



Manual and technical description

for

SCHERMER

Electrical stunning equipment

Type CS-1



Instructions for Use for SCHERMER Electrical Stunning Equipment Type CS-1

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Instructions for Use for SCHERMER Electrical Stunning Equipment Type CS-1

0. Warning and Instructions for Use

The operator of electrical stunning equipment has to observe the national laws and regulations regarding safety and animal welfare.

- IEC/EN 60335-2-87
- DGUV Regulation 1 "Basis of prevention" (Germany)
- DGUV Regulation 3 "Electric Installation and Material" (Germany)
- DGUV Rule 110-008 "Working in the Meat Industry" (Germany)
- Directive 1099/2009/EC
- National regulations and directives in effect

The examinations stipulated in DGUV Regulation 3 and the instructions for carrying out are to be applied to this equipment with the corresponding periods.

Installation, putting into operation and using the stunning equipment by proficient and instructed persons only!

The stunning equipment is only to be used for stunning animals for slaughter!

Connect data registration unit **SchernerLogger** to „**TEST-PORT**“ if a registration of the stunning data is required, e.g. in the **area of validity of directive 1099/2009/EC**.

Before starting maintenance work, stunning transformer is to be separated from power supply.

Pull out plug ZK-18 of stunning tongs before starting maintenance work.

Never leave stunning tongs down at the ground or another place!

Contacts between electrodes and metal parts are to be avoided!

Do not combine part of the equipment with part of an equipment from another manufacturer, as we assume no liability for safe use in this case!

Note: When depressing key "TEST" stunning voltage is at the electrodes for a moment.

Recommendation: When sending the stunning equipment to manufacturer for repair or maintenance, please use the original packing material which guarantees safe transport!

Therefore please store carefully the packing material.

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1. Introduction

The complete standard device consists of:

- Supply part Stunning transformer type CS-1
- Application part stunning tongs type ZK

Alternatively:

- Stunning fork type GK made of plastic
- Stunning tongs type Z3

Please use the above devices together only!

The stunning equipment for animals for slaughter is fully automatic and corresponds to the directives of IEC/EN 60335-2-87.

2. Technical Advice

2.1. Supply part: stunning transformer type CS-1

Stunning transformer is a device not necessarily firmly installed with plug junction type B.

It consists of operating part, mains adapter, stunning transformer, control board and connections clips built-in in a plastic housing protected against torrents of water as to safety class II (according to DIN 40014).

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Display is shown in appendix IV.

Signal lamps

- | | | |
|-----|--|--|
| 1 | White signal lamp „Ready“: | Indicates readiness for operation |
| 2 | red signal lamp „Stun“: | Indicates stunning amperage |
| 3 | green signal lamp „TB min“: | Indicates end of selected minimum stunning time |
| 4 | orange signal lamp „Error“: | Indicates when minimum strength of stunning amperage and minimum stunning time have fallen below selected values (Controlling is made during minimum stunning time). |
| 5. | White signal lamp „Level 1“: | Indication of „HEAD STUNNING“ |
| 6. | White signal lamp „Level 2“: | Indication of „HEAD - TO - HEART STUNNING“. |
| 7. | 4-lines display: | |
| | 1 st line: | Strength of the electric stunning amperage I and stunning voltage or measuring voltage U |
| | 2 nd line: | Effective level and countdown of minimum stunning time |
| | 3 rd line: | Number of stunning program |
| | 4 th line: | Kind of stunning |
| 8. | „ON“ key | |
| 9. | „OFF“ key | |
| 10. | TEST“ key | |
| 11. | Key to dial stunning program downwards | |
| 12. | Key to dial stunning program upwards | |
| 13. | Key to confirm | |

2.2. Application part: stunning tongs ZK

Stunning tongs correspond to Safety Class IP 55 according to DIN 40014. Stunning tongs are made of plastic and glass fibre plastic material, the electrodes are embedded in nylon. The electric cable is secured against accidental removal by means of an effective pull relief.

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2.3. Installation

Installation is to be made according to the regulations in effect and the recognised regulations of technique and by expert staff only!

Input voltage: - 230 V AC

Frequency: 50 - 60 Hz

Mains supply connection is to be safeguarded by a 16 amps fuse. Stunning transformer is to be installed at least 1.60 m (= 5'3") above floor level so that the operator has sight on signal lamps.

Install near the device a wall socket, which is quite accessible. Mount preferably an ON – OFF switch (IP 55) in front of the wall socket.

Mount the mounting for stunning tongs beside the stunning transformer also at least 1.60 m (= 5'3").

When not in use, stunning transformer is to be disconnected from mains supply and the stunning tongs are to be hung into the mounting.

Install a suspension spring for cable ZK-17 in order to avoid hauling the cable on the floor.

Connect data registration unit **SchermerLogger** to „TEST-PORT“ if a registration of the stunning data is required, e.g. in the **area of validity of directive 1099/2009/EC**.

Connect measuring instruments only, if the sum of their inside resistance is more than 20 kOhm. When measuring instrument is delivered ex our factory, this regulation is observed. Measuring instruments or printer are only to be connected to connecting unit „TEST PORT“.

IMPORTANT: If no measuring instruments are connected, blind plug must be screwed-in in connecting unit „TEST PORT“!

Should the stunning transformer be firmly installed, the regulations as to IEC/EN 50335-2-87 have to be complied with, i.e. there must exist a device to separate mains supply easily to be reached. An EMERGENCY -OFF – switch is to be installed at mains supply.

2.4. Putting into Operation

by expert staff only!

Put the device into operation as follows:

1. Connect stunning tongs to stunning transformer by linking up plug ZK-18.
2. Link up measuring instruments or logger, if existing to connecting unit „TEST PORT“.
3. Insert plug of stunning transformer into the wall socket.
4. Depress key "ON".

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5. For a short time, all signal lamps flash up, display shows manufacturer's name and version of software used.

Thereafter signal lamps „**Ready**“ and „**Level 1**“ flash only.

The number and description of the selected stunning program is shown in the third line. Another program can be selected by depressing one of dial keys for stunning program (11 or 12).

6. Check whether safety cut-off functions:

Attention: When depressing key "**TEST**" (10) there is for a moment stunning voltage on the electrodes of stunning tongs.

When depressing key "**TEST**" (10) stunning transformer switches off immediately, signal lamps lapse. Safety cut-off has correctly switched off transformer after a fault had been faked. In order to put transformer into operation again depress key **ON** (8).

7. Stunning transformer is cut-off by depressing key **OFF** (9).

2.5. Maintenance and Cleaning

by proficient persons only!

After stunning keep stunning equipment stored in a dry and warm room.

Maintain the device as follows:

- Remove dirt from stunning equipment.

Important: Do not use a high pressure engine for cleaning. Use neutral cleanser only.

- Check the equipment whether there are visible damages.
- Clean the electrodes ZK-1 thoroughly by means of a steel brush.
- Tighten up screws ZK-1A.
- Examine cable ZK-17 whether it shows breaks or traces of chews.

Change damaged or worn parts immediately. This guarantees perfect function of the stunning equipment. Use original spares only.

Please do maintenance work at the stunning transformer CS-1 only after consultation of the manufacturer.

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Attention:

Basically we wish to point out that only repair made by an expert guarantees perfect function and use of the equipment. We, therefore, recommend having the equipment repaired at manufacturer's factory, as repair will be made there quickly and proficiently.

2.6. Reasons for malfunctions and repair advice for stunning tongs ZK

Unsatisfactory stunning is, in most cases, due to an insufficient amperage flow.

Possible causes may be:

- 1) Corroded or dirtied electrodes ZK-1.

Remedy:

Unscrew electrodes, clean them thoroughly with steel brush or emery cloth.

2. Defective cable ZK-17.

Remedy:

remove cable connection

Pull out and separate cable ZK-17.

Mount new cable with cable connectors.

Push cable into the pipe of the tongs ZK13-1 and tighten firmly cable connection.

Note: Check minimum insulating value by connecting both electrodes with measuring instrument. Measured minimum insulating value must be 400 k Ω .

- 3) Stunning transformer does not switch on perfectly.

Remedy:

Sharpen points of the electrodes ZK-1 in order to improve contact between electrodes and animal's head.

3. Advice for Use

3.1. Starting the equipment

According to the directives for slaughter of animals regarding animal's protection, the stunning equipment is to be used by expert staff only, being in possession of an adequate knowledge.

- 1) Connect stunning tongs with stunning transformer.
- 2) Check whether transformer is connected with mains supply.
- 3) Depress key "ON".
- 4) For an instance, all signal lamps flash. Thereafter signal lamps „Ready“ „Level 1“ flash.

In the 3rd line of display is shown the number of stunning program. The program shown in the display is the one being used at last.

By depressing the key to select a stunning program (11 and 12) another program can be selected. (See appendix I and V)

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3.2. Stunning

by persons with adequate knowledge only!

Choose stunning program according to Appendix I.

Note:

Do not sling the animals before electrical stunning procedure is finished. Hold stunning tongs with both hands during stunning procedure and place the electrodes at the animal's head as shown in Appendix II or III.

Ignoring this advice may result in danger for persons!

Do not use the stunning tongs to herd or drag the hogs!

When stunning animals for slaughter in stun pens, it is advisable to corner them so that there will be little room for movement. The spot where the animals are stunned should be close to the elevator so they can be slung and lifted immediately after stunning process. Immediate and expert stabbing of the animals is effective regarding quality of meat.

Place the electrodes according to attached appendix II or III.

Stunning amperage is automatically switched on as the resistance on the electrodes falls below the limit. While stunning amperage is flowing red signal lamp "**Stun**" flashes.

For stunning amperage and stunning time the following values according to the directives in the moment of slaughter or killing with regard to animal's protection are given:

Minimum stunning amperage:	pigs	1.3 A
	sheep	1.0 A

Value of electric stunning amperage as well as value of stunning voltage are shown at the display. If the limit value of stunning amperage has fallen below during minimum stunning period, the orange signal lamp „**Error**“ flashes after the stun.

The individual minimum stunning amperage is to be reached within the 1st second. In order to have an effective stunning result on the animal, i.e. to reach the phase of limpness a longer period of stunning instead of the minimum stunning time can be necessary. Regard national regulations for limit values.

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As soon as minimum stunning time has been reached green signal lamp „**TB min**“ flashes. Sufficient stunning has been done when the animal stretches and starts beating with its hind legs. At this moment stunning is to be stopped. An extensive stunning may lead to muscle bleeding and bone fractures etc. As soon as the resistance limit has been reached or exceeded by opening the stunning tongs stunning amperage cuts off automatically.

When the animal is stunned it must immediately and expertly be stabbed and entirely bled dry as stunning lasts only approx. 30 seconds.

Attach most importance to an expertly done stabbing.

Avoid interruptions of stunning amperage due to not expertly placed electrodes. Interruptions of stunning amperage result in muscle bleeding and bone fractures.

Always hang the stunning tongs in the mounting beside the transformer!

Switch off the equipment when work is finished by depressing key **OFF** (9) and store it in a warm and dry room.

Have maintenance work done according to paragraph 2.5.

4. Technical data:

Measurements:	580 x 350 x 180 mm (W x H x D)
Weight:	14 kg
Primary voltage:	230 V
Frequency:	45 - 60 Hz
Stunning voltage:	max. 285 V
Stunning amperage:	1.3 A (at 210 Ohm)
Frequency:	see appendix V
Period of switch-on:	75%

5. Accessories (not included in standard delivery)

- measuring- and registration unit MRE-3
- data registration unit SchermerLogger
- signal transmitters: 1. lamp
 2. buzzer
- additional electronic boards

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Appendix I

Program-list

Attention: no automatic switch-off of stunning-tension with program 16.

head-to-heart-stun:	program 01 to 05:	pigs
	program 06 to 09:	pigs + sows
	program 10:	piglets
head-only-stun:	program 11 to 13:	sheep + piglets
	program 14:	pigs
	program 15:	sows
	program 16:	universal

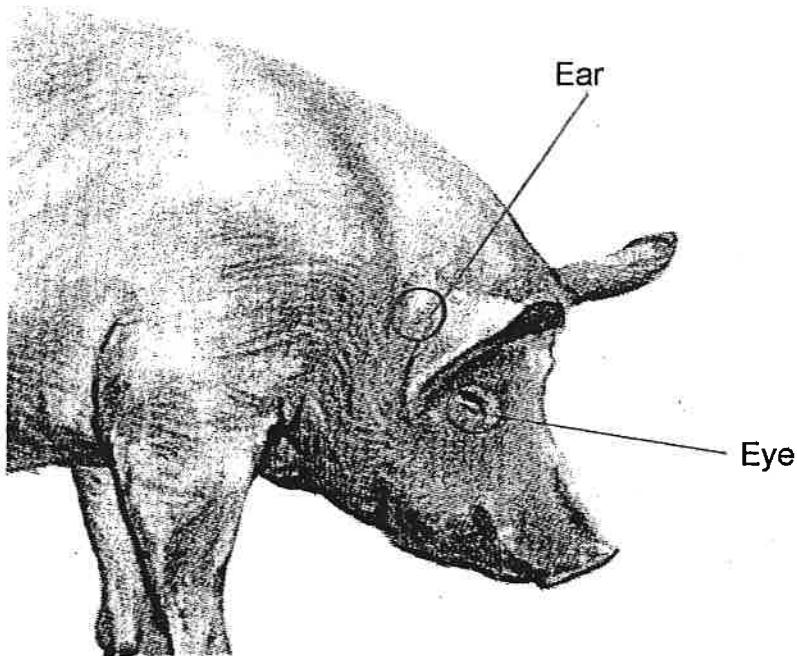
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program-no.	Level 1 head stun		Level 2 head-to-heart stun	
	$I_{stun}[A]$	$t_{stun}[sec.]$	$I_{stun}[A]$	$t_{stun}[sec.]$
1	1,3	4	1,3	4
2	1,3	4	1,3	6
3	1,4	4	1,3	4
4	1,4	4	1,3	6
5	1,6	4	1,3	6
6	1,8	4	1,4	6
7	1,8	4	1,4	8
8	2,0	6	1,6	11
9	2,0	8	1,8	11
10	1,0	4	1,0	4
11	1,1	4	-	-
12	1,2	4	-	-
13	1,2	6	-	-
14	1,6	8	-	-
15	2,2	20	-	-
16	1,6	without auto- mational switch- off	-	-

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Appendix II

Level 1: head stunning



In order to guarantee an optimal flowing through of brain the following 3 options to place the electrodes are recommended:

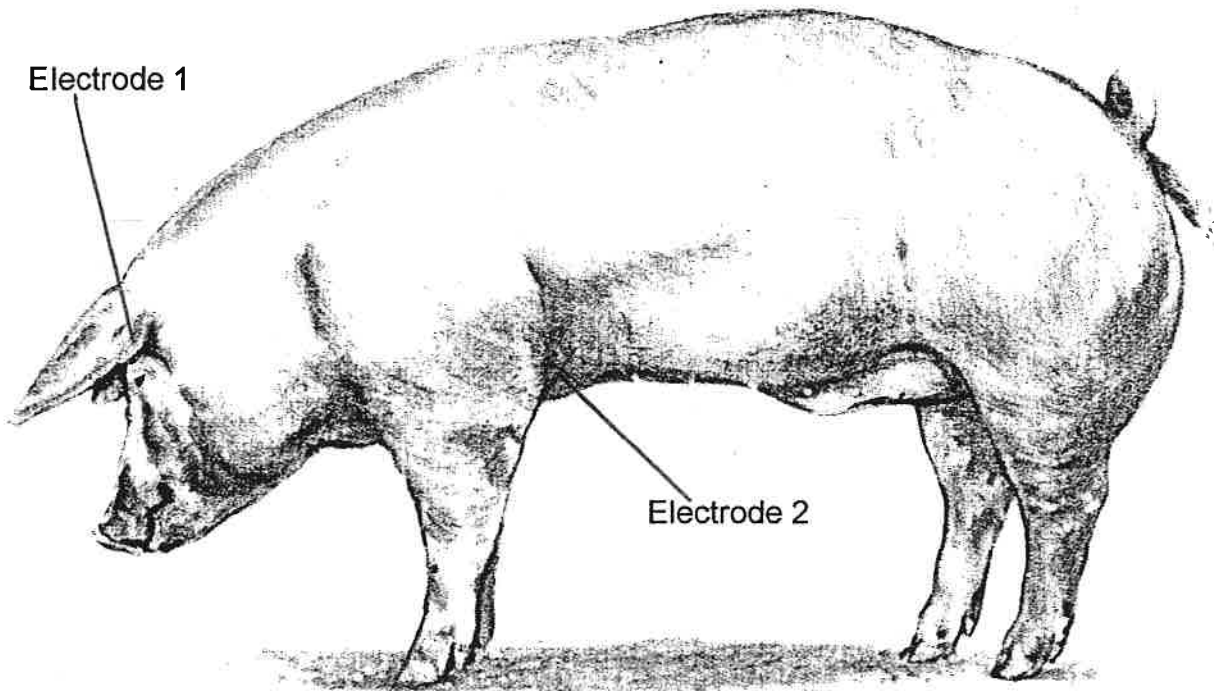
- 1) eye – eye
- 2) eye – ear
- 3) ear – ear

At the end of minimum stunning time green signal lamp „ST min“ flashes. Stunning amperage is automatically cut-off as soon as stunning time chosen has been reached if a stunning program with automatic cut-off of stunning amperage (appendix I) had been chosen and red signal lamp „STUN“ lapses.

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Level 2: brain - cardiac stunning

(head-to-heart stun)



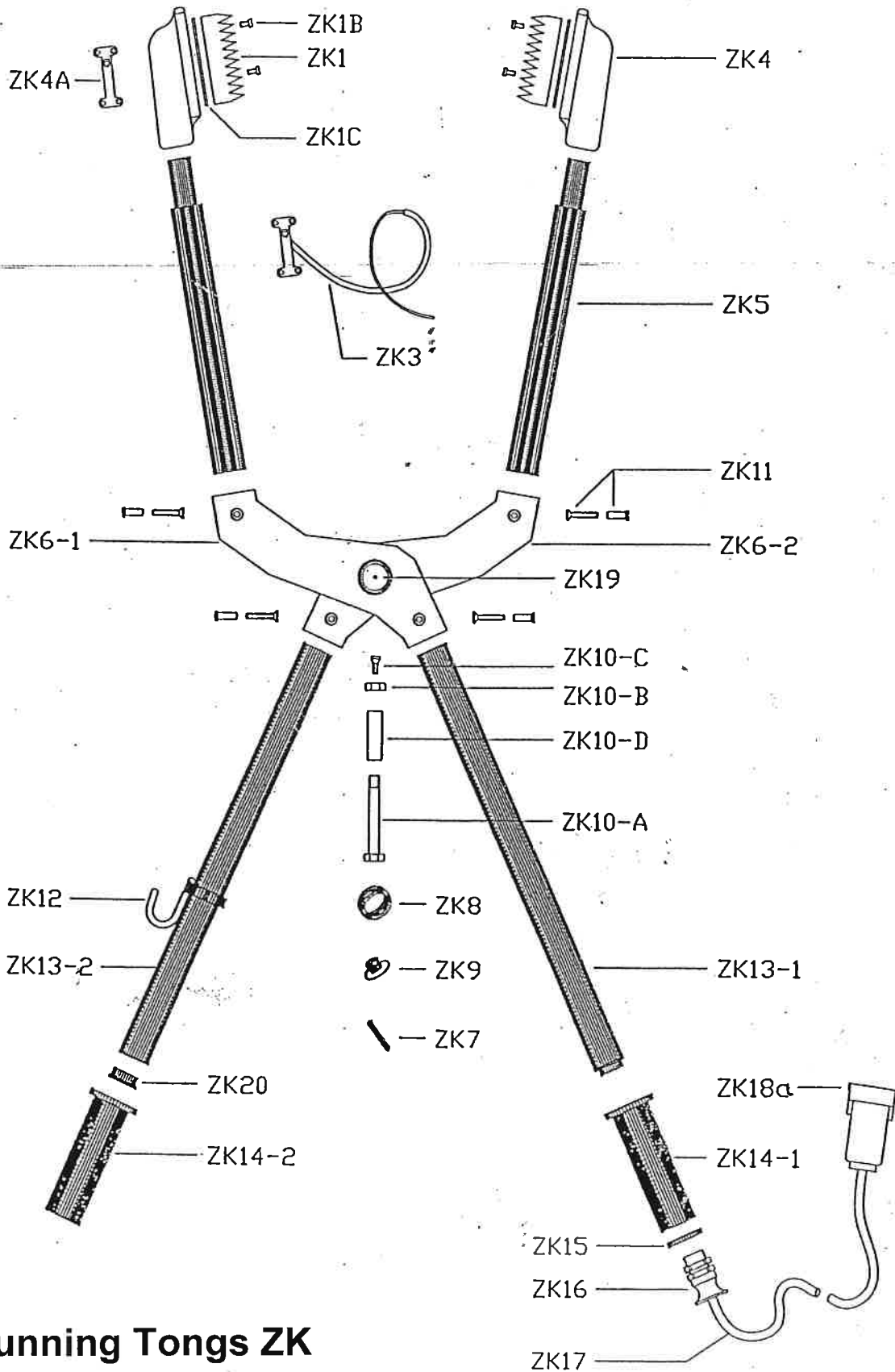
As soon as head stunning is terminated stunning tongs are opened and placed at the indicated spots in order to carry through a brain / cardiac stunning.

White signal lamp „LEVEL 1“ flashes first when stunning programs for brain / cardiac stunning are chosen. First set-on of the stunning tongs is done as shown at head stunning. At the end of minimum stunning time green signal lamp „ST min“ flashes. As soon as stunning time chosen has been reached stunning amperage is cut off and red signal lamp „STUN“ lapses. After opening the stunning tongs white signal lamp „LEVEL 2“ flashes. Now stunning tongs must be placed as shown above within approx. 2 seconds. At the end of minimum stunning time green signal lamp „ST min“ flashes and as soon as stunning time chosen has been reached stunning amperage cuts off and red signal lamp „STUN“ lapses. After opening the stunning tongs white signal lamp „LEVEL 1“ flashes. The next animal can be stunned.

Important: If the time between the first and the second set-on of stunning tongs exceeds 2 seconds, the device goes back to „LEVEL 1“ automatically.

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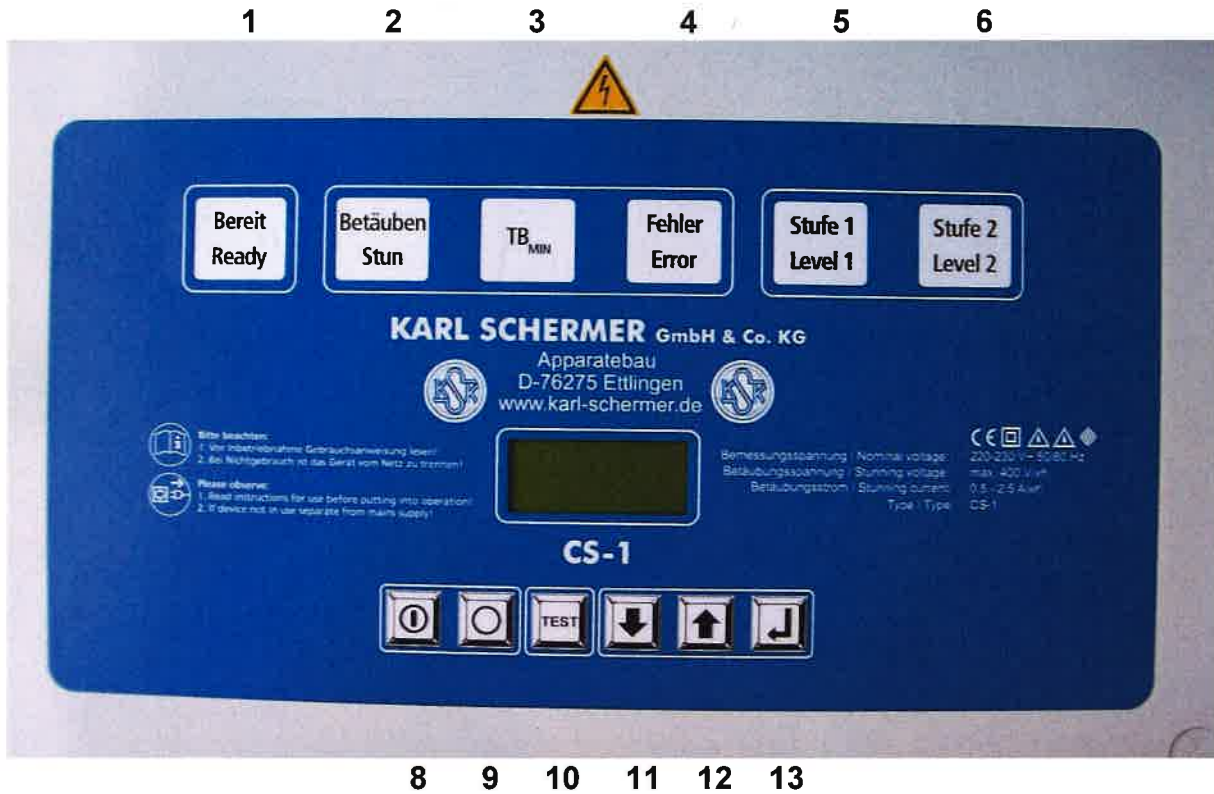
Appendix III



Stunning Tongs ZK

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Appendix IV



- | | | |
|----|-----------------------------|---|
| 1 | Ready | |
| 2 | Stun | |
| 3 | TBmin | minimum stunning time |
| 4 | Error | fault according selected minimum values |
| 5 | Level 1 | head-stun only |
| 6 | Level 2 | head-to-heart stun |
| 8 | ON | |
| 9 | OFF | |
| 10 | TEST | |
| 11 | Key “downwards” | |
| 12 | Key “upwards” | |
| 13 | Key “confirmation” of input | |

Appendix V

specification of stunning programs

CS-1

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program-no.	head-only - level 1			head-to-heart - level 2		
	stunning current	stunning time	frequency	stunning current	stunning time	frequency
1	1,3 A	4 sec	400/100 Hz	1,3 A	4 sec	450/50 Hz
2	1,3 A	4 sec	400/100 Hz	1,3 A	6 sec	450/50 Hz
3	1,4 A	4 sec	400/100 Hz	1,3 A	4 sec	450/50 Hz
4	1,4 A	4 sec	400/100 Hz	1,3 A	6 sec	450/50 Hz
5	1,6 A	4 sec	400/100 Hz	1,3 A	6 sec	450/50 Hz
6	1,8 A	4 sec	400/100 Hz	1,4 A	6 sec	450/50 Hz
7	1,8 A	4 sec	400/100 Hz	1,4 A	8 sec	450/50 Hz
8	2,0 A	6 sec	400/100 Hz	1,6 A	11 sec	450/50 Hz
9	2,0 A	8 sec	450/50 Hz	1,8 A	11 sec	450/50 Hz
10	1,0 A	4 sec	400/100 Hz	1,0 A	4 sec	450/50 Hz
11	1,1 A	4 sec	400/100 Hz			
12	1,2 A	4 sec	450/50 Hz			
13	1,2 A	6 sec	450/50 Hz			
14	1,6 A	8 sec	450/50 Hz			
15	2,2 A	20 sec	450/50 Hz			
16	1,6 A	no time switch-off	450/50 Hz			
head-to-heart stunning		program-no. 1 bis 5	pigs (max. 180 kg)			
		program-no. 6 bis 9	pigs (also over 180 kg)			
		program-no. 10	piglets			
head-only stunning		program-no. 11 bis 13	sheep + piglets			
		program-no. 14	pigs (max. 180 kg)			
		program-no. 15	pigs (also over 180 kg)			
		program-no. 16	all-purpose (max. 180 kg)			