



## Instruction Manual

Toftejorg SaniMagnum with ATEX Certification in accordance with Directive  
94/9/EC

IM-TE91A744-EN1

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## Introduction

This manual has been prepared as a guide for installation and for the persons who will be operating and maintaining your tank cleaning machine.

The information in this manual is simple to follow, but should you require further assistance, our Customer Service 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 will help us to help you.

**Warning:**




Before installing the machine and setting it into operation carefully read the General Installation Instructions (page 8) and the Safety Precautions (page 9 - 10) 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.

## ATEX marking

The Toftejorg SaniMagnum is certified as category I component. The certification is carried out by the notified body Baseefa, who has issued the certificate no. 04ATEX0357X. The marking on the ATEX certified Toftejorg SaniMagnum is as follows:

AlfaLaval, DK-Ishøj, Baldershoej 19  
SaniMagnum 2005-xxxx

 II 1 GD c T140° C

 1180 Baseefa 04ATEX0357X

xxxx is equal to the serial number.

## General Description

The Toftejorg SaniMagnum is a tank cleaning machine intended for industrial use in closed tanks for processing storage. There is a broad range of application area within pharmaceutical, food and chemical industries.

The Toftejorg SaniMagnum is a sanitary cleaning device of the rotating fan jets type for permanent installation that provides a cleaning pattern from 180° - 360°C. The machine is designed in such a way that it is completely self-cleaning. If Installed according to drawing on page 8, the Toftejorg SaniMagnum is completely self-draining in the shown positions. All products contacts surfaces are AISI 316L stainless steel or FDA approved polymer materials.

No open thread or screws in the product areas.

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

The Toftejorg SaniMagnum is designed for use in pharmaceutical, biotechnological, food and dairy processing applications. It may be used in storage tanks, reactors, mixing tanks, spray dryers and other process equipment with a volume ranging from 0.1-10m<sup>3</sup> (27-2,700 US gallons). For larger volumes, multiple Toftejorg SaniMagnum 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.

## Quality system

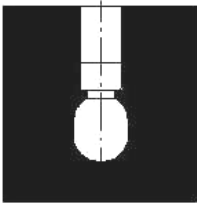
The Toftejorg SaniMagnum is produced according to Alfa Laval Tank Equipment's ISO 9001 international Standard certified quality system. All parts are made from certified material and all non-metal parts are made from FDA-approved materials, 21 CFR § 177.

## General Description (continued)

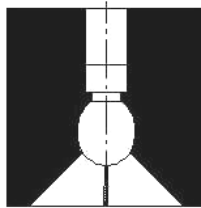
### Functioning

The flow of the cleaning media causes the head of the Toftejorg SaniMagnum to rotate, with fan jets 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 track and onto the neck of the elongated head.

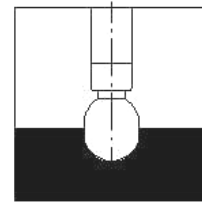
### Spray Pattern



360°



270°

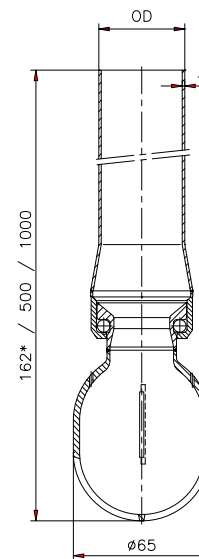
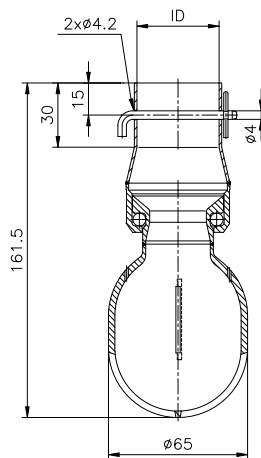
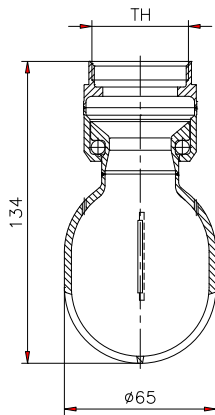


180°

## Technical Data

Weight of machine	:	Thread and clip-on: 0.76 kg On pipe: 0.97/1.52 kg
Working pressure	:	1 – 3 bar
Recommended pressure	:	2 bar
Max. working temperature	:	95°C
Max. ambient temperature	:	140°C
Wetting radius	:	Max. 3 m
Impact cleaning radius	:	Max. effective 2 m
Materials: inlet connections	:	1.4404 (316L)
bearing race parts	:	SAF 2205 (UNS31803)
balls	:	1.4401 (316)/PTFE (FDA approved 21 CFR § 177.1550)
head	:	1.4404 (316L)
Lubricant	:	Self-lubricating with the cleaning fluid
Connections	:	1¼" BSP or NPT thread Clip-on or weld-on for pipe: ISO2037, ASTM A270, BS4825 part 1 or DIN 11.850

## Standard Configurations for Toftejorg SaniMagnum



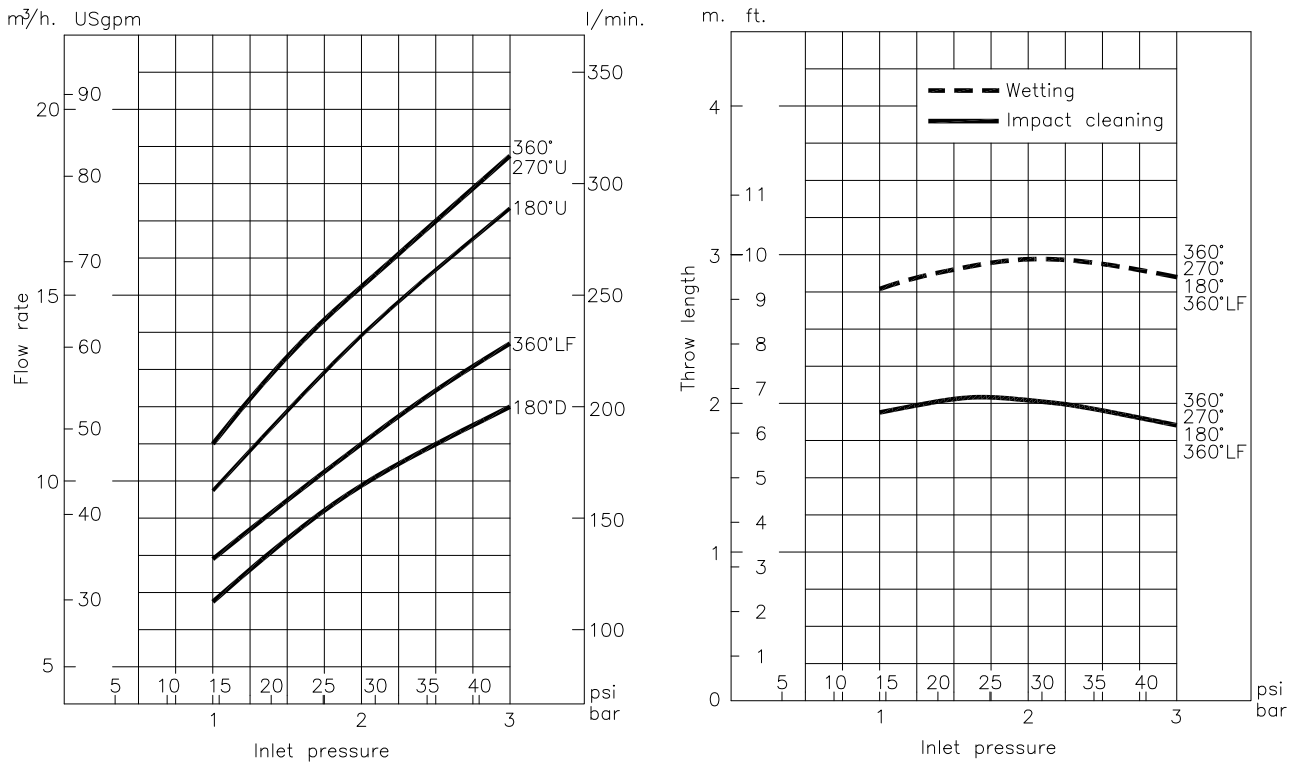
TH  
1¼" BSP  
1¼" NPT

ID  
1½": ø38.4  
2": ø51.3  
DN40: ø40.4  
DN40: ø41.4

OD x t  
Welded on pipe  
1" ISO: ø25 x 1.2  
Weld end\*  
1" ISO: ø38 x 1.2  
DN25DIN: ø41 x 1.5

## Technical Data (continued)

### Performance Data for Toftejorg SaniMagnum



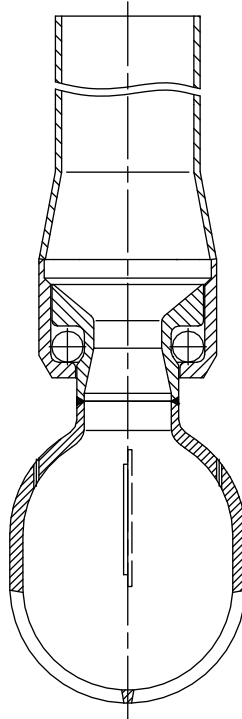
**Flow rate**

**Cleaning radius**

**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 taken in consideration.

# Installation and Normal Operation

## General Installation Instructions



### Self draining position

It is recommended to install a filter with mesh size 250  $\mu\text{m}$  (0.01") in the supply line in order to avoid particles, scale etc. from clogging the inside of the cleaner. It is essential to avoid fine solid particles, such as fine sand, in the cleaning fluid as they will increase wear considerably, and may cause slower rotation speed or stoppage. This is particular important in case of recirculation.

Before installation, all supply lines and valves must be thoroughly flushed to remove remains of welding electrodes, 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.

**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.

## Installation and Normal Operation (continued)

### General Installation Instructions

#### Special Conditions for Safe Use in accordance with the ATEX Certification, Directive 94/9/EC

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



**Warning:** The maximum permitted process fluid temperature is 95°C, with an ambient temperature range of 0°C to 140°C.



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



**Warning:** The unit must not be operated in a vessel having an enclosed volume of greater than 100m<sup>3</sup>.



**In addition to the above mentioned precautions relating to the ATEX guidelines Directive 94/9/EC of March 23 1994, the following safety precautions, page 10, must be observed.**

## Installation and Normal Operation (continued)

### General Safety Precautions

The Toftejorg SaniMagnum 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 of the cleaning operation, while personnel are inside the tank or otherwise can be hit by jets from the cleaner head



**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 Ω. 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 CENELEC R044-001 Safety of Machinery, 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.

## Installation and Normal Operation (continued)

### Normal Operation

#### Cleaning Media

Use only media compatible with Stainless Steel AISI 316L, SAF 2205 and PTFE. 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 you are in doubt, contact your local Alfa Laval Tank Equipment sales office.

#### Temperature

In accordance with the ATEX specifications regarding special conditions for safe use, see page 9.

**Warning:**



Tanks with capacities greater than 100 m<sup>3</sup> 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.

**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. Put on pressure gradually in order to avoid hydraulic shocks, which might stress mechanical parts in the Toftejorg SaniMagnum cleaner. Max. pressure is 5.0 bar.

#### After-Use Cleaning

After use flush the machine with fresh water. Cleaning media should never be allowed to dry or set-up 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.

## **Claim Procedure**

In case of failure that needs assistance from Alfa Laval Tank Equipment A/S, it is essential for our evaluation that the problem, as well as the working conditions of the machine, is described as detailed as possible.

For description of the working conditions, fill in the form "Claim Report - Working Conditions", which you will find at the back of this manual.

## **How to contact Alfa Laval Tank Equipment A/S**

For further information please feel free to contact:

Alfa Laval Tank Equipment A/S  
Baldershoej 19  
P.O. Box 1149  
2635 Ishoej  
Denmark

Phone no.: +45 43 55 86 00  
Fax no.: +45 43 55 86 01  
[www.alfalaval.com](http://www.alfalaval.com)  
[www.toftejorg.com](http://www.toftejorg.com)

Contact details for all countries are continually updated on our websites.

# Claim Report Working Conditions

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Ref. Claim Case : \_\_\_\_\_

Machine/Cleaner Type : \_\_\_\_\_ Serial No.: \_\_\_\_\_

Configuration

- Nozzles : \_\_\_\_\_ x  $\varnothing$  \_\_\_\_\_ mm

- Turbine/Inlet Guide : \_\_\_\_\_ %

Working Conditions

Inlet pressure at machine/cleaner : \_\_\_\_\_

Type of Valve in inlet line : \_\_\_\_\_

Can hydraulic shock be disregarded: :  Yes  No

Inlet line flushed before installation of tank cleaner? :  Yes  No

Working hours before failure : \_\_\_\_\_ hours

Cleaning Programme

Cleaning media and conc.	Temperature	Time	Recirculation?

Is sterilising being used? :  Yes  No

Procedure (media/temp.)? : \_\_\_\_\_

Is steam injection being used for heating? :  Yes  No

Time: \_\_\_\_\_

Temperature: \_\_\_\_\_

V. 98.1

## Claim Report Working Conditions (continued)

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### Condition of Cleaning Media

- |   |   |
|---|---|
| <input type="checkbox"/> Clean                                      |   |
| <input type="checkbox"/> Contaminated with (nature and description) |   |
| <input type="checkbox"/> Chemicals/Solvents _____                   | <input type="checkbox"/> High viscous     |
| <input type="checkbox"/> Soluble                                    | <input type="checkbox"/> Sticky/tenacious |
| <input type="checkbox"/> Low viscous                                | <input type="checkbox"/> Solidifying      |
| <input type="checkbox"/> Hard particles/size _____                  | <input type="checkbox"/> Crystallising    |
| <input type="checkbox"/> Soft particles/size _____                  |   |

Has filter been installed in inlet line?

- Yes  
Mesh size: \_\_\_\_\_ mm  
 No

Is tank cleaner flushed with clean water after tank cleaning?

- Yes  No

Type of Soilage/Tank Contents to be removed

Name, formula/concentration of material to be removed from tank : \_\_\_\_\_

What is material soluble in : \_\_\_\_\_

Nature of material:

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Volatile/explosive | <input type="checkbox"/> Sticky/tenacious | <input type="checkbox"/> Contains soft particles        |
| <input type="checkbox"/> Low viscous        | <input type="checkbox"/> Solidifying      | <input type="checkbox"/> Contains hard particles/fibres |
| <input type="checkbox"/> High viscous       | <input type="checkbox"/> Crystallising    |   |

Is tank cleaner submerged in material?

- Yes  No

Other information/Remarks

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Date: \_\_\_\_\_ Sign.: \_\_\_\_\_

# EU Declaration of Conformity



## EU Declaration of Conformity

We

Manufacturer: Alfa Laval Tank Equipment A/S  
Address: Baldershoej 19, DK-2635 Ishoej  
Phone: +45 43 55 86 00  
Fax: +45 43 55 86 01  
E-mail: tankequipment.info@alfalaval.com

herewith declare that the below mentioned product:

### tank cleaning machine Toftejorg SaniMagnum

Type no. 11B000-71 / 11B056-71	Type no. 11B000-81 / 11B056-81
Type no. 11B100-71 / 11B156-71	Type no. 11B100-81 / 11B156-81
Type no. 11B200-71 / 11B256-71	Type no. 11B200-81 / 11B256-81
Type no. 11D000-71 / 11D056-71	Type no. 11D000-81 / 11D056-81
Type no. 11D100-71 / 11D156-71	Type no. 11D100-81 / 11D156-81
Type no. 11D200-71 / 11D256-71	Type no. 11D200-81 / 11D256-81

is in conformity with the provisions of:

- The Machinery Directive 98/37/EC, Annex II, Part A
- The Equipment explosive atmospheres (ATEX) Directive 94/9/EC.
- The Pressure Directive 97/23/EC

### Harmonised European Standards:

The machine is manufactured in accordance with the relevant clauses of the following standards:

<u>The Machinery Directive:</u>	<u>The ATEX-Directive:</u>
- DS/EN 292-1	- EN1127-1,
- DS/EN 292-2	- EN 13463-1
- EN 1672-2	- EN 13463-5

### ATEX Certification:

- EC Type Examination Certificate no. 04ATEX0357X  
Marking: II 1 GD c T140°C

Baseefa  
Rockhead Business Park  
Staden Lane, Buxton  
Derbyshire SK17 9RZ  
United Kingdom

### The pressure directive:

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

Place: Ishoej, Denmark  
Date: June 11, 2007

Signature:   
Name and title: Bo Hedegaard Knudsen  
Managing Director

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