

OPERATING MANUAL STUNNING-DEVICES

Translation of original manual





ELECTRIC STUNNER

- STUN-E4
- STUN-E6 XXL
- STUN-E8 XXL

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



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 stunning device, stun tongs and accessory devices are all designated as device in these operating instructions.

These operating instructions have been prepared so that you can work quickly and safely with the machinery.

The operating instructions are part of the machinery and contain important recommendations, notes and information

- on safe and correct machinery installation.
- on safe operation of the machinery.
- on how to remedy simple faults yourself.
- on maintenance and cleaning

Read these operating instructions carefully and in full before beginning to operate the machine. Be sure to comply with all of the safety and warning notices provided.

1.1 Target group

These operating instructions are aimed towards operators of slaughtering equipment and personnel employed at slaughtering facilities, as well as butchers and small businesses and their apprentices.

The operating instructions are aimed, in particular, towards specialist personnel involved in assembly, installation, maintenance and repair, and towards cleaning staff.

The target group must have basic knowledge of the machinery described here in order to handle it.

1.2 Liability and warranty

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

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

The original version of these operating instructions was written in German. The translation has been prepared to the best of our knowledge; however, we cannot accept any liability for translation errors. In case of doubt, the original German version shall prevail.

Disclaimer We are not liable for any warranty or liability claim

- for wear parts.
- for damage that may occur during slaughter.

We also state expressly that we are not liable for damage resulting from the following:

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- failure to observe, or insufficient observance, of the information provided in these operating instructions
- improper use of the machinery
- inappropriate or improper handling
- use of spare parts or components that are not approved by FREUND Maschinenfabrik GmbH & Co. KG
- unauthorised alterations to machinery functions or materials
- incorrect operation or operation by unqualified personnel
- removal or manipulation of safety equipment
- improper or incorrect cleaning
- chemical or mechanical overload
- inadequate maintenance and repair works or non-compliance with maintenance intervals

Modifications and/or adjustments to the machine may be made in certain circumstances. 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 instructions

These operating instructions are part of the machinery and must be accessible to operating, maintenance and cleaning personnel at all times during the entire service life of the machinery.

Always keep these operating instructions to hand at the machinery's usage site.

1.4 Installation manuals and technical information



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

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

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1.5 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.} 3. The numbers indicate that the instruction steps follow each other 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







Head flow



Heart flow



Comply with the operating manual

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



Separate spare parts list available

There is a separate spare parts list for this spare part.



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

About this Manual





Available as a set

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

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Tool set available

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

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



2

Lubrication

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



No lubrication



Glue

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



Cleaning

Instruction for an additional cleaning step.



Power plug

symbolises the connection of the machine to the power network.



Disassembly of the machine or component



Assembly of the machine or component

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

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2 For your safety

This chapter describes the safety measures and safety devices. 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

Structure of a

warning

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.



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 Only persons possessing the necessary knowledge and skills (expertise) personnel 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 The site operator must ensure that the machine is only operated and used machine 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 observed
	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.

For your safety

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Safety at the 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 In the case of an accident, administer first aid and call a doctor and procedures 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 in accordance with EN 60204-1

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

2.7 Residual risks

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

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



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

- danger to life from live machine parts in electrical stunning device
- 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).

is operated in conjunction with FREUND electric stunning device.

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 interface control box

- controls the pneumatic components of the stun tongs/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 \rightarrow 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.

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3 Technical Description

3.1 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 - TierSchIV.

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.

3.2 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:

 \rightarrow national legislation in your country

Body resistance: 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 stunning device records all relevant stun data and the set stun parameters.

If there is an active Internet connection, this data is transferred to the password-protected FREUND web server, where they can be evaluated, \rightarrow Chapter *The FREUND Web Server* on page 60.



Technical Description

3.3 Stun phases

3.3.1 Head stunning



No.	Phase	Parameter
	Head flow	Head flow time
		Head current
		Head amount of charge
1 Hea		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

3.3.2 Head and heart stunning





No.	Phase	Parameter
		Head flow time
		Head current
		Head minimum current
1	Head flow	Head minimum time
1		Head max. voltage
		Head frequency time
		Head starting frequency
		Head final frequency
2	Repositioning	Reposition time
3	Reset	Reset time
		Heart flow time
		Heart current
		Heart amount of charge
		Heart minimum current
4	Heart flow	Heart minimum time
		Heart max. voltage
		Heart frequency time
		Heart starting frequency
		Heart final frequency
5	Pause between stun processes	Pause time

3.4 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 (TierSchIV).

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 electric stunning devices E4, E6XXL and E8XXL come with preinstalled stun programs.

The customer decides which programs are activated. To have additional programs activated for a fee, please contact our sales department. Address and telephone number can be found in the imprint.

Technical Description

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Stun program		Minimum current [A]	E4	E6 XXL	E8 XXL
P1	Head and heart stunning of pigs $^{\rm N}$	1.3	x	х	x
P2	Head and heart stunning of pigs $^{\rm S}$	1.3	x	x	x
P3	Head and heart stunning of sows	1.3	x	х	x
P4	Head flow of sows	1.3		х	x
P5	Head flow of pigs ^N	1.3		х	x
P6	Head flow of pigs ^s	1.3		х	x
P7	Head flow of lambs and goats	1.0		х	x
P8	Head flow of sheep	1.0	x	х	x
P9	Restunning of pigs	1.3		х	x
P10	Restunning of sows	1.3		х	x
P11	Head flow ostriches	0,4		х	x
P12	Head flow rabbits	0,2		x	x
P13	Head flow poultry	0,3		х	x
P14	Killing pigs	1,3		х	x
P15	Killing cattle	1,3		х	x
P16	Head flow of pigs ^{N,P}	1.3			x
P17	Head flow of pigs ^{S,P}	1.3			x
P18	Head flow of sows ^P	1.3			x
P19	Head and heart stunning of pigs $^{\rm N,P,1}$	1.3			x
P20	Head and heart stunning of pigs ^{S,P,1}	1.3			x
P21	Head and heart stunning of sows P,1	1.3			x
P22	unassigned			х	x
P23	unassigned			х	x
P24	unassigned			x	x

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

3.5 Stun parameters

Stunning Each stunning program has 20 different parameters which can be changed individually.

	No.	Parameter	Description
Phase Head flow	1	Head start frequency [Hz]	Frequency at the beginning of head flow (in conjunction with parameters 2 + 3)



	No.	Parameter	Description
	2	Head end frequency [Hz]	Frequency at the end of the set head flow time (in conjunction with parameters 1 + 3)
	3	Head ramp time [s]	Period of time, from the beginning of the head flow to the beginning of the frequency shift
	4	Head frequency runtime [s]	Period over which the frequency shifts from head starting frequency to head final frequency (in conjunction with parameters $1 + 2$)
	5	Head charge volume [As]	amount of current flowed in one second during head flow
	6	Head current [A]	Constant current strength during head flow
	7	Head flow time [s]	Total duration of -head flow- phase; head stun time > head frequency time
	15	Head minimum current [A]	Minimum electric current ¹ head flow
	16	Head minimum time [s]	Minimum stun time ¹ for head flow
	22	Max. Voltage Head [V]	Maximum possible voltage for head flow
Phase Repositioning	19	Switch time [2] ²	Time during which the stun tong can be repositioned from head to heart flow
	20	Reset time [s] ²	Time during which the stun tong can be repositioned from head to heart flow after the reposition time has elapsed Start of reset time:
			 The stun tong has not been repositioned from head to heart flow within the reposition time
			During reset time:
			 The stun tong is repositioned and the stunning process is continued with heart flow
			End of reset time:
			 The current stunning process is aborted and the settings are reset to the head flow settings
Phase Heart flow	8	Heart start frequency [Hz]	Frequency at the beginning of heart flow (in conjunction with parameters 7 + 8)
	9	Heart end frequency [Hz]	Frequency at the end of the set heart stunning time (in conjunction with parameters 6 + 8)



	No.	Parameter	Description
	10	Heart ramp time [s]	Period of time, from the beginning of the heart flow to the beginning of the frequency shift
	11	Heart frequency runtime [s]	Period over which the frequency shifts from heart starting frequency to heart final frequency (in conjunction with parameters 6 + 7)
	12	Head charge volume [As]	amount of current flowed in a set time during heart flow
	13	Heart current [A]	Constant current strength during heart flow
	14	Heart stun time [s]	Total time of the -heart flow- phase; heart flow time > heart frequency time
	17	Heart minimum current [A]	Minimum electric current ¹ heart flow
	18	Heart minimum time [s]	Minimum stun time ¹ for heart flow
	23	Max. Voltage Heart [V]	Maximum possible voltage for heart flow
Phase Pause	21	Break time [s]	Time between stun processes
General parameters		With heart electrode (y/n) Select 1	Activation/deactivation (y/n) of stunning with heart electrode
		Restrainer without measuring Select 2	High voltage resistance measurement only when 2 stunners are used in a restrainer
		Start without Nr. Select 3	intended for rerstrainer operation
		Parameter correction Select 4	Plausibility check of related parameters
		Language	Choice of display language (de/en)
		Number of programs	Number of preconfigured stun programs
		Buzzertime (s)	Duration of signal tone The signal tone sounds
			 when the stun time has elapsed. if an error occurs during the stunning process.
		Stunning counter day	Shows the number of animals stunned/day
		Stunning counter total	Displays the total number of animals stunned



No.	Parameter	Description	
	Not transmitted in memory	Number of stun data sets stored in the machine if there is no network connection to the FREUND web server	
	Device number/version no.	Machine's serial number/firmware version number	
	Input date	Input of the current date	
	Input clock	Input of the current time	
	Input local time Offset	Input of the deviation from GMT (General Mean Time) in hours	
	Password	Password input (numerical value)	
	Operator number	Operator number input (numerical value)	

* 1 Prescribed by TierSchIV

* 2 Only in conjunction with head and heart stunning

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

	No. Parameter		Setting range	Increment
Phase	1	Head starting frequency [Hz]	50 - 1000	10
Head now	2	Head final frequency [Hz]	50 - 1000	10
	3	Head ramp time [s]		
	4	Head frequency time [s]	0.1 - 5.0	0.1
	6	Head current [A]	0.1 - 2.5	0.1
	7	Head stun 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
Phase Repositioning	19	Reposition time [2] ²	0.1 - 9.9	0.1
	20	Reset time [s] ²	0.1 - 9.9	0.1
Phase	8	Heart starting frequency [Hz]	50 - 1000	10
Heart now	9	Heart final frequency [Hz]	50 - 1000	10
	10	Heart ramp time [s]		
	11	Heart frequency time [s]	0.1 - 5.0	0.1
	13	Heart current [A]	0.1 - 2.5	0.1
	14	Heart stun time [s]	0.1 - 25.5	0.1
	17	Heart minimum current [A] ¹	0.5 - 2.3	0.1



	No	Deremeter	Sotting range	Increment
	INO.		Setting range	Increment
	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 Parameter		Heart electrode (y/n) ²	Query yes/no	-
		visible/activated (y/n)	Query yes/no	-
		editable (y/n)	Query yes/no	-
		Language	de/en	-
		# of programs	1 - 24	1
		Buzzer 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 TierSchIV

* 2 Only in conjunction with head and heart stunning

3.6 Electric stunning devices STUN-E4, -E6XXL, -E8XXL

The FREUND electric stunning devices STUN-E4, STUN-E6XXL and STUN-E8XXL comply with the provisions of the German Animal Protection Slaughter Regulation of December 12th 2012 (BGBI 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)

EN



3.6.1 Functional elements STUN-E4, -E6XXL, -E8XXL



Fig. 3-1 Functional elements E6XXL, E8XXL Fig. 3-2 Functional elements E4

	ltem.	Description		
1 LAN cable connection				
	2	Buzzer		
only E8XXL	3	Connection for stunning: power cable for the stun tong (head flow)		
	(4)	Connection for stunning: power cable to the heart electrode (heart flow)		
	(5)	 Connection for activation of a pneumatic stun tong with an electrical trigger Control box interface 		



Technical Description

3.7 Displays and controls



Fig. 3-3 Display

3.7.1 Display elements

Display	Explanation
86 bereit 7:49:58	LCD display
The second second	Indicates head flow
\bigcirc	Indicates heart flow
()	Indicates stunning errors and device faults

ΕN



3.7.2 Controls

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

3.7.3 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	3 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 Volt.167V	50Hz 1.4Sec		
Explanation	Stunning phase	Stunning cu	ırrent	Power frequency



ΕN

	Current voltage at the electrodes		Stunning duration	
Display	3.Switch time Voltage	1.3s 14V		
Explanation	Stunning phase		Time until o stunning	ptimum start of heart
	Current voltage at the ele	ectrodes		
Display	4.Reset time Voltage	2.0s 14V		
Explanation	Stunning phase		Time until reset to start	
	Current voltage at the ele	ectrodes		
Display	5.Heart 0.8A Volt.122V 0	50Hz .6sec		
Explanation	Stunning phase	Stunning cu	ırrent	Power frequency
	Current voltage at the electrodes		Stunning du	Iration
Display	7.Break time Voltage	0.5s 14V		
Explanation	Stunning phase		Minimum wastunning	aiting time until next
	Current voltage at the ele	ectrodes		

3.7.4 Rating plate STUN-E6XXL, -E8XXL

The rating plate is attached to the side of the housing on the outside, and to the door of the control cabinet on the inside. The following illustration shows an example of a rating plate:







Element	Explanation
1	Company address
2	Machine type and designation
3	Performance data
4	Year and week of manufacture and production order no.

3.8 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	Animal species		Stunning method		
STUN-TONG	L L			E.S.	$\langle D \rangle$
EP Steel	•	-	-	•	-
EP LS	•	-	•	•	-
EA Steel	-	-	•	•	-
ES Steel	•	•	-	•	•
EPP2 (pneumatic)	•	-	-	•	•*
EPP3 (pneumatic)	•	•	-	•	•*

* Stunning in restrainers and individual traps

ΕN



3.8.1 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)

3.8.2 STUN-TONG-ES Steel: function elements



Fig. 3-6 STUN-TONG-ES Steel



Item	Description
1	Hexagonal electrodes for pigs
2	Ergonomically angled handle

3.8.3 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
6	Mechanical trigger for closing process
7	Silencer





3.8.4 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**.

3.9 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 STUN-IF2-E8

Connections STUN-IF1-E8 This variant gives you the option of controlling pneumatic stun tongs. 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.





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
Ρ	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
L3	Electric button connection option
L4	Pneumatic button connection option Compressed air hose Ø4 mm
ΕN





Fig. 3-10	Connections	STUN-IF2-E8
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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
Ρ	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
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



Pos.	Description
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

3.10 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)



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 worksThe 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 \rightarrow chapter *Disposal and Recycling* on page 81.
- 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.

ΕN



5 Installation and Commissioning

The electric stunning device, stun tong and accessory devices are installed and connected by the operator.

FREUND Maschinenfabrik accepts no liability for damage resulting from incorrect connection or improper handling.

5.1 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 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.



Ĭ

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.



- 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. Longer power cables can cause intermittent contacts during the stunning process.



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-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.



- Attach the stun tongs to the balancer. Clamp the connecting line of 3. 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

The following illustration is a schematic representation of the connection Connection diagram 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)

Insert the plug of the stun tongs into the connection socket on the \triangleright 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. Insert the plug of the stun tongs into the connection socket on the electric stunner.
- 6. Attach the stun tongs to a balancer.
- 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, \rightarrow connection diagram.

EN o



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	El
7	Power cable: STUN-E8 XXL ► pneumatic stun tongs	

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

Interface IF2

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

Pos.	Description	EN
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-TONG-EPP3 is operated on a balancer. The drive cable of the STUN-TONG-EPP3 must never be live while work is being carried out. To prevent damage to the drive cable due to tensile loads, strain relief must be implemented.

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 Mount STUN-CHECK-M

Fig. 5-3 Hole pattern dimensions

Fig. 5-4 Wall fastening set

The signal and display elements of the machine must be easily visible by the operator and faults displayed must be identifiable immediately.

> Put the machine on a stable table.

or

 Hang up the machine using our wall fastening set* (Fig. 5-2).

To hang up the machine, use the 4 mounting holes located on the back of the machine.

- Integrate the machine in an effective equipotential bonding system (i.e. it must be earthed).
- Install the machine where water can run off easily.

* The wall fastening set (part no. 100-022-069) can be ordered from our sales team. Please refer to the imprint for the address and telephone number.

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

ΕN

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 (TierSchIV) 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 is a specification based on the current German Animal Protection Slaughter Regulation of 1 January 2013 (BGBI 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 machine to the power supply.
- To transfer the stun data to the FREUND web server: Connect the machine to a router connected to the Internet using a LAN cable. The machine's memory has only a limited capacity. When the memory is full, you can no longer perform stunning.
- 3. Connect the machine to the output connection of the stunner.

Switching on 4

To do so, turn the 0/I switch.

Switch on the machine.

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

Stunner E6 ProgVers XX.XX EN

+

After a few seconds, the display will change:

0

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

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

- 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 ready, Prog.3 08:05:35 Int:0 14V (Example display)
- Selecting a program 7. Select the program's program number. Up to 24 pictograms may be stored.

Press or until the desired program number is shown.

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

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.

ΕN

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 TierSchIV (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.

When the pre-set head current flow time has elapsed, a horn signal

sounds. The stunning device automatically switches to heart

The 🔄 symbol lights up.

Phase Repositioning

The \bigcirc symbol lights up.

stunning mode.

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.

EN

Fig. 6-4 Ideal electrode contact positions

 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 am 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 TierSchIV (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. Press the 0/I switch.
- 2. Disconnect the machine from the power supply.
- 3. Clean the machine (\rightarrow chapter *Daily cleaning* on page 73).

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 2. Press the confirmation key .

×

- 3. Press and hold the key \checkmark until the display shows **password**.
- 4. Press + or until your password's number the display shows your password's number.
 - Press the confirmation key ^I.
 The display will show confirmation that you have entered the password correctly.

Change the parameters.

6.

- Press the confirmation key <a>

 .
- ^ **v**
- 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.
- Press the confirmation key ^I.
 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 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.

6.7.1 Stun errors during head flow

Fault	Possible cause	Log entry
Stunner resets to start position.	The carcass's resistance exceeds 1,400 ohms.	
	The carcass's resistance exceeds 1,400 ohms.	
The stunner switches off and starts the pause	The head stun current is	Within 1,000 ms: Head current gain error
phase.	reached within a period of 800 ms after starting.	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

6.7.2 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	Heart minimum current is temporarily or permanently interrupted	Heart current error		
Stunning process can be restarted afterwards.	Heart minimum current is interrupted or not reached before specified heart minimum time has elapsed	Heart time error		

6.8 Testing the electric stunner with STUN-CHECK-M

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

6.8.1 Selecting a test objective

Fig. 6-5 Machine overview STUN-CHECK-

Position	Test objective
1 and 2	Pig stunning
3	Increase error is detected by the electric stunner
4	Safety check

6.8.2 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 stunning program on the stunner.
- 5. Select a test resistor using the rotary switch on the STUN-CHECK-M.
- 6. Attach the stun tongs in such a way that the electrodes of the tongs are in contact with the contact plates of the test device.

The electric stunner starts the stunning cycle. (Stunning must not start if the selector switch is in position 4)

- Check whether the values displayed on the measuring instruments of the STUN-CHECK-M correspond to the values on the display of the stunner. Current in A and voltage in V.
- 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.

7 The FREUND Web Server

The web server archives the stun data transmitted by the electric stunning device and sends program parameters back to the stunning device.

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. To request your personal access data, visit https://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.

	Home	Downloads	Contact
Protected area	I		
User name:			
Password:			
Log in Forgot p	assword		
English	•	•	

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

Contact the FREUND Maschinenfabrik sales department to register a new machine.

The FREUND Maschinenfabrik sales department will assign your user data to the new machine and register it.

7.3 User interface

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

Seq	# Date/Time 🔶	Rise HeadCurrent	Err Head Tim	e Err	Heart Current	Err	Heart Time	Err	Ein.Dat.	Export Load for offline view
1	2000-00-00 05:00:00	0.00 A	0.1 s	ek	0.00 A		0.9 sek		2018-12-06 13:42:05	
4	2018-12-04 00:04:00	0.04 A	5.1 s	ek	0.09 A		1.6 sek		2018-12-06 13:44:14	🗐 filter by date
5	2018-12-04 00:04:08	0.04 A	1.6 s	ek	0.00 A		0 sek		2018-12-06 13:54:10	# 25 07 10 26 07 10 -
6	2018-12-04 00:04:25	1.36 A	5.1 s	ek	0.64 A		5.2 sek		2018-12-06 13:54:31	m 23.07.19 - 20.07.19 •
7	2018-12-04 00:05:00	1.36 A	5.1 s	ek	0.92 A		6.1 sek		2018-12-06 13:55:06	📄 filter by error type
8	2018-12-04 00:05:32	1.36 A	5.1 s	ek	0.93 A		6.1 sek		2018-12-06 13:55:35	Current rise
2	2018-12-04 13:32:24	0.04 A	0.3 s	ek	0.00 A		0 sek		2018-12-06 13:42:28	Head time
3	2018-12-04 13:34:02	0.09 A	1.9 s	ek	0.00 A		0 sek		2018-12-06 13:43:04	Heart time
9	2018-12-06 13:55:51	1.41 A	5.1 s	ek	0.93 A		6.1 sek		2018-12-06 13:55:53	Heart current
10	2018-12-06 13:56:10	1.40 A	5.1 s	ek	0.93 A		6.1 sek		2018-12-06 13:56:12	no errors
11	2019-01-16 11:11:10	1.40 A	5.1 s	ek	0.93 A		6.1 sek		2019-01-30 10:59:56	filter by operator
12	2019-01-16 11:11:22	1.99 A	1 s	ek 📵	0.00 A	0	0 sek	0	2019-01-30 11:00:05	Alumbor
13	2019-01-16 11:11:39	2.00 A	5.1 s	ek	1.33 A		8.1 sek		2019-01-30 11:00:20	Number.
area 14	2019-01-30 11:00:13	1.41 A	5.1 s	ek	0.93 A		6.1 sek		2019-01-30 11:00:23	
15	2019-01-30 12:25:55	1.41 A	5.1 s	ek	0.00 A	0	0 sek	0	2019-01-30 12:25:58	Details/Print Zoom
16	2019-01-30 12:26:07	1.41 A	5.1 s	ek	0.00 A	0	0 sek	0	2019-01-30 12:26:10	
17	2019-01-30 12:26:46	1.41 A	5.1 s	ek	0.93 A		6.1 sek		2019-01-30 12:26:48	Overview
18	2019-01-30 12:28:54	1.40 A	5.1 s	ek	0.00 A		0 sek		2019-01-30 12:28:56	
19	2019-01-30 13:21:08	1.39 A	5.1 s	ek	0.00 A		0 sek		2019-01-30 13:21:09	
20	2019-01-30 13:21:15	1.40 A	5.1 s	ek	0.00 A		0 sek		2019-01-30 13:21:16	
21	2019-01-30 13:24:35	1.40 A	5.1 s	ek	0.00 A		0 sek		2019-01-30 13:24:37	
22	2019-01-30 13:24:46	1.40 A	5.1 s	ek	0.00 A		0 sek		2019-01-30 13:24:47	
23	2019-01-30 13:24:52	1.39 A	5.1 s	ek	0.00 A		0 sek		2019-01-30 13:24:53	
24	2019-01-30 13:25:41	1.39 A	5.1 s	ek	0.00 A		0 sek		2019-01-30 13:25:43	
25	2019-01-30 13:26:48	1.40 A	5.1 s	ek	0.00 A		0 sek		2019-01-30 13:26:49	

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
1 -	 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.

stundata serve	er Home	My Devices	Overview #	Table	Statistics	Parame	terisation							1 -
Welcom	е													
Please choose an a	action													
My Devices	Change p	password												
Your Devic	es													
Locate the device y	ou want to mana	age in the table b	elow, and click	one of the t	outtons next t	o it.You se	e all dev	ices foi	which y	ou have	access	authoriza	tion.	
Туре D	evice ID.	Des	scription		Action									
E6					Ove	rview	•	٥]					

Control element	Explanation
My Devices	Calls up the "My Devices" function field
Change password	Opens the "Change password" window
Overview	Calls up the "Overview" function field → Chapter "Overview" function field on page 63
	Calls up the "Table" function field → Chapter "Table" function field on page 64
۲	Calls up the "Statistics" function field → Chapter "Statistics" function field on page 65
•	Calls up the "Parameters" function field → Chapter "Parameters" function field on page 66

Fig. 7-2 "Home" function field

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.

stundata server	Home My Devices	Overview	Tab	le	St	atistic	S	Pa	arame	eters	1.
										Table Statistics	• Parameters
General Info	ormation		Su	mr	na	ry					
Device Type:	B609		0		Jul	v 20	19		0	Daily summary for 2019-07-26	
Device ID.:	1998		Su	Мо	Tu	We	Th	Fr	Sa	Number of stuns this day: 0 Rise errors: 0	
Status:	off offline seit 06.02.19	15:25		1	2	3	4	5	6	Head: Min. time not satisfied: 0 Current error: 0	
Description:			7	8	9	10	11	12	13	Heart: Min. time not satisfied: 0	
Location:			14	15	16	17	18	19	20	Current error: 0 Stunning begin: End:	
Owner:			28	22	30	31	20	20	21		
Contact Details:											
Maintained by:											
Device settings:	 Device enabled Keyboard enabled Master/Slave enabled 										

Fig. 7-3 "Overview" function field

Control element	Explanation
I Table	Calls up the "Table" function field → Chapter "Table" function field on page 64
 Statistics 	Calls up the "Statistics" function field → Chapter "Statistics" function field on page 65
Parameters	Calls up the "Parameters" function field → Chapter "Parameters" function field on page 66

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	Ein.Dat.	Export	Load for offline view		
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	🔲 filter	by date		
5	2018-12-04 00:04:08		0.04 A		1.6 sek		0.00 A		0 sek		2018-12-06 13:54:10	# 25.0	7 10 26 07 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	m 20.0	1.13-20.01.13		
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	📄 filter	by error type		
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	Curre	nt rise		
2	2018-12-04 13:32:24		0.04 A		0.3 sek		0.00 A		0 sek		2018-12-06 13:42:28	Head	time		
3	2018-12-04 13:34:02		0.09 A		1.9 sek		0.00 A		0 sek		2018-12-06 13:43:04	Head current Heart time			
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	 Heart current no errors filter by operator 			
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	0.00 A	0	0 sek	0	2019-01-30 11:00:05	(Number)			
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	Number			
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	0 sek	0	2019-01-30 12:25:58	Details	/Print Zoom		
16	2019-01-30 12:26:07		1.41 A		5.1 sek		0.00 A	0	0 sek	0	2019-01-30 12:26:10	and the second s			
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	Overvie	W		
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
Q	Opens search dialogue. Column headers can be selected as search parameters
φ	Resets the search parameters and reloads the table

EN

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

Control element	Explanation
Close window	Closes the window
Print this view	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.

tundata sen	ver Home My	/ Devices Overvie	w Table	Statistics Para	imeters		T
Statist	ics				View: Days	Months ← prev	ious today next
,		Su	uccessful and de	fective stuns by KV	Selected: / 4 2019	Kw 4 (by Mon 28.01	.2019 to Sun 03.02.20
			_				
		_	2				with errors
			11	.10			
Mon 28.0	1. Tue 29	1.01. Wei	1 30.01.	Thu 31.01.	Fri 01.02.	Sat 02.02.	Sun 03.02.
8	Mon 28.01.	Tue 29.01.	Wed 30.01.	Thu 31.01.	Fri 01.02.	Sat 02.02.	Sun 03.02.
ж	0	0	11	13	0	0	0
rror	0	0	2	4	0	0	0
Rise)	0	0	0	0	0	0	0
Head/Time)	0	0	0	3	0	0	0
Head/Current)	0	0	0	0	0	0	0
Heart/Time)	0	0	2	4	0	0	0

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
$\leftarrow \text{previous} \text{today} \text{next} \rightarrow$	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.

parameter set (Fig. 7-8)

ΕN

Control element	Explanation
Target device: # [E6]	Selection menu for registered machines
	Opens the selected parameter set for review
???	Opens a window with information on the icons for transmission status:
ſĊ	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
ß	 Parameter data have been edited but not yet sent to machine
	Transfering this parameter set was cancelled after 20 unsuccessful attempts

	S	tundata	a serve	er	Home	My Devic	es	Overviev	V	Tabl	e St	atistics	Parame	eters							1-
Edit and send	8	Currently	used pa	rameter	s Sho	w history															
parameter set		Draft of	a param	eter se	t. Click "S	end", to ti	ransfer	this para	ameter se	et to you	r device										
		Send																			
		Max. curre	ent		Opera	tor		Software	e version			Mair	is voltage	Э.		Lang	guage		Num	of pro)g.
		0			5			19.15				133				1			1		
	N	un Head Start free	Head End freq	Head Verzug	Head Ramp time	Head Charge	Head	Head t Total time	Heart Start freq	Heart End freq	Heart Verzug	Heart Ramp time	Heart Charge	Heart	Heart Total time	Head min. currer	Head min. time	Heart min. currer	Heart min. time	Change	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 se	c 50 Hz	50 Hz	0 sec	0 sec	0 As	0 A	0 sec	1.3 A	4 sec	0 A 0	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	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
	1	9 400 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
	2	0 400 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
	2	1 400 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
Send	Sends the edited parameter set to the machine. The symbol in the list of all parameter sets indicates if the data is transmitted
1.4	Editing mode for selected parameter

7.4 Viewing machine data

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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

Ħ

Table

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

7.5 Evaluating stun data

 \geq

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

or

Click Table in the menu bar.

or

Click Table .

Searching for data sets

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

<u>م</u> 1.	Click 🔎.
-------------	----------

The search dialogue open in a separate window.

Search			×
Seq.#	equal	•	
✤ Reset			Search P

- 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).

 Choose date range • filter by error type Current rise Head time Head current Head time 	Choose date range filter by error type Current rise Head time Head current Heart time Heart current no errors	filter by date
 filter by error type Current rise Head time Head current Head time 	ifilter by error type Current rise Head time Head current Heart time Heart current no errors	Choose date range
 Heart current no errors 		filter by error type Current rise Head time Head current Heart time Heart current no errors

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Click $\fbox{\ }$ 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:

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- tab-separated
- comma-separated

Export

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.

7.6 Call up daily figures

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

or

Click Statistics in the menu bar.

or

 \triangleright

Statistics

Click statistics 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.



- 3. In the table, click the value you wish to change.
- 4. Change the parameter value.

Change further parameter values as required.

Click Send. 5. 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!

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.





ΕN



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.

For maintenance and repairs, use only measuring instruments with protective insulation. The internal resistance of the connected measuring instrument must be at least 100 kOhm.

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 from the mains.
- Secure the electric stunner to prevent it being switched on accidentally.
- Before beginning any installation, maintenance or repair work, disconnect the stun tongs from the electric stunner.
- Never connect more than one electrode combination to a stunner.





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



9.3 Periodic inspection of electrical equipment

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

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

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

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



9.4 Electric stunning devices

9.4.1 Required inspection of stunning devices

The relevant national legislation of your country on operational safety and accident prevention is applicable.

Example: Federal Republic of Germany

According to the Ordinance on Industrial Safety and Health (BetrSichV)e operational safety regulation and accident

prevention regulations, the operator of a slaughterhouse is obliged to

inspect all electric stunning devices at least once each year for compliance with the requirements of the German Animal Protection Slaughter Regulation (TierSchIV).

The required annual inspection must be carried out by an electrician or an electrically trained person in accordance with accident prevention regulations governing *Electrical Systems and Operating Materials*.

Service FREUND Maschinenfabrik offers a full inspection service with an inspection log and inspection tag. In addition, we can provide you with a replacement stunning

device for the duration of the inspection, subject to an additional charge. If you are interested in having the inspection conducted, please contact our Sales department. The address and telephone number can be found at the top of the copyright page.

9.4.2 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.

ΕN





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.

9.5 Stun tongs

Changing the electrodes

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

You can recognize burned 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.



Information about replacing the electrodes can be found in the installation manual on the FA portal.



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 from the mains.
- Secure the electric stunner to prevent it being switched on accidentally.
- Before beginning any installation, maintenance or repair work, disconnect the stun tongs from the electric stunner.
- Never connect more than one electrode combination to a stunner.



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.

ΕN

10.2 Personal protective equipment



10.3 Overview of possible faults

10.3.1 Electric stunning devices

Fault	Possible cause	Remedy	
Unreadable display when switched on.	Control unit or display	Contact the manufacturer. The address and telephone number	
Display flickers when switched on.	circuit board defective.	can be found at the top of the copyright page.	
Display does not illuminate.	Power supply is interrupted.	Check the mains supply line for interruptions.	
Vollow light in lighting	Stunning current was not reached within four seconds.	Repeat stun procedure. The yellow light automatically turns	
renow light is lighting.	Stun procedure was interrupted within the first four seconds.	The stun error is also signalled acoustically.	

10.3.2 Stun tongs

Fault	Possible cause	Remedy
	Electrodes are soiled.	Clean the electrodes using a wire brush.
	Electrodes are burnt	Change the electrodes.
Current strength set is not reached. The stunning process does not start.	through.	→ Assembly manual in FA.
	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.
		\rightarrow Assembly manual in FA.



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, -E8 XXL

	STUN-E4	STUN-E6 XXL, -E8 XXL
Dimensions (H x W x D) [mm]	350 x 305 x 165	400 x 300 x 200
Operating voltage [V UC]	115 / 230	90 – 260
Weight [kg]	9.7	13
Power [W]	500 / ED 20%	1000 / ED 25%
Frequency [Hz]	50 / 60	50 / 60
Power consumption [A]	max. 5	max. 5
Open circuit voltage [V]	14	14
Temperature range Tu [°C]	0 - 40	0 - 40
Stunning voltage [VAC]	15 – 310	15 – 400
Stunning current [A]	max. 2.5	max. 2.5
Stunning frequency [Hz]	50 – 1000 incrementally	50 – 1000 incrementally
Fuse [AT]*	6.3	6.3
IP protection class	IP 65	IP 65

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



Technical Data

ΕN

12.2 Stun tongs

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





	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



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

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

12.2.2 STUN-TONG-ES Steel





Technical Data

ΕN

	STUN-TONG-ES Steel
Width B3 [mm]	640

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

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

12.2.3 STUN-TONG-EPP2



	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
		Electrode set for sheep, goats, lambs	077-000-021

Optional accessories

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



Technical Data

12.2.4 STUN-TONG-EPP3



ΕN



Electrodes	Electrode shape	Designation	Part-No.
		Electrode set for pigs	

12.3 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

12.4 STUN-CHECK-M testing device

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



Manufacturer	FREUND Maschinenfabrik GmbH & Co. KG Schulze-Delitzsch-Str. 38 DE-33100 Paderborn	
Documentation Authorised Representative	FREUND Maschinenfabrik GmbH & Co. KG Schulze-Delitzsch-Str. 38 DE-33100 Paderborn	
Hereby we declare that the machine,		
Туре	STUN-CHECK-M	

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



Manufacturer	FREUND Maschinenfabrik GmbH & Co. KG Schulze-Delitzsch-Str. 38 DE-33100 Paderborn	
Documentation Authorised Representative	FREUND Maschinenfabrik GmbH & Co. KG Schulze-Delitzsch-Str. 38 DE-33100 Paderborn	
Hereby we declare that the machine,		

Туре

STUN-IF1-E8 / STUN-IF2-E8

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

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



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

Hereby we declare that the machine,

Туре

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



Manufacturer	FREUND Maschinenfabrik GmbH & Co. KG Schulze-Delitzsch-Str. 38 DE-33100 Paderborn	
Documentation Authorised Representative	FREUND Maschinenfabrik GmbH & Co. KG Schulze-Delitzsch-Str. 38 DE-33100 Paderborn	
Hereby we declare that the machine,		
Туре	STUN-E4 WEB E-Betäuber / STUN-E6 mit Kühlkörper	

STUN-E4 WEB E-Betäuber / STUN-E6 mit Kühlkörper

STUN-E8 mit Kühlkörper / Betäubungsanlage 2x E8 M/S

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

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



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

Manufacturer	FREUND Maschinenfabrik GmbH & Co. KG Schulze-Delitzsch-Str. 38 DE-33100 Paderborn
Documentation Authorised Representative	FREUND Maschinenfabrik GmbH & Co. KG Schulze-Delitzsch-Str. 38 33100 Paderborn, GERMANY
Hereby we dealars that th	ha maahina

Hereby we declare that the machine,

Туре

STUN-TONG-EPP3 E-Serie

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

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



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

Manufacturer	FREUND Maschinenfabrik GmbH & Co. KG Schulze-Delitzsch-Str. 38 DE-33100 Paderborn	
Documentation Authorised Representative	FREUND Maschinenfabrik GmbH & Co. KG Schulze-Delitzsch-Str. 38 DE-33100 Paderborn	
Hereby we declare that the machine		

Туре

STUN-TONG-EPP2 (PL)

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

	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



Technische Information /



Technical Information



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