

OPERATING / INSTALLATION INSTRUCTIONS

(Translation)



Container cleaning device Spate cleaner TANKO®SF40



3-A Standard 78-03

Armaturenwerk Hötensleben GmbH

Schulstr. 5-6

39393 Hötensleben, Germany

Telephone: +49 39405 92-0

Fax: +49 39405 92-111

E-mail: info@awh.eu

Homepage: <http://www.awh.eu>

ID no.: 664BASF3A00EN- 2019/08 Rev. 0

NOTE



These instructions are an essential part of the device and must be available to operating and maintenance personnel at all times throughout its entire life cycle. The safety precautions they contain must be observed.

If the device is resold, the instructions must always be transferred to the new owner.

Translation

The operating instructions must be written in an official European Community language acceptable to the manufacturer of the machinery in which the partly completed machinery will be assembled, or to his authorized representative. If any discrepancies arise in the translated text, the original operating instructions (German) are to be consulted for clarification, or the manufacturer is to be contacted.

These instructions and all illustrations contained therein are protected by copyright. Any use beyond the confines of copyright law is not permissible and liable to prosecution without the prior written approval of the publisher. This applies in particular to reproductions, translations, microfilming, and storage and processing in electronic systems.

Contents

List of Pictures	III
List of Tables	III
Abbreviations and Units	IV
1 Introduction	1
1.1 Means of Presentation	1
1.1.1 Explanation of Signal Words	1
1.1.2 Explanation of the Warnings	2
1.1.3 Pictograms and Symbols	3
1.2 Warranty and Liability	4
1.3 Product Names and Trademarks	4
1.4 Related Documents	4
2 Safety	5
2.1 Intended Use	6
2.2 Spare Parts, Replacement Parts and Accessories	8
2.3 Duties of the Operating Company	9
2.4 Requirements for Personnel	11
2.4.1 Personal Protective Equipment	12
2.5 Identification Marking	13
2.5.1 Type Designation	13
2.5.2 Type Plate	13
3 Construction and Function	14
3.1 Construction	14
3.2 General Function Description	14
3.3 Technical Data	14
3.4 Cleaning media	16
4 Transportation and Storage	19
4.1 Packaging	20
4.2 Transportation	20
4.3 Storage	21
5 Installation	22
5.1 Safety Notes for Installation	22
5.2 Installation	24
5.2.1 Interfaces	25
5.2.2 Installation Position	26
5.2.3 Installing the Device	27
6 Commissioning	29
6.1 Safety Notes for Commissioning	29
6.2 Functional Check / Trial Run	31
6.3 Switch-on Procedure	32
6.4 Operation	33

7 Maintenance	36
7.1 Safety Notes for Maintenance	36
7.2 Switch-off Procedure	38
7.3 Removal	39
7.3.1 Removing the Device	39
7.4 Maintenance	40
7.4.1 Maintenance Intervals	41
7.4.2 Tools and Tightening Torque Values	44
7.4.3 Disassembling the Device	45
7.4.4 Assembling the Device	45
7.4.5 Notes on Cleaning	46
7.5 Spare Parts and Customer Service	48
7.5.1 Spare Parts	49
8 Faults	50
8.1 Safety Notes for Fault Clearance	50
8.2 Faults and Remedial Action	51
8.3 How to Act in Case of an Emergency	52
9 Decommissioning	53
9.1 Disposal	53
Index	55
Appendices	57
Notes	61

List of Pictures

Figure 2.5-1: Type Plate Position.....	13
Picture 3.1-1: Overview	14
Picture 3.2-1: Spray Pattern	14
Figure 3.3-1: Diagram - Consumption Data	16
Picture 5.2-1: Device Interfaces.....	25
Picture 5.2-2: Dimensions	26
Picture 5.2-3: Clipon Installation.....	27
Picture 5.2-4: Weldon Installation.....	28
Picture 7.4-1: Maintenance Points.....	42
Picture 7.4-2: Disassembling/assembling the Device.....	45
Picture 7.5-1: Internal Construction.....	49

List of Tables

Table 1.1-1: Overview of Signal Words	1
Table 3.3-1: Technical Data of the Device.....	15
Table 5.2-1: Assignment of the Connections.....	25
Table 5.2-2: Assignments of Dimensions	26
Table 7.4-1: Inspection and Maintenance Work	43
Table 7.5-1: Bill of Material	49
Table 7.5-2: Assignment of the Individual Items.....	49
Table 8.2-1: Operating Faults – Cause and Remedy	51

Abbreviations and Units

Abbreviations

Pic.	Picture
AISI	American Iron and Steel Institute
ASME	American Society of Mechanical Engineers
ATEX	AT mosphère EX plosible; Synonym for the ATEX Directive of the European Union; comprises measures for explosion protection for explosive atmospheres
AWH	Armaturenwerk Hötensleben GmbH
BetrSichV	Betriebssicherheitsverordnung (German industrial safety ordinance); ordinance concerning health and safety when using work equipment; German implementation of Directive 2009/104/EC of the European Parliament concerning the minimum safety and health requirements for the use of work equipment by workers at work
or	Or
approx.	Approximately
DN	DIN-Nennweite (DIN nominal width)
DIN	Deutsches Institut für Normung e.V.; is a national standards organization in the Federal Republic of Germany; The standards of this organization are referred to as DIN standards.
DP	Downpipe In the context of these instructions, this colloquial term describes a line or connection in cleaning technology between a media connection [MC] and a cleaning head or cleaning device. This line is generally used to establish the process connection [PC] for connection of the device to the container.
ES	European Standard
EPDM	ethylene-propylene-diene rubber
if necessary	if necessary
ISO	International Organization for Standardization
$L_{EX,8h}$	Level of daily exposure to sound, e.g. maximum permissible exposure value of 85 dB(A)
L_{PA}	Emission sound pressure level at the workplace
MC	Media connection In the context of these instructions, this colloquial term describes the interface used in cleaning technology for supplying cleaning agent from the supply line to the device.
max.	Maximum
min.	Minimum
TECAPEEK	Trade name for polyetheretherketone and registered trademark of the company ENSINGER GmbH, 71154, Nufringen, DE
Ra	Roughness (surface)
SI	Système international d'unités; the most widely used international system of units for physical variables
Tab.	Table

V_{eff} effective vibration velocity

Units of Measure



The following indicated factors are for orientation and conversion of the Si units to common units of measures for the American market.

bar	Unit of measure for pressure p [bar] All pressure [bar] specifications stand for positive pressure [bar] [bar _g] unless expressly described otherwise. Conversion: 1 bar = 14.50376 psi [pound-force per square inch]
°C	Unit of measure for temperature T [degrees Celsius] Conversion from Celsius to Fahrenheit: °C × 1.8 + 32 = °F [degrees Fahrenheit]
min	Unit of measure for time t [minute]
h	Unit of measure for time t [hour]
kg	Unit of measure for mass m [kilograms] Conversion: 1 kg = 2.20462 ... lb [Latin libra; pound]
l/min	Unit of measure for volume flow rate V [liters per minute] Conversion: 1 l/min = 0.06 m ³ /h [cubic meters per hour] 1 l/min = 0.26417 ... gpm (US) [gallons per minute (US)] 1 m ³ /h = 4.40286 ... gpm (US) [gallons per minute (US)]
lx	Unit of measure for illuminance E _v [Lux]
m	Unit of measure for length l [meters] Conversion: 1 m = 3.28083... ft [feet]
mm	Unit of measure for length l [millimeters] Conversion: 1 mm = 1 / 25.40005 in [inches] = 0.03937 in [inches]
Nm	Unit of measure for moment/torque M [newton meters] Conversion: 1 Nm = 0.737 lbft [pound-force + feet]
rpm	Unit of measure for speed n [revolutions per minute] Conversion: 1 rpm = 1 revolution per minute
µm	Unit of measure for length l [micrometers]

1 Introduction

These operating/installation instructions (referred to hereinafter as the instructions) are a component part of the device. They provide you with all the information required for smooth operation of the TANKO®SF spate cleaner (referred to hereinafter as the device).

The instructions must be read, understood, and applied by all persons employed to carry out installation and assembly, maintenance, cleaning and troubleshooting on the device. This applies in particular to the listed safety notes.

After studying the instructions, you will be able to

- assemble, install and operate the device safely,
- clean and service the device correctly and
- take the correct measures if a fault occurs.

In addition to these instructions, generally valid, statutory and other binding regulations in regard of the prevention of accidents and in regard of environmental protection in the country of use must also be observed.

The instructions must be kept at the location of use of the device so that it is available in legible condition at all times. If the device is resold, the instructions must always be transferred to the new owner.

Download the instructions if necessary from the <http://www.awh.eu/de/downloads> Internet page.

1.1 Means of Presentation

1.1.1 Explanation of Signal Words

The warnings are introduced with a signal word which describes the extent of the hazard. The meaning and their classification in case of hazardous situations are explained in the following overview.

Signal Word	Meaning	Consequences of Failure to Observe
⚠ DANGER	Hazard with a high level of risk	Death or severe physical injuries
⚠ WARNING	Hazard with a medium level of risk	Death or severe physical injuries
⚠ CAUTION	Hazard with a low level of risk	Minor or moderate physical injuries
NOTE	Hazard with a low risk	Risk of material damage

Table 1.1-1: Overview of Signal Words

1.1.2 Explanation of the Warnings

Section-related Warnings

The section-related warnings do not just apply for one particular action but rather for all actions within a section. In addition, the pictograms and symbols indicate a general or specific danger.



DANGER

This warning warns of a hazard with a high level of risk.

Failure to observe it can lead to death or severe physical injury.

- Measure(s) to prevent the danger



WARNING

This warning warns of a hazard with a medium level of risk!

Failure to observe it can lead to death or severe physical injury.

- Measure(s) to prevent the danger



CAUTION

This warning warns of a hazard with a low level of risk!

Failure to observe it can lead to minor or moderate injury.

- Measure(s) to prevent the danger

NOTE

This warning warns of a hazard with a minor level of risk!

Failure to observe it can lead to material damage.

- Measure(s) to prevent the danger

Embedded Warnings

The embedded warnings apply to specific actions and are integrated directly into the action before the specific action step.

The embedded warnings are structured as follows.

⚠ SIGNAL WORD Type and source of danger

Possible consequences in case of failure to observe

- Measure(s) to prevent the danger

Further Means of Presentation



The “Info” symbol provides useful information, additional tips and recommendations.

- Texts which follow this mark, are bulleted lists.
 - Texts which follow this mark, describe measures for prevention of the danger.
 - 1. Texts which follow this numbering, describe the first step of a task which is followed by further numbered steps which have to be performed in the specified order.
 - (1) Numbers in brackets reflect the item numbers in illustrations or parts lists.
 - “ “ Texts in quotation marks are (direct) quotes from documents (e.g. directives or standards) or words, word groups and parts of a text with a special meaning.
- Important, significant information is shown with additional **bold type**, *in italics* or CAPITAL LETTERS for emphasis of individual words or phrases.

1.1.3 Pictograms and Symbols

The following pictograms and symbols are used as a supplementary measure in these instructions to clarify the sources of dangers and measures. They can appear at all levels of danger.



Warning about electrical voltage



Warning about explosive atmosphere



Warning about hand injuries



Warning about a hot surface



Warning about corrosive substances



Warning about substances which are a water hazard



Unauthorized access prohibited



Wear protective work clothing



Wear safety shoes



Wear protective gloves



Wear safety goggles



Wear a hard hat



Wear hearing protection



Wear a welding mask



Isolate from voltage before work



Obey instructions



Protective grounding connection required



Secure against power being switched back on



Return for recycling



78-03
3-A Sanitary
Standard 78-03

1.2 Warranty and Liability

The commitments agreed in the contract of supply and delivery, the general terms and conditions and the terms of delivery of Armaturenwerk Höstensleben GmbH (referred to hereinafter as AWH) and the statutory regulations valid at the time the contract was concluded shall apply.

Warranty and liability claims in the case of personal injury and damage to property shall be excluded in particular if these can be attributed to one or more of the following causes:

- Improper or incorrect use of the device,
- Improper assembly and installation, commissioning, operation and maintenance of the device,
- Failure to observe the instructions in the instructions regarding assembly and installation, commissioning, operation and maintenance of the device,
- Constructional modifications to the device (conversions or other modifications to the device must not be made without previous written approval from AWH. In case of infringement, the device will lose its EC conformity and the operating authorization),
- Use of spare parts that do not meet the specified technical requirements,
- Improperly performed repairs,
- Disasters, the effects of foreign objects and force majeure.

Disclaimer

AWH reserves the right to make alterations to this document at any time and without prior notice. AWH provides no guarantee (neither expressed nor implied) with regard to all information in this document, including but not limited to the implied warranty of merchantability and suitability for a particular purpose. Furthermore, AWH does not guarantee the correctness or completeness of information, text, graphics or other parts in this document.

1.3 Product Names and Trademarks

The product names and trademarks included in these instructions are brands or registered trademarks of the respective owners.

TANKO® and AWH® are registered trademarks of Armaturenwerk Höstensleben GmbH.

1.4 Related Documents

The following documents may contain supplementary information for these instructions:

- Manufacturer's declaration and/or certificates of conformity
- Certificates
- Additional documents for any attached or upstream components, e.g. Drawings, technical data, information on accessories etc.
- Supplements to these instructions (e.g. special versions)
- AWH catalog, product data sheet

2 Safety

The device has been built in accordance with state-of-the-art technology and the recognized rules of safety. Nevertheless, use of the device may represent a danger to the life and limb of the user and third parties or a risk of impairments to the device and other objects of material value as a result of its function.

The following basic safety notes are intended to prevent injury to personnel and material damage. The operating company must ensure that the basic safety instructions are observed and adhered to.

These instructions contain basic notes on installation, operation, maintenance and servicing of the device which must be complied with.

Anyone involved in installation, operation, maintenance and servicing must have read and understood these instructions.

The safety systems and safety notes described in these instructions must be adhered to.



WARNING



Failure to comply with these instructions, incorrectly performed installation and repair work or incorrect operation could lead to malfunctions on the device and to dangerous situations!

There is a risk of death or severe physical injuries.

- *All work performed on the device must be carried out only by a specialist and in compliance with
 - *the corresponding detailed operating and installation instructions,*
 - *the warning and safety signs on the device,*
 - *regulations and requirements specific to the plant and*
 - *national/regional regulations for safety and the prevention of accidents.**
- *Never install damaged devices or components.*



The figures in these instructions are for basic understanding and are primarily representations of the principles involved. They may differ from the actual design of the device.



For maintenance and repair, we recommend a training course provided by the manufacturer or a person authorized by the manufacturer.



If questions or doubts about handling the cleaning device arise during maintenance, please contact AWH.

2.1 Intended Use



DANGER



Risk of injuries from fire/explosion when using the device in an explosive atmosphere.

Use of the device in an Ex area (potentially explosive atmosphere) is PROHIBITED.

There is a risk of death or severe physical injuries.

- Adhere to the **type plate** of the device (see [section 2.5.2 Type Plate](#)) and the **respective operating instructions**



WARNING

Risk of hazardous situations caused by use going beyond intended use and/or other types of use of the device!

There is a risk of death or severe physical injuries.

- Only use the device for the intended use.
 - Only ever use the device in accordance with the specifications contained in these instructions and the specifications on the device's type plate.
 - All the specifications in these instructions must be adhered to at all times.
 - Always keep the operating instructions at the location where the device is used.
 - Keep all signs on the device in legible condition.
 - Only use original spare parts.
- Modifications or conversions to the device are NOT permitted.



WARNING

Danger from the incorrect use of materials/agents!

The materials/agents to be used for the intended operation of the device are procured and utilized by the operating company for the device.

If unsuitable materials or agents are selected, strong chemical reactions could lead to fatal injury or (severe) physical injuries.

- The proper selection and treatment of these materials/agents is solely the responsibility of the operating company.
- When selecting the materials/agents, make sure that the permitted technical parameters of the device are NOT exceeded.
- The cleaning agents and media must be approved for all of the materials of the device (e.g. washers, bushings) and for the substances in the container to be cleaned which come into contact with them.
- Adhere to the specified chemical limitations for use in the material data sheets.
- Adhere to the safety data sheets supplied by the manufacturers of the materials and media, in particular for hazardous substances:
 - Comply with the hazard and disposal instructions.
 - Set out protective measures and compile operating instructions for hazardous substances.
 - This also applies to hazardous substances that may arise during work processes.

The TANKO-SF is constructed and produced in such a way that it is in conformance with the requirements of the 3-A-Sanitary Standard 78-03 in terms of design, material, manufacture and documentation.



Once it is installed, the device in the welding version is in conformance with the 3-A Sanitary Standard 78-03 only if the installation enables visual inspection of all surfaces in contact with media and has been welded in accordance to AWS D18.1 and AWS D18.3 (see [section 5.2.3 Installing the Device](#)).

Refer to the order confirmation / parts list from AWH for the materials used in the device.

The TANKO-SF is a rotating cleaning device and belongs to the group of spate cleaners. The device is driven by the cleaning agent. The device is used for cleaning the interiors of containers with and without installed equipment.

For the purpose of these instructions, containers refer to **enclosed, depressurized** tanks, silos, barrels, containers, pipes, etc., which are provided with an outlet that ensures a free outward flow of the supplied cleaning fluid.

The device was developed, engineered and built exclusively for industrial and commercial use. It must not be used for private use.

In all cases, operating company must check whether the device is suitable for its application.

The device can be used in containers inside and outside of buildings in compliance with the limitations for use (see [section 3.3 Technical Data](#)).

In the process, the following must always be observed:

- Only operate the device when installed inside an enclosed container.
- Never direct the cleaning jet or torrent from the device at persons.
- Protect the device from freezing (e.g. risk of frost from possible residual water).
- The device is designed for fixed pipe installation only. Installation on a hose is PROHIBITED.
- Use a suitable filter system in the supply line for the cleaning agent.
- Operate the container only within the approved parameters, e.g. pressure and temperature, (see [section 3.3 Technical Data](#)).
- Only cleaning agents which are compatible with the materials of the device (see [section 3.4 Cleaning media](#)) may be used.
- The preferred installation position for the device is vertical with the cleaning head pointing downwards. Other installation positions are possible (see [section 5.2.2 Installation Position](#)).
- The device may generate vibrations when cleaning the container. Any vibrations going beyond this must be avoided (see [section 7.4.1 Maintenance Intervals](#)).

The device is **NOT suitable** for the following applications:

- The device is NOT suitable for private use.
- The device is NOT suitable for use outside of containers.
- Holding the device with your hand during operation is PROHIBITED.
- The device is NOT suitable for ATEX applications.

- The device must NOT be immersed in the product of the production process (NOT even partially). This could cause the product to enter into the device. The spray openings may become blocked. The free movement of the actuator may be obstructed.
- The device may NOT be operated with gases (e.g. steam or air), because damage to the bearing surfaces would occur as the result of dry running.

The device is intended exclusively for the purpose outlined above. Any other use beyond that described here or alteration of the device without written approval from the manufacturer is considered IMPROPER use.

The manufacturer accepts NO liability for damage arising from this. The operating company is solely responsible for the risk.

The device must not be put into operation until it has been assured that all the safety devices are fully functional and the plant in which the device is installed meets the safety requirements of all relevant European directives (e.g. the Machinery Directive).

2.2 Spare Parts, Replacement Parts and Accessories



CAUTION

Risk of damage, malfunction or complete failure of the device!

Incorrect or faulty spare/replacement parts and accessories put the functional safety and reliability of the device at risk.

There is a risk of minor or moderate bodily injury.

The failure of components or a device malfunction can cause material damage and consequential damages

- *Use only the manufacturer's original spare parts.*

NOTE



Loss of the hygienic 3-A Sanitary Standard!

The use of NON-approved spare parts, replacement parts and accessory parts impairs the required hygienic standard of the device.

Microbial contamination of the manufacturing product could be the consequence.

- *Use only the manufacturer's original spare parts.*
- *Use only 3-A authorised spare parts when replacing standard parts.*

We expressly draw attention to the fact that replacement parts and accessories NOT supplied by AWH have NOT been checked or approved by AWH. The installation and/or the use of such products could therefore under certain circumstances result in changes with negative results to the properties of the device specified by its design and the higher-level plant.

AWH is not liable for any damage arising from the use of non-original parts or non-original accessory parts. Standard parts can be obtained from specialist dealers.

[Section 7.5 Spare Parts and Customer Service](#) includes a list of spare parts.

2.3 Duties of the Operating Company

The device is used in the commercial sector. The operating company is thus subject to the legal obligations of occupational safety.

In the EEA (European Economic Area), the national implementation of the Framework Directive 89/391/EEC on carrying out measures for improving safety and protecting the health of employees during work, as well as the associated individual directives shall be observed and complied with in their current valid versions.

Of particular importance in this connection is Directive 2009/104/EC on the minimum specifications for safety and health protection of employees using work equipment in their work.

As a basic rule, in Germany the Industrial Safety Regulation (BetrSichV) must be observed.

In other countries, the respective national directives, statutes and country-specific regulations regarding occupational safety and accident prevention are to be complied with.

At the same time, the following, non-exhaustive instructions apply in particular:

- The operating company must ensure that the device is used only as intended (see [section 2.1 Intended Use](#)).
- The operating company must keep informed of the locally applicable occupational health and safety regulations and, in addition, use a risk assessment to determine the hazards resulting from the specific working conditions at the location of use of the device. This must then be implemented in the form of operating instructions for the operation of the device.
- When using hazardous materials, protective measures must be specified in accordance with the safety data sheets and operating instructions shall be compiled for hazardous materials. Personnel must be appropriately briefed about this. This also applies to hazardous substances that may arise during work processes.
- A continuous risk assessment must be carried out for workplaces, including temperature conditions for the medium and the place of use (falling). The measures are to be defined in operating instructions. Personnel must be instructed accordingly.
- Supervisors must monitor compliance with the measures specified in the operating instructions.
- Throughout the entire operating period of the device, the operating company must check whether the operating instructions he has compiled reflect current legislation requirements and adapt them as necessary.
- The operating company must clearly regulate and specify the responsibilities of personnel (e.g. for operation, maintenance and cleaning).
- The operating company must allow only sufficiently qualified and authorized personnel to work on the device.
- The operating company must ensure that all employees handling the device have read and understood the instructions.
Furthermore, he must provide personnel with training at regular intervals with certification and inform them about the hazards.
- The user must provide sufficient workplace lighting at the plant in accordance with the locally applicable regulations for occupational health and safety in order to prevent hazards occurring as a result of poor lighting.

- The operating company must provide personnel with personal safety clothing and equipment and make sure that this is used (see [section 2.4.1 Personal Protective Equipment](#)).
- The operating company must make sure that the danger area of the higher-level plant in which the device is installed is not accessible to unauthorized persons.
- The operating company must make sure that no one is permitted to work on the device whose ability to react is impaired by drugs, alcohol, medication or similar.
- The operating company must take appropriate measures to inform groups of persons who are not intended to come into direct contact with the device (e.g. visitor groups) about the potential dangers involved.
- The operating company is responsible for making sure that the device is only ever operated in perfect condition.
- Wherever high pneumatic pressures occur, there is a possibility of sudden failure of or damage to the lines and connections. This poses a hazard. The operating company must instruct operating and maintenance personnel at least once a year on the possible hazards.
- The constructor of the overall plant must install the switching and safety devices required for setting up, inspection, shutting down (including emergency shutdown), operation, maintenance, cleaning and repair.
- The operating company must design the disconnection of the energy sources on the higher-level plant technically in such a way that the Switch-off Procedure described in [section 7.2](#) can be adhered to.
- The operating company must define and adhere to the intervals for inspections and control measures in accordance with the environment and media used.
- The operating company must provide fire safety devices, e.g. the appropriate quantity of suitable hand-held fire extinguishers of the appropriate size, in easily accessible places and provide employees with training on fire safety.
- Warnings in the documentation for externally supplied assembly units must be adhered to and incorporated into the risk assessments for the specific workplace.
- For installation of the device in a plant, the operating company must guarantee safe access using steps, platforms and rails in accordance with EN 14122-1-3.

Connections:

Before operating the machine with the device, the operating company must make sure that the local regulations are observed for assembly and installation and commissioning, if these tasks are performed by the operating company.

- The hydraulic connections must meet the requirements of EN ISO 4413.
- The grounding measures must be implemented and checked prior to commissioning of the device and the container.

2.4 Requirements for Personnel

The device must only be operated, maintained and repaired by persons with the appropriate qualifications. These persons must be familiar with these instructions and act in accordance with them. The respective authorizations for personnel must be clearly defined.

The following qualifications are designated in the instructions for various fields of activity:

Expert/Specialist Personnel

An expert is a person whose professional training, knowledge and experience and knowledge of the relevant standards and regulations enables them to carry out work on the device and identify and prevent potential risks independently.

Instructed Person

An instructed person has been briefed and, if necessary, trained by the operating company or an expert in a briefing on the assigned tasks and possible hazards in the event of improper actions, and instructed on the necessary safety devices and protective measures.

Only personnel with the following expertise are permitted to perform work on the device:

- **Assembly/disassembly:** Industrial mechanic or similar training, practical experience in the assembly/disassembly of devices
The person must be familiar with the construction, mechanical installation, maintenance of the device and fault clearance on the device and have the following qualifications:
 - Vocational training and final qualification in the field of mechanics (e.g. mechanic or mechatronics technician)
- **Welding work:** Welder qualification in pipeline engineering or similar qualification.
- **Electrical work:** Electrician; person with appropriate specialized training, knowledge and experience, enabling them to identify and prevent risks which may be caused by electricity
The person must be familiar with the electrical installation, commissioning, fault clearance on and repair of the device and have the following qualifications:
 - Vocational training and final qualification in electrical engineering (e.g. electrician, electronics engineer or mechatronics technician)
 - Several years of vocational experience in the field of electrical engineering
- **Cleaning:** Instructed person

Work performed in other areas **transportation, storage, operation and disposal** must be performed exclusively by personnel who have received suitable instruction.

All of the personnel listed above must wear protective clothing in accordance with their respective activities.

2.4.1 Personal Protective Equipment

Personal protective equipment must be used in accordance with the respective task when working on the device in order to minimize health hazards.



Protective work clothing

Protective work clothing is tight-fitting work clothing with low resistance to tearing, with close-fitting sleeves and without protruding parts. It is mainly used for protection against getting entangled in moving components. Do not wear any rings, necklaces or other jewelry.



Safety shoes

Wear slip-resistant safety shoes for protection against heavy, falling objects or for protection against slipping on slippery surfaces.



Protective gloves

Wear protective gloves to protect your hands against friction, grazes, getting pricked or deep cuts and for protection against coming into contact with hot surfaces or chemical substances.



Protective goggles

Wear protective goggles for protection against media escaping at high pressure and against flying objects.



Hard hat

Wear a hard hat for protection against falling or flying objects.



Hearing protection

Wear hearing protection to protect yourself from an increased sound pressure level (≥ 85 dB(A)).



Welding mask

Wear a welding mask to protect against damage to the eyes or skin caused by the welding arc and to protect against burns caused by flying particles during welding.

Personal protective equipment must be provided by the user and must meet the valid requirements.

Furthermore, both the national regulations and, if necessary, the internal instructions from the operating company, must be observed.

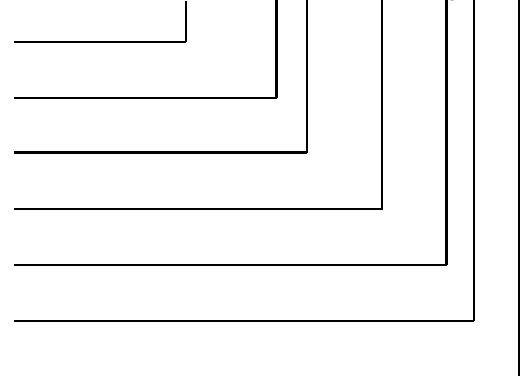
2.5 Identification Marking

2.5.1 Type Designation

Example: Splate cleaner

- | | |
|-----------------------------------|--------------|
| 1) Brand of the cleaning devices: | TANKO |
| 2) Type: | SF |
| 3) Construction size: | 40 |
| 4) Spray angle: | 270° upwards |
| 5) Connection type: | C (Clipon) |
| 6) Pipe series: | DIN 11866 A |
| 7) For pipe exterior diameter: | 19.0 mm |

TANKO - SF40-270° no C/A 19.0

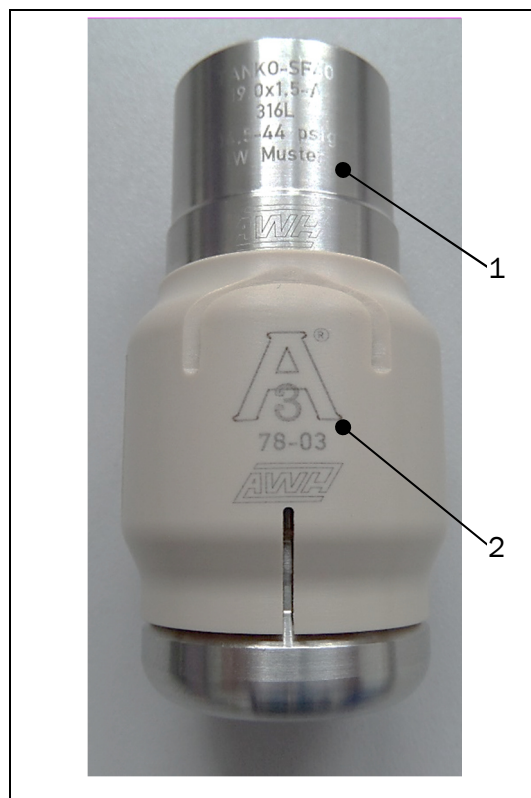


2.5.2 Type Plate



The information only applies to devices with types indicated on the title page of these instructions.

The marking is applied to the device according to the following illustration.



1 Device type plate

In case of inquiries, the data on the type plate of the device are important for proper and speedy processing:

- Manufacturer
- Type designation
- Serial no. [SN]

2 Identification marking for 3-A Sanitary Standard

Symbol for 3-A Sanitary Standard



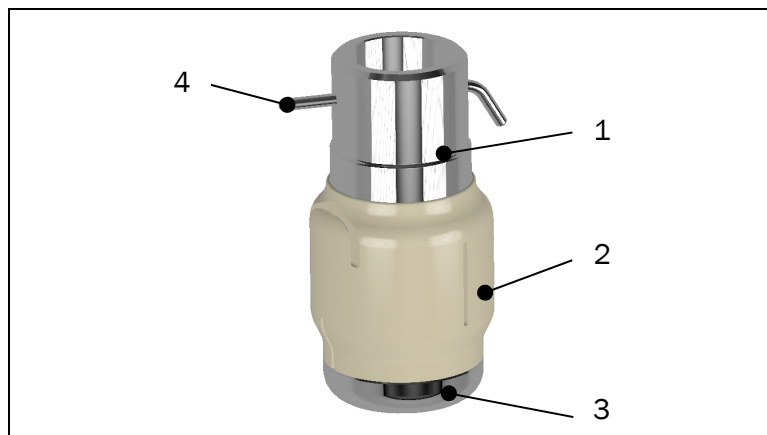
Standard number of the 3-A Sanitary Standard 78-03 to which the device corresponds in its design version.

Figure 2.5-1: Type Plate Position

3 Construction and Function

3.1 Construction

The Container Cleaning Device comprises the following Main Components:



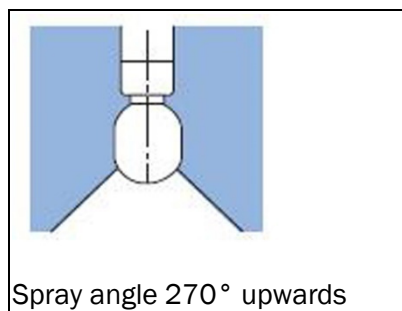
- 1 Shaft (media connection)
- 2 Cage
- 3 Bearing (Weldon only)
- 4 Wire locking pin (only Clipon)

Picture 3.1-1: Overview

3.2 General Function Description

The devices of the TANKO-SF type series are compact, axially rotating cleaning devices that are driven by the flow of the cleaning agent in their asymmetrical outlet openings.

The axes of the device float on bearings due to the cleaning media that flows through and are intended mainly for vertical installation.



Spray angle 270° upwards

Picture 3.2-1: Spray Pattern

The TANKO-SF is a hygienic cleaning device of the “Rotary spray head” type for permanent installation with a spray angle of 270° pointed upwards. The device is designed in such a way that it is able to clean itself.

The device is lubricated by the cleaning agent. No oils, greases or other lubricants are used.

3.3 Technical Data

The estimated safe service life of the device is 10 years with single-shift operation and the use of drinking water.

Prerequisite for this: the device must be maintained properly at the intervals specified in the [section 7.4 Maintenance](#).

Aggressive agents can reduce the service life of the device.

Designation	TANKO-SF
Range:	
- Cleaning radius	1 m (3.3 ft)
- Wetting radius	1,5 m (4.9 ft)
Operating pressure:	
- Cleaning agent	1 – 3 bar (14.5 – 43.5 psig)
- Optimum pressure range	2 bar (29 psig)
Operating temperature (permitted):	
- Cleaning agent	+5 °C (+41 °F) to + 95 °C (+203 °F)
Ambient temperature (permitted):	
- Inside the container	+5 °C (+41 °F) to +140 °C (+284 °F)
Volume flow rate / flow:	see chart Figure 3.3-1
Media connection [MC]	see Table 5.2-1
Sound pressure level:	Depends on the properties of the container!
- Outside the container	It is not to be expected that the noise pressure level will exceed the maximum permitted exposure value of $LE_{x,8h} = 85$ dB(A) during operation (see section 6.1).
Surface roughness:	
- Standard	$R_a \leq 0.8 \mu\text{m}$ (32 μin)
- optional	$R_a \leq 0.5 \mu\text{m}$ (20 μin) (electro-polished)
Materials:	1.4435 (AISI 316L), 1.4430 (AISI 316L), TECAPEEK® natural
Weight:	0.22 kg
Installation opening:	see section 5.2.1
Installation position:	see section 5.2.2

Table 3.3-1: Technical Data of the Device

Consumption Data

The specified values for consumption and rotation speed are average values, and may deviate by approx. $\pm 10\%$ during normal operation.

They apply to operation with clear water as the cleaning fluid at a temperature of $+25\text{ }^{\circ}\text{C}$ / $+77\text{ }^{\circ}\text{F}$. The values may differ with a different cleaning agent and if the medium temperature is different.

The consumption of cleaning fluid is dependent on several factors; increasing the pressure leads to increased consumption (throughput). The permitted range for the operating pressure of the cleaning agent must be adhered to.

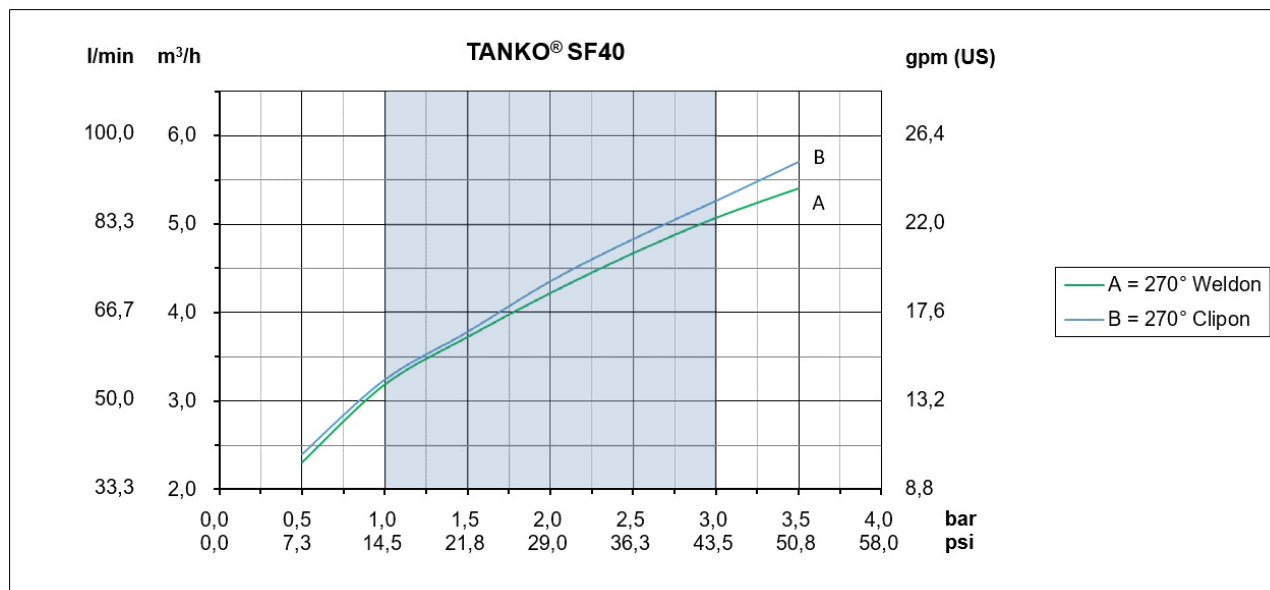


Figure 3.3-1: Diagram - Consumption Data

3.4 Cleaning media

Due to the wide variety of practical cases of application and use for the cleaning device, it is NOT possible for AWH to recommend specific cleaning agents for the operating company.

The operating company holds sole responsibility for the type of cleaning media, their use and handling.

For this reason, AWH can provide the operating company with **a few reference points and notes, but only as a precautionary measure** (for a device in a container), which must be observed and integrated into the operating company's risk assessments.



DANGER



Risk of explosion as a result of the formation of an explosive atmosphere!

There is a risk of death or severe physical injuries.

- The following items are **PROHIBITED** for use as cleaning agents:
 - Fluids which may form a dangerous explosive atmosphere when splashed or sprayed.
 - Fluids which cause a chemical reaction with the substance to be cleaned that could form a dangerous explosive atmosphere.
 - Aggressive, flammable or explosive fluids (e.g. acids, thinners, etc.).

**WARNING****Warning against corrosive and aggressive cleaning agents!**

There is a risk of death or severe physical injuries.

- Adhere to the regulations and specifications in the safety data sheets for the cleaning agents (e.g. vapors or hazardous substances).

The following limitations for cleaning agents are derived from the durability of the materials used in the device (see following page).

**CAUTION****Danger as a result of use of incorrect cleaning agents!**

There is a risk of minor or moderate injuries.

- The cleaning agents must be approved for all of the materials of the device (e.g. seals, bushings) and for the substances to be cleaned in the container that come into contact with it.
- The following items are **PROHIBITED** for use as cleaning agents:
 - Cleaning agents containing solids or liquids with solid particles or solid content (e.g. abrasives) which can lead to increased wear and/or blockages of the spray holes.
 - Cleaning agents containing substances which may cause exothermic reactions with the materials of the cleaning agent, the container of the plant, e.g.:
 - chlorine and chlorine ions
 - substances containing salt (no resistance to seawater)
 - medium-concentrated to highly concentrated organic acids
 - strong acids, in particular nitric acid and sulfuric acid (with acid content > 65%)
 - aliphatic, aromatic and chlorinated hydrocarbons
 - phenols
 - fluorine compounds

NOTE**Risk of damage to the device from the cleaning agent!**

Soiling or foreign objects in the cleaning agent can have a negative effect on the function of the device.

There is a risk of material damage and consequential damages.

- Use a suitable filter system in the cleaning agent supply line. The use of a filter with a filtration effect corresponding to a mesh width of 50 µm is recommended.
- Adhere to the instructions on the supply and return lines in the [section 5.2 Installation](#).

NOTE***Operation of the device with steam or gases!***

The conveyance of steam or gases through the device (e.g. for sterilization) leads to extremely high rotation speed on the part of the cleaning head.

Severe wearing on the bearing surfaces or destruction of the device could be the result.

- *Do NOT channel steam or gases through the device into the container.*
- *Carry out sterilization of the device only through the container, i.e. apply steam or gases to the container.*

The following Agents are permitted for use for Container Cleaning:

Clean, sprayable fluids (e.g. water with alkali cleaning additives and similar).



For proper use in food or pharmaceutical applications, the cleaning media must meet the hygienic requirements for this purpose or be suitable or approved. Only environmentally friendly media should be used for cleaning.

4 Transportation and Storage

AWH products are checked carefully before they are dispatched and are packaged in accordance with the respective transportation and storage conditions. However, it is NOT possible to rule out the possibility of damage during transportation completely.



CAUTION



Risk from protruding sharp edges on the device!

Depending on the design, the device may have protruding sharp edges which can be dangerous when handling it.

There is a risk of minor cuts.

- *Wear protective gloves when working on the device.*
- *When handling, e.g. unpacking, transportation without packaging, assembly/disassembly and maintenance work, beware of protruding sharp edges.*

In the event of damage (including cases involving spare parts) please contact AWH immediately with a damage report.

Scope of Delivery

- Container cleaning device
- Operating and installation instructions
- Technical documents in accordance with the order (e.g. certificates and reports)

The scope of delivery ends at the interfaces of the device (see [section 5.2.1 Interfaces](#))!



Refer to the delivery note and the order confirmation for full details of the scope of delivery.

Inspection on Receipt of Goods:

- Immediately check the delivery against the delivery note and the order confirmation on receipt to make sure that it is complete.
- Check the delivery for any transport damage (visual inspection).

Claims:

- Register claims for damaged and/or incomplete deliveries with the transport company immediately.
- Keep the packaging for a possible inspection by the transport company or for return delivery.

Return Delivery:

In the event of a possible return delivery, pack the device parts so that they cannot become damaged during transportation. If possible, use the original packaging and the original packaging material. If neither is available anymore, request a packaging company with specialist personnel.

- Consult AWH if you have any questions regarding packaging and transport safety.

4.1 Packaging

The device is supplied fully assembled. The packaging is selected to suit the conditions of transportation. Required accessories, spare parts, operating or installation instructions and technical documents are packaged separately and enclosed with the delivery.

The packaging should protect the device up until the time of installation against transport damage, corrosion and other damage. Therefore, do not remove the packaging until shortly before installation.

NOTE



Danger due to improper disposal!

Packaging materials are valuable raw materials and can be reused in many cases or usefully processed and recycled.

Improper disposal can cause environmental damage.

- *Dispose of packaging materials in an environmentally friendly manner and recycle them.*
- *Adhere to the locally valid disposal regulations.*



4.2 Transportation

NOTE Improper transportation can cause damage to the device.

The functional safety and reliability of the device may be compromised.

- Adhere to the symbols and instructions on the packaging.
- Transport the device only in a dry condition.
- The device must be protected from impacts.
- If possible, use the original packaging for transportation.
- Proceed with care when unloading the device and when transporting it on your premises.
- Do not remove the packaging until shortly before installation.

4.3 Storage

The packaging of the device, the components and the spare parts is designed for a storage period of 3 months.

NOTE Risk of damage as a result of incorrect storage!

Incorrect storage can cause damage to the device and its components and lead to premature aging (e.g. plastic parts).

The failure of components or a device malfunction can cause material damage and consequential damages.

- Adhere to the following storage conditions:
 - Store the device in the original packaging wherever possible.
 - Store the device in a clean and dry place (e.g. enclosed, dust-free room).
 - Store the device in constant environmental conditions.
 - Prevent major temperature fluctuations so that condensation does not form.
 - Prevent dirt and moisture from entering into the device.
 - Protect the device from the elements (e.g. formation of condensation in the device, sunlight).
 - Protect unpacked devices or components with dust-proof covers. Condensation must not be allowed to form beneath the covering.

Parameters for Storage (recommended):

- | | |
|------------------------------|--------------------------------------|
| – Room temperature | +10 °C to +45 °C / +50 °F to +113 °F |
| – Relative humidity | max. 60% (non-condensing) |
| – Temperature fluctuations | max. 10 °C / 18 °F per day |
| – Occurrence of oscillations | $v_{\text{eff}} < 0.2 \text{ mm/s}$ |

5 Installation

5.1 Safety Notes for Installation



WARNING



Danger as a result of static charge!

Containers may become statically charged during cleaning operation. There is a risk of electric shock or electrical irritation in case of contact with the hand, which could cause a startled reaction.

There is a risk of death or severe physical injuries.

- Only allow work on the device to be performed by experts.
- Make sure that an electrostatic charge is prevented. To do so, ground the device and the container to a common potential.
- The grounding must always be implemented before commissioning the device.



WARNING



Risk of falling when working at heights!

When carrying out assembly/disassembly work on parts of the plant at heights, there is a risk of falling.

There is a risk of death or severe physical injuries.



- Do not perform any work at heights except with a safety platform with cage or suitable fall protection (e.g. safety rope and safety harness).
- If you are using a harness as fall protection, it is imperative that the rescue concept is observed for a person in the harness.
- A person must not remain suspended in the harness for longer than 15 min as there is otherwise a risk of shock or even death.
- Wear protective work clothing, safety shoes, protective gloves and a hard hat for work at heights.

**CAUTION*****Risk of accidents as a result of improper installation!***

Incorrect installation, falling components or failure to comply with the indicated safety notes can result in accidents or damage to property.

There is a risk of minor or moderate injuries.



- Allow only experts to perform work on the device.
- Before starting work, observe the **working steps of the switch-off procedure** (see [section 7.2 Switch-off Procedure](#)).



- Wear protective work clothing, protective gloves and safety shoes when performing work.
- Do not on the device unless it is depressurized and in a cool state.
- Maintain a safe distance when working on the device. We recommend that you provide 1 m of space for free movement around the device and container.

**CAUTION*****Risk from protruding sharp edges on the device!***

Depending on the design, the device may have protruding sharp edges which can be dangerous when handling it.

There is a risk of minor cuts.

- Wear protective gloves when working on the device.
- When handling, e.g. unpacking, transportation without packaging, assembly/disassembly and maintenance work, beware of protruding sharp edges.

5.2 Installation

The safety notes in [section 5.1 Safety Notes for Installation](#) must be adhered to before installation of the device in the container.



CAUTION

Failure due to incorrect installation position/location of the device!

Installation of the device which is NOT performed properly can cause damage to the device which puts the functional safety and reliability at risk when it is commissioned.

This can result in hazards.

There is a risk of minor or moderate injuries.

- When selecting the installation position of the device, make sure
 - that a safe distance from the inner wall of the container and from surrounding components is maintained, so as to prevent scraping or knocking during vibration.
 - It is imperative to prevent collisions while the cleaning head and surrounding components (e.g. agitators) are moving simultaneously.
- Only fixed pipe installation is permitted. Installation with a hose can cause the installed cleaning device to thump/whip.
- Install the device free of mechanical strain.
- See the [Picture 5.2-2: Dimensions](#) for the installation dimensions.



CAUTION

Risk of a fault as a result of soiling, foreign objects or damage to the device!

Foreign objects such as scale, burrs, chips, etc. can restrict flow or get into the piping system and cause malfunctions or damage to components, including seals. This can result in hazards that endanger the functional safety of the device.

There is a risk of minor or moderate injuries.

The following measures must be observed before installing the device for the first time, and also when installing it after retooling work on the plant in which the device is installed:

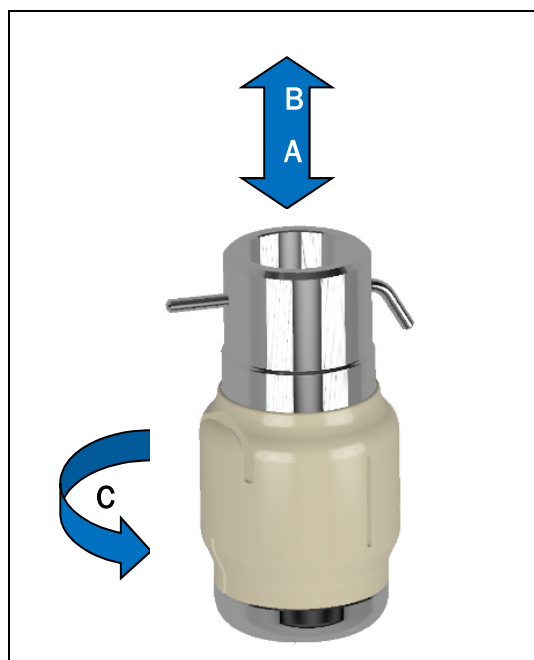
- All supply and return lines for the cleaning medium must be rinsed with clear water in order to remove any contamination, foreign objects or residue in the supply line (e.g. scale, chippings, welding particles etc.).
- Take suitable measures to prevent soiling and foreign objects from entering via the interfaces of the device. Install a filter upstream of the media connection [MC] in the supply line for the cleaning media (see [section 3.4 Cleaning media](#)).
- Paint must not be applied to the surface of the device



The operating company is solely responsible for fastening the device to the container. The vessel connector must be securely sealed.

The use of Teflon tape or other similar material is **NOT** permitted.

5.2.1 Interfaces



A Actuator / Energy Supply

Media connection [MC] (connection of the downpipe [DP] to the device)

B Device / Container

Process connection [PC] (connection of the downpipe [DP] to the container)

C Space for Movement / Installation Space

Cleaning head with spray openings for the cleaning agent

Picture 5.2-1: Device Interfaces

Assignment of the Connections



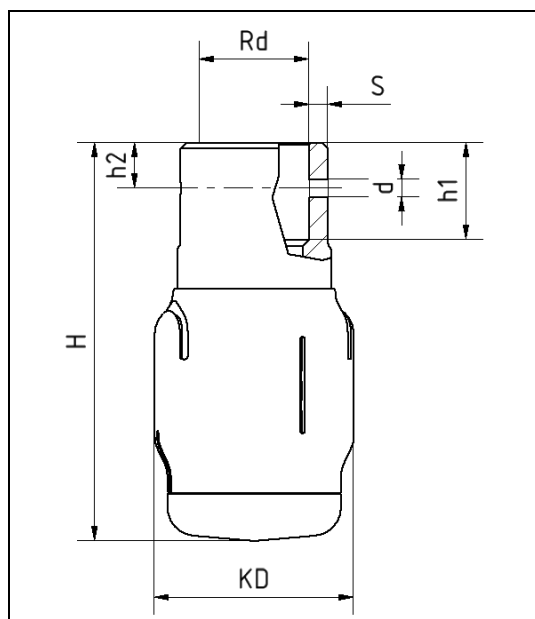
The correct downpipe dimensions are important in order to achieve the volumetric flows specified in these instructions.

The Clipon and Weldon versions of the TANKO-SF are intended for connection to the following downpipes:

Connection for Pipe acc. to DIN 11866	Article No.	Downpipe
Clipon Series A (DIN)	665F441A36230	Ø 19.0 x 1.5
Clipon Series B (ISO)	665F477A36230	Ø 21.3 x 1.6
Clipon Series C (ASME)	665F490A36230	Ø 19.05 x 1.65
Weldon Series A (DIN)	665F442A36630	Ø 23.0 x 1.5
Weldon Series C (ASME)	665F491A36630	Ø 25.4 x 1.65

Table 5.2-1: Assignment of the Connections

Dimensions



Picture 5.2-2: Dimensions

Connection for Pipe acc. to DIN 11866	Article No.	DN (mm)	RD ø (mm)	s (mm)	KD ø (mm)	H (mm)	h1 (mm)	h2 (mm)	d ø (mm)
Clipon Series A (DIN)	665F441A36230	15	19.3	—	35	70	17	8	3.2
Clipon Series B (ISO)	665F477A36230	15	21.6	—	35	70	17	8	3.2
Clipon Series C (ASME)	665F490A36230	15	19.3	—	35	70	17	8	3.2
Weldon Series A (DIN)	665F442A36630	20	23	1.5	35	70	—	—	—
Weldon Series C (ASME)	665F491A36630	20	25.4 (1")	1.65	35	70	—	—	—

Table 5.2-2: Assignments of Dimensions

5.2.2 Installation Position

The device is designed for vertical installation, downward suspension or standing upwards, as the preferred position. In the event of a different installation position, observe the following:

- The angle of deviation from the vertical should not exceed 25° in order to ensure the functioning of the device's self-cleaning feature. **No** complete cleaning is ensured when in standing upwards position.
- The running performance may be compromised.
- If the installation angle exceeds 25° from the vertical then Air purging will be necessary.
- The service life of the bearing elements may be shortened as a result of the increased strain.
- Maintenance intervals should be shortened if necessary (see [section 7.4.1 Maintenance Intervals](#)).

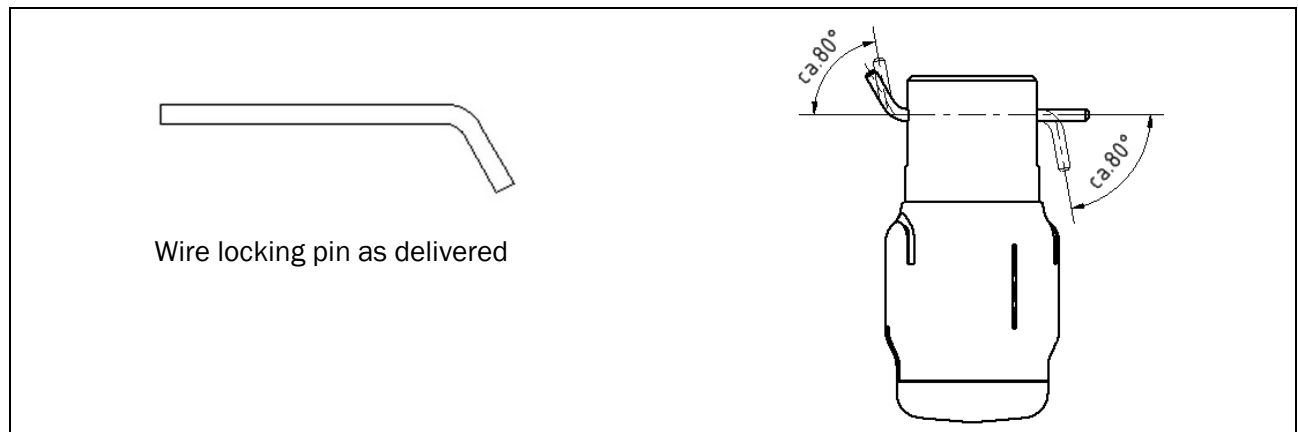
5.2.3 Installing the Device

NOTE Risk of dirt and foreign objects in the device!

Functional safety and reliability may be compromised.

- During installation, make sure and check that there is no dirt or foreign bodies in the device (e.g. small particles, sealing material).

Installation with Clipon Variant



Picture 5.2-3: Clipon Installation

NOTE Multiple utilization of the wire locking pin.

The material experiences fatigue and loses its rigidity when the wire locking pin is subjected to multiple bending. The wire locking pin may break and come loose.

The device and the wire locking pin could fall into the container.

- The wire locking pin is to be replaced by a new wire locking pin after it has been bent (see [section 7.5.1 Spare Parts](#)).

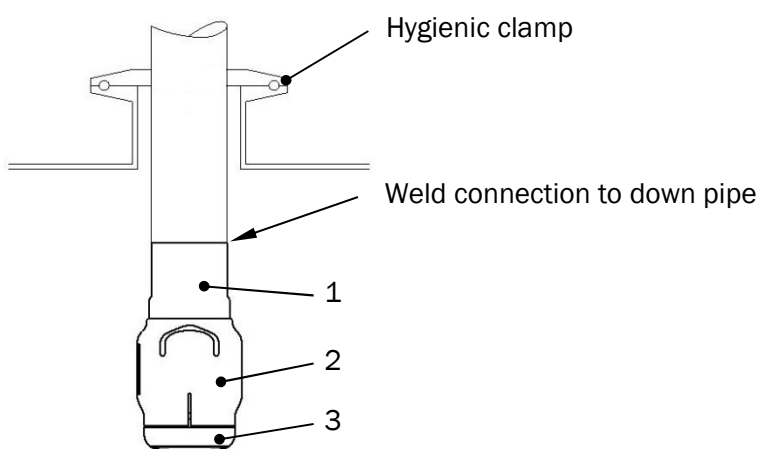
NOTE Non-observance of the dimensions for the media connection (see [Picture 5.2-2: Dimensions](#)). Problems with the fastening of the device to the downpipe could be the result.

- The distance between the bore hole for the clip in the downpipe and the end of the downpipe may not exceed a maximum of 8 mm.
 - The bore hole diameter for the clip in the downpipe is 3.2 mm.
1. Slide the shaft (1) over the downpipe and rotate it until the clip bore holes in the downpipe match the clip boreholes in the shaft (1).
 2. Insert the wire locking pin (5) through the bore holes in the downpipe and shaft (1) until it hits the stopper.
 3. Bend the straight end of the wire locking pin (5) with the assembly/disassembly tool for the locking pin 2.4 mm by at least 45° (see [Picture 5.2-3: Clipon Installation](#)). If using other means of bending the pin surface damage to the pin must be prevented.
 4. Check whether the cage can rotate freely.

Installation with Weldon Variant



In order to conform to the requirements of the 3-A Sanitary Standard 78-03, it is necessary to weld the welding version of the TANKO-SF to the end of a straight downpipe. This straight downpipe must be connected to the supply system for the medium in a way that can be dismantled and removed complete with the device attached. This must enable simple assembly and disassembly (e.g. by means of a hygienic clamp coupling see [Picture 5.2-4: Weldon Installation](#)) and must permit a visual inspection (through the downpipe) of the interior of the downpipe and of the connection element. The welding must be carried out in accordance with the 3-A Sanitary Standard and to AWS D18.1 & AWS. D.18.3. Orbital welding is preferred. No bore hole is required in the downpipe for attaching the weldon version. The downpipe end is welded directly to the connection (shaft 1).



Picture 5.2-4: Weldon Installation

1. Push the cage (2) past one click point towards the top.
2. Remove the bearing (3) and the cage (2) from the shaft (1).
3. Weld the shaft (1) to the end of the downpipe as described above.

4. **NOTE** Incorrect assembly.

Function and cleaning effectiveness of the device are impaired.

- Observe the direction arrow on the cage (2).
 - Slide the cage (2) onto the shaft (1) and push the cage (2) past one click point.
5. Assemble the bearing (3) to the shaft (1) and push the cage (2) downwards past one click point.
 6. Check for free rotation of the cage (2).

6 Commissioning

Before the device is commissioned in Germany, the user of the plant must adhere to the Industrial Safety Regulation (BetrSichV).

In other countries, the respective national directives, statutes and country-specific regulations regarding occupational safety and accident prevention are to be complied with.



WARNING

Hazardous situations when commissioning as a result of incorrect installation of the device!

There is a risk of death or severe physical injuries.

- As a basic rule, commissioning of the device (with cleaning agent) must not be performed until the following has been checked:
 - Correct mechanical installation of the device on / in the container
 - The safe and reliable functioning of the device

6.1 Safety Notes for Commissioning

Before the device is commissioned, the operating company must ensure that local regulations are observed during commissioning.



We recommend that you document the commissioning in a report.



WARNING



Risk of burns from hot surfaces!

The device is supplied without additional measures to provide protection from hot surfaces. The device may heat up significantly as a result of the cleaning fluid or the heat transfer from the container. Contact with the device can cause burns on the skin.

There is a risk of burns from cleaning agent at temperatures of more than +60 °C / +140 °F.

- Insulate hot surfaces.
- Secure hot surfaces with a guard or barriers.
- Put up warning signs in the direct vicinity of the hot surfaces.
- Use protective work clothing and protective gloves when working.



WARNING

Danger resulting from negative pressure/vacuum in the container!

A cold cleaning process in hot enclosed containers can generate negative pressure, which may lead to damage to the container.

There is a risk of death or severe physical injuries.

- Take precautions to allow gases or vapors to escape during operation (e.g. install devices for ventilation).

As a result of the variety of practical applications and uses for the cleaning device, AWH CANNOT specify a noise level for the device under load, i.e. installed in the container and operating with cleaning fluid.

For this reason, the manufacturer can provide the operating company **with only some reference points and information as a precautionary measure** which must be observed and integrated into its risk assessment.



CAUTION



Risk of hearing damage as a result of an increased noise level!

The device emits a sound pressure level of $L_{pA} < 70 \text{ dB(A)}$.

When the device is operated in a container, the sound level may exceed the maximum permitted exposure value of $L_{EX,8h} = 85 \text{ dB(A)}$ and varies depending on the properties of the container in the plant and the existing operating conditions of the device.

Hearing damage could be incurred as a result.

- The plant noise level must always be measured and documented by the operating company.
- Keep the plant noise level within the legal range:
 - Perform noise reduction measures (e.g. sound insulation).
 - Delimit and mark the noise area (e.g. with mandatory sign “Wear hearing protection”).
 - Use effective hearing protection (e.g. ear muffs or ear plugs).

Comply with the technical health and safety rules (TRLV Lärm in Germany) relating to noise and vibration. State-of-the-art technology must be used to implement the measures to provide protection from exposure to noise based on the risk assessment. In this case, noise emissions must be prevented at source, or reduced as far as possible.



CAUTION

Insufficient lighting in the working environment!

The device DOES NOT have illumination. Insufficient lighting when working on the device can cause accidents.

There is a risk of minor or moderate injury.

- Make sure that there is sufficient and even lighting in all areas of the plant in which the devices is used when work is performed on the device.
- In Germany, the technical rules for workplaces (ASR A3.4) apply. An illumination level of **300 lx (lux)** is recommended (maintenance value).

6.2 Functional Check / Trial Run

All the screw connections on the device are firmly tightened in the factory. Nevertheless, a trial run should be carried out to check that the device functions safely and reliably and that it is leak-tight once installed.



Do not operate the device unless it is in perfect condition.

The container to be cleaned must be run empty and depressurized.

⚠ WARNING Persons in the container.

A person may be struck by the jets from the cleaning head!

There is a risk of death or severe physical injuries.

- DO NOT start cleaning operation while there are persons in the container.
- 1. Securely close all of the openings on the container (e.g. inspection openings).
- 2. Switch off moving parts in the container and secure against being inadvertently switched back on or set in motion.
- 3. Check to see if there is a safe distance around the container and the surrounding components.
- 4. Switch on the device (see [section 6.3 Switch-on Procedure](#)).
- 5. Check the interfaces on the device for leaks.
- 6. **NOTE** Danger of collisions with moving parts!
Observe the following steps if components in the container are required to rotate during the cleaning process:
 - Start up the surrounding components (e.g. agitators) step by step.
 - Carefully check that the cleaning head and surrounding components (e.g. agitators) do NOT collide while moving simultaneously.
- 7. Make sure that there are no unusual vibrations.
- 8. Check the device to make sure that it runs quietly and smoothly.
- 9. Switch off the device (see [section 7.2 Switch-off Procedure](#)).

6.3 Switch-on Procedure

In accordance with the type of device activation and how it is integrated (e.g. manual or automatic) on the cleaning plant, the switch-on procedure must be integrated and the following instructions must be observed when switching on.



WARNING

Risk from sudden, unforeseeable or unauthorized activation of the device (e.g. triggering of a start command as a result of incorrect operation of a start-up control device)!

There is a risk of death or severe physical injuries.

*When commissioning the device, it is imperative to perform the following **working steps** in the specified order.*

Switch-on procedure

1. Securely close all of the openings on the container (e.g. inspection openings).
2. Switch on the supply of cleaning agent (e.g. slowly open the shut-off valve or ball cock).
3. Check that the supply of cleaning agent is NOT interrupted and the media pressure on the device is established.
4. Take suitable measures to secure the supply of cleaning agent to prevent it from switching off suddenly, unexpectedly or without authorization.

NOTE

Risk of breakage due to material overload!

Pressure surges when switching the cleaning agent on or off, in particular pressure surges which exceed the operating pressure, and gas components in the cleaning agent may cause hammering in the cleaning device.

There is a risk of material damage or destruction of plant parts, e.g. leakage in the pipe system or on connected devices.

- Prevent pressure surges (“water hammers”) and gas components in the cleaning agent, e.g. caused by:
 - installing a water hammer arrester or pressure relief valve in the supply line,
 - starting up/stopping the pump slowly and
 - opening/closing the shut-off fitting slowly (e.g. valve or ball cock).

The term “water hammer” denotes a pressure surge in a fluid line which is generated by opening/closing a shut-off fitting (e.g. valve or ball cock) quickly at the end of a pipeline.

Pressure hammers/pressure surges can also be provoked by quick changes in the flow speed (pressure increase or pressure drop) or by sudden changes in direction of the flow of fluids. This effect is particularly common in pump systems with long pipelines when starting up, stopping or changing the speed of pumps.

6.4 Operation

After commissioning and performing inspection, the device can be put into operation, observing the following instructions.



WARNING



Risk when using outdoors!

If the device is used outdoors, there is a risk of a lightning strike in case of a storm.

There is a risk of death or severe physical injury.

- The devices are usually operated in an enclosed factory hall and are thus protected from the **risk of lightning**.
- In case of use outdoors and in case of storms or the risk of lightning strikes, stop work immediately.



WARNING



Risk if the operating / working area is accessed by unauthorized persons!

Unauthorized persons ARE NOT familiar with the hazards in the working area as described in these instructions.

There is a risk of death or severe physical injuries.

- Permit only authorized specialist personnel who are qualified and trained for the operation to operate the cleaning device.
- Keep unauthorized persons away from the working area of the plant/machine in which the device is installed.
- If in doubt, address these persons direct them to exit the working area.
- Stop the work for as long as there are unauthorized persons in the working area.



WARNING



Risk of chemical burns and burns when opening the container!

The supply line is pressurized. The person may be struck by cleaning jets or come into contact with residual fluid from the supply line and device. There may also be hot vapors in the container.



There is a risk of death or severe physical injuries.



- **DO NOT open the container** during the cleaning process.
- Before starting work, adhere to the **working steps of the switch-off procedure** (see [section 7.2 Switch-off Procedure](#)).
- Before opening the container, observe the **cooling and draining time**.
- Use personal protective equipment (e.g. protective gloves, safety shoes, safety goggles).





WARNING



Risk of burns from hot surfaces!

The device may heat up significantly as a result of the cleaning fluid or the heat transfer from the container. Contact with the device can cause burns on the skin.



There is a risk of death or severe physical injuries.

- Comply with the warning signs and **DO NOT** touch the indicated areas.
- Do **NOT** remove insulation from protected hot surfaces.
- Maintain safety clearance of existing protective equipment or barriers.
- Use protective equipment (e.g. protective gloves; cloths) to provide protection from the hot surface.
- Do not touch the device until after a sufficient cooling time.

NOTE

Operation of the device with steam or gases!

The conveyance of steam or gases through the device (e.g. for sterilization) leads to extremely high rotation speed on the part of the cleaning head.

Severe wearing on the bearing surfaces or destruction of the device could be the result.

- Do **NOT** channel steam or gases through the device into the container.
- Carry out sterilization of the device only through the container, i.e. apply steam or gases to the container.

The safety systems and safety notes in the operating instructions for the higher-level plant/machine must be adhered to.

The area around the plant/machine and the operator work stations at the plant/machine must be kept free of objects during operation so that unobstructed access is possible at all times.

In order to ensure fault-free operation, the device must be treated with care at all times.

When operating the device, adhere to the following additional instructions:

⚠ WARNING Persons in the container.

A person may be struck by the jets from the cleaning head!

There is a risk of death or severe physical injuries.

- DO NOT start cleaning operation while there are persons in the container.
- NEVER direct the cleaning jet at persons.

⚠ WARNING Incorrect operation of the device!

There is a risk of death or severe physical injuries.

- Only operate the device when it is in perfect condition.
- Allow only experts to operate the device.
- Do not operate the device unless it is installed inside an enclosed container.
- Drain and depressurize the container being cleaned.

- Securely close all of the openings on the container (e.g. inspection openings).
- When operating the device, **adhere to the switch-on and switch-off procedures** (see [sections 6.3 Switch-on Procedure](#) and [7.2 Switch-off Procedure](#)).
- There is no need for the device to be run in.
- The following operating states of the device are NOT permitted:
 - Operation of the device without cleaning agent.
 - Immerse the device in the product of the production process.
 - Operation of the device outside the permitted parameters (see [section 3.3 Technical Data](#)).
- Immediately stop operation in the event of leaks outside the container.
- Refrain from any type of work which compromises the safe and reliable function of the device.
- Immediately inform the operating company of any changes to the device or the plant that may impair its safety.

If you notice vibrations on the plant while commissioning the device which are NOT generated by the device, then they must be prevented with suitable measures so that the vibrations CANNOT be transmitted to the device.

If this is NOT possible, the maintenance intervals in [section 7.4.1 Maintenance Intervals](#) must be shortened accordingly.

During normal operation of the device, you must make sure that the mixture of supplied cleaning agent and detached substances can flow freely from the container.

NOTE Clogging in the drain of the container is to be eliminated at once so that:

- no large quantities of dirt can accumulate in the container,
- there is NO impermissible filling of the container with cleaning agent,
- the device DOES NOT become immersed as the fluid level rises.

For cleaning agent in circulation:

Run the final cleaning step with clean water to remove any suspended matter which may have been introduced.

7 Maintenance

The following safety notes apply to all work on the device that is listed and described in this chapter and must be observed at all times.

Use only **original spare parts** when replacing parts of the device. A **functional check** must be performed after every repair (see [section 6.2 Functional Check / Trial Run](#)).

7.1 Safety Notes for Maintenance



DANGER



Fatal shock hazard through contact with live parts!

Activated electrical components are live with dangerous electrical voltage and may perform uncontrolled movements.

There is a risk of death or severe physical injuries.

- Allow only **qualified electricians** to perform work on the electrical system.
- Before starting work, observe the **working steps of the switch-off procedure** (see [section 7.2 Switch-off Procedure](#)).
- Cover adjacent live parts to prevent contact.
- Beware of the hazards due to electrical current (e.g. warnings).



WARNING

Risk of accident caused by incorrectly performed maintenance and repair work!

Improper maintenance, falling components or failure to adhere to the listed safety notes can lead to accidents.

There is a risk of death or severe physical injuries.

- Allow only **experts** to perform work on the device.
- Do not work on the device unless it is insulated from electrical voltage, depressurized and in a cool state.
- Maintain a safe distance when working on the device.
We recommend that you provide 1 m of space for free movement around the device and container.

**WARNING****Risk of chemical burns and burns when opening the container!**

The supply line is pressurized. The person may be struck by cleaning jets or come into contact with residual fluid from the supply line and device. There may also be hot vapors in the container.



There is a risk of death or severe physical injuries.



- **DO NOT open the container** during the cleaning process.
- Before starting work, observe the **working steps of the switch-off procedure** (see [section 7.2 Switch-off Procedure](#)).
- Before opening the container, observe the **cooling and draining time**.
- Use personal protective equipment (e.g. protective gloves, safety shoes, safety goggles).

**WARNING****Risk of burns from hot surfaces!**

The device may heat up significantly as a result of the cleaning fluid or the heat transfer from the container. Contact with the device can cause burns on the skin.



There is a risk of death or severe physical injuries.

There is a risk of burns from cleaning agent at temperatures of more than +60 °C / +140 °F.

- Do not remove the devices unless they are in a cool state.
- Allow the device to cool down before starting work.
- Beware of hot surfaces (e.g. warning signs).
- Use safety clothing and equipment (e.g. protective gloves, cloths) to provide protection against the hot surface.

**WARNING****Risk of crushing when carrying out maintenance, cleaning and repair work!**

The container and the interfaces of the device (e.g. media connections) may be pressurized!



There is a risk of death or severe physical injuries.

- Before starting work, depressurize the container and all lines.
- Switch off moving parts in the container and secure against being inadvertently switched back on or set in motion.
- Do not remove the device unless it has been depressurized.
- Wear protective gloves.

7.2 Switch-off Procedure

In accordance with the type of device activation and how it is integrated (e.g. manual or automatic) on the cleaning plant, the switch-off procedure has to be integrated and the following instructions have to be observed when switching off.



WARNING



Risk from sudden, unforeseeable or unauthorized reactivation of the device (e.g. triggering of a start command as a result of incorrect operation of a start-up control device)!



There is a risk of death or severe physical injuries.

Before performing any disassembly, maintenance, repair or cleaning work on the device, it is imperative to carry out the following **working steps** in the specified order:

Switch-off procedure

1. Stop the supply of cleaning agent (e.g. slowly close the shut-off valve or ball cock).
2. Check that the supply of cleaning agent is stopped and there is no media pressure on the device.
3. Safeguard the supply of cleaning agent to protect it from sudden, unforeseeable or unauthorized reactivation (e.g. lockable switches/shut-off elements).
4. Make sure that the cleaning device and supply line for cleaning agent have been completely drained (e.g. by waiting before opening the container).

NOTE

Risk of breakage due to material overload!

Pressure surges when switching the cleaning agent on or off, in particular pressure surges which exceed the operating pressure, and gas components in the cleaning agent may cause hammering in the cleaning device.

There is a risk of material damage, e.g. leakage in the pipe system or on connected devices.

- Prevent pressure surges ("water hammers") and gas components in the cleaning agent, e.g. caused by:
 - installing a water hammer arrester or pressure relief valve in the supply line,
 - starting up/stopping the pump slowly and
 - opening/closing the shut-off fitting slowly (e.g. valve or ball cock).

7.3 Removal

The safety notes in [section 7.1 Safety Notes for Maintenance](#) must be adhered to before removing the device from the container.



WARNING



Risk of chemical burns and burns when opening the container!

The supply line is pressurized. The person may be struck by cleaning jets or come into contact with residual fluid from the supply line and device. There may also be hot vapors in the container.



There is a risk of death or severe physical injuries.



- **DO NOT open the container** during the cleaning process.
- Before starting work, observe the **working steps of the switch-off procedure** (see [section 7.2 Switch-off Procedure](#)).
- Before opening the container, observe the **cooling and draining time**.
- Use personal protective equipment (e.g. protective gloves, safety shoes, safety goggles).



CAUTION

Risk of a fault as a result of soiling, foreign objects or damage to the device!

There is a risk of minor or moderate injuries.

- Implement suitable measures to prevent soiling and foreign objects from entering via the interfaces of the device.
- Before starting work, make sure that all necessary tools, accessories and information are available and observe the instructions for the interfaces.
- When lifting the device out of the container, maintain a gap from the inner wall of the container and surrounding components (e.g. agitators), to avoid scraping or knocking.
- Set the device down on a stable surface after removing it.

7.3.1 Removing the Device

⚠ WARNING Risk of the device falling accidentally!

The device may strike personnel when falling.

There is a risk of minor or moderate injuries.

- Hold the device firmly when installing/removing it.
- There must be nobody beneath the device when installing/removing it.

For Clipon connection:

1. Bend open the wire locking pin (4) With the assembly/disassembly tool for the 2.4 mm locking pin (Clipon) to one side.
2. **NOTE** The device could fall down!
The device could become damaged by impact effects.
 - When screwing out the parts, take care to ensure that the housing CAN NOT fall down (e.g. by holding it with one hand).
 - Remove the wire locking pin (4).
3. Detach the device from the pipe for the media supply.

For Weldon Connection:



To disassemble the welding version, the downpipe must be removed from the holder together with the device.

Before removal, the downpipe [DP] is disconnected from the process connection [PC] and lifted out of the container together with the device.

To perform maintenance on the device, all individual parts, except for the inlet that is welded to the downpipe, can be dismounted.

For permanent dismounting, the inlet of the device can be separated from the downpipe with a suitable procedure. The device will no longer be able to be used afterwards.

7.4 Maintenance

To ensure the trouble-free operation, high operational safety and long service life of the cleaning device, it is imperative to have it cleaned and maintained at regular intervals.



We recommend that you document the maintenance work in a report.

Check and log the volumetric flow at regular intervals.



If the volumetric flow deviates by more than 15% from the values specified in these instructions, then that is a sign of wear or blockage of the flow, and both the cleaning device and the supply line must be checked. An inspection is recommended.

The safety notes in [section 7.1 Safety Notes for Maintenance](#) must be adhered to when carrying out cleaning, maintenance and repair work.

7.4.1 Maintenance Intervals

NOTE

Component failure due to vibration damage!

During operation, vibration can cause screw and clamp connections to work loose or the device to be subjected to severe strain, thus possibly leading to component failure.

The failure of components or a device malfunction can cause material damage and consequential damages.

- *Check the installed device for loose connections at regular intervals.*
- *Watch out for vibration damage during maintenance and checking.*
- *Adapt the maintenance intervals according to the operating conditions of the plant.*
After commissioning, start first with short maintenance intervals.
If no damage occurs, the maintenance intervals can be adapted incrementally until the intervals specified in the instructions are reached.



The design of the device requires a low amount of maintenance.

An inspection is recommended after each 250 operating hours (h_B) and maintenance no later than after 500 operating hours (h_B).

Inspection

The purpose of the inspection is to determine the orderly condition of the device. An inspection should be carried out as follows:

⚠ CAUTION Risk of chemical burns and burns when opening the container!

The supply line is pressurized. The person may be struck by cleaning jets or come into contact with cleaning agent. There may also be hot vapors in the container.

There is a risk of minor or moderate injuries.

- Use only clear water with a maximum temperature of +40 °C (+104 °F) for inspection purposes.
 - Before opening the container, observe the cooling and draining time.
 - Before opening the container, make sure that the container is NOT pressurized.
 - Use personal protective equipment (e.g. protective gloves, safety shoes, safety goggles).
1. Set the water pressure to 0.3 bar (4.35 psig).
 2. Open the flap on the container.
 3. Check the rotation of the device and the spreading of the liquid at the outlet openings.
 4. For maintenance work, remove the device as necessary (see [section 7.3 Removal](#)). Before starting work, observe the **working steps of the switch-off procedure** (see [section 7.2 Switch-off Procedure](#)).

Maintenance Intervals and Methods



Shorten the maintenance intervals by 30% in the event of:

- Deviation from the preferred installation position of the device (see [section 5.2.2 Installation Position](#)),
- Vibrations that occur in the plant which are NOT caused by the device and CANNOT be prevented.

If the device is NOT operated for a longer period, we recommend that you check the device completely before re-commissioning to make sure that it is fully functional (see [section 6.2 Functional Check / Trial Run](#)).



The specified times of the maintenance intervals are based on single-shift operation (8 hours per working day, 12 months per year) of the device and operation with

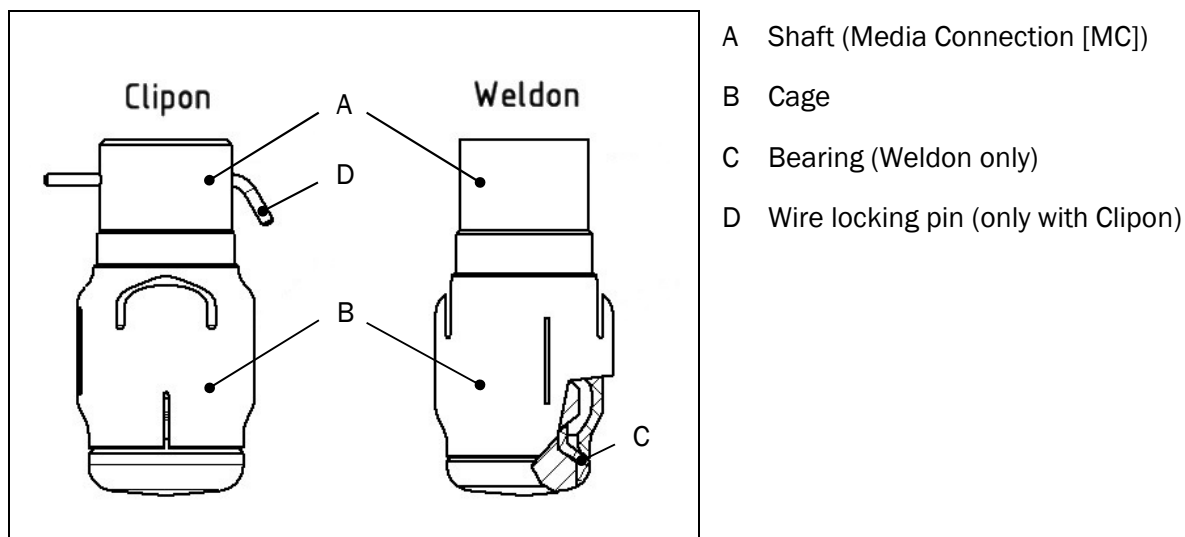
Cleaning agent:	Water
Media pressure:	2 bar (29 psig)
Media temperature:	+25 °C (+77 °F)

Interval: h_o = operating hours of the device

Method: V = visual inspection
F = functional check
M = measurement
C = cleaning*

*The cleaning intervals are to be defined by the operating company in accordance with operating conditions.

Overview of Maintenance Points



Picture 7.4-1: Maintenance Points

Point	Inspection and Maintenance Work	Interval	Method
A	Check inlet openings for the cleaning agent and running surfaces for contaminations, wear and damage. <ul style="list-style-type: none"> • Clean in the event of contaminations • Replace device in the event of wear or damage 	500 h ₀	S/F/R
B	Check whether the cage rotates freely. Check outlet openings for the cleaning agent and running surfaces for contaminations, wear and damage. <ul style="list-style-type: none"> • Clean in the event of contaminations • Replace device in the event of wear or damage 	500 h ₀	S/F/R
C	Check running surfaces for contaminations, wear and damage. <ul style="list-style-type: none"> • Clean in the event of contaminations • Replace device in the event of wear or damage 	500 h ₀	S/F/R
D	Replace wire locking pin with a new part.	500 h ₀	---

Table 7.4-1: Inspection and Maintenance Work

NOTE Multiple utilization of the wire locking pin.

The material experiences fatigue and loses its rigidity when the wire locking pin is subjected to multiple bending. The wire locking pin may break and come loose.

The device and the wire locking pin could fall into the container.

- The wire locking pin is to be replaced by a new wire locking pin after it has been bent (see [section 7.5.1 Spare Parts](#)).

7.4.2 Tools and Tightening Torque Values

Use only proper tools which are required for performing the required work and approved for use.

Standard workshop equipment and the special tools listed are sufficient for performing mechanical tasks on the device. The following tools are required:

- Assembly/disassembly tool for 2.4 mm locking pin or pliers with smooth parallel jaws

Special Tools



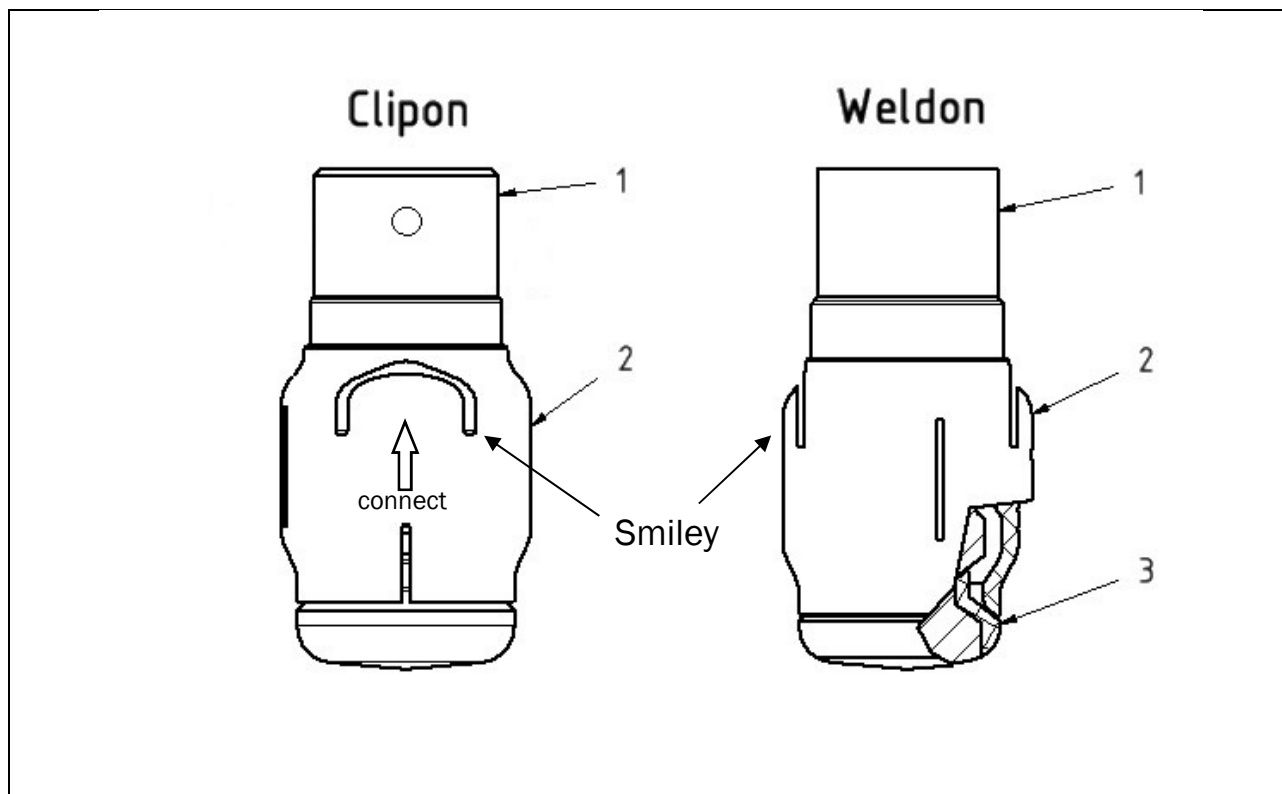
Assembly/disassembly tool for 2.4 mm locking pin (Clipon):

Art. no. 664 MW0 102 005 0

7.4.3 Disassembling the Device

For Clipon connection:

1. Hold the device in one hand and push the shaft (1) downward with the other hand forcing the cage (2) past two click points.
2. Remove the cage (2) from the shaft (1).



Picture 7.4-2: Disassembling/assembling the Device

For Weldon Connection (device with downpipe):

1. Push the cage (2) past one click point to the top.
2. Remove the bearing (3) from the shaft (1) by prizing apart.
3. Push the cage (2) past one click point to the bottom.
4. Remove the cage (2) from the shaft (1).

7.4.4 Assembling the Device

For Clipon connection:

1. **NOTE** Incorrect assembly.
Function and cleaning effectiveness of the device are impaired.
 - Observe the direction arrow on the cage (2).
 - Slide the cage (2) onto the shaft (1) and push the cage (2) downwards past one click point.
2. Check for free rotation of the cage (2).

For Weldon connection (device with downpipe):

1. **NOTE** Incorrect assembly.
Function and cleaning effectiveness of the device are impaired.
 - Observe the direction arrow on the cage (2).
 - Slide the cage (2) onto the shaft (1) and push the cage (2) upwards past two click points.
2. Assemble the bearing (3) to the shaft (1) and push the cage (2) back past one click point.
3. Check for free rotation of the cage (2).

7.4.5 Notes on Cleaning

It is recommended for the device to be cleaned during maintenance.



The device must be thoroughly cleaned and inspected during maintenance. The weldon device should be removed from the vessel manually cleaned and all surfaces must be inspected.

Comply with the following safety notes prior to cleaning.

**WARNING****Hazard from corrosive or aggressive cleaning agents!**

There is a risk of death or severe physical injuries.



- Adhere to the regulations and specifications in the safety data sheets for the cleaning agents (e.g. vapors or hazardous substances).
- Use personal protective equipment (e.g. protective gloves, safety shoes, safety goggles).
- Avoid excessive concentration of the cleaning agent.
- Use only clean and chlorine-free water as a diluting agent.
- Flush the device with plenty of clean water after cleaning.
- Store cleaning agent in accordance with the applicable safety guidelines.

NOTE**Risk of damage to the device during cleaning!**

The use of incorrect cleaning agent or sharp objects can damage the device.

The functional safety and reliability of the device may be compromised.

- The cleaning agents must be approved for all materials of the device (e.g. seals, bushings).
- Do not use sharp objects (e.g. knives) or tools.

NOTE

Formation of hydrochloric acid when cleaning the device!

No dry adhesions or deposits of cleaning agent should be left behind in the device. This could cause the cleaning agent to salt out or form crusts. If the cleaning agent contains volatile solvents containing chloride, then hydrochloric acid could arise when rinsing with clear water.

The functional safety and reliability of the device may be compromised.

- DO NOT rinse with clear water if the cleaning agent includes volatile solvents containing chloride.



The following must be observed when **blowing out** the device with air:

- fix the head in place in such a way that it cannot rotate while being blown out
- use filtered, oil-free compressed air
- Time of the dry-blowing 5 – 10 min (longer is technically possible but not necessary under normal circumstances)

Cleaning in Assembled State:

As a basic rule, cleaning the device parts that are located in the **interior of the container** is NOT necessary. Self-cleaning takes place during the cleaning process.

Cleaning is carried out by simply flushing the surfaces that come into contact with media (CIP cleaning).

Cleaning agents:	3% nitric acid	max. +60 °C / +140 °F
	3% caustic soda	max. +80 °C / +176 °F

Cleaning after Removal:

Prior to cleaning, the device must have been removed from the container by an **expert** and dismantled into its individual parts. The safety instructions in [section 7.1 Safety Notes for Maintenance](#) must be observed.

Cleaning the device in a disassembled state can be carried out by **instructed persons**. After cleaning, the device has to be assembled, checked and installed in the container again by an **expert** (see [section 5.2 Installation](#)).

NOTE

**Danger due to improper disposal!**

Cleaning agents, consumables and lubricants must NOT be allowed to enter the groundwater, waterways or sewerage system.

Improper disposal can cause environmental damage.

- Dispose of any cleaning agents, lubricants and consumables (e.g. brushes and cloths) which have been used for cleaning in accordance with the local regulations and in accordance with the information in the manufacturer's safety data sheets.
- Dispose of packaging materials in an environmentally friendly manner and turn them in for recycling.

7.5 Spare Parts and Customer Service

NOTE



Loss of the hygienic 3-A Sanitary Standard!

The use of NON-approved spare parts, replacement parts and accessory parts impairs the required hygienic standard of the device.

Microbial contamination of the manufacturing product could be the consequence.

- Use only the manufacturer's original spare parts.
- Use only 3-A-authorized spare parts when replacing standard parts.

Spare Parts and Wear Parts



Subject to technical modifications in the interest of further development and improvement to the properties of the device. The Article No., dimensions or materials may differ from those of the supplied device.

The following data is important when requesting spare parts and for all inquiries:

Device

- Type
- Serial number

Spare part

- Designation
- Article No.

Customer Service



For technical questions or spare part requests, you can contact Customer Service department as follows:

Armaturenwerk Hötensleben GmbH

Schulstraße 5 – 6

D-39393 Hötensleben, Germany

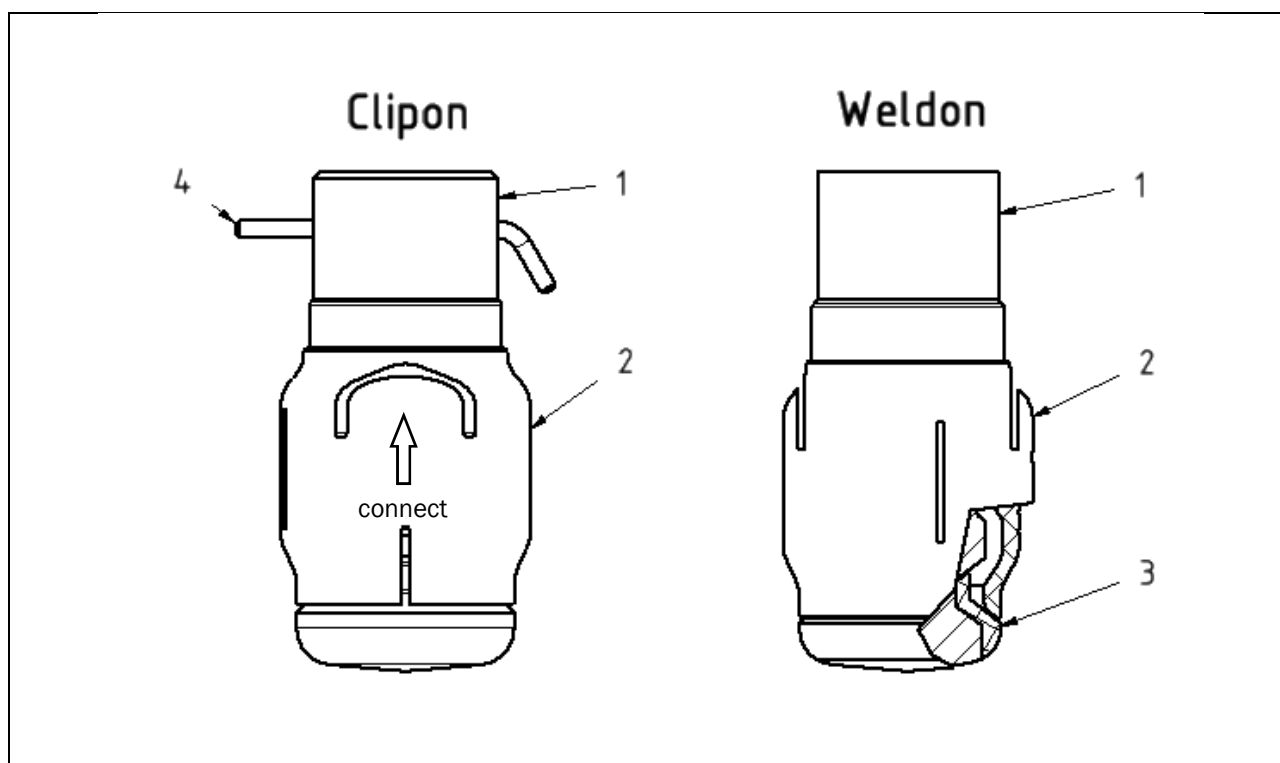
Telephone +49 39405 92-0

Fax +49 39405 92-111

E-mail info@awh.eu

Internet <http://www.awh.eu>

7.5.1 Spare Parts



Picture 7.5-1: Internal Construction

Item	Quantity	Designation	Article No.	Material	Spare part
1	1	Shaft	see Table 7.5-2	1.4435 (AISI 316L)	---
2	1	Cage	665F400A160M0	TECAPEEK® natural	---
3	1	Bearing (only Weldon)	665F4001806M0	TECAPEEK® natural	---
4	1	Wire locking pin (only Clipon)	see Table 7.5-2	1.4430 (AISI 316L)	X

Table 7.5-1: Bill of Material

Assignment to the Variants

Connection	Art. No. TANKO-SF	Art. No. Item 1	Art. No. Item 4
Clipon Series A (DIN)	665F441A36230	665F490170230	6640000A50040
Clipon Series B (ISO)	665F477A36230	665F477170230	6640000A50040
Clipon Series C (ASME)	665F490A36230	665F441170230	6640000A50040
Weldon Series A (DIN)	665F442A36630	665F442170630	---
Weldon Series C (ASME)	665F491A36630	665F491170630	---

Table 7.5-2: Assignment of the Individual Items

8 Faults

8.1 Safety Notes for Fault Clearance

Before clearing a fault, the following safety notes must always be adhered to:



WARNING



Risk of chemical burns and burns when opening the container!

The supply line is pressurized. The person may be struck by cleaning jets or come into contact with residual fluid from the supply line and device. There may also be hot vapors in the container.



There is a risk of death or severe physical injuries.



- **DO NOT open the container** during the cleaning process.
- Before starting work, observe the **working steps of the switch-off procedure** (see [section 7.2 Switch-off Procedure](#)).
- Before opening the container, observe the **cooling and draining time**.
- Use personal protective equipment (e.g. protective gloves, safety shoes, safety goggles).



WARNING

Hazardous situations caused by performing work on the device incorrectly!

There is a risk of death or severe physical injuries.

- Repairs and fault clearance work must be performed only by qualified experts who have knowledge of the “Technische Regeln für Betriebssicherheit (TRBS)” (German technical rules for operational reliability and safety).
- Before eliminating any malfunction, comply with the safety notes in [chapter 7 Maintenance](#).
- In case of any uncertainty or doubt, contact AWH.

8.2 Faults and Remedial Action

Fault	Cause	Remedy
Effectiveness of the cleaning process is inadequate	Pressure for the cleaning fluid is insufficient or no cleaning fluid pressure.	Check the pressure of the cleaning agent
		Check the filter and clean it if necessary
		Check the outlet opening on the device and clean it if necessary
	Pressure of the cleaning agent too high, cleaning agent turns into mist	Check the pressure of the cleaning agent and reduce pressure if necessary
Spray head does not rotate	Holes blocked	Clean holes
	Holes deformed	Replace the device
	Sliding surfaces soiled	Clean the device
	Device is worn	Replace the device

Table 8.2-1: Operating Faults – Cause and Remedy

If the specified measures are NOT successful, please contact AWH.



In the event of return shipment (e.g. repair / servicing / return), a hazardous substance declaration must be enclosed with the device in accordance with the Hazardous Substance Directive (GefStoffV).

Request the form for the hazardous substance declaration from AWH.

8.3 How to Act in Case of an Emergency

If a hazardous situation occurs, or if you need to avert a potential danger, quickly set the device to a safe state.

The type of EMERGENCY STOP circuit used for the device is to be determined depending on the hazards and operating conditions and is the sole responsibility of the operating company.

It is for this reason that AWH can offer the operating company, solely as a precautionary measure, a few points of reference and notes to be observed and to be integrated into the operating company's hazard assessments.

- The working steps listed in [section 7.2 Switch-off Procedure](#) must be adhered to for switching off the device.
- The EMERGENCY STOP circuit must be designed in such a way that the machine or system operator can actuate it immediately in the event of an emergency.
- Switching off with the “EMERGENCY STOP” in case of emergency is designed to disconnect the entire machine from the supply voltage without delay in order to eradicate the risks caused by electrical voltage immediately.
- Shutting down in case of emergency using the “EMERGENCY STOP” is intended to prevent risks which cause hazardous movements as soon as possible.
- The EMERGENCY STOP must have priority over all other functions and actuations in all operating modes.
- Resetting must not cause the plant/machine to start up again.



Source:

- DIN EN 60204-1 / VDE 0113-1 “Safety of machinery – Electrical equipment of machines – Part 1: General requirements”
- EN ISO 13850: “Safety of machinery - Emergency stop - Principles for design”

In Case of Emergency:

Trigger the EMERGENCY STOP function on the higher-level plant / machine.

- Actuate the **EMERGENCY STOP** switch
- Interrupt actuating energy supply!
 - Interrupt electricity supply (e.g. electrical actuator)
 - Switch off higher-level main switch
 - Pull out power plug
 - Close the compressed air shut-off valve (e.g. pneumatic actuator)
- Interrupt the supply of cleaning agent (actuator energy)
 - Close the shut-off valve

9 Decommissioning

Once the device has reached the end of its service life, it must be removed from the container, dismantled and disposed of in an environmentally friendly manner. Disposal must be performed in accordance with the respective valid local, national and international regulations.



WARNING



Danger due to improper removal from operation / disposal!

A risk of poisoning or irritation exists when using media that is hazardous to health, toxic or hazardous in any other way.



There is a risk of death or severe physical injuries.



- Only an expert should perform the work.
- Before starting work, observe the **working steps of the switch-off procedure** (see [section 7.2 Switch-off Procedure](#)).
- Use protective work clothing, protective gloves and safety goggles when carrying out the tasks.
- In case of any uncertainty or doubt, contact AWH.

Removal

Only experts are permitted to perform the removal from the container and the disassembly of the device for disposal. The [section 7.3 Removal](#) contains information on the removal of the devices and its interfaces. The safety instructions in [section 7.1 Safety Notes for Maintenance](#) must be observed.

9.1 Disposal



CAUTION



Danger of injuries from harmful liquids which are a health hazard!

When performing disposal, there is a risk of injury from contact with harmful liquids.

There is a risk of minor or moderate injuries.



- Use personal protective equipment (e.g. protective gloves, safety shoes, safety goggles).

NOTE



The cleaning device is made of stainless steel and plastic. Stainless steel is a valuable raw material and can easily be recycled.

After removal, for proper disposal, the entire device must be properly

- cleaned (see [section 7.4.5 Notes on Cleaning](#)) and
- broken down into assembly groups and individual parts.

Unless other arrangements have been made for return or disposal, disassembled components should be recycled:

- Scrap any parts made of metal
- Recycle any parts made of plastic

If necessary, contact a specialist company to arrange for disposal.

Comply with locally applicable health, safety, disposal and environmental protection regulations.

NOTE



Danger due to improper disposal!

Cleaning agents, consumables and lubricants must NOT be allowed to enter the groundwater, waterways or sewerage system.

Improper disposal can cause environmental damage.

- *Dispose of any cleaning agents, lubricants and consumables (e.g. brushes and cloths) which have been used for cleaning in accordance with the local regulations and in accordance with the information in the manufacturer's safety data sheets.*
- *Dispose of packaging materials in an environmentally friendly manner and recycle them.*

Index

A

Abbreviations.....	IV
Assembling the Device.....	45

C

Cleaning Agents.....	6, 16
Cleaning media.....	7, 16, 24
Commissioning.....	29
Construction.....	14
Construction and Function.....	14
Consumption Data.....	16
Container	
Container in the Context of these Instructions	
.....	7
Customer Service	48

D

Decommissioning.....	53
Device Interfaces	
Cleaning Head	25
Media Connection [MC]	25
Process Connection [PC].....	25
Dimensions	26
Disassembling the Device.....	45
Disposal	53
Duties of the Operating Company	9

E

Emergency	52
Expert	
Expert	11, 23, 36, 47
Instructed Person	11, 47
Qualified Electrician	36
Explanation of Signal Words.....	1
Explanation of the Warnings.....	2

F

Faults.....	5, 50
Faults and Remedial Action.....	51
Functional check	
Trial run with the device.....	36, 42
Trial Run with the Device	30

G

General Function Description.....	14
-----------------------------------	----

H

How to Act in Case of an Emergency.....	52
---	----

I

Identification Marking	13
Installation	22, 24
Clipon Variant.....	27
Weldon Variant	28
Installation Position	26
Installing the Device	27
Intended Use.....	6
Interfaces	25

M

Maintenance.....	36, 40
Maintenance Points	42
Maintenance Intervals	41
Means of Presentation	1, 3

N

Noise Level	
Noise Level of the Device.....	15, 30
Noise Level of the Plant	30
Notes on Cleaning	46

O

Operation	32
-----------------	----

P

Packaging.....	20
Personal Protective Equipment	12
Pictograms and Symbols.....	3
Product Names and Trademarks.....	4

R

Related Documents.....	4
Removal	39, 53, 54
Removing the Device.....	39
Requirements for Personnel.....	11

S

Safety	5
Safety Notes for Commissioning	29
Safety Notes for Fault Clearance.....	50
Safety Notes for Installation	22

Safety Notes for Maintenance	36
Scope of Delivery	19
Spare Parts	6, 8, 48
Spare Parts and Customer Service.....	48
Spare Parts and Wear Parts	
Spare Parts	48
Spare Parts, Replacement Parts and	
Accessories	8
Spray Angle	14
Storage	21
Switch-off Procedure	38
Switch-on Procedure.....	31

T

Technical Data	14
Tools and Tightening Torque Values	44

Transportation.....	20
Transportation and Storage	19
Type Designation	13
Type Plate	6, 13

U

Units of Measure.....	V
-----------------------	---

W

Warranty and Liability.....	4
Working steps	
Switch-off Procedure.....	23, 37, 50, 53
Working Steps	
Switch-off Procedure.....	38, 52
Switch-on Procedure.....	31

Appendices

Appendix 1: Declaration (Translation).....	59
--	----

Appendix 1: Declaration (Translation)

Armaturenwerk Höstensleben GmbH

Schulstraße 5 - 6

39393 Höstensleben, Germany

Phone +49 39405 92-0

Fax +49 39405 92-111

E-Mail info@awh.eu

Homepage <http://www.awh.eu>

Declaration for incorporation as per

– EC Directive - Machinery 2006/42/EC, Annex II B

We hereby declare that the container cleaning device

Name: Spate cleaner

Type: TANKO-SF40

Year of construction: See type plate on the device

Serial number: See type plate on the device

is consistent with the following essential health and safety requirements of directive 2006/42/EC:

1.1.2 – 1.1.7, 1.3, 1.5.2 – 1.5.9, 1.5.15, 1.5.16, 1.6, 1.7.1 – 1.7.3, 1.7.4, 1.7.4.1, 1.7.4.2, 1.7.4.3.

The specific technical documents were compiled in accordance with directive 2006/42/EC, Annex VII B.

The supplied version of the device is consistent with the following directives and standards:

Directive / Standard	Title	Version	Comments
2006/42/EC	EC Machinery Directive	2006	
DIN EN ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction	2011-03	Harmonized standard
	Correction to DIN EN ISO 12100:2011-03	2013-08	

If any modifications are made to the device without our consent, this declaration shall lose its validity.

Commissioning is prohibited until it is determined that the overall system fulfills the provisions of the directives.

Höstensleben, Germany, 6. August 2019



Thomas Erhorn (CEO)

Person authorized to compile the technical documentation:

Armaturenwerk Höstensleben GmbH, Ms. Heike Schlange; Schulstr. 5 - 6; 39393 Höstensleben, Germany

Notes

Armaturenwerk Hötensleben GmbH

Schulstr. 5 – 6

39393 Hötensleben, Germany

Phone +49 39405 92-0

Fax +49 39405 92-111

E-Mail info@awh.eu

Homepage <http://www.awh.eu>

NEUMO Ehrenberg Goup

