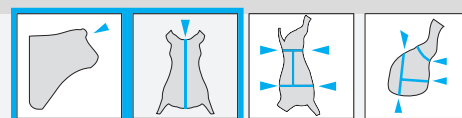


OPERATING MANUAL STUNNING & STIMULATION DEVICES

Translation of original manual



ELECTRIC STUNNER

- STUN-E4
- STUN-E6XXL
- STUN-E6XXL LVP
- STUN-E8XXL

STUN TONGS

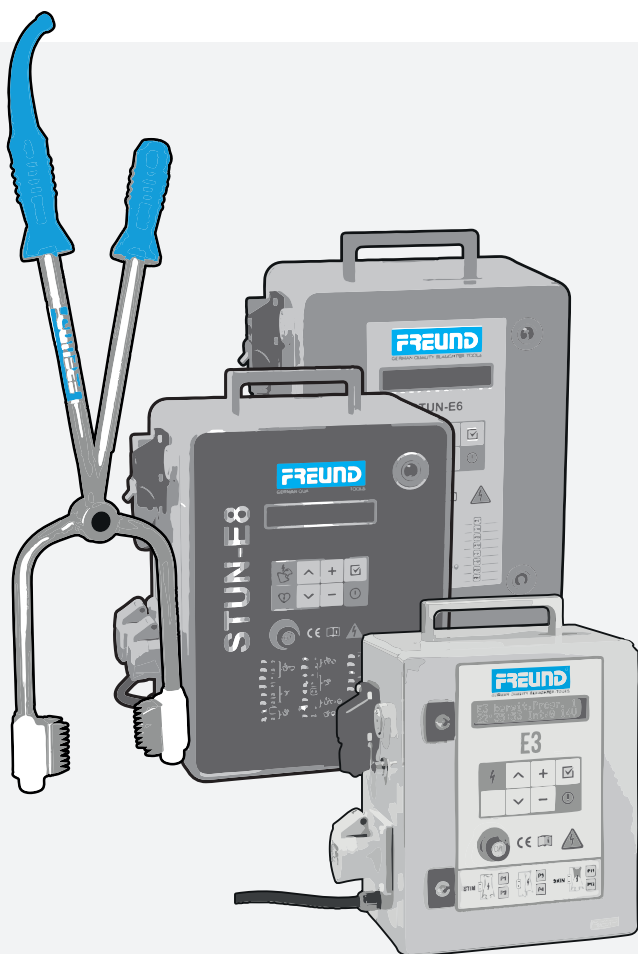
- STUN-TONG-EP Steel
- STUN-TONG-EP LS
- STUN-TONG-EA Steel
- STUN-TONG-ES Steel
- STUN-TONG-EPP2
- STUN-TONG-EPP3

OPTIONAL ACCESSORIES

- STUN-Check-M

ELECTRIC STIMULATION DEVICE

- STIM-E3



Imprint

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Technical changes reserved

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 electric stunners, electric stimulation devices, stun tongs and accessory devices are also referred to as machines 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

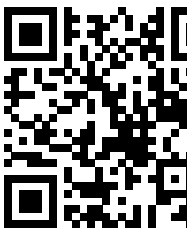
Modifications and/or adjustments to the machine are possible in certain cases. In such cases, prior written approval must be obtained from FREUND Maschinenfabrik GmbH & Co. KG – subsequently referred to as FREUND Maschinenfabrik.

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.

1.5 Symbols and layout elements

1.5.1 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

1.5.2 Safety signs

Warning signs



Warning of a danger point

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



Warning of dangerous electrical voltage

Danger to life from electric shocks to the body.



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 hand injuries

Danger to the hands and fingers from crushing due to the sinking or downward movements of machine parts.



Warning of substances harmful to health and irritants

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

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.

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



Wear safety shoes or rubber boots

protect the feet against crushing, falling objects and guarantee secure support



Wear a protective apron

protects the body against humidity, blood and other fluids.



Pull out the power plug

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



Observe the assembly manual or spare parts lists

Further information can be found in the assembly manuals and spare parts lists.

1.5.3 Symbols



Restunning



Pneumatics



Killing



Head flow



Heart flow



Comply with the operating manual

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



Video/Video playlist

Link to the videos and video playlists.



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 border clarifies which parts are included.



Tool set available

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

2

Numbers in the grey field indicate the sequence of the steps



Lubrication

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



Do not lubricate



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



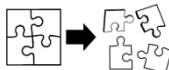
Power plug

Indicates connection of the machine to the power network.

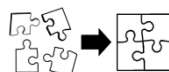


Releasing pressure

The machine must be depressurised prior to maintenance, servicing and cleaning.



Disassembly of the machine or assembly



Assembly of the machine or component

Indicates assembly of the machine following prior disassembly, Carry out steps in the reverse order

2 For your safety

This chapter describes the safety measures and safety devices. Before setting the machine into operation be sure you have read and understood the following safety information.

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.

Read the following chapter on safety and the safety instructions contained therein carefully before commissioning and using the machine.

2.1 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.

2.2 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)).
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.
Competent personnel	Only persons possessing the necessary knowledge and skills (expertise) may look after, restrain, stun, slaughter or kill animals. The site operator ensures that the activities within the framework of slaughtering are only carried out by persons possessing a relevant certificate of expertise.
Back-up equipment	The site operator shall ensure that during stunning operations appropriate back-up equipment is immediately available on the slaughtering point and is used in the case of failure of the stunning equipment initially used. The back-up method may differ from that first used.
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.
Workplace	The workplace must comply with the national and regional hygiene and workplace regulations.

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

2.3 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.
- Competent personnel Competent personnel are such persons who, due to technical training and experience, possess 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 with the latest regulations of the protection of animals.
- 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.

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. Disconnect the stunning device from the power supply when not in use.
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.

2.4 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.

2.5 Inspection in accordance with the German Animal Protection Slaughter Regulation (TierSchIV)

For all FREUND electric stunning devices, all relevant stunning and work safety parameters are inspected prior to the first use in accordance with the applicable Animal Protection Slaughter Regulation and the EC Regulation 1099/2009, the operational safety regulation and the accident prevention regulation. An inspection sticker is attached to the machine, which indicates the next repeat test.

The inspection interval is one year.

2.6 Electrical safety

The electrical machinery and electrical equipment of FREUND Maschinenfabrik is tested for electrical safety prior to delivery and following modification or repair in our factory by a qualified electrician in accordance with the electrical engineering rules of the relevant standards and guidelines.

The inspection interval for equipment that is used in slaughtering and cutting plants is every six months.

2.7 Residual risks

The Stunning & Stimulation Devices 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
- danger of injury from compressed air/overpressure
- danger of burning on hot surfaces
- Danger of injury from breakage or ejection of fragments of the cutting tool.
- hearing damage from noise if noise emissions exceed 75 dB(A)
- Cutting injuries from cutting tools
- danger of injury from flying pieces of meat and bone fragments
- danger of injury to fingers and hands.
- risk of injury from negligent handling of personal safety equipment while operating the device, during maintenance and repair work and during cleaning and disinfection

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 instructions given at the beginning of the individual chapters and observing the instructions in the entire operating manual.

2.8 Intended use

FREUND electric stunners

- are intended for stunning and for killing pigs, sheep, and goats in stalls, restrainers, and individual traps.
- may only be operated with the designated safety devices, which must be fully functional.
- are suitable for the transfer of stunning data to the FREUND web server via a LAN cable (as per the recording obligation of the German Animal Protection Slaughter Regulation and EC Regulation No. 1099/2009).
- may only be connected on one electrode combination at any one time.

The LAN cable

- is intended for the transfer of stunning data to the FREUND web server (as per the recording obligation of the German Animal Protection Slaughter Regulation and EC Regulation No. 1099/2009).

FREUND electric stun tongs

- are intended for stunning and for killing pigs, sheep, and goats in stalls, restrainers, and individual traps.
- are operated in conjunction with the electric stunners.

The intended use applies to the following stun tongs:

STUN-TONG-EP Steel	For stunning pigs
STUN-TONG-EP LS	For stunning pigs
STUN-TONG-EA Steel	For stunning sheep, goats, and lambs
STUN-TONG-ES Steel	For stunning pigs and sows
STUN-TONG-EPP2	For stunning pigs (with pneumatic drive to open and close the stun tongs)
STUN-TONG-EPP3	For stunning pigs (with pneumatic drive to open and close the stun tongs)

The FREUND STIM-E3

- is intended for immobilisation after slaughter.
- is intended for electrical stimulation during draining of blood at slaughter.
- is intended for electrical stimulation during dehiding of the carcass
- may be operated only with the provided safety devices, which must be fully functional.
- may only be connected on one electrode combination at any one time.

The interface control box

- controls the pneumatic components of the stun tongs and heart electrode.
- is operated in conjunction with the electric stunner STUN-E8 XXL.

The FREUND test device for electric stunners STUN-CHECK-M

- is intended for testing electric stunners (as per the German Animal Protection Slaughter Regulation and EC Regulation No. 1099/2009).

Operating the machine within the limits of its intended use also involves:

- observing the safety instructions.
- proper execution of repair and maintenance work.
- regular cleaning of the machine.

Any other use is considered as contrary to the intended use and poses risks to the safety of operating staff.

Disclaimer of liability FREUND Maschinenfabrik does not accept liability for any damage resulting from improper use of the machine.

2.9 Improper use

Every use other than those described as → chapter *Intended use* is deemed to be non-intended and is thus inadmissible.

The operator is solely responsible for risks in the case of improper use. Consult the manufacturer in case of doubt.

The following are also deemed as improper use:

- the use of the machine to human beings.
- the use to tranquilize the animals prior to slaughter.
- the use of the machine without functional safety devices.
- the extension of the cables and connecting lines attached to the machine.

3 Technical Description

3.1 Safety devices of electric stunners



The FREUND electric stunners meet the safety requirements of the Low Voltage Directive 2014/35/EU and in particular DIN EN IEC 60335-2-87, "Safety of electrical appliances for domestic use and similar purposes – Part 2-87: Particular requirements for electrical animal stunning equipment".

Safety devices FREUND electric stunners measure stun voltage and current. The stunners monitor the body resistance and prevent stun voltage from being applied to the body outside the permissible range.

Regulation (EC) No 1099/2009 For compliance with Regulation (EC) No 1099/2009 "on the protection of animals at the time of killing" and the German Animal Welfare Slaughter Regulation – TierSchlV, deviations of the stunning current profile from the minimum current and compliance with the minimum exposure time of the minimum current are signaled and recorded.

3.2 Minimum electric current and stunning times

In all FREUND-electric-stunning devices the minimum electric currents for each animal species is preconfigured according to the German Animal Welfare Slaughter Ordinance - TierSchlV.

Minimum electric current	Animal species	Minimum electric current
	Pigs	1.3 A*
	Sheep / goats	1.0 A*
	* the minimum current intensity must be reached within the first second and maintained for at least 4 seconds	

Country-specific legal regulations

The respective national regulations on the protection of animals apply at the time of slaughter or killing. If necessary adapt the stunning parameters (e.g. minimum current levels and stunning times) to the regulations in your country.

3.3 Function description of electric stunning

An electric stunning system consists of an electric stunner and stun tongs.

For electric stunning or killing, the current must flow through the brain of the animal first or at least at the same time as it flows through the body or heart. The minimum current must be reached within a defined time and be maintained for a certain amount of time.

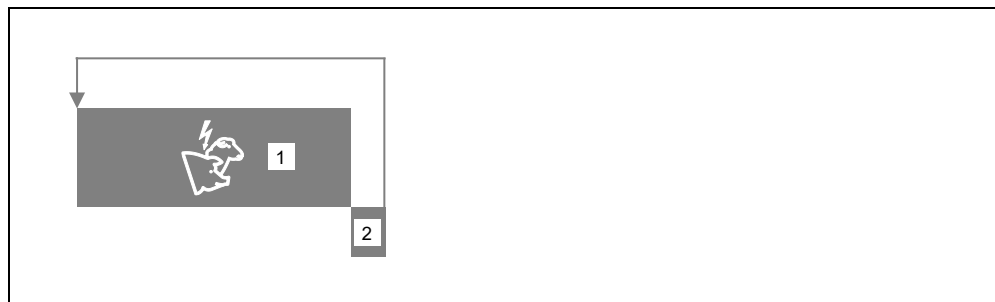
Requisite stunning parameters:

→ national legislation in your country

- Body resistance: animal The electric stunner works according to the constant current measuring method.
- The body resistance of the animal (pig, sheep or goat) is thus continuously measured at short intervals and analysed based on the resistance measurement principle. If the measured value is within the preset range of up to 1400 ohms, the stunning voltage is adjusted automatically. For safety reasons, the stunner shuts down at 1,400 ohms.
- Uncontrolled conditions and defects in the stunning circuit are indicated to the user by a fault lamp.
- Data recording The data memory of the electric stunner records all relevant stunning data and the set stunning parameters.
- If there is an active Internet connection, this data is transferred to the password-protected FREUND web server, where they can be evaluated,
→ Chapter *The FREUND Web Server* on page 75.

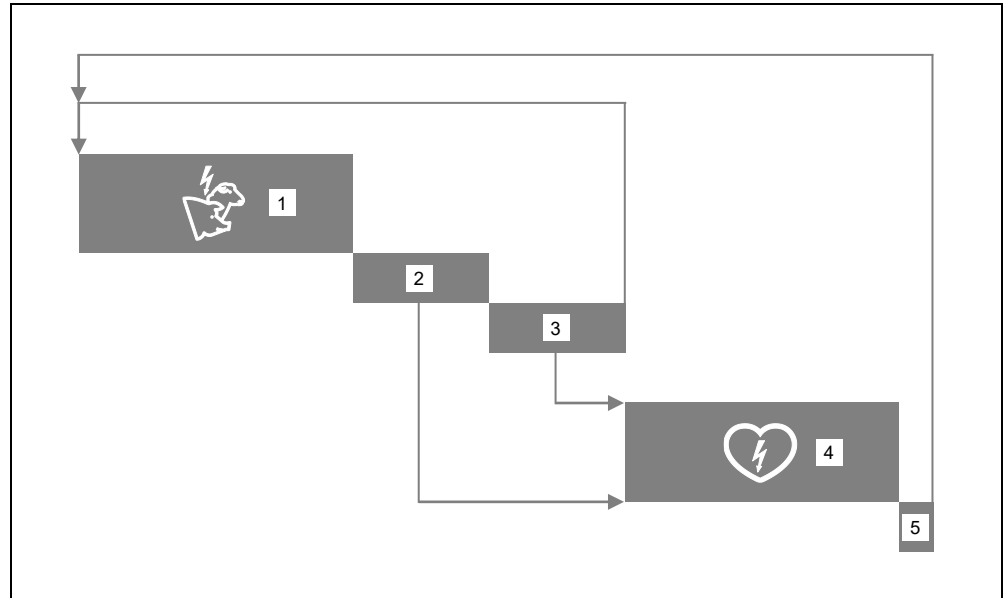
3.4 Stun phases

3.4.1 Head stunning



No.	Phase	Parameter
1	Head flow	Head flow time
		Head current
		Head amount of charge
		Head minimum current
		Head minimum time
		Head max. voltage
		Head frequency time
		Head starting frequency
		Head final frequency
2	Pause between stun processes	Pause time

3.4.2 Head and heartstunning



No.	Phase	Parameter
Head	1 Head stunning	Head stun time
		Head current
		Head minimum current
		Head minimum time
		Max. voltage head
		Head frequency time
		Head starting frequency
		Head ramp delay time
		Head frequency time
		Head final frequency
2	Repositioning	Reposition time
3	Reset	Reset time
4	Heart stunning	Heart stun time
		Heart current
		Heart charge amount
		Heart minimum current
		Heart minimum time
		Max. voltage heart
		Heart frequency time
		Heart starting frequency

No.	Phase	Parameter
		Heart ramp delay time
		Heart frequency time
		Heart final frequency
5	Pause between stun processes	Pause time

3.5 Pre-set stun programs

In the stunning programmes, stunning time and minimum flow rate are preset for the respective animal species. The specifications correspond to the provisions of the German Animal Welfare Slaughter Ordinance (TierSchlV).

The following applies to animal welfare regulations:

If necessary, adjust the parameters for stunning (e.g. minimum current intensity and stunning time) to the legal regulations in your country.



The electrical stunners STUN-E4, STUN-E6 XXL, STUN-E6 XXL LVP and STUN-E8 XXL have already activated stunning programs as well as other stunning programs that are already pre-installed but not yet activated.



Pre-installed and unlocked programs



Pre-installed but not yet unlocked programs. The activation of these programs is subject to a fee.

The programs that are activated on the device is customer-specific. To activate additional programs (subject to charge), please contact our sales department.

The address and telephone number can be found in Imprint

	Stun program		Minimum current [A]	STUN-E4	STUN-E6 XXL	STUN-E6 XXL LVP	STUN-E8 XXL
Selectable stun programs	P1	Head and heart stunning for pigs ^N	1.3	☒	☒	☒	☒
	P2	Head and heart stunning for pigs ^S	1.3	☒	☒	☒	☒
	P3	Head and heart stunning for sows	1.3	☒	☒	☒	☒
	P4	Head stunning for sows	1.3		☒	☒	☒
	P5	Head stunning for pigs ^N	1.3		☒	☒	☒
	P6	Head stunning for pigs ^S	1.3		☒	☒	☒

Stun program		Minimum current [A]	STUN-E4	STUN-E6 XXL	STUN-E6 XXL LVP	STUN-E8 XXL
P7	Head stunning for lambs and goats	1.0		✓	✓	✓
P8	Head stunning for sheep	1.0	✓	✓	✓	🔒
P9	Restunning for pigs	1.3		🔒	🔒	🔒
P10	Restunning for sows	1.3		🔒	🔒	🔒
P11	Head stunning for ostriches	0.4		🔒	🔒	🔒
P12	Head stunning for rabbits	0.2		🔒	🔒	🔒
P13	Head stunning for poultry	0.3		🔒	🔒	🔒
P14	Slaughter of pigs	1.3		🔒	✓	🔒
P15	Slaughter of cattle	1.3		🔒	✓	🔒
P16	Head stunning for pigs ^{N,P}	1.3				🔒
P17	Head stunning for pigs ^{S,P}	1.3				🔒
P18	Head stunning for sows ^P	1.3				🔒
P19	Head and heart stunning of pigs ^{N,P,1}	1.3				✓
P20	Head and heart stunning of pigs ^{S,P,1}	1.3				✓
P21	Head and heart stunning of sows ^{P,1}	1.3				✓
P22	unassigned					
P23	unassigned					
P24	unassigned					

* N = normal; S = heavy; P = pneumatic; 1 = stunning with heart electrode

3.6 Stun parameters

Stun parameters Each stun program has 20 individual stun parameters, which can be changed separately.

	No.	Parameter	Description
Head stunning phase	1	Head starting frequency [Hz]	Frequency at the beginning of head flow (in conjunction with parameters 2 + 4)
	2	Head final frequency [Hz]	Frequency at the end of the set head total time (in conjunction with parameters 1 + 4)
	3	Head ramp delay time [s]	Ramp time, from the start of the head flow to the start of the frequency change
	4	Head frequency time [s]	Ramp time over which the frequency shifts from head starting frequency to head final frequency (in conjunction with parameters 1 + 2)
	5	Head charge amount [As]	This is the amount of electrical charge that passes through the animal's head during stunning.
	6	Head current [A]	Setpoint of the constant current strength during head stunning
	7	Head stun time [s]	Total time of the head stunning phase
	15	Head minimum current [A]	Minimum current ¹ head stunning
	16	Head minimum time [s]	Minimum stunning time ¹ head stunning
	22	Max. voltage head [V]	Maximum possible voltage during the head stunning phase
Repositioning phase	19	Reposition time [s] ² (setting range: 0.1 - 9.9)	Period in which the stun tongs can be regularly switched to heart stunning after the head stunning.

Heart stunning
phase

No.	Parameter	Description
20	Reset time [s] ² (setting range: 0.1 - 9.9)	Additional period after the transfer time, during which the repositioning of the stun tongs is still possible without the system resetting to head stunning. If the implementation does not take place until the reset time has elapsed, the program starts again with head stunning. Start of reset time: - The stun tongs have not been repositioned from head to heart stunning within the reposition time During reset time: - The stun tongs are repositioned and the stunning process is continued with heart stunning End of reset time: - The current stunning process is aborted and the settings are reset to the head stunning settings
8	Heart starting frequency [Hz]	Frequency at the beginning of heart stunning (in conjunction with parameters 9 + 11)
9	Heart final frequency [Hz]	Frequency at the end of the set heart total time (in conjunction with parameters 8 + 11)
10	Heart ramp delay time [s]	Ramp time, from the start of the heart stunning to the start of the frequency change
11	Heart frequency time [s]	Ramp time over which the frequency shifts from heart starting frequency to heart final frequency (in conjunction with parameters 8 + 9)
12	Heart charge amount [As]	Is the amount of electrical charge that is introduced into a body during the flow through the heart.
13	Heart current [A]	Setpoint of the constant current strength during heart stunning
14	Heart stun time [s]	Total time of the heart stunning phase
17	Heart minimum current [A]	Minimum current ¹ heart stunning
18	Heart minimum time [s]	Minimum stunning time ¹ heart stunning
23	Max. voltage heart [V]	Maximum possible voltage during the phase of heart stunning

	No.	Parameter	Description
Phase Pause	21	Pause time [s]	Time between two consecutive animal stun processes
		with heart electrode (y/n) Selection 1	Activation/deactivation of the output of a separate heart electrode in stunning traps or restrainer
General parameters		Restrainer without measurement Selection 2	High-voltage resistance measurement exclusively for the automated operation of the electric stunner in the restrainer
		Start without bed. No. selection 3	The entry of an operator number is not required if the operator waives it or the system is running in restrainer mode
		Parameter from server (y/n) selection 7	Allows the parametrisation of the device from the database 'stundata'
		Language selection: Parameter - No. 24	Choice of display language (de/en)
		Number of programs: Parameter - No. 25	Number of preconfigured stun programs
		Horn time (s): Parameter - No. 26	Duration of signal tone. The signal tone sounds • when the stunning time has elapsed. • if an error occurs during a stunning process.
		Head starting delay	Specifies the time of the current release after successful resistance measurement for the head stunning.
		Heart starting delay	Specifies the time of the current release after successful resistance measurement for heart stunning.
		Day counter	Shows the number of animals stunned/day
		Total counter	Displays the total number of animals stunned
		Not transmitted in memory	Number of stun data sets stored in the machine if there is no network connection to the FREUND web server
		Machine number/version no.	Machine's serial number/firmware version number
		Enter date	Enter current date
		Enter time	Enter time at the installation site

No.	Parameter	Description
	Enter OFFSET local time	Enter deviation from GMT (General Mean Time) in hours
	Enter password	Password input (numerical value)
	Enter personnel number	Operator number input (numerical value)
* 1 Prescribed by TierSchlV * 2 Only in conjunction with head and heart stunning		

Setting ranges and increments

The following table lists the stun parameters' setting ranges and increments.

	No.	Parameter	Setting range	Increment
Head stunning phase	1	Head starting frequency [Hz]	50 - 1,000	10
	2	Head final frequency [Hz]	50 - 1,000	10
	3	Head ramp delay time [s]	0.1 - 10	0.1
	4	Head frequency time [s]	0.1 - 5.0	0.1
	6	Head current [A]	0.1 - 2.5	0.1
	7	Head stunning time [s]	0.1 - 25.5	0.1
	15	Head minimum current [A] ¹	0.5 - 2.2	0.1
	16	Head minimum time [s] ¹	0.5 - 22.5	0.1
	22	Head max. voltage [V]	2 - 400	2
Repositioning phase	19	Reposition time [s] ²	0.1 - 9.9	0.1
	20	Reset time [s] ²	0.1 - 9.9	0.1
Heart stunning phase	8	Heart starting frequency [Hz]	50 - 1,000	10
	9	Heart final frequency [Hz]	50 - 1,000	10
	10	Heart ramp delay time [s]	0.1 - 10	0.1
	11	Heart frequency time [s]	0.1 - 5.0	0.1
	13	Heart current [A]	0.1 - 2.5	0.1
	14	Heart flow time [s]	0.1 - 25.5	0.1
	17	Heart minimum current [A] ¹	0.5 - 2.3	0.1
	18	Heart minimum time [s] ¹	0.5 - 22.5	0.1
	23	Heart max. voltage [V]	2 - 400	2
Phase Pause	21	Pause time [s]	0.1 - 9.9	0.1
General parameters		Heart electrode (y/n) ²	Query yes/no	-
		visible/activated (y/n)	Query yes/no	-

No.	Parameter	Setting range	Increment
	editable (y/n)	Query yes/no	-
	Language selection	de/en	-
	Number of programs	1 - 24	1
	Horn time	0.3 - 5	0.1
	Day counter	numerical value	-
	Total counter	numerical value	-
	Not transmitted in memory	numerical value	-
	Machine number/version no.	1 - 9999	1
	Check date	DD.MM.YYYY	-
	Revision OK	Query yes/no	-
	Enter password	numerical value	1
	Enter personnel number	numerical value	1
* 1 Prescribed by TierSchlV * 2 Only in conjunction with head and heart stunning			

3.7 Electric stunning device STUN-E4, -E6 XXL, -E6 XXL LVP, -E8 XXL

The FREUND electric stunning devices STUN-E4, STUN-E6 XXL, STUN-E6 XXL LVP STUN-E8XXL comply with the provisions of the German Animal Protection Slaughter Regulation of December 12th 2012 (BGBl I p.2982) and EC Regulation 1099/2009.

- Features
- Preinstalled stun programs for various animal species and animal sizes
 - Selectable head and heart stunning programs
 - Audible signal for minimum stunning time
 - Visual and audible stun error indication
 - LCD-display
 - Internal memory stores up to 15,000 stun processes
 - Automatic data transfer to a password-protected web server (requires active Internet connection)

3.7.1 Functional elements STUN-E4, -E6 XXL, -E6 XXL LVP, -E8 XXL

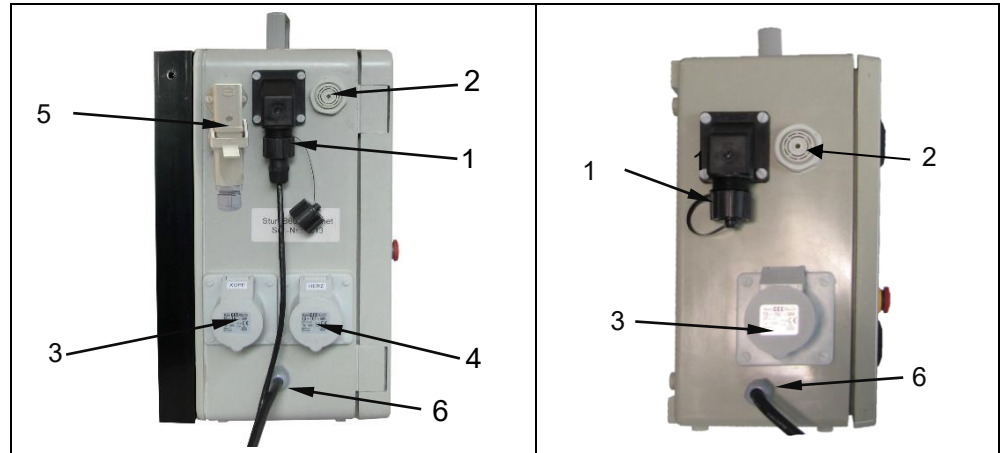


Fig. 3-1 Functional elements STUN-E6 XXL, STUN-E6 XXL LVP, STUN-E8 XXL

Fig. 3-2 Functional elements STUN-E4

STUN-E4, E6	Pos.	Description
	1	LAN cable connection
	2	Buzzer
	3	Connection, head tongs
STUN-E8 XXL only	4	Connection, heart electrode
STUN-E8 XXL only	5	Connection, interface control box/signal light (from interface V2.6)
	6	Mains cable

STUN-E8 XXL
(current)

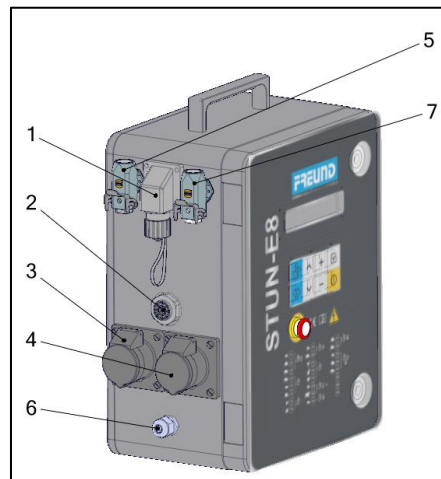


Fig. 3-2 STUN-E8 XXL

STUN-E8 XXL (current)	Pos.	Description
	1	LAN cable connection
	2	Buzzer
	3	Connection, head tongs:
	4	Connection, heart electrode
	5	Connection, interface control box/signal light (from interface V2.6)
	6	Mains cable
	7	Connection, master/slave coupling cable

3.8 Display and operating elements

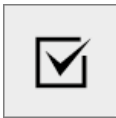


Fig. 3-3 Display and operating elements

3.8.1 Display elements

Display	Meaning
	LCD display
	Indicates head flow
	Indicates heart perfusion
	- Indicates stunning errors and device faults - Reset button

3.8.2 Controls

Key	Assignment
 	Change selection: - Stun program - Parameter
 	Numerical input
	Confirmation key
	Rotary knob 0/I for switching system on and off; also acts as emergency stop switch

3.8.3 Content of the display during stunning

The display indicates the current measured values of the stunner. During stunning, you can use the information on the display as a means of checking that stunning is progressing correctly.

The times indicated assist you in coordinating the timings for the stunning phases.

Display

E6 ready, Prog.3
08:05:35 Int:0 14V

Explanation

State of the device		Chosen stun program
Current time	Status of the Internet connection 0=offline, 1=standby, 2=data transfer	Current voltage at the electrodes

Display

2.Head 1.40A 50Hz
Volt.167V 1.4Sec

Explanation

Stunning phase	Stunning current	Power frequency
Current voltage at the electrodes		Stunning duration

Display

3.Switch time 1.3s
Voltage 14V

Explanation

Stunning phase	Time until optimum start of heart stunning
Current voltage at the electrodes	

Display

4.Reset time 2.0s
Voltage 14V

Explanation

Stunning phase	Time until reset to start
Current voltage at the electrodes	

Display

5.Heart 0.8A 50Hz
Volt.122V 0.6sec

Explanation

Stunning phase	Stunning current	Power frequency
Current voltage at the electrodes		Stunning duration

Display

7.Break time 0.5s
Voltage 14V

Explanation

Stunning phase	Minimum waiting time until next stunning
Current voltage at the electrodes	

3.9 Optional accessory – signal light for stunners

STUN-E8 (current) The connection for the signal light is installed as standard in the current version of the STUN-E8.

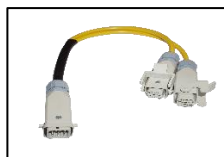
STUN-E6 XXL The connection for the signal light can be retrofitted to this device on request. If necessary, talk to us.



For older versions of the STUN-E8, the signal light can be connected to position 5 of the stunner. The prerequisite for this is that the installed interface board is version V2.6.



If a pneumatic interface is to be connected to position 5 of the stunner, an adapter distributor is required. This adapter distributor is available from FREUND Maschinenfabrik under part number 100-037-522.

Designation	Part No.	
Signal lights	100-037-525	
Adapter cable	100-037-522	

3.9.1 Functional states of signal lights

General The signal light shows the current operating state/error state of the electric stunner clearly and recognisable at all times.
The colours are for quick orientation.



Signal	Description	Measure
Red	Error during head stunning (time error, current error or rise error).	Start next stunning. The signal light will remain on until the next stunning is started.
Yellow	Error during heart stunning (time error, current error, rise error)	Start next stunning. The signal light will remain on until the next stunning is started
Green	The electric stunner is ready for operation.	No action necessary.
Flashing green	The stunning process is carried out.	No action necessary.
Green/Yellow/Red	When restarting the electric stunner.	

3.10 Rating plate for electric stunners



The rating plate shown is an example and may differ from the actual rating plate.

The rating plate is attached to the side wall of the housing on the exterior and to the control cabinet door on the interior. The illustration below is an example of a rating plate:



Fig. 3-4 Rating plate example

Element	Explanation
1	Company address (no longer current)
2	Machine type and designation
3	Performance data
4	Year and week of machine and production order no.

3.11 Stun tongs

FREUND electric stun tongs

- were built in accordance with DIN EN 60335-2-87 and tested according to quality standards.
- comply with the provisions of the German Animal Protection Slaughter Regulation of 1 January 2013 and Regulation (EC) No 1099/2009.

- Features
- Combined spike plus middle-thorn electrodes
 - Electrode quick-change system
 - Angled, ergonomic handle (electric stun tongs STUN-TONG-ES Steel)
 - Stable stainless steel design ** INOX / rust-free **
 - Wear-resistant spiral cable (except pneumatic stun tongs STUN-TONG-EPP2/STUN-TONG-EPP3)

The table below provides an overview of the various uses of the stun tongs according to animal species and stunning method.



Stun tongs suitable for animal type and stunning method!

⊗ Stun tongs **not** suitable for animal species and stunning method!

Stun tongs	Animal species			Stunning method	
STUN-TONG					
EP Steel	✓	⊗	⊗	✓	⊗
EP LS	✓	⊗	✓	✓	⊗
EA Steel	⊗	⊗	✓	✓	⊗
ES Steel	✓	✓	⊗	✓	✓
EPP2 (pneumatic)	✓	⊗	⊗	✓	⊗
EPP3 (pneumatic)	✓	✓	✓*	✓	⊗

*With long tips (optional) also suitable for sheep.

3.11.1 STUN-TONG-EP steel, STUN-TONG-EA steel, -EP LS: function elements

Function elements

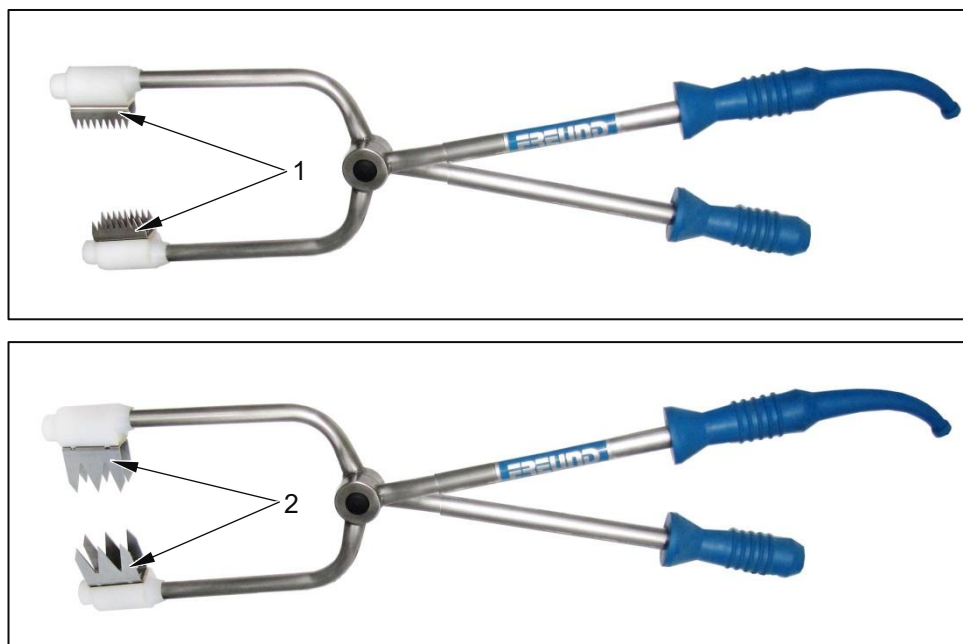


Fig. 3-5 STUN-TONG-EP steel/ -EP LS, STUN-TONG-EA steel

Item	Description
1	Electrodes for pigs (STUN-TONG-EP steel/ -EP LS)
2	Electrodes for sheep (STUN-TONG-EA steel)

3.11.2 STUN-TONG-ES Steel: function elements

Function elements

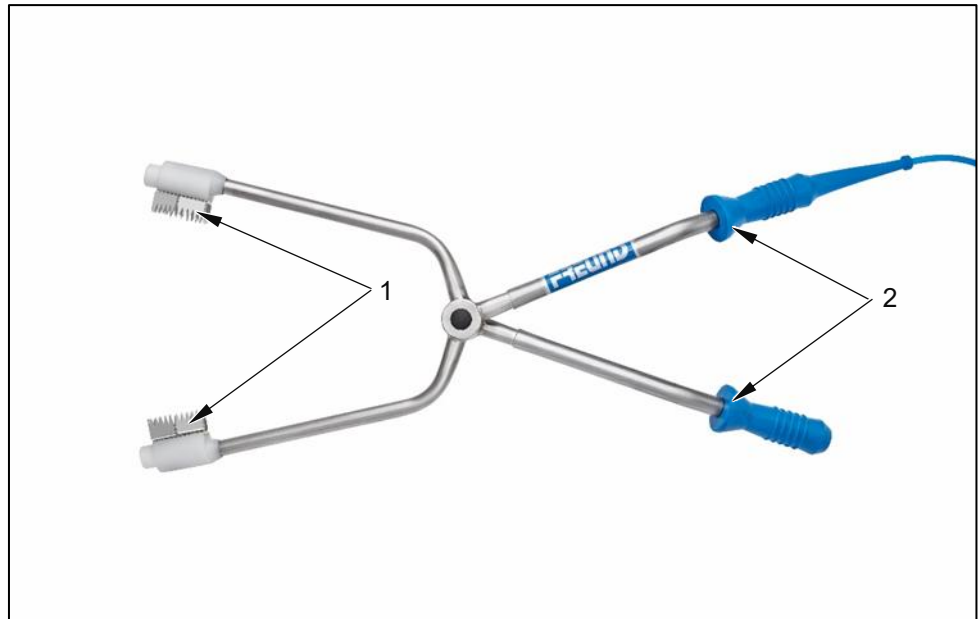


Fig. 3-6 STUN-TONG-ES Steel

Item	Description
1	Hexagonal electrodes for pigs
2	Ergonomically angled handle

3.11.3 STUN-TONG-EPP2 function elements

Function elements

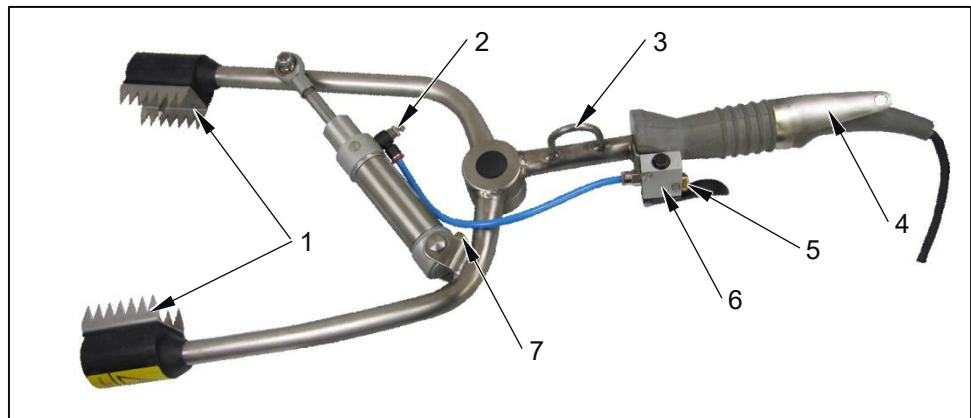


Fig. 3-7 STUN-TONG-EPP2

Item	Description
1	Electrodes for pigs
2	Adjusting screw for closing speed
3	Attachment for horizontal hanging
4	Attachment for vertical hanging
5	Compressed air connection

Item	Description
6	Mechanical trigger for closing process
7	Silencer

3.11.4 Functional elements STUN-TONG-EPP3

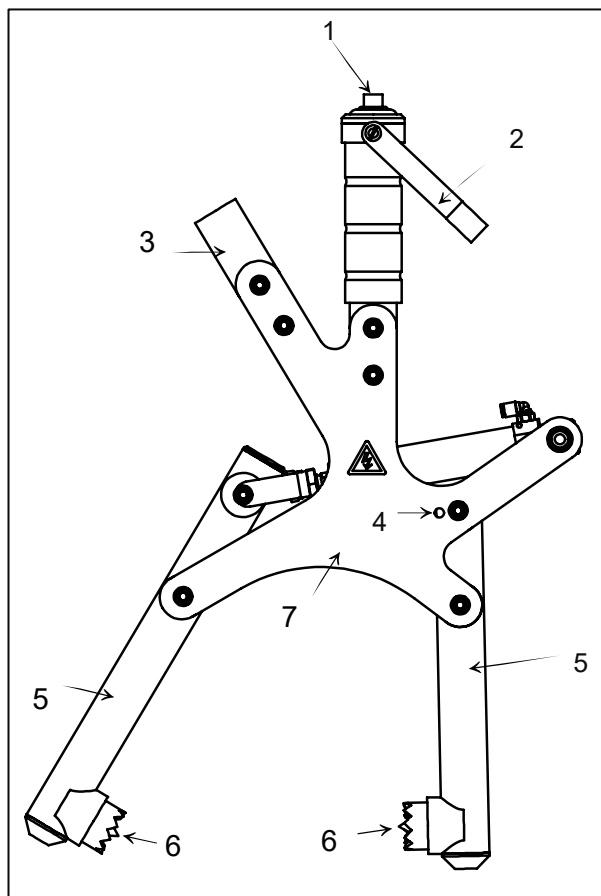


Fig. 3-8 STUN-TONG-EPP3

Pos.	Description
1	Pushbutton (triggers the stunning process)
2	Clip (for mounting the stun tongs in a balancer)
3	Connecting line (pneumatics, electrics)
4	Hole (used to adjust the side piece position)
5	Plastic side piece
6	Electrodes
7	Position of the serial number



The STUN-TONG-EPP3 can be set to two electrode distances. A conversion manual can be found in the appendix under the heading **TIN-014058**.

3.12 Interface control box

The interface control box

serves as an extension to the E8 to control pneumatic components. It is available in two variants.

- All variants
 - The cylinder movement speeds can be adjusted.
 - There is the option of connecting stun tongs with an electric or pneumatic button.
- STUN-IF1-E8
 - This variant gives you the option of controlling pneumatic stun tongs.
- STUN-IF2-E8
 - This variant gives you the option of controlling pneumatic stun tongs, as well as up to 2 pneumatic cylinders on a heart electrode.



Unused connections on the interface are to be sealed with the caps/dummy plugs included in the delivery.

Connections
STUN-IF1-E8

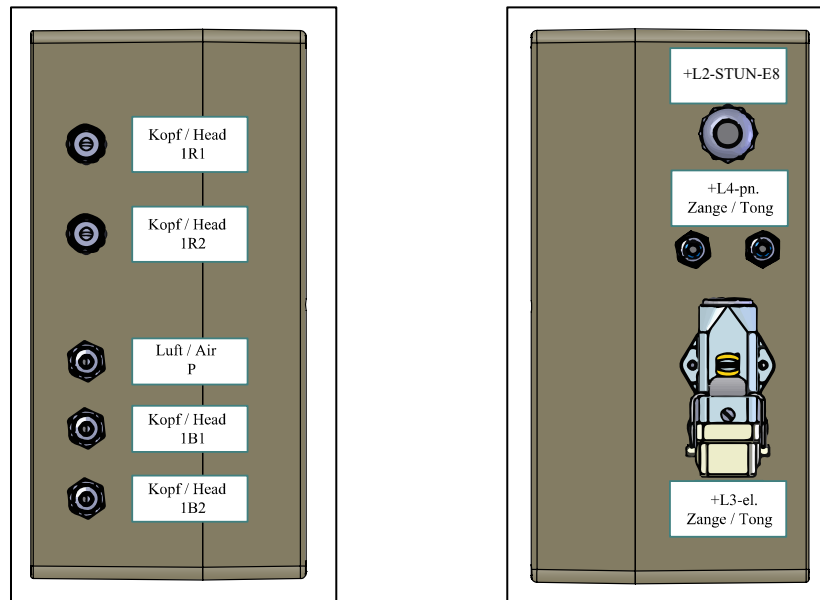


Fig. 3-9 Connections STUN-IF1-E8

Pos.	Description
1R1	Throttle for adjusting the movement speed of the stun tongs when closing
1R2	Throttle for adjusting the movement speed of the stun tongs when opening
P	Central compressed air connection for the interface's compressed air supply. Compressed air hose Ø6 mm; operating pressure 6 bar
1B1	Compressed air connection, opening the stun tongs Compressed air hose Ø6 mm
1B2	Compressed air connection, closing the stun tongs Compressed air hose Ø6 mm
L2	Connection of the interface to STUN-E8

Connections
STUN-IF2-E8

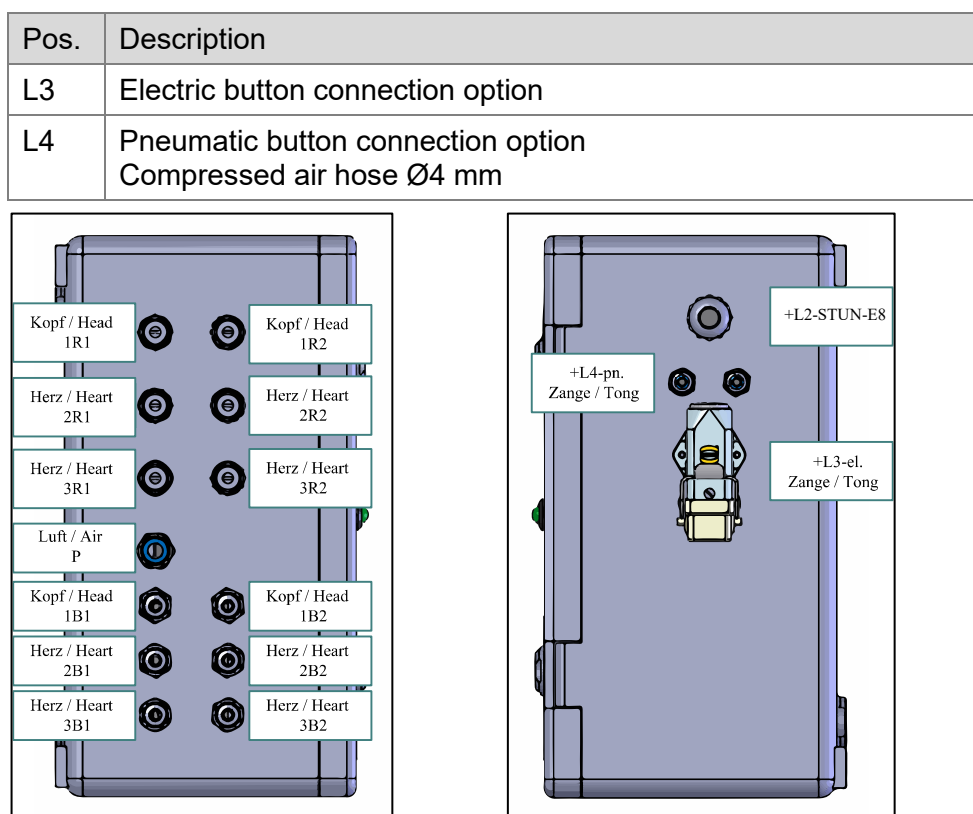


Fig. 3-10 Connections STUN-IF2-E8

Pos.	Description
1R1	Throttle for adjusting the movement speed of the stun tongs when closing
1R2	Throttle for adjusting the movement speed of the stun tongs when opening
2R1	Throttle for adjusting the movement speed of the heart electrode when moving to stunning position
2R2	Throttle for adjusting the movement speed of the heart electrode when moving to starting position
3R1	Throttle for adjusting the movement speed of the heart electrode when moving to stunning position
3R2	Throttle for adjusting the movement speed of the heart electrode when moving to starting position
P	Central compressed air connection for the interface's compressed air supply. Compressed air hose Ø8 mm; operating pressure 8 bar
1B1	Compressed air connection, opening the stun tongs Compressed air hose Ø6 mm
1B2	Compressed air connection, closing the stun tongs Compressed air hose Ø6 mm

Pos.	Description
2B1	Compressed air connection, moving the heart electrode to starting position Compressed air hose Ø6 mm
2B2	Compressed air connection, moving the heart electrode to stunning position Compressed air hose Ø6 mm
3B1	Compressed air connection, moving the heart electrode to starting position Compressed air hose Ø6 mm
3B2	Compressed air connection, moving the heart electrode to stunning position Compressed air hose Ø6 mm
L2	Connection of the interface to STUN-E8
L3	Electric button connection option
L4	Pneumatic button connection option Compressed air hose Ø4 mm

3.13 Test device STUN-CHECK-M for stunning device

With the test device STUN-CHECK-M you can test the function and safety of a FREUND stunning device. To do this, select the corresponding resistance with the rotary switch..

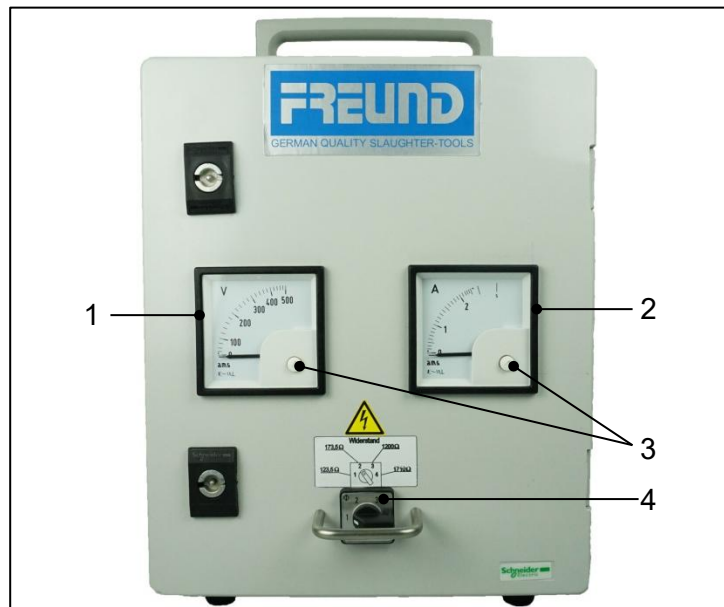


Fig. 3-11 Machine overview STUN-CHECK-M

Pos.	Description
1	Volt display
2	Ampere display
3	Set screw (calibration measuring instruments)
4	Rotary switch (measuring resistor)

3.14 Functional description of electrical stimulation

After a successful stunning and effective draining of blood, the methods of electrical stimulation can be used advantageously. This improves meat quality, reduces the risk of contamination, supports the processing process and extends the shelf life of the product.

3.14.1 Functional description for immobilisation

In electrical stimulation for immobilisation, electricity is passed through the carcass. This causes the muscles to contract strongly. Reflex-like movements of the animal are avoided. The animal can be attached more easily and safely.

3.14.2 Functional description for draining blood

In electrical stimulation for bleeding, electric current is passed through the carcass. This causes the muscles to contract, compressing the blood vessels. The bleeding process is accelerated.

3.14.3 Functional description of dehiding

In electrical stimulation for dehiding, a voltage in the voltage range between 30-400V is applied to the carcass. The flow of electricity through the carcass causes the muscles of the carcass to contract. This stretches the connective tissue and the coat can be pulled off more easily and gently.

3.15 Electrical stimulation device STIM-E3

- The STIM-E3 is used exclusively for electrical stimulation after slaughter and must not be used for stunning.
 - The requirements of the Animal Welfare Slaughter Ordinance for stunning live animals therefore do not apply.
 - The general regulations on electrical safety and occupational safety apply.
- Features
- Pre-installed stimulation programs for dehiding, immobilising and stimulating when draining blood
 - Visual and audible error indication
 - LCD display

3.15.1 Preset programs STIM-E3

-  When delivered, the stimulation device STIM-E3 has preset programs.
-  Please refer to the following table for the available programs.
-  Pre-installed and unlocked programs

Program		Interval	STIM-E3
P1	Immobilisation	Short	☒
P2	Immobilisation	Long	☒
P3	Draining of blood	Short	☒
P4	Draining of blood	Long	☒
P11	Dehiding	Short	☒
P12	Dehiding	Long	☒

3.15.2 Functional elements STIM-E3

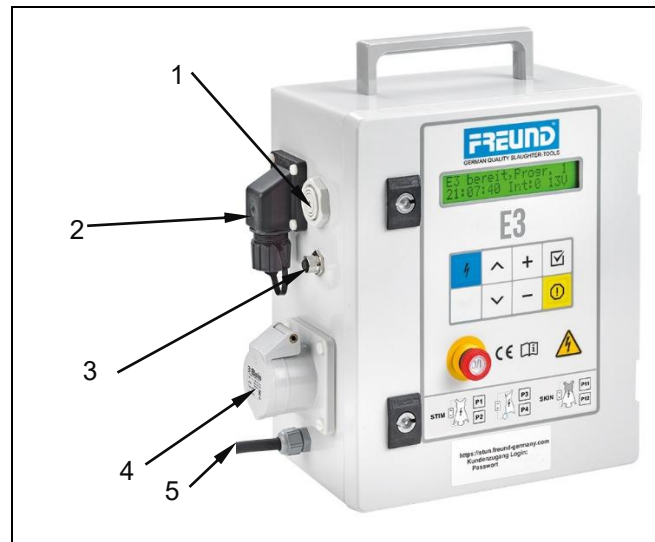


Fig. 3-12 Functional elements STIM-E3

Pos.	Description
1	Buzzer (acoustic signal)
2	LAN cable connection
3	Interface connection for start signal (2-hand control or manual start button)

Pos.	Description
4	Connection, stimulation/immobilisation: Power cable to the tongs (electrodes)
5	Mains cable

3.15.3 Optional accessory STIM-E3

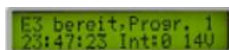
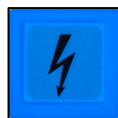
Designation	Part No.
Manual start button	164-301-003
Clamp electrode set	164-301-004
Tongs	100-037-077

3.15.4 Display and operating elements STIM-E3



Fig. 3-13 Display and operating elements STIM-E3

3.15.5 Display elements STIM-E3

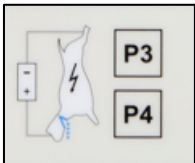
Display	Meaning
	LCD display:
	Operation/program display: Indicates that the device is switched on and a stimulation program is actively running.

Display	Meaning
	Indicates stunning errors and device faults

3.15.6 Operating elements STIM-E3

Key	Function
 	Select/change the program: Stun program parameters
 	Number input/correction
	Confirmation key
	Emergency stop button for switching the device off and on again with rotary release.

3.15.7 Program legend

	Stimulation/immobilisation
	Draining of blood
	Dehiding/fur removal

4 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.

4.1 Unpacking the machine

Recycling and disposal The original packaging of the machine is made of recyclable material and can be given to the system for collecting recyclables.

For details about recycling and disposal of the package refer to the → chapter *Disposal and Recycling* on page 96.

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

4.2 Storing the machine

To store the machine safely, be sure to observe the following notes:

- Only store the machine in dry and frost-free rooms.
- When storing the machine for a longer period, make sure it is dry.
- Store the machine so that damage to the machine is excluded.
- Protect the machine against corrosion.

5 Installing and commissioning

The installation and connection of the electric stunner, the electrical stimulation device, the stun tongs and the devices of the accessories are to be performed by the operator.

FREUND Maschinenfabrik will not be liable for damage resulting from incorrect connection or improper handling.

5.1 Safety information



DANGER!

Live machine parts.

Danger to life.

- Before beginning any installation, maintenance or repair work, place the stun tongs on a non-conductive surface.
- Before beginning any installation, maintenance or repair work, disconnect the electric stunner or electric stimulation device from the mains.
- Before beginning any installation, maintenance or cleaning work, disconnect the stun tongs or electrodes from the stunner or electrical stimulation device.
- Secure the electric stunner or the electric stimulation device against being switched on accidentally.
- Never connect more than one stun tong or electrode combination to a stunner or electrical stimulation device.



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 electrodes.

Risk of cutting on sharp-edged electrodes.

- Wear protective gloves when performing any installation, maintenance or repair work.

5.2 Personal protective equipment



5.3 Installation and connection of the electric stunner



Improperly extended power cables can cause interference with stunning. We recommend installation of a power outlet or a permanent connection.

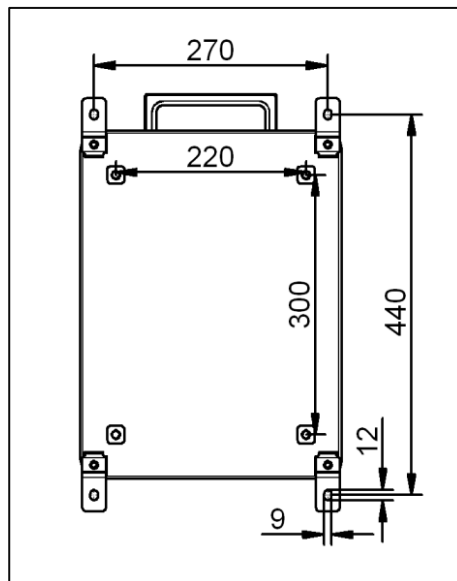


Fig. 5-1 Drilling pattern dimensions

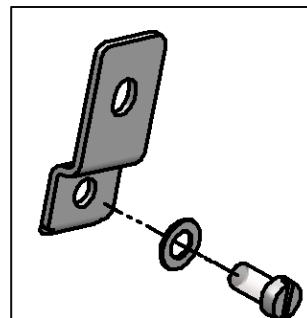


Fig. 5-2 Wall mounting set

The electric stunning device's signal and display elements must be clearly visible to the user so that faults can be identified immediately.

- Mount the electric stunning device with our wall mounting set* (Fig. 5-2) at a height of at least 1.6 m.
Use the 4 mounting holes fitted on the back of the electric stunning device for mounting.
- Store the stun tong in a suitable holding device at the same height when not in use.
- Connect the electric stunning device to an effective equipotential bonding system (grounding).
- Install an EMERGENCY STOP mechanism in the power supply circuit.
- Route electrical connection cables so that they cannot be reached by slaughter animals.

* The wall mounting set (part no. 100-022-069) is available from our Sales department. The address and telephone number can be found on the copyright page.

5.4 Connecting a LAN cable to the electric stunning device

1. Unscrew the protective cap on the connection socket.



2. Plug the data cable's connector (1) into the connection socket on the electric stunning device.
3. Screw the connector onto the connection socket.



5.5 Connecting the stun tongs

The connecting lines are 5 m long, allowing you to position the electric stunner and the stun tongs at a safe distance from the work area.



Do **not** extend the power cable included in the delivery. A cable extension increases electrical resistance and may interfere with proper stunning



Each electric stunner may only supply one electrode combination. (DIN EN IEC 60335-2-87)

5.5.1 Installing the balancer (optional)

The balancer is used for balancing and counterbalancing the weight of the stun tongs attached to it.

Recommendation

FREUND Maschinenfabrik recommends the balancer F 4-2,5 (Part-No. 920-414-001) for the pneumatic stun tongs STUN-TONG-EPP2 and STUN-TONG-EPP3.



Please refer to the operating manual for the balancer regarding technical data and the structure of the balancer.

1. Secure the balancer in accordance with the manufacturer's operating manual.
2. Attach the balancer to a higher rail above the workstation or to the ceiling with a rail system.



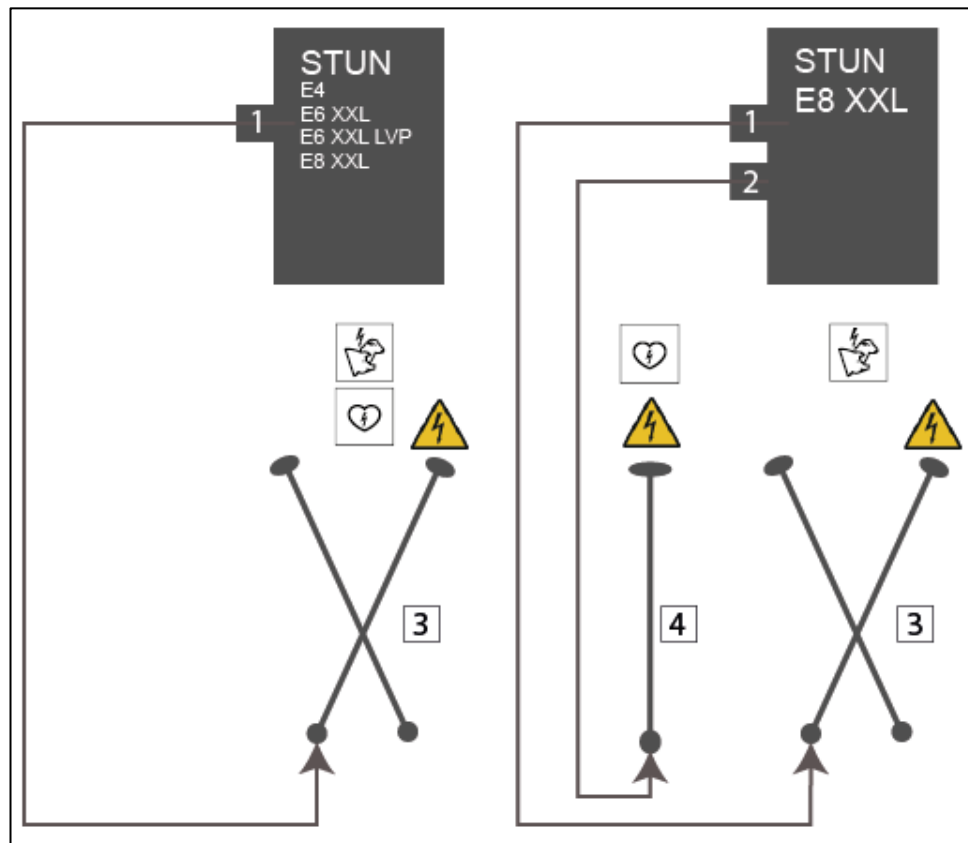
When an overhead track is used, the distance between the centre of the overhead track or the point where the carcass is suspended and the balancer suspension must be between 350 and 400 mm.

3. Attach the stun tongs to the balancer. Clamp the connecting line of the stun tongs into the balancer holder.
4. Readjust the balancer if necessary. Observe the operating manual for the balancer when doing so.

5.5.2 Connecting the STUN-TONG-EP, -ES, -EA, -EF stun tongs

Connection
diagram
Stunning

The following illustration is a schematic representation of the connection for stun tongs **without** a pneumatic drive.



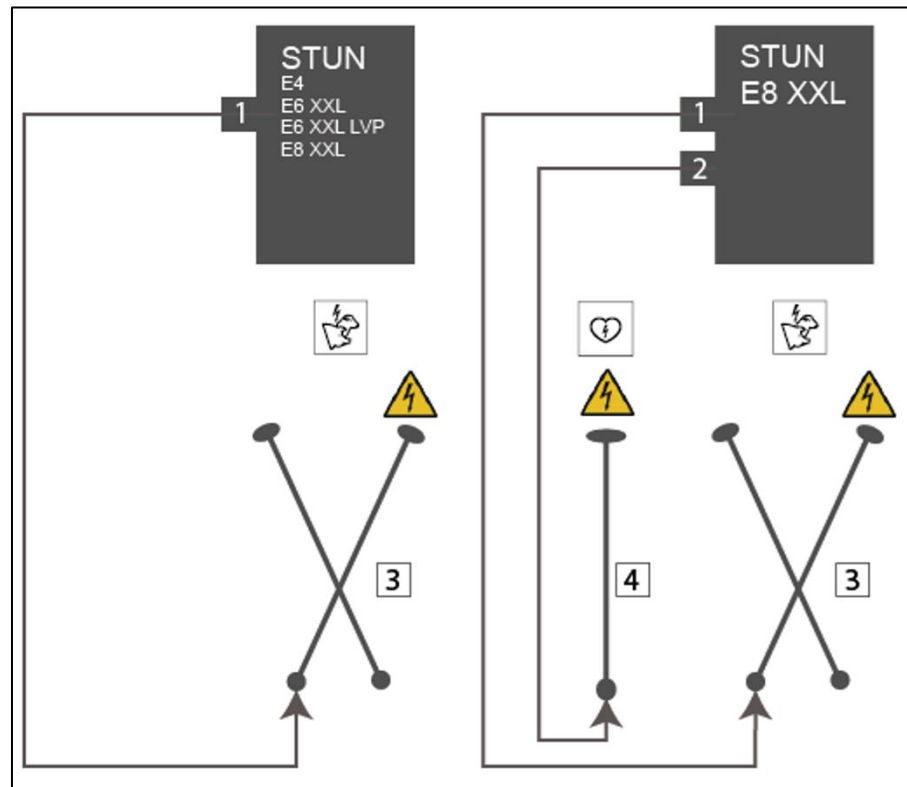
Pos.	Description
1	Connection, stun tongs
2	Connection, heart electrode
3	Stun tongs
4	Heart electrode (provided by the customer)

- Plug the stun tongs' connector into the connection socket on the electric stunner.
- For heart stunning with a heart electrode:
Insert the plug of the heart electrode into the connection socket on the electric stunner.

5.5.3 Connecting the STUN-TONG-EPP2 stun tongs

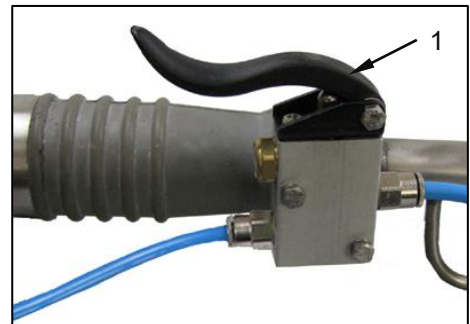
Connection
diagram
Stunning

The following illustration is a schematic representation of the connection for the stun tongs **with** a pneumatic drive.



Pos.	Description
1	Connection, stun tongs
2	Connection, heart electrode
3	Pneumatic stun tongs
4	Heart electrode (provided by the customer)
5	Connection, compressed air supply at the installation site

1. Connect the pneumatic stun tongs to the compressed air supply or to a compressor with an output of 5 – 8 bar.
2. Pull the trigger (1) and keep it pulled.



3. Use the adjustment screw (2) to adjust the closing speed of the stun tongs.
4. Release the trigger again.



5. Plug the stun tongs' connector into the connection socket on the electric stunner.
6. Attach the stun tongs to a balancer.
7. For heart stunning with a heart electrode:
Insert the plug of the heart electrode into the connection socket on the electric stunner.

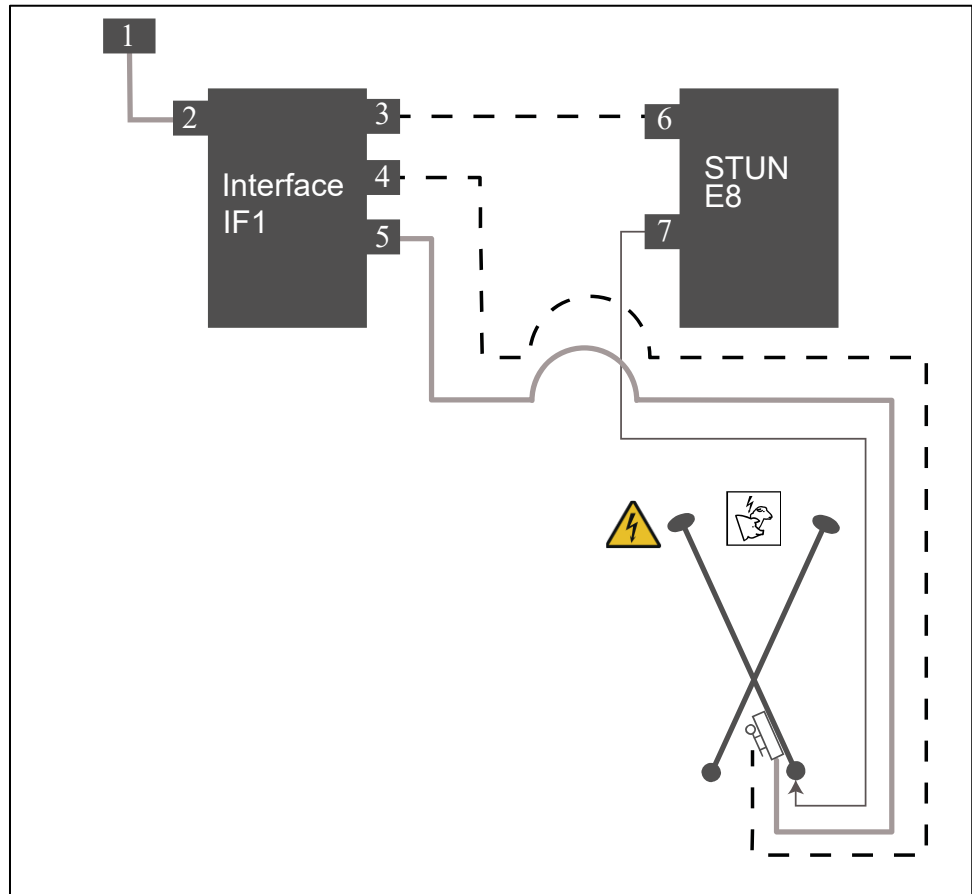
5.5.4 Connecting the STUN-TONG-EPP3 stun tongs

Pneumatic stun tongs for stunning in restrainers and individual traps require an interface control box for controlling the pneumatics.

- Set up the interface control box near the electric stunner.
- Mount the interface control box at a height of at least 1.6 m. To mount the box, use the 4 designated mounting holes on the back of the interface control box.
- Route the control cables and compressed air hoses in such a way that they are out of reach of the slaughter animals.
- Connect the interface control box: → *connection diagram*.

Connection
diagram
Interface IF1

Pneumatic stun tongs (e.g. STUN-TONG-EPP3): The following illustration is a schematic representation of the interface control box connection.

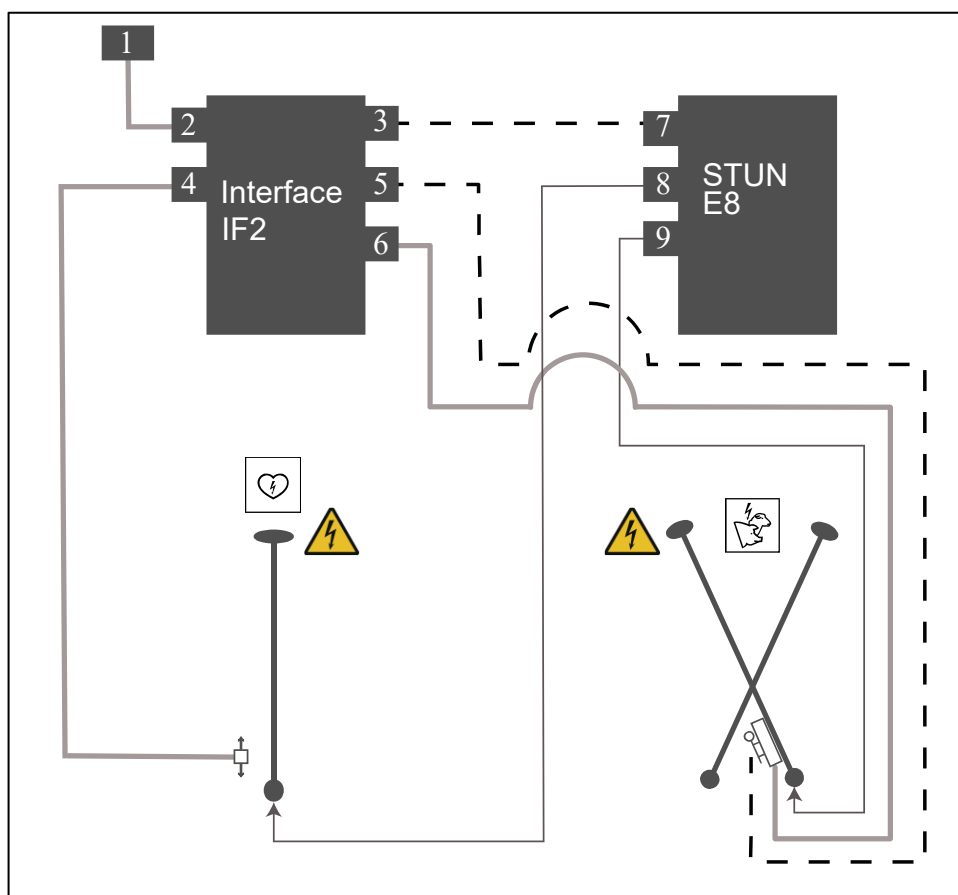


Pos.	Description
—	Compressed air hose
---	Power cable for stunning
---	Control cable
1	Compressed air supply at the installation site
2	Compressed air supply: interface control box ► installation site
3	Control system: interface control box ► electric stunner STUN-E8 XXL
4	Control system: interface control box ► pneumatic stun tongs
5	Compressed air supply: interface control box ► pneumatic stun tongs
6	Control system: STUN-E8 XXL ► interface control box

Pos.	Description
7	Power cable: STUN-E8 XXL ► pneumatic stun tong

Connection
diagram
Interface IF2

Single moveable heart electrode: The following illustration is a schematic representation of the interface control box connection.

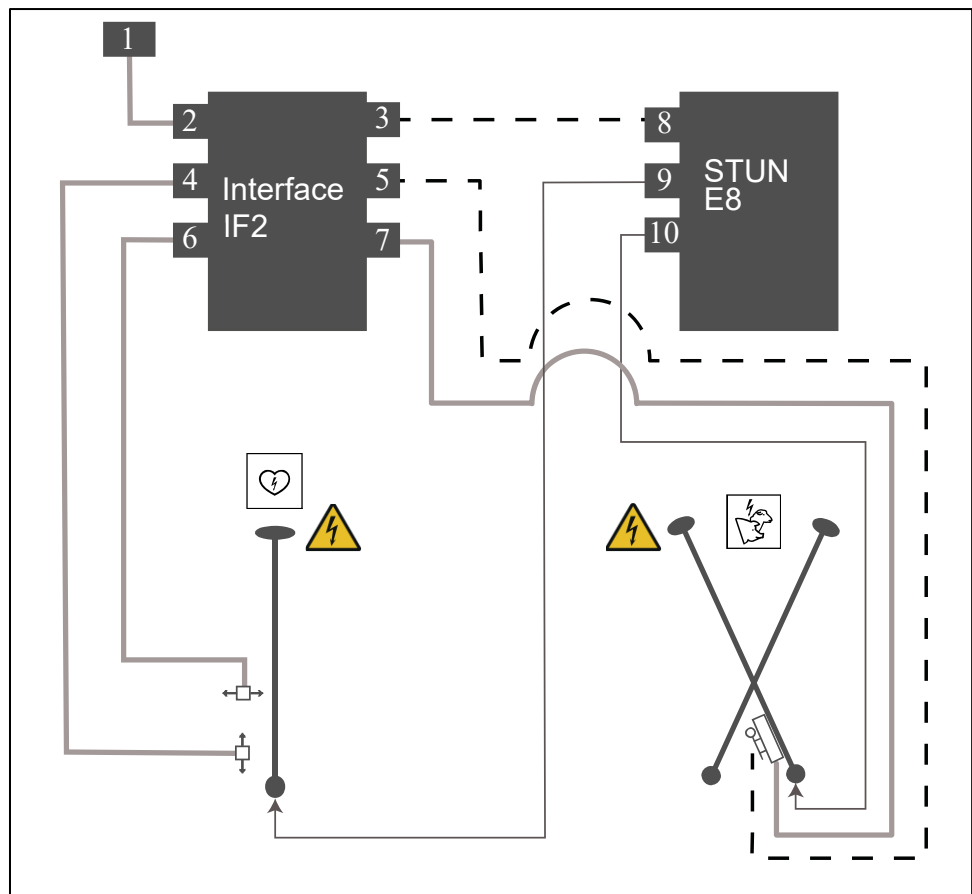


Pos.	Description
	Compressed air hose
	Power cable for stunning
	Control cable
1	Compressed air supply at the installation site
2	Compressed air supply: interface control box ► installation site
3	Control system: interface control box ► electric stunner STUN-E8 XXL
4	Compressed air connections (movement towards carcass): interface control box ► pneumatic cylinder (heart electrode)

Pos.	Description
5	Control system: interface control box ► pneumatic stun tongs
6	Compressed air supply: interface control box ► pneumatic stun tongs
7	Control system: STUN-E8 XXL ► interface control box
8	Power cable: STUN-E8 XXL ► heart electrode
9	Power cable: STUN-E8 XXL ► pneumatic stun tongs

Connection
diagram
Interface IF2

Dual moveable heart electrode: The following illustration is a schematic representation of the interface control box connection.



Pos.	Description
—	Compressed air hose
—	Power cable for stunning
- - -	Control cable

Pos.	Description
1	Compressed air supply at the installation site
2	Compressed air supply: interface control box ► installation site
3	Control system: interface control box ► electric stunner STUN-E8 XXL
4	Compressed air connections (movement towards carcass): interface control box ► pneumatic cylinder 1 (heart electrode)
5	Control system: interface control box ► pneumatic stun tongs
6	Compressed air connections (lateral movement): interface control box ► pneumatic cylinder 2 (heart electrode)
7	Compressed air supply: interface control box ► pneumatic stun tongs
8	Control system: STUN-E8 XXL ► interface control box
9	Power cable: STUN-E8 XXL ► heart electrode
10	Power cable: STUN-E8 XXL ► pneumatic stun tongs

5.6 STUN-TONG-EPP3



- The stun tongs STUN-TONG-EPP3 are to be hung on a suitable balancer and operated exclusively in this position.
- The connection string must not be exposed to any mechanical tensile load at any time during operation.
- To avoid damage, a functional strain relief must be provided and properly set up.



An example of a strain relief can be found in the appendix under the heading **TIN-015066**.

5.7 STUN-CHECK-M

5.7.1 Mounting STUN-CHECK-M

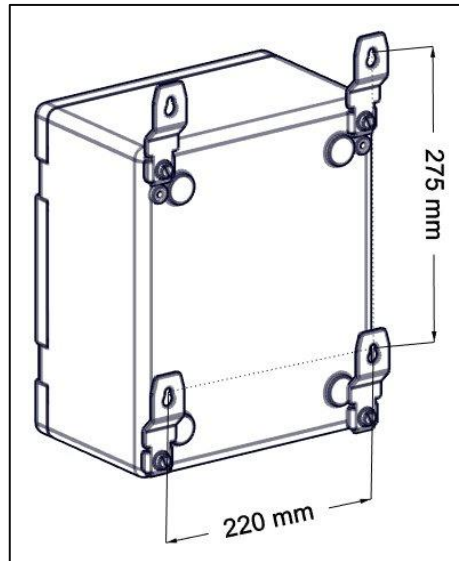


Fig. 5-3 Dimensions of hole pattern

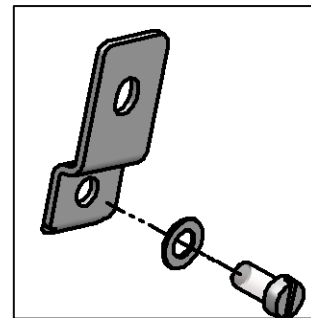


Fig. 5-4 Wall fastening set

The signal and display elements of the STUN-Check-M must be clearly visible to the operator and faults displayed must be identifiable immediately.

- Put the device on a stable table.
- or
- Attach the device using our wall fastening set* (Fig. 5-2). For mounting purposes, use the 4 mounting holes located on the back of the STUN-Check-M.
- Integrate the device in an effective equipotential bonding system (earthed).
- Install the device where water can run off easily.

* The wall fastening set (part no. 100-022-069) can be ordered from our sales team. The address and telephone number can be found at the beginning of Imprint.

5.7.2 Adjusting the displays

The pointers of both displays must be set to zero.

Use a suitable tool to turn the set screw until the pointer is at zero.



Fig. 5-5 Volt display with set screw bottom right

5.8 Installing and connecting the electrical stimulation device



Improperly extended power cables can cause interference with the stimulation process.

We recommend installing a socket or a fixed connection.

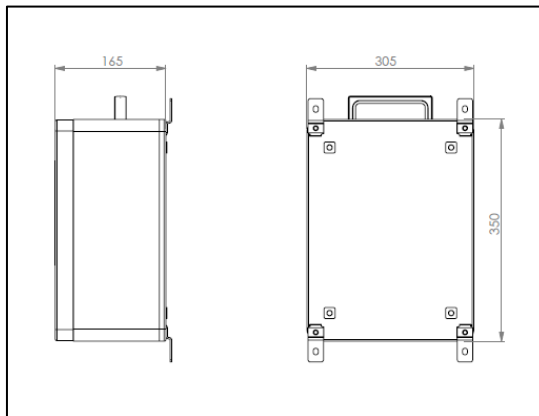


Fig. 5-6 dimensions STIM-E3

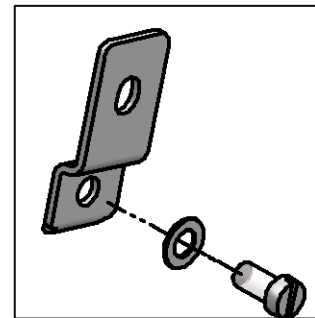


Fig. 5-7 Wall fastening set

The signal and display elements of the electric stimulation device must be clearly visible to the operator and faults displayed must be identifiable immediately.

- Attach the electrical stimulation device with our wall fastening set * (Fig. 5-2) at a height of at least 1.6 m.
To mount the electrical stimulation device, use the 4 mounting holes located on the back of the electrical stimulation device.
 - When not in use, store the power cables in a suitable holding device at the same height.
- Recommendation Install an additional EMERGENCY STOP device at a central location in the supply circuit so that in an emergency the power supply can be interrupted not only at the device

6 Operation and Stunning

When operating stunning plants the relevant provisions of the trade association are to be observed. Moreover the provisions of the veterinary offices, the EU and the animal welfare apply.

FREUND electric stunning device offer the following stunning methods:

- Head flow
- Head and heart stunning
- Stunning in restrainers
- Killing

6.1 Safety information



WARNING!

Risk of accident caused by insufficiently qualified personnel.

Danger to Life and most severe injuries are possible.

- The machine may only be operated by instructed and authorized personnel.
- The machine may only be operated by personnel, who possessing the necessary knowledge and skills (expertise) to look after, restrain, stun, slaughter or kill animals.

6.2 Personal protective equipment



Use special electric rubber gloves according to EN 60903.

Only use foot protection with insulating soles, e.g. rubber boots.

6.3 Animal welfare

The harmonised laws of the EU and the German Animal Protection Slaughter Regulation (TierSchlV) require careful treatment that prevents pain, suffering or injury of the slaughter animals as the top priority.

- Avoid causing the slaughter animals any excitement, pain or suffering when driving, loading and stalling the animals.
Do not use electric stunners to herd animals.
- Avoid causing stress to the slaughter animals prior to stunning so that the level of excitement or injury is kept the absolute minimum.
- Only use electric animal drover with healthy and uninjured over one year old cattle and over four month old pigs.

- Moisten only the areas on the slaughter animals where the electrodes of the stun tongs are to be applied.
Use warm water (approx. 40 °C) if possible.
- Avoid pain and suffering by attempting to apply contact pressure in a manner conducive to the well-being of the animal.
- Stun the animals so that they are quickly and painlessly rendered unconscious and insensitive right up to the point of death.

6.4 Daily safety check

Before starting operation, check the E-stunning device and the stunning system diligently for flawless and intended functioning.

Only use faultless and fully functional machines.

Check the

- machine and all electrical connections and access lines for surface damages.
- functionality of the entire stunning system.
- function of the safety devices.
- electrodes to be properly fixed and rounded and burned tips.
- balancer and the balancer settings.

6.5 Carrying out stunning

Default stunning
time

The pre-set stunning time is a specification based on the current German Animal Protection Slaughter Regulation of 1 January 2013 (BGBl I S. 2982) and Regulation (EC) No. 1099/2009.

In other countries, the respective national regulations on the protection of animals apply at the time of slaughter or killing. Adapt the stunning time to the regulations in your country.

1. Connect the stunner to the power supply.
2. To transfer the stunning data to the FREUND web server:
Connect the stunner to a router connected to the Internet using a LAN cable.

The electric stunner's memory has only a limited capacity. When the memory is full, you can no longer perform stunning.
3. Connect the appliance to the output connection of the stunner.

Switching on

4. Switch on the machine.



To do so, turn the 0/I switch.

The LCD display shows the following together with the machine designation and version number:

Stunner E6
ProgVers XX.XX

After a few seconds, the display will change:

Employee Entering
number 0

Entering personnel
number

5. Enter the operator's number. This can be a number between 1 and 250.

The stunner cannot be started until a number greater than 0 has been entered.



To do so, press until the desired number is shown in the display.



6. Confirm input by pressing .

The display shows the number of the set program (Prog.3), the time (08:05:35), Internet connection yes (Int:1)/no (Int:0) and the head electrode's measured voltage (14V).

E6 XXL ready, Prog.3
08:05:35 Int:0 14
⌂

(Example display)

Selecting a
program

7. Select the program's program number.

Up to 24 pictograms may be stored.



To do so, press the button or until the desired program number is shown.

E6 XXL ready, Prog.3
08:05:35 Int:0 14
⌂

6.5.1 Carrying out head stunning (restrainer and individual trap)

Stunning on the head of the animal is carried out in a single step. The stunning effect lasts approximately 40 – 60 seconds.

When the electrodes are in contact with the skin of the animal, the stunning voltage is automatically triggered, as indicated by a signal lamp. The electric stunner's digital display shows the actual flowing current in amperes, voltage in volts, and frequency in Hz.

Contact positions
for pigs

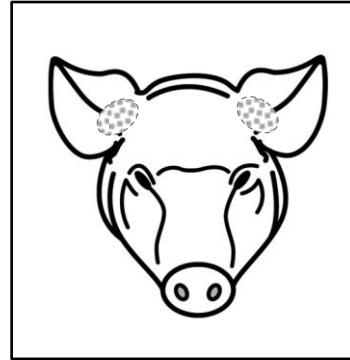


Fig. 6-1 Ideal electrode contact position (side and front view)

Contact positions
for sheep

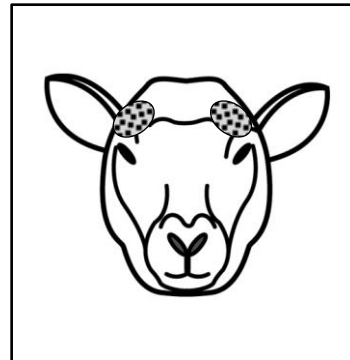
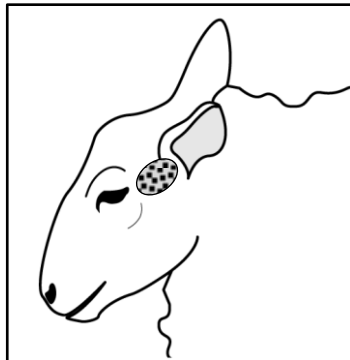


Fig. 6-2 Ideal electrode contact position (side and front view)

1. Apply the electrodes of the stun tongs on both sides of the animal's head.

Pig: preferably at the base of the ear or between eye and base of ear (see markings Fig. 6-1)

Sheep: between eye and ear (see markings Fig. 6-2)

This causes the current to flow through the brain along the shortest possible path.



Avoid deeper probing with the stun tongs. This could result in bone fractures.



The  symbol lights up.

A signal tone sounds when the preset stunning time has elapsed. The stunning process is now finished and the stunning current is switched off.

2. Open the stun tongs.

The electric stunner switches back to the start of the program.

3. Ensure quick draining of the blood after completion of stunning to ensure that the animal bleeds out immediately in a controlled manner.

Sheep:

- No later than 5 seconds.

Pigs:

- No later than 10 seconds* (ideally 5 seconds) if blood is drained in lying position.
- No later than 20 seconds* (ideally 10 to 15 seconds) if blood is drained in hanging position.

* Specifications as per TierSchlV (German Animal Protection Slaughter Regulation) of 01/01/2013

6.5.2 Carrying out head and heart stunning

Head and heart stunning is carried out in two steps.

Generally, this stunning method results in an optimum stunning effect and a better meat quality.

Head flow phase

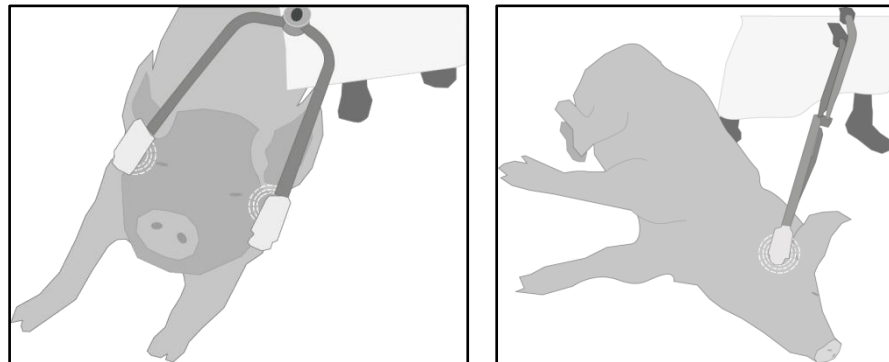


Fig. 6-3 Ideal electrode contact positions

1. Apply the electrodes of the stun tong on both sides of the animal's head.

Pig: preferably on base of ear or between eye and base of ear (see markings in Fig. 6-3)

This causes the current to flow through the brain along the shortest possible path.



Phase
Repositioning

The  symbol lights up.

When the pre-set head current flow time has elapsed, a horn signal sounds. The stunning device automatically switches to heart stunning mode.



The  symbol lights up.

The stun tong must be repositioned within 4 seconds as the stunning process will otherwise be aborted and will then have to be repeated starting once more with head flowing.

Heart stunning phase

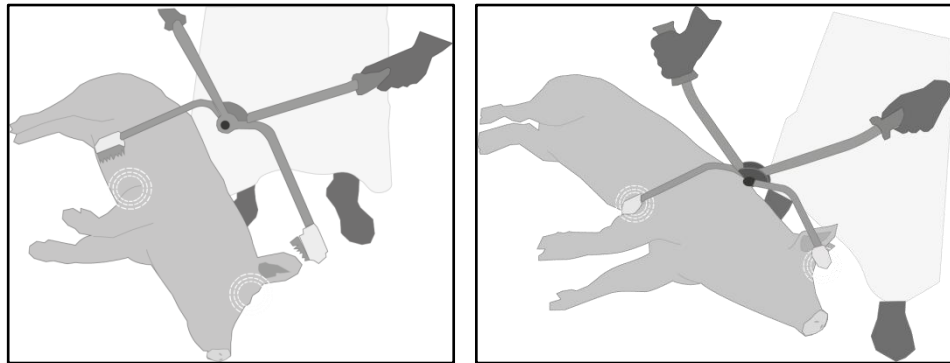


Fig. 6-4 Ideal electrode contact positions

2. Immediately apply the electrodes of the stun tong to the heart and the base of the ear of the animal lying on the ground (see markings in Fig. 6-4):
 - 1 electrode on heart
 - 1 electrode on head

A horn signal sounds when the preset stun time has elapsed.

The stun process is now finished and the stun current is switched off.
3. Open the stun tong.

The machine switches back to the start of the program.
4. Ensure quick draining of the blood after completion of the stunning to ensure that the animal bleeds out immediately in a controlled manner.
 - no later than 10 seconds* (ideally 5 seconds) if blood is drained in lying position.
 - no later than 20 seconds* (ideally 10 to 15 seconds) if blood is drained in hanging position.

* Specifications as per TierSchlV (German Animal Protection Slaughter Regulation) of 01/01/2013



For further details on stunning using a stun tong, refer to the corresponding operating manual.

6.5.3 End of stunning

1. Switch off the electric stunner.
2. Disconnect the stunner from the mains power supply.
3. Clean the stunner (→ Chapter *Daily cleaning* on page 87).

6.6 Changing parameters

To change a program's default parameters, you require a password. Our sales department will provide you with your personal password for your stunner.

1. Select the program whose parameters you wish to change.

- Enter the password.
2. Press the confirmation key .
3. Press and hold the key  until the display shows **password**.
4. Press  or  until your password's number the display shows your password's number.
5. Press the confirmation key .
- The display will show confirmation that you have entered the password correctly.*
- Change the parameters.
6. Press the confirmation key .
7. Press the key  or  until you reach the parameter you wish to change.
- The display shows the set numerical value.*
8. Press  or  to change the numerical value.
- The numerical value flashes during input.
9. Press the confirmation key .
- The numerical value stops flashing and is adopted in the stunner's internal memory.
- If there is an active network connection, the parameter set is transferred to the FREUND web server after around 10 seconds. The program is now available to all users with its changed parameters.

6.7 Time setting



To set or change a time, you do not require a password.

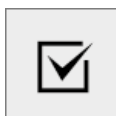


Display

1. Switch on the electric stunner.
 - Turn the rotary switch of the device to the right to position I.

E6 ready, Prog.3
08:05:35 Int:0 14V

Explanation



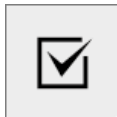
2.
 - Press the confirmation key.
 - The display will show the **head start frequency**

Head Starting frequency
Para.Nr.1 400Hz

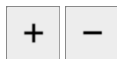


3. Press the selection button until the display shows **input time**

Time input
11:11:14



4. To set the time, do the following:
- Press the confirmation key.
 - The hour indicator flashes.



5. Press  or  until the corresponding number of hours appears on the display.



6. Press the confirmation key to save your entry. After that, the cursor changes from the hour display to the minute display.



7. The input process for setting the minutes is analogous to setting the hours.

6.7.1 Selecting a language



- To select or change a language, you do not require a password.

The following languages are available for selection:

- German
- English
- Spanish
- French

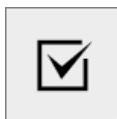


1. Switch on the electric stunner.
- Turn the rotary switch of the device to the right to position I.

Display

E6 ready, Prog.3
08:05:35 Int:0 14V

Explanation



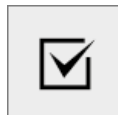
- Start-up display
- 2.
- Press the confirmation key.
 - The display will show the **head start frequency**

Head Starting frequency
Para.Nr1 400Hz



3. Press the selection button until the display shows the **language selection**.

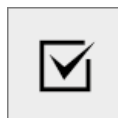
Language selection
Para.Nr.24 German



4. To select the language, follow these steps:
- Press the confirmation key.



5. Press **+** or **-** until the corresponding language appears on the display.



6. Press the confirmation key to save your entry.



7. To exit the language selection menu, press the **reset button**.

6.8 Stun errors and stun error indication

Should one or more errors occur during stunning, the yellow **Error** signal lamp lights up in the stunner's keyboard and a signal tone sounds.

6.8.1 Stun errors during head flow

Fault	Possible cause	Log entry
Stunner resets to start position.	The carcass's resistance exceeds 1,400 ohms.	
The stunner switches off and starts the pause phase.	The carcass's resistance exceeds 1,400 ohms.	
	The head stun current is intermittently interrupted or not reached within a period of 800 ms after starting.	Within 1,000 ms: Head current gain error More than 100 ms: Head current maintenance error
Stunning process stops prematurely.	Head minimum current is temporarily or permanently interrupted.	Head current gain error Head current maintenance error
Stunning process can be restarted afterwards.	Head minimum current is interrupted or not reached before the specified head minimum time.	Head time error

6.8.2 Stun errors during heart flow

Fault	Possible cause	Log entry
Stunner starts reset time.	The carcass's resistance exceeds 1,400 ohms.	
The stunner switches off and starts the pause phase.	The carcass's resistance exceeds 1,400 ohms.	Failed heart flow
Stunning process stops prematurely. Stunning process can be restarted afterwards.	Heart minimum current is temporarily or permanently interrupted	Heart current error
	Heart minimum current is interrupted or not reached before specified heart minimum time has elapsed	Heart time error

6.9 Testing the electric stunner with STUN-CHECK-M

You can use the STUN-CHECK-M test device to check the function and safety of a stunner. To this end, use the rotary switch to select the appropriate resistance.

6.9.1 Selecting a test objective

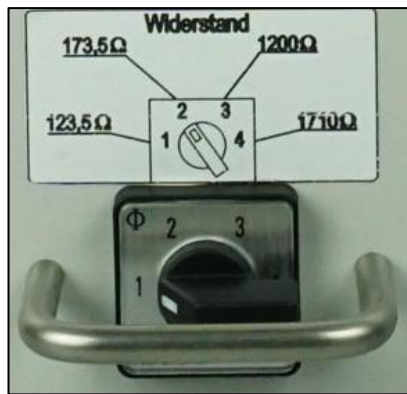


Fig. 6-5 Rotary switch test resistors STUN-CHECK-M

Position	Test objective
1 and 2	Evaluation of the stunning procedure under varying resistance values.
3	Detection of a current and rise error by the stunner
4	Safety check: Check the limiting resistance.

6.9.2 Testing the electric stunner

This is how to test an electric stunner using STUN-CHECK-M.



DANGER!

Danger to life due to high voltage

There is a danger of death and serious injuries.

- The STUN-CHECK-M may only be operated by one person.
- Do not hold the STUN-CHECK-M in your hand.
- Do not touch the contact plates.
- Do not touch the electrodes of the stun tongs.

1. Connect the stun tongs to the stunner.
2. Connect the stunner to the power supply.
3. Switch on the stunner.
4. Select a stun program on the stunner.
5. Select a test resistor using the rotary switch on the STUN-CHECK-M (Pos. 1 - 4).
6.
 - Attach the stun tongs in such a way that the electrodes of the tongs are safely in contact with the contact plates of the test device.
 - An intact stunner starts stunning at positions 1, 2 and 3 of the rotary switch.
 - Stunning must not start when the rotary switch is in position 4.



6.1 Current or rise error (pos. 3 of rotary switch):

If such a fault exists, the yellow indicator for stunning and device faults on the stunner lights up until the next stunning starts. The indicator on the stunner will then turn off automatically.

7. Check whether the current and voltage values displayed on the measuring instruments of the STUN-CHECK-M correspond to the values on the display of the stunner.
If the values deviate significantly from each other, contact FREUND service immediately.
8. Once the test has concluded, remove the stun tongs from the test device.
9. Switch off the electric stunner.
10. Disconnect the electric stunner from the power supply.

6.10 Carrying out electrical stimulation



Electrical stimulation is only used on animals that have previously been effectively stunned. It serves to

- to prevent reflex-like movements (immobilisation),
- to promote draining of blood (stimulation) and
- to loosen the connective tissue by muscle contraction, so that the fur can be pulled off more easily and gently (dehiding/fur removal).

Requirements Only trained personnel may connect the electrodes and operate the electrical stimulation device.

- Checks before use:
visible signs of unconsciousness must be documented.
- Equipment testing and documentation:
regular maintenance and calibration of the equipment is required.
- Emergency procedure:
If signs of consciousness/awakening occur, → immediate re-stun or humane killing according to the relevant laws.

Immobilisation **Placing the tongs on the snout and tail:**

A current pulse is passed through the muscles and spinal cord to suppress reflex movements (kicks, jerks). After immobilisation, the stunned animal is hung on the hind leg with a chain.

**Draining of blood/
fur removal**

Placing the tongs on the snout:

The second connection of the power cable is attached to a conductive connection on the suspension device (overhead track).

6.10.1 Placing the tongs



A manual on how to place the tongs for immobilisation can be found in the appendix under the heading **TIN-015744**.



A manual for placing the tongs for draining blood and dehiding can be found in the appendix under the heading **TIN-015737**.

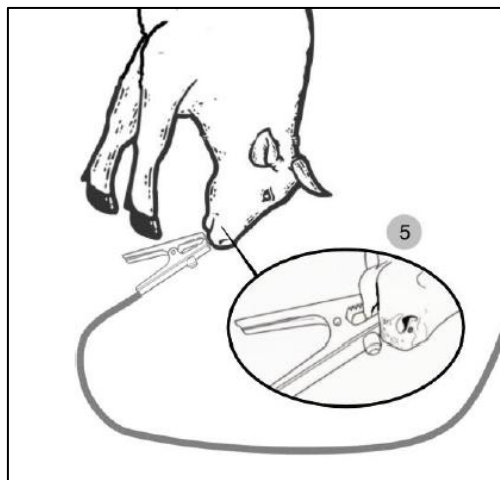


Fig. 6-6 Placing the tongs on the snout

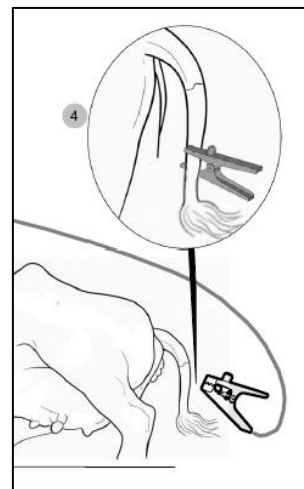


Fig. 6-7 Placing the tongs on the tail during immobilisation

6.10.2 Preparation

- Prerequisite
- Insert the plug of the electrode cable into the connection socket of the STIM-E3.
 - Connect the manual start button to the interface for the start signal.
 - Connect the LAN cable to the RJ45 network port of the STIM-E3 device to establish the network connection.
 - Connect the power cable of the STIM-E3 to the power supply.



If connected to the Internet, the stimulation and immobilisation data are transmitted to the stun data server, where they can be accessed at any time.



The pipe connection must be firmly mounted on the overhead track or the suspension device for the draining of blood and dehidring/fur removal programs.

Before the selected program can be activated, the tongs must be attached to the animal as described.

6.10.3 Electrical stimulation workflow

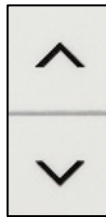


Turn on the STIM-E3 by turning the 0/I switch to the left.

E3 ready, Prog.1
08:05:35 Int:0 14V

Display	Meaning
E3	Device name
ready	State of the device
Progr. 1	Selected program
23:47:23	Time
Int:	• Internet connection 0 No connection • Internet connection 1 Connection active • Internet connection 2 Data transmission active • Internet connection 3 Data reception active
14 V	Measuring voltage

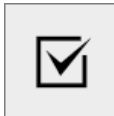
Selecting a
program



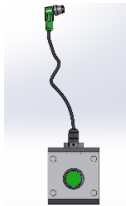
Use the program buttons to select the desired program:

Program	Application
P1/P2	Immobilisation
P3/P4	Draining of blood
P11/12	Dehiding/fur removal

Confirm each of your entries with the control button.



Triggering
stimulation



Trigger the desired process by pressing the manual start button



While the program is running, the blue signal lamp lights

After the preset stimulation time has elapsed, an acoustic beep sounds:

- which signals that the respective process has been completed.
- that the STIM-E3 is ready for the next operation.

7 The FREUND Web Server

The web server manages the stun data transmitted by the electric stunner and sends program parameters back to the stunner.

The web server can be accessed and operated using any common web browser.

Web server
access

To access your data, you need a user name and a password.
These personal access data will be delivered to you with the stunner.



Keep your personal access data safe!

If you lose your access data or need a replacement, you can request this at stun.freund-germany.com.

Features

- Fully automated documentation and supervision of stunning processes (as per EC Regulation 1099/2009, article 14, clause 1 together with Annex II, item 4.1)
- Online monitoring and creation of test reports (including options to filter by period, machine and error category)
- Saves costs and time thanks to remote maintenance capacity and analysis tool

7.1 Logging in to the web server

1. Access our site <https://stun.freund-germany.com>.
2. Enter your user name and password.
Password entry is case-sensitive.

3. Click **Login**.
You are automatically transferred to the "Home" screen.
The "Home" screen shows you all machines already registered.

7.2 Registering a new device



FREUND stunners are already registered when delivered. You will receive the access data with the stunner and can access all functions immediately

7.3 User interface

The user interface comprises a menu bar and a work area.

Menu bar

stundata server Home My Devices Overview **Table** Statistics Parameters

Work area

Seq.#	Date/Time	Rise	HeadCurrent	Err	Head Time	Err	Heart Current	Err	Heart Time	Err	Ein.Dat.
1	2000-00-00 05:00:00		0.00 A		0.1 sek		0.00 A		0.9 sek		2018-12-06 13:42:05
4	2018-12-04 00:04:00		0.04 A		5.1 sek		0.09 A		1.6 sek		2018-12-06 13:44:14
5	2018-12-04 00:04:08		0.04 A		1.6 sek		0.00 A		0 sek		2018-12-06 13:54:10
6	2018-12-04 00:04:25		1.36 A		5.1 sek		0.64 A		5.2 sek		2018-12-06 13:54:31
7	2018-12-04 00:05:00		1.36 A		5.1 sek		0.92 A		6.1 sek		2018-12-06 13:55:06
8	2018-12-04 00:05:32		1.36 A		5.1 sek		0.93 A		6.1 sek		2018-12-06 13:55:35
2	2018-12-04 13:32:24		0.04 A		0.3 sek		0.00 A		0 sek		2018-12-06 13:42:28
3	2018-12-04 13:34:02		0.09 A		1.9 sek		0.00 A		0 sek		2018-12-06 13:43:04
9	2018-12-06 13:55:51		1.41 A		5.1 sek		0.93 A		6.1 sek		2018-12-06 13:55:53
10	2018-12-06 13:56:10		1.40 A		5.1 sek		0.93 A		6.1 sek		2018-12-06 13:56:12
11	2019-01-16 11:11:10		1.40 A		5.1 sek		0.93 A		6.1 sek		2019-01-30 10:59:56
12	2019-01-16 11:11:22		1.99 A		1 sek		0.00 A		0 sek		2019-01-30 11:00:05
13	2019-01-16 11:11:39		2.00 A		5.1 sek		1.33 A		8.1 sek		2019-01-30 11:00:20
14	2019-01-30 11:00:13		1.41 A		5.1 sek		0.93 A		6.1 sek		2019-01-30 11:00:23
15	2019-01-30 12:25:55		1.41 A		5.1 sek		0.00 A		0 sek		2019-01-30 12:25:58
16	2019-01-30 12:26:07		1.41 A		5.1 sek		0.00 A		0 sek		2019-01-30 12:26:10
17	2019-01-30 12:26:46		1.41 A		5.1 sek		0.93 A		6.1 sek		2019-01-30 12:26:48
18	2019-01-30 12:28:54		1.40 A		5.1 sek		0.00 A		0 sek		2019-01-30 12:28:56
19	2019-01-30 13:21:08		1.39 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:21:09
20	2019-01-30 13:21:15		1.40 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:21:16
21	2019-01-30 13:24:35		1.40 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:24:37
22	2019-01-30 13:24:46		1.40 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:24:47
23	2019-01-30 13:24:52		1.39 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:24:53
24	2019-01-30 13:25:41		1.39 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:25:43
25	2019-01-30 13:26:48		1.40 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:26:49

Export Load for offline view

filter by date
25.07.19 - 26.07.19

filter by error type
☐ Current rise
☐ Head time
☐ Head current
☐ Heart time
☐ Heart current
☐ no errors

filter by operator
Number:

Details/Print Zoom

Overview

Please choose a row

Fig. 7-1 User interface (example: "Table" function field)

Function field	Explanation
Home ¹	Home screen with overview of registered machines Password management
My devices ¹	Overview of registered devices
Overview ²	Machine data (machine ID, status, location)
Table ²	Overview and export functions for stun data
Statistics ²	Daily figures for successful and failed stuns shows as a graphic
Parameters ²	Configuration and transmission of stun data
	Selection menu: • Download link for archiving program • Imprint • Password management • Logout

* ¹ Function fields can be selected directly in the menu bar

* ² Function fields can be selected after selecting a registered device

7.3.1 "Home" function field

The "Home" function field lists all registered machines.

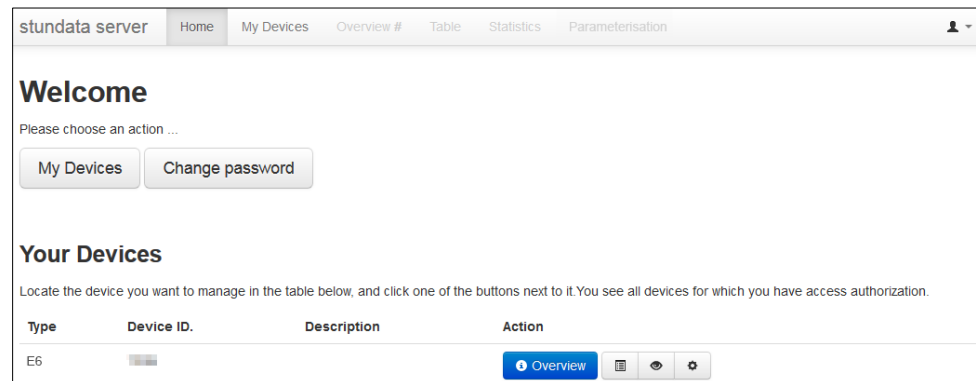


Fig. 7-2 “Home” function field

Control element	Explanation
	Calls up the “My Devices” function field
	Opens the “Change password” window
	Calls up the “Overview” function field → Chapter “Overview” function field on page 77
	Calls up the “Table” function field → Chapter “Table” function field on page 78
	Calls up the “Statistics” function field → Chapter “Statistics” function field on page 79
	Calls up the “Parameters” function field → Chapter “Parameters” function field on page 80

7.3.2 “Overview” function field

The function field “Overview” displays the selected machine’s general data. From this function field, you can access all the other function fields.

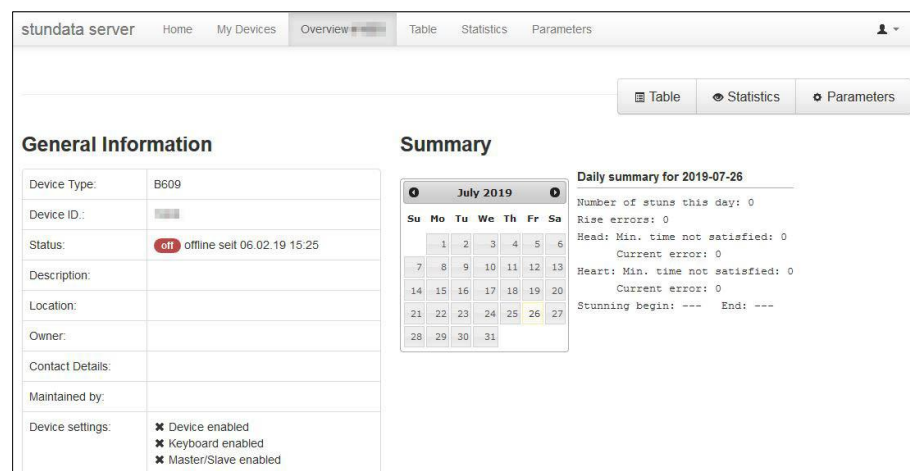
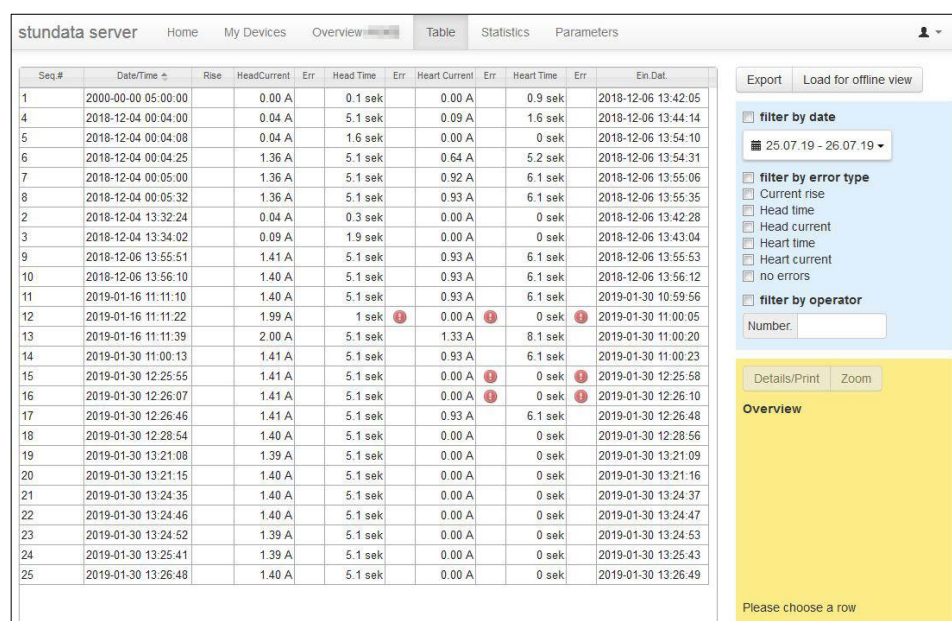


Fig. 7-3 “Overview” function field

Control element	Explanation
 Table	Calls up the “Table” function field → Chapter “Table” function field on page 78
 Statistics	Calls up the “Statistics” function field → Chapter “Statistics” function field on page 79
 Parameters	Calls up the “Parameters” function field → Chapter “Parameters” function field on page 80

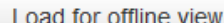
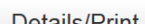
7.3.3 “Table” function field

The “Table” function field displays all values for each stun.



Seq.#	Date/Time ±	Rise	HeadCurrent	Err	Head Time	Err	Heart Current	Err	Heart Time	Err	En.Dat.
1	2000-00-00 05:00:00		0.00 A		0.1 sek		0.00 A		0.9 sek		2018-12-06 13:42:05
4	2018-12-04 00:04:00		0.04 A		5.1 sek		0.09 A		1.6 sek		2018-12-06 13:44:14
5	2018-12-04 00:04:08		0.04 A		1.6 sek		0.00 A		0 sek		2018-12-06 13:54:10
6	2018-12-04 00:04:25		1.36 A		5.1 sek		0.64 A		5.2 sek		2018-12-06 13:54:31
7	2018-12-04 00:05:00		1.36 A		5.1 sek		0.92 A		6.1 sek		2018-12-06 13:55:06
8	2018-12-04 00:05:32		1.36 A		5.1 sek		0.93 A		6.1 sek		2018-12-06 13:55:35
2	2018-12-04 13:32:24		0.04 A		0.3 sek		0.00 A		0 sek		2018-12-06 13:42:28
3	2018-12-04 13:34:02		0.09 A		1.9 sek		0.00 A		0 sek		2018-12-06 13:43:04
9	2018-12-06 13:55:51		1.41 A		5.1 sek		0.93 A		6.1 sek		2018-12-06 13:55:53
10	2018-12-06 13:56:10		1.40 A		5.1 sek		0.93 A		6.1 sek		2018-12-06 13:56:12
11	2019-01-16 11:11:10		1.40 A		5.1 sek		0.93 A		6.1 sek		2019-01-30 10:59:56
12	2019-01-16 11:11:22		1.99 A		1 sek		0.00 A		0 sek		2019-01-30 11:00:05
13	2019-01-16 11:11:39		2.00 A		5.1 sek		1.33 A		8.1 sek		2019-01-30 11:00:20
14	2019-01-30 11:00:13		1.41 A		5.1 sek		0.93 A		6.1 sek		2019-01-30 11:00:23
15	2019-01-30 12:25:55		1.41 A		5.1 sek		0.00 A		0 sek		2019-01-30 12:25:58
16	2019-01-30 12:26:07		1.41 A		5.1 sek		0.00 A		0 sek		2019-01-30 12:26:10
17	2019-01-30 12:26:46		1.41 A		5.1 sek		0.93 A		6.1 sek		2019-01-30 12:26:48
18	2019-01-30 12:28:54		1.40 A		5.1 sek		0.00 A		0 sek		2019-01-30 12:28:56
19	2019-01-30 13:21:08		1.39 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:21:09
20	2019-01-30 13:21:15		1.40 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:21:16
21	2019-01-30 13:24:35		1.40 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:24:37
22	2019-01-30 13:24:46		1.40 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:24:47
23	2019-01-30 13:24:52		1.39 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:24:53
24	2019-01-30 13:25:41		1.39 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:25:43
25	2019-01-30 13:26:48		1.40 A		5.1 sek		0.00 A		0 sek		2019-01-30 13:26:49

Fig. 7-4 “Table” function field

Control element	Explanation
 Export	Exports the recorded data to an Excel or text file
 Load for offline view	Saves data to a local computer in “sdsi” format
☒ filter by date	Filters the data sets according to date
☒ filter by error type	Filters the data sets according to error category
☒ filter by operator	Filters the data sets according to operator
 Details/Print	For the selected line, opens a window showing the current strength as a graph and an overview of all stun data (Fig. 7-5). The detailed view can be printed
 Zoom	For the selected line, opens a window showing the current as a detailed graph
	Opens search dialogue. Column headers can be selected as search parameters

Control element	Explanation
	Resets the search parameters and reloads the table

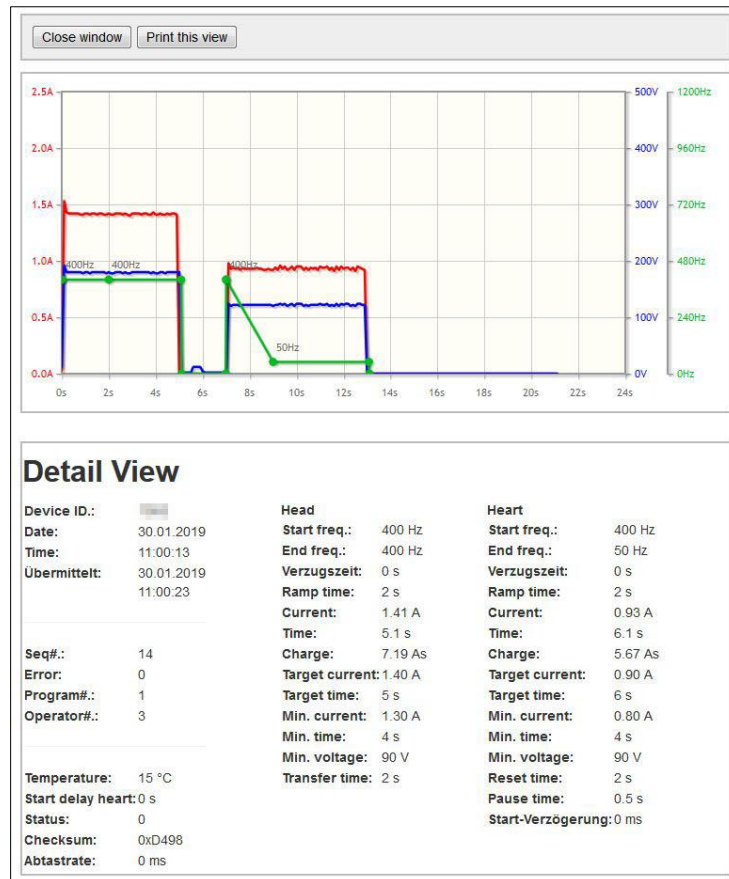
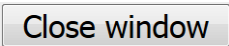


Fig. 7-5 "Table" function field (Details/Print)

Control element	Explanation
	Closes the window
	Opens the "Print" menu. When the printer and print settings have been selected, the detailed view is printed

7.3.4 "Statistics" function field

The function field "Statistics" displays the daily figures for the selected stunner.

The figures provide an overview of the successful and the failed stuns over the course of the day. For failed stuns, the rates of the various error categories are indicated.

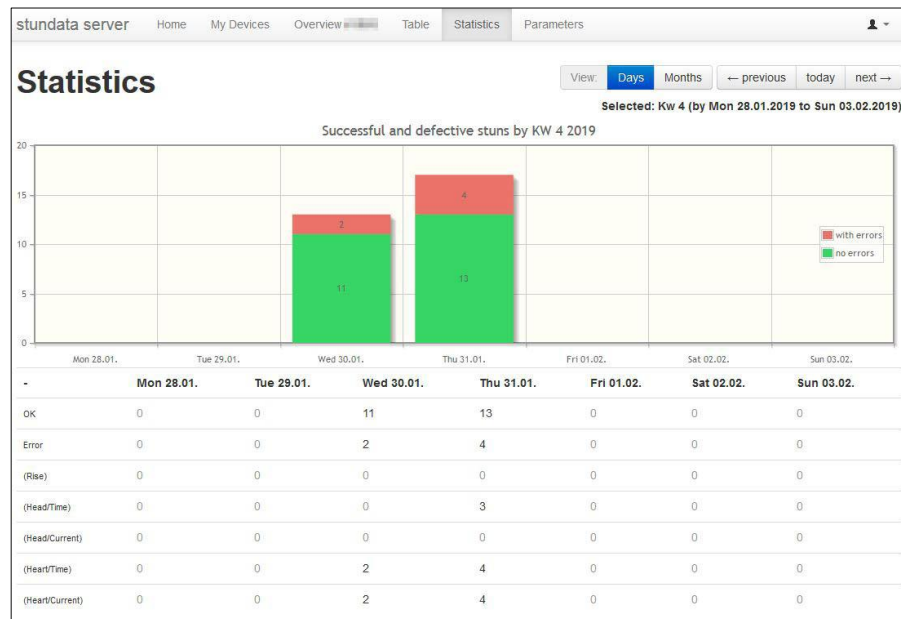


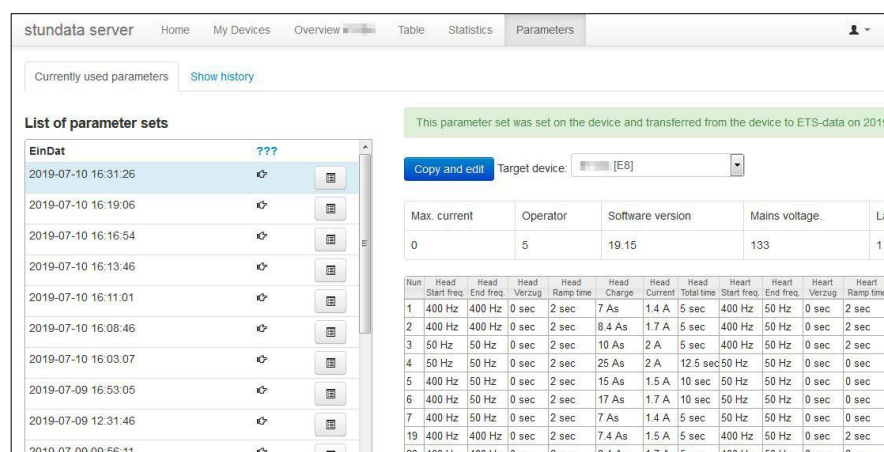
Fig. 7-6 Graphic overview of stun data

Bedienelement	Bedeutung
View: Days Months	Sets the display of the stunning statistics options: Days of a week or months of a Year
← previous today next →	Enables to select weeks or years

7.3.5 “Parameters” function field

The function field “Parameters” displays the selected machine’s parameters. The parameters can be changed and transmitted to the machine.

Currently set parameters



stundata server Home My Devices Overview Table Statistics Parameters

Currently used parameters Show history

List of parameter sets

EinDat ???

2019-07-10 16:31:26

2019-07-10 16:19:06

2019-07-10 16:16:54

2019-07-10 16:13:46

2019-07-10 16:11:01

2019-07-10 16:08:46

2019-07-10 16:03:07

2019-07-09 16:53:05

2019-07-09 12:31:46

2019-07-09 09:56:11

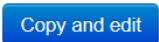
This parameter set was set on the device and transferred from the device to ETS-data on 2019

Copy and edit Target device: [E8]

Max. current	Operator	Software version	Mains voltage	La
0	5	19.15	133	1

Nun	Head Start freq	Head End freq	Head Verzug	Head Ramp time	Head Charge	Head Current	Head Total time	Heart Start freq	Heart End freq	Heart Verzug	Heart Ramp time
1	400 Hz	400 Hz	0 sec	2 sec	7 As	1.4 A	5 sec	400 Hz	50 Hz	0 sec	2 sec
2	400 Hz	400 Hz	0 sec	2 sec	8.4 As	1.7 A	5 sec	400 Hz	50 Hz	0 sec	2 sec
3	50 Hz	50 Hz	0 sec	2 sec	10 As	2 A	5 sec	400 Hz	50 Hz	0 sec	2 sec
4	50 Hz	50 Hz	0 sec	2 sec	25 As	2 A	12.5 sec	50 Hz	50 Hz	0 sec	0 sec
5	400 Hz	50 Hz	0 sec	2 sec	15 As	1.5 A	10 sec	50 Hz	50 Hz	0 sec	0 sec
6	400 Hz	50 Hz	0 sec	2 sec	17 As	1.7 A	10 sec	50 Hz	50 Hz	0 sec	0 sec
7	400 Hz	50 Hz	0 sec	2 sec	7 As	1.4 A	5 sec	50 Hz	50 Hz	0 sec	0 sec
19	400 Hz	400 Hz	0 sec	2 sec	7.4 As	1.5 A	5 sec	400 Hz	50 Hz	0 sec	2 sec
20	400 Hz	400 Hz	0 sec	2 sec	8.4 As	1.7 A	5 sec	400 Hz	50 Hz	0 sec	2 sec

Fig. 7-7 “Parameters” function field

Control element	Explanation
	Opens a window for editing the selected parameter set (Fig. 7-8)
	Selection menu for registered machines
	Opens the selected parameter set for review
	Opens a window with information on the icons for transmission status: • Parameter data was set directly on machine • Parameter data was transmitted to machine and confirmed • Parameter data will be transmitted to machine as soon as there is a live network connection • Parameter data have been edited but not yet sent to machine • Transferring this parameter set was cancelled after 20 unsuccessful attempts

Edit and send
parameter set

stundata server Home My Devices Overview **Table** Statistics Parameters

Currently used parameters Show history

Draft of a parameter set. Click "Send", to transfer this parameter set to your device.

Send

Max. current	Operator	Software version	Mains voltage	Language	Num. of prog.
0	5	19.15	133	1	1

Nun	Head Start freq.	Head End freq.	Head Verzug	Head Ramp time	Head Charge	Head Current	Head Total time	Heart Start freq.	Heart End freq.	Heart Verzug	Heart Ramp time	Heart Charge	Heart Current	Heart Total time	Head min. current	Head min. time	Heart min. current	Heart min. time	Change Time	Reset Time
1	400 Hz	400 Hz	0 sec	2 sec	7 As	1.4 A	5 sec	400 Hz	50 Hz	0 sec	2 sec	5.4 As	0.9 A	6 sec	1.3 A	4 sec	0.8 A	4 sec	2 sec	2 sec
2	400 Hz	400 Hz	0 sec	2 sec	8.4 As	1.7 A	5 sec	400 Hz	50 Hz	0 sec	2 sec	7.2 As	1.2 A	6 sec	1.3 A	4 sec	1.1 A	4 sec	2 sec	2 sec
3	50 Hz	50 Hz	0 sec	2 sec	10 As	2 A	5 sec	400 Hz	50 Hz	0 sec	2 sec	10.4 As	1.3 A	8 sec	1.6 A	4 sec	1.2 A	4 sec	2 sec	2 sec
4	50 Hz	50 Hz	0 sec	2 sec	25 As	2 A	12.5 sec	50 Hz	50 Hz	0 sec	0 sec	0 As	0 A	0 sec	1.3 A	4 sec	0 A	0 sec	2 sec	2 sec
5	400 Hz	50 Hz	0 sec	2 sec	15 As	1.5 A	10 sec	50 Hz	50 Hz	0 sec	0 sec	0 As	0 A	0 sec	1.3 A	4 sec	0 A	0 sec	2 sec	2 sec
6	400 Hz	50 Hz	0 sec	2 sec	17 As	1.7 A	10 sec	50 Hz	50 Hz	0 sec	0 sec	0 As	0 A	0 sec	1.3 A	4 sec	0 A	0 sec	2 sec	2 sec
7	400 Hz	50 Hz	0 sec	2 sec	7 As	1.4 A	5 sec	50 Hz	50 Hz	0 sec	0 sec	0 As	0 A	0 sec	1.3 A	4 sec	0 A	0 sec	2 sec	2 sec
19	400 Hz	400 Hz	0 sec	2 sec	7.4 As	1.5 A	5 sec	400 Hz	50 Hz	0 sec	2 sec	3.2 As	0.8 A	4.1 sec	1.3 A	4 sec	0.7 A	4 sec	1 sec	1 sec
20	400 Hz	400 Hz	0 sec	2 sec	8.4 As	1.7 A	5 sec	400 Hz	50 Hz	0 sec	2 sec	3.2 As	0.8 A	4.1 sec	1.3 A	4 sec	0.7 A	4 sec	1 sec	1 sec
21	400 Hz	400 Hz	0 sec	2 sec	9.4 As	1.9 A	5 sec	400 Hz	50 Hz	0 sec	2 sec	7.8 As	1.3 A	6 sec	1.3 A	4 sec	1.2 A	4 sec	1 sec	1 sec

Fig. 7-8 "Parameters" function field" (editing mode)

Control element	Explanation
	Sends the edited parameter set to the machine. The symbol in the list of all parameter sets indicates if the data is transmitted
	Editing mode for selected parameter

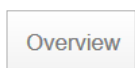
7.4 Viewing machine data

To view the general machine data:



- On the 'home' page, select the machine and click **Overview**.
The selected machine's general data is shown.

or



- Click **Overview** in the header bar.
The selected machine's general data is shown.

7.5 Evaluating stun data



- On the 'home' page, select the machine and click .

or

Click **Table** in the menu bar.

or



- Click .

Searching for data sets

The search function allows you to search quickly for specific data sets.



1. Click

The search dialogue open in a separate window.

The image shows a search dialog box titled 'Search...'. It contains a search bar with 'Seq.#' and a dropdown menu set to 'equal'. Below the search bar are two buttons: 'Reset' and 'Search'.

2. Select the desired feature and the search criteria. You can select any of the table headers as a feature.

- Click **Search**.

The desired data sets are displayed.

or

- Click **Reset** to reset the search criteria.

Filtering data sets

The filter lets you filter the data sets according to “Date”, “Error category” and “Operator”.

- Select the desired criterion (you can also select multiple criteria). To do so, tick the corresponding box(es).

The image shows a filter dialog box with three sections: 'filter by date' (with a 'Choose date range' dropdown), 'filter by error type' (with checkboxes for 'Current rise', 'Head time', 'Head current', 'Heart time', 'Heart current', and 'no errors'), and 'filter by operator' (with a 'Number' input field).

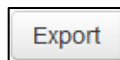


- Click to refresh the view.

Exporting stun data

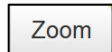
The stun data can be exported to the following formats:

- Excel file:
 - simple (currents, times and time errors for head and heart stunning are exported)
 - detailed (all stun data is exported)
- Text file:
 - tab-separated
 - comma-separated



- Click **Export** to export the stun data to an Excel or text file.
The files are saved to your PC in the desired format.

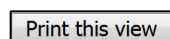
Printing stun data



- In the table, select the line containing the stun which you wish to view in detail or print.
- Click **Zoom**.
A second window opens showing a magnified view of the selected line's current graph.

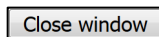


- Click **Details/Print**.
A second window opens showing the selected line's details.



- Click **Print screen** to print the detailed view.
After selecting the printer, the selection is printed.

or



- Click **Close window** to abort the process.
The detailed view window is closed.

7.6 Call up daily figures



- On the 'home' page, select the machine and click .
- or
- Click **Statistics** in the menu bar.

or



- Click  in the menu bar.
The figures for successful and failed stuns are shown.

7.7 Changing stun parameters

Transmitting the data sets

Web server ► stunner:

The stun parameters can be changed on the web server and transmitted directly to the stunner if there is a live Internet connection.

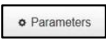
Stunner ► web server:

If there is a live network connection, the stunner transmits its stun parameters to the web server.



- On the 'home' page, select the machine and click .
- or
- Click **Parameters** in the menu bar.
- or



Click .

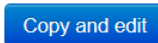
The window "Currently used parameters" appears.



1. In the "List of all parameter sets", select the parameter set in which you wish to change parameters.

To do so, click .

2. Select the machine (target machine), to which you wish to transmit the changed parameter set.



Click **Copy and edit**.

or



Click **Edit and send parameter set** to change the parameter set's values.

The table listing the parameter values is shown.



3. In the table, click the value you wish to change.

4. Change the parameter value.

Change further parameter values as required.



Click **Send**.

If there is live network connection, the changed parameter set is transmitted to the machine.

8 Cleaning and disinfection

Cleaning is performed to remove dirt from the machine. All surfaces must be visually clean after cleaning.



Always take note of the safety information in the product data sheets issued for the relevant cleaning agent or disinfectant.

8.1 Safety information



WARNING!

Live machine parts.

Danger to life and most severe injuries are possible.

- Before beginning 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 risk of very serious injuries.

- The machine may only be maintained, serviced, operated, and cleaned by qualified personnel.
- Maintenance work on live components may only be performed by trained 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 Daily cleaning

The cleaning may only done by hand with detergents and disinfectants approved for the food industry.



- Disconnect the stunning device from the power supply.
- Disconnect the connected stunn-tong from the stunning device.
- Do not use high-pressure cleaners.
- Avoid a direct jet of water on all electrical control panels and the housing.

8.4 Cleaning the Stun-tong

The cleaning may only done by hand with detergents and disinfectants approved for the food industry.



1. Disconnect the electric stunning device from the power supply.
2. Disconnect the stun-tong from the electric stunning device.
3. Clean the dirty electrodes with a steel brush.

9 Maintenance and repairs

The electric stunner and devices must be inspected and serviced regularly in order to prolong the life of the electric stunning device as much as possible and to ensure minimal wear.

The workbench area must be clean and free from foreign matter for disassembly and maintenance.

Repairs and maintenance may be performed by qualified and authorised specialists only.

Warranty If errors or defects occur in the electric stunning device and devices within the statutory warranty period, please contact our sales department. The address and telephone number can be found at the top of the copyright page.

Only use original spare parts or replacement parts

recommended by FREUND Maschinenfabrik.



Maintenance and repair work:

Only use measuring instruments with protective disconnection. For voltage measurements, the internal resistance must be $\geq 1\text{M}\Omega$ in order not to load the circuit and to avoid measurement errors.

9.1 Safety information



DANGER!

Live machine parts.

Danger to life.

- Before beginning any installation, maintenance or repair work, place the stun tongs on a non-conductive surface.
- Before beginning any installation, maintenance or repair work, disconnect the electric stunner or electric stimulation device from the mains.
- Before beginning any installation, maintenance or cleaning work, disconnect the stun tongs or electrodes from the stunner or electrical stimulation device.
- Secure the electric stunner or the electric stimulation device against being switched on accidentally.
- Never connect more than one stun tong or electrode combination to a stunner or electrical stimulation device.



WARNING!

Risk of accident caused by insufficiently qualified personnel.

Danger to life and risk of very serious injuries.

- The stun tong may only be connected to the electric stunning device by instructed and authorised personnel only. Only instructed and authorised personnel may commission and operate the stun tong.
- Maintenance work on live components must only be performed by trained electricians.



WARNING!

Sharp-edged electrodes.

Risk of cutting on sharp-edged electrodes.

- Wear protective gloves when performing any installation, maintenance or repair work.

9.2 Personal protective equipment



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

9.3 Electric stunning devices

9.3.1 Prescribed inspection of stunners and electrical stimulation devices



The respective national legal regulations pertaining to operational safety and accident prevention in your country apply.

Example: Federal Republic of Germany:

Here, the rules of the accident prevention regulation DGUV Regulation 3 and the rules in accordance with the Animal Protection Slaughter Regulation (EC) No 1099/2009 apply:

Use of devices for immobilisation and stunning:

The operators of a slaughterhouse ensure that all equipment for immobilisation or stunning is maintained and controlled by specially trained personnel in accordance with the manufacturer's instructions. The maintenance measures must be documented and the documents must be kept for at least one year.

Electric stunners

In accordance with the operational safety regulation (BetrSichV) and the accident prevention regulation (UVV), the operator of a slaughterhouse is obligated to inspect all electric stunners at least once each year.

The required annual inspection must be performed by an electrician as defined by the Accident Prevention Regulation (UVV) *Electrical installations and equipment* or by a person trained in electrical engineering.

Electrical stimulation device

According to the Industrial Safety Regulation (BetrSichV) and the accident prevention regulation DGUV regulation 3, the operator is obliged to have electrical work equipment – including electrical stimulation devices – regularly checked for its proper condition. The test must be carried out before the first commissioning and periodically, at least once a year, by a qualified electrician within the meaning of TRBS 1203*.

The test interval must be shortened to 6 months in the event of increased stress (e.g. wet area in the slaughterhouse).

The results must be documented and marked on the device.

*Technical rules for operational safety 1203

Service

FREUND Maschinenfabrik's service includes the complete inspection with inspection report and test sticker. In addition, we can provide you with a replacement machine for the duration of the inspection, at an extra charge.

If you are interested in having the inspection conducted, please contact our sales department. The address and telephone number can be found in Imprint.

9.3.2 Taking electrical control measurements

Council Regulation (EC) No. 1099/2009, Annex 1, section 6.8 on protection of animals at the time of killing requires that an electric stunning system must have a mechanism for connection of an external device to enable display of stunning voltage and stunning current strength.

You need

- a tong ammeter for current measurement.
- a multimeter for voltage measurement.



Electrical measurements may be taken by trained specialists or personnel with specialist training only.

Measuring stunning current strength

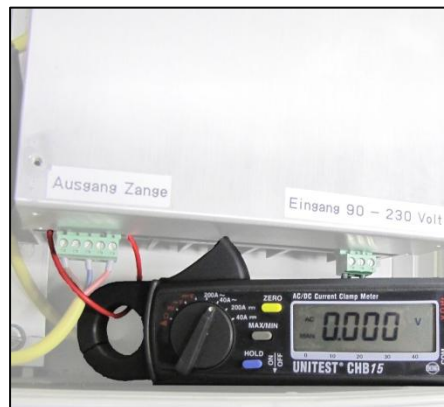


Fig. 9-1 Stunning current strength measurement E6 and E8



Fig. 9-2 Stunning current strength measurement E4

1. Open the machine with a square electrical cabinet key (included in scope of supply).
2. Set the tong ammeter's measurement range to 10A/AC.
3. Encircle the red curved cable with a tong ammeter.
4. Take the measurement.
5. Close the machine with the square electrical cabinet key.

Measuring stunning voltage

1. Open the machine with a square electrical cabinet key (included in scope of supply).
2. Set the tong multimeter's measurement range to 600V/AC.
3. Plug the multimeter probes into the PIN 1 and PIN 3 slots on the green PCB terminal.



Fig. 9-3 Head stunning voltage measurement E6 and E8

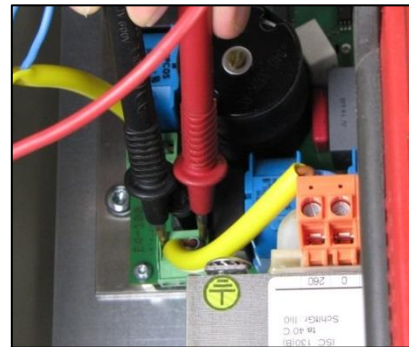


Fig. 9-4 Head stunning voltage measurement E4

4. Take the measurement of the head stunning voltage.
5. Plug the multimeter probes into the PIN 3 and PIN 5 slots on the green PCB terminal.



Fig. 9-5 Heart stunning voltage measurement E6 and E8

6. Take the measurement of the heart voltage
7. Close the machine with the square electrical cabinet key.

9.4 Stun tongs

Changing the electrodes

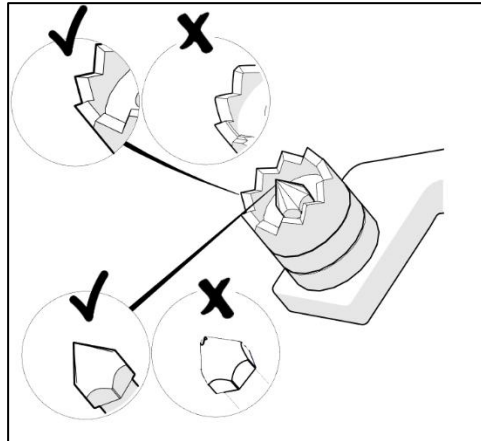
Dirty and burnt-out electrodes result in insufficient skin contact and no longer ensure optimal stunning.

You can recognise burnt-out electrodes by the round electrode tips.

Replace worn and burnt-out electrodes of the stun tongs in good time to prevent downtimes.

Always replace both electrodes at the same time.

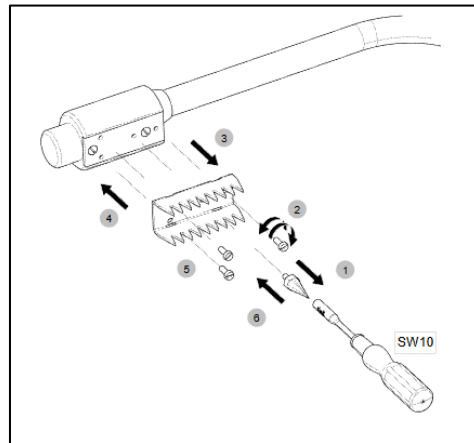
Example of worn
and burnt-out
electrodes STUN-
TONG-EPP3



The electrodes of the STUN-TONG-EPP3 are unscrewed anti-clockwise with a nut spanner size 10. For reinsertion, the electrodes are firmly screwed in again in a clockwise direction.



Electrode change
STUN-TONG-EP
STEEL
-EA STEEL



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 beginning any installation, maintenance or repair work, place the stun tongs on a non-conductive surface.
- Before beginning any installation, maintenance or repair work, disconnect the electric stunner or electric stimulation device from the mains.
- Before beginning any installation, maintenance or cleaning work, disconnect the stun tongs or electrodes from the stunner or electrical stimulation device.
- Secure the electric stunner or the electric stimulation device against being switched on accidentally.
- Never connect more than one stun tong or electrode combination to a stunner or electrical stimulation device.



WARNING!

Risk of accident caused by insufficiently qualified personnel.

Danger to life and risk of very serious injuries.

- The stun tong may only be connected to the electric stunning device by instructed and authorised personnel only. Only instructed and authorised personnel may commission and operate the stun tong.
- Maintenance work on live components must only be performed by trained electricians.



WARNING!

Sharp-edged electrodes.

Risk of cutting on sharp-edged electrodes.

- Wear protective gloves when performing any installation, maintenance or repair work.

10.2 Personal protective equipment



10.3 Overview of possible faults

10.3.1 Electric stunners/electrical stimulation device

Fault	Possible cause	Remedy
Illegible display when switched on.	Main module defective or display board defective.	Contact the manufacturer. The address and telephone number can be found in Imprint.
Display flickers when switched on.		
Display does not light up.	Power supply interrupted.	Check the mains supply line for interruptions.
Yellow lamp lights up.	Stunning current was not reached within four seconds.	Repeat the stunning procedure. The yellow lamp automatically goes out during the next stunning procedure. The stunning error is also signalled acoustically.
	Stunning procedure was interrupted within the first four seconds.	

10.3.2 Stun tongs

Fault	Possible cause	Remedy
Current strength set is not reached. The stunning process does not start.	Electrodes are soiled.	Clean the electrodes using a wire brush.
	Electrodes are burnt through.	Change the electrodes. → Assembly manual in <u>FA</u> .
	Water ingress near the electrodes.	Disassemble the electrodes. Allow the water to drain. Leave the stun tongs to air until they are completely dry. Install the electrodes. → Assembly manual in <u>FA</u> .

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.

12 Technical Data

12.1 Electric stunners STUN-E4, -E6 XXL, -E6 XXL LVP & -E8 XXL

	STUN-E4	STUN-E6 XXL, STUN-E8 XXL	STUN-E6 XXL LVP
Dimensions (H x W x D) [mm]	350 x 305 x 165	400 x 300 x 200	400 x 300 x 200
Operating voltage [V UC]	115 / 230	90 – 260	100 - 230 ± 10%
Weight [kg]	9.7	13	13
Power [W]	500 / ED 20%	1000 / ED 25%	1000 / ED 50%
Frequency [Hz]	50 / 60	50 / 60	50 / 60
Power consumption [A] 230V	max. 5	max. 5	max. 5
Power consumption [A] 115V	max. 10	max. 10	max. 10
Open circuit voltage [V]	14	14	14
Temperature range Tu [°C]	0 – 40	0 – 40	0 - 40
Stunning voltage [VAC]	15 – 400	15 – 400	15 - 400
Stunning current [A]	max. 2,5	max. 2,5	max. 2,5
Stunning frequency [Hz]	50 – 1000 incrementally	50 – 1000 incrementally	50 – 1000 incrementally
Fuse [AT]*	10	10	10
IP protection class	IP 65	IP 65	IP 65

*Electric fuse in case of electrode short circuit, short circuit and/or a defect in the stunning circuit

12.2 Electrical stimulation device STIM-E3

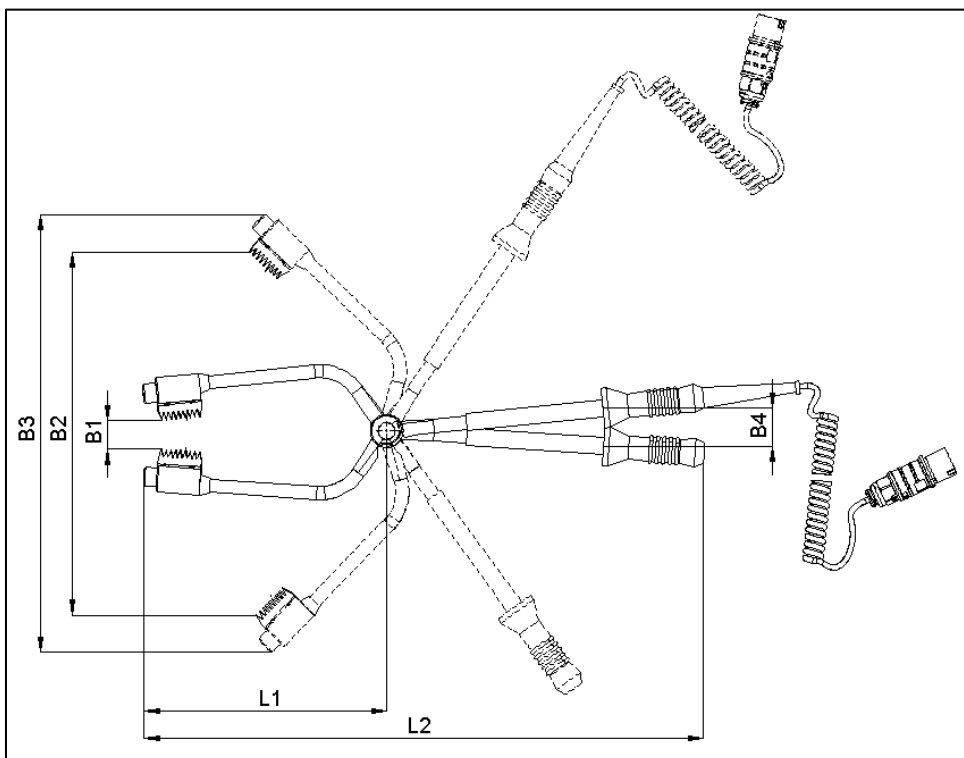
	STIM-E3
Dimensions (H x W x D) [mm]	350 x 305 x 165
Supply voltage [V UC]	115 / 230
Weight [kg]	9.7
Power [W] / ED [%]	500 / 20
Grid frequency [Hz]	50 / 60
Power consumption [A]	max. 5
Measuring voltage [V DC]	14
Temperature range Tu [°C]	0 – 40
Stimulation voltage [V / AC]	30 - 400
Stimulation current [A]	0.20 - 2.00
Stimulation frequency [Hz]	50 – 1,000
Fuse [AT]*	6.3
IP protection class	IP 65

* Electric device fuse

12.3 Stun tongs

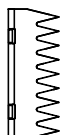
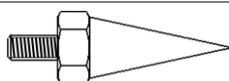
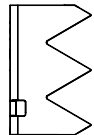
12.3.1 STUN-TONG-EP/-EA/ -Steel, -EP LS

Dimensions



	STUN-TONG-EP Steel	STUN-TONG-EA Steel	STUN-TONG-EP LS
Weight [kg]	3.5	3.5	3,5
Length L1 [mm]	370	370	370
Length L2 [mm]	850	850	850
Width B1 [mm]	45	10	65
Width B2 [mm]	550	525	550
Width B3 [mm]	660	660	660
Width B4 [mm]	60	60	110

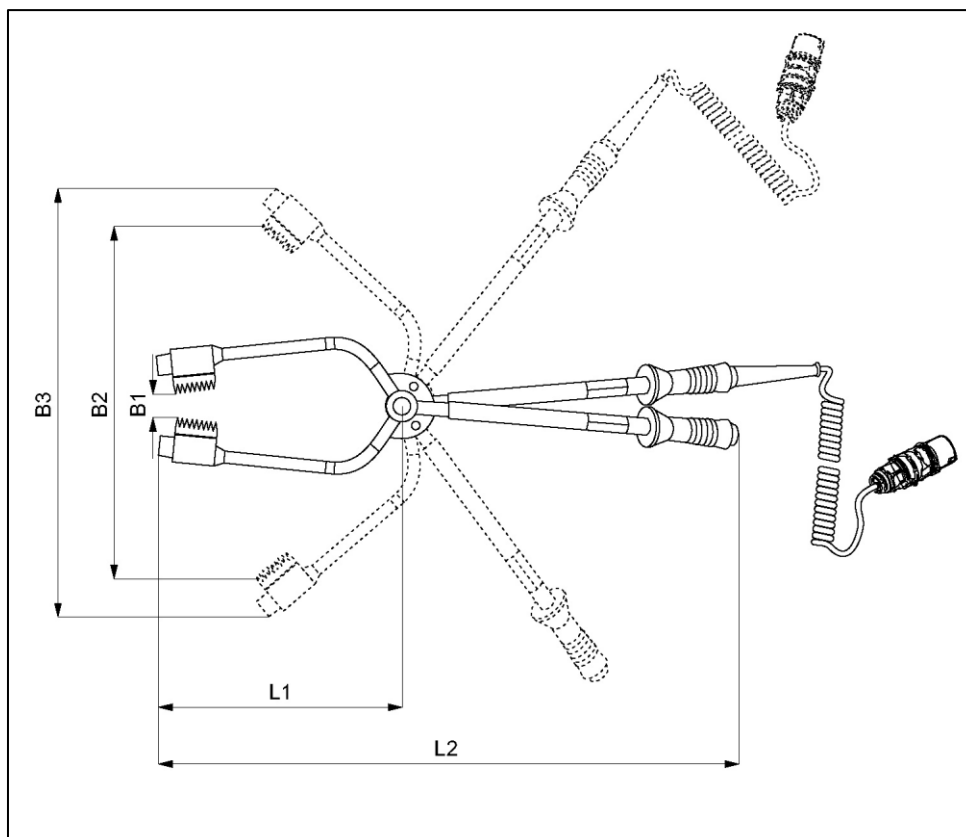
IP protection type **IP65**

Electrodes	Electrode shape	Designation	Part no.
		Electrode set for pigs	077-000-006
		Centre electrode (electrode set for pigs)	077-000-009
		Electrode set for sheep, goats, lambs	077-000-021

Optional accessories	Component	Part no.
	Wall unit	164-010-001

12.3.2 STUN-TONG-ES Steel

Dimensions



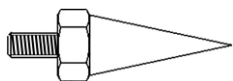
	STUN-TONG-ES Steel
Weight [kg]	3.7
Length L1 [mm]	460
Length L2 [mm]	940
Width B1 [mm]	40
Width B2 [mm]	680
Width B3 [mm]	750

IP protection type

IP65

Electrodes

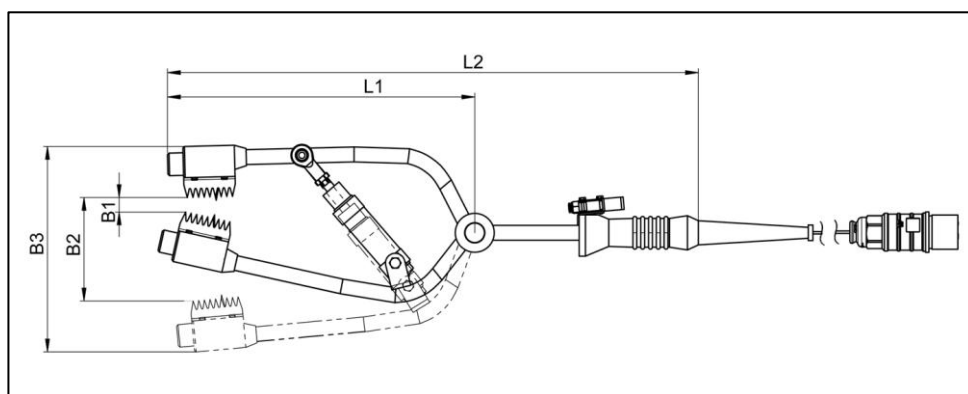
Electrode shape	Designation	Part no.
	Electrode set for pigs	077-000-006

Electrodes	Electrode shape	Designation	Part no.
		Centre electrode (electrode set for pigs)	077-000-009

Optional accessories	Component	Part no.
	Wall unit	164-010-001

12.3.3 STUN-TONG-EPP2

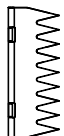
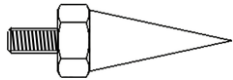
Dimensions

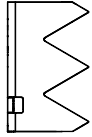


	STUN-TONG EPP2
Weight [kg]	3.2
Length L1 [mm]	375
Length L2 [mm]	640
Width B1 [mm]	70
Width B2 [mm]	220
Width B3 [mm]	375

IP protection type **IP65**

Compressed air **5–8 bar**

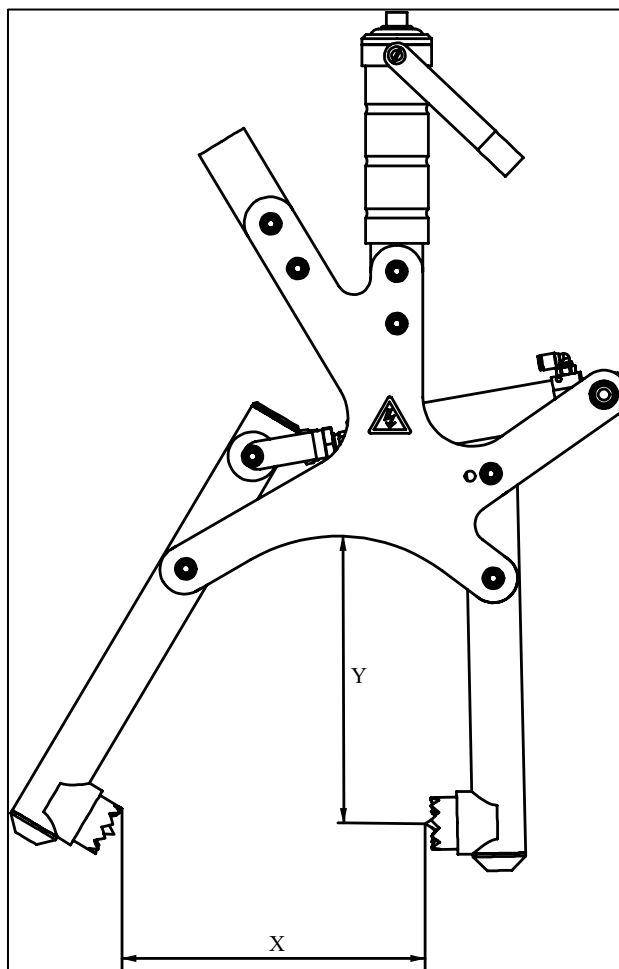
Electrodes	Electrode shape	Designation	Part no.
		Electrode set for pigs	077-000-006
		Centre electrode (electrode set for pigs)	077-000-009

Electrodes	Electrode shape	Designation	Part no.
		Electrode set for sheep, goats, lambs	077-000-021

Optional accessories	Component	Part no.
	F4-2.5 spring balancer	920-414-001

12.3.4 STUN-TONG-EPP3

Dimensions

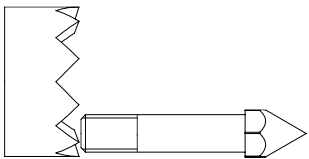
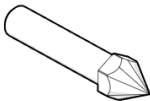
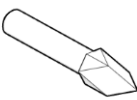


	STUN-TONG-EPP3	
Weight [kg]	3.4	
Dimension X [mm] (closed)	70	90
Dimension X [mm] (open)	180	200
Dimension Y [mm]	185	

IP protection class	Protection class	IP 55
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Compressed air	8 bar
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Optional accessories	Component	Part No.
	Balancer F4-2.5	920-414-001

Electrodes	Electrode shape	Designation	Part No.
		Electrode set for pigs	164-100-003
		Electrode crown for sows and sheep	010-345213
		Electrode tip for electrode crown 010-345213	010-345218
		Electrode tip for sows	100-037-617

12.4 Interface control box

	Interface IF1	Interface IF2
Dimensions (H x W x D)	240 x 160 x 120 mm	310 x 255 x 160 mm
Weight (kg)		3.8
Temperature range Tu	0 – 40 °C	0 – 40 °C
Protection class	IP44	IP44

12.5 STUN-CHECK-M testing device

Type	STUN-CHECK-M
Power [W]	400
Weight [kg]	6.8
Height [mm]	370
Width [mm]	265
Depth [mm]	200

EU-Declaration of Conformity

within the meaning of the Low Voltage Directive 2014/35/EU.

Manufacturer	FREUND Maschinenfabrik GmbH & Co. KG Greifswalder Str. 5 DE-33106 Paderborn
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Documentation Authorised Representative	FREUND Maschinenfabrik GmbH & Co. KG Greifswalder Str. 5 DE-33106 Paderborn
---	--

Hereby we declare that the machine

Type	STUN-CHECK-M
------	---------------------

Complies with all relevant provisions of the Low Voltage Directive 2014/35/EU.

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

DIN EN 60529:2014-09	DIN EN 61010-1:2020-03
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EU-Declaration of Conformity

within the meaning of the Low Voltage Directive 2014/35/EU.

Manufacturer **FREUND Maschinenfabrik GmbH & Co. KG**
Greifswalder Str. 5
DE-33106 Paderborn

Documentation
 Authorised
 Representative **FREUND Maschinenfabrik GmbH & Co. KG**
Greifswalder Str. 5
DE-33106 Paderborn

Hereby we declare that the machine,

Type **STUN-IF1-E8 / STUN-IF2-E8**

Complies with all relevant provisions of the Low Voltage Directive 2014/35/EU.

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

DIN EN 60335-2-87:2021-03	DIN EN 60529-2014-09
DIN EN ISO 4414-2011-04	

EU-Declaration of Conformity

within the meaning of the Low Voltage Directive 2014/35/EU.

Manufacturer	FREUND Maschinenfabrik GmbH & Co. KG Greifswalder Str. 5 DE-33106 Paderborn
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Documentation Authorised Representative	FREUND Maschinenfabrik GmbH & Co. KG Greifswalder Str. 5 DE-33106 Paderborn
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Hereby we declare that the machine

Type	STUN-TONG-EP STEEL / STUN-TONG-EA STEEL / STUN-TONG-ES STEEL STUN-TONG-EP TITAN
------	--

Complies with all relevant provisions of the Low Voltage Directive 2014/35/EU.

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

DIN EN 60529:2014-09

DIN EN 60335-2-87:2022-2

EU-Declaration of Conformity

within the meaning of the Low Voltage Directive 2014/35/EU.

Manufacturer **FREUND Maschinenfabrik GmbH & Co. KG**
Greifswalder Str. 5
DE-33106 Paderborn

Documentation **FREUND Maschinenfabrik GmbH & Co. KG**
Authorised **Greifswalder Str. 5**
Representative **DE-33106 Paderborn**

Hereby we declare that the machine,

Type **STUN-E4 WEB Electrical stunning device/ STUN-E6 with heat sink**
STUN-E8 with heat sink / Stunning system 2x STUN-E8 Master/Slave

Complies with all relevant provisions of the Low Voltage Directive 2014/35/EU.

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

(EU) 2014/30	EMC Electromagnetic compatibility
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The following harmonised standards (or parts of these standards) have been applied:

DIN EN 61000-6-4:2020-09	DIN EN 60529:2014-09
DIN EN 61000-6-2:2014-11	DIN EN 60335-2-87:2021-03

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**
Greifswalder Str. 5
DE-33106 Paderborn

Documentation **FREUND Maschinenfabrik GmbH & Co. KG**
Authorised **Greifswalder Str. 5**
Representative **DE-33106 Paderborn**

Hereby we declare that the machine,

Type **STUN-TONG-EPP3 E-Serie**

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

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

DIN EN ISO 12100:2011-03	DIN EN 60204-1:2008
DIN EN ISO 11201:2010-10	DIN EN 60529:2014-09
DIN EN 13861:2012-01	DIN EN 60335-2-87:2021-03

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**
Greifswalder Str. 5
DE-33106 Paderborn

Documentation
 Authorised
 Representative **FREUND Maschinenfabrik GmbH & Co. KG**
Greifswalder Str. 5
DE-33106 Paderborn

Hereby we declare that the machine

Type **STUN-TONG-EPP2 (PL)**

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

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

DIN EN ISO 12100:2011-03	DIN EN 60204-1:2008
DIN EN ISO 11201:2010-10	DIN EN 60529:2014-09
DIN EN 13861:2012-01	DIN EN 60335-2-87:2021-03

**TIN-100-013****Hydrauliköl / Hydraulic oil Esso Marcol 82 (100-013-029)**

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

Hydrauliköl / Hydraulic oil Nevastane AW46 (100-013-026)

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
1 l Flasche / Bottle	047-004-004
5 l Kanister / Canister	171-500-004
10 l Kanister / Canister	171-500-005
20 l Kanister / Canister	171-500-006
Verwendung / Ability for	Füllmenge / Filling capacity
K16-P4, PNM, SD11	0,1 l
HPE9	21 l
HPE20	28 l

Getriebefett / Gearbox grease Kajo GLP o F (100-013-001)

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



TIN-100-013

Getriebefett / Gearbox grease MOBIL Glygoyle 30 (100-013-048)

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
1 l Flasche / Bottle	159-016-035
Verwendung / Ability for	Füllmenge / Filling capacity
Getriebe / Gear ZKM60, ZKM75	0,5 l

Vakuumpumpenöl / Vacuum pump oil MOBIL Rarus 427 (100-013-032)

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
1 l Flasche / Bottle	171-500-015
5 l Kanister / Canister	171-500-016
10 l 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 Rivolta F.L.G. 4-2 (100-013-036)

<https://info.nsf.org/USDA/letters/125886.pdf>

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 Rivolta F.L.G. GT-2 (100-013-057)

<https://info.nsf.org/USDA/letters/140657.pdf>

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
0,18 kg Fettpresse / Grease gun	028-100-006
1 kg Dose / Box	100-013-058
Verwendung / Ability for	
Trimmer	
Hand Skinner	

**TIN-100-013****Schmierfett / Grease OKS 475 (100-013-038)**

VK Gebinde / Disposal dimensions	Teile Nr. / Item No
0,4 kg Kartusche / Cartridge	100-013-037
0,14 kg Fettpresse ST / Grease Gun ST	151-002-039
0,14 kg Fettpresse EDF, SD11 / Grease Gun (EDF, SD11)	047-004-002
Verwendung / Ability for	Füllmenge / Filling capacity
Getriebe / Gear ST, SST, BBST	0,07 kg
EDF, SD11	0,03 kg
STUN-HE-M, STUN-HE-PP	

Schmierfett / Grease OKS 479 (100-013-039)

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



TIN-013309

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■ FREUND



■ SCHERMER



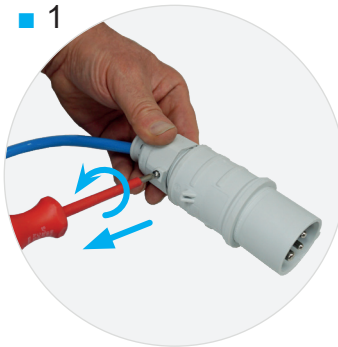


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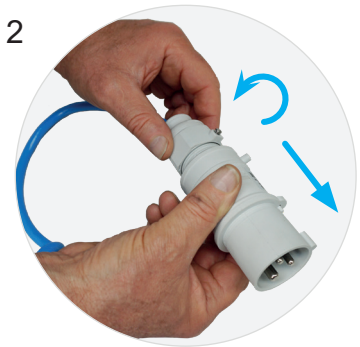
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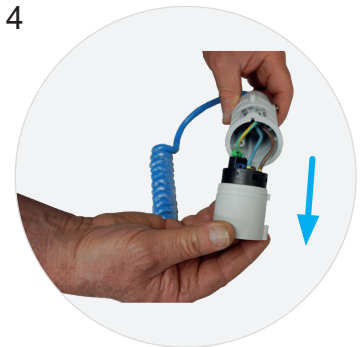
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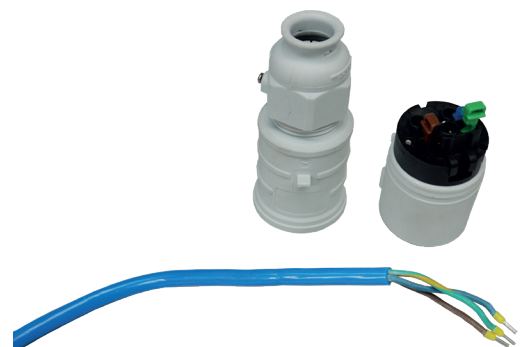
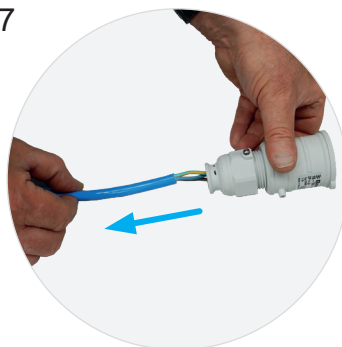
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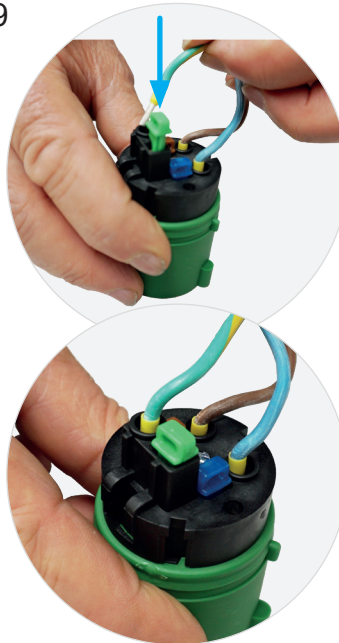
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■ 11



■ 12

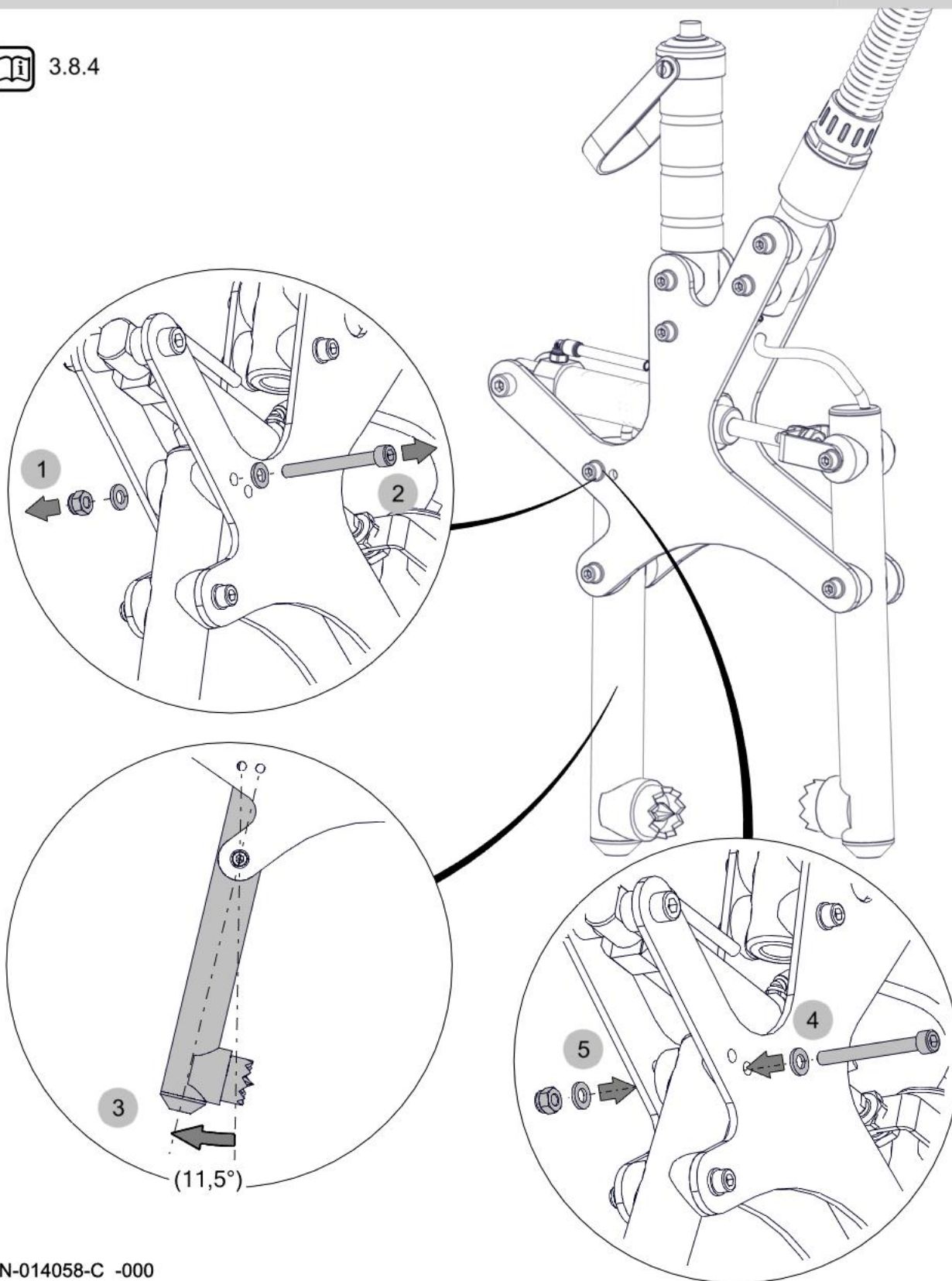




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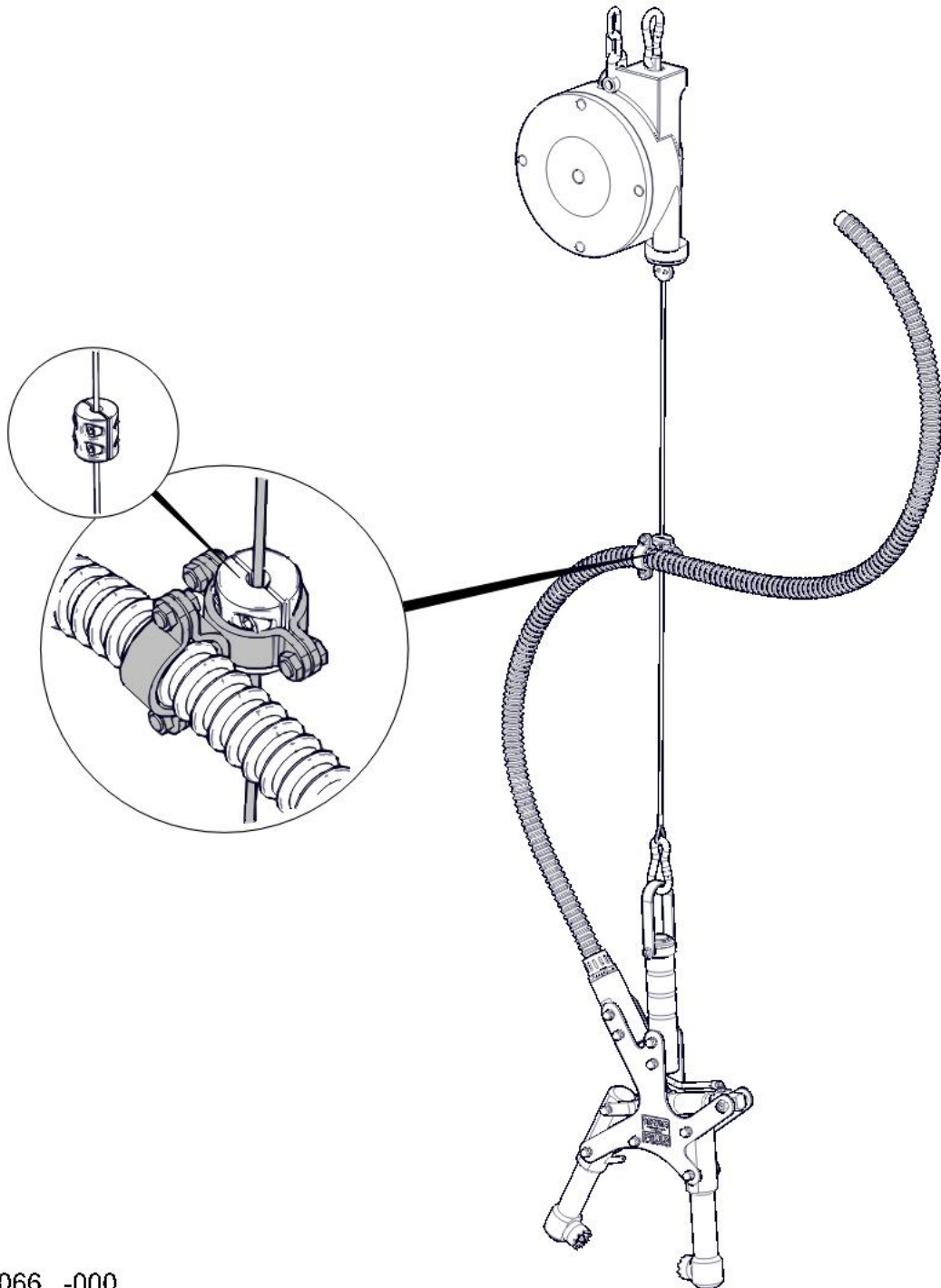
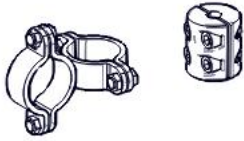
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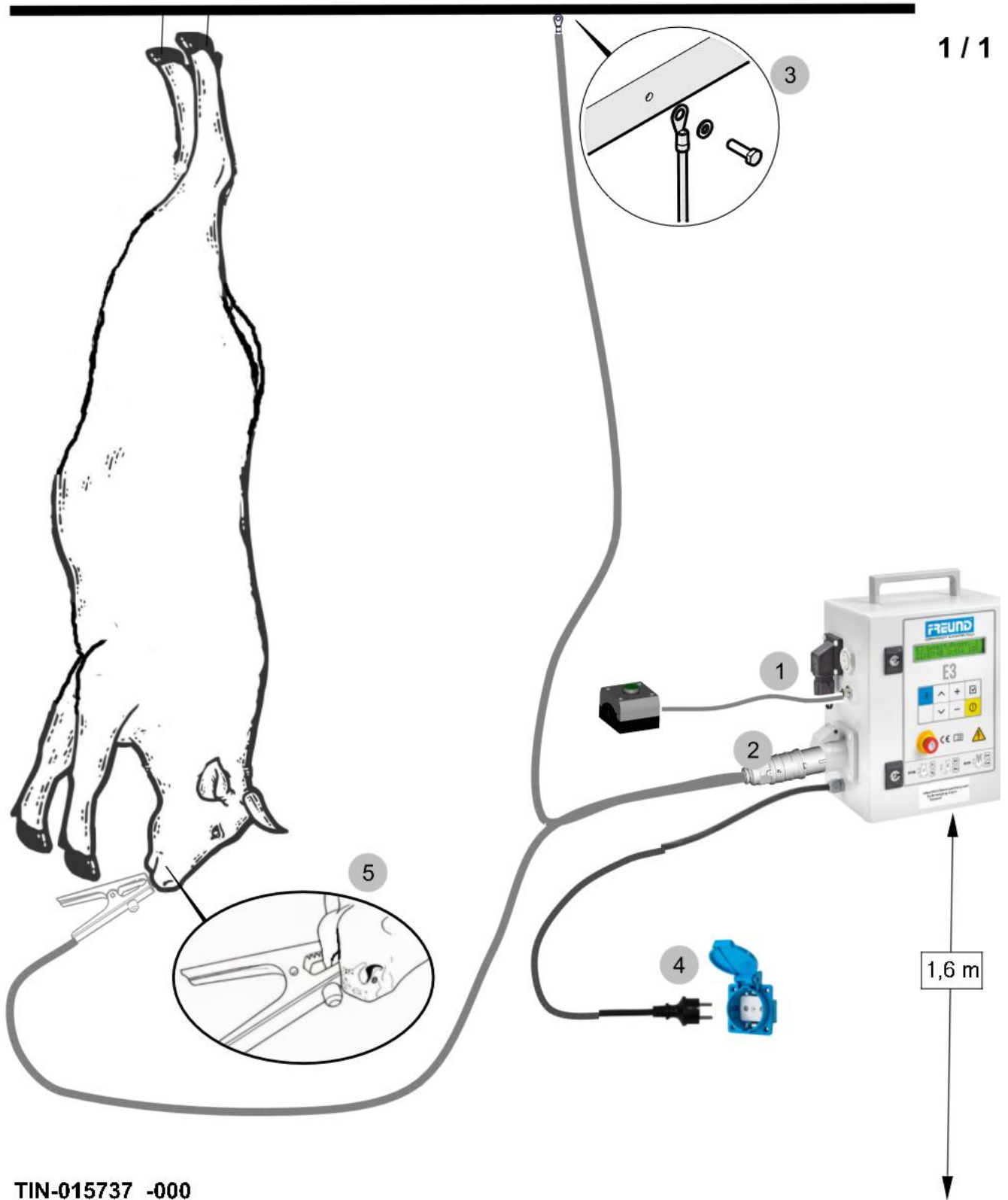


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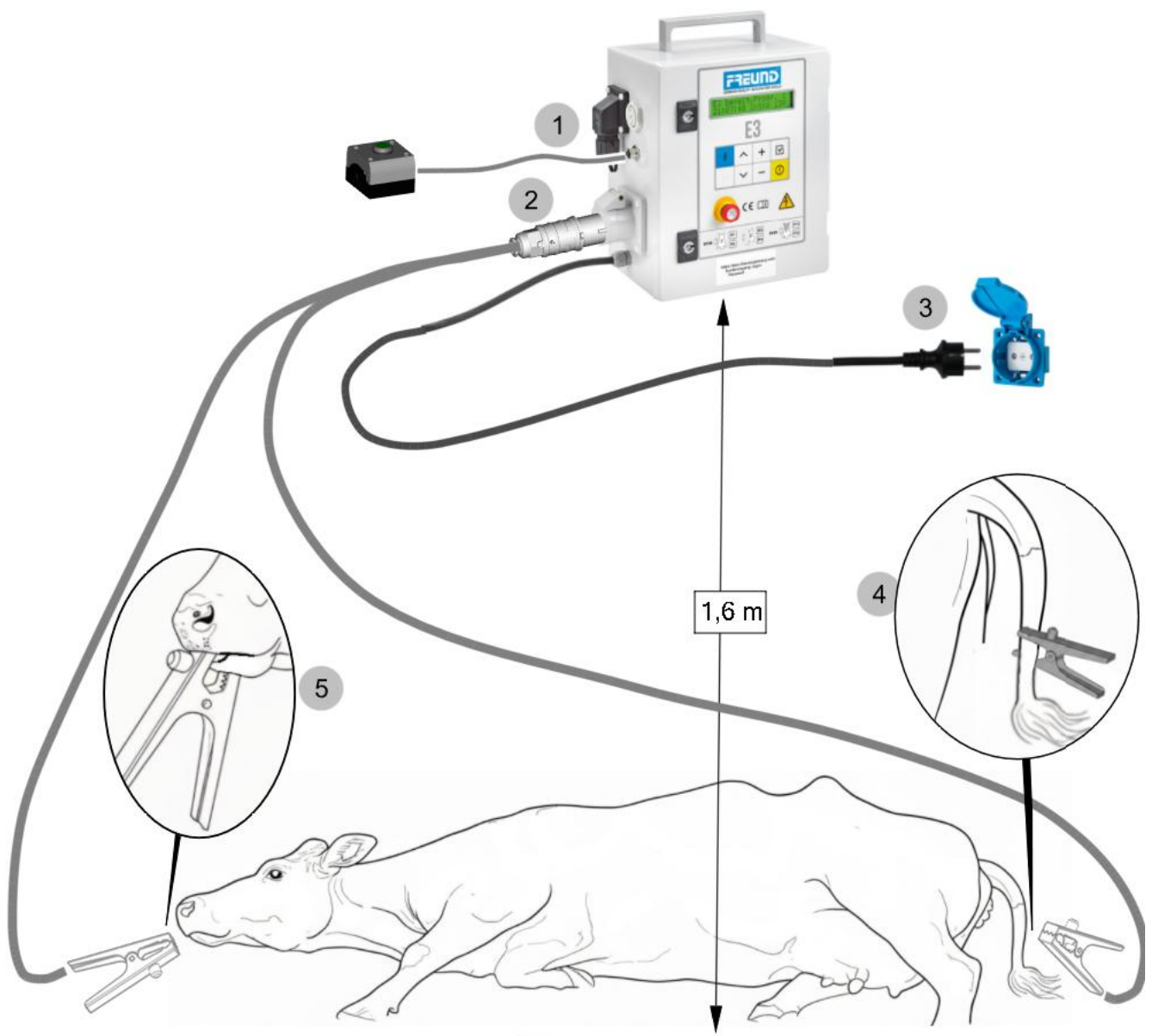
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TIN-015744

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