

SOLA-LITE VCTE

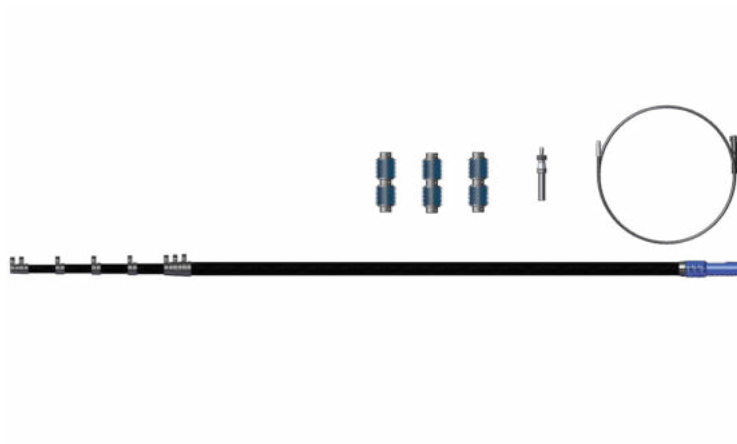
Operating manual

BJ 2012 ...
BA 0303783 R01 2019-01

Manual for the telescopic lance Set
SOLA-LITE VCTE

en





SET






MADE
IN
GERMANY

Cleantecs



 Basics	5
Overview of the components of the telescopic lance set	6
Scope of delivery of the telescopic lance set	7
Spare parts of the telescopic lance	8
Tool kit of the telescopic lance	9
How the telescopic lance works	10
Components	11
Intended use	13
Requirements for the user of the system	13
Space requirement when working with the telescopic lance system	13
Technical limits of the telescopic lance	13
Documentary evidence	14
 Safety basics	15
For your own safety	16
 Working safely	18
Working safely	19
Select a safe starting point	19
Pay attention to sources of danger in the working area	19
Determine the safety of the modules to be cleaned	19
Safety when cleaning	20
Check and prepare high-pressure equipment	20
Check the lances for damage	20
 Assembly	21
Construction of the telescopic lance	22
Spraying with anti-adhesive	22
Adjusting the tension clamp	22
Adjusting the segments	23
Reeling in the high-pressure hose	24
Mounting the VCTE adapter	25



Preparing the sliding brushes	26
Pulling the segments apart	26
Fastening the sliding brushes	27
 Work	28
Ready for work	29
Attach and align the cleaner	29
Fastening the cleaner	30
Connect the high-pressure cleaner	30
Operating the lance	31
Normal working position	31
 Care and storage	32
Care of the telescopic lance	33
Cleaning the telescopic lance	33
Checking for damage	33
Care of the Lanz elements	33
Storing the telescopic lance	33
Transporting the telescopic lance	33
 Disposal	34
What happens with the waste	35
Packaging	35
Carbon tubes	35
Clamp complete	35
Lance bend	35



It is **IMPORTANT** that you read this operating manual **CAREFULLY BEFORE USE** and **KEEP IT FOR FUTURE REFERENCE**.

The operating manual is for ...

telescopic lance SOLA-LITE VCTE from year of manufacture 2012.

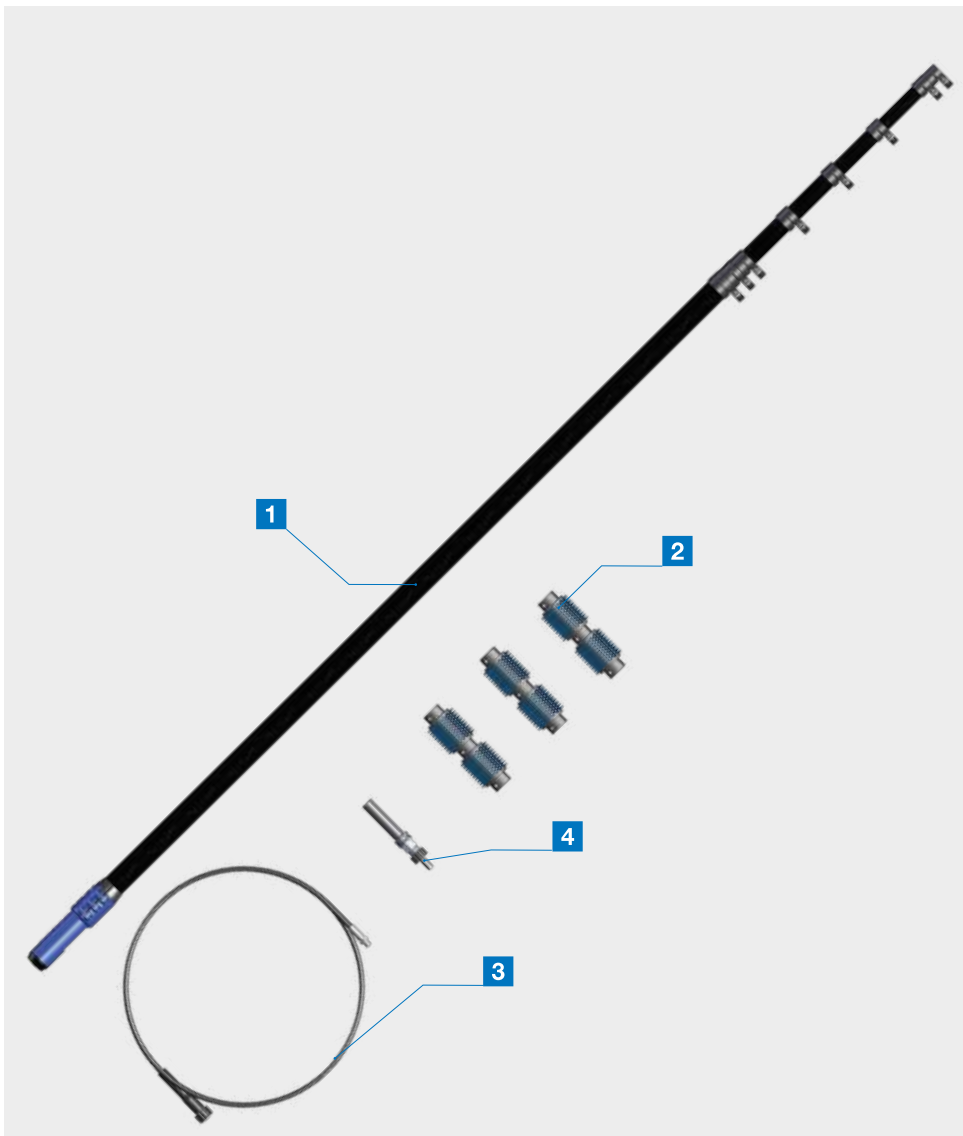


Components and functions of the telescopic lance

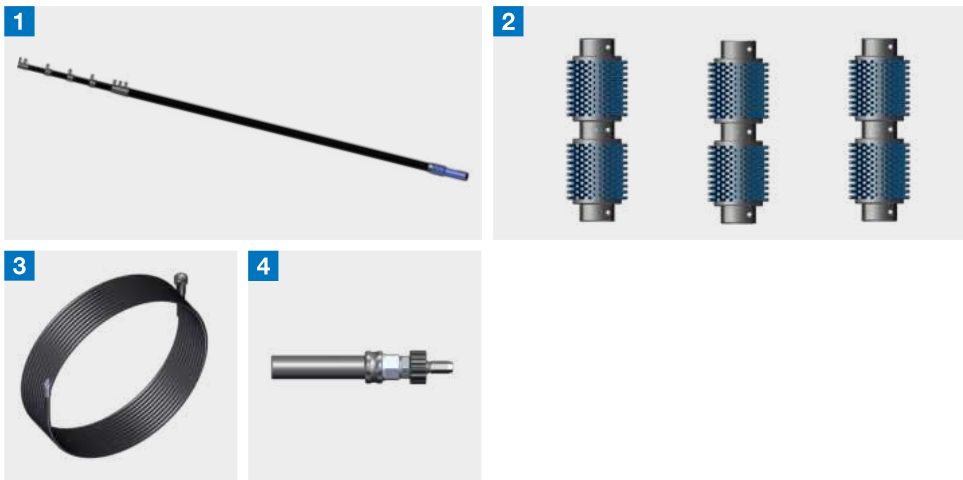
In this section you will find information about:
The components of the cleaner, tools for maintenance, accessories that are important for operation.



Overview of the components of the telescopic lance set



Scope of delivery of the telescopic lance set



- 1 SOLA-LITE VCTE
- 2 Sliding brush set
- 3 High-pressure hose DN6 x 25 m
- 4 SOLA-LITE Adapter - telescopic lances



Spare parts of the telescopic lance

1



2



3



4



1 Clasp lever set

2 Clamp complete for telescopic lances

3 SOLA-LITE Adapter - telescopic lances

4 Lance member

The listed tools are included in the scope of delivery.

Infobox

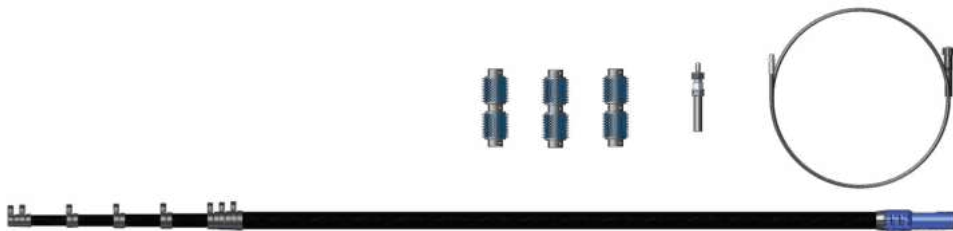


Basics

Tool kit of the telescopic lance

open-end wrench - size 11





How the telescopic lance works

The SOLA-LITE telescopic lance system consists of individual carbon poles.

The length can be varied from 2.1 to 12 meters for the VCTE 12 and between 2.3 to 15 meters for the VCTE 15.

The desired length is fixed to the individual pole sections using the clamping system.

Energy and water are supplied to the cleaner using a high-pressure hose. The high-pressure hose is guided through a rubber base. The rubber base prevents the high-pressure hose from kinking.

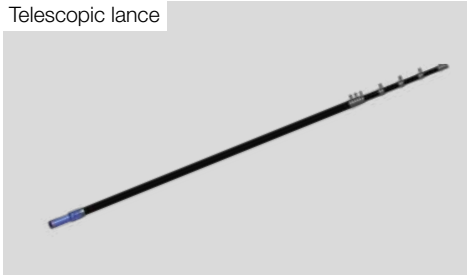
The high-pressure hose inside the telescopic lance is then guided to the VCTE adapter.

The cleaner is connected to the VCTE adapter directly or with the lance bend (accessory) as an adapter.

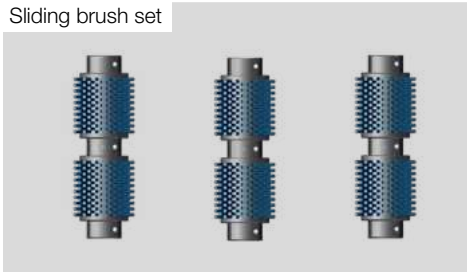
With the cleaner mounted and the high-pressure cleaner connected, the cleaning device can then be guided manually on the surface to be cleaned.



Telescopic lance



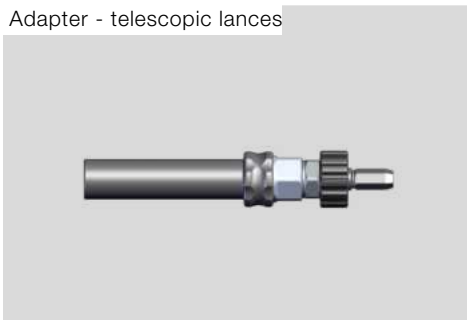
Sliding brush set



High-pressure hose



Adapter - telescopic lances



Components

The cleaner is guided manually with the **telescopic lance**. The length of the telescopic lance can be varied from 2.1 to 12 meters for the VCTE 12 and between 2.3 to 15 meters for the VCTE 15.

The sliding brush protects the photovoltaic panels and the telescopic lance from damage.

The basic 25-meter hose is always the high-pressure supply hose that is connected to the cleaner. Only this, with its 1/4 inch connection side, fits the VCTE adapter.

The VCTE adapter is the connection between the telescopic lance, high-pressure hose and cleaner.



Intended use

In this section you will find information about:
The purposes for which the telescopic lance
may be used, where the telescopic lance may be
used, and who may use the telescopic lance



Intended use

The telescopic carbon lance system can be adjusted by pulling apart individual segments up to a required length of 12 or 15 meters. This pole system is used to manually operate the cleaning devices Sola-Brush and Sola-Tecs C.

Requirements for the user of the system

Operator: The operator has been instructed by the proprietor about the tasks assigned to him and possible dangers in the event of improper handling. The operator may carry out tasks outside the remit of regular operations only if doing so is indicated in these instructions and the proprietor has expressly instructed him to do so.

Qualified personnel: Qualified personnel are individuals, who, due to their technical training, knowledge and experience as well as their knowledge of the relevant standards and regulations, are able to carry out the work assigned to them and to independently recognize potential hazards and avoid dangers.

The following groups of people are not authorized to operate the Sola-Tecs C:

- ▶ Persons with limited physical, sensory or mental abilities
- ▶ Children and adolescents under the age of 18
- ▶ Non-instructed persons

Space requirement when working with the telescopic lance system

- ▶ Safety distance of at least three meters during cleaning work near high-voltage lines or other electrical equipment.
- ▶ During cleaning, space for movement around the user of 5 m² is required.
- ▶ There must be a distance of at least 1 m to the next obstacle in the direction of work.
- ▶ To prevent accidents, a safety radius of 20 meters around the user must be closed off to prevent access by other persons.

Technical limits of the telescopic lance

- ▶ Length VCTE 12: 2.1–12 meters
- ▶ Length VCTE 15: 2.3–15 meters
- ▶ Permitted maximum length: 12 meters or 15 meters
- ▶ Weight VCTE 12: 2,800 grams
- ▶ Weight VCTE 15: 3,500 grams
- ▶ Telescopic lance system can be loaded with a maximum of 4,954 grams at its maximum length.



Documentary evidence

Projekt: SOLA-LITE VCTE
Produkt: SOLA-LITE
Hersteller: Gardiner Pole Systems Ltd
Gardiner Pole Systems Ltd is a limited company registered in England and Wales. Registered number 6785633 Registered Office: Trevarrick Mill, Trevarrick Road, St Austell, Cornwall, PL25 5JN.

Cleantecs GmbH
Grundweg 10
89250 Senden
Tel: +49 (0)7307-97606-0
Fax: +49 (0)7307-97606-20

Nachweisdokumentation nach EN ISO 12100

für

SOLA-LITE VCTE



General safety instructions

Important instructions for the safe use of the system and for establishing a safe cleaning operation



For your own safety

Important instructions for the safe use of the system. This is how you protect yourself and other persons from hazardous situations and from injury.

⚠ DANGER



Danger to life due to thunderstorms

- ▶ Avoid using the machine during thunderstorms. This protects you from injury caused by lightning and from hypothermia.

⚠ DANGER



Risk of death from electric shock and high-voltage cables

- ▶ The safety distance from the cleaning device to the high-voltage cable must not be less than **20 meters (65,6 ft)**. Failure to maintain the safety distance puts your life and health at risk.

⚠ WARNING



Risk of injury from falling

- ▶ Use a fall-arrest system. This will protect you from injuries from falling off the roof.

⚠ CAUTION



Illness and hypothermia caused by bad weather

- ▶ In bad weather, wear suitable protective clothing. This will protect you from illness caused by hypothermia.



CAUTION



Risk of injury when lifting heavy parts

- ▶ When lifting the machine, lift it ergonomically correctly. This will protect you from back-strain injuries.

CAUTION



Risk of injury from overloading/strain

- ▶ Take regular breaks. This will prevent injuries caused by physical and mental overload and fatigue.

NOTICE

Risk of damage due to frost

- ▶ Prevent the machine from freezing up. Otherwise this could cause damage to the components. This will protect the machine from frost damage.



Safe cleaning operation

In this section you will find information about:
The selection of a safe cleaning location
Sources of danger in the working area
Sources of danger when working



Working safely

This section describes how to work safely with the telescopic lance system.

Select a safe starting point

- ▶ Basically, the location and accessibility of the site determines the position of the cleaning work.
- ▶ Before setting up the system, carry out an inspection and consider how and where you want to work safely.

WARNING

Risk of injury from falling

- ▶ Use a fall-arrest system. This will protect you from injuries from falling off the roof.

CAUTION

Risk of injury due to slippery surface

- ▶ Check the surface for any situations that may facilitate slipping. This will protect you from falling and injuring yourself.

CAUTION

Risk of injury due to falling

- ▶ Check your working area for unevenness and obstacles. This will protect you from injuries resulting from a fall.

- ▶ The cleaning position must be easily accessible.

Pay attention to sources of danger in the working area

- ▶ There must be **no high-voltage equipment** (cables, switch cabinets, etc.) in the immediate working environment

DANGER

Risk of death from electric shock and high-voltage cables

- ▶ The safety distance from the cleaning device to the high-voltage cable must not be less than **20 meters (65,6 ft)**. Failure to maintain the safety distance puts your life and health at risk.

Determine the safety of the modules to be cleaned

- ▶ When inspecting the system, pay attention to any defects in the system.

For example,
- broken / defective solar panel
- exposed lines
- loose fastenings
- ...



⚠ WARNING

Electric shock due to defective photovoltaics

- ▶ Check the modules for damage (cracks, scratches, leaks, etc.) prior to cleaning. Damaged modules must not be cleaned. There is a risk of injury due to electric shock.

Safety when cleaning

- ▶ When cleaning, make sure that you do not damage any components or lines.

⚠ WARNING

Electric shock from photovoltaics

- ▶ Cables and components of photovoltaic installations are always live during incidence of light. Touching live parts can lead to electric shock and is prohibited.

Check and prepare high-pressure equipment

- ▶ Check the high-pressure connections for damage before starting work.
- ▶ Check the high-pressure hose for damage before starting work.

⚠ CAUTION

Risk of injury from defective hoses and connections

- ▶ Check all high-pressure hoses and connections for damage. This will protect you from being injured by escaping hard water jets.

⚠ CAUTION

Risk of injury due to incorrect installation of the joints

- ▶ Always hand-tighten and check the joints. This will protect you from injuries caused by uncontrolled flying joints.

Check the lances for damage

- ▶ Check the clamp and end ring for damage.
- ▶ Check the carbon rods for damage such as breaks or impact marks.
- ▶ Defective parts must be replaced immediately.

⚠ WARNING

Risk of injury due to incorrect adjustment of the bracket

- ▶ The bracket must always clamp with sufficient force. This prevents personal injury and damage to property due to uncontrolled falling of parts.



Construction of the telescopic lance

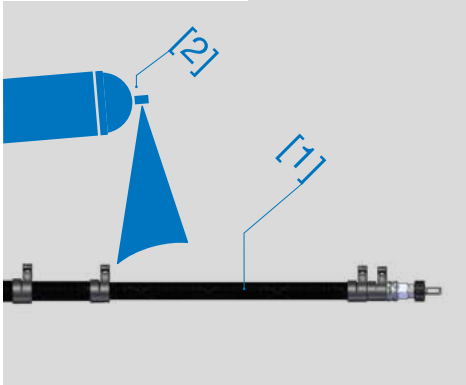
Construction of the SOLA-LITE VCTE lance



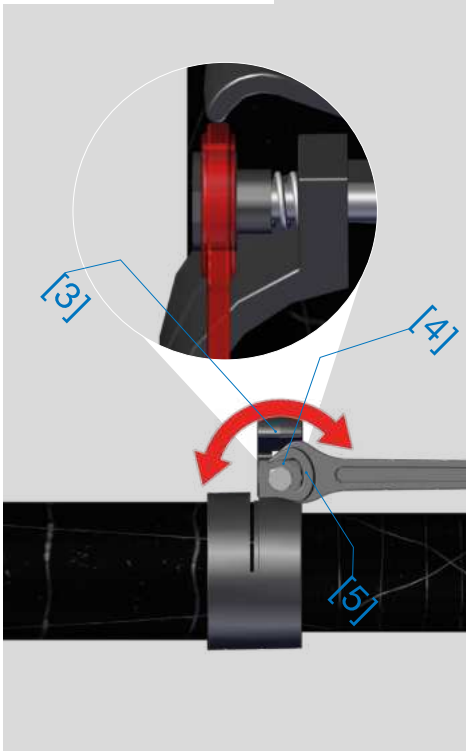
The following tools are required.



Spraying the plug-in area



Adjusting the tension clamp



Construction of the telescopic lance

This step explains how to prepare the telescopic lance.

Spraying with anti-adhesive

- ▶ Spray the plug-in area [1] of the telescopic lance with a PTFE spray (GT-85) [2] from a distance of 15–20 cm.

NOTICE

Avoiding damage to the pole

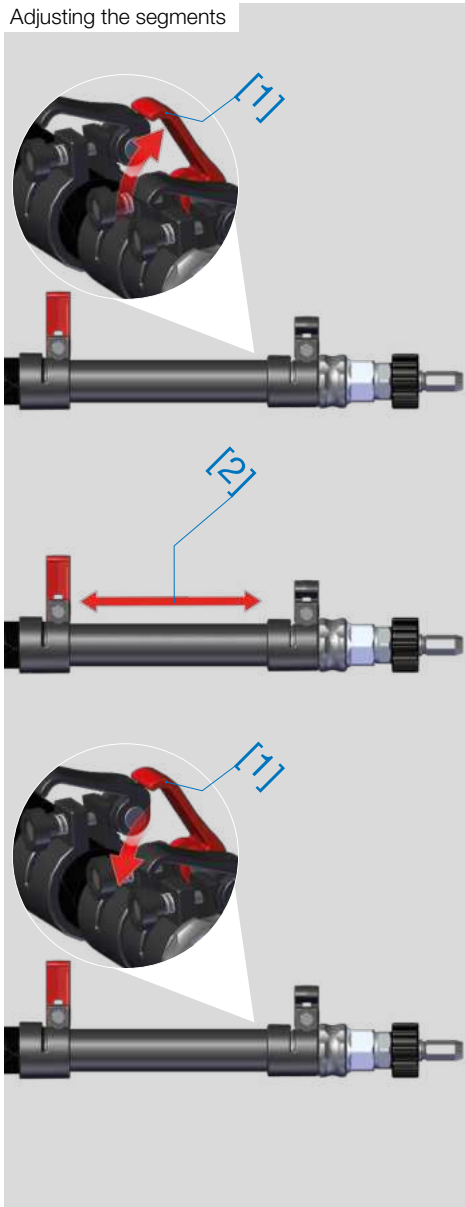
- ▶ Apply a PTFE spray (GT-85) to the connectors once a week and observe the drying times. This will protect the poles from damage to the connectors.

Adjusting the tension clamp

- ▶ Check the clamp [3] of the individual telescopic lance segments and adjust if necessary using the adjusting nut [4].
- ▶ Adjust the clamp [3] so that the segments can no longer be pulled apart.
- ▶ If the adjusting nut [4] is difficult to turn, use the open-end wrench [5] at the rear of the adjusting nut [4] and use it to adjust the clamp [3].



Adjusting the segments



NOTICE

Danger of damage caused by setting too tight

- ▶ Do not set the clamp too tightly. This protects the closure from damage.

Adjusting the segments

- ▶ Open the tension clamp [1].
- ▶ Pull apart the individual segments [2] and check the plug-in area for impurities such as sand and dust.
- ▶ Move the segments [2] to the desired positions.
- ▶ It must be possible to push the segments into each other without exerting great force.
- ▶ Close the tension clamp [1].
- ▶ Repeat the procedure until the desired length is reached or the maximum permitted length is reached.

WARNING

Risk of injury due to incorrect adjustment of the bracket

- ▶ The bracket must always clamp with sufficient force. This prevents personal injury and damage to property due to uncontrolled falling of parts.



Reeling in the high-pressure hose



Reeling in the high-pressure hose

- ▶ Unspool the high pressure hose.
- ▶ Push the high-pressure hose [1] with the 1/4 inch connection [2] into the rubber base [3].
- ▶ Push the high-pressure hose through the telescopic lance until it reemerges at the upper end.

NOTICE

Avoiding damage to the tension clamp and photovoltaic panel

- ▶ Align in parallel the tension clamp and the lance bow connection. Aligning them this way protects the tension clamp and the photovoltaic panel from damage.

WARNING

Risk of injury due to incorrect adjustment of the bracket

- ▶ The bracket must always clamp with sufficient force. This prevents personal injury and damage to property due to uncontrolled falling of parts.



Following tool is required.

Infobox



Assembly

VCTE-Adapter



Mounting the VCTE adapter

- ▶ Screw the VCTE adapter onto the 1/4 inch thread of the high-pressure hose.
- ▶ Use a size 19 open-ended wrench to tighten the connection so that the VCTE adapter turns in your hand with a firm grip.
- ▶ Check the plug-in area of the telescopic lance for impurities such as sand and dust.
- ▶ Open the tension clamp [1].
- ▶ Insert VCTE adapter into the end ring [3].
- ▶ The VCTE adapter must be insertable without great effort.
- ▶ Close the tension clamp [1].

CAUTION

Risk of injury from defective hoses and connections

- ▶ Check all high-pressure hoses and connections for damage. This will protect you from being injured by escaping hard water jets.

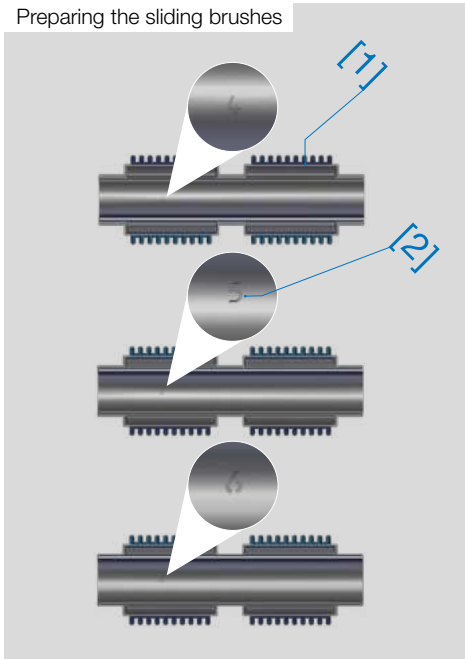
CAUTION

Risk of injury due to incorrect installation of the joints

- ▶ Always hand-tighten and check the joints. This will protect you from injuries caused by uncontrolled flying joints.



Preparing the sliding brushes



Pulling the segments apart



Preparing the sliding brushes

► Sort the sliding brushes [1] according to size 4,5,6. The numbering [2] can be found on the inside of the sliding brush on the cellular rubber.

Pulling the segments apart

► Pull the required segments 4, 5 and 6 apart by approx. 200 mm. The numbering [3] can be found on the end ring [4].

NOTICE

Avoiding damage to the pole

► Apply a PTFE spray (GT-85) to the connectors once a week and observe the drying times. This will protect the poles from damage to the connectors.

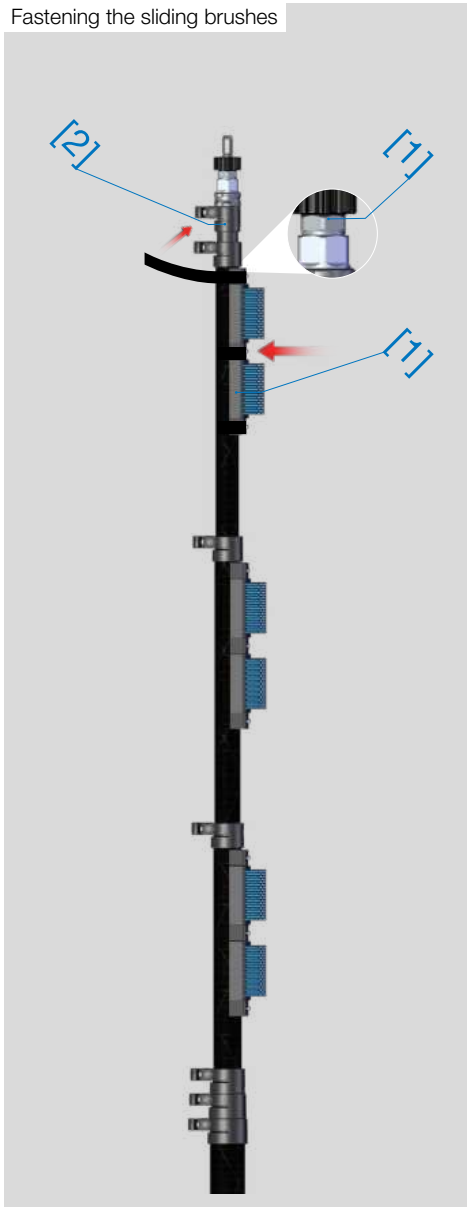
WARNING

Risk of injury due to incorrect adjustment of the bracket

► The bracket must always clamp with sufficient force. This prevents personal injury and damage to property due to uncontrolled falling of parts.



Fastening the sliding brushes



Fastening the sliding brushes

- ▶ Place the first sliding brush 4 [1] on segment 4 [2] of the telescopic pole.
- ▶ Position the sliding brush 4 on segment 4 directly on the end ring [3].
- ▶ Press the sliding brush vigorously onto the telescopic lance and fasten the Velcro straps firmly.
- ▶ Check sliding brushes. The sliding brush must not be easily moved.
- ▶ If the sliding brush is too loose, you must re-tighten the Velcro strips.
- ▶ Repeat the steps for sliding brushes 5 and 6.

WARNING

Risk of injury from falling parts

- ▶ Check the surface to be cleaned for parts that could fall.
In this way you will protect yourself and other persons from injury from falling parts.

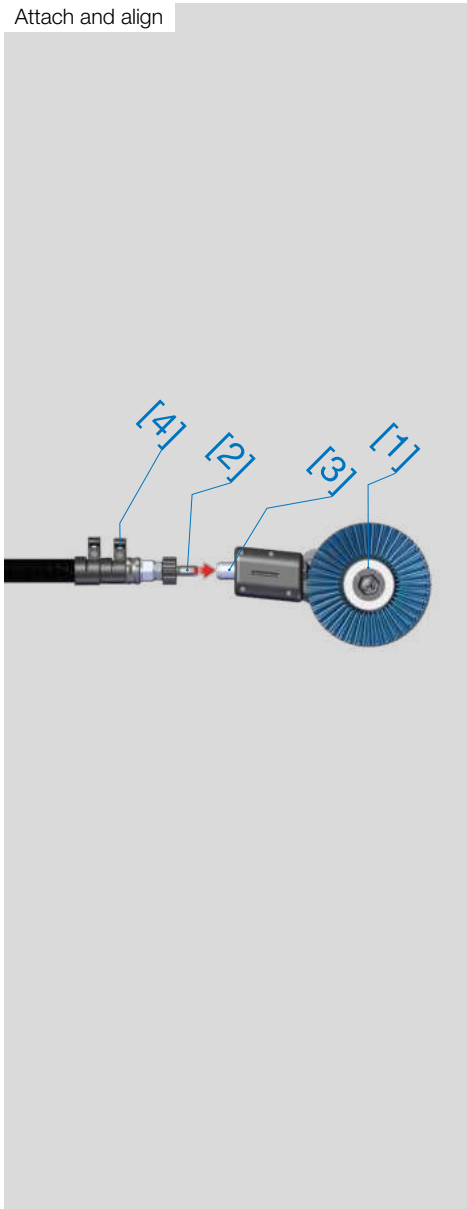


Working with the lance

In this section you will find information about:
Preparing the lance with cleaning device
Working with the lance



Attach and align



Ready for work

Attach and align the cleaner

- ▶ Place the Sola-Tecs C [1] on a flat surface.
- ▶ Insert the lance with the hexagon [2] into the connection PIN [3] as far as it will go.
- ▶ Ensure that the clamps [4] point upwards. If the clamps do not point upwards, open the first clamp and turn the lance until the clamp points upwards.

NOTICE

Risk of damage caused by seizing of thread and hexagonal nipple

- ▶ Grease (DIN 51502: KP2G-30) hexagon nipple Lance and thread connection PIN before assembly.

This reduces the risk of seizing and any resulting damage.

⚠ CAUTION

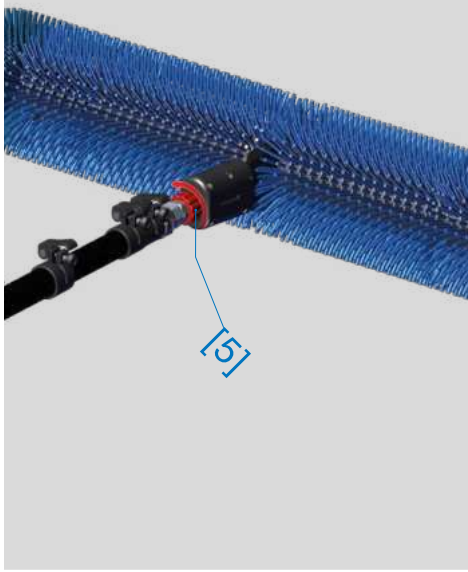
Risk of injury due to incorrect installation of the joints

- ▶ Always hand-tighten and check the joints.

This will protect you from injuries caused by uncontrolled flying joints.



Screw on the lance



Fastening the cleaner

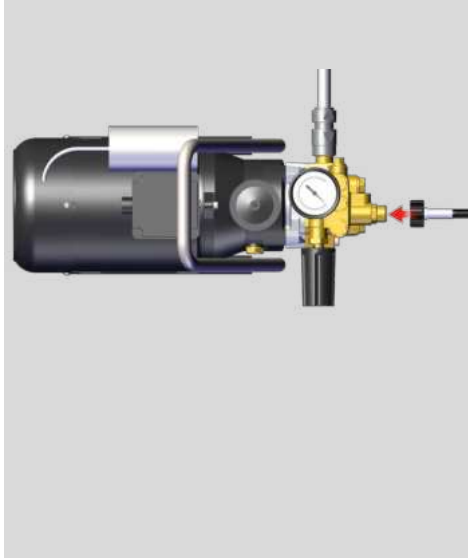
- ▶ Screw the Quick connector [5] by turning it clockwise on the connection PIN. Make sure that the connection PIN does not slide out of place when screwing it on.
- ▶ Screw on until the Sola-Tecs C is firmly seated.

NOTICE

Preventing damage to the quick connector

- ▶ Tighten the quick-release screw connection hand-tight. Do not use any tools (pliers etc.) for tightening. This will prevent chipping of the plastic and damage to the thread.

Connect high pressure cleaner

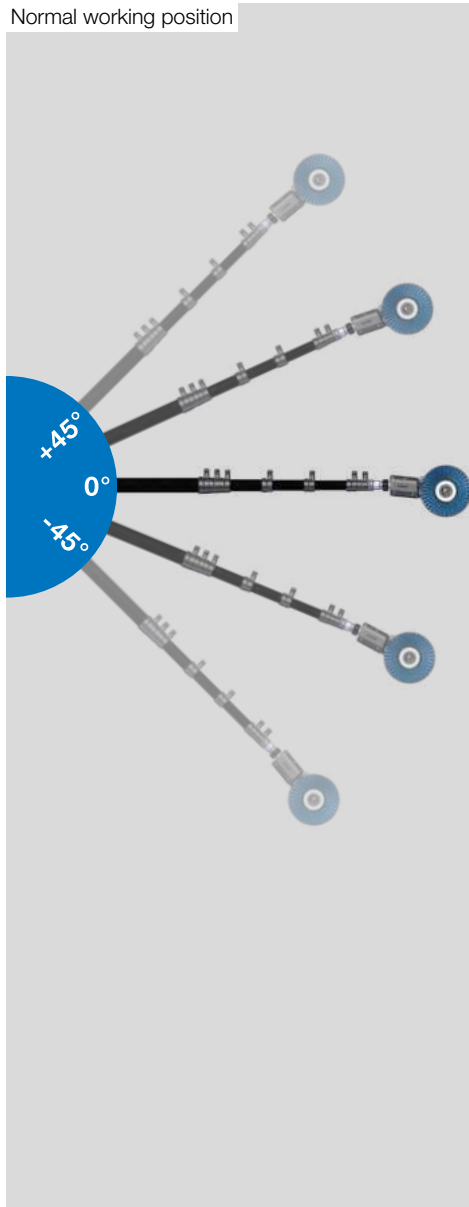


Connect the high-pressure cleaner

- ▶ For information on how to connect the lance to the high-pressure cleaner, please refer to the operating instructions for the high-pressure cleaner.



Normal working position



Operating the lance

Normal working position

- ▶ The cleaning devices are guided horizontally at an angle between $+45^\circ$ to -45° over the cleaning level.

WARNING

Danger of injury due to incorrect guidance of the cleaning device

- ▶ Do not move the SOLA brush and SOLA-TECS C vertically upwards or vertically downwards. This will prevent injuries from a falling cleaning device.

DANGER

Risk of death from electric shock and high-voltage cables

- ▶ The safety distance from the cleaning device to the high-voltage cable must not be less than **20 meters (65,6 ft)**. Failure to maintain the safety distance puts your life and health at risk.



Proper care and storage of poles

In this section you will find information about:
The care and storage of the poles



Care of the telescopic lance

Cleaning the telescopic lance

- ▶ Remove coarse dirt from the Lanz elements.
- ▶ Use a soft cloth and household detergent to remove any dust and dirt from the poles.
- ▶ Clean the poles once a week.

Checking for damage

- ▶ Inspect the surface of the poles for damage.
- ▶ Check the clamp and end ring for function and damage.
- ▶ Check the warning labels for damage. *Warning labels must be replaced if they are difficult to read.*
- ▶ Check daily for damage.

WARNING

Risk of injury due to incorrect adjustment of the bracket

- ▶ The bracket must always clamp with sufficient force.

This prevents personal injury and damage to property due to uncontrolled falling of parts.

NOTICE

Danger of damage caused by setting too tight

- ▶ Do not set the clamp too tightly. This protects the closure from damage.

Care of the Lanz elements

- ▶ Apply a PTFE spray (GT-85) to the plug-in area to prevent dust and dirt from sticking to the plug-in area.
- ▶ You should apply the PTFE spray (GT-85) once a week.

Storing the telescopic lance

Transporting the telescopic lance

- ▶ Transport the poles such that they are protected from blows and impacts.

WARNING

Risk of injury due to damaged closures and pole tubes

- ▶ Check the closures and the pole tubes daily for function and damage. This will prevent injuries from a falling cleaning device.

NOTICE

Danger due to missing warning labels

- ▶ Make sure that the warning labels on the lance are present, undamaged and clearly legible. This ensures that they can be read by every operator.



Disposing of the lance

In this section you will find information about:
The disposal of the product and its components.



What happens with the waste

Packaging

▶ The packaging is made of cardboard and can be recycled.

PTFE spray

▶ Please read the manufacturer's instructions on how to dispose of the PTFE spray.

Carbon tubes

▶ To dispose of the carbon tubes, please contact your local waste disposal company.

Clamp complete

▶ The tension clamp and the end ring can be disposed of with household waste.

Lance bend

▶ The lance bend can be disposed of in metal recycling.

