



Instruction Manual

Alfa Laval Toftejorg™ SaniMidget SB, SaniMagnum SB & SaniMega SB



Covering: Standard Machines

3-A standard version (clip-on & weld-on). UltraPure standard version (clip-on & weld-on)

Machines delivered with ATEX Certification in accordance with Directive 94/9/EC valid until 2016-04-19/

Directive 2014/34/EU valid from 2016-04-20. Q-doc - Equipment Doc (3.1 Inspection Certificate - EN 10204).

Q-doc - Qualification Doc (Qualification Documentation, FAT/SAT)

TE91A720-EN9. First published: 2009-09

ESE01844-EN9 2016-01

Original manual

The information herein is correct at the time of issue but may be subject to change without prior notice

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1 EC/EU Declaration of Conformity

The Designated Company

Alfa Laval Kolding A/S

Company Name

Albuen 31, DK-6000 Kolding, Denmark

Address

+45 79 32 22 00

Phone No.

hereby declare that

Tank Cleaning Machine Alfa Laval

Designation

Toftejorg SaniMidget SB, SaniMagnum SB & SaniMega SB

Type

From serial number 2015-0001 to 2030-99999

is in conformity with the following directive with amendments:

Machinery Directive 2006/42/EC

DS/EN ISO 12100:2011

The Pressure Directive 97/23/EC

According to its own volume and the rated pressure range, the product is regarded an Article 3, paragraph 3 Equipment

FDA 21CFR§177

Regulation (EC) 1935/2004

Equipment Explosive Atmospheres (ATEX) Directive 94/9/EC, valid until 2016-04-19

Equipment Explosive Atmospheres (ATEX) Directive 2014/34/EU valid from 2016-04-20

(Applicable for machine certified as category 1 and 2 component, see machine engraving)

DS/EN 13463-1:2009, DS/EN 13463-5:2011

DS/EN ISO/IEC 80079-34:2011, Annex A, paragraph A.5.3 Rotating machines

EC Type Examination Certificate no. Baseefa10ATEX0187X

Marking:  II 1 GD c T188°C Tamb 0°C to 150°C

Baseefa Ltd., Certification body number 1180, Rockhead Business Park, Staden Lane, Buxton, Derbyshire SK17 9RZ, United Kingdom

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

Global Product Quality Manager
Pumps, Valves, Fittings and Tank Equipment

Title

Lars Kruse Andersen

Name



Signature

ATEX Responsible Engineer

Title

Denniz Høxbroe

Name



Signature

Kolding

Place

2016-01-22

Date

(This Declaration of Conformity replaces Declaration of Conformity dated 2016-01-01)



2 Safety

*Unsafe practices and other important information are emphasized in this manual.
Warnings are emphasized by means of special signs.
Always read the manual before using the tank cleaning machine!*

2.1 Important information

WARNING

Indicates that special procedures must be followed to avoid serious personal injury.

CAUTION

Indicates that special procedures must be followed to avoid damage to the tank cleaning machine

NOTE

Indicates important information to simplify or clarify procedures.

2.2 Warning signs

General warning:



3.1 Introduction

This manual has been prepared as a guide for installing, operating and maintaining your Alfa Laval Toftejorg Rotary Spray Head tank cleaning machine. Should you require further assistance, our Technical Sales Support department and worldwide net of sales offices are pleased to help you. Please quote the type, article and serial numbers with all of your enquiries; this helps us to help you.

This manual covers the Alfa Laval Alfa Laval Toftejorg SaniMxxxx SB (Slide Bearing) series that consists of four main product series; the Alfa Laval Toftejorg SaniMidget SB, the Alfa Laval Toftejorg SaniMidget SB UltraPure, the Alfa Laval Toftejorg SaniMagnum SB and the Alfa Laval Toftejorg SaniMega SB. All versions are similar in design. Differences are in material selection for the rotor and dimensions.

The Alfa Laval Toftejorg SaniMidget SB UltraPure is equipped with a rotor made from USP Class VI certified material and the Alfa Laval Toftejorg SaniMxxxx SB is equipped with a rotor made from material that meets the 3-A Sanitary Standard 20-25. The USP Class VI polymer used has not been part of the 3-A Third Party Verification (TPV). Consequently the Alfa Laval Toftejorg SaniMidget SB UltraPure has not been verified to meet 3-A Sanitary Standards.

Important information: Before installing the machine and setting it into operation, carefully read the General Installation Instructions (page 11), the special conditions for safe use in accordance with ATEX Certification Directive 94/9/EC valid until 2016-04-19/Directive 2014/34/EU valid from 2016-04-20 (page 13) and the General Safety Precautions (page 13) and take all necessary precautions according to your application and local regulations.



NOTE

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

The English version of the instruction manual is the original manual. We make reservations in regard to possible mistranslations in language versions of the instruction manual. In case of doubt, the English version of the instruction manual applies.

3.2 Intended Use

End-user should verify:

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

Important information: **Liquid inlet pressure:** Max. 4 bar.
Do not steam: Steaming through the Rotary Spray Head may result in excessive high rotation speed of the cleaner and cause severe wear of the ball bearing and/or damage to the cleaner.



See General Installation Instructions on page 11 of this manual for information on recommended installation position.

3 Introduction

3.3 Patents and Trademarks

This Instruction Manual is published by Alfa Laval Kolding A/S without any warranty. Improvements and changes to this Instruction Manual may at any time be made by Alfa Laval Kolding A/S without prior notice. Such changes will, however, be incorporated in new editions of this Instruction Manual.

Alfa Laval, Kolding A/S. All rights reserved.

The Alfa Laval logotype is a trademark or a registered trademark of Alfa Laval Corporate AB. "Toftejorg" is a trademark or registered trademark of Alfa Laval Kolding A/S. The Alfa Laval Toftejorg™ SaniMxxx SB series product has patent in the US (US 8.137.481). Other products or company names mentioned herein may be the trademarks of their respective owners. Any rights not expressly granted herein are reserved.

3.4 Quality System

The Alfa Laval Toftejorg SaniMxxxx SB and Alfa Laval Toftejorg SaniMidget SB UltraPure are designed to meet 3-A Sanitary Standards as well as the guidelines of the European Hygienic Design Group (EHEDG) and thus comply with requirements to design, materials, finish and documentation.

Third Party Verification (TPV) shows that the Alfa Laval Toftejorg SaniMxxxx SB meets the requirements of the 3-A Sanitary Standard 78-01 and EHEDG certificate of cleanability according to EHEDG doc. 2 shows the machines self cleanability features. All machines are produced according to Alfa Laval Kolding's ISO 9001 international Standard certified quality system.

3.5 Marking

Alfa Laval tank cleaning machines are all marked to allow recognition of machine type, machine name, Serial number and manufacturing address. The marking is placed on the body of the tank cleaning machine.

Rotary Spray Head
SaniMxxx SB
s/n.: yyyy-xxxxx

Alfa Laval, DK-6000 Kolding, Albuen 31



4114-0012

Rotary Spray Head
SaniMxxx SB
s/n.: yyyy-F/S-xxx

Alfa Laval, DK-6000 Kolding, Albuen 31



4114-0013

3.6 ATEX Marking

Alfa Laval tank cleaning machines are all marked to allow recognition of machine type, machine name, Serial number and manufacturing address. The marking is placed on the body of the tank cleaning machine.

Rotary Spray Head
SaniMxxx SB
s/n.: yyyy-xxxxx

Alfa Laval, DK-6000 Kolding, Albuen 31
 II 1GD c T188°C Tamb 0°C to 150°C
 1180 Baseefa 10ATEX0187X

4114-0014

Rotary Spray Head
SaniMxxx SB
s/n.: yyyy-F/S-xxx

Alfa Laval, DK-6000 Kolding, Albuen 31
 II 1GD c T188°C Tamb 0°C to 150°C
 1180 Baseefa 10ATEX0187X

4114-0015

Serial number explanation

Machines supplied with or without normal documentation:

yyyy-xxxxx: serial number

yyyy: year

xxxxx: 5 digit sequential number

Serial number explanation

Machines supplied with Qualification Documentation package incl. FAT-SAT

yyyy-F/S-xxx: serial number

yyyy: year

xxx: 3digit sequential number

Changes to the machines are not allowed without approval by the person responsible for the ATEX certification at Alfa Laval Tank Equipment. If changes are made – or spare parts other than Alfa Laval original spare parts are used - the EC Type Examination certification (the ATEX Directive) is no longer valid.

Important ATEX information: See also page 20 ff regarding special conditions for repair of ATEX certified machines.



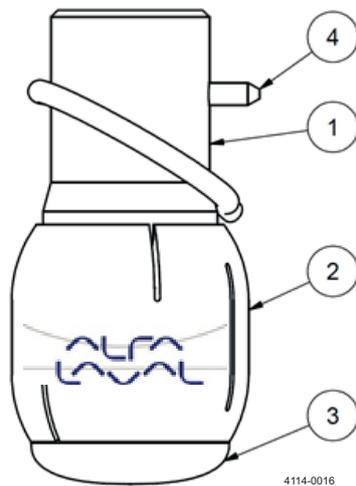
4.3 General Installation Instructions

It is recommended to install a filter with mesh size 250 µm (0.01") in the supply line to avoid particles, scale etc. from clogging the inside of the cleaner. However, particles up to 0.8 mm can pass the cleaning slots in the rotor.

Before installation, all supply lines and valves must be thoroughly flushed to remove remains from welding, grinding dust, scale and other foreign matter. During handling and installation handle the machine with care in order not to damage the fine surface of the machine.

Randomly selected Alfa Laval Toftejorg SaniMxxxx SB machines are tested at the factory before shipping, in accordance with "Test Requirements for SaniMxxxx SB".

Note: The machine shall be installed in accordance with national regulations for safety and other relevant regulations and standards. In EU-countries the complete system must fulfil the EU-Machinery Directive and depending of application, the EU-Pressure Equipment Directive, the EU-ATEX Directive and other relevant Directives.



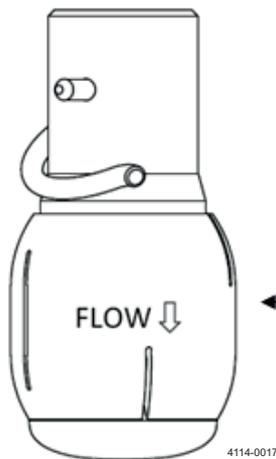
- | | |
|--------|-----------|
| Pos. 1 | Connector |
| Pos. 2 | Rotor |
| Pos. 3 | Stator |
| Pos. 4 | Clip |

4 Installation

Note: Only valid for Alfa Laval Toftejorg SaniMidget SB:

Please note that when doing installation or re-assembly, the rotor must be placed correctly according to below drawing in order to ensure normal operation.

The arrow on the rotor shows the flow direction.



Correct orientation of rotor

Note: Flow direction

Important information:



Recommended installation position:

The Rotary Spray Head tank cleaning machine should be installed in vertical position (upright or upside down). If the machine is installed in any angle to vertical, the life time may vary. If installing at an angle to vertical, ensure that the clip cannot fall out by gravity. To maintain drainability, the device should not be tilted more than 25° to vertical.

ATEX Warning



If the machine is used in potential explosive atmospheres, tapes or joint sealing compounds which are electrical insulators must not be used on threads or joints, unless an electrical connection is otherwise established to ensure an effective earthing. In addition, connecting pipe work, must be electrically conductive and earthed to the tank structure. The resistance between the nozzles and the tank structure should not exceed 20,000 Ohm. This is essential to avoid the build-up of static electricity on the machine. For further information see til IEC/TS 60079-32-1:2013, guidance and recommendations for the avoidance of hazards due to static electricity.

4.4 General Safety Precautions

The Alfa Laval Toftejorg SaniMxxxx SB is intended for use inside a tank only, and must not be operated in open air or when the tank is open.

Warning:



Precautions shall be made to prevent starting the cleaning operation, while personnel are inside the tank or otherwise can be hit by water jets from the cleaner head.

Warning:



In case potentially explosive liquids are used, precautions should be taken against incidental creation of an explosive mixture with oxygen in the tank atmosphere.

4.5 Special Conditions for Safe Use in Accordance with ATEX Certification

Directive 94/9/EC valid until 2016-04-19

Directive 2014/34/EU valid from 2016-04-20

ATEX Warning: The unit may be operated, in a hazardous area, only when filled with the process fluid.



ATEX Warning: Working temperature max.:



The maximum permitted process fluid temperature and ambient temperature when the machine is operating is 95°C.

Ambient temperature:

When the machine is **not** operating, the maximum permitted ambient temperature is 150°C.

ATEX Warning: The maximum permitted process fluid pressure is 3 bar.



ATEX Warning: The unit must **not** be operated in a vessel having an enclosed volume of greater than 100m³.



Tanks larger than 100 m³:

To use Tank Cleaning Machines in tanks larger than 100m³ is possible under certain conditions.

It is necessary to know the current factors such as tank size, cleaning solvent and product.

Additives can be used in the cleaning solvent, or, for example, the tank can be filled with nitrogen. The basic rules are described in the guide "IEC/TS 60079-32-1:2013".

Following a guidance document such as "IEC/TS 60079-32-1:2013" to establish safe use of machinery and process is the users own responsibility and is not covered by the ATEX certification for this product.

In addition to the above mentioned precautions relating to the ATEX guidelines Directive 94/9/EC valid until 2016-04-19/Directive 2014/34/EU valid from 2016-04-20, the Safety Precautions on page 13 must be observed.

4 Installation

4.6 Installation

The Alfa Laval Toftejorg SaniMxxxx SB clip-on versions are installed on:

1" BPE US down pipe (16B102-xx or 16B132-xx)
1½" BPE US down pipe (16B152-xx or 16B182-xx or 17Bxxx-xx)
2" BPE US down pipe (18Bxxx-xx)

The Alfa Laval Toftejorg SaniMxxxx SB weld-on versions are installed on:

1" BPE US down pipe (16B203-xx or 16B233-xx)
1"ISO down pipe (16B202-xx or 16B232-xx)
DIN Range 1 Ø28 down pipe (16B102-xx or 16B132-xx)
1½" BPE US down pipe (17B203-x0 or 17B233-x0)
2" BPE US down pipe (18B203-x0, or 18B233-x0, or 18B263-x0, or 18B293-x0)

Correct down-pipe dimensions are important to ensure volumetric flow rates as provided in this manual. Clip-on hole centre for 1" must be less than 15 mm (0.59") from the bottom end (recommended 13-15 mm – 0.51"-0.59") of the down-pipe and for the 1½" and 2" less than 34 mm (1.33") from the bottom end (recommended 30-34 mm – 1.18"-1.33"). For weld-on versions NO clip hole is needed – the connector (containing the clip hole) is welded on the end of the down pipe.

Important information:



Alfa Laval Toftejorg SaniMxxxx SB weld-on versions:

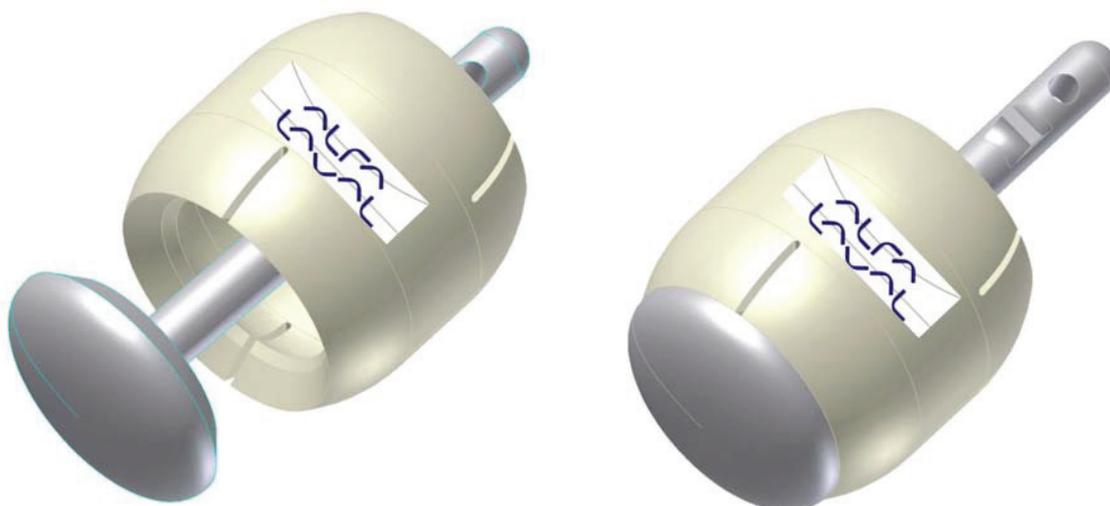
To continue to meet the requirements of the 3-A Sanitary Standard 78-01, the weld-on version shall be welded onto the end of a **straight down pipe**. This straight down pipe shall be connected to the supply system in a dismantlable manner. This shall allow for easy disassembly and reassembly (e.g. a sanitary clamp coupling) to allow visual inspection (through the down pipe) of the inside of the down pipe and the inside of the connector. Welding must be performed according to relevant 3-A Sanitary Standard.

4.7 Assembly

The Alfa Laval Toftejorg SaniMxxxx SB itself is assembled as follows (for the weld-on version, weld the connector onto the down pipe as explained above):

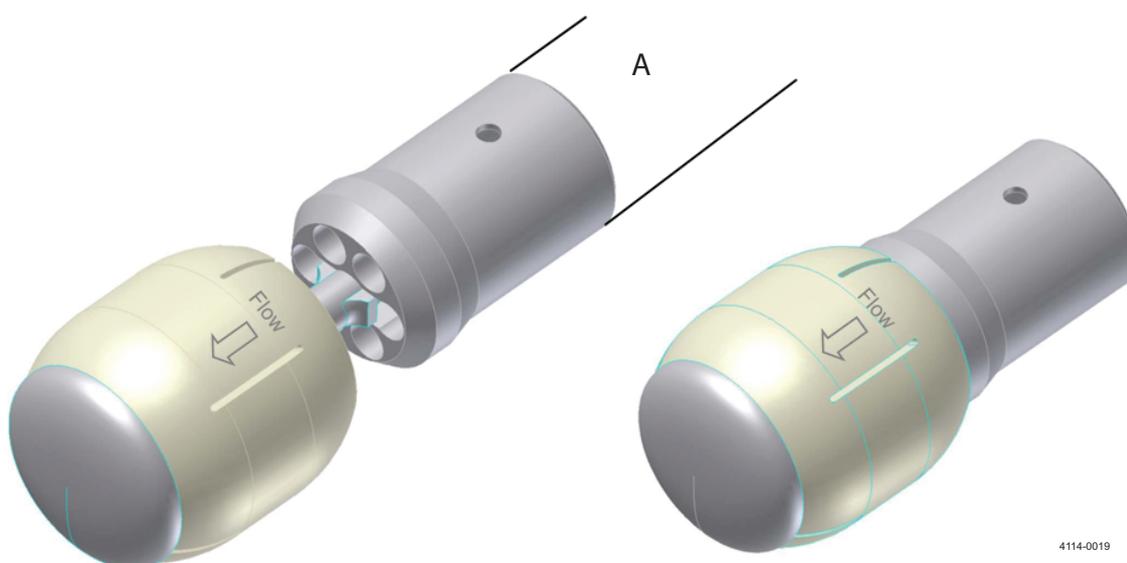
1. Insert the cylindrical end of the stator (Pos. 3) through the Rotor (Pos. 2). If the logo is upside down then the rotor is wrongly orientated (see below for correct orientation of logo).

Note: The arrow on the rotor shows the flow direction



4114-0018

2. The cylindrical end of the stator (Pos. 3) is then inserted into the centre hole of the Connector (Pos. 1). The stator can be inserted to its full extent in one position only. When the stator is fully inserted into the connector, the rotor (Pos. 2) will be fixed between the bearing surface of the stator and connector

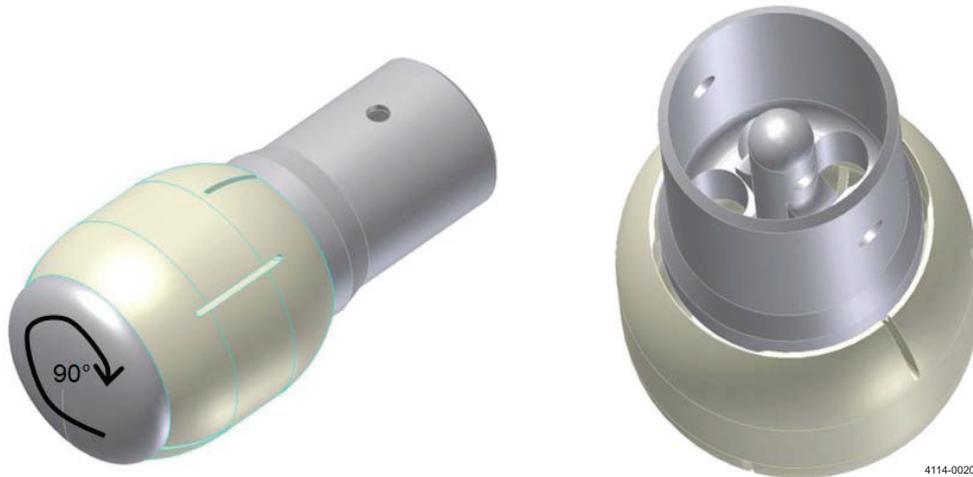


4114-0019

A: Down pipe if weld-on version

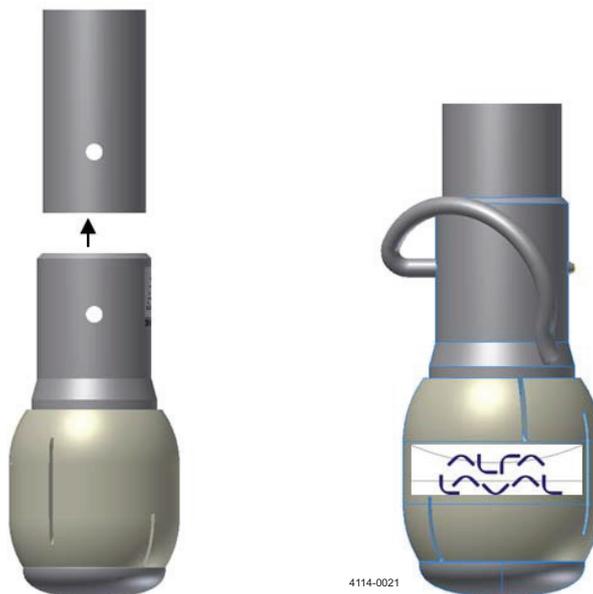
4 Installation

3. Having inserted the stator (Pos. 3) into the connector (Pos. 1) turn the stator 90° to align the hole in the cylindrical end of the stator with the holes in the connector.



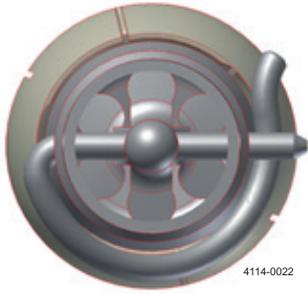
4. **Weld-on version:** Insert the clip (Pos. 4) through the hole in one side of the connector (Pos. 1), through the hole in the stator (Pos. 3) and through the hole on the other side of the connector.

Clip-on version: Holding the machine in one hand (hand below the stator) slide the Alfa Laval Toftejorg SaniMxxx SB onto the downpipe. Align the clip holes in the connector (Pos. 1) with the clip holes in the down pipe, while mounting the clip through the hole in the connector, the down pipe, the stator (Pos. 3), the other side of the down pipe and finally out through the other side of the connector.



Hold hand here

5. Twist the clip (pos. 4) around the connector (pos. 1) to secure it around the connector.



6. Check that the rotor (Pos. 2) can be rotated freely by turning it with your fingers.
-

5 Operation

5.1 Normal Operation

Cleaning Media

Use only media compatible with Stainless Steel AISI 316L and PEEK. Normal detergents, moderate solutions of acids and alkalis are acceptable. Aggressive chemicals, excessive concentrations of chemicals at elevated temperatures, as well as certain solvents hydrochlorides should be avoided. If in doubt, contact your local Alfa Laval sales office.

Note: PEEK is not resistant to concentrated sulphuric acid.

Temperature:

The machine is designed to operate with cleaning media at temperatures up to 95°C (203°F). However, it withstands temperatures up to 150°C (304°F) inside the tank.

ATEX Warning: Atmosphere/surface temperature:



In potentially explosive atmospheres, the temperature must not exceed the maximum surface temperature according to the temperature class for the combustible gas or liquid.

ATEX Warning: Steam cleaning



Tanks with capacities greater than 100 m³ that could contain a flammable atmosphere should not be steam cleaned, as steam issuing from a nozzle could contain charged droplets.

Tanks smaller than this may be steam cleaned providing that: the steam nozzles and other metal parts of the system are reliably earthed and grounded to the tank structure.

Pressure:

Please make sure that the connections are correctly mounted before opening of the washing valve. Apply pressure gradually in order to avoid hydraulic shocks, which might stress mechanical parts in the Alfa Laval Toftejorg SaniMxxxx SB cleaner. Max. pressure difference is 4.0 bar. Ideally, use a frequency controlled pump with gradually increase of pumping speed.

ATEX Warning: Steam cleaning pressure



If steam cleaning is done through the machine, the steam pressure must not cause the machine to rotate.

ATEX Warning: Draining



If the machine is drained using compressed air, then the compressed air pressure must not cause the machine to rotate.

After-use cleaning:

After use flush the machine with fresh water. Cleaning media should never allow to dry or settle in the system due to possible "salting out" or "scaling" of the cleaning media. If cleaning media contains volatile chloride solvents, it is recommended not to flush with water after use, as this might create hydrochloric acid.

Warning:



Hot chemicals and steam under pressure may be used for cleaning and sterilising. Protect against scalding and burning. Never tamper with or try to open clamps or other connections while system is in operation. Make sure that system is de-pressurised and drained before disassembly.

In order to keep the tank cleaning machine servicing as an efficient tool in the tank cleaning operations, it is essential to maintain its high performance by following a simple preventive maintenance programme, which will help keep the tank cleaning machine in good condition

Good maintenance is careful and regular attention!

6.1 Recommended Service Intervals

The design of the Alfa Laval Toftejorg SaniMxxxx SB asks for little maintenance, as there are no rotating parts in direct contact with stationary parts. It is recommended that inspection is performed after each 500 running hours.

For continuous surveillance of the Alfa Laval Toftejorg SaniMxxxx SB, monitor and log the volumetric flow rate. If the volumetric flow rate increases or decreases by more than 15% over time this could be a sign of wear or blockage of the flow path in certain parts of the machine and the machine should be inspected.

A service consists of:

0. At a pressure of 0.3 bar open a hatch in the tank to verify rotation and liquid fans are emerging from all slots. **ATTENTION: Use only pure water at normal temperature for safety reasons.**

If needed proceed to 1).

1. Un-install the machine (as described on the following pages).
2. Visual inspection for foreign objects. Remove any objects and clean before rotation verification.
3. Visual inspect the bearing surfaces, the holes for the clip-on connection and the width of the slots in the rotor.
4. In case of machine wear, the parts worn down are to be replaced.
5. Look for wear of the slots in the spray head. Recommendation: Replace rotor if slot width (slot at equator on rotor) exceeds SaniMidget SB: 1.2 mm, SaniMagnum SB: 3.2 mm, SaniMega SB 4.2 mm and SaniMega SB high flow version 5.2 mm, as throw length decreases and flow rate increases.
6. Reinstall machine.
7. Fill in the Service Log.

Lists of parts included in the machines are provided on page 28.

6 Maintenance

6.2 Service and Repair of ATEX Approved Machines

All service and repair of ATEX certified machines can be performed by Alfa Laval Tank Equipment, Kolding, Denmark or by an Alfa Laval service center approved by Alfa Laval Tank Equipment.

ATEX Warning: In order to ensure compliance with the ATEX regulations and keep the machine ATEX certification valid the service or repair must be performed by an authorized person with knowledge of the ATEX requirements and regulations.



All spare parts must be original Alfa Laval spare parts and the repair or service must be done according to the instructions in the related manual.

If a customer wishes to carry out service or repair himself, it is the responsibility of the repair shop to ensure that the ATEX requirements are met in any way possible. After performing service or repair, the repair shop thus carries the full responsibility for traceability of all relevant documents in order to ensuring the retention of the ATEX certification of the machine.

6.3 Service and Repair of Machines Ordered with Alfa Laval Q-doc

In order to ensure full traceability and to obtain full test documentation (FAT: Factory Acceptance Test), it is necessary to order a new Rotary Spray Head machine with Alfa Laval Q-doc. The new Rotary Spray Head machine will be manufactured and tested (FAT) and shipped to the customer with new Alfa Laval Q-doc for further qualification (SAT: Site Acceptance Test) and validation (PV: Process Validation).

6.4 Disassembly

Disassemble machine as described on the following pages.

1. Hold one hand under the stator (Pos. 3) of the Alfa Laval Toftejorg SaniMxxxx SB.



Hold hand here

2. With the other hand unlock the clip (Pos. 4) and withdraw it from the holes to loosen the Alfa Laval Toftejorg SaniMxxxx SB from the down-pipe (for weld-on version: from the connector).
3. Still holding the hand under the stator (Pos. 3), lower the Alfa Laval Toftejorg SaniMxxxx SB free from the down pipe and remove it from the tank together with the clip (Pos. 4).
4. When out of the tank, turn the Stator (Pos. 3) 90° to allow it to be withdrawn from the connector (Pos. 1).

This completes the disassembly and the four parts (stator, rotor, connector and clip) of the Alfa Laval Toftejorg SaniMxxxx SB can be inspected. For the weld-on versions, the connector (Pos. 3) is still on the down pipe and shall be inspected on the inside by looking down through the straight down-pipe.

6.5 Reassembly

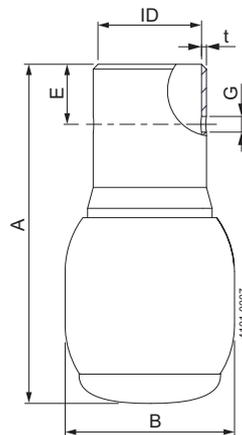
Reassembly is carried out according to the installation instruction given on page 11.

7 Technical Data

7.1 Alfa Laval Toftejorg SaniMidget SB

Surface finish	:	Ra < 0.8 µm (32 µin)
Weight of machine	:	SaniMidget SB 1": 0.20 kg (0.44 lbs) SaniMidget SB 1½": 0.44 kg (0.97 lbs)
Working pressure	:	1 – 3 bar (14.5 – 44 psi)
Recommended pressure	:	2 bar (29 psi)
Max. working temperature	:	95°C (203°F)
Max. sterilisation temperature	:	121°C (250°F)
Max. ambient temperature	:	150°C (304°F)
Wetting radius	:	3 m (9.8 ft)
Impact cleaning radius	:	1.4 m (4.6 ft)
Materials	:	AISI 316L, PEEK 450G (for 3-A version) PEEK w. USP Class VI cert (for UltraPure version)
Lubricant	:	Self-lubricating with the cleaning fluid
Steam or gas (air)	:	Not supported (contact AL for recommendations)
Connections	:	Clip-on 1" BPE US, Clip-on 1½" BPE US Clip-on 1½" ISO 2037, Weld-on 1" BPE US Weld-on 1" ISO 2037, Weld-on DN25 DIN Range 1

Dimensions



Dimensions (mm)

	Clip-on 1" BPE US		Clip-on 1½" BPE US		Weld-on 1" ISO 2037		Weld-on 1" BPE US		Weld-on DIN Range 1 (Ø28)	
	mm	inch	mm	Inch	mm	inch	mm	inch	mm	inch
ID	25.7	1.012	38.4	1.512						
OD					25.0	0.984	25.4	1.000	28.1	1.106
t	1.2	0.047	1.2	0.047	1.2	0.047	1.65	0.065	1.2	0.047
B	42.0	1.653	54.7	2.154	42.0	1.653	42.0	1.653	42.0	1.653
A	84.8	3.338	118.3	4.659	104.8	4.126	104.8	4.126	84.8	3.338
Ø-clip	4.0	0.157	4.0	0.157	4.0	0.157	4.0	0.157	4.0	0.157
G	4.1	0.161	4.1	0.161	4.1	0.161	4.1	0.161	4.1	0.161
E	15.0	0.590	25.4	1.000						

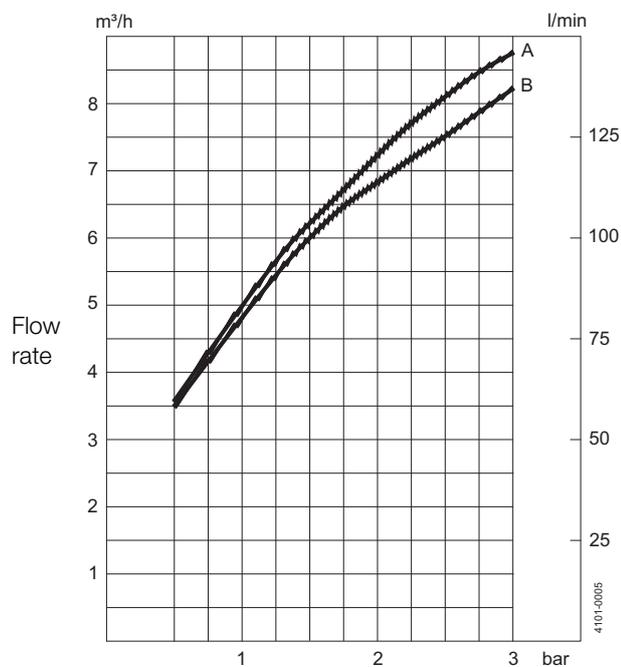
Important information: The SaniMidget SB Weld-on versions only continue to meet the requirements of the 3-A Sanitary Standard 78-01, if the installation makes visual inspection of all liquid contacts surfaces possible. See Installation instructions on page 11.



Performance Data for Alfa Laval Toftejorg SaniMidget SB

Flow rate

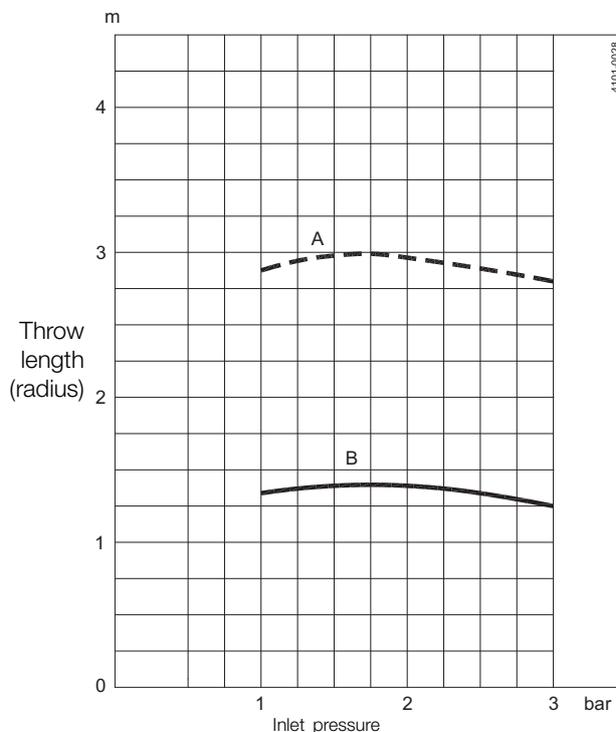
Inlet pressure



A: 360°C - B: 270°C

Cleaning radius

Inlet pressure



A: Wetting - B: Impact Cleaning

For Clip-on models, the flow rate is increased by approx. 0.5 m³/h.

Note: The curves show the average value of flow rate and throw length. The Flow rate can vary up to +/- 10%.

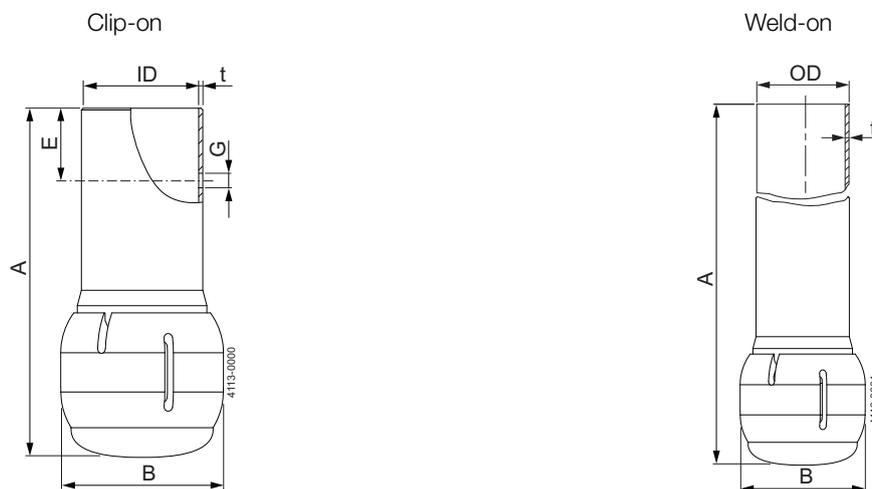
Note: The inlet pressure has been taken immediately before the inlet to the machine. In order to achieve the performance indicated on the curves, the pressure drop in the supply lines between pump and machine must be taken in consideration and the water temperature during testing was approx. 20°C.

7 Technical Data

7.2 Alfa Laval Toftejorg SaniMagnum SB

Surface finish	: Ra < 0.8 µm (32 µin)
Weight of machine	: 0.40 kg (0.88 lbs)
Working pressure	: 1 – 3 bar (14.5 – 44 psi)
Recommended pressure	: 2 bar (29 psi)
Max. working temperature	: 95°C (203°F)
Max. sterilisation temperature	: 121°C (250°F)
Max. ambient temperature	: 150°C (304°F)
Wetting radius	: 4.5 m (14.7 ft)
Impact cleaning radius	: 2.4 m (7.5 ft)
Materials	: AISI 316L, PEEK 450G (for 3-A version)
Lubricant	: Self-lubricating with the cleaning fluid
Steam or gas (air)	: Not supported (contact AL for recommendations)
Connections	: Clip-on 1½" BPE US Weld-on 1½" BPE US

Dimensions



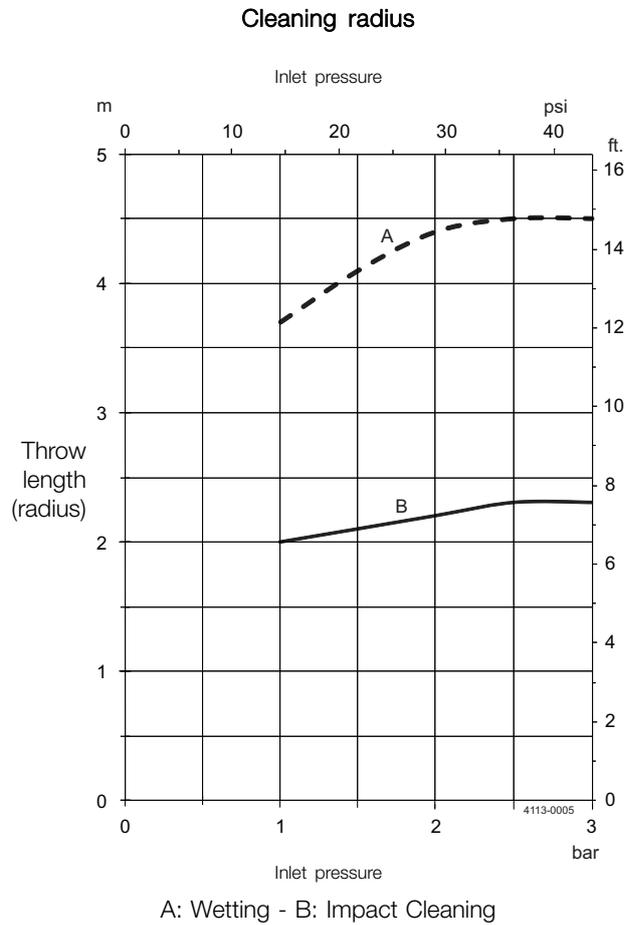
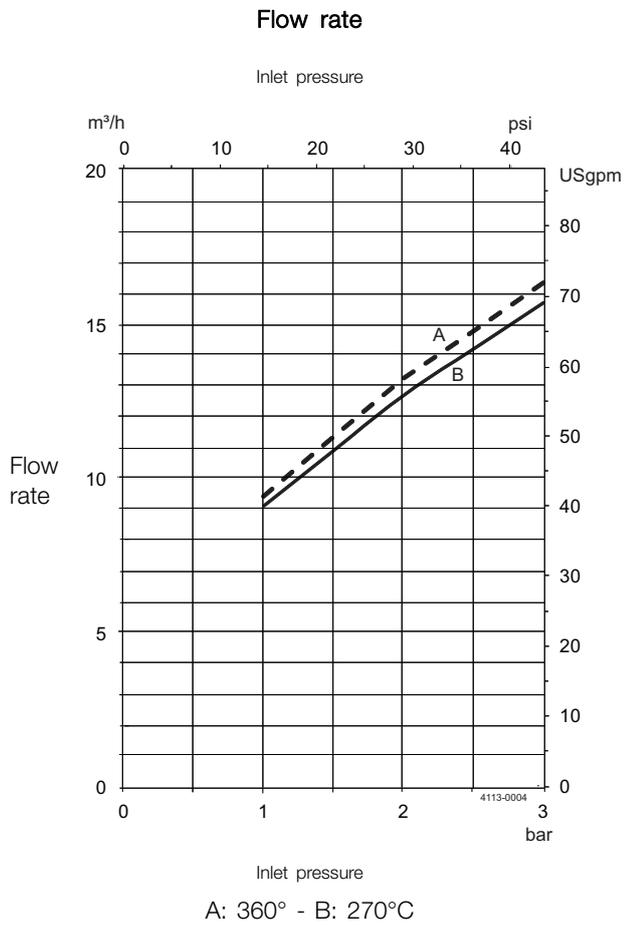
Dimensions (mm)

Type	A	B	E	G	ID	OD	t	Clip
Clip-on	118.3	54.7	25.4	ø4.1	ø 38.4			ø4.0
Weld-on**	138.9	54.7				ø38.1	1.2	

Important information: The SaniMagnum SB Weld-on versions only continue to meet the requirements of the 3-A Sanitary Standard 78-01, if the installation makes visual inspection of all liquid contacts surfaces possible. See Installation instructions on page 11.



Performance Data for Alfa Laval Toftejorg SaniMagnum SB



For Clip-on models, the flow rate is increased by approx. 1.5 m³/h.

Note: The curves show the average value of flow rate and throw length. The Flow rate can vary up to +/- 10%.

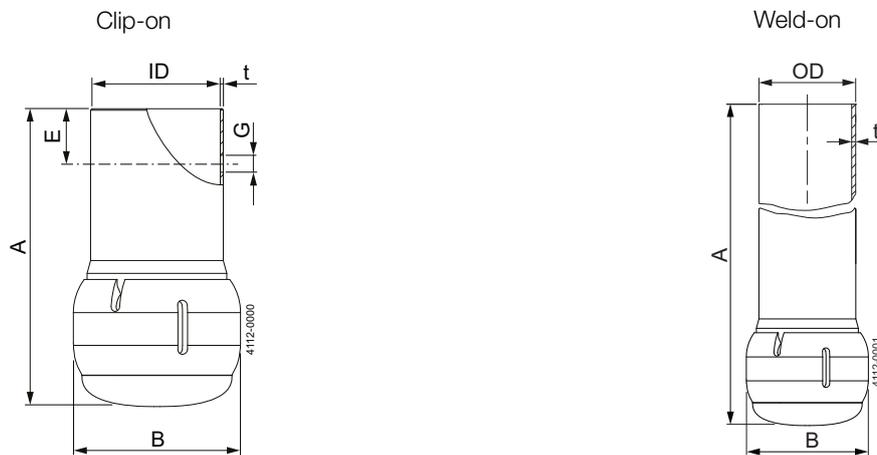
Note: The inlet pressure has been taken immediately before the inlet to the machine. In order to achieve the performance indicated on the curves, the pressure drop in the supply lines between pump and machine must be taken in consideration and the water temperature during testing was approx. 20°C.

7 Technical Data

7.3 Alfa Laval Toftejorg SaniMega SB and SaniMega SB HF

Surface finish	: Ra < 0.8 µm (32 µin)
Weight of machine	: 0.61 kg (1.34 lbs)
Working pressure	: 1 – 4 bar (14.5 – 58 psi)
Recommended pressure	: 3 bar (44 psi)
Max. working temperature	: 95°C (203°F)
Max. sterilisation temperature	: 121°C (250°F)
Max. ambient temperature	: 150°C (304°F)
Wetting radius	: 5.7 m (18.7 ft)
Impact cleaning radius	: 2.7 m (8.85 ft)
Materials	: AISI 316L, PEEK 450G (for 3-A version)
Lubricant	: Self-lubricating with the cleaning fluid
Steam or gas (air)	: Not supported (contact AL for recommendations)
Connections	: Clip-on 2" BPE US Weld-on 2" BPE US

Dimensions



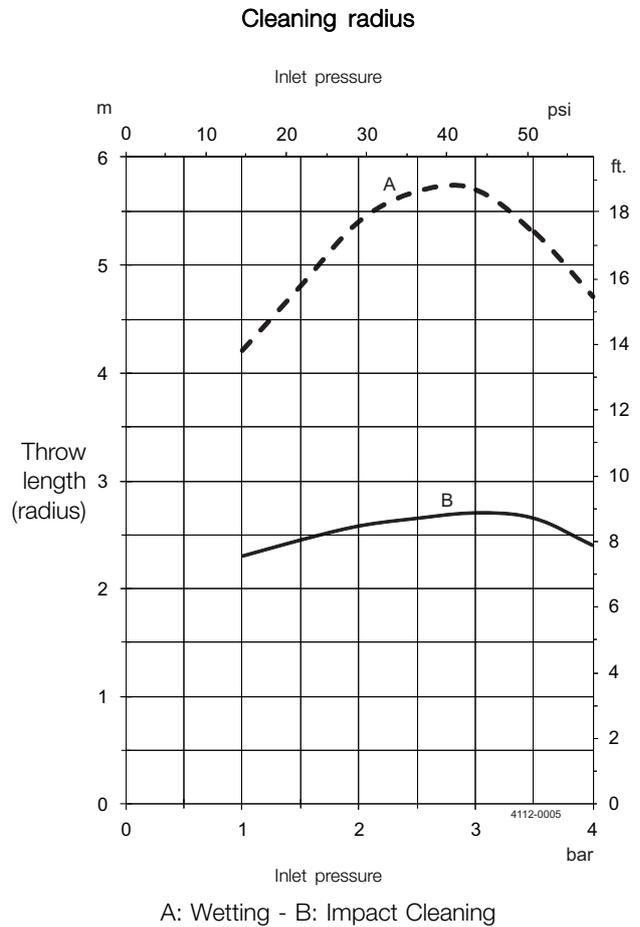
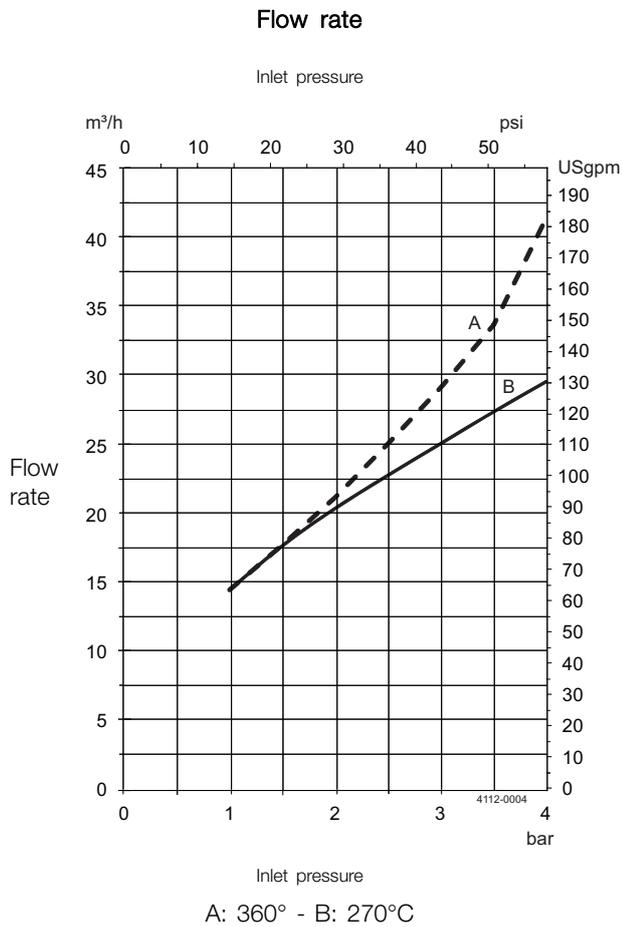
Dimensions (mm)

Type	A	B	G	E	ID	OD	t	Clip
Clip-on 2" BPE US	121	ø67.4	ø5.1	25.4	ø51.1			ø5.0
Weld-on** 2" BPE US	141.6	ø67.4				ø50.8	1.2	

Important information: The SaniMega SB Weld-on versions only continue to meet the requirements of the 3-A Sanitary Standard 78-01, if the installation makes visual inspection of all liquid contacts surfaces possible. See Installation instructions on page 11.



Performance Data for Alfa Laval Toftejorg SaniMega SB and SaniMega SB HF



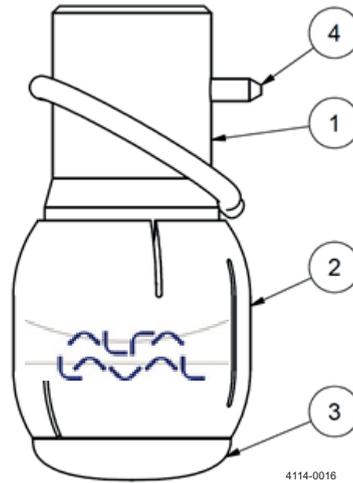
For Clip-on models, the flow rate is increased by approx. 1.5 m³/h.

Note: The curves show the average value of flow rate and throw length. The Flow rate can vary up to +/- 10%.

Note: The inlet pressure has been taken immediately before the inlet to the machine. In order to achieve the performance indicated on the curves, the pressure drop in the supply lines between pump and machine must be taken in consideration and the water temperature during testing was approx. 20°C.

8 Parts Lists and Drawing

8.1 Part lists for Alfa Laval Toftejorg SaniMxxxx SB



*Wear part

Item number	Pos. 1 AISI 316L	Pos. 2 PEEK 450G	Pos.3 AISI 316L	Pos. 4 AISI 316L
16B102-x0	16B510	16B543*	16B521	16B562
16B132-x0	16B510	16B540*	16B520	16B562
16B152-x0	16B515	16B552*	16B531	16B563
16B182-x0	16B515	16B550*	16B530	16B563
16B202-x0	16B511	16B543*	16B521	16B562
16B203-x0	16B512	16B543*	16B521	16B562
16B232-x0	16B511	16B540*	16B520	16B562
16B233-x0	16B512	16B540*	16B520	16B562
17B102-x0	17B500	17B543*	16B531	16B563
17B132-x0	17B500	17B540*	16B530	16B563
17B203-x0	17B502	17B543*	16B531	16B563
17B233-x0	17B502	17B540*	16B530	16B563
18B102-x0	18B500	18B543*	18B521	18B562
18B132-x0	18B500	18B540*	18B520	18B562
18B142-x0	18B500	18B544*	18B521	18B562
18B152-x0	18B500	18B545*	18B520	18B562
18B203-x0	18B502	18B543*	18B521	18B562
18B233-x0	18B502	18B540*	18B520	18B562
18B263-x0	18B502	18B544*	18B521	18B562
18B293-x0	18B502	18B545*	18B520	18B562

8.2 Part lists for Alfa Laval Toftejorg SaniMidget SB UltraPure

*Wear part

Item number	Pos. 1 AISI 316L	Pos. 2 PEEK MG	Pos.3 AISI 316L	Pos. 4 AISI 316L
16B132-x5	16B510	16B542*	16B520	16B562
16B232-x5	16B511	16B542*	16B520	16B562
16B233-x5	16B512	16B542*	16B520	16B562

This manual covers the product programme for Alfa Laval Toftejorg™SaniMxxx SB tank cleaning machine.

9.1 Standard Configurations

Table 1. Standard Configurations for Alfa Laval Toftejorg SaniMidget SB

Connection	Rotor	Article number	
		270°U	360°
1" Clip-on BPE US	PEEK 450G	16B132-00	16B102-00
Weld-on DIN Range 1 (ODø28)			
1½" Clip-on BPE US	PEEK 450G	16B182-00	16B152-00
1" Weld-on ISO	PEEK 450G	16B232-00	16B202-00
1" Weld-on BPE US	PEEK 450G	16B233-00	16B203-00

Table 2. Standard Configurations for Alfa Laval Toftejorg SaniMidget SB UltraPure

Connection	Rotor	Article number	
		270°U	360°
1" Clip-on BPE US	PEEK MG*	16B132-05	16B102-05
Weld-on DIN Range 1 (ODø28)			
1" Weld-on ISO	PEEK MG*	16B232-05	16B202-05
1" Weld-on BPE US	PEEK MG*	16B233-05	16B203-05

*PEEK MG (USP Class VI conforming) was not part of the TPV. As a consequence SaniMidget SB UltraPure has not been verified to meet the requirements of 3-A Sanitary Standards.

Table 3. Standard Configurations for Alfa Laval Toftejorg SaniMagnum SB

Connection	Rotor	Article number	
		270°U	360°
1½" Clip-on BPE US	PEEK 450G	17B132-00	17B102-00
1½" Weld-on ISO	PEEK 450G	17B232-00	17B202-00
1½" Weld-on BPE US	PEEK 450G	17B233-00	17B203-00

Table 4. Standard Configurations for Alfa Laval Toftejorg SaniMega SB

Connection	Rotor	Article number	
		270°U	360°
2" Clip-on BPE US	PEEK 450G	18B132-00	18B102-00
2" Weld-on ISO	PEEK 450G	18B232-00	18B202-00
2" Weld-on BPE US	PEEK 450G	18B233-00	18B203-00

Table 5. Standard Configurations for Alfa Laval Toftejorg SaniMega SB HF

Connection	Rotor	Article number	
		270°U	360°
2" Clip-on BPE US	PEEK 450G	18B152-00	18B142-00
2" Weld-on BPE US	PEEK 450G	18B293-00	18B263-00

See page 30 for available documentation add-on's.

9 Product Programme

9.2 Available add-ons

TE1XBXXX00	Standard, 2.2 Material Certification is included	
TE1XBXXX90	3.1 Material certification is included	
TE1XBXXX70	ATEX+2.2	
TE1XBXXX80	ATEX+3.1	
Documentation specification		Explanation to Add-on
TE1XBXXX00	Standard, 2.2 Material Certification is included - Declaration of conformity EN 10204, Sub clause 2.2 test report - 3-A - Number: 78-01. Spray Cleaning Devices	
TE1XBXXX90	3.1 Material certification is included - EN 10204 type 3.1 inspection certificate - 3-A - Number: 78-01. Spray Cleaning Devices	
TE1XBXXX70	2.2 Material Certification is included - ATEX approved machine for use in explosive atmospheres. Category 1 for installation in zone 0/20 in accordance to Directive 94/9/EC, valid until 2016-04-19/Directive 2014/34/EU valid from 2016-04-20 Ex II 1 GD c T188°C Tamb 0° to +150°C; Baseefa10ATEX0187X	
TE1XBXXX80	3.1 Material certification is included - ATEX approved machine for use in explosive atmospheres. Category 1 for installation in zone 0/20 in accordance to Directive 94/9/EC. valid until 2016-04-19/Directive 2014/34/EU valid from 2016-04-20 Ex II 1 GD c T188°C Tamb 0° to +150°C; Baseefa10ATEX0187X	

10.1 Service & Repair

Upon every return of a product, no matter if for modifications or repair, it is necessary to contact your local Alfa Laval office to guarantee a quick execution of your request.

You will receive instructions regarding the return procedure from your local Alfa Laval office. Be sure to follow the instructions closely.

10.2 How to contact Alfa Laval Tank Equipment

For further information please feel free to contact:

Alfa Laval Tank Equipment

Alfa Laval Kolding A/S

31, Albuen - DK 6000 Kolding - Denmark

Registration number: 30938011

Tel switchboard: +45 79 32 22 00 - Fax switchboard: +45 79 32 25 80

www.toftejorg.com, www.alfalaval.dk - info.dk@alfalaval.com

Contact details for all countries are continually updated on our websites

11 Miscellaneous

11.1 Declaration of Conformity with EN 10204

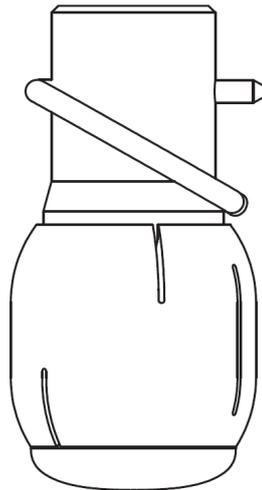


**Declaration Of Conformity
with
EN 10204, Sub Clause 2.2 Test Report
Materials of Construction and Surface Finishes**

Alfa Laval Kolding A/S (supplier)

declare, under our sole responsibility, that the following product:

Description:
Alfa Laval SaniMidget SB rotary spray head
Alfa Laval SaniMagnum SB rotary spray head
Alfa Laval SaniMega SB rotary spray head



have been subjected to non-specific controls for product quality and are found to conform with the following standards and other normative documents:

Metal Materials

AISI 316L

Non-Metal Materials

21CFR§177.2415 (PEEK)

Surface Finish

All parts are finished with a nominal external roughness $R_a = 0,8 \mu\text{m}$ (30 micro inch).

*This certificate is delivered in compliance with the latest valid design and construction. Alfa Laval Kolding A/S reserve the right to alter or modify any unit specification without notice or any obligation.
Januar 2014*

2 of 2

Non-Specific Controls on Product Quality “As-Supplied”

All metallic part material certifications are inspected upon receipt before assembly.

Parts inspections are completed according to the approved ISO 9001:2008 standard program. The Quality Control Department only accepts the product in component parts for assembly according to this program if the parts comply with the above material specification documentation.

Product welds are executed, inspected and finished (polished where accessible), according to written, approved procedures.

Parts produced from FDA approved polymers are only sourced from suppliers that have met “pre-qualification” standards established by Alfa Laval Tank Equipment’s ISO 9001:2008 program. Materials of construction of component parts are controlled through clear and explicit specifications in purchase orders. These specifications include the materials of construction specified by the parts designers, making them subject to the contractual terms and conditions.

The following item numbers are covered by this certificate:

SaniMidget SB	
TE16B102-x0	TE16B202-x0
TE16B132-x0	TE16B203-x0
TE16B152-x0	TE16B232-x0
TE16B182-x0	TE16B233-x0

SaniMidget SB UltraPure	
TE16B132-x5	TE16B232-x5
	TE16B233-x5

SaniMagnum SB	
TE17B102-x0	TE17B203-x0
TE17B132-x0	TE17B233-x0

SaniMega SB	
TE18B102-x0	TE18B203-x0
TE18B132-x0	TE18B233-x0
TE18B142-x0	TE18B263-x0
TE18B152-x0	TE18B293-x0

Kolding, Denmark, 2014.01.02



Annie Dahl, QHSE Manager, Alfa Laval

This certificate is delivered in compliance with the latest valid design and construction. Alfa Laval Kolding A/S reserve the right to alter or modify any unit specification without notice or any obligation.
Januar 2014

11 Miscellaneous

11.2 Declaration of Compliance for Food Contact Materials

Declaration of compliance for food contact materials



Article Nr: TE16BXXX-XX
TE17BXXX-XX
TE18BXXX-XX
Product SaniMidget SB
SaniMagnum SB
SaniMega SB

We, Alfa Laval Kolding A/S, hereby certify that the plastic articles intended to come into contact with product included in the article stated above comply with the Regulation (EC) No. 1935/2004 and the Regulation (EC) No. 10/2011 both in their relevant versions on materials and articles intended to come in contact with food.

Finished articles subject to an overall migration limit of 10 mg/dm² or 60 mg/kg.
The following substances subject to limitations are used in the above stated article:
SML:

PEEK Natur
Diphenylsulphor: 3 mg/kg food
1,4 Dihydroxybenzol: 0.6 mg/kg food
4,4' Defluorobenzopheneone: 0.05 mg/kg food

Migration from the plastic articles has been investigated by calculations as laid down in paragraph (32) in Regulation (EC) No. 10/2011, to control that the migration limits and other requirements are fulfilled. The articles can be used, within its application area, with all type of foods at batch size above

SaniMidget SB 1":	438 kg*
SaniMidget SB and SaniMagnum SB 1½":	596 kg*
SaniMega SB:	728 kg*

We also certify that the plastic articles intended to come into contact with product included in the article stated above are also entirely in accordance with the present US regulation FDA CFR 21§ 177.

Kolding, 18-03-2015

A handwritten signature in blue ink, appearing to read 'Henrik Falster-Hansen', is written over a horizontal line.

Henrik Falster-Hansen,
R&D Manager
R&D Manager
Alfa Laval Kolding A/S

*Based on worst case scenario = dissolving 100% of the polymer material in one single batch

Alfa Laval Kolding A/S
Albuen 31, 6000 Kolding, Denmark
Tel switchboard: +45 79 32 22 00 - Fax switchboard: +45 79 32 25 80
www.alfalaval.com

11.3 EHEDG Certificate of Compliance

CERTIFICATE OF COMPLIANCE



TYPE EL - CLASS I

DTU National Food Institute
hereby declares that the product

SaniMidget SB 1" Clip-on, SaniMidget SB 1,5" Clip-on, SaniMidget SB 1" Weld-on, SaniMidget SB UltraPure 1" Clip-on, SaniMidget SB UltraPure 1" Weld-on, SaniMagnum SB Clip-on and Weld-on, SaniMega SB Clip-on and Weld-on and SaniMega SB HF Clip-on and Weld-on

from

Alfa Laval Kolding A/S, Albuen 31 6000 Kolding Denmark

has been evaluated for compliance with the
Hygienic Equipment Design Criteria of the EHEDG, by:

DTU National Food Institute, EHEDG Test Center, DTU
and meets the criteria of this document as demonstrated by:

Evaluation Report No. 250110

Signed Per Veggemose Nielsen Date 26.05.2014
Per Veggemose Nielsen, Evaluation Officer

Signed Jens Adler-Nissen Date 26.05.2014
Jens Adler-Nissen, Head of Department

DTU Center for Hygienic Design
National Food Institute

Certificate No. DTU2014/65
Date first issue DTI 201001

DTU National Food Institute, Søtofts Plads 222, DK-2800 Kgs. Lyngby, Denmark
©EHEDG

11 Miscellaneous

11.4 ATEX - Special Conditions for Safe Use

ATEX CERTIFICATION

EC – Type Examination Certificate Number : Baseefa10ATEX0187X

II 1GD c T188°C Tamb 0°C to 150°C

BASEEFA CUSTOMER REFERENCE No. 5322

PROJECT FILE No. 10/0602

Special Condition for Safe Use

1. The Unit may be operated, in a hazardous area, only when filled with fluid.
2. If a medium other than the process fluid is passed through the equipment the flow must not be high enough to cause the equipment to operate. If this cannot be avoided the rotor must be removed or secured to prevent rotation.
3. The maximum permitted process fluid temperature is 95°C, with an ambient temperature range of 0°C to +150°C.
4. The maximum permitted process fluid pressure is 3 bar.
5. The unit must not be operated in a vessel having an enclosed volume of greater than 100 m³.
6. The unit must be effectively earthed at all times when in use.
7. The user must address the electrostatic hazards generated from the process of the equipment in accordance with guidance document CLC/TR 50404:2003.

This product fully complies to ATEX category 1 as long as the 5 special conditions above are adhered to.

Please read the above conditions prior to installation & ensure that all conditions are met.

Explanation of T (temperature) rating.

The ATEX classification

The standard machines is approved for an ambient temperature range of 0°C to +150°C and is marked

II 1GD c T188°C Tamb 0°C to 150°C

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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