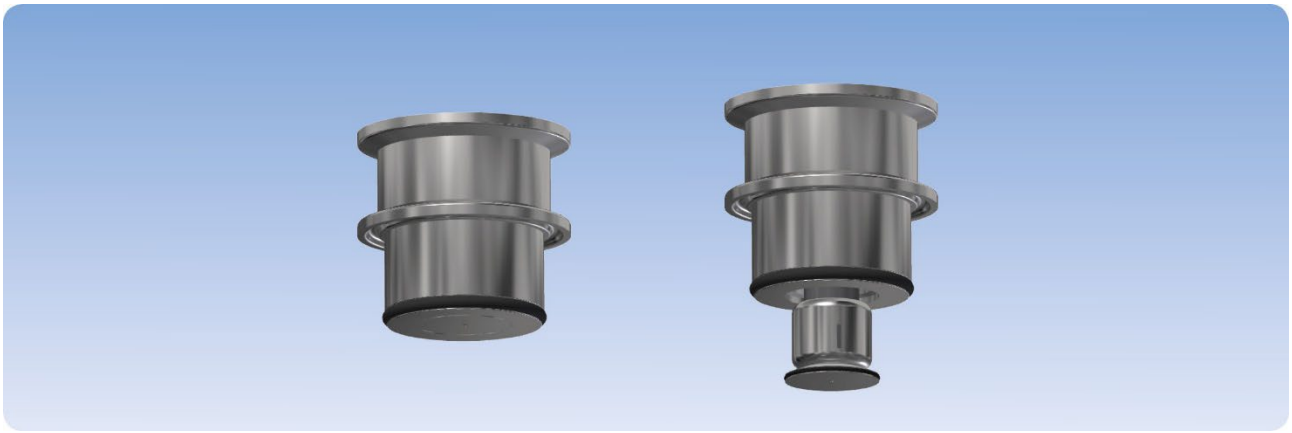
OPERATING/INSTALLATION INSTRUCTIONS

(translation)



Container cleaning device

Mini retractor system

TANKO®RF40

TANKO®RF50

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NOTE

These instructions are an integral part of the device and must be available to operating and maintenance personnel at all times throughout its entire life cycle. The safety instructions contained therein 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 accepted by 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) must be consulted for clarification, or the manufacturer must be contacted.

Contents

List of Figures

List of Tables

Abbreviations and Units

Abbreviations

ATEX	**AT**mosphère **EX**plosible; synonym for the ATEX Directives of the European Union; comprises measures for explosion protection for potentially explosive atmospheres
AF	Width across flats [wrench size]
AG	Assembly group
approx.	approximately
ASSY	Assembly
AWH	Armaturenwerk Hötensleben GmbH
BetrSichV	Betriebssicherheitsverordnung (German Operational 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
CIP	Cleaning in Place; a local (automated) cleaning process without dismantling plant parts. Refers to a procedure for cleaning processing plants, predominantly in sectors with particularly critical hygiene requirements, such as the pharmaceutical industry, food and beverage industry or biofuel plants.
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.
DN	DIN nominal width
EN	European Standard (Norm)
EPL	Protection level of the device (Equipment Protection Level)
etc.	and so on
FDA	Food and Drug Administration (US food and medication monitor regulation authority)
if nec.	if necessary
IP	Individual part
ISO	International Organization for Standardization
LE	Installation dimension; corresponds to the length from the lower edge of the process connection to the lower edge of the cleaning head.
$L_{EX,8h}$	Daily noise exposure level
L_{PA}	Emission sound pressure level at workplace
max.	maximum
MC	Media connection In the context of these instructions, this colloquial term describes the interface used in cleaning technology for supplying cleaning medium from the supply line to the device.
min.	minimum
NEUMO	NEUMO Armaturenfabrik-Apparatebau-Metallgießerei GmbH + Co KG
PC	Process connection In the context of these instructions, this colloquial term describes the interface used in cleaning technology for the connection to the process from the device to the container.

Ra	Average roughness value (dimension for surface roughness)
SI	Système international d'unités; the most widely used international system of units for physical values
SN	Serial number
TRBS	Technische Regeln für Betriebssicherheit (German for Technical Rules for Operational Safety); these rules specify the details of the “Betriebssicherheitsverordnung” (BetrSichV = German for Operational Safety Ordinance) with regard to the identification and assessment of hazards and the derivation of suitable measures.
TRGS	Technische Regel für Gefahrstoffe (German for Technical Rules for Hazardous Substances); these rules reflect the state of the art, occupational medicine and occupational hygiene as well as other sound scientific knowledge for activities involving hazardous substances, including their classification and identification.
v_{eff}	effective vibration velocity
WA	Welded assembly
WP	Wearing part

Units of Measure

The following factors given below are intended for orientation and the conversion of the SI units to common units of measure for the American market.

bar	Unit of measure for pressure p [bar] All pressure [bar] specifications stand for overpressure [bar o] = positive pressure [bar g], unless expressly described otherwise (e.g. absolute pressure [bar a]). 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]
h	Unit of measure for time t [hours]
K	Unit of measure for temperature T and temperature differences ΔT [Kelvin] Conversion: 273.15 K = 0 °C
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 luminance intensity E_v [lux]
m	Unit of measure for length l [meter] Conversion: 1 m = 3.28083... ft [feet]
mm	Unit of measure for length l [millimeter] Conversion: 1 mm = 1/25.40005 in [inch] = 0.03937 in [inch]
Nm	Unit of measure for moment/torque M [newton meter] Conversion: 1 Nm = 0.737 lbft [pound-force feet]
rpm	Unit of measure for speed n [revolutions per minute] Conversion: 1 U/min = 1 rpm [revolutions per minute]
µm	Unit of measure for length l [micrometer]
MΩ	Unit of measure for electrical resistance R [Mega Ohm = 1 million ohms]
pS/m	Unit of measure for electrical conductivity of materials κ [picosiemens per meter]

1 Introduction

These operating/installation instructions (referred to hereinafter as the instructions) are a component of the device. They provide you with all the information required for smooth operation of the TANKO® mini-retractor system (referred to hereinafter as the device).

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

After studying the instructions, you will be able to

- 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 applicable, statutory and other binding regulations for the prevention of accidents and for 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 they are 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 nec. from the website: http://www.awh.eu/de/downloads.

1.1 Means of Representation

1.1.1 Explanation of Signal Words

The warnings are introduced by a signal word that describes the extent of the hazard. Their meaning and their classification in 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 injury
⚠ WARNING	Hazard with a moderate level of risk	Death or severe physical injury
⚠ CAUTION	Hazard with a low level of risk	Minor or moderate physical injury
NOTE	Hazard with a low risk	Risk of material damage
NOTE ON EXPLOSION PROTECTION	Important note on explosion protection	Disabling the explosion protection and resulting dangers

Table 1.1-1: Overview of Signal Words

1.1.2 Explanation of the Warnings

Section-Related Warnings

The section-related warnings apply not only to one particular action, but to 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 result in death or severe physical injury.

- *Measure(s) to prevent the danger*

WARNING

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

Failure to observe it can result in 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 result in minor or moderate injury.

- *Measure(s) to prevent the danger*

NOTE

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

Failure to observe it can result in material damage.

- *Measure(s) to prevent the danger*

NOTE ON EXPLOSION PROTECTION

This note contains instructions regarding explosion protection.

Non-compliance can disable the explosion protection, thus resulting in hazards.

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 the danger

Possible consequences in case of failure to observe

- Measure(s) to prevent the danger

Further Means of Presentation

The information symbol provides useful information, additional tips and recommendations.

– Texts that follow this mark are enumerations.

• Texts that follow this mark describe measures for avoiding the danger.

1. Texts that follow this numbering describe the first step of a task, followed by further numbered steps that have to be performed in the specified order.

a) Texts that follow this lettering as a subitem of a numbering (e.g. 1) describe the first step of a task for a higher-level task, followed by further lettered steps that have to be performed in the specified order.

(1) Numbers in parentheses reflect the item numbers in figures 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 additionally highlighted in **bold type**, *italics* or CAPITAL LETTERS for individual words or phrases.

1.1.3 Pictograms and Symbols

The following pictograms and symbols are used as an additional measure in warnings to clarify the sources of dangers and measures. They can appear at all danger levels.


Warning of electrical voltage

Warning of a potentially explosive atmosphere


Warning of hand injuries


Warning of a hot surface


Warning of corrosive substances


Warning about magnetic field


Warning about automatic startup


Warning about trapping/entanglement hazard


Warning about substances that are a water hazard


Unauthorized access prohibited


People with pacemakers must keep away


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 power supply before work


Follow instructions


Protective grounding connection required


Secure against power supply being switched back on


Return for recycling

Operating equipment for Ex zone

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 Hötensleben 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 case of personal injury and material damage shall be ruled out, 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, start-up, operation and maintenance of the device,
- failure to observe the notes in the instructions regarding assembly and installation, start-up, operation and maintenance of the device,
- constructional modifications to the device (conversions or other modifications to the device must not be made without the previous written approval from AWH. In case of infringement, the device will lose its EU conformity and the operating permit.),
- use of spare parts that do not comply with the specified technical requirements,
- improperly performed repairs,
- disasters, the effects of foreign matter and force majeure.

Disclaimer

AWH reserves the right to make changes to this document at any time without prior notice. AWH provides no guarantee (neither explicitly 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 Hötensleben GmbH.

1.4 Related Documents

The following documents may contain additional information to 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 was built in accordance with state-of-the-art technology and the recognized safety rules. Nevertheless, use of the device may pose 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 instructions are intended to prevent injury to personnel and material damage. The owner 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 that must be complied with.

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

The safety systems and safety instructions 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 at the device and to dangerous situations!

There is a risk of death or severe physical injury.

- *Have all work performed on the device carried out by an expert only and in compliance with*
  - *the corresponding detailed operating and installation instructions,*
  - *the warnings and safety signs on the device,*
  - *the regulations and requirements specific to the plant and*
  - *the national/regional regulations for safety and the prevention of accidents.*
- *Never install damaged devices or components.*

The figures in these instructions are intended to provide a basic understanding, and are primarily illustrations of the principles involved. They may deviate from the actual design of the device.

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

If you have questions or doubts about the handling the cleaning device, please contact AWH.

Built-in Safety Systems

The built-in safety devices used by the higher-level plant in which the device is installed are to be checked at regular intervals.

WARNING

Dangerous situations arising from changing or disabling safety devices!

Only functioning safety devices can ensure safe operation and prevent inadmissible operating conditions.

Changing or disabling safety devices can result in unpredictable and dangerous situations.

There is a risk of death or severe physical injury.

- *Disabling the safety devices or changing the way they work is strictly prohibited.*

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,** UNLESS the device is expressly intended for said purpose!*

There is a risk of death or severe physical injury.

- *Follow the information on the **type plate** of the device (see Section 2.5.2 Type Plate) **and** the **relevant operating** instructions.*

WARNING

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

There is a risk of death or severe physical injury.

- *Only use the device as intended.*
  - *Only use the device in accordance with the specifications contained in these instructions and the specifications on the device's type plate.*
  - *All 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 of the device are NOT permitted.*

WARNING

Danger from incorrect use of materials/media!

The materials/media to be used for operation of the device as intended are procured and utilized by the owner of the device.

If unsuitable materials/media are selected, strong chemical reactions could result in fatal injury or severe physical injuries.

- *The proper selection and handling of these materials/media is the sole responsibility of the owner.*
- *When selecting the materials/media, 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 limits for use in the material data sheets.*
- *Adhere to the safety data sheets provided 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 develop during work processes.*

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

The device is used for the interior cleaning of containers with and without installed equipment.
The small TANKO-RF design was developed for use in small containers and for pipelines.

The option of using retractor systems is useful, particularly in situations where there is little space available for a cleaning device, due to projecting agitators or other installations, or where critical products prevent permanent installation the device.

For the purpose of these instructions the word container refers to **closed** tanks, silos, barrels, containers, pipes, etc. that are provided with an outlet that ensures a free flow of the supplied cleaning medium.

When using the device, it is necessary to distinguish between the following operating states.

Operating State - Cleaning Process (Cleaning > Cleaning head extended > Cleaning medium is sprayed)

- Pressure in the container: 0 to 0.5 bar (0 to 7.25 psi g)
- Temperature of the cleaning medium: +5 °C to +95 °C
- Ambient temperature in the container to be cleaned: +5 °C to +95 °C
- Ambient temperature outside the container to be cleaned: +5 °C to +40 °C

Operating State – Idle Position (NO cleaning > cleaning head retracted)

- Pressure in the container: 0 to 6.0 bar (-14.5 to 87.0 psi g)
- Ambient temperature in the container to be cleaned:
  -20 °C to +130 °C (O-ring material EPDM)
  -15 °C to +140 °C (O-ring material FKM or FFKM)
- Ambient temperature outside the container to be cleaned: -15 °C to +40 °C

The device was developed, engineered and built exclusively for industrial and commercial use (food, chemical and pharmaceutical industries and low-germ processes). It must not be used for private purposes.

The device is designed so that it can be operated safely within the specified technical parameters (see *Section 3.3 Technical Data*).

Locations for containers in which the device is to be installed are usually closed spaces. In different setups, the owner must ensure the protection of the device from harmful weather and environmental influences while maintaining the specified application limits/conditions (see *Section 3.3 Technical Data*).

In the process, the following must always be observed:

- Only operate the device when installed in a closed 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).
- Use a suitable filter system in the cleaning medium supply line.
- Only operate the device only the approved parameters (see *Section 3.3 Technical Data*). If necessary, appropriate monitoring and limiting systems (e.g. for pressure and temperature) must be used.
- Only cleaning media that are compatible with the materials of the device (see *section 3.4 Cleaning Media*)
- The preferred installation position for the device is vertical with the cleaning head pointing downwards. Other installation locations (see *Section 5.2.2 Installation Position*) are possible.

Non-Intended Use

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 containers.
- Holding the device with your hand during operation is PROHIBITED.
- Use in explosive atmospheres is prohibited.
- The device must NOT be immersed in the product of the production process (NOT even partially). This could cause the product to penetrate the device. The spray holes/slots may become blocked. The free movement of the actuator could be obstructed.
- The device must NOT by operated with gases (e.g. air) over a long period, as the cleaning medium is used for lubrication of the bearings.
- Operation with cleaning agents that can generate an explosive atmosphere when sprayed is prohibited

This device is intended exclusively for the purpose outlined above. Any other use beyond that described here or any conversion of the device without a written agreement with the manufacturer is considered IMPROPER use.

The manufacturer accepts NO liability for damage arising from such improper use. The owner bears the sole risk.

The device must not be put into operation until it has been assured that all the safety equipment is in full working order 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

WARNING

> ***Risk of damage, malfunction or complete failure of the device!***
> *Incorrect or faulty spare/replacement parts and accessories will put the functional safety and reliability of the device at risk. The failure of components or a device malfunction can cause material damage and consequential damage.*
> *There is a risk of death or severe physical injury.*
> - *Only use the manufacturer's original spare parts.*

We expressly draw attention to the fact that spare parts and accessories NOT supplied by AWH have NOT been checked or approved by AWH. The installation and/or 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 accessories. Standard parts can be obtained from specialist dealers.

2.3 Duties of the Owner

The device is used in the commercial sector. The owner is thus subject to the legal obligations regarding occupational safety.

In the EEA (European Economic Area), the national implementation of the Framework Directive (89/391/EEC) on taking 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.

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

As a basic rule, in Germany the Industrial Safety and Health Protection Ordinance (BetrSichV) must be observed.

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

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

- The owner must ensure that the device is used only as intended (see *Section 2.1 Intended Use*).
- The owner must keep himself informed of the locally applicable occupational health and safety regulations and, in addition, use a hazard assessment to determine the hazards resulting from the specific working conditions at the location of use of the device. These must then be implemented in the form of operating instructions for operation of the device.
- When using hazardous materials, protective measures must be specified in accordance with the safety data sheets and operating instructions must be compiled for hazardous materials. Personnel must be instructed accordingly. This also applies to hazardous substances that may develop 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 owner company must check whether the operating instructions he has compiled reflect current legislation requirements and adapt them as necessary.
- The owner must clearly regulate and specify the responsibilities of personnel (e.g. for operation, maintenance and cleaning).
- The owner must allow only sufficiently qualified and authorized personnel to work on the device.
- The owner 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 of the hazards.
- The owner 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 owner must provide personnel with personal protective equipment and make sure that this is used (see *Section 2.4.1 Personal Protective Equipment*).
- The owner 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 owner 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 owner 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 owner 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 owner 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 owner 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 owner must define and adhere to the intervals for inspections and control measures in accordance with the environment and media used.
- The owner 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 in fire safety.
- Warnings in the documentation of externally supplied assembly groups must be adhered to and incorporated into the risk assessments for the specific workplace.
- For installation of the device in a plant, the owner 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 owner must make sure that the local regulations are observed for assembly, installation and start-up, if these tasks are performed by the owner.

- The hydraulic connections must meet the requirements of EN ISO 4413.
- The pneumatic connections must meet the requirements of EN ISO 4414.
- The grounding measures must be implemented and checked prior to start-up of the device, including the container.

2.4 Personnel Requirements

The device may only be operated, serviced and repaired by persons with the appropriate qualifications. These persons must be familiar with the 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 him to carry out work on the device and identify and avoid potential risks independently.

Instructed Person

An instructed person has been instructed and, if necessary, trained by the owner or an expert in a briefing on the assigned tasks and possible hazards in the event of improper action, 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 comparable vocational qualification, practical experience in the assembly/disassembly of devices
  The person must be familiar with the construction, mechanical installation, maintenance and troubleshooting of 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:** Welding training in pipeline engineering or similar training
- **Electrical work:** Electrician; person with appropriate specialized apprenticeship, knowledge and experience, enabling them to identify and avoid the risks that may arise from working with electricity
  The person must be familiar with the electrical installation, start-up, troubleshooting 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 professional experience in the field of electrical engineering
- **Cleaning:** Instructed person

Work performed in the other areas, i.e. **transport, storage, operation and disposal,** must be performed exclusively by personnel who have been given suitable instructions.

All persons 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 tight-fitting sleeves and without protruding parts. It is mainly used for protection against becoming 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 parts or for protection against slipping on slippery surfaces.

Protective gloves

Wear protective gloves to protect your hands against friction, grazes, getting pierced 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 parts.

Hard hat

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

Hearing protection

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

Welding mask

Wear a welding mask to protect yourself from 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 owner in accordance with the valid requirements. Furthermore, both the national regulations and, if necessary, the internal instructions from the owner must be observed.

2.5 Identification

2.5.1 Type Designation

Example: Retractor system

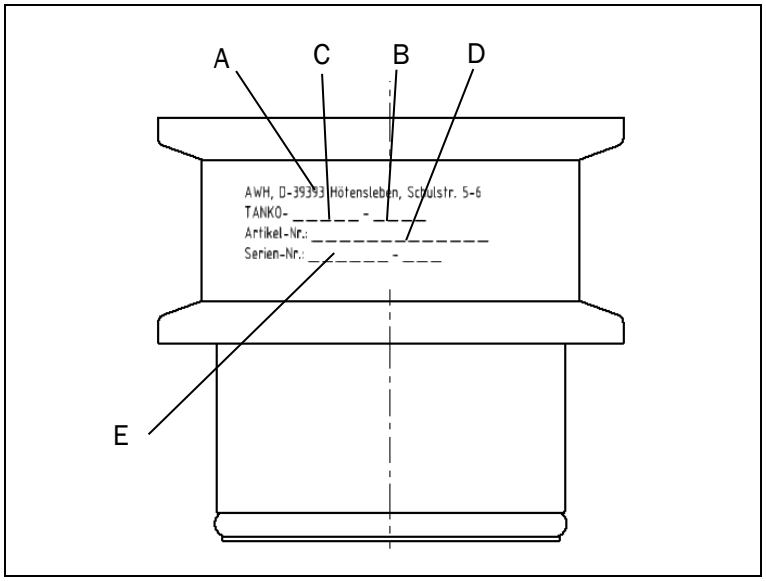
TANKO–RF40 C-C E

1) Brand of the cleaning devices: **TANKO**
2) Type:**R**etractor system (**R**etractor system **F**eder (=Spring))
3) Size DN: **40** mm (**50** mm)
4) Process connection: **C**lamp (DN) DIN 32676
   - **C**lamp DN40 / DN50 (see size)
   - **T**hread G1 1/4“ for DN40 or
   - **T**hread G1 1/2“ for DN50
5) Media connection: **C**lamp (DN40)
   Clamp (DN50)
6) O-ring: **E**PDM
   - **E**PDM / FKM (e.g. **V**ITON®) / **F**FKM

When selecting the O-rings, the limits of the application temperatures must be observed, see Section 3.3 Technical Data.

2.5.2 Type Plate

Labeling is applied to the device according to the following illustration.



A) Manufacturer
B) Year of manufacture
C) Type, size
D) Article number
E) Serial number (internal plant number)

Figure 2.5-1: Type Plate Position

The labeling of the device or the inscription on the type plate must be permanently visible and legible.

3 Design and Function

3.1 Design

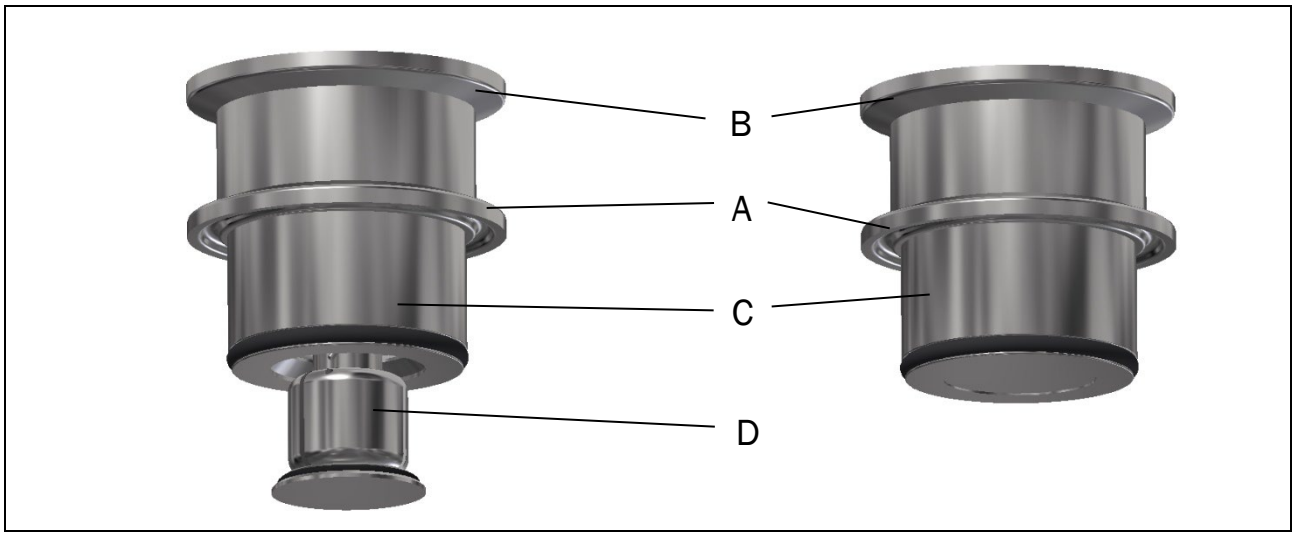


Figure 3.1-1: General Construction

The TANKO-RF cleaning device driven by medium consists of the following main components:

A	Process connection [PC]
B	Media connection [MC] (cleaning agent feed)
C	Housing to accommodate the cleaning head
D	Cleaning head, rotating

Dimensions and Weight

TANKO-RF40

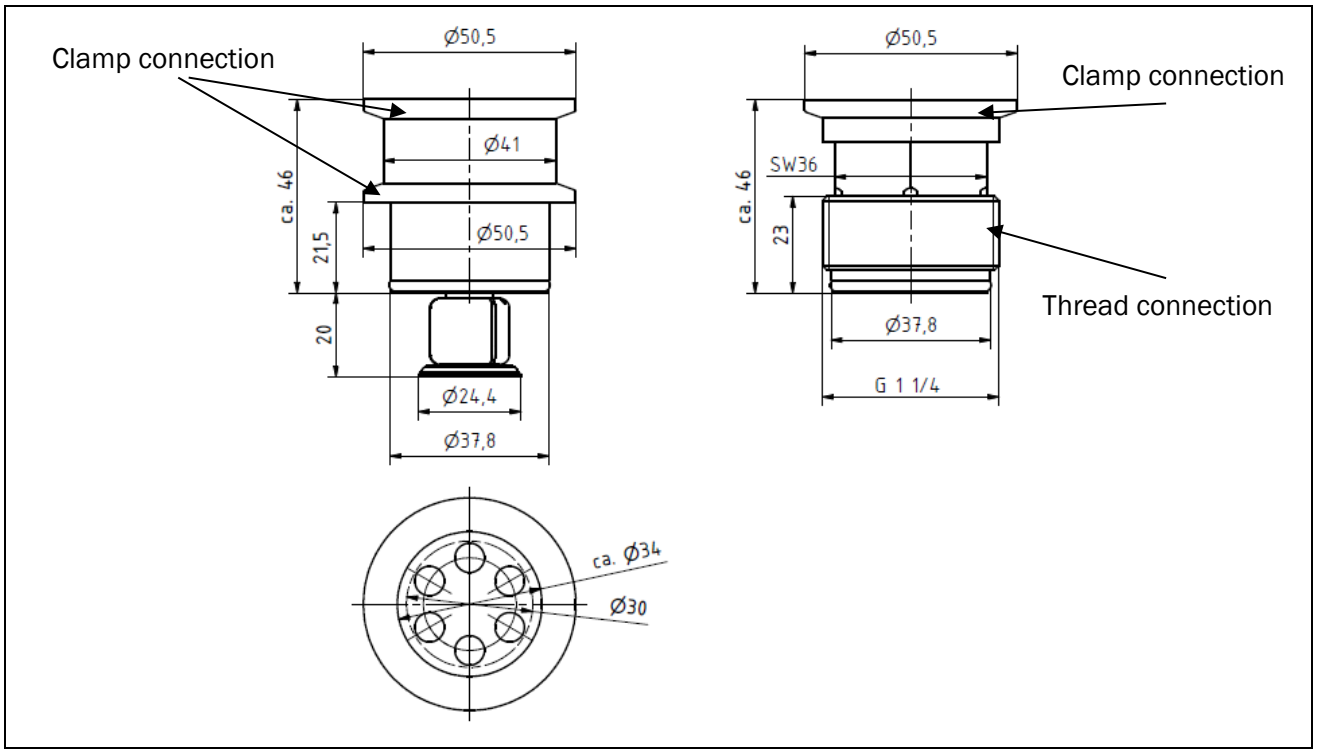


Figure 3.1-2: Dimensions of TANKO-RF40

TANKO-RF50

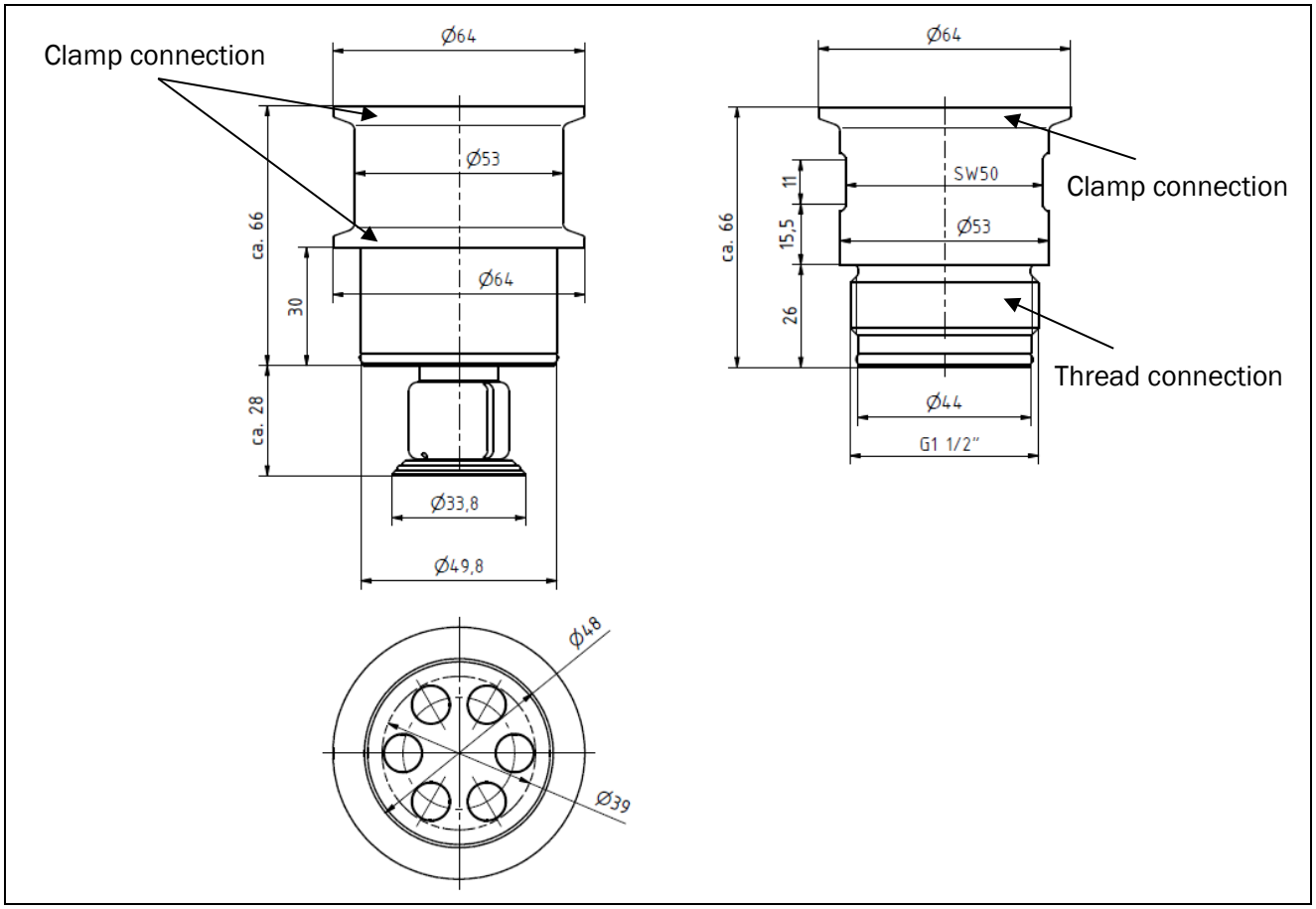


Figure 3.1-3: Dimensions of TANKO-RF50

Device designation	Process connection (PC)		Media connection [MC]		Stroke [mm]	Weight [kg]
	Version	PC [mm]	Version	MC [mm]		
TANKO-RF40 C-C	Clamp (DIN 32676)	Ø 50.5	Clamp (DIN 32676)	Ø 50.5	21	0.428
TANKO-RF50 C-C		Ø 64.0		Ø 64.0	28	0.911
TANKO-RF40 G-C	External thread	G 1 1/4		Ø 50.5	21	0.420
TANKO-RF50 G-C		G1 1/2		Ø 64.0	28	0.831

Table 3.1-1: Dimensions and Weights

The inner Ø of the media connection should not be less than Ø30 mm for TANKO-RF40 and Ø39 mm for TANKO RF50.

Surfaces

Exterior surface — Metal bright/polished

Interior surfaces in contact with the product — Ra < 0.8 µm

For the exact design of the device, refer to the order confirmation.

Accessories

Container connector for TANKO-RF40: for inner tank or pipe diameter from 96 mm
Container connector for TANKO-RF50: for inner tank or pipe diameter from 146 mm

for device	Container connector for tank		Weight [kg]
	Version	Article no.	
TANKO-RF40 C-C	Clamp DN40	66RF0400AC020	0.120
TANKO-RF50 C-C	Clamp DN50	66RF0500AC020	0.915
TANKO-RF40 G-C	Thread 1 1/4“	66RF0400AG020	0.188
TANKO-RF50 G-C	Thread 1 1/2“	66RF0500AG020	0.186

Table 3.1-2: Container connector

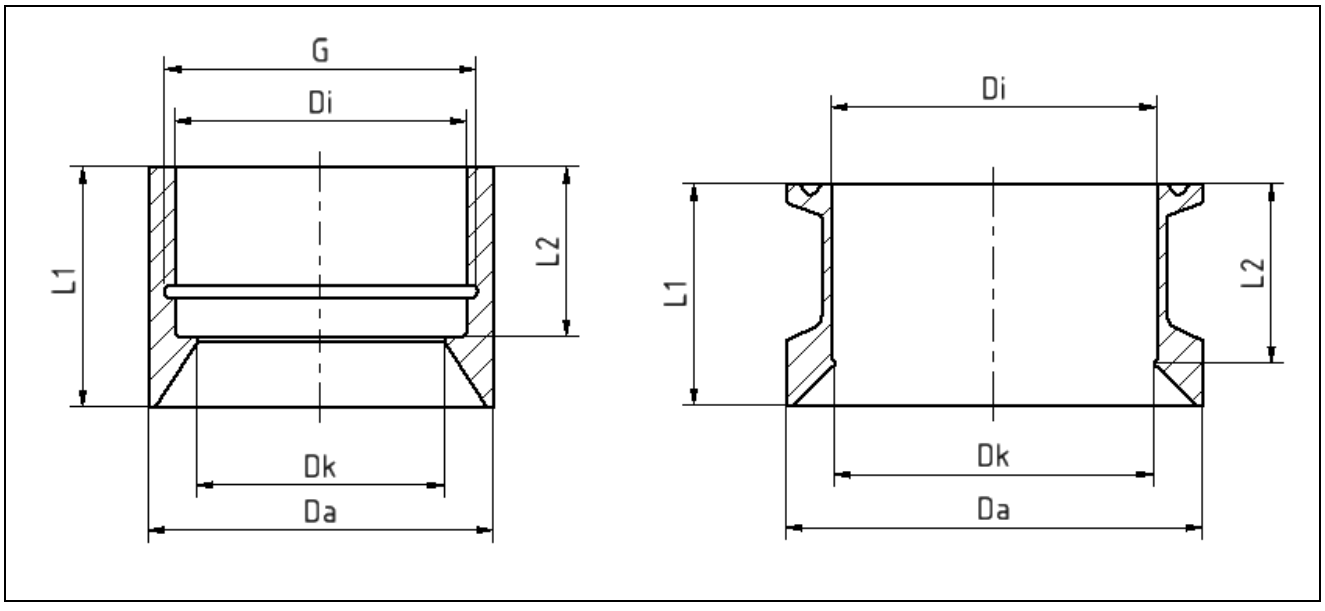


Figure 3.1-4: Container connector dimensions

Container connector for tank		Da [mm]	L1 [mm]	L2 [mm]	Dk [mm]	Di [mm]	G
Version	Article no.						
Clamp DN40	66RF0400AC020	50	31	19.3	37	38	
Clamp DN50	66RF0500AC020	64	34	27.6	49	50	
Thread 1 1/4“	66RF0400AG020	53	26	22	32	39	1 1/4"
Thread 1 1/2“	66RF0500AG020	53	37	26	38	45	1 1/2"

Table 3.1-3: Container connector dimensions

3.2 General Function Description

The item numbers shown in brackets refer to Figure 7.5-1: Internal design; the letters in brackets refer to Figure 3.1-1: General Construction.

The TANKO-RF is a mini-retractor system with a rotating spray head that is extended into the container for the cleaning procedure by means of the cleaning medium pressure only. The minimum opening pressure must be observed (see *chapter 3.3 Technical Data*). The rotating spray head is driven by the cleaning medium. After switching off the cleaning medium supply, the spray head retracts into its housing by spring force and closes tightly with it. A quantity of cleaning medium trapped between the media supply and the closed plate as a result must be removed by suitable measures (installation angle, blowing out the device). The device is used for the interior cleaning of containers with and without installed equipment. The small TANKO-RF design was developed for use in small containers and for pipelines.
The item numbers shown in brackets refer to *Figure 7.5-1: Internal design RF40* and *Figure 7.5-2: Internal design of RF50*

The housing (1) forms a unit with the media connection (B) and process connection (A). The cleaning head (9) is extended and rotated by the media pressure.
If the media pressure drops below the opening pressure of 1 bar, the cleaning head is pressed back into the housing by an internal spring and seals with the housing via an O-ring.
The process connection [PC] is available in 2 variants (see *Table 3.1-1: Dimensions and Weights*).
The cleaning head (9) is mounted on 2 plain bearing bushes made of PEEK (7 and 8). The plate axle (2) at the lower end of the cleaning head is connected to the axle center section (3) via a wire locking pin (10). This is connected to the axle cover (3) via a thread.
An O-ring (14) on the plate seals with the housing (1) when the cleaning head (9) is retracted.
The spray angle of the cleaning head is approx. 80° in the direction of the housing. Due to the shape of the head and the closing function of the plate, the area below the plate is not sprayed with cleaning agent.
The device is made of stainless steel and was developed, designed and built exclusively for industrial and commercial use. Several versions of the device are available for different applications and container dimensions.

Application examples of the TANKO-RF mini-retractor

Small tanks, barrels, containers, pipe lines and the like.

Comment on the Cleaning Process

The result of a cleaning process with the device, like all other cleaning processes, depends on multiple parameters. According to the “Sinner's Circle”, the four most important parameters for cleaning are:

– Chemicals (cleaning medium, plus the product and its concentration)
– Mechanical power (removal of dirt, establishment of contact with the cleaning medium)
– Temperature and
– Time (reaction time of the cleaning medium and duration of the cleaning process).

All four factors are mutually dependent and vary in relation to each other in terms of their size.
The desired cleaning result can only be achieved with a well-balanced combination of pressure, flow, reaction time, temperature and cleaning medium.

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.
The prerequisites for this are that the device must be maintained properly at the intervals specified in *Section 7.4 Maintenance* and the wearing parts must be replaced regularly.
All media other than tap water can reduce the service life of the device.

Technical Data

Designation	TANKO-RF40/-RF50
Operating pressure range in the container to be cleaned - During the cleaning process - In idle state Clamp with adapter (AWH) Thread with adapter (AWH)	 0.0 to 0.5 bar (0.0 to 7.25 psi g) 0,0 bar to 6 bar (0.0 psi g to 82.0 psi g) 0,0 bar to 3 bar (0.0 psi g to 43,5 psi g) Depending on the maximum pressure of the connection to the tank
Installation dimensions:	see *Figure 3.1-2* as well as *Figure 3.1-3* and *Table 3.1-1*
Plant noise level:	L_{pA} max. = 70 dB(A)
Materials: in contact with media	 1.4404, 1.4401, 1.4430, PEEK, EPDM, optional: FKM or FFKM (alternative materials according to customer order)
Range	see *Figure 3.3-3: Range*
Operating temperature (permitted): – Cleaning medium (water with cleaning additives) – Steam (short term) – Compressed air for blowing dry	 +5 °C (+41 °F) to +95 °C (+203 °F) +121 °C (250 °F) max. 1 min. Max. 1 min
Ambient temperature (permitted): In the container to be cleaned – During the cleaning process – Idle state O-ring material EPDM	 +5 °C (+41 °F) to +121 °C (+250 °F) -20 °C (-4 °F) to +140 °C (+284 °F)

Designation	TANKO-RF40/-RF50
O-ring material FKM and FFKM	-15 °C (+5 °F) to +150 °C (+302 °F)
Operating pressure, cleaning medium – Liquid medium – Gaseous medium (air or nitrogen)	1 – 6 bar (14.5 – 87 psi g) recommended 2-3 bar (43.5 psi g) 1 bar (14.5 psi g), max. 1 min
Volume flow rate (depending on pressure)	see *Figure 3.3-1* and *Figure 3.3-2*
Process connection [PC]:	see *Table 3.1-1: Dimensions and Weights*
Media connection [MC]: TANKO-RF40 TANKO-RF50	 Clamp DN40, based on DIN 32676 Clamp DN50, based on DIN 32676

Table 3.3-1: Technical Data

Consumption Data and Operating Pressure for the Cleaning Process:

Consumption data, flow rate depending on pressure

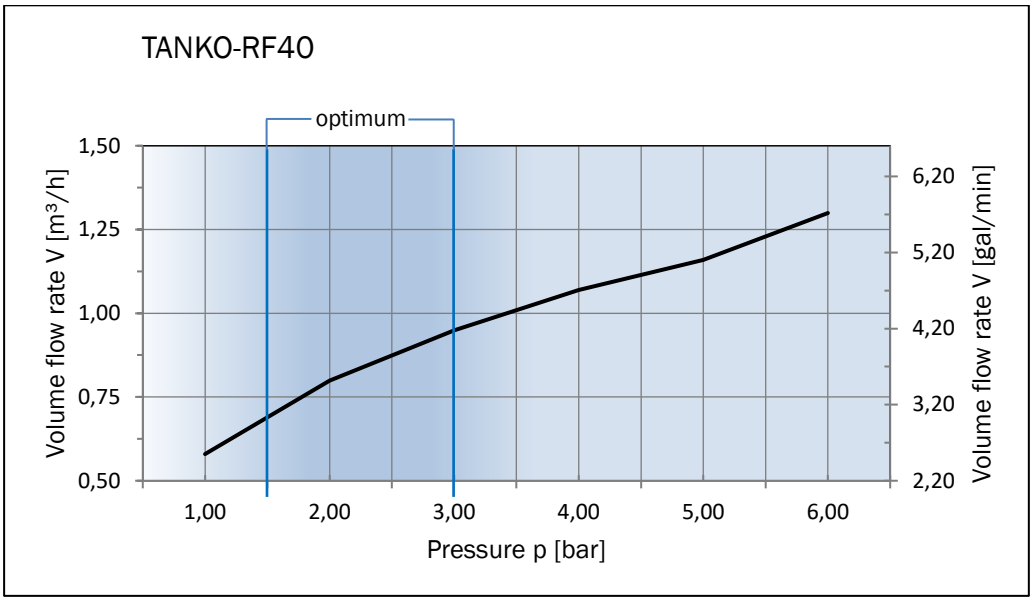


Figure 3.3-1: TANKO-RF40 volume flow rate

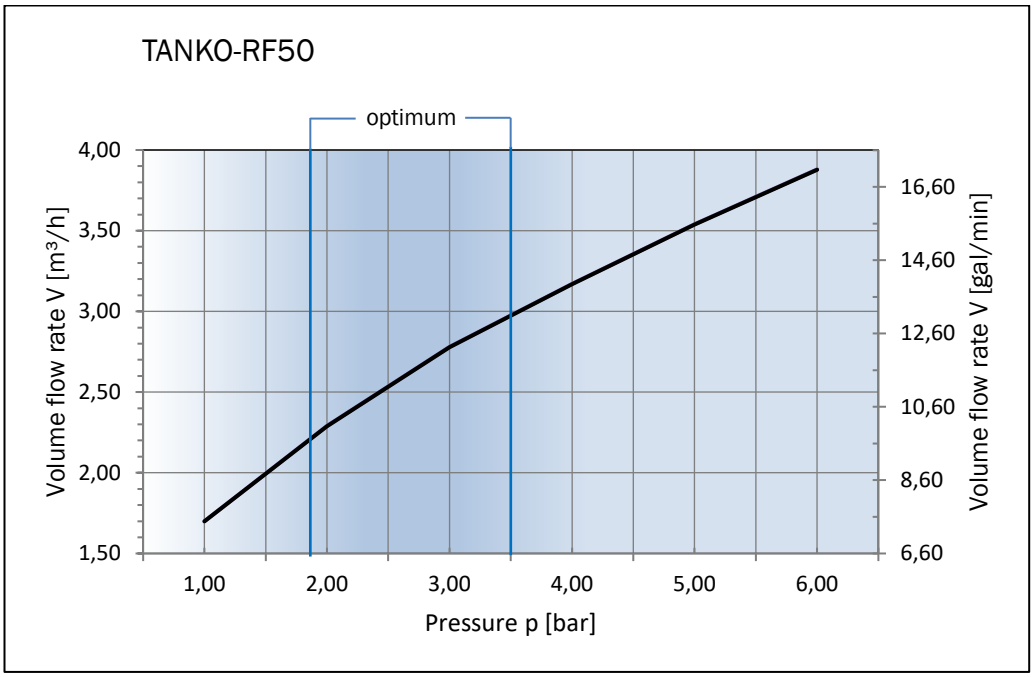


Figure 3.3-2: TANKO-RF50 volume flow rate

The specified values for consumption in the charts are average values and may fluctuate by approx. ±10% in normal operation. They apply to operation with clear water as the cleaning medium at a temperature of +25 °C (+77 °F). The values may differ if a different cleaning medium or temperature is used.

The consumption of cleaning fluid in TANKO-RF40/ -RF50 devices depends on multiple factors, e.g. the pressure of the cleaning fluid and the size of the spray openings. An increase in pressure leads to increased consumption (throughput). The permitted range for the operating pressure of the cleaning medium must be adhered to.

The recommended operating pressure of the device is 1.5 - 3 bar (21.7 - 43.5 psi g) for TANKO-RF40 and 2 - 3.5 bar (29 - 50.8 psi g) for TANKO-RF50.

Range of the Cleaning Fluid

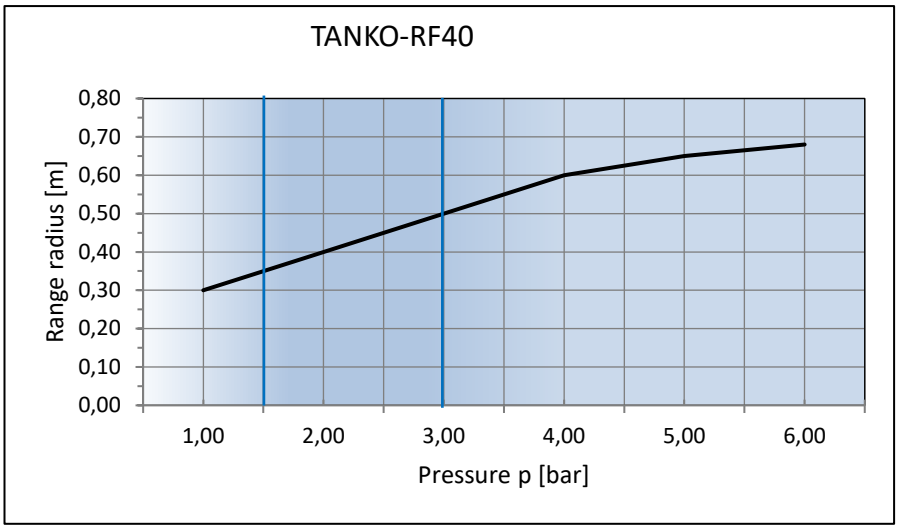


Figure 3.3-3: Range (cleaning radius) TANKO-RF40

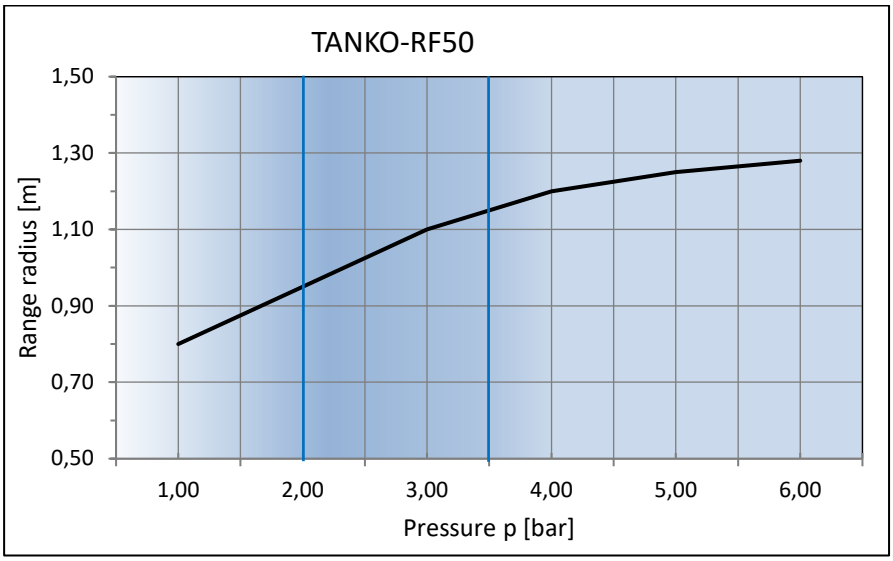


Figure 3.3-4: Range (cleaning radius) of TANKO-RF50

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 media for the owner.

The owner bears the sole responsibility for the type of cleaning media, their use and handling.

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

DANGER

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

There is a risk of death or severe physical injury.

- *The following items are **PROHIBITED** for use as cleaning media:*
  - *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

Danger due to corrosive and aggressive cleaning medium!

When handling the cleaning medium, the risk of inhalation, swallowing, contact with the skin, eyes and mucous membranes CANNOT be ruled out.

There is a risk of death or severe physical injury.

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

CAUTION

Danger as a result of using incorrect cleaning media!

Due to their material resistance, the materials used in the device impose certain restrictions on the cleaning media used.

Failure to observe these restrictions can result in the failure of components or a device malfunction, causing material damage and consequential damage.

- *The cleaning media 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.*
- *Cleaning media containing the following (corrosive) substances may NOT be used:*
  - *chlorine and chlorine ions*
  - *substances containing salt (no resistance to seawater)*
  - *moderately 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 medium!

Dirt or foreign matter in the cleaning medium can have a negative effect on the functional availability of the device.

There is a risk of material damage and consequential damage.

- *Use a suitable filter system in the cleaning medium 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 Section 5.2 Installation .*

The Following Media are Permitted for Use for Container Cleaning:

Only clean and sprayable liquids may generally be used (e.g. water with alkaline cleaning additives and similar).

4 Transport and Storage

AWH products are checked carefully before they are dispatched, and are packaged in accordance with the respective transport 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 that 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 and wearing parts) please contact AWH immediately with a damage report.

Scope of Delivery

- TANKO-RF container cleaning device
- Operating and/or installation instructions (including Declaration of Conformity)
- Technical documents in accordance with the order (e.g. instructions for sensors, certificates and reports)

NOT included in the scope of delivery:

- Fasteners required for fastening the device to the container (e.g. screws, nuts, clamps)
- Fasteners required for fastening the device to the supply line for the cleaning medium (e.g. screws, nuts, clamps)
- Seals

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 any 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 transport. If possible, use the original packaging and the original packaging material. If neither is available any more, 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 adapted to the transport conditions. 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

Hazard as a result of incorrect disposal of the packaging!

Packaging materials are valuable raw materials and can frequently be re-used or processed and recycled practically.

Improper disposal can cause environmental damage.

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

4.2 Transport

NOTE Improper transportation can result in damage to the device.

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

- Observe the symbols and instructions on the packaging.
- Always transport the device in dry condition.
- Protect the device from impact.
- If possible, use the original packaging for transport.
- 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 used for the device, the components and the replacement/wearing parts is designed to be stored for 3 months.

NOTE Risk of damage to the device 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 damage.

- 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. closed, dust-free room).
  - Store the device in steady environmental conditions.
  - Avoid major temperature fluctuations in order that condensation does not develop.
  - Prevent dirt and moisture from entering the device.
  - Protect the device from the elements (e.g. formation of condensation in the device, sunlight).
  - Protect unpacked devices or components with dust-tight covers. Condensation must not be allowed to develop beneath the cover.
  - Store the device without the original packaging, solely on a support suitable for the contour of the device.

Parameters for Storage (Recommended):

- Closed, dry, dust-free room
- Room temperature +10 °C – +55 °C (+50 °F – +131 °F)
- Relative humidity max. 60% (non-condensing)
- Temperature fluctuations max. 10 °C (18 °F) per day
- Occurrence of vibrations v_{eff} < 0.2 mm/s

5 Installation

5.1 Safety Instructions 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 injury.

- *Only allow work on the device to be performed by experts.*
- *Make sure that any electrostatic charge is prevented. To do so, ground the device and the container using equipotential bonding.*
- *Grounding must always be carried out before start-up of 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 injury.

- *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 essential that the rescue concept for a person in the harness is observed.*
- *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 due to incorrect installation!

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

There is a risk of minor or moderate injuries.

- *Only have experts perform work on the device.*
- *Before starting work, observe the **work steps of the switch-off procedure** (see Section Switch-off Procedure 7.2).*
- *Wear protective work clothing, protective gloves and safety shoes for work.*
- *Do not work on the device unless it is depressurized and cold.*
- *Maintain a safe distance when working on the device. We recommend that you provide 1 m space for free movement around the device and container.*

CAUTION

Insufficient lighting in the work environment!

The device is NOT equipped with any lighting. Insufficient lighting when working on the device can cause accidents.

There is a risk of minor or moderate injuries.

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

5.2 Installation

The safety instructions in *Section 5.1 Safety Instructions for Installation* must be adhered to before installation of the device in the container.

CAUTION

Fault as a result of dirt, foreign objects or damage to the device!

There is a risk of minor or moderate injuries.

Before the device is installed for the first time and for assembly after conversion work on the system in which the device is installed, the following measures must be taken.

- *All supply and return lines for the cleaning medium must be rinsed thoroughly with clear water in order to remove any impurities, foreign objects or residues in the supply line (e.g. scale, chippings, welding particles etc.).*
- *Take suitable measures to prevent dirt and foreign objects from entering via the interfaces of the device. Install a filter upstream of the media connection [MC] in the cleaning media supply line (see Section 3.3 Technical Data)*

Please also note:

- If the device is used outdoors or in rooms where there is a risk of frost, it must be protected against freezing.
- The process connection on the container [PC] and the connection [MC] for the cleaning medium must be firmly fastened and designed to be permanently technically tight (hazard due to fluid being expelled in the event of leaks).
- The spray heads may only be operated with the corresponding locking pins from the manufacturer on the plate axle. When replacing a spray head, a new locking pin must be used on the plate axle.

5.2.1 Interfaces

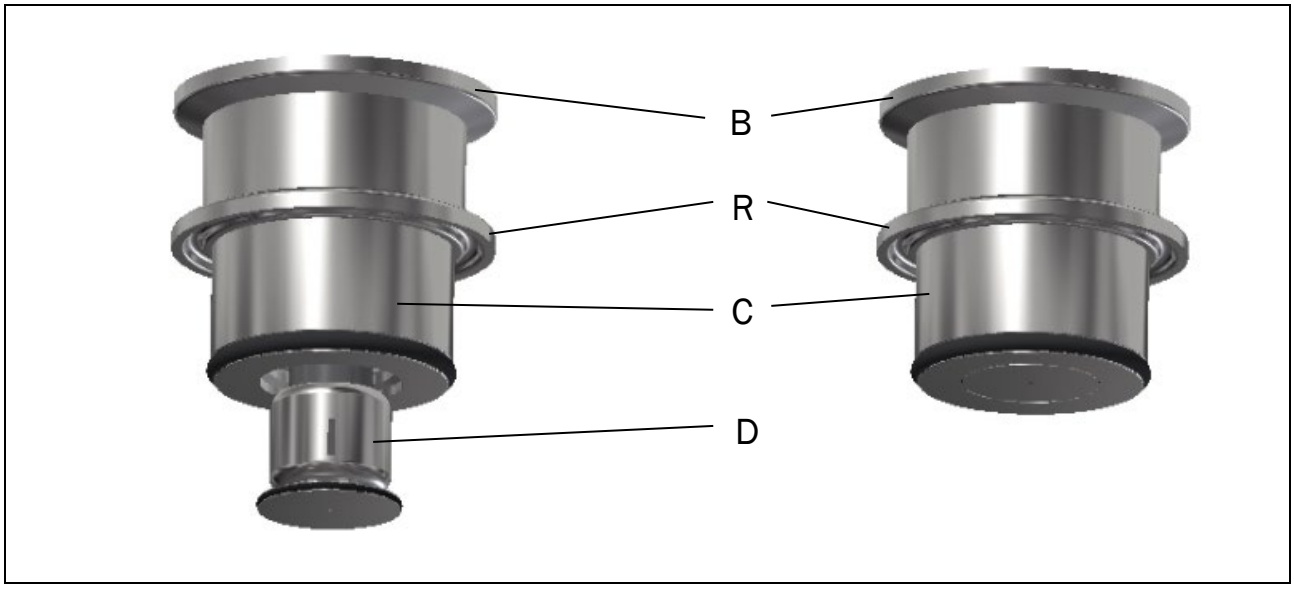


Figure 5.2-1: Device interfaces

The following interfaces are located on the cleaning device:

R Process connection] [PC], (design based on order)
B Media connection [MC]
C Housing
D Spray head

The installation position of the cleaner can be freely selected.

Fastening the device to the container is the responsibility of the owner. The container connector must be sealed reliably.
*The use of Teflon tape or other similar material is **NOT** permitted.*

5.2.2 Installation Position

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

– The running performance may be compromised.

– The service life of the bearing elements and springs may be reduced 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

⚠ **WARNING** Risk of the device falling accidentally!

The device may hit personnel when falling.

There is a risk of severe physical injury.

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

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 objects in the device (e.g. small particles, sealing material).

The seal and bracket for the medium connection are not supplied; they are available on request from AWH.

For fastening to the container wall, the AWH container connectors can be used for welding to the container. The advantage is, via the funnel-shaped connection: Different container or pipe diameters can thus be covered. The container connector is designed to seal with the container wall via the special sealing contour with the O-ring.

5.2.3.1 Welding of the Container Connector

The seal and bracket for the medium connection and the clamp process connection are not supplied. They are available on request from AWH.

If the internal diameter of the container (2 x R) is known, the container connector can be ordered with a corresponding radius at an additional cost, or it can be modified by the customer. For more information, please consult AWH.

1. Take the container connector out of the packaging and perform a visual inspection for damage, see *chapter 4 Transport and Storage*.

2. **Welding preparation**

   Create the hole (see *Table 3.1-3: Container connector dimensions*) for the container connector in the container.

   Clean all the parts to be welded prior to assembly.

Base material	Suitable filler material
1.4435	1.4430, 1.4440
2.4602	2.4607

Table 5.2-1: Recommended Filler Materials

The owner is responsible for the selection of the correct welding filler and for the correct implementation of the welding joint.

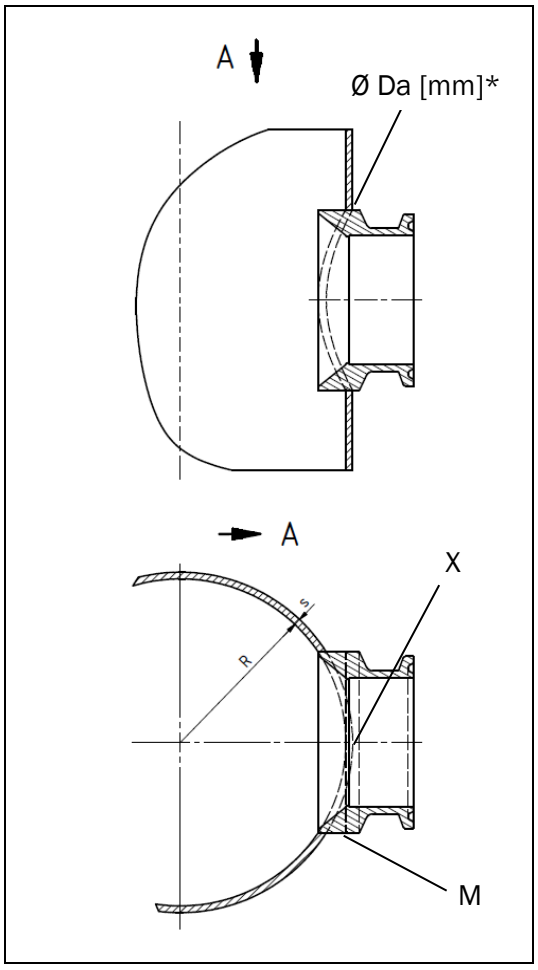


Figure 5.2-2: Container connector connection

The container connector, both for the clamp PC and for the thread PC, is provided with a circumferential marking [M]. This circumferential marking should form an intersection with the interior wall of the container and not protrude any deeper into the container.

For easier assembly, it is useful to make a second marking at a distance equivalent to the wall thickness [s] from the existing exterior marking on the container connector in the direction of the clamp.

Insert the container connector far enough into the container and align it until this marking matches the outer Ø at its outermost position, point [X].

Weld the container connector to the container.

Weld distortion must be avoided by selecting suitable welding parameters.

Before welding, connect the forming gas.

Before welding, affix 3 to 4 tack weld-ons.

*) see *Table 3.1-3: Container connector dimensions*

3. **Welding**

   Align the container connector to the container and affix 3 to 4 tack weld-ons.

   Weld the container connector to the container without distortion.

4. Welding post-treatment

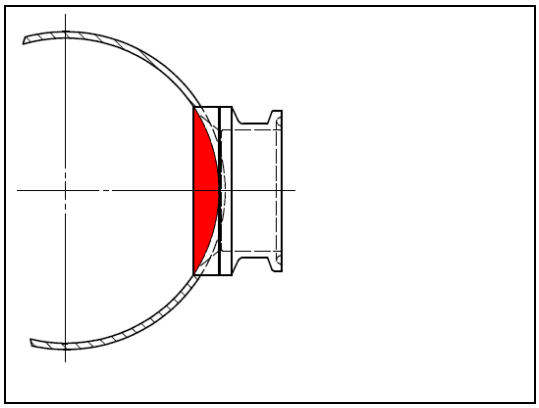


Figure 5.2-3: Grinding

In the interior area, an acid cleaning treatment is recommended after welding.
The surface of accessible points can be improved by grinding.
The exterior can be treated afterwards by staining, brushing, grinding and polishing.

After welding, the container connector can be ground with the interior wall of the container (see *Figure 5.2-3: Grinding*).

5.2.3.2 Installation of Clamp PC

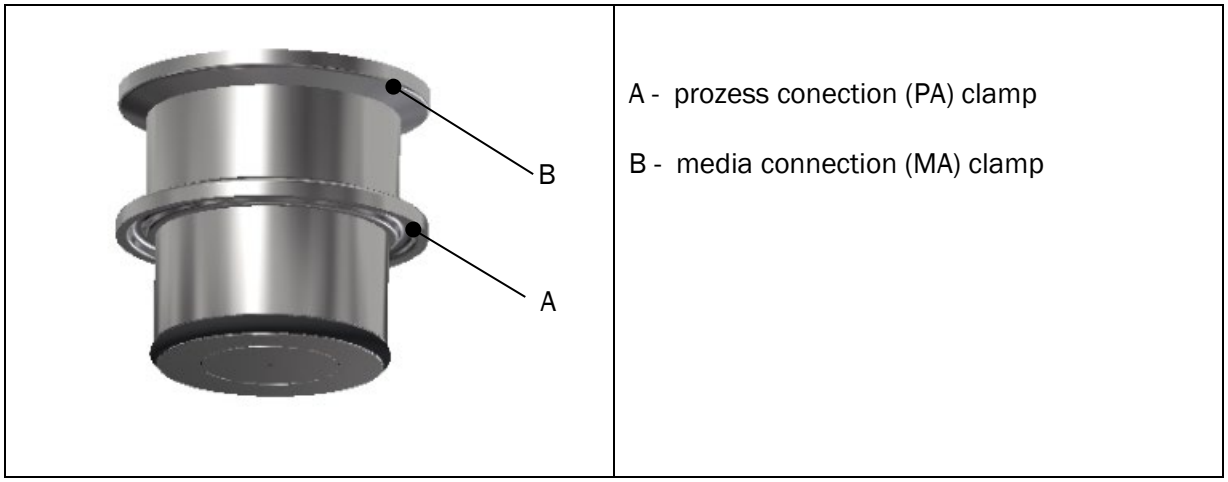


Figure 5.2-4: Installation of clamp connection

1. Take the container connector out of the packaging and perform a visual inspection for damage.
   Protect that the O-ring that seals the housing of the TANKO-RF from the container connector from damage.
2. Check the sealing surface in the container connector and on the clamp connections for contamination.
   Keep the O-ring, O-ring groove and interior surface in the container connector clean.
   Place the O-ring correctly in the O-ring groove at the bottom end of the housing, if not already pre-assembled.
   The contact surfaces of the clamp connection between container connector (A, fig. 5.2-4) and housing and on the media connection (B, fig. 5.2-4) must be kept clean.

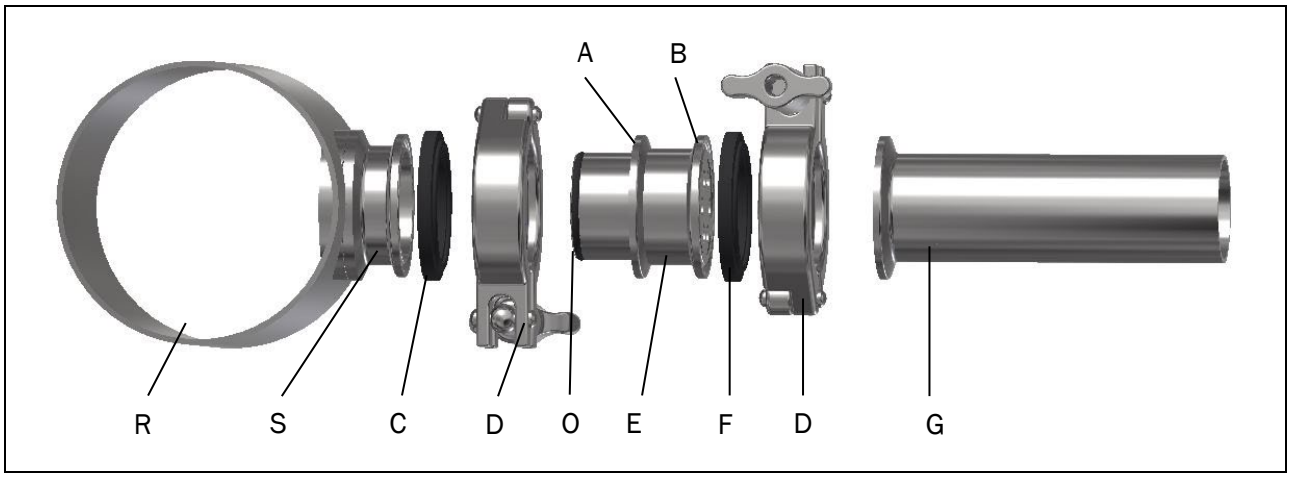


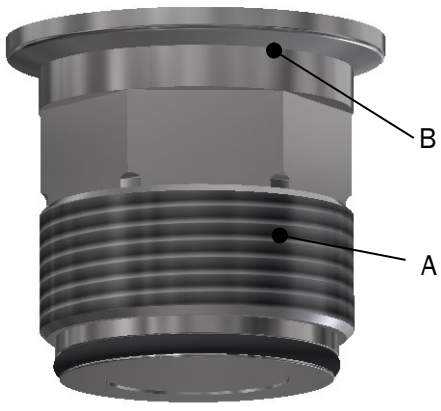
Figure 5.2-5: Mounting TANKO-RF with Clamp PC on Clamp Container Connector

R Container / pipe (operator side)
S Container connector (please order separately, see *Table 3.1-2: Container connector*)
C Seal (not included in the scope of delivery)
D Heavy duty clamp (not included in the scope of delivery)
E TANKO-RF... C-C
F Seal (not included in the scope of delivery)
G Media supply (owner side)
O O-ring (is also supplied pre-assembled)

3. Slide the seal for the clamp connection (not included in the scope of delivery) on to the housing of the device up to the clamp process connection (A).
   - Ensure that the O-ring is correctly seated at the bottom edge of the housing.

   Push the device into the container connector on the container as far as it will go and connect it with the heavy duty clamp (not included in the scope of delivery).
4. Install the cleaning medium supply (standard: clamp in accordance with DIN32676) on the media connection (B) with suitable seal and clamp. The seal and clamp are not included in the scope of delivery

5.2.3.3 Installation of Threaded Connection PC



A - prozess connection (PC) thread

B - media connection (MC) clamp

Figure 5.2-6: Installation of threaded connection

1. Take the container connector out of the packaging and perform a visual inspection for damage.

   Protect that the O-ring that seals the housing of the TANKO-RF from the container connector from damage.

2. Check the sealing surface in the container connector as well as on the clamp connection of the media supply (B, fig. 5.2-6) and the thread (A, fig. 5.2-6) for contamination.

   Keep the O-ring, O-ring groove and interior surface in the container connector clean.

   Place the O-ring correctly in the O-ring groove of the housing, if not already pre-assembled.

   The contact surfaces of the connection between container connector (A, fig. 5.2-4) and housing and on the media connection (A, fig. 5.2-4) must be kept clean.

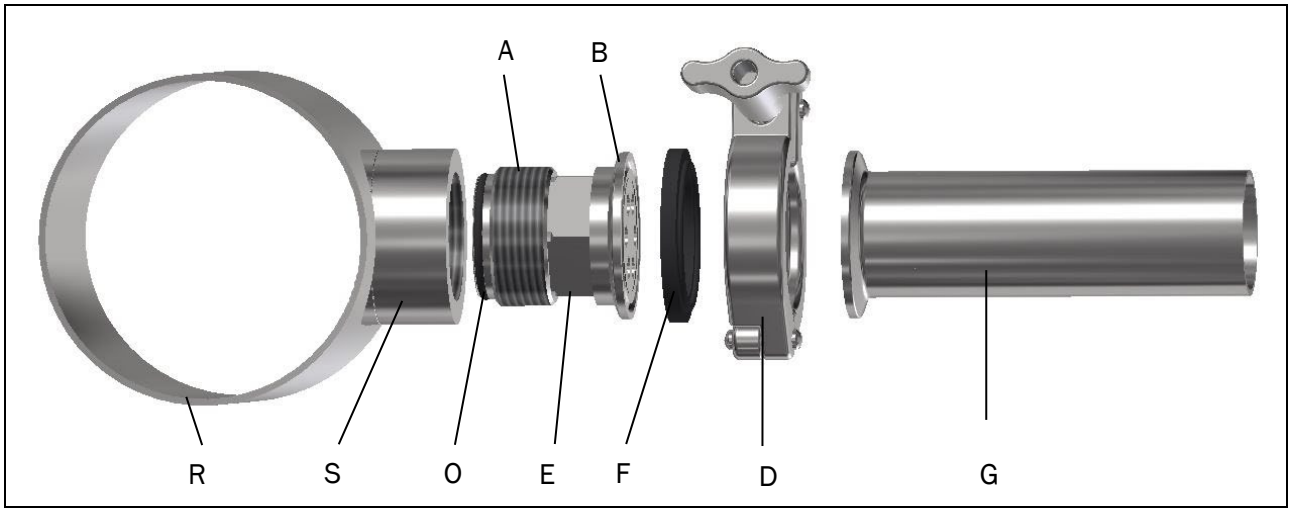


Figure 5.2-7: Installation of TANKO-RF with Thread PC on Thread Container Connector

R Container / pipe (operator side)
S Container connector (please order separately, see *Table 3.1-2: Container connector*)
D Heavy duty clamp (not included in the scope of delivery)
E TANKO-RF... G-C
F Seal (not included in the scope of delivery)
G Media supply (owner side)
O O-ring (is also supplied pre-assembled)

3. Screw the device with the external thread into the container connector piece on the connector.

   NOTE There is a risk of damage to the thread if the tightening torque applied to the threaded device connection and the container connector is excessive!

   - Observe the tightening torque, see *Table 7.5-2* and *Table 7.5-6*.

4. Install the cleaning medium supply (standard: clamp in accordance with DIN32676) on the media connection (B) with suitable seal and clamp. The seal and clamp are not included in the scope of delivery.

6 Start-up

Before starting up the device in Germany, the owner of the plant must observe the Industrial Safety and Health Protection Ordinance (BetrSichV).

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

WARNING

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

If the device is not installed properly, unpredictable situations may arise during start-up or operation.

There is a risk of death or severe physical injury.

- *As a basic rule, start-up of the device (with cleaning medium) must not be performed until the following have been checked:*
  - *Correct mechanical installation of the device on/in the container*
  - *Safe and reliable functioning of the device*

6.1 Safety Instructions for Start-up

Before operating the device, the owner must ensure that local regulations are observed during start-up.

We recommend that you document start-up and the corresponding operating conditions in a report.

WARNING

Danger due to hot surfaces!

The device is delivered without additional protective measures against hot surfaces and may NOT be equipped with thermal insulation.

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

There is a risk of burns from the cleaning medium at temperatures above +60 °C (+140 °F).

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

WARNING

Danger resulting from negative pressure/vacuum in the container!

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

There is a risk of death or severe physical injury.

- *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, AWH can only offer the owner, **as a precautionary measure, a few points of reference and notes** to be observed and to be integrated into the owner's hazard and risk assessments.

CAUTION

Risk of hearing damage due to increased noise level!

The device emits a noise pressure level of L_{pA} < 70 dB(A).

When the device is operated in a container, the noise level may exceed the maximum permitted exposure value of $L_{EX,8h}$ = 85 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 the result.

- *The plant noise level must always be measured and documented by the owner.*
- *Keep the plant noise level within the legal range:*
  - *Take 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 relating to noise and vibration protection (called TRLV Lärm in Germany). State-of-the-art technology must be used to implement the measures to provide protection from exposure to noise based on the hazard assessment. In this case, noise emissions must be prevented at their source, or reduced as far as possible.

CAUTION

Insufficient lighting in the work environment!

The device is NOT equipped with any lighting. Insufficient lighting when working on the device can cause accidents.

There is a risk of minor or moderate injuries.

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

6.2 Function Check/Trial Run

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

Only operate the device in perfect condition.
The container to be cleaned must be emptied and depressurized.

⚠ **WARNING** Persons in the container. A person could be hit by a jet from the cleaning head!

There is a risk of death or severe physical injury.

- Do NOT start the cleaning process while there are persons in the container.

Function Check

1. Close all of the openings on the container (e.g. inspection openings).
2. Switch off all moving parts in the container (e.g. agitators) and secure them to prevent them from being inadvertently switched back on or set in motion.
3. Check to ensure that there is a safe distance around the container and to the surrounding components.
4. Switch on the device (see *Section 6.3 Switch-on Procedure*).
5. Check the interfaces on the device for impermeability.
6. ***NOTE*** Risk of collision with moving parts!
   Observe the following steps if components in the container need 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 is running 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 injury.

During start-up of the device, it is essential to perform the following ***work steps*** *in the specified order.*

Switch-on procedure

1. *Firmly close all of the openings on the container (e.g. inspection openings).*
2. *Empty and depressurize the container.*
3. *Switch on the compressed air supply for possible dry blowing of the device.*
   - *Check that the compressed air supply is NOT interrupted and that the air pressure is applied to the switching valve, if compressed air is used.*
   - *Take suitable measures to secure the compressed air supply to prevent it from switching off suddenly, unexpectedly or without authorization.*
4. *Switch on the cleaning medium supply (e.g. slowly open the shut-off valve or ball cock).*
   - *Check that the supply of cleaning medium is NOT interrupted and the media pressure is established at the device.*
   - *Take suitable measures to secure the supply of cleaning medium to prevent it from being switched off suddenly, unexpectedly or without authorization.*

NOTE

Risk of breakage due to material overload!

Pressure surges when switching the cleaning medium on or off, in particular pressure surges which exceed the operating pressure, and gas components in the cleaning medium 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 medium, e.g. caused by:*
  - *installing a water hammer arrester or pressure relief valve in the supply line,*
  - *slowly starting/stopping the pump 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 rate (pressure increase or pressure drop), or by sudden changes in the 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

Once it has been started up and inspected, the device can be put into operation, observing the following instructions.

WARNING

Risk when used outdoors!

If the device is used outdoors, there is a risk of lightning in the 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, 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 injury.

- *Only permit authorized specialist personnel who are qualified and trained for 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 and order 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 heat burns when opening the container!

The supply line is pressurized. The person could be hit 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 injury.

- ***Do NOT open the container*** *during the cleaning process.*
- *Before starting work, adhere to the* ***work 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

Danger caused by the return of the cleaning medium!

If the cleaning medium returns after a system failure (e.g. pressure drop due to interruption of the pressure supply) there is a risk of accident.

There is a risk of death or severe physical injury.

- *Do NOT remove the device if the cleaning medium has failed.*
- *Always follow the work steps of the* ***switch-off procedure*** *(see Section 7.2 Switch-off Procedure).*

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

WARNING Persons in the container. A person could be hit by a jet from the cleaning head!

There is a risk of death or severe physical injury.

- Do NOT start the cleaning process while there are persons in the container.
- NEVER direct the cleaning jet or torrent at persons.

⚠ **WARNING** Incorrect operation of the device!

There is a risk of death or severe physical injury.

- Only operate the device when it is in perfect condition.
- Only operate the device when installed in a closed container.
- Drain and depressurize the container that needs to be cleaned.
- Close all openings on the container (e.g. inspection openings) firmly.
- When operating the device, **adhere to the switch-on and switch-off procedure** (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:
  - Immersing 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 owner of any changes to the device or the plant that may impair its safety.

If you notice vibrations on the plant that are NOT generated by the device during start-up of the device, these must be prevented with suitable measures so that the vibrations CANNOT be transferred to the device.

If this is NOT possible, the maintenance intervals must be shortened in accordance with *Section 7.4.1 Maintenance Intervals*.

During normal operation of the device, you must make sure that the mixture of supplied cleaning medium and dislodged substances can flow freely out of the container.

NOTE Any clogging in the drain of the container is to be eliminated at in order that:

- no large quantities of dirt can accumulate in the container,
- there is NO impermissible filling of the container with cleaning medium,
- the device does NOT become immersed in the rising fluid level.

For cleaning agent in circulation:
Run the final cleaning step with clean water to remove any suspended matter that may have been introduced.

7 Maintenance

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

Only use **original spare parts** when replacing parts of the device. A **functional check** must be performed after every repair (see *Section 6.2*).

If you have questions or doubts about the handling the cleaning device, please contact AWH.

7.1 Safety Instructions for Maintenance

DANGER

Risk of fatal injury from electric shock 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 injury.

- *Only allow **qualified electricians** to perform work on the electrical system.*
- *Before starting work, observe the **work steps of the switch-off procedure** (see Section 7.2 Switch-off Procedure).*
- *Cover adjacent live parts to prevent contact.*
- *Beware of the hazards caused by electrical current (e.g. warnings).*

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 injury.

- *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 essential that the rescue concept for a person in the harness is observed.*
- *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.*

WARNING

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

Improper maintenance, falling components or failure to adhere to the listed safety instructions can cause accidents.

There is a risk of death or severe physical injury.

- *Only have **experts** perform work on the device.*
- *Do not work on the device unless it is disconnected from the power supply, depressurized and in cold condition.*
- *Maintain a safe distance when working on the device.*
  We recommend that you provide 1 m space for free movement around the device and container.

WARNING




Risk of chemical burns and heat burns when opening the container!

The supply line is pressurized. The person could be hit 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 injury.

- ***Do NOT open the container** during the cleaning process.*
- *Before starting work, observe the **work 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 on hot surfaces!

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

There is a risk of burns from the cleaning medium at temperatures above +60 °C (+140 °F).

- *Do not remove the devices unless they are in cold condition.*
- *Allow the device to cool down before starting work.*
- *Beware of hot surfaces (e.g. warning signs).*
- *Use protective equipment (e.g. protective gloves; cloth) against hot surfaces.*

WARNING

Risk of crushing during 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 injury.

- *Before starting work, depressurize the container and all lines.*
- *Switch off all moving parts in the container and secure them to prevent them from being inadvertently switched back on or set in motion.*
- *Only remove the device if 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 must be integrated and the following instructions must 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 injury.

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

Switch-off Procedure

1. *Interrupt the supply of cleaning medium (e.g. slowly close the shut-off valve or ball cock).*
   - *Check that the supply of cleaning medium is stopped and there is no media pressure at the device.*
2. *Safeguard the supply of cleaning medium to prevent sudden, unforeseeable or unauthorized reactivation (e.g. lockable switch/shut-off elements).*
   - *Check that any supply of media is reliably prevented and insert dummy disks if necessary.*

     Observe a cooling-down phase for media temperatures above 80 °C.
   - *Make sure that the cleaning device and supply line for cleaning medium have been completely drained.*
3. *Disconnect the power supply to the higher-level plant/the device.*
   - *Check that the power supply is disconnected*
   - *Safeguard the power supply to prevent sudden, unforeseen or unauthorized reactivation (e.g. lockable switches)*
4. *Depressurize the container against the ambient pressure.*
   - *Safeguard the supply of steam or other media that affect the pressure to prevent sudden, unforeseen or unauthorized reactivation (e.g. lockable switches/ shut-off elements).*
   - *Make sure that the pressure inside the container matches the ambient pressure.*

NOTE

Risk of breakage due to material overload!

Pressure surges when switching the cleaning medium on or off, in particular pressure surges that exceed the operating pressure, and gas components in the cleaning medium can 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 medium, e.g. by:*
  - *installing a water hammer arrester or pressure relief valve in the supply line,*
  - *slowly starting/stopping the pump and*
  - *slowly opening/closing the shut-off fitting (e.g. valve or ball cock).*

7.3 Removal

The safety instructions in *Section 7.1 Safety Instructions for Maintenance* must be observed before removing the device from the container.

CAUTION

Fault as a result of dirt, foreign objects or damage to the device!

Foreign objects such as scale, burrs, chips, etc. can restrict flow or get into the pipe 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.

- *Take suitable measures to prevent dirt and foreign objects from entering via the interfaces of the device.*
- *Before starting work, make sure that all necessary tools, auxiliary materials and information are available and observe the instructions for the interfaces.*
- *Place the device on a firm surface after removing it.*

7.3.1 Removing the Device

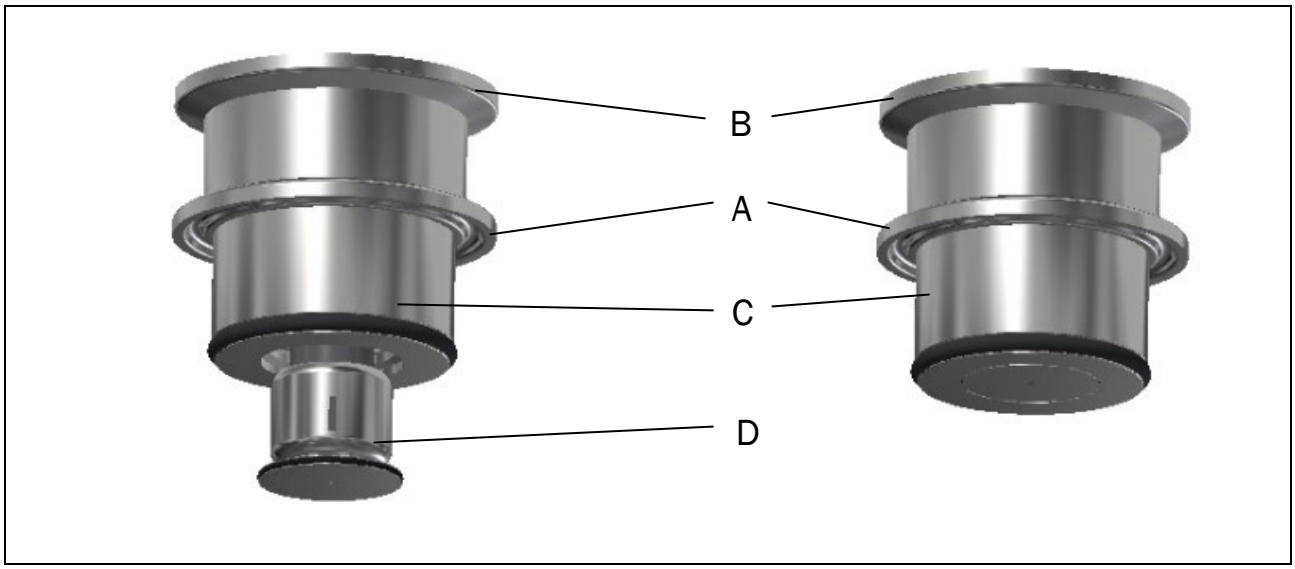


Figure 7.3-1: Overview of Assembly Units

A Process connection [PC]
B Media connection [MC] (cleaning agent feed)
C Housing
D Spray head

⚠ WARNING Risk of the device falling accidentally!

The device may hit personnel when falling.

There is a risk of severe physical injury.

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

Interface B

The supply line for the cleaning medium must be disconnected at the media connection [MC]. The media connection [MC] must be sealed with a screw cap.

1. Check to make sure that the media supply is interrupted *(see Section 7.2 Switch-off Procedure)*.
2. Undo the screw connection on the heavy duty clamp.
3. Remove the heavy duty clamp.
4. Keep the seal in a safe place.

Interface A

Clamp Process Connection

1. Release the heavy duty clamp at the process connection and set it to one side.
2. Remove the device from the clamps on the container.
3. Store the seal and O-ring in a safe place.
4. If necessary, close the clamps on the container.

Thread Process Connection

1. Loosen the device using a wrench with the appropriate width across flats, AF36 for RF40, AF50 for RF50.
2. Remove the device from the threaded connector on the container.
3. Keep the seal in a safe place.
4. If necessary, close the container connector on the container.

7.4 Maintenance

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

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

The safety instructions in *Section 7.1 Safety Instructions for Maintenance* must be adhered to when carrying out cleaning, maintenance and repair work.

NOTE

Danger due to leaks at the connections!

The sealing elements of the process connection [PC] and media connection [MC] are manufactured in accordance with the technical requirements for sealing surfaces.

Incorrect operation of the device can cause damage to the sealing elements (e.g. scratches and tears).

This can result in the penetration or escape of media at the connections.

This can result in leaks and the corresponding dangers.

- *Protect sealing elements from damage and contamination during transport, storage, assembly and cleaning!*
- *Check them regularly for impermeability*
- *Replace the seal in the event of leaks*
- *If these measures are not successful, contact the manufacturer*

NOTE

Risk of damage to the device due to improper assembly/disassembly work!

Assembly/disassembly of the device that is NOT performed properly can cause damage to the device which puts the functional safety and reliability at risk during restart.

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

- *Use a vise with protective jaws, e.g. plastic or light metal, for clamping.*
- *Only use suitable tools that do not damage the surface.*
- *During assembly, observe the specified tightening torques (see Section 7.5 Spare Parts and Customer Service).*

NOTE

Dirt or foreign objects in the device!

Dirt or foreign objects can impair the functional safety and reliability of the device.

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

NOTE

Edge compression in the area of the wrench flats!

If workpieces are NOT grasped without play and in a protective manner by the flats during assembly/disassembly, then they are at risk of damage.

- *For gentle, protective assembly/disassembly work, use an adjustable or pliers wrench with parallel, smooth clamping jaws.*
- *Apply the clamping jaws of the adjustable wrench or pliers wrench to the flats without play so that they rest evenly across the surface and loosen or tighten the screwed part.*

7.4.1 Maintenance Intervals

NOTE

Component failure due to vibration damage!

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

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

- *Check the installed device for loose connections at regular intervals.*
- *Pay attention to vibration damage during maintenance and inspection.*
- *Adapt the maintenance intervals according to the operating conditions of the plant.*

  After start-up, begin with short maintenance intervals at first.

  If no damage occurs, the maintenance intervals can be adapted incrementally until the intervals specified in the instructions are reached.

Maintenance Intervals and Methods

Reduce 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 that are NOT caused by the device and CANNOT be prevented.*

If the device is NOT operated for a prolonged period of time, then we recommend that a complete functional capability check be performed on the device prior to restart (see *Section 6.2 Function 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 medium:	*Water*
Media pressure:	*2 bar (43.5 psi g)*
Media temperature:	*+25 °C (+77 °F)*

Interval:

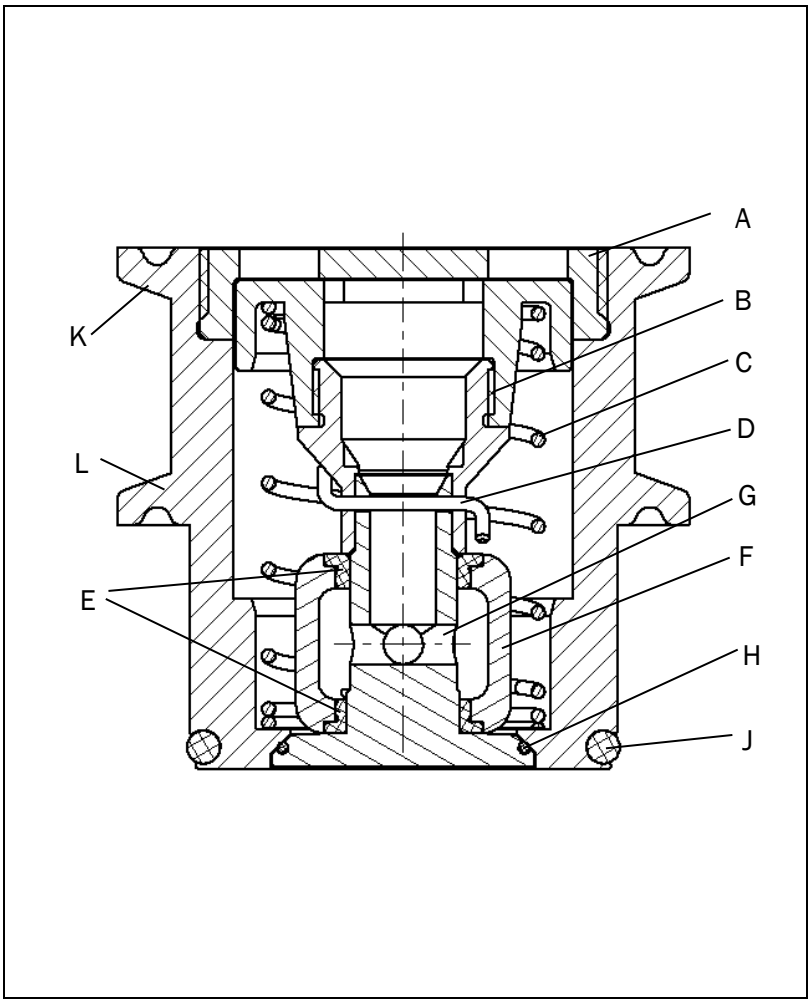
h_O	= operating hours of the device
d	= daily
w	= weekly
m	= monthly
¼ y	= every three months
½ y	= every six months
y	= annually
S	= according to number of strokes

Method:

V	= visual inspection
F	= function check
M	= measurement
C	= cleaning*
R	= replacement

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

Overview of Maintenance Points



A Screw connection housing / cover

B Screw connection axle cover / axle center section

C Pressure spring for closing the device

D Wire locking pin for connecting plate axle and center hole in spray head

E Plain bearing spray head

F Spray slots, spray head

G Spray holes in plate axle

H O-ring plate seal

J O-ring, sealing of container connector

K Clamp connection media connection [MC]

L Clamp/screw connection process connection [PC]

Figure 7.4-1: Maintenance Points

The tightening torques required for the screw connections for maintenance are listed in Table 7.5-1 .

The item numbers shown in parentheses refer to Figure 7.5-1: Internal design.

Point	Inspection and maintenance work	Interval	Method
A	Check screw connection for tightness, tighten if necessary. (For tightening torque, see *Table 7.5-1*).	m	V, F
B	Check screw connection for tightness, tighten if necessary. (For tightening torque, see *Table 7.5-1*).	m	V, F
C	Check spring for wear, cracks or breakage, replace if necessary. Replace after 100000 load cycles at the latest.	1st and 2nd H500 then H1000 or ¼-j	V, F
D	Check clip-on connection for contamination, wear and damage. • In case of wear or damage of the connected parts (pos.2 and 3) replace them. • Replace wire locking pin with original part.	$200H_B$	V, F
E	Check plain bearings for wear. Spray head should be easy to rotate. Replace plain bearings if necessary.	m, or after $h_{B=}300$	V, F, R
F	The spray slots must be free of deposits and contamination, clean if necessary.	m, or after $h_{B=}300$	V, F, C
G	The spray holes must be free of deposits and contamination, clean if necessary.	m, or after $h_{B=}300$	V, F, C
H	Check O-ring for wear and tightness, replace if necessary.	m	V, F, R
J	Check O-ring for wear and tightness, replace if necessary.	m	V, F, R
K	Check the clamp connection for tight fit and impermeability. If necessary, correct clamp or replace seal	d	V, R
L	For clamp PC, check clamp connection for tight fit and impermeability. If necessary, correct clamp or replace seal.	d	V, F
L	For screw connection PC, check screw connection for tight fit, tighten if necessary. (For tightening torque, see *Table 7.5-1*).	d	V, F

Table 7.4-1: Inspection and Maintenance Work

The presence and legibility of information and warnings must be checked regularly.

7.4.2 Tools and Tightening Torques

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

Normal workshop equipment is sufficient for the mechanical work on the device. The following tools are required:

- Open-end wrench AF 36 and AF 24 mm for TANKO-RF40, AF 50 and AF 30 mm for TANKO-RF50
- or bigger and smaller (without illustration) pliers wrench
- 2X torque wrench with socket shaft ☐ 14 x 18
- Jaw wrench insert AF 24 for TANKO-RF40 or adjustable pliers wrench insert
- Jaw wrench insert AF 30 for TANKO-RF50 or adjustable pliers wrench insert
- Articulated face wrench, small size

Figure 7.4-2: Tools for TANKO-RT/-RTS

Recommended assembly tools:

The following assembly tools can be purchased from AWH to facilitate assembly:

- Assembly tool for wire locking pin, see table
- Mounting bolt, art. no. see table
- Mounting ring, art. no. see table

Figure 7.4-3: Assembly tool for wire locking pin

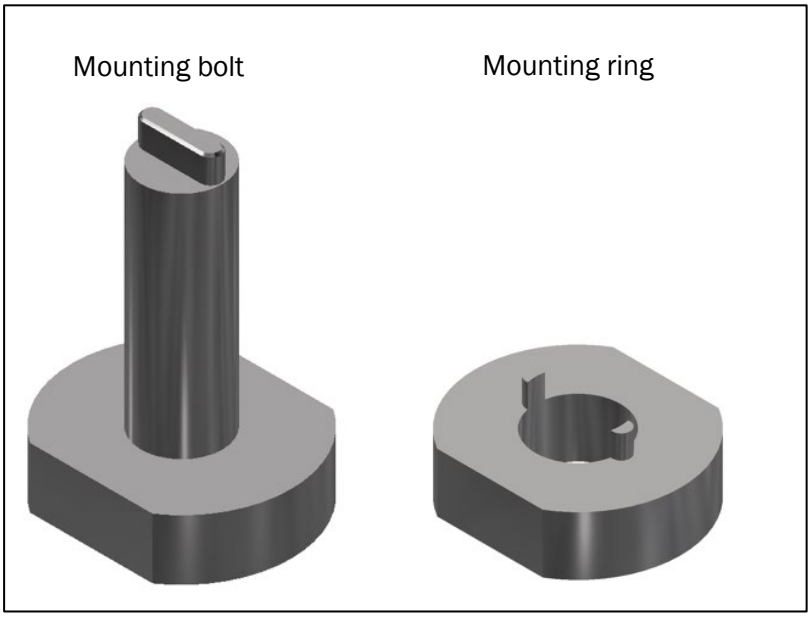


Figure 7.4-4: Mounting ring and mounting bolt

Assembly tools		
Tool	**Art. no. for TANKO-RF40**	**Art. no. for TANKO-RF50**
Assembly tool for wire locking pin	664MW01050050	664MW01060050
Mounting bolt for TANKO-RF	664MWRF400120 (AF 24)	664MWRF500120 (AF 30)
Mounting ring for TANKO-RF	664MWRF400220 (AF 24)	664MWRF500220 (AF 30)

Table 7.4-2: Assembly tools

All the screw connections on the device are tightened to the appropriate tightening torque in the factory in order to ensure the necessary clamping force between the components that need to be connected, even when the maximum operating forces are applied.

All relevant tightening torques of the screw connections are listed in Section 7.5 Spare Parts and Customer Service in Table 7.5-1.

7.4.3 Disassembling the Device

The tools required for assembly/disassembly work are listed in Section 7.4.2 Tools and Tightening Torques.

The item numbers shown in parentheses refer to Figure 7.4-5: Internal design of TANKO-RF40 and TANKO-RF50.

Table 7.5-1 includes a list of spare parts.

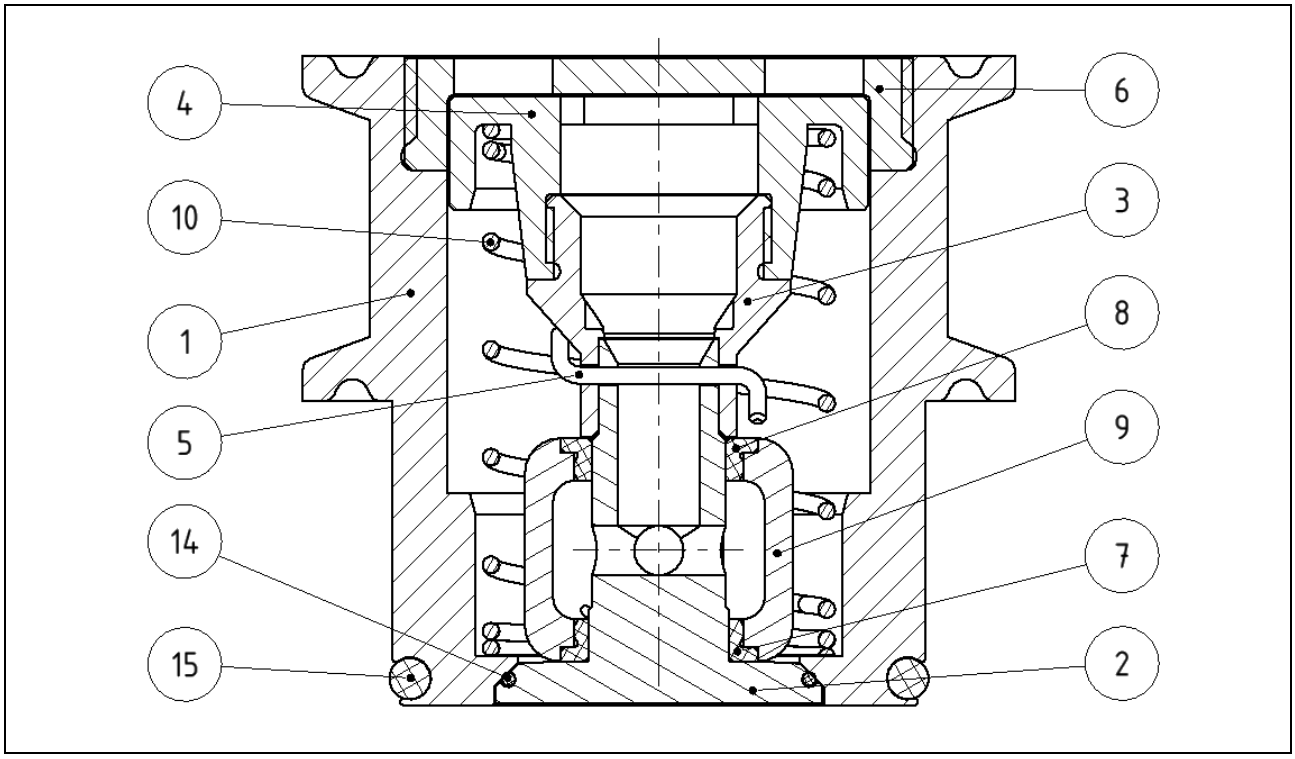


Figure 7.4-5: Internal design of TANKO-RF40 and TANKO-RF50

Complete disassembly is described below. It is recommended to disassemble the device only to the extent that is necessary to change the wearing parts.

NOTE Damage to the sealing surfaces must be prevented during disassembly.

1. ***NOTE*** Incorrect clamping in the vise can cause threaded connections to become jammed and deformed unintentionally!

   The threaded connection cannot be screwed and may become damaged.

   - The jaws of the vise must not clamp too firmly and not directly in the area of the threaded connection being loosened.
   - Clamp the device in the vise in such a way on the housing (1) that the threaded connection on the cover (3) does NOT become jammed.

2. Unscrew the cover (6) from the housing (1).
3. Insert the mounting bolt (art. no. see *Table 7.4-2: Assembly tools*) with the 2 pins facing downwards into the axle center section (3) so that the pins engage in the recesses in the axle center section (3). Slide the mounting ring (art. no. see *Table 7.4-2: Assembly tools*) over the mounting bolt until it engages with the 2 pins in the axle cover (4). Now unscrew the axle cover from the axle center section (3) using the mounting bolt.

   NOTE Risk of injury, the spring is released when the axle cover is released and can cause the axle cover to jump out of housing.

   Release the spring in a controlled manner and remove it from the housing (1).

4. Pull the plate axle (2) with the axle center part (3) and the spray head (9) downwards out of the housing (1).
5. Bend the locking pin (5) open or pinch off a bent end. Remove the locking pin. Pull the plate axle (2) with spray head assembly (7, 8, 9) off the axle center section (3).
6. *NOTE* Make a note of the direction of rotation of the head

   Top view from axle plate direction (top)

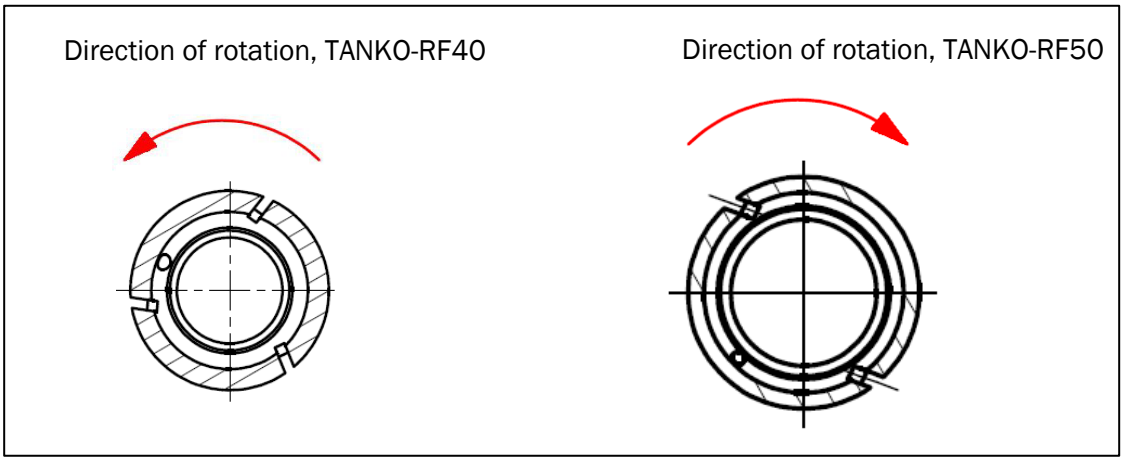


Figure 7.4-6: Direction of Rotation of the Spray Head

   Pull the spray head assembly (7, 8, 9) off the plate axle (2).
7. Press the plain bearings (7) and (8) out of the head.
8. Remove the O-ring (14) from the plate axle.
9. Remove the O-ring (15) from the housing.

The device is now completely disassembled.

7.4.4 Mounting the Device

The tools required for assembly/disassembly work are listed in Section 7.4.2 Tools and Tightening Torques.

The item numbers shown in parentheses refer to Figure 7.4-5: Internal design of TANKO-RF40 and TANKO-RF50.

Table 7.5-1 includes a list of spare parts.

The complete assembly is described below. If the device was not completely disassembled, start with the appropriate work step corresponding to the disassembly stage.

NOTE Damage to the sealing surfaces must be prevented during disassembly and assembly.

1. Fit a new O-ring (14) on the plate axle (2).
2. Fit a new O-ring (15) on the housing.
3. Press the new plain bearings (7) at the top and (8) bottom into the spray head (9), while observing *Figure 7.4-6: Direction of Rotation of the Spray Head*.
4. Fit the spray head assembly (7, 8 and 9) with plain bearing (7), larger inner diameter (Ø10.1 for RF40 and 16.1 for RF50)) facing downwards on to the plate axle (2).
5. Plug the plate axle (2) and axle center section (3) together, align the clip holes with each other and push a new wire locking pin (5) through.

   NOTE Bend the locking pin so that it does not rub at any point when it is inserted into the housing (1) and the spring (10).
6. Insert the plate axle (2) with axle center section (3) and spray head assembly (7, 8 and 9) into the housing (1) from below. Slide the spring (10) over the axle center section (3) and screw on the axle cover (4) using a suitable tool.

   NOTE The axle cover is under tension due to the pressure spring when it is screwed on. We recommend using the mounting ring and the mounting bolt for tightening the screw connection, see *Table 7.4-2: Assembly tools*.
7. ***NOTE*** Incorrect clamping in the vise can cause threaded connections to become jammed and deformed unintentionally!

   The threaded connection cannot be screwed and may become damaged.

   - The jaws of the vise must not clamp too firmly and not directly in the area of the threaded connection.
   - Clamp the device in the vise in such a way on the housing (1) that the threaded connection on the cover (6) does NOT become jammed.

   Screw the cover (6) into the housing (1) as far as it will go.

The device is now fully assembled and can be installed in the container.

7.4.5 Notes on Cleaning

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

Follow the following safety instructions prior to cleaning.

WARNING

Hazard from corrosive or irritant cleaning agents!

There is a risk of death or severe physical injury.

- *Adhere to the regulations and specifications on 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 any excessively strong concentration of the cleaning agent.*
- *Only use clean and chlorine-free water as a diluting agent.*
- *Rinse 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 an incorrect cleaning agent or sharp objects can damage the device.

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

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

Before commencing cleaning work, the work steps of the switch-off procedure must be carried out (see *Section 7.2 Switch-off Procedure*).

Prior to cleaning, the device must have been removed from the container by an **expert** and disassembled into its individual parts. The safety instructions in *Section 7.1 Safety Instructions for Maintenance* must be observed.

Cleaning is carried out when disassembled by simply washing the surfaces that come into contact with media or using an ultrasonic bath.

Cleaning media: e.g. 3% caustic soda

Temperature: max. 70 °C

- Only use clean and chlorine-free water as a diluting agent.
- Measure carefully to avoid excessively strong concentrations of cleaning agent.
- Rinse with plenty of clean water after cleaning.
- When cleaning the parts of the device outside the container make sure that dust and adhering matter (e.g. grease and oil residues) are removed.

Cleaning of the device in a disassembled state can be carried out by **instructed persons**. After cleaning, the device must be assembled, checked and reinstalled in the container by an **expert** (see *Section 5.2 Installation*).

NOTE

Environmental damage in case of improper disposal!

Cleaning agents, auxiliary materials and lubricants must NOT be allowed to penetrate the groundwater, waterways or sewer system.

There is a risk of environmental damage.

- *Dispose of any cleaning agents, lubricants and auxiliary materials (e.g. brushes and cloths) which were 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.*

7.5 Spare Parts and Customer Service

Spare Parts and Wearing Parts

Subject to technical modifications in the interest of further development and improvement of the properties of the device. The article numbers, 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 the 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 TANKO-RF40

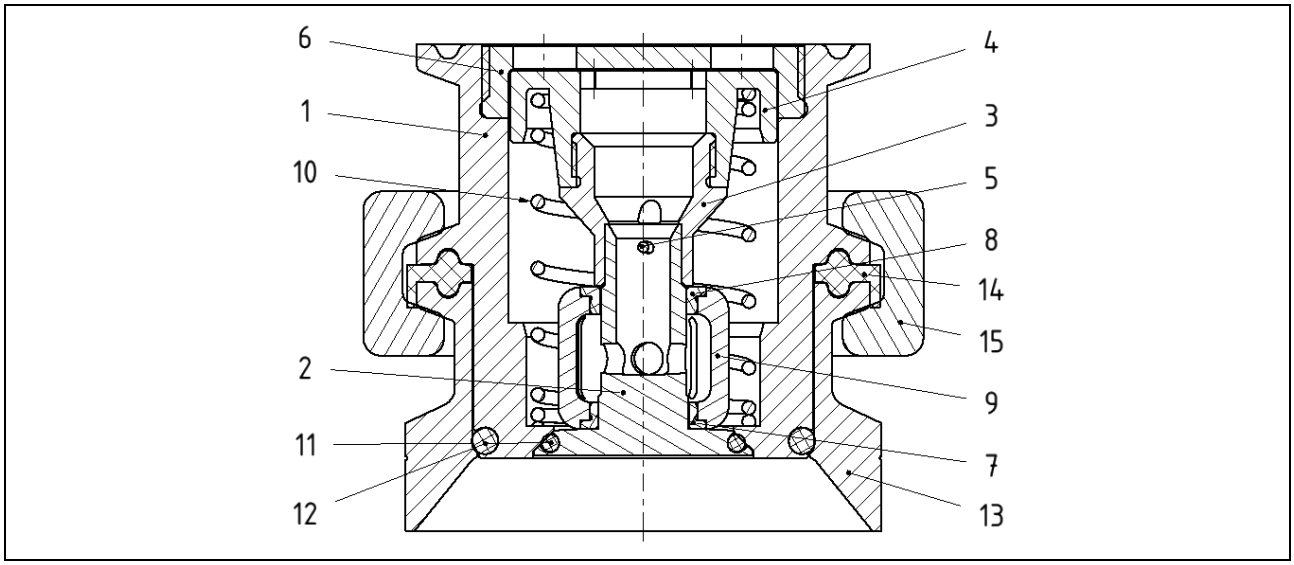


Figure 7.5-1: Internal design RF40

Remark: The items marked with "X" or "■" are included in the wearing parts package and can be ordered. The items marked with "■" are required for replacing wearing parts [WP].

Item	Qty.	Designation	Tightening torque [Nm]	Article number	Material	[WP]
1	1	Housing for TANKO-RF40	see Tab.7.5-2	see *Table 7.5-2*.	1.4404	
2	1	Plate axle for TANKO-RF40	–	66RF040020020	1.4404	
3	1	Axle center part for TANKO-RF40	10	66RF040030020	1.4404	
4	1	Axle cover for TANKO-RF40	–	66RF040040020	1.4404	
5	1	Wire locking pin D1x22	–	6640000A10040	1.4430	X
6	1	Housing cover for TANKO-RF40	13	66RF040060020	1.4404	
7	1	Collar bushing Di 10.1 for TANKO-RF40	–	66RF0400700M0	PEEK	X
8	1	Collar bushing Di 9.6 for TANKO-RF40	–	66RF0400800M0	PEEK	X
9	1	Spray head for TANKO-RF40	–	66RF04009S0020	1.4404	
10	1	Spring 1.5xDm23.5xLo86.5	–		1.4401	X
11	1	O-ring 18 x 2	–	see *Table 7.5-3*.		X
12	1	O-ring 32 x 3	–	see *Table 7.5-4*.		X
13	1	Welding adapter for TANKO-RF40	–	see *Table 7.5-5*		
14	1-2	Sealing ring ID 38.2x 50.5	–	1051400004055 **Not included in the delivery**	EPDM	
15	1-2	Clamp DN25/40 1"-1.5" SP	–	111100072 **Not included in the delivery**	1.4308	

Table 7.5-1: Replacement Parts List (Standard), Wearing Parts, Tightening Torques RF40

For deviations from the standard, see the supplementary sheet “Special version”.

Item 1 housing for RF40		
PS DIN 32676	Article number	Tightening torque
Clamp DN40	66RF04001C020	- - -
Thread G1 1/4"	66RF04001G020	60 Nm

Table 7.5-2: Housing for TANKO-RF40

Item 11 O-ring Ø 18 x 2		
Material	Article no.	Perm. operating temperature
EPDM	1060500001801	-20 °C (-4 °F) to +130 °C (+266 °F)
FKM (e.g. VITON®)	1060500001804	-15 °C (+5 °F) to +140 °C (+284 °F)
FFKM	1060500001805	-15 °C (+5 °F) to +140 °C (+284 °F)

Table 7.5-3: O-rings for plate RF40

Item 12 O-ring Ø 27x 3		
Material	Article no.	Perm. operating temperature
EPDM	1060500002554	-20 °C (-4 °F) to +130 °C (+266 °F)
FKM (e.g. VITON®)	1060500002702	-15 °C (+5 °F) to +140 °C (+284 °F)
FFKM	1060500002705	-15 °C (+5 °F) to +140 °C (+284 °F)

Table 7.5-4: O-rings for RF40 process connection for container connector

Item 13 Welding adapter for TANKO-RF40		
PA DIN 32676	Article no.	Tightening torque
Clamp DN40	66RF0400AC020	- - -
Thread G1 1/4"	66RF0400AG020	60 Nm

Table 7.5-5: Welding adapter for TANKO-RF40

7.5.2 TANKO-RF50

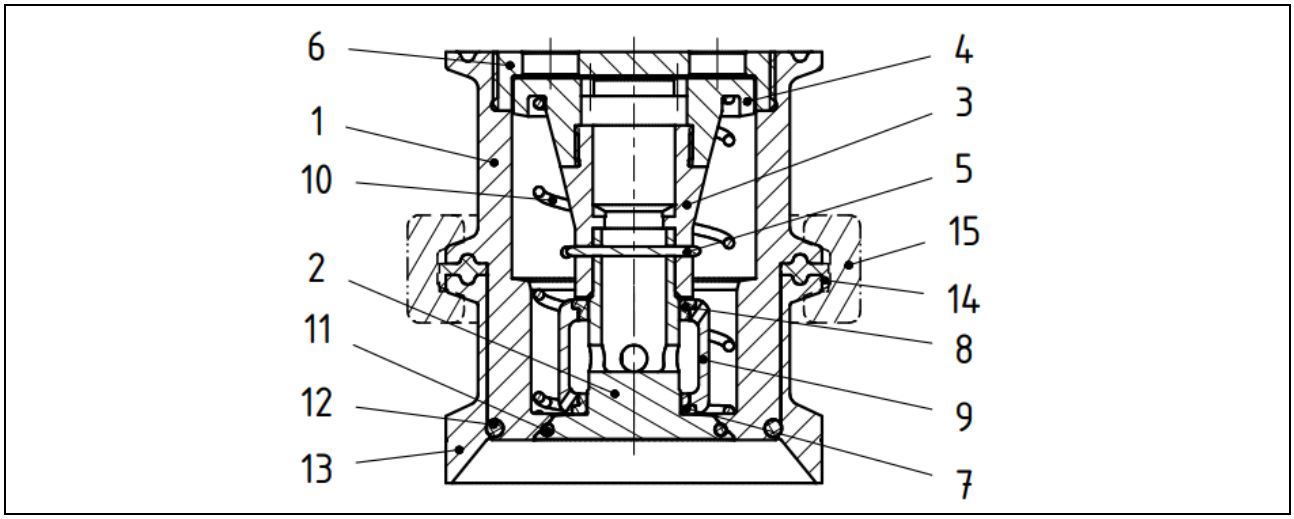


Figure 7.5-2: Internal design of RF50

Remark: The items marked with "X" or "■" are included in the wearing parts package and can be ordered. The items marked with "■" are required for replacing wearing parts [WP].

Item	Qty.	Designation	Tightening torque [Nm]	Article number	Material	[WP]
1	1	Housing for TANKO-RF50	see Tab. 7.56	see *Table 7.5-7*	1.4404	
2	1	Plate axle for TANKO-RF50	–	66RF050020020	1.4404	
3	1	Axle center part for TANKO-RF50	–	66RF050030020	1.4404	
4	1	Axle cover for TANKO-RF50	12	66RF050040020	1.4404	
5	1	Wire locking pin 2.4/42	–	667000006020540	1.4404	X
6	1	Cover for TANKO-RF50	16	66RF050060020	1.4404	
7	1	Collar bushing Di16.1 for TANKO-RF50	–	66RF0500700M0	PEEK	X
8	1	Collar bushing Di15.6 for TANKO-RF50	–	66RF0500800M0	PEEK	X
9	1	Spray head for TANKO-RF50	–	66RF05009S0020	1.4404	
10	1	Spring 1.7xDm32.3xLo68.5	–	39131	1.4401	X
11	1	O-ring 26 x 2	–	see *Table 7.5-8.*		X
12	1	O-ring 42 x 3 (only for clamp PC)	–	see *Table 7.5-9.*		X
12	1	O-ring 37 x 3 (only for thread PC)	–	see *Table 7.5-10.*		
13	1	Welding adapter for TANKO-RF50	–	See *Table 7.5-11*		
14	1-2	Sealing ring ID 50.2x 64.0	–	1051400005055 **Not included in the delivery**	EPDM	
15	1-2	Clamp DN50 u. 2" SP	–	111100082 **Not included in the delivery**	1.4308	

Table 7.5-6: Replacement Parts List (Standard), Wearing Parts, Tightening Torques RF50

For deviations from the standard, see the supplementary sheet “Special version”.

Item 1 Housing		
PS DIN 32676	Article number	Tightening torque
Clamp DN50	66RF05001CC20	- - -
Thread G1 1/2"	66RF05001GC20	70 Nm

Table 7.5-7: Housing for TANKO-RF50

Item 11 O-ring Ø 26 x 2		
Material	Article no.	Perm. operating temperature
EPDM	1060500002603	-20 °C (-4 °F) to +130 °C (+266 °F)
FKM (e.g. VITON®)	1060500002604	-15 °C (+5 °F) to +140 °C (+284 °F)
FFKM	1060500002605	-15 °C (+5 °F) to +140 °C (+284 °F)

Table 7.5-8: O-rings for plate RF50

Item 12 O-ring Ø 42 x 3		
Material	Article no.	Perm. operating temperature
EPDM	1060500004206	-20 °C (-4 °F) to +130 °C (+266 °F)
FKM (e.g. VITON®)	1060500004212	-15 °C (+5 °F) to +140 °C (+284 °F)
FFKM	1060500004210	-15 °C (+5 °F) to +140 °C (+284 °F)

Table 7.5-9: O-Rings for Process Connection [PC] Clamp RF50 42x3

Item 12 O-ring Ø 37 x 3		
Material	Article no.	Perm. operating temperature
EPDM	1060500003701	-20 °C (-4 °F) to +130 °C (+266 °F)
FKM (e.g. VITON®)	1060500003702	-15 °C (+5 °F) to +140 °C (+284 °F)
FFKM	1060500003703	-15 °C (+5 °F) to +140 °C (+284 °F)

Table 7.5-10: O-Rings for Process Connection [PC] Thread RF50 37x3

Item 13 Welding adapter for TANKO-RF50		
PA DIN 32676	Article no.	Tightening torque
Clamp DN50	66RF0500AC020	- - -
Thread G1 1/2"	66RF0500AG020	70 Nm

Table 7.5-11: Welding adapter for TANKO-RF50

8 Faults

8.1 Safety Instructions for Troubleshooting

Before rectifying a fault, the following safety instructions must always be adhered to:

WARNING




Risk of chemical burns and heat burns when opening the container!

The supply line is pressurized. The person could be hit 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 injury.

- ***Do NOT open the container*** *during the cleaning process.*
- *Before starting work, observe the* ***work 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 injury.

- *Repairs and troubleshooting work must be performed only by qualified experts who have knowledge of the German Technical Rules for Operational Safety (TRBS).*
- *Before starting work, observe the* ***work steps of the switch-off procedure*** *(see Section 7.2 Switch-off Procedure).*
- *Before rectifying any fault, observe the safety instructions in Chapter 7 Maintenance.*
- *In case of any uncertainty or doubt, contact AWH.*

WARNING

Danger caused by the return of the cleaning medium!

If the cleaning medium returns after a system failure (e.g. pressure drop due to interruption of the pressure supply) there is a risk of accident.

There is a risk of death or severe physical injury.

- *Do NOT remove the device if the cleaning medium has failed.*
- *Always follow the work steps of the **switch-off procedure** (see Section 7.2 Switch-off Procedure).*

WARNING

Danger caused by return of the compressed air!

If the compressed air returns after a system failure (e.g. pressure drop due to interruption of the pressure supply) there is a risk of accident.

There is a risk of death or severe physical injury.

- *Do NOT remove the device if the compressed air supply has failed.*
- *Always comply with the switch-off procedure (see Section 7.2 Switch-off Procedure).*

CAUTION

Danger of getting caught/entangled in rotating components!

Failure to observe it can result in minor or moderate injury.

- *Beware of moving parts whenever working with the device.*
- *Wear tight-fitting work clothing.*

8.2 Faults and Remedial Action

Fault	Cause	Remedy
Spray head does not extend	Cleaning medium not switched on.	Switch on compressed air or control system.
	Pressure of cleaning medium too low (below 1 bar).	Check pressure of the cleaning medium.
	Severe soiling of the spray head in the area of the device housing.	Clean the area Attention: Do not damage sealing surfaces.
	Interference contour / foreign body is in the container in the opening area of the device	Remove interference contour / foreign body
	Spring (item 10) defective / broken and obstructs the extension movement	Replace item 10.
Spray head does not retract	Supply line between shut-off valve and device too long. Cleaning agent column prevents retraction.	Wait until the line is empty. Move the shut-off valve closer to the device.
	Foreign body in the device	Remove and disassemble the device, remove foreign bodies
	Spring broken, retraction force missing	Remove and disassemble device, replace spring
Spray head does not turn and/or no fluid is emitted.	Cleaning fluid pressure and flow rate too low.	Adjust the pressure and flow rate to standard values.
	Strainer in filter is clogged.	Check the flow rate of the device with the spray head removed. Clean the strainer/filter.
	Nozzle holes/slots clogged. Foreign body in the device	Disassemble the unit and check for deposits / check wither the nozzle slots are clogged. If necessary, clean or replace the spray head.
Effectiveness of cleaning is not sufficient.	Connection pressure too low.	Check connection pressure, adjust it.
	Connection pressure is high.	Check connection pressure, adjust it.
	Spray slots clogged.	Clean the spray slots.
Spray head does not rotate.	Bearing worn.	Replace bearing.

Table 8.2-1: Operating Faults – Cause and Remedy

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

If the device is sent back (e.g. repair/service/return), it is necessary for a hazardous substance declaration to be enclosed with the device in compliance with the German Ordinance on Hazardous Substances (GefStoffV).

Request the form for the hazardous substance declaration from AWH.

8.3 What to do 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 owner.

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

- The work steps for switching off the device listed in *Section 7.2 Switch-off Procedure* must be adhered to.
- 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 in an emergency ("EMERGENCY STOP") is intended to disconnect the entire machine from the supply voltage without delay in order to eliminate the risks caused by electrical voltage immediately.
- Stopping in an emergency ("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:
- *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 an Emergency:

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

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

9 Shutdown

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 sound manner. Disposal must be performed in accordance with the respective valid local, national and international regulations.

NOTE ON EXPLOSION PROTECTION

Work on the device in an explosive atmosphere is PROHIBITED!

If this is not observed, the explosion protection could be invalidated.

- *Only allow instructed personnel to work in potentially explosive atmospheres.*
- *The personal protective equipment must meet the explosion protection requirements.*
- *Do not use a tool that could generate sparks.*

WARNING

Danger due to improper shutdown/disposal!

There is a risk of intoxication or chemical burns when using harmful or toxic media, or media which is hazardous in any other way.

There is a risk of death or severe physical injury.

- *Have the work carried out by an expert only.*
- *Before starting work, observe the **work 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 work.*
- *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. *Section 7.3 Removal* contains information on the removal of the devices and its interfaces. The safety instructions in *Section 7.1 Safety Instructions for Maintenance* must be observed.

9.1 Disposal

CAUTION

Danger from fluids that are a health hazard!

During disposal, there is a risk of injury from contact with harmful fluids.

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 predominantly of stainless steel. Stainless steel is a valuable raw material and can easily be recycled.

After removal, clean the complete device professionally for disposal

- (see *Section 7.4.5 Notes on Cleaning*) and
- Disassemble it 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, auxiliary materials and lubricants must NOT be allowed to penetrate the groundwater, waterways or sewer system.

There is a risk of environmental damage.

- *Dispose of any cleaning agents, lubricants and auxiliary materials (e.g. brushes and cloths) which were 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 sound manner and have them recycled.*

Index

Annexes

Annex 1: Declaration (translation)

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Declaration for incorporation pursuant to the EC Machinery Directive 2006/42/EC, Annex II B

We hereby declare that the container cleaning device
Designation: **Mini retractor system**

Type: **TANKO-RF40 Clipon; TANKO-RF40 thread**
Type: **TANKO-RF50 Clipon; TANKO-RF50 thread**
Serial number: see cover sheet
complies with the following basic health and safety requirements according to the annex of the Directive 2006/42/EC: no. 1, no. 1.1.2 (a + b), 1.1.3, 1.1.5, 1.3.2, 1.3.3, 1.3.4, 1.5.2, 1.5.3, 1.5.4, 1.5.5, 1.5.6, 1.5.7, 1.5.8, 1.5.13, 1.6.1, 1.6.3, 1.7.1, 1.7.3

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

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

Directive/standard	Title	Version	Remarks
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 of DIN EN ISO 12100:2011-03	2013-08	
DIN EN ISO 4414	Pneumatic fluid power - General rules and safety requirements for systems and their components	2011-04	Harmonized standard

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

Start-up is prohibited until it is determined that the overall plant complies with the provisions of the directives.

Hötensleben, 2. January 2024

Thomas Erhorn (CEO)

Person authorized to compile the technical documents:
Armaturenwerk Hötensleben GmbH, Schulstr. 5 - 6; 39393 Hötensleben, Germany

Notes

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