Instruction Manual

Alfa Laval Toftejorg™ TZ-89

Covering:
Standard Machines
TE91A500-EN6
First published: 1989

ESE01837-EN6 2016-02

Original manual

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

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1 EC Declaration of Conformity

The Designated Company

Alfa Laval Kolding A/S
Company Name

Albuen 31, DK-6000 Kolding, Denmark
Address

+45 79 32 22 00
Phone No.

hereby declare that

Tank Cleaning Machine
Designation

Alfa Laval Toftejorg TZ-89
Type
From serial number 2016-0001 to 2030-99999

is in conformity with the following directive with amendments:

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

The Pressure Directive 97/23/EC
- According to its own volume and the rated pressure range, the product is regarded an Article 3, paragraph 3 Equipment

The person authorised to compile the technical file is the signer of this document

Global Product Quality Manager Pumps, Valves, Fittings and Tank Equipment	Lars Kruse Andersen	
Title	Name	Signature

Kolding	2016-02-01
Place	Date

(This Declaration of Conformity replaces Declaration of Conformity dated 2015-11-01)

CE

Unsafe practices and other important information are emphasized in this manual.
Warnings are emphasized by means of special signs.
Always read the manual before using the tank cleaning machine!

2.1 Important information

WARNING
Indicates that special procedures must be followed to avoid serious personal injury.

CAUTION
Indicates that special procedures must be followed to avoid damage to the tank cleaning machine

NOTE
Indicates important information to simplify or clarify procedures.

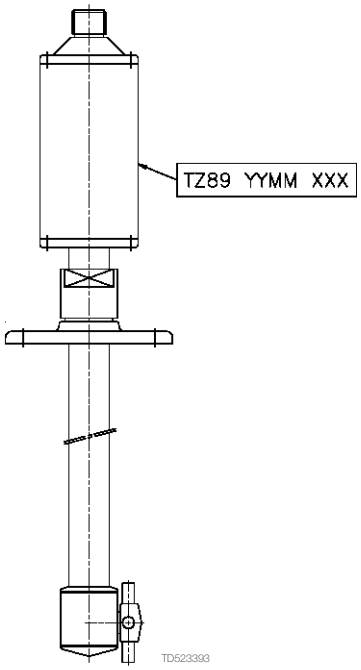
2.2 Warning signs

General warning:

3 Introduction

3.1 Introduction

This manual has been prepared as a guide for installing, operating and maintaining your Alfa Laval Toftejorg tank cleaning machine. Should you require further assistance, our Technical Sales Support department and worldwide net of sales offices will be pleased to help you. Please quote the type, article and serial numbers with all of your enquiries; this helps us to help you. The type and serial number are placed on the gear house of the tank cleaning machine.



Important information: Before installing the machine and setting it into operation, carefully read the General Safety and Installation Instructions (page9) and take all necessary precautions according to your application and local regulations.

NOTE
The illustrations and specifications contained in this manual were effective at the date of printing. However, as continuous improvements are our policy, we reserve the right to alter or modify any unit specification on any product without prior notice or any obligation

The English version of the instruction manual is the original manual. We make reservations in regard to possible mistranslations in language versions of the instruction manual. In case of doubt, the English version of the instruction manual applies.

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3.2 Intended Use

The end-user should verify:

- that the tank cleaning machine is in conformity with respect to tank, vessel or container size in which it is used.
- that the construction materials (both metallic and non-metallic) are compatibility with product, flushing media, cleaning media, temperatures and pressure under the intended use.

3.3 Patents and Trademarks

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

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3.4 Quality System

The Alfa Laval Toftejorg tank cleaning machines are produced according to Alfa Laval Kolding's ISO 9001 International Standard certified quality system.

4 Installation

The Alfa Laval Toftejorg TZ-89 is a media driven and media lubricated tank cleaning machine. No lubricating substances such as oil or grease are used. All materials are selected for contact with food.

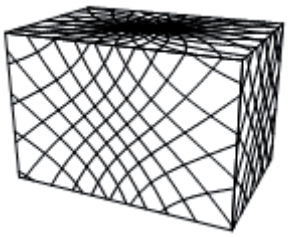
4.1 Functioning

The flow of the cleaning fluid passes through a guide and a turbine, which accordingly is set into rotation. Through a gear set and a driver tube, the turbine rotation is transmitted to the Cleaner Head.

The 90° Angle gear in the Cleaner Head transmits the rotation from the gear unit to a horizontal rotation of the Cleaner Head body and a vertical rotation of the Nozzle head.

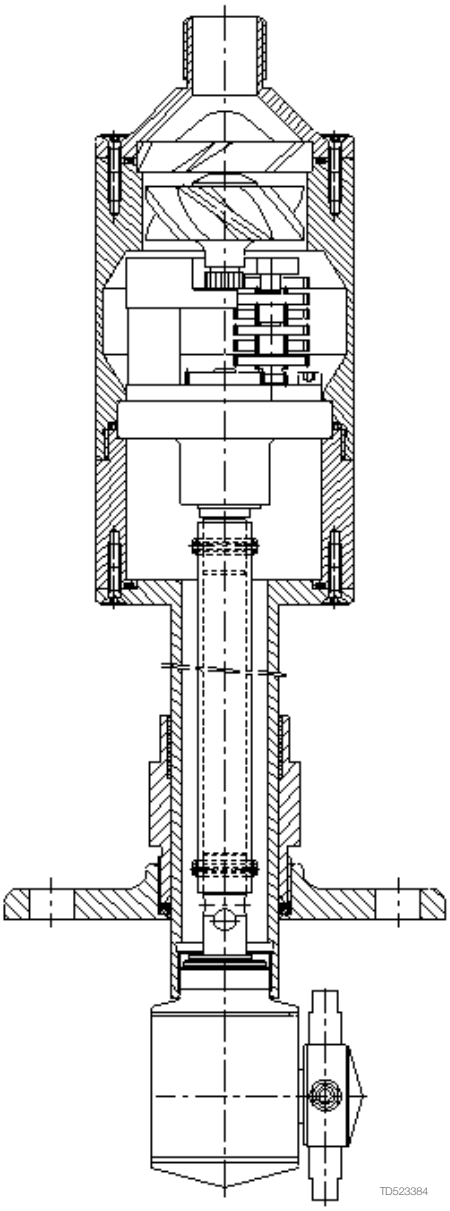
The combined motion of the Cleaner head and the Nozzle head ensures a fully indexed tank cleaning coverage. After 5 1/8 (for 2 nozzle version: 10 1/4) revolutions of the Nozzle head, corresponding to 4 7/8 (for 2 nozzle version: 9 3/4) revolutions of the cleaner head, a coarse cleaning pattern is laid out on the tank surface and the first cycle has been made. During the following cycles, this pattern is repeated 7 (for 2 nozzle version: 3) times, each of which is displaced and the pattern gradually becomes more dense. After 8 (for 2 nozzle version: 4) cycles - a total of 41 revolutions of the Nozzle head (39 revolutions of the Cleaner head), a complete cleaning pattern has been laid out, and the first pattern is repeated.

A complete cleaning pattern is illustrated below for a square tank with the machine placed in the centre:



First cycle

complete pattern



4.2 General Safety and Installation Instructions

The Alfa Laval Toftejorg TZ-89 is designed to be installed in a vertical upright position, however, the machine can operate horizontally or in any desired angle position.

The machine is equipped with a sliding and locking type flange connection, permitting to adjust the protruding of the cleaning head into the tank from 65 - 766 mm for the standard configuration. For the optional lengths, the max. protuding varies with the length.

It is recommended to install a filter with mesh size 250 µm (0,01") 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.

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 flushed to remove remains of welding electrodes, grinding dust, scale and other foreign matter.

Note: Do not try to turn Nozzle head by hand, since this will damage the Gear. Nozzle head can be turned by blowing air from an air pistol through the inlet connection.

Note: The machine shall be installed in accordance with national regulations for safety and other relevant regulations and standards. Precautions shall be made to prevent starting of the cleaning operation, while personnel are inside the tank or otherwise can be hit by jets from the nozzles. In EU-countries the complete system must fulfil the EU-machine Directive and depending of application, the EU-Pressure Equipment Directive and other relevant Directives and shall be CE-marked before it is set into operation.

Warning:

If the machine is used in potential explosive atmospheres, tapes or joint sealing compounds which are electrical insulators must not be used on threads or joints. 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 machine.

5 Operation

5.1 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: 3 - 6 bar (44 - 87 psi). Too high pressure will increase consumption of wear parts.

Cleaning Media
Use only cleaning fluids, which are compatible with Stainless Steel AISI 316/316L, SAF2205, FEP/Silicone, PEEK and PTFE. Please note that PEEK is not resistant to concentrated sulfuric acid. Normal detergents, moderate solutions of acids and alkalics are acceptable as well as a number of solvents at ambient temperature during cleaning. Use instead the special version with PEEK Guide and Turbine wheel. Aggressive chemicals, excessive concentrations of chemicals at elevated temperatures as well as certain dissolvents and hydrochlorides should be avoided. If you are in doubt, contact your local Alfa Laval sales office.

After Use Cleaning
Cleaning solutions must never be allowed to dry out in the machine, due to possible "salting out" or "scaling" of the cleaning ingredient. Therefore, the machine should always be flushed with fresh water after it has been used. The machine is self-draining.

6.1 Preventive Maintenance

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

Good maintenance is careful and regular attention!

The following recommended preventive maintenance is based on tank cleaning machines working in average conditions. 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.

Recommended Preventive Maintenance
Every 300 working hours

1. Disassemble machine as described on the following pages.
2. Clean material build-up and deposits from internal parts with Scotch-brite, S-Ultrafine, eventually chemical cleaner and fine abrasive cloth.
3. Special attention must be directed to the wear parts. To check which parts that are wear parts, please see Reference Lists of Parts, page 24 and 25. Replace worn or damaged parts.
4. When holding components in a vice, use lead or aluminium jaws or jaws made from other soft material. If it is necessary to knock any components, use a plastic hammer.
5. Never place parts directly on dirty floors or tables. Always place the parts on a piece of cloth, cardboard, etc.
6. Always perform all assembly/disassembly steps in the order described in this manual. Never assemble components without previous cleaning. Work in a well-lighted work area.

Note: Recommended tightening torque for all screws: 4-5 Nm.

6.2 Main Assembly

Important: The Cleaner head must never be unscrewed before the Gear unit has been taken out

Dismantling

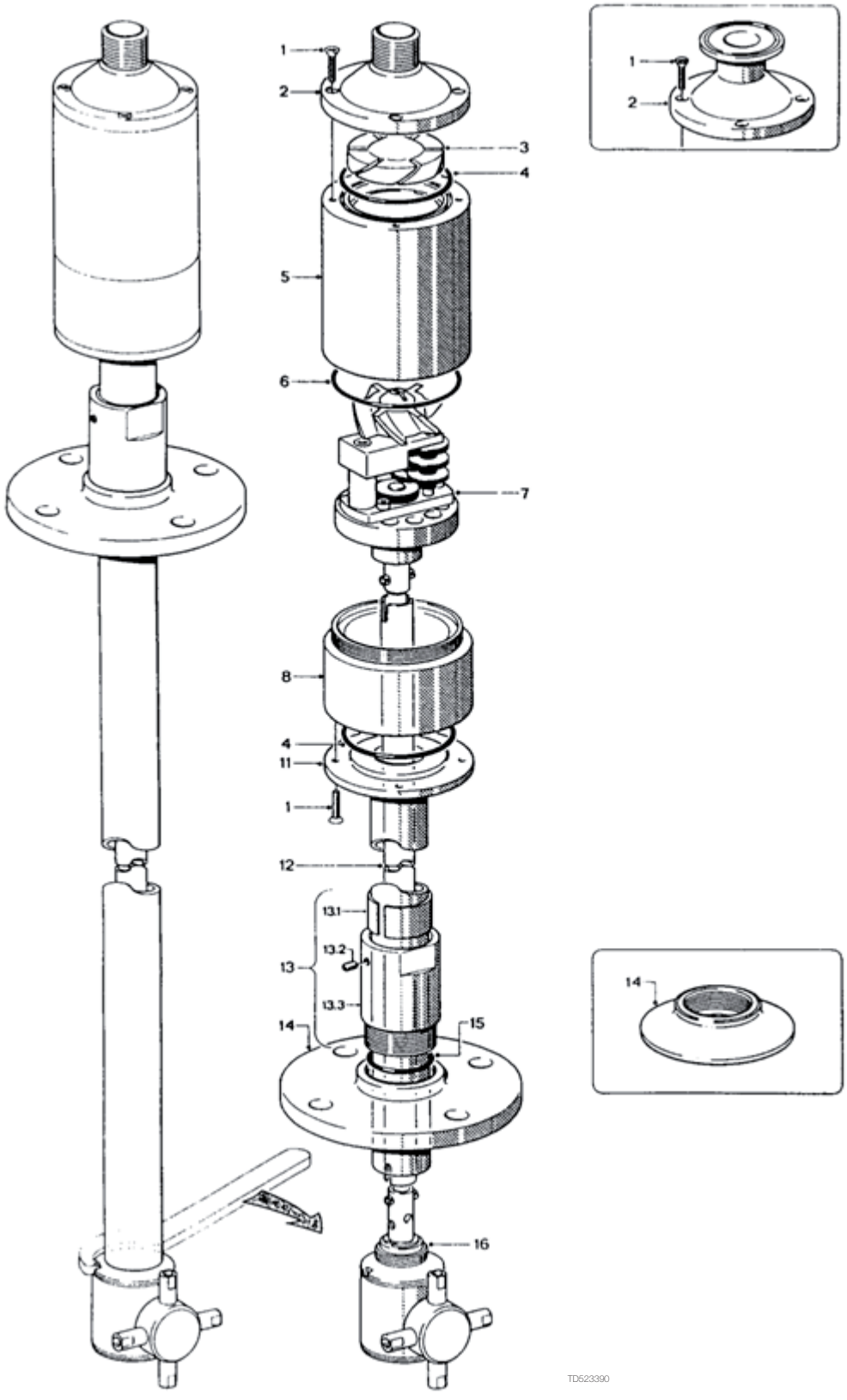
1. Remove Screws (pos. 1). Lift off Inlet connection (pos. 2)
2. Lift off Guide (pos. 3) and remove O-ring (pos. 4)
3. Unscrew Gear house (pos. 5). Lift off the complete Gear unit (pos. 7) and remove O-ring (pos. 6)
4. Lift out the Driver tube (pos. 12). Unscrew Cleaner head (pos. 16) with a hook-spanner
5. After unscrewing the Pointed screw (pos. 13.2), unscrew Tank Connection (pos. 14) by turning Flange guide (pos. 13) and holding (pos.14)
6. Remove (pos. 14), Flange guide (pos. 13) and O-ring (pos. 15)
7. Remove screws (pos. 1), take off Gear house lower part (pos. 8) and O-ring (pos. 4)

For normal inspection and repair only steps 4.-7. are necessary.

Reassembling

1. Place the O-ring (pos. 4) in the O-ring groove on Gear house lower part (pos. 8). Mount Gear house lower part on Centre tube (pos. 11)
2. Mount Screws (pos. 1) and tighten crosswise.
3. Slide on Flange guide (pos. 13), O-ring (pos. 15), and Tank connection (pos. 14) to Centre Tube (pos. 11). Connect Flange guide and Flange, and tighten. Tighten the Pointed screw (pos. 13.2).
4. Insert Driver tube (pos. 12) in Centre tube (pos. 11). Connect Driver tube and Cleaner head (pos. 16), screw on Cleaner head and tighten with hook spanner.
5. Mount Gear unit (pos. 7). Make sure that Tubular rivet meshes into slot in Driver tube.
6. Place O-ring (pos. 6), mount Gear house (pos. 5) and tighten O-ring (pos. 4), Guide (pos. 3) and Inlet Connection (pos. 2).
7. Mount Screws (pos. 1) and tighten crosswise.

Main Assembly



6.3 Gear Unit

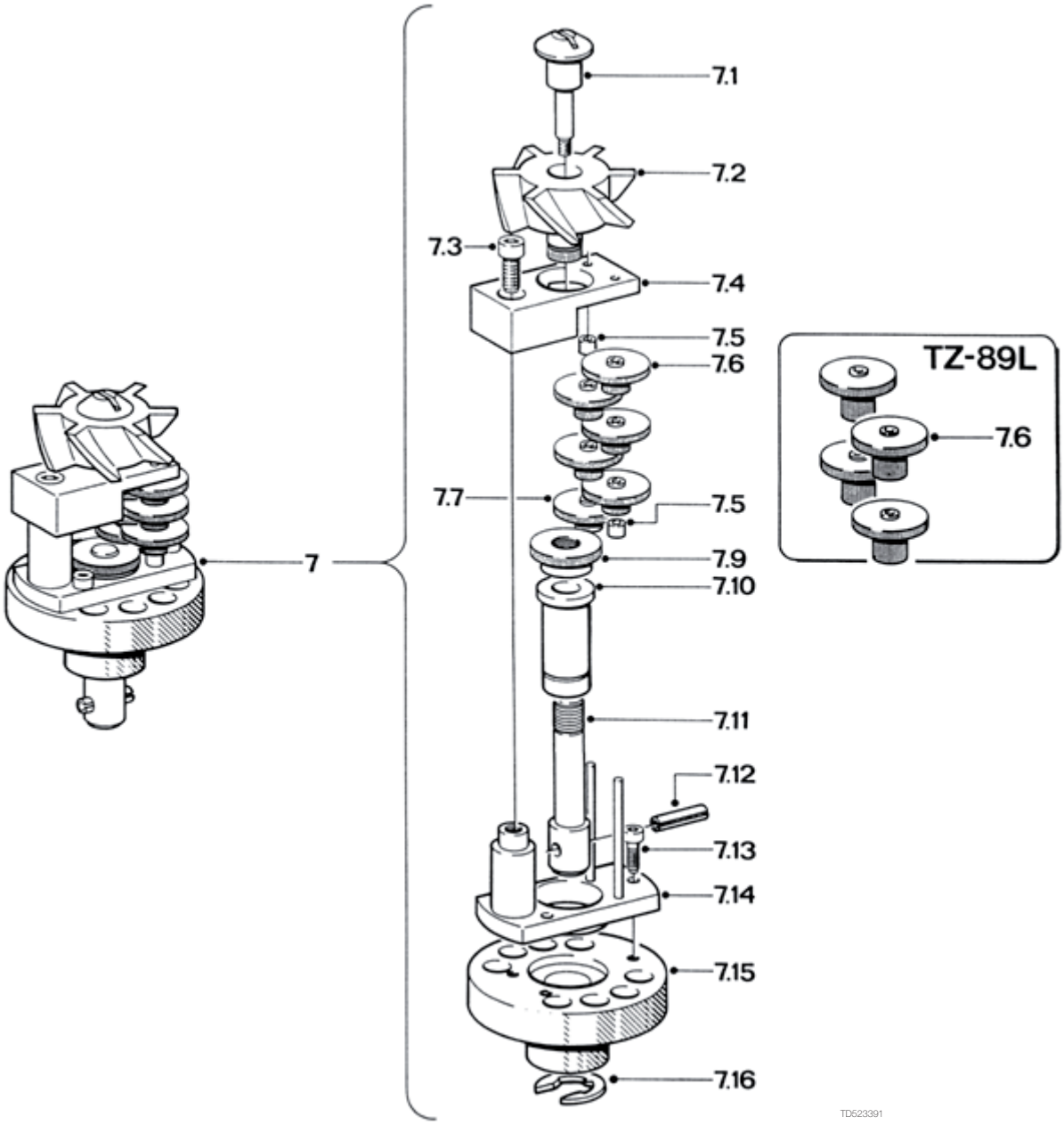
Dismantling

1. Screw off Turbine shaft (pos. 7.1) and take off Turbine wheel (pos. 7.2)
2. Unscrew Screw (pos. 7.3) and lift off Transverse (pos. 7.4)
3. Remove Distance bush (pos. 7.5), Gear wheel (pos. 7.6) and Gear wheel (pos. 7.7)
4. Unscrew the Screws (pos. 7.13) and lift off Gear frame (pos. 7.14)
5. Carefully knock out Tubular Rivet (pos. 7.12)
6. Take off the Circlip (pos. 7.16)
7. Push out Drive shaft (pos. 7.11) with Bearing bush (pos. 7.10) and Traction wheel (pos. 7.9)
8. Unscrew Traction wheel (pos. 7.9) Note: Left hand thread and remove Bearing bush (pos. 7.10)

Reassembling

1. Place Bearing bush (pos. 7.10) on Drive shaft (pos. 7.11) and screw on Traction wheel (pos. 7.9) (Left hand thread).
2. Mount the assembled Drive shaft in Bearing plate (pos. 7.15)
3. Mount the Circlip (pos. 7.16) on the Bearing bush (pos. 7.10)
4. Mount Tubular Rivet (pos. 7.12)
5. Mount Gear frame (pos. 7.14) and secure with Screws (pos. 7.13)
6. Mount Distance bush (pos. 7.5) on the one shaft and Stainless Steel Gear wheel (pos. 7.7) on the other (N/A in Alfa Laval Toftejorg TZ-89L). Mount Gear wheels (pos. 7.6)
7. Mount Transverse (pos. 7.4) and secure with Screw (pos. 7.3), while holding Transverse.
8. Mount Turbine wheel (pos. 7.2) and Turbine shaft (pos. 7.1). Tighten Turbine shaft with a screwdriver.

Gear Unit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7.1
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7.16
TZ-89L
7.6
TD523391

6.4 Cleaner Head

Dismantling

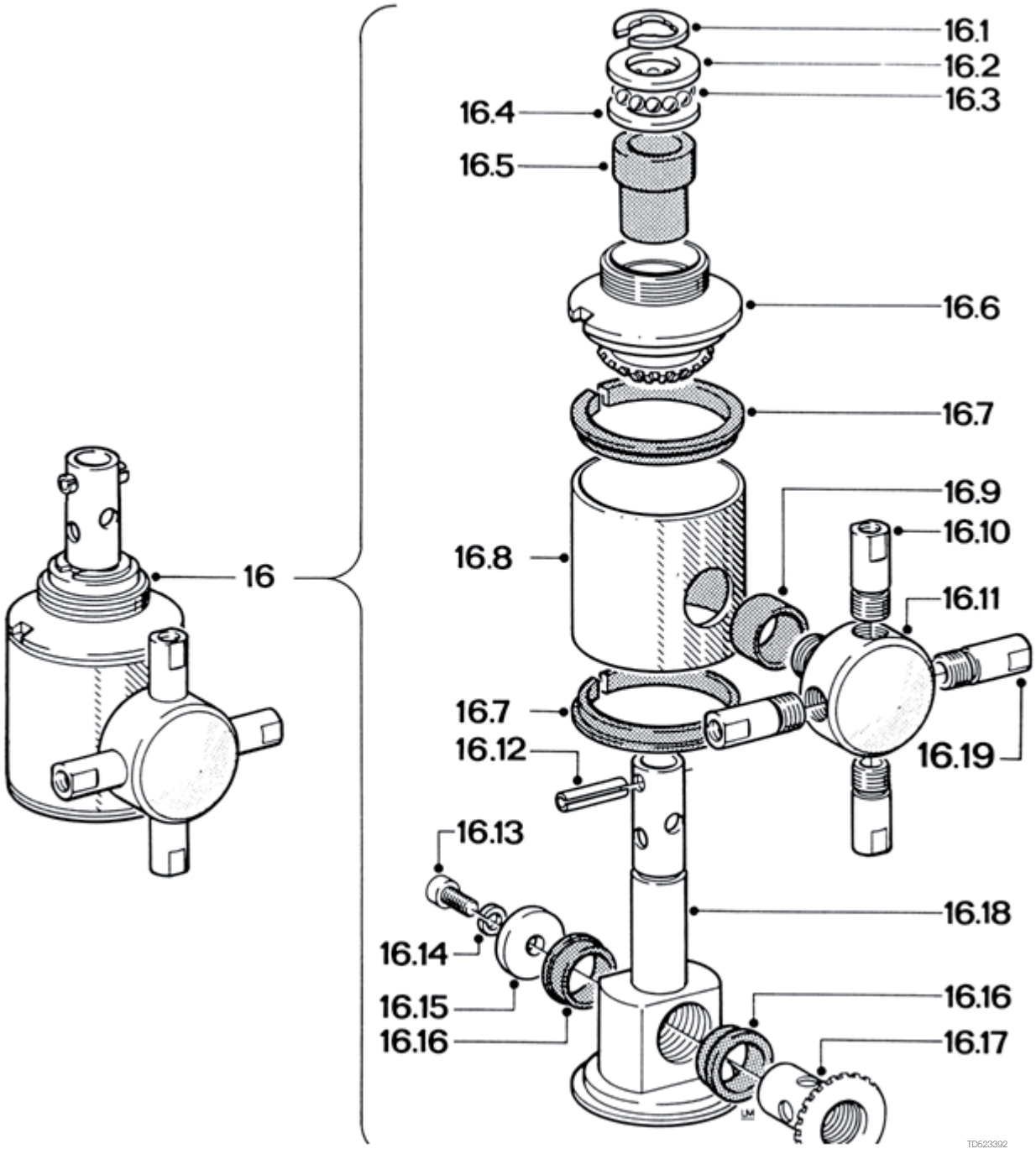
1. Knock out Tubular Rivet (pos. 16.12)
2. Unscrew the Nozzle head (pos. 16.11) with Nozzles (pos. 16.10). Insert a screwdriver inside the shaft for Cleaner Head (pos. 16.18) into hole in Rotor (pos. 16.17), turn the Nozzle Head (pos. 16.11) anti-clockwise.
3. Remove Circlip (pos. 16.1)
4. Remove Bearing washer (pos. 16.2). Take out the Balls (pos. 16.3)
5. Lift off Stator (pos. 16.6) including the Bearing washer (pos. 16.4) and the Bush for stator (pos. 16.5)
6. Withdraw the Bearing washer (pos. 16.4) and the Bush for stator (pos. 16.5)
7. Lift off Sleeve (pos. 16.8). Remove the two Bushes (pos. 16.7)
8. Unscrew Screw (pos. 16.13), remove Spring washer (pos. 16.14) and Washer (pos. 16.15). Insert a screwdriver inside the shaft for Cleaner head (pos. 16.18) into hole in Rotor (pos. 16.17) to avoid rotation of Rotor. Remove Rotor (pos. 16.17). If worn, replace the two Bushes (pos. 16.16)

Important The two Bushes are press fitted and held by barbs. They will be damaged by withdrawing. Only withdraw Bushes if they are to be replaced.

Reassembling

1. Mount the new Bushes (pos. 16.16) in shaft for Cleaner head (pos. 16.18)
2. Mount Rotor (pos. 16.17), Washer (pos. 16.15), Spring washer (pos. 16.14) and Screw (pos. 16.13) and tighten. To secure Rotor against rotation insert a screwdriver through shaft for Cleaner head into a hole in the rotor.
3. Mount the two Bushes (pos. 16.7)
4. Locate Sleeve on shaft for Cleaner head (pos. 16.18)
5. Mount the Bush for stator (pos. 16.5) and Bearing washer (pos. 16.4) in the Stator (pos. 16.6)
6. Mount Stator (pos. 16.6)
7. Place the Balls (pos. 16.3) in the Stator (pos. 16.6)
8. Mount Bearing washer (pos. 16.4) and Circlip (pos. 16.1)
9. Screw on Nozzle head (pos. 16.11) and tighten. To secure Rotor against rotation, insert a screwdriver through shaft for Cleaner head into a hole in the Rotor.
10. Mount Tubular Rivet (pos. 16.12).

Cleaner Head



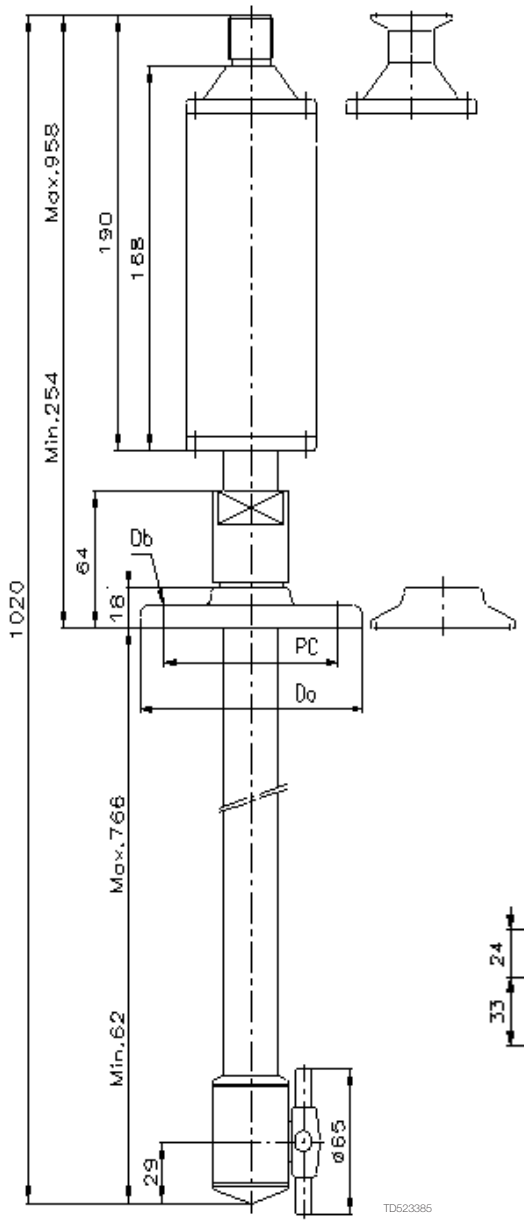
7 Trouble Shooting Guide

Slow rotation or failure of machine to rotate

Possible Causes	Action
No or insufficient liquid flow	a). Check if supply valve is fully open b). Check if inlet pressure to machine is correct c). Check nozzles for clogging d). Check supply line and filter for restriction/clogging. e). Dismount Connection nipple and Guide (see page 12) and check for clogging in Guide/Turbine wheel area. If large particles repeatedly get jammed in the machine, install filter or reduce mesh size of installed filter in supply line.
Foreign material or material build-up	Execute a total dismantling of the machine (page 12 to 16). Remove foreign material/ material build up. Special attention must be paid to the Cleaner head assembly and the Gear unit assembly. Cleaner head and Turbine wheel must rotate freely without any sign of restriction.
Mechanical defects	Execute a total dismantling of the machine. Special attention must be paid to the wear parts - to find out which parts are wear parts, see Reference Lists of Parts, pages 24 and 25. Damaged parts must be replaced.

Weight of machine:	7.0 kg (15,4 lb)
Working pressure:	2-7 bar (30-100 psi)
Materials:	AISI 316L, AISI 316, SAF2205 (UNS 31803), PEEK, PTFE, FEP/Silicone

Principal dimensions in mm



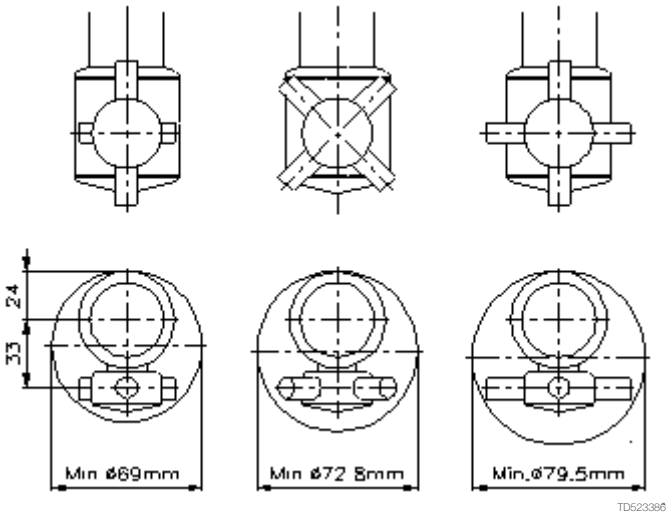
ns:

3/4” BSP
3/4” NPT
1” ISO2852
Do = 50.5

ns:

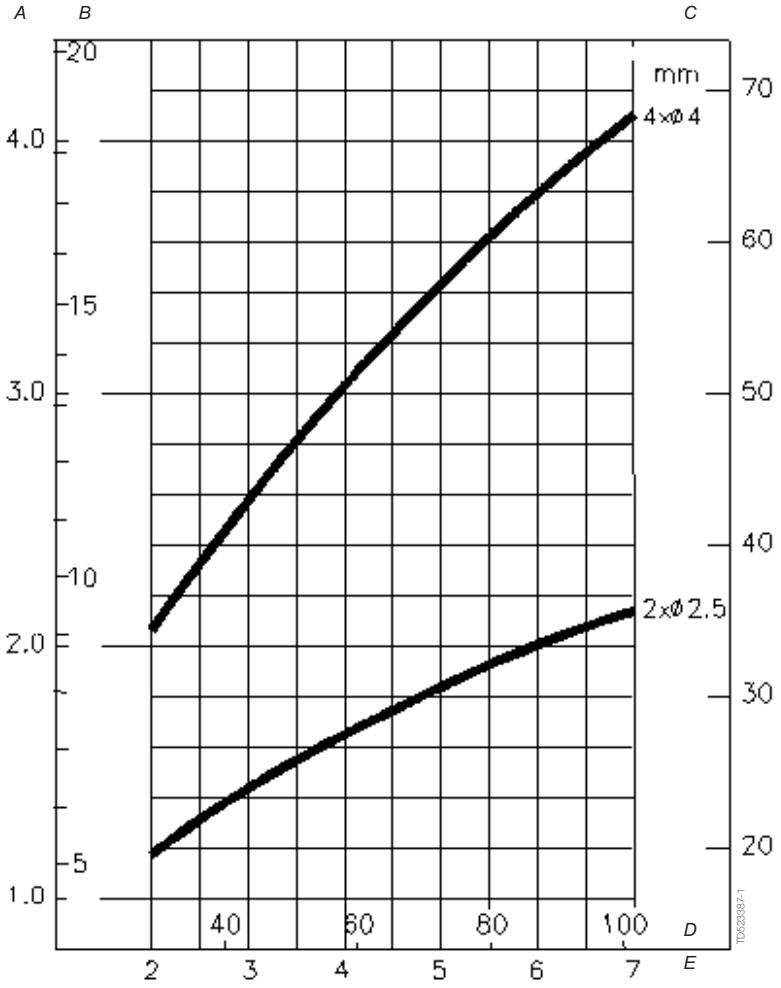
50ND6, DIN2501
Do = 140, PC = 110
Db = 4 x ø14
3” ANSI B16.5 1991
Do = 190.5, PC = 152.4
Db = 4 x ø19
3” ISO2852 Do = 91

eter of hole in tank for cleaning head to pass through:



8 Technical Data

Flow rate)



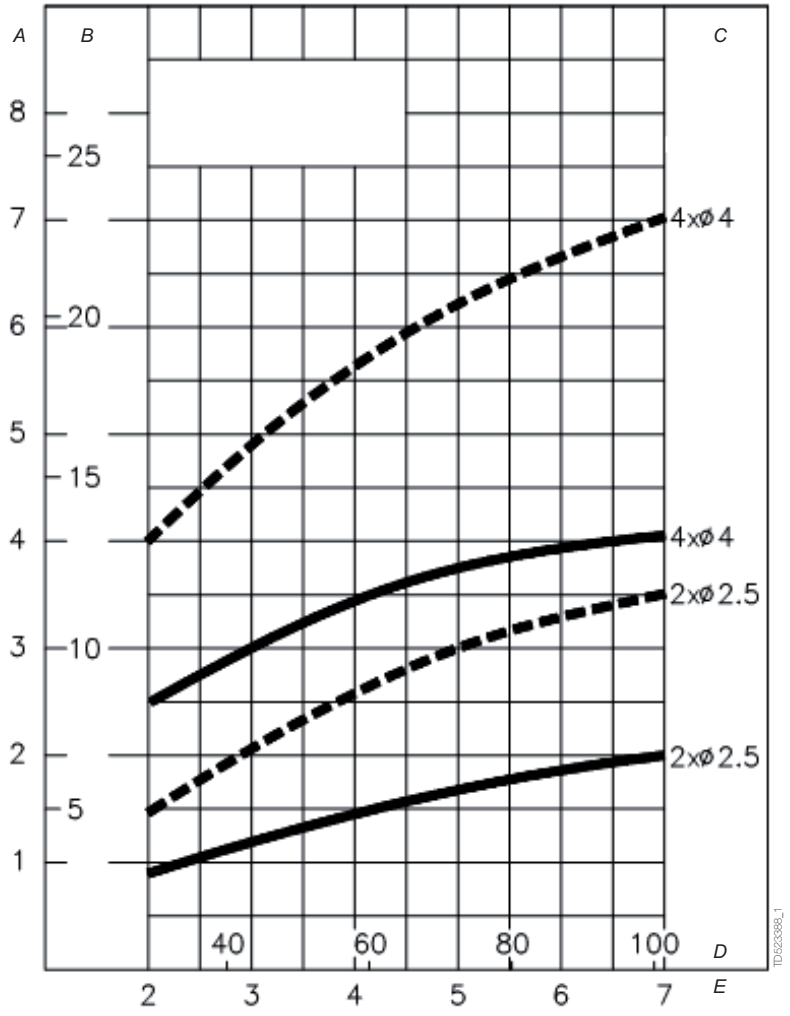
Inlet pressure

A: m3/h	B: USgpm	C: nozzle sizes	D: psi	E: bar

Throw length

Max. static

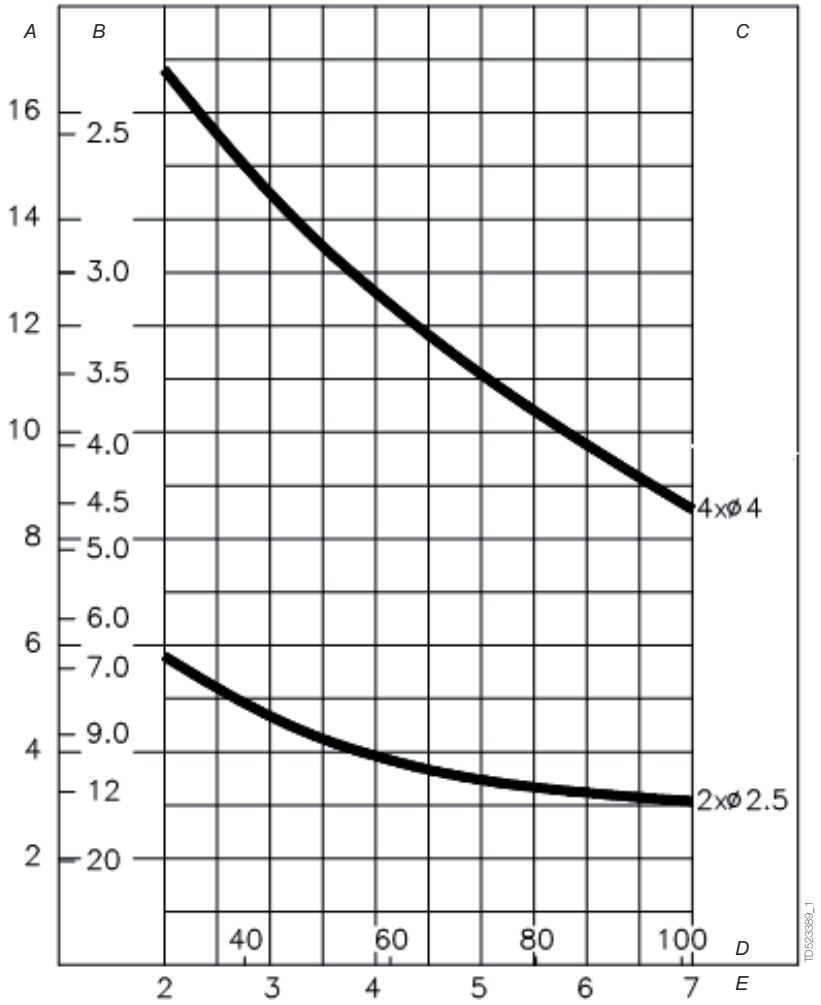
Effective



Inlet pressure

A: m	B: ft	C: nozzle sizes	D: psi	E: bar

Cleaning Time, f. complete Pattern (=8 cycles)



Inlet pressure

A: min.	B: RPM of machine body	C: nozzle sizes	D: psi	E: bar

9.1 Standard Configurations

Standard Configurations for Alfa Laval Toftejorg TZ-89

Machine	Article No.	Inlet Connection	Tank Connections	Length
TJ TZ-89	TE20A000	3/4" BSP	50ND6 DIN 2501	1020 mm
TJ TZ-89	TE20A003	1" Clamp	3" Clamp	1020 mm
TJ TZ-89L	TE20A004	3/4" BSP	50ND6 DIN 2501	1020 mm
TJ TZ-89L	TE20A006	1" Clamp	3" Clamp	1020 mm

TJ TZ-89 = Standard version 4x4 mm nozzles
TJ TZ-89L = "Low flow" 2x2.5 mm nozzles

Alfa Laval Toftejorg TZ-89L is designed for small tanks, cleaning with low flow, fast rotation and has only 2 nozzles.

Options

Machine	Article No.	Inlet Connection	Tank Connections	Length
TJ TZ-89	TE20A030	3/4" BSP	50ND6 DIN	350 mm
TJ TZ-89	TE20A031	3/4" BSP	50ND6 DIN	500 mm
TJ TZ-89	TE20A032	3/4" BSP	50ND6 DIN	750 mm
TJ TZ-89	TE20A033	3/4" BSP	50ND6 DIN	1270 mm
TJ TZ-89	TE20A034	3/4" BSP	50ND6 DIN	1500 mm
TJ TZ-89	TE20A002	3/4" NPT	3" ANSI	1020 mm
TJ TZ-89	TE20A040	3/4" NPT	3" ANSI	350 mm
TJ TZ-89	TE20A041	3/4" NPT	3" ANSI	500 mm
TJ TZ-89	TE20A042	3/4" NPT	3" ANSI	750 mm
TJ TZ-89	TE20A043	3/4" NPT	3" ANSI	1270 mm
TJ TZ-89	TE20A044	3/4" NPT	3" ANSI	1500 mm
TJ TZ-89	TE20A050	1" Clamp	3" Clamp	350 mm
TJ TZ-89	TE20A051	1" Clamp	3" Clamp	500 mm
TJ TZ-89	TE20A052	1" Clamp	3" Clamp	750 mm
TJ TZ-89	TE20A053	1" Clamp	3" Clamp	1270 mm
TJ TZ-89	TE20A054	1" Clamp	3" Clamp	1500 mm
TJ TZ-89L	TE20A060	3/4" BSP	50ND6 DIN	350 mm
TJ TZ-89L	TE20A061	3/4" BSP	50ND6 DIN	500 mm
TJ TZ-89L	TE20A062	3/4" BSP	50ND6 DIN	750 mm
TJ TZ-89L	TE20A063	3/4" BSP	50ND6 DIN	1270 mm
TJ TZ-89L	TE20A064	3/4" BSP	50ND6 DIN	1500 mm
TJ TZ-89L	TE20A005	3/4" NPT	3" ANSI	1270 mm
TJ TZ-89L	TE20A070	3/4" NPT	3" ANSI	350 mm
TJ TZ-89L	TE20A071	3/4" NPT	3" ANSI	500 mm
TJ TZ-89L	TE20A072	3/4" NPT	3" ANSI	750 mm
TJ TZ-89L	TE20A073	3/4" NPT	3" ANSI	1270 mm
TJ TZ-89L	TE20A074	3/4" NPT	3" ANSI	1500 mm
TJ TZ-89L	TE20A080	1" Clamp	3" Clamp	350 mm
TJ TZ-89L	TE20A081	1" Clamp	3" Clamp	500 mm
TJ TZ-89L	TE20A082	1" Clamp	3" Clamp	750 mm
TJ TZ-89L	TE20A083	1" Clamp	3" Clamp	1270 mm
TJ TZ-89L	TE20A084	1" Clamp	3" Clamp	1500 mm

Special version with PEEK Guide and Turbine Wheel: TE20AXXX-15.

10.1 Reference list of parts, TZ-89

Pos.		Ref. No.	No./Unit	Description	Remarks
1		TE51A050	4	Screw	Spare part
2	❑	TE20A505	1	Connection nipple 3/4" BSP	Spare part
	❑	TE20A506	1	Connection nipple 3/4" NPT	Spare part
	❑	TE20A500	1	1" Clamp connection	Spare part
3	❑	TE20A520	1	Guide	Spare part
	❑	TE20A52001	1	Guide, polymer	Spare part
4		TE51T034	2	O ring	Spare part
5			1	Gear house	*Note
6		TE51T036	1	O ring	Spare part
7		TE20A307	1	Gear unit complete	Spare part
7.1		TE20A530	1	Turbine shaft	Wear part
7.2	❑	TE20A525	1	Turbine wheel	Wear part
7	❑	TE20A52501	1	Turbine wheel, polymer	Wear part
7.3		TE51A102	1	Screw	Spare part
7.4		TE20A535	1	Traverse	Spare part
7.5		TE20A555	2	Distance bush	Spare part
7.6		TE20A562	5	Gear wheel, polymer	Wear part
7.7		TE20A310	1	Gear wheel	Wear part
7.9		TE20A566	1	Traction wheel	Wear part
7.10		TE20A577	1	Bearing bush	Wear part
7.11		TE20A571	1	Drive shaft	Wear part
7.12		TE51C050	1	Tubular rivet	Wear part
7.13		TE51A101	3	Screw	Spare part
7.14		TE20A305	1	Gear frame	Wear part
7.15		TE20A580	1	Bearing plate	Spare part
7.16		TE51C200		See pos. 16.1	Wear part
8		TE20A515	1	Gear house lower part	Spare part
11		TE20A587/592	1	Centre tube	Spare part
12		TE20A581/586	1	Driver tube	Spare part
13		TE20A320	1	Flange guide	Spare part
13.1		TE20A602	1	Split bushing	Spare part
13.2		TE51A011	1	Pointed screw	Spare part
14	❑	TE20A605	1	Flange 50	Spare part
	❑	TE20A607	1	Flange 3"	Spare part
	❑	TE20A608	1	3" Clamp flange	Spare part
15		TE51T022	1	O ring	Spare part
16		TE20A300	1	Cleaner head complete	Spare part
16.1		TE51C200	2	Circlip	Wear part
16.2		TE20A616	1	Bearing washer, upper	Wear part
16.3		TE1262	12	Ball	Wear part
16.4		TE20A617	1	Bearing washer, lower	Wear part
16.5		TE20A623	1	Bush for stator	Wear part
16.6		TE20A626	1	Stator	Spare part
16.7		TE20A630	2	Bush	Wear part
16.8		TE20A635	1	Sleeve	Spare part
16.9		TE20A622	1	Bush	Wear part
16.10		TE20A655	4	Nozzle	Spare part
16.11		TE20A650	1	Nozzle head	Spare part
16.12		TE51C050	1	Tubular rivet	Wear part
16.13		TE51A100	1	Screw	Wear part
16.14		TE156	1	Spring washer	Wear part
16.15		TE20A640	1	Washer	Wear part
16.16		TE20A621	2	Collar bush	Wear part
16.17		TE20A645	1	Rotor	Wear part
16.18		TE20A610	1	Shaft for Cleaner head	Wear part

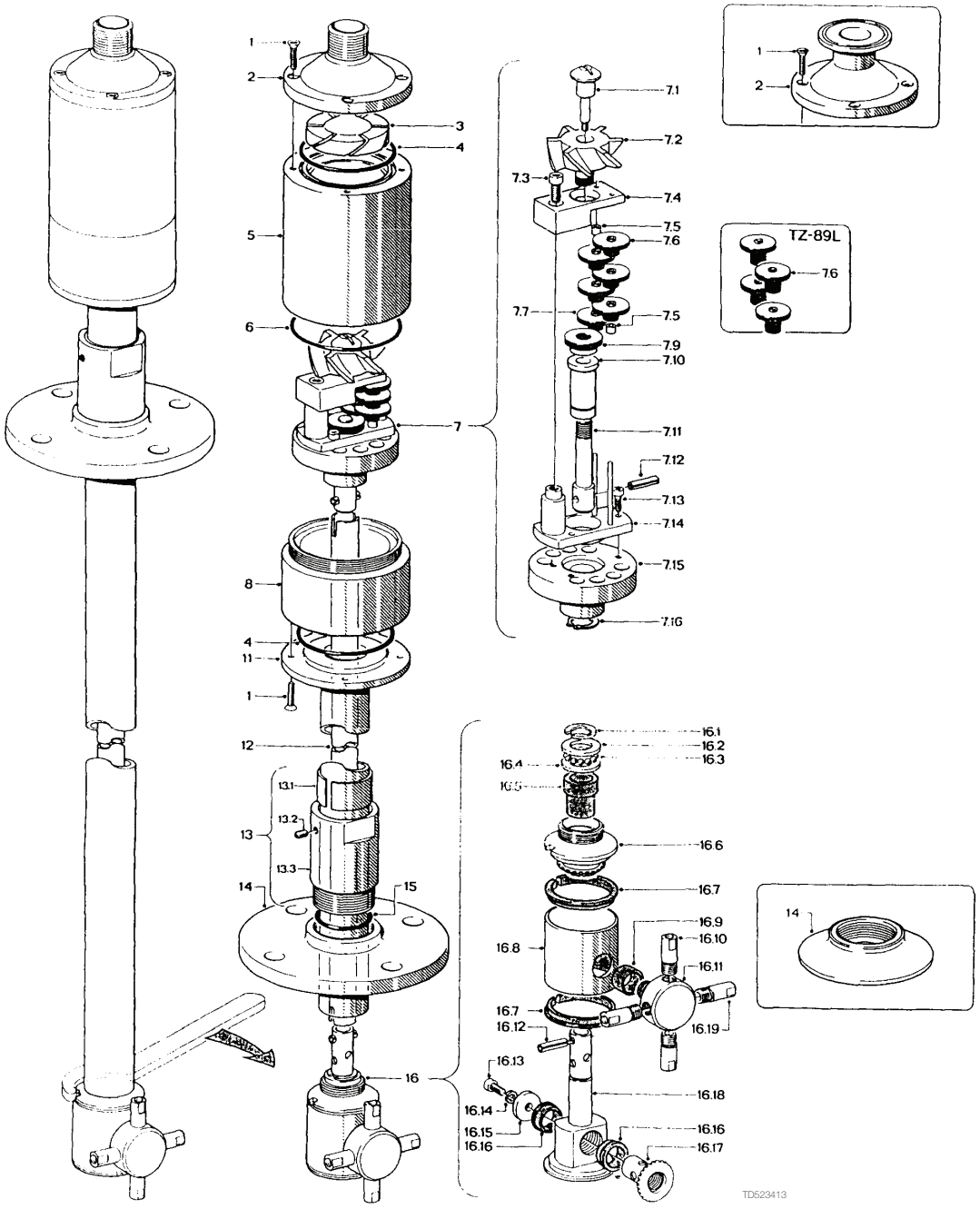
❑ Configuration according to delivery note/order confirmation.
Please note that some of the parts are in PEEK, which is not resistant to concentrated sulfuric acid.
*Note: Pos. 5 is not sold as single spare part component but only as part of a machine maintenance/repair order. For further information please contact Alfa Laval Customer Support.

10.2 Reference list of parts, TZ-89LF

Pos.		Ref. No.	No./Unit	Description	Remarks
1		TE51A050	4	Screw	Spare part
2	❑	TE20A505	1	Connection nipple 3/4" BSP	Spare part
	❑	TE20A506	1	Connection nipple 3/4" NPT	Spare part
	❑	TE20A500	1	1" Clamp connection	Spare part
3	❑	TE20A520	1	Guide	Spare part
	❑	TE20A52001	1	Guide, polymer	Spare part
4		TE51T034	2	O ring	Spare part
5			1	Gear house	*Note
6		TE51T036	1	O ring	Spare part
7		TE20A308	1	Gear unit complete	Spare part
7.1		TE20A530	1	Turbine shaft	Wear part
7.2	❑	TE20A525	1	Turbine wheel	Wear part
	❑	TE20A52501	1	Turbine wheel, polymer	Wear part
7.3		TE51A102	1	Screw	Spare part
7.4		TE20A535	1	Traverse	Spare part
7.5		TE20A555	2	Distance bush	Spare part
7.6		TE20A559	4	Gear wheel, polymer	Wear part
7.9		TE20A566	1	Traction wheel	Wear part
7.10		TE20A577	1	Bearing bush	Wear part
7.11		TE20A571	1	Drive shaft	Wear part
7.12		TE51C050	1	Tubular rivet	Wear part
7.13		TE51A101	3	Screw	Spare part
7.14		TE20A305	1	Gear frame	Wear part
7.15		TE20A580	1	Bearing plate	Spare part
7.16		TE51C200		See pos. 16.1	Wear part
8		TE20A515		Gear house lower part	Spare part
11		TE20A587/592	1	Centre tube	Spare part
12		TE20A581/586	1	Driver tube	Spare part
13		TE20A320	1	Flange guide	Spare part
13.1		TE20A602	1	Split bushing	Spare part
13.2		TE51A011	1	Pointed screw	Spare part
14	❑	TE20A605	1	Flange 50	Spare part
	❑	TE20A607	1	Flange 3"	Spare part
	❑	TE20A608	1	3" Clamp flange	Spare part
15		TE51T022	1	O ring	Spare part
16		TE20A301	1	Cleaner head complete	Spare part
16.1		TE51C200	2	Circlip	Wear part
16.2		TE20A616	1	Bearing washer, upper	Wear part
16.3		TE126 2	12	Ball	Wear part
16.4		TE20A617	1	Bearing washer, lower	Wear part
16.5		TE20A623	1	Bush for stator	Wear part
16.6		TE20A626	1	Stator	Spare part
16.7		TE20A630	2	Bush	Wear part
16.8		TE20A635	1	Sleeve	Spare part
16.9		TE20A622	1	Bush	Wear part
16.10		TE20A652	2	Nozzle	Spare part
16.11		TE20A650	1	Nozzle head	Spare part
16.12		TE51C050	1	Tubular rivet	Wear part
16.13		TE51A100	1	Screw	Wear part
16.14		TE156	1	Spring washer	Wear part
16.15		TE20A640	1	Washer	Wear part
16.16		TE20A621	2	Collar bush	Wear part
16.17		TE20A645	1	Rotor	Wear part
16.18		TE20A610	1	Shaft for Cleaner head	Wear part
16.19		TE20A660	2	Plug	Spare part

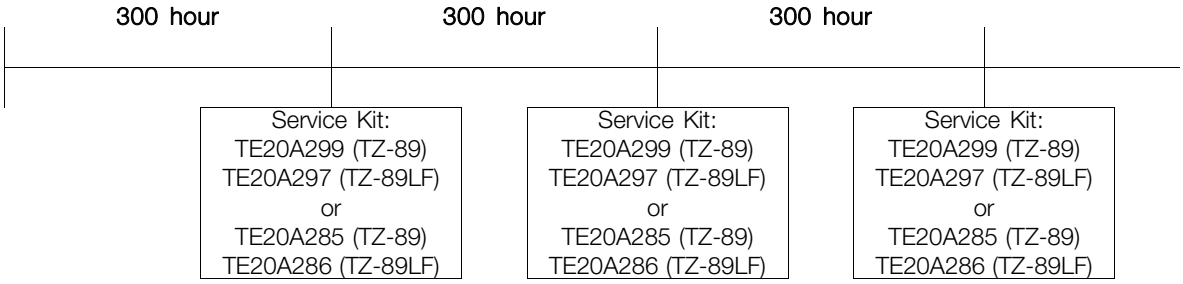
❑ Configuration according to delivery note/order confirmation.
Please note that some of the parts are in PEEK, which is not resistant to concentrated sulfuric acid.
*Note: Pos. 5 is not sold as single spare part component but only as part of a machine maintenance/repair order. For further information please contact Alfa Laval Customer Support.

10.3 Exploded view drawing, TZ-89 & TZ-89LF



10.4 Spare part kits, service kits and Tools

Service intervals



Spare Part Kit for Alfa Laval Toftejorg TZ-89, Article No. TE20A299

Part No.	Description	No.	Pos. No.
TE51T034	O-ring	2 pcs.	4
TE51T036	O-ring	1 pcs.	6
TE51T022	O-ring	1 pcs.	15
TE20A562	Gear wheel, polymer	5 pcs.	7.6
TE20A616	Bearing washer, upper	1 pcs.	16.2
TE20A617	Bearing washer, lower	1 pcs.	16.4

Spare Part Kit for Alfa Laval Toftejorg TZ-89LF, Article No. TE20A297

Part No.	Description	No.	Pos. No.
TE51T034	O-ring	2 pcs.	4
TE51T036	O-ring	1 pcs.	6
TE51T022	O-ring	1 pcs.	15
TE20A559	Gear wheel, polymer	4 pcs.	7.6
TE20A616	Bearing washer, upper	1 pcs.	16.2
TE20A617	Bearing washer, lower	1 pcs.	16.4

Service Kit for Alfa Laval Toftejorg TZ-89, Article No. TE20A285

Part No.	Description	No.	Pos. No.
TE1262	Ball for Thrust bearing	12 pcs.	16.3
TE20A562	Gear wheel	5 pcs.	7.6
TE20A616	Bearing washer Upper	1 pcs.	16.2
TE20A617	Bearing washer lower	1 pcs.	16.4
TE20A621	Collar bush	2 pcs.	16.16
TE20A622	Bush	1 pcs.	16.9
TE20A623	Bush for Stator	1 pcs.	16.5
TE20A630	Bush	2 pcs.	16.7
TE51A050	Screw	8 pcs	1
TE51T034	O-ring	2 pcs.	4

10 Parts Lists, Service Kits and Tools

Service Kit for Alfa Laval Toftejorg TZ-89LF, Article No. TE20A286

Part No.	Description	No.	Pos. No.
TE1262	Ball for Thrust bearing	12 pcs.	16.3
TE20A559	Gear wheel	4 pcs.	7.6
TE20A616	Bearing washer Upper	1 pcs.	16.2
TE20A617	Bearing washer Upper	1 pcs.	16.4
TE20A621	Collar bush	2 pcs.	16.16
TE20A622	Bush	1 pcs.	16.9
TE20A623	Bush for Stator	1 pcs.	16.5
TE51A630	Bush	2 pcs	16.7
TE51A050	Screw	8 pcs.	1
TE51T034	O-ring	2 pcs.	4

Tools for Alfa Laval Toftejorg TZ-89

Part No.	Descripton
TE81B039	Hook-spanner
	Spanner
	Hex key for Allen Screw

11.1 Service and Repair

Upon every return of a product, no matter if for modifications or repair, it is necessary to contact your local Alfa Laval office to guarantee a quick execution of your request.

You will receive instructions regarding the return procedure from your local Alfa Laval office. Be sure to follow the instructions closely.

11.2 How to Order Spare Parts

On the Cross Sectional Drawings as well as on all instruction drawings, the individual parts have a pos. No., which is the same on all drawings. From the pos. No. the part is easily identified in the Reference Lists of Parts, pages 24 and 25.

Individual parts should always be ordered from the Reference Lists of Parts, pages 24 and 25. Ref. No. and description should be clearly stated.

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

11.3 How to contact Alfa Laval Tank Equipment

For further information please feel free to contact:

Alfa Laval Tank Equipment
Alfa Laval Kolding A/S
31, Albuen - DK 6000 Kolding - Denmark
Registration number: 30938011
Tel switchboard: +45 79 32 22 00 - Fax switchboard: +45 79 32 25 80
www.toftejorg.com, www.alfalaval.dk - info.dk@alfalaval.com

Contact details for all countries are continually updated on our websites

How to contact Alfa Laval
Contact details for all countries are
continually updated on our website.
Please visit www.alfalaval.com to access the information directly.

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