Oil Diffusion Pumps
DIJ Series
Most innovative design for best performance and efficiency
The new DIJ oil diffusion pump series

Oil diffusion pumps from Leybold are ideally suited for industrial high vacuum applications. They excel with superior vacuum performance and are reliable components in medium vacuum and high vacuum systems with a fit and form retrofit capability.

DIJ oil diffusion pumps are wear-free high vacuum pumps without wearing and moving components. The pumping effect of these pumps is created through the diffusion of gases into an oil vapor stream.

**DIJ benefits at a glance**

- **Most innovative heating concept**
  - utilizing newly developed heater cartridges with large heat exchange surface for an optimized energy transfer into the oil. Effective temperature monitoring protects the system against overheating. The insulated heater area ensures minimum energy losses.
  - Minimum stress and longest lifetime for heaters and oil
  - Highest uptime
  - Flanged heaters, easy to exchange

- **Choice of flange variants**
  - for improved connectivity
  - ANSI / Inch flanges (with O-ring)
  - ISO-F or ISO-K flanges (with centering ring)

- **Unique baffle design**
  - Proven cold cap baffle at the inlet to minimize oil backstreaming
  - Innovative, new foreline baffle for reduced oil losses

- **Various electrical connection opportunities**
  - to meet customers requirements
  - Three different connection types available
    - Basic – simplified OEM connection with male plug
    - Standard – with circuit breaker box
    - ECO, with switchbox and energy control unit

- **Five stage system design**
  - provides excellent performance data
  - Four diffusion pump stages for highest suction speed at low pressures and lowest final pressure
  - One ejector stage for high forevacuum stability and stable throughput at pressures >10⁻³ mbar

**Typical Applications**

- Vacuum coating
- Metallurgy
- Vacuum furnaces
- Vacuum drying
- Research and development
Improved design features
for your vacuum requirements

Two diagrams and a table show the performance of a DIJ Oil Diffusion Pump.

**DIJ Oil Diffusion Pump Advantages**
- Prolonged maintenance intervals, non-wearing, high safety standard.
- High and stable throughput at pressures >10⁻³ mbar
- High forevacuum tolerance
- High pumping speed
- Safe and economical
- CE compliant electronics supplied
- No wear caused by moving parts
- Simple to operate
- Maintenance friendly design for rapid and simple replacement of heating elements
- Wide range of accessories available
- Innovative ECO Energy control unit (ROI < 2 years)

**Power Efficiency Control**

**Energy savings up to 30% without power loss**
- Oil diffusion pumps require a certain minimum oil temperature for operation. Commonly, 100% of the installed heating power is constantly utilized.
- The innovative Leybold power efficiency control unit for diffusion pumps cuts power consumption by up to 30% since the supplied power is significantly reduced after the pump has attained its operating temperature. Further savings result from the utilization of the standby mode at a reduced temperature.

- Cost reductions through energy-savings (up to 30%)
- Increased service life of oil and heating cartridges
- Excellent operating convenience and simple use
- Fast ROI (< 2 years)
- Simple, visual monitoring of the parameters
- PLC driven
- USB Interface and Ethernet

![Diagram showing pumping speed characteristics and throughput of a DIJ 20 oil diffusion pump](image-url)

**Graphs**

- Intake Pressure (mbar) vs. Suction speed N₂, Suction speed Ar, Throughput N₂, Throughput Ar

100% power demand during the warm-up phase
Approx. 70% power demand after attaining the defined oil temperature
LEYBONOL pump fluid for oil diffusion pumps in any application

The matching pump fluid influences the performance and pumping speed of oil diffusion pumps. Our LEYBONOL pumping fluids fulfil the requirements for working in a high vacuum:

- High-quality, reliable fluids for a long service life of oil and pump
- Excellent vacuum performance data
- ECO (Energy control unit) compliant

The product line of suitable pump fluids and vacuum oils for your application are described in our full line catalog. We gladly provide personal advice for the selection of the suitable pump fluid. Please contact us.

Technical Data *

<table>
<thead>
<tr>
<th>Oil diffusion pumps</th>
<th>DIJ 20</th>
<th>DIJ 35</th>
</tr>
</thead>
<tbody>
<tr>
<td>High vacuum connection</td>
<td>ANSI/ISO</td>
<td>20</td>
</tr>
<tr>
<td>High vacuum connection</td>
<td>ANSI</td>
<td>4</td>
</tr>
<tr>
<td>High vacuum connection</td>
<td>DN ISO-K/ISO-F</td>
<td>630</td>
</tr>
<tr>
<td>High vacuum connection</td>
<td>DN ISO-K</td>
<td>160</td>
</tr>
<tr>
<td>Forevacuum connection</td>
<td>DN ISO-K</td>
<td>630</td>
</tr>
<tr>
<td>Forevacuum connection</td>
<td>DN ISO-K</td>
<td>160</td>
</tr>
<tr>
<td>Nominal pumping speed (l/s)</td>
<td></td>
<td>10000</td>
</tr>
<tr>
<td>Ultimate total pressure (mbar)</td>
<td></td>
<td>&lt; 5 \times 10^{-7}</td>
</tr>
<tr>
<td>Ultimate backing pressure (mbar)</td>
<td></td>
<td>&lt; 5 \times 10^{-1}</td>
</tr>
<tr>
<td>Operating range (mbar)</td>
<td></td>
<td>1 \times 10^{-2} - 5 \times 10^{-7}</td>
</tr>
<tr>
<td>Gas throughput (l/s)</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td></td>
<td>220</td>
</tr>
<tr>
<td>Cooling water consumption (l/h)</td>
<td></td>
<td>620</td>
</tr>
<tr>
<td>Oil filling LEYBONOL (l)</td>
<td></td>
<td>5.5 / 7.0</td>
</tr>
<tr>
<td>Number of heating cartridges</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Heating power (kW)</td>
<td></td>
<td>10.8</td>
</tr>
</tbody>
</table>

- in accordance with ISO/R 1000, DIN 28 400 with LVO 500 as the pump fluid

P/N *

<table>
<thead>
<tr>
<th>Oil diffusion pumps</th>
<th>P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIJ diffusion pump, ANSI flange versions</td>
<td>Vxxx</td>
</tr>
<tr>
<td>DIJ diffusion pump, DN-ISO flange versions</td>
<td>Vxxx</td>
</tr>
</tbody>
</table>

Accessories

- Astrotorus baffle
- Overtemperature protection switch
- Contact thermometer
- Resistance thermometer (Pt 100)
- Valves

For detailed information, please refer to our general catalog.

Pump fluids/oils

<table>
<thead>
<tr>
<th>Pump fluids/oils</th>
<th>P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral oil base, for standard applications:</td>
<td></td>
</tr>
<tr>
<td>LEYBONOL LVO 500</td>
<td>L500 01</td>
</tr>
<tr>
<td>LEYBONOL LVO 510</td>
<td>L510 01</td>
</tr>
<tr>
<td>LEYBONOL LVO 520</td>
<td>L520 01</td>
</tr>
<tr>
<td>LEYBONOL LVO 530</td>
<td>L530 01</td>
</tr>
</tbody>
</table>

Silicone oil base, for processes with aggressive media or oxygen:

- LEYBONOL LVO 520
- LEYBONOL LVO 530

For detailed information, please contact us. Visit our webshop www.leyboldproducts.com.

LEYBOLD GmbH
Bonner Str. 498 · D-50968 Köln
T +49 (0) 221-347-0
F +49 (0) 221-347-1250
info@leybold.com
www.leybold.com