

OPERATING/INSTALLATION INSTRUCTIONS



Container Cleaning System

TANKO®R64T

with Cleaning Devices

TANKO®RB-30 or TANKO®S30

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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 acceptable to the manufacturer of the machine in which the partly completed machine will be installed, 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.

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Abbreviations and Units

Abbreviations

approx.	approximately
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
CD	Cleaning device
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.
EN	European Standard (Norm)
etc.	and so on
if nec.	if necessary
ISO	International Organization for Standardization
L	Length
LE _{x,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
or	or
Ra	Average roughness value (dimension for surface roughness)
SI	Système international d'unités; the most widely used international system of units for physical values
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.
V _{eff}	effective vibration velocity

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 positive pressure [bar _g] unless expressly described otherwise. Conversion: 1 bar = 14.50376... psi [pound-force per square inch]
°C	Unit of measure for temperature T [degrees Celsius] Conversion from Celsius to Fahrenheit: °C × 1.8 + 32 = °F [degrees Fahrenheit]
h	Unit of measure for time t [hours]
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]

1 Introduction

These operating/installation instructions (referred to hereinafter as instructions) are an integral part of the device. They provide you with all the information required for smooth operation of the TANKO®R64T cleaning 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.

If necessary, download the manual from the <http://www.awh.eu/de/downloads> Internet page.

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

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*

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, groups of words 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 substances that are a water hazard



Unauthorized access prohibited



Wear protective work clothing



Wear safety shoes



Wear protective gloves



Wear safety goggles



Wear a hard hat



Wear hearing protection



Wear a welding mask



Isolate from power supply before work



Follow instructions



Protective grounding connection required



Secure against power supply being switched back on



Return for recycling



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 EC 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 declarations and/or certificates of conformity
- Certificates
- Additional documents for any attached or upstream components, e.g. drawings, performance data, information on accessories etc.
- Additions 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.**

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 media and agents must be approved for all materials of the device (e.g. washers, bushings) and for the substances in the container to be cleaned that 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 TANKO-R64T with the TANKO-S30 or TANKO-RB-30 combination is a cleaning system without an external actuator. The device is driven by the cleaning medium. The device is used for the interior cleaning of containers with and without installed equipment.

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 agent is sprayed and spray head rotates)

- Pressure in the container: 0 to 0.5 bar (0 to 7.25 psi g)
- Temperature of the cleaning medium: +5 °C to 180 °C
- Ambient temperature in the container to be cleaned: +5 °C to +180 °C

Operating state - idle state (NO cleaning > cleaning medium is NOT sprayed, TANKO-R64T and attached spray heads are stationary)

- Pressure in the container: Depending on the permissible maximum pressure of the attached fittings including media supply. The media supply must be closed tightly, the cleaning device does not have its own shut-off device
- Ambient temperature in the container to be cleaned: -20 °C to 180 °C

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



Only TANKO-S30 or TANKO-RB-30 may be used as cleaning devices.

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

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 point the cleaning jet or surge of 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 within the approved parameters such as pressure and temperature (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 of the device (see [Section 5.2.2 Installation Position](#)).
- The device may generate vibrations when cleaning the container. Any other vibrations must be avoided (see [Section 7.4.1 Maintenance Intervals](#)).
- The device is designed for a fixed pipe installation only. Installation on a hose is PROHIBITED.

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.
- 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 of the attached cleaning device may become clogged. The free movement of the actuator could be obstructed.
- The device must NOT be operated with gases (e.g. air) over a long period, as the cleaning medium is used for lubrication of the bearings.

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 fully 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 would like to explicitly draw your 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.

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.

- Hydraulic connections must meet the requirements of DIN EN ISO 4413
- Pneumatic connections must meet the requirements of DIN 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 similar training, practical experience in the assembly/disassembly of devices

The person must be familiar with the design, mechanical installation, maintenance and troubleshooting of the device and have the following qualifications:

- Training in the field of mechanical systems (e.g. as a mechanic or mechatronic technician), with a successfully completed final examination
- **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:
 - Training in the field of electrical engineering (e.g. electrician, electronic engineer or mechatronic technician) and a successfully completed final examination
 - 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.

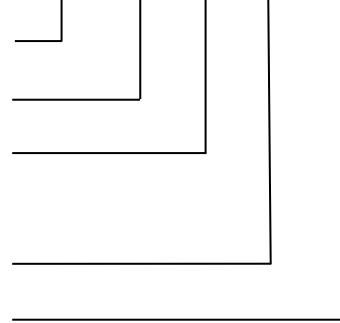
2.5 Identification

2.5.1 Type Designation

Example: Tank cleaning system

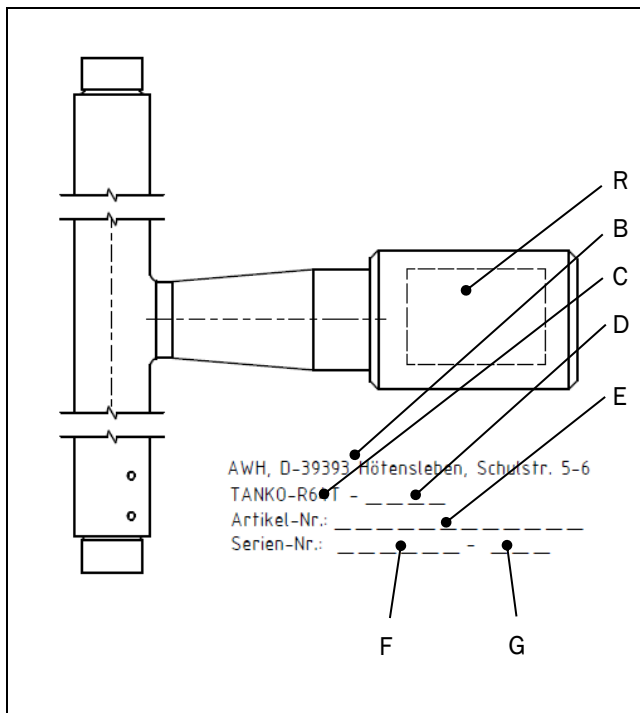
- 1) Brand of the cleaning devices:
- 2) Type: R64T
- 3) Size: Media connection thread BSP **3/4"**
Media connection –clipon/series **A29**
- 4) Specification: without cleaning device
- 5) Turning radius with TANKO-S/-RB: 111 mm

TANKO-R64T 3/4" o.CD UR111



2.5.2 Type Plate

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



- A) Position of the type plate
- B) Manufacturer
- C) Type
- D) Year of manufacture
- E) Item number
- F) Serial no.
- G) Consecutive count number

Figure 2.5-1: Type Plate Position

3 Design and Function

3.1 Design

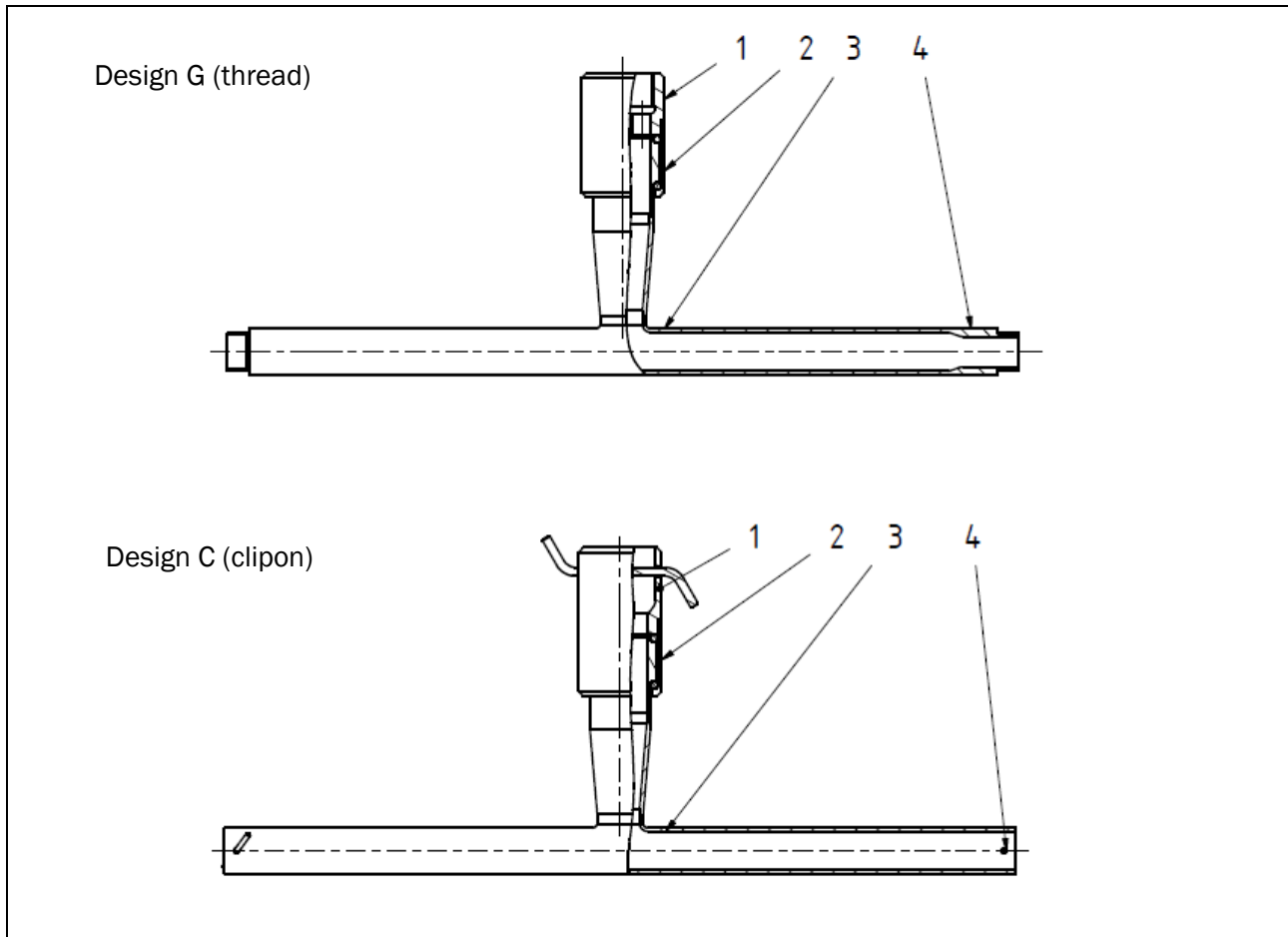


Figure 3.1-1: TANKO-R64T device carrier without cleaning devices

The TANKO-R64T device carrier consists of the following main components:

- 1 Media connection [MA]
- 2 Actuator
- 3 Distribution for connections, freely rotating
- 4 Connection for cleaning devices

The devices are made of stainless steel. They do not have any electrical equipment.

Cleaning device carriers with different arm lengths are available for different purposes and container sizes.



Only TANKO-S30 or TANKO-RB-30 may be used as cleaning devices.

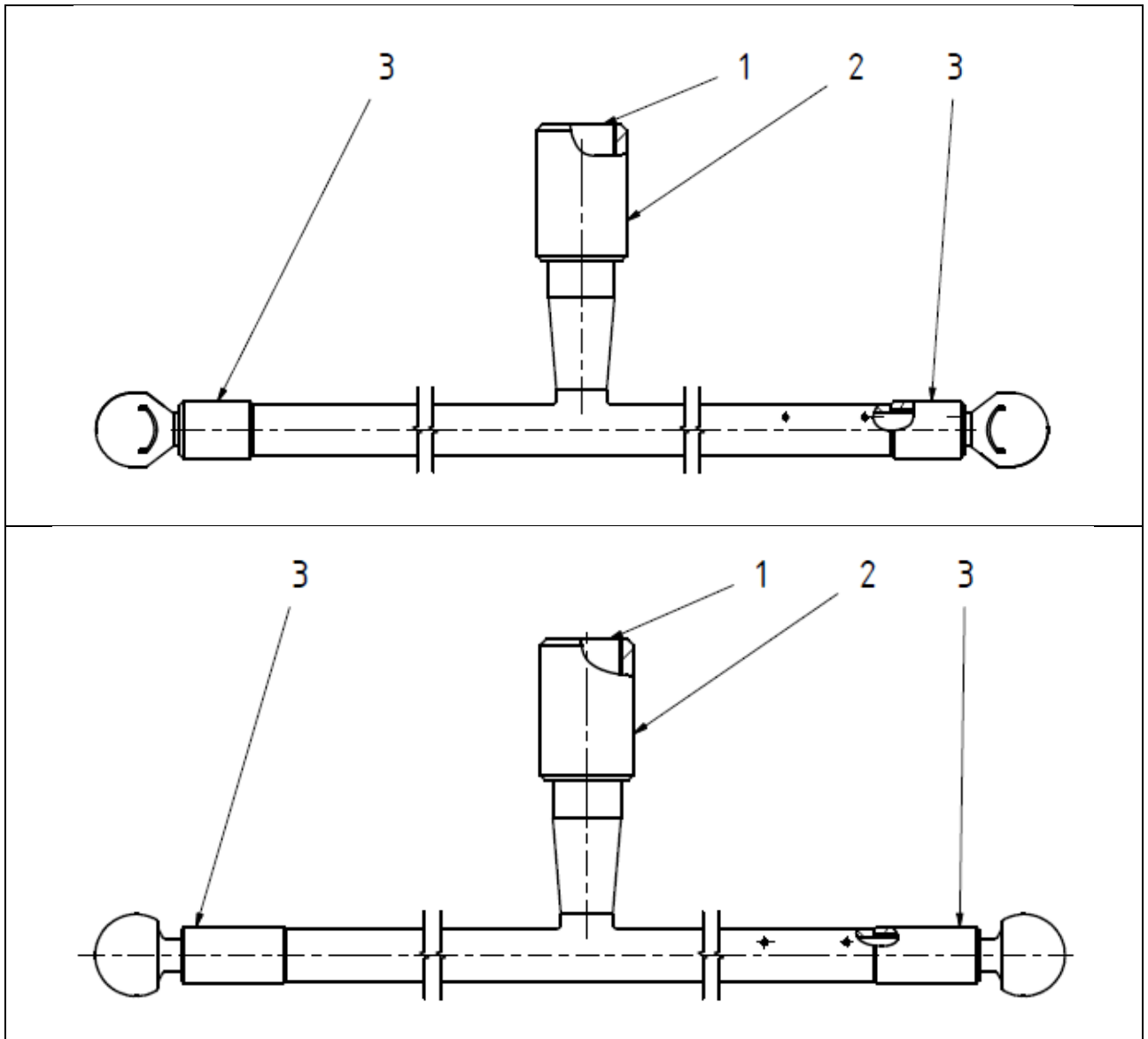


Figure 3.1-2: Overview of the different combinations with threaded connection

The TANKO-R64T cleaning system with cleaning device consists of the following main components:

- 1 Media connection [MA]
- 2 Actuator
- 3 TANKO-S30
- 4 TANKO-RB-30

3.2 General Function Description

The TANKO-R64T is a compact, axially rotating cleaning system.

It has no electrical equipment and is driven by the flowing cleaning medium and internal paddle wheels.

The axis, which forms the cleaning device carrier with the welded T-piece and the threaded nipples, is double-mounted on balls.

The pressure and the flow of the cleaning medium cause the cleaning device carrier of the TANKO-R64T to rotate. This is done by paddle wheels in the actuator. Holes at the ends of the cleaning device carrier that are inclined towards the center plane are used as an actuating support for the TANKO-R64T.

2 TANKO-S30 units or 2 TANKO-RB-30 units are attached to the cleaning device carrier. They are also driven by the cleaning medium flowing through the TANKO-R64T.

The TANKO-R64T is made of stainless steel. Several circulation radii of the TANKO-R64T are available for different applications and container sizes.

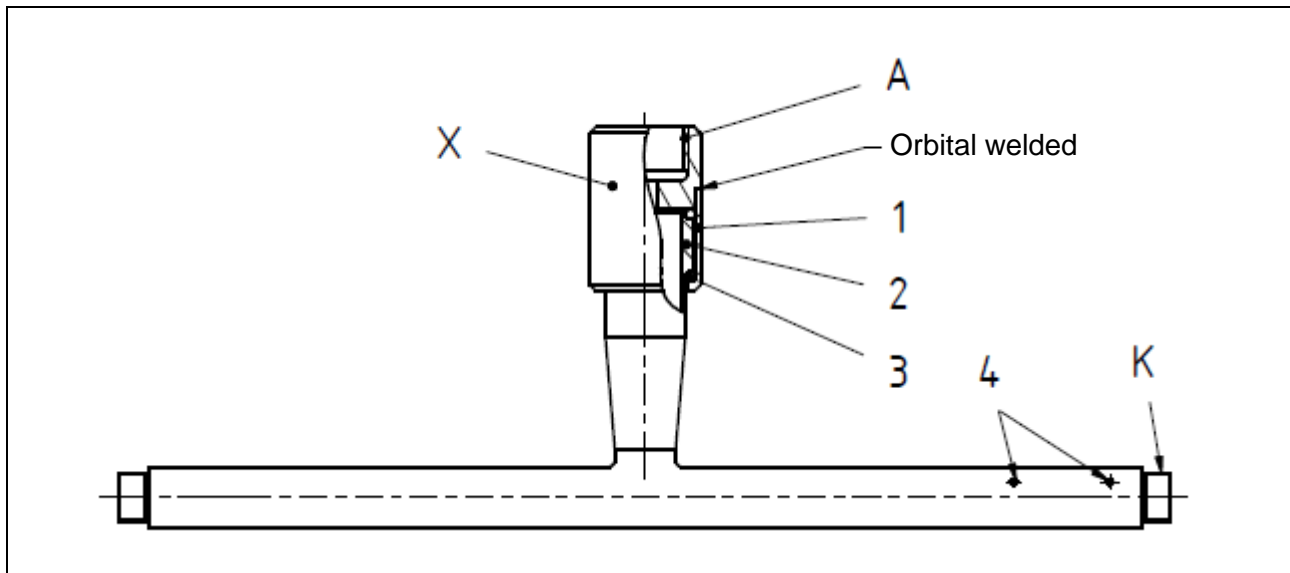


Figure 3.2-1: Design of actuator

- R Media connection [MC]
- K Connections for cleaning devices
- X Identification of the device (see [Section 2.5 Identification](#))
- 1 - 3 Actuator components
 - 1 Housing
 - 2 Shaft
 - 3 Balls
 - 4 Holes for actuator support

Cleaning Times:

The time for a cleaning cycle depends on several factors, and must be defined individually by the owner.

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.

Example applications:

Spray and surge cleaning in containers with and without installations such as tanks, silos, drums, containers, pipelines, dryers, centrifuges, agitators, vacuum containers, container washing systems, filters, spray towers, fermenters, mixing vessels and horizontal dryers as well as containers in biotechnology for laboratory applications and conveyor belts.

3.3 Technical Data

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

Prerequisite for this: the device must be serviced professionally at the intervals specified in [Section 7.4 Maintenance](#).

All media other than tap water can reduce the service life of the device.

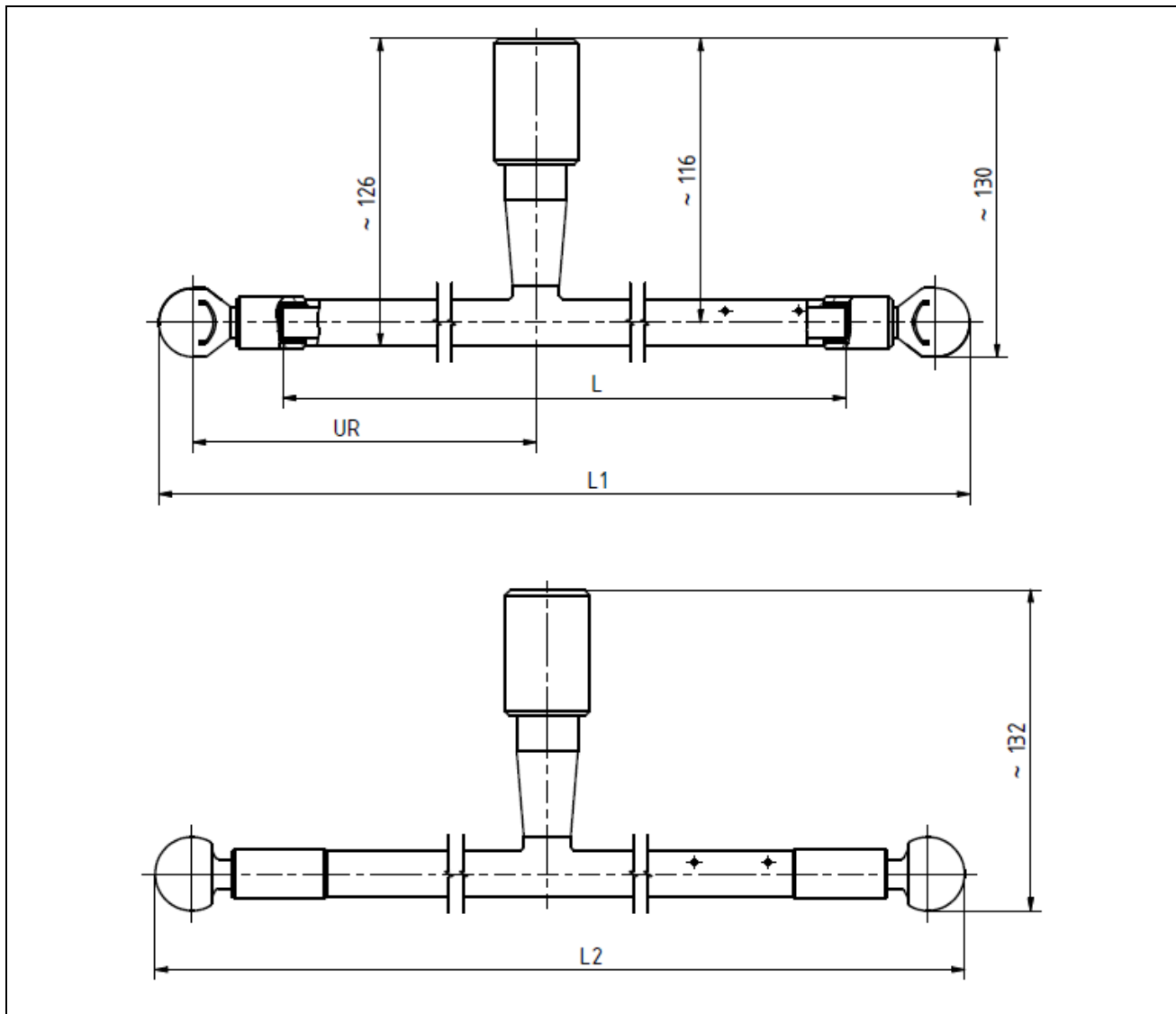


Figure 3.3-1: Length with and without devices, connections thread

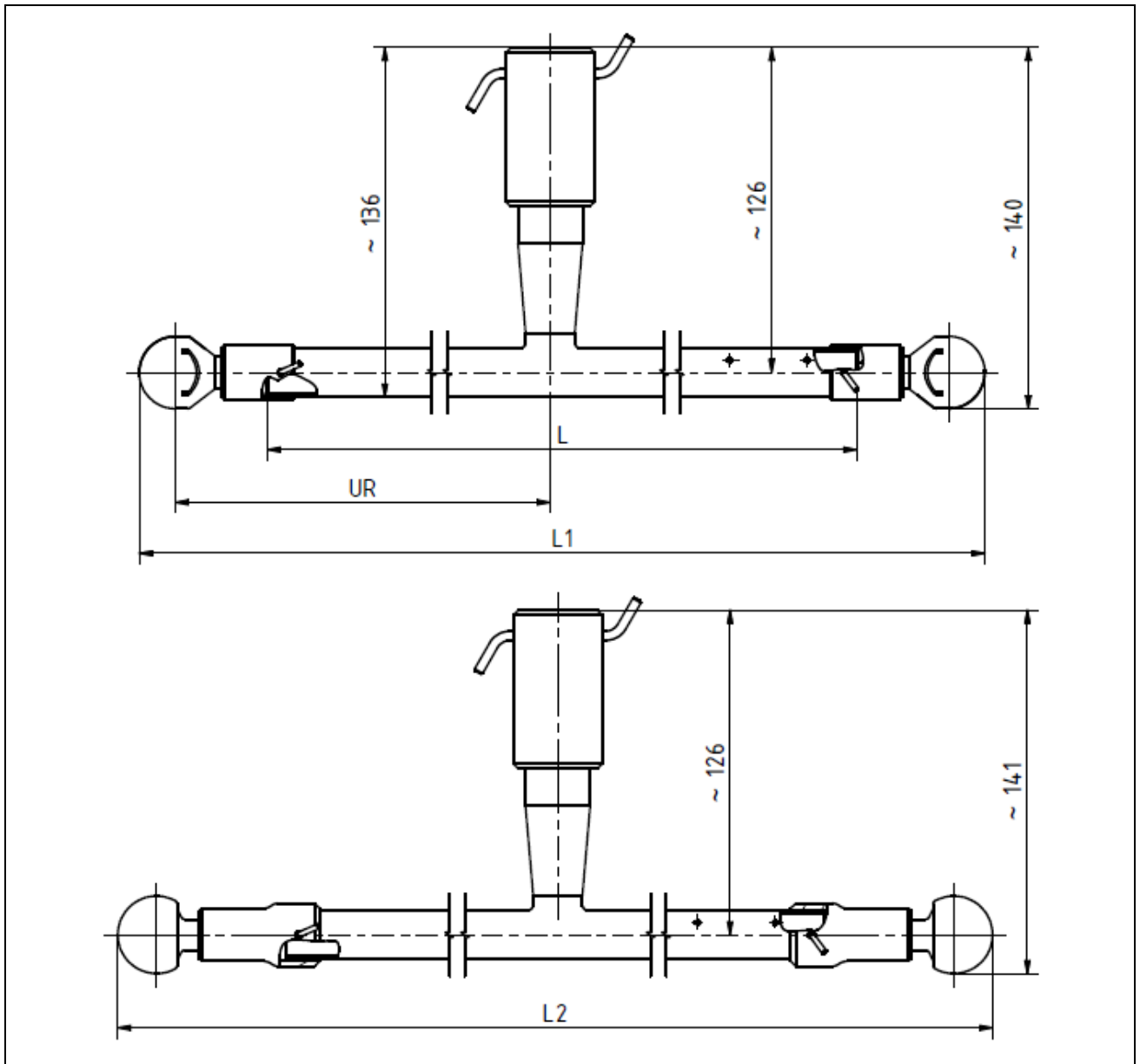


Figure 3.3-2: Length with and without devices, connections clipon

Type Series Available for Standard Lengths

Device	UR [mm]	L [mm]	L 1 [mm]	L 2 [mm]	Weight without CD [g]
Thread connections					
TANKO-R64T 3/4" o.CD UR111 Article no. 66T051341313131	111	148	250	270	352
TANKO-R64T 3/4" o.CD UR201 Article no. 66T051341313132	201	328	430	450	473
TANKO-R64T 3/4" o.CD UR291 Article no. 66T051341313133	291	508	610	630	590
TANKO-R64T 3/4" o.CD UR366 Article no. 66T051341313134	366	658	760	780	688

Connections clipon					
TANKO-R64T-C/A29 o.CD UR111 Article no. 66T051241343131	111	148	250	278	365
TANKO-R64T-C/A29 o.CD UR201 Article no. 66T051241343132	201	328	430	458	484
TANKO-R64T-C/A29 o.CD UR291 Article no. 66T051241343133	291	508	610	638	604
TANKO-R64T-C/A29 o.CD UR366 Article no. 66T051241343134	366	658	760	788	703

Table 3.3-1: Type series for standard lengths

Device type	TANKO-R64T	
	with TANKO-S30	with TANKO-RB-30
Container diameter	max. 6000 mm (19.7 ft)	
Container volume	max. 100 m ³	
Operating temperature (permitted):		
– Cleaning medium	+5 °C (+41 °F) to +180 °C (+356 °F)	
Ambient temperature (permitted):		
– Inside the container	+5 °C (+41 °F) to +180 °C (+203 °F)	
Operating pressure:		
– Cleaning medium	< 1 – 7 bar (15 – 73 psi)	< 1 – 5 bar (15 – 73 psi)
Optimum pressure:		
– Liquid medium	approx. 3 bar (43.5 psi)	
– Gaseous medium (air or nitrogen)	1 bar (14.5 psi g), max. 1 min. 0.5 bar (7.25 psi g), max. 2 min.	
Operating pressure range in the container to be cleaned		
– During the cleaning process	0 to 0.5 bar (0 to 7.25 psi g)	
– In idle state	Depending on the permissible maximum pressure of the attached fittings including media supply. The media supply must be closed tightly, the cleaning device does not have its own shut-off device	
Volume flow thread:	See Figure 3.3-3	See Figure 3.3-4
Volume flow clipon:	See Figure 3.3-5	---
Installation opening min.:	min. Ø150 mm (5.91 in) ¹⁾	
Media connection [MC]		
For design G:		
– R64T	BSP 3/4"	
– TANKO S and -RB	Connection for cleaning devices: BSP 3/8"	
For design C		
– R64T	Clipon for pipe outer Ø 29 mm	
– TANKO S and -RB	Connection for cleaning devices clipon for pipe outer Ø 19 mm	

Device type	TANKO-R64T	
	with TANKO-S30	with TANKO-RB-30
Length [L] - without cleaning device	148 – 660 mm (5.83 – 25.98 in)	
- with cleaning device	250 – 760 mm (9.84 – 29.92 in)	270 – 780 mm (10.63 – 30.71 in)
Height - without cleaning device Design G Design C	126 mm (4.96 in) 136 mm (5.35 in)	
- with cleaning device Design G Design C	131 mm (5.16 in) 141 mm (5.55 in)	132 mm (5.20 in) 142 mm (5.59 in)
Weight - without cleaning device	see Table 3.3-1	
- with cleaning device Design G Design C	+2x 90g +2x 81g	+2x 160g ---
Rotation speed: – with water	2 –85 rpm	
Installation position:	generally only vertical, max. permissible deviation of 5°	
Materials:	See Table 3.3-3	
Noise pressure level • Outside the container	Depending on the condition of the container! The noise pressure level can exceed the maximum permissible Exposition value of $L_{EX,8h} = 85$ dB (A).	

Table 3.3-2: Operating parameters

- 1) We recommend choosing a larger installation opening for the circulation radii $UR > 201$ for better handling of the device when installing and removing the device in the container.

Material Combinations

		TANKO-S/RB body				
		1.4404	1.4435	1.4571	2.4610 (HC4)	2.4602 (HC22)
Balls	1.4401	V	V	V	–	–
	2.4610 (HC4)	X	X	X	V	–
	2.4602 (HC22)	X	X	X	–	V

S = standard X = optional

Table 3.3-3: Material combinations: body – balls



Other materials and material combinations are available on request.



Further data for the TANKO-S30 and TANKO-RB-30 cleaning devices can be found in the corresponding operating instructions.

Consumption Data

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

They apply to operation with clean water as the cleaning medium at a temperature of +25 °C / +77 °F. The values may deviate if a different cleaning medium and a different medium temperature are used.

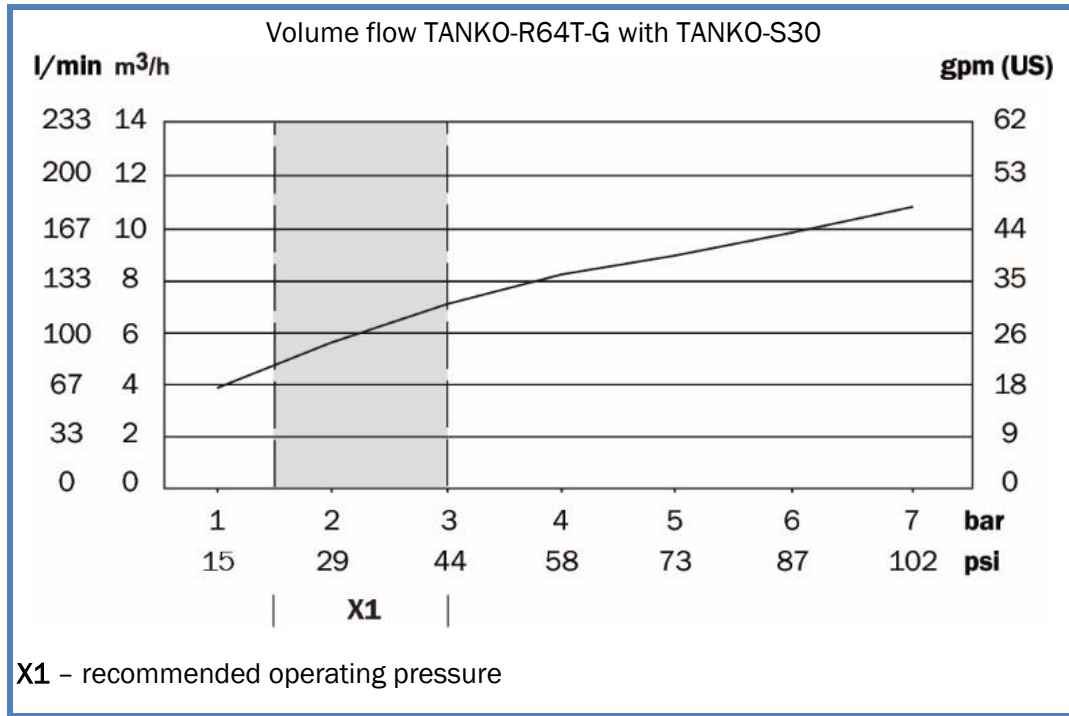


Figure 3.3-3: Consumption data thread connection with TANKO-S30 360°

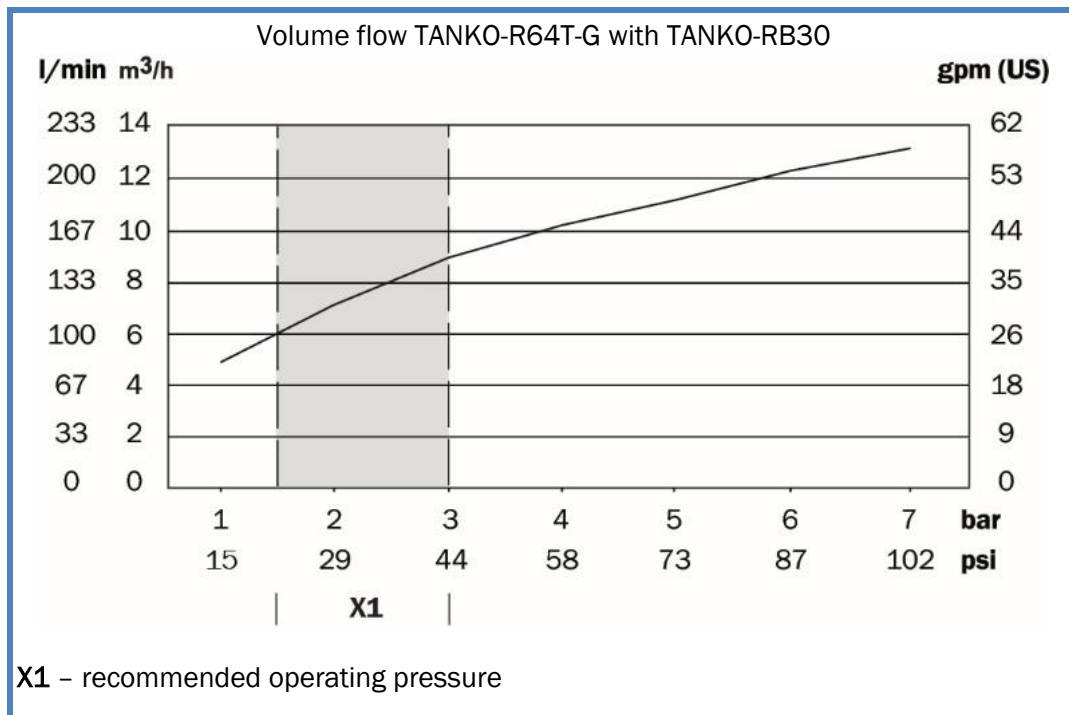


Figure 3.3-4: Consumption data thread connection with TANKO-RB30 360°

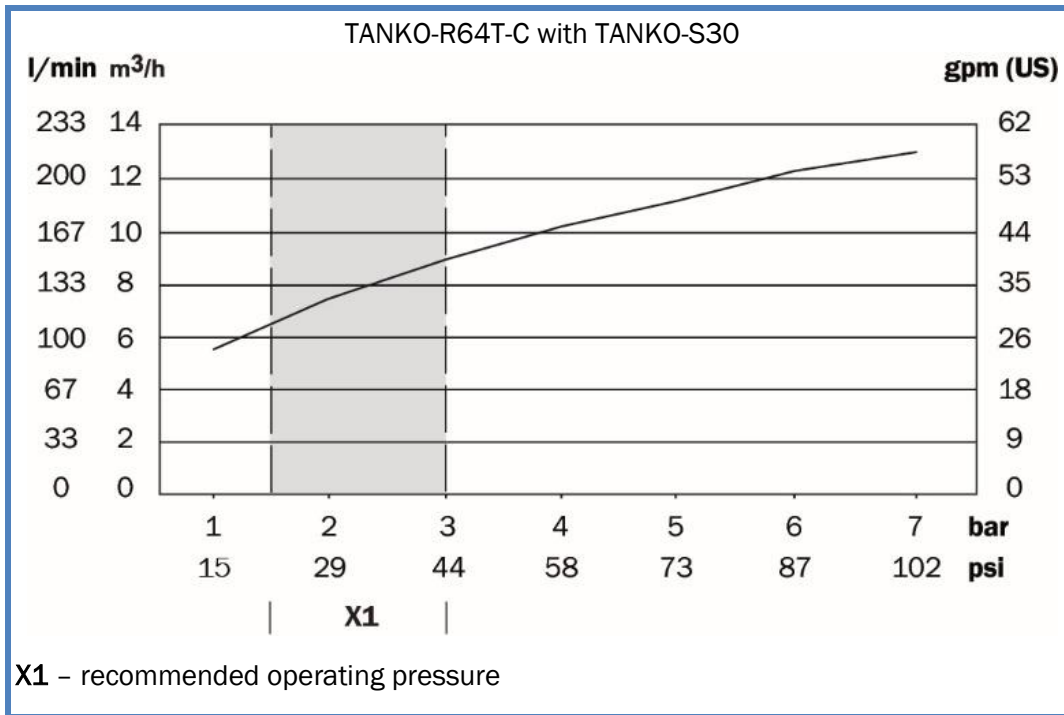


Figure 3.3-5: Consumption data clipon connection with TANKO-S30 360°

3.4 Cleaning Media

Due to the wide range of practical applications and use cases 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****Warning of corrosive and aggressive cleaning medium!**

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 materials of the device (e.g. gaskets, 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%)

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.
- Follow the instructions on supply and return lines in [Section 5.2 Installation](#).

The Following Media are Permitted for Use for Container Cleaning:

Clean, sprayable fluids (e.g. water with alkali 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, transport without packaging, assembly/disassembly and maintenance work, pay attention to protruding sharp edges.

In the event of damage, please contact AWH immediately to report the damage.

Scope of Delivery

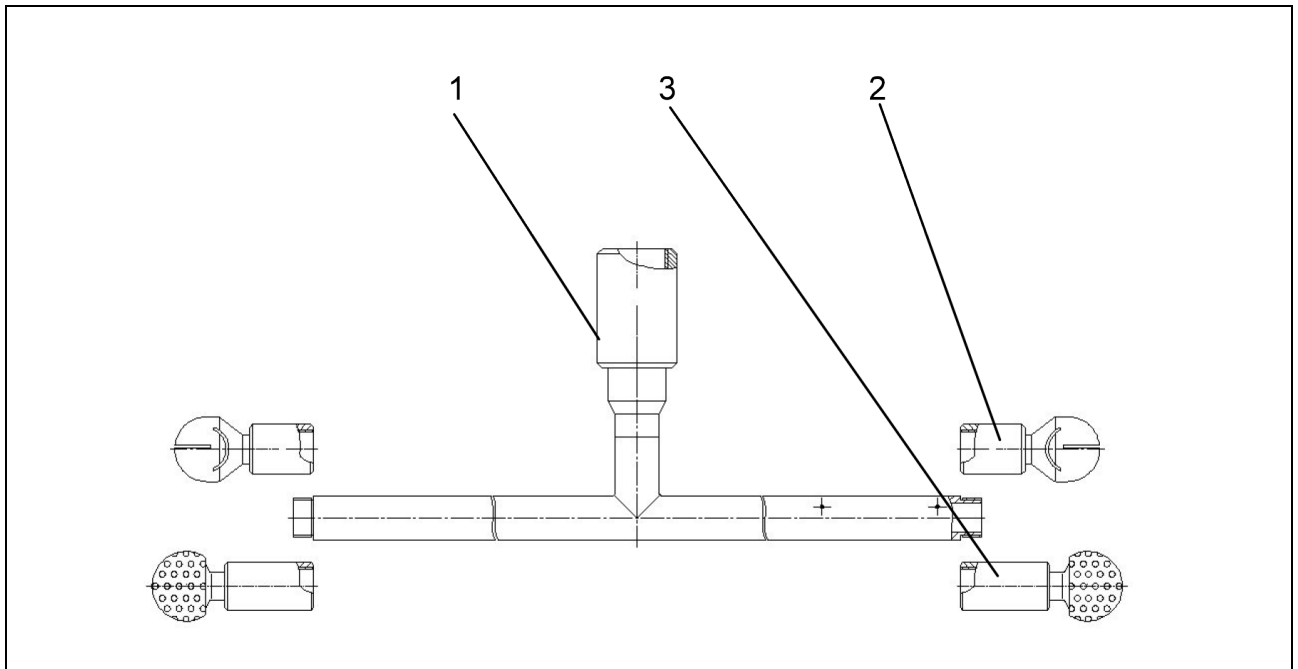


Figure 3.4-1: Scope of Delivery

Scope of Delivery

- 1) TANKO-R64T cleaning system
- 2) TANKO-S30 tank cleaning device or
- 3) TANKO-RB-30 tank cleaning device
- TANKO-R64T operating and installation instructions
- TANKO-S / -RB operating and installation instructions
- Technical documents according to the order (e.g. certificates and reports)

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



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

Inspection on Receipt of Goods:

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

Claims:

- Register 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



Risk of environmental damage 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 of the device and the components is designed for a storage period of 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 result in 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 weathering influences (e.g. development 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.

Parameters for Storage (Recommended):

- | | |
|----------------------------|-------------------------------------|
| – 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 | $v_{\text{eff}} < 0.2 \text{ mm/s}$ |

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 commissioning the device.



WARNING



Risk of falling when working at heights!

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

There is a risk of death or severe physical injury.



- Do not perform any work at height except with a safety 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 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 7.2 Switch-off Procedure](#)).
- 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.

 **WARNING****Danger due to swinging hydraulic equipment!**

In certain operating states, screw and clamp connections may unforeseeably loosen due to significant swinging motions and/or vibrations. This means it is possible for leaks to form at the sealed points of the connections and line connections, from which hot and/or corrosive fluid may spray out at high pressure.

There is a risk of death or severe physical injury.

- All connections and line connections should be securely attached without mechanical tension and permanently technically leakproof.
- During initial commissioning, the swinging and vibrations of the device must always be observed and, insofar as is possible, tested under various operating conditions.
- In the event of swinging and/or vibrations, avoid releasing the connections by additional measures, such as spot welding or bonding (e.g. Loctite).

**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.

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.

- *Thoroughly rinse all supply and return lines of the cleaning medium with clear water in order to remove any dirt, foreign matter or residues in the supply line (e.g. lime, chips, 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 [MA] in the supply line for the cleaning agent (see [Section 3.4 Cleaning Media](#)).*
- *Paint must not be applied to the surface of the device.*

**CAUTION*****Fault due to incorrect installation position/location of the device!***

Any installation of the device NOT performed correctly can cause damage to the device which puts the functional safety and reliability at risk during commissioning.

That can result in hazards.

There is a risk of minor or moderate injuries.

- *When selecting the installation position of the device, make sure that*
 - *a safe distance is maintained from the internal wall of the container and from nearby components, in order to prevent scraping or impact during operation and*
 - *to prevent collisions while the cleaning head and surrounding components (e.g. agitators) are moving simultaneously.*
- *Only a fixed pipe installation is permitted. Installation of a hose can cause the installed cleaning device to thrash/hit about.*
- *Install the device free of mechanical tension.*
- *Take the installation dimensions from [Section 3.3 Technical Data](#) and the dimensional drawing of the AWH catalog or the device drawing.*
Ensure sufficient space for operation and maintenance.

 **CAUTION*****Danger due to freely rotating components on the device!***

When grasping the device at the media connection or at one of the spray heads of the attached devices, the device can suddenly and quickly turn due to the built-in ball bearings until it reaches its center of gravity.

There is a risk of minor contusions.

- *When handling, e.g. unpacking, transportation without packaging, assembly/disassembly and maintenance work, pay attention to the free rotation possibility and grasp appropriately firmly, preferably at the distribution.*
- *If necessary, provide free space for the rotary movement*
- *Wear protective gloves when working on the device.*

 **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.*

 **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.

Connection to the Power Supply:

Connection to the power supply should only be established once the device is securely attached mechanically to the container. The connection must be established in such a way that a permanent, secure connection is maintained.

- Hydraulic connections must meet the requirements of EN ISO 4413.



Fastening the device to the container is the responsibility of the owner. The container connector must be sealed reliably.

*The use of insulating materials (such as Teflon tape or similar) for sealing is **NOT** permitted.*

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 pipe or hose connections and the cleaning media connection [MA] must be firmly fastened and have a permanently tight design (hazard due to fluid being expelled in the event of leaks).
- After installation, it must be ensured that all parts of the device have a conductive connection with the container and are grounded (leak resistance to ground RE < 10⁶ ohm).

5.2.1 Interfaces

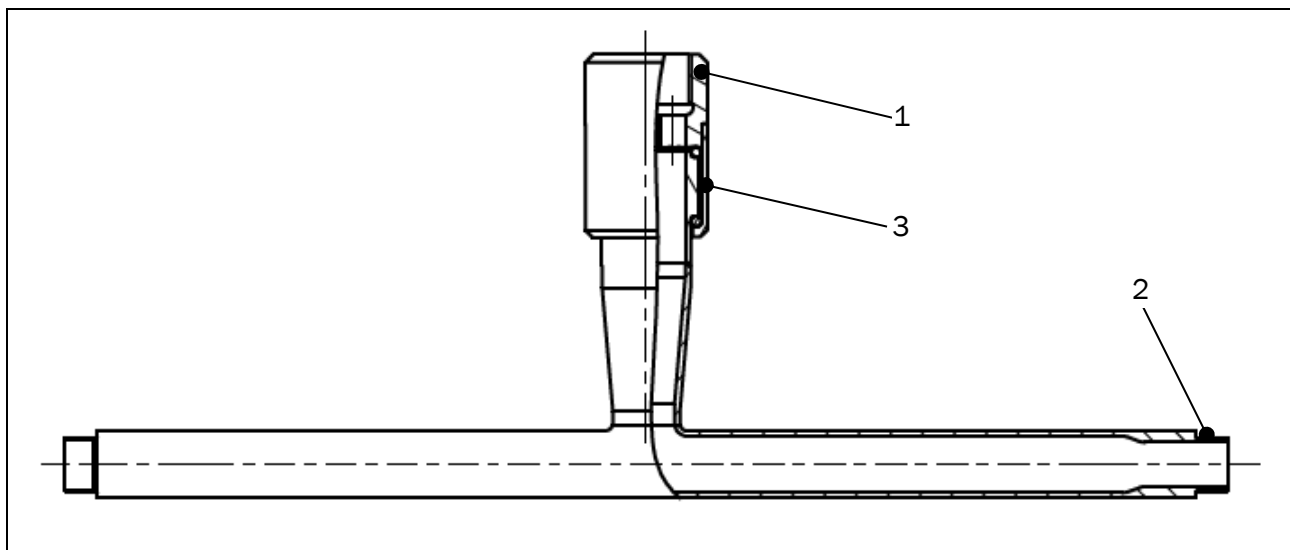


Figure 5.2-1: Interfaces

The device has the following interfaces:

- | | |
|-------------------|---|
| Interfaces | <ol style="list-style-type: none">1 The media connection [MA] (is simultaneously the process connection [PA] for mounting) internal thread 3/4" for design G or clipon for tube outer Ø 29 mm for design C2 Device connection for cleaning devices TANKO-S30 or TANKO-RB-30 external thread G3/8" for design G or clipon for pipe outer Ø 19 mm for design C3 Do NOT place the strap wrench/belt wrench in the bearing area |
|-------------------|---|

5.2.2 Installation Position

The preferred installation position of the system is a vertical media connection (pointing up or down), the axis with the cleaning heads aligned horizontally, with a maximum permissible deviation of 5°.

When installed, the cleaning devices move horizontally in a circle around the downpipe (media connection) and at the same time around their own axis.

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.

Design G, with thread connection

1. Screw the TANKO-S30 or TANKO-RB30 devices with the internal thread onto the pipe end of the device carrier.

NOTE There is a risk of damage to the thread if the tightening torque applied to the threaded device connection and the pipe is too high!

- The tightening torque for the threaded connection between the device and the pipe depends on the material of the TANKO-R64T and of the cleaning device.

NOTE When tightening and loosening the device, the bearing of the cleaning device could be damaged (see TANKO-S/-RB operating instructions)! The rotation performance could be impaired!

- Do NOT place the strap wrench/belt wrench in the bearing area.

2. Tighten the threaded device connection to the pipe with the strap wrench/belt wrench.

- The tightening torque for the threaded connections between the media connection and the pipe depends on the material of the pipe and of the cleaning device.

3. Push the TANKO-R64T with the internal thread onto the pipe for the media supply.

NOTE There is a risk of damage to the thread if the tightening torque applied to the threaded connection between the media connection and the pipe is too high!

- The tightening torque for the threaded connections between the media connection and the pipe depends on the material of the pipe for the media supply.

NOTE When tightening and releasing the device, the bearing of the R64T could be damaged! The rotation performance could be impaired!

- Do NOT place the strap wrench/belt wrench in the bearing area (see [Figure 5.2-1](#)).
4. Screw connections are to be prevented from coming loose by taking appropriate measures (2 weld points between the device and supply line, pinning of the device to the supply line).

Design C, with clipon connection

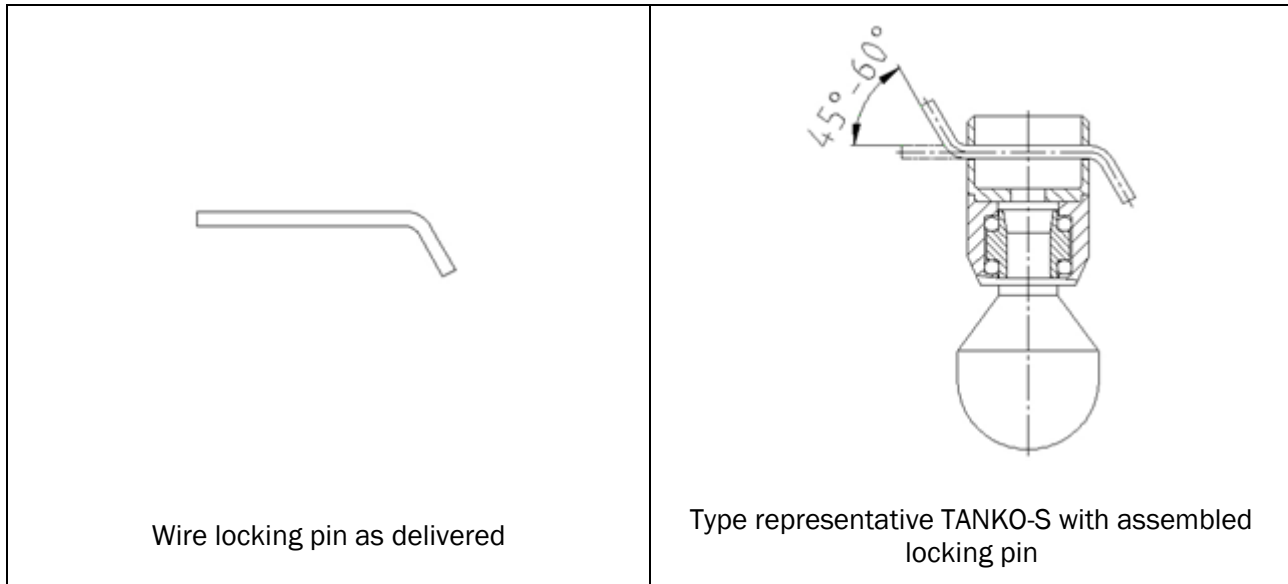


Figure 5.2-2: Clip-on Installation

NOTE Multiple utilization of the wire locking pin.

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

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

- The wire locking pin is to be replaced by a new wire locking pin after it has been bent (see [Section 7.5 Spare Parts and Customer Service](#)).
1. Slide the TANKO-S30 or TANKO-RB30 devices onto the pipe end of the device carrier and turn until the clip holes in the device carrier match the clip holes of the device.
Insert the wire locking pin through the bore holes in the device and the device carrier.
Bend the straight end of the wire locking pin with the assembly/disassembly tool for the locking pin by at least 45° (see [Figure 5.2-2: Clip-on Installation](#)).
 2. Slide the TANKO-R64T with the clipon media connection onto the pipe for the media supply and turn until the clip holes in the media connection of the R64T are aligned with the clip holes of the downpipe.
Insert the wire locking pin through the bore holes in the device and the downpipe until it hits the stopper.
Bend the straight end of the wire locking pin with the assembly/disassembly tool for the locking pin by at least 45° (see [Figure 5.2-2: Clip-on Installation](#)).

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.

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.

As a result of the wide range of practical applications and usage conditions for the cleaning device, AWH CANNOT specify a noise level for the device under load, i.e. when installed in the container and during operation with cleaning medium.

For this reason, the manufacturer can only offer the owner **as a precautionary measure, a few points of reference and some notes** to be observed and to be integrated into the owner's hazard assessment.



WARNING

Hazardous situations during start-up 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*
 - *Correct hydraulic connection*
 - *Safe and reliable functioning of the device*

 **WARNING****Risk when used outdoors!**

The devices are usually operated in a closed factory hall and are thus protected from the risk of lightning. 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 plant in which the device is installed must be protected by suitable lightning protection measures.
- 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.

 **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.
- Pay attention to hazards caused by electrical current (e.g. warnings).

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.
- Pay attention to 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 connection) may be under pressure.



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.

**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 vary 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. noise insulation).*
 - *Place barriers around the noise area and mark it accordingly (e.g. with mandatory sign: "Use hearing protection").*
 - *Use effective hearing protection.*

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

A trial run should be carried out to check that the device is working safely and reliably 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 cleaning while there are persons in the container.

Function Check

1. Close all openings on the container (e.g. inspection openings) firmly.
2. Switch off all moving parts in the container 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 does NOT collide with the surrounding components (e.g. agitator) during simultaneous movement.
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

Depending on the type of device activation and how it is integrated (e.g. manual or automatic) in 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 electrical power supply.
 - Check to make sure that the electrical power supply is NOT disconnected and that voltage is applied to the sensors.
 - Take suitable measures to secure the electrical power supply to prevent it from being switched 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 components, e.g. leakage in the pipe system or at 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).

The term "water hammer" refers to a pressure surge in a fluid line that is caused by opening/closing a shut-off fitting (e.g. valve or ball cock) quickly at the end of the 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 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 cleaning 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 procedures** (see [Section 6.3 Switch-on Procedure](#) and [7.2 Switch-off Procedure](#)).
- There is no need for the device to be run in.
- The following operating states of the device are NOT permitted:
 - Operation of the device without cleaning medium.
 - Immersing the device in the product of the production process.
 - Operation of the device outside the permitted parameters (see [Section 3.3 Technical Data](#)).
 - Operating the device with air or gas for a longer period (several minutes)
- 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 that 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 media 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 all maintenance work (see [Section 6.2 Function Check/Trial Run](#)).

7.1 Safety Instructions for Maintenance



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.



CAUTION



Danger due to freely rotating components on the device!

When grasping the device at the media connection or at one of the spray heads of the attached devices, the device can suddenly and quickly turn due to the built-in ball bearings until it reaches its center of gravity.

There is a risk of minor contusions.

- When handling, e.g. unpacking, transportation without packaging, assembly/disassembly and maintenance work, pay attention to the free rotation possibility and grasp appropriately firmly, preferably at the distribution.
- If necessary, provide free space for the rotary movement
- Wear protective gloves when working on the device.

**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 the ingress of dirt and foreign matter 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.*
- *When lifting the device out of the container, maintain a distance from the inner wall of the container and surrounding components (e.g. agitators), to avoid scraping or knocking.*
- *Place the device on a firm surface after removing it.*

7.2 Switch-off Procedure

Depending on the type of device activation and how it is integrated (e.g. manual or automatic) in 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 the cleaning medium have been completely drained (waiting time at least 60s).
3. Disconnect the power supply to the higher-level plant/the device.
 - Check to make sure that the power supply is disconnected and that there is no voltage at the sensors.
 - 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.

⚠ 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.

Design G, thread connection:

1. Remove thread lock (locking pin, welding points)
2. Release the threaded connection between media connection and media supply with belt wrench/strap wrench.
3. Unscrew the device from the pipe for the media supply.

Design C, clipon connection:

1. Bend open one end of the wire locking pin or pinch it off with the help of a pair of pliers
2. Hold the device and pull the wire locking pin out of the device and the pipe for the media supply.
3. Detach the device from the pipe for the media supply.

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

Assembly/disassembly of the device that is NOT performed properly could cause damage to the device and put its functional safety and reliability at risk during recommissioning. The failure of components or a device malfunction can cause material damage and consequential damage.

- *Only use suitable tools that do not damage the surface.*
- *For assembly work, adhere to the specified tightening torques.*

NOTE***Damage to the screw connections!***

Stainless steel screw connections may tend to seize up during assembly as a result of friction caused by high preload forces and high friction values, and can cause problems when tightening and releasing.

- *Lubricate the screw connections before assembly.*
- *Define the choice of lubricant very exactly for the application and the requirements (e.g. Klüberpaste UH1 96-402 or UH1 84-201).*
- *Adhere to the information on the safety data sheets provided by the lubricant manufacturer.*

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

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:

- *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 longer period, we recommend that you check the device completely before restarting it to make sure that it is fully functional (see [Section 6.2 Function Check/Trial Run](#)).



Service life of the ball bearings

The integrated ball bearings in the TANKO-EX series are subject to low wear.

The typical service life with the following standard parameters

- *vertical installation position of the actuator downwards, cleaning device carrier horizontal*
- *water as the cleaning medium*
- *medium pressure of 3 bar (44 psi)*
- *medium temperature of 25 °C (77 °F)*

is equivalent to a service life of 300 hours.

With a typical cleaning cycle time of 20 minutes per day and 200 days per year, that results in a product service life of 4.5 years.

For the attached TANKO-S or TANKO-RB cleaning heads, please take the parameters from the operating instructions for TANKO-S/-RB. Please note that if the actuator is installed vertically downwards, the attached TANKO-S or -RB are in a horizontal installation position.

Overview of Maintenance Points

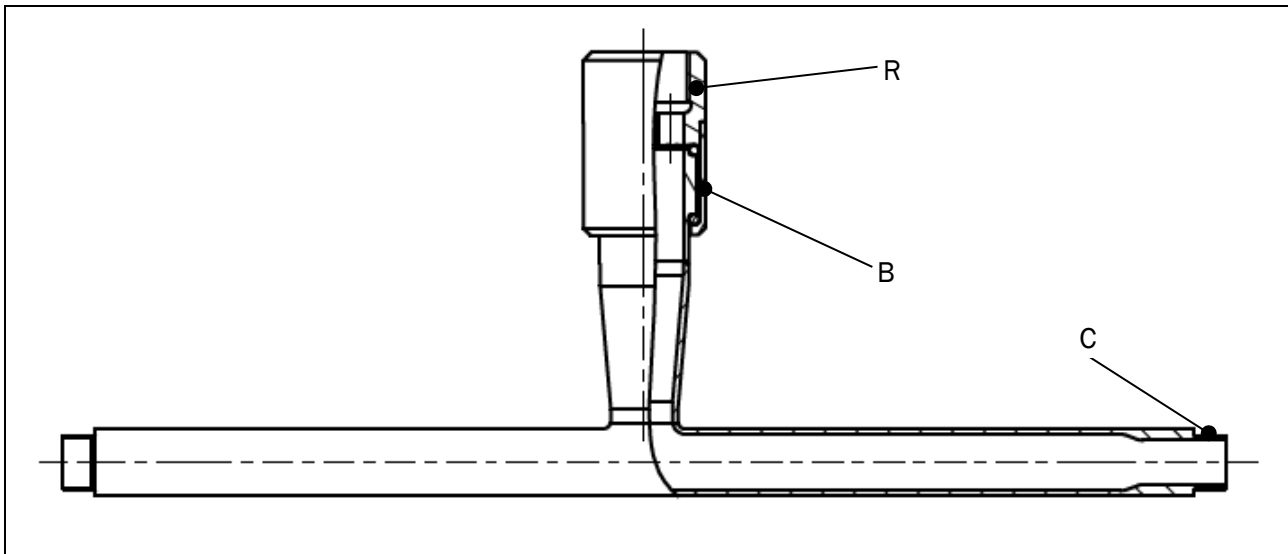


Figure 7.4-1: Maintenance Points

- Maintenance Points**
- R Connection
 - B Actuator/ball bearing area
 - C Connection for cleaning devices

Interval: h_0 = operating hours of the device

Method:

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



Maintenance of cleaning devices

All information necessary for maintenance of the installed TANKO-S30 or TANKO-RB30 cleaning devices can be found in the operating instructions supplied with these devices.

Point	Inspection and Maintenance Work	Interval		Method
		Initial check	Follow-up check	
A	Thread connection: Check the tightness of the thread and check the functional reliability of the thread lock. <ul style="list-style-type: none"> • Restore safety Check thread for wear and/or damage. <ul style="list-style-type: none"> • Replace device in the event of wear or damage Clip-on connection: Check wire locking pin for wear and/or damage. <ul style="list-style-type: none"> • Replace wire locking pin in the event of wear or damage 	200 h _o	200 h _o	S/F/A
B	Check actuator/ball bearing area for functionality (rotatability), contamination, wear and damage. <ul style="list-style-type: none"> • Clean in the event of contamination • Replace device in the event of wear or damage 	200 h _o	50 h _o	R/S/F/A
C	Thread connection: Check tightness of thread and check functional reliability of the thread lock. <ul style="list-style-type: none"> • Restore safety Check thread for wear and/or damage. <ul style="list-style-type: none"> • Replace device in the event of wear or damage Clip-on connection: Check wire locking pin for wear and/or damage. <ul style="list-style-type: none"> • Replace wire locking pin in the event of wear or damage 	200 h _o	200 h _o	S/F/A

Table 7.4-1: Inspection and Maintenance Work

7.4.2 Tools and Tightening Torques

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

The following tools/special tools are sufficient for mechanical work on the device:

- Strap wrench/belt wrench (e.g. Ø 140) with fabric tape



The tightening torques must be selected according to the strength of the material and the thread size of the pipe connection.

Special Tools



Assembly/disassembly tool for locking pin (clip-on):

Art. no. 664 MW0 101 005 0 size A for wire Ø 2.0 mm

Art. no. 664 MW0 103 005 0 size C for wire Ø 3.6 mm

7.4.3 Notes on Cleaning

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

Follow the following safety instructions prior to cleaning.

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.*

NOTE***Development of hydrochloric acid when cleaning the device!***

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

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

- *Do NOT rinse with clear water if the cleaning agent contains volatile solvents containing chloride.*


WARNING

Hazard from corrosive or aggressive cleaning agents!

There is a risk of death or severe physical injury.



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



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



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

- Fasten the device and attached cleaning devices so that they cannot turn when they are blown out
- Use filtered, oil-free compressed air
- Dry-blowing time 5 – 10 min (longer is technically possible but not necessary under normal circumstances)

Cleaning in Assembled State:

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

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

Cleaning media: 3% nitric acid max. +60 °C (+140 °F)

 3% caustic soda max. +80 °C (+176 °F)

Cleaning in Disassembled State:

The device must be removed from the container by an **expert** before cleaning and the TANKO-RB-30 or TANKO-S30 devices dismantled. The safety instructions in [Section 7.1 Safety Instructions for Maintenance](#) must be observed.

Cleaning of the components may be carried out by **instructed persons**. After cleaning, the device must be assembled by an **expert** with the TANKO-RB-30 or TANKO-S30 devices, checked and reinstalled in the container (see [Section 5.2 Installation](#)).

NOTE**Environmental damage in the event 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 consumables (e.g. brushes and cloths) that 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



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.

There are no wearing parts. If damaged, the device must be replaced with a new one.

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

Device

- Type
- Serial number

Attached cleaning devices

- Type
- Serial number

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>

For the connection of TANKO-S30/-RB30 to the TANKO-R64T clipon, the wire locking pins listed here must always be used. Cotter pins are not permitted.

Item no. (Pack = 4 units)	Material	Wire Ø / length [mm]	TANKO-S30	TANKO-RB30	TANKO-R64T media connection
6640000A20044	1.4430	Ø 2.0 / L = 40	--	X	--
6640000A20064	1.4576	Ø 2.0 / L = 40	--	X	--
6640000A20094	2.4607	Ø 2.0 / L = 40	--	X	--
6640000A30064	1.4576	Ø 2.0 / L = 49	X	--	--
6640000A30044	1.4430	Ø 2.0 / L = 49	X	--	--
6640000A30094	2.4607	Ø 2.0 / L = 49	X	--	--
6640000A60054	1.4571	Ø 3.6 / L = 78	--	--	X
6640000A60074	2.4610	Ø 3.6 / L = 78	--	--	X

Table 7.5-1: Spare Parts

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 rectifying any fault, observe the safety instructions in [Chapter 7 Maintenance](#).
- In case of any uncertainty or doubt, contact AWH.

8.2 Faults and Remedial Action

Fault	Cause	Remedy
Screw connection not tight.	Thread damaged.	Replace the device.
	Thread not tightened completely.	Retighten the threaded connection.
Effectiveness of cleaning is not sufficient.	Connection pressure too low.	Check and increase the connection pressure. Attention! Do not exceed operating pressure (see Table 3.3-2: Operating parameters).
	Connection pressure too high, cleaning medium turns into mist.	Check and reduce the connection pressure.
Distribution / cleaning device does not turn.	Openings closed.	Clean openings.
	Openings deformed.	Replace the device.
	Ball bearing worn.	Replace the device.

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:

- *DIN EN 60204-1 / VDE 0113-1 "Safety of machinery – Electrical equipment of machines – Part 1: General requirements"*
- *DIN 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



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.*

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

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



Risk of injuries due to harmful fluids!

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

After removal, clean the complete device professionally for disposal

- clean (see [Section 7.4.3 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:

- This device is made entirely of metal (stainless steel) and can be scrapped
- There are no plastic parts in this TANKO-R64T, or in the TANKO-S30 or TANKO-RB30 attachments

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

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

NOTE



Risk of environmental damage as a result 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 consumables (e.g. brushes and cloths) that 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.

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Annex 1: Declaration (Translation)

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Declaration of incorporation as per

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

We hereby declare that the container cleaning device

Designation: Container Cleaning System**Type:** TANKO-R64T**Year of manufacture:** See type plate on the device**Serial number:** see type plate on the device

complies with the following basic health and safety requirements of Directive 2006/42/EC, Annex I:
1.1.2 – 1.1.7, 1.3, 1.5.2 – 1.5.9, 1.5.15, 1.5.16, 1.6, 1.7.1 – 1.7.3, 1.7.4, 1.7.4.1, 1.7.4.2, 1.7.4.3.

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

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

Directive/standard	Title	Version	Remarks
2006/42/EC	EC Directive - Machinery	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	---

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

Start-up is prohibited until it is determined that the overall system fulfills the provisions of the directives.

Hötensleben, Germany, on 4. May 2023



Thomas Erhorn (CEO)

Person authorized to compile the technical documentation:

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Notes



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