FlensTech

operating instructions

extraction system

This user manual describes the use of system suction. Please read this guide before installing.

If you have any questions, please contact FlensTech:

info@flenstech.de

version: 2.01
November 2021

CE

FlensTech

EU Declaration of Conformity

We hereby declare that the design and construction of the following product complies with the essential directives on health and safety requirements, which are based on the EU Directive for Machinery 2006/42/EC.

manufacturer:

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Germany
Phone: +49(0)175-3751 062

Applied harmonized standards:

ISO 12100:2011-03 (Risk assessment and risk mitigation)
VDI 2262-4:2006-03 (Detection of non-air substances)

Information on the person responsible:

Name: Hans Christian Madsen
Position: Managing Director

Place, date signature

version: 2.01
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Overview

1 Description

1.1 Determination

The FlensTech extraction system is used for selective extraction of ozone and nitrogen oxides at the point of formation. It is therefore an aid for the extraction of dangerous gases and must always be operated with a correspondingly designed extraction unit.

The system hood is not released for other gases or vapors except the above-mentioned as well as normal room air. In particular, it should be noted that solvent-containing environments are.

1.2 Specifications

materials Holder and carrier: aluminium Screws: steel, galvanized Hood: ABS/PC, flame retardant according to UL94 V-0 Connection: PA6 Hose clamps: stainless steel, rubber	**Standard 1** h x w x d: 335 x 148 x 145mm Weight:1.2kg **Standard 3** h x w x d: 335 x 210 x 145mm Weight: 2,1kg
application for one Tantec PLX plasma nozzle (version Standard-1) or up to three Tantec plasma nozzles (version Standard-3)	connection DN100

1.3 Technical description of the environment

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

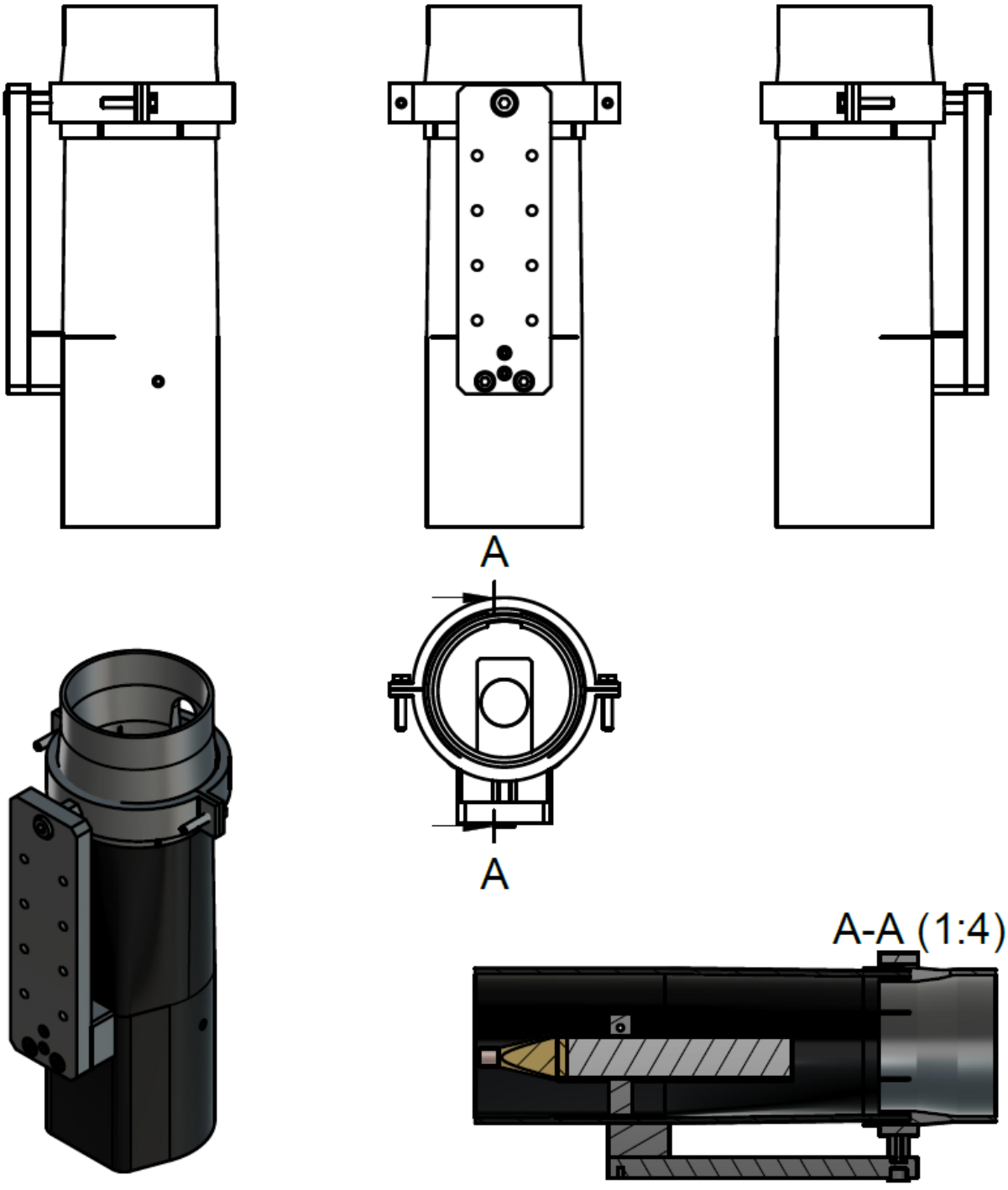
1.4 General

The information in this data sheet refers to our state of knowledge and the component versions at the time of publication. We reserve the right to make changes to the components or the data sheet. For the current versions, please contact us.

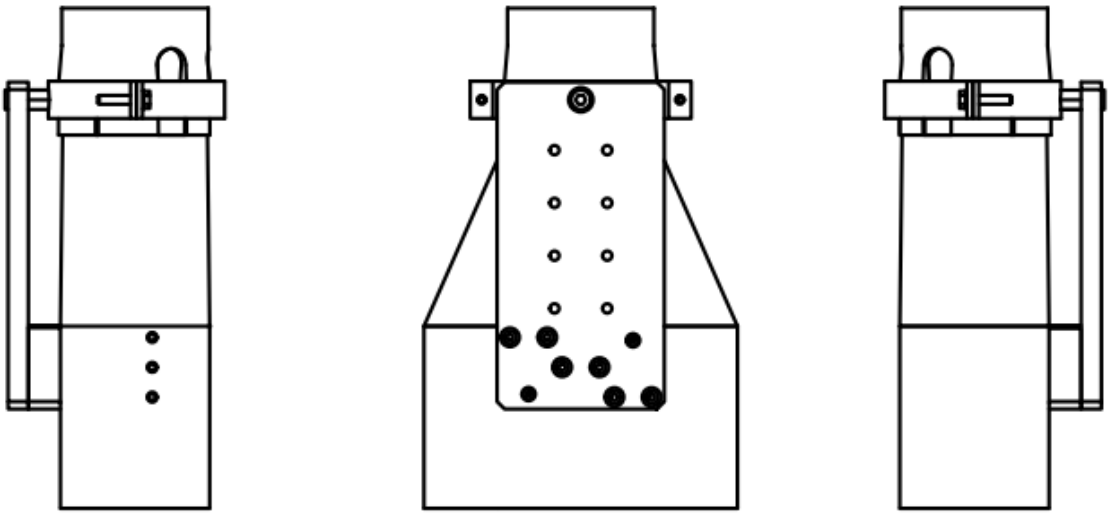
The system hood sees itself as an aid. The responsibility for complying with applicable maximum workplace concentrations cannot be assumed by FlensTech. The buyer is responsible for the correct installation and use. Please check regularly the effectiveness of the entire extraction system. In addition, observe the applicable guidelines and limits for your operating environment. The same applies to the protection of other machine elements – for example, due to corrosion as a result of ozone exposure.

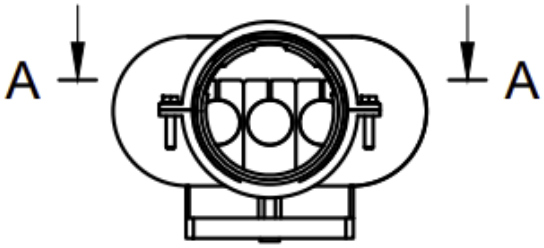
1.5 Representation

1.5.1 Standard 1



1.5.2 Standard 2





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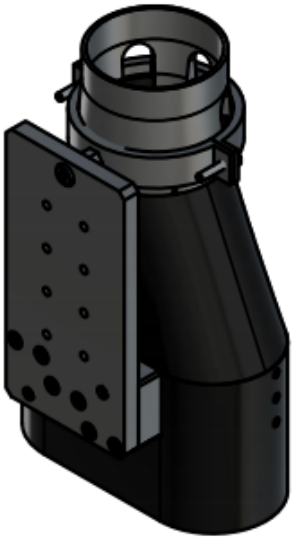
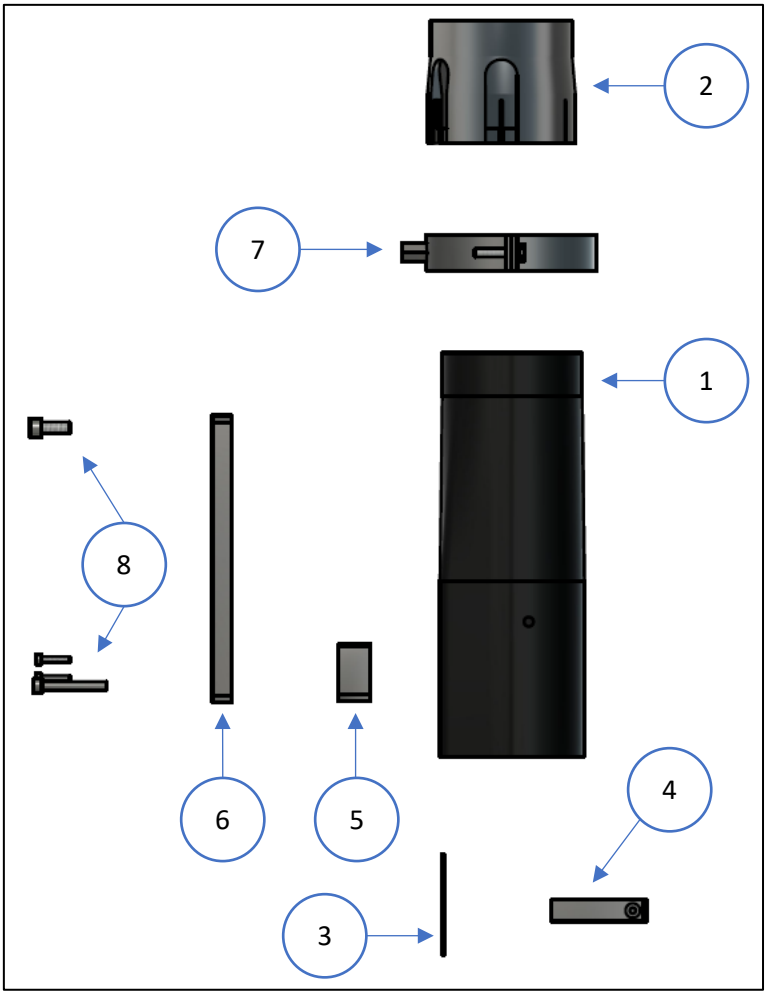


1.6 Scope of delivery



Item	number	designation
1	1	Standard hood
2	1	Standard connector DN100
3	1	Standard sheet plate
4	1-3	Mounting fitting
5	1	Standard carrier spacer
6	1	Standard carrier
7	1	Tube clamp DN100
8	1	Screw set standard

2 Safety precautions

If work on the system hood is required, it must be ensured that the suction cannot be switched on unintentionally. Otherwise, there is a risk that the resulting negative pressure sucks in objects or body parts and can lead to injuries immediately or when detached again.	
The tip of a plasma nozzle can get hot up to 300°C. For this purpose, the information provided by the manufacturer of the plasma nozzle must be taken into account.	
The system hood serves as an aid for detecting ozone and nitrogen oxides. Before use, it must be ensured that: 1. all components have been mounted correctly and are intact, 2. the adapter has been selected according to the number of nozzles used, or unused recesses are closed with suitable blind plugs, 3. the connected extraction device is suitable and operational.	
To ensure that the plasma source is only active if the suction works with sufficient power, we recommend permanent pressure or current control in the extraction line. The measuring point should be chosen as close as possible to the hood.	
In order to ensure that the toxic gases are removed from the pipeline, the extraction must continue for a reasonable period of time after the ozone and/or nitrogen oxide source has been switched off. The duration depends on the length of the lines and flow velocities inside. For work on the hood, the duration should be at least a few seconds.	
In the event of a fire, the hood (ABS/PC) and the connection (PA6) can cause harmful gases.	
In the treatment of loose substrates (i.e. cardboard boxes or cores), the substrate can be sucked in if the suction power is too high. Due to the lack of movement, the substrate can burn or inflame.	
In the treatment of loose, electrically conductive substrates (i.e. cardboard boxes or sleeves), the substrate can be sucked in if the suction power is too high. As a result, an electrical potential could be transferred from the plasma nozzle to the substrate.	
To ensure the functionality of the entire system, we recommend measuring the (residual) emissions under real production conditions. Even after changes to the system, such a control measurement is recommended.	
Observe the favourable national limit values for hazardous substances: Ozone (O_3) CAS 10028-15-6 Nitric oxide (NOx) CAS 10102-43-9	

3 First commissioning

3.1 Positioning

The plasma flame emits the hazardous substances with opposite proper motion to the suction direction. Due to the high exit velocity, the detection of these hazardous substances can only be achieved by deceleration of the gases. This means that the flame may only be ignited if it hits a substrate. It is also important to ensure that the flame is aligned perpendicular to the surface of the substrate.

The optimal positioning of the plasma nozzle is achieved when the nozzle tip and inlet opening of the hood are on one plane.

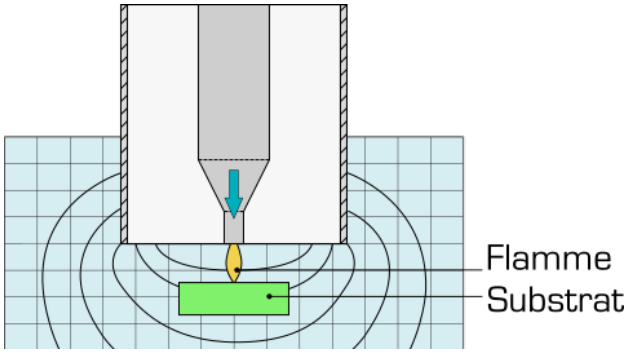


Figure 1Plasma nozzle and substrate position in the suction field

In particular, in robot-guided applications, care must be taken to ensure that the plasma flame is not activated during routes. In discontinuous treatments, for example of individual parts on a conveyor belt, the plasma flame can also only be switched on when it hits a component surface.

The background is that around the area of the air intake a so-mentioned suction field is created. In this field, the surrounding air is sucked in depending on the suction flow. The following illustration illustrates such a suction field. The detection speed to the inlet opening decreases rapidly with increasing distance.

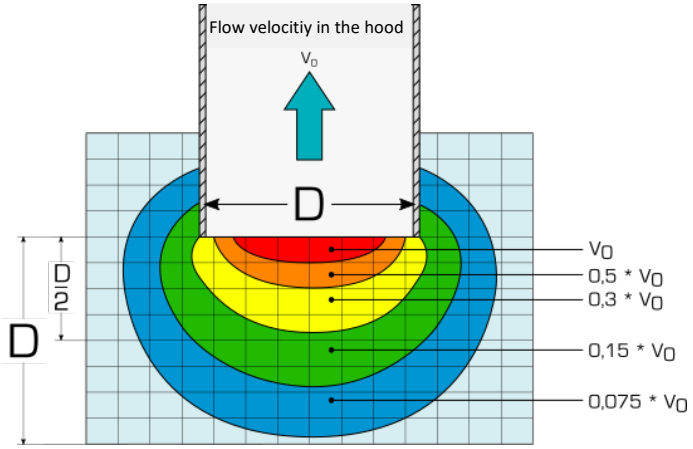
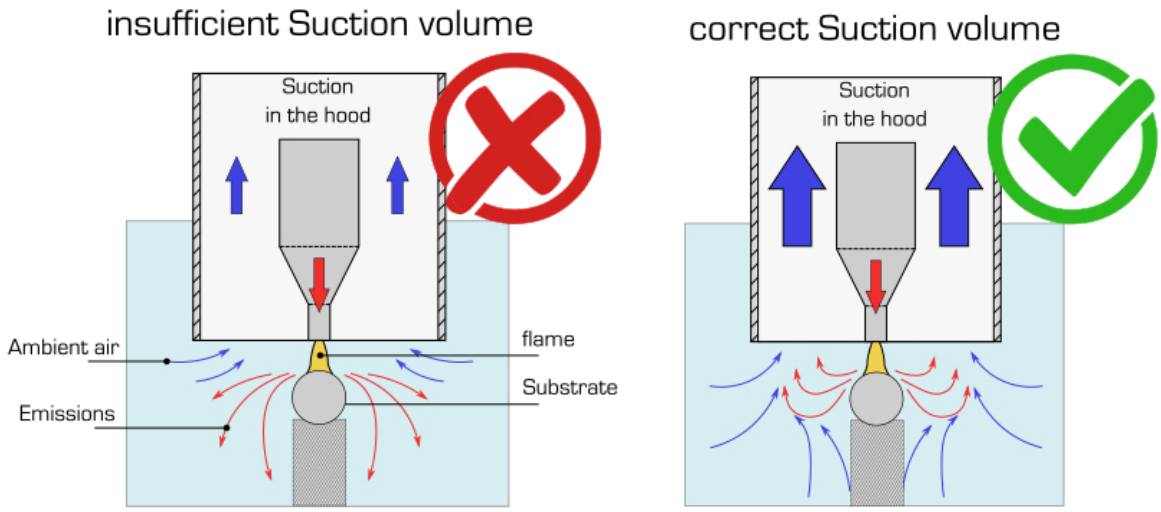


Figure 2: Suction field on the hood as a function of the flow velocity and Inlet diameter (in accordance with DGUV rule 109-002, p.15).

3.2 Checking for correct operation

To check for a correct operation, a test run should be carried out under real production conditions after the installation of the entire extraction system. A suitable measuring device must be a measuring device to measure the emission of ozone and nitrogen oxides at the plant. Alternatively, a smoke generator can be used to check the flow. The test should also be carried out after each change in the operating parameters and at regular intervals as a control measurement.



3.3 Surveillance

In order to ensure a permanent and flawless operation, we recommend continuous monitoring of the extraction performance – for example, by a differential pressure measurement on the hood. Guideline values for the differential pressure measurement can be found in the technical design.

If the set limit values are exceeded or lower, the plasma nozzle should not be switched on or switched off.

To find the lower pressure point, proceed as follows:

1. Set up high suction power, set up measuring devices for ozone and nitrogen oxides and start plasma treatment
2. Slowly reduce the suction power
3. If an increase in the concentration of one of the gases is detected, the suction line is slightly increased again until the concentration has fallen back to the ambient value.
   → **lower pressure point**
4. Turn off the plasma treatment and wait until the nozzle has cooled down.
5. Close the hood inlet to about 2/3, for example with a solid cardboard or sheet metal.
   →**upper pressure point: indication of a blocked hood inlet.**

Furthermore, regular control measurements of the pollutant load at the place of use are to be carried out.

3.4 Switch off

After switching off the plasma nozzle, we recommend leaving the suction switched on for several minutes. This ensures that the non-air gases remain within the pipeline and, if necessary. pose a hazard to other machines, machine elements or persons.

4 Maintenance

4.1 Regular checks

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

what?	where?	how?	interval
Hood without damage and clean	hood	visual inspection	daily
Adapter without damage and clean	connection	visual inspection	daily
Cables and connections without damage and stuck	pilotages	visual inspection	weekly

4.2 Consumables

The standard connection is subject to a special load. Due to ozone exposure, this component is additionally weakened and must be regularly checked for wear and breakage. In case of damage, this 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 turn the extraction system on or off.

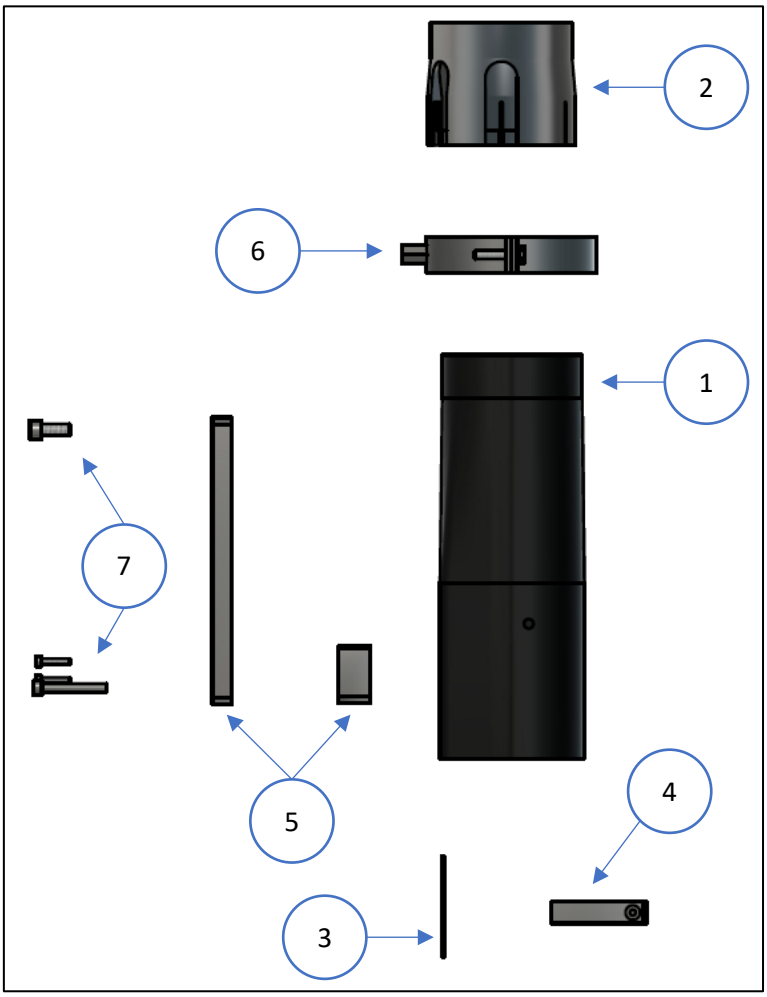
Only agents released for cleaning may be used. This includes, in particular, cleaning and solvents that are applied to plastic surfaces.

Corresponding cleaning agents are listed under the item "Spare parts" in the operating instructions.

For cleaning, a soft cloth is wetted with the cleaning agent and the surfaces are wiped with it. In particular, no cleaning agents are to be applied directly to the plastic surfaces.

5 Spare parts and accessories

Part sketch



Version Standard-1

Item	designation	Art.-No.
1	Standard hood type 1	F-831470
2-1	Standard connector DN 63 (only for standard 1)	F-831401
2-2	Standard connector DN 90	F-831402
2-3	Standard connector DN 100	F-831403
3	Standard sheet plate type 1	F-831404
4	Mounting fitting	F-567934
5	Standard carrier type 1	F-831405
6	Tube clamp DN100	F-831407
7	Screw set standard type 1	F-831408

Version Standard-3

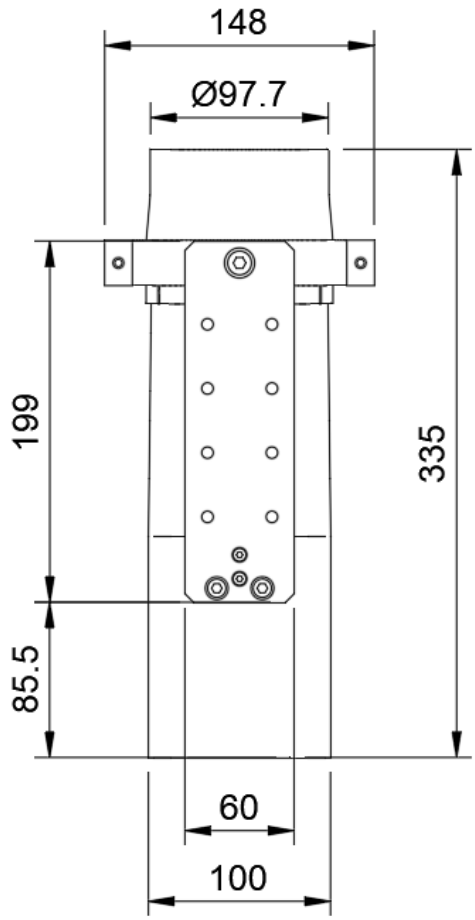
Item	designation	Art.-No.
1	Standard hood type 3	F-831471
3	Standard document type 3	F-831410
5	Standard carrier type 3	F-831411
7	Screw set standard type 3	F-831413

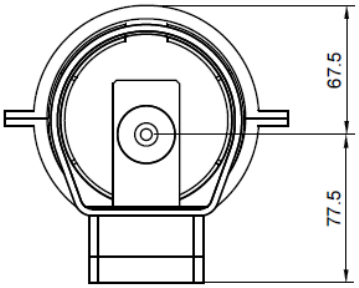
Accessories

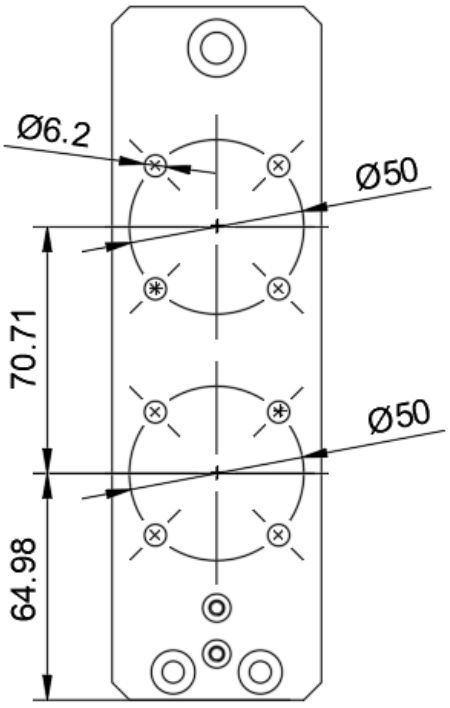
Item	designation	Art.-No.
1	UniClean cleaning products	F-223467
2	Hose clamp up to DN100	F-830406
3	Hose, DN100, PVC, per meter	F-830409
4	Hose, DN90, PVC, per meter	F-830410
5	Hose, DN63, PVC, per meter	F-830411

6 Technical drawings

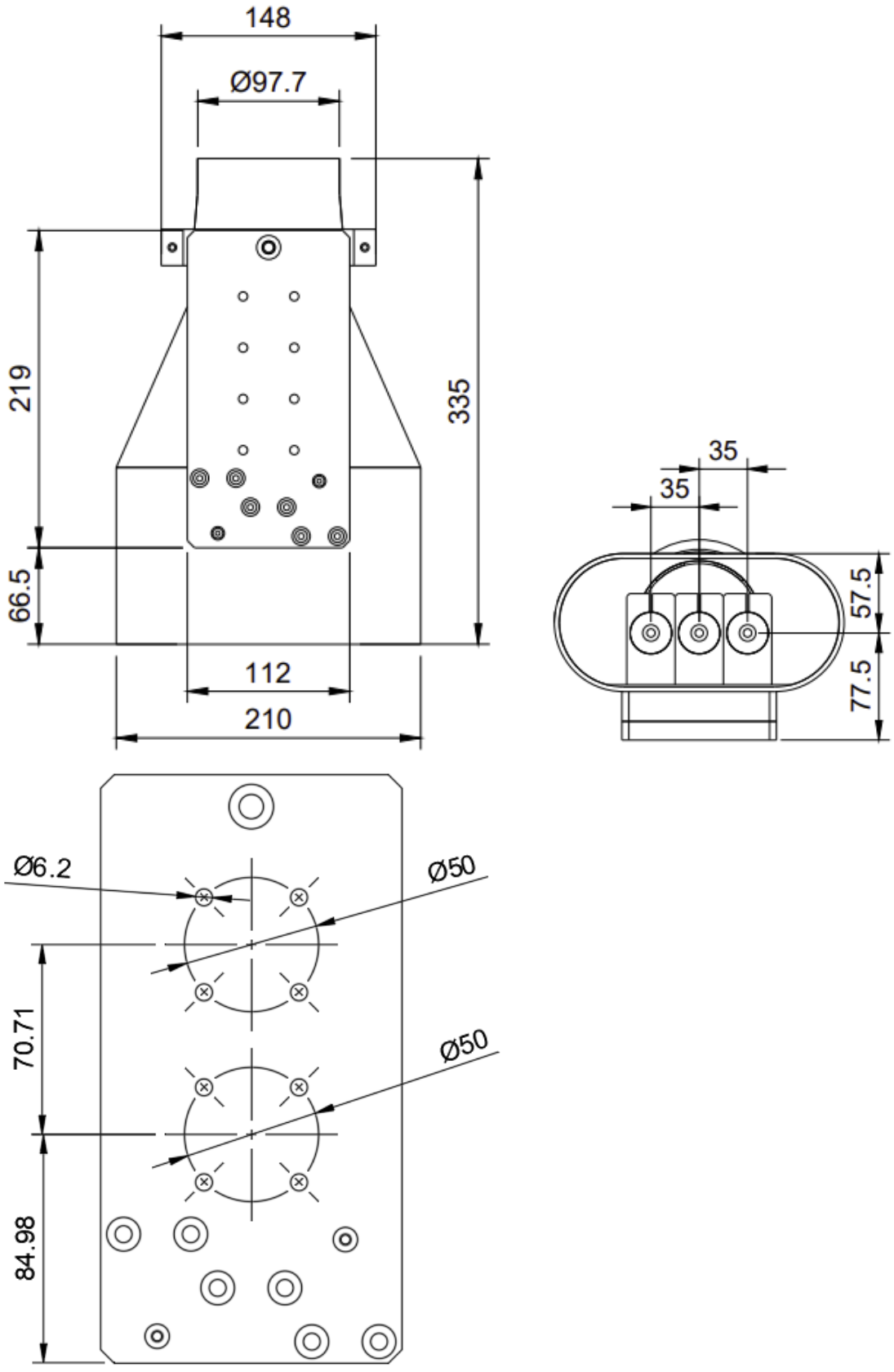
6.1 Version Standard Type 1





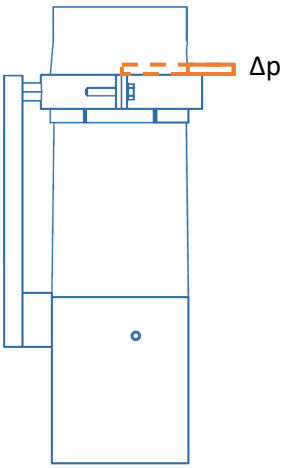


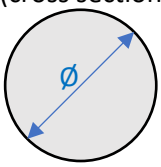
6.2 Version Standard Type 3



7 Technical design

Below are recommended differential pressures for different substrates and suction solutions. The values were determined experimentally and are to be understood as benchmarks. The information applies only to the pressure measurement offered by FlensTech. Tantec plasma nozzles type PLX with a distance of 10mm to the substrate were used.



substrate	Standard 1
round (cross section)  14 < Ø < 30	$\Delta p_{min} = 380\ Pa$
round (cross section)  30 < Ø	$\Delta p_{min} = 125\ Pa$
flat (top view)  15 < d	$\Delta p_{min} = 125\ Pa$

Since real operating conditions are manifold and can have a great influence on the overall system, a test of the set values by means of measurement is required in any case.

8 Change log

Version-nr.	Changes to predecessor
1.00	First version without predecessor
1.01	spare parts → version Standard-1 → 2-2 → standard connection DN 90, 831402 spare parts → version Standard-1 → 2-3 → standard connection DN 100, 831403 spare parts → accessories → 4, hose, DN90, PVC, per meter, 830410 spare parts → accessories → 5, hose, DN63, PVC, per meter, 830411
2.00	Scope of delivery →pos 4 → renamed Chapter 2 Safety precautions → Indication of fire hazard in loose substrates Chapter 2 Safety precautions → Indication of electric shock in conductive substrates Chapter 3.1 renamed Chapter 3.1.2 removed Chapter 3.2 reworded Chapter 3.2 → pictures of suction volume added Chapter 3.3 →Reference to Chapter 7 *Technical interpretation* inserted Chapter 3.3 → Setting of pressure points added. Chapter 4.2 → new formulation Spare parts and accessories →pos 4 → renamed Chapter 6 renamed Chapter 7 *Technical design* inserted
2.01	New company address