VerusLab Lubricated Rotary Vane Laboratory Vacuum
Duplex Vertical Mount
Basic (PLC) Control System
1.5 - 2 HP

SPECIFICATION

Vacuum System
The Lubricated Rotary Vane vacuum package features a common base with single point connections for the electrical panel, intake, and discharge. Each pump and the receiver are connected to a common intake manifold. The system is capable for transport through a standard 34.5” doorway. Designed and manufactured with ISO 13485 processes, each system is completely tested before shipment and includes:

• Two oil-sealed rotary vane vacuum pumps with two motors
• Integral pre-wired control panel
• Vertical air receiver with full-size three-valve bypass system sized for appropriate demand

Vacuum Pump
Each pump is a direct driven, oil-sealed rotary vane vacuum pump, with an end (ultimate) vacuum of 29.3° Hg. Each pump is completely air-cooled with no water requirements. Each pump contains:

• Integral, fully recirculating oil supply to provide lubrication
• An automotive-type, spin-on oil filter for oil filtration
• High-discharge temperature switch
• Oil drain valve assembly with temperature gauge
• Each pump is mounted on vibration isolators

The oil separation system is integral and consists of the following:

• No less than three stages of internally installed oil and smoke eliminators through which the exhaust gas stream must pass
• Bulk separation, oil mist elimination, and smoke elimination
• Capability to remove 99.9+% percent of all oil and smoke particles from the exhaust gas stream

Each vacuum pump includes the following:

• Built-in, anti-suck-back valve mounted at the pump inlet
• Three non-metallic, non-asbestos vanes, each having a minimum life of 30,000 hours
• 5 micron inlet filter for removal of particulates
• Flexible connector and isolation valve

Vacuum Pump Drive
The pump shall be direct driven. Torque is transmitted from the motor to the pump through a shaft coupling.

Vacuum Pump Motor and Lag Alarm
Motors are continuous duty, NEMA rated, C-face, foot-mounted, TEFC, 1800 RPM, available in 60 hertz (208V, 230V, or 460V) and 50 hertz (380V), 3-phase electrical service. The lead vacuum pump is factory set to alternate every 10 hours but it is field adjustable between 4 to 24 hours.

This vacuum pump system comes standard with a lag alarm that can be enabled or disabled in the field.

Vacuum Receiver
The vacuum receiver is ASME Code stamped, and rated for a minimum 150 PSIG design pressure. The receiver has a full-size three-valve bypass system to allow for draining of the receiver without interrupting the vacuum service. A manual drain is provided on the receiver.

Automatic Purge System
The vacuum pump is equipped with an automatic purge system to flush any gases from the pump to prevent condensation as the pump cools. The purge system incorporates a 24V electric controlled automatic isolation valve, and controls to operate an adjustable 1 to 15-minute shutdown purge with factory setting at 7 minutes. This vacuum pump system requires no air supply.

Intake Piping
Each vacuum pump has a factory piped intake with integral flex connector, isolation valve with 24V electric actuator, and check valve. Interconnecting piping consists of powder-coated steel tubing and flanges.

Basic Control System
The basic control system is U.L. labeled. The control system provides automatic sequence of pumps activating an optional lag alarm. A programmable logic controller (PLC) controls the automatic but adjustable run timer alternation of vacuum pumps based on first-on/first-off principle with provision for simultaneous operation if required. Automatic activation of reserve unit, if required, will activate an audible alarm as well as a visual alarm on the control panel if the lag alarm option is enabled.

Additional components include:
• NEMA 12 control panel enclosure
• Circuit breaker disconnects for each motor with external operators
• Full voltage motor starters with overload protection
• 24V control circuit
• Visual/audible reserve unit alarm with isolated contacts for remote alarm, visual alarms for high discharge temperature shutdown with isolated contacts for remote alarm.
• Hand-Off-Auto lighted selected switches
• Runtime hourmeters
• Vacuum gauge
Standard Configuration
1.5 - 2 HP Duplex Lube Vane

1. Full-size 3-valve receiver bypass.
2. Oil sight glass and filler plug with ease of access for annual oil changes.
3. Isolation valve with 24 V electric actuator.
4. Flex connectors on vacuum inlet to isolate pump vibration from facility pipeline.
5. 30-gallon vertical receiver.
6. Individual 5 micron air inlet filter per vacuum pump to protect pump from incoming particulates.
7. Automatic Purge System.
8. Through the door disconnects for pumps for safety during service.
Standard Configuration
1.5 - 2 HP Duplex Lube Vane

Notes:
- Discharge muffler ships loose
- Allow 36 inches in front of control panel for maintenance and ventilation, all other sides require 24 inches of clearance.

Vacuum System Specifications\(^1\) @ Sea Level

<table>
<thead>
<tr>
<th>System Model No.</th>
<th>Hz</th>
<th>HP</th>
<th>Nominal Pumping Speed (acfm/pump)</th>
<th>Capacity(^2) @ 19(^3) HgV (scfm/system)</th>
<th>Capacity(^2) @ 25(^3) HgV (scfm/system)</th>
<th>End Pressure inch of HgV (Torr)</th>
<th>System BTU/Hr</th>
<th>db(A) per Pump</th>
<th>System Weight (lb)</th>
<th>System FLA</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVL01D-030V-BD</td>
<td>50</td>
<td>1.5</td>
<td>15</td>
<td>12</td>
<td>4</td>
<td>29.3 (15)</td>
<td>6,108</td>
<td>70</td>
<td>630</td>
<td>N/A</td>
</tr>
<tr>
<td>LVL01D-030V-BD</td>
<td>60</td>
<td>1.5</td>
<td>18</td>
<td>14</td>
<td>6</td>
<td>29.3 (15)</td>
<td>6,108</td>
<td>70</td>
<td>630</td>
<td>10.4</td>
</tr>
<tr>
<td>LVL02D-030V-BD</td>
<td>50</td>
<td>2</td>
<td>23</td>
<td>18</td>
<td>6</td>
<td>29.3 (15)</td>
<td>8,144</td>
<td>70</td>
<td>658</td>
<td>N/A</td>
</tr>
<tr>
<td>LVL02D-030V-BD</td>
<td>60</td>
<td>2</td>
<td>28</td>
<td>22</td>
<td>8</td>
<td>29.3 (15)</td>
<td>8,144</td>
<td>70</td>
<td>658</td>
<td>12.6</td>
</tr>
</tbody>
</table>

Notes:
1. Normal operating conditions at a maximum ambient of (41°C) 105°F. Consult factory for higher ambient conditions.
2. Capacity measured at reference conditions of absolute inlet pressure 1 bar (14.5 psi), intake air temperature 20°C (68°F).
   System capacities include two pumps running.