Instruction Manual

Alfa Laval Toftejorg™ Rotary Spray Heads - SaniMicro, SaniMidget, SaniMagnum

Covering: Standard Machines
Machines delivered with ATEX Certification in accordance with Directive 2014/34/EU
Q-doc - Equipment Doc (3.1 Inspection Certificate - EN 10204)
Q-doc - Qualification Doc (Qualification Documentation, FAT/SAT)
TE91A747. First published: 2009-05

ESE01778-EN9  2017-03
Original manual
# Table of contents

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

1. EC/EU Declaration of Conformity ................................................................. 4
2. Safety ........................................................................................................... 5
   2.1. Important information .......................................................................... 5
   2.2. Warning signs .................................................................................... 5
3. Introduction .................................................................................................. 6
   3.1. Introduction ....................................................................................... 6
   3.2. Intended Use .................................................................................... 6
   3.3. Patents and Trademarks ................................................................... 7
   3.4. Quality System ................................................................................ 7
   3.5. ATEX Marking ................................................................................ 8
4. Installation ................................................................................................... 9
   4.1. General Description .......................................................................... 9
   4.2. Functioning ...................................................................................... 9
   4.3. General Safety and Installation Instructions ....................................... 10
   4.4. Special Conditions for Safe Use in Accordance with ATEX Certification .................................................... 10
   4.5. General safety precautions ............................................................. 11
5. Operation ................................................................................................... 12
   5.1. Normal operation ............................................................................. 12
6. Maintenance ............................................................................................... 13
   6.1. Service of ATEX Certified Machines ............................................. 13
   6.2. Recommended Service Intervals ..................................................... 13
   6.3. Service and repair of machines ordered with Alfa Laval Q-doc .......... 13
   6.4. Service and Repair of Machines Ordered with Alfa Laval Q-doc and FAT-SAT ............................................................. 13
7. Technical data ........................................................................................... 14
   7.1. Alfa Laval Toftejorg SaniMicro ..................................................... 14
   7.2. Alfa Laval Toftejorg SaniMidget ..................................................... 16
   7.3. Alfa Laval Toftejorg SaniMagnum ................................................... 18
8. Product Programme .................................................................................... 20
   8.1. Alfa Laval Toftejorg SaniMicro ..................................................... 20
   8.2. Alfa Laval Toftejorg SaniMidget ..................................................... 21
   8.3. Alfa Laval Toftejorg SaniMagnum ................................................... 22
   8.4. Available add-ons ........................................................................... 24
9. General information .................................................................................... 25
   9.1. Service & Repair ............................................................................. 25
   9.2. How to contact Alfa Laval Tank Equipment .................................... 25
10. Miscellaneous .......................................................................................... 26
   10.1. ATEX - Special Conditions for Safe Use ........................................ 26
   10.2. Declaration of compliance for food contact materials .................... 27
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 SaniMicro, SaniMidget & SaniMagnum
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
Equipment Explosive Atmospheres (ATEX) Directive 2014/34/EU
(Applicable for machine certified as category 1 and 2 component, see machine engraving)
DS/EN ISO/IEC 80079-34:2011, Annex A, paragraph A.5.3 Rotating machines
EC Type Examination Certificate no. Baseefa04ATEX0357X
Marking: II 1 GD c T140°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
Lars Kruse Andersen
Title Name Signature
Kolding 2017-03-31
Place Date

(This Declaration of Conformity replaces Declaration of Conformity dated 2015-11-01)
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 will be pleased to help you. Please quote the type, article and serial numbers with all of your enquiries; this helps us to help you.

**Important information:**
Before installing the machine and setting it into operation, carefully read the General Installation Instructions (page 10), the special conditions for safe use in accordance with Directive 2014/34/EU (page 10) and the Safety Precautions (page 11) 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.

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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. 3 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 10 of this manual for information on recommended installation position.
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.

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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 Rotary Spray Head is produced according to Alfa Laval Kolding’s ISO 9001 international Standard certified quality system. All parts are made from certified material and all non-metal parts comply with FDA 21CFR§177 and EU 10/2011.
3 Introduction

3.5 ATEX Marking

The Alfa Laval Toftejorg SaniMicro, SaniMidget and SaniMagnum are certified as category I components. The certification is carried out by the notified body Baseefa, who has issued the certificate no. 04ATEX0357X. The markings on the ATEX certified Alfa Laval Toftejorg SaniMicro, SaniMidget and SaniMagnum are as follows:

**Serial number explanation**
- **Machines supplied with or without normal documentation:**
  - yyyy-xxxxx: serial number
  - yyyy: year
  - xxxxx: 5 digit 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 13 regarding special conditions for repair of ATEX certified machines.
4.1 General Description

The Alfa Laval Toftejorg Rotary Spray Heads are tank cleaning machines intended for industrial use in tanks, vessels and containers under typical CIP procedures. They have a broad range of application areas within pharmaceutical, food and chemical industries.

The Alfa Laval Toftejorg Rotary Spray Head is a sanitary cleaning device of the rotating fan spray type for permanent installation that provides a cleaning pattern from 180° - 360°. The machine is completely self-cleaning and when properly installed also self-draining (see page 10). All product contact surfaces are AISI 316L stainless steel (or better corrosion vice) or FDA compliant and EU 10/2011 compliant polymer materials.

All assemblies are fully welded. The cleaning device is lubricated by the cleaning media. No oil, grease or other lubricants are used.

The Alfa Laval Toftejorg Rotary Spray Head is designed for use in pharmaceutical, biotechnological, food and dairy processing applications. It may be used in reactors, mixing/processing tanks, spray dryers and other process equipment with a volume from 0.1 – 50 m³ (22 - 10,998 US gallons) and storage tanks up to 125 m³ (27496 US gallons). For larger volumes, multiple Alfa Laval Toftejorg Rotary Spray Heads may be applied.

Application assistance and optimal position recommendation is available.

For use in explosive hazard zones all types can be used, provided they are installed according to the safety instructions in local regulations.

4.2 Functioning

The flow of the cleaning media causes the head of the Alfa Laval Toftejorg Rotary Spray Head to rotate, with fans laying out a swirling pattern throughout the vessel. This generates a vibrating impact and cascading flow that covers all internal surfaces of the tank or reactor. The device’s self-cleaning feature is achieved by directing the cleaning media through the rotating bearing and onto the neck of the elongated head.

Spray Pattern
4.3 General Safety and Installation Instructions

**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 horizontally, the life time may be reduced.

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 Rotary Spray Head.

**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 treat the machine with care in order not to damage the fine surface of the machine.

**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-Machine Directive and depending of application, the EU-Pressure Equipment Directive, the EU-ATEX Directive and other relevant Directives and shall be CE-marked before it is set into operation.

4.4 Special Conditions for Safe Use in Accordance with ATEX Certification

**Directive 2014/34/EU**

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

ATEX Warning: The maximum permitted flush or cleaning fluid temperature is 95°C, with an ambient temperature range of 0°C to 140°C.

ATEX Warning: The maximum permitted flush or cleaning fluid pressure difference across the machine is 3 bar.

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

ATEX Warning: The unit must be effectively earthed at all times when in use.

In addition to the above mentioned precautions relating to the ATEX guidelines Directive 2014/34/EU, the General Safety Precautions on page 11 must be observed.

4.5 General safety precautions

The Alfa Laval Toftejorg Rotary Spray Head 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.

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 joints, if this may violate the grounding of the machine to the tank. Resistance between nozzles and tank must not exceed 20.000 Ohm. The intended installation with standard clamp connections will ensure this. In addition, connecting pipe work, must be electrically conductive and earthed to the tank structure.

This is essential to avoid the build-up of static electricity on the nozzles and the machine. For further information see IEC/TS 60079-32-1:2013, guidance and recommendations for the avoidance of hazards due to static electricity.

Electrical equipment such as magnetic valves and electric actuators must not be installed in Ex-zones without type approval and marking, corresponding to the EX-class in question. Magnetic cylinder sensors shall be EX-approved
5 Operation

5.1 Normal operation

Cleaning Media
Use only media compatible with Stainless Steel AISI 316/316L, SAF 2205 and PTFE. If you have ordered the optional Hastelloy version, please contact your local Alfa Laval sales office for cleaning media guidelines. 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.

Temperature:
In accordance with the ATEX specifications regarding special conditions for safe use.

ATEX Warning: 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.

ATEX Warning: 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.

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

Pressure
Please make sure that the connections are correctly mounted before opening of the washing valve. Apply pressure gradually to avoid hydraulic shocks, which might stress mechanical parts in the Alfa Laval Toftejorg Rotary Spray Head cleaner. Max. pressure difference is 3.0 bar.

Recommendation
After Use Cleaning
After use flush the machine with fresh water. Cleaning media should never be allowed to dry or settle in the system

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.
6.1 Service of ATEX Certified Machines

In case of extensive machine wear, the machine is to be replaced, as it is not possible to repair Rotary Spray Head machines. Please remember to order an ATEX approved Rotary Spray Head machine.

6.2 Recommended Service Intervals

Inspection every 500 working hours. After 2000 working hours: inspection every 200 hours.

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.
2. Visual inspection for foreign objects. Remove any objects and clean before rotation verification.
3. Rotation verification by hand for free rotation.
4. Reinstall machine.
5. Fill in the Service Log.

6.3 Service and repair of machines ordered with Alfa Laval Q-doc

In case of machine wear, the machine is to be replaced, as it is not possible to repair Rotary Spray Head machines.

Please remember to order a Q-doc version machine.

6.4 Service and Repair of Machines Ordered with Alfa Laval Q-doc and FAT-SAT

In case of machine wear, the machine is to be replaced, as it is not possible to repair Rotary Spray Head machines.

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 is 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).
7 Technical data

7.1 Alfa Laval Toftejorg SaniMicro

<table>
<thead>
<tr>
<th>Weight of machine:</th>
<th>Thread and clip-on: 0.30 kg. On pipe: 0.55/090 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working pressure:</td>
<td>1-3 bar</td>
</tr>
<tr>
<td>Recommended inlet pressure:</td>
<td>2 bar</td>
</tr>
<tr>
<td>Max. working temperature:</td>
<td>95°C (200°F)</td>
</tr>
<tr>
<td>Max. ambient temperature:</td>
<td>140°C (284°F)</td>
</tr>
<tr>
<td>Wetting radius:</td>
<td>Max. 2.7 m</td>
</tr>
<tr>
<td>Impact cleaning radius:</td>
<td>Max. effective 0.6 m</td>
</tr>
<tr>
<td>Materials:</td>
<td>Inlet connections: 1.4404 (316L)</td>
</tr>
<tr>
<td></td>
<td>bearing race parts: SAF 2205 (UNS31803)</td>
</tr>
<tr>
<td></td>
<td>balls: AISI 316/PTFE (FDA compliant §177.1550 and EU 10/2011 compliant)</td>
</tr>
<tr>
<td></td>
<td>head: 1.4404 (AISI 316L)</td>
</tr>
<tr>
<td>Lubricant:</td>
<td>Self-lubricating with the cleaning fluid</td>
</tr>
<tr>
<td>Connections:</td>
<td>3/8” Rp or NPT thread</td>
</tr>
</tbody>
</table>

Thread TH
3/8” Rp (BSP)
3/8” NPT

Clip-on ID
ISO:
DIN Range 1: Ø17.4 mm
BPE US / DIN Range 2: Ø18.2 mm

Weld-on OD x t
ISO:
DIN Range 1: Ø17.2 x 1 mm
DIN Range 2: Ø19 x 1.5 mm
BPE US: Ø19.05 x Ø1.65 mm

<table>
<thead>
<tr>
<th>Type</th>
<th>A</th>
<th>B</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tread</td>
<td>62</td>
<td>ø25</td>
<td>11</td>
<td></td>
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<tr>
<td>Clip-on</td>
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<td>ø25</td>
<td>11</td>
<td>5.9</td>
<td>ø3.6</td>
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<td>Weld-on</td>
<td>77.500</td>
<td>ø25</td>
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</tr>
</tbody>
</table>
Performance Data

Flow rate (m³/h) vs. Inlet pressure

- A: 360°, 270°UP
- B: 360° LowFlow
- C: 270°UP LowFlow
- D: 180°D

Inlet pressure (bar)

- NF: 360°, 270°UP, 180°D
- LF: 360° LowFlow, 270°UP LowFlow

Cleaning radius vs. Inlet pressure

Throw length (m)

Note: The inlet pressure has been taken immediately before the machine inlet. In order to achieve the performance indicated in the curves, the pressure drop in the supply lines between pump and machine must be considered.

For Clip-on models, the flow rate is increased by approx. 0.2 m³/h
### 7.2 Alfa Laval Toftejorg SaniMidget

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight of machine: Thread and clip-on</td>
<td>0.30 kg. On pipe: 0.55/090 kg</td>
</tr>
<tr>
<td>Working pressure:</td>
<td>1-3 bar</td>
</tr>
<tr>
<td>Recommended inlet pressure:</td>
<td>2 bar</td>
</tr>
<tr>
<td>max. working temperature:</td>
<td>95°C (200°F)</td>
</tr>
<tr>
<td>Max. ambient temperature:</td>
<td>140°C (284°F)</td>
</tr>
<tr>
<td>Wetting radius:</td>
<td>Max. 3 m</td>
</tr>
<tr>
<td>Impact cleaning radius:</td>
<td>Max. effective 1.4 m</td>
</tr>
<tr>
<td>Inlet connections:</td>
<td>1.4404 (316L)</td>
</tr>
<tr>
<td>bearing race parts:</td>
<td>SAF 2205 (UNS31803)</td>
</tr>
<tr>
<td>balls:</td>
<td>AISI 316/PTFE (FDA compliant 21CFR§177. 1550 and EU 10/2011 compliant)</td>
</tr>
<tr>
<td>head:</td>
<td>1.4404 (AISI 316L)</td>
</tr>
<tr>
<td>Lubricant:</td>
<td>Self-lubricating with the cleaning fluid</td>
</tr>
<tr>
<td>Connections:</td>
<td>1/2” or 3/4” BSP or NPT thread</td>
</tr>
<tr>
<td>Clip-on or weld-on for pipe:</td>
<td>ISO2037, ASTM A270. BS4825 part 1 or DIN11850</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>F</th>
<th>G</th>
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<tr>
<td>Thread</td>
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<td>ø45</td>
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<td>Clip-on</td>
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<td>ø45</td>
<td>30</td>
<td>15</td>
<td>ø4</td>
<td></td>
</tr>
<tr>
<td>Weld-on</td>
<td>120.5, 500, 1000</td>
<td>ø45</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Performance Data

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

**Note:** The inlet pressure has been taken immediately before the machine inlet. In order to achieve the performance indicated in the curves, the pressure drop in the supply lines between pump and machine must be considered.
### 7 Technical data

#### 7.3 Alfa Laval Toftejorg SaniMagnum

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
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<tbody>
<tr>
<td>Weight of machine:</td>
<td>Thread and clip-on: 0.76 kg, On pipe: 0.97/1.52 kg</td>
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<tr>
<td>Working pressure:</td>
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<tr>
<td>Recommended inlet pressure:</td>
<td>2 bar</td>
</tr>
<tr>
<td>Max. working temperature:</td>
<td>95°C (200°F)</td>
</tr>
<tr>
<td>Max. ambient temperature:</td>
<td>140°C (284°F)</td>
</tr>
<tr>
<td>Wetting radius:</td>
<td>Max. 3m</td>
</tr>
<tr>
<td>Impact cleaning radius:</td>
<td>Max. effective 2m</td>
</tr>
<tr>
<td>Materials:</td>
<td>Inlet connections: 1.4404 (316L)</td>
</tr>
<tr>
<td></td>
<td>bearing race parts: SAF 2205 (UNS31803)</td>
</tr>
<tr>
<td></td>
<td>balls: AISI 316/PTFE (FDA compliant 21CFR §177.1550 and EU 10/2011 compliant)</td>
</tr>
<tr>
<td></td>
<td>head: 1.4404 (AISI 316L)</td>
</tr>
<tr>
<td>Lubricant:</td>
<td>Self-lubricating with the cleaning fluid</td>
</tr>
<tr>
<td>Connections:</td>
<td>1 1/4&quot; BSP or NPT thread</td>
</tr>
<tr>
<td></td>
<td>Clip-on or weld-on for pipe: ISO2037, ASTM A270. BS4825 part 1 or DIN11850</td>
</tr>
</tbody>
</table>

![Thread Diagram](image1.png)

![Clip-on Diagram](image2.png)

![Weld-on Diagram](image3.png)

<table>
<thead>
<tr>
<th>Type</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
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<tbody>
<tr>
<td>Thread</td>
<td>130</td>
<td>ø65</td>
<td>44</td>
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<td>Weld-on</td>
<td>157, 500, 1000</td>
<td>ø65</td>
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</tr>
</tbody>
</table>
### Technical data

#### Performance Data

**Flow rate (m³/h)**

<table>
<thead>
<tr>
<th>Flow rate (m³/h)</th>
<th>l/min</th>
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</thead>
<tbody>
<tr>
<td>20</td>
<td>13</td>
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<tr>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

**Inlet pressure (bar)**

- **A**: 360°, 270°UP
- **B**: 360° LowFlow
- **C**: 270°UP LowFlow
- **D**: 180°D

**Throw length (m)**

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

Note: The inlet pressure has been taken immediately before the machine inlet. In order to achieve the performance indicated in the curves, the pressure drop in the supply lines between pump and machine must be considered.
8 Product Programme

This manual covers the product programme for Alfa Laval Toftejorg SaniMicro, SaniMidget and SaniMagnum. For the different types of Alfa Laval Toftejorg SaniMicros, SaniMidgets and SaniMagnums, please see the following pages.

8.1 Alfa Laval Toftejorg SaniMicro

### Alfa Laval Toftejorg SaniMicro, Clip-on

**Surface finish:** Semi bright

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>360° PD</td>
<td>TE14B100-01</td>
<td>TE14D100-01</td>
<td>TE14B120-01</td>
</tr>
<tr>
<td>360° low flow</td>
<td>TE14B101-01</td>
<td>TE14D101-01</td>
<td>TE14B121-01</td>
</tr>
<tr>
<td>270° up low flow</td>
<td>TE14B104-01</td>
<td>TE14D104-01</td>
<td>TE14B124-01</td>
</tr>
</tbody>
</table>

**Spray Pattern:**
- 360°: TE14B100-01, TE14D100-01, TE14B120-01
- 360° low flow: TE14B101-01, TE14D101-01, TE14B121-01
- 270° up low flow: TE14B104-01, TE14D104-01, TE14B124-01

**Surface finish:** 0.5 µm Ra internal/external. With 3.1 certificate and electro-polished

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>360° PD</td>
<td>TE14F100-91</td>
<td>TE14D100-91</td>
<td>TE14F120-91</td>
</tr>
<tr>
<td>360° low flow</td>
<td>TE14F101-91</td>
<td>TE14D101-91</td>
<td>TE14F121-91</td>
</tr>
<tr>
<td>270° up low flow</td>
<td>TE14F103-91</td>
<td>TE14D103-91</td>
<td>TE14F123-91</td>
</tr>
</tbody>
</table>

**Spray Pattern:**
- 360°: TE14F100-91, TE14D100-91, TE14F120-91
- 360° low flow: TE14F101-91, TE14D101-91, TE14F121-91
- 270° up low flow: TE14F103-91, TE14D103-91, TE14F123-91

### Alfa Laval Toftejorg SaniMicro, Weld-on

**Surface finish:** Semi bright

<table>
<thead>
<tr>
<th>Spray Pattern</th>
<th>OD 25, ISO2037</th>
<th>DN15, DIN11850-R1</th>
<th>3/4” ASME BPE tube</th>
</tr>
</thead>
<tbody>
<tr>
<td>360° PD</td>
<td>TE14C200-01</td>
<td>TE14D200-01</td>
<td>TE14C220-01</td>
</tr>
<tr>
<td>360° low flow</td>
<td>TE14C201-01</td>
<td>TE14D201-01</td>
<td>TE14C221-01</td>
</tr>
<tr>
<td>270° up low flow</td>
<td>TE14C204-01</td>
<td>TE14D204-01</td>
<td>TE14C224-01</td>
</tr>
<tr>
<td>180° down</td>
<td>TE14C202-01</td>
<td>TE14D202-01</td>
<td>TE14C222-01</td>
</tr>
<tr>
<td>360° PD</td>
<td>TE14C250-01</td>
<td>TE14D250-01</td>
<td>TE14C270-01</td>
</tr>
<tr>
<td>360° low flow</td>
<td>TE14C251-01</td>
<td>TE14D251-01</td>
<td>TE14C271-01</td>
</tr>
<tr>
<td>270° up</td>
<td>TE14C253-01</td>
<td>TE14D253-01</td>
<td>TE14C273-01</td>
</tr>
<tr>
<td>270° up low flow</td>
<td>TE14C254-01</td>
<td>TE14D254-01</td>
<td>TE14C274-01</td>
</tr>
<tr>
<td>180° down</td>
<td>TE14C252-01</td>
<td>TE14D252-01</td>
<td>TE14C272-01</td>
</tr>
</tbody>
</table>

**Spray Pattern:**
- 360°: TE14C200-01, TE14D200-01, TE14C220-01
- 360° low flow: TE14C201-01, TE14D201-01, TE14C221-01
- 270° up low flow: TE14C204-01, TE14D204-01, TE14C224-01
- 180° down: TE14C202-01, TE14D202-01, TE14C222-01

### Alfa Laval Toftejorg SaniMicro, Thread

**Surface finish:** Semi bright

<table>
<thead>
<tr>
<th>Spray Pattern</th>
<th>Thread 3/8” Rp (BSP)</th>
<th>Thread 3/8” NPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>360° PD</td>
<td>TE14M000-01</td>
<td>TE14D000-01</td>
</tr>
<tr>
<td>360° low flow</td>
<td>TE14M001-01</td>
<td>TE14D001-01</td>
</tr>
<tr>
<td>270° up</td>
<td>TE14M003-01</td>
<td>TE14D003-01</td>
</tr>
<tr>
<td>270° up low flow</td>
<td>TE14M004-01</td>
<td>TE14D004-01</td>
</tr>
<tr>
<td>180° down</td>
<td>TE14M002-01</td>
<td>TE14D002-01</td>
</tr>
</tbody>
</table>

**Spray Pattern:**
- 360°: TE14M000-01, TE14D000-01, TE14M001-01
- 360° low flow: TE14M001-01, TE14D001-01, TE14M002-01
- 270° up: TE14M003-01, TE14D003-01, TE14M004-01
- 270° up low flow: TE14M004-01, TE14D004-01, TE14M005-01
- 180° down: TE14M002-01, TE14D002-01, TE14M003-01
8 Product Programme

This manual covers the product programme for Alfa Laval Toftejorg SaniMicro, SaniMidget and SaniMagnum. For the different types of Alfa Laval Toftejorg SaniMicros, SaniMidgets and SaniMagnums, please see the following pages.

8.2 Alfa Laval Toftejorg SaniMidget

Alfa Laval Toftejorg SaniMidget, Clip-on
Surface finish: Bright

<table>
<thead>
<tr>
<th>Spray Pattern</th>
<th>Clip-on OD 25, ISO2037</th>
<th>Clip-on DN25, DIN11850-R1</th>
<th>Clip-on DN25 DIN11850-R2</th>
<th>Clip-on 1&quot; US tube</th>
</tr>
</thead>
<tbody>
<tr>
<td>360° up</td>
<td>TE10B100-01</td>
<td>TE10B105-01</td>
<td>TE10B106-01</td>
<td>TE10B102-01</td>
</tr>
<tr>
<td>270° up</td>
<td>TE10B130-01</td>
<td>TE10B135-01</td>
<td>TE10B136-01</td>
<td>TE10B132-01</td>
</tr>
</tbody>
</table>

Surface finish: 0.5 µm Ra internal/external. With 3.1 certificate and electro-polished

<table>
<thead>
<tr>
<th>Spray Pattern</th>
<th>Clip-on OD 25, ISO2037</th>
<th>Clip-on DN25, DIN11850-R1</th>
<th>Clip-on 1&quot; US tube/DN25 DIN11850-R2</th>
<th>Clip-on 1&quot; US tube</th>
</tr>
</thead>
<tbody>
<tr>
<td>360° up</td>
<td>TE10F100-91</td>
<td>TE10F105-91</td>
<td>TE10F106-91</td>
<td>TE10F102-91</td>
</tr>
<tr>
<td>270° up</td>
<td>TE10F130-91</td>
<td>TE10F135-91</td>
<td>TE10F136-91</td>
<td>TE10F132-91</td>
</tr>
</tbody>
</table>

Alfa Laval Toftejorg SaniMidget, Weld-on
Surface finish: Bright

<table>
<thead>
<tr>
<th>Spray Pattern</th>
<th>Weld-on OD 25, ISO2037</th>
<th>Weld-on DN15, DIN11850-R1</th>
<th>Weld-on DN15, DIN11850-R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>360° up</td>
<td>120.3</td>
<td>102</td>
<td>102</td>
</tr>
<tr>
<td>270° up</td>
<td>120.3</td>
<td>102</td>
<td>102</td>
</tr>
<tr>
<td>180° down</td>
<td>120.3</td>
<td>102</td>
<td>102</td>
</tr>
</tbody>
</table>

Alfa Laval Toftejorg SaniMidget, Thread
Surface finish: Bright

<table>
<thead>
<tr>
<th>Spray Pattern</th>
<th>Thread 3/4&quot; Rp (BSP)</th>
<th>Thread 3/4&quot; NPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>360° up</td>
<td>102</td>
<td>102</td>
</tr>
<tr>
<td>270° up</td>
<td>102</td>
<td>102</td>
</tr>
<tr>
<td>180° down</td>
<td>102</td>
<td>102</td>
</tr>
</tbody>
</table>
8 Product Programme

This manual covers the product programme for Alfa Laval Toftejorg SaniMicro, SaniMidget and SaniMagnum. For the different types of Alfa Laval Toftejorg SaniMicros, SaniMidgets and SaniMagnums, please see the following pages.

8.3 Alfa Laval Toftejorg SaniMagnum

Alfa Laval Toftejorg SaniMagnum, Clip-on
Surface finish: Semi bright

<table>
<thead>
<tr>
<th>Spray Pattern</th>
<th>Clip-on OD 38, ISO2037/US tube</th>
<th>Clip-on OD 51, ISO2037/US tube</th>
<th>Clip-on DN40 DIN11850-R1</th>
<th>Clip-on DN40 DIN11850-R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>360°</td>
<td>TE11B100 stainless steel</td>
<td>TE11D100 stainless steel</td>
<td>TE11B104 stainless steel</td>
<td>TE11D104 stainless steel</td>
</tr>
<tr>
<td>360° low flow</td>
<td>TE11B140 stainless steel</td>
<td>TE11D140 stainless steel</td>
<td>TE11B144 stainless steel</td>
<td>TE11D144 stainless steel</td>
</tr>
<tr>
<td>270° up</td>
<td>TE11B130 stainless steel</td>
<td>TE11D130 stainless steel</td>
<td>TE11B134 stainless steel</td>
<td>TE11D134 stainless steel</td>
</tr>
<tr>
<td>270° up low flow</td>
<td>TE11B150 stainless steel</td>
<td>TE11D150 stainless steel</td>
<td>TE11B154 stainless steel</td>
<td>TE11D154 stainless steel</td>
</tr>
</tbody>
</table>

Surface finish: 0.5 µm Ra internal/external. With 3.1 certificate and electro-polished

<table>
<thead>
<tr>
<th>Spray Pattern</th>
<th>Clip-on OD 38, ISO2037/US tube</th>
<th>Clip-on OD 51, ISO2037/US tube</th>
<th>Clip-on DN40 DIN11850-R1</th>
<th>Clip-on DN40 DIN11850-R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>360° low flow</td>
<td>TE11F140 stainless steel</td>
<td>TE11F144 stainless steel</td>
<td>TE11F148 stainless steel</td>
<td>TE11F148 stainless steel</td>
</tr>
<tr>
<td>270° up</td>
<td>TE11F130 stainless steel</td>
<td>TE11F134 stainless steel</td>
<td>TE11F138 stainless steel</td>
<td>TE11F138 stainless steel</td>
</tr>
<tr>
<td>270° up low flow</td>
<td>TE11F150-91 stainless steel</td>
<td>TE11F154-91 stainless steel</td>
<td>TE11F158-91 stainless steel</td>
<td>TE11F158-91 stainless steel</td>
</tr>
</tbody>
</table>

Alfa Laval Toftejorg SaniMagnum, Weld-on
Surface finish: Semi bright

<table>
<thead>
<tr>
<th>Spray Pattern</th>
<th>Weld-on OD 38, ISO2037</th>
<th>Weld-on OD 38, ISO2037/ASME BPE tube</th>
<th>Weld-on OD 51, ISO2037/ASME BPE tube</th>
<th>Weld-on DN40, DIN11850-R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>360°</td>
<td>157</td>
<td>TE11B20 stainless steel</td>
<td>TE11B22 stainless steel</td>
<td>TE11B20 stainless steel</td>
</tr>
<tr>
<td>360° low flow</td>
<td>157</td>
<td>TE11B22 stainless steel</td>
<td>TE11B24 stainless steel</td>
<td>TE11B22 stainless steel</td>
</tr>
<tr>
<td>270° up</td>
<td>157</td>
<td>TE11B23 stainless steel</td>
<td>TE11B25 stainless steel</td>
<td>TE11B23 stainless steel</td>
</tr>
<tr>
<td>270° up low flow</td>
<td>157</td>
<td>TE11B24 stainless steel</td>
<td>TE11B26 stainless steel</td>
<td>TE11B24 stainless steel</td>
</tr>
<tr>
<td>180° down</td>
<td>157</td>
<td>TE11B22 stainless steel</td>
<td>TE11B22 stainless steel</td>
<td>TE11B22 stainless steel</td>
</tr>
<tr>
<td>360°</td>
<td>1000</td>
<td>TE11B21 stainless steel</td>
<td>TE11B27 stainless steel</td>
<td>TE11B21 stainless steel</td>
</tr>
<tr>
<td>360° low flow</td>
<td>1000</td>
<td>TE11B21 stainless steel</td>
<td>TE11B27 stainless steel</td>
<td>TE11B21 stainless steel</td>
</tr>
<tr>
<td>270° up</td>
<td>1000</td>
<td>TE11B21 stainless steel</td>
<td>TE11B27 stainless steel</td>
<td>TE11B21 stainless steel</td>
</tr>
<tr>
<td>180° down</td>
<td>1000</td>
<td>TE11B31 stainless steel</td>
<td>TE11B27 stainless steel</td>
<td>TE11B21 stainless steel</td>
</tr>
</tbody>
</table>
8 Product Programme

This manual covers the product programme for Alfa Laval Toftejorg SaniMicro, SaniMidget and SaniMagnum.
For the different types of Alfa Laval Toftejorg SaniMicros, SaniMidgets and SaniMagnums, please see the following pages.

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**Alfa Laval Toftejorg SaniMagnum, Thread**
Surface finish: Semi bright

<table>
<thead>
<tr>
<th>Spray Pattern</th>
<th>Thread 1 1/4&quot; Rp (BSP)</th>
<th>Thread 1 1/4&quot; (NPT)</th>
<th>Thread 1 1/2&quot; Rp (BSP)</th>
<th>Thread 1 1/2&quot; NPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>360° low flow</td>
<td>TE11B041</td>
<td>TE11B043</td>
<td>TE11B014</td>
<td>TE11B013</td>
</tr>
<tr>
<td>270° up</td>
<td>TE11B030</td>
<td>TE11B032</td>
<td>TE11B034</td>
<td>TE11B033</td>
</tr>
<tr>
<td>270° up low flow</td>
<td>TE11B042</td>
<td>TE11B046</td>
<td>TE11B054</td>
<td>TE11B053</td>
</tr>
<tr>
<td>180° down</td>
<td>TE11B020</td>
<td>TE11B022</td>
<td>TE11B024</td>
<td>TE11B023</td>
</tr>
</tbody>
</table>

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23
8 Product Programme

This manual covers the product programme for Alfa Laval Toftejorg SaniMicro, SaniMidget and SaniMagnum. For the different types of Alfa Laval Toftejorg SaniMicros, SaniMidgets and SaniMagnums, please see the following pages.

8.4 Available add-ons

Following add-ons are available for Alfa Laval Toftejorg SaniMicro, SaniMidget & SaniMagnum:

- Q-doc
- ATEX, category 1 for installation in zone 0/20
- Documentation package in accordance with ASME BPE 2007 (Design Specifications with traceability Matrix, FAT incl. QC Documentation (IQ & OQ), SAT incl. IQ & OQ for end-users execution and 3.1

For more information, please see explanation below or last page in ordering leaflet for Alfa Laval Toftejorg SaniMicro, SaniMidget & SaniMagnum.

| TE10XXXX-91  | Q-doc.         |
| TE10XXXX-71  | ATEX          |
| TE10XXXX-81  | ATEX + Q-doc. |
| TE10XXXX-51  | Q-doc. incl.  |
| TE10XXXX-61  | Q-doc. incl.  |

**Explanation to Add-on**

**Q-doc**

Equipment Documentation includes:
- EN 10204 type 3.1 Material Inspection certificate
- USP Class VI certificate
- FDA Declaration of Conformity
- TSE Declaration
- QC Declaration of Conformity

**ATEX**

ATEX approved machine for use in explosive atmospheres, Category 1 for installation in zone 0/20 in accordance with Directive 2014/34 Ex II 1 GD c T140°C; Baseefa04ATEX0357X

**Q-doc + FAT-SAT**

Qualification Documentation includes:
- Q-doc: 3.1, USP Class VI, FDA, TSE and QC Declaration of Conformity
- RS, Requirement Specification
- DS, Design specification incl. Traceability Matrix
- FAT, Factory acceptance Test incl. IQ and OQ
- SAT, Site Acceptance Test protocol incl. IQ and OQ for End-User Execution
9 General information

9.1 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.

9.2 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.
10 Miscellaneous

10.1 ATEX - Special Conditions for Safe Use

ATEX CERTIFICATION

EC – Type Examination Certificate Number: Baseefa04ATEX0357X

Ⅱ 1GD c T140°C

BASEEFA CUSTOMER REFERENCE No. 5102
PROJECT FILE No. 12/1061

Special Condition for Safe Use

1. The unit may be operated, in a hazardous area, only when filled with the process fluid.
2. The maximum permitted process fluid temperature is 95°C, with an ambient temperature range of 0°C to 140°C.
3. The maximum permitted process fluid pressure is 3 bar.
4. The unit must not be operated in a vessel having an enclosed volume of greater than 100m³.
5. The unit must be effectively earthed at all times when in use.

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 machine is approved for an ambient temperature range of 0°C to +140°C and is marked

Ⅱ 1GD c T140°C
10.2 Declaration of compliance for food contact materials

Declaration of compliance for food contact materials

Article Nr:  
TE14BXXX-XX  
TE10BXXX-XX  
TE11BXXX-XX

Product  
SaniMicro  
SaniMidget  
SaniMagnum

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:

PTFE  
Tetrafluoroethylene (TFE): 0.05 mg/kg product

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

SaniMicro: 9.5 kg*  
SaniMidget: 22 kg*  
SaniMagnum: 35 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, December 15, 2014

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

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