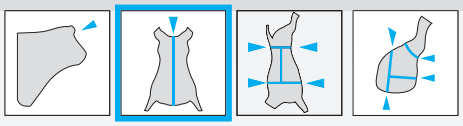
FREUND
GERMAN QUALITY SLAUGHTER-TOOLS

OPERATING MANUAL
VACUUM SUCTION SYSTEM

OPERATING MANUAL

Translation of original manual



VACUUM SUCTION SYSTEM MODELS

- VSS
- VSS-EDF
- SVSS

Imprint

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This operating manual was compiled with the greatest care. However if you notice incompleteness and/or mistakes, please inform us.

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1 About this Manual

The Vacuum suction system are also referred to as machine in this operating manual.

This operating manual was prepared to enable you to work quickly and safely with your machine.

The operating manual is a component of the machine and contains important recommendations, instructions and information.

- to enable safe and proper installation of the machine.
- to enable safe operation of the machine.
- to enable you to rectify simple faults yourself.
- for maintenance and cleaning.

Before you start operating the machine, read this entire operating manual thoroughly and carefully. It is imperative that you adhere to all written safety and warning information.

1.1 Target group

This operating manual is intended for operators of slaughtering facilities and the staff employed there, as well as for butchers and small businesses and their apprentices.

The operating manual is intended in particular for qualified personnel for assembly, installation, maintenance and servicing and for the cleaning staff.

The target group must have basic technical knowledge of how to handle the machine described herein.

1.2 Liability and warranty

All information and instructions regarding the operation and maintenance of the machine contained in this manual are provided to the best of our knowledge, taking into account our experience and know-how.

We will accept no liability for claims that extend beyond the scope of the warranty agreed in the main contract.

The original version of this operating manual was written in German. The translation was created with the best care and knowledge, but we assume no liability for translation errors. In case of doubt, the original German version always applies.

Exclusion of liability

We assume no liability and warranty:

- for wearing parts.
- for damage that occurs during slaughtering.

Furthermore, we expressly point out that we do not assume any liability for damages attributable to the following causes:

- not observing the information provided in this operating manual at all or to the necessary extent
- non-intended use
- unsuitable or improper handling
- spare parts or parts are used which have not been approved by FREUND Maschinenfabrik GmbH & Co. KG
- changing functions or materials on the machine without prior approval
- operating the machine incorrectly or operation by unqualified personnel
- safety devices being removed or manipulated
- cleaning the machine incorrectly or unprofessionally
- chemical or mechanical overloads
- maintenance and repair work not being carried out according to instructions or maintenance intervals not being adhered to

Modifications and/or adjustments to the machine are possible in certain cases. In such cases, prior written approval must be obtained from FREUND Maschinenfabrik GmbH & Co. KG – subsequently referred to as FREUND Maschinenfabrik.

1.3 Storing the operating manual

This operating manual is part of the machine and must be accessible at all times to the operating, maintenance and cleaning staff during the entire service life of the machine.

Therefore, always keep the operating manual near the machine’s place of use.

1.4 Installation manuals and technical information

Purchasing a FREUND product gives you access to our online customer portal, FREUND Assistance (FA). FA will show you which spare parts are available for your product. You can send an order request directly to our sales team via FA. The requisite installation manuals for ensuring safe installation of your FREUND spare parts are also provided on the FA portal. You will also find the CE declarations for series machines on the FA portal.

The appendix to this operating manual and the FA portal contain technical information (TIN). TINs provide descriptions of the most important maintenance and operating steps for your machine.

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1.5 Warnings

While you are using the machine, dangers may occur in certain situations or as a result of certain behaviours.

In this operating manual, warning information is given at the start of the respective chapter or life phase that involves danger of personal injury or property damage. They relate to all following actions of the chapter or life phase.

The precautions described must be observed to avoid the danger.

Structure of a warning

Signal word!

Type and source of the imminent danger.

Possible consequences of the danger if the warning is disregarded.

➢ Instructions for averting the danger.

Signal word	Meaning
DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
ATTENTION	Indicates a potentially hazardous situation which, if not avoided, could result in damage to the machine or the environment.

1.6 Symbols and layout elements

1.6.1 Layout elements

- Enumerations

➢ Individual, independent instruction step

Result arising from the instruction step

1. Step-by-step sequences in a specific order
2. The numbers indicate that the instruction steps follow each other
3. *Result arising from the instruction steps*

→ References to another chapter

Important additional information or special details regarding the use of the machine

Embedded warning note - shows type and source of the danger and the measure to avoid the danger

1.6.2 Safety signs

Warning signs

Warning of a danger point

Caution! At this point there is an increased danger to your safety.

Warning of sharp-edged machine parts

Danger to the fingers and hands from cutting and striking.

Danger to limbs from cutting or severing and injuries to the body.

Warning of rotating cutting tools

Danger to limbs from cutting or severing.

Danger of entanglement of loose clothing, jewellery and long hair due to the rotational movement.

Warning of substances harmful to health and irritants

The information on the packaging and containers must be observed. Keep separate from food.

Warning about horizontal rotary movements

Danger from unexpected machine impacts.

Danger to the fingers and hands from cutting or cutting off.

Warning of hot surfaces

There is a danger of burns or scalds to body parts at the marked areas particularly to hands and fingers.

Warning of hot water or steam

Danger to the hands and fingers from hot water or steam suddenly escaping.

Prohibition signs

General prohibition signs

This sign is only used in connection with an additional sign or text, which describes the prohibition in greater detail.

High-pressure cleaners forbidden

Do not use high-pressure cleaners to clean the machine.

Parts of the machine could be damaged.

Avoid direct water contact

Avoid direct contact between the machine and water during cleaning. The machine is not waterproof.

Mandatory signs

Wear protective gloves

protect the hands against friction, abrasions, and cuts.

Wear safety spectacles

protect the eyes against flying parts, fragments and squirting liquids.

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Wear hearing protection
protect hearing during operation of the machine.

Wear safety shoes or rubber boots
protect the feet against crushing, falling objects and guarantee secure support.

Wear a hair net or use a blade guard
protect long hair against entanglement in the machine.

Wear a protective apron
protects the body against humidity, blood and other fluids.

Wear head protection
protect the head against injuries from contact with oscillating objects and machines and during work beneath suspended loads.

Pull out the power plug
disconnect the machine from the mains power supply before all servicing, maintenance and cleaning work.

1.6.3 Symbols

Comply with the operating manual
Be sure to observe the information and notes in the operating manual.

Separate spare **parts list available**
There is a separate spare parts list for this spare part.

Assembly manual available There is an extra assembly manual for this spare part. In the assembly manual, work steps and required tools are shown.

Available as a set
The symbol indicates an article in a set. In a set, multiple related spare parts are available together. A plate clarifies which parts are included.

Tool set available
To install this spare part, a special tool is required which can be ordered from us.

The order of the work steps is marked with numbers in the grey field.

Lubrication
Information about the amount and properties of the lubricant can be found in the operating manual.

No lubrication

Glue

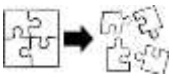
Parts must be glued; information about the type and properties of the glue can be found in the operating manual.

Cleaning

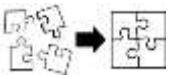
Instruction for an additional cleaning step.

Power plug

symbolises the connection of the machine to the power network.



Disassembly of the machine or component



Assembly of the machine or component

symbolises the assembly of the machine after prior disassembly, carry out work steps in the reverse order.

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2 For your Safety

This chapter describes the safety measures and safety devices. It serves for your orientation regarding safety questions about the use of the machine.

Safety instructions are intended to provide occupational safety and prevent accidents. Observe all the safety instructions provided here and at the beginning of each chapter.

Be sure to read the following chapter on safety and the safety instructions contained within carefully before commissioning and using the machine.

2.1 Obligations of the operator

In accordance with the rules and regulations of the employers' liability insurance association relating to the safety and health when working for a business in the meat industry (BGR 229), the site operator may only allow insured persons who are 18 years old and are familiar with the equipment and the handling of the equipment to operate slaughter equipment.

Young people over the age of 16 may be employed if this is required as part of their vocational training and if they have read and understood the safety regulations. Their safety must be ensured by a supervisor.

Risk assessment and protective measures

Before using work equipment, the operator must assess the risks that could occur (risk assessment) and derive necessary and suitable protective measures from this assessment. The presence of a CE marking on the work equipment does not release the operator from its obligation to carry out a risk assessment (German Regulation on Safety and Health - BetrSichV from 3 February 2015 Section 2 (3)(1)).

Operating instructions

Before employees use work equipment for the first time, the operator must provide them with written operating instructions for use of the work equipment in a form and language understandable to said employees and make them available in a suitable location (German Regulation on Safety and Health - BetrSichV 3 February 2015 Section 2 (12)(2)).

2.2 Personal protective equipment

The staff must carry the customary personal protective equipment. The personal protective equipment is dependent on the respective field of work.

The personal protective equipment must be provided by the operator. For hygienic reasons, each employee gets his/her own personal protective equipment.

2.3 Electrical safety in accordance with EN 60204-1

All our electrical machinery and equipment is tested for electrical safety prior to commissioning and following modification or repair in our factory by an electrically skilled person in accordance with the electrical engineering rules as per DIN VDE 0701-0702 / EN 60204-1. The inspection interval for machinery and equipment that is used in slaughtering and cutting plants is every six months.

2.4 Requirements on the installation location

Installation conditions

- enclosed and frost-free room
- ambient temperature between -25°C to +4°C
- ground must be level, solid and load-bearing

Set up the machine in a manner that all control elements and bolt connections are always freely accessible.

Operation and all maintenance and repair work must be carried out safely and without obstacles.

Operating staff

The site operator, as a higher level legal person, is responsible that the machine is used in accordance with its intended use and is responsible for training and for assigning authorized and qualified operating, maintenance and cleaning staff.

The site operator is obliged to ensure that each employee is properly trained in the operation of the machine.

Staff undergoing training may only work at the machine under the supervision of properly qualified staff.

Instruction of staff

The operator is obliged to instruct employees regularly and in light of certain events (e.g. if an accident has occurred) in safe work procedures and occupational safety and health. We recommend that the instruction and the content covered should be documented by the employee's signature.

Risk assessment

The site operator must inform operators of possible dangers, symptoms and preventative measures. Relevant occupational safety conditions have to be complied with.

Workplace

The workplace must comply with the national and regional hygiene and workplace regulations.

Escape routes

The operator must ensure that sufficient escape routes are available for the staff and that these are clearly marked. The operator must ensure that escape routes are not obstructed and that their function is not impaired (e.g. that doors open towards the escape route).

Cleaning

The operator must ensure that machine and working equipment can be cleaned easily and without any risk. The operator must provide suitable detergents and define suitable cleaning procedures.

Safety of the machine

The site operator must ensure that the machine is only operated and used in perfect and functional condition.

The site operator must ensure that safety devices are regularly serviced and checked for proper function.

2.5 Employee responsibilities

Operating staff

The operating staff must be properly instructed and trained by the operator. Staff who have read and understood the safety information and have been properly familiarised themselves with the operation of the machine can be regarded as instructed.

Operating staff must be familiar with the operating manual and the applicable OHS and accident prevention regulations.

Qualified personnel

A technical expert is a person who, due to technical training and experience, possesses sufficient skills and knowledge.

The technical expert must be familiar with the operating manual and the applicable OHS and accident prevention regulations, as well as the applicable animal welfare laws.

2.6 Qualification level

Qualification level

Definition of the qualification

Instructed person

- Informed and instructed in relation to the machine's protective measures. Has confirmed this with their signature.
- Informed about personal protective measures.
- Informed about the tasks assigned to them and, if necessary, trained.
- Informed about potential dangers associated with improper conduct.

Operator

With regard to the machine they operate, the operator must:

- Be familiar with the machine,
- Understand its functional principles and familiar with the technology used to product a product or carry out a procedure.
- The operator works according to instructions and operating rules.

In the event of a fault, the operator must be capable of rectifying the fault and averting the risk of damage.

Qualified electrician

Within the meaning of the accident prevention regulation DGUV Rule 3, a qualified electrician is someone:

- Who, on the basis of their professional training, knowledge and experience as well as their knowledge of the relevant regulations, is able to assess the work assigned to them and recognise potential dangers.
- Who makes decisions independently and is able to initiate and perform the necessary work.

Mechanical specialist

Specially qualified due to training, knowledge and experience.

Service personnel
Has received training from the machine manufacturer in how to implement maintenance and servicing measures.

Safety at the workplace
Maintain a stable upright position and keep your balance. Avoid awkward postures.

Keep your workplace clean and tidy. Untidy workplaces can cause accidents.

Always wear the personal protective equipment provided.

Keep children, young persons and untrained staff away from the machine.

Emergency procedures
In the case of an accident, administer first aid and call a doctor and emergency medical services.

Notify the operator or his authorised representative of every accident.

Machine safety
Before starting any work, carefully check the machine for proper function in accordance with the intended use.
Do not set the machine into operation if it does not work correctly.
Switch off the machine immediately if it no longer works correctly and have it checked.
Have defective safety devices, switches or other defective machine parts repaired.
Notify the operator or his authorised representative of any changes to the machine which may affect your safety.

2.7 Residual risks

The machineVacuum suction system was built according to the current state of the art before being placed on the market and complies with the basic safety and health requirements of the European Union.

The machine is operationally safe, assuming compliance with the operating manual, the company-specific instructions and the accident prevention regulations.

However, there are still dangers involved which cannot be eliminated by design measures. These include:

- Danger to life from live machine parts in electrical machinery.
- Danger of injury from compressed air/overpressure in pneumatic machinery.
- Risk of injury from negligent handling of personal safety equipment while operating the machine, during maintenance and repair work and during cleaning and disinfection.
- Cutting injuries from cutting tools.
- Danger of crushing injuries to fingers and hands when closing the cover and the base flap of the vacuum tank and when closing the separator can.
- Danger of injury from breakage or ejection of fragments of the cutting tool.
- Hearing damage from noise if noise emissions exceed 75 dB(A).

- Risk of burns from hot surfaces.
- Risk of burns from hot steam.

It should also be noted that, despite all precautionary measures, residual risks may remain which are not evident.

You can minimise these residual risks by observing the safety information given at the beginning of the individual chapters and observing the instructions in the entire operating manual.

2.8 Intended use

Vacuum suction system

The VSS is used in the slaughtering area of high throughput plants for

- Suctioning of spinal cord on cattle, pigs, goats, and sheep,
- Suctioning of brain, lungs, leaf lard and grease residues on cattle and pigs.

The vacuum suction system EDF is intended for hygienic cutting out of the rectum of pigs and sows.

The steam vacuum sanitiser system SVSS is used on pig and cattle slaughter lines of industrial plants for suctioning of contamination and for disinfection of the carcass.

The steam generator may only be used to generate steam.

The vacuum pump is only used to generated the requisite vacuum.
All other forms of use contrary to the intended use are forbidden.

The VSS systems

- may only be operated by one operator at a time.
- may only be operated with the designated safety devices, which must be fully functional.

Any other use is deemed non-intended use and poses risks to the safety of the operating personnel.

Intended use includes:

- compliance with the safety information,
- proper execution of repairs and maintenance tasks,
- regular cleaning.

Exclusion of liability

FREUND Maschinenfabrik shall not accept any liability for damage resulting from non-intended use.

3 Technical description

The VSS systems are used in slaughtering areas of high throughput plants.

VSS
- Suctioning of spinal cord, brain, lungs, leaf lard, and fat residues.
- Hygienic removal of the spinal cord from cattle and pigs

VSS-EDF
- Hygienic cutting out of the rectum of pigs and sows

SVSS
- Suctioning of contamination.
- Disinfection of carcasses

3.1 Components of vacuum suction systems

The VSS systems are made up of the following components:

- a vacuum tank (sizes: VT110; VT220, VT330)
- a vacuum pump with safety circuit
- a separator can
- various hoses

VSS
- Trimmer EL2 35 (pneumatic) & Trimmer EL2/AD35 (electric)
- Handpieces: VH38B, VH38E, VH38G, VH38H; VH38I

VSS-EDF
- Handpieces EDF64; EDF76

VSS-EDF/VSS
- A service unit

SVSS
- Handpiece SVH38A
- Steam generator

Optional accessory:

- Trolley
- Disinfection pool DES-B-01
- Disinfection pool DES-B-EDF
- Balancer
- Bracket: Steam generator

3.2 Configuration of VSS suction systems

In addition to the trolley variant, each VSS system can also be installed on a wall. See chapter Dimensions for wall installation.

The following diagrams show one possible set-up of the various VSS systems along with the relevant components.

Your version may differ from that depicted in the respective diagram.

VSS

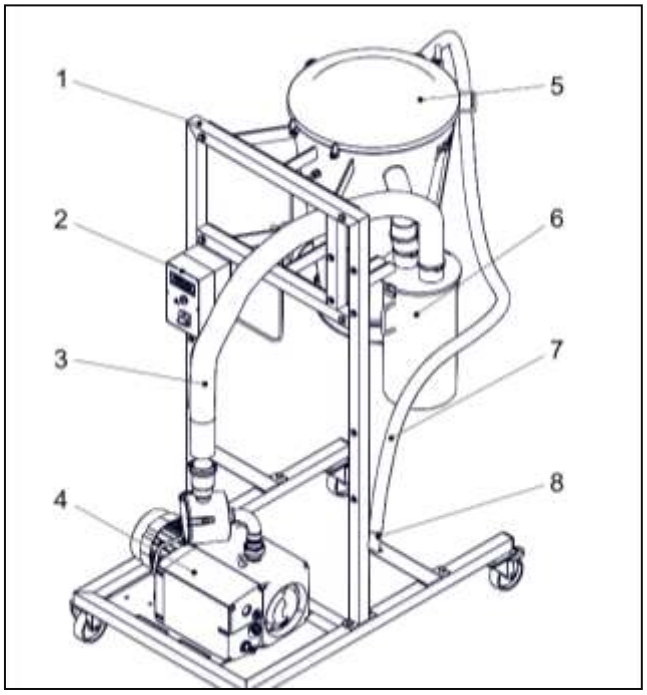


Fig. 3-1 VSS

Position	Designation
1	Trolley
2	Safety circuit
3	Vacuum pump hose
4	Vacuum pump with intake filter
5	Vacuum tank
6	Separator can SC23
7	Handpiece hose VHSL38
8	Handpieces

VSS-EDF

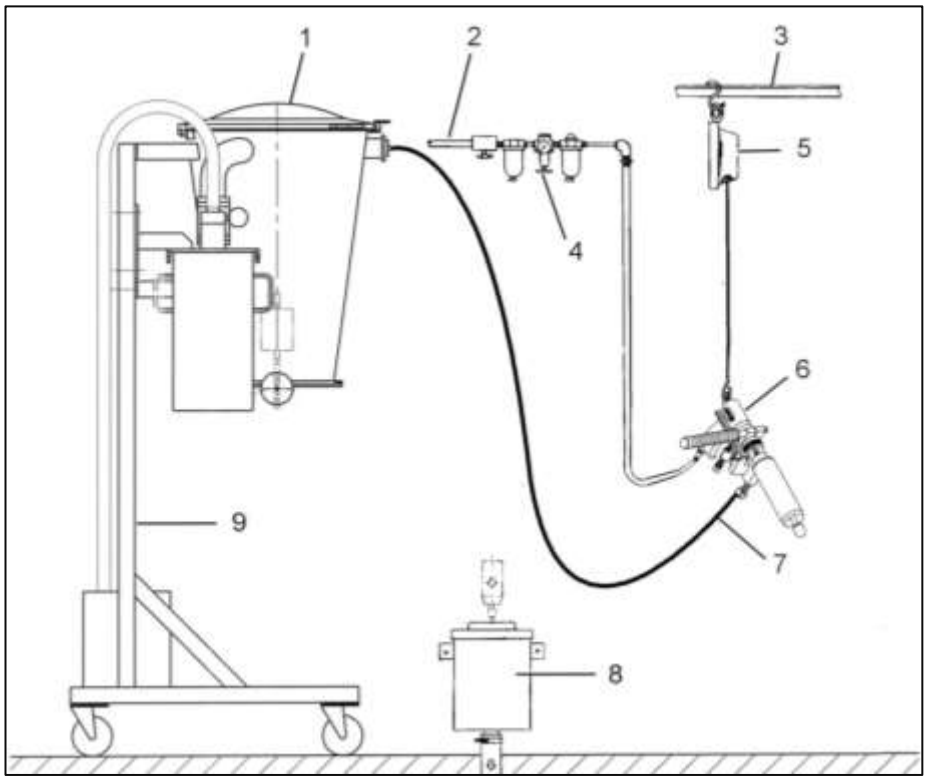


Fig. 3-2 VSS-EDF

Position	Designation
1	Vacuum tank VT110 or VT220
2	Compressed air line
3	Roller conveyor for balancer
4	Service unit
5	Balancer
6	EDF handpiece
7	Vacuum hose
8	Disinfection pool DES-B01
9	Trolley

SVSS

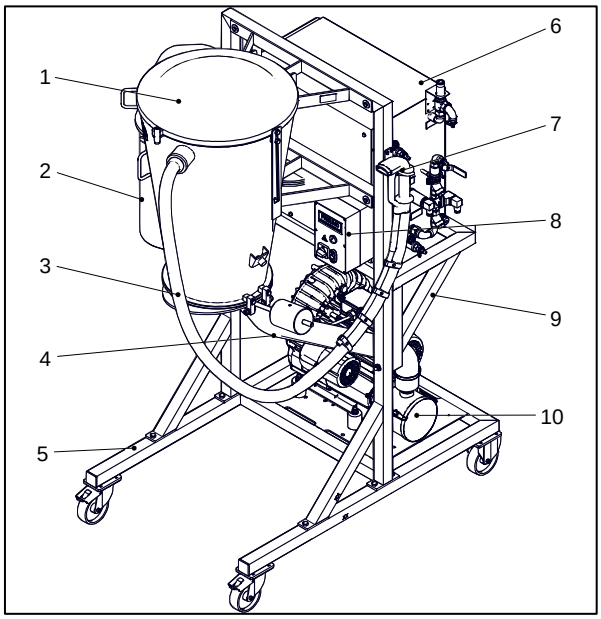


Fig. 3-3 Standard configuration SVSS

Position	Designation
1	Vacuum tank
2	Separator can SC23
3	Handpiece hose VHSL38
4	Vacuum pump hose
5	Trolley
6	Steam generator
7	Handpiece SVH38A
8	Safety circuit SVSS
9	Steam generator bracket
10	Vacuum pump VPSC300-2 with intake filter

3.3 Rating plate

Every component of a VSS system, such as the vacuum tank, trolley etc., has its own rating plate. The rating plates are attached to the relevant component in a clearly visible position. They contain all the important information about the component.

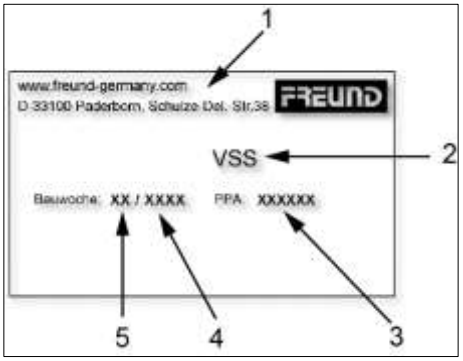


Fig. 3-4 Rating plate

Position	Explanation
1	Company address
2	System type and designation
3	Production order number
4	Week of construction
5	Year of construction

3.4 Vacuum pumps

Becker Pumps

Observe the instructions for installation, commissioning, and maintenance provided in the enclosed operating manual of the pump manufacturer. Further information, operating manuals, and data sheets can be found on the manufacturer's website in the 'Download' area: www.becker-international.com.

SKV-Tec vacuum pumps

Observe the instructions for installation, commissioning, and maintenance provided in the enclosed operating manual of the pump manufacturer. Further information, operating manuals, and data sheets can be found on the manufacturer's website in the 'Download' area: www.skv-tec.de.

3.4.1 Safety information

Warning!

Hot surfaces or media.

Danger of burns and scalding.

- Suitable protective equipment (safety helmet, safety shoes, safety gloves) must be worn when working with the vacuum pump.

Warning!

Danger from rotating cutting tools

Danger to limbs from cutting or severing.

- ➢ The vacuum pump must be fully installed prior to commissioning.
- ➢ Do not reach into the vacuum pump through the open connections.
- ➢ Do not insert any objects in the vacuum pump connections.

Danger!

Live machine parts.

Danger to life.

- ➢ The vacuum pumps may only be connected by qualified electricians.

3.4.2 Personal protective equipment (PPE)

3.4.3 Technical data of Becker vacuum pumps

	VP020	VP100	VP200	VP300	VPSC 300-2
Weight [kg]	20	77	135	180	52
Dimensions (L x W x H) [mm]	340x245 x220	800x380 x300	860x530 x420	990x550 x410	431x348 x375
Motor rating [kW]	0.55	2.4	3.0	7.5 / 9.0	3.0/3.6
Voltage (V)	230/400				
Speed [rpm]	2,800	1,440	1,440	1,720	2,890/ 3,500
Pumping speed [m^3/h]	18	100	160	300 / 360	160/190
Final pressure, absolute [mbar]	<1	3	3	0.1	
Protection class	IP55				

Vacuum connection [mm]	76				
Noise emissions at 1 m distance [dB(A)]	63	68	71	73	65
Oil filling quantity [l]	0.5	2.0	7.0	7.0	No oil
Oil separating element	1x	2x	2x	2x	0

3.4.4 Technical data of SKV-Tec vacuum pumps

The data sheets for the vacuum pumps can be found in the 'Download' area of the manufacturer's website www.skv-tec.de/ under the relevant name, e.g. SKV-ND-150-3-946.
See table below.

FREUND designation	SKV-Tec designation
VPSC150-3	SKV-ND-150-3-946
VPSC320-3	SKV-ND-320-3-836 (IE2)
VPSC520-3	SKV-ND-520-3-836 (IE2)

Model

	VPSC150-3		VPSC320-3 (IE2)		VPSC520-3 (IE2)	
Weight [kg]	27		53		110	
Dimensions (L x W x H) [mm]	315x485x401		410x537x566		490x799x695	
Motor rating [kW] 50 Hz/60Hz	2.2	2.55	4	4.6	11	12.6
Voltage [V] [50Hz/60Hz]	200-240Δ/ 345-415Y	220-275Δ/ 380-480Y	200-260Δ/ 350-450Y	230-290Δ/ 400-500Y	200-260Δ/ 350-450Y	230-290Δ/ 400-500Y
Amperage [A] 50Hz/60Hz	9.7Δ/ 10Y	5.6Δ/ 5.8Y	14.5Δ/ 8.4Y	14.2Δ/ 8.2Y	38.1Δ / 22.0Y	
Pumping speed [mbar] 50Hz/60Hz	-330	-350	-340	-300	-430	-460

Max. air volume [m^3/h] 50Hz/60Hz	150	180	320	384	520	624
Pressurised operation [mbar] 50Hz/60Hz	440	420	320	270	560	470
Noise emissions at 1 m distance [dB(A)]	66	69	73	75	74	78

3.5 Steam generator

Comply with the operating manual

Prior to commissioning a steam generator, the operating manual for the steam generator must be read in its entirety and be understood.
The instructions must be followed.
Always store the operating manual for the steam generator and all other documents at the place of use so that they are accessible at all times.

The steam generator (SVG21 or SVG28) is used to generate steam efficiently.
Thanks to its compact design, the steam generator and bracket can also be installed on the trolley to save space.

To prevent calcification of the steam generator, the manufacturer of the steam generator recommends installing a water softener.

3.5.1 General safety information

WARNING!

Risk of accident caused by insufficiently qualified personnel.

Danger to life and risk of very serious injuries.

- The electrical installation may only be implemented by a qualified electrician in accordance with DIN VDE 1000 or local regulations and in accordance with the technical connection conditions of the network operator or comparable local regulations.
- The machine may only be operated, maintained and repaired by instructed and authorised service personnel.

Caution!

Hot steam. The steam generated is hotter than 100 °C.

Danger of scalding.

Careless handling can cause scalding and burns.

Vapour lines and fittings are hot.

- Do not touch vapour lines and fittings.
- Never put your hand in front of the suction port of the handpiece during the disinfection process.
- Before starting any work and before cleaning, disconnect the system from the power supply and water supply.
- Always wear heat-resistant safety gloves.

Caution!

Danger of accident when draining due to high wastewater temperature and high pressure!

Scalding and skin burns!

- The blowdown and drain line must be designed to withstand sudden pressurisation, high discharge velocity, thermal shock, and vibration associated with blowdown.
- The pipe must be sufficiently braced.
- The drain ball valve must be secured against unauthorised actuation.

Warning!

Use of toxic decalcifier!

Danger of poisoning!

- Do not use any acids or such like to decalcify the steam generator.

3.5.2 Technical data

The steam generator may only be operated with treated water.

Recommended water values

Water guideline values for steam generators up to 5 bar operating pressure	
Appearance	Colourless, clear, without any sediment
pH value	7 – 9
Total alkaline earths (hardness)	< 0.02 mmol/l ≥ 3°dH
Salinity/conductivity	< 10 mg/l ≙ 20 µS/cm

	SVG21	SVG28
Dimensions (W x H x L) [mm]	400 x 750 x 1,200	400 x 750 x 1,200
Weight [kg]	approx. 55	approx. 57
Max. heat output [kW]	15	20
Vapour output [kg/h]	21	28
Water test pressure [bar]	10	10
Discharge pressure of the safety valve [bar]	6.0	6.0
Max. operating pressure [bar]	5.0	5.0
Max. vapour temperature [°C]	160	160
Operating voltage [V]	400	400
Frequency [Hz]	50	50
Rated current [A]	22	22
Protection class	IP 54	IP 54

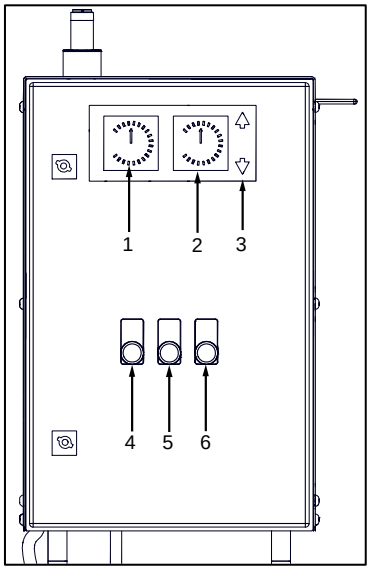


Fig. 3-5 Front

1	Operating pressure indicator
2	Operating temperature limiter (210 °C fixed)
3	Water level indicator Min./Max.
4	Heating step switch
5	Control switch
6	On button

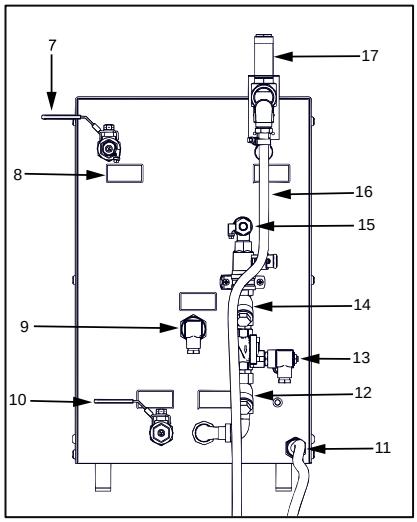


Fig. 3-6 Back

7	Steam outlet ½"
8	Designation field
9	Pressure switch
10	Drain R ½"
11	Connecting line
12	Non-return valve
13	Solenoid valve
14	Non-return valve
15	Water inlet ½"
16	Blow-off line
17	Safety valve R1”

3.5.3 Electrical and mechanical installation

The cable cross section of the supply line and the fuse must be designed according to the rating plate of the steam generator.

Please refer to the operating manual provided by the manufacturer for information about the steam generator’s electrical and mechanical connection.

Caution!

High pressure and a high wastewater temperature of over 100 °C can cause a non-heat-resistant wastewater hose to detach from its screw connection.

The discharging hot liquid can cause scalding.

➢ A suitable pipe must be installed. This pipe must safely discharge the hot liquid in a downward direction.

Installation

- The steam generator may only be installed in enclosed and dry spaces.
- Ensure that there is sufficient space for installation. The steam generator must be accessible from all sides.
- We recommend a bracket for improved operation and servicing. The bracket should be attached at a height of 60 to 80 cm.
- The bracket offered by FREUND (Part No.: 166-109-006E) is suitable for installation on the FREUND trolley (Part No.: 909-900-002) and for installation on a wall.

3.5.4 Commissioning and decommissioning the steam generator

1. Close the drain (10).
2. Open the water inlet (15).
3. Main switch ON.
4. Press control switch (5) ON.
5. Switch on the heat step switch (4) if necessary.
6. Press the On button (6).
7. Open the steam outlet (7) when the operating pressure is reached

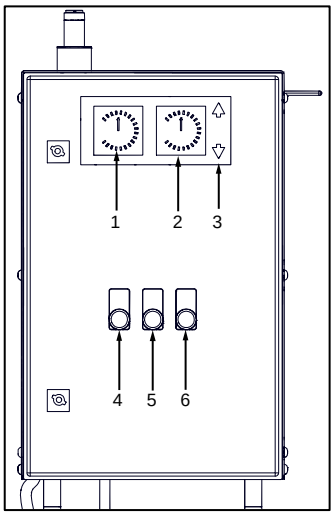


Fig. 3-7 Front

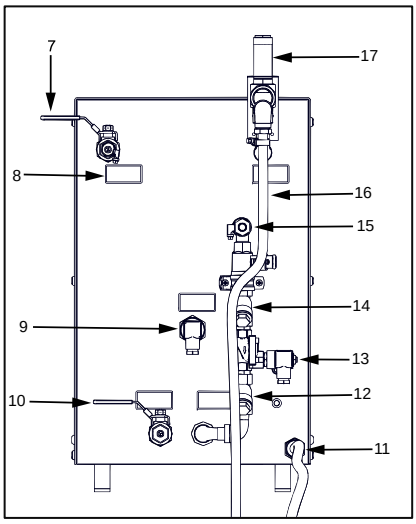


Fig. 3-8 Back

Decommissioning

1. Heating step switch (4) Off.
2. Control switch (5) Off.
3. Main switch Off.
4. Close the water inlet (15).
5. Close the steam outlet (7).
6. Fully open the drain (10), drain it under pressure, and leave it open until next commissioning.

Blowing off the safety valve

Ensure that no danger emanates from blowing off the safety valve.

For example, route the blow-off line to a safe place or prevent access to the danger area.

3.5.5 Recommended measures to ensure safe operation of the steam generator

Procedure	Note	Measure
Transport	Check for transport damage.	Notify the freight forwarder of any transport damage.
	Housing damage, fittings, safety valve broken off	Return the device to the manufacturer.
Installation	Installation site of the device	Dry, inside the building, flat, level floor.
	Extended steam line	Ensure pressure and temperature resistance.
	Protect against excessively high contact temperatures	Use thermal insulation, possibly a protective enclosure too.
	Electrical lines	Observe local regulations.

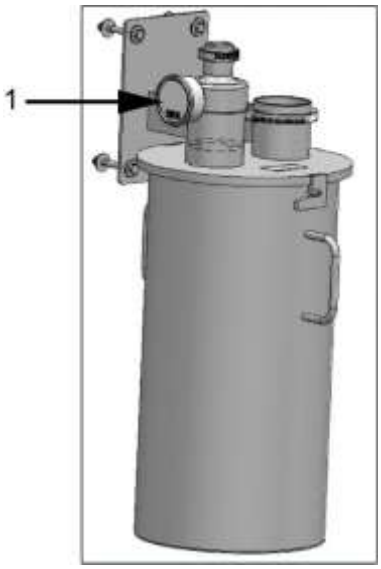
Steam generation	Commissioning	See operating manual provided by the device manufacturer.
	Decommissioning	
Non-intended use	Overpressure	• Do not shut off the safety valve. • Do not block the pressure switch. • Do not block the heating contactor.
	Water level too low/too high	Do not manipulate water level electronics electrically or mechanically.
	Calcification	• Manufacturer's recommendation: Install a water softener. • Do not use any acids or such like for decalcification purposes. Danger of poisoning!

3.6 Separator can SC23

The separator can prevents liquid from the vacuum tank entering the vacuum pump. It catches the material overflowing from the vacuum tank.

Manometer

The vacuum displayed on the manometer (EDF only) must be between -0.6 and -1.0 bar in order to ensure operation of the EDF handpiece.



1 Manometer

Fig. 3-9 Separator can with manometer

Overflow guard

- The floating ball (1) located in the separator can seals the inlet to the vacuum pump if the level is too high. In doing so, it prevent liquid entering the pump and damaging it. Check that the floating ball is moving freely after draining the separator can.
  Readjust the float cage (2) if necessary.

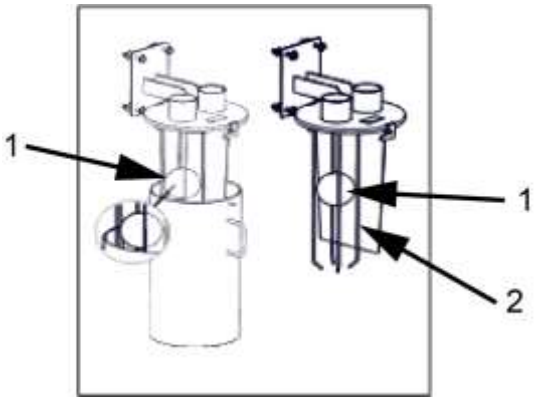


Fig. 3–10 Separator can overflow guard

Technical data

Separator can SC23	
Volume [l]	23
Weight [kg]	16.5
Dimensions (W x D x H) [mm]	300 x 430 x 657
Vacuum connection [mm]	76

3.7 Vacuum tank

The suctioned contamination - such as leaf lard, spinal cord etc. - accumulates in the vacuum tank.

The vacuum tanks are equipped with an overflow guard.

The vacuum tank is available in three different sizes. Please refer to the table below for the technical data of the vacuum tank.
The vacuum tanks VT110/VT220 can be installed both on a trolley and on a wall.
The vacuum tank VT330 may only be mounted on a wall that has been subject to static testing. It must not be mounted on a trolley

Characteristics

- Large opening and drain panels
- High-grade steel INOX / stainless
- Easy drainage and cleaning
- Overflow guard

Vacuum tank

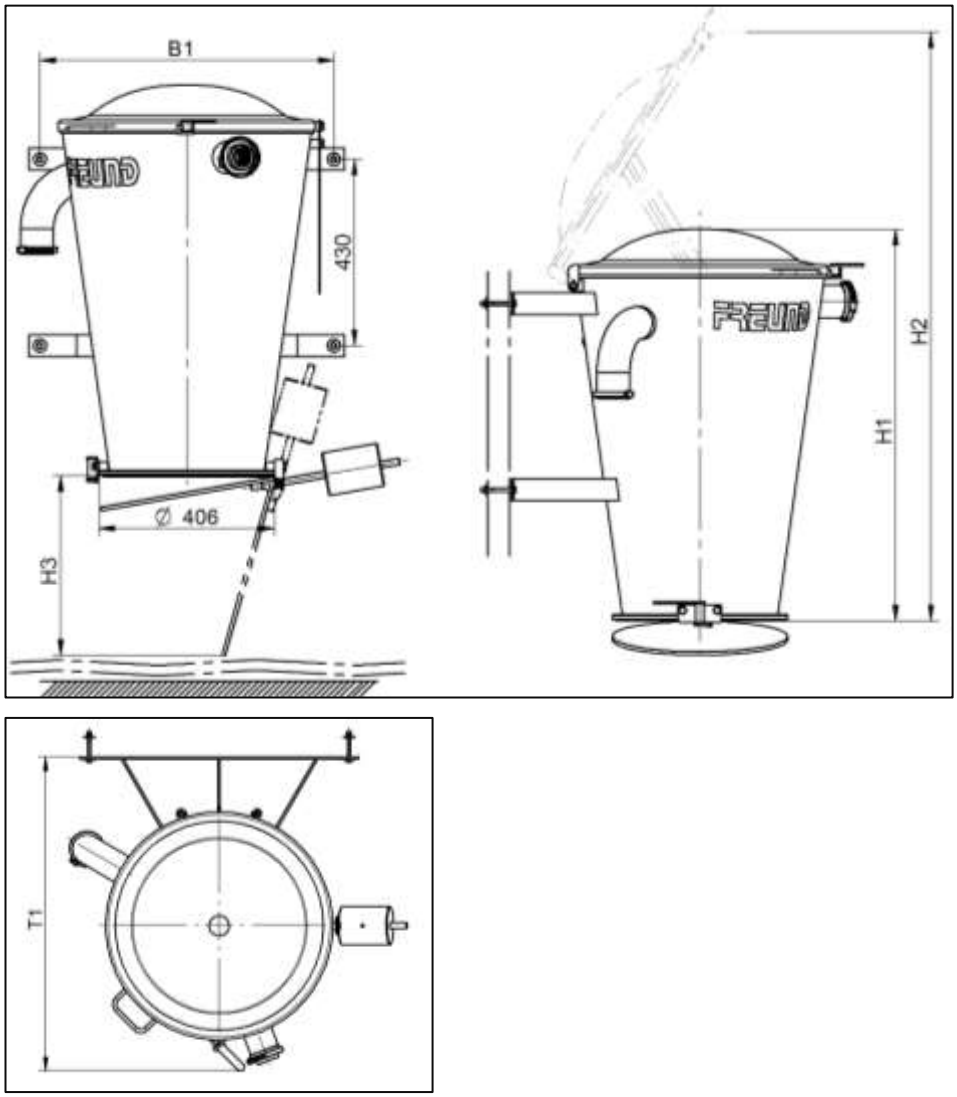


Fig. 3-11 Vacuum tank

Technical data

	VT110	VT220	VT330
Volume [l]	110	220	330
Weight [kg]	approx. 61 (134 lbs)	approx. 72 (159 lbs)	approx. 83 (183 lbs)
Dimensions [mm] H1 H2 (open) H3 B1 T1	 904 1,360 410 680 820	 1,260 1,720 410 680 820	 1,704 2,166 410 680 820
Suction connection [mm]	ID71	ID71	ID71

Overflow guard

- Inside the vacuum tank, a tilt switch checks the level of the vacuum tank.
- If the level in the vacuum tank rises above the tilt switch, the vacuum pump will switch off automatically

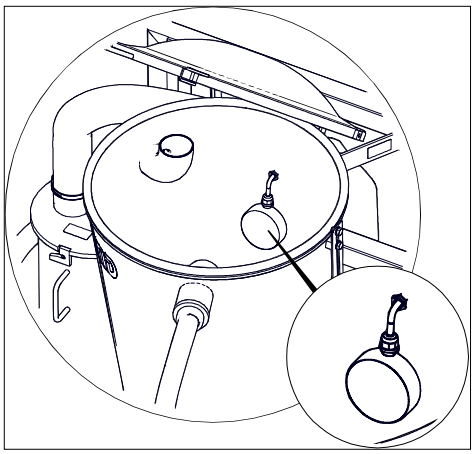


Fig. 3-12 Vacuum tank overflow guard

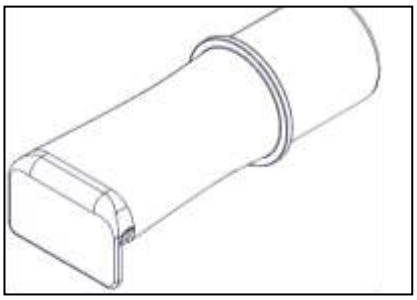
3.8 Handpieces of VSS suction systems

3.8.1 VSS standard

Use of the handpiece requires an ultra-flexible and durable suction hose (Part No.: 100-035-056). It is installed between the handpiece and vacuum tank.
Dimensions:

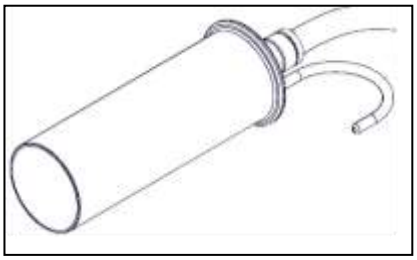
- Length: 5 m / 196.85 inch
- Diameter ø: 38 mm / 1½ inch

VH38B



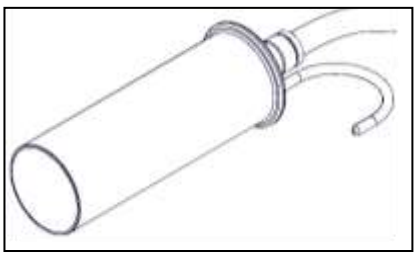
- 
- Suctioning of spinal cord, brain, grease and leaf lard residues

VH38E



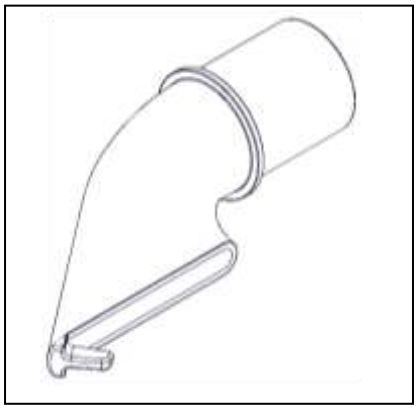
- 
- Suctioning of spinal cord on whole sheep carcasses

VH38G



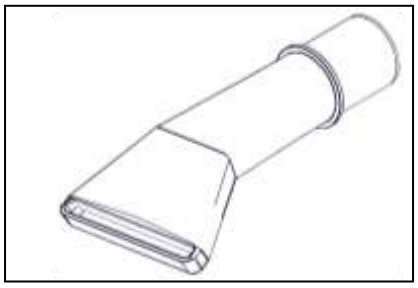
- 
- Suctioning of spinal cord on whole cattle carcasses

VH38H



- 
- Suctioning of spinal cord

VH38I



- 
- Suctioning of soft bone meal, water, blood, grease and spinal cord residues.

3.8.2 EDF handpiece

Warning!

Rotating saw blades and blades.

Risk of being caught and pulled in due to wearing loose clothing, long hair and jewellery.

- ➢ Wear only tight-fitting clothes.
- ➢ Do not wear jewellery while working.
- ➢ Protect long hair with a hair net.

EDF64/EDF76

Fig. 3-13 EDF handpiece

EDF64	EDF76
	

- Hygienic rectum cutout from sows and pigs.
- Clean and even cut of the rear ham.
- Using the optimum blade size enhances the cut quality

Characteristics

- Powerful integrated compressed air motor
- Hardened and polished blade made of stainless steel ** INOX/rust-free
- Reduced contamination due to internal rinsing

EN

Technical data

	EDF64	EDF76
Application		
Blade Ø [mm]	64	76
Weight [kg]	4.7	
Total length [mm]	394	
Motor rating [kW]	750	
Drive	Pneumatic	
Operating pressure [bar]	6.9	
Air consumption [m^3/min]	1.08	
Vibration [$m/s^{2]}$	approx. 2.78	

3.8.3 Handpiece SVSS - SVH38A

The SVH38A is used for extraction and disinfection of the carcass.

Caution!

Discharging hot steam. The steam generated is hotter than 100 °C.

Danger of scalding.

Careless handling can cause scalding and burns.

Vapour lines and fittings are hot.

- Do not touch vapour lines and fittings.
- Never put your hand in front of the suction port of the handpiece during the disinfection process.
- Before starting any work and before cleaning, disconnect the machine from the power supply and water supply.
- Always wear safety gloves.

WARNING!

Hot surfaces!

Danger of burns.

There is a danger of burns or scalds to body parts at the areas on the steam generator marked with safety symbols. Particularly to hands and fingers.

- Wear PPE

SVH38A

Fig. 3-14 Handpiece SVH38A

Disinfect the carcass.

- 
- Vacuum suctioning of contamination such as digestive tract content etc.
- Disinfect the carcass surface using hot steam (>100 °C)

3.9 Service unit

3.9.1 Safety information

Caution!

Danger in the event of incorrect installation and incorrect direction of flow!

An incorrect direction of flow or incorrect installation can cause material damage.

- ➢ Pay attention to the direction of flow.
- ➢ Install the service unit in a vertical position only.

Warning!

The service unit is pressurised during operation!

Opening the system when it is pressurised can damage the service unit and cause serious injuries.

- ➢ Ensure that the service unit is no longer pressurised before you change the filter.

Caution!

Potential impairment of the compressed air system due to condensate!

In the event of prolonged operation, the condensate could rise above the maximum level of the collection container and enter the compressed air system and, in doing so, damage it.

- ➢ Check the level of the collection container on a regular basis.
- ➢ Do not drain the condensate in an uncontrolled manner.

Service unit

The service unit adds atomised oil to the air used to lubricate tools and machines operated by compressed air.

The service unit is ready for connection upon delivery.

The maximum input pressure must not exceed 16 bar.

Fig. 3-15 Service unit

1	Handwheel
2	Manometer
3	Compressed air input
4	Collection container lock
5	Collection container
6	Oil drain plug
7	Oil filling hose connection
8	Oiler
9	Oiler lock
10	Compressed air output
11	Drop quantity setting
12	Oil filling button
13	Lock

Connection set

A FREUND connection set consists of a service unit, the associated connecting kit and oil.

3.9.2 Setting the service unit

Caution!

Overload due to excessive pressure

Premature wear of the pneumatic motor.

- The working pressure and drop quantity of the oiler must be set by the operator on an individual basis.
- Use a padlock to secure the working pressure setting.

The relevant manual can be found in the appendix under the heading **TIN-014526**.

3.9.3 Maintenance and cleaning

Warning!

System is pressurised

There is a risk of serious personal injuries and service unit damage.

➢ Ensure that the system is no longer pressurised before you perform maintenance jobs.

Check the service unit for cracks, fissures, deformation and other damage on a daily basis.

In the event of any damage, do not put the system into operation. Replace the damaged part.

Topping up the oil

The relevant manual can be found in the appendix under the heading **TIN-014526**.

Draining condensate

Check the level in the collection container on a regular basis and drain it.

Caution

Solvents and aggressive detergents

Solvents and aggressive detergents damage the polycarbonate container of the service unit.

➢ Do not use any solvents or aggressive detergents.

Clean polycarbonate components with a damp cloth only. To do so, use only water and a mild detergent without any chemical additives.

3.10 Technical data Total weight of VSS systems

VSS

Technical data

Variants	Total weight*
VT110 + VP300	approx. 310 kg
VT110 + VP200	approx. 267 kg
VT220 + VP300	approx. 325 kg
VT220 + VP200	approx. 278 kg
VT330 + VP300	approx. 335 kg
VT330 + VP200	approx. 287 kg

*Total weight with trolley

VSS-EDF

Technical data

Variants	Total weight*
System with VP020	approx. 155 kg
System with VP100	approx. 210 kg

*Total weight with trolley

SVSS

Technical data

Variants	Total weight*
System with VT110	approx. 202 kg
System with VT220	approx. 217 kg
System with VT330	approx. 265 kg

*Total weight including steam generator

3.11 Dimensions for VSS systems

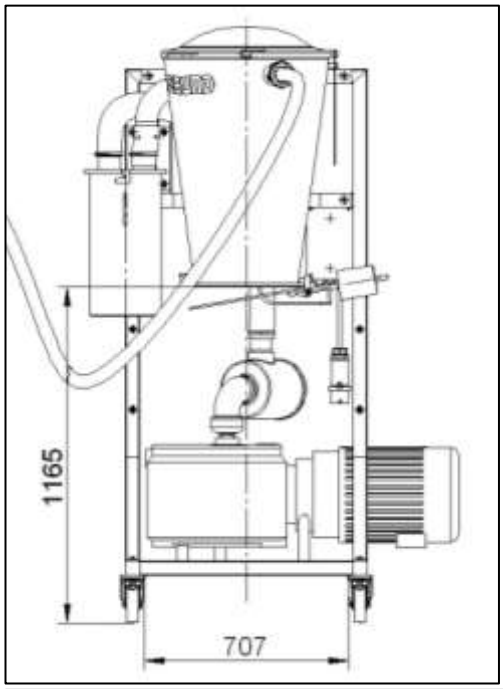
The following diagrams provide an overview of the system dimensions in their respective configuration.

Deviations and technical changes are a possibility.

VSS/VSS-EDF

The dimensions (specifications in mm) also apply to the VSS-EDF system.

The vacuum pump differs depending on the configuration of the system variants.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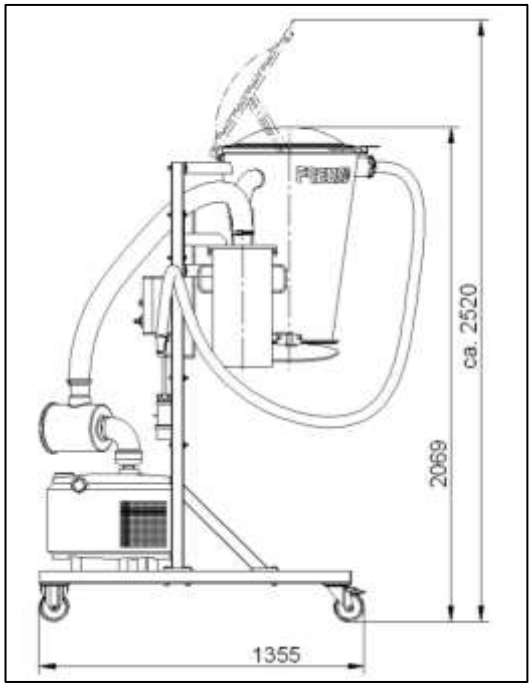
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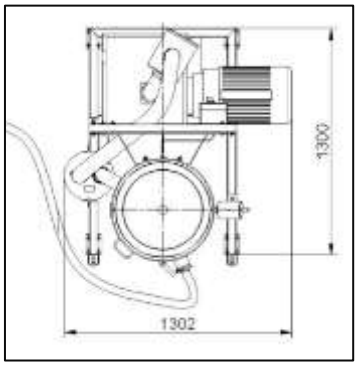

Fig. 3-16 Dimensions VSS Standard/VSS-EDF

SVSS

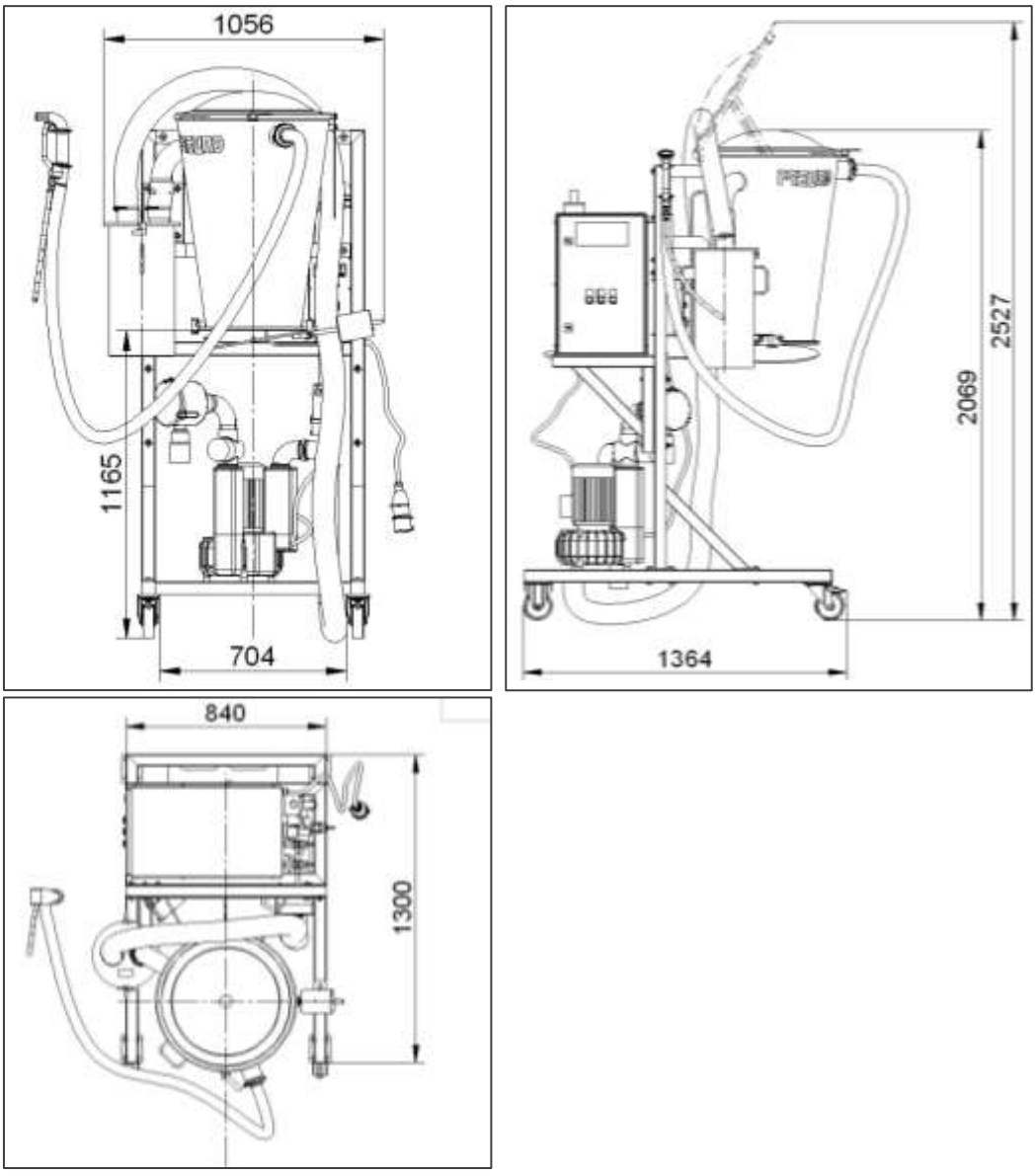

Fig. 3-17 Dimensions SVSS with trolley

3.12 Dimensions for wall installation

All VSS systems can also be mounted on a wall that has been subject to appropriate static testing.

The relevant manuals can be found in the appendix under the following headings:

	Dimensional drawings
TIN-014394	SVSS VT110/VT220
TIN-014504	VSS VT330
TIN-014505	VSS VT110/VT220
TIN-014506	SVSS VT330

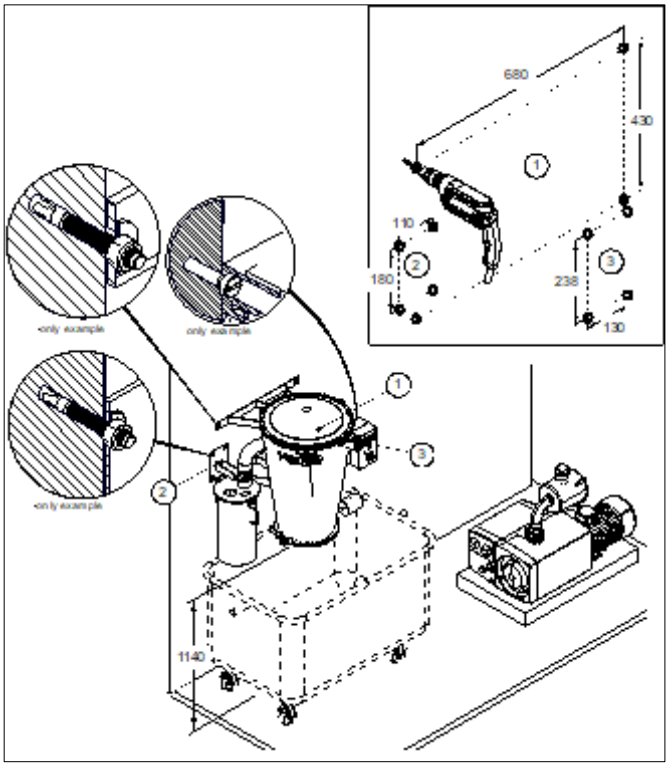

Fig. 3-18 Hole pattern VSS with VT110

3.13 Scope of delivery

Designation	VSS standard	VSS-EDF	SVSS
Trolley (top and bottom part/roller fastening material)	Optional	Optional	Optional
Vacuum pump	●	●	●
Vacuum pump hose VPSL76	●	●	●

Separator can (with manometer)	●	●(●)	●
Vacuum tank (size as desired)	●	●	●
Handpiece	As desired	EDF64	SVH38A
Handpiece hose VHS38 [L=5 m, ø 38 mm]	●	●	●
Steam generator			●
Steam generator bracket			●
Packaging material	●	●	●
Service unit with connecting kit	Only with trimmer EL35	●	

Please refer to the spare parts lists for the part numbers of components. FA will show you which spare parts are available for your product. FREUND Assistance allows you to send an order request directly to our customer service.

3.13.1 Scope of delivery for operating materials

Designation	Article no.:	
1L hydraulic oil for service unit	100-013-072	
Grease gun and grease	028-100-006	
Vacuum pump oil for rotary vane vacuum pumps	1L bottle	171-500-015
	5L canister	171-500-016
	10L canister	171-500-017

3.13.2 Operating materials

The disturbance-free functioning and the efficiency of the machine depend significantly on the quality of the lubricants used.

Information and instructions relating to lubricants can be found in the appendix under the heading **TIN-100-013.**

The H1 designation has been established as an international standard for food grade lubricants.

FREUND Maschinenfabrik uses lubricants that comply with the FDA-H1 standard on all machines where accidental contact between the lubricants and the animal carcass is possible.

Safety data sheet

Please refer to the safety data sheets for further information. You can find the safety data sheets in the FA.

Lubricating grease

The lubricating grease recommended by FREUND is based on highly refined paraffin oil and is tasteless and odourless. It is physiologically safe and is conforming to NSF-H1.

Vacuum pump oil

The vacuum pump oils recommended by FREUND are produced using high quality mineral based oils and a high performance additive system. They have been specially developed for rotary vane vacuum pumps with high compression temperatures up to 220 °C and are extremely resistant to oxidation and sedimentation.

Hydraulic oil

The hydraulic oil recommended by FREUND is a low-viscosity, highly refined medical white mineral oil. It is physiologically harmless and is certified as per FDA H1.

The hydraulic oils used for the system must have a viscosity of between 32 and 46 cSt (HLP46) as per DIN 51524-2 and DIN 15519 and ISO viscosity class VG46 as per DIN 51519.

The machine is operated using clean dry compressed air.

The air quality must meet the requirements of DIN ISO 8573-1, quality class 3 – 4.

Minimum requirements

- Solid contamination up to a particle size of max. 15 µm
- Maximum particle concentration up to 5 mg/m^3
- Water content 9.4 g/m^3 at + 10 °C
  Water content 5.6 g/m^3 at + 2 °C
- Maximum oil concentration up to 1 – 5 mg/m^3

EN

4 Optional accessories

4.1 Trimmer EL2 35

For information about operation of the trimmer EL2 35, please refer to the operating manual included with your purchase of the trimmer.

4.2 Balancer

Machines weighing in excess of 1.5 kg must be equipped with a suspension option so that they can be connected to a balancing system or counterweight system.

FREUND balancers have been specially developed for use in the food industry, for food processing specifically.

Please refer to the operating manual for the balancers for information about the functioning and servicing of balancers.

Failure to observe the safety information and instructions could cause injuries.

Characteristics

- Balancer housing and drum made of corrosion-resistant aluminium pressure casting
- Balancer rope and stainless steel hook
- Sealed bearing
- Polished and unpainted aluminium housing and thus no risk of contamination due to flaking surfaces or paint
- Falling protection/spring fracture safety device for machines from 3 kg
- Lubrication with food grease as per FDA guidance

Technical data

	F1-1.6N (SVSS/VSS Standard)	F 3-1.6N (VSS-EDF)	F 6-2.5SK (VSS-EDF recommendation)
Weight [kg]	0.6	0.7	4.0
Cable extension [m]	1.6	1.6	2.5
Balancing range (min – max) [kg]	0.4 – 1.0	2.0 – 3.0	4.0 – 6.0

4.3 Trolley

The trolley (Part No. 909-900-002) is an option for wall installation. It enables flexible deployment at different locations within a slaughterhouse.

The trolley is only approved for tank variants VT110 and VT220.

Information about the “Trolley” can be found in the appendix under the heading **TIN-014438**

Fig. 4-1 Trolley model

- 2 steering rollers and 2 trestle rollers
- Weight approx. 44 kg
- Dimensions 1,100 x 840 x 1,700 mm

4.4 Disinfection-basin DES-B01

The Disinfection-basin DES-B01 is a compact cleaning and disinfection device, especially for blades and handpieces with a maximal length of 22 cm.

The water heating is caused by an electrical spiral; the temperature regulation is controlled by a thermostat, which is pre-set at 85°C ex delivery.

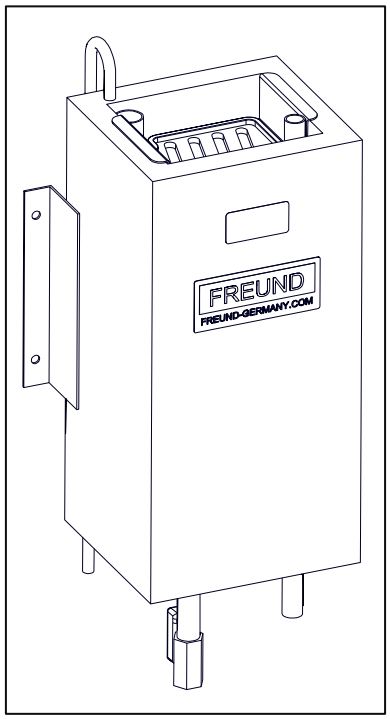

Fig. 4-2 DES-B01

- Stainless steel ** INOX
- Double insulated container
- Easy installation
- Low weight

Weight [kg]	8
Dimensions [mm] (L x W x H)	200x180x410
Operating voltage [V]	230
Heating power [W]	1000
Waste water connection- Ø [mm]	25
Fresh water connection- Ø [mm]	10

4.5 EDF sharpening machine

Please refer to the operating manual for the sharpening machine for information about operation and maintenance of the sharpening machine. The safety and maintenance instructions stated in the manual must be observed.

Fig. 4-3 Sharpening machine

Technical data	
Dimensions (L x W x H) [m]	356 x 254 x 394
Weight [kg]	19
Motor rating [kW]	149
Voltage (V)	220

4.6 Steam generator

Please refer to the operating manual for the steam generator for information about commissioning, operating, and servicing the steam generator.

The stated safety information and operating instructions must be observed.

4.7 Console for steam-generator

With the console you can attach the steam-generator securely screw-type fixation to the trolley or a wall.

- High-grade steel ** INOX / stainless
- Weight ca. 20 kg
- Dimensions 840 x 420 x 420 mm

Fig. 4-4 Console

4.8 Power sockets

FREUND-machines are delivered without sockets. Optionally, you can equip your machine with a power socket.

To prevent incorrect insertion, a nose on the plug fits into a keyway in the socket.

All sockets are with protection class IP 44.

Fig. 4-5 Power socket

Variants

- 400V – 32A (red)
  Part-No. 100-017-065
- 230V – 16A (bue)
  Part-No. 100-017-062
- 110V – 16A (yellow)
  Part-No. 100-017-018

EN

5 Transport and storage

FREUND machines are designed for shipment by truck, rail, air or ship. Secure shipment is carried out in individual packaging or multi-packs.

Test run ex works

The machine was tested prior to shipment. Such testing ensures that the machine corresponds to the specified data and is working properly.

Despite all due care, it is possible that the machine could be damaged during transport. When unpacking the machine, please therefore check it for possible transport damage and document any such damage. Inform the transport company and Freund customer service immediately.

5.1 Safety information

WARNING!

Danger due to falling or toppling load.

Death or very serious injuries are possible.

- ➢ Only use approved lifting gear and accessories appropriate for the total weight of the machine.
- ➢ Never stand under a suspended load.
- ➢ Secure the danger zone against unauthorized access.
- ➢ Wear a hard hat, protective footwear and gloves.

5.2 Personal protective equipment

5.3 Transporting the machine

All FREUND-machines can be transported using a fork-lift truck or lift truck. The length of the fork must at least correspond to the depth of the machine.

- ➢ Only use lifting equipment and gear that has been approved for the weight of the machine. This includes transporting using a crane, fork-lift truck or lift truck. For the weight of the machine refer to → chapter *Technical data*.
- ➢ Secure the machine during transport to prevent it from tilting and slipping.
- ➢ Only use ropes and lifting appliances which ensure sufficient safety and load bearing capacity.

5.4 Unpacking the machine

In exceptional cases, the machine is delivered in parts in a cardboard box. In such cases, the system must be installed prior to commissioning.

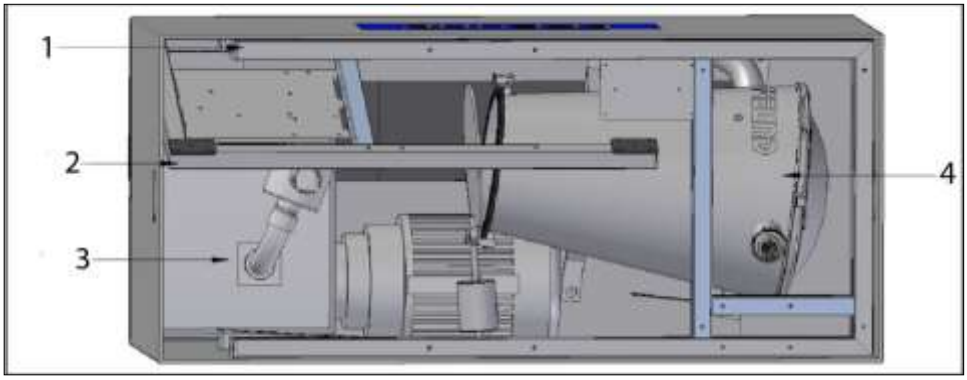

Fig. 5-1 Packaged system

Element	Designation
1	Bottom part of trolley
2	Top part of trolley
3	Vacuum pump
4	Vacuum tank with separator can

Recycling and disposal

The original packaging is made of recyclable materials and can be disposed of according to the recyclables collection scheme in place.

Instructions for recycling and disposing of the packaging can be found in the ‘Disposal and recycling’ chapter.

- Remove all packing materials and dispose of them properly and in an environmentally sound manner.
- Remove any accumulated condensate.
- Check the machine for potential transport damage.
- Document any transport damage and report this to the relevant parties.
- Watch the machine during the first hours of operation to check whether any malfunctions occur.

5.5 Storing the machine

Observe the following instructions to ensure safe storage of the machine:

- Only store the machine in dry and frost-free rooms.
- Only store the machine if it is dry.
- Store the machine in such a way that damage to the machine is ruled out.
- Protect the machine against corrosion.

EN

6 Installation and Commissioning

The installation and connection of the machine is made by the operator.

For damages, which result from this, the manufacturer FREUND Maschinenfabrik, is not liable.

6.1 Safety information

DANGER!

Live machine parts.

Danger to life.

- Before starting any installation, maintenance and repair work, disconnect the machine from the power supply.
- Secure the machine against being inadvertently switched back on.

WARNING!

Risk of accident caused by insufficiently qualified personnel

Danger to Life and most severe injuries are possible.

- The machine may only be commissioned by instructed and authorized personnel.
- All works to live components may only be performed by approved electricians.

WARNING!

Sharp-edged machine parts.

Cutting hazard.

- Never put your hands near moving machine parts.
- Keep your hands away from the cutting tools.
- Always wear protective gloves for your own safety.

Caution!

Uncontrolled machine movement.

Risk of injury by not blocked locking device of the machine.

- Check whether the trestle rollers of the machine are blocked by the locking device.

Caution!

Hot water steam.

Scalding hazard.

- Never touch the exhaust port of the hand piece during the sanitation process.
- Before starting any work or cleaning disconnect the machine from the mains supply and water supply.
- Always wear protective gloves.

6.2 Personal protective equipment

6.3 Installation conditions

- Only install the system in enclosed and frost-free spaces.
- The flooring must be level, firm, and have an adequate load capacity.
- For cleaning purposes, we recommend positioning the machine close to a water connection.

Wall installation

- The system has been designed for installation on a wall with adequate load-bearing capacity.
- For wall installation of the VSS machine, ensure that there is sufficient space between the vacuum pump and vacuum tank in which to place a container for draining the vacuum tank.

Trolley

- The individual components of a VSS system can also be installed on a trolley to enable flexible deployment (Part No. 909-900-002).
- All operating elements and screw connections of the machine must be freely accessible at all times.
- It must be possible to perform maintenance and repair tasks safely and without any obstructions.

Vacuum pump

- Position the vacuum pump in such a way that there is a clearance of at least 10 cm from adjoining walls in an open space.
- There must be no obstruction in the air flow for cooling. The ambient temperature must not exceed 40 °C.
- Install the vacuum pump on a pedestal or on a trolley.

Safety circuit

- Secure the safety circuit for the vacuum pump in such a way that the operator can reach it quickly and without obstruction.

6.4 Vacuum pump installation

The operating manual for the vacuum pumps must be read in its entirety and be understood before beginning any work on the unit. The instructions provided in the operating manual must be followed.

The distance to adjoining walls must be at least 10 cm in an open space, to avoid obstructing the air flow for cooling.

The ambient temperature must not exceed 40 °C.

- Install the vacuum pump horizontally on a level surface (pedestal) or secure it on the trolley.
- Attach the vacuum hose between separator can and vacuum pump in such a way that it is not tensioned.
- Connect the handpiece hose to the handpiece and the specified nozzle on the vacuum tank.
- For installation with a fixed connection, use transparent hoses with a steel core:
  this allows faults, such as blockages, to be detected from the outside.
- Do not extend the hoses for the vacuum connection or the handpiece, as the vacuum can otherwise not be built up optimally.
- Connect the vacuum pump in compliance with the regulations of VDE and the local utility company.

6.4.1 Establishing the vacuum pump's electrical connection

Please refer to the operating manual for the vacuum pump for information about the electrical connection. The instructions provided in the operating manual must be followed.

The vacuum pump must be connected by a qualified electrician in compliance with the regulations of VDE and the local utility company or national regulations.

6.5 Structure of VSS system

6.5.1 Trolley

The installation of the VSS (SVSS and EDF) systems, for both the trolley variant and the wall installation variant, always follows the same procedure.

The relevant manual can be found in the appendix under the heading **TIN-014438**

6.5.2 Wall installation

The structural characteristics of the wall must be inspected prior to wall installation.

The relevant manuals can be found in the appendix under the following headings:

	Dimensional drawings
TIN-014394	SVSS VT110/VT220
TIN-014504	VSS VT330
TIN-014505	VSS VT110/VT220
TIN-014506	SVSS VT330

6.5.3 Establishing the system's electrical connection

DANGER!

Live system parts.

Danger to life.

- ➢ Disconnect the system from the power supply before beginning any installation, maintenance or repair work.
- ➢ Secure the system against being switched on accidentally.
- ➢ Maintenance work on live components may only be performed by qualified electricians.

The safety circuit and vacuum pump must be connected by a qualified electrician in compliance with the VDE regulations and the local utility company's wiring diagram.

Install the safety circuit for the vacuum pump in such a way that the operator can access it quickly and without any impediment.

The relevant wiring diagram can be found on the FA portal under the serial number of your system.

6.6 Structure of SVSS system

6.6.1 Trolley

The installation of the SVSS (VSS and EDF) system, for both the trolley variant and the wall installation variant, always follows the same procedure.

The relevant manual can be found in the appendix under the heading **TIN-014438.**

6.6.2 Connecting the steam generator

Comply with the operating manual!

Prior to using the steam generator, operating and maintenance personnel must read and understand the operating manual for the steam generator.

- The instructions must be followed.
- Always store the operating manual for the steam generator and all other documents at the place of use so that they are accessible at all times.

6.6.3 Commissioning the SVSS

The safety circuit, steam generator, and vacuum pump must be connected by a qualified electrician in compliance with the VDE regulations and the local utility company's wiring diagram.

The relevant wiring diagram for the safety circuit can be found on the FA portal under the serial number of your system.
Please refer to the relevant operating manual for the circuit diagrams for the steam generator and vacuum pump.

Ensure that there are no foreign objects, liquids or dirt present in the suction line of the vacuum pump.

Comply with the operating manual

Observe the information and instructions in the operating manual regarding the commissioning of the vacuum pump and steam generator.

Switching on the machine

1. Turn the main switch on the machine to **"I ON"**.
2. Press button **"I"**. The vacuum pump starts up.

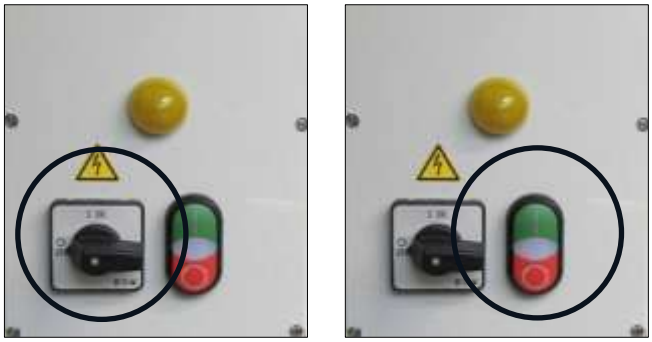

Fig. 6-1 Safety circuit SVSS

6.7 Installation of VSS-EDF

The safety circuit, vacuum pump, and vacuum tank (with overflow guard) must be connected by a qualified electrician in compliance with VDE regulations and the local utility company according to the wiring diagram. The relevant wiring diagram for the safety circuit can be found on the FA portal under the serial number of your system

The relevant information can be found in the appendix under the headings **TIN-014438 (**trolley installation) and **TIN-0143394 (**wall installation)**.**

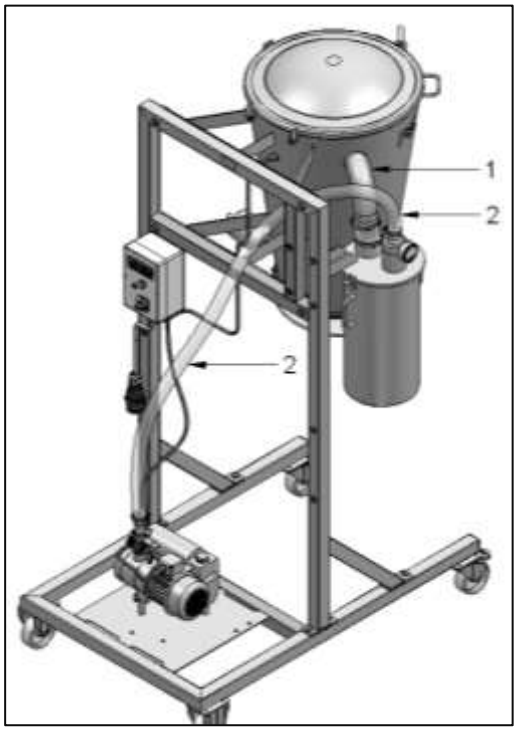

Fig. 6-2 VSS-EDF

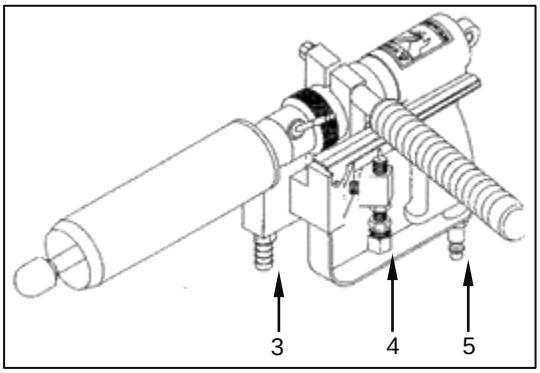

Fig. 6-3 EDF handpiece

Position	Connections	Length
1	Vacuum pump hose VPSL76 (VP100/VP020)	0.2 m
2	Vacuum pump hose VHSL38 (VP020)	2.0 m
	Handpiece connections	
3	Vacuum hose extraction	5.0 m
4	Water hose connection	5.0 m
5	Compressed air connection	5.0 m

VSS-EDF hose connections

1. Connect the separator can and vacuum tank to vacuum pump hose (1) VPSL76.
2. Connect the separator can and vacuum tank to vacuum pump hose (2) VHSL38.
3. The hose connection (2) between the separator can and vacuum tank must not be tensioned.

Connecting the VSS-EDF handpiece

4. Connect the compressed air line (5) of the handpiece to the service unit.
5. Connect the water hose of the handpiece (4) to the water supply.
6. Connect the suction hose (3) of the vacuum extraction to the vacuum tank (6).

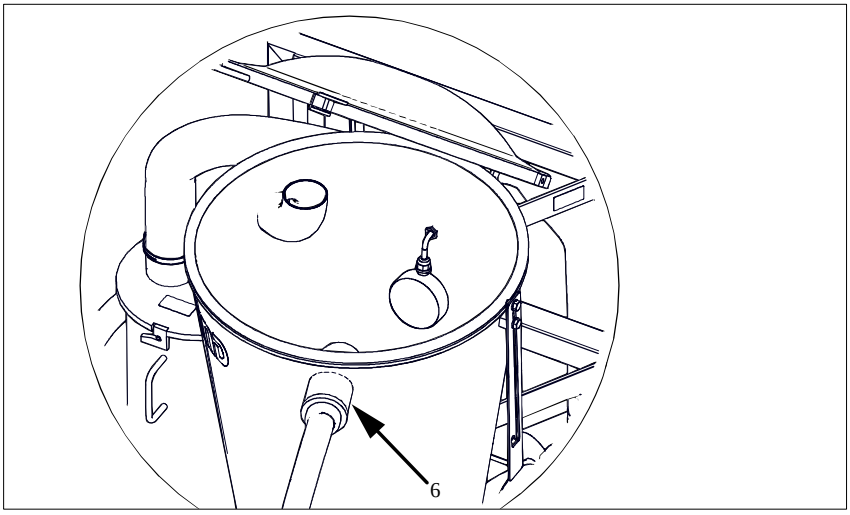

Fig. 6-4 Suction hose connection

7. Use hose clips to secure all hose connections.

6.7.1 Commissioning the system

1. Attach the EDF handpiece to the balancer.
2. Connect the EDF handpiece to the compressed air outlet of the service unit.

- EDF64/76: Required compressed air flow: 1,080 l/ min at 6.9 bar.

3. Connect the EDF handpiece to the water supply.
4. Connect the suction hose of the EDF handpiece to the vacuum tank.

The relevant specifications and manuals can be found in the appendix under the heading **TIN-014526**.

6.7.2 VSS-EDF test run

Check the handpiece and vacuum pump to ensure their operational readiness. The requisite information can be found in the relevant operating manuals.

Separator can

1. Check the vacuum at the separator can.
2. Check the display in the manometer (1).

Fig. 6-5 SC23 with manometer

Noises

Pay attention to noticeable and unusual noises during operation.

To switch on the system:

- Turn main switch to **“I ON”.**

To switch off the system:

- Turn main switch to **“0 OFF”**.

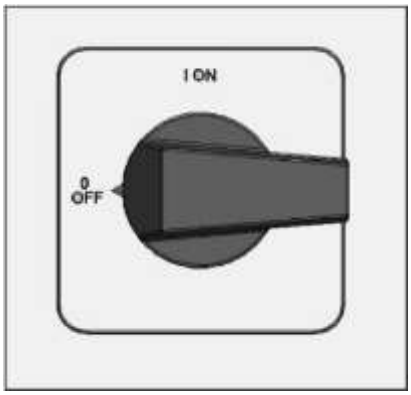

Fig. 6-6 Main switch

EN

7 Operating

7.1 Safety information

WARNING!

Rotating saw blades and blades.

Risk of being caught and drawn in due to wearing loose clothing, long hair and jewellery.

- Wear only close-fitting clothes.
- Do not wear jewellery while working.
- Protect long hair with a hair net.

WARNING!

Sharp-edged machine parts.

Cutting hazard.

- Never put your hands near moving machine parts.
- Keep your hands away from the cutting tools.
- Always wear protective gloves for your own safety.

WARNING!

High intake flow speeds of the vacuum pump.

Risk of injury to skin and body parts.

- Do not point the intake lines at persons or body parts.

Caution!

Hot water steam.

Scalding hazard.

- Never touch the exhaust port of the hand piece during the sanitation process.
- Before starting any work or cleaning disconnect the machine from the mains supply and water supply.
- Always wear protective gloves.

Caution!

Uncontrolled machine movement.

Risk of injury by not blocked locking device of the machine.

- Check whether the trestle rollers of the machine are blocked by the locking device.

7.2 Personal protective equipment

7.3 Daily safety inspection

The VSS systems must be inspected daily before beginning work to ensure they are functioning flawlessly and as intended.
Only use technically sound and functioning machines.

Check:

- the safety devices for correct operation.
- the function of the tilt switch and floating ball.
- the fit of moving parts.
  They must not get jammed or exhibit any signs of damage.
- the balancer and the balancer settings.
- the stability of the system.
- the oil level of the vacuum pump.
- the intake lines for damage and clogged lines.

the vacuum display on the manometer of the separator can.

- the oil level of the service unit.
- the connection between the system and the cold water supply

7.4 Operating the VSS

7.4.1 Suctioning spinal cord/leaf lard residues on pigs and cattle

1. Position your chosen handpiece at the top end of the spinal canal.

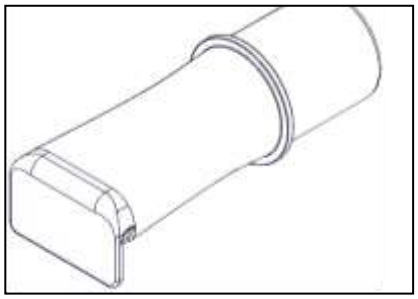

Fig. 7-1 Handpiece VH38B

2. Pull the handpiece downward through the spinal canal in a swift movement.
   If you wish to suction brain matter too, continue this movement into the skull.

3. Scrape off leaf lard and fat residues with short swift movements from top to bottom.
   Ensure that you do not remove pieces that are too big. The opening for suctioning must not be blocked.

7.4.2 Suctioning spinal cord on sheep and goats

1. Cut into the spinal canal in the tail area.
   This creates an air passage for the spinal canal.
2. Insert the handpiece and hose into the spinal canal.
3. To ensure that the spinal cord is fully removed from the spinal canal, guide the handpiece through the spinal canal several times.

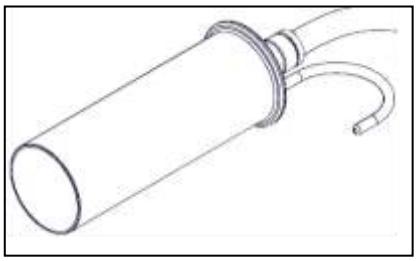

Fig.7-2 Handpiece VH38E

7.5 Operating the VSS-EDF

7.5.1 Working with VSS-EDF

1. Turn main switch of the safety circuit to **“I” ON**.
   The vacuum pump starts up.

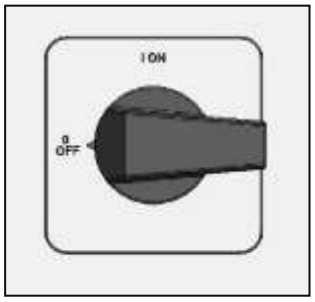

Fig. 7-3 Main switch

2. Connect the compressed air (2).
3. Slowly pull the vacuum trigger (1) in the pistol handle of the EDF handpiece.
   The vacuum is established.

Fig. 7-4 EDF handpiece

4. Pull back the vacuum trigger in the pistol handle as far as it will go.
   The compressed air motor starts up and the blade begins to rotate.

5. Guide the guide pin of the EDF handpiece with rotating blade into the anus of the carcass.
   The contents of the bowels are sucked out.
6. Cut deep enough so that the bowels are released from the ham. In doing so, hold the EDF handpiece securely with both hands.
   The bowels then fall into the carcass.
7. Pull the EDF handpiece out of the carcass.
8. Release the pulled vacuum trigger.
   The blade stops.
9. Clean and disinfect the blade (e.g. in a disinfection pool) of the EDF handpiece after every work process before you insert it into the next carcass.

7.5.2 Disinfecting the handpiece

Comply with the operating manual!
The operating manual of the handpiece must be read and be understood before beginning any work. The instructions provided in the operating manual must be followed.

1. Insert the EDF handpiece into the opening of the disinfection pool.
2. Press and pull the lever for the water rinse (1) and the vacuum trigger at the same time.
   Hold the handpiece with both hands (2 handles).
   The blade rotates and is cleaned with hot water at the same time.

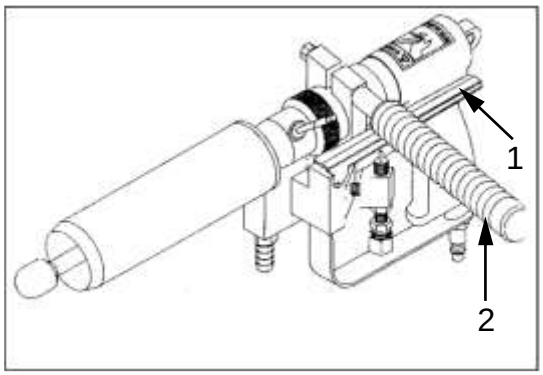

Fig. 7-5 EDF handpiece

3. Perform the cleaning and disinfection procedure for several minutes.
4. Pull the handpiece out of the disinfection pool. Check that the blade is clean.
5. If required, repeat the cleaning procedure.

7.6 Operating the SVSS system

Switching on the SVSS

1. Turn the main switch (1) to “**I**” **ON**.

Switching off the SVSS

2. Turn the main switch (1) to “**0**” **OFF**.

Fig. 7-6 Safety circuit

Steam generator

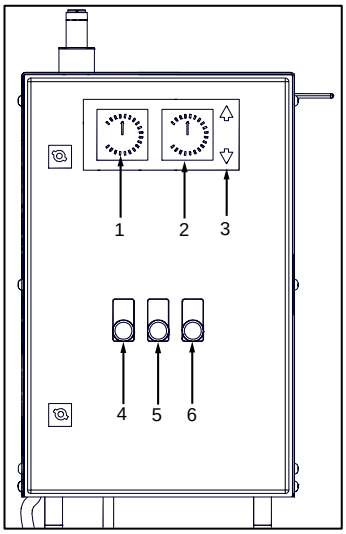

Fig. 7-7 Front operating elements

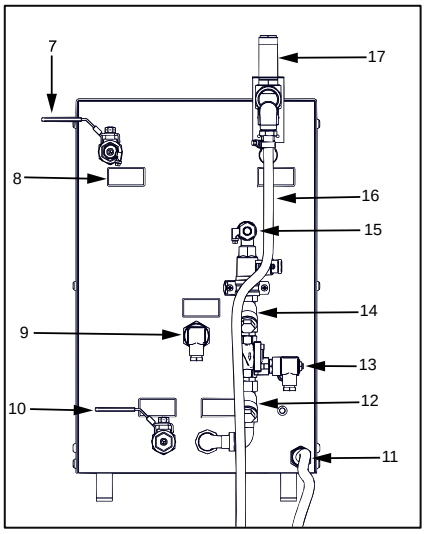

Fig. 7-8 Back operating elements

3. Close the drain (10) on the steam generator.
4. Open the water supply line (15) on the steam generator.
5. Switch on the control switch (5).
6. Switch on the heating levels (4) as required.
7. Press the On button (6).
8. Press the green button on the safety circuit **“I” (B)** (Fig. 7-6)
   The vacuum pump also switches on automatically.
9. Open the steam outlet (7) when the operating pressure is reached.
   The machine is ready for operation as soon as steam discharges from the handpiece.

7.6.1 Working with the handpiece

SVH38H

1. Move the handpiece quickly over the surface of the carcass.
   Contamination - such as dung, hair, and bacteria - is suctioned.
   At the same time, the steam disinfects the carcass.

Fig. 7-9 Handpiece SVH38H

2. Check the level of the vacuum tank and separator can regularly when working with the handpiece.
3. Clean the handpiece regularly during operation.

7.6.2 Switching off the SVSS

1. Press the red button (1) **"O"**.

The pump continues running for approx. 15 minutes after switching off to remove condensate residues from the system.
The pump then switches off automatically.

Fig. 7-10 Safety circuit SVSS

2. Do not turn the main switch (2) to the **"O OFF"** position until now.

7.7 Draining the vacuum tank, separator can, and steam generator

7.7.1 Draining the vacuum tank

There must always be an empty, movable collection container in place underneath the vacuum tank.
The collection container must have sufficient capacity to hold the full volume of the mounted vacuum tank.

Base flap

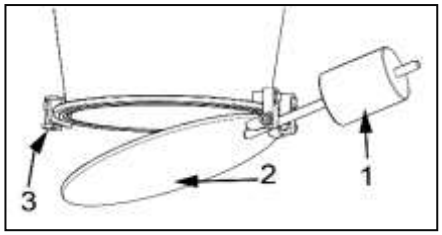

Fig. 7-11 Base flap of the vacuum tank

1	Counterweight
2	Base flap
3	Locking mechanism

The base flap of the vacuum tank must be locked during operation.
The latch on the vacuum tank can be moved in both directions.

1. Move the collection container underneath the vacuum tank.
   Always place the collection container underneath the vacuum tank

SVSS only 2. Close the steam outlet (7) on the steam generator.

3. Unlock the base flap.

4. Switch off the vacuum pump.

After switching off the vacuum pump, the base flap opens automatically due to the counterweight and the weight of the contents.

5. The contents of the vacuum tank will immediately drain into the collection container.
6. Seal the vacuum tank with the base flap once fully drained.
7. Lock the base flap again.
8. Replace the collection container.

SVSS only 9. Open the steam outlet on the steam generator.

10. Switch the vacuum pump back on.

7.7.2 Draining the separator can

It is also necessary to drain the separator can after you have drained the vacuum tank.

The relevant manual can be found in the appendix under the heading **TIN-014372**.

Caution!

Danger of hands being crushed

This can result in crushing and skin abrasion.

- ➢ Wear PPE.
- ➢ Have two people drain the separator can.

Never exceed the maximum level of the separator can. If the separator can is too full, this will damage the vacuum pump.

7.7.3 Flushing the handpiece hose

To prevent clogging, the handpiece hose must be flushed regularly during work.

VSS
VSS-EDF, SVSS 1. Suction warm water in with the handpiece.
The warm water flushes the handpiece and the handpiece hose and guides the water into the vacuum tank.

2. Flush the handpiece and handpiece hose for at least 1 minute.

Flushing interval

Repeat this procedure

- at least every 2 hours, or
- after 500 to 600 pigs processed, or
- after 100 to 200 cattle processed.

Once you have done this, check the level of the vacuum tank and the separator can.

- Drain the vacuum tank and separator can if necessary.

7.8 Draining the steam generator

The operating manual provided by the device manufacturer must be read in its entirety and be understood before all work on the unit. The instructions provided in the manufacturer's operating manual must be followed.

Drain

The blowdown and drain line must be designed
to withstand sudden pressurisation, high discharge velocity, thermal shock, and vibration associated with blowdown.
The pipe must be sufficiently braced.

7.8.1 Safety information

Caution!

Hot steam.

Danger of scalding.

- ➢ Never put your hand in front of the suction port of the handpiece during the disinfection process.
- ➢ Before starting any work and before cleaning, disconnect the machine from the power supply and water supply.
- ➢ Always wear safety gloves.

Caution!

Danger of accident when draining due to high wastewater temperature and high pressure!

Scalding and skin burns!

- ➢ The blowdown and drain line must be designed to withstand sudden
pressurisation, high discharge velocity of the liquid, thermal shock, and vibration associated with blowdown.
- ➢ The pipe must be sufficiently braced.
- ➢ The drain ball valve must be secured against unauthorised actuation.

7.8.2 Personal protective equipment (PPE)

7.8.3 Drainage procedure

The wastewater temperature is above 100 °C when draining the tank.

- Observe the local regulations regarding the maximum permissible wastewater temperature, if you are introducing water into the wastewater network.
- Use a suitable blowdown container.
- Wear your personal protective equipment.

Drainage interval

The steam generator must be drained weekly under working pressure and each time it is switched off. FREUND Maschinenfabrik GmbH recommends draining the steam generator daily.

- Please refer to the maintenance instructions provided by the device manufacturer.

Depending on the installation, place a blowdown container underneath the drain line (10).

1. Remove the lock from the drain ball valve.
2. Open the drain ball valve.
3. The contents of the steam generator empty into the blowdown container.
4. After drainage, close the drain line and secure it with a lock.
5. Replace the blowdown container.

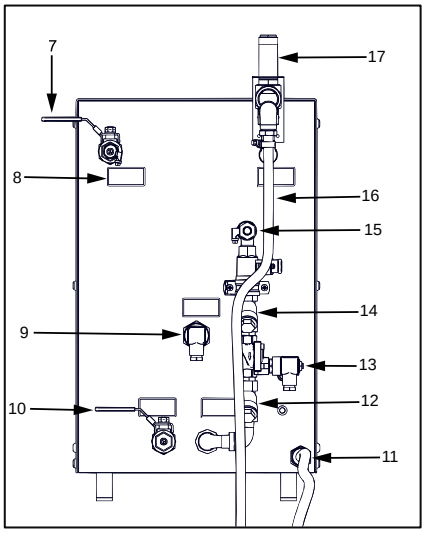

Fig. 7-12 Back of the steam generator

8 Cleaning and Disinfection

Cleaning is carried out in order to remove dirt, meat and fat particles from the machine.

For hygienic reasons, the machine must be thoroughly cleaned at least daily after each shift, and in between in case of heavy soiling. All surfaces must be visually clean after cleaning.

Always take note of the safety instructions in the product data sheets issued for the relevant detergents or disinfectants.

8.1 Safety information

DANGER!

Live machine parts.

Danger to life.

- Before starting any installation, maintenance and repair work, disconnect the machine from the power supply.
- Secure the machine against being inadvertently switched back on.

WARNING!

Compressed air.

Severe injuries.

- Before starting any installation, maintenance and repair work disconnect the machine from the compressed air supply.

WARNING!

Risk of accident caused by insufficiently qualified personnel

Danger to Life and most severe injuries are possible.

- The machine may only be maintained, repaired and cleaned by qualified personnel.
- All works to live components may only be performed by approved electricians.

WARNING!

Highly irritant or corrosive detergents and disinfectants.

Breathing difficulties and other health damage is possible.

- ➢ Always take note of the hazardous substance symbols and the safety data sheets issued for the relevant detergent or disinfectants.
- ➢ Wear the personal protective equipment specified by the manufacturer of the detergents and disinfectants.

8.2 Personal protective equipment

8.3 Carrying out cleaning and disinfection

- ➢ Only use detergents and disinfectants approved for the food industry.
- ➢ Be sure to adhere to the specified, interdependent, parameters for detergents (concentration, dwell time, dwell temperature).
- ➢ Store detergents and disinfectants separately or in a special room.

  Make absolute sure those detergents and disinfectants do not come in contact with food.
- ➢ Only use cloths, brushes or other devices which are only used for cleaning and disinfection.

Notice!

Damage due to high water pressure.

High water pressures will cause damage to seals and machine parts.

- ➢ Do not use high-pressure cleaners.
- ➢ Only work at water pressures of less ≤ 6 bar.

Work steps	Detergents and disinfectants	Auxiliary materials
		
Rough cleaning		
Removing product residue	Drinking water	Plastic scraper, brush
Removing small parts and assembly parts	Drinking water	Plastic scraper, brush; dishwasher if necessary

Work steps	Detergents and disinfectants	Auxiliary materials
Intermediate rinsing		
	Drinking water, max. 60°C depending on fat melting temperature Low-pressure device, spray bottle	
Main cleaning		
Apply foam, allow to act for approx. 15 minutes	2 – 4% Somplex grease solvent 2 – 3% Ecolab P3-topax 19 2 – 3% Ecolab P3-topax 66 Ecolab P3-steril Powerfoam	Spray bottle, brush, tub, clean damp cleaning cloths
Rinse	Drinking water, max. 60°C	Low-pressure device, spray bottle
Check that machine is visibly clean		
Acid cleaning*[1] (instead of main cleaning)		
Apply foam, allow to act for approx. 15 minutes	3 – 6% P3-topax 56 3 P3-riskan, Somplex foam, acidic	Spray bottle, brush for removing limescale deposits
Rinse	Drinking water at 50 – 60°C	Low-pressure device, water hose
Check that machine is visibly clean		
Intermediate rinsing		
	Drinking water, max. 60°C Low-pressure device, spray bottle	
Disinfection*[2]		
Spray, apply foam Allow to act as per product data sheet Solution temperature approx. 15°C	1 – 2% Ecolab P3-topax 99 0.5 – 2% Ecolab P3-topax 91 1% TEGOL 2000 1% TEGOL IMC 1% Somplex	Spray bottle, spray gun, clean damp cloth
Final rinsing		
	Drinking water, max. 60°C depending on fat melting temperature Low-pressure device, spray bottle	
Check		
that machine is visibly clean; repeat cleaning and/or disinfection if necessary		
Drying		
Rub dry or allow to dry in ambient air; allow disassembled parts to dry individually if possible		

Work steps	Detergents and disinfectants	Auxiliary materials
Care		
Apply	Preservative oil, food grade oil	Spray bottle, clean cleaning cloth
Assembly		
Personnel must wash and disinfect hands		

* 1 For materials sensitive to acids such as POM, PMMA (acrylates) and cast materials, we recommend limiting acid cleaning to around 1x every 2 to 6 weeks.

* 2 The surfaces should, after cleaning and disinfection, simply be dried and protected from oxidation by a suitable preservative film.

Preparing

1. Disconnect the machine from the power supply.
2. Remove all parts which prevent thorough cleaning.

Cleaning

3. Remove heavy soiling using a soft brush or plastic scraper and spraying water.
4. Measure the detergent out exactly according to the information from the manufacturer.
   Be sure to adhere to the specified, interdependent, parameters for detergents (concentration, dwell time, dwell temperature).
5. Foam the machine and all removed parts and let the detergent work.
   Observe the dwell times specified by the manufacturers.
6. Rinse the machine and all removed parts with hot drinking water and remove all residues of the detergent.

Disinfection

7. Measure the disinfectant out exactly according to the information from the manufacturer.
   Be sure to adhere to the specified, interdependent, parameters for disinfectants (concentration, dwell time, dwell temperature).
8. Apply the disinfectant to the machine at a higher temperature or using hot water (temperatures to 82 °C).
9. Observe the dwell times specified by the manufacturers.
10. Rinse the machine after the dwell time with hot drinking water or treated water of drinking water quality. Remove all disinfectant residues.
11. Refit the parts that were removed to the machine.
12. Allow the surfaces of the machine to air-dry.

9 Maintenance and Repair Work

To ensure a long service life and low wear, the machine must be regularly checked and maintained.

The work area on the workbench must be clean and free from foreign material for all maintenance or dismantling work.

Repair and maintenance must only be carried out by skilled and authorized qualified personnel.

Warranty

If faults or defects are detected on the machine during the legal warranty period, contact our sales staff. Please refer to the company information at the imprint for address and telephone numbers.

Only use original spare parts or spare parts recommended by FREUND Maschinenfabrik.

9.1 Safety information

DANGER!

Live machine parts.

Danger to life.

- Before starting any installation, maintenance and repair work, disconnect the machine from the power supply.
- Secure the machine against being inadvertently switched back on.

WARNING!

Compressed air.

Severe injuries.

- Before starting any installation, maintenance and repair work disconnect the machine from the compressed air supply.

WARNING!

Risk of accident caused by insufficiently qualified personnel

Danger to Life and most severe injuries are possible.

- The machine may only be maintained, repaired and cleaned by qualified personnel.
- All works to live components may only be performed by approved electricians.

WARNING!

Sharp-edged machine parts.

Cutting hazard.

- Never put your hands near moving machine parts.
- Keep your hands away from the cutting tools.
- Always wear protective gloves for your own safety.

Caution!

Uncontrolled machine movement.

Risk of injury by not blocked locking device of the machine.

- Check whether the trestle rollers of the machine are blocked by the locking device.

9.2 Personal protective equipment

9.3 Periodic inspection of electrical equipment

Periodic inspections of non-stationary electrical machinery and equipment that is used in slaughtering and cutting plants must be carried out at intervals of six months in accordance with EN 60204-1.

The electrical test must be carried out by an electrically skilled person in the sense of the accident prevention regulation “Electrical installations and equipment” or by an electrically instructed person.

Service package SDL-003-004

We at FREUND Maschinenfabrik would like to give you the option to arrange for the next periodic inspection of your machinery or equipment to be carried out at our factory. We offer the service package SDL-003-004 including a complete inspection of the electrical system with inspection report and test sticker.

If you are interested in arranging for a periodic inspection at our factory or by a service technician on-site, please contact our sales departement. Please refer to the company information in the imprint for address and telephone numbers.

9.4 Recommended lubricants

To relubricate the machine, we offer the lubricants recommended by FREUND in the following container sizes:

Retail container	Article number
Grease gun	028-100-006
1 kg can of grease	100-013-007
Oil bottle for service unit (1L)	100-013-072
Oil for vacuum pump:	
1L bottle	171-500-015
5L canister	171-500-016
10L canister	171-500-017

Vacuum pumps

The oils used for the vacuum pumps must have a viscosity of 100 cSt as per DIN 51506 VD-L and DIN 15519.

9.5 Vacuum pump maintenance schedule

Some maintenance tasks must be performed at specific intervals.

The table below gives you an overview of the maintenance tasks to be performed, together with the maintenance intervals.

If necessary, adapt the maintenance intervals to your operating conditions.

Interval	Maintenance	Comment
Daily	Visual inspection before starting work	
	Check the oil level of the vacuum pump	See manufacturer's operating manual.
	Check the safety device, vacuum tank, and separator can for proper function	→ Chapter Vacuum tank and in chapter Separator can SC23.
Monthly	Clean the intake filter (vacuum pump)	See manufacturer's operating manual.
Monthly	Cleaning the surfaces	See manufacturer's operating manual.
Every six months	Electrical recurring inspection in accordance with VDE 0701/0702/EN60204-1	
After 100 operating hours	Perform the first oil change. VP020-VP300 only.	See manufacturer's operating manual.

2x per year or Every 500–2,000 operating hours	Change the oil and oil filter. VP020-VP300 only.	See manufacturer's operating manual.
Check at every oil change or Every 2,000 operating hours	Check and change the air/oil separator elements. VP020-VP300 only.	See manufacturer's operating manual.
Annually	Check the seals of vacuum pump and vacuum tank.	See manufacturer's operating manual.
Every 5,000 operating hours	Clean the coarse separator. VP100 only.	See manufacturer's operating manual.

9.6 General maintenance schedule

Adapt the maintenance intervals to your operating conditions.

Maintenance job	Comment
Visual inspection before starting work	
Check the service unit	→ Chapter *Service unit*.
Check the floating ball and tilt switch for proper function	→ Chapter *Separator can SC23*.
Greasing the EDF handpiece	Only use grease recommended by FREUND to grease the handpiece. See chapter Recommended lubricants.

9.7 Servicing the EDF handpiece

The operating manual of the EDF handpiece must be read in its entirety and be understood before beginning any work on the handpiece. The instructions provided in the operating manual must be followed.

Cut-proof protective gloves must be worn when working on the EDF handpiece and cutting cylinder.

9.7.1 Greasing the EDF handpiece

Only use grease recommended by FREUND to grease the handpiece. See chapter Recommended lubricants.

Grease the handpiece at least four times a day.

1. Press one to two strokes of grease into the grease fitting on the shaft housing (2) and on the adapter (1) with the grease gun.

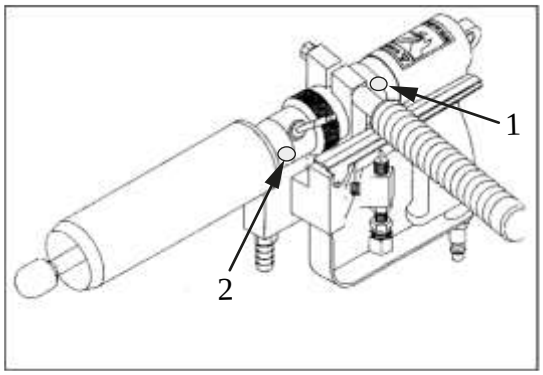

Fig. 9-1 Position of grease fitting on EDF handpiece

9.7.2 Replacing the EDF cutting cylinder

WARNING!

Danger of cuts due to sharp-edged machine parts.

This can result in serious cuts.

- Never reach into the vicinity of moving machine parts.
- Never reach into the cutting tool.
- Wear cut-proof protective gloves for your safety.

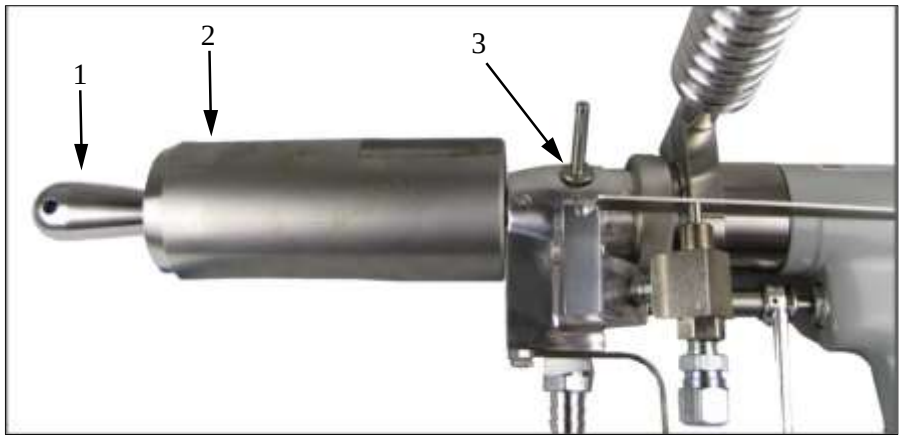

Fig. 9-2 Changing the cutting cylinder on the EDF handpiece

1. Disconnect the handpiece from the compressed air and water supply.
2. Unscrew the shaft locking screw (3) from the shaft housing.
3. Turn the shaft locking screw and insert the end without thread into the housing hole.
4. Turn the cutting cylinder until the pin falls through the hole in the cutting shaft and locks the cutting cylinder.
5. Insert a pin (4.5 mm ø) (3/16 inch ø) into the opening on the tip of the guide pin (1) and turn it anti-clockwise.

When performing this task, make sure you do not make contact with the blade of the cutting cylinder.

6. Unscrew the guide (1) and then remove and replace the cutting cylinder.

The new cutting cylinder is installed in the reverse order.

➢ After installation, reinsert the shaft locking screw and tighten it.

9.7.3 Sharpening the cutting cylinder

The handpiece manufacturer recommends a sharpening machine for sharpening the cutting cylinder.

9.8 Maintenance schedule SVSS

Interval	Maintenance job	Comment
Daily	Visual inspection before starting work	
	Check function of the level switch (vacuum tank)	→ Chapter *Vacuum tank*.
	Drain steam generator	→ Chapter *Draining the steam generator*.
1x per month	Clean intake filter (vacuum pump)	→ Chapter *Cleaning the intake filter VP100 - VPSC300-2*.
	Clean surfaces (vacuum pump)	See operating manual provided by the pump manufacturer.
	Clean water level electrodes (steam-generator)	See operating manual provided by the device manufacturer.
Every 6 months	Electrical recurring inspection in accordance with VDE 0701/0702/EN 60204-1	→ Chapter *Electrical safety in accordance with EN* 60204-1.
Annually	Check the seals of vacuum pump and vacuum tank	See manufacturer's operating manual.
	Full servicing of the steam generator	Send device to the manufacturer for inspection.

9.9 Servicing the vacuum pumps

VP020-VP300

Comply with the operating manual!

The operating manual for the vacuum pump must be read in its entirety and be understood before beginning any work on the unit. The instructions provided in the operating manual must be followed.

Caution!

Damage to the vacuum pump due to mixing different oils.

Material damage

- Do not mix the oils of different manufacturers.
- Never mix different oil types.
- Use only oils and lubricants recommended by Freund Maschinenfabrik.

Safety data sheet

Please refer to the safety data sheet for information about the oil used. FREUND customer service will be happy to answer any questions you may have about vacuum pumps. The address and telephone number can be found in the imprint. See chapter Imprint.

Fig. 9-3 VP020

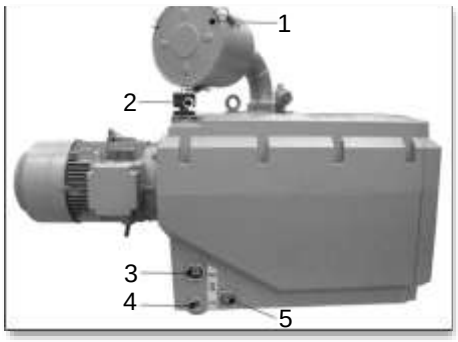

Fig. 9-4 VP100

VP020	VP100
1 Air filter	1 Intake filter
2 Oil fill nozzle /oil separating element service indicator	2 Oil fill nozzle/oil separating element service indicator
3 Sight glass - Oil Max/Min	3 Sight glass - Oil Max
4 Oil drain plug	4 Sight glass - Oil Min
	5 Oil drain plug

9.9.1 Changing the oil separating element

Information about changing the oil separating elements can be found in the operating manual provided by the vacuum pump manufacturer.

Change the oil separating elements every 2,000 operating hours.

9.9.2 Cleaning the intake filter VP100 - VPSC300-2

Clean the filter roughly every 40 to 200 operating hours.

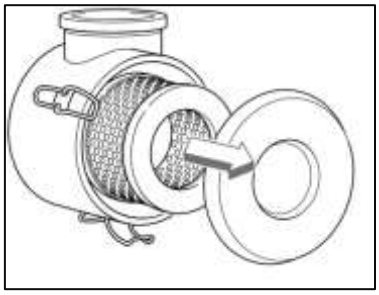

Fig. 9-5 Intake filter

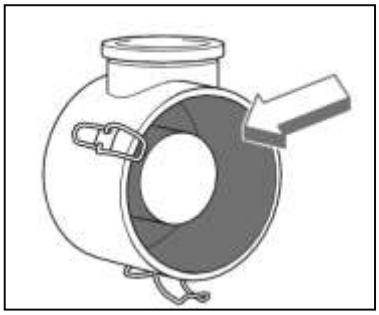

Fig. 9-6 Filter housing

Sequence

1. Open the filter housing.
2. Remove the filter
3. Carefully blow off the filter with compressed air or wipe it out with a damp cloth.
4. Dry the filter housing from the inside.
5. Reinsert the filter in the filter housing.
6. Close the cover of the filter housing.

9.9.3 Cleaning the silencer (VP020)

Clean the silencer of the VP020 regularly.

Fig. 9-7 Silencer VP020

1. Unscrew the silencer (1).
2. Blow out the silencer with compressed air.
3. Reinstall the silencer.

9.9.4 Cleaning the coarse separator (VP100)

Cleaning interval

Clean the coarse separator roughly every 5000 operating hours.

Check the coarse separator regularly for contamination.

- Remove the coarse separator from the filter housing and clean it.
- Do not clean the coarse separator with water in the filter housing.
  Water entering the system may damage the vacuum pump.

9.9.5 Changing the oil

Changing the oil on the rotary vane vacuum pump

Oil change after:

- First oil change after 100 operating hours.
- Every 1,000-2,000 operating hours thereafter.
  At least 2 x yearly however.

The side channel compressor vacuum pumps are operated without oil.

Please refer to the original operating manual for details of the relevant fill volumes.

The vacuum pump must be at operating temperature for changing the oil.

9.9.6 Maintenance intervals of vacuum pumps

Interval	Maintenance job	Comment
Once a week	Clean the air filter	See operating manual provided by the pump manufacturer.
Monthly	Clean the intake filter (VP100)	See operating manual provided by the pump manufacturer.
Monthly	Clean the surfaces	See operating manual provided by the pump manufacturer.
After 100 operating hours	First oil change	
With every oil change or after 2,000 operating hours	Checking and changing the air/oil separating elements	See operating manual provided by the pump manufacturer.
Every 5,000 operating hours.	Clean the coarse separator (only) for VP100	See operating manual provided by the pump manufacturer.
Annually	Check the seals of the vacuum pump	See operating manual provided by the pump manufacturer.

9.9.7 Servicing the SKV-Tec side channel compressor

Designation

FREUND designation	SKV-Tec designation
VPSC150-3	SKV-ND-150-3-946
VPSC320-3	SKV-ND-320-3-836 (IE2)
VPSC520-3	SKV-ND-520-3-836 (IE2)

Please refer to the relevant operating manual for the respective pump type (see above) for information about servicing the SKV-Tec side channel compressor vacuum pumps. The operating manuals can be found in the 'Download' area on the manufacturer's website: www.skv-tec.de.

9.10 Steam generator maintenance schedule

Information about maintenance can be found in the operating manual provided by the pump manufacturer.

Maintenance interval	Maintenance job
Daily maintenance	During operation, the exterior of the steam generator must be checked for damage and leaks once a day.
Weekly draining *(Daily draining is recommended)*	The steam generator must be drained under working pressure once a week – even if operated with softened water.
	Exception: If the steam generator is operated with fully desalinated water.
Monthly maintenance	The level controller needs to be cleaned depending on the water quality.
Yearly maintenance	Manufacturer's recommendation: Send the device to the manufacturer for inspection.

10 Troubleshooting

If malfunction or faults occur during the operation, you can look for possible causes and remedies in this chapter.

If you do not find the malfunction or fault of your machine in the following table, contact our sales staff. Please refer to the company information at the Imprint.

10.1 Safety information

DANGER!

Live machine parts.

Danger to life.

- Before starting any installation, maintenance and repair work, disconnect the machine from the power supply.
- Secure the machine against being inadvertently switched back on.

WARNING!

Compressed air.

Severe injuries.

- Before starting any installation, maintenance and repair work disconnect the machine from the compressed air supply.

WARNING!

Risk of accident caused by insufficiently qualified personnel

Danger to Life and most severe injuries are possible.

- The machine may only be maintained, repaired and cleaned by qualified personnel.
- All works to live components may only be performed by approved electricians.

WARNING!

Sharp-edged machine parts.

Cutting hazard.

- Never put your hands near moving machine parts.
- Keep your hands away from the cutting tools.
- Always wear protective gloves for your own safety.

EN

Caution!

Uncontrolled machine movement.

Risk of injury by not blocked locking device of the machine.

- ➢ Check whether the trestle rollers of the machine are blocked by the locking device.

10.2 Personal protective equipment

10.3 System faults

Fault	Possible cause	Remedy
System does not run.	Fuse has switched off.	Have the fuse and the motor connection checked by a qualified electrician.
	No power.	Have the power supply checked by a qualified electrician.
		Have the connection cables checked by a qualified electrician.

10.3.1 Vacuum pump

Fault	Possible cause	Remedy
Vacuum pump is not starting. No vacuum is established.	Fuse has switched off.	Have the fuse and the motor connection checked by a qualified electrician.
	No power.	Have the connection cables checked by a qualified electrician.
	Motor circuit breaker has tripped.	Notify your qualified electrician.
		Allow the motor to cool down.
	Incorrect rotation direction of the motor.	Notify your qualified electrician.
	Intake lines are defective or clogged.	Check the intake lines.
	Incorrect seals or incorrectly inserted seals	Check the seals.
	Seals are not leaktight.	Check the seals.
		Change the seals on the tank cover and the base flap of the vacuum tank.
Loud and unusual noises.	Insufficient oil in the vacuum pump.	Check the container and rectify the cause.
		Top up the oil.
	Incorrect rotation direction of the motor.	Notify your qualified electrician.
	Intake filter is soiled.	Clean or replace the intake filter.
	Vacuum pump is defective.	Replace the vacuum pump.
	Motor only operating on two phases.	Notify your qualified electrician
	Oil used has the wrong viscosity.	Only use oils with a viscosity of 100 cSt.

Vacuum pump is running hot.	Ambient temperature is too high.	Ensure lower room temperatures.
	Fan cannot draw in air freely.	Ensure free air intake at the fan.
Vacuum pump shuts off.	Separator can fill level too high.	Empty the separator can.
	Level switch in the vacuum tank is faulty.	Notify your qualified electrician.
	Vacuum tank level too high.	Empty the vacuum tank.

10.3.2 Steam generator

Fault	Possible cause	Remedy
Overpressure.	Improper use.	Do not shut off the safety valve.
		Do not block the heating contactor.
		Do not block the pressure switch.
Temperature too high.	Improper use.	Do not short circuit the operating temperature limiter.
Steam-generator does not run correctly.	Pressure is too high.	See operating instructions of manufacturer
	Temperature is too high.	Check the settings of the operating temperature limiter.
	Water level is too low or too high.	Do not manipulate water level electronics electrically or mechanically.
	Steam-generator is covered in scale.	Use water with a different water hardness. See operating manual provided by the device manufacturer.
		Descale the machine.

10.3.3 EDF handpiece

Fault	Possible cause	Remedy
The rectum separator will not start or it runs too slowly.	The air supply rate of 0.96 m^3/min at 6.9 bar is not reached.	Disassemble the compressed air motor and inspect.
	The silencer is clogged.	Clean the silencer.

Insufficient vacuum in the vacuum tank.	O-ring in the shaft housing is worn.	Change the O-ring.
	Vacuum pump is soiled.	Clean the vacuum pump.
Vacuum tank fills up too fast.	Water is being sucked in.	Do not press the vacuum trigger in the pistol handle during cleaning.
Low cutting performance.	Cutting cylinder is blunt.	Sharpen or replace the cutting cylinder.

EN

11 Disposal and Recycling

The machine must be disposed of in accordance with the pertinent national regulations.

More Information

For more information about our materials and their disposal please contact our sales staff.

Please refer to the company information in the imprint for the address and telephone numbers.

11.1 Disassembling and disposing of the machine

Old machines contain recoverable materials which you can return for recycling.

When disposing of the machine, make sure to observe local environmental regulations.

1. Disconnect all connections and supply lines from the machine.
2. Completely disassemble the machine.
3. Segregate all materials.
4. Dispose of waste oil and components and materials soiled with oil in accordance with the applicable environmental regulations.
5. Send the individual materials to the appropriate recycling or disposal facilities.
6. Send hazardous waste to a local hazardous waste site.

11.2 Disposing of packaging material

All packaging materials used by FREUND Maschinenfabrik are environmentally friendly and can be recycled.

You can safely dispose of the packaging materials through your local waste collection system or return them for recycling.

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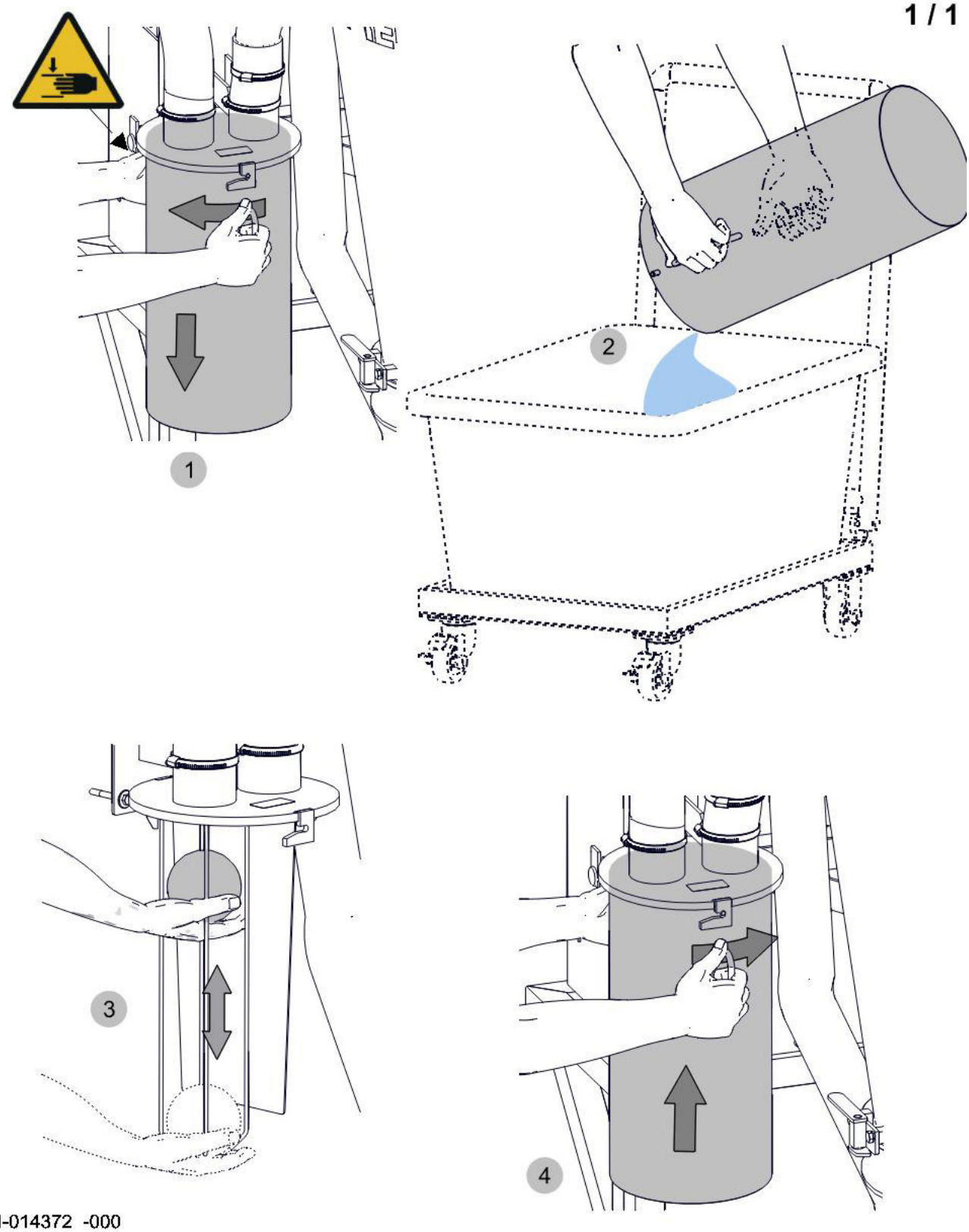

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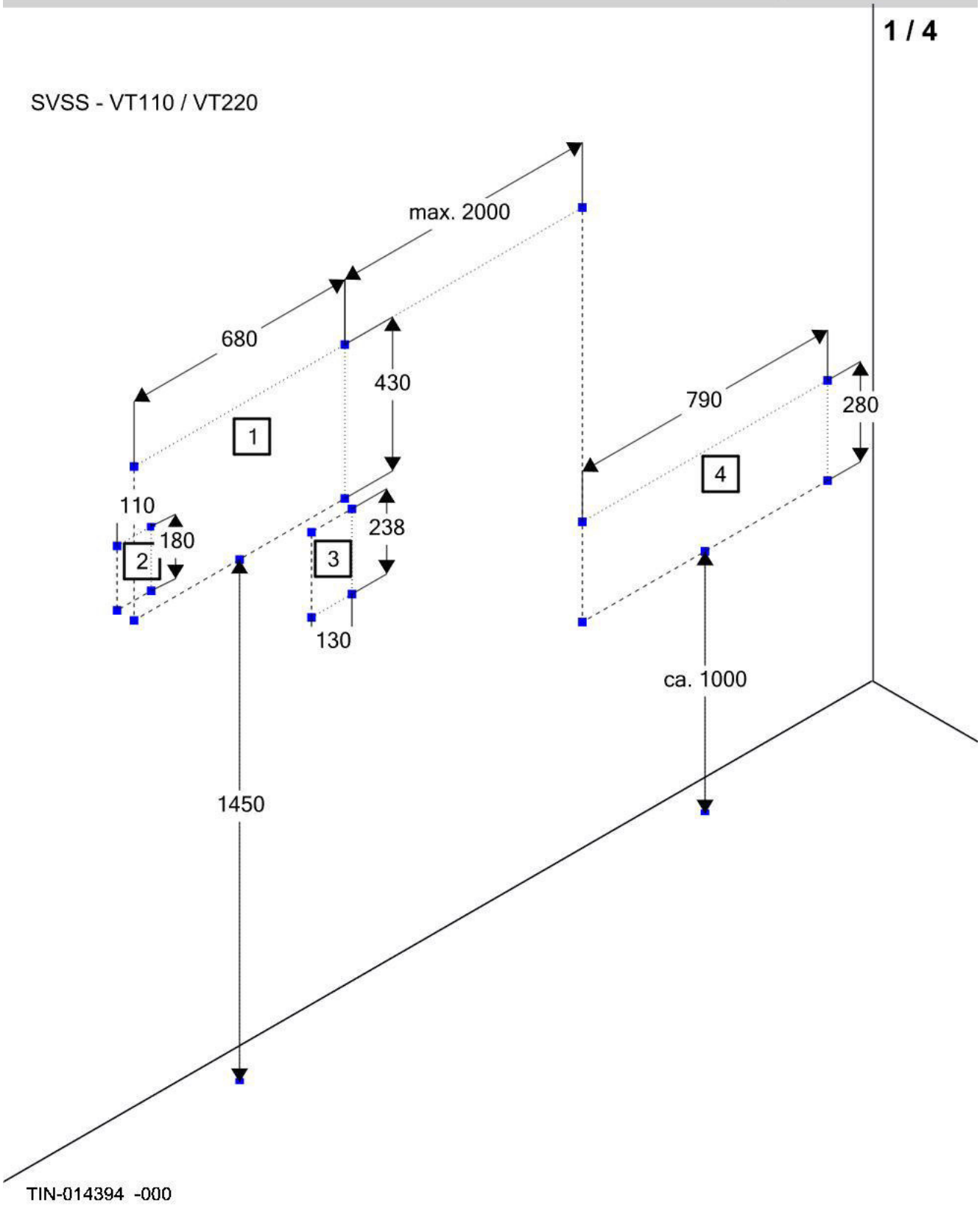
SVSS - VT110 / VT220



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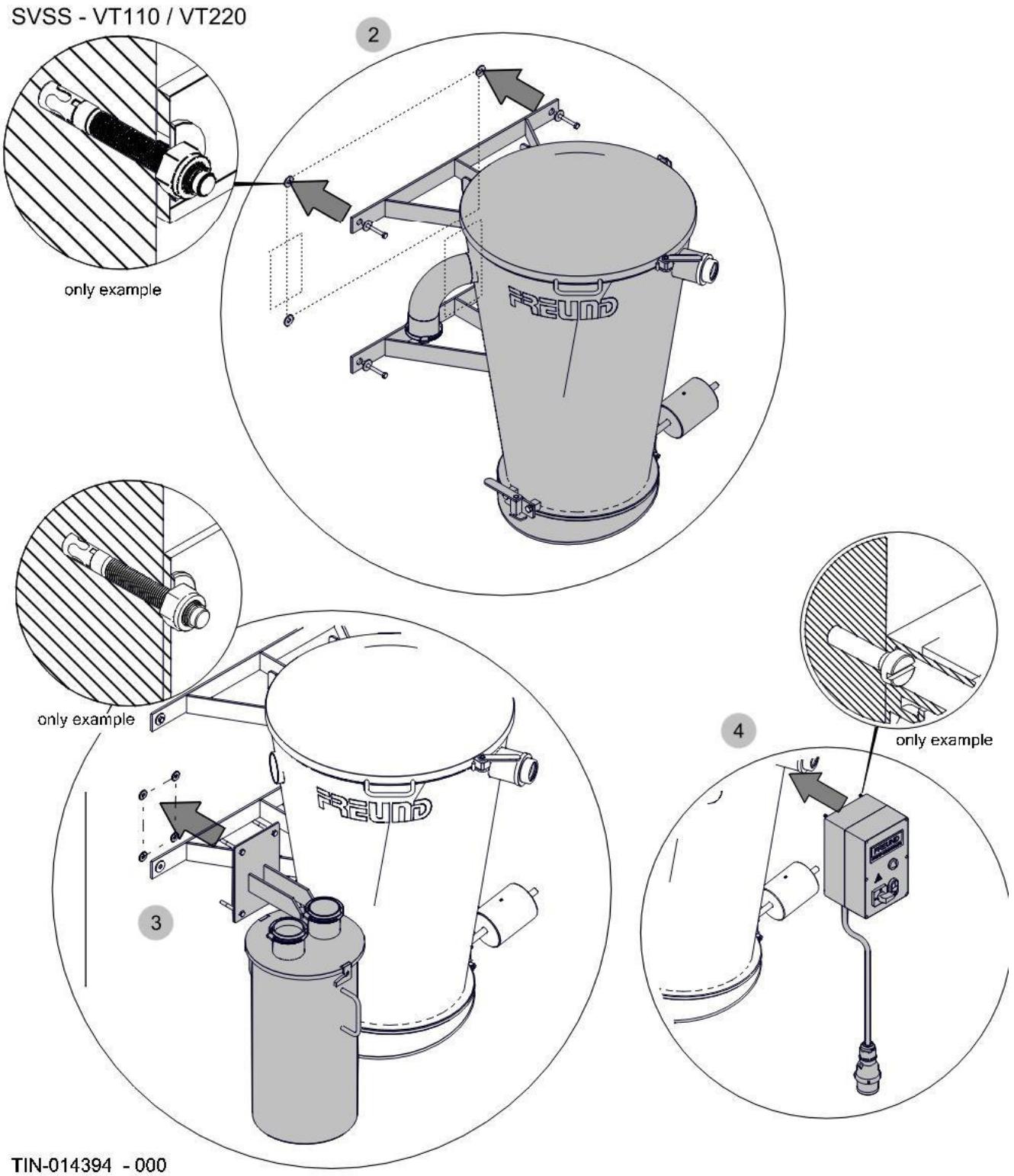

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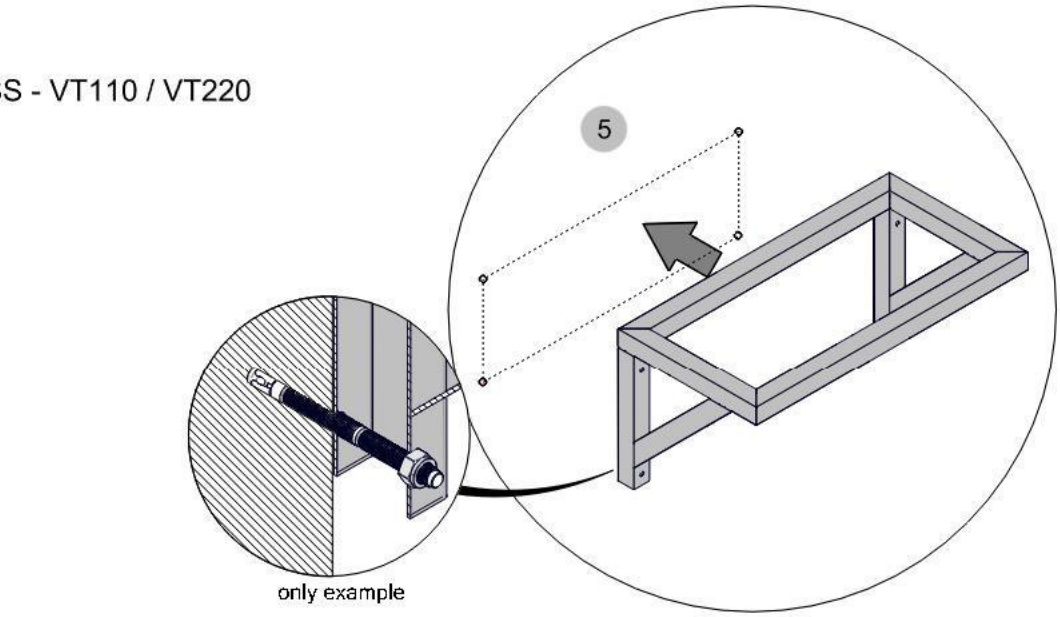
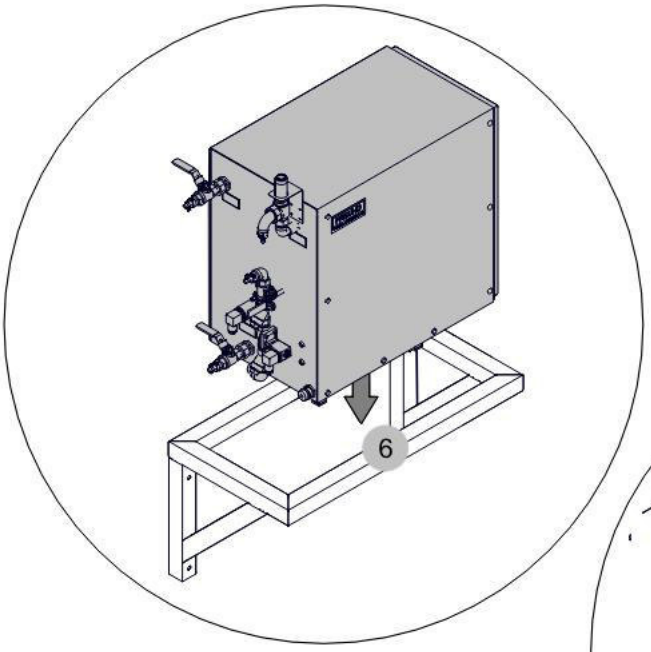
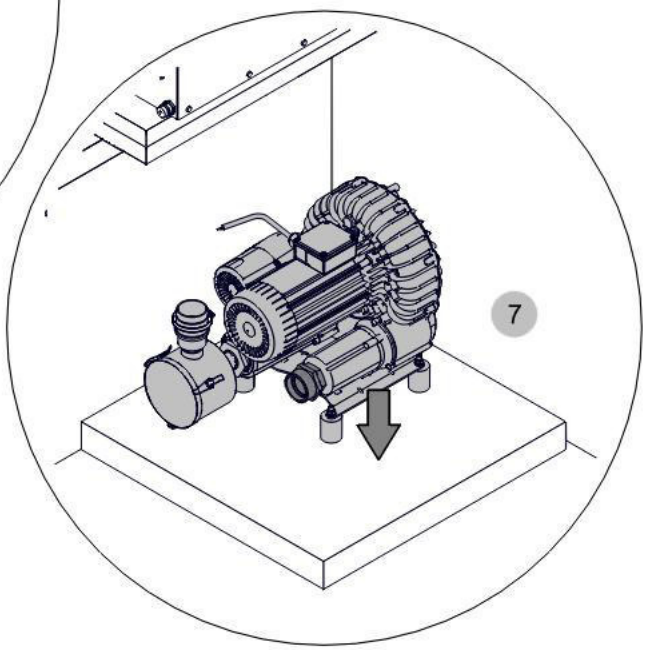
TIN-014394

SVSS - VT110 / VT220







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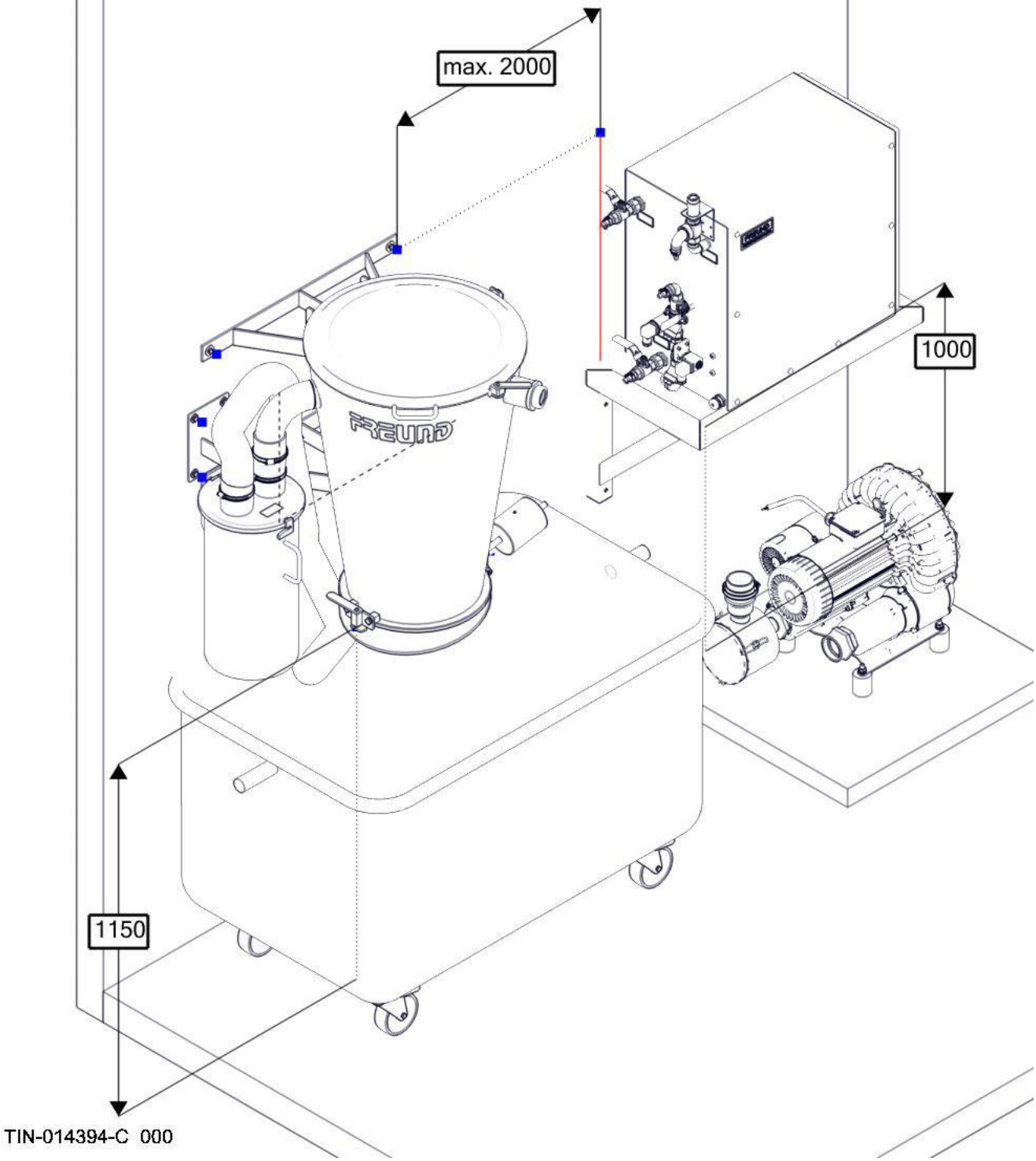

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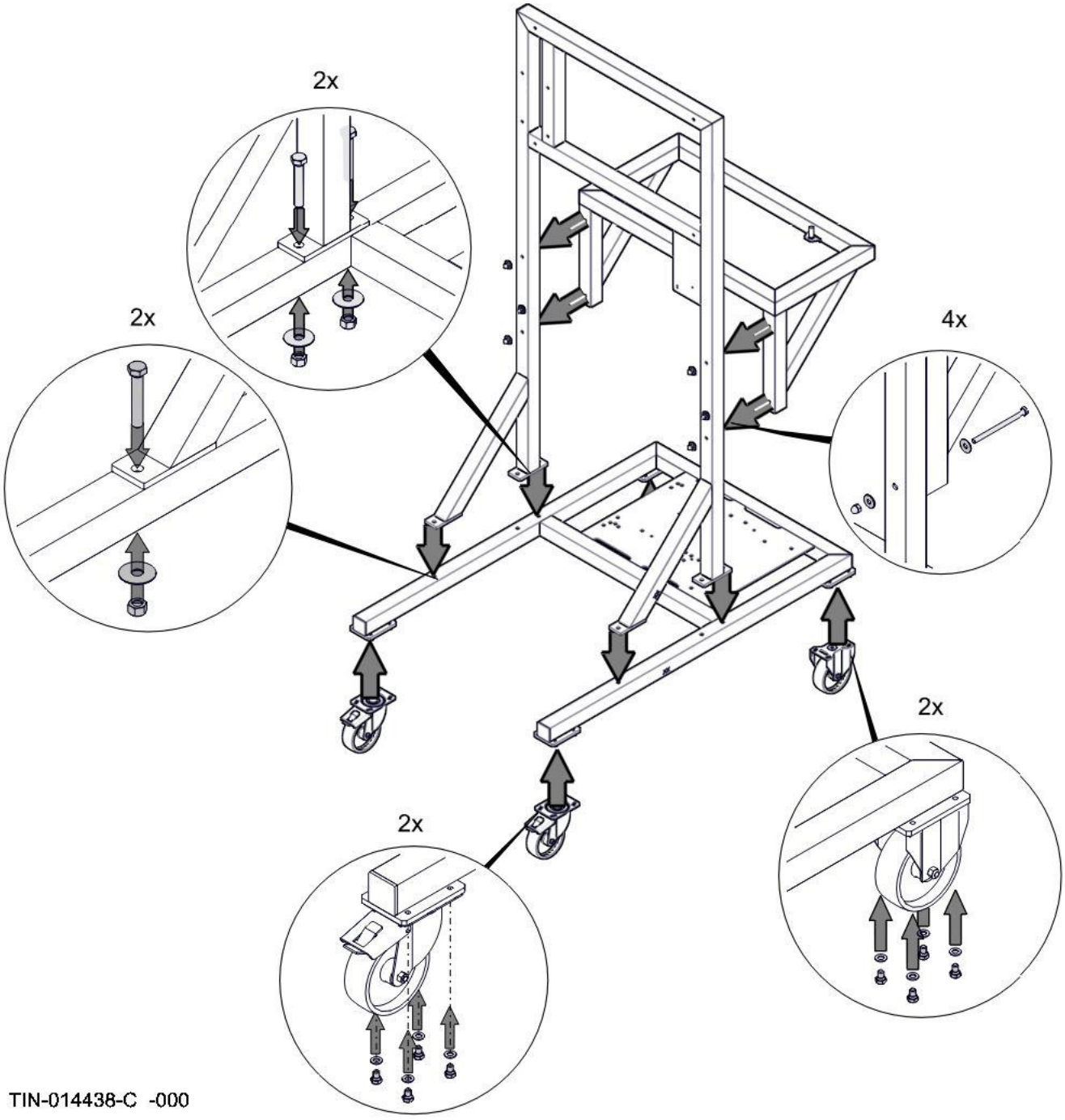
TIN-014438

909-900-002

SW18

SW13



TIN-014438-C -000

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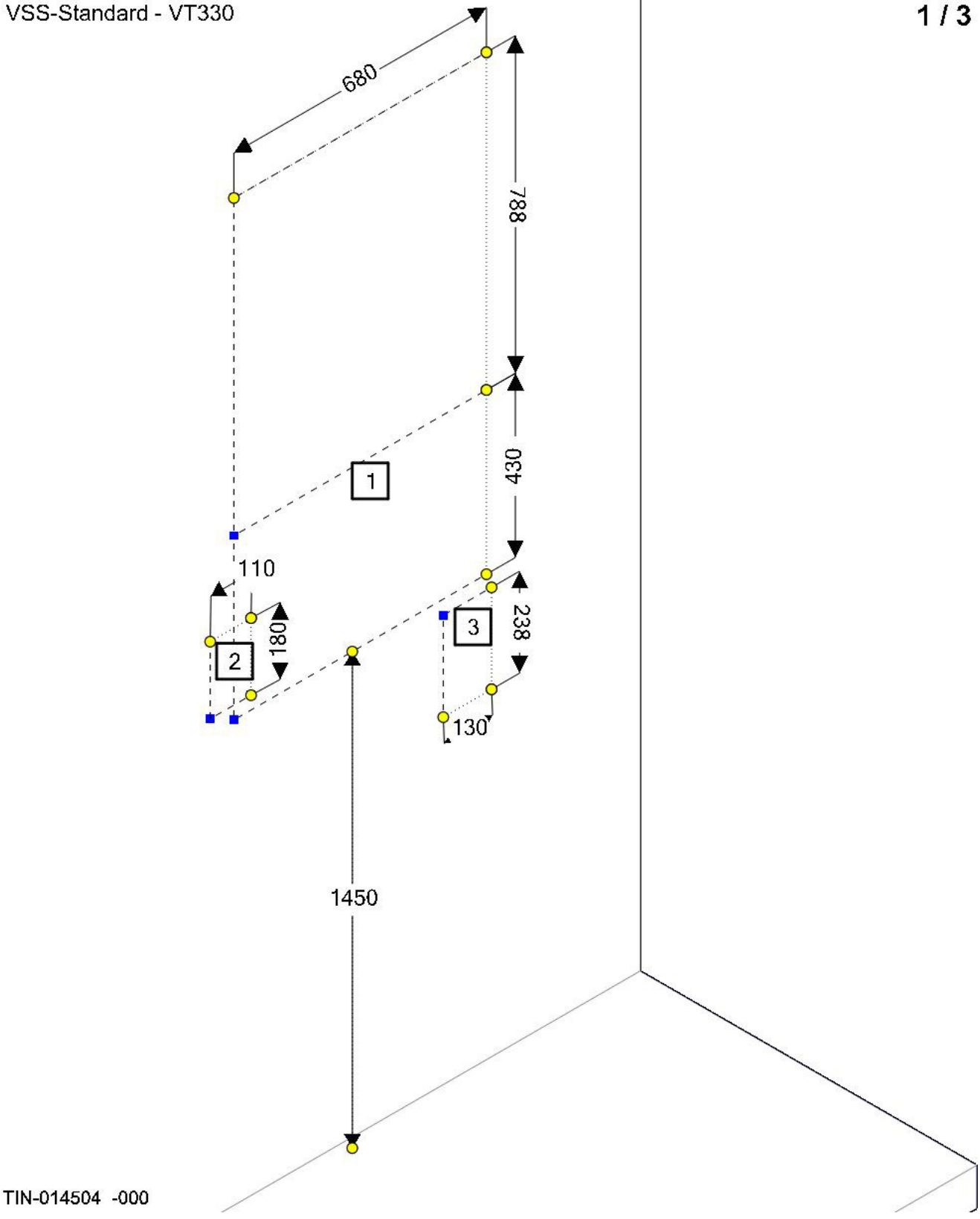
TIN-014504

VSS-Standard - VT330



TIN-014504 -000

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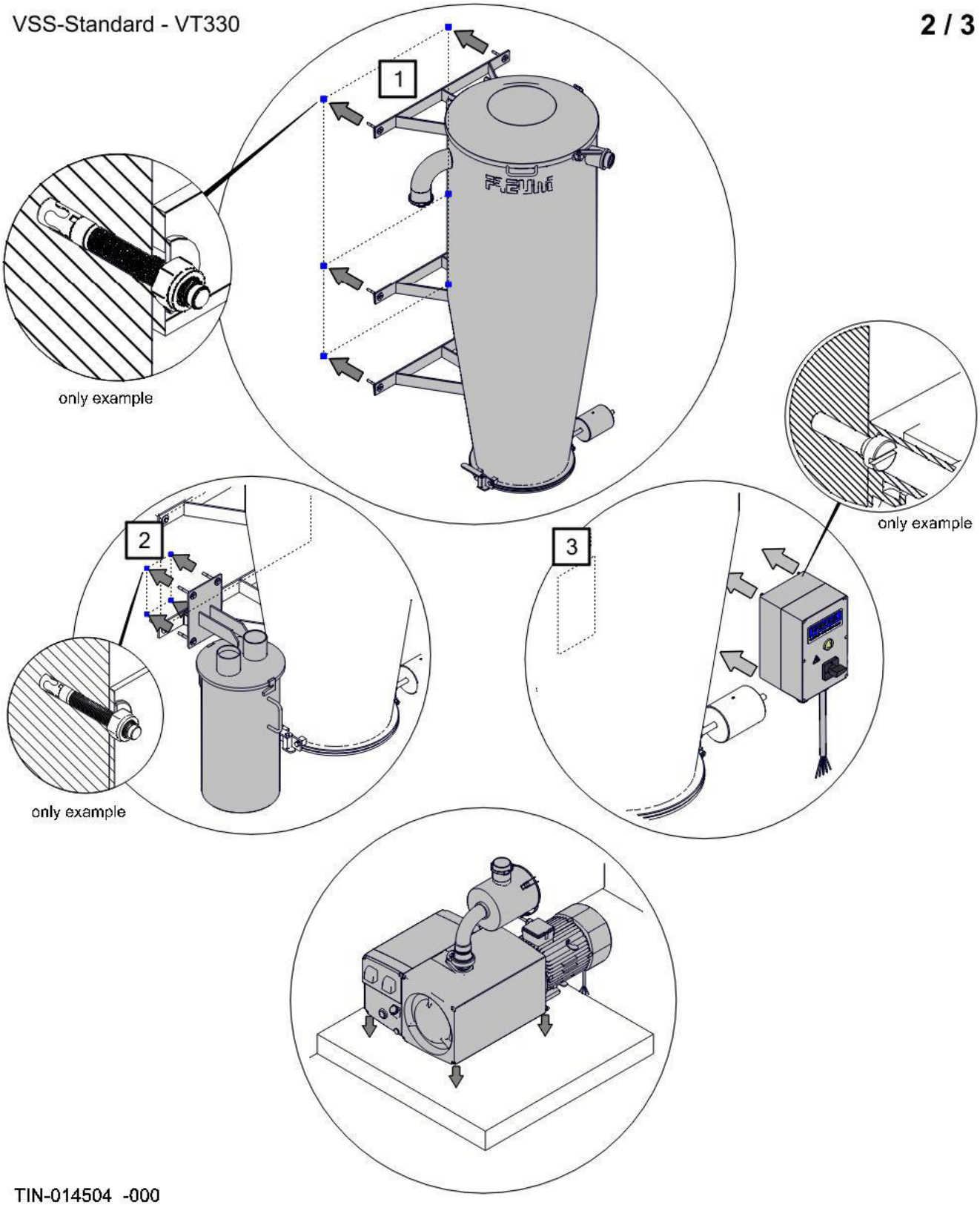
TIN-014504

VSS-Standard - VT330



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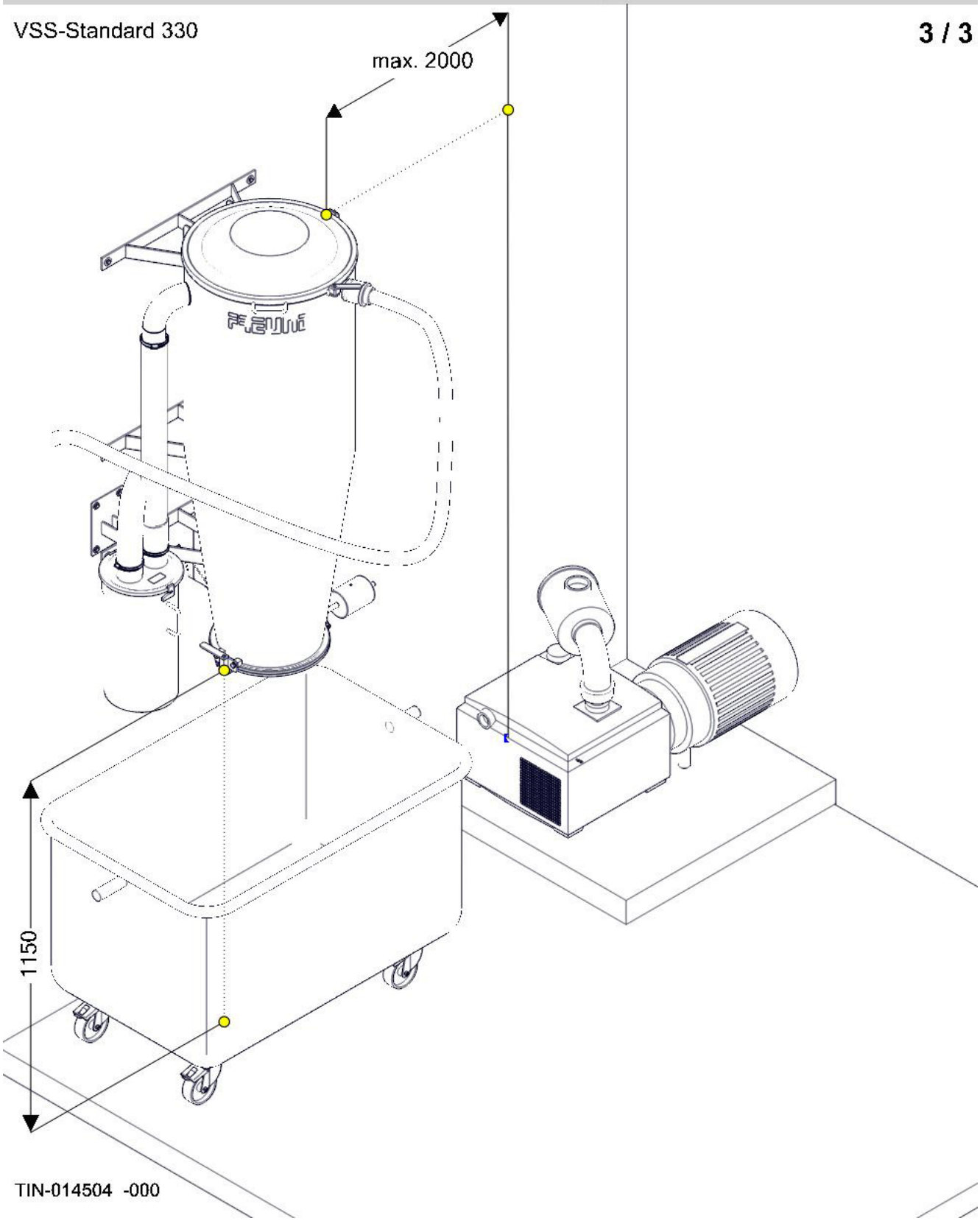
TIN-014504

VSS-Standard 330



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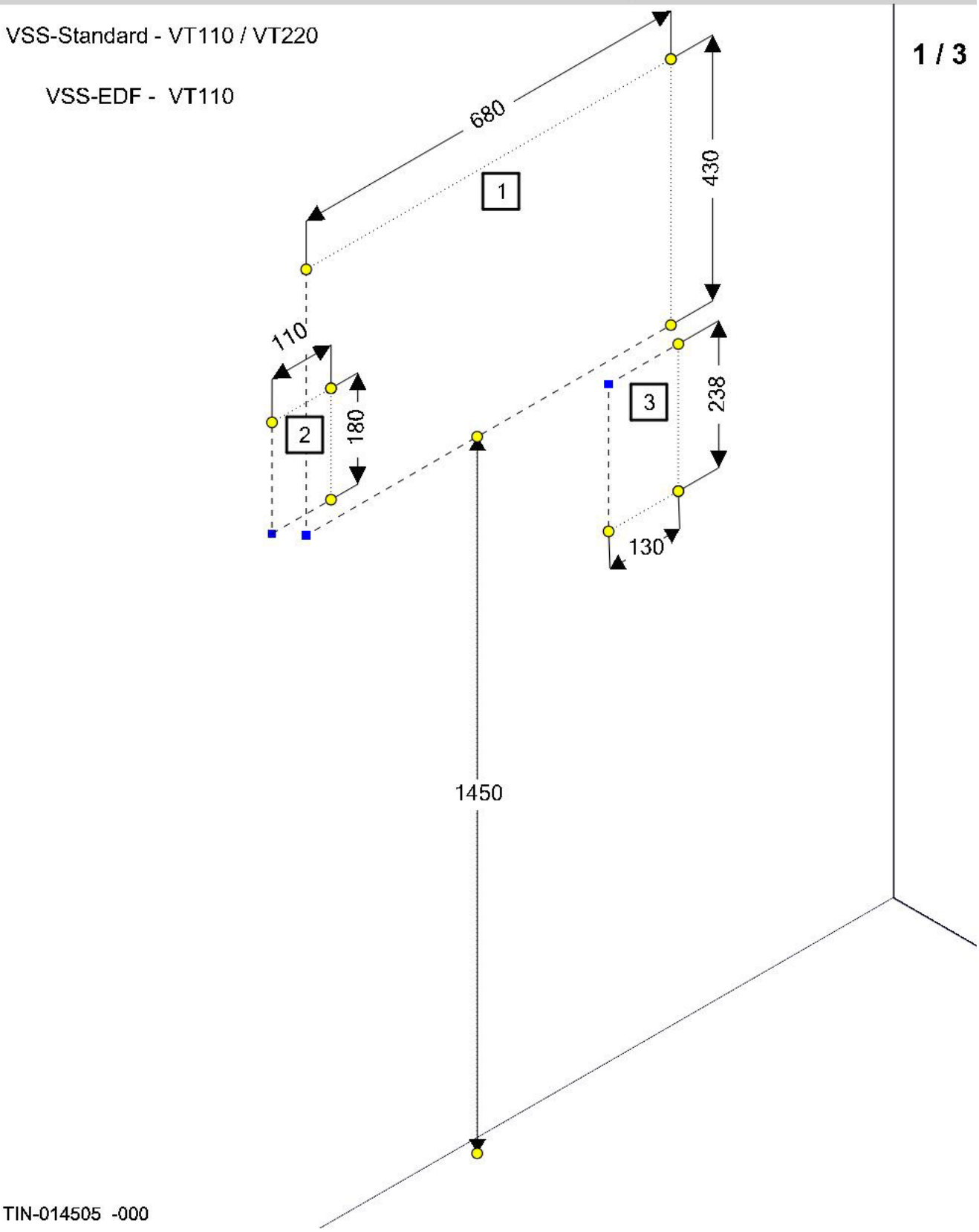
TIN-014505

VSS-Standard - VT110 / VT220

VSS-EDF - VT110



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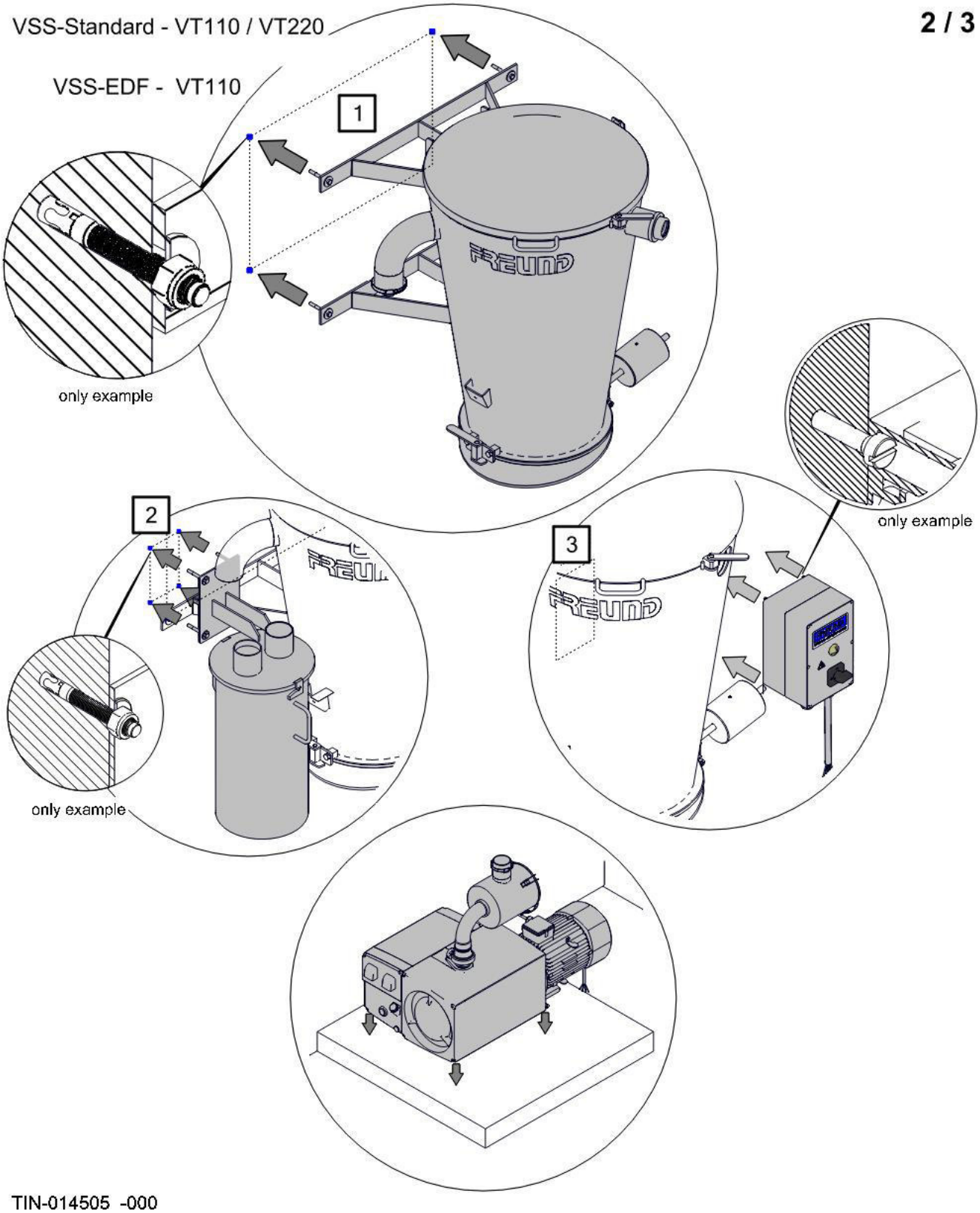
TIN-014505



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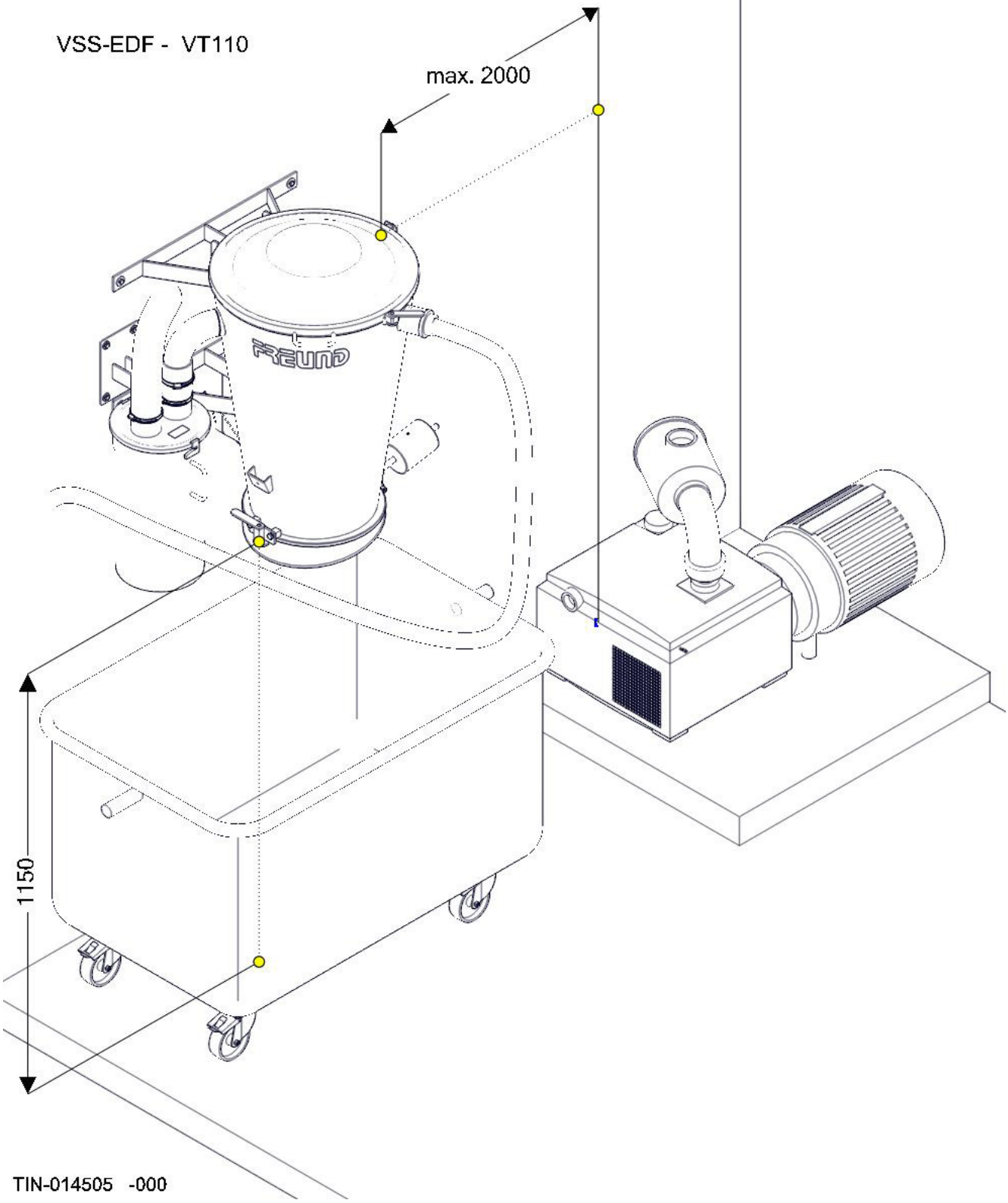
TIN-014505

VSS-Standard - VT110 / VT220

VSS-EDF - VT110



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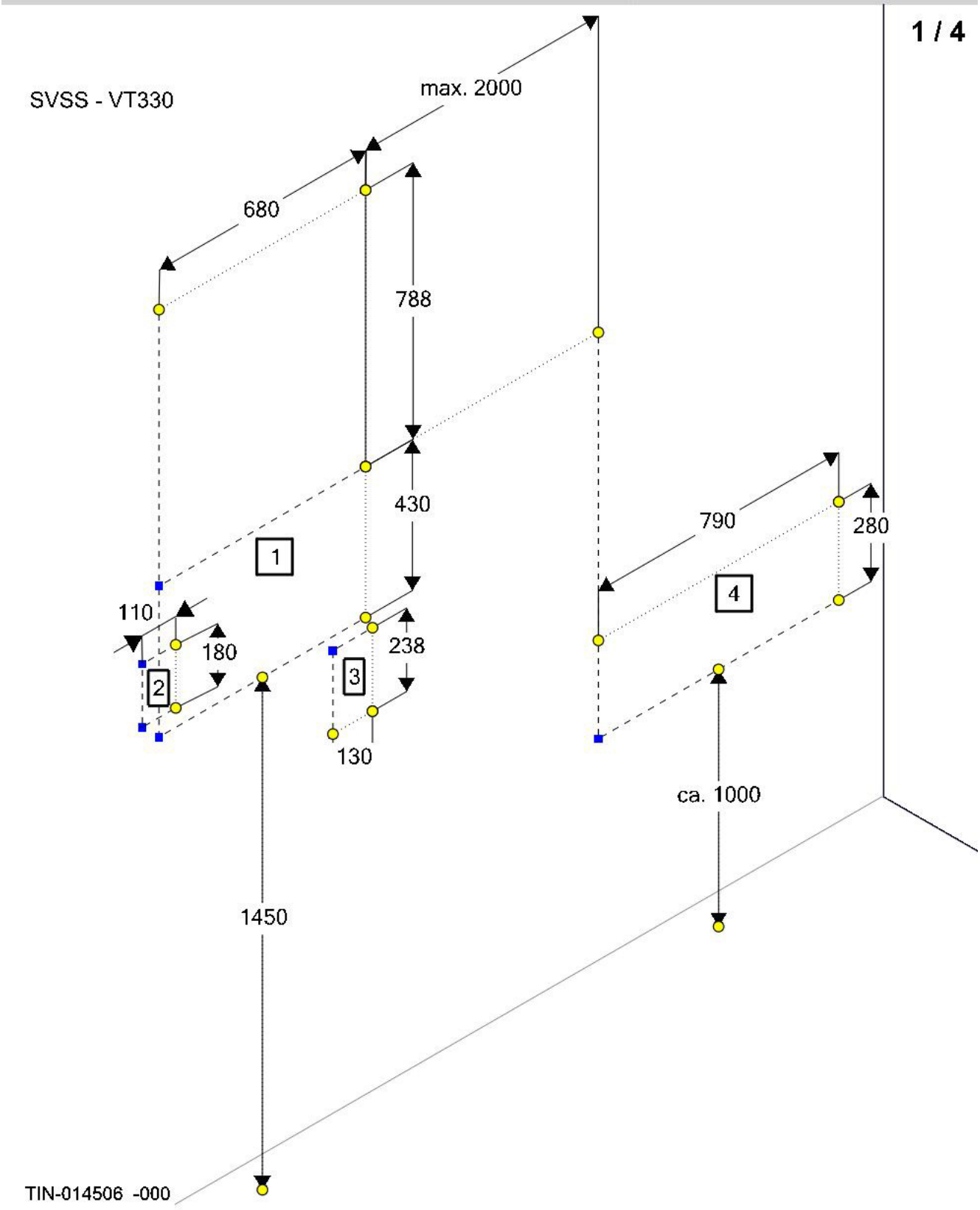
TIN-014506



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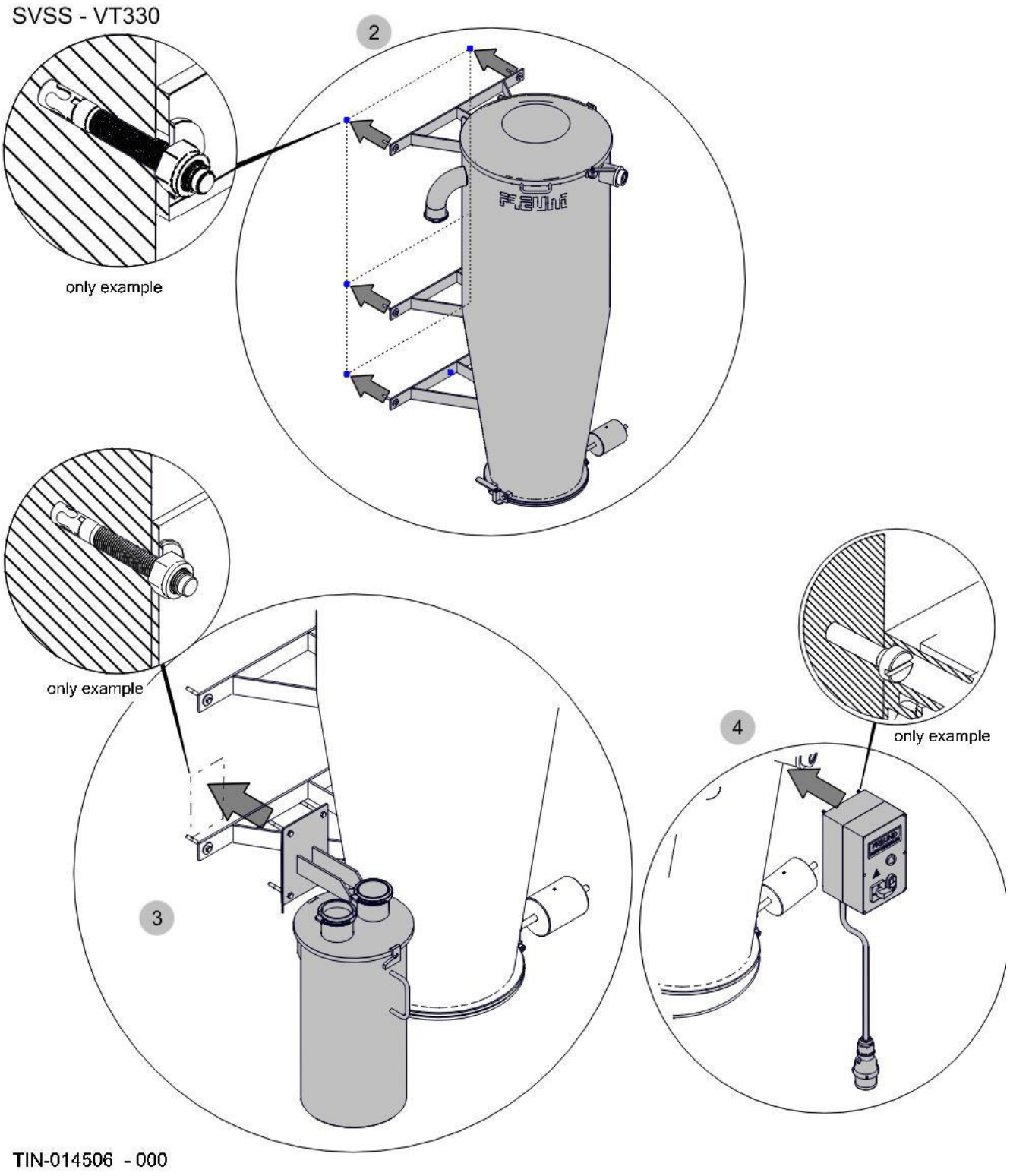
TIN-014506



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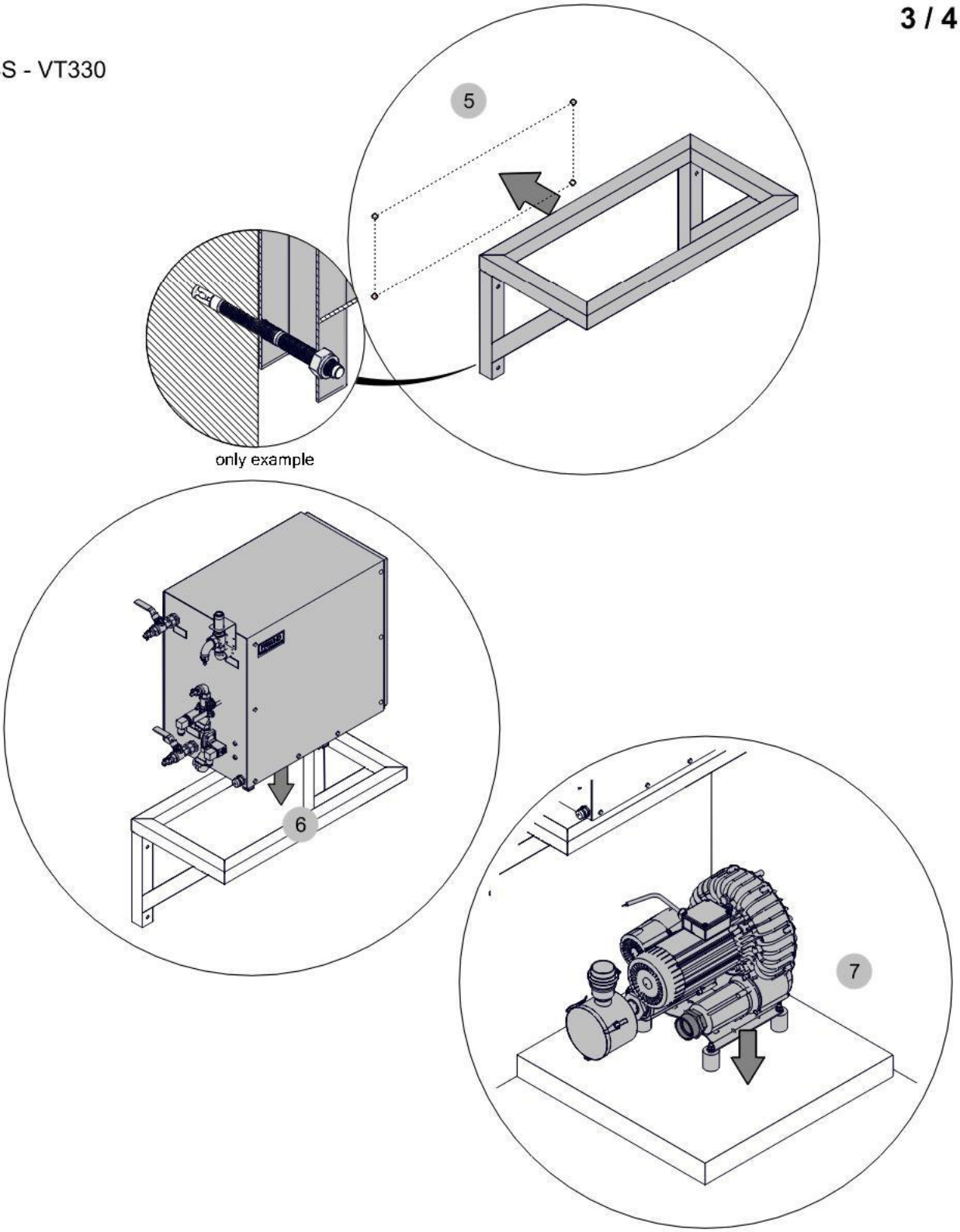
TIN-014506

SVSS - VT330



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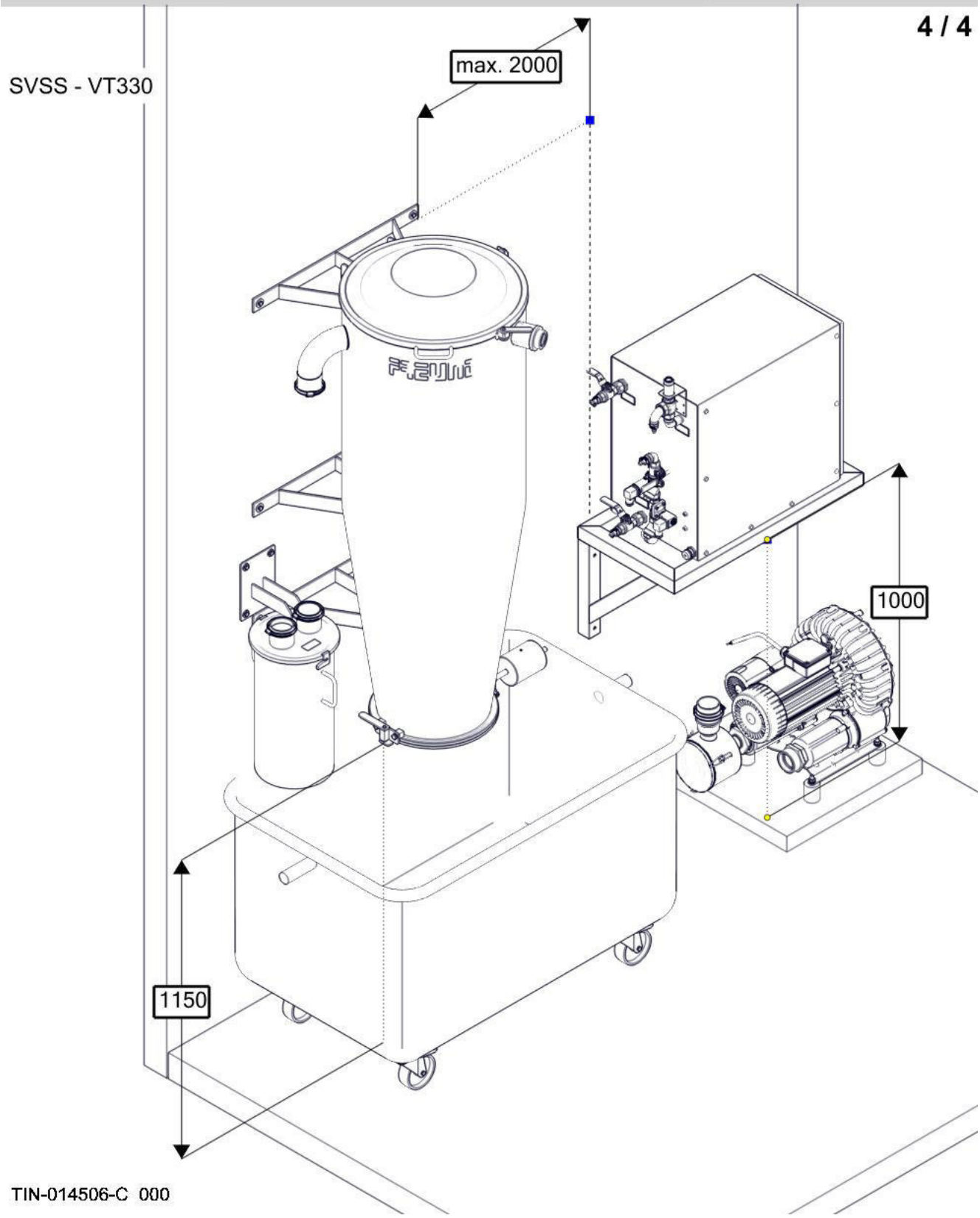
TIN-014506

SVSS - VT330



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TIN-100-013

Hydrauliköl / Hydraulic oil

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
5L Kanister / Canister	171-500-001
10L Kanister / Canister	171-500-002
20L Kanister / Canister	171-500-003
Verwendung / Ability for	**Füllmenge / Filling capacity**
HPP12	7 L

Hydrauliköl / Hydraulic oil

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
1L Flasche / Bottle	047-004-004
5L Kanister / Canister	171-500-004
10L Kanister / Canister	171-500-005
20L Kanister / Canister	171-500-006
Verwendung / Ability for	**Füllmenge / Filling capacity**
Anschlusseinheit / Connecting kit K16-P4 , PNM , SD11	0,1 L
HPE 9	21 L
HPE 20	28L

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TIN-100-013

Getriebefett / Gearbox grease

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
1 kg Dose / Box	171-500-010

Verwendung / Ability for	Füllmenge / Filling capacity
Getriebe / Gear K16	0,1 kg
Getriebe / Gear K18	0,1 kg
Getriebe / Gear K23, K28	0,1 kg
Getriebe / Gear K33	0,1 kg

Getriebeöl / Gearbbox grease

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
1L Flasche / Bottle	159-016-035

Verwendung / Ability for	Füllmenge / Filling capacity
Getriebe ZKM60, ZKM75	0,5 L

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TIN-100-013

Vakuumpumpenöl / Vacuum pump oil

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
1L Flasche / Bottle	171-500-015
5L Kanister / Canister	171-500-016
10L Kanister / Canister	171-500-017

Verwendung / Ability for	Füllmenge / Filling capacity
VP 020	0,5 L
VP 200	7 L
VP 300	7 L

Lebensmittelfett / Lubricating grease

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
0,14 kg Fettpresse / Grease gun	151-001-067
1 kg Dose / Box	100-013-007

Verwendung / Ability for	Füllmenge / Filling capacity
Scheren / Shear	0,01 kg
Getriebe / gear SH/BBH	0,1 kg

Lebensmittelfett / Lubricating grease

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
0,18 kg Fettpresse / Grease gun	028-100-006

Verwendung / Ability for	Füllmenge / Filling capacity
Trimmer Kopf / Trimmer Head	
Getriebe HSK-P3	

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TIN-100-013

Schmierfett / Grease

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
0,4 kg Kartusche / Cartridge	100-013-037
0,14 kg Fettpresse (ST)	151-002-039
0,14 kg Fettpresse (EDF, SD11)	047-004-002

Verwendung / Ability for	Füllmenge / Filling capacity
Getriebe / gear ST, SST, BBST	0,07 kg
EDF , SD11	0,03 kg

Schmierfett / Grease

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
1 kg Dose / Box	100-013-039

Verwendung / Ability for	Füllmenge / Filling capacity
Getriebe / Gear GM	0,1 kg
Getriebe / Gear ZKM25	0,1 kg
Getriebe / gear FK40	0,1 kg

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TIN-014526

1 / 1

/min

/min

< 16 bar

	/min
PNM2	2
P3	1
P4	4
P5	0,5
SD11	1 - 2
EDF	3

< min.

> max.

max.

min.

80 ml = max.

047-004-004

TIN-014526 -000

Erklärung der Symbole siehe Betriebsanleitung Kap.1 / *Explanations of symbols see operating manual chp. 1*

Demontage *Disassembly*

Montage *Assembly*

Betriebsanleitung beachten *Pay attention to operating manual*

Montageanleitung *Assembly instructions*

Werkzeugsatz *Toolkit*

Declaration of material conformity

Manufacturer	**FREUND Maschinenfabrik GmbH & Co. KG** **Schulze-Delitzsch-Str. 38** **33100 Paderborn, GERMANY**
Authorised representative	**Jürgen Rodenkirchen** **Head of Development** **Schulze-Delitzsch-Str. 38** **33100 Paderborn, GERMANY**

FREUND Maschinenfabrik GmbH & Co. KG hereby confirms that the objects and their materials which come into contact with foodstuffs when used as intended comply with the following general requirements:

- Regulation (EC) No 1935/2004 on materials and articles intended to come into contact with foodstuffs.
- Regulation (EU) 10/2011 on plastic materials and articles intended to come into contact with foodstuffs.
- Regulation (EC) No 2023/2006 on good manufacturing practice for materials and articles intended to come into contact with foodstuffs.

This applies to the following machine types and their spare parts:

Machine type: **All Vacuum suction systems**

Machine parts with food contact	Material designation	Group of materials and objects
Mobile carriage	1.4301	Stainless steel
Vacuum tank	1.4301	Stainless steel
Vacuum extraction hose	Polyether polyurethane	Plastic
Compressed air tube	Polyether polyurethane	Plastic
Separator can	1.4301	Stainless steel
Handpiece VH38B	1.4301	Stainless steel
Handpiece VH38E	1.4301	Stainless steel
Handpiece VH38G	1.4301	Stainless steel
Handpiece VH38H	1.4301	Stainless steel
Handpiece VH38I	1.4301	Stainless steel
Handpiece SVH38A	PA 2200	Polyamide
Handpiece EDF64/76	1.4301	Stainless steel

Name and signature

Head of Development (Leiter Entwicklung)

Paderborn, 19.10.2023

EU-Declaration of Conformity

in the sense of the EC Machinery Directive 2006/42/EC, Annex II, No.1 A.

Manufacturer	**FREUND Maschinenfabrik GmbH & Co. KG** **Schulze-Delitzsch-Str. 38** **33100 Paderborn, GERMANY**
Documentation Authorised Representative	**FREUND Maschinenfabrik GmbH & Co. KG** **Schulze-Delitzsch-Str. 38** **33100 Paderborn, GERMANY**

Hereby we declare that the machine,

Type

Serial number

complies with all relevant provisions of the EC Machinery Directive 2006/42/EC.

The machine also complies with all relevant provisions of the following EC Directives:

EMC Directive	**2014/30/EU**
Pressure Vessel Directive	**2014/29/EU**
Pressure Equipment Directive	**2014/68/EU**

The following harmonised standards (or parts of these standards) have been applied:

DIN EN ISO 12100-2011	**DIN EN 60529:2014-09**
DIN EN 60204-1:2018	**DIN EN 1672-1:2014**
DIN EN 13861:2012-01	**DIN EN 1672-2:2020**
DIN EN ISO 13850:2015	**DIN EN 28011:2012-06**
DIN EN ISO 13732-1:2018	**DIN CEN/TS 764:2011-11**

EU-Declaration of Conformity

in the sense of the EC Machinery Directive 2006/42/EC, Annex II, No.1 A.

Manufacturer	**FREUND Maschinenfabrik GmbH & Co. KG** **Schulze-Delitzsch-Str. 38** **33100 Paderborn, GERMANY**
Documentation Authorised Representative	**FREUND Maschinenfabrik GmbH & Co. KG** **Schulze-Delitzsch-Str. 38** **33100 Paderborn, GERMANY**

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DIN EN ISO 13850:2015	**DIN EN 28011:2012-06**
DIN CEN/TS 764:2011-11	