

# Alfa Laval Access Tank Cover - LKDC, LKD & COR

Tank covers

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Instruction Manual

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# 1 Safety

## Read this first



This Instruction Manual is designed for operators and service engineers working with the supplied Alfa Laval product.

Operators must read and understand the **“Safety, Installation and Operating Instructions”** of the supplied Alfa Laval product before carrying out any work or before you put the supplied Alfa Laval product into service!

Not following the instructions can result in serious accidents.

This documentation describes the authorized way to use the supplied Alfa Laval product. Alfa Laval will take no responsibility for injury or damage if the equipment is used in any other way.

This Instruction Manual is designed to provide the user with the information to perform tasks safely for all phases in the lifetime of the supplied Alfa Laval product.

The operator shall always read the **“Safety”** chapter first. Hereafter the operator can skip to the relevant section for the task to be carried out or for the information needed.

**Always** read the **“Technical Data”** thoroughly.

This is the complete Instruction Manual for the supplied Alfa Laval product.




### NOTE

The illustrations and specifications in this Instruction Manual were effective at the date of printing. However, as continuous improvements are our policy, we reserve the right to alter or modify the Instruction Manual without prior notice or any obligation.




The English version of the Instruction Manual is the original manual. Alfa Laval cannot be held responsible for incorrect translations. In case of doubt, the English version applies.

## 1.1 Safety Signs

### Mandatory action signs

	General mandatory action sign.
	Refer to instruction manual.
	Wear protective equipment - safety helmet.

### Warning Signs

	General warning.
	Transportation with forklift truck or other industrial vehicles if heavy.
	Heavy object lifting.

## 1.2 Safety Precautions

Pay special attention to the instructions below so that severe personal injury and/or damage to the supplied Alfa Laval product is avoided.

### General

	<p><b>Always</b> ensure that personnel must have experience with lifting operations.</p>
	<p><b>Always</b> ensure the lifting point to be in line with center of gravity. Adjust lifting point if necessary.</p>
	<p><b>Always</b> keep an eye on the load and stay clear during the lifting operation.</p>
	<p><b>Always</b> ensure that the lifting equipment is suitable for the specific supplied Alfa Laval product.</p>
	<p><b>Always</b> use appropriate lifting equipment for heavy parts when relevant. Use lifting logs when available.</p>

### Storage

	<p><b>Alfa Laval recommend:</b></p> <ul style="list-style-type: none"> <li>• Store the supplied Alfa Laval product as supplied in original packaging</li> <li>• Port opening(s) should be protected against any ingress</li> <li>• Bare steel (not stainless) should be lightly oiled/greased</li> <li>• Store in a clean, dry place without direct sunlight or UV light</li> <li>• Temperature range -5 °C to 40 °C (23 °F - 104 °F)</li> <li>• Relative humidity less than 60%</li> <li>• No exposure to corrosive substances (including contained air)</li> <li>• Rinse the supplied Alfa Laval product with clean water before storage</li> </ul>
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### Safety check

	<p>A visual inspection of any protective device (shield, guard, cover or other) on the supplied Alfa Laval product shall be carried out at least every 12 months. If the protective device is lost or damaged, especially when this leads to deterioration of safety performance, it shall be replaced. The fixing of the protective device should only be replaced with fixings of the same or an equivalent type.</p> <p><b>Inspection acceptance criteria:</b></p> <ul style="list-style-type: none"> <li>• It should not be possible to reach moving parts originally protected by a protective device</li> <li>• The protective device must be securely mounted</li> <li>• Ensure that screws for the protective device are securely tightened</li> </ul> <p><b>Procedure in case of non-acceptance:</b></p> <ul style="list-style-type: none"> <li>• Fix and/or replace the protective device</li> </ul>
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## 1.3 Warning Signs in Text

Pay attention to the safety instructions in this Instruction Manual.

Below are definitions of the four grades of warning signs used in the text where there is a risk for injury to personnel or damage to the supplied Alfa Laval product.

 **DANGER**

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING**

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

 **CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate damage to the supplied Alfa Laval product.

 **NOTE**

Indicates important information to simplify or clarify procedures.



## 1.4 Requirements of Personnel

### Operators

The operators shall read and understand this Instruction Manual.

### Maintenance personnel

The maintenance personnel shall read and understand this Instruction Manual. The maintenance personnel or technicians shall be skilled within the field required to carry out the maintenance work safely.

### Trainees

Trainees can perform tasks under the supervision of an experienced employee.

### People in general


The public shall not have access to the supplied Alfa Laval product.

In some cases, specially skilled personnel may need to be hired (i.e. electricians, welders). In some cases the personnel has to be certified according to local regulations with experience of similar types of work.

## 1.5 Recycling Information

### Unpacking

Packing material may consist of wood, plastics, cardboard boxes and in some cases metal straps.

	<ul style="list-style-type: none"> <li>• Wood and cardboard boxes can be reused, recycled or used for energy recovery</li> <li>• Plastics should be recycled or burnt at a licensed waste incineration plant</li> <li>• Metal straps should be sent for material recycling</li> </ul>
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### Maintenance

During maintenance, oil (if used) and wear parts in the supplied Alfa Laval product should be replaced.

- Oil and all non-metal wear parts must be disposed of in accordance with local regulations
- Rubber and plastics should be burnt at a licensed waste incineration plant. If not available they should be disposed of in accordance with local regulations
- Bearings and other metal parts should be sent to a licensed handler for material recycling
- Seal rings and friction linings should be disposed of to a licensed land fill site. Check your local regulations
- All metal parts should be sent for material recycling
- Worn out or defected electronic parts should be sent to a licensed handler for material recycling

### Scrapping

At end of use, the equipment must be recycled in accordance with the relevant local regulations. Besides the equipment itself, any hazardous residues from the process liquid must be considered and dealt with in a proper manner. When in doubt, or in the absence of local regulations, please contact your local Alfa Laval sales company.

### How to contact Alfa Laval

Contact details for all countries are continually updated on our website.

Please visit [www.alfalaval.com](http://www.alfalaval.com) to access the information directly.

## 2 Introduction

The Alfa Laval manway doors and manhole covers do not come within the definition of pressure equipments of the article 1.2.1, and are, therefore, not marked CE, ref. Guideline 1/22 of the PED Guideline approved by the WPG 29-06-2002.

These instructions are valid only for the use of Alfa Laval manway doors and manhole covers.

With the knowledge of these instructions incorrect use can be avoided.

### 2.1 General Description



Study the instructions carefully and pay special attention to the warnings!

The service personnel must be acquainted with the content of these instructions.

Incorrect use can be of danger to the user or a third party, and can cause damage to objects and/or people.



The Alfa Laval manway doors and manhole covers do not come within the definition of pressure equipments of the article 1.2.1, and are, therefore, not marked CE, ref. Guideline 1/22 of the PED Guideline approved by the WPG 29-06-2002.

These instructions are valid only for the use of Alfa Laval manway doors and manhole covers.

With the knowledge of these instructions incorrect use can be avoided.

You will find the information contained in this manual simple to follow, but should you require further assistance, our Technical Sales Support Department and worldwide net of sales offices are pleased to help you.

## 2.2 Intended Use

The end-user should verify:

- that the tank cover is in conformity with respect to tank, vessel or container size in which it is used
- that the construction materials (both metallic and nonmetallic) are compatible with product, flushing media, cleaning media, temperatures and pressure under the intended use

Alfa Laval covers are suitable for different applications (e.g.: filling, emptying, access for cleaning or inspection, general access opening etc.).

## 3 Installation

### 3.1 Application

#### NOTE

Study the instructions carefully and pay special attention to the warnings!



1. The cover shall be installed in accordance with national regulations for safety and other relevant regulations and standards.
2. The item cannot work autonomously, but it is intended for installation through welding on a tank. It is the responsibility of the contractor to respect the regulations related to the construction of said equipment.
3. On the manway door/manhole cover, loads, solicitations or vibrations of external origin should be avoided.
4. Instructions as to the positioning of the product (horizontally or vertically, above or below the liquid level of the tank) are included in the product data sheets. Positioning the product in any position other than as shown in the catalogue may damage the manway and cause leakages. Do not apply any loads to the manhole or cause stress by vibrations. Use only the components (frame, lid, bolts, arms) provided by Alfa Laval. The Alfa Laval products are individually fitted. The manway door/manhole cover is delivered complete and assembled by qualified personnel. Always use the manhole together with the frame provided. Decoupling the frame from the manhole lid could result in improper fit. Its components (frame, cover, eyebolt, arm) cannot be removed and separately reassembled on other similar items.
5. The manway door/manhole cover is marked on the frame. Do not remove neither alter the marking.
6. The manway door/manhole cover is individually fitted. Always use the manhole together with the frame provided. Decoupling the frame from the manhole could result in improper fit. Do not disassemble and do not use with any other component.

## 3.2 Special Precautions, Oval Cover Type LKD 400 x 320

### 3.2.1 Installation

In order to obtain a perfect seal and a good function of our manhole cover it is essential that the welding of the casing is carried out carefully and correctly. If the cover is fitted on a vertical tank wall, the hinge of the casing must always be placed on the left hand side. For thin-gauged containers, i.e. sheet thickness less than 2.5 mm, welding is easier, if the hole is marked in such a way that a 10 mm edge can be burred up as sharply as possibly.

When the hole is cut and the edge burred up, if applicable, the frame is inserted, and tack-welding is now carried out on points placed opposite each other all the way round, in the sequence shown in figure 1.

The frame may now be fully welded on both sides. A control should be made by removing the rubber seal, and cover and frame should be assembled loosely to ensure that they fully contact each other over the whole surface.

Any stresses are removed by hammering the sheet around the casing.

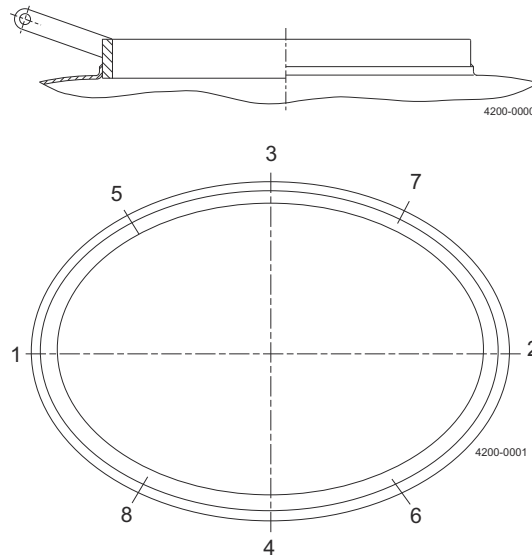


Figure 1. Installation of LKD

## 4 Operation

### 4.1 Safety Regulations



All operations on the manway doors/manhole covers or operations connected herewith must be conducted by qualified personnel, trained on the regulations related to the functioning of the tanks and more precisely to the pressure to which they are subject.



When opening make certain that the components of the closing systems (handle, bush, washer etc.) are screwed in such way that the components do not fall out.



### 4.2 Welding

1. The weld between frame of the manway door/manhole cover and the tank must be preceded by an accurate preparation of the edges to be welded, and by a perfect adaptation.
2. Welding work, perforation, folding, cutting or similar must not be performed on the manway door/manhole cover, if such actions are not absolutely necessary for the installation of the manway door/manhole cover.
3. Avoid an excessive stretching of the material.
4. Before welding the frame of the manway door/manhole cover onto the tank, carefully prepare the surfaces and edges to be welded cleaning them with a degreasing agent and dry with a clean cloth. Carefully position the manway door against the frame to ensure cohesion.
5. During welding, close the cover on the frame using a spacer in place of the gasket in order to reduce the expansion of the frame in respect of the cover as much as possible, to maintain the form and the original dimensions of the cover and to assure a perfect joining with the cover itself.
6. To protect the gasket remove the gasket during the welding phase.
7. After welding always control that the sealing is in full contact with the sealing surface.

## 4.3 Opening

### DANGER

Before opening the manway door/manhole cover make sure that the tank/ container/equipment is not pressurized and without heat and/or chemical and toxic vapours.

If necessary, use protective garments (see [Safety Regulations](#) on page 15).

1. Slowly unscrew the handles in the same way in which they have been screwed (cross way).
2. Once opened, the cover must be positioned so damage to the gasket is avoided.

## 4.4 Closing and Tightening

### DANGER

The operator is responsible for the safe closure of the cover.

Study the instructions carefully and pay special attention to the warnings!

Ensure before closing that the container is not occupied by persons, animals or inadmissible objects.

Ensure before closing the cover that the sealing surface is free from any obstructions (i.e. body parts or equipment) as injury or damage can occur.

1. Before closing it must be verified that the contact surface of the gasket is clean and without any external objects that can damage its good condition. The state of the gasket and its seats must always be checked.
2. While closing, it must be verified that the cover suits well with the frame, and that the cover is centred with the frame without effort or without being off-centre, and that the gasket is in its seat.

Before closing the handles it must be verified that there is a small clearance between the frame and the cover, which is a sign that there is no metallic impediment to the closing.

Do not close the handles with levers, pipes and/or key that can damage the functionality.

### NOTE LKD model only:

The static strength of pressure has to act on the gasket, and the tightening must be effected in a uniform way (example of cross tightening).



## 5 Maintenance

### 5.1 Maintenance

1. Gasket must be removed and Cleaned Out Of Place during the cleaning process.
2. Periodically check the condition of the gasket, wash it and carefully dry it. Replace if necessary.
3. The process of control and periodic washing is also valid for the seat of the gasket on the cover.
4. Periodically check the state of the closing systems, eyebolts and handles. Replace if necessary.

#### ! NOTE

##### **Special Maintenance only valid for the LDK and O-series with SS wing handle:**

After 24 months of operation, check cross arm. Verify that the cross arm has not been subject to excessive stress due to overstraining of the SS-wing handle. (Applying excessive force on the SS-wing handle during tightening will deform the cross arm over time).



Position 1: SS wing handle

Position 2: Cross arm

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## 6 Spare Parts

For every delivered Alfa Laval Product, a spare part list is available.

This spare part list contains a range of the most common wear parts for the machinery. If any component not mentioned is required, please contact your local Alfa Laval representative for availability.

You can find our spare part catalogue at <https://hygienicfluidhandling-catalogue.alfalaval.com>.

**Always** use Alfa Laval genuine spare parts. The warranty of Alfa Laval products is dependent on use of Alfa Laval genuine spare parts.

### 6.1 Ordering Spare Parts

When ordering spare parts, please always state:

1. Serial number (if available)
2. Item number/spare part number (if available)
3. Capacity or other relevant identification

### 6.2 Alfa Laval Service

Alfa Laval is represented in all larger countries of the world.

Do not hesitate to contact your local Alfa Laval representative, with any questions or requirement of spare parts for Alfa Laval equipment.

### 6.3 Warranty

The warranty conditions are subject to the legal warranty period of 12 months from the date of delivery. In case of improper use, modifications of or damages to the device, we do not accept warranty claims. Damaged devices will also not be accepted. Furthermore, defects due to normal wear are not subject to warranty services. When exchanging parts, only original replacement parts, released from the manufacturer, must be used.

## 6.4 Warranty - definition



The rules of Intended use are absolute. Use of the supplied Alfa Laval product is allowed only when in compliance with the technical data supplied with the Intended use.

Differing utilisation, other than agreed with Alfa Laval Kolding A/S, exclude any liability and warranty.

No modification or alteration of the supplied Alfa Laval product is allowed, unless explicit permission is granted by Alfa Laval Kolding A/S.



### Liability and warranty are excluded:

- If advice and instruction of operating instructions are ignored
- For incorrect operation or for insufficient maintenance of the supplied Alfa Laval product
- For any kind of change of function of the supplied Alfa Laval product without prior written agreement by Alfa Laval Kolding A/S
- If supplied Alfa Laval product is modified by non-authorized persons
- If using the supplied Alfa Laval product without attention of appropriate safety regulations. (See [Safety](#) on page 5)
- If protection equipment is not used and vessel process / ancillary equipment is not brought to a standstill
- If the supplied Alfa Laval product and ancillary parts are not properly maintained (to be executed in intervals and including fitting of prescribed replacement parts)

When exchanging parts, only original replacement parts, released from the manufacturer, must be used.