Alfa Laval LKB UltraPure

Butterfly valves

Introduction
The Alfa Laval LKB UltraPure Butterfly Valve is a hygienic in-line valve for routing low and medium-viscosity liquids in stainless steel pipe systems. The LKB UltraPure is available with a standard handle with spring-locking action for straightforward manual operation or with a pneumatic actuator for pneumatic operation.

Application
This in-line butterfly valve is designed for on-off duties in high-purity applications across the personal care, biotechnology and pharmaceutical industries.

Benefits
- Versatile, highly modular design
- Competitively priced alternative to diaphragm valves in certain applications
- Full transparency and traceability of the entire supply chain due to the Alfa Laval Q-doc documentation package
- Easy to configure in either a manual version or a pneumatic version

Standard design
The LKB UltraPure Butterfly Valve consists of two valve body halves, valve disc, and bushings for the disc stem and seal ring, assembled by means of screws and nuts. The valve can also be fitted with the Alfa Laval ThinkTop® V50 and V70 for sensing and control of the valve.

Working principle
The Alfa Laval LKB UltraPure Butterfly Valve is either controlled remotely by means of an pneumatic actuator or manually by means of a handle.

For pneumatic operation, an actuator converts axial piston motion into a 90° rotation of the shaft. The actuator torque increases as the valve disc comes into contact with the seal ring of the butterfly valve to secure proper closing of the valve seat. The actuator comes in three standard versions: normally closed (NC); normally open (NO); and, air/air activated (A/A). Two actuator sizes, ø 3.35" and ø 5.24", cover all valve sizes and are available in two versions, LKLA and LKLA-T (T for mounting of indication or control unit on the actuator).

For manual operation, the handle mechanically locks the valve in open or closed position. Handles are available in two positions, four positions, regulating 90° position, and multi-position. The valve can be supplied either with welding connections or clamp connections and can be mounted with indication units for feedback on the valve position (open or closed).

TECHNICAL DATA

Valve	
Max. product pressure:	145 psi (10 bar)
Min. product pressure:	Full vacuum
Temperature range:	14°F to +284°F* (EPDM) However max. 203°F when operating the valve (All seals)

Actuator	
Max. air pressure:	87 PSI (6 bar)
Min. air pressure, NC and NO:	58 psi (4 bar)
Temperature range:	-13°F to +194°F
Air consumption (litres free air):	
- ø3.35 in:	0.24 x p (bar)
- ø5.24 in:	0.95 x p (bar)
Weight:	
- ø3.35 in:	6.6 lb.
- ø5.24 in:	26.5 lb

ATEX	
Classification	II 2 G D*

*This equipment is outside the scope of the directive 2014/34/EU and must not carry a separate CE marking according to the directive as the equipment has no own ignition source

PHYSICAL DATA

Materials	
Product wetted steel part	1.4404 (316L) acc. to EN 10088
Other steel parts	1.4301 (304) acc. to EN 10088
Bushings for valve disc	PVDF

Elastomers	
Product wetted seals	EPDM acc. to FDA and USP Class VI

Connections	
Weld ends**	Matching tubes and fittings: ASME BPE Acc. to ASME BPE
Clamp ends	Matching tubes and fittings: ASME BPE Acc. to ASME BPE

** Weld ends on ASME BPE valves are according to ASME BPE 2009 316L Table DT-3 with low sulfur and suitable for orbital welding

Actuator	
Actuator body:	1.4307 (304L)
Piston:	Light alloy Air/air version (for ø85 mm: Bronze)
Seals:	NBR
Housing for switches:	PPO

Surface specification (Product wetted steel parts)

ASME BPE*:	
Internal:	20 µin
ASME BPE designation:	SF1
External:	Semi-bright
ASME BPE*:	
Internal:	15 µin electro polish
ASME BPE designation:	SF4
External:	Semi-bright

* According to ASME BPE 2009 table SF-3

Options

A. Product wetted seals: FPM (acc. to FDA and USP Class VI), Q and PFA
B. Tri-Clamp® or butt weld ends standard
C. ThinkTop® for control and indication.*
D. Green Top - position indication MS or PS
E. Indication unit with micro switches.*
F. Indication unit with inductive proximity switches.*
G. Handle with two or four positions.
H. Handle for electrical position indication.
I. Handle with infinite intermediate positions.
J. Multi-positioning handle with lever handle or pull knob
K. Service tool for actuator.
L. Service tool for fitting 1"-1.5" valve discs

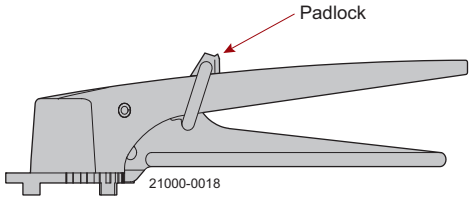


Fig. 1. Lockable Multiposition Handle with padlock.

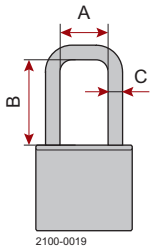


Fig. 2. Dimensions - padlock.
A. Min. 0.79 inch
B. Min. 1.38 inch
C. ø 0.23 inch

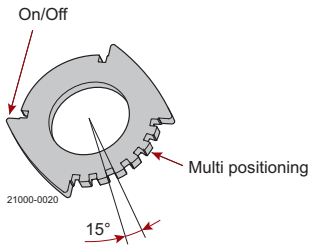


Fig. 3 Positioning cap.

Note! For Ultra Pure ASME BPE clamp valve (size 1" - 2½")

Installation and removal of some clamp rings is easiest by removal of the lockable multi position handle first.

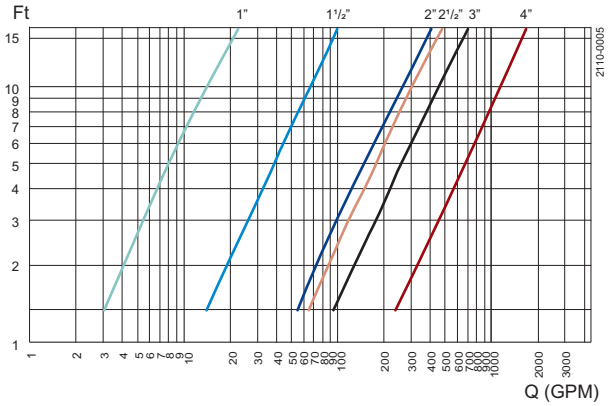
Documentation

All valves are delivered with Alfa Laval Q-doc.

Note!

For further details, see also ESE01699.

Capacity/Pressure drop diagrams

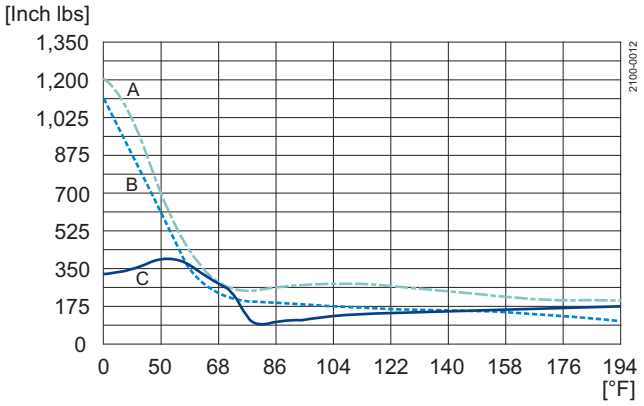


NOTE!

For the diagrams the following applies:
Medium: Water (68°F).
Measurement: In accordance with VDI 2173.

Torque diagrams - Actuator

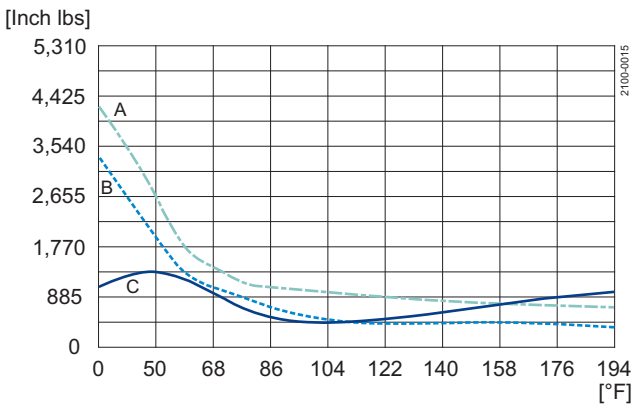
LKLA ø3.35 in:



Closing - Spring activated ← → Opening - Air activated

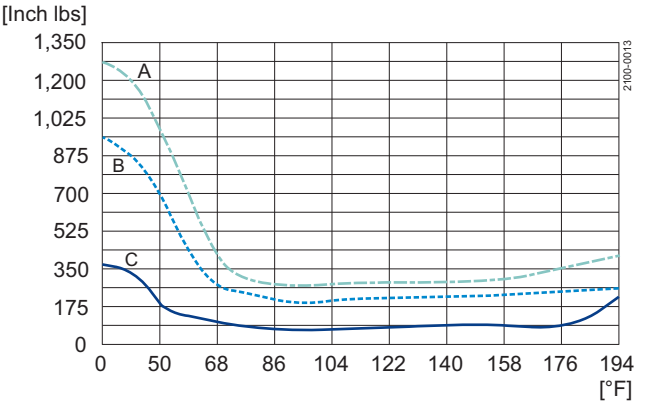
A = 6 bar air pressure
B = 5 bar air pressure
C = Closing/opening with spring

LKLA ø5.25 :



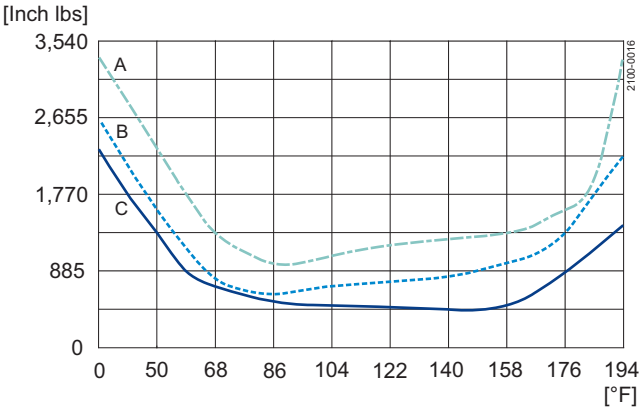
Closing - Spring activated ← → Opening - Air activated

A = 6 bar air pressure
B = 5 bar air pressure
C = Closing/opening with spring



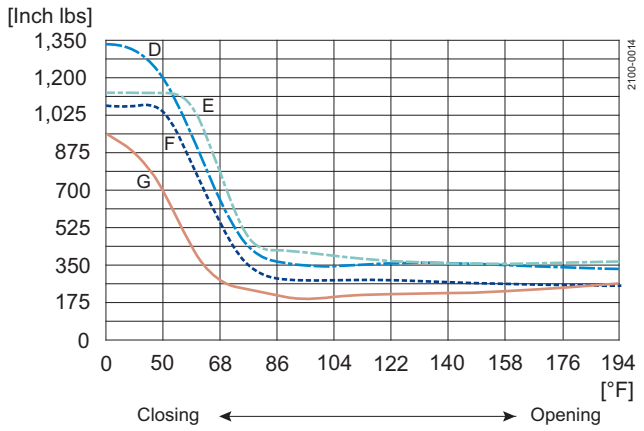
Closing - Air activated ← → Opening - Spring activated

A = 6 bar air pressure
B = 5 bar air pressure
C = Closing/opening with spring



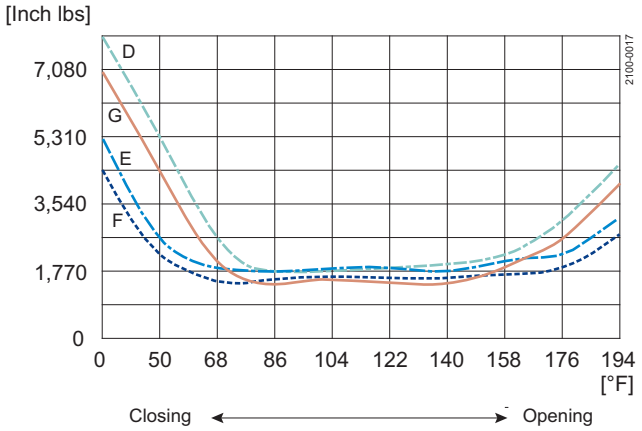
Closing - Air activated ← → Opening - Spring activated

A = 6 bar air pressure
B = 5 bar air pressure
C = Closing/opening with spring



Closing ← → Opening

D = 6 bar air pressure connection on top
E = 6 bar air pressure connection on bottom
F = 5 bar air pressure connection on top
G = 5 bar air pressure connection on bottom



Closing ← → Opening

D = 6 bar air pressure connection on top
E = 6 bar air pressure connection on bottom
F = 5 bar air pressure connection on top
G = 5 bar air pressure connection on bottom

Torque values (for rotating the valve disc in a dry seal ring)

LKB UltraPure	Max Torque (ft-lbs)
1-inch	11
1.5-inch	11
2-inch	11
2.5-inch	15
3-inch	18
4-inch	26

Dimensions (inch)

Fig. 1. Dimensions - valve.

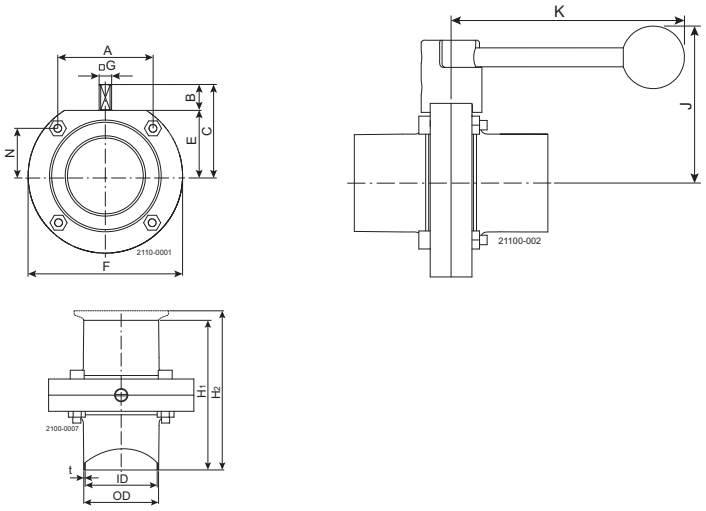
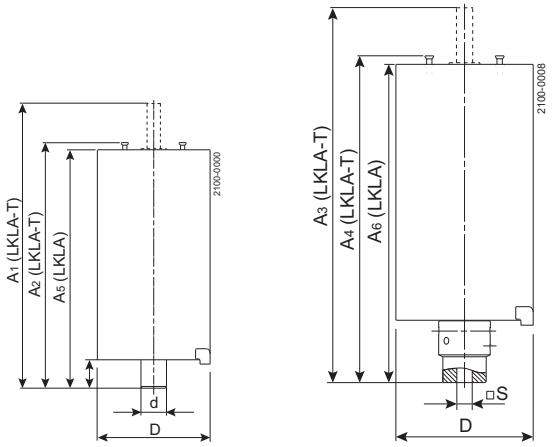


Fig. 2. Dimensions - actuator



a. Without coupling.

a1 = d

b. With coupling.

b1 =□S

Dimensions (inch)

LKB UltraPure

Size	1"	1½"	2"	2½"	3"	4"
A	1.654	1.654	2.402	2.402	3.130	4.173
B	0.610	0.657	0.654	0.689	0.654	0.630
C	1.929	1.929	2.303	2.736	2.894	3.661
OD	1.0	1.5	2.0	2.5	3.0	4.0
ID	0.870	1.370	1.870	2.370	2.870	3.834
t	0.065	0.065	0.065	0.065	0.065	0.083
E	1.280	1.280	1.654	2.047	2.244	3.031
F	3.071	3.071	3.898	4.606	5.197	6.654
□ G	0.315	0.315	0.315	0.315	0.394	0.472
H_1	5.000	5.000	5.197	5.276	6.378	7.087
H_2	2.850	2.850	3.047	3.126	3.441	4.402
J	3.228	3.228	3.622	4.016	4.213	5.000
K	4.724	4.724	4.724	4.724	6.378	6.378
N	1.043	1.043	1.201	1.594	1.713	2.087
Weight (lb)	2.65	2.20	3.31	4.63	6.61	10.36

NOTE! Weights are for valves with welding ends and handles.

Dimensions (inch) - Actuator

LKLA and LKLA-T

Valve Size	1"-2.5"	3"	4"	4"
A_1	9.61	9.53	9.53	14.29
A_2	7.60	7.52	7.52	12.44
A_3	9.61	9.61	9.61	13.27
A_4	6.81	6.81	6.81	11.42
D	3.35	3.35	3.35	5.24
d	0.67	0.67	0.67	1.18
l	0.65	0.65	0.65	1.34
□ s	0.31	0.39	0.47	0.47
Function	NC,NO,A/A	NC,NO,A/A	NC,NO,A/A	NC,NO,A/A

Note! Suitability depends on process conditions

900594

Connections

Compressed air

R1/8" (BSP), internal thread.

(Quick connect fittings for ¼" tubing provided as standard)

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Alfa Laval reserves the right to change specifications without prior notification.

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