FlensTech

Manual

Extraction system SpotTEC F830181

This manual describes the use of the extraction system. Please read this manual before installation. If you have any questions, please contact FlensTech:

info@flenstech.de

Version: 1.1
September 2024

CE

FlensTech

EU Declaration of Conformity

We hereby declare that the product specified below has been designed and manufactured in accordance with the essential health and safety requirements as stipulated in the EU Machinery Directive 2006/42/EC.

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Manufacturer:

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Applied harmonized standards:

ISO 12100:2011-03 (Risk assessment and risk reduction)
VDI 2262-4:2006-03 (Capture of airborne substances)

Details of the responsible person:

Name: Hans Christian Madsen
Position: Managing Director

Place, Date Signature

Version: 1.1
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Overview

1 Description

1.1 Purpose

The FlensTech extraction system is designed for the targeted capture of ozone and nitrogen oxides at their point of origin. It serves as an auxiliary tool for the extraction of hazardous gases and must always be operated with a properly designed extraction unit.

The system hood is not approved for gases or vapors other than those mentioned above, as well as normal ambient air. Particular attention must be paid to environments containing solvents.

1.2 Technical data

Materials Hood: ABS/PC, flame-retardant according to UL94 V-0 Connection: PA6 Screws: Steel, galvanized Washers: Stainless steel A4 Sleeves: Aluminum	**Dimensions** h x w x d: 230 x 109 x 142 mm Weight: 0,39 kg Connection DN100
Application For an angled Tantec SpotTEC treatment head	

1.3 Technical description of the environment

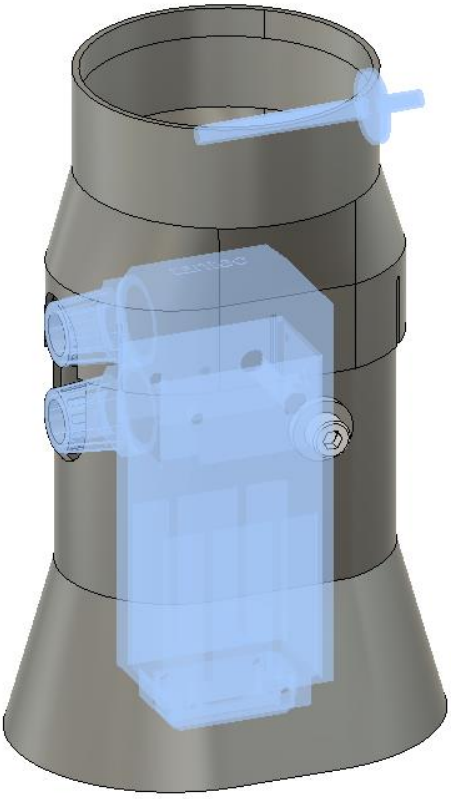
Operating environment Temperature: +10 to +40 °C Relative humidity: max. 70%, non-condensing	 No elevated concentrations of solvents, paints, adhesives, or dusts. Do not expose to direct UV light

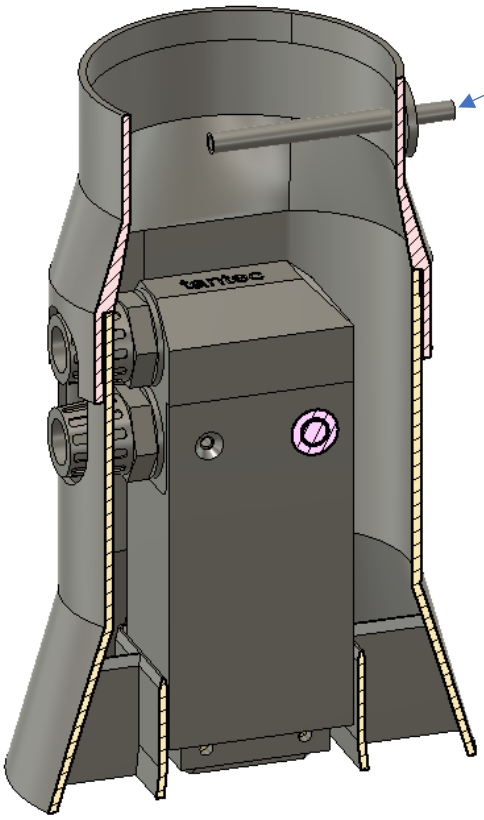
1.4 General information

The information in this datasheet is based on our knowledge and the component versions at the time of publication. We reserve the right to make changes to the components or the datasheet. For the most current versions, please contact us.

The system hood is intended as an auxiliary tool. FlensTech cannot assume responsibility for compliance with applicable workplace exposure limits. The buyer is responsible for the correct installation and use. Please regularly check the effectiveness of the entire extraction system. Additionally, observe the applicable guidelines and limits for your operating environment. The same applies to the protection of other machine components, such as from corrosion caused by ozone exposure.

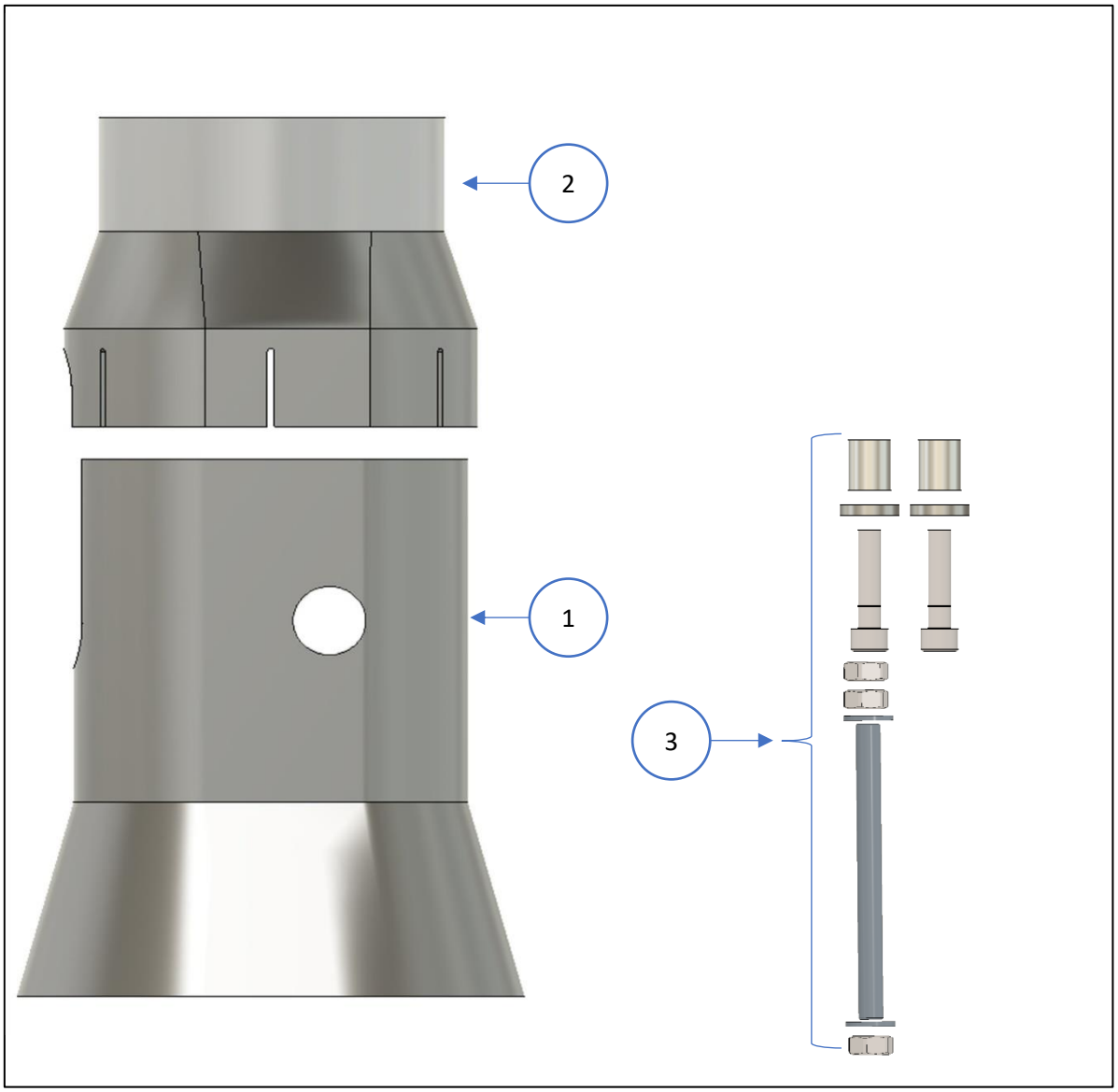
1.5 Illustration





Connection nipple for pressure monitoring available as an option

1.6 Scope of delivery



Pos	Anzahl	Bezeichnung
1	1	Hood
2	1	Connector DN100
3	1	Screw set Standard SpotTEC

2 Safety precautions

If any work is required on the system hood, it must be ensured that the extraction system cannot be switched on unintentionally. Otherwise, there is a risk that the resulting vacuum could suction objects or body parts, potentially causing injuries either immediately or upon release.	
The system hood serves as an auxiliary tool for the capture of ozone and nitrogen oxides. Before use, it must be ensured that 1. All components have been correctly assembled and are intact. 2. The connected extraction system is suitable and operational.	
To ensure that the plasma source is only active when the extraction system is operating at sufficient capacity, we recommend permanent pressure or flow monitoring in the extraction line. The measurement point should be positioned as close to the hood as possible.	
To ensure that the toxic gases are removed from the duct, the extraction system should continue to operate for an appropriate period after the ozone and/or nitrogen oxide source has been switched off. The duration depends on the length of the ducts and the airflow speeds inside. For work on the hood, the extraction should continue for at least a few seconds.	
In the event of a fire, the hood (ABS/PC) and the connection (PA6) may release harmful gases.	
When treating loose substrates (e.g., cardboard or sleeves), excessive suction power may cause the substrate to be drawn in. Due to the lack of movement, the substrate may burn or catch fire.	
When treating loose, electrically conductive substrates (e.g., cardboard or sleeves), excessive suction power may cause the substrate to be drawn in. This could result in an electrical potential being transferred from the plasma nozzle to the substrate.	
To ensure the proper functioning of the entire system, we recommend measuring the (residual) emissions under real production conditions. Such a control measurement is also recommended after any modifications to the system.	
Please observe the applicable national limits for hazardous substances: Ozone (O_3) CAS 10028-15-6 Nitrogen Oxide (NOx) CAS 10102-43-9	

3 Initial commisioning

3.1 Installation

For the installation, the SpotTEC treatment head is first placed into the hood and secured using one of the included M8 screws along with a heavy washer and spacer sleeve.

Subsequently, the treatment head, including the hood, is brought to its final position using an M8 screw or M8 threaded rod along with a heavy washer and spacer sleeve. It must be ensured that the treatment head is securely fixed.

Attach the connection to the hood and, if necessary, install the connection nipple for pressure monitoring. If the connection does not yet have a hole for pressure monitoring, drill a hole in an appropriate and accessible location using a 7mm drill bit. The hole should be positioned so that the connection nipple can measure the pressure in the center of the connection.

Attach the hose to the connection. Secure the hose either with a pipe clamp, which simultaneously secures the connection to the hood, or fix the hose with a hose clamp and secure the connection by placing a pipe clamp just above the installation to clamp the hose.

Securing the hose and connection with a pipe clamp	Separate securing of the hose and connection using a hose clamp and pipe clamp

3.2 Positioning

The plasma flame emits hazardous substances in the direction opposite to the extraction flow. Due to the high exit velocity, capturing these hazardous substances can only be achieved by slowing down the gases. This means the flame should only be ignited when it hits a substrate. Additionally, care must be taken to ensure that the flame is aligned perpendicularly to the surface of the substrate.

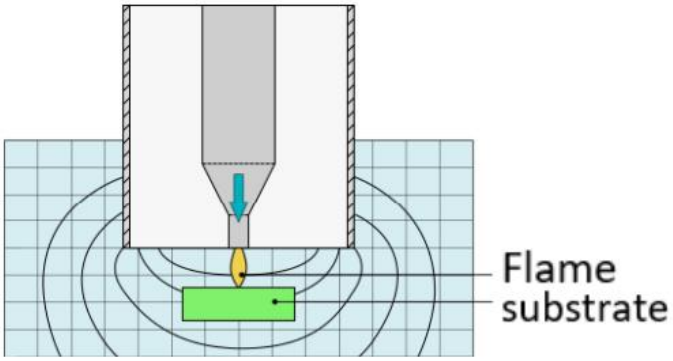


Figure 1: Plasma nozzle and substrate position in the suction field

Particular attention must be paid in robot-guided applications to ensure that the plasma flame is not activated during travel paths. In discontinuous treatments, such as individual parts on a conveyor belt, the plasma flame should also only be turned on when it hits a component surface.

The reason for this is that a so-called suction field forms around the area of the air inlet. In this field, the surrounding air is drawn in depending on the extraction flow. The following figure illustrates such a suction field. The capture velocity towards the inlet decreases rapidly with increasing distance.

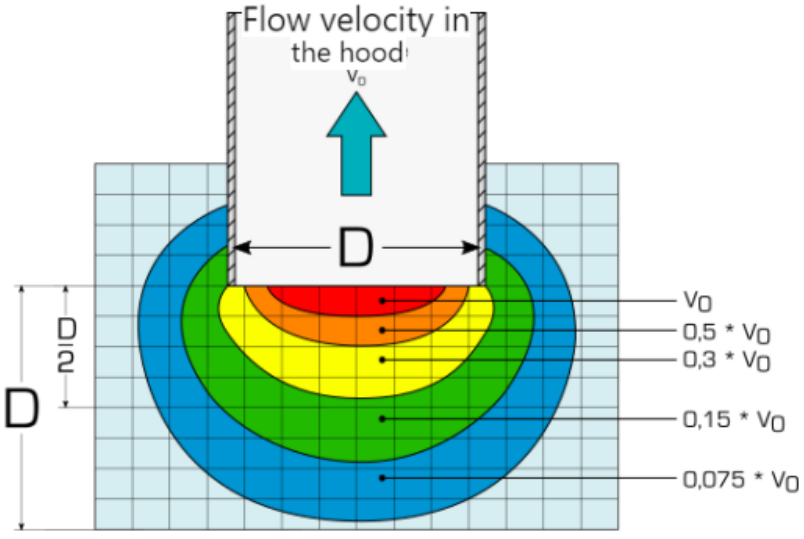
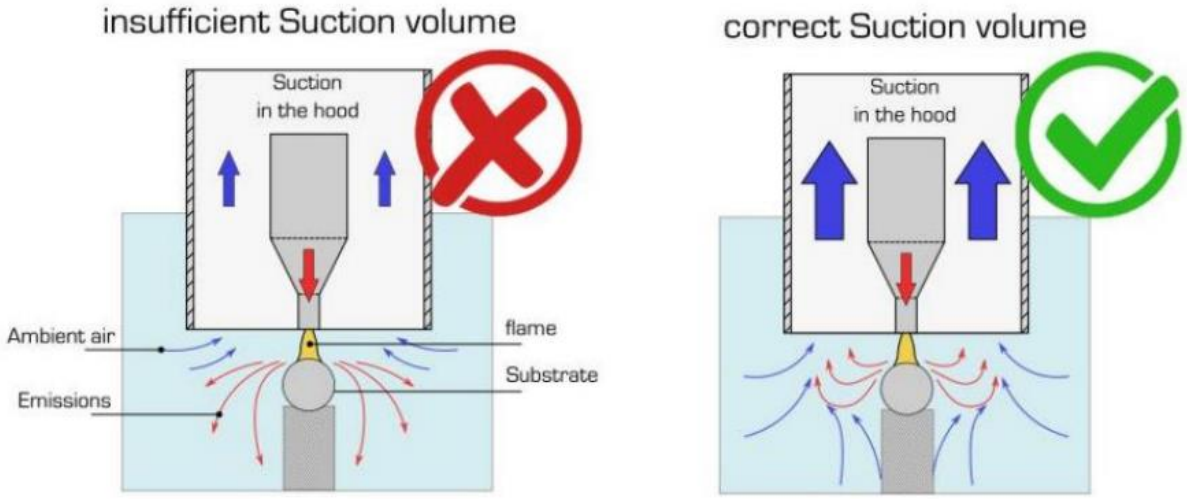


Figure 2 Suction field at the hood depending on the flow velocity and Intake diameter (based on DGUV Regel 109-002, S.15).

3.3 Verification of correct operation

To ensure correct operation, a test run under real production conditions should be conducted after the installation of the entire extraction system. Emissions of ozone and nitrogen oxides from the system should be measured using an appropriate measuring device. Alternatively, airflow can be checked using a smoke generator. This test should also be performed after any changes to operating parameters and at regular intervals as a control measurement.



3.4 Monitoring

To ensure consistently reliable operation, we recommend continuous monitoring of the extraction performance, for example, by using differential pressure measurement at the hood.

If the set threshold values are exceeded or not met, the plasma nozzle should not be able to be turned on, or it should be turned off.

To set the lower pressure point, proceed as follows:

1. Set high suction power, set up measuring devices for ozone and nitrogen oxides, and start plasma treatment
2. Slowly reduce the suction power.
   If an increase in the concentration of either gas is detected, slightly increase the suction power again until the concentration returns to the typical ambient level
   → **lower pressure point**
3. Turn off the plasma treatment and wait until the nozzle has cooled down
   Cover about two-thirds of the nozzle inlet, for example, with a piece of sturdy cardboard or metal
   → **Upper pressure point: Indicator of a blocked hood inlet**

Furthermore, regular control measurements of pollutant levels at the operating site must be carried out.

3.5 Shutdown

After truning off the plasma nozzle, we recommend keeping the extraction system running for several minutes. This ensures that airborne gases do not remain in the duct and potentially pose to other machines, machine components, or personnel.

4 Maintenance

4.1 Regular inspections

The components must be inspected and, if necessary, replaced according to the following maintenance intervals.

What?	Where?	How?	Interval
Hood undamaged and clean	Hood	Visual inspection	daily
Adapter undamaged and clean	Connector	Visual inspection	daily
Cables and connections undamaged and securely fastened	Cables	Visual inspection	weekly

4.2 Wear parts

The connection is subject to particular stress. Due to ozone exposure, this component is additionally weakened and must be regularly inspected for wear and breakage. If any damage is detected, the part must be replaced

4.3 Cleaning

During cleaning, maintenance, and repair work, it must be ensured that the production process cannot start.

During the work, it must be ensured that only the responsible technician can switch the extraction system on or off.

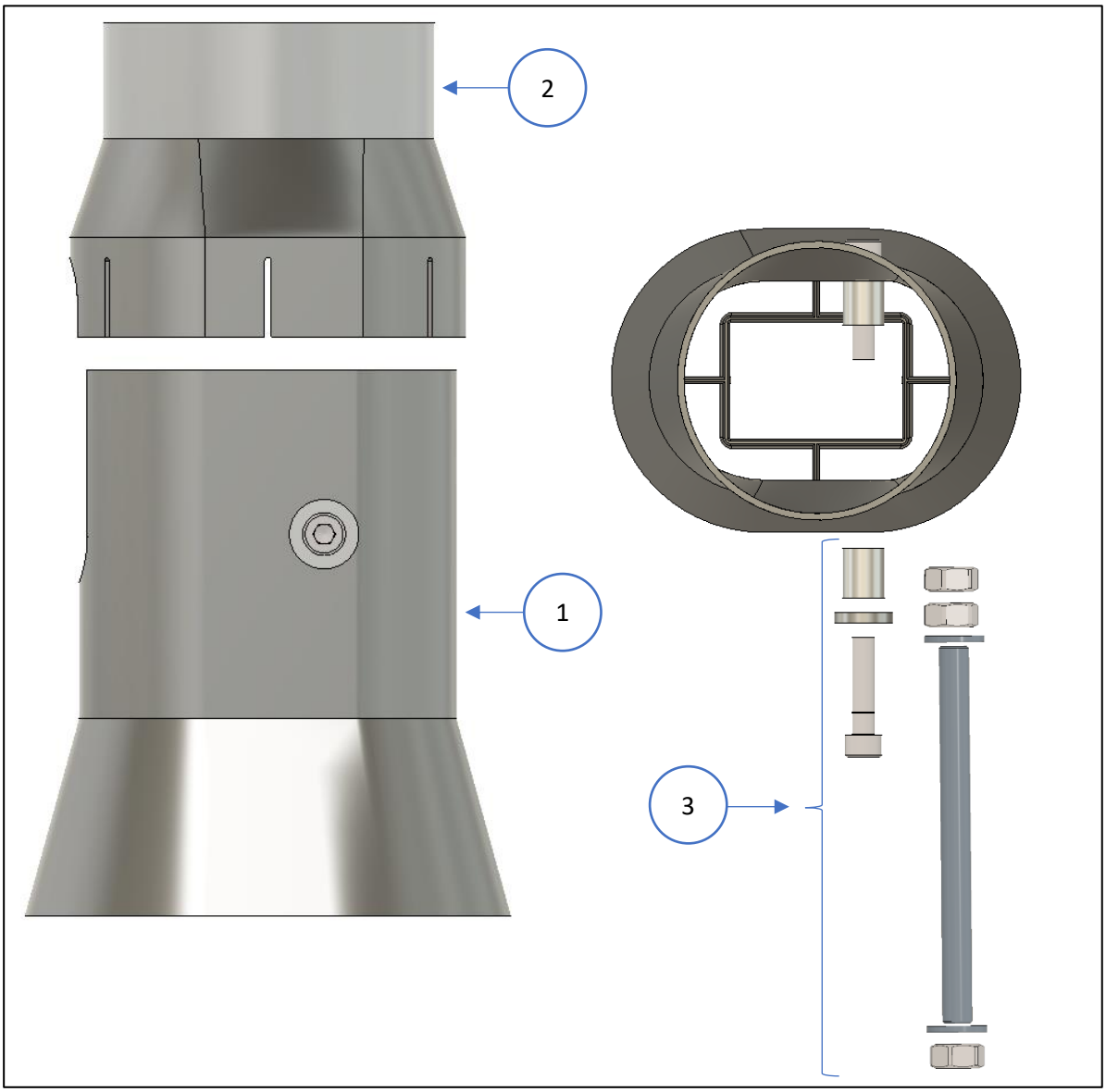
Only cleaning solutions approved for use may be used. This particularly includes cleaning and solvent agents that are safe for application on plastic surfaces.

Appropriate cleaning products are listed under the section 'Spare Parts and Accessories' in the user manual.

To clean, moisten a soft cloth with the cleaning product and wipe the surfaces. Do not appl the cleaning product directly to plastic surfaces.

5 Spare parts and accessories

Parts diagram

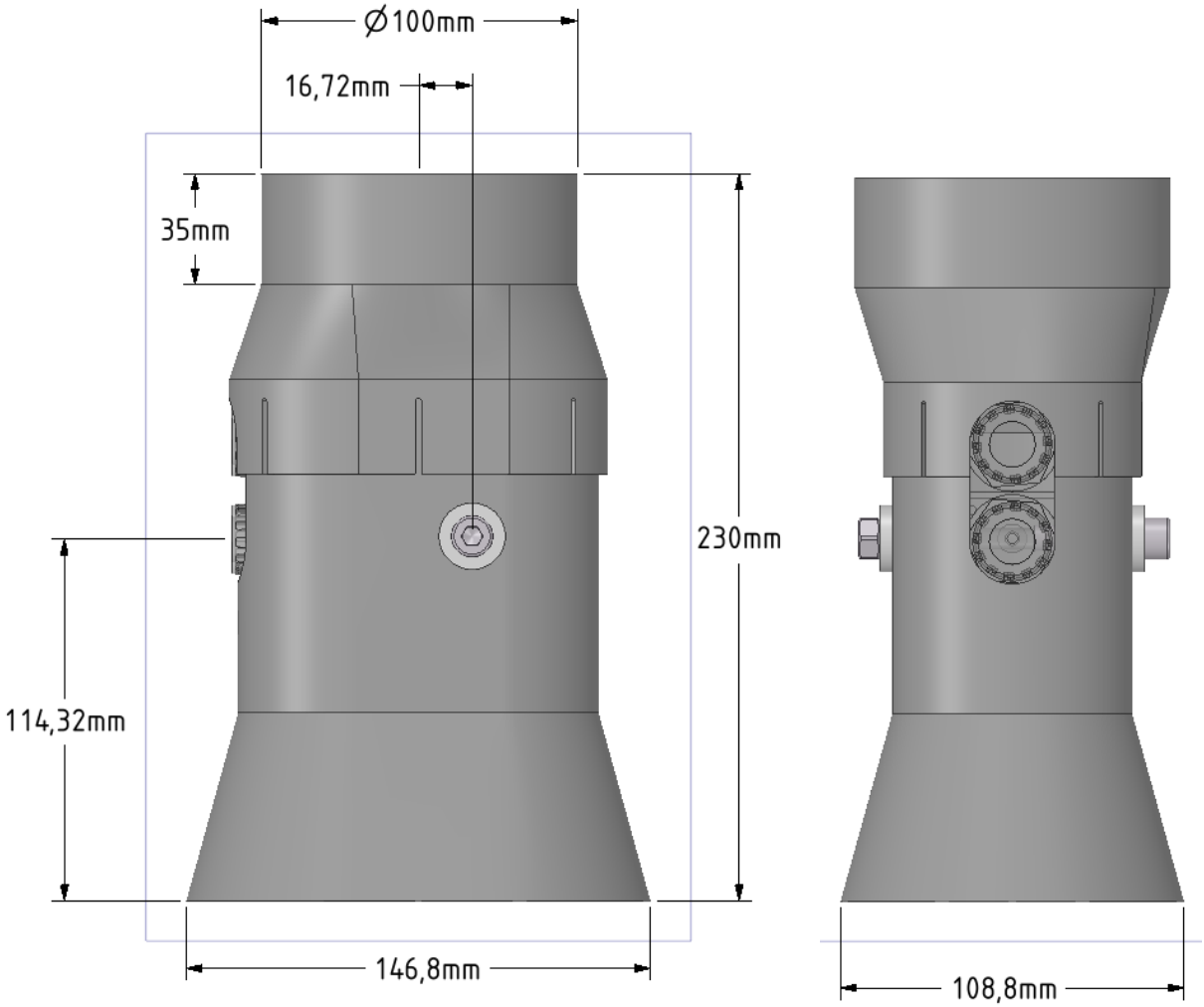


Pos	Bezeichnung	Art.-Nr.
1	Standard SpotTEC Hood	F831472
2	Standard SpotTEC Connector DN100	F831473
3	Mounting kit SpotTEC Hood	F831474

Zubehör

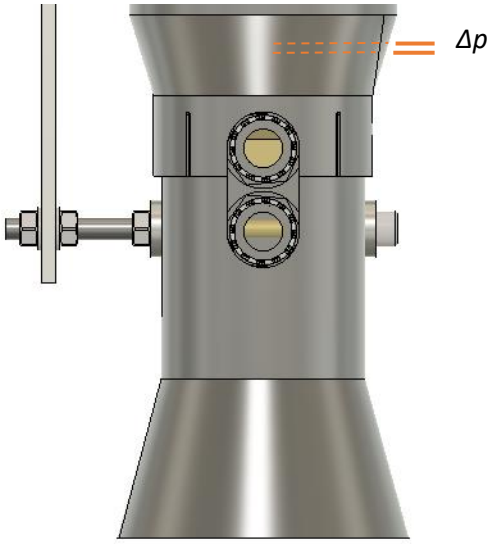
Pos	Bezeichnung	Art.-Nr.
1	UniClean Cleaning product	F223467
2	Hose clamp up to DN100	F830406
3	Pipe clamp up to DN100	F831407
4	Hose, DN100, PVC, per Meter	F830409
5	Hose, DN100, highly flexible, 3m	F830405

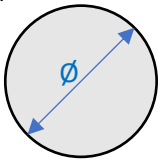
6 Technical Drawings



7 Technical Design

Below are the recommended differential pressures for various substrates and extraction solutions. These values were determined experimentally and are to be understood as reference figures. The specifications apply only to the pressure measurement offered by FlensTech. Tantec SpotTEC treatment heads were used with a distance of 15mm from the substrate.



Substrate	Pressure measured in hood
Flat (Top view)  d>1,5x Hood diameter	Δp_{min} = 70 Pa
round (Cross-section)  60 < Ø < 110	Δp_{min} = 70 Pa
round (Cross-section)  20 < Ø	Δp_{min} = 220 Pa
Since real operating conditions can vary greatly and have a significant impact on the overall system, it is essential to verify the set values through measurement in every case. For small diameters (<30mm), the treatment head can, if possible, be positioned lengthwise to the substrate in order to reduce the extraction volume	

8 Change log

Versionsnr.	Modifications from the earlier version
1.00	Initial version with no predecessor