

Alfa Laval Access Tank Cover – Type HLSD-2

Tank covers circular



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Instruction Manual

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The original instructions are in English

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

Storage

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



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.

Inspection acceptance criteria:

- It should not be possible to reach moving parts originally protected by a protective device
- The protective device must be securely mounted
- Ensure that screws for the protective device are securely tightened

Procedure in case of non-acceptance:

- Fix and/or replace the protective device

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.



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



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



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



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.



- Wood and cardboard boxes can be reused, recycled or used for energy recovery
- Plastics should be recycled or burnt at a licensed waste incineration plant
- Metal straps should be sent for material recycling

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 to access the information directly.

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2 Introduction

The Alfa Laval Access Tank Cover – Circular Cover Type HLSD-2 is an outward-opening manway cover that provides a secure fit for openings on top of pressurized tanks and containers. It is approved for use on pressure vessels according to PED 2014/68/EU.

The HLSD-2 offers a quick, easy and convenient means of entry and egress to tank interiors. It also provides a closable means of access to the interior of the vessel, situated above or below the liquid level.

2.1 General Description



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

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

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



This Instruction Manual has been prepared as a guide for the persons who will be operating/handling the HLSD-2 Circular Access Tank Covers.

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

Outward opening manhole cover type HLSD-2 is used on top of pressurized tanks and containers where closeable means of access to the interior of the vessel is required. HLSD-2 is approved and can be used on pressure vessels according to PED 2014/68/EU.

3.2 Working Principle

HLSD-2 is secured in the closed position by swingbolts, which, together with the seal in the cover, ensure complete tightness. The cover is attached to the frame by a rigid hinge, giving exact location of the cover in the closed position and designed to stop the cover at an angle of 20° - 30° beyond the vertical position when opening.



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4 Operation

4.1 Safety Regulations



All operators must be trained / certified to work in the area of the container operation and must abide by the site safety regulations.

All work on the cover must be carried out by competent staff with knowledge of the relevant rules of operation of container and pressure container.

When the removal of protection equipment is necessary for cleaning or maintenance purpose, assembly and examination of protection equipment has to follow immediately!

Before opening the cover, check the pressure of the container. Only open the cover when the container is not under pressure.

Conditions are not allowed to exceed pressure and temperature specified. The Pressure (PS) and Temperature (TS) are written on each cover.

When filling and emptying the container, the regulations regarding contact of the liquid or content (e.g. foodstuff) must be kept.

National rules regarding use and test frequency must be followed.



4.2 Components

Depending of the detailed version of the cover, specified by the customer, components are attached accordingly.

Typical components according to drawing:

- Screws complete (number according to description)
- Hinge / swivelling feature
- Screwed sight glass / circular sight glass
- Spring assist
- Limit switch
- Locking bolt
- Safety grill
- Safety valve
- Etc. for other special items agreed

4.3 Weld into Position

To tack in, frame and vessel wall have to be adjusted carefully.

By applying the tack weld, the weld crack has to be small. Short distances between the tack welds prevent deformation.

During the welding of the neck to the container, it is preferable to have the cover lid closed and the operational seal removed (to be replaced by a temporary seal / spacer). This will give added rigidity to the neck when welding in and avoid heat transfer damage to the seal.

After welding, gasket seating has to be checked against circular and plane. If there is a difference of more than 1 mm, gasket seating has to be put in right form.

4.4 Assembly

When surface treatment is completed (ground, pickled, polished, shot-blasted etc.), all components have to be assembled carefully.

Screws / Swing-pins must be assembled completely (i.e. securing the bolts with the safety circlips, clamp sleeve, washer and nut / handle to be correctly assembled to the screws / swing-pins).

Before starting a process or putting the container under pressure / temperature, all equipment must be checked to ensure correct functionality; (hinge, gasket seating, screws/swing-pins including all safety cir-clips assembled, locking bolt, nuts / handles etc.).

4.5 Closure of Cover



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.

All parts relevant to security and pressure has to be checked visually before closing the cover (e.g. gasket, gasket seating, screws).

Cover has to be closed carefully without force. Look after good centralisation. Ensure seal is positioned correctly and that contact area is clean.

Lid and neck should have a little lateral clearance, so that the gasket seating does not have metal contact.

Centre of lid flange has to enclose the gasket seating of the neck perfectly.

Screws / swing-pins are to be put in the correct position, so that the machined face of sleeves clings to the outside groove of the lid flange.

The bolting arrangement must be tightened evenly and to a set torque when using a max. allowable torque procedure in several steps as follows:

1. 50% torque
2. 80% torque
3. Max. torque

Cross tightening of the bolting arrangement should be used when applying torque to the nut / handle (e.g. North, South, East, West where appropriate).

The maximum torque for the screws is 40 Nm for M12 Screws and 60 Nm for M16 Screws.

4.6 Opening of Cover



The operator is responsible for the safe opening of the cover. Before opening the cover, ensure the container is checked to be free from pressure, heat and chemical vapours.

If necessary, protective clothing and protective eyewear have to be used especially for high temperatures, for caustic or toxic liquid applications etc.

Like with closing, all nuts / handles should be opened symmetrically. Cross opening of the bolting arrangement should be used when opening the cover (e.g. North, South, East, West where appropriate).

Opened lid to be set down securely / carefully, to avoid damage to lid / seal (if possible use a spring loaded locking pin) and to prevent lid falling downwards accidentally causing injury.

4.7 Cleaning

The complete cover has to be cleaned as per the recommendations of the manufacturer of the container.

It is the responsible of the operator to ensure that all cleaning agents used do not have an adverse affect on the cover materials and the seal. Cleaning agents should be thoroughly removed after use.

During C.I.P., it is imperative that the temperature does not rise above the recommended temperature of the cover / seal causing damage.

5 Maintenance

5.1 Maintenance

Cover has to be checked regularly for damage (e.g. gasket, gasket seating, nut / screw and complete swing assembly, hinge, spring, etc. - Only Alfa Laval recommended spare parts to be used).

We recommend inspection of each cover at least annually against mechanical damage, corrosion and tightness.

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6 Technical Data

NOTE

Technical data must be observed during installation, operation and maintenance.
All personnel should be informed about the technical data.

6.1 Technical Data

The HLSD-2 pressure cover is designed according to Merkblätter AD 2000 and PED 2014/68/EU newest editions and designed for installation in pressure vessels until hazard category IV. The cover is not pressure tested and must be tested as a part of the pressure vessel.

HLSD-2 is designed for fluid group 1 and 2.

Sizes

200 mm, 300 mm, 400 mm, 450 mm, 500 mm and 600 mm /
7.87 in, 11.81 in, 15.75 in, 17.72 in, 19.68 in and 23.62 in.

Pressure

Max. allowable pressure:	According to selection table, see Selection Table on page 25
Min. allowable negative pressure:	Full vacuum
Max. test pressure P _{test} :	According to selection table, see Selection Table on page 25

6.2 Physical Data

Materials

Product wetted steel parts:	1.4404 (AISI 316L)
Other steel parts:	1.4301 (AISI 304)
Seal:	EPDM, FPM, Silicone, FEP covered silicone, FEP covered FPM, PFA covered silicone

Standard surface finish

Semi bright

Outside	Ra 1.6 µm / 64 µin
Inside	Ra 0.8 µm / 32 µin

Temperature

Temperature range:	-10°C to +250°C / 14°F to 482°F
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6.3 Options

- Spring to assist opening.
- Arrangement for securing cover in open and closed position.
- Bracket for indication unit in size $\varnothing 12$ or $\varnothing 18$. Please specify size at order.
- Handle in stainless steel.
- Guide for cover for vertical installation. Please define positioning of the hinge (right or left hand side).
- Sight glass DIN 28120.
- Sight glass DIN 11851.
- Safety grid.
- Special surface finish.
- Frame height G = 300 mm ()
- Seal of Q (silicone), FPM, FEP covered silicone, PFA covered silicone, FEP covered FPM.
- Conical frame, different frame thickness and frame height available on request.

6.4 Selection Table

Size	A	Number of bolts	Max. allowable pressure PS (bar) at design temperature Td (°C)					Max. test pressure Ptest	Cover thickness (SL)	Cover radius
			50 °C	100 °C	150 °C	200 °C	250 °C			
			bar	bar	bar	bar	bar			
200	208	4	14.7	13.0	11.8	10.8	10.0	21.1	8	500
300	308	4	7.6	6.7	6.4	6.1	6.0	13.5	5	500
		6	9.4	8.4	7.5	6.9	6.4	13.5	6	500
400	408	4	4.4	3.8	3.7	3.5	3.4	10.1	4	500
		6	6.6	5.8	5.5	5.3	5.2	14.3	5	500
		8	8.7	7.7	7.4	7.1	6.8	14.3	6	500
450	458	6	5.2	4.6	4.4	4.2	4.1	12.0	4	500
		8	7.0	6.1	5.9	5.7	5.5	12.5	5	500
		10	8.7	7.7	7.1	7.0	6.8	14.5	6	500
500	508	6	4.2	3.7	3.6	3.4	3.3	9.8	4	500
		8	5.7	5.0	4.8	4.6	4.5	10.7	4	500
		10	7.5	6.9	6.6	6.3	6.2	12.0	5	500
600	608	6	3.0	2.6	2.5	2.4	2.3	6.9	4	500
		8	4.0	3.5	3.3	3.2	3.1	7.7	4	500
		10	5.0	4.4	4.2	4.0	3.9	7.7	4	500
		12	6.0	5.3	5.0	4.9	4.7	8.8	5	500
		14	7.0	6.1	5.9	5.7	5.4	10.0	5	500

6.5 Dimensions

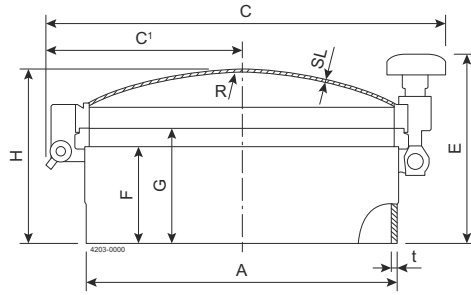


Table 1: mm

Size	200	300	400	450	500	600
A	208	308	408	458	508	608
C ₁	154	204	254	279	309	359
C	320	420	520	570	625	725
E	237	237	247	247	247	247
F	125	125	125	125	125	125
G	150	150	150	150	150	150
H	185	198	226	240	251	285
R	500	500	500	500	500	500
SL see selection table						
t ¹	4	4	4	4	4	4

¹ Dimension only for guidance, measured before grinding and polishing

6.6 Certificates

- 3.1 Certificate (EN10204)
- EC unit verification module G according to PED 2014/68/EU
- FDA declaration §177.2600 for seal material
- ASME BPE Certificate (option)

7 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.

7.1 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

7.2 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.

7.3 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.

7.4 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.