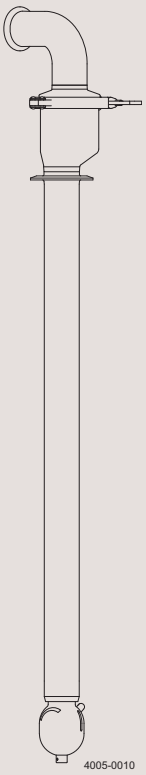
Instruction Manual

Alfa Laval Toftejorg™ SaniMega



Covering:
Standard Machines
TE91A590-EN6
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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 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

Designation

Alfa Laval Toftejorg SaniMega

Type

From serial number 2016-0001 to 2030-99999

is in conformity with the following directive with amendments:

Machinery Directive 2006/42/EC
- DS/EN ISO 12100:2010
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

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

Kolding

Place

2016-02-01

Date

Signature

(This Declaration of Conformity replaces Declaration of Conformity dated 20156-01-01)

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 Introduction

3.1 Introduction

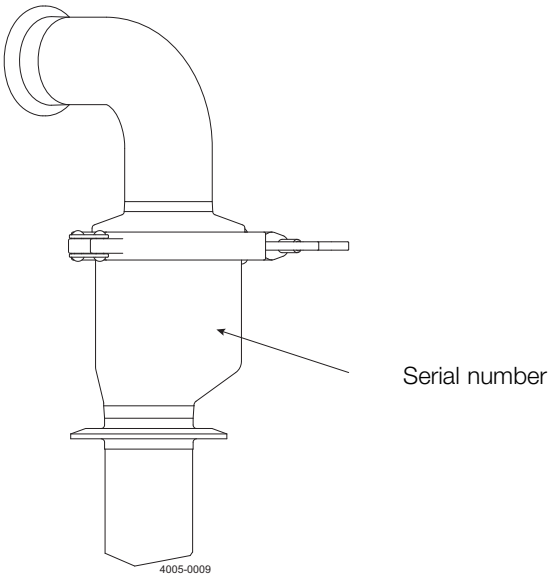
This manual has been prepared as a guide for installing, operating and maintaining your Alfa Laval Toftejorg Rotary Spray Head tank cleaning machine. Should you require further assistance, our Technical Sales Support department and worldwide net of sales offices will be pleased to help you. Please quote 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 Safety and Installation Instructions (page 9) 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.

The serial number is placed on the Gear house of the tank cleaning machine.



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.

See General Installation Instructions on page 9 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.

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.

4 Installation

4.1 General Description

The Alfa Laval Toftejorg SaniMega is a media driven and media lubricated tank cleaning machine, which is being used at fixed vertical installations. The Alfa Laval Toftejorg SaniMega rotary spray head provides a controlled rotating fan impact cleaning action. It is an automatic device with an optimised design for distribution of cleaning fluids in vertical cylindrical tanks. However, it can also be used for a number of other tank shapes and vessels.

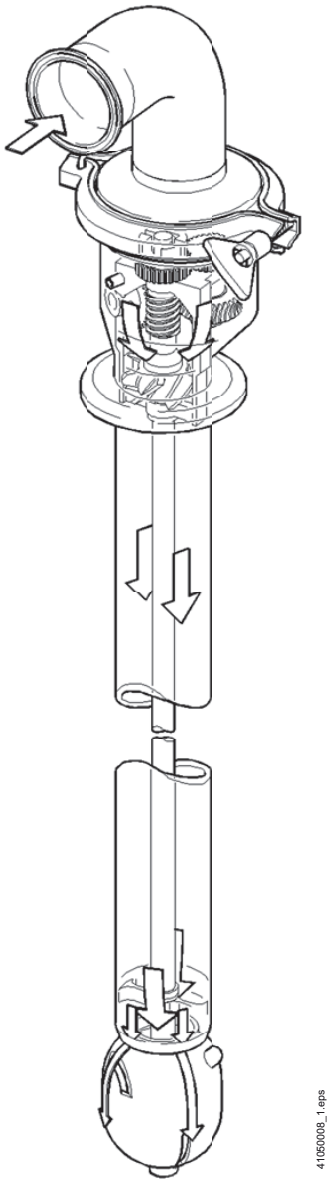
4.2 Functioning

The cleaning media is lead through the inlet connection and into the housing, where it flows through the Gear and the Turbine, setting the Turbine into rotation. It then continues downwards to the Cleaner head and out through the slots.

The rotation of the Turbine is via the Gear transmitted to the Drive shaft, which makes the Cleaner head rotate at a steady speed. The resulting fans of the cleaning media cleans the targeted surfaces by impact and provides a swirling action down the tank wall.

The Alfa Laval Toftejorg SaniMega contains no lubricating substances such as oil or grease. All materials are selected for contact with foods, and the machine is self-cleaning, i.e. all internal and external surfaces within the product contact area are cleaned.

The Alfa Laval Toftejorg SaniMega can, as an option, be fitted with a non-invasive electronic Rotation Sensor to verify the rotation of the cleaner.



4.3 General Safety and Installation Instructions

The Alfa Laval Toftejorg SaniMega is designed for fixed vertical installation in vertical tanks. It is recommended to install a filter in the supply line in order to avoid particles larger than 2.5 mm like scale etc. from clogging the inside of the cleaner. Fine solid particles in the cleaning fluid will result in increase of wear and may cause slower rotation speed or stoppage.

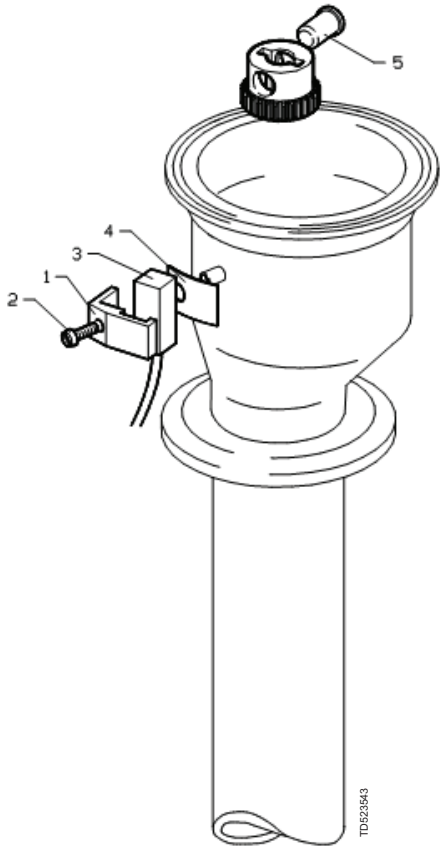
Before installation, all supply lines and valves must be flushed to remove remains of welding electrodes, grinding dust, scale and other foreign matter.

Note: The machine shall be installed in accordance with national regulations for safety and other relevant regulations and standards. Precautions shall be made to prevent starting the cleaning operation, while personnel are inside the tank or otherwise can be hit by jets from the cleaner head. In EU-countries the complete system must fulfil the EU-machine directive and shall be CE-marked.

Warning:

The machine is not designed for installation in tanks with a potential explosive atmosphere, where build-up of static electricity on the cleaner head can result in risk of sparks and consequently an explosion may follow.

4.4 Rotacheck add-on Installation Guide



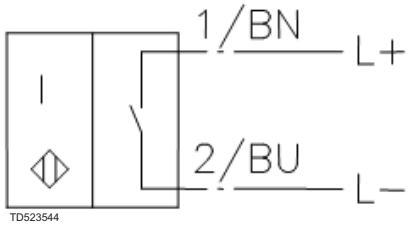
The Rotacheck Sensor is a Namur-type magnetic sensor according to DIN 19234. The sensor must be supplied from an external relay.

When the Magnet inside the cleaner passes the sensor, an impulse is sent to the relay.

Technical Data:

Dimensions:	12x12x30 mm
Connection, electrical:	2 m, PVC-cable 2 x 0.34 mm^2
Supply voltage:	5-24 V DC
Supply voltage, ex. approv.:	Max. 8.2 V DC
Current consumption, magnet sensed:	3 mA
Current consumption, not sensed:	1 mA
Operating temperature:	-25°C to 70°C
Material of Housing:	PBT
Enclosure:	IP67
Ex-class:	EEx ia II T6

Standard Symbol:



Working Instructions:
(Ref. page 19 for positions)

1. Remove the Inlet connection (Pos. 19, page 19)
2. Remove Circlip (Pos. 11) and Gear wheel (Pos. 4, page 19)
3. Fit Magnet (Pos. 5) in Gear wheel
4. Fit Gear wheel with Magnet complete on shaft
5. Fit Inlet connection
6. Fit pos. 1, 2, 3 and 4 on the Housing. Position of the Sensor is important. It must be fitted on the right side of tap.

5.1 Normal operation

Cleaning Media
Use only media compatible with Stainless Steel AISI 316L, PTFE, PEEK and EPDM. Please note that PEEK is not resistant to concentrated sulfuric acid. Normal detergents, moderate solutions of acids and alkalics are acceptable. Aggressive chemicals, excessive concentrations of chemicals at elevated temperatures, as well as certain hypochlorids should be avoided. If in doubt, contact your local Alfa Laval sales office.

Temperature
Max. temperature 140°C at steam sterilisation.

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 Alfa Laval Toftejorg SaniMega cleaner. Max. pressure is 4.0 bar.

After-use cleaning
After using the Alfa Laval Toftejorg SaniMega, flush the machine with clean water. Cleaning solutions should never be allowed to dry or set-up in the system due to possible "salting out" or "scaling" of the cleaning ingredient.

Warning: Do not touch hot surfaces when working with hot cleaning solutions or steaming.
Never try to loosen clamps without securing against pressure on the pipe line.

6 Maintenance and Repair

6.1 Preventive Maintenance

In order to keep your tank cleaning machine servicing you as an efficient tool in your tank cleaning operations, it is essential that you maintain its high performance. A simple preventive maintenance programme will keep your tank cleaning machine in good condition.

Good maintenance is careful and regular attention!

The following recommended preventive maintenance is based on tank cleaning machines working in average conditions. A tank cleaning machine, which has a rough and dirty job to do, needs more frequent attention than one working under ideal conditions. We trust that you will adjust your maintenance programme accordingly.

Always use only proper tools. Unless otherwise stated never use unnecessary force (i.e. hammer or pry) to put components together or take them apart. Always perform all assembly/disassembly steps in the order described in this manual.

Never assemble components without previous cleaning. This is especially important at all mating surfaces. Work in a clear well lighted work area.

Every 300-500 working hours

(Ref. page 13 for positions)

Inspect the gear, turbine parts and bearings:

Disassembly

1. Dismount the Clamp ring, inlet connection and Gasket (Pos. 20, 19 and 21).
2. Remove Circlip (Pos. 11) and remove Gear wheel (Pos. 4). Push out Cylindrical Pin (Pos. 3). Be careful not to drop Pin into machine.
3. Remove the Gear assembly from the Drive shaft (Pos. 9). The Turbine shaft (Pos. 8) is now released and can be removed.

Check/Inspection

1. Check the Worm and Worm wheel on the Horizontal shaft (Pos. 12). Replace shaft if teeth are worn more than 50%.
2. Check that the Horizontal shaft (Pos. 12) and the Worm wheel (Pos. 2) can be rotated freely without any uneven resistance. Check Turbine bearings (Pos. 6). Replace Bearings if hole is worn to more than ø10.3 mm.
3. Replace if Collar on lower Bearing has been worn to 1.0 mm or less.

Reassembly

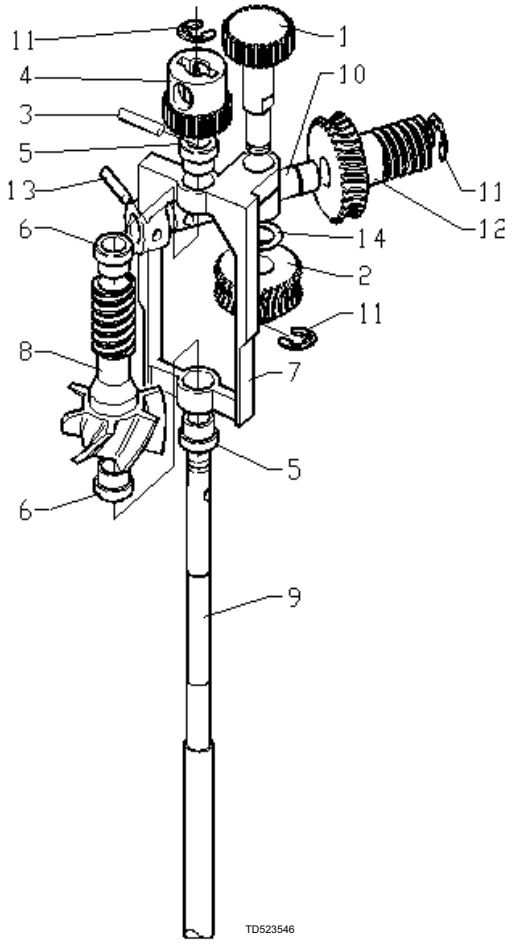
1. Reassembly is carried out in the opposite order.

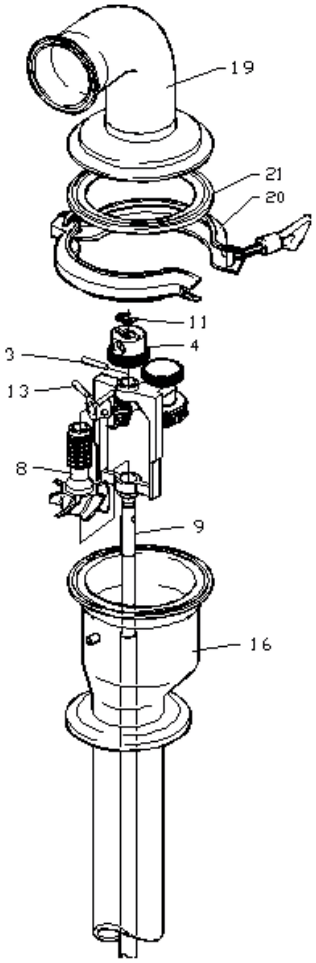
6.2 Turbine and Gear Assembly

Disassembly:
1. Remove Circlip (pos. 11) and remove the Gear wheel (Pos. 4) . Push out Cylindrical Pin (Pos. 3)
2. Remove the Gear assembly from the Drive Shaft (Pos. 9). The Turbine shaft (Pos. 8) is now released and can be removed.
3. Remove Circlip (Pos. 11) and pull out the Pinion (Pos. 1) releasing the Worm wheel (pos. 2) and Washer (Pos. 14).
4. Remove the Circlip (Pos. 11) and the Horizontal shaft (Pos. 12).

Reassembly:
1. Reassembly is carried out in the opposite order.

Before mounting Gear wheel (Pos. 4) make sure that the Horizontal shaft (Pos. 12) and the Worm wheel (Pos. 2) can be rotated easily without any uneven resistance.



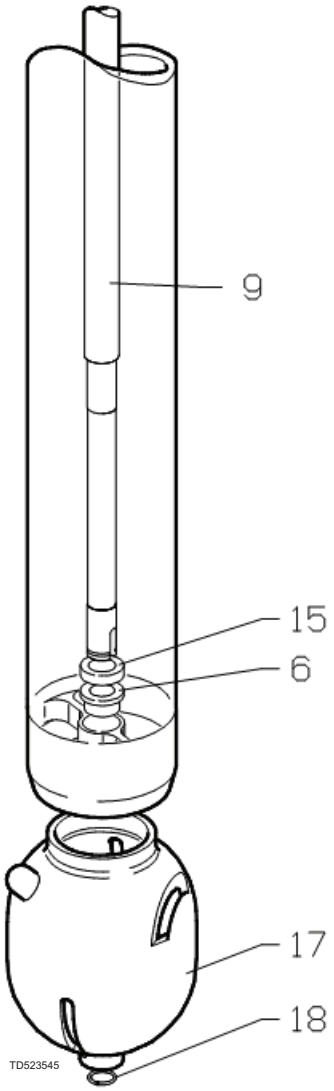


6.3 Cleaner Head Assembly

Disassembly:
It is necessary to disconnect the cleaner from any piping etc. and dismount it from the tank. Place the machine on a level surface.

1. Dismount the Clamp ring, Inlet connection and Gasket (Pos. 20, 19 and 21, see page 13).
2. Push the Cleaner head up (Pos. 17) and remove the Lock ring (Pos. 18). If necessary hold Drive shaft (Pos. 9) in position when pushing the Cleaner head up.
3. Pull off Cleaner head.

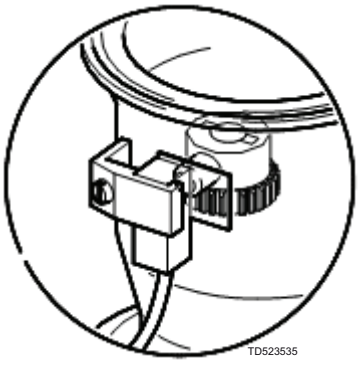
Reassembly:
Reassembly is carried out in the opposite order.



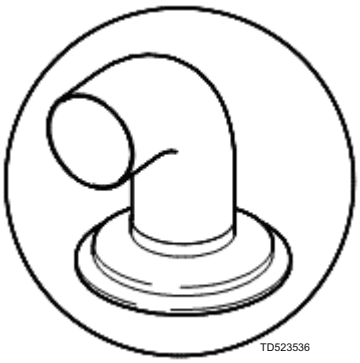
Weight of machine:	6.0 kgs (13.3 lbs)
Working pressure:	2-4 bar (28-58 psi)
Recommended inlet pressure:	3 bar (44 psi)
Max. working temperature:	95°C (203°F)
Max. sterilisation temperature:	140°C (284°F)
Max. ambient temperature:	140°C (284°F)
Effective cleaning radius:	3 m (10 ft.)
Standard connection:	Inlet: 2” ISO clamp. Tank: 3” ISO clamp
Standard downpipe length:	1.200 or 1.500 mm
Min. tank opening:	ø72.5 mm
Materials:	Stainless steel AISI 316L, PTFE, PEEK, EPDM

Options

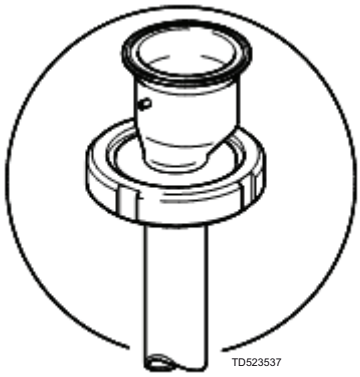
- A non-invasive electronic Rotation Sensor to validate speed of the cleaner
- Downpipe length 800 or 1.000 mm
- Inlet connection as welding end 2” ISO (ø51x1.2)
- Tank inlet as DIN Union NW100
- Counter parts to the standard clamp connections including gaskets and clamp rings



Rotation Sensor



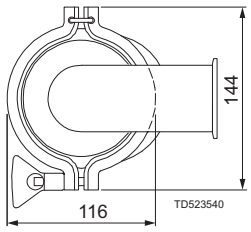
Inlet connection as welding end

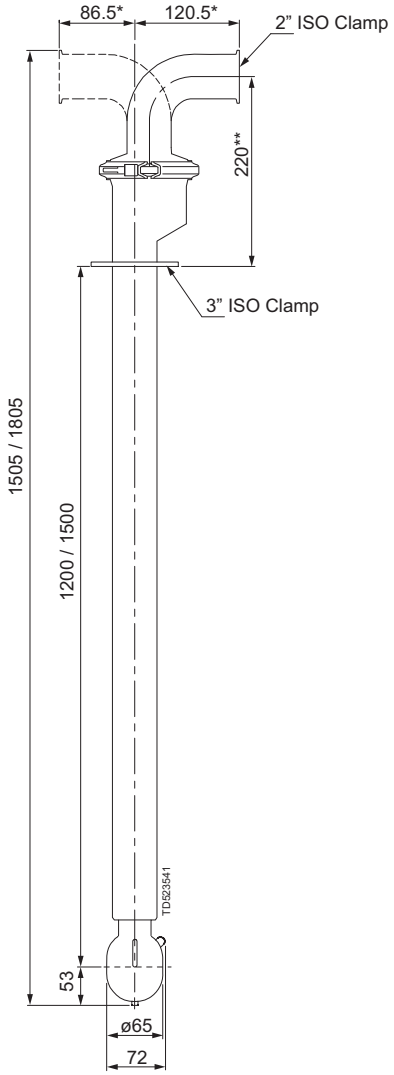


Tank inlet as DIN Union

7 Technical Data

Principal dimensions (mm)

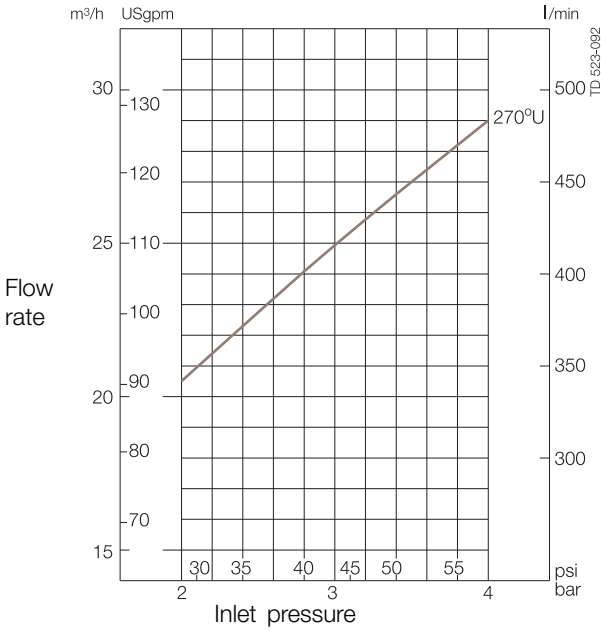


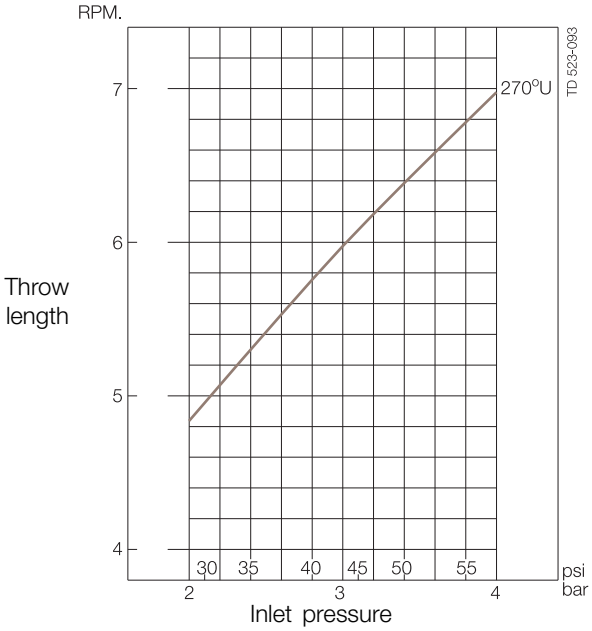


Dimensions for Options:

* For Welding end:	65/99 mm
** For NW100 DIN Union:	234 mm

Performance Data





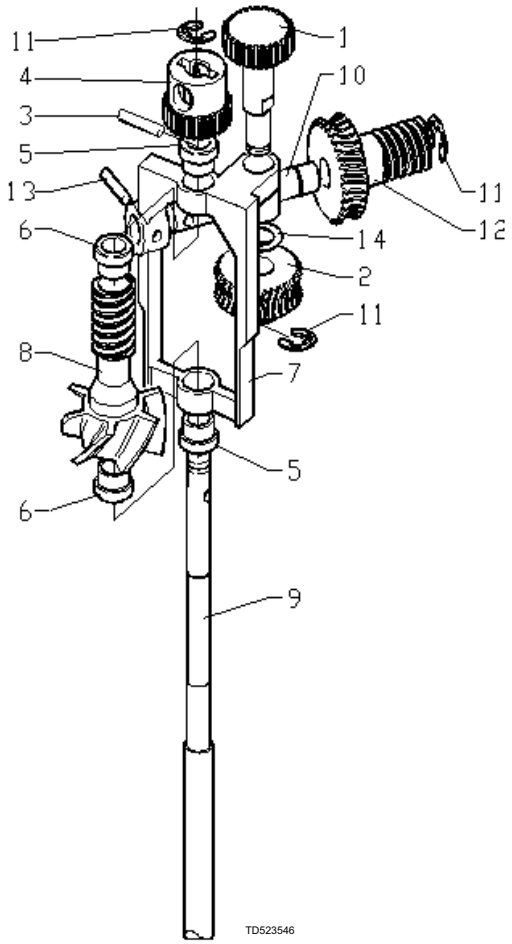
8 Parts Lists and Drawings

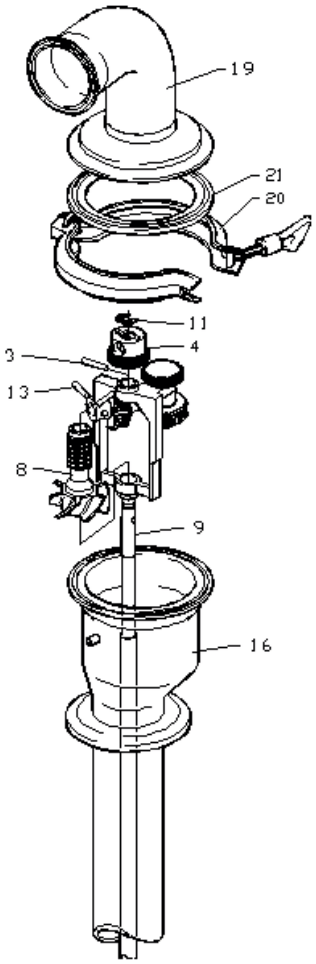
8.1 Parts list, Alfa Laval Toftejorg SaniMega

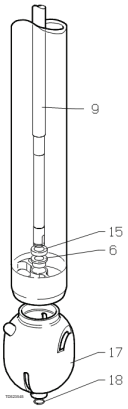
Pos.	Ref. No.	No./Unit	Description	Material
1	TE12A514	1	Pinion	Polymer
2	TE12A508	1	Worm wheel	Stainless steel
3	TE51C017	1	Cylindrical Pin	Stainless steel
4	TE12A506	1	Gear wheel	Stainless steel
5	TE12A528	2	Bush	Polymer
6	TE20G640	3	Bearing for Turbine shaft	Polymer
7	TE12A505	1	Gear frame	Stainless steel
8	TE12A509	1	Turbine shaft	Stainless steel
9	TE12A530/33	1	Drive Shaft	Stainless steel
10	TE12A507	1	Shaft	Stainless steel
11	TE51C202	3	Circlip	Stainless steel
12	TE12A513	1	Horizontal shaft	Polymer
13	TE51C004	1	Pin	Stainless steel
14	TE12A515	1	Washer	Polymer
15	TE12A566	1	Washer	Stainless steel
16		1	Housing	*Note
17	TE12A573	1	Cleaner head	Stainless steel
18	TE12A559	1	Lock ring	Stainless steel
19	TE12A526	1	Inlet connection	Stainless steel
20	TE51S128	1	Clamp ring	Stainless steel
21	TE51S118	1	Gasket	Elastomer

*Note: Pos. 16 is not sold as single spare part component but only as part of a machine maintenance/repair order. For further information please contact Alfa Laval Customer Support.

8.2 Parts drawings, Alfa Laval Toftejorg SaniMega



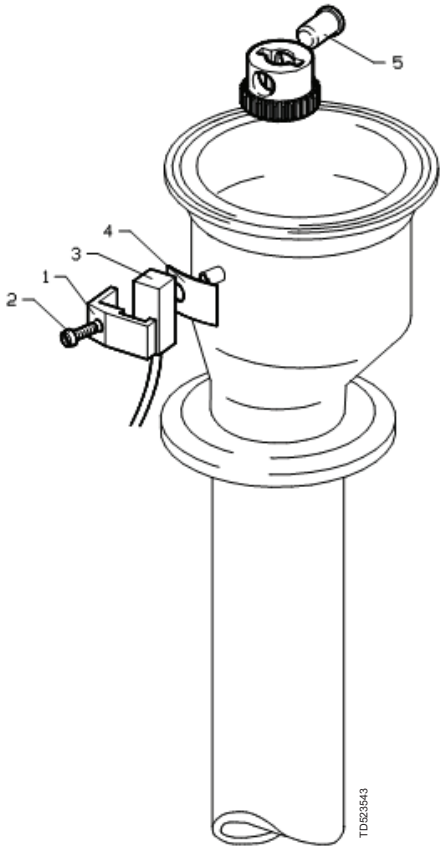




8.3 Parts list and drawing, Alfa Laval Rotacheck

Rotacheck for Alfa Laval Toftejorg SaniMega complete TE12A305

Pos.	Ref. No.	No./Unit	Description	Material
1	TE12A555	1	Clamp for sensor	Stainless steel
2	TE51A148	1	Screw	Stainless steel
3	TE51V555	1	Sensor	
4	TE12A557	1	Isolator for sensor	Polymer
5	TE12A356	1	Magnet complete	



Spare Part Kit for Alfa Laval Toftejorg SaniMega, Article no. TE12A289

Pos. no.	Item no.	No./unit	Description	Material
3	TE51C017	2 pcs.	Cylindrical Pin	Stainless steel
6	TE20G640	2 pcs.	Bearing for Turbine shaft	Polymer
11	TE51C202	3 pcs.	Circlip	Stainless steel
12	TE12A513	1 pcs.	Horizontal shaft	Polymer
18	TE12A559	1 pcs.	Lock ring	Stainless steel

10 General information

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 order Spare Parts

On the Cross Sectional Drawings as well as on all instruction drawings, the individual parts have a pos. no., which is the same on all drawings. From the pos. No. the part is easily identified in the Reference List of Parts, from page 19.

For the Rotacheck system the individual parts have a Pos. No. and are all listed in the Reference list of Parts page 20. Ref. No. and description should be clearly stated.

Please also quote the type of machine and serial No. This will help us to help you. The type and serial Nos. are stamped on the Connection Nipple on the top of the tank cleaning machine.

10.3 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

Declaration of compliance for food contact materials

Article Nr: TE12Axxx-xx

Product SaniMega

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/dm^2 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 19 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, January 28, 2015

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

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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.