

**CSI**417.831.1411
csidesigns.com

Instruction Manual

Toftejorg™ SaniJet™ 20 Air Driven

Versions included:

- Standard
- Hastelloy
- Q-Doc: Equipment Doc (3.1 Inspection Certificate - EN 10204)
- Q-Doc+FAT-SAT: Qualification Documentation incl. FAT and SAT)
- ATEX Certification in accordance with Directive 94/9/EC
- Improved surface finish (0.5 µm Ra internal/external media contact parts)

IM-TE91A793-EN10

ESE01829EN

Date of issue: April 3, 2014

First published: April 2009

Original manual

Instruction Manual

Contents

| | |
|--|----|
| Contents | 1 |
| Toftejorg SaniJet 20 Air Driven, Product program | 3 |
| Air Driven: Toftejorg SaniJet 20 (3" connection) | 3 |
| Air Driven: Toftejorg SaniJet 20 (4" connection) | 4 |
| Accessories..... | 6 |
| Introduction | 7 |
| Intended Use | 8 |
| Patents and trademarks | 8 |
| ATEX Marking..... | 9 |
| General Description..... | 10 |
| Quality System..... | 10 |
| Functioning | 11 |
| Machine with External Motor Drive | 12 |
| Self-cleaning | 13 |
| Cleaning Pattern, The Golden Section..... | 13 |
| Performance Data for Toftejorg SaniJet 20 Air Driven | 14 |

Instruction Manual - Installation

| | |
|--|----|
| Contents | 18 |
| General Installation Instructions..... | 19 |
| Special Conditions for Safe Use in accordance with the ATEX Certification, Directive 94/9/EC | 20 |
| Installation of Air Motor | 22 |

Instruction Manual - Operation

| | |
|--|----|
| Contents | 24 |
| Normal Operation..... | 25 |
| Normal Operation of Air Motor | 26 |
| Safety Precautions..... | 28 |
| Safety Precautions for Air Motor | 29 |

Instruction Manual - Maintenance

| | |
|--|----|
| Contents | 30 |
| Preventive Maintenance | 31 |
| Reserved rights for design changes of Alfa Laval equipment used in validated processes | 31 |
| Service and repair of ATEX approved machines | 32 |
| Service and repair of machines ordered with Q-Doc..... | 33 |
| Every 300 working hours | 34 |
| Preventive Maintenance of Air Motor | 35 |

| | |
|--|----|
| Part List Drawing | 36 |
| Toftejorg SaniJet 20 Air Driven complete, Part List Drawing | 37 |
| Reference List of Parts | 38 |
| Toftejorg SaniJet 20A, Air Driven (EPDM as standard) | 38 |
| Toftejorg SaniJet 20 Air Driven with improved surface finish (EPDM as standard)..... | 40 |
| Toftejorg SaniJet 20 Air Driven, Hastelloy version (FFKM as standard) | 42 |
| Dismantling and reassembling, Cleaner Unit | 47 |
| Dismantling and reassembling, Base Unit..... | 48 |
| Air motor Drive unit..... | 50 |
| Rotacheck System..... | 51 |
| Trouble Shooting Guide..... | 52 |
| Service Kits and Tools..... | 54 |
| Service Intervals | 54 |
| Service Kit in Viton for Toftejorg SaniJet 20 Air driven version | 54 |
| Service Kit in EPDM for Toftejorg SaniJet 20 Air driven version | 54 |
| Service Kit in Perlast for Toftejorg SaniJet 20 Air driven version | 55 |
| Tools | 55 |
| How to Order Spare Parts | 56 |
| How to contact Alfa Laval Tank Equipment..... | 56 |
| EU Declaration of Conformity with ATEX Certification | 56 |
| Declarations of Conformity per EN 10204 Type 2.2..... | 58 |

Toftejorg SaniJet 20 Air Driven, Product program

This manual covers the product programme for Toftejorg SaniJet 20 Air Driven. For information on the media driven please refer to Instruction Manual IM-TE91A792.

Air Driven: Toftejorg SaniJet 20 (3" connection)

| Standard (EPDM as standard) | | | |
|-----------------------------|-----------|-----------|-----------|
| Length | 2xø2.0 mm | 2xø3.8 mm | 4xø4.2 mm |
| 500mm | TE24B100 | TE24B120 | TE24B160 |
| 350mm | TE24B101 | TE24B121 | TE24B161 |
| 700mm | TE24B102 | TE24B122 | TE24B162 |
| 1000mm | TE24B104 | TE24B124 | TE24B164 |
| 1200mm | TE24B106 | TE24B126 | TE24B166 |
| 1500mm | TE24B108 | TE24B128 | TE24B168 |

| Hastelloy C22 (FFKM as standard) | | | |
|----------------------------------|-----------|-----------|-----------|
| Length | 2xø2.0 mm | 2xø3.8 mm | 4xø4.2 mm |
| 500mm | TE24C100 | TE24C120 | TE24C160 |
| 350mm | TE24C101 | TE24C121 | TE24C161 |
| 700mm | TE24C102 | TE24C122 | TE24C162 |
| 1000mm | TE24C104 | TE24C124 | TE24C164 |
| 1200mm | TE24C106 | TE24C126 | TE24C166 |
| 1500mm | TE24C108 | TE24C128 | TE24C168 |

| Improved surface finish* (EPDM as standard) | | | |
|---|-----------|-----------|-----------|
| Length | 2xø2.0 mm | 2xø3.8 mm | 4xø4.2 mm |
| 500mm | TE24E100 | TE24E120 | TE24E160 |
| 350mm | TE24E101 | TE24E121 | TE24E161 |
| 700mm | TE24E102 | TE24E122 | TE24E162 |
| 1000mm | TE24E104 | TE24E124 | TE24E164 |
| 1200mm | TE24E106 | TE24E126 | TE24E166 |
| 1500mm | TE24E108 | TE24E128 | TE24E168 |

| Improved surface finish* and Hastelloy C22 (FFKM as standard) | | | |
|---|-----------|-----------|-----------|
| Length | 2xø2.0 mm | 2xø3.8 mm | 4xø4.2 mm |
| 500mm | TE24D100 | TE24D120 | TE24D160 |
| 350mm | TE24D101 | TE24D121 | TE24D161 |
| 700mm | TE24D102 | TE24D122 | TE24D162 |
| 1000mm | TE24D104 | TE24D124 | TE24D164 |
| 1200mm | TE24D106 | TE24D126 | TE24D166 |
| 1500mm | TE24D108 | TE24D128 | TE24D168 |

* Surface finish: 0.5 µm Ra internal/external media contact parts. 0.8 µm non media contact parts.
Passivated. Note: Nominal Surface Finish

Toftejorg SaniJet 20 Air Driven, Product program

Air Driven: Toftejorg SaniJet 20 (4" connection)

| Standard (EPDM as standard) | | | |
|------------------------------------|-----------|-----------|-----------|
| Length | 2xø2.0 mm | 2xø3.8 mm | 4xø4.2 mm |
| 500mm | TE24G100 | TE24G120 | TE24G160 |
| 350mm | TE24G101 | TE24G121 | TE24G161 |
| 700mm | TE24G102 | TE24G122 | TE24G162 |
| 1000mm | TE24G104 | TE24G124 | TE24G164 |
| 1200mm | TE24G106 | TE24G126 | TE24G166 |
| 1500mm | TE24G108 | TE24G128 | TE24G168 |

| Hastelloy C22 (FFKM as standard) | | | |
|---|-----------|-----------|-----------|
| Length | 2xø2.0 mm | 2xø3.8 mm | 4xø4.2 mm |
| 500mm | TE24H100 | TE24H120 | TE24H160 |
| 350mm | TE24H101 | TE24H121 | TE24H161 |
| 700mm | TE24H102 | TE24H122 | TE24H162 |
| 1000mm | TE24H104 | TE24H124 | TE24H164 |
| 1200mm | TE24H106 | TE24H126 | TE24H166 |
| 1500mm | TE24H108 | TE24H128 | TE24H168 |

| Improved surface finish* (EPDM as standard) | | | |
|--|-----------|-----------|-----------|
| Length | 2xø2.0 mm | 2xø3.8 mm | 4xø4.2 mm |
| 500mm | TE24F100 | TE24F120 | TE24F160 |
| 350mm | TE24F101 | TE24F121 | TE24F161 |
| 700mm | TE24F102 | TE24F122 | TE24F162 |
| 1000mm | TE24F104 | TE24F124 | TE24F164 |
| 1200mm | TE24F106 | TE24F126 | TE24F166 |
| 1500mm | TE24F108 | TE24F128 | TE24F168 |

| Improved surface finish* and Hastelloy C22 (FFKM as standard) | | | |
|--|-----------|-----------|-----------|
| Length | 2xø2.0 mm | 2xø3.8 mm | 4xø4.2 mm |
| 500mm | TE24J100 | TE24J120 | TE24J160 |
| 350mm | TE24J101 | TE24J121 | TE24J161 |
| 700mm | TE24J102 | TE24J122 | TE24J162 |
| 1000mm | TE24J104 | TE24J124 | TE24J164 |
| 1200mm | TE24J106 | TE24J126 | TE24J166 |
| 1500mm | TE24J108 | TE24J128 | TE24J168 |

* Surface finish: 0.5 µm Ra internal/external media contact parts. 0.8 µm non media contact parts.
Passivated. Note: Nominal Surface Finish

The item number must always be included with an add-on extension of **-XX**. (e.g. TE24G102-**90**)

Toftejorg SaniJet 20 Air Driven, Product program

Available add-on's

| For: TE24BXXX, TE24EXXX, TE24GXXX, TE24FXXX | For: TE24HXXX, TE24CXXX, TE24JXXX, TE24DXXX |
|--|---|
| <ul style="list-style-type: none"> -0X (Standard) -5X Q-doc+FAT-SAT -6X Q-doc+FAT-SAT + ATEX -7X ATEX -8X Q-doc + ATEX -9X Q-doc -X0 EPDM (Standard) -X1 FPM (Viton) -X4 FFKM | <ul style="list-style-type: none"> -0X (Standard) -5X Q-doc+FAT-SAT -6X Q-doc+FAT-SAT + ATEX -7X ATEX -8X Q-doc + ATEX -9X Q-doc -X4 FFKM (Standard) |

Explanation to Add-on's:

Q-doc (Equipment Doc.) includes:



Declaration of Compliance:

- EN 10204 type 3.1 inspection Certificate
- FDA Declaration of Compliance
- USP Class VI (if possible)
- ADI Declaration
- QC Declaration of Compliance

Q-doc+FAT-SAT (Qualification Doc) includes:



Qualification Documentation:

- RS, Requirement Specification
- DS, Design Specification incl. Traceability Matrix
- FAT, Factory Acceptance Test incl. IQ & OQ
- SAT, Site Acceptance Test Protocol incl. IQ & OQ for End-User Execution
- Declaration of Compliance:
 - EN 10204 type 3.1 inspection Certificate
 - FDA Declaration of Compliance
 - USP Class VI (if possible)
 - ADI Declaration
 - QC Declaration of Compliance

ATEX includes:

ATEX approved machine for use in explosive atmospheres.

Cleaner unit category 1 for installation in zone 0/20 (inside tank) in accordance to Directive 94/9/EC. Ex II 1 GD c T140°C.

Air drive unit category 2 for installation in zone 1/21 (outside tank) in accordance to Directive 94/9/EC. Ex II 2 GD c IIC T4 Tamb -20°C to +40°C.

Toftejorg SaniJet 20 Air Driven, Product program

Accessories

Clamp Coupling Parts

| Reference no. | Description |
|---------------|----------------------------------|
| 9611-31-019-0 | Clamp welding liner 1" |
| 9611-99-1358 | Gasket EPDM f. 1" Clamp coupling |
| 211053 | Clamp ring 1" |
| 9611-31-023-0 | Clamp welding liner 3" |
| 9611-99-1362 | Gasket EPDM f. 3" Clamp coupling |
| 211056 | Clamp ring 3" |
| 9611-31-024-0 | Clamp welding liner 4" |
| 9611-99-1363 | Gasket EPDM f. 4" Clamp coupling |
| 211057 | Clamp ring 4" |

Monitoring

An electronic system with rotation sensor to validate 360° coverage can be included:

TE52E067 Rotacheck Sensor ø27 mm

TE52E058 Rotacheck Relay

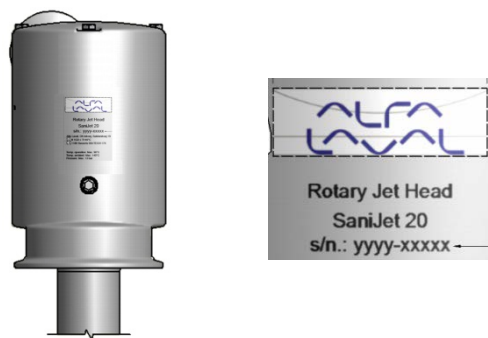
For further information see page 51.

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 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 world-wide net of Distributors will be pleased to help you. Please quote the type, article and serial number with all your enquiries; this will help us to help you. The type, article and serial number are laser engraved on the Base house of the tank cleaning machine.



Warning:



Before installing the machine and setting it into operation carefully read the General Installation Instructions (page 19) and the Safety Precautions (page 28) and take all necessary precautions according to your application and local regulations.

© Alfa Laval Corporate AB

This document and its contents is owned by Alfa Laval Corporate AB and protected by laws governing intellectual property and thereto related rights. It is the responsibility of the user of this document to comply with all applicable intellectual property laws. Without limiting any rights related to this document, no part of this document may be copied, reproduced or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), or for any purpose, without the expressed permission of Alfa Laval Corporate AB. Alfa Laval Corporate AB will enforce its rights related to this document to the fullest extent of the law, including the seeking of criminal prosecution.

Intended Use

It is to be verified by the end-user:

- that the tank cleaning machine is in conformity with respect to tank, vessel or container size in which it will be 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.

Patents and trademarks


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


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

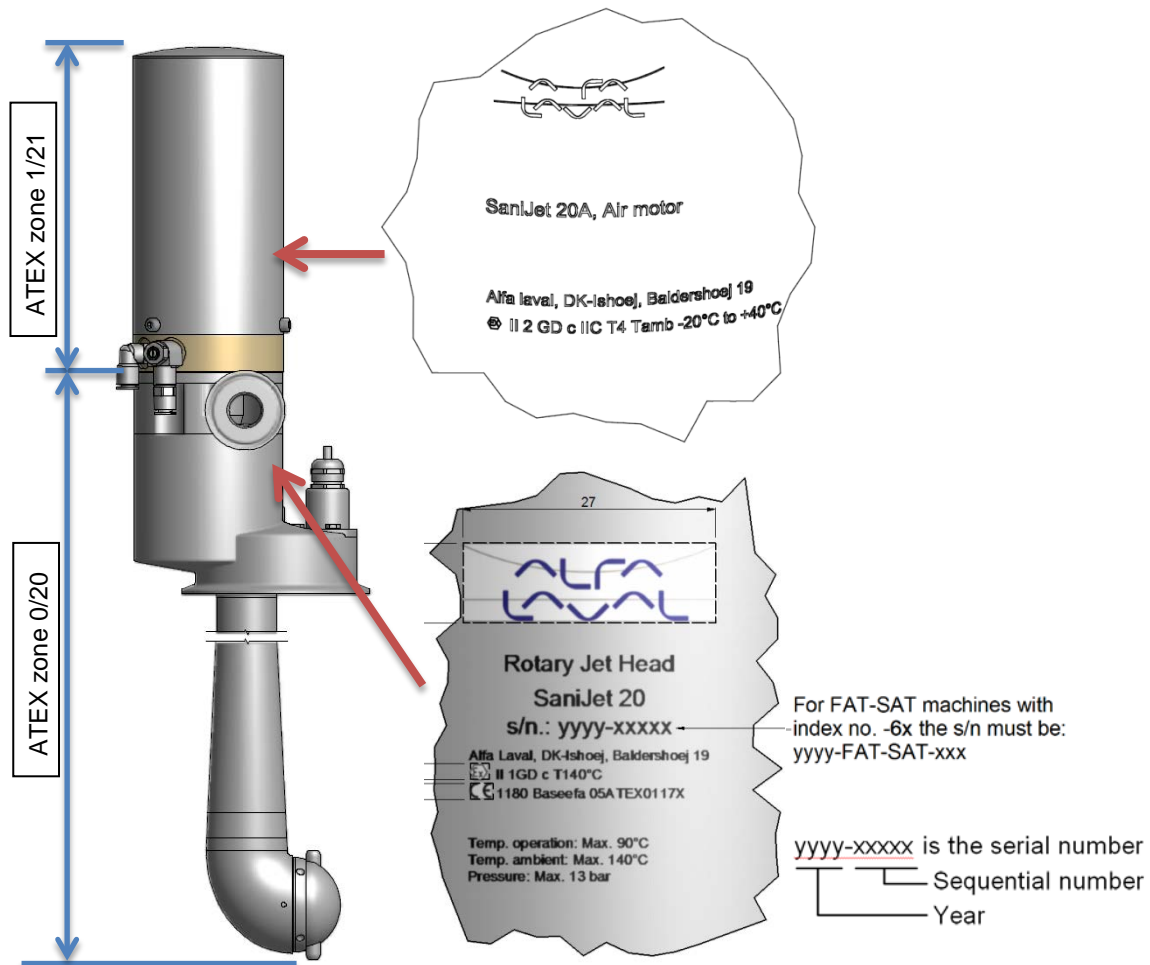
The Alfa Laval logotype is a trademark or a registered trademark of Alfa Laval Corporate AB. "Toftejorg" and "SaniJet" are trademarks or registered trademarks of Alfa Laval Kolding A/S. The Toftejorg™ SaniJet™ 20 product has patents in the EPO member states, in the US and in other countries. Other products or company names mentioned herein may be the trademarks of their respective owners. Any rights not expressly granted herein are reserved.

ATEX Marking

The Toftejorg SaniJet 20A Cleaner unit is certified as category 1 component for installation in zone 0/20 (inside tank) in accordance to Directive 94/9/EC. The certification is carried out by the Certification body SGS Baseefa, who has issued the certificate no. 1180 Baseefa 05ATEX0117X.

Marked:  II 1 GD c T140°C

The Toftejorg SaniJet 20A Air drive unit is certified as category 2 component for installation in zone 1/21 (outside tank) in accordance to Directive 94/9/EC. The certification is carried out by Alfa Laval as a Own Assessment and archived at Certification body Teknologisk Institut. Registered as archive no.: DTI-2013-1-0148A. Marked:  II 2 GD c IIC T4 Tamb -20°C to +40°C.



Changes to the machine are not allowed without approval by the person responsible for the ATEX certification at Alfa Laval Tank Equipment A/S. 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 information: Also see "Maintenance" pages 31 ff regarding special conditions for repair of ATEX certified machines.



General Description

The Toftejorg SaniJet 20 is a tank cleaning machine intended for industrial use in closed tanks for processing storage and transportation. There is a broad range of application areas within pharmaceutical, food and chemical industries.

The Toftejorg SaniJet 20 is a hygienic cleaning device of the rotary jet head type for permanent installation that provides a 360° indexed cleaning pattern. Provided it is installed in an upright position, the Toftejorg SaniJet 20 is completely self-cleaning and self-draining, and it has an integrated self-cleaning down pipe (patent pending). The drive mechanism is located outside the tank or process equipment, leaving a minimum of parts to be submerged into the product. . All product contact surfaces are AISI 316/316L, duplex SAF 2205, Ti Grade 5, Hastelloy C22/C276 stainless steel and USP Class VI and FDA approved polymer materials such as PEEK, E-CTFE, EPDM, Viton and FFKM.

No threads or screws have been used in the product contact areas.

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

The Toftejorg SaniJet 20 is available in media driven or air motor driven versions. The air motor driven versions are equipped with a magnetic clutch providing a leakage-proof transmission and provide an effective drive for low flow machines in rough environments. The air motor has variable speed in order to adjust cleaning intensity. The media version is covered by Instruction Manual IM-TE91A792.

The Toftejorg SaniJet 20 is designed for use in pharmaceutical, biotechnological, food and dairy processing applications. Tanks and vessels between 0.5-30 m³ (130-8,000 US gallons). The design makes the Toftejorg SaniJet 20 especially well suited when processing high viscous, foaming or thixotropic products and in chemical processing applications, where product cross contamination is unacceptable and must be avoided.

For use in explosive hazard zones the media driven and the air motor driven version can be used, provided it is installed according to safety instructions in local regulations.

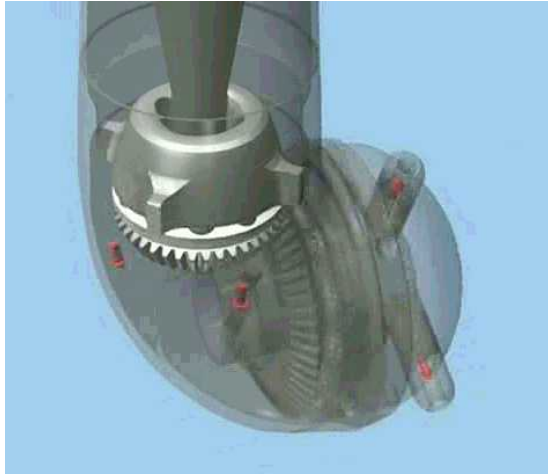
Quality System

The Toftejorg SaniJet 20 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 and USP Class VI approved materials.

General Description (continued)

Functioning

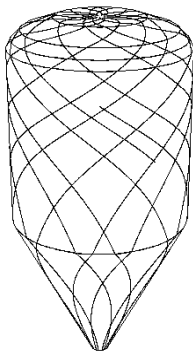
Toftejorg SaniJet 20 consists of 3 main parts: The Drive unit with flow inlet and the Base housing placed outside the tank, and inside the tank: the Down pipe with the rotating Outer tube and the Cleaner unit.



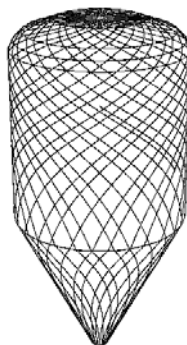
The flow of the cleaning fluid passes from the inlet through the Base housing, through the Down pipe, into the Cleaner head and out through the Nozzles. The Outer tube of the Down pipe is rotably suspended on a Stationary shaft with a Ball bearing inside the Outer tube. The Drive mechanism rotates the Outer tube with the Cleaner unit around the vertical axis. Via a set of Bevel gears on the Stationary shaft and the Cleaner head, the Cleaner head with the Nozzles is simultaneously rotated around the horizontal axis in a fixed relation thus moving the nozzles and the jets 360° around in the tank making a pre-set indexed cleaning pattern

The Toftejorg SaniJet 20 utilises the patented “Golden Section” cleaning pattern. The distance between the tracks of the jets ensures an efficient removal of remaining product from the tank surface right from the beginning of the cleaning sequence, allowing for short cleaning time.

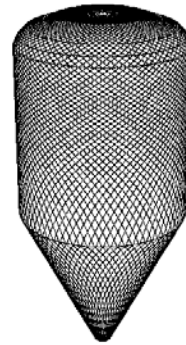
Example – 2 nozzle machine:



0.8 min.



2.3 min.



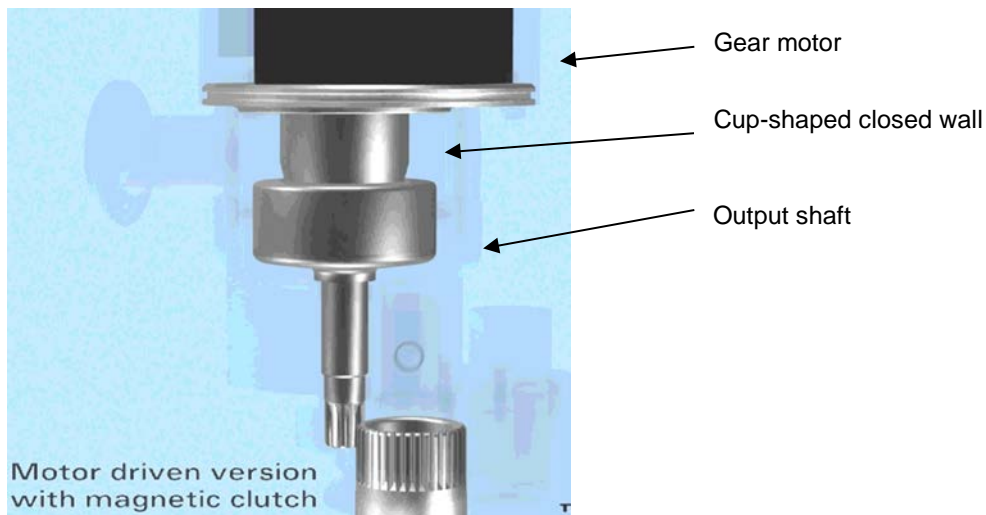
6 min.

The time needed to perform a proper cleaning depends on type of soilage, distance, cleaning procedure and agent. For substances that are easily mobilised, i.e. are easy to remove, less than 1 min. could be sufficient while in cases of more heavy soilage (high viscous, sticky substances, etc.) a more dense pattern/longer time will be needed.

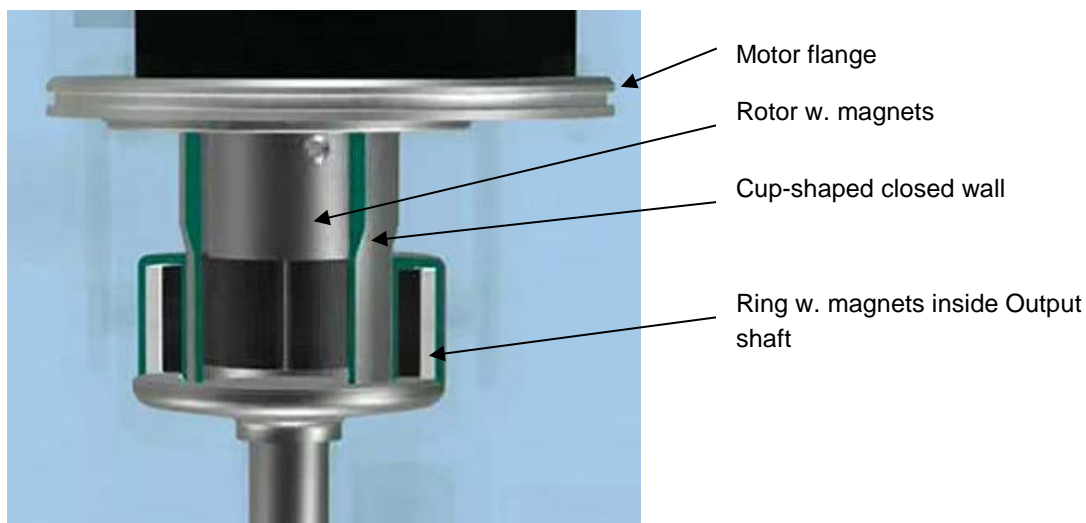
General Description (continued)

Machine with External Motor Drive

The machine is driven by a gear motor mounted on top of the Inlet housing. Via a Magnetic clutch the rotation of the gear motor is transmitted from the outside through a closed wall to the Output shaft placed inside the Inlet housing. The Output shaft is in mesh with the Down pipe and rotates the Down pipe in the same way as in the media driven version.



The output shaft of the gear motor is equipped with a Rotor with permanent magnets. The rotor is placed inside the cavity in the Motor flange, made by the cup protruding into the liquid chamber in the Inlet housing. The cup is welded to the motor flange as a hermetic sealed closed wall between the liquid chamber and the outside. The magnetic field from the permanent magnets is transferred through the wall, to a ring with permanent magnets inside the Output shaft, which is placed around the cup on the inside the liquid chamber.



The machine with Air motor is equipped with a flow regulator to make the speed adjustable between approx. 3 and 14 RPM.

General Description (continued)

Self-cleaning

Apart from the main flow flushing the inside of the Base housing and the Down pipe, and thereafter forming the jets through the Nozzles, fluid is flushed through all internal cavities, through Bevel gear, Ball bearings and gabs between moving parts and is finally also used for cleaning of the outside surfaces of the machine. From the gab between the Base housing and the rotating Down pipe, a cleaning jet is directed against the Down pipe, thus loosening and removing product remains on the outside. A liquid film flushing all around the tube further assists by continuously transporting away loosened product remains. The front of the Cleaner head is flushed by a liquid flow from the gab between the Cleaner head and the Retaining ring.

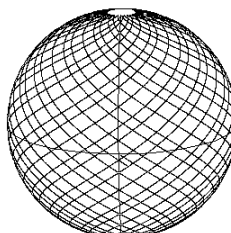
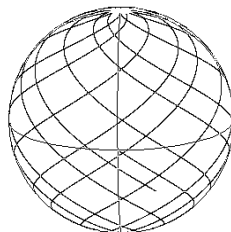
In order to ensure a proper self-cleaning, the machine must be installed in an approx. upright position and the inlet pressure must be min. 3 bar. In the bottom of the Cleaner head, in the Retaining ring, the machine is equipped with a hole to ensure self-draining. This self-draining is only ensured, if the machine is installed in an upright position.

Cleaning Pattern, The Golden Section

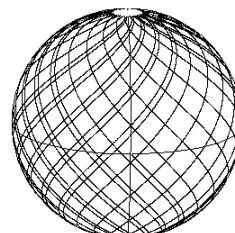
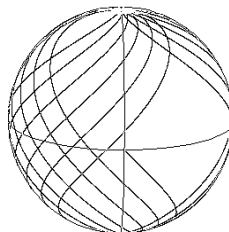
The patented Golden Section cleaning pattern (EP-Patent No.: 0495883. US-Patent No.: 5,279.675) is unique in building up the pattern in an ultimate uniform way. The pattern starts very coarse and refines itself in a step-less way by laying out the tracks approximately in the middle between the two most distant tracks already made. This means that the jets always clean the areas containing most remaining product, and thereby remove as much deposit as possible in the shortest possible way.

In case a complete cleaning pattern is not required, it will be possible to reach the same cleaning level within half the time and by using half the amount of cleaning fluid compared to a traditional step-wise cleaning pattern. Furthermore, due to the uniform cleaning pattern, the cleaning can be stopped at any time, whereas with traditional non-uniform cleaning pattern this would not be advantageous. However, after the complete cleaning pattern has been established, the difference between the Golden Section and the traditional stepwise cleaning pattern is negligible.

**Golden Section
Cleaning pattern**



**Traditional
Cleaning pattern**



Technical Data

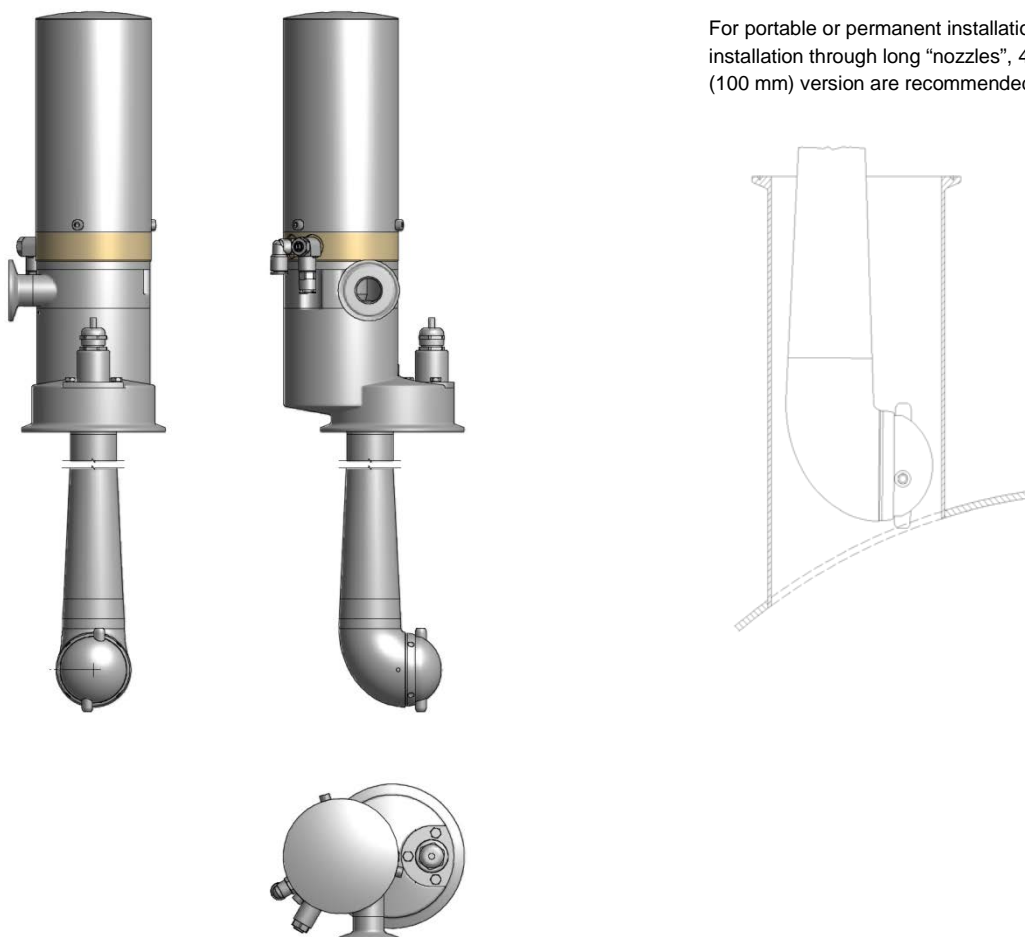
Performance Data for Toftejorg SaniJet 20 Air Driven

| | |
|---|--|
| Weight of machine | :11.7 kg (25.8 lbs) |
| Working pressure | : 3-13 bar (45-185 psi) |
| Recommended media pressure | : 5-8 bar (75-116 psi) |
| Working temperature (Cleaning unit) | : -20°C to +90°C (-4° to +194°F) (Cleaning fluid and ambient) |
| Max. temperature inside tank(Cleaning unit) | : 140°C (284°F) (When not operating) |
| Working ambient temperature (Drive unit) | : -20°C to +40°C (-4°F to +104°F) (Ambient) |
| Max. air pressure (Drive unit) | : 6 bar (87 psi) |
| Max. ambient temp. f. air motor | : +40°C (104°F) |
| Effective throw length | : 1.0-5 m (3-16 ft) |
| Materials | : Stainless Steel: AISI 304/316/316L, SAF 2205, Ti Grade 5, Hastelloy C22/C276, MS-nickled. |
| | Sealing: EPDM, Viton, FFKM. FDA 21 CFR §177 and USP Class VI |
| | Polymers: PEEK, E-CTFE. FDA-approved 21 CFR §177 and USP Class VI |
| Surface finish | : Product contact surfaces: Ra=0.8 µm – except weldings |
| Improved surface finish | : 0.5 µm Ra internal/external media contact parts - 0.8 µm Ra non media contact parts. Note: Certain Exception applies |
| Lubricant | : Machine |
| | Air motor : See page 23 |

Principal Dimensions in mm, Air driven

Inlet connection: 1" Clamp ISO2852

Tank connection: 4" Clamp ISO2852

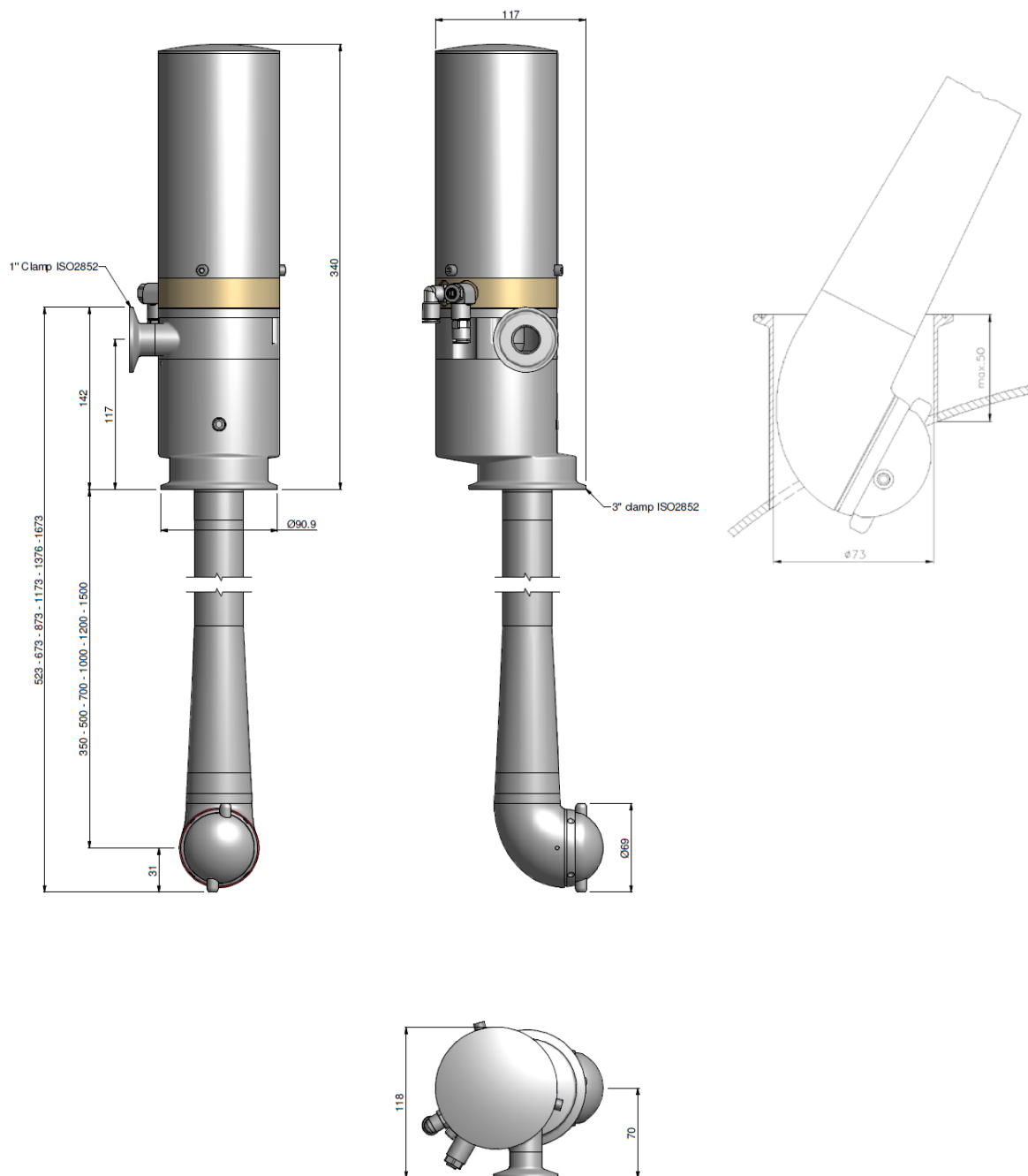


Technical Data (continued)

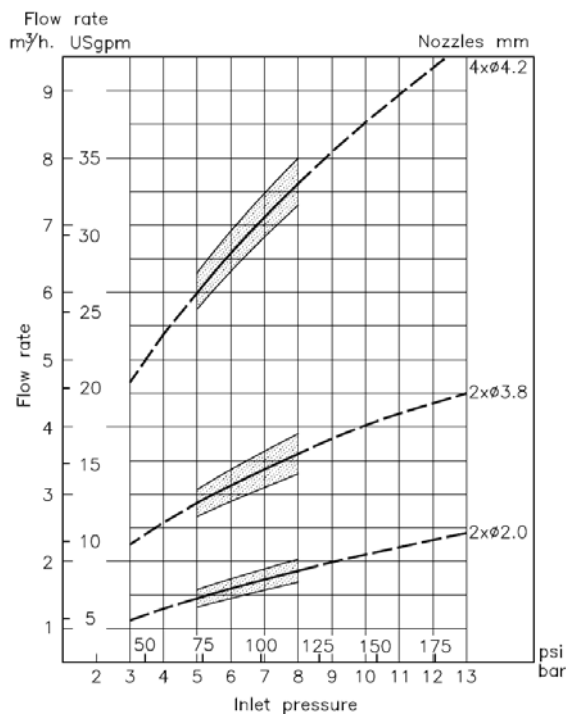
Inlet connection: 1" Clamp ISO2852

Tank connection: 3" Clamp ISO2852

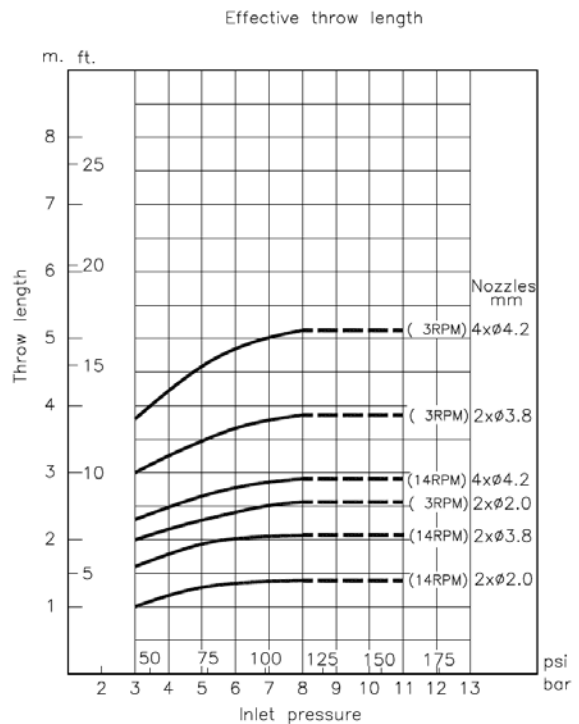
For permanent installation machine can pass through 3" clamp of max. length 50 mm:



Performance Data for Toftejorg SaniJet 20 Air Driven



Flow rate



Effective throw length depending on rotation speed

| Down pipe RPM | Time between vertical jet impingements | | Cleaning time complete pattern |
|------------------|---|-----------|-----------------------------------|
| | 2 Nozzles | 4 Nozzles | |
| 3 | 3.6 sec. | 1.8 sec. | 18.4 min |
| 4 | 2.7 sec. | 1.3 sec. | 13.8 min |
| 5 | 8.7 sec. | 4.3 sec. | 11.0 min |
| 6 | 7.2 sec. | 3.6 sec. | 9.2 min |
| 7 | 6.2 sec. | 3.1 sec. | 7.9 min |
| 8 | 5.4 sec. | 2.7 sec. | 6.9 min |
| 9 | 4.8 sec. | 2.4 sec. | 6.1 min |
| 10 | 4.3 sec. | 2.2 sec. | 5.5 min |
| 11 | 3.9 sec. | 2.0 sec. | 5.0 min |
| 12 | 3.6 sec. | 1.8 sec. | 4.6 min |
| 13 | 3.3 sec. | 1.7 sec. | 4.2 min |
| 14 | 3.1 sec. | 1.6 sec. | 3.9 min |

Note: Effective throw length varies depending on jet transverse speed over surface, substance to be removed, cleaning procedure and agent.

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 into consideration.

Technical Data (continued)

Performance Data for Toftejorg SaniJet 20 Air Driven

| | | |
|-------------------------------|---|--|
| Air supply pressure | : | Max. 6 bar (87 psi) |
| Air quality | : | Clean, filtered max. 50 µm |
| | | Dry, dew point max. 5°C |
| Air consumption at max. speed | : | 6 l/sec. (22 m ³ /h) ~ 95 Usgpm |
| Adjustable speed | : | 3-14 RPM |
| Cleaning time | : | 4-18 min (adjustable) |

Instruction Manual, Installation

Contents

Contents 18

General Installation Instructions..... 19

Special Conditions for Safe Use in accordance with the ATEX Certification, Directive 94/9/EC 20

Installation of Air Motor 22

Installation

General Installation Instructions

The Toftejorg SaniJet 20 is designed to be installed in a vertical upright position.

It is recommended to install a filter with mesh size 250 µm (0,001") in the supply line in order to avoid particles, scale etc. from clogging inside the machine. It is essential to avoid fine solid particles, such as fine sand, in the cleaning fluid as they will increase wear considerably. This is particular important in case of recirculation.

In order to prevent accidental leakage of cleaning fluid into the tank it is recommended to install a shut-off valve close to the machine inlet. This will also prevent back-flow of liquid from the tank through the machine in case the cleaner head is submerged and there is an over-pressure inside the tank. The installation and operation shall be made in such a way that the draining of the machine is ensured.

It is recommended that the fluid valve fitted is of a type that prevents hydraulic shocks, which may cause severe damage to the entire installation.

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 finish of the machine.

The Toftejorg SaniJet 20 machine has been tested in a test tank according to Alfa Laval Tank Equipment test procedures at the factory before shipping.

Note: Do not try to turn Nozzle head by hand, since this may damage the Gear. Nozzle head can be turned by blowing air from an air pistol through the inlet connection of the media driven machine or the intake port of the air motor.

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.

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 nozzles.



Installation (continued)

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

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 DS/CLC/TR 50404:2003 Safety of Machinery, guidance and recommendations for the avoidance of hazards due to static electricity.



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



If the Cleaner unit is not filled with process fluid the Cleaner unit may be operated / rotated by the Drive unit, in a hazardous area, for one minutes max.

Warning: Working temperature max for **Cleaner unit:**



The maximum permitted process fluid temperature and ambient temperature when the machine is operating is +90°C.

Ambient temperature **Cleaner unit:**

When the Cleaner unit is **not** operating, the maximum permitted ambient temperature is 140°C.

Ambient temperature for **Drive unit:**

The maximum permitted ambient temperature when the Drive unit is operating is +40°C.

Warning: The maximum permitted process fluid pressure is 13 bar(g).



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



In addition to the above mentioned precautions relating to the ATEX guidelines Directive 94/9/EC of March 23 1994, the general safety precautions in this manual must be observed, see pages 28-29.

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.



Warning: If the cleaning media is both inflammable and an insulator with high resistance, it must be made electrically conductive by additives or otherwise having a volume resistivity $> 104 \Omega\text{m}$ but $\leq 109 \Omega\text{m}$.



For further information see DS/CENELEC/TR 50404:2003 §5.3.4 and §2.8.

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



Warning: Tanks with capacities greater than 100 m^3 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.



Warning: MODEC air motors are designed to be operated by compressed air only. Do not drive with flammable or explosive gases.



Warning: MODEC air motors are designed to be operated by lubricated compressed air. The pneumatic oil used must have a self-ignition temperature above 260°C . The air motor must be lubricated with 50 mm^3 per m^3 of air (1 drop = 15 mm^3). The pneumatic oil used must have a viscosity between 22 and 46 cst depending on the temperature of the motor operation (e.g. 40°C the viscosity of the oil shall be between 22 and 30 cst).



In addition to the above mentioned precautions relating to the ATEX guidelines Directive 94/9/EC of March 23 1994, the general safety precautions in this manual must be observed, see pages 28-29.

Installation (continued)

Installation of Air Motor

Important Information

Recommended inlet air pressure is not to exceed 6 bar (87 psi) maximum. It is recommended to use an air filter and moisture trap on inlet air supply to avoid contamination being fed into air motor.

General Information

The air motor is designed to be driven by compressed air and under no circumstances be driven with any other gases. Fluids, particles, solids or any substances mixed with air, particularly combustible substances likely to cause explosions, must not drive air motor.

Danger: Do not drive with flammable or explosive gases.



Caution: Air motor is designed for air only. Do not allow corrosive gases or particulate material to enter motor. Water vapor, oil-based contaminants, or other liquids must be filtered out.



Caution: Do not use a hammer or force coupling or drive pulley onto shaft when installing drive onto air motor. This causes end thrust that could damage air motor.



Note: Ambient temperature outside tank should not exceed +40°C (+104°F).

Installation

Install a moisture trap and filter in air line ahead of motor. For efficiency of output and control of speed, use air lines of same size or in next pipe size larger than intake port of motor. As inlet line a $\varnothing 8/5.5$ tube should be used (customer supply). As standard, the drive unit is fitted with a hose connector $\varnothing 8$ on the blow-out line. It is possible to lead the exhaust out of the room with a hose and it is recommended in this context to use an adapter so that a $\varnothing 12$ tube or larger can be used for this. It is also possible to attach a silencer on the exhaust, but in this respect it should be borne in mind that a possible oil mist may contaminated surroundings in the room where it exhausted.

Installation (continued)

Lubrication

The pneumatic oil used for lubrication must have a self-ignition temperature above 260°C and have a viscosity between 22 and 46 cst depending on the temperature of the motor operation (e.g. 40°C the viscosity of the oil shall be between 22 and 30 cst).

MODEC recommends that an automatic air line lubricator, be installed in air line just ahead of air motor. Lubricator should be adjusted to feed with 50mm³ of oil per m³ of air (1 drop = 15 mm³) (see table below).

| At max power | | At max speed | | | | | |
|----------------------|----------------------------|----------------------|----------------------------|------------------|----------------------------|-----------------------------------|---------------------------------|
| Air cons. (1/min) | Lubrication (drops/min) | Air cons. (1/min) | Lubrication (drops/min) | Valve mini Kv | Max air flow (1/min) | Feeding pipe min. dia. (mm) | Connection min. dia. (mm) |
| 290 | 1 | 360 | 1 | 20 | 1293 | 6 | 5 |

Lubrication is necessary for all internal moving parts. Excessive moisture in air line can cause rust formation in motor and might also cause ice to form in muffler due to expansion of air through motor. Moisture problem can be corrected by installing a moisture separator in line and also by installing an after-cooler between compressor and air receiver.

A lubricant filter (FRL) unit should be installed between upstream from the motor. Filtration should be 50 micron maximum.

Mounting

Warning:



Beware of any exposed and/or moveable parts. Proper guards should be in place to prevent personal and/or property damage.

Instruction Manual, Operation

Contents

Contents 24

Normal Operation 25

Normal Operation of Air Motor..... 26

Safety Precautions 28

Safety Precautions for Air Motor..... 29

Operation

Normal Operation

Pressure

In order to protect the machine, your pipe and valve installation, etc. against damage:

Avoid hydraulic shocks! Put on pressure gradually!

Recommended working pressure: 5- 8 bar (75 - 116 psi). Too high pressure will increase consumption of wear parts.

The machine is designed to stand up to 13 bar working pressure. This is normally not recommended but may be used for special purposes, where high pressure at close distance is preferred.

Cleaning Media

Use only cleaning fluids, which are compatible with Stainless Steel AISI 316/316L, SAF2205, Titanium Grade 5, Hastelloy C22/C276, PEEK, E-CTFE, EPDM, Viton and FFKM. Please note that PEEK is not resistant to concentrated sulfuric acid. Normal detergents, moderate solutions of acids and alkalis are acceptable as well as a number of solvents at ambient temperature during cleaning. Aggressive chemicals, excessive concentrations of chemicals at elevated temperatures as well as certain solvents and hydrochlorides should be avoided. If you are in doubt, contact your local Alfa Laval Tank Equipment sales office.

Temperature

The machine is designed to operate with cleaning media at temperatures up to 90°C (194 °F). However, it stands temperatures up to 140°C (284°F) inside the tank when it is not operating, and it is possible to steam the tank through the machines.

The machine is not designed to rotate during steaming. The air motor must not be running during steaming.

The machine is designed to operate at an ambient temperatures outside the tank at -20°C to +40°C (-4°F to +104°F). However, it stands ambient temperatures up to 80°C (176°F) outside the tank when it is not operating.

Warning:



In potentially explosive atmospheres please see "Special Conditions for Safe Use – ATEX" page 29.

Operation (continued)

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.

Normal Operation of Air Motor

Never let the machine run dry without cleaning media except for short time under surveillance. It is recommended always to put on pressure with cleaning media before the air motor starts rotating. This will ensure proper cooling and lubrication of the bearings.

Warning:



Do not remove muffler during operation. Solid or liquid material exiting unit can cause eye or skin damage. Keep away from air stream.

Always disconnect air supply before servicing.

Speed adjustment

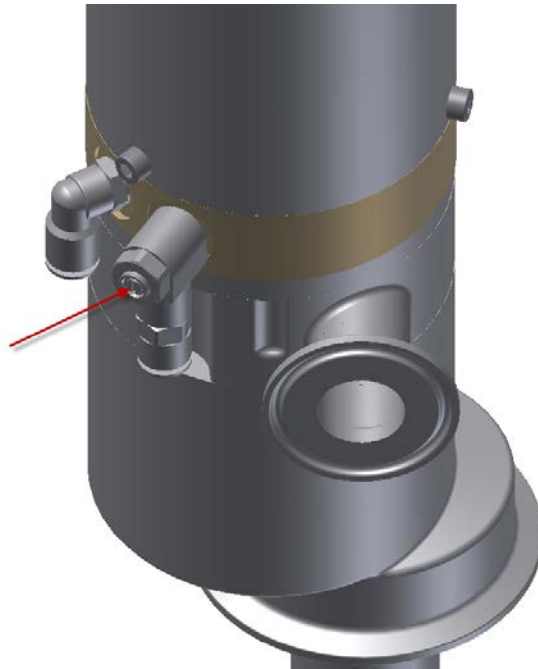
The air motor provides adjustable rotation speed and makes it possible to optimise the cleaning time and fluid consumption to the actual cleaning job.

High rotation speed may be used in small tanks with easy to clean substances, whereas larger tanks or more difficult cleaning tasks require slower rotation for longer throw length or higher impact and wetting intensity. The correlation between rotation speed, throw length and cleaning time appears from the curves and the table on page 16.

Operation (continued)

The rotation speed is pre-set at the factory to approx. 3 RPM

The rotation speed is adjusted on the Flow regulator (Pos. 66) with a small screwdriver, see photo below.



The speed can be approximately adjusted without cleaning media, however when cleaning with media under pressure the rotation speed will be slightly reduced. For fine adjustment the machine should be installed in the tank and run with cleaning media at the stipulated pressure in the closed tank.

To verify the rotation speed: record the time intervals between vertical jet impingements on the tank top. This can easily be detected from the sound pattern of the jets moving over the tank surface. Use the table on page 16 to find time interval for the desired RPM-value.

Caution:



Do not allow air motor to “run free” at high speeds with no loads. Excessive internal heat build-up, loss of internal clearances and rapid motor damage will result.

Operation (continued)

Safety Precautions

The machine is intended for use inside a tank only. As peak velocity of main jets reaches 40 m/s, Toftejorg SaniJet 20 must not be operated in open air or when tank is open.

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.



The cleaning jets impinging the tank surface are a source of noise. Depending on pressure and distance to the tank walls, noise level may reach up to 85 dB.

Warning: In case potentially explosive liquids are used, see “Special Conditions for Safe Use – ATEX” page 29.



Warning: Tanks with capacities greater than 100 m³ that could contain a flammable atmosphere should not be steam cleaned, see “Special Conditions for Safe Use – ATEX” page 29.



Warning: Tanks may contain poisonous/hazardous products or products which represent an environmental or safety risk. Never open tank and dismount the machine without checking previous tank contents and necessary precautions.



Warning: Retaining screw on side of Base housing (Pos. 17) must never be loosened, when machine is mounted in tank unless down pipe is supported and Pressure line is disconnected, as otherwise the complete Down pipe assembly will fall down.



Warning: To prevent explosive hazard DO NOT drive this air motor with combustible gases. Injury and/or property damage can result.



Operation (continued)

Safety Precautions for Air Motor

Warning: Do not remove muffler during operation. Solid or liquid material exiting unit can cause eye or skin damage. Keep away from air stream.



Always disconnect air supply before servicing.

Warning: Do not use kerosene or other combustible solvents for cleaning the inside of the motor during maintenance.



Instruction Manual, Maintenance

Contents

| | |
|--|----|
| <u>Contents</u> | 30 |
| <u>Preventive Maintenance</u> | 31 |
| <u>Reserved rights for design changes of Alfa Laval equipment used in validated processes</u> | 31 |
| <u>Service and repair of ATEX approved machines</u> | 32 |
| <u>Service and repair of machines ordered with Q-Doc</u> | 33 |
| <u>Every 300 working hours</u> | 34 |
| <u>Preventive Maintenance of Air Motor</u> | 35 |
| <u>Part List Drawing</u> | 36 |
| <u>Toftejorg SaniJet 20 Air Driven complete, Part List Drawing</u> | 37 |
| <u>Reference List of Parts</u> | 38 |
| <u>Toftejorg SaniJet 20A, Air Driven (EPDM as standard)</u> | 38 |
| <u>Toftejorg SaniJet 20 Air Driven with improved surface finish (EPDM as standard)</u> | 40 |
| <u>Toftejorg SaniJet 20 Air Driven, Hastelloy version (FFKM as standard)</u> | 42 |
| <u>Dismantling and reassembling, Cleaner Unit</u> | 47 |
| <u>Dismantling and reassembling, Base Unit</u> | 48 |
| <u>Air motor Drive unit</u> | 50 |
| <u>Rotachek System</u> | 51 |
| <u>Trouble Shooting Guide</u> | 52 |
| <u>Service Kits and Tools</u> | 54 |
| <u>Service Intervals</u> | 54 |
| <u>Service Kit in Viton for Toftejorg SaniJet 20 motor driven version (air/electrically)</u> | 54 |
| <u>Service Kit in EPDM for Toftejorg SaniJet 20 motor driven version (air/electrically)</u> | 54 |
| <u>Service Kit in Perlast for Toftejorg SaniJet 20 motor driven version (air/electrically)</u> | 55 |
| <u>Tools</u> | 55 |
| <u>How to Order Spare Parts</u> | 56 |
| <u>How to contact Alfa Laval Tank Equipment</u> | 56 |
| <u>EU Declaration of Conformity with ATEX Certification</u> | 56 |
| <u>Declarations of Conformity per EN 10204 Type 2.2</u> | 58 |

Maintenance

Preventive Maintenance

In order to keep your tank cleaning machine servicing you as an efficient tool in your tank cleaning operations, it is essential to maintain its high performance by following a simple preventive maintenance programme.

Good maintenance is careful and regular attention!

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

Handle machine with care. Take proper action to protect fine surfaces from being damaged.

Always use only proper tools. Use Toftejorg SaniJet 20 standard tool kit. 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.

Reserved rights for design changes of Alfa Laval equipment used in validated processes

Alfa Laval is continuously working on improving our equipment and services. In this improvement work Alfa Laval may for example change the design and material in our equipment. A change in the design will not necessarily entail a change of the specification and item no. for the equipment.

Alfa Laval reserves the right to change the design of Alfa Laval equipment without any notifications for improvements of our design.

If Equipment from Alfa Laval is used in connection with, for example, a validated plant, and an order for replacements is made, the design of the replacement may have been changed even if the specifications /item no. is the same as the existing installed and validated ones.

When ordering a replacement please contact Alfa Laval sales support in this matter before placing the order.

Service and repair of ATEX approved machines

In order to ensure compliance with the ATEX regulations for service and repair in accordance with EN 60079-19, all service and repair of ATEX approved machines should be performed by Alfa Laval Tank Equipment, Kolding, Denmark or by an Alfa Laval service center approved by Alfa Laval Tank Equipment.

Warning: ATEX requirements regarding repair of ATEX approved machines according to EN 60079-19



A tag with the following labelling information must be attached to the machine:

- Repair symbol
- Alfa Laval logo and address
- Repair number
- Date of repair
- Machine serial number

The tag must be laminated and attached to the machine using a cable tie.

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

Maintenance (continued)

Service and repair of machines ordered with Q-Doc

In order to ensure full traceability and to obtain full qualification and validation documentation, all service and repair of machines ordered with Q-Doc (Qualification Documentation) should be handled and ordered in one of the 2 different ways described below:

1. **Q-Doc+FAT-SAT Service/Repair Order** (Item no.: TEREP-Q-doc):

(This maintenance order should be selected if the customer wishes to have Alfa Laval Tank Equipment to obtain full file log of all FAT (Factory Acceptance Test) documents for the Tank Cleaning Machine).

- Maintenance/Repair is carried out at Alfa Laval Tank Equipment and Q-Doc Maintenance Log, FAT-SURFACE (if necessary), FAT-WELD (if necessary) and FAT-PERFORMANCE is performed. The FAT documents are stored in the Q-Doc Maintenance Log as PDF-files.
- 3.1 Certificate + FDA and USP Class VI Declaration of Compliance for all spare parts are stored in the Q-Doc Maintenance Log as PDF-files.
- The machine is returned to the customer incl. the Q-Doc-Log CD and hardcopy of all FAT documents, for further qualification (SAT: Site Acceptance Test) and validation (PV: Process Validation).
- Word and PDF documents are stored in the Alfa Laval Q-Doc Maintenance Log folder.

2. **Q-Doc+FAT-SAT Spare Part Order** (Item no.: TE24XXXX-5X or -6X)

(This maintenance order should be selected if the customer wishes to carry out service or repair. The customer or the repair shop thus carries the full responsibility for the full traceability of the material and FAT documentation for the Tank Cleaning Machine).

- The spare part is sent to the customer incl. 3.1 Cert. + FDA and USP Class VI Declaration of Compliance incl. Weld-Log documentation (Inner shaft, Outer pipe) as hardcopy.
- This service information will not be recorded in the Alfa Laval Q-Doc folder. The customer has to perform all Qualification tests and documentation (FAT, SAT, IQ & OQ) himself.

Contact local Alfa Laval service and support (see. www.alfalaval.com).

Important information to give to Alfa Laval:

- Serial No.
- Q-Doc+FAT-SAT maintenance order type:
 - Item no.: TEREP-Q-doc
 - or
 - Item no.: 24XXXX-5X or -6X(See page 46 for more information)

Maintenance (continued)

Every 300 working hours

1. Disassemble machine as described on the following pages.
2. Clean material build-up and deposits from internal parts with water or suitable chemical cleaner, possibly Scotch-brite, S-Ultrafine.
3. Check Bearing bushes (Pos. 20 + 19) in Base housing by fitting Rotor outer (Pos. 60) and check sideways movement. Replace if necessary. If bushes are worn they will allow Rotor outer to tilt and eventually it may seize up.

Note: Timely replacement of bearings will prevent costly damage to the gear. However, all Bearing bushes, made from high performance plastic PEEK-material, are mounted with press-fit and should not be removed unless they need to be replaced.

4. Check unrestricted rotation of Ball bearings. Inspect for build-up of foreign material in Ball rings (Pos. 10 + 4) and Ball races. Balls must rotate freely in Ball rings.

Assemble machines as described in the following pages.

5. After fitting the Rotor outer (Pos. 60), before mounting Motor drive unit, rotate down pipe and check unrestricted rotation.
6. Also check unrestricted rotation of Motor drive unit before mounting on machine.

In order to ensure current good hygiene it is recommended to replace all rubber seals at each service inspection.

Apart from the parts specifically mentioned above, all the remaining wear parts should regularly be inspected for wear. Wear parts are specified in the Reference Lists of Parts, pages 38-43.

Maintenance (continued)

Preventive Maintenance of Air Motor

General recommendation

- Air motor maintenance shall be performed by skilled operators, trained by MODEC or by our after sales service department.
- It is advisable to check and clean air motors every six months when used daily.
- In case of engine malfunction after a period of inactivity, insert a few oil drops into the air supply pipe.
- Always Unplug motor feeding connection before starting an operation of substitution, adjustment, maintenance or dismantling.
- After each maintenance operation, motors should be tested to check proper operation.
- Use only original replacement parts and elements for maintenance, lubrication and sealing.

Your motor has been delivery with permanent greasing, if required the reducer can be re-greased:

- old grease must be removed carefully
- 50 to 70mL of grease 606 ORAPI CTDMEP 2 has to be distribute uniformly inside the reducer

Quick diagnosis

| Symptoms | Causes | Actions |
|-------------------------------------|---|---|
| rotation of the output shaft | <ol style="list-style-type: none">1. Insufficient air supply2. Too much load on the shaft3. Wrong seizing of internal components of motor4. Blades blocked | <ol style="list-style-type: none">1. Check the air source2. Check the air connection3. Check the load4. Pulse air in the inlet |
| Insufficient power, speed or torque | <ol style="list-style-type: none">1. Lack of pressure2. Lack of flow3. Outlet counter-pressure | <ol style="list-style-type: none">1. Check pressure2. Check flow3. Check that the muffler is adequate and properly fitted |
| Wrong rotation direction | <ol style="list-style-type: none">1. Wrong hose connection | <ol style="list-style-type: none">1. Reverse input and output2. Check the air connection |

- If after all checks listed in this manual your motor is not working properly, please contact the "MODEC After Sales Services". www.modec.fr

Shutdown procedure

1. Turn off air intake supply and remove plumbing.
2. Remove air motor from connecting machinery.
3. Use clean, dry air at low pressure to “flush out” condensates, such as water.

Warning:



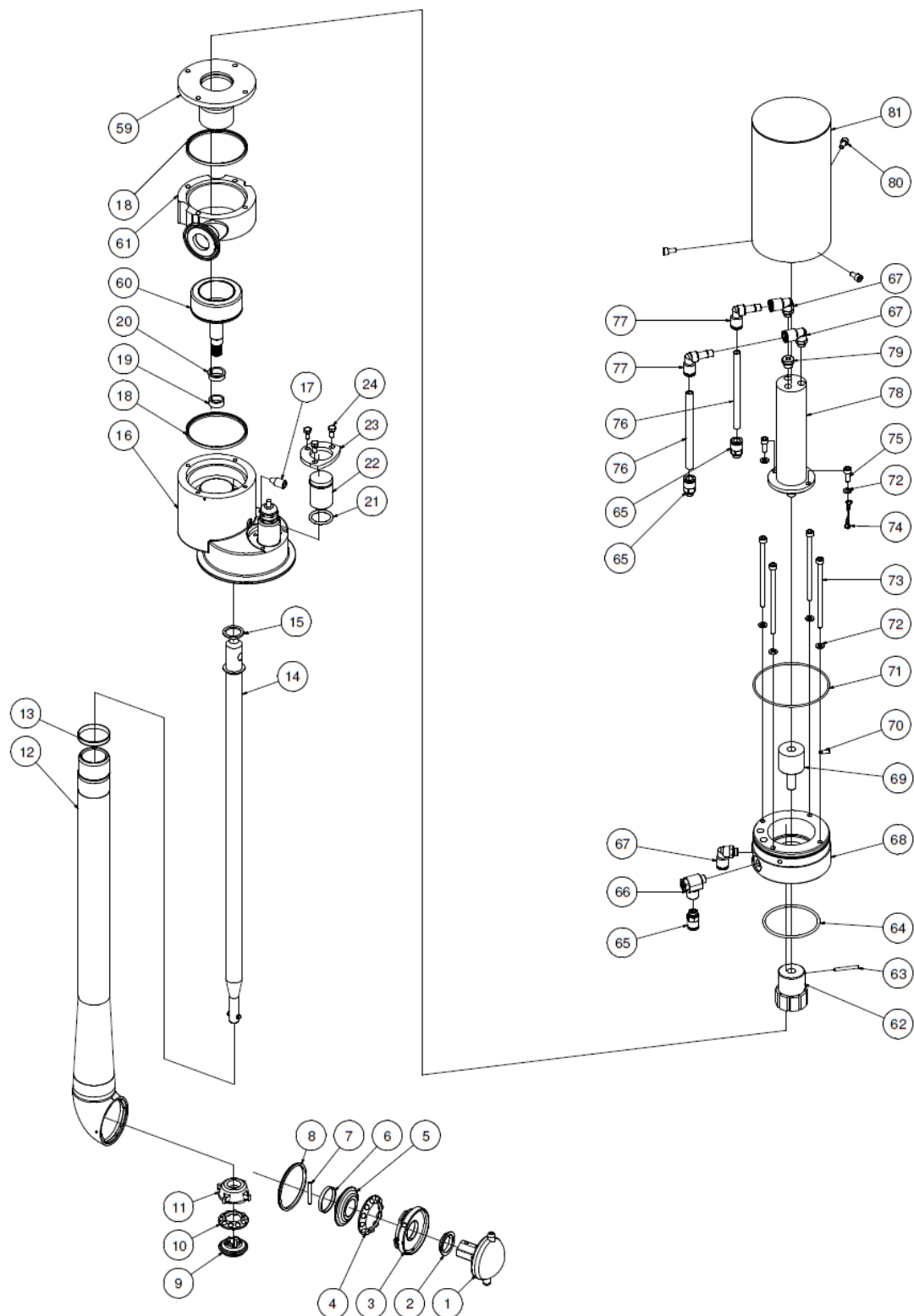
Solid or liquid material exiting unit can cause eye or skin damage. Keep away from air stream.

4. Re-lubricate air motor with a squirt of oil in chamber. Rotate shaft by hand several times.
5. Plug or cap each port.

Unit is ready for storage.

Part List Drawing

Toftejorg SaniJet 20 Air Driven complete, Part List Drawing



Reference List of Parts

Toftejorg SaniJet 20A, Air Driven (EPDM as standard)

| Pos | | Item no. for 4" version | Item no. for 3" version | No/ Unit | Description | Material | Remarks |
|-----|--------------------------|----------------------------|----------------------------|-------------|--------------------------|------------------|------------|
| 1 | <input type="checkbox"/> | TE20B334 | TE20B334 | 1 | Cleaner head 2xø2.0mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20B335 | TE20B335 | 1 | Cleaner head 2xø3.8mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20B336 | TE20B336 | 1 | Cleaner head 4xø4.2mm | Stainless steel | Spare part |
| 2 | | TE20B554 | TE20B554 | 1 | Bearing bush | Polymer | Wear part |
| 3 | | TE20B552 | TE20B552 | 1 | Retaining ring | Stainless steel | Wear part |
| 4 | | TE20B365 | TE20B365 | 1 | Ball ring N | Polymer/Titanium | Wear part |
| 5 | | TE20B550 | TE20B550 | 1 | Bevel gear | Stainless steel | Wear part |
| 6 | | TE20B571 | TE20B571 | 1 | Clip ring | Stainless steel | Spare part |
| 7 | | TE20B572 | TE20B572 | 1 | Pin | Stainless steel | Spare part |
| 8 | <input type="checkbox"/> | TE20B553 | TE20B553 | 1 | Seal ring H | EPDM | Wear part |
| | <input type="checkbox"/> | TE20B553-01 | TE20B553-01 | 1 | Seal ring H | FPM (Viton) | Wear part |
| | <input type="checkbox"/> | TE20C553 | TE20C553 | 1 | Seal ring H | FFKM | Wear part |
| 9 | | TE20B542 | TE20B542 | 1 | Bevel gear | Stainless steel | Wear part |
| 10 | | TE20B364 | TE20B364 | 1 | Ball ring | Polymer/Titanium | Wear part |
| 11 | | TE20B539 | TE20B539 | 1 | Ball race | Stainless steel | Wear part |
| 12 | <input type="checkbox"/> | TE20B310 | TE20B310 | 1 | Outer tube, L = 350 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20B311 | TE20B311 | 1 | Outer tube, L = 500 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20B312 | TE20B312 | 1 | Outer tube, L = 700 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20B313 | TE20B313 | 1 | Outer tube, L = 1000 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20B314 | TE20B314 | 1 | Outer tube, L = 1200 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20B315 | TE20B315 | 1 | Outer tube, L = 1500 mm | Stainless steel | Spare part |
| 13 | | TE20B510 | TE20B510 | 1 | Bearing ring | Polymer | Wear part |
| 14 | <input type="checkbox"/> | TE20B538 | TE20B538 | 1 | Inner shaft, L = 350 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20B532 | TE20B532 | 1 | Inner shaft, L = 500 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20B533 | TE20B533 | 1 | Inner shaft, L = 700 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20B534 | TE20B534 | 1 | Inner shaft, L = 1000 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20B535 | TE20B535 | 1 | Inner shaft, L = 1200 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20B536 | TE20B536 | 1 | Inner shaft, L = 1500 mm | Stainless steel | Spare part |
| 15 | <input type="checkbox"/> | TE20B511 | TE20B511 | 1 | Plain seal | EPDM | Wear part |
| | <input type="checkbox"/> | TE20B511-01 | TE20B511-01 | 1 | Plain seal | FPM (Viton) | Wear part |
| | <input type="checkbox"/> | TE20C511 | TE20C511 | 1 | Plain seal | FFKM | Wear part |
| 16 | | TE24G500 | TE24B500 | 1 | Base housing | Stainless steel | Spare part |
| 17 | | TE20B512 | TE20B512 | 1 | Retaining screw | Stainless steel | Spare part |
| 18 | <input type="checkbox"/> | TE20B516 | TE20B516 | 2 | Gasket | EPDM | Wear part |
| | <input type="checkbox"/> | TE20B516-01 | TE20B516-01 | 2 | Gasket | FPM (Viton) | Wear part |
| | <input type="checkbox"/> | TE20C516 | TE20C516 | 2 | Gasket | FFKM | Wear part |
| 19 | | TE20B514 | TE20B514 | 1 | Bearing bush | Polymer | Wear part |

Configuration as delivered marked ☐

Please note that some of the polymer parts are in PEEK, which is not resistant to concentrated sulfuric acid.

Available add-on's

Available add-on's regarding material certificates, Declaration of Conformity and Q-Doc documents, see page 46 for more information.

Reference Lists of Parts (continued)

Toftejorg SaniJet 20A, Air Driven (EPDM as standard)

| Pos | Item no. for 4" version | Item no. for 3" version | No/ Unit | Description | Material | Remarks |
|-----|-----------------------------------|----------------------------|-------------|----------------------------|-----------------------|------------|
| 20 | TE20B513 | TE20B513 | 1 | Bearing bush | Polymer | Wear part |
| 21 | <input type="checkbox"/> TE51T127 | | 1 | O-ring | EPDM | Wear part |
| | <input type="checkbox"/> TE51T008 | | 1 | O-ring | FPM (Viton) | Wear part |
| | <input type="checkbox"/> TE51T129 | | 1 | O-ring | FFKM | Wear part |
| 22 | TE20B642 | | 1 | Plug | Stainless steel | Spare part |
| 23 | TE24G594 | | 1 | Bracket | Stainless steel | Spare part |
| 24 | TE51A172 | | 3 | Screw | Stainless steel | Spare part |
| 59 | TE24B349 | TE24B349 | 1 | Motor flange welded A | Stainless steel | Spare part |
| 60 | TE20B340 | TE20B340 | 1 | Rotor outer complete | Stainless steel/steel | Spare part |
| 61 | TE24B351 | TE24B351 | 1 | Inlet housing 1" Tri-clamp | Stainless steel | Spare part |
| 62 | TE20B343 | TE20B343 | 1 | Rotor inner w. magnets | Steel | Spare part |
| 63 | TE51C052 | TE51C052 | 1 | Tubular rivet | Stainless steel | Spare part |
| 64 | TE51T142 | TE51T142 | 1 | O-ring | Elastomer | Spare part |
| 65 | TE51U392 | TE51U392 | 3 | Straight connector | Brass, Nickel-pl. | Spare part |
| 66 | TE51U395 | TE51U395 | 1 | Flow control valve | Brass, Nickel-pl. | Spare part |
| 67 | TE51U393 | TE51U393 | 3 | L-connector | Brass, Nickel-pl. | Spare part |
| 68 | TE24B557 | TE24B557 | 1 | Flange for air motor | Polymer | Spare part |
| 69 | TE24B556 | TE24B556 | 1 | Adapter for air motor | Polymer | Spare part |
| 70 | TE51A096 | TE51A096 | 1 | Screw | Stainless steel | Spare part |
| 71 | TE51T143 | TE51T143 | 1 | O-ring | Elastomer | Spare part |
| 72 | TE51B013 | TE51B013 | 6 | Washer | Stainless steel | Spare part |
| 73 | TE51A097 | TE51A097 | 4 | Screw | Stainless steel | Spare part |
| 74 | TE24B353 | TE24B353 | 1 | Wire for grounding | Stainless steel/alu. | Spare part |
| 75 | TE51A112 | TE51A112 | 2 | Screw | Stainless steel | Spare part |
| 76 | TE51U397 | TE51U397 | 2 | Air tubing | Polymer | Spare part |
| 77 | TE51U394 | TE51U394 | 2 | L-connector | Brass, Nickel-pl. | Spare part |
| 78 | TE51U009 | TE51U009 | 1 | Air motor | | Spare part |
| 79 | TE51U396 | TE51U396 | 1 | Plug | Brass, Nickel-pl. | Spare part |
| 80 | TE51A100 | TE51A100 | 3 | Screw | Stainless steel | Spare part |
| 81 | TE24B348 | TE24B348 | 1 | Motor cover | Stainless steel | Spare part |

Configuration as delivered marked ☐

Please note that some of the polymer parts are in PEEK, which is not resistant to concentrated sulfuric acid.

Available add-on's

Available add-on's regarding material certificates, Declaration of Conformity and Q-Doc documents, see page 46 for more information.

Reference List of Parts (continued)

Toftejorg SaniJet 20 Air Driven with improved surface finish (EPDM as standard)

| Pos | | Item no. for 4" version | Item no. for 3" version | No/ Unit | Description | Material | Remarks |
|-----|--------------------------|----------------------------|----------------------------|-------------|--------------------------|------------------|------------|
| 1 | <input type="checkbox"/> | TE20E334 | TE20E334 | 1 | Cleaner head 2xø2.0mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20E335 | TE20E335 | 1 | Cleaner head 2xø3.8mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20E336 | TE20E336 | 1 | Cleaner head 4xø4.2mm | Stainless steel | Spare part |
| 2 | | TE20B554 | TE20B554 | 1 | Bearing bush | Polymer | Wear part |
| 3 | | TE20E552 | TE20E552 | 1 | Retaining ring | Stainless steel | Wear part |
| 4 | | TE20B365 | TE20B365 | 1 | Ball ring N | Polymer/Titanium | Wear part |
| 5 | | TE20E550 | TE20E550 | 1 | Bevel gear | Stainless steel | Wear part |
| 6 | | TE20E571 | TE20E571 | 1 | Clip ring | Stainless steel | Spare part |
| 7 | | TE20E572 | TE20E572 | 1 | Pin | Stainless steel | Spare part |
| 8 | <input type="checkbox"/> | TE20B553 | TE20B553 | 1 | Seal ring H | EPDM | Wear part |
| | <input type="checkbox"/> | TE20B553-01 | TE20B553-01 | 1 | Seal ring H | FPM (Viton) | Wear part |
| | <input type="checkbox"/> | TE20C553 | TE20C553 | 1 | Seal ring H | FFKM | Wear part |
| 9 | | TE20E542 | TE20E542 | 1 | Bevel gear | Stainless steel | Wear part |
| 10 | | TE20B364 | TE20B364 | 1 | Ball ring | Polymer/Titanium | Wear part |
| 11 | | TE20E539 | TE20E539 | 1 | Ball race | Stainless steel | Wear part |
| 12 | <input type="checkbox"/> | TE20E310 | TE20E310 | 1 | Outer tube, L = 350 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20E311 | TE20E311 | 1 | Outer tube, L = 500 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20E312 | TE20E312 | 1 | Outer tube, L = 700 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20E313 | TE20E313 | 1 | Outer tube, L = 1000 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20E314 | TE20E314 | 1 | Outer tube, L = 1200 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20E315 | TE20E315 | 1 | Outer tube, L = 1500 mm | Stainless steel | Spare part |
| 13 | | TE20B510 | TE20B510 | 1 | Bearing ring | Polymer | Wear part |
| 14 | <input type="checkbox"/> | TE20E538 | TE20E538 | 1 | Inner shaft, L = 350 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20E532 | TE20E532 | 1 | Inner shaft, L = 500 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20E533 | TE20E533 | 1 | Inner shaft, L = 700 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20E534 | TE20E534 | 1 | Inner shaft, L = 1000 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20E535 | TE20E535 | 1 | Inner shaft, L = 1200 mm | Stainless steel | Spare part |
| | <input type="checkbox"/> | TE20E536 | TE20E536 | 1 | Inner shaft, L = 1500 mm | Stainless steel | Spare part |
| 15 | <input type="checkbox"/> | TE20B511 | TE20B511 | 1 | Plain seal | EPDM | Wear part |
| | <input type="checkbox"/> | TE20B511-01 | TE20B511-01 | 1 | Plain seal | FPM (Viton) | Wear part |
| | <input type="checkbox"/> | TE20C511 | TE20C511 | 1 | Plain seal | FFKM | Wear part |
| 16 | | TE24F500 | TE24E500 | 1 | Base housing | Stainless steel | Spare part |
| 17 | | TE20B512 | TE20B512 | 1 | Retaining screw | Stainless steel | Spare part |
| 18 | <input type="checkbox"/> | TE20B516 | TE20B516 | 2 | Gasket | EPDM | Wear part |
| | <input type="checkbox"/> | TE20B516-01 | TE20B516-01 | 2 | Gasket | FPM (Viton) | Wear part |
| | <input type="checkbox"/> | TE20C516 | TE20C516 | 2 | Gasket | FFKM | Wear part |
| 19 | | TE20B514 | TE20B514 | 1 | Bearing bush | Polymer | Wear part |

Configuration as delivered marked ☐

Please note that some of the polymer parts are in PEEK, which is not resistant to concentrated sulfuric acid.

Available add-on's

Available add-on's regarding material certificates, Declaration of Conformity and Q-Doc documents, see page 46 for more information.

Reference List of Parts (continued)

Toftejorg SaniJet 20 Air Driven with improved surface finish (EPDM as standard)

| Pos | Item no. for 4" version | Item no. for 3" version | No/ Unit | Description | Material | Remarks |
|-----|-----------------------------------|----------------------------|-------------|----------------------------|-----------------------|------------|
| 20 | TE20B513 | TE20B513 | 1 | Bearing bush | Polymer | Wear part |
| 21 | <input type="checkbox"/> TE51T127 | | 1 | O-ring | EPDM | Wear part |
| | <input type="checkbox"/> TE51T008 | | 1 | O-ring | FPM (Viton) | Wear part |
| | <input type="checkbox"/> TE51T129 | | 1 | O-ring | FFKM | Wear part |
| 22 | TE20E642 | | 1 | Plug | Stainless steel | Spare part |
| 23 | TE24F594 | | 1 | Bracket | Stainless steel | Spare part |
| 24 | TE20E654 | | 3 | Screw | Stainless steel | Spare part |
| 59 | TE24E346 | TE24E346 | 1 | Motor flange welded A | Stainless steel | Spare part |
| 60 | TE20E340 | TE20E340 | 1 | Rotor outer complete | Stainless steel/steel | Spare part |
| 61 | TE24E351 | TE24E351 | 1 | Inlet housing 1" Tri-clamp | Stainless steel | Spare part |
| 62 | TE20B343 | TE20B343 | 1 | Rotor inner w. magnets | Steel | Spare part |
| 63 | TE51C052 | TE51C052 | 1 | Tubular rivet | Stainless steel | Spare part |
| 64 | TE51T142 | TE51T142 | 1 | O-ring | Elastomer | Spare part |
| 65 | TE51U392 | TE51U392 | 3 | Straight connector | Brass, Nickel-pl. | Spare part |
| 66 | TE51U395 | TE51U395 | 1 | Flow control valve | Brass, Nickel-pl. | Spare part |
| 67 | TE51U393 | TE51U393 | 3 | L-connector | Brass, Nickel-pl. | Spare part |
| 68 | TE24B557 | TE24B557 | 1 | Flange for air motor | Polymer | Spare part |
| 69 | TE24B556 | TE24B556 | 1 | Adapter for air motor | Polymer | Spare part |
| 70 | TE51A096 | TE51A096 | 1 | Screw | Stainless steel | Spare part |
| 71 | TE51T143 | TE51T143 | 1 | O-ring | Elastomer | Spare part |
| 72 | TE51B013 | TE51B013 | 6 | Washer | Stainless steel | Spare part |
| 73 | TE51A097 | TE51A097 | 4 | Screw | Stainless steel | Spare part |
| 74 | TE24B353 | TE24B353 | 1 | Wire for grounding | Stainless steel/alu. | Spare part |
| 75 | TE51A112 | TE51A112 | 2 | Screw | Stainless steel | Spare part |
| 76 | TE51U397 | TE51U397 | 2 | Air tubing | Polymer | Spare part |
| 77 | TE51U394 | TE51U394 | 2 | L-connector | Brass, Nickel-pl. | Spare part |
| 78 | TE51U009 | TE51U009 | 1 | Air motor | | Spare part |
| 79 | TE51U396 | TE51U396 | 1 | Plug | Brass, Nickel-pl. | Spare part |
| 80 | TE51A100 | TE51A100 | 3 | Screw | Stainless steel | Spare part |
| 81 | TE24B348 | TE24B348 | 1 | Motor cover | Stainless steel | Spare part |

Configuration as delivered marked ☐

Please note that some of the polymer parts are in PEEK, which is not resistant to concentrated sulfuric acid.

Available add-on's

Available add-on's regarding material certificates, Declaration of Conformity and Q-Doc documents, see page 46 for more information.

Reference List of Parts (continued)

Toftejorg SaniJet 20 Air Driven, Hastelloy version (FFKM as standard)

| Pos | | Item no. for 4" version | Item no. for 3" version | No/ Unit | Description | Material | Remarks |
|-----|--------------------------|----------------------------|----------------------------|-------------|--------------------------|------------------|------------|
| 1 | <input type="checkbox"/> | TE20C334 | TE20C334 | 1 | Cleaner head 2xø2.0mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE20C335 | TE20C335 | 1 | Cleaner head 2xø3.8mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE20C336 | TE20C336 | 1 | Cleaner head 4xø4.2mm | Alloy | Spare part |
| 2 | | TE20B554 | TE20B554 | 1 | Bearing bush | Polymer | Wear part |
| 3 | | TE20C552 | TE20C552 | 1 | Retaining ring | Alloy | Wear part |
| 4 | | TE20C361 | TE20C361 | 1 | Ball ring N | Polymer/Titanium | Wear part |
| 5 | | TE20C550 | TE20C550 | 1 | Bevel gear | Alloy | Wear part |
| 6 | | TE20C571 | TE20C571 | 1 | Clip ring | Alloy | Spare part |
| 7 | | TE20C655 | TE20C655 | 1 | Pin | Alloy | Spare part |
| 8 | | TE20C553 | TE20C553 | 1 | Seal ring H | FFKM | Wear part |
| 9 | | TE20C542 | TE20C542 | 1 | Bevel gear | Alloy | Wear part |
| 10 | | TE20C360 | TE20C360 | 1 | Ball ring | Polymer/Titanium | Wear part |
| 11 | | TE20C539 | TE20C539 | 1 | Ball race | Alloy | Wear part |
| 12 | <input type="checkbox"/> | TE20C310 | TE20C310 | 1 | Outer tube, L = 350 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE20C311 | TE20C311 | 1 | Outer tube, L = 500 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE20C312 | TE20C312 | 1 | Outer tube, L = 700 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE20C313 | TE20C313 | 1 | Outer tube, L = 1000 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE20C314 | TE20C314 | 1 | Outer tube, L = 1200 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE20C315 | TE20C315 | 1 | Outer tube, L = 1500 mm | Alloy | Spare part |
| 13 | | TE20B510 | TE20B510 | 1 | Bearing ring | Polymer | Wear part |
| 14 | <input type="checkbox"/> | TE20C538 | TE20C538 | 1 | Inner shaft, L = 350 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE20C532 | TE20C532 | 1 | Inner shaft, L = 500 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE20C533 | TE20C533 | 1 | Inner shaft, L = 700 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE20C534 | TE20C534 | 1 | Inner shaft, L = 1000 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE20C535 | TE20C535 | 1 | Inner shaft, L = 1200 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE20C536 | TE20C536 | 1 | Inner shaft, L = 1500 mm | Alloy | Spare part |
| 15 | | TE20C511 | TE20C511 | 1 | Plain seal | FFKM | Wear part |
| 16 | | TE24H500 | TE24C500 | 1 | Base housing | Alloy | Spare part |
| 17 | | TE20B512 | TE20B512 | 1 | Retaining screw | Stainless steel | Spare part |
| 18 | | TE20C516 | TE20C516 | 2 | Gasket | FFKM | Wear part |
| 19 | | TE20B514 | TE20B514 | 1 | Bearing bush | Polymer | Wear part |

Configuration as delivered marked ☐

Please note that some of the polymer parts are in PEEK, which is not resistant to concentrated sulfuric acid.

Available add-on's

Available add-on's regarding material certificates, Declaration of Conformity and Q-Doc documents, see page 46 for more information.

Reference List of Parts (continued)

Toftejorg SaniJet 20 Air Driven, Hastelloy version (FFKM as standard)

| Pos | Item no. for 4" version | Item no. for 3" version | No/ Unit | Description | Material | Remarks |
|-----|----------------------------|----------------------------|-------------|----------------------------|----------------------|------------|
| 20 | TE20B513 | TE20B513 | 1 | Bearing bush | Polymer | Wear part |
| 21 | TE51T129 | | 1 | O-ring | FFKM | Wear part |
| 22 | TE20C642 | | 1 | Plug | Alloy | Spare part |
| 23 | TE24G594 | | 1 | Bracket | Stainless steel | Spare part |
| 24 | TE51A172 | | 3 | Screw | Stainless steel | Spare part |
| 59 | TE24C346 | TE24C346 | | Motor flange welded A | Alloy | Spare part |
| 60 | TE20C340 | TE20C340 | 1 | Rotor outer complete | Alloy | Spare part |
| 61 | TE24C351 | TE24C351 | 1 | Inlet housing 1" Tri-clamp | Alloy | Spare part |
| 62 | TE20B343 | TE20B343 | 1 | Rotor inner w. magnets | Steel | Spare part |
| 63 | TE51C052 | TE51C052 | 1 | Tubular rivet | Stainless steel | Spare part |
| 64 | TE51T142 | TE51T142 | 1 | O-ring | Elastomer | Spare part |
| 65 | TE51U392 | TE51U392 | 3 | Straight connector | Brass, Nickel-pl. | Spare part |
| 66 | TE51U395 | TE51U395 | 1 | Flow control valve | Brass, Nickel-pl. | Spare part |
| 67 | TE51U393 | TE51U393 | 3 | L-connector | Brass, Nickel-pl. | Spare part |
| 68 | TE24B557 | TE24B557 | 1 | Flange for air motor | Polymer | Spare part |
| 69 | TE24B556 | TE24B556 | 1 | Adapter for air motor | Polymer | Spare part |
| 70 | TE51A096 | TE51A096 | 1 | Screw | Stainless steel | Spare part |
| 71 | TE51T143 | TE51T143 | 1 | O-ring | Elastomer | Spare part |
| 72 | TE51B013 | TE51B013 | 6 | Washer | Stainless steel | Spare part |
| 73 | TE51A097 | TE51A097 | 4 | Screw | Stainless steel | Spare part |
| 74 | TE24B353 | TE24B353 | 1 | Wire for grounding | Stainless steel/alu. | Spare part |
| 75 | TE51A112 | TE51A112 | 2 | Screw | Stainless steel | Spare part |
| 76 | TE51U397 | TE51U397 | 2 | Air tubing | Polymer | Spare part |
| 77 | TE51U394 | TE51U394 | 2 | L-connector | Brass, Nickel-pl. | Spare part |
| 78 | TE51U009 | TE51U009 | 1 | Air motor | | Spare part |
| 79 | TE51U396 | TE51U396 | 1 | Plug | Brass, Nickel-pl. | Spare part |
| 80 | TE51A100 | TE51A100 | 3 | Screw | Stainless steel | Spare part |
| 81 | TE24B348 | TE24B348 | 1 | Motor cover | Stainless steel | Spare part |

Configuration as delivered marked ☐

Please note that some of the polymer parts are in PEEK, which is not resistant to concentrated sulfuric acid.

Available add-on's

Available add-on's regarding material certificates, Declaration of Conformity and Q-Doc documents, see page 46 for more information.

Reference List of Parts (continued)

Toftejorg SaniJet 20 Air Driven, Hastelloy version with improved surface finish (FFKM as standard)

| Pos | | Item no. for 4" version | Item no. for 3" version | No/ Unit | Description | Material | Remarks |
|-----|--------------------------|----------------------------|----------------------------|-------------|--------------------------|------------------|------------|
| 1 | <input type="checkbox"/> | TE24J334 | TE24J334 | 1 | Cleaner head 2xø2.0mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE24J335 | TE24J335 | 1 | Cleaner head 2xø3.8mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE24J336 | TE24J336 | 1 | Cleaner head 4xø4.2mm | Alloy | Spare part |
| 2 | | TE20B554 | TE20B554 | 1 | Bearing bush | Polymer | Wear part |
| 3 | | TE24J552 | TE24J552 | 1 | Retaining ring | Alloy | Wear part |
| 4 | | TE20C361 | TE20C361 | 1 | Ball ring N | Polymer/Titanium | Wear part |
| 5 | | TE24J550 | TE24J550 | 1 | Bevel gear | Alloy | Wear part |
| 6 | | TE24J571 | TE24J571 | 1 | Clip ring | Alloy | Spare part |
| 7 | | TE24J655 | TE24J655 | 1 | Pin | Alloy | Spare part |
| 8 | | TE20C553 | TE20C553 | 1 | Seal ring H | FFKM | Wear part |
| 9 | | TE24J542 | TE24J542 | 1 | Bevel gear | Alloy | Wear part |
| 10 | | TE20C360 | TE20C360 | 1 | Ball ring | Polymer/Titanium | Wear part |
| 11 | | TE24J539 | TE24J539 | 1 | Ball race | Alloy | Wear part |
| 12 | <input type="checkbox"/> | TE24J310 | TE24J310 | 1 | Outer tube, L = 350 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE24J311 | TE24J311 | 1 | Outer tube, L = 500 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE24J312 | TE24J312 | 1 | Outer tube, L = 700 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE24J313 | TE24J313 | 1 | Outer tube, L = 1000 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE24J314 | TE24J314 | 1 | Outer tube, L = 1200 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE24J315 | TE24J315 | 1 | Outer tube, L = 1500 mm | Alloy | Spare part |
| 13 | | TE20B510 | TE20B510 | 1 | Bearing ring | Polymer | Wear part |
| 14 | <input type="checkbox"/> | TE24J538 | TE24J538 | 1 | Inner shaft, L = 350 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE24J532 | TE24J532 | 1 | Inner shaft, L = 500 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE24J533 | TE24J533 | 1 | Inner shaft, L = 700 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE24J534 | TE24J534 | 1 | Inner shaft, L = 1000 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE24J535 | TE24J535 | 1 | Inner shaft, L = 1200 mm | Alloy | Spare part |
| | <input type="checkbox"/> | TE24J536 | TE24J536 | 1 | Inner shaft, L = 1500 mm | Alloy | Spare part |
| 15 | | TE20C511 | TE20C511 | 1 | Plain seal | FFKM | Wear part |
| 16 | | TE24J500 | TE24D500 | 1 | Base housing | Alloy | Spare part |
| 17 | | TE20B512 | TE20B512 | 1 | Retaining screw | Stainless steel | Spare part |
| 18 | | TE20C516 | TE20C516 | 2 | Gasket | FFKM | Wear part |
| 19 | | TE20B514 | TE20B514 | 1 | Bearing bush | Polymer | Wear part |

Configuration as delivered marked ☐

Please note that some of the polymer parts are in PEEK, which is not resistant to concentrated sulfuric acid.

Available add-on's

Available add-on's regarding material certificates, Declaration of Conformity and Q-Doc documents, see page 46 for more information.

Reference List of Parts (continued)

Toftejorg SaniJet 20 Air Driven, Hastelloy version with improved surface finish (FFKM as standard)

| Pos | Item no. for 4" version | Item no. for 3" version | No/ Unit | Description | Material | Remarks |
|-----|----------------------------|----------------------------|-------------|----------------------------|--------------------------|------------|
| 20 | TE20B513 | TE20B513 | 1 | Bearing bush | Polymer | Wear part |
| 21 | TE51T129 | | 1 | O-ring | FFKM | Wear part |
| 22 | TE24J642 | | 1 | Plug | Alloy | Spare part |
| 23 | TE24F594 | | 1 | Bracket | Stainless steel | Spare part |
| 24 | TE20E654 | | 3 | Screw | Stainless steel | Spare part |
| 59 | TE24J346 | TE24J346 | 1 | Motor flange welded A | Alloy | Spare part |
| 60 | TE24J340 | TE24J340 | 1 | Rotor outer complete | Alloy | Spare part |
| 61 | TE24J351 | TE24J351 | 1 | Inlet housing 1" Tri-clamp | Alloy | Spare part |
| 62 | TE20B343 | TE20B343 | 1 | Rotor inner w. magnets | Steel | Spare part |
| 63 | TE51C052 | TE51C052 | 1 | Tubular rivet | Stainless steel | Spare part |
| 64 | TE51T142 | TE51T142 | 1 | O-ring | Elastomer | Spare part |
| 65 | TE51U392 | TE51U392 | 3 | Straight connector | Brass, Nickel-pl. | Spare part |
| 66 | TE51U395 | TE51U395 | 1 | Flow control valve | Brass, Nickel-pl. | Spare part |
| 67 | TE51U393 | TE51U393 | 3 | L-connector | Brass, Nickel-pl. | Spare part |
| 68 | TE24B557 | TE24B557 | 1 | Flange for air motor | Polymer | Spare part |
| 69 | TE24B556 | TE24B556 | 1 | Adapter for air motor | Polymer | Spare part |
| 70 | TE51A096 | TE51A096 | 1 | Screw | Stainless steel | Spare part |
| 71 | TE51T143 | TE51T143 | 1 | O-ring | Elastomer | Spare part |
| 72 | TE51B013 | TE51B013 | 6 | Washer | Stainless steel | Spare part |
| 73 | TE51A097 | TE51A097 | 4 | Screw | Stainless steel | Spare part |
| 74 | TE24B353 | TE24B353 | 1 | Wire for grounding | Stainless steel/aluminum | Spare part |
| 75 | TE51A112 | TE51A112 | 2 | Screw | Stainless steel | Spare part |
| 76 | TE51U397 | TE51U397 | 2 | Air tubing | Polymer | Spare part |
| 77 | TE51U394 | TE51U394 | 2 | L-connector | Brass, Nickel-pl. | Spare part |
| 78 | TE51U009 | TE51U009 | 1 | Air motor | | Spare part |
| 79 | TE51U396 | TE51U396 | 1 | Plug | Brass, Nickel-pl. | Spare part |
| 80 | TE51A100 | TE51A100 | 3 | Screw | Stainless steel | Spare part |
| 81 | TE24B348 | TE24B348 | 1 | Motor cover | Stainless steel | Spare part |

Configuration as delivered marked ☐

Please note that some of the polymer parts are in PEEK, which is not resistant to concentrated sulfuric acid.

Available add-on's

Available add-on's regarding material certificates, Declaration of Conformity and Q-Doc documents, see page 46 for more information.

Reference List of Parts (continued)

Available add-on's for Spare parts

| Item no. | Description |
|---|---|
| TE2XXXXX-90 or TE2XXXXX-91 or TE2XXXXX-94 | <ul style="list-style-type: none"> Declaration of Compliance: <ul style="list-style-type: none"> EN 10204 type 3.1 inspection Certificate FDA Declaration of Compliance USP Class VI ADI Declaration |
| TE2XXXXX-50 or TE2XXXXX-51 or TE2XXXXX-54 Inner shaft pos. no. 14 or Outer pipe pos. no. 12 or Inlet housing pos. no. 61 only | <ul style="list-style-type: none"> Declaration of Compliance: <ul style="list-style-type: none"> EN 10204 type 3.1 inspection Certificate FDA Declaration of Compliance USP Class VI ADI Declaration Weld-Log documentation (if necessary) as hardcopy |

Maintenance

Dismantling and reassembling, Cleaner head unit

Dismantling

1. Loosen Cleaner head unit (Pos. 1, 2, 3, 4, 5, 6, 7) with Hook spanner (tool no. TE20B701). Insert carefully into holes in Retaining ring (Pos. 3). Turn counter-clockwise and draw out Cleaner head unit. Never use Pipe wrench or any other tool than the Toftejorg SaniJet 20 special Hook spanner, which is developed especially to protect the surface from being damaged.
2. Remove Seal ring (Pos. 8).
3. Pull off Clip ring (Pos. 6). Push out Pin (Pos. 7).
4. Draw off Bevel gear (Pos. 5) together with Ball ring (Pos. 4) and Retaining ring (Pos. 3).
5. If replacement is necessary, pull off Bearing bush (Pos. 2) from Cleaner head (Pos. 1). The Bearing bush should not be removed unless worn or damaged. Wear on this part will increase leakage flow around the front of the Cleaner head, and accordingly increase the total flow rate.

Reassembling

1. If necessary press new Bearing bush (Pos. 2) fully home onto Cleaner head (Pos. 1).
2. Mount Retaining ring (Pos. 3), Ball ring (Pos. 4) and Bevel gear (Pos. 5) on Cleaner head (Pos. 1).
3. Hold Cleaner head and turn Bevel gear to align the groove over the holes in the Cleaner head. Mount Pin (Pos. 7).
4. Secure with Clip ring (Pos. 6) over Pin (Pos. 7). Check that Pin with Clip ring can move axially.
5. Hold Retaining ring (Pos. 3) and check free rotation of Cleaner head unit.
6. Insert Seal ring (Pos. 8) into Cleaner house on Outer tube. Make sure that it is fitted correctly into recess.
7. Insert Cleaner head unit (Pos. 1, 2, 3, 4, 5, 6, 7) in Outer tube. Correct mounting is made foolproof: Drain hole in Retaining ring must be at the lowest point. Tighten with Hook spanner (tool no. TE20B701).

Caution:



It is important that Seal ring is fitted correctly and that Retaining ring is tightened fully home against "stop". Check that assembly is firmly held in position. If assembly feels loose, replace Seal ring.

Maintenance (continued)

Dismantling and reassembling, Base Unit

Dismantling of Outer tube

In order to dismantle the parts in the Outer tube, it is necessary first to release the Inner shaft (Pos. 14).

Warning:



Retaining screw on side of Base housing (Pos. 16) must never be loosened, when machine is mounted in tank unless down pipe is supported and Pressure line is disconnected, as otherwise the complete Down pipe assembly will fall down.

6. Remove Retaining screw (Pos. 17). Loosen and unscrew with a M10 Hex key (Allen key). Pull out Outer tube (Pos. 12) together with Inner shaft (Pos. 14) from Base housing (Pos. 16).
7. Turn Outer tube upside down. Hold Bevel gear (Pos. 9) and push Inner shaft (Pos. 14) approx. 5 mm into Outer tube. Then rotate Inner shaft $\frac{1}{4}$ revolution, in order for pin in the shaft to pass through grooves in Bevel gear. Remove Bevel gear (Pos. 9) and Ball ring (Pos. 10).
8. Rotate Inner shaft to pass grooves in Ball race (Pos. 11) and pull it out. Tip out Ball race from Outer tube (Pos. 12).
9. If it is necessary to replace Bearing ring (Pos. 13) on Outer tube, pull it off. The Bearing ring should not be removed unless worn or damaged. Wear on this part will increase leakage around Down pipe and accordingly increase total flow rate. It is recommended to replace if diameter is below $\varnothing 38.7$ mm. Diameter must never be below $\varnothing 38.5$ mm.
10. Remove Plain seal (Pos. 15) from Inner shaft (Pos. 14).
11. If necessary, replace Bearing bush (Pos. 20 and 19) in Base housing (Pos. 16).

Reassembling of Outer Tube

12. Mount Plain seal (Pos. 15) on Inner shaft (Pos. 14).
13. Turn Outer tube (Pos. 12) upside down. Fit Ball race (Pos. 11) into Outer tube. Make sure that it is correctly placed in recess.
14. Mount Inner shaft (Pos. 14) from below into the Outer tube. Hold against Ball race (Pos. 11) and fit Inner shaft pin through axial grooves. Place Ball ring (Pos. 10) and Bevel gear (Pos. 9) over Inner shaft on top of the Ball race (Pos. 11). Hold Bevel gear, rotate Inner shaft and draw back to fit pin into groove in the end face of the Bevel gear.
15. Place Base housing (Pos. 16) upside down. Fit upper end of Inner shaft into Base housing. By pressing at the lower end of Inner shaft push the entire assembly into Base housing. Tighten with Retaining screw (Pos. 17).

Maintenance (continued)

Base Unit (continued)

Toftejorg SaniJet 20 (4") is as a standard prepared for monitoring by a Rotacheck Sensor (see Rotacheck System). A Plug (Pos. 22) is fitted in the Base housing in the opening designed for the Rotacheck sensor.

Dismantling of Plug or Rotacheck Sensor

1. Remove Screws (Pos. 24). Loosen and unscrew with a Socket wrench (tool no. TE462A).
2. Remove Bracket (Pos. 23).
3. Press up Plug/Rotacheck (Pos. 22). Remove O-ring (Pos. 21).

Reassembling of Plug or Rotacheck Sensor

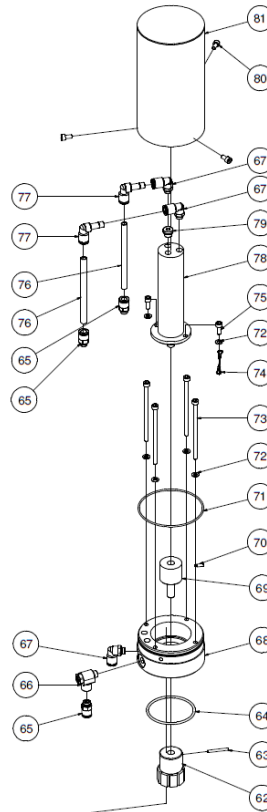
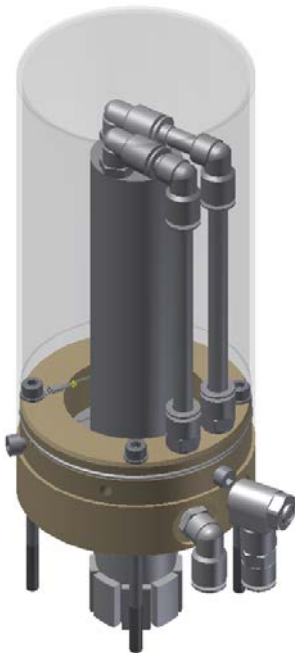
16. Insert O-ring (Pos. 21) in hole for Rotacheck on Base housing (Pos. 16). Make sure that it is fitted correctly into O-ring groove inside hole. Insert Plug/Rotacheck (Pos. 22).
17. Place Bracket (Pos. 23) over Plug/Rotacheck.
18. Mount and tighten Screws (Pos. 24) with Socket wrench (tool no. TE462A).

Maintenance (continued)

Air motor Drive unit

Dismantling

1. Push the ring on the push-in fittings and release the compressed air tubes.
2. Remove the 3 pcs Screws (Pos. 80) and take off the Motor cover (Pos. 81).
3. Remove the 4 pcs M5 Screws (Pos. 73) holding the Air motor Drive unit. Loosen and unscrew with a Hex key.
4. The complete Air motor Drive unit can now be removed and taken to the work shop for inspection and maintenance (see page 35).
5. For dismantling the air motor from the motor flange (Pos. 68) first push out the Tubular rivet (Pos. 63) and take off the Rotor inner (Pos. 62). Remove the 2 Screws (Pos. 75) and take off the air motor.



Reassembling

Reassembling is done in the reverse order.

Mount and tighten Screws (Pos. 73) with Hex key. Tighten crosswise. Torque: 3-4 Nm

Caution:



Be careful when reinserting the Rotor with magnets into the cavity in the Motor flange (Pos. 59). Hold Air motor Drive unit firmly and insert slowly. A strong magnetic field is present, which could pull the unit down or to one of the sides and damage the magnets.

Maintenance (continued)

Further Dismantling

1. Lift off the Motor flange (Pos. 59).
2. Remove Gasket (Pos. 18) and lift off Inlet housing (Pos. 61).
3. Withdraw Rotor Outer (Pos. 60).
4. Remove Gasket (Pos. 18) from Base housing (Pos. 16).

Further Reassembling

Before reassembly make sure that all parts are clean without deposits or build-up of foreign matter.

1. Insert Gasket (Pos. 18) in top of Base housing (Pos. 16).
2. Insert the Rotor outer (Pos. 60). Check free rotation.
3. Replace Inlet housing (Pos. 61) on Gasket (Pos. 18) in Base housing (Pos. 16).
4. Mount Gaskets (Pos. 18) into Inlet housing (Pos. 61).

Rotacheck System

The Rotacheck System is an ex-proof system, designed for monitoring the operation of the tank cleaning machine. The Sensor is supplied from a special Relay. The Sensor will send a signal to the Relay each time it is hit by a jet from the rotating tank cleaning machine, thus providing verification that the machine is rotating, of the rotation speed, and that the nozzles are not blocked. To install Rotacheck Sensor simply replace Plug (Pos. 22) with Rotacheck Sensor TE52E067. For further information see Data sheet and operators manual for Rotacheck system.

Trouble Shooting Guide

Symptom: Slow rotation or failure of machine to rotate

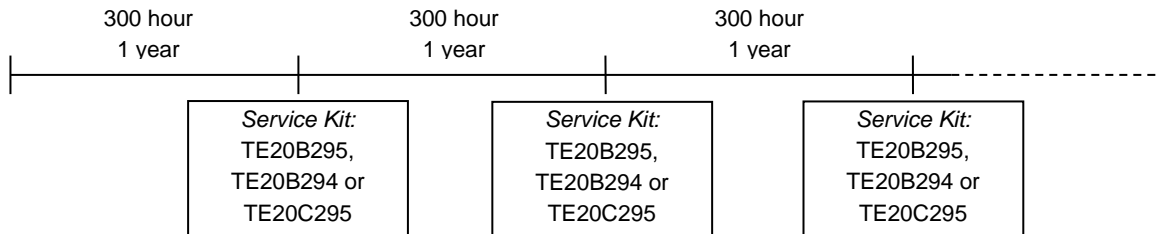
| Possible Causes | Fault finding |
|--|--|
| No or insufficient liquid flow | <p>a). Check if supply valve is fully open.</p> <p>b). Check if inlet pressure to machine is correct</p> <p>c). Check supply line/filter for restrictions/ clogging</p> <p>d). Remove Inlet cap (see page 47) and check for clogging in Impeller area.</p> <p>e). Remove Gear ring and Output shaft (see page 47) and check for clogging in Base housing.</p> <p>f). Remove Cleaner head (see page 47) and check Nozzles and Cleaner head for clogging. If blocked, carefully clean without damaging Nozzles vanes and Nozzle tip. Use air pistol.</p> <p>g). Inspect Bevel gear, Ball ring and Bevel gear inside Outer tube (see page 48). If necessary, remove parts and clean.</p> <p>If large particles repeatedly get jammed in the machine, install filter or reduce mesh size of installed filter in supply line.</p> |
| Foreign material or material build-up | <p>With air pistol blow air through inlet and check that machine rotates evenly. If any resistance is recognised, disassemble machine in order to localise the cause.</p> |
| a). Impeller jammed | Remove Turbine shaft with Impeller and Planet gear assembly (see page 47) and remove foreign material. |
| b). Turbine shaft sluggish in Bearings | Remove Turbine shaft with Impeller (see page 47) and clean Bearings. |
| c). Planet gear jammed/sluggish | Remove foreign material from Planet wheel and Internal gears. Check rotation of Planet wheel. If restriction is recognised, disassemble Planet gear assembly (see page 47) and remove material build up, especially on Shaft and hole in Planet wheel. |

Trouble Shooting Guide (continued)

| Possible Causes | Fault finding |
|---|---|
| d). Output shaft jammed/sluggish | Remove Planet gear assembly (see page 47). Turn Down pipe and check unrestricted rotation. Remove Gear ring and Output shaft. Remove foreign material/material build-up on Output shaft, in holes and Bushes in Base housing. |
| e). Cleaner unit or Bevel gears jammed/sluggish | Rotate again Down pipe. It must rotate freely without any restriction. If not, remove Cleaner unit (see page 47). Clean out any foreign material and material build-up inside Cleaner head in the bottom of the Outer tube. Hold Retaining ring and rotate Cleaner head. If any restriction is recognised, disassemble Cleaner unit and clean all parts. Balls in ball ring must rotate freely. |
| f). Down pipe jammed/sluggish | If Down pipe still does not rotate freely without any restriction, it must be disassembled. Clean opening in bottom of Base housing and Bearing ring on Outer tube. Remove Bevel gear, Ball ring and Ball race inside Outer tube and clean parts. Balls in Ball ring must rotate freely without any restriction. |
| Wear | |
| a). Slide bearings | See page 31-36. |
| b). Bearing for Turbine shaft | See page 31-36 |
| c). Planet wheel | See page 31-36 |
| d). Shaft for Planet wheel | Check clearance of Planet wheel on Shaft. Transverse movement should not exceed 0.3 mm. |
| e). Turbine shaft | Check clearance in Planet gear, Bearing bush and Bearings for Turbine shaft. Transverse movement should not exceed 0.3 mm. Also inspect teeth for wear. |
| Mechanical defects | |
| a). Planet wheel. Teeth broken | Replace Planet wheel. |
| b). Planet wheel can not rotate on Shaft/Shaft bent | Replace Shaft for Planet wheel. |
| c). Damaged teeth on Bevel gear | Inspect teeth on Bevel gear for deformation. Mount Cleaner Unit in Outer tube (See page 47). Remove Planet gear. Hold Base housing and rotate Down pipe to check that Bevel gears can work together. If damaged: Replace Bevel gears. |

Service Kits and Tools

Service Intervals



Service Kit in Viton for Toftejorg SaniJet 20 Air driven version

Article no. TE20B294

| Reference no. | No. | Description | Pos. no. |
|---------------|-----|-------------------|----------|
| TE20B510 | 1 | Bearing ring, top | 13 |
| TE20B513 | 1 | Bearing bush D1 | 20 |
| TE20B514 | 1 | Bearing bush D2 | 19 |
| TE20B511-01 | 1 | Plain seal S | 15 |
| TE20B516-01 | 2 | Gasket D | 18 |
| TE20B553-01 | 1 | Seal ring H | 8 |
| TE51T008 | 1 | O-ring | 21 |

Service Kit in EPDM for Toftejorg SaniJet 20 Air driven version

Article no. TE20B295

| Reference no. | No. | Description | Pos. no. |
|---------------|-----|-------------------|----------|
| TE20B510 | 1 | Bearing ring, top | 13 |
| TE20B513 | 1 | Bearing bush D1 | 20 |
| TE20B514 | 1 | Bearing bush D2 | 19 |
| TE20B511 | 1 | Plain seal S | 15 |
| TE20B516 | 2 | Gasket D | 18 |
| TE20B553 | 1 | Seal ring H | 8 |
| TE51T127 | 1 | O-ring | 21 |

Service Kits and Tools

Service Kit in Perlast for Toftejorg SaniJet 20 Air driven version

Article no. TE20C295

| Reference no. | No. | Description | Pos. no. |
|---------------|-----|-------------------|----------|
| TE20B510 | 1 | Bearing ring, top | 13 |
| TE20B513 | 1 | Bearing bush D1 | 20 |
| TE20B514 | 1 | Bearing bush D2 | 19 |
| TE20C511 | 1 | Plain seal S | 15 |
| TE20C516 | 2 | Gasket D | 18 |
| TE20C553 | 1 | Seal ring H | 8 |
| TE51T129 | 1 | O-ring | 21 |

Available add-on's

Available add-on's regarding material certificates, Declaration of Conformity and Q-Doc documents, see page 46 for more information.

Tools

| Reference no. | Description |
|---------------|--------------------------|
| TE462A | 8mm Socket Wrench w. pin |
| TE20B701 | Hook spanner |

How to Order Spare Parts

On the Part List Drawing page 37 as well as on all instruction drawings, the individual parts have a position number, which is the same on all drawings. From the position number, the part is easily identified in the Reference List of Parts, pages 38-43. Individual parts should always be ordered from the Reference Lists of Parts, clearly stating reference number and description.

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 Nipple on the top of the tank cleaning machine.

In cases where spare parts are ordered for machines originally delivered with 3.1 certificates, please state this information on your ordering form together with the machine type and serial number. This is to ensure full traceability henceforward.

In connection with ordering of spare parts for machines originally delivered with Q-doc+FAT-SAT (Qualification Documentation) please note that all service and repair should be performed by Alfa Laval Tank Equipment, Kolding, Denmark, see page 33 "Service and Repair of machines ordered with Q-Doc+FAT-SAT".

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.

EU Declaration of Conformity with ATEX Certification

Only valid for EU countries

| | | |
|---|---|--|
| EC Declaration of Conformity | |  |
| The designated company | | |
| <u>Alfa Laval Tank Equipment A/S</u> Company name | | |
| <u>Baldershoej 19, DK-2635 Ishoej, Denmark</u> Address | | |
| <u>+45 43 55 86 00</u> Phone no. | | |
| hereby declare that | | |
| <u>Tank Cleaning Machine</u> Denomination | <u>Toftejorg SaniJet 20 Air Driven</u> Type | |
| Valid from SN: 2013 00001 to 2014 10000 | | |
| is in conformity with the following regulations and directives with amendments: | | |
| <ul style="list-style-type: none">- Regulation (EC) No. 1935/2004- FDA 21CFR§177- The 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- The Equipment Explosive Atmospheres (ATEX) Directive 94/9/EC (Applicable for machine certified as category 1 and 2 component, see machine engraving) DS/EN 1127-1:2011, DS/EN 13463-1:2009, DS/EN 13463-5:2011 | | |
| <u>SaniJet 20 A, Tank cleaning machine</u> EC Type Examination Certificate no. Baseefa 05ATEX0117X Marking:  II 1 GD c T140°C SGS Baseefa Ltd., Certification body number 1180. Rockhead Business Park, Staden Lane, Buxton, Derbyshire SK17 9RZ, United Kingdom The technical construction file is retained at the above address | | |
| <u>SaniJet 20 A, Air motor unit</u> Archive no.: DTI-2013-1-0148A Marking:  II 2 GD c IIC T4 Tamb -20°C to +40°C Archived at Danish Technological Institute, Certification body number 0396, Gregersensvej, 2630 Taastrup, Denmark | | |
| <u>R&D Manager</u> Title | <u>Henrik Falster Hansen</u> Name |  Signature |
| <u>ATEX Responsible Engineer</u> Title | <u>Denniz Hoxbroe</u> Name |  Signature |
| <u>December 20, 2013</u> Date | <u>Alfa Laval Tank Equipment A/S</u> Company | |
|  | | |

Declarations of Conformity per EN 10204 Type 2.2

Only valid for EU countries

Non-Metal Materials

Impeller, bearings: 21CFR§177.2415 (PEEK450G)

Gaskets, o-rings: 21CFR§177.2600 (FFKM)

Ball ring: 21CFR§176.170 (C) 1997

Surface Finish

For item numbers TE24B1XX-XX and TE24G1XX-XX: All parts in contact with media are finished with a nominal internal/external surface roughness Ra = 0.8 µm (30 micro inch).

For item numbers TE24E1XX-XX and TE24F1XX-XX: All parts in contact with media are finished with a nominal internal/external surface roughness Ra = 0.5 µm (20 micro inch).

Non-Specific Controls on Product Quality "As-Supplied"

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

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

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

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

The following item numbers are covered by this certificate:

| | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|
| TE24B100 | TE24B120 | TE24B140 | TE24B160 | TE24G100 | TE24G120 | TE24G140 | TE24G160 |
| TE24B101 | TE24B121 | TE24B141 | TE24B161 | TE24G101 | TE24G121 | TE24G141 | TE24G161 |
| TE24B102 | TE24B122 | TE24B142 | TE24B162 | TE24G102 | TE24G122 | TE24G142 | TE24G162 |
| TE24B104 | TE24B124 | TE24B144 | TE24B164 | TE24G104 | TE24G124 | TE24G144 | TE24G164 |
| TE24B106 | TE24B126 | TE24B146 | TE24B166 | TE24G106 | TE24G126 | TE24G146 | TE24G166 |
| TE24B108 | TE24B128 | TE24B148 | TE24B168 | TE24G108 | TE24G128 | TE24G148 | TE24G168 |
| TE24E100 | TE24E120 | TE24E140 | TE24E160 | TE24F100 | TE24F120 | TE24F140 | TE24F160 |
| TE24E101 | TE24E121 | TE24E141 | TE24E161 | TE24F101 | TE24F121 | TE24F141 | TE24F161 |
| TE24E102 | TE24E122 | TE24E142 | TE24E162 | TE24F102 | TE24F122 | TE24F142 | TE24F162 |
| TE24E104 | TE24E124 | TE24E144 | TE24E164 | TE24F104 | TE24F124 | TE24F144 | TE24F164 |
| TE24E106 | TE24E126 | TE24E146 | TE24E166 | TE24F106 | TE24F126 | TE24F146 | TE24F166 |
| TE24E108 | TE24E128 | TE24E148 | TE24E168 | TE24F108 | TE24F128 | TE24F148 | TE24F168 |

Standard

-0X

-01

-04

ATEX

-7X

-71

-74

Material (rubber articles)

EPDM

FFKM (Viton)

FFKM (Peribut)

Copenhagen, Ishøj, on December 20, 2013

For Alfa Laval Tank Equipment A/S

Dennis Hoxbroe

Quality Manager

2/2

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

May 2013

Declaration Of Conformity

Per

EN 10204, Sub Clause 2.2 Test Report

Materials of Construction and Surface Finishes

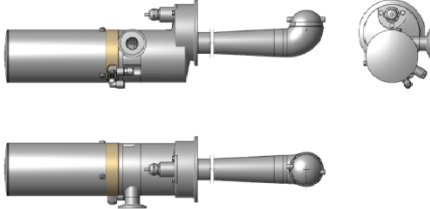
Alfa Laval Tank Equipment A/S (supplier)

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

Description:

Toftejorg SaniJet20 Air Driven Rotary Jet Head

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



Metal Materials

In contact with media

Inlet house, cleaner head, shaft and gear wheel:

Ball race:

Balls:

AISI 316L

SAF 2205

TIGAL4V

Werkstoff no. 1.4404

Werkstoff no. 1.4462

Metal Materials

Not in contact with media

Screws:

Motor cover:

Bracket:

A4

AISI 304

AISI 316L

Werkstoff no. 1.4301

Werkstoff no. 1.4404

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

May 2013

1/2

Page 58

Instruction Manual, Toftejorg SaniJet 20 Air Driven
Covering standard and hastelloy machines, machines with improved finish and
machines delivered with Q-Doc and/or ATEX certification, Dir. 94/9/EC
IM-TE91A793-EN10

Declarations of Conformity per EN 10204 Type 2.2

Only valid for EU countries

Non-Metal Materials

Impeller, bearings: 210FR§77.2415 (PEEK450G)

Gaskets, o-rings: 210FR§177.2600 (FFRM)

Ball ring: 210FR§76.170 (C) 1997

Surface Finish

For item numbers TE24C1XX-XX and TE24H1XX-XX: All parts in contact with media are finished with a nominal internal/external surface roughness Ra = 0.8 µm (30 micro inch).

For item numbers TE24D1XX-XX and TE24J1XX-XX: All parts in contact with media are finished with a nominal internal/external surface roughness Ra = 0.5 µm (20 micro inch).

Non-Specific Controls on Product Quality "As-Supplied"

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

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

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

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

The following item numbers are covered by this certificate:

| | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|
| TE24C100 | TE24C120 | TE24C140 | TE24C160 | TE24H100 | TE24H120 | TE24H140 | TE24H160 |
| TE24C101 | TE24C121 | TE24C141 | TE24C161 | TE24H101 | TE24H121 | TE24H141 | TE24H161 |
| TE24C102 | TE24C122 | TE24C142 | TE24C162 | TE24H102 | TE24H122 | TE24H142 | TE24H162 |
| TE24C104 | TE24C124 | TE24C144 | TE24C164 | TE24H104 | TE24H124 | TE24H144 | TE24H164 |
| TE24C106 | TE24C126 | TE24C146 | TE24C166 | TE24H106 | TE24H126 | TE24H146 | TE24H166 |
| TE24C108 | TE24C128 | TE24C148 | TE24C168 | TE24H108 | TE24H128 | TE24H148 | TE24H168 |
| TE24D100 | TE24D120 | TE24D140 | TE24D160 | TE24J100 | TE24J120 | TE24J140 | TE24J160 |
| TE24D101 | TE24D121 | TE24D141 | TE24D161 | TE24J101 | TE24J121 | TE24J141 | TE24J161 |
| TE24D102 | TE24D122 | TE24D142 | TE24D162 | TE24J102 | TE24J122 | TE24J142 | TE24J162 |
| TE24D104 | TE24D124 | TE24D144 | TE24D164 | TE24J104 | TE24J124 | TE24J144 | TE24J164 |
| TE24D106 | TE24D126 | TE24D146 | TE24D166 | TE24J106 | TE24J126 | TE24J146 | TE24J166 |
| TE24D108 | TE24D128 | TE24D148 | TE24D168 | TE24J108 | TE24J128 | TE24J148 | TE24J168 |


Standard -04

ATEX -74

Material (rubber antides) FFRM (Perfluor)

Copenhagen, Ishøj, on December 20, 2013

For Alfa Laval Tank Equipment A/S



Dennis Hoxbroe

Quality Manager

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

May 2013

2/2

Declaration Of Conformity

Per

EN 10204, Sub Clause 2.2 Test Report

Materials of Construction and Surface Finishes

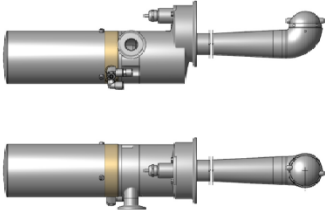
Alfa Laval Tank Equipment A/S (supplier)

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

Description:

Toftejorg SaniJet20 Air Driven Rotary Jet Head, Hastelloy

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



Metal Materials

In contact with media

Inlet house, cleaner head, shaft, gear wheel and ball race:

Balls:

Hastelloy C22 Werkstoff no. 2.4602

Hastelloy C276 Werkstoff no. 2.4819

Metal Materials

No. in contact with media

Screws:

Motor cover:

Bracket:

A4

ANSI 304 Werkstoff no. 1.4301

ANSI 316L Werkstoff no. 1.4404

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

May 2013

1/2

Instruction Manual, Toftejorg SaniJet 20 Air Driven
Covering standard and hastelloy machines, machines with improved finish and
machines delivered with Q-Doc and/or ATEX certification, Dir. 94/9/EC
IM-TE91A793-EN10

Page 59



CSI 417.831.1411 • csidesigns.com

© Alfa Laval Corporate AB

This document and its contents is owned by Alfa Laval Corporate AB and protected by laws governing intellectual property and thereto related rights. It is the responsibility of the user of this document to comply with all applicable intellectual property laws. Without limiting any rights related to this document, no part of this document may be copied, reproduced or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), or for any purpose, without the expressed permission of Alfa Laval Corporate AB. Alfa Laval Corporate AB will enforce its rights related to this document to the fullest extent of the law, including the seeking of criminal prosecution.