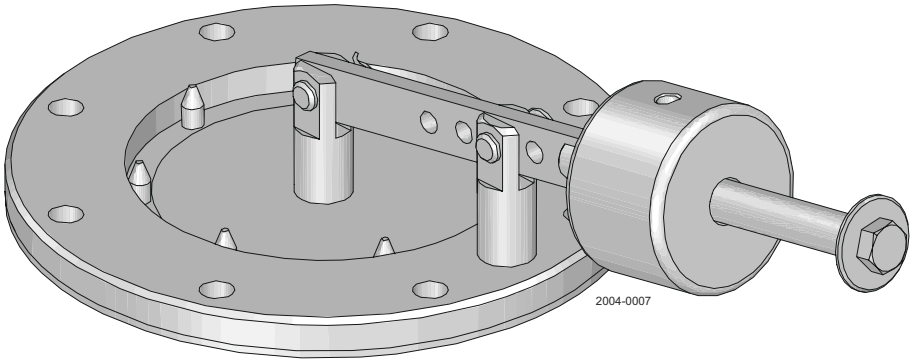
Alfa Laval SB Anti Vacuum Valve



Lit. Code 200007934-2-EN-GB

Instruction Manual

BRITISH ENGLISH

Published by
Alfa Laval Kolding A/S
Albuen 31
DK-6000 Kolding, Denmark
+45 79 32 22 00

The original instructions are in English

Contents

This page is intentionally left blank.

1 Declarations of Conformity

1.1 EU Declaration of Conformity

The designated company

Alfa Laval Kolding A/S, Albuen 31, DK-6000 Kolding, Denmark, +45 79 32 22 00

Company name, address and phone number

Hereby declare that

Valve

Designation

SB Anti Vacuum Valve

Type

Serial number from AAB000000001 to AAC999999999
Serial number from 100700000001 to 100799999999

is in conformity with the following directives with amendments:

- Machinery Directive 2006/42/EC
- Pressure Equipment Directive (PED) 2014/68/EU *Category IV, Fluids Group II*

Conformity Assessment According to Directive 2014/68/EU Annex III Module D
PED Quality Certificate No. QS-005-19 rev2

Notified Body Number: 1336
Inspecta Estonia OÜ
Teaduspargi 8
12618 Tallinn
ESTONIA

The person authorised to compile the technical file is the signer of this document.

Vice President BU Hygienic Fluid Handling Head of Product Management	Mikkel Nordkvist
Title	Name
Kolding, Denmark	2024–06–01
Place	Date (YYYY-MM-DD)

Signature

DoC Revison_ 01_062024 / This Declaration of Conformity replaces Declaration of Conformity dated 2023–10–26

1.2 UK Declaration of Conformity

The designated company

Alfa Laval Kolding A/S, Albuen 31, DK-6000 Kolding, Denmark, +45 79 32 22 00

Company name, address and phone number

Hereby declare that

Valve

Designation

SB Anti Vacuum Valve

Type

Serial number from AAB000000001 to AAC999999999
Serial number from 100700000001 to 100799999999

is in conformity with the following directives with amendments:

- The Supply of Machinery (Safety) Regulations 2008
- The Pressure Equipment (Safety) Regulations 2016 *Category IV, Fluids Group II*

PED Quality Certificate No. QS-005-19 rev2

Notified Body Number: 1336
Inspecta Estonia OÜ
Teaduspargi 8
12618 Tallinn
ESTONIA

Signed on behalf of: Alfa Laval Kolding A/S.

Vice President BU Hygienic Fluid Handling Head of Product Management	Mikkel Nordkvist
Title	Name
Kolding, Denmark	2024–06–01
Place	Date (YYYY-MM-DD)

DoC Revison_ 03_062024

2 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.

2.1 Safety Signs

Mandatory Action Signs

	General mandatory action sign.
	Refer to instruction manual.
	Use eye protection - safety glasses.
	Use protective hand wear - safety gloves.
	Wear protective equipment - safety helmet.
	Use ear protection in noisy environments - noise protector.
	Wear protective equipment - safety shoes.

Warning Signs

	General warning.
	Transportation with forklift truck or other industrial vehicles if heavy.
	Hot surface and burning danger.
	Cutting danger.

	Corrosive substance.
	Crushing of hands.

2.2 Safety Precautions

All warnings in the Instruction Manual are summarised on these pages. Pay special attention to the instructions below so that severe personal injury and/or damage to the supplied Alfa Laval product is avoided.

General

	To prevent unexpected start and contact with electrical live and moving parts. **Always** disconnect the power supply safely: • The power supply disconnecting device must be disconnected (in off position) and locked.

Transportation and Lifting

	**Never** lift or elevate in any way other than described in this manual. **Always** use the original packaging or similar during transportation. **Always** ensure that personnel must have experience with lifting operations. **Always** ensure that all connections are disconnected before attempting to remove the valve from the installation. **Always** ensure that no leakage of lubricants can occur. **Always** drain liquid out of the valves before transportation. **Always** ensure sufficient fixing of the valve during transportation - if specially designed packaging material is available, it must be used. **Always** ensure that compressed air is released.
	**Always** use designated lifting points if defined. Ensure that the lifting equipment is suitable for the supplied Alfa Laval product. **Always** ensure that the unit is securely fixed during transportation. **Always** ensure the lifting point to be in line with center of gravity. Adjust lifting point if necessary. **Always** use suitable transport device ie. forklift or pallet lifter. **Always** use appropriate lifting equipment for heavy parts when relevant. Use lifting logs when available. **Always** keep an eye on the load and stay clear during the lifting operation.

Installation

	If the local safety regulations prescribe that the installation has to be inspected and approved by responsible authorities before the valve is put into service, consult with such authorities before installing the equipment and have the projected installation approved by them. **Always** release compressed air after use. **Always** assemble the valve completely before startup and make sure everything is in place and correctly tightened.
  	**Always** ensure that the valve and pipelines are depressurized, emptied, and cooled down to ambient temperature before installation, inspection, assembly, or dismantling of the valve.
	**Never** work on the valve or touch moving parts if the actuator is supplied with compressed air.

Operation

	Always read ***Technical Data*** thoroughly. **Never** operate the valve unless a correct installation has been verified. **Never** cover or in any way restrict the valve, the valve must be able to work unobstructed at all time. **Never** dismantle or touch the actuator for force opening if supplied with compressed air.
	**Never** touch the valve or pipelines when hot.
	**Always** rinse well with clean water after cleaning. **Always** handle lye and acid with great care. **Always** follow the instructions in the safety data sheets from the suppliers of cleaning agents, detergents, oils etc.
	**Never** touch moving parts of the valve during operation. **Never** dismantle the valve during operation or when pressurized. **Always** release compressed air after use.

Maintenance

In order to optimise the operation of the supplied Alfa Laval product and to minimize the down time due repair activities, the maintenance includes:

- Inspection and maintenance of the supplied Alfa Laval product: strictly follow the technical documentation
- **Preventive maintenance:** visual inspection of the supplied Alfa Laval product followed by necessary adjustments and planned periodic replacement of wear and tear parts
- **Repairs:** unscheduled break down of a component, often causing the system to stop. Damaged components must be replaced
- **Stock of Alfa Laval genuine spare parts:** Alfa Laval recommend keeping a stock of genuine spare parts facilitating preventive maintenance and reducing downtime in case of unplanned break downs

Always release compressed air after use.

Always ensure that the valve and pipelines are depressurized, emptied, and cooled down to ambient temperature before dismantling the valve.

Never stick your fingers through the valve ports if the actuator is supplied with compressed air.

Never put your fingers between the valve and actuator for force opening.

Never touch the moving parts if the actuator for force opening is supplied with compressed air.

Never work on the valve or touch moving parts if the actuator is supplied with compressed air.

Storage

Alfa Laval recommend:

- Store the supplied Alfa Laval product as supplied in original packaging
- Port opening(s) should be protected against any ingress
- 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)

Noise

Under certain operating conditions, the supplied Alfa Laval product and/or the systems in which they are installed can produce high sound pressure levels. Appropriate noise protection measures should be taken when necessary and in accordance with local legislation.

Hazards

Burn Hazard

- Lubrication oil, machine parts and various machine surfaces can be hot and cause burns. Wear protective gloves

Corrosive Hazard

- Always handle cleaning liquids, lye and acid with great care and in accordance with separate instructions for those fluids
- When using chemical cleaning agents and lubricants, make sure you follow the general rules and suppliers recommendation regarding ventilation, personnel protection etc.

Cut Hazard

- Sharp edges, especially on bowl discs and threads, can cause cuts. Wear protective gloves

Crushing Hazard

- Avoid placing hands into valve orifice pinch points

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

2.3 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.

2.4 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.

2.5 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.

This page is intentionally left blank.

3 Introduction

The Alfa Laval SB Anti Vacuum Valve is a compact safety valve that protects tanks from collapse or implosion due to internal vacuum conditions. These conditions occur during emptying, cool-rinsing after hot-cleaning, or caustic cleaning in a CO_2 atmosphere. The compact, easy-to-clean safety valve fits onto any closed process tank, optimizing the personnel safety, reliability and performance of critical processes and maximizing uptime.

The Anti Vacuum Valve is delivered with counterweight set and locked for an individual opening vacuum to suit the tank design data. When the vacuum in the tank is lower than the preset opening value, the valve opens and lets in atmospheric air. The valve can be equipped with a Force opener and a CIP device for extra cleaning.

This page is intentionally left blank.

4 Installation

4.1 Unpacking/delivery

NOTE

The instruction manual is part of delivery. Study the instructions carefully.

The items refer to *Parts Lists and Exploded Views* on page 43.

CAUTION

Alfa Laval cannot be held responsible for incorrect unpacking.

Check the delivery for:

1. Valve seat and disc
2. Lever and weight
3. Bearing pins, washers and locking rings
4. Flange gasket
5. Actuator for force opening (option)
6. Splash guard (option)
7. Proximity sensor (option)

1. Remove any packing materials from the valve/valve parts.

2. Inspect the valve/valve parts for visible transport damage.

   Avoid damaging the valve/valve parts.

4.2 General installation

WARNING

Always read *Technical Data* on page 37 thoroughly.

WARNING

Always release compressed air from the actuator for force opening after use.

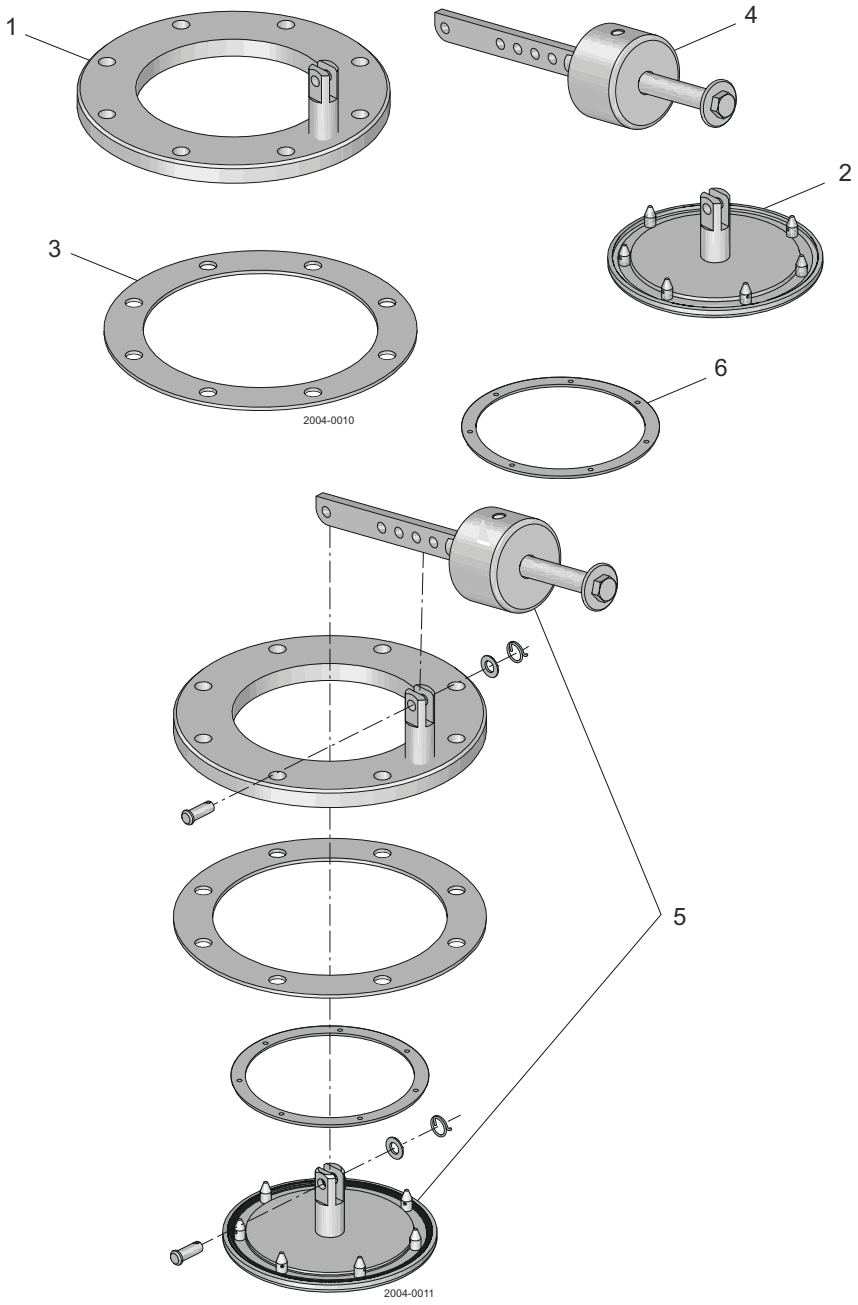
CAUTION

Alfa Laval cannot be held responsible for incorrect installation.

4.3 Valve assembly

The lever and weight are to be assembled with the valve seat and disc. Make sure the serial no. engraved on the disc matches the serial no. engraved on the lever.

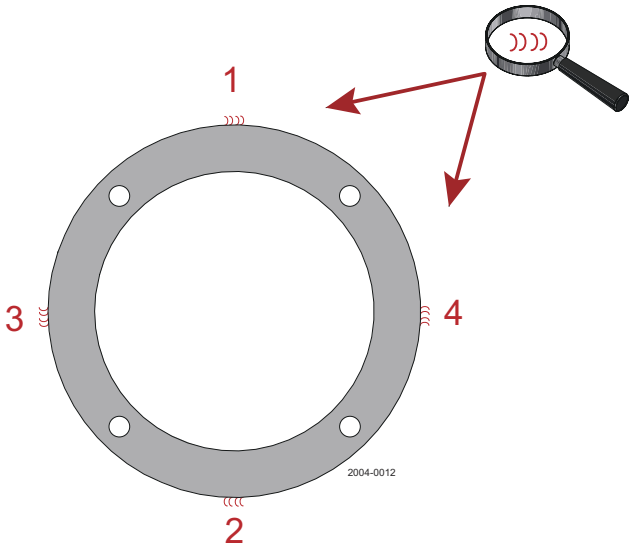
Pos. 1.	Valve seat
Pos. 2.	Valve disc
Pos. 3.	Gasket
Pos. 4.	Lever and weight
Pos. 5.	Serial number
Pos. 6.	Disc ring



4.4 Welding procedures for welding flange

1

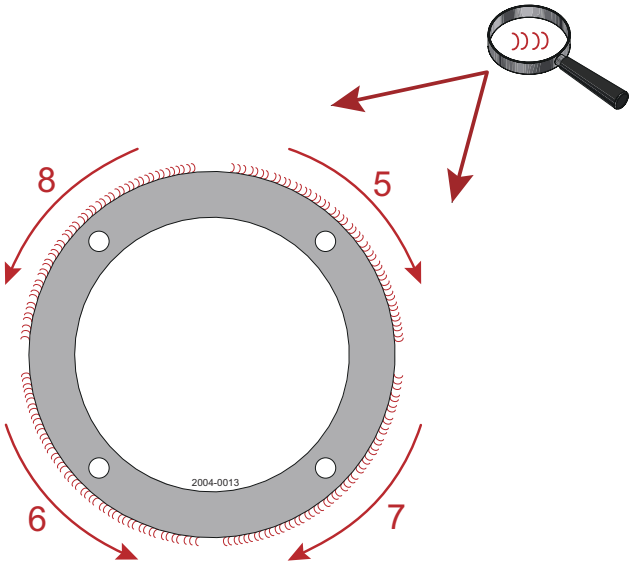
Spot weld from outside



2

Weld the following sections first from the outside then from the inside, and cool with air between each section.

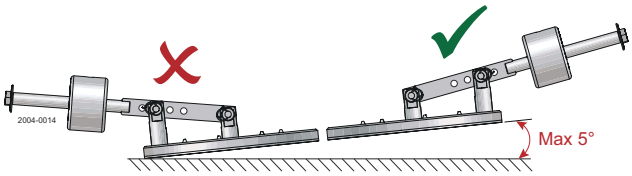
Spot weld from inside



3

- Ensure that the surface flatness tolerance equals ±0.2
- Grind and polish the welding flange

The valve should be seated horizontally. An inclination of max. 5° is acceptable but the lever must then point upwards.

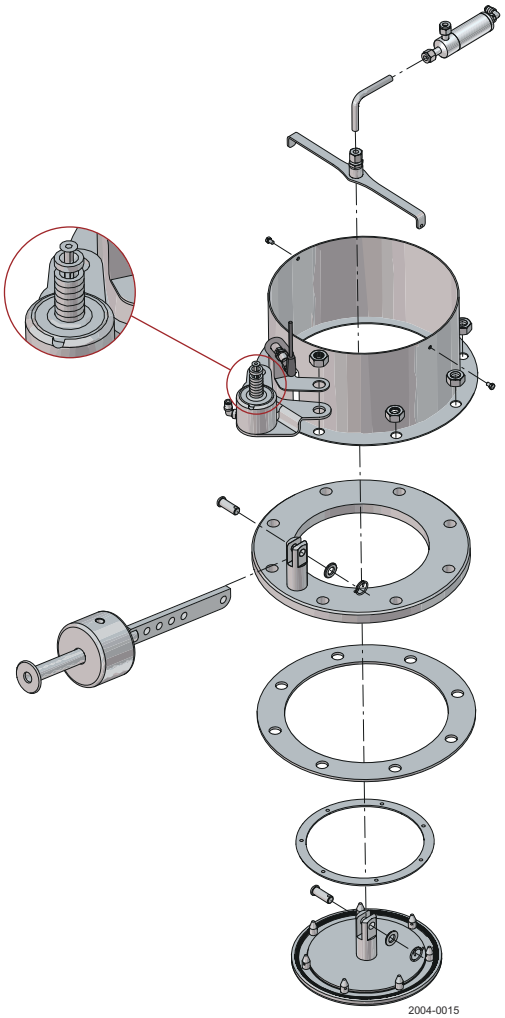


4.5 Installation of valve and accessories

NOTE

The valve is to be fitted with M16 bolts.

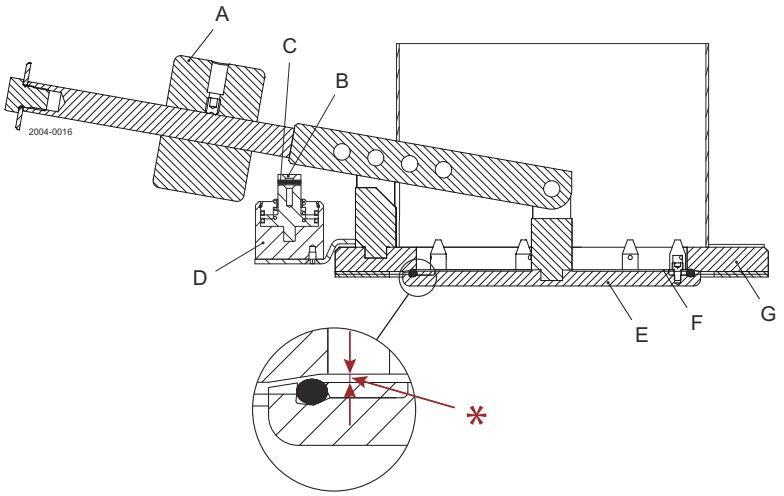
The options Splash guard, Force opener and Proximity sensor are to be fitted with M16 bolts.



Options

1. Force opener: force-opening during valve seat cleaning[1]
2. Splash guard: containing CIP liquid during valve seat cleaning
3. CIP Nozzle: for cleaning valve seat
4. CIP closing valve: for applying CIP liquid
5. Proximity sensor: for operation detection
6. Welding flange: for installation

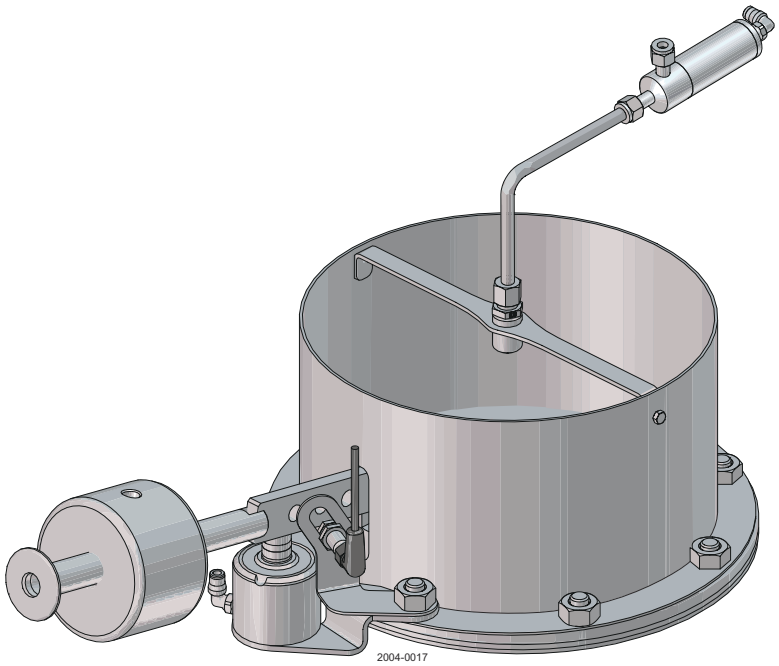
[1] The force opener is delivered with a spacer kit. Adjust the spacer kit to leave a recommended gap of 2-3 mm (0.08" - 0.12") to avoid O-rings are washed out by sprayballs etc. See drawing.



A = Counter weight
B = Screw
C = Spacing rings
D = Force opener
E = Valve disc
F = Valve seat
G = Top plate
* = Adjust gap to 2-4 mm

Tightening torques for bolts:

M16	218 Nm
M6	11 Nm



This page is intentionally left blank.

5 Operation

NOTE

The valve is delivered with counterweight locked by welding to an individual opening pressure to suit the tank design data.

5.1 Operation

WARNING

Never cover or in any way restrict the valve, it must be able to work unobstructed at all time.

Alfa Laval cannot be held responsible for incorrect operation.

Never alter the position of the weight or lever, thereby changing the opening pressure of the valve.

Operation range

Nominal size	Opening pressure range	Allowable pressure PS
100 mm (4")	50-500 mmH2O (0.07-0.7 PSI)	6 bar (87 PSI)
150 mm (6")	25-500 mmH2O (0.035-0.7 PSI)	6 bar (87 PSI)
200 mm (8")	25-500 mmH2O (0.035-0.7 PSI)	6 bar (87 PSI)
250 mm (10")	25-300 mmH2O (0.035-0.43 PSI)	4 bar (58 PSI)
300 mm (12")	25-500 mmH2O (0.035-0.7 PSI)	4 bar (58 PSI)
400 mm (16")	25-100 mmH2O (0.035-0.14 PSI)	4 bar (58 PSI)

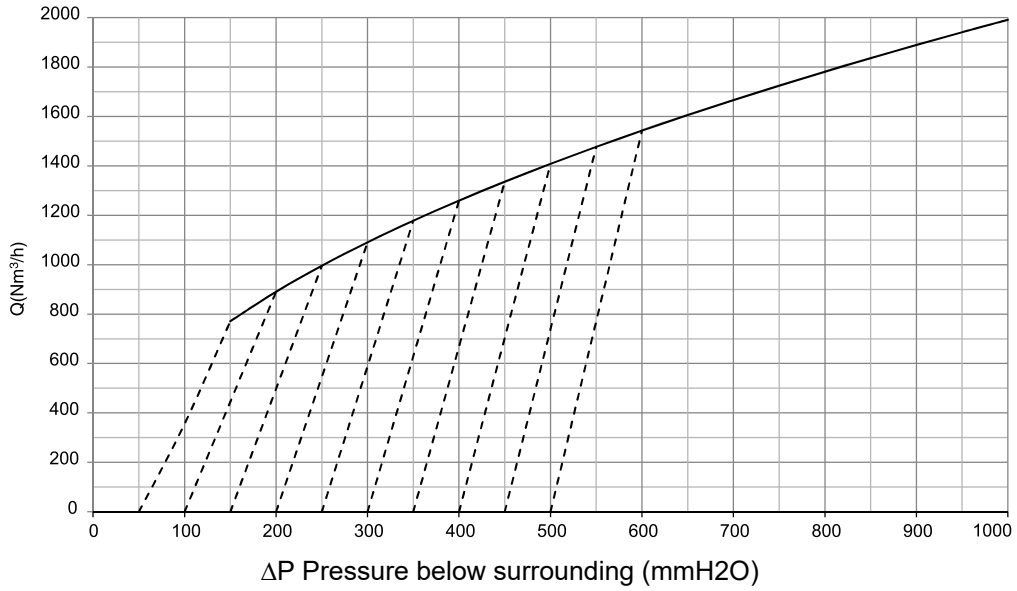
5.2 Volumetric flow capacity

Nominal size: 100 mm

Volumetric flow capacity

Medium: Air

- - - - Preset opening pressure to fully open valve

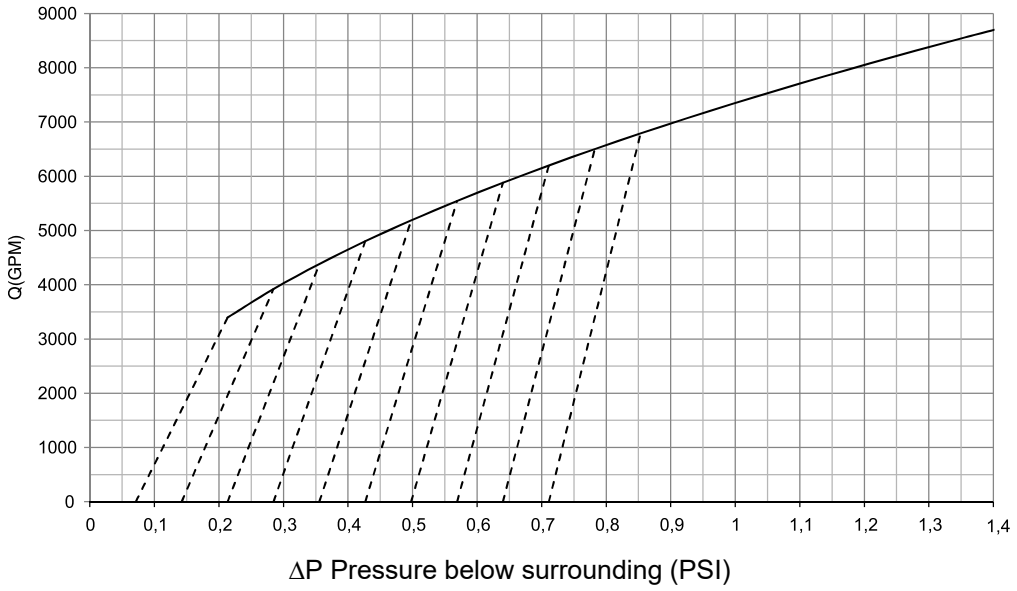


Nominal size: 4"

Volumetric flow capacity

Medium: Air

- - - - Preset opening pressure to fully open valve

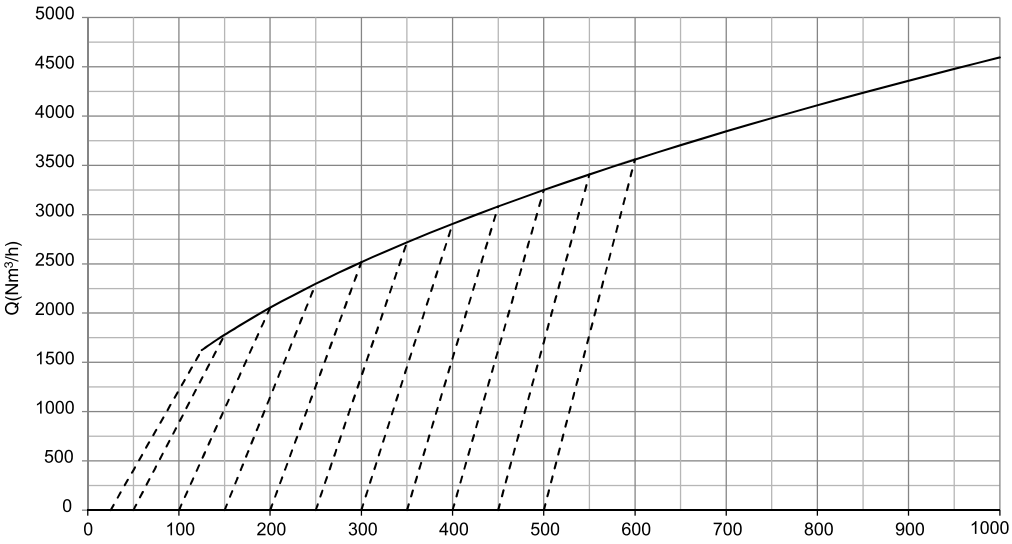


Nominal size: 150 mm

Volumetric flow capacity

Medium: Air

- - - - Preset opening pressure to fully open valve

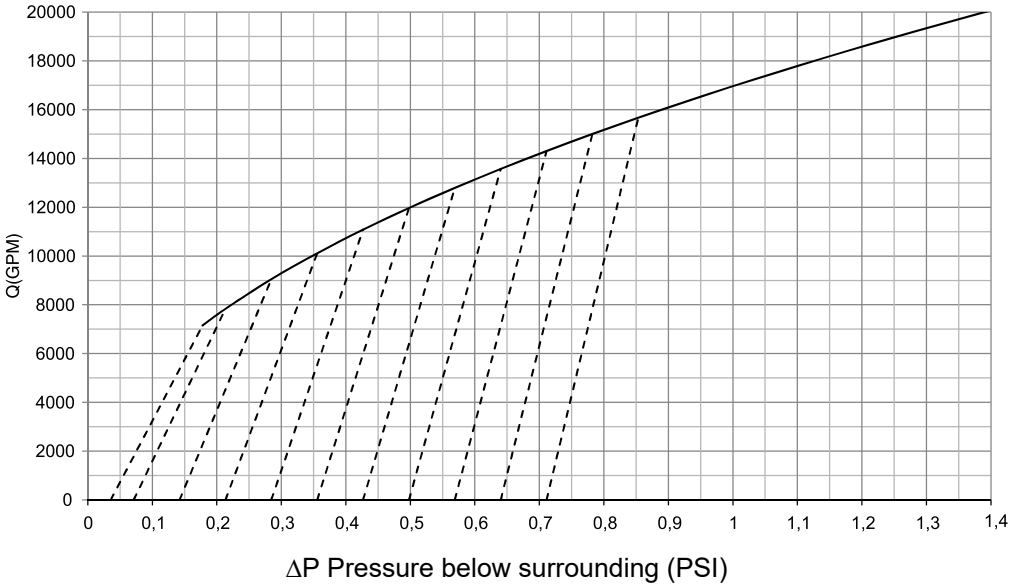


Nominal size: 6"

Volumetric flow capacity

Medium: Air

- - - - Preset opening pressure to fully open valve

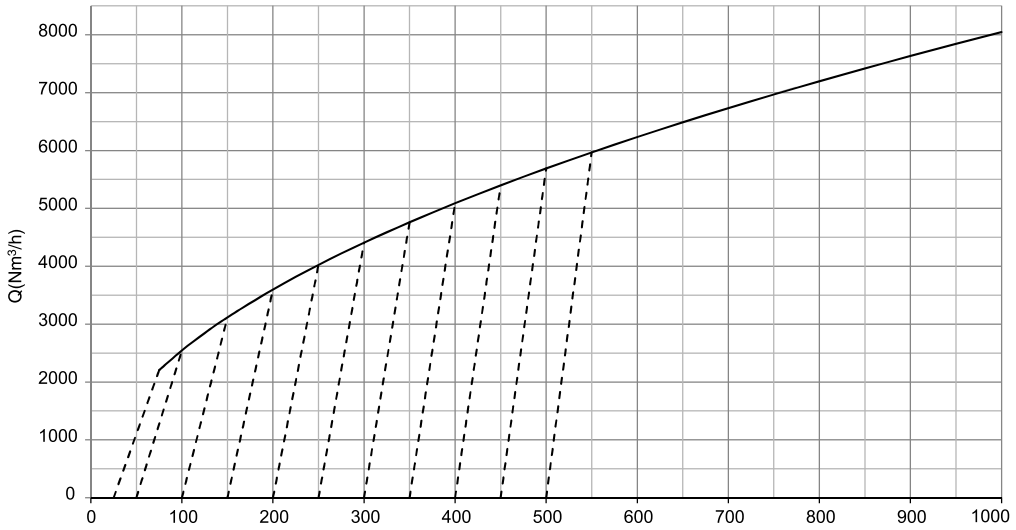


Nominal size: 200 mm

Volumetric flow capacity

Medium: Air

- - - - Preset opening pressure to fully open valve

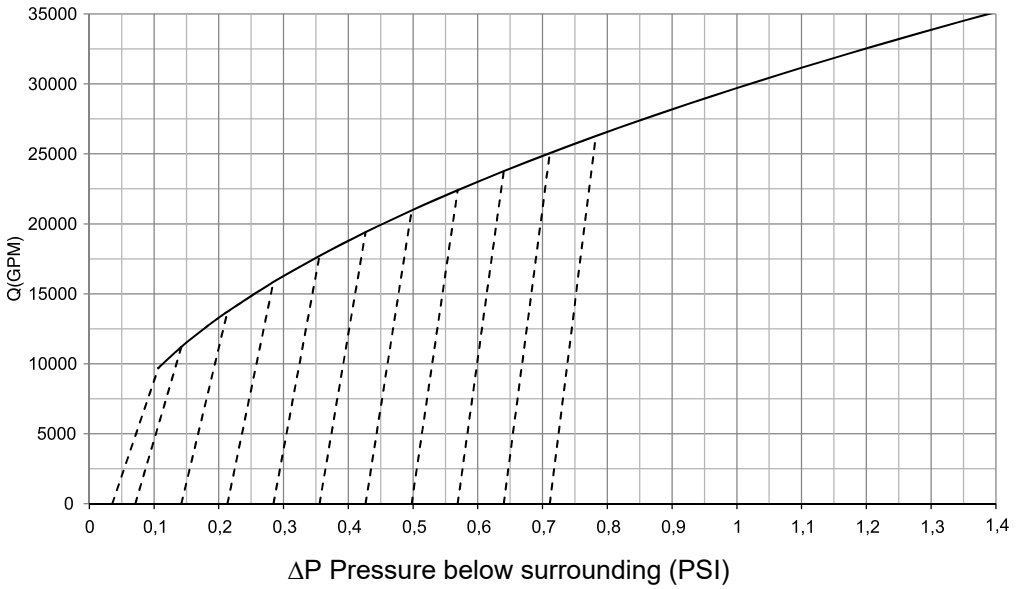


Nominal size: 8"

Volumetric flow capacity

Medium: Air

- - - - Preset opening pressure to fully open valve

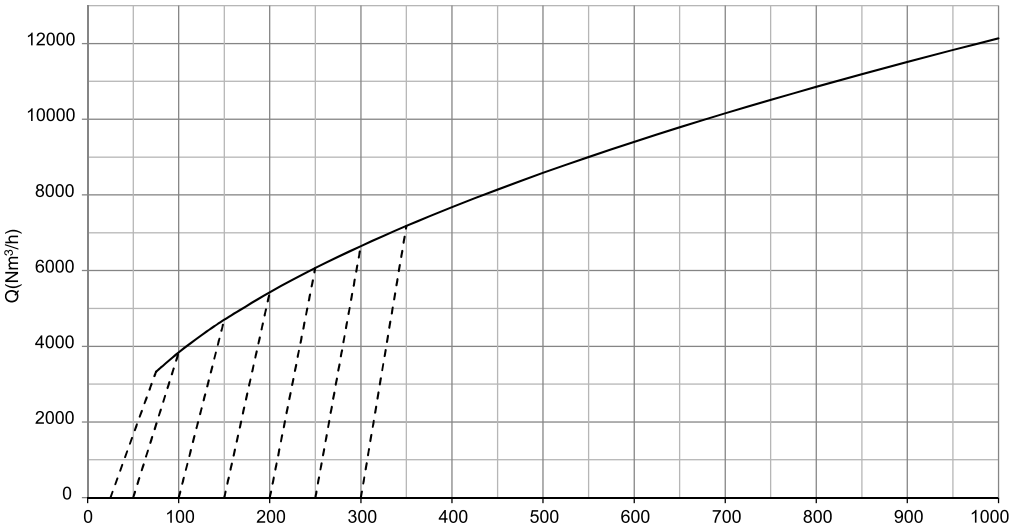


Nominal size: 250 mm

Volumetric flow capacity

Medium: Air

- - - - Preset opening pressure to fully open valve

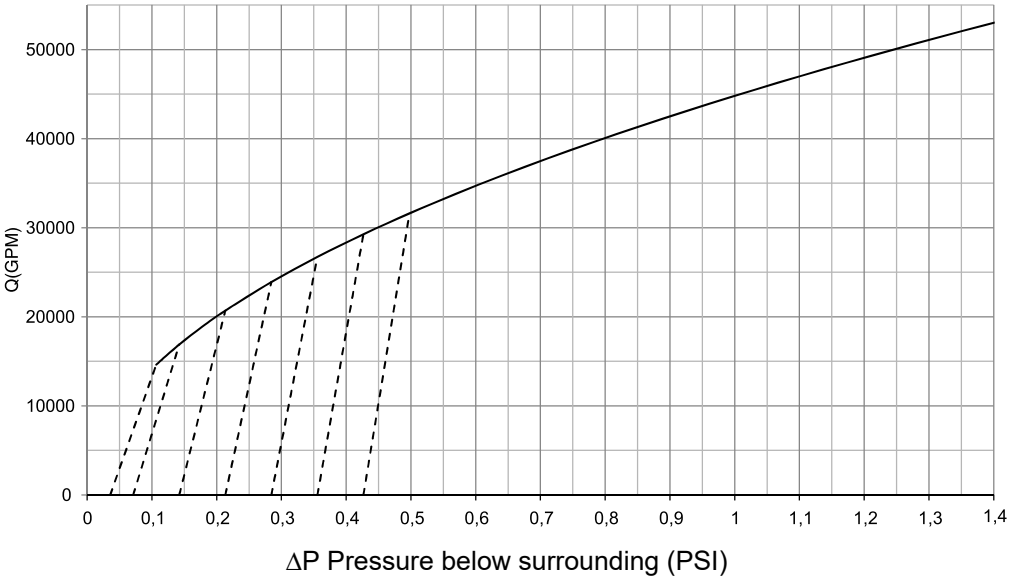


Nominal size: 10"

Volumetric flow capacity

Medium: Air

- - - - Preset opening pressure to fully open valve

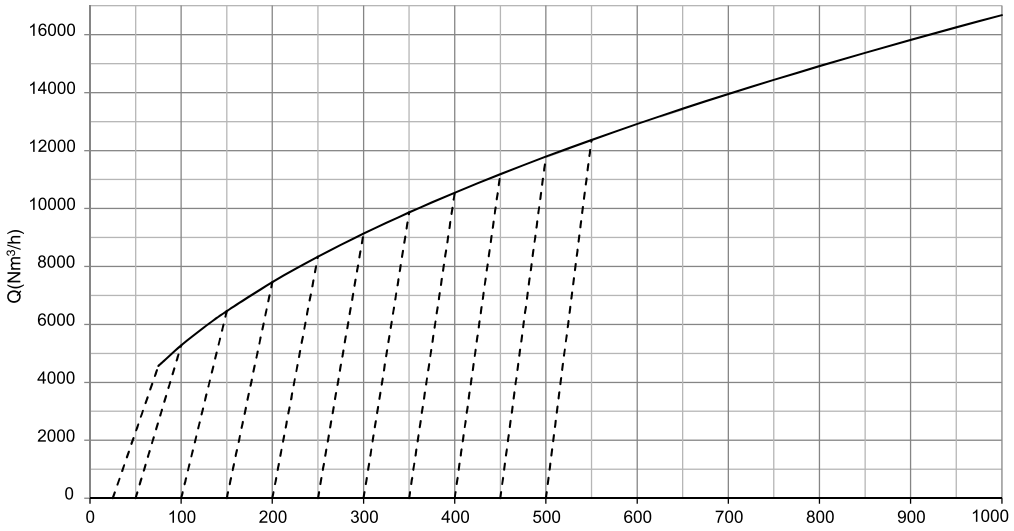


Nominal size: 300 mm

Volumetric flow capacity

Medium: Air

- - - - Preset opening pressure to fully open valve

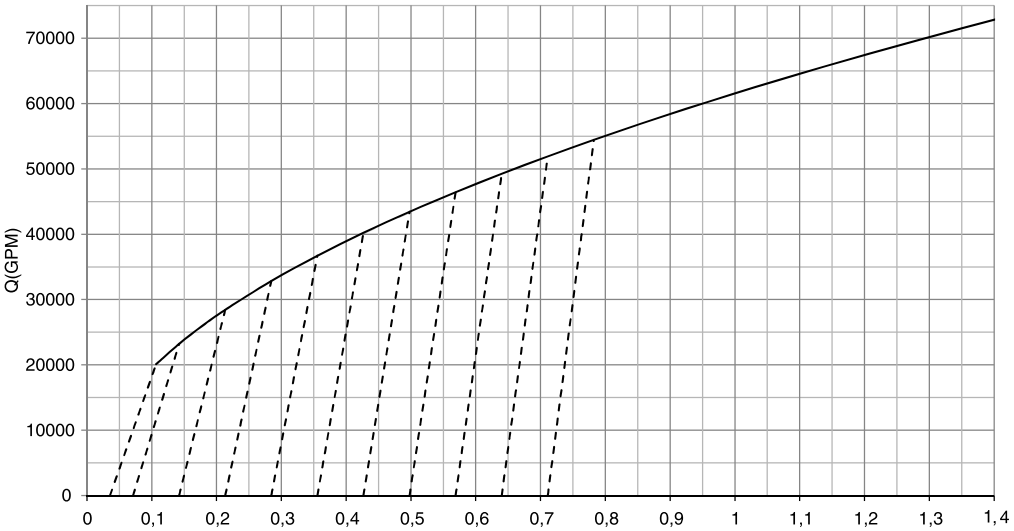


Nominal size: 12"

Volumetric flow capacity

Medium: Air

- - - - Preset opening pressure to fully open valve

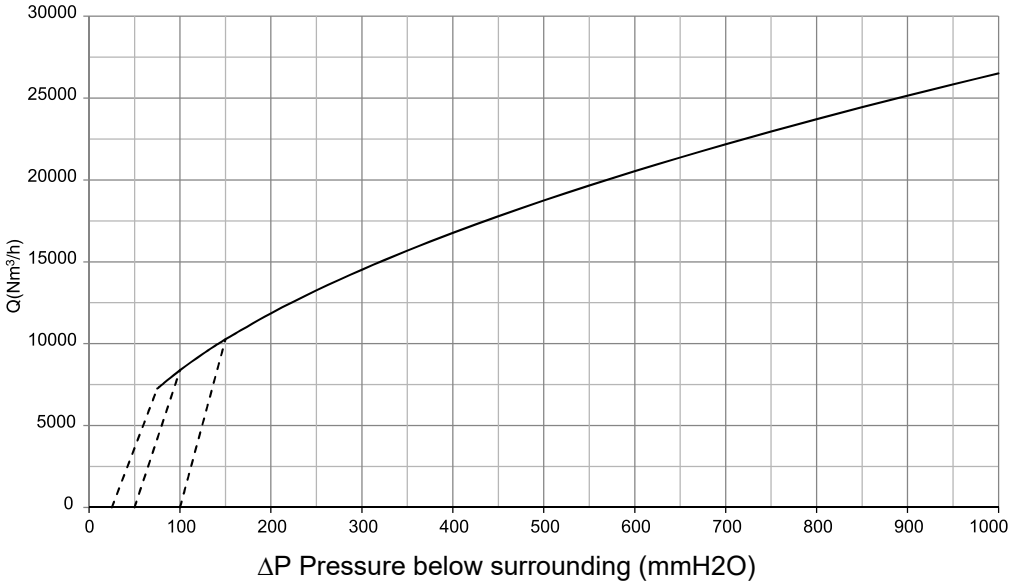


Nominal size: 400 mm

Volumetric flow capacity

Medium: Air

- - - - Preset opening pressure to fully open valve

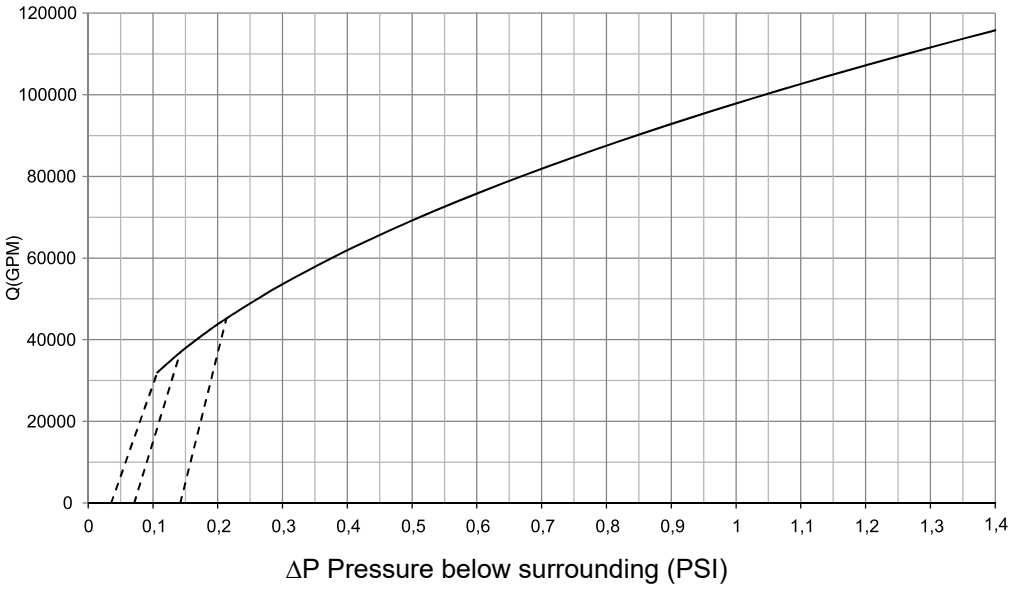


Nominal size: 16"

Volumetric flow capacity

Medium: Air

- - - - Preset opening pressure to fully open valve



5.3 Recommended cleaning

WARNING **Caustic hazard!**

Always handle lye and acid with great care.

Always use rubber gloves!

Always use protective goggles!

Cleaning In Place (CIP) The Anti Vacuum Valve is cleaned, when closed, by the tank cleaning head, but this will not include the valve seating. To include the valve seating in the cleaning cycle, there are two options:

CIP Kit 1 - Force opener; splash guard.

The valve is force-opened during tank CIP. The cleaning of the valve seat is dependent on cleaning jets from the tank cleaning head. Any CIP liquid escaping the tank is contained by the splash guard and drains back into the tank.

CIP Kit 2 - Force opener; splash guard; CIP nozzle; CIP closing valve.

The valve is force-opened during tank CIP. The cleaning of the valve seat is performed by the CIP nozzle. All CIP liquid from the CIP nozzle is contained by the splash guard and drains back into the tank.

NOTE

Applying any of the above CIP options requires that the tank is pressureless at the moment of force opening the Anti Vacuum Valve.

CIP Recommendation:

Do not open anti-vacuum valve from very beginning of tank CIP.

Allow for some caustic cleaning to run on the closed valve before flushing the valve seat.

6 Maintenance

6.1 General maintenance

WARNING

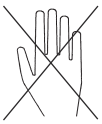
Always read *Technical Data* on page 37 thoroughly.

WARNING **Burn hazard!**

Never service the valve when it is hot.

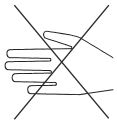
Atmospheric pressure required!

Never service the valve with the valve or actuator under pressure.



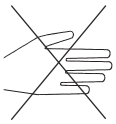
WARNING **Cutting hazard!**

Never put your fingers between the valve and actuator for force opening.



WARNING **Moving parts!**

Never touch the moving parts if the actuator for force opening is supplied with compressed air.



Below are some guidelines for maintenance and lubrication intervals.

Valve

To ensure the valve operates correctly, test of function at regular intervals is required.

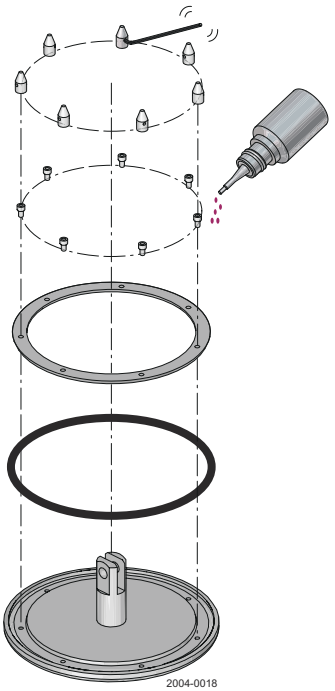
Intervals are dependent on operation conditions and should be specified by the user or local regulations.

Alfa Laval recommend intervals of once every 6-12 months.

O-ring and flange gasket replacement every 2-5 years.

Replacement of O-ring

1. Dismount positioning pins, with the help of an allen key e.g.
2. Dismount screw and remove ring, and old O-ring
3. Place new O-ring in slot, and place disc ring again
4. Fasten screw by cross tighten screws. Max. tightening torque 2 Nm. Remember to lubricate thread on screws, with a little amount of food grade grease, to make sure they can be dismounted again
5. Finally screw positioning pins back onto screw heads again. Max. torque 0.5 Nm



Actuator for force opening

Disassemble, clean and lubricate the actuator every 2-5 years.

O-ring replacement every 2-5 years.

7 Technical Data

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

7.1 Technical Data

Nominal size	Opening pressure Range (ΔP)	Allowable pressure PS
100 mm (4”)	50 - 500 mmH2O (0.07-0.7 psi)	6 bar (87 psi)
150 mm (6”)	25 - 500 mmH2O (0.035-0.7 psi)	6 bar (87 psi)
200 mm (8”)	25 - 500 mmH2O (0.035-0.7 psi)	6 bar (87 psi)
250 mm (10”)	25 - 300 mmH2O (0.035-0.43 psi)	4 bar (58 psi)
300 mm (12”)	25 - 500 mmH2O (0.035-0.7 psi)	4 bar (58 psi)
400 mm (16”)	25 - 100 mmH2O (0.035-0.14 psi)	4 bar (58 psi)

Temperature	
Max. operating temperature	80 °C

Actuator data

Actuator for force opening	
Max. air supply	10 bar
Min. air supply	5 bar

Noise	
Noise of actuator	75 dB(A)

7.2 Physical Data

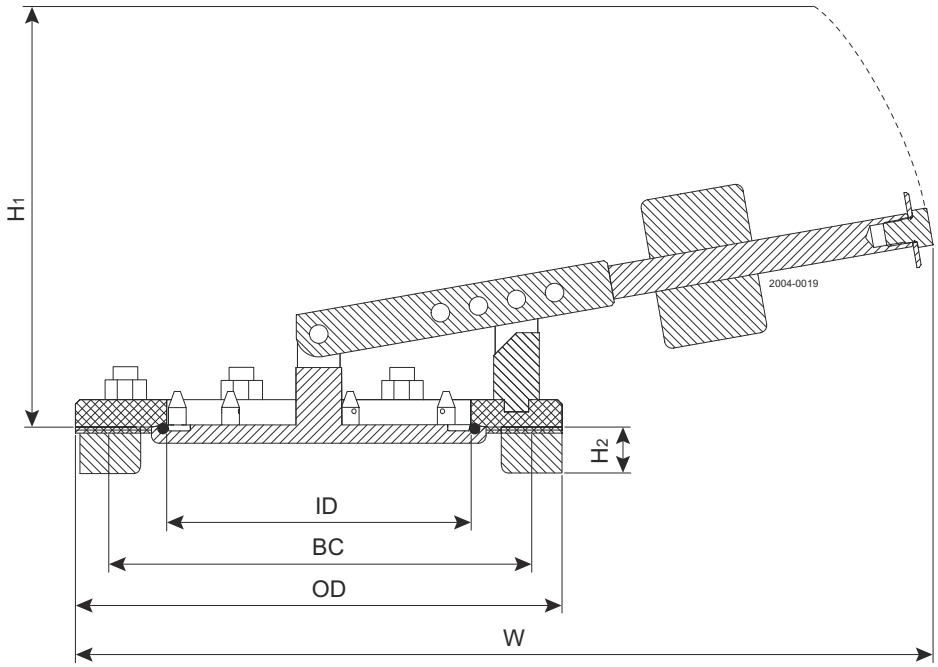
Materials	
Product wetted steel parts:	EN 1.4404 (AISI 316L) with 3.1 cert.
Product wetted steel surfaces:	Surface roughness Ra<0.8 µm (32 µin)
Product wetted seals:	EPDM/NBR
Product wetted polymers:	PEEK
Other steel parts:	EN 1.4307 (AISI 304L)

7.3 Technical data for individual valves

Weight		
Nominal size	**Opening pressure**	**Weight**
100 mm (4")	50 mmH2O (0.07 psi)	5 kg
	100 mmH2O (0.15 psi)	5.2 kg
	150 mmH2O (0.22 psi)	5.5 kg
	200 mmH2O (0.29 psi)	5.3 kg
	250 mmH2O (0.36 psi)	5.8 kg
	300 mmH2O (0.435 psi)	6.8 kg
	350 mmH2O (0.51 psi)	6.8 kg
	400 mmH2O (0.58 psi)	6.8 kg
	450 mmH2O (0.65 psi)	6.8 kg
	500 mmH2O (0.72 psi)	6.8 kg
150 mm (6")	25 mmH2O (0.04 psi)	9.7 kg
	50 mmH2O (0.07 psi)	9.7 kg
	100 mmH2O (0.15 psi)	10.7 kg
	150 mmH2O (0.22 psi)	10.7 kg
	200 mmH2O (0.29 psi)	12.7 kg
	250 mmH2O (0.36 psi)	12.7 kg
	300 mmH2O (0.44 psi)	12.7 kg
	350 mmH2O (0.51 psi)	12.7 kg
	400 mmH2O (0.58 psi)	14.6 kg
	450 mmH2O (0.65 psi)	14.6 kg
	500 mmH2O (0.72 psi)	14.6 kg
200 mm (8")	25 mmH2O (0.04 psi)	16.1 kg
	50 mmH2O (0.07 psi)	16.1 kg
	100 mmH2O (0.15 psi)	18.1 kg
	150 mmH2O (0.22 psi)	16.1 kg
	200 mmH2O (0.29 psi)	20.3 kg
	250 mmH2O (0.36 psi)	20.3 kg
	300 mmH2O (0.44 psi)	24 kg
	350 mmH2O (0.51 psi)	24 kg
	400 mmH2O (0.58 psi)	28 kg
	450 mmH2O (0.65 psi)	28 kg
	500 mmH2O (0.72 psi)	28 kg
250 mm (10")	25 mmH2O (0.04 psi)	23.3 kg
	50 mmH2O (0.07 psi)	23.3 kg
	100 mmH2O (0.15 psi)	25.3 kg
	150 mmH2O (0.22 psi)	31.2 kg
	200 mmH2O (0.29 psi)	31.2 kg
	250 mmH2O (0.36 psi)	36 kg
	300 mmH2O (0.44 psi)	36 kg

Weight		
Nominal size	**Opening pressure**	**Weight**
300 mm (12")	25 mmH2O (0.04 psi)	24 kg
	50 mmH2O (0.07 psi)	28 kg
	100 mmH2O (0.15 psi)	33.9 kg
	150 mmH2O (0.22 psi)	33.9 kg
	200 mmH2O (0.29 psi)	38.7 kg
	250 mmH2O (0.36 psi)	38.7 kg
	300 mmH2O (0.44 psi)	39.3 kg
	350 mmH2O (0.51 psi)	39.3 kg
	400 mmH2O (0.58 psi)	39.3 kg
	450 mmH2O (0.65 psi)	39.3 kg
	500 mmH2O (0.72 psi)	39.3 kg
400 mm (16")	25 mmH2O (0.04 psi)	55.2 kg
	50 mmH2O (0.07 psi)	55.2 kg
	100 mmH2O (0.15 psi)	60.2 kg

Interface requirements



ID = Inside diameter
BC = Bolt circle
OD = Outside diameter

Interface requirements (mm)

Nominal size	ID	BC	OD	Bolts	H1	H2	W
100 (4")	100 (3.93")	165 (6.50")	200 (7.87")	4xM16	310 (12.20")	30 (1.18")	510 (20.07")
150 (6")	150 (5.91")	230 (9.06")	270 (10.63")	8xM16	325 (12.80")	30 (1.18")	550 (21.65")
200 (8")	200 (7.87")	280 (11.02")	320 (12.60")	8xM16	310 (12.20")	30 (1.18")	570 (22.44")
250 (10")	250 (9.84")	330 (12.99")	370 (14.57")	8xM16	325 (12.80")	30 (1.18")	600 (23.62")
300 (12")	300 (11.81")	380 (14.96")	420 (16.54")	12xM16	500 (19.66")	30 (1.18")	940 (37.00")
400 (16")	400 (15.75")	515 (20.26")	560 (22.05")	12xM16	490 (19.29")	30 (1.18")	1010 (39.76")

This page is intentionally left blank.

8 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.

8.1 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

8.2 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.

8.3 Warranty - Definition

WARNING

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.

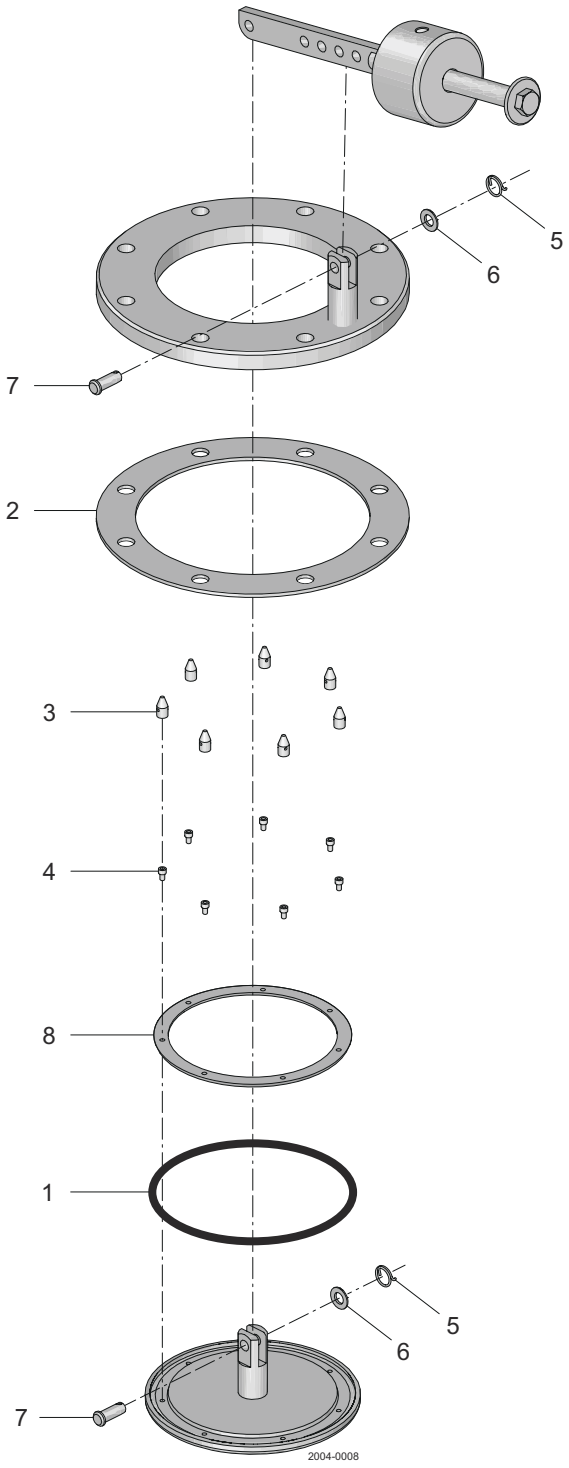
Liability and warranty are excluded:

- 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-authorised persons
- If using the supplied Alfa Laval product without attention of appropriate safety regulations, (see *Safety* on page 7)
- 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.

9 Parts Lists and Exploded Views

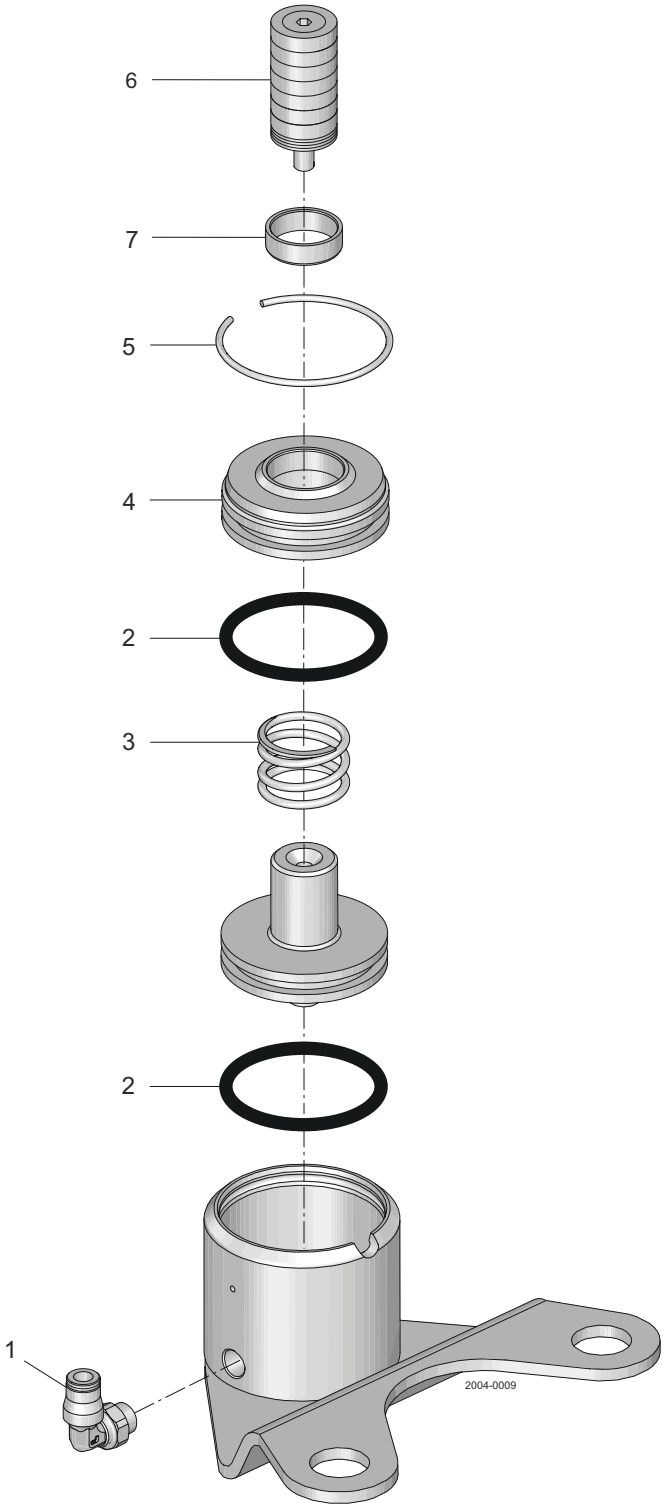
9.1 Anti Vaccum Valve Ø100 to Ø400



Pos.	Qty.	Denomination
1	1	O-ring
2	1	Gasket
3	8	Control pin
4	8	Screw

Pos.	Qty.	Denomination
5	2	Locking ring
6	2	Washer
7	2	Bearing tap

9.2 Force Opener



Pos.	Qty.	Denomination
1	1	Air fitting
2	2	O-ring
3	1	Spring
4	1	Force opener cover

Pos.	Qty.	Denomination
5	1	Locking ring
6	1	Spacer kit
7	1	Bushing