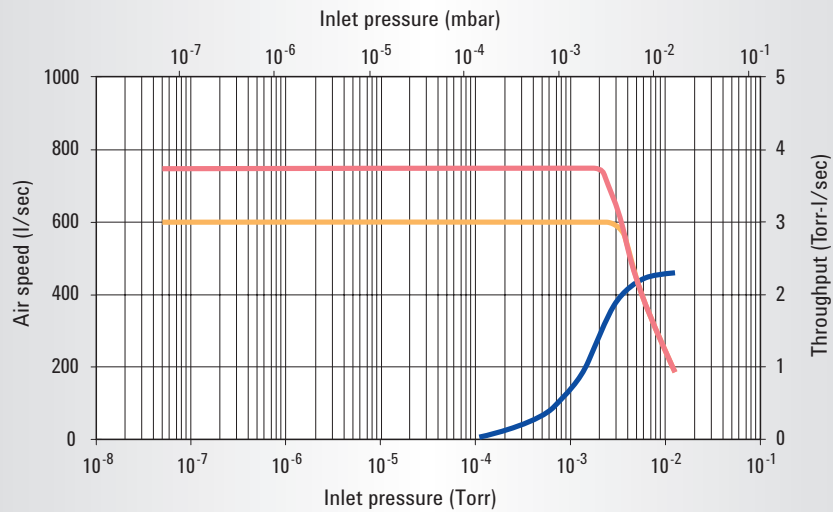
|  |  |
|--|--|
| <b>Pumping speed*, operating range</b>         | 750 l/s air, 940 l/s He/H <sub>2</sub>   |
| <b>Pumping speed*, AVS 4.1 (1963)</b>          | 1,200 l/s air  |
| <b>Maximum throughput</b>                      | 1.5 T-l/s (2.0 mbar-l/s) in operating range, 2.5 T-l/s (3.2 mbar-l/s) @ 0.01 Torr                    |
| <b>Operating range</b>                         | $2 \times 10^{-3}$ to $<5 \times 10^{-9}$ Torr ( $2.7 \times 10^{-3}$ to $<6.5 \times 10^{-9}$ mbar) |
| <b>Maximum forepressure</b>                    | No load: 0.65 Torr (0.86 mbar)<br>Full load: 0.55 Torr (0.73 mbar)                                   |
| <b>Recommended backing pump</b>                | $\geq 10$ cfm (17 m <sup>3</sup> /hr)  |
| <b>Backstreaming rate**, standard cold cap</b> | $<5 \times 10^{-4}$ mg/cm <sup>2</sup> /min  |
| <b>Warmup time</b>                             | 10 minutes   |
| <b>Cooldown time</b>                           | 10 minutes (with quick cool coil)  |
| <b>Fluid charge</b>                            | 300 cc   |
| <b>Electrical requirements</b>                 | 1 ph, 50/60 Hz, 120/208/240 VAC  |
| <b>Pump power</b>                              | 1450 watts   |
| <b>Cooling water requirements</b>              | 0.15 gpm (30 l/hr) at 60-80 °F (15-26 °C)  |
| <b>Water connections</b>                       | ½ in. FPT Tee  |

\* For an explanation of pumping speed measurements, please see page 160.

\*\* Refer to page 158 for a description of test methods.

# DIFFUSION PUMPS

VHS-4 Pumping Speed - Air/N<sub>2</sub>



— Pumping speed/Standard cold cap — Pumping speed/Extended cold cap — Throughput

## Ordering Information

| Description                  | Voltage | Weight kg (lbs) | Part Number        |          |
|------------------------------|---------|-----------------|--------------------|----------|
|                              |         |                 | Flange Type<br>ASA | ISO      |
| <b>VHS-4 Pump</b>            |         |                 |                    |          |
| VHS-4 with standard cold cap | 120 V   | 25.0 (55.0)     | 86460301           | L6256301 |
| VHS-4 with extended cold cap | 120 V   | 25.0 (55.0)     | 86460311           | L6256311 |
| VHS-4 with standard cold cap | 208 V   | 25.0 (55.0)     | 86460306           | L6256306 |
| VHS-4 with extended cold cap | 208 V   | 25.0 (55.0)     | 86460316           | L6256316 |
| VHS-4 with standard cold cap | 240 V   | 25.0 (55.0)     | 86460302           | L6256302 |
| VHS-4 with extended cold cap | 240 V   | 25.0 (55.0)     | 86460312           | L6256312 |

| Accessories  | Page | Weight kg (lbs) | Part Number |
|--|------|-----------------|-------------|
| Water-cooled baffle with ASA flanges   | 157  | 4.5 (10.0)      | F8286304    |
| Water-cooled baffle with ISO flanges   | 157  | 4.5 (10.0)      | F8286305    |
| Centering ring for ISO inlet flange, 160K  |      | 0.5 (1.0)       | IC160SV     |
| Centering ring for ISO foreline flange, KF40   |      | 0.2 (0.5)       | KC40SV      |
| Santovac 5 diffusion pump fluid, 500 cc  | 156  | 1.1 (2.5)       | 695405005   |
| Installation and Operation Manual<br>(download from <a href="http://www.agilent.com/chem/vacuum">www.agilent.com/chem/vacuum</a> ) |      |                 | 699901021   |

### Replacement Parts (one heater required per pump)

|  |     |           |             |
|--|-----|-----------|-------------|
| 1450 W, 120 V heater   |     | 0.5 (1.0) | 647304205   |
| 1450 W, 208 V heater   |     | 0.5 (1.0) | 647304210   |
| 1450 W, 240 V heater   |     | 0.5 (1.0) | 647304250   |
| Heater clamp (one required per pump)   |     | 1.0 (2.0) | 88164301    |
| VHS-4 heater wire, 10 AWG, 24 inches (3 per pump required)   |     | 0.5 (0.2) | X3901-68001 |
| Replacement o-ring kit (kit contains: 3 inlet flange o-rings (butyl 2-258),<br>10 fill and drain o-rings (Viton 2-113), sight glass o-ring and gasket) |     | 0.5 (1.0) | K0377183    |
| Thermal switch (set at 300 °F – 147 °C)  |     | 0.5 (1.0) | 642906025   |
| Extended cold cap  | 157 | 0.5 (1.0) | F6898301    |
| Sight glass repair kit   |     |           | L8908301    |

**NOTE**

- Inlet flange 4 in. ASA, foreline flange KF40
- Inlet flange ISO 160K, foreline flange ISO KF40
- Pumps with ISO flanges do not include required centering rings