



Instruction Manual

Toftejorg SaniMega

IM-TE91A590-EN1
August 2005

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Introduction

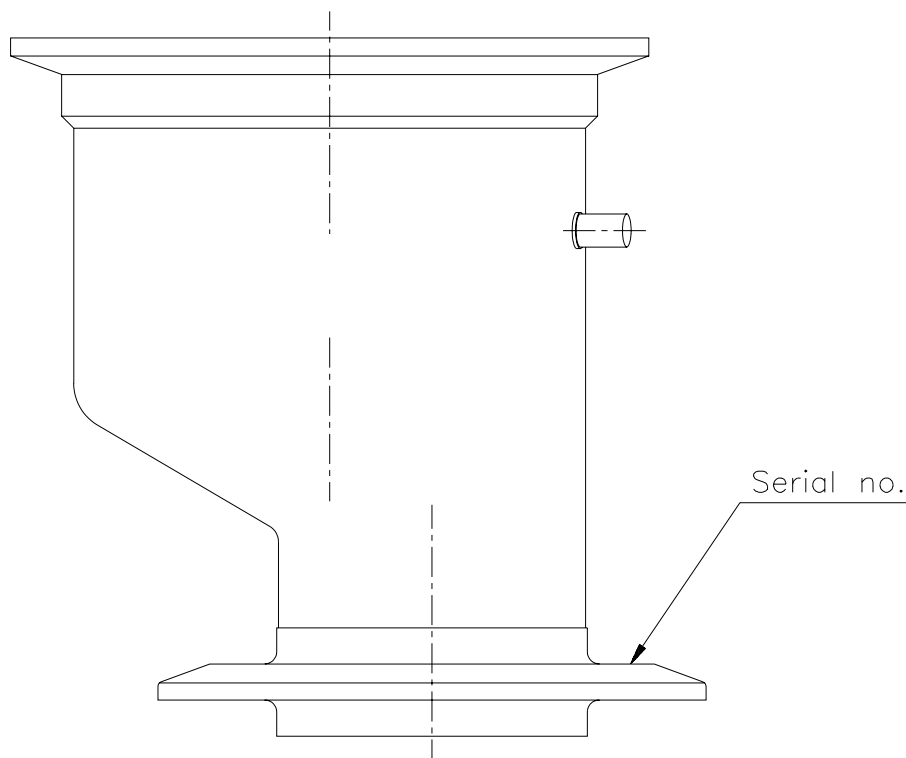
This manual has been prepared as a guide for the persons who operate and maintain the tank cleaning machine.

The key to long life for your tank cleaning machine is a carefully planned system for preventive maintenance; you must appreciate that a tank cleaning machine which has a rough and dirty job to do will need more frequent attention than one working under ideal conditions.

Note: Get the best and most economical performance from your tank cleaning machine. Insufficient preventive maintenance means poor performance, unscheduled stops, shorter lifetime and extra costs. Good preventive maintenance on the contrary means good performance, no unscheduled stops and superior total economy.

The information in this manual is simple to follow, but should you require further assistance, our Customer Service department and worldwide net of distributors 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.

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



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.

General Description

The Toftejorg SaniMega is a media driven and media lubricated tank cleaning machine, which is being used at fixed vertical installations. The 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.

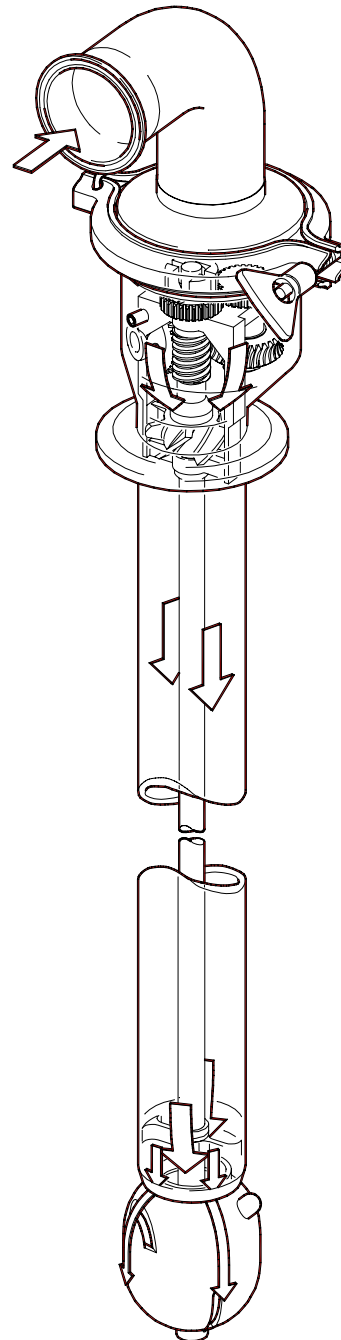
Functioning

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 fan impact jet of the cleaning media cleans the impacted surfaces and provides a swirling action down the tank wall.

The 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 are cleaned.

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

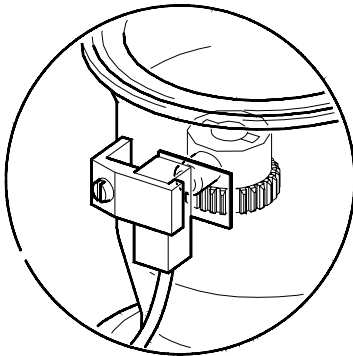


Technical Data

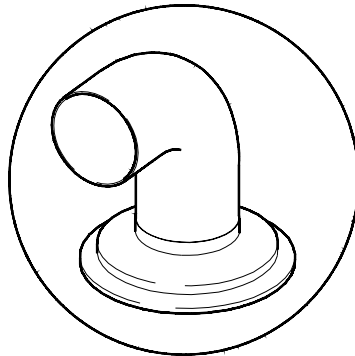
Weight of machine	:	6.0 kgs (13.3 lbs)
Working pressure	:	2-4 bar (28-58 psi)
Recommended pressure	:	3 bar (44 psi)
Max. working temperature	:	95°C (203° F)
Max. sterilisation temperature	:	140°C (284°F)
Max. ambient temperature	:	140°C (284°F)
Effective cleaning radius	:	3 m (10 ft.)
Standard connection	:	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

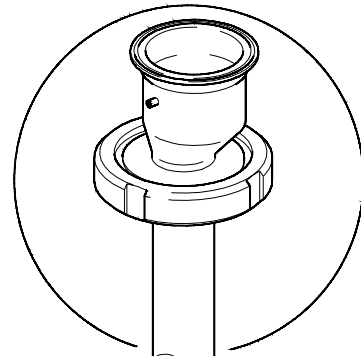
- A non-invasive electronic Rotation Sensor to validate speed of the cleaner can be included
- Downpipe length 800 or 1.000 mm
- Inlet connection as welding end 2" ISO (ø51x1.2)
- Tank inlet as DIN Union NW100
- Counter parts to the standard clamp connections including gaskets and clamp rings



Rotation Sensor



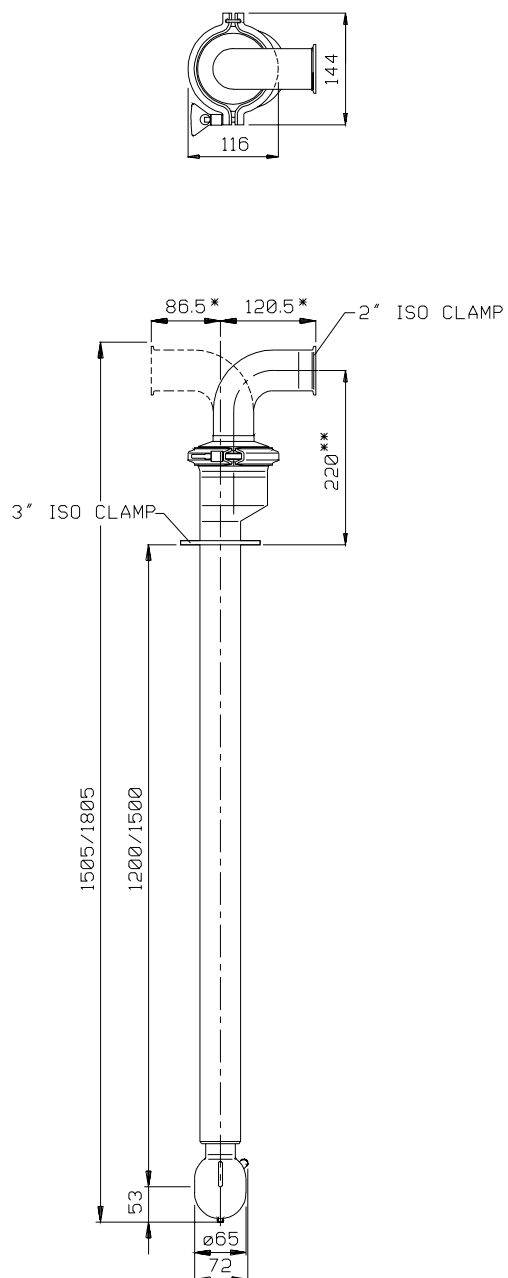
Inlet connection as welding end



Tank inlet as DIN Union

Technical Data (continued)

Principal dimensions



Dimensions in mm

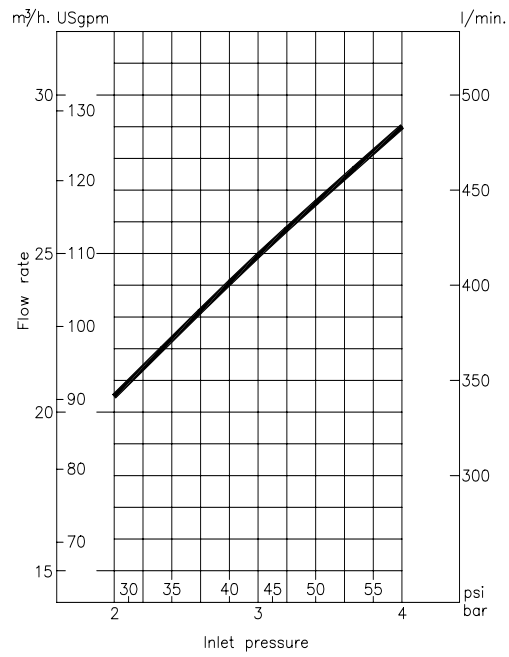
Dimensions for Options

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

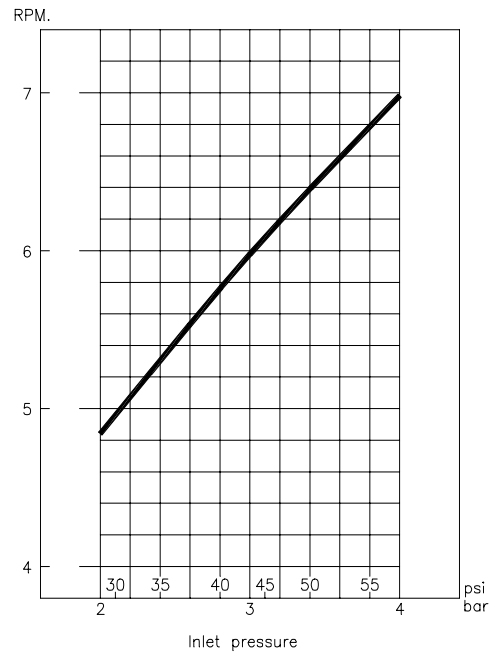
Technical Data (continued)

Performance Data

Flow Rate



Rotating speed



Installation and Normal Operation

General Installation Instructions

The 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 of 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.



Installation and Normal Operation (continued)

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 alkalis will be acceptable. Aggressive chemicals, excessive concentrations of chemicals at elevated temperatures, as well as certain hypochlorides should be avoided. If you are in doubt, contact your local Alfa Laval Tank Equipment 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 Toftejorg SaniMega cleaner. Max. pressure is 4.0 bar.

After Use Cleaning

After using the 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.

Maintenance and repair

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 by following a simple preventive maintenance programme, which will help 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, will need more frequent attention than one working under ideal conditions. We trust that you will adjust your maintenance programme accordingly.

Caution:



Always use only the proper tools.

Never force, hammer or pry components together or 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

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 lift off Gear wheel (Pos. 4). Push out Cylindrical Pin (Pos. 3). Be careful not to drop Pin into machine.
3. Lift off 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 $\varnothing 10.3$ mm.
3. Replace if Collar on lower Bearing has been worn to 1.0 mm or less.

Reassembly

Reassembly is carried out in the opposite order.

Maintenance and repair (continued)

Turbine and Gear Assembly

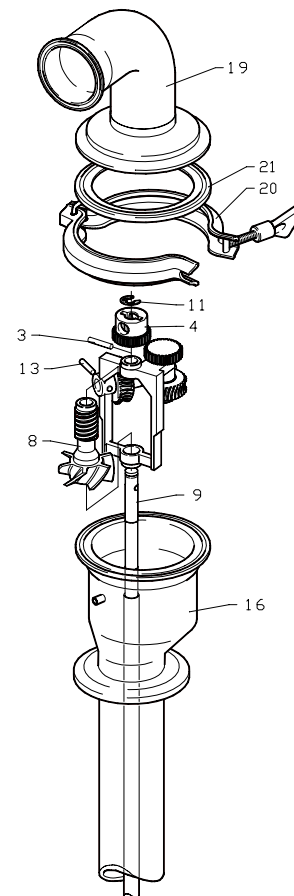
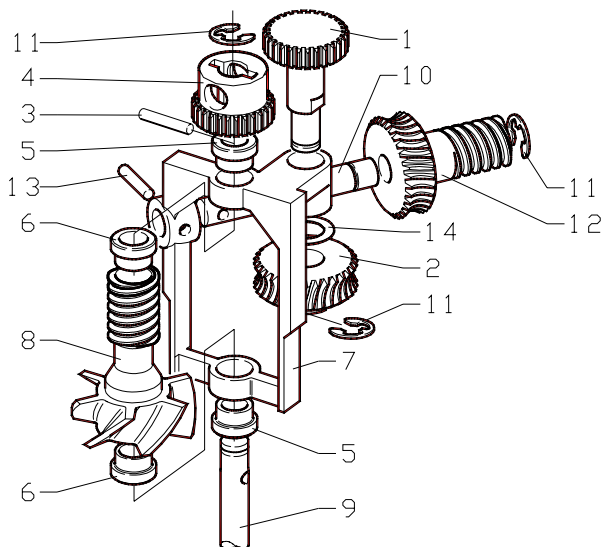
Disassembly:

1. Remove Circlip (pos. 11) and lift off the Gear wheel (Pos. 4) . Push out Cylindrical Pin (Pos. 3)
2. Lift off the Gear assembly from the Drive Shaft (Pos. 9). The Turbine shaft (Pos. 8) will now be 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 pull off the Horizontal shaft (Pos. 12).

Reassembly:

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.



Maintenance and repair (continued)

Cleaner Head Assembly

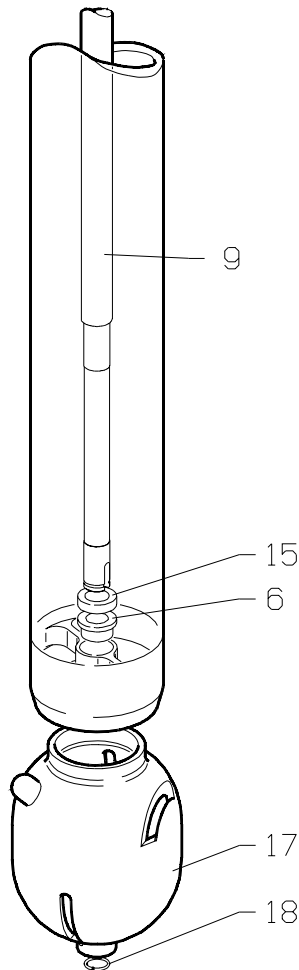
Disassembly:

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

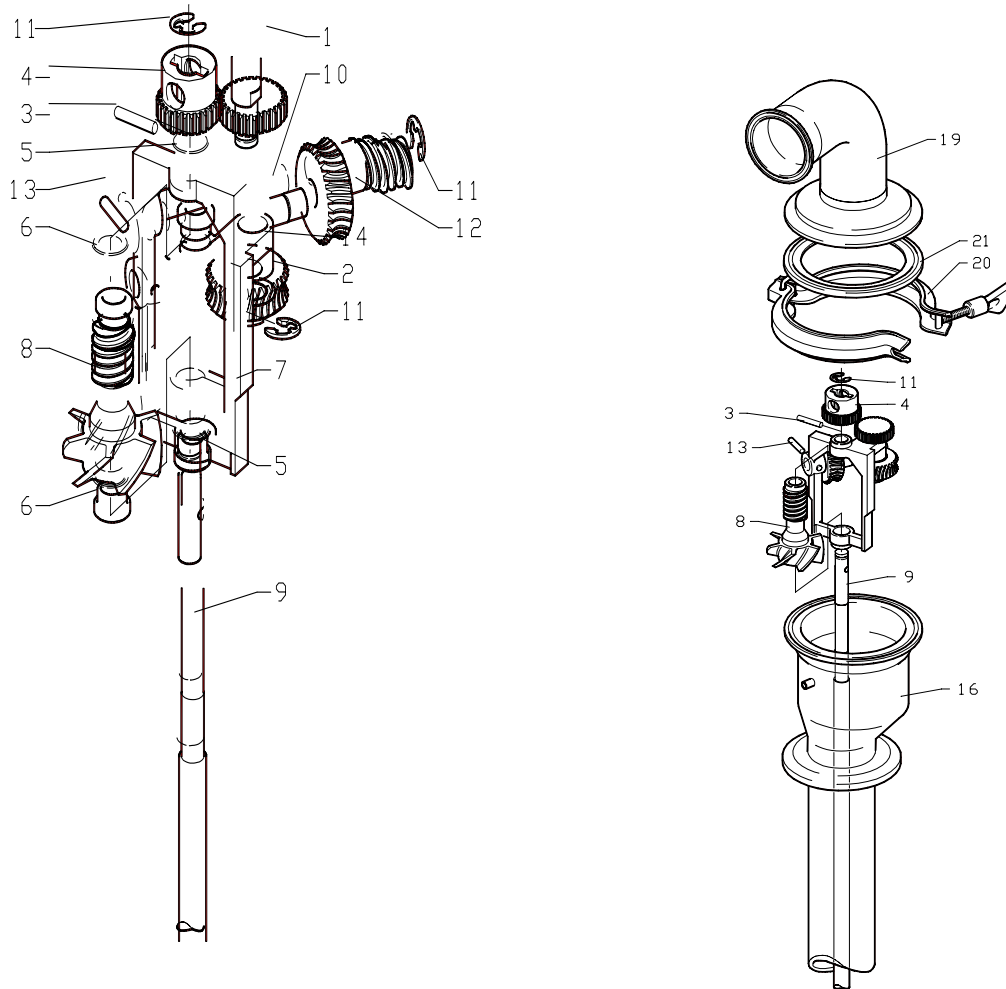
1. Dismount the Clamp ring, Inlet connection and Gasket (Pos. 20, 19 and 21).
2. Push up the Cleaner head (Pos. 17) and remove the Lock ring (Pos. 18). If necessary hold Drive shaft (Pos. 9) in position when pushing up Cleaner head.
3. Pull off Cleaner head.

Reassembly:

Reassembly is carried out in the opposite order.



Reference List of Parts



Toftejorg SaniMega, Reference List of Parts

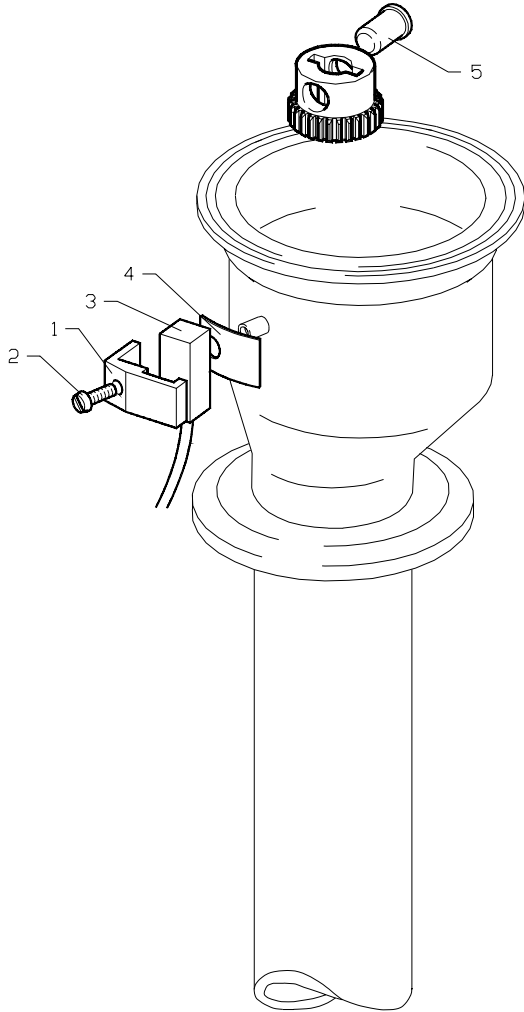
Pos.	Ref. no.	No/Unit	Description	Material
1	TE12A514	1	Pinion	Polymer
2	TE12A508	1	Worm wheel	Stainless steel
3	TE51C017	1	Cylindrical Pin	Stainless steel
4	TE12A506	1	Gear wheel	Stainless steel
5	TE12A528	2	Bush	Polymer
6	TE20G549	3	Bearing f. Turbine shaft	Polymer
7	TE12A505	1	Gear frame	Stainless 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	TE12A545/48	1	Housing	Stainless steel
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

Rotacheck

Installation Guide

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

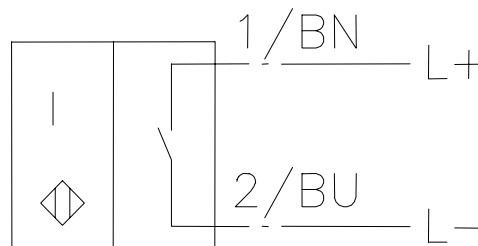
When the Magnet inside the cleaner passes the sensor, an impulse is sent to the relay.



Technical Data:

Dimensions:	12x12x30 mm	
Connection, electrical:	2m, PVC-cable 2x0.34mm ²	
Supply voltage:	5-24 V DC	
Supply voltage, Ex approv.:	Max. 8.2 V DC	
Current consumption, Magnet sensed	mA	3
Current consumption, Magnet not sensed	mA	1
Operating temperature:	-25°C to 70° C	
Material of Housing:	PBT	
Enclosure:	IP67	
Ex-class:	EEx ia II T6	

Standard Symbol:



Installation Guide (continued)

Rotacheck for Toftejorg SaniMega complete TE12A305, Reference List of Parts

Pos.	Ref. No.	Number	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	

Working Instructions

1. Remove the Inlet connection (Pos. 19, page 13)
2. Remove Circlip (Pos. 11) and Gear wheel (Pos. 4, page 13).
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.

How to Order Spare Parts and Claim Procedure

How to Order Spare Parts

The drawings on page 11, as well as the instruction drawings on page 12 and 13, show that 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, page 13. For the Rotacheck system the individual parts have a Pos. No. and are all listed in the Reference list of Parts, same page.

Individual parts should always be ordered from the Reference List of Parts, page 13 or page 14. 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 Serial No. is stamped on the Connection flange of the tank cleaning machine.

Spare part kit: Article no. TE12A299

Pos.	Ref. No.	Number	Description	Material
3	TE51C017	2	Cylindrical Pin	Stainless steel
6	TE20G549	2	Bearing f. Turbine shaft	Polymer
11	TE51C202	3	Circlip	Stainless steel
12	TE12A513	1	Horizontal shaft	Polymer
18	TE12A559	1	Lock ring	Stainless steel

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
www.toftejorg.com

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

Claim Report Working Conditions

Page 1/2

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: _____

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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?

- | | |
|------------------------------|----|
| <input type="checkbox"/> Yes | |
| Mesh size: _____ | mm |
| <input type="checkbox"/> No | |

Is tank cleaner flushed with clean water after tank cleaning?

- | | |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> 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?

- | | |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|

Other information/Remarks

Date: _____ Sign.: _____