High Vacuum Angle Valve
DN 16–50 ISO-KF
- with manual actuator M
- aluminum version AL
- stainless steel version VA

High Vacuum Inline Valve BIV
DN 16–50 ISO-KF
- with manual actuator M
- aluminum version AL
- stainless steel version VA

Part numbers

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>215313</td>
<td>215377</td>
<td>215381</td>
<td>215386</td>
<td>215389</td>
</tr>
<tr>
<td>215374</td>
<td>215378</td>
<td>215383</td>
<td>215377</td>
<td>215390</td>
</tr>
<tr>
<td>215375</td>
<td>215379</td>
<td>215385</td>
<td>215387</td>
<td></td>
</tr>
<tr>
<td>215376</td>
<td></td>
<td>215385</td>
<td>215388</td>
<td>215384V001</td>
</tr>
</tbody>
</table>
Imprint

Manufacturer  Leybold GmbH, D-50968 Cologne, Germany
Website:  www.leybold.com
Phone:  +49 (0) 221 347 0
Fax:  +49 (0) 221 347 1250
Email:  info@leybold.com

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Original document  The German language version of this user manual is the original document. All other languages are a translation of the original user manual. In case of deviations the information within the original user manual is valid.
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1 Description of product

1.1 Important information

This symbol points to a very important statement that requires particular attention.

Example:
Leybold disclaims any liability for damages resulting from inappropriate packaging.

1.2 Identification of product

The fabrication number and part number are fixed on the product directly or by means of an identification plate.

Figure 1-1

In all communications with Leybold, please specify the information on the product nameplate.
### 1.3 Validity of the user manual

This document applies to products with the part numbers below-mentioned.

**List of part numbers**

<table>
<thead>
<tr>
<th>Type</th>
<th>Part number</th>
<th>Type</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAV . . M AL</td>
<td></td>
<td>BAV . . M LPDM</td>
<td></td>
</tr>
<tr>
<td>ISO KF 16</td>
<td>215375</td>
<td>ISO KF 16</td>
<td>215384V01</td>
</tr>
<tr>
<td>ISO KF 25</td>
<td>215376</td>
<td>ISO KF 25</td>
<td>-</td>
</tr>
<tr>
<td>ISO KF 40</td>
<td>215377</td>
<td>ISO KF 40</td>
<td>-</td>
</tr>
<tr>
<td>ISO KF 50</td>
<td>215378</td>
<td>ISO KF 50</td>
<td>-</td>
</tr>
<tr>
<td>BAV . . M VA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISO KF 16</td>
<td>215383</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISO KF 25</td>
<td>215385</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISO KF 40</td>
<td>215386</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISO KF 50</td>
<td>215387</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIV . . M AL</td>
<td></td>
<td>BIV . . M VA</td>
<td></td>
</tr>
<tr>
<td>ISO KF 16</td>
<td>215313</td>
<td>ISO KF 16</td>
<td>215379</td>
</tr>
<tr>
<td>ISO KF 25</td>
<td>215388</td>
<td>ISO KF 25</td>
<td>215374</td>
</tr>
<tr>
<td>ISO KF 40</td>
<td>215389</td>
<td>ISO KF 40</td>
<td>215381</td>
</tr>
<tr>
<td>ISO KF 50</td>
<td>215390</td>
<td>ISO KF 50</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 1-1
1.4 Technical data

Standard valves see chapter «1.3 Validity of the user manual».

For special valves which are not listed in chapter «1.3 Validity of the user manual» the product data sheet is applicable in addition.

Material

<table>
<thead>
<tr>
<th>Item</th>
<th>Aluminum version</th>
<th>Stainless steel version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>Aluminium (AlMgSi)</td>
<td>Stainless steel (AISI 304)</td>
</tr>
<tr>
<td>Actuator</td>
<td>Aluminium</td>
<td>Aluminium</td>
</tr>
<tr>
<td>Valve plate</td>
<td>AISI 316L</td>
<td>AISI 316L</td>
</tr>
<tr>
<td>Bellows</td>
<td>AISI 316L (1.4404, 1.4435)</td>
<td>AISI 316L (1.4404)</td>
</tr>
<tr>
<td></td>
<td>AISI 316 Ti (1.4571)</td>
<td>AISI 316 Ti (1.4571)</td>
</tr>
<tr>
<td>Bonnet seal, plate seal</td>
<td>Viton® ¹</td>
<td>Viton®</td>
</tr>
<tr>
<td>Handwheel</td>
<td>Plastic</td>
<td>Plastic</td>
</tr>
<tr>
<td>(Plug-in component.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Removal by pulling)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1-2

¹ EPDM, for valve part number 215384V001
General technical data

<table>
<thead>
<tr>
<th>Type / Item</th>
<th>Value / description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leak rate [mbar l/s]</strong></td>
<td>≤ 1 · 10⁻⁹</td>
</tr>
<tr>
<td><strong>Pressure range: valve open [mbar], absolute</strong></td>
<td>1 · 10⁻⁸ to 5000</td>
</tr>
<tr>
<td><strong>Differential pressure on the plate [bar]</strong></td>
<td></td>
</tr>
<tr>
<td>In opening direction ²</td>
<td>≤ 5</td>
</tr>
<tr>
<td>In closing direction ¹</td>
<td>≤ 5</td>
</tr>
<tr>
<td><strong>Differential pressure at opening [bar]</strong></td>
<td>≤ 2 in either direction</td>
</tr>
<tr>
<td><strong>Weight [kg]</strong></td>
<td></td>
</tr>
<tr>
<td>Angle valve: aluminum</td>
<td>0.24 0.36 0.92 1.34</td>
</tr>
<tr>
<td>Angle valve: stainless steel</td>
<td>0.3 0.47 1.08 1.52</td>
</tr>
<tr>
<td>Inline valve: aluminum</td>
<td>0.32 0.49 1.3 2.19</td>
</tr>
<tr>
<td>Inline valve: stainless steel</td>
<td>0.74 0.47 1.16 –</td>
</tr>
<tr>
<td><strong>Molecular flow conductance [l/s]</strong></td>
<td>5 14 45 80</td>
</tr>
<tr>
<td><strong>Mounting position</strong></td>
<td>any</td>
</tr>
<tr>
<td><strong>Admissible temperature [°C]</strong></td>
<td></td>
</tr>
<tr>
<td>Valve body aluminium</td>
<td>0 to 120</td>
</tr>
<tr>
<td>Valve body stainless steel</td>
<td>0 to 150</td>
</tr>
<tr>
<td>Handwheel</td>
<td>0 to 120</td>
</tr>
<tr>
<td><strong>Cycles until first service</strong></td>
<td>20 000</td>
</tr>
<tr>
<td>at 80°C max., differential pressure1 bar max.</td>
<td></td>
</tr>
</tbody>
</table>

Table 1-3

² see «Figure 3-1»
**DESCRIPTION OF PRODUCT**

**Drawings / Dimensions**

**Angle valve: aluminum and stainless steel**

<table>
<thead>
<tr>
<th>Pos.</th>
<th>16</th>
<th>25</th>
<th>40</th>
<th>50</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>40</td>
<td>50</td>
<td>65</td>
<td>70</td>
<td>mm</td>
</tr>
<tr>
<td>B</td>
<td>40</td>
<td>48</td>
<td>65</td>
<td>77</td>
<td>mm</td>
</tr>
<tr>
<td>D</td>
<td>16</td>
<td>25</td>
<td>40</td>
<td>50</td>
<td>mm</td>
</tr>
<tr>
<td>L</td>
<td>64.9</td>
<td>60.9</td>
<td>94.3</td>
<td>101.1</td>
<td>mm</td>
</tr>
<tr>
<td>L1</td>
<td>67.4</td>
<td>64.3</td>
<td>97.3</td>
<td>104.1</td>
<td>mm</td>
</tr>
<tr>
<td>Q</td>
<td>46</td>
<td>44</td>
<td>73.5</td>
<td>85.5</td>
<td>mm</td>
</tr>
<tr>
<td>V</td>
<td>40</td>
<td>40</td>
<td>60</td>
<td>60</td>
<td>mm</td>
</tr>
<tr>
<td>Z(^1)</td>
<td>3.6</td>
<td>4.7</td>
<td>7.9</td>
<td>9.3</td>
<td>mm</td>
</tr>
<tr>
<td>Gate stroke</td>
<td>6.5</td>
<td>8.5</td>
<td>13.5</td>
<td>14.5</td>
<td>mm</td>
</tr>
</tbody>
</table>

\(^1\) Longer gate stroke due to transmission

L = aluminum version
L1 = stainless steel version

- ▼ Valve seat side
- ▲ Required for dismantling
- ⭐ Mechanical position indication
- ◇ Leak detection slot

**Figure 1-2**

**Inline valve: aluminum and stainless steel**

<table>
<thead>
<tr>
<th>Pos.</th>
<th>16</th>
<th>25</th>
<th>40</th>
<th>50</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>80</td>
<td>100</td>
<td>130</td>
<td>178</td>
<td>mm</td>
</tr>
<tr>
<td>B</td>
<td>40</td>
<td>48</td>
<td>65</td>
<td>77</td>
<td>mm</td>
</tr>
<tr>
<td>D</td>
<td>16</td>
<td>25</td>
<td>40</td>
<td>50</td>
<td>mm</td>
</tr>
<tr>
<td>L</td>
<td>90.6</td>
<td>101</td>
<td>143.5</td>
<td>167.2</td>
<td>mm</td>
</tr>
<tr>
<td>L1</td>
<td>92.7</td>
<td>105.8</td>
<td>152.3</td>
<td>169.1</td>
<td>mm</td>
</tr>
<tr>
<td>Q</td>
<td>46</td>
<td>44</td>
<td>73.5</td>
<td>85.5</td>
<td>mm</td>
</tr>
<tr>
<td>V</td>
<td>40</td>
<td>40</td>
<td>60</td>
<td>60</td>
<td>mm</td>
</tr>
<tr>
<td>Z(^1)</td>
<td>3.6</td>
<td>4.7</td>
<td>7.9</td>
<td>9.3</td>
<td>mm</td>
</tr>
<tr>
<td>Gate stroke</td>
<td>6.5</td>
<td>8.5</td>
<td>13.5</td>
<td>14.5</td>
<td>mm</td>
</tr>
</tbody>
</table>

\(^1\) Longer gate stroke due to transmission

L = aluminum version
L1 = stainless steel version

- ▼ Valve seat side
- ▲ Required for dismantling
- ⭐ Mechanical position indication
- ◇ Leak detection slot

**Figure 1-3**
1.5 **Components delivered with the valve**

Protective covers on both flanges.

The original document of this user manual in German language is also enclosed.

1.6 **Warranty**

Leybold assumes no liability if the end-user or third parties:
- disregard the information in this document
- use the product in a non-conforming manner
- make any kind of interventions (modifications, alterations etc.) on the product
- use the product with accessories, options, and add-ons not listed in the corresponding product documentation.

Failures due to contamination or wear and tear, as well as expendable parts (e.g. seals), are not covered by the warranty.

Improperly accomplished maintenance work may reduce the safety, lifetime and performance of the product and lead to refusal of warranty claims.

maintenance work not described in this user manual may only be carried out by the Leybold service staff or by specialists trained and authorized by Leybold.
2 Safety

2.1 Compulsory reading material

Read this chapter prior to performing any work with or on the product. It contains important information that is significant for your own personal safety. This chapter must have been read and understood by all persons who perform any kind of work with or on the product during any stage of its serviceable life.

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of knowledge</td>
</tr>
<tr>
<td>Failing to read this manual may result in property damage.</td>
</tr>
<tr>
<td>Firstly, read manual.</td>
</tr>
</tbody>
</table>

This user manual is an integral part of a comprehensive documentation belonging to a complete technical system. It must be stored together with the other documentation and accessible for anybody who is authorized to work with the system at any time.

2.2 Danger levels

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>High risk</td>
</tr>
<tr>
<td>Indicates a hazardous situation which, if not avoided, will result in death or serious injury.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium risk</td>
</tr>
<tr>
<td>Indicates a hazardous situation which, if not avoided, could result in death or serious injury.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low risk</td>
</tr>
<tr>
<td>Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command</td>
</tr>
<tr>
<td>Indicates a hazardous situation which, if not avoided, may result in property damage.</td>
</tr>
</tbody>
</table>
2.3 Purpose of use

2.3.1 Permitted use

- The high vacuum angle valve BAV as well as the high vacuum inline valve BIV acts as venting and shut-off device within a vacuum system.
- The valve features ISO-KF flanges and is intended for mounting within clamping flange systems.
- Use product for clean and dry vacuum applications only. Observe the specification in chapter «1.4 Technical data».

2.3.2 Adverse use

- Use of the product for liquid gas.
- Use of the product without instruction or outside of the permitted limits.
- Detaching of hazard notices, disabling safety systems.
- Conducting any kind of interventions (modifications, alterations etc.) on the product.
- Use with accessories and options, which are not mentioned in the corresponding product documentation.
- Either use, not explicitly mentioned as permitted use, applies as adverse use.

2.4 Obligations / area of responsibility

2.4.1 Manufacturer

Leybold GmbH as manufacturer is responsible for supplying the product, with its user manual and original accessories, in a completely safe condition.

2.4.2 Operator

The operator is the person in charge of the product. The operator ensures that the product is used in accordance with the instructions, and the safety of the equipment in use. Training and deployment of personnel who use the product is also the operator's charge.

The operator has the following duties:
- To know local, operative regulations regarding safety and accident prevention.
- To assure that the national laws and directives are respected.
- To understand safety indications on the product, and instructions in the user manual.
- To immediately inform the manufacturer, if safety shortcomings of the product or its use occur.
- To check the sound condition of the product regularly and to assure the execution of the maintenance works mandated.

The end-user assumes the responsibility in conjunction with the process media used.
2.5 Personnel qualifications

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unqualified personnel</td>
</tr>
<tr>
<td>Inappropriate handling may cause serious injury or property damage.</td>
</tr>
<tr>
<td>Only qualified personnel are allowed to carry out the described work.</td>
</tr>
</tbody>
</table>

2.6 General Safety Instructions

- Adhere to the applicable regulations and take the necessary precautions for the process media used. Consider possible reactions between the materials and the process media.
- Adhere to the applicable regulations and take the necessary precautions for all work you are going to do and consider the safety instructions in this document.
- Before beginning to work, find out whether any vacuum components are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

2.7 Safety labels

<table>
<thead>
<tr>
<th>Label</th>
<th>Part No.</th>
<th>Location on valve</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Label" /></td>
<td>T-9001-155</td>
<td>On protective covers of flanges</td>
</tr>
<tr>
<td><img src="image2" alt="Label" /></td>
<td>253198</td>
<td>On valve body or actuators</td>
</tr>
</tbody>
</table>

Table 2-1
3 Design and Function

3.1 Design

This illustration shows an angle valve. The inline valve has a different body shape.

![Diagram of angle valve with labels]

Figure 3-1

1 Body 30 Handwheel 62 Bonnet seal
15 Bellows 60 Screws
26 Actuator shaft 61 Plate seal

3.2 Function

Valve is closed and opened by turning the handwheel.
4 Installation

The subsequent notes need to be observed for all installation works!

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unqualified personnel</td>
</tr>
<tr>
<td>Inappropriate handling may cause serious injury or property damage.</td>
</tr>
<tr>
<td>Only qualified personnel are allowed to carry out the described work.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contamination</td>
</tr>
<tr>
<td>Product may get contaminated because of inadequate handling.</td>
</tr>
<tr>
<td>Always wear cleanroom gloves when handling the product.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inappropriate tools</td>
</tr>
<tr>
<td>Sealing surfaces may get damaged.</td>
</tr>
<tr>
<td>Do not use sharp-edged tools.</td>
</tr>
</tbody>
</table>

4.1 Unpacking

- Before unpacking, check whether the packaging shows transport damages and the goods could be damaged.

- Check whether the goods are complete and in impeccable condition. If you have any objections, please contact the local agency immediately; see backside of the document.

- Store the original packaging material. It may be useful if products must be returned.

Remove the protective covers from the valve only at the moment when the valve is being installed into the system. Keep unprotected sealing surfaces clean and do not damage them.
### 4.2 Installation into the system

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overpressure in the vacuum system &gt;1 bar</strong></td>
</tr>
<tr>
<td>Injury caused by released parts and harm caused by escaping process gases can result if clamps are opened while the vacuum system is pressurized. Do not open any clamps while the vacuum system is pressurized. Use the type of clamps which are suited to overpressure.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overpressure in the vacuum system &gt;2.5 bar</strong></td>
</tr>
<tr>
<td>KF flange connections with elastomer seals (e.g. O-rings) cannot withstand such pressures. Process media can thus leak and possibly damage your health. Use O-rings provided with an outer centering ring.</td>
</tr>
</tbody>
</table>
1. Remove the protective lids.

2. Check and carefully clean sealing surfaces of valve flanges and counter flanges.

3. Install valve with connection components appropriate for ISO-KF flanges by taking the specification in «Table 4-1» into account.

<table>
<thead>
<tr>
<th>DN (nom. I. D.)</th>
<th>Axial tensile or compressive force «F_A»</th>
<th>Bending moment «M»</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>Inch</td>
<td>N</td>
</tr>
<tr>
<td>16</td>
<td>5/8</td>
<td>25</td>
</tr>
<tr>
<td>25</td>
<td>1</td>
<td>70</td>
</tr>
<tr>
<td>40</td>
<td>1½</td>
<td>100</td>
</tr>
<tr>
<td>50</td>
<td>2</td>
<td>150</td>
</tr>
</tbody>
</table>

A combination of both forces «F_A» and «M» is not allowed. Please contact Leybold.

4. Check that the vacuum connections are leak tight.
5 Operation

Standard valves see chapter «1.3 Validity of the user manual».

For special valves which are not listed in chapter «1.3 Validity of the user manual» the product data sheet is applicable in addition.

<table>
<thead>
<tr>
<th><strong>WARNING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unqualified personnel</strong></td>
</tr>
<tr>
<td>Inappropriate handling may cause serious injury or property damage.</td>
</tr>
<tr>
<td>Only qualified personnel are allowed to carry out the described work.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CAUTION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hot surfaces</strong></td>
</tr>
<tr>
<td>Risk of burning when touching hot surfaces.</td>
</tr>
<tr>
<td>Take safety measures in order that the valve cannot be touched during operation.</td>
</tr>
</tbody>
</table>

If the valve is operated under harsh or dirty conditions, it should be cleaned / maintained before the specified service time has been reached.

5.1 Normal operation

Valve is closed and opened by turning the handwheel.

5.2 Operation under increased temperature

See chapter «1.4 Technical data».
6 Maintenance

Under clean operating conditions the valve does not need any maintenance during the specified cycle life; see chapter «1.4 Technical data».

Contamination from the process may require more frequent maintenance.

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unqualified personnel</strong></td>
</tr>
<tr>
<td>Inappropriate handling may cause serious injury or property damage.</td>
</tr>
<tr>
<td>Only qualified personnel are allowed to carry out the described work.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contaminated parts</strong></td>
</tr>
<tr>
<td>Contaminated parts can be detrimental to health and environment.</td>
</tr>
<tr>
<td>Before beginning to work, find out whether any parts are contaminated.</td>
</tr>
<tr>
<td>Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hot surfaces</strong></td>
</tr>
<tr>
<td>Risk of burning when touching hot surfaces.</td>
</tr>
<tr>
<td>Touch hot surfaces only if the valve has cooled down.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contamination</strong></td>
</tr>
<tr>
<td>Product may get contaminated.</td>
</tr>
<tr>
<td>Always wear cleanroom gloves when handling the product.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inappropriate tools</strong></td>
</tr>
<tr>
<td>Sealing surfaces may get damaged.</td>
</tr>
<tr>
<td>Do not use sharp-edged tools.</td>
</tr>
</tbody>
</table>

Leybold assumes no liability and the warranty becomes null and void if maintenance works are performed, which are not covered by this user manual.
6.1 Exchange of vacuum seals

Figure 6-1

60 Screws 61 Plate seal 62 Bonnet seal

6.1.1 Dismount actuator / plate assembly

The item numbers in brackets refer to «Figure 6-1».

1. Loosen and remove screws (60) uniformly and in crosswise order.
2. Withdraw actuator / plate assembly carefully from body.
3. Remove bonnet seal (62) from groove by using an O-ring removal tool.

6.1.2 Replacement of plate seal

1. Remove plate seal (61) from groove by using an O-ring removal tool.
2. Check sealing surface and clean it with a cleanroom wiper soaked with alcohol (2% methyl ethyl ketone).
3. Put new plate seal (61) on groove and press it into groove at 4 opposite spots.
4. Press remaining sections uniformly into groove.
6.1.3 Mount actuator / plate assembly

1. Check sealing surfaces of bonnet flange / valve seat and clean it with a cleanroom wiper.

2. Put bonnet seal (62) into body.

3. Insert actuator / plate assembly carefully.

4. Fasten screws (60) uniformly and in crosswise order in 2 to 3 rounds.
7 Repairs

Repairs may only be carried out by qualified personnel. We recommend having this work carried out by one of our service centers.

You will find the addresses of the service centers on the backside of the document. When contacting us, please always specify the fabrication number of the valve; see chapter «1.2 Identification of product». 
8 Dismounting and Storage

**WARNING**

Unqualified personnel
Inappropriate handling may cause serious injury or property damage. Only qualified personnel are allowed to carry out the described work.

**CAUTION**

Hot surfaces
Risk of burning when touching hot surfaces. Touch hot surfaces only if the valve has cooled down.

**NOTICE**

Contamination
Product may get contaminated. Always wear cleanroom gloves when handling the product.

8.1 Dismounting

1. Vent the vacuum system and wait until the valve has cooled down to <55°C.
2. Dismount valve from system, attach the protective lids.

8.2 Storage

**NOTICE**

Wrong storage
Inappropriate temperatures and humidity may cause damage to the product. Valve must be stored at:
- relative humidity between 10% and 70%
- temperature between 10 °C and +50 °C
- non-condensing environment

1. Clean / decontaminate valve.
2. Cover all valve openings with protective covers or foils.
## Packaging and Transport

### WARNING
- **Unqualified personnel**
  - Inappropriate handling may cause serious injury or property damage.
  - Only qualified personnel are allowed to carry out the described work.

### WARNING
- **Harmful substances**
  - Risk of injury in case of contact with harmful substances.
  - Remove harmful substances (e.g., toxic, caustic or microbiological ones) from product before you return the product to Leybold.

### NOTICE
- **Inappropriate packaging**
  - Product may get damaged if inappropriate packaging material is used.
  - Always use the original packaging material and handle product with care.

When returning products, the completed form «12.2 Declaration of chemical contamination» must be enclosed to the shipment.
9.1 Packaging

**NOTICE**

Valve in open position
Valve mechanism may get damaged if valve gate is in open position.
Make sure that the valve is closed.

1. Cover all valve openings with protective covers or foils.
2. Pack valve appropriately, by using the original packaging material.

Leybold disclaims any liability for damages resulting from inappropriate packaging.

9.2 Transport

**NOTICE**

Inappropriate packaging
Product may get damaged if inappropriate packaging material is used.
Always use the original packaging material and handle product with care.

Leybold disclaims any liability for damages resulting from inappropriate packaging.
10 Disposal

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
</table>
| Harmful substances
Environmental pollution.
Discard products and parts according to the local regulations. |

Separating the components

After disassembling the product, separate its components according to the following criteria:

- **Contaminated components**
  Contaminated components (radioactive, toxic, caustic, microbiological hazard etc.) must be decontaminated in accordance with the relevant national regulations, separated according to their materials, and disposed of.

- **Other components**
  Such components must be separated according to their materials and recycled.
11 Spare parts and accessories

NOTICE

Non-original spare parts
Non-original spare parts may cause damage to the product. Use original spare parts from Leybold only.

When you place an order for spare parts, please specify the fabrication number of the valve; see chapter «1.2 Identification of product». This is to ensure that the appropriate spare parts are supplied.

Figure 11-1

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>DN 16</th>
<th>DN 25</th>
<th>DN 40</th>
<th>DN 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Bellows</td>
<td>E242292</td>
<td>E233014</td>
<td>E229542</td>
<td>E244980</td>
</tr>
<tr>
<td>26</td>
<td>Manual actuator complete</td>
<td>E333290</td>
<td>E333312</td>
<td>E333321</td>
<td>E333332</td>
</tr>
<tr>
<td>30</td>
<td>Hand wheel</td>
<td>E245912</td>
<td>E245912</td>
<td>E245913</td>
<td>E245913</td>
</tr>
<tr>
<td>61 + 62</td>
<td>Seal kit</td>
<td>EK242324 3</td>
<td>EK241077</td>
<td>EK241079</td>
<td>EK245556</td>
</tr>
</tbody>
</table>

Table 11-1

3 EK314448, for valve part number 215384V001
12 Appendix

12.1 Safety information on contamination

Aim and purpose

Each entrepreneur (operating company) is responsible for the health and safety of its employees. The responsibility extends to external personnel carrying out repairs on the site of the operating company and to personnel of contractors.

The enclosed declaration shall inform contractors about contamination of compressors, vacuum pumps and vacuum components returned for repair. Due to this information, the contractor is capable of taking the necessary safety precautions when carrying out repairs.

The same regulations apply for on-site repairs.

Preparation for dispatch

Before dispatching the product the operating company must fill out the declaration as per chapter «12.2 Declaration of chemical contamination» and enclose it to the shipping documents. The shipping instructions stated in the relevant user manual must be observed.

For example:
- Drain all service fluids
- Remove filter elements, where applicable
- Close all openings airtight
- Pack products appropriately
- Dispatch products in suitable transport containers

Attach declaration on contamination to the outside of the transport container.
# 12.2 Declaration of chemical contamination

## Declaration of Contamination of Compressors, Vacuum Pumps and Components

The repair and/or servicing of compressors, vacuum pumps and components will be carried out only if a correctly completed declaration has been submitted. Non-completion will result in delay. The manufacturer can refuse to accept any equipment without a declaration. A separate declaration has to be completed for each single component.

This declaration may be completed and signed only by authorized and qualified staff.

<table>
<thead>
<tr>
<th>Customer/Dep/Institute:</th>
<th>Reason for return:</th>
<th>applicable please mark</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Repair:</td>
<td>chargeable warranty</td>
</tr>
<tr>
<td></td>
<td>Exchange:</td>
<td>chargeable warranty</td>
</tr>
<tr>
<td></td>
<td>Exchange already arranged / received</td>
<td></td>
</tr>
<tr>
<td>Person to contact:</td>
<td>Return only:</td>
<td>rent loan for credit</td>
</tr>
<tr>
<td>Phone:</td>
<td>Calibration:</td>
<td>DKD Factory-calibr.</td>
</tr>
<tr>
<td>Fax:</td>
<td>Quality test certificate DIN 55360-18-4.2.1</td>
<td></td>
</tr>
</tbody>
</table>

## A. Description of the Leybold product

<table>
<thead>
<tr>
<th>Material description:</th>
<th>Failure description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog number:</td>
<td>Additional parts:</td>
</tr>
<tr>
<td>Serial number:</td>
<td>Application-Tool</td>
</tr>
<tr>
<td>Type of oil (Fore/Vacuum-Pumps):</td>
<td>Application-Process</td>
</tr>
</tbody>
</table>

## B. Condition of the equipment

<table>
<thead>
<tr>
<th>1. Has the equipment been used?</th>
<th>Yes</th>
<th>No</th>
<th>Contamination:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Drained (Product/service fluid)</td>
<td></td>
<td></td>
<td>toxic</td>
</tr>
<tr>
<td>3. All openings sealed airtight</td>
<td></td>
<td></td>
<td>corrosive</td>
</tr>
<tr>
<td>4. Purged</td>
<td></td>
<td></td>
<td>flammable</td>
</tr>
</tbody>
</table>

If yes, which cleaning agent and which method of cleaning?

If answered with “No”, go to D.

## C. Description of processed substances (Please fill in absolutely)

1. What substances have come into contact with the equipment?
   - Trade name and/or chemical term of service fluids and substances processed, properties of the substances according to safety data sheet (e.g., toxic, inflammable, corrosive, radioactive)
   - | Tradename: | Chemical name: |
   - | a)          |              |
   - | b)          |              |
   - | c)          |              |
   - | d)          |              |

2. Are these substances harmful?
3. Dangerous decomposition products when heated? Yes | No

## D. Legally binding declaration

I/we hereby declare that the information supplied on this form is accurate and sufficient to judge any contamination level.

Name of authorized person (block letters): __________________________

Date: __________________________

Signature of authorized person: __________________________

[Stamp]
The instruction manual supplied with your product is available in two different standard European languages, English and German. If you wish to have a manual in your own European language, please contact your Leybold representative.
Sales and Service

Germany
Leybold GmbH
Sales, Service, Support Center (SSC)
Bonner Straße 498
D-50968 Cologne
T: +49-(0)221-347 1234
F: +49-(0)221-347 31234
sales@leybold.com
www.leybold.com

Leybold GmbH
Sales Area North
Branch Office Berlin
Industriestraße 10b
D-12099 Berlin
T: +49-(0)30-435 609 0
F: +49-(0)30-435 609 10
sales.bn@leybold.com

Leybold GmbH
Sales Office South
Branch Office Munich
Parc du Technopolis, Bâtiment Beta
Sales Office South
Leybold France S.A.S.
France
T: +49-(0)221-347 1250
info@leybold.com

Leybold Deutschland GmbH
Service Competence Center
Zur Wetterwarte 50, Haus 304
Service Competence Center
D-26501 Bourg-lès-Valence Cedex
B.P. 107
T: +49-(0)89-357 33 9-10
Valence Factory
Leybold France S.A.S.
France
T: +49-(0)89-357 33 9-10

Europe
Belgium
Leybold Nederland B.V.
Belgisch bijkantoor
Leuvensesteenweg 542-9A
B-1930 Zaventem
Sales: T: +32-2-771 00 83
F: +32-2-720 83 38
sales.zv@leybold.com
Service: T: +32-2-771 00 82
F: +32-2-720 83 38
service.zv@leybold.com

France
Leybold France S.A.S.
Parc du Technopolis, Bâtiment Beta
3, avenue du Canada
F-91940 Les Ulis cedex
Sales and Service: T: +33-1-69 82 48 00
F: +33-1-69 07 57 38
info.ctb@leybold.com
sales.ctb@leybold.com

Leybold France S.A.S.
Valence Factory
640, Rue A Bergès
B.P. 107
F-26501 Bourg-lès-Valence Cedex
T: +33-4-75 82 33 00
F: +33-4-75 82 92 69
marketing.vc@leybold.com

Great Britain
Leybold UK LTD.
Unit 9
Silverglade Business Park
Leatherhead Road
Cheam
Surrey (London)
KT9 2QL
T: +44-13773 7300
F: +44-13773 7301
sales.uk@leybold.com
Service: T: +44-13773 7320
F: +44-13773 7303
service.uk@leybold.com

Italy
Leybold Italia S.r.l.
Via Trasimeno 8
l-20128 Mailand
Sales: T: +39-02-27 20 33 60
F: +39-02-27 20 96 41
sales.mi@leybold.com
Service: T: +39-02-27 22 32 17
F: +39-02-27 22 32 17
service.mi@leybold.com

Netherlands
Leybold Nederland B.V.
Floridafred 102
NL-3565 AM Utrecht
Sales and Service:
T: +31-(0) 242 63 30
F: +31-(0) 242 63 31
sales.ut@leybold.com
service.ut@leybold.com

Switzerland
Leybold Schweiz AG, Pfäffikon
Churerstrasse 120
Sales and Service:
T: +41-44-302 40 50
F: +41-44-302 40 50
service.ch@leybold.com

Spain
Leybold Spain, S.A.
C. Huelva, 7
E-08940 Cornellà de Llobregat
(Spanish)
Sales:
T: +34-93-666 43 11
F: +34-93-666 43 70
sales.ba@leybold.com
Service:
T: +34-93-666 46 11
F: +34-93-685 43 70
service.ba@leybold.com

America
USA
Leybold USA Inc.
5700 Mellion Road
USA-Export, PA 15632
T: +1-724-327-5700
F: +1-724-325-3577
info.ex@leybold.com
Sales:
T: +1-724-327-5700
F: +1-724-333-1217
Service:
T: +1-724-325-3577

Brazii
Leybold Brasil
Rod. Vice-Prefeito Hemenegildo Tonoli, n° 4413-6B
Distrito Industrial
Jundiai – SP
CNP 13.212-315
Sales and Service:
T: +55 11 3395 3180
F: +55 11 99467 5934
sales.ju@leybold.com
service.ju@leybold.com

Asia
P. R. China
Leybold (Tianjin)
International Trade Co. Ltd.
Beichen Economic Development Area (BEDA),
No. 8 Western Shuangchen Road
Tianjin 300400
China
Sales and Service:
T: +86-11 3393 0989
F: +86-11 99467 5934
sales.ju@leybold.com
service.ju@leybold.com

South Korea
Leybold Korea Ltd.
3F. Jetzone 2 Tower
Jeonga-dong 159-4
Bundang-gu Sungnam-si
Gyeonggi-do
Bundang 463-384, Korea
Sales:
T: +82-31 785 1367
F: +82-31 785 1399
sales.kr@leybold.com
Service:
T: +63-7, Upsung-Dong
Cheonan-Si
Chungcheongnam-Do
Korea 330-290
T: +82-41 589 3035
F: +82-41 588 0165
service.cn@leybold.com

Singapore
Leybold Singapore Pte Ltd.
8 Commonwealth Lane #01-01
Singapore 149555
Singapore
Sales and Service:
T: +65-6773 0038
F: +65-6773 0039
sales.sg@leybold.com
service.sg@leybold.com

Taiwan
Leybold Taiwan Ltd.
No. 416-1, Sec. 3
Chunghsin Rd., Chuting
Hsinchu County 310
Taiwan, R.O.C.
Sales and Service:
T: +886-3-583 1688
F: +886-3-563 3999
sales.hc@leybold.com
service.hc@leybold.com

Headquarter
Leybold GmbH
Bonner Straße 498
D-50968 Cologne
T: +49-(0)221-347 0
F: +49-(0)221-347 1250
info@leybold.com

www.leybold.com