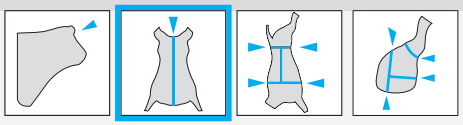
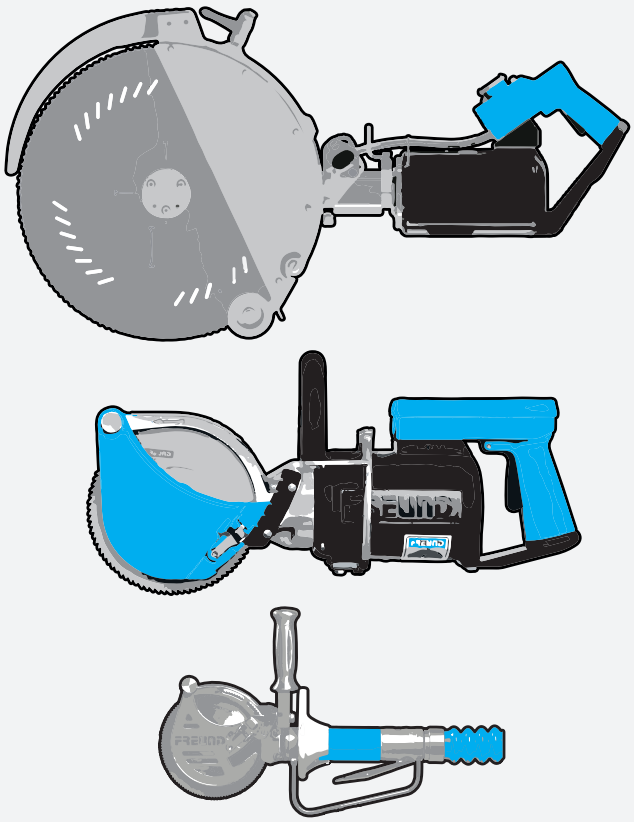
FREUND
GERMAN QUALITY SLAUGHTER-TOOLS

OPERATING MANUAL CIRCULAR-SAWS

OPERATING MANUAL

Translation of original manual





CIRCULAR-SAW MODELS

- PFK23-03
- HBK28-06
- HBK33-08
- BBKM25-03D
- BBKM25-06D
- BBK28-06D
- SK28-03L
- SK32-06L
- SK40-08L
- SK52-08L
- K16-P4_evo2
- RTK18-13
- BCK23-03
- BCK23-06
- K18-01
- K18-13
- K23-13
- K23-03
- K23-03L
- K23-06
- K23-06L
- K28-03
- K28-03L
- K28-06
- K28-06L
- K32-06
- K32-06L

Imprint

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

Contents

EN

1 About this Manual

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

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

- to install the machine safely and properly.
- to operate the machine safely.
- to rectify simple faults yourself.
- for maintenance and cleaning.

Before you start operating the machine, read this entire operating manual thoroughly and carefully. In particular, follow all written safety and warning information.

1.1 Target group

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

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

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

1.2 Liability and warranty

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

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

The original version of this operating manual was written in German. The translation was created with the best care and knowledge, but we assume no liability for translation errors. In the event of inconsistency or conflict between the English and the German version, the German version shall prevail.

Exclusion of liability

We assume no liability and warranty:

- on spare parts.
- if damage occurs during slaughtering.

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

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

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

1.3 Storing the operating manual

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

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

1.4 Symbols and layout elements

1.4.1 Layout elements

- Enumerations

➢ Individual, independent instruction step
Result arising from the instruction step

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

→ References to another chapter

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

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

1.4.2 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 rotating cutting tools

Danger to limbs from cutting or severing.

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

Warning of hot surfaces

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

Warning of substances harmful to health and irritants

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

Warning of suspended load

Danger to the body from falling loads or machines.

Warning of hot water or steam

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

Warning of cutting tools running-on or restarting

Danger to limbs from cutting or severing.

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

Warning of horizontal rotary motion

Risks related to unexpected machine shocks.

Hazard of fingers or hands by cutting or clipping.

Prohibition signs

General prohibition signs

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

High-pressure cleaners forbidden

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

Parts of the machine could be damaged.

Avoid direct water contact

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

Mandatory signs

Wear protective gloves

protect the hands against friction, abrasions, and cuts:

- during the changing of sharp or cutting tools,
- during cleaning,
- while touching hot surfaces.

Wear safety spectacles

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

- during operation,
- while the machine is cleaned.

Wear hearing protection

protect hearing during operation of the machine.

Wear safety shoes or rubber boots

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

- during operation,
- while the machine is cleaned.

Wear a hair net or use a blade guard

protect long hair against entanglement in the machine.

Wear a protective apron

protects the body against humidity, blood and other fluids.

Wear head protection

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

Pull out the power plug

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

EN

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

1.4.3 Symbols

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

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

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

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

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.

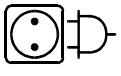
Part of a spare parts kit
This spare part is part of a spare parts kit, in which parts identified through experience as requiring replacement or being subject to wear are combined.

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

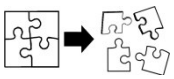
Lubrication
Information about the amount and properties of the lubricant can be found in the operating manual.

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

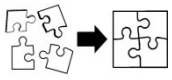
Cleaning
Instruction for an additional cleaning step.



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.

2 For your Safety

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

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

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

2.1 Warning notes

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. It relates to all following actions of the chapter or life phase.

The precautions described must be observed to avoid the danger.

Structure of a warning note

Signal word!

Type and source of the imminent danger.

Possible consequences of the danger.

➢ Measures to avoid the danger.

Signal word	Meaning
DANGER	indicates an imminently hazardous situation which, if not avoided, will result in danger to life or death.
WARNING	indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.
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 machine or environment.

2.2 Site operator's responsibilities

In accordance with the rules and regulations of the German DGUV Regel 110-008, the site operator may only allow insured persons who are over 18 years old and are familiar with the equipment and the handling of the equipment to operate slaughter equipment.

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

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

The 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.

Risk assessment
The operator must inform users of possible dangers, symptoms and preventative measures when handling the machine. Relevant occupational safety conditions have to be complied with.

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

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

Workplace
The operator must ensure that the lighting intensity is at least 500 lux.

The workplaces must be designed so that clearance of 1.5 m in width and 1 m in depth per person is provided so that each person can move around freely. All persons working at these workplaces must be able to maintain an upright and neutral body posture.

The material of the floor must be such that the risk of slipping on wet, greasy or soiled floors is reduced.

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

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

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

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.

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.

Safety at the workplace

Maintain a stable upright position and keep your balance. Avoid awkward postures.

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

Always wear the personal protective equipment provided.

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

Machine safety

Before starting any work, carefully check the machine for proper function in accordance with the intended use.

Do not set the machine into operation if it does not work correctly.

Switch off the machine immediately if it no longer works correctly and have it checked.

Have defective safety devices, switches or other defective machine parts repaired.

Notify the operator or his authorised representative of any changes to the machine which may affect your safety.

Emergency procedures

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

Notify the operator or his authorised representative of every accident.

2.4 Personal protective equipment

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

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

2.5 Electrical safety in accordance with EN60204-1

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 / EN60204-1. The inspection interval for machinery and equipment that is used in slaughtering and cutting plants is every six months.

2.6 Residual risks

The machine has been built according to the scientific and technological state of the art and complies with the basic occupational health and safety requirements of the European Union.

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

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

- danger to life from live machine parts in electrical machinery.
- danger of injury from compressed air/overpressure in pneumatic machinery.
- Risk of injury from negligent handling of personal safety equipment while operating the machine, during maintenance and repair work and during cleaning and disinfection.
- hearing damage from noise if noise emissions exceed 75 dB(A).
- danger of burning on hot surfaces.
- cutting injuries from cutting tools.
- danger of injury from breakage or ejection of fragments of the cutting tool.
- danger of injury from flying pieces of meat and bone fragments.

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.

2.7 Intended use

FREUND circular saws are intended for a variety of cutting tasks in operations of all sizes.

The exact usage of individual machines is described in → chapter *Overview of the machines* from page 18.

Safety requirements

Machines with a safety extra-low voltage less than 50 V (e.g. 42 V) must be operated with a safety transformer.

Machines with an operating voltage of more than 50 V (e.g. 400 V) should be secured on the operating side with a residual-current circuit breaker of less than or equal to 30 mA.

Failure to observe this results in the risk of fatal injury.

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.

2.8 Improper use

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

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

The following are deemed as non-intended use of the machine:

- the cutting and sawing of other materials such as wood, plastic or stone.
- the use of machines with safety extra-low voltage less than 50 V (e.g. 42 V) without a safety transformer.
- the use of machines with an operating voltage of more than 50 V (e.g. 400 V) in slaughter rooms without a residual-current circuit breaker.
- the use of machines without functional safety devices.
- the extension of the cables and connecting lines attached to the machine.

3 Technical Description

3.1 Definitions

In this operating manual, abbreviations are used for the various component parts of the machine. The following table explains the abbreviations used:

	Designation	Meaning
MMB	Mechanical motor brake	integrated mechanical brake, corresponds to the requirements of DIN EN 12984
EMB-I1/-I2	Brake switch version	integrated electronic brake for the alternating current machine K18-01, corresponds to the requirements of EN 60204-1
EMBS75	Electronic motor brake with soft start	external electronic brake for machines with motor -08 or -08L, provides infinitely variable speed control; corresponds to the requirements of EN 60204-1
2HATDS-M / 2HATDS	Two-hand synchronous safety circuit with magnetic sensor	improved two-hand safety circuit, corresponds to DIN EN 574
EWV	Electrical water valve	automatically controls the water supply
DES-K0xx	Disinfection cabin	for the external cleaning and external disinfection of the machines between work processes
TR3 / TR5 / TR7	Safety transformer	generates the required safety extra-low voltage for 42V machines, corresponds to the requirements of EN 60204-1 and EN 61558-1

3.2 Rating plate

The rating plate is attached at the end of the motor.

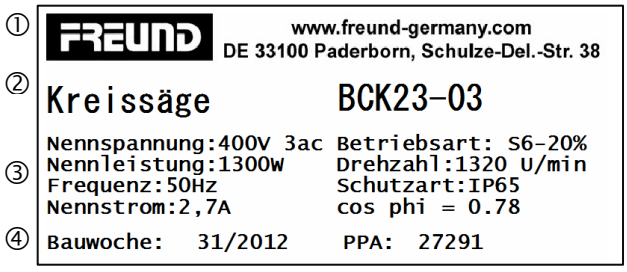


Fig. 3-1 Rating plate example

	Explanation
1	Company address
2	Machine type and designation
3	*Performance data:* Rated voltage/phases [V] — Duty type Rated power [W] — Speed [rpm] Frequency [Hz] — Protection class Rated current [A] — Displacement power factor [cos φ]
4	Year of manufacture of the machine and production order number

3.3 Overview of the machines

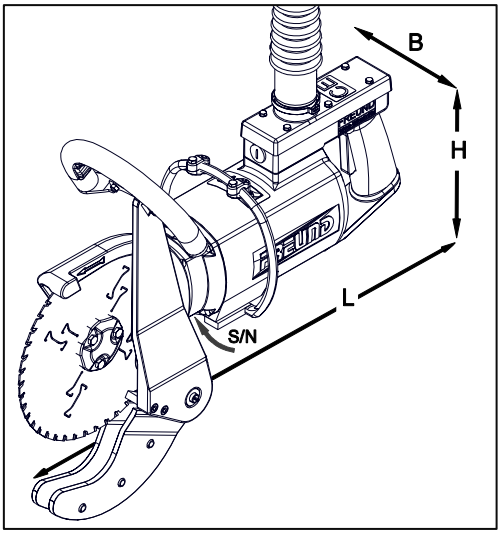
Exact details regarding the features of your machine are provided on the machine-related cover sheet.

Technical data can be found on the table in the → *Appendix*.

3.3.1 Circular foot saw PFK23-03

Use
- Removing the feet of pigs, sows and sheep

View



(S/N = serial number)

Fig. 3-1 Illustration example, circular foot saw

Dimensions

	PFK23-03
Weight [kg]	14.5
Ø [mm]	230
Length L [mm]	594
Height H [mm]	467 with foot attachment
Width W [mm]	237
Cutting depth [mm]	75

Equipment options
- Voltage choice* 42 V, 400 V

* Special voltage on request

Saw blade selection

Tooth shape	Designation	Part-No.
	KGZ230	220-005-004
	KHZ230	220-100-003

Optional accessories

	Part-No.
Balancer F14-2SK	920-426-100
Transformer TR3-SG360	912-010-382
Disinfection cabin DES-K02	913-506-003

Wall socket

400 V – 16 A (red)	100-017-043

3.3.2 Circular horn and leg saws HBK28-06 and HBK33-08

Use
- Removal of horns and legs in slaughtering of cattle and calves
- **only** with two-hand safety switch
- HBK33-08 also available with an electronic brake

View

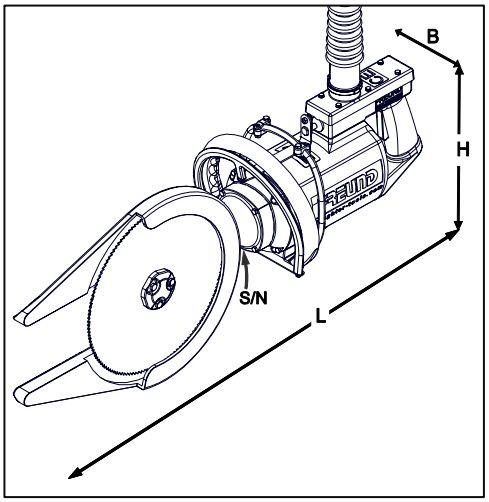


Fig. 3-2 Illustration example for circular horn and leg saws (S/N = serial number)

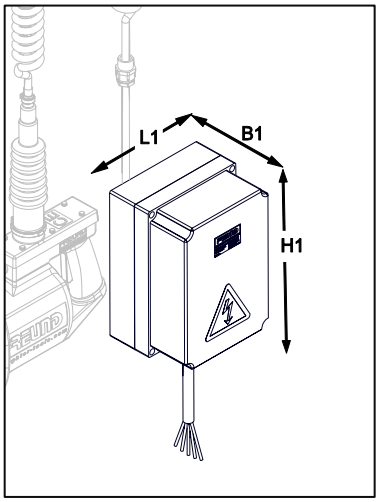


Fig. 3-3 Illustration example for control box 2HADTS

Dimensions

Machine		HBK28-06	HBK33-08
	Weight [kg]	21.0	31.0
	Ø [mm]	280	320
	L [mm]	850	920
	H [mm]	320	355
	W [mm]	235	255
	Cutting depth [mm]	105	105
Control box		2HATDS-M	2HATDS/EMBS75
		42 V / 115–400 V	42 V / 400 V
	Weight [kg]	2.5 / 2.0	
	L1 [mm]	180 / 160	430
	H1 [mm]	150 / 120	200
	W1 [mm]	255 / 240	530

Equipment options
- Voltage choice* 42 V, 400 V

* Special voltage on request

Saw blade selection

Tooth shape	Designation	Part-No.
	KSZ…H	Ø280 → 220-010-006 Ø320 → 220-010-008
	KHZ320HGA	220-100-010

Optional accessories		Part-No.
HBK28-06	Balancer F22-2SK	920-431-100
	Transformer TR5-SG360	912-020-382
	Disinfection cabin DES-K02	913-506-003
HBK33-08	Balancer F35-2SK	920-437-000
	Transformer TR7-360	912-030-380
	Disinfection cabin DES-K07	913-510-000
Wall socket	400 V – 16 A (red)	100-017-043

3.3.3 Sternum saws BBKM25-03D, BBKM25-06D and BBK28-06D

Use
- Opening the sternum in slaughtering of pigs and sheep

View

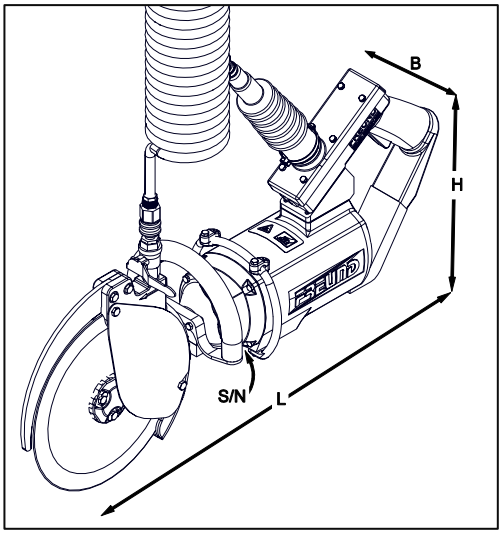


Fig. 3-4 Illustration example for sternum saws

Dimensions

	BBKM25-03D	BBKM25-06D	BBK28-06D
Weight [kg]	16,0*	21,0*	21,0*
Ø [mm]	250	250	280
L [mm]	736	750	795
H [mm]	335	346	362
W [mm]	187	234	234
Cutting depth [mm]	85	85	100

* Weight for machines with two-hand control +1 kg

Equipment options
- 2HATDS-M

Control box	42 V	115 – 400 V
Weight [kg]	2.5	2.0
L1 [mm]	180	160
H1 [mm]	150	120
W1 [mm]	255	240

- EWV
- Voltage choice* 42 V, 400 V

* Special voltage on request

Circular blade selection
BBKM25-03D
BBKM25-06D

Tooth shape	Designation	Part-No.
	KM250 W-2F	230-250-002
	KM250 A-2F	230-250-004

Saw blade selection
BBK28-06D

Tooth shape	Designation	Part-No.
	KGZ280	220-005-005
	KFZ280	220-000-006
	KSZ280GA	220-000-508
	KHZ280GA	220-100-005

Optional accessories
BBKM25-03D

	Part-No.
Balancer F14-2SK	920-426-100
Transformer TR3-SG360	912-010-382
Disinfection cabin DES-K02	913-506-003

BBK28-06D
BBKM25-06D

Balancer F22-2SK	920-431-100
Transformer TR5-SG360	912-020-382
Disinfection cabin DES-K02	913-506-003

Wall socket

400 V – 16A (red)	100-017-043

3.3.4 Circular splitting saws SK28-03L, SK32-06L, SK40-08L and SK52-08L

Use

- Splitting the back in the slaughtering of pigs and sows
- SK40-08L and SK52-08 may **only** be operated with two-hand safety switch and electronic brakes.

View SK28-03L und SK32-06L

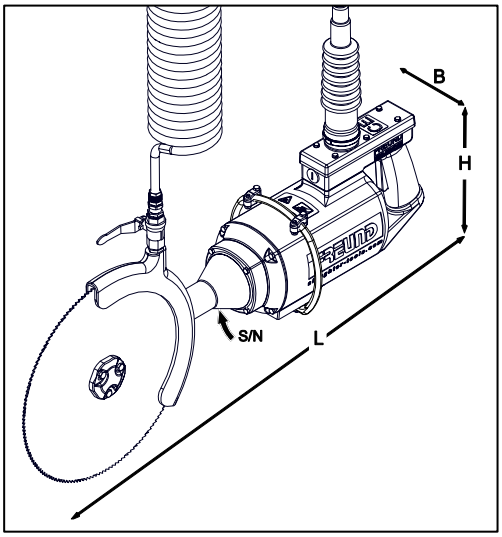


Fig. 3-5 Illustration example for circular splitting saw SK32 and SK40 (S/N = serial number)

View SK40-08L und SK52-08L

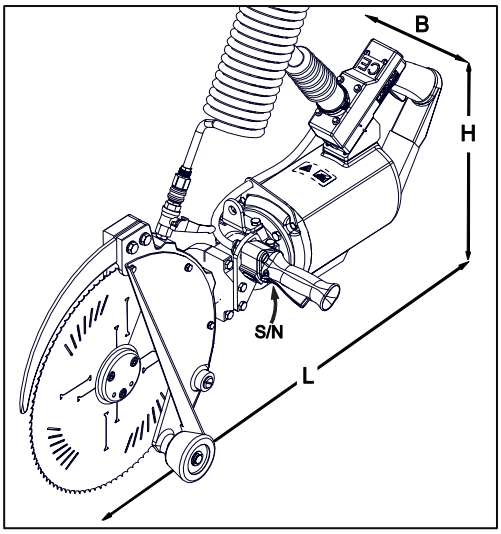


Fig. 3-6 Illustration example for circular splitting saw with motor 08 (S/N = serial number)

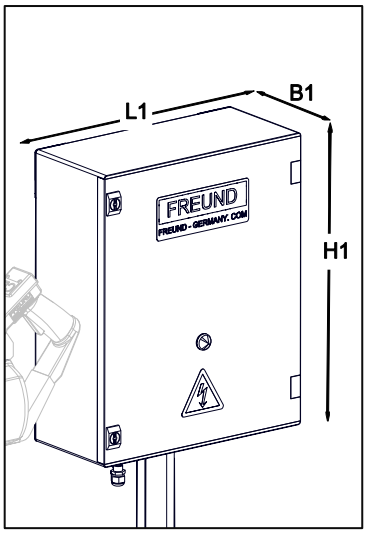


Fig. 3-7 Illustration example for control box

Dimensions

	SK40-08L	SK52-08L	SK28-03L	SK32-06L
Weight [kg]	36.0	41.0	14.0*	19.0*
Ø [mm]	400	520	280	320
L [mm]	1040	1090	770	810
H [mm]	465	580	300	330

W [mm]	305	305	187	235
Cutting depth [mm]	140	205	100	120

Control box

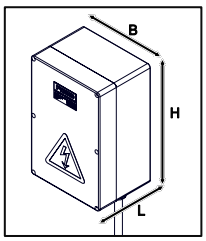
	2HATDS/EMBS75 42 V / 400 V
L1 [mm]	430
H1 [mm]	200
W1 [mm]	530

* Weight for machines with two-hand control +1 kg

Equipment options

- 2HATDS-M for SK28-03L / SK32-06L

Control box	42 V	115 – 400 V
Weight [kg]	2.5	2.0
L1 [mm]	180	160
H1 [mm]	150	120
W1 [mm]	255	240



- EWV
- Voltage choice* 42V, 400V

* Special voltage on request

Saw blade selection

Tooth shape	Designation	Part-No.
	KGZ…	Ø 280 → 220-005-005 Ø 320 → 220-005-006
	KFZ280	220-000-006
	KSZ…GA	Ø 280 → 220-000-508 Ø 320 → 220-000-509
	KHZ…GA	Ø 280 → 220-100-005 Ø 320 → 220-100-006
	KGZ…SPGA	Ø 400 → 220-006-001 Ø 520 → 220-006-002
	KSZ…SPGA	Ø 400 → 220-000-512 Ø 520 → 220-000-513
	KHZ…SPGA	Ø 400 → 220-100-013 Ø 520 → 200-100-012

Optional accessories		Part-No.
SK28-03L	Balancer F14-2SK	920-426-100
	Balancer F20-3SK*	920-470-100
	Transformer TR3-SG360	912-010-382
	Disinfection cabin DES-K02	913-506-003
SK32-06L	Balancer F22-2 SK	920-431-100
	Balancer F20-3SK*	920-470-100
	Transformer TR5-SG360	912-020-382
	Disinfection cabin DES-K02	913-506-003
SK40-08L	Balancer F35-2	920-437-000
	Balancer F35-3*	920-472-000
	Transformer TR5-360	912-020-380
	Disinfection cabin DES-K07	913-510-000
SK52-08L	Balancer F45-2	920-438-000
	Balancer F45-3*	920-473-000
	Transformer TR5-360	912-020-380
	Disinfection cabin DES-K07	913-510-000

* Balancer for cattle and pigs weighing more than 120 kg

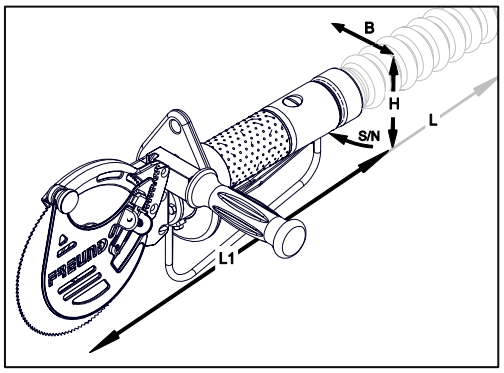
Wall socket	400 V – 16 A (red)	100-017-043

3.3.5 Pneumatic circular breaking saw K16-P4_evo2

Use
- Sawing into the chest and ribs of pigs and sows

Only suitable for medium-sized operations with a production output of under 5,000 pigs per week.
With production outputs higher than 5000 pig per week an increased wearout and accordingly increased maintenance effort is to be expected.

View



S/N = serial number

Fig. 3-8 Illustration example for pneumatic circular breaking saw

Dimensions

	K16-P4_evo2
Weight [kg]	3.1
Ø [mm]	160
L [mm]	920
L1 [mm]	410
H [mm]	195
W [mm]	220
Cutting depth [mm]	15 – 50

Saw blade selection

Tooth shape	Designation	Part-No.
	KFZ160	220-000-012
	KFZ160x1.1	220-000-011

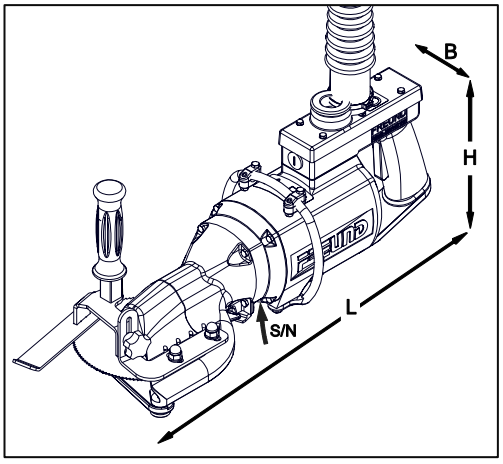
Optional accessories

	Part-No.
Connecting kit	168-002-042
Balancer F4-2.5	920-414-001
Disinfection cabin DESK-01	913-501-502

3.3.6 Riptop circular saw RTK18-13

Use
- Sawing the ribs from the spine of pigs

View



S/N = serial number

Fig. 3-9Illustration example for the riptop circular saw

Dimensions

	RTK18-13
Weight [kg]	12.0
Ø [mm]	160
L [mm]	525
H [mm]	232
W [mm]	187
Cutting depth [mm]	15 – 65

Equipment options
- Voltage choice* 42 V, 400 V

* Special voltage on request

Saw blade selection

Tooth shape	Designation	Part-No.
	KFZ160	220-000-012
	KFZ160x1.1	220-000-011
	KHZ160GA	220-100-002

Optional accessories

	Part-No.
Balancer F10-2.5SK	920-417-101
Transformer TR3-SG360	912-010-382

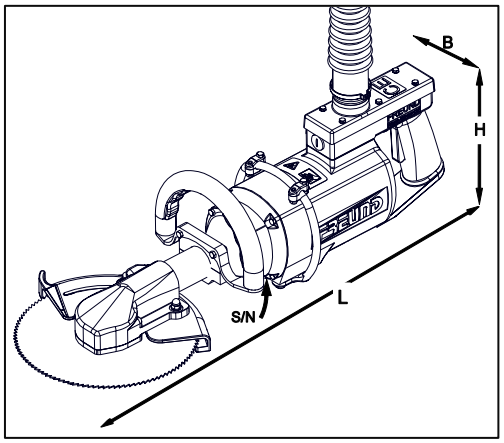
Wall socket

400 V – 16 A (red)	100-017-043

3.3.7 Circular bacon saws BCK23-03 and BCK23-06

Use
- Cutting out the backbone of bacon half-carcasses of pigs
- First stage cutting of pigs

View



S/N = serial number

Fig. 3-10 Illustration example for circular bacon saws

Dimensions

	BCK23-03	BCK23-06
Weight [kg]	13.0	17.0
Ø [mm]	230	230
L [mm]	675	690
H [mm]	180	197
W [mm]	264	264
Cutting depth [mm]	70	75

Equipment options
- Voltage choice* 42 V, 400 V

* Special voltage on request

Saw blade selection

Tooth shape	Designation	Part-No.
	KGZ230	220-005-004
	KFZ230	220-000-005
	KGZ230-60GA	220-005-550
	KSZ230-16	220-010-050

Saw blade selection

Tooth shape	Designation	Part-No.
	KSZ230GA	220-000-507
	KHZ230GA	220-100-003

Optional accessories

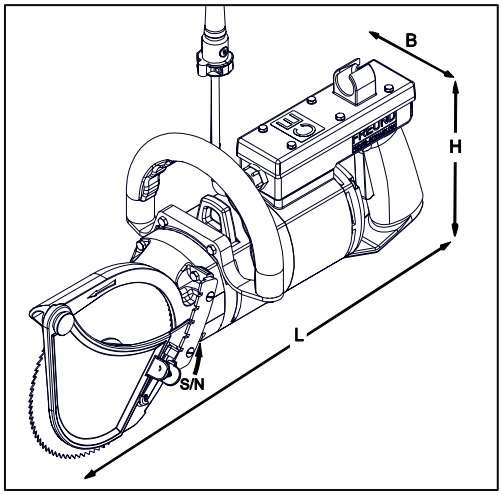
		Part-No.
BCK23-03	Balancer F14-2SK	920-426-100
	Transformer TR3-SG360	912-010-382
BCK23-06	Balancer F22-2SK	920-431-100
	Transformer TR5-SG360	912-020-382

Wall socket	400 V – 16A (red)	100-017-043

3.3.8 Circular breaking saws - alternating current

Use
- General cutting work

View



S/N = serial number

Fig. 3-11 Illustration example for alternating current circular breaking saws

Dimensions

	K18-01
Weight [kg]	6.0
Ø [mm]	180
L [mm]	525
H [mm]	232
W [mm]	187
Cutting depth [mm]	15 – 65

Equipment options
- EMB1 or EMB2
- Voltage choice* 230 V, 115 V

* Special voltage on request

Saw blade selection

Tooth shape	Designation	Part-No.
	KGZ180	220-005-003
	KFZ180	220-000-004
	KSZ180GA	220-000-506

Saw blade selection

Tooth shape	Designation	Part-No.
	KHZ180GA	220-100-001

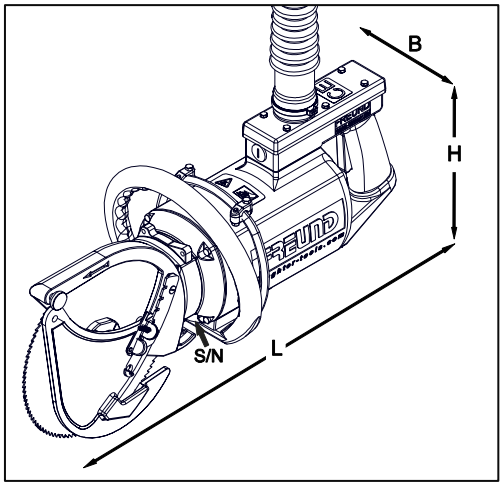
Optional accessories

	Part-No.
Balancer F6-2.5SK	920-415-102

3.3.9 Circular breaking saws - three-phase current

Use
- General cutting work

View



S/N = serial number

Fig. 3-12 Illustration example for circular breaking saws with depth control

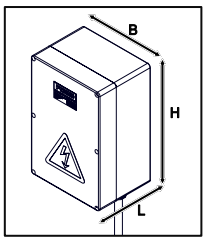
Dimensions

	K18-13	K23-13	K23-03	K23-06
Weight [kg]	11.0	13.0*	14.0*	19.0*
Ø [mm]	180	230	230	230
L [mm]	527	594	594	613
H [mm]	256	244	255	244
W [mm]	187	187	187	234
Cutting depth [mm]	15 – 65	15 – 75	15 – 75	15 – 75

* Weight for machines with two-hand control +1 kg

Equipment options
- 2HATDS-M

Control box	42 V	115 – 400 V
Weight [kg]	2.5	2.0
L1 [mm]	180	160
H1 [mm]	150	120
W1 [mm]	255	240



- Voltage choice* 42 V, 400 V

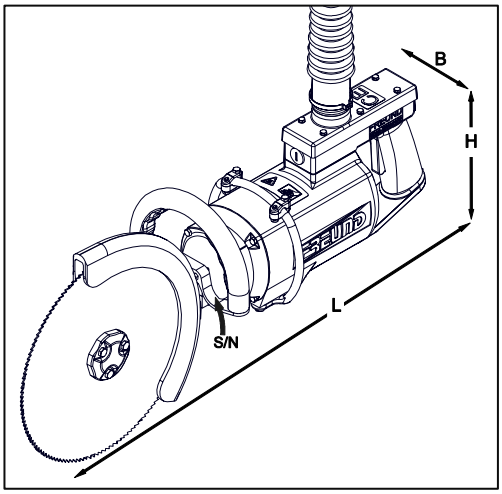
* Special voltage on request

Saw blade selection

Tooth shape	Designation	Part-No.
	KGZ…	Ø 180 → 220-005-003 Ø 230 → 220-005-004
	KFZ…	Ø 180 → 220-000-004 Ø 230 → 220-000-005
	KGZ230-60GA	Ø 230 → 220-005-550
	KHZ…GA	Ø 180 → 220-100-001 Ø 230 → 220-100-003
	KSZ180	220-010-004
	KSZ…GA	Ø 180 → 220-000-506 Ø 230 → 220-000-507

Optional accessories

		Part-No.
K18-13	Balancer F10-2.5SK	920-417-101
	Transformer TR3-SG360	912-010-382
	Disinfection cabin DES-K01	913-501-502
K23-13/K23-03	Balancer F14-2SK	920-426-100
	Transformer TR3-SG360	912-010-382
	Disinfection cabin DES-K02	913-506-003
K23-06	Balancer F22-2SK	920-431-100
	Transformer TR5-SG360	912-020-382
	Disinfection cabin DES-K02	913-506-003
Wall socket	400 V – 16 A (red)	100-017-043



S/N = serial number

Fig. 3-13 Illustration example for circular breaking saws

Dimensions

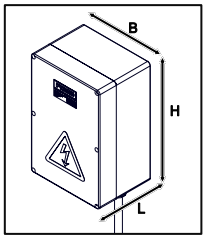
	K28-03	K28-06	K32-06
Weight [kg]	15.0*	19.5*	20.0*
Ø [mm]	280	280	320
L [mm]	700	710	740
H [mm]	310	300	334
W [mm]	187	234	174
Cutting depth [mm]	100	100	120

* Weight for machines with two-hand control +1 kg

Equipment options

- 2HATDS-M

Control box	42 V	115 – 400 V
Weight [kg]	2.5	2.0
L1 [mm]	180	160
H1 [mm]	150	120
B1 [mm]	255	240



- Voltage choice* 42 V, 400 V

  * Special voltage on request

Saw blade selection

Tooth shape	Designation	Part-No.
	KGZ…	Ø 280 → 220-005-005 Ø 320 → 220-005-006
	KFZ280	Ø 280 → 220-000-006

Saw blade selection

Tooth shape	Designation	Part-No.
	KSZ…GA	Ø 280 → 220-000-508 Ø 320 → 220-000-509
	KHZ…GA	Ø 280 → 220-100-005 Ø 320 → 220-100-006

Optional accessories

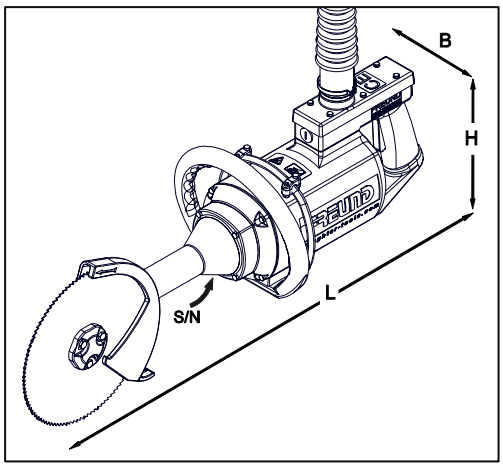
		Part-No.
K28-03	Balancer F14-2SK	920-426-100
	Transformer TR3-SG360	912-010-382
	Disinfection cabin DESK-02	913-506-003
K28-06/K32-06	Balancer F22-2SK	920-431-100
	Transformer TR5-SG360	912-020-382
	Disinfection cabin DESK-02	913-506-003

Wall socket	400 V – 16 A (red)	100-017-043

3.3.10 Circular breaking and quartering saws

Use
- General cutting work

View



S/N = serial number

Fig. **3**-14 Illustration example for circular breaking and quartering saws

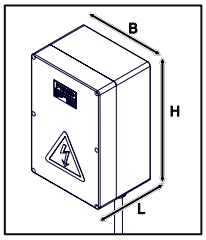
Dimensions

	K23-03L	K23-06L	K28-03L	K28-06L	K32-06L
Weight [kg]	13.0*	18.5*	15.0*	19.0*	19.0*
Ø [mm]	230	230	280	280	320
L [mm]	750	765	770	790	810
H [mm]	245	245	300	310	330
W [mm]	155	155	155	174	174
Cutting depth [mm]	75	100	100	100	120

* Weight for machines with two-hand control +1 kg

Equipment options
- 2HATDS-M

Control box	42 V	115 – 400 V
Weight [kg]	2.5	2.0
L1 [mm]	180	160
H1 [mm]	150	120
W1 [mm]	255	240



- Second handle
- Voltage choice* 42 V, 400 V

* Special voltage on request

Saw blade selection

Tooth shape	Designation	Part-No.
	KGZ…	Ø 230 → 220-005-004 Ø 280 → 220-005-005 Ø 320 → 220-005-006
	KFZ…	Ø 230 → 220-000-005 Ø 280 → 220-000-006
	KGZ230-60GA	Ø 230 → 220-005-550
	KSZ230-16	Ø 230 → 220-010-050
	KSZ...GA	Ø 230 → 220-000-507 Ø 280 → 220-000-508 Ø 320 → 220-000-509
	KHZ...GA	Ø 230 → 220-100-003 Ø 280 → 220-100-005 Ø 320 → 220-100-006

Optional accessories

	Part-No.
K23-03L/K28-03L	
Balancer F14-2SK	920-426-100
Transformer TR3-SG360	912-010-382
Disinfection cabin DESK-02	913-506-003
K23-06L/K28-06L/ K32-06L	
Balancer F22-2SK	920-431-100
Transformer TR5-SG360	912-020-382
Disinfection cabin DESK-02	913-506-003
Wall socket	
400 V – 16 A (red)	100-017-043

3.4 Operating materials

3.4.1 Lubricants

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

The H1 designation has been established as an international standard for food grade lubricants. The NSF-H1 standard describes products that must be used whenever accidental contact with foodstuffs is possible.

FREUND Maschinenfabrik uses lubricants that are in compliance with the H1 standard on all equipment where accidental contact between the lubricants and the animal carcass is possible.

Safety data sheet

For further information refer to our safety data sheets. The safety data sheets are available from our sales. Please refer to the company information at the imprint for address and telephone numbers.

Gearbox grease

FREUND-grease is high-performance transmission grease that is extremely resistant to high pressure loads and high temperatures. It is physiologically harmless and resistance to oxidation and ageing.

Hydraulic oil

FREUND-hydraulic oil is a low-viscosity, highly refined medical white mineral oil. The hydraulic oil is crystal clear, transparent and contains no toxic impurities. It is physiologically safe and conforming to FDA-H1.

3.4.2 Compressed air (K16-P4_evo2)

The machine is operated using clean dry compressed air.

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

Minimum requirements

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

3.5 Scope of delivery

K18/K16

- 1 angle wrench (Part-No.106-005-002)
- 1 ring wrench SW46 (Part-No.111-002-055)

K23/K28

- 1 wrench SW60 (Part-No.110-002-091)
- 1 ring wrench SW8 (Part-No.100-009-006)

K33

- 1 open-ended wrench (Part-No.111-002-024)
- 1 hexagon wrench SW6 (Part-No.100-009-005)

4 Transport und Storage

FREUND-machines are intended for shipment via motor truck, train, aircraft, or ship. The secure shipment will be separately or in multiple packages.

Trial run at manufacturer

The machine has been thoroughly checked before shipping and has already undergone a trial run in the factory. This check ensures that the machine corresponds to the data specified and works correctly.

Despite all the care taken the machine can be damaged in transit.

4.1 Unpacking the machine

After unpacking, the machine is ready for use.

Recycling and disposal

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

For details about recycling and disposal of the package refer to the → chapter *Disposal and Recycling* on page 80.

- 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.

4.3 Transporting the machine

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

- Only use lifting equipment and gear that has been approved for the weight of the machine. This includes transporting using a crane, fork-lift truck or lift truck. For the weight of the machine refer to → chapter *Technical data* on page 81.
- Secure the machine during transport to prevent it from tilting and slipping.
- Only use ropes and lifting appliances which ensure sufficient safety and load bearing capacity.

5 Installation and Commissioning

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

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

5.1 Safety information

DANGER!

Live machine parts.

Danger to life.

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

WARNING!

Risk of accident caused by insufficiently qualified personnel

Danger to Life and most severe injuries are possible.

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

WARNING!

Sharp-edged machine parts.

Cutting hazard.

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

5.2 Personal protective equipment

5.3 Connecting the machine

DANGER!

Live machine parts.

Danger to life from electric current.

- Connection of the machine and maintenance work on live components may only be performed by trained electricians.

We recommend that a main switch is installed before the machine is connected to the power supply. This way, the machine can be easily disconnected from the power supply after finishing work.

Length of power cable

The length of the power supply cable is adapted to the performance of the machine. The power supply cable must not be extended.

5.4 Machines with 42 Volt operating voltage

Machines with a safety extra-low voltage (VLV) less than 50 V must be operated with a safety transformer.

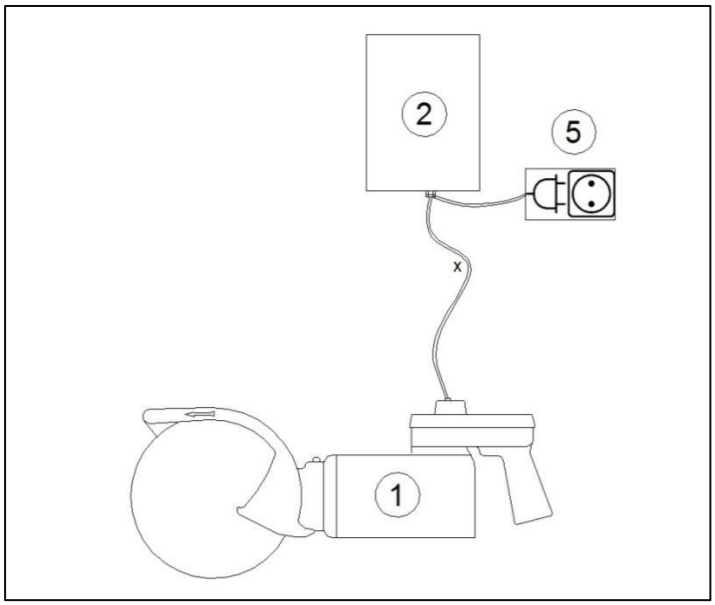
Transformers

We recommend the FREUND transformers TR3-SG360, TR5-SG360, TR5-360 or TR7-360.

Detailed information on the attachment of the transformers can be found in the corresponding operating manual.

5.4.1 Connection diagram for 42V machines with motor -13, -03, -03L, -06, -06L

Connection diagram



1 Machine 42 V
2 Transformer
5 Network 400 V
x Cable

Fig. 5-1 Connection diagram for machines with motor 03/13/03L and motor 06/06L

EN

Connecting lines

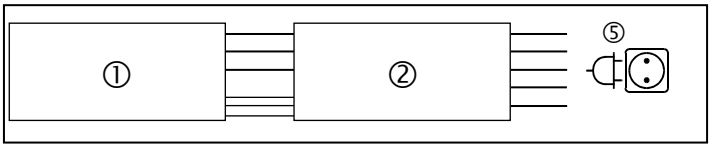
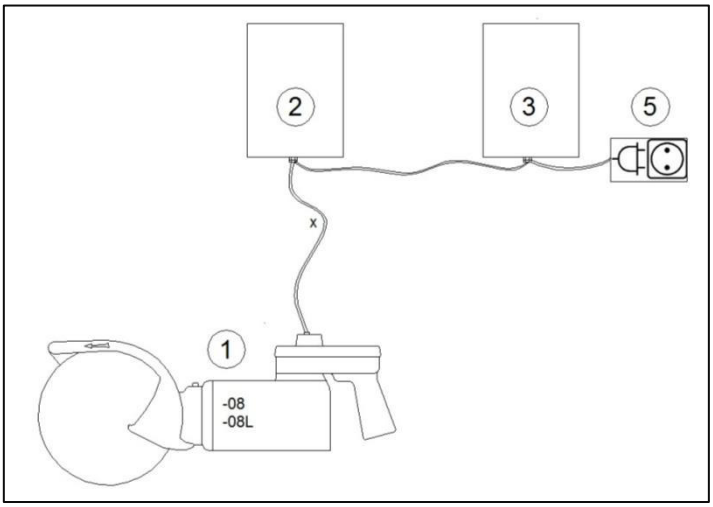


Fig. 5-2 Connecting lines for machines with motor 03/13/03L and motor 06/06L

5.4.2 Connection diagram for 42V machines with motor -08, -08L

Connection diagram



1 Machine
2 Transformer TR5
3 Control box 2HATDS/EMBS
5 Network 400 V
x Cable

Fig. **5**-3 Connection diagram for machines with motor 08/08L

Connecting lines

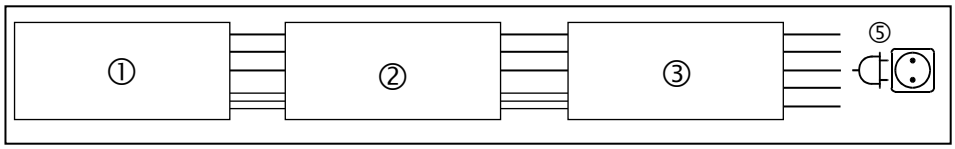


Fig. **5**-4 Connecting lines for machines with motor 08/08L

Control box 2HATDS/EMBS

The machines are equipped with an additional control box. The control box contains the frequency converter for the electronic brake and the soft start, as well as the circuit board of the two-hand safety switch.

Fasten the control box with our optionally available wall fastening set, Part.No. 100-022-069.

Hole pattern

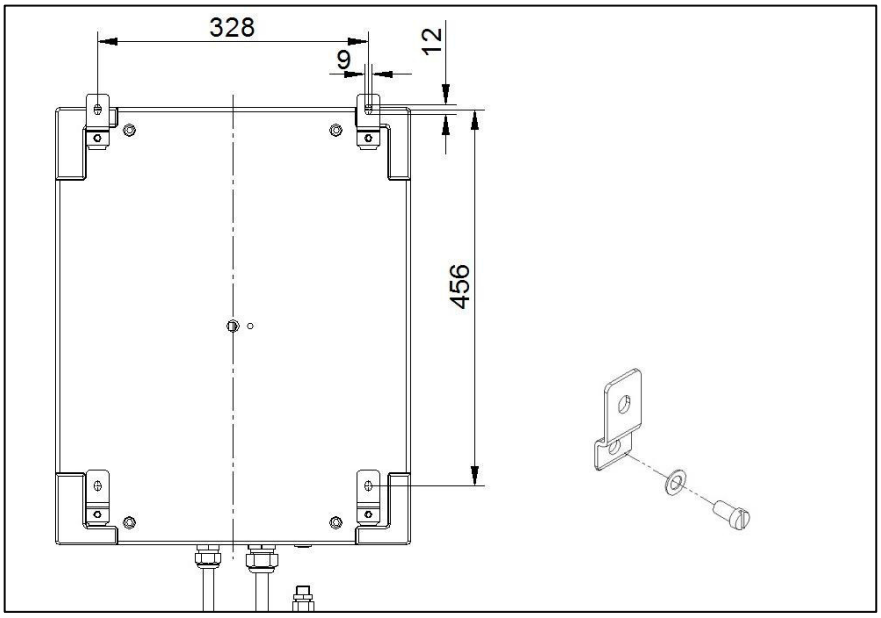


Fig. 5-5 Control box hole pattern 2HATDS/EMBS and wall fastening set

5.4.3 Connection diagram for 42V machines with two-hand control

The machine is equipped with an additional control box for the two-hand safety switch (2HADTS).

- Standard for HBK28-06
- Optional for all circular saws

Hole pattern

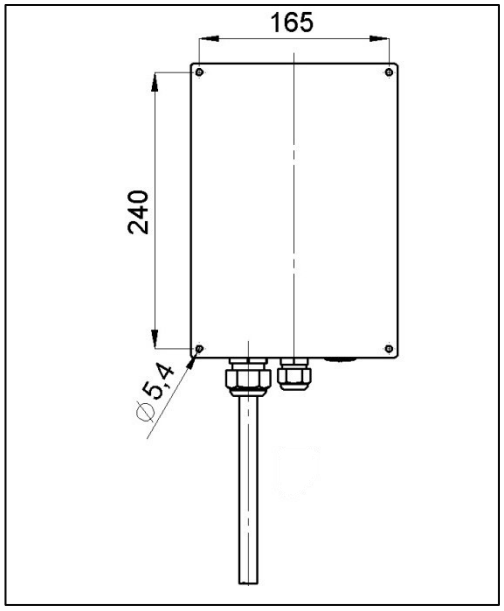
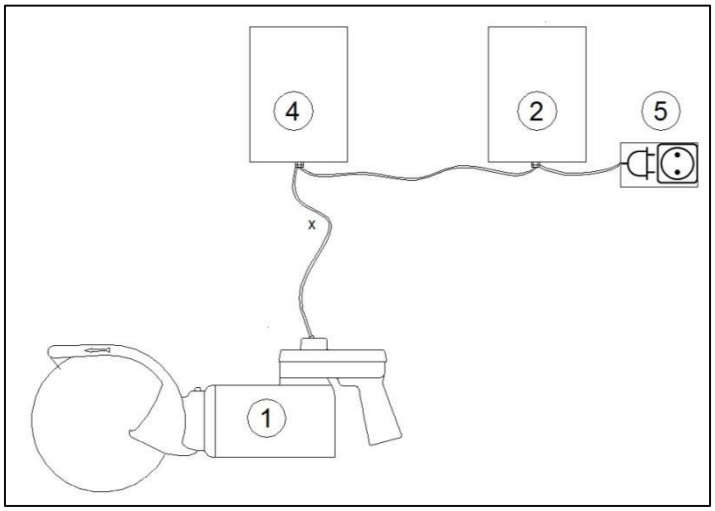


Fig. 5-6 Control box hole pattern 2HATDS 42V

EN

Connection diagram



1 Machine 42 V
2 Transformer
4 Control box 2HATDS
5 Network 400 V
x Cable

Fig. 5-7 Connection diagram for machines with 2HADTS

Connecting lines

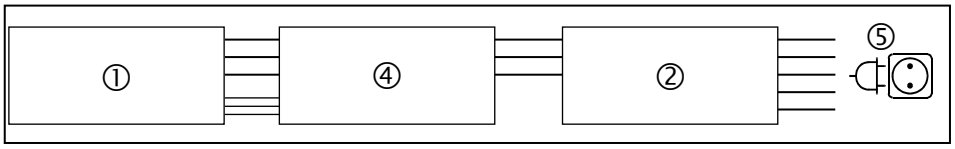


Fig. 5-8 Connecting lines for machines with 2HADTS

5.5 Machines with 400 Volt operating voltage

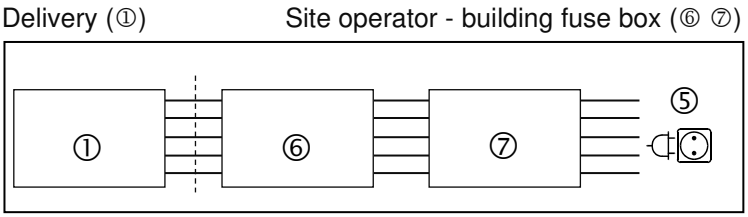
Machines in the slaughter rooms

Handheld machines that are used in the slaughter rooms **must** be secured on-site with a residual-current circuit breaker (FI switch) less than or equal to 30 mA.

Machines in the cutting rooms

Handheld machines that are used in the cutting rooms should be secured on-site with a residual-current circuit breaker (FI switch) less than or equal to 30 mA.

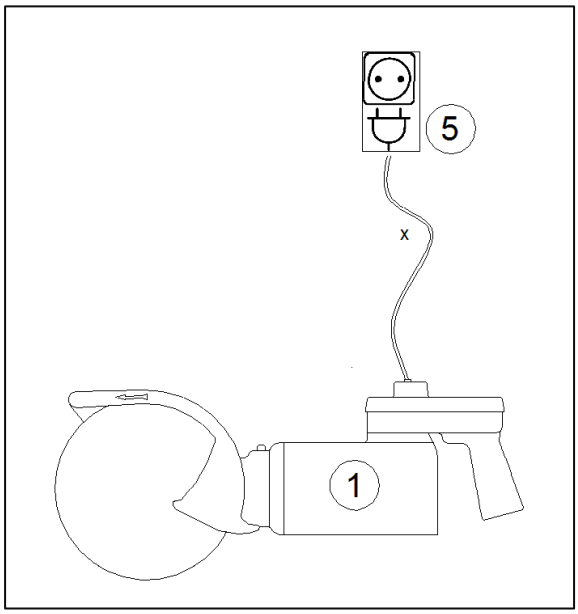
Connection diagram



1 Machine 400 V
6 Fuse
7 FI switch
5 Network 400 V

5.5.1 Connection diagram for 400V machines with motor -13, -03, -03L, -06, -06L

Connection diagram



1 Machine 400 V
5 Network 400 V
x Cable

Fig. 5-9 Connection diagram for machines with motor 03/13/03L and motor 06/06L

Connecting lines

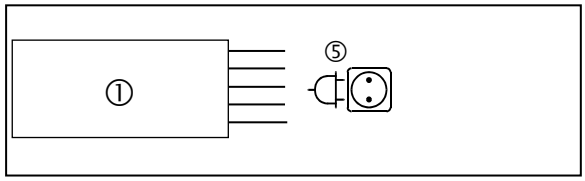
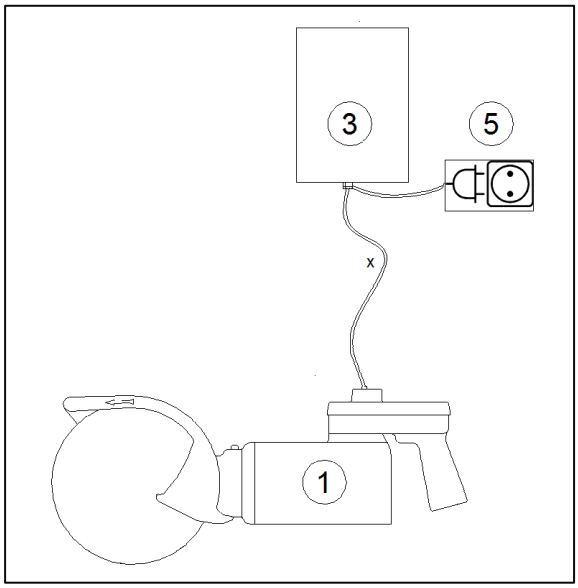


Fig. 5-10 Connecting lines for machines with motor 03/13/03L and motor 06/06L

5.5.2 Connection diagram for 400V machines with motor -08, -08L

Connection diagram



1 Machine 400 V
3 Control box EMBS/2HATDS
5 Network 400 V
x Cable

Fig. 5-11 Connection diagram for machines with motor -08/-08L

Connecting lines

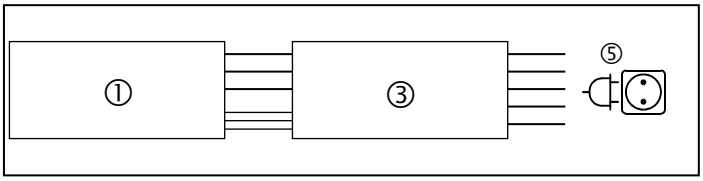


Fig. 5-12 Connecting lines for machines with motor -08/-08L

Control box 2HATDS/EMBS

The machines are equipped with an additional control box. The control box contains the frequency converter for the electronic brake and the soft start, as well as the circuit board of the two-hand safety switch.

Fasten the control box with our optionally available wall fastening set, part-no. 100-022-069.

Hole pattern

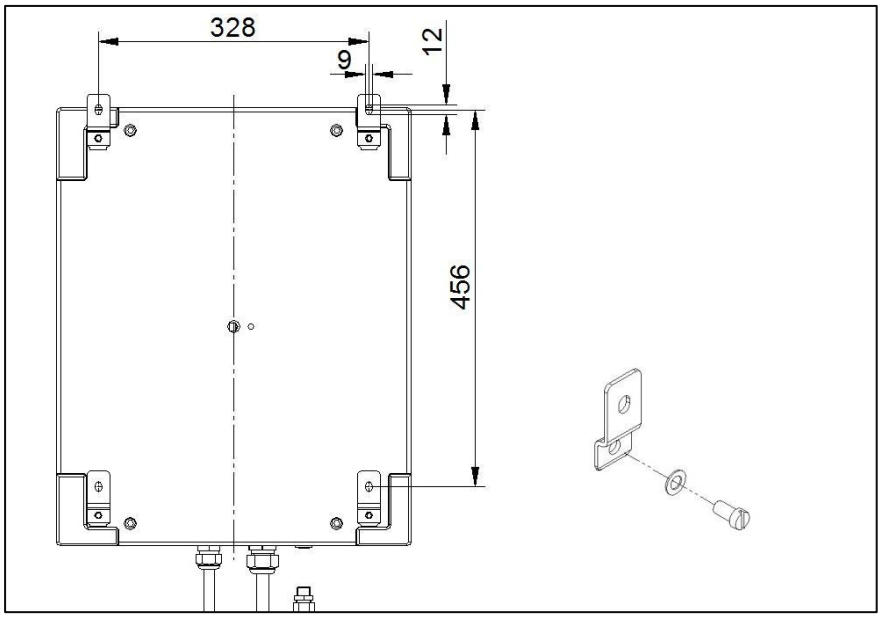


Fig. 5-13 Control box hole pattern 2HATDS/EMBS and wall fastening set

5.5.3 Connection diagram for 400V machines with two-hand control

Control box 2HADTS

The machine is equipped with an additional control box for the two-hand safety switch (2HADTS).

- Standard for HBK28-06
- Optional for all circular saws

Hole pattern

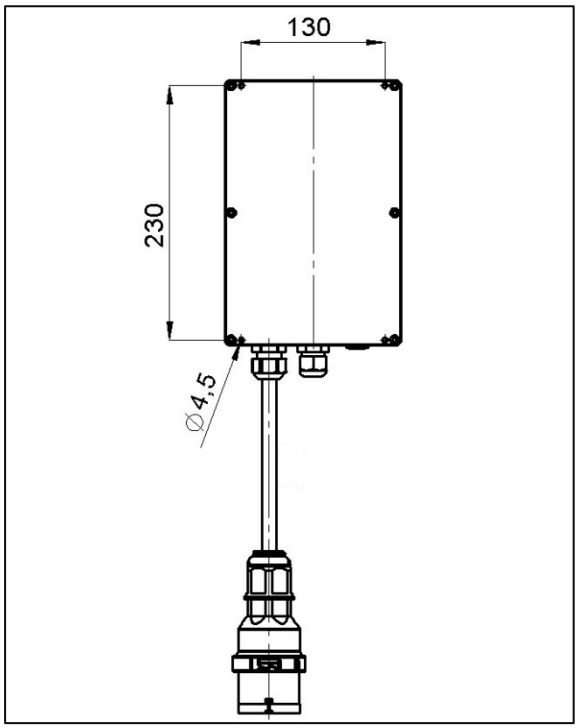
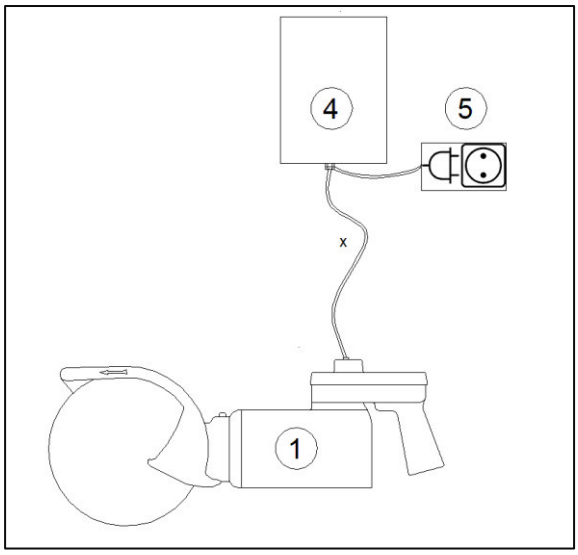


Fig. 5-14 Control box hole pattern 2HATDS 400 V

Connection diagram



1 Machine 400 V
4 Control box 2HATDS
5 Network 400 V
x Cable

Fig. 5-15 Connection diagram for machines with 2HADTS

Connecting lines

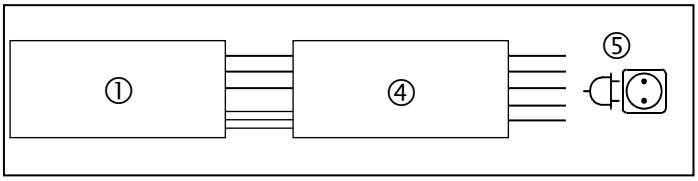
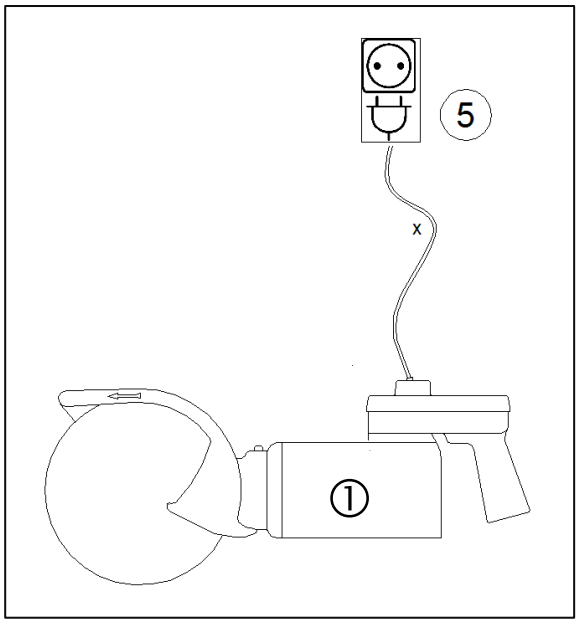


Fig. 5-16 Connecting lines for machines with 2HADTS

5.6 Machines with 230 Volt alternating current (K18-01)

Connection diagram



1 Machine 230V
5 Network 400V
x Cable

Fig. 5-17 Connection diagram for machines with 230 V alternating current

Connecting lines

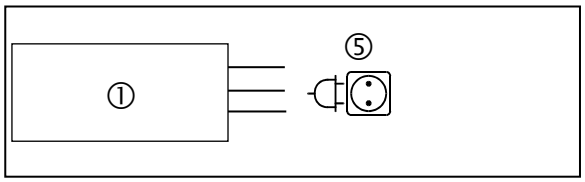


Fig. 5-18 Connecting lines for machines with 230 V alternating current

5.7 Machines with a pneumatic motor

5.7.1 Connecting the machine

Connection diagram

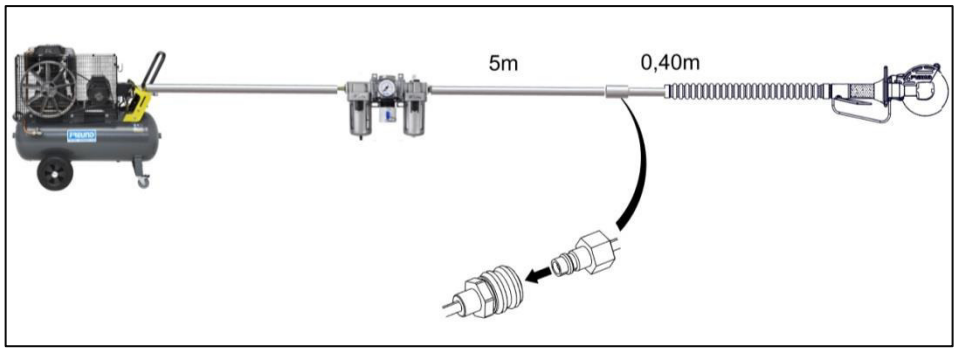


Fig. 5-19 Connection diagram for machine K16-P4_evo2

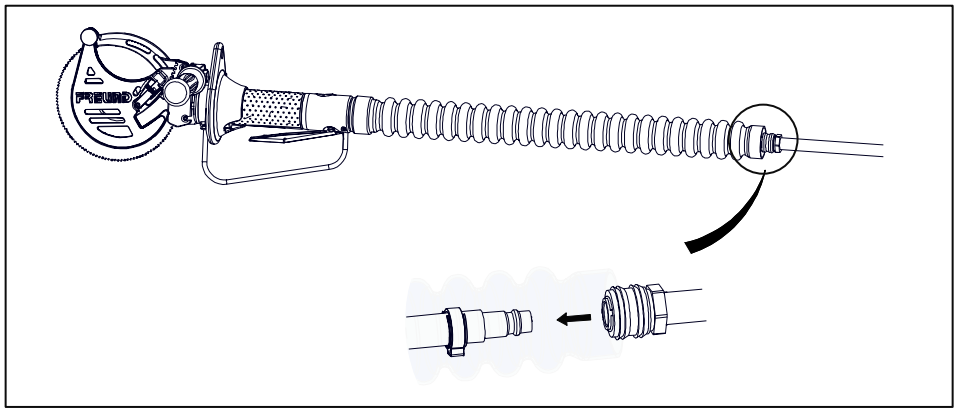


Fig. 5-20 Connecting machine K16-P4_evo2

5.7.2 Connecting the service unit

Caution!

Overload through excessive pressure.

Premature wear of pneumatic motor.

- Do not change the default compressed-air pressure setting of max. 6 bar.
- Secure the compressed-air pressure setting using the included padlock (❹).

EN

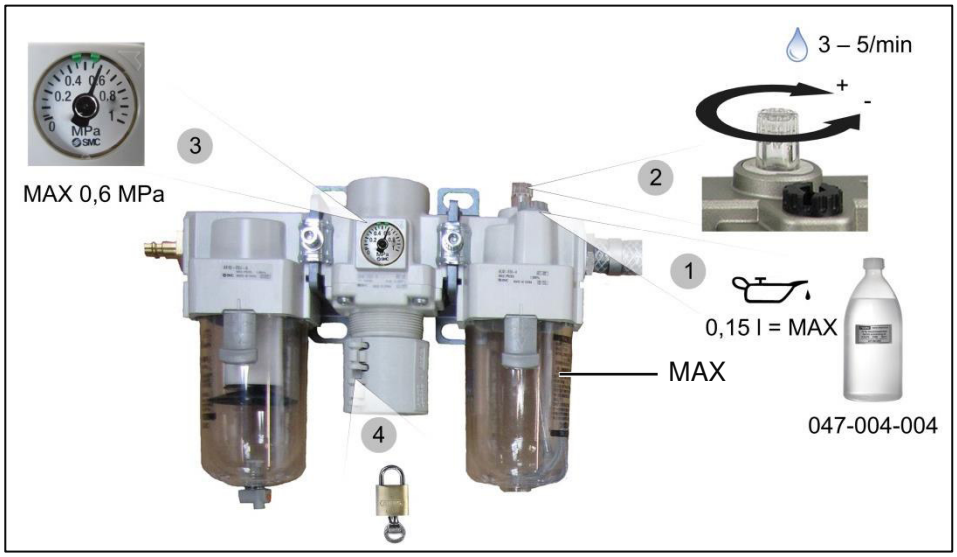


Fig. 5-21 Connecting the service unit

At the sight dome 2 you see the oil drops visibly down. Check here, that the drip setting is 3 to 5 drops per minute.

Note that the numbered scale markings are guidelines for adjusting the drip setting, and not indicators of the dripping amount.

5.7.3 Changing the side handle position

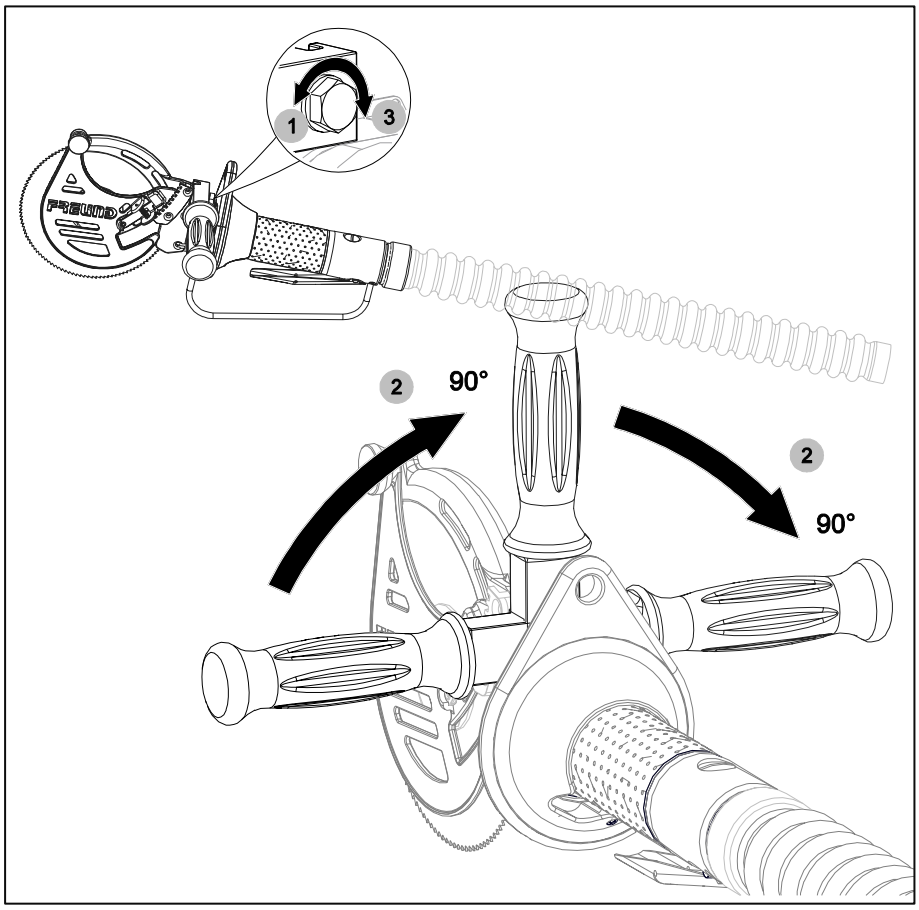


Fig. 5-22 Possible handle positions

EN

5.7.4 Adjusting the hanger

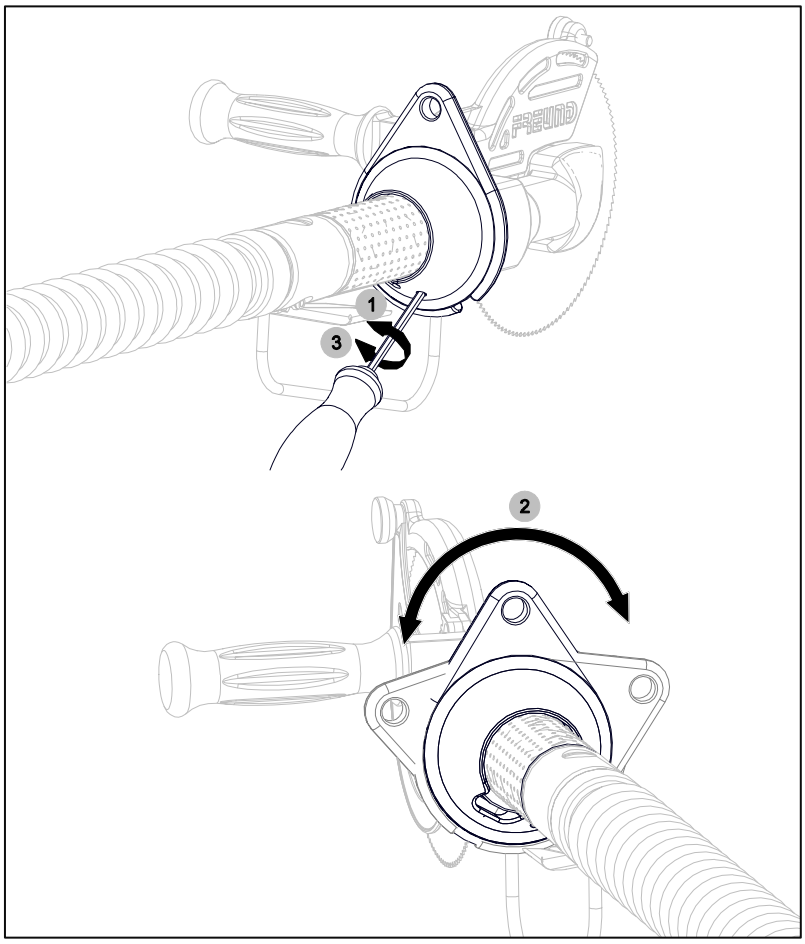


Fig. 5-23 Possible hanger positions

6 Operating

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.

WARNING!

Rotating saw blades and blades.

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

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

WARNING!

Sharp-edged machine parts.

Cutting hazard.

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

Attention!

Machine performs horizontal movement when it is switched on.

Cutting hazard due to unexpected fast movement of the starting machine.

- Hold the machine strongly on both handles before switch on.

Caution!

The machine is very heavy.

Personal injury as a result of the machine falling down.

- Always attach the machine to a balancer.
- Do not position yourself under the machine.

Caution!

Bellow can burst.

Danger of injury from exploding bellow.

➢ Do not close the bellow. The discharged must be able to stream out.

6.2 Personal protective equipment

6.3 Daily safety check

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

Only use faultless and fully functional machines.

Check the

- ➢ machine for surface damages and loose machine parts.
- ➢ electrical and/or pneumatic connections and access lines for surface damages.
- ➢ seating of moving parts.
  These must not lock and show any partial damages.
- ➢ saw blade / circular blade knife to be properly fixed.
- ➢ balancer and the balancer settings.
- ➢ Never use a machine with defective safety devices, switches or other defective machine parts.
- ➢ Have defective safety devices, switches or other parts repaired, and notify your employer.

6.4 Operating the machines

6.4.1 All machines

Always keep the trigger in the rear handle depressed during the sawing operation, and on machines with a two-hand safety switch also keep the round handle of the two-hand safety switch depressed.

6.4.2 Machines with a horizontal saw blade

Due to the horizontal position of the circular saw, the machine has the tendency to execute a sudden horizontal rotary movement when it is switched on.

Unexpected sudden rotary movement on switching on the machine! Make sure to hold the machine firmly by both handles.

BCK23-03
BCK23-06
RTK18-13

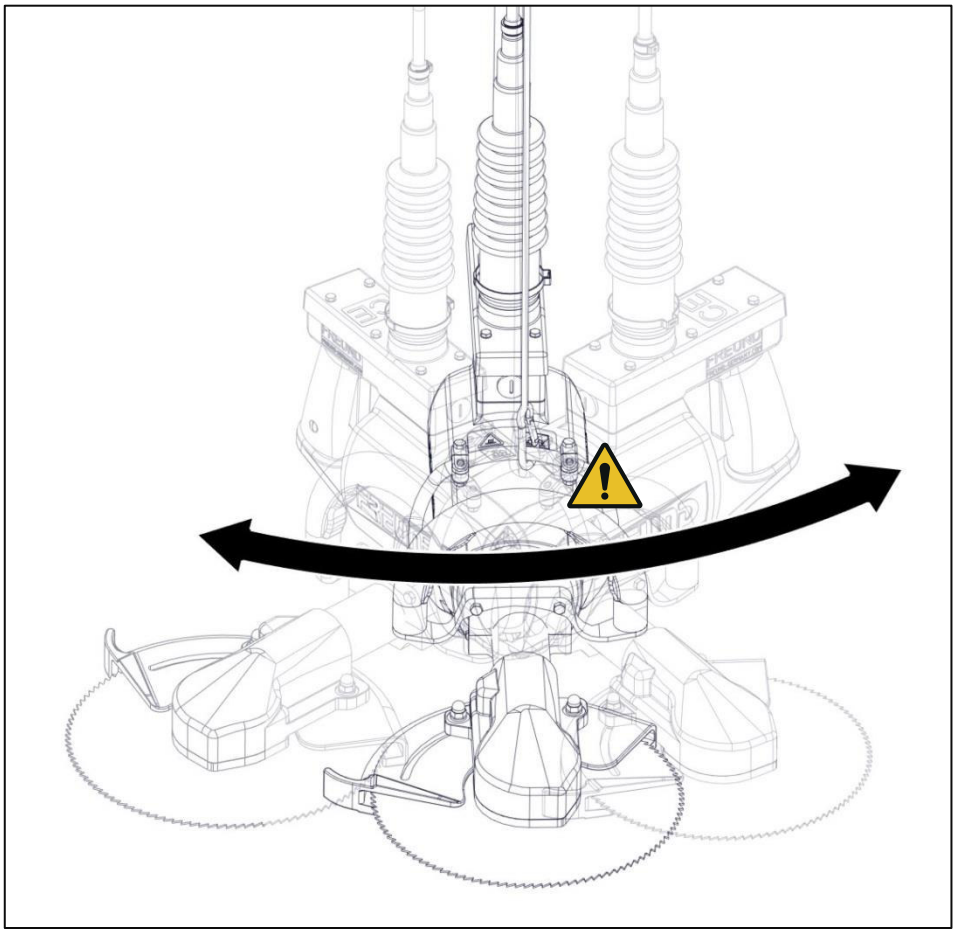


Fig. 6-1 Rotary movement on switching on the machine, example for BCK23-03

7 Cleaning and Disinfection

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

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

Thorough cleaning is a prerequisite for the subsequent disinfection to be effective.

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

7.1 Safety information

DANGER!

Live machine parts.

Danger to life from electric shock.

- Before starting any cleaning work, disconnect the machine from the power supply and secure it against being inadvertently switched back on.
- Do not use water or a high-pressure cleaner to clean live machine parts.

WARNING!

Risk of accident caused by insufficiently qualified personnel.

Danger to Life and most severe injuries are possible.

- The machine may only be maintained, repaired and cleaned by qualified personnel.

WARNING!

Sharp-edged machine parts.

Cutting hazard.

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

WARNING!

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.

7.2 Personal protective equipment

7.3 Carrying out cleaning and disinfection

- Only use detergents and disinfectants approved for the food industry.
- Store detergents and disinfectants separately or in a special room.
  Make absolute sure those detergents and disinfectants do not come in contact with food.
- Only use cloths, brushes or other devices which are only used for cleaning and disinfection.

Caution!

Damage due to high water pressure.

High water pressures cause damage to seals and machine parts / penetrating water damages the motor of the machine K18-01.

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

Caution!

Corrosion on the saw blade.

Unsuitable detergents and cleaning equipment may result in corrosion on the saw blade.

- Only clean the saw blade with the specified detergents.
- Apply the detergents in the specified concentrations.
- Do not exceed the application times for the detergents.
- Only clean the saw blade with a soft cloth or a brush with soft bristles.

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

Work steps	Detergents and disinfectants	Auxiliary materials
Drying		
Rub dry or allow to dry in ambient air; allow disassembled parts to dry individually if possible		
Care		
Apply	Preservative oil, food grade oil	Spray bottle, clean cleaning cloth
Assembly		
Personnel must wash and disinfect hands		

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

* 2 When disinfecting blades and cutting tools made of materials such as 1.2842, 1.4112, 1.4291, 1.6582 and 1.8161 and steels such as 1.4308, 1.4528, we recommend avoiding disinfection methods that allow agent to act for a long time.

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

8 Maintenance and Repair Work

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

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

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

Warranty

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

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

8.1 Safety information

DANGER!

Live machine parts.

Danger to life.

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

WARNING!

Risk of accident caused by insufficiently qualified personnel

Danger to Life and most severe injuries are possible.

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

WARNING!

Sharp-edged machine parts.

Cutting hazard.

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

8.2 Personal protective equipment

8.3 Spare part kits

FREUND-spare part kits contain all common spare parts and parts subject to wear that, according to experience, must be replaced regularly.

Downtime is kept to a minimum by the stocking of parts. The spare parts included in the package are significantly cheaper than the entire individual components. The quantity of single spare parts in the spare part kits can be larger than at the individual assembly.

Information about the content of the available spare part kits can be found in the spare parts list.

8.4 Recommended lubricants

For the refilling and topping up of the machine we offer you the following lubricants:

	Retail container	Part-No.
	1kg box	171-500-010
Service unit	1-l oil bottle	047-004-004

8.5 Maintenance schedule

Some maintenance jobs must be carried out at regular intervals.

The following table gives you an overview of the maintenance work to be carried out and the corresponding maintenance interval. Adjust the maintenance intervals to your working conditions, if necessary.

You find further instructions to repair and assembly works in the spare parts lists.

Interval	Maintenance job	Chapter
Daily	Visual inspection before starting work	→ Chapter *Daily safety check* on page 55
	Check the service unit (K16-P4_evo2 only)	→ Chapter *Checking the service unit* on page 73
Every 6 months	Electric in-service inspection	→ Chapter *Periodic inspection of* electrical equipment on page 63
	Grease the gear unit	→ Chapter *Greasing the gear unit* on page 68
Approx. every 50,000 cuts	Grease the gear unit for K16-P4_evo2	

Interval	Maintenance job	Chapter
Approx. every 500 operating hours	Maintenance of the compressed-air motor P4 (K16-P4_evo2 only) FREUND Maschinenfabrik service, Part-No. SDL-003-050	→ Chapter *Checking the compressed-air motor* on page 73
As necessary	Replace the saw blade	→ Chapter *Changing the saw blade* on page 64
	Replace the circular blade (BBKM25-03D only)	→ Chapter *Replacing the circular blade* on page 67
	Sharpen the saw blade	→ Chapter *Sharpening the saw blade* on page 67
	Replace the carbon brush (K18-01 only)	→Separate assembly manual

8.6 Periodic inspection of electrical equipment

Inspection intervals

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.

Fig. 8-1 Test sticker 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.

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. Our service includes 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, contact our sales staff. Please refer to the company information for address and telephone numbers.

8.7 Changing the saw blade

8.7.1 Machines with gear unit 16 and 18

K16-P4_evo2
K18-01
K18-13
RTK18-13

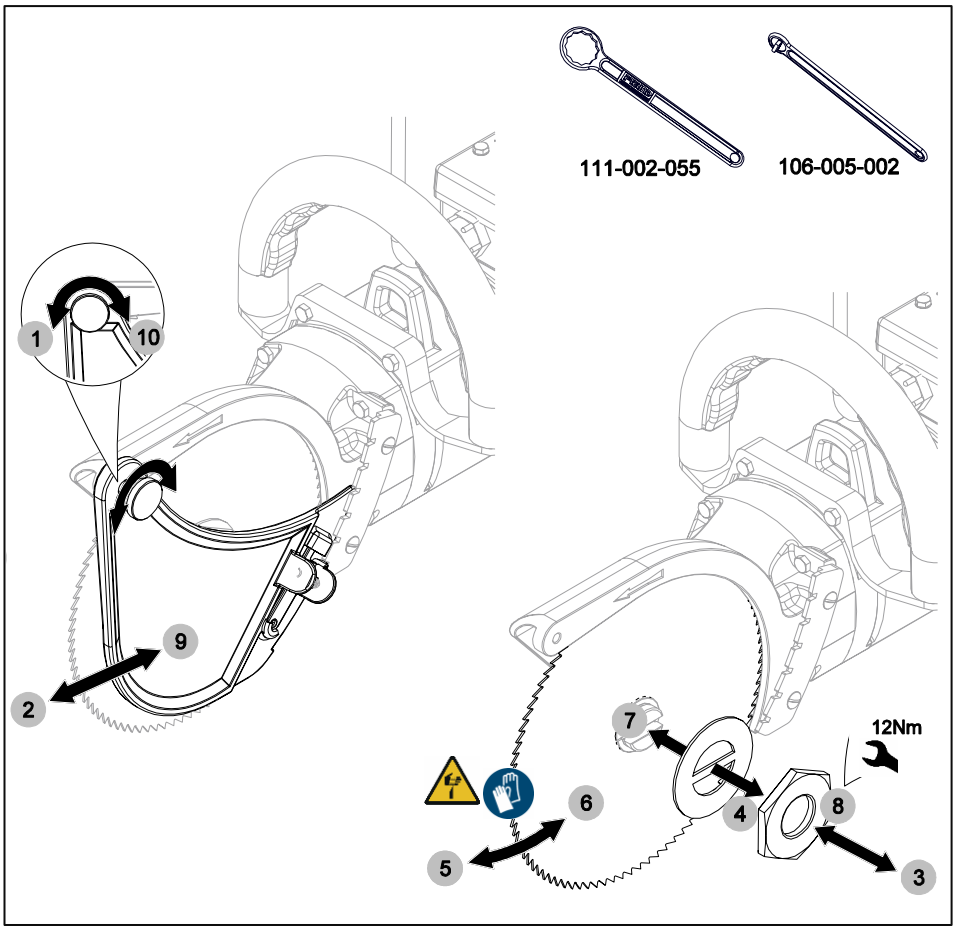


Fig. 8-1 Changing the saw blade (example: K18-01)

EN

8.7.2 Machines with gear unit 23

K23-13
K23-03
K23-06

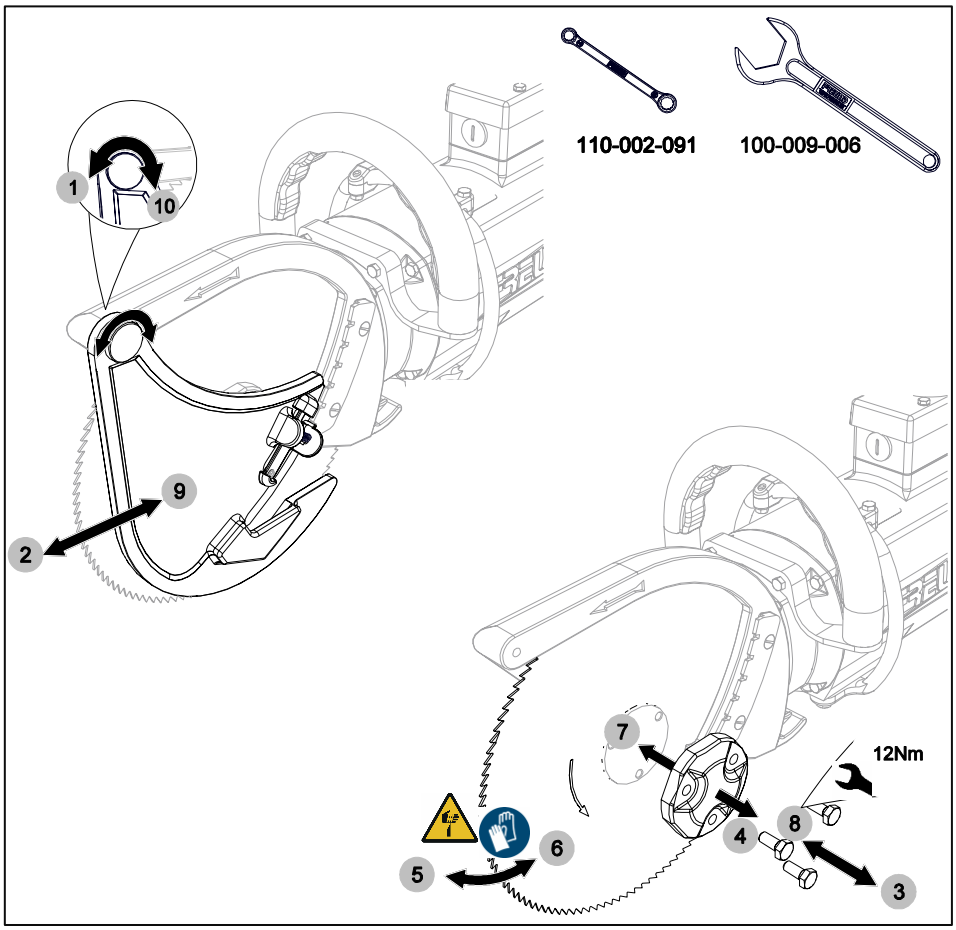


Fig. 8-2 Changing the saw blade (example: K23-03)

K28-03
K28-06
K32-06

K23-03L
K23-06L
K28-03L
K28-06L
K32-06L

PFK23-03

BCK23-06
BCK23-06

HBK28-06

BBK28-06D

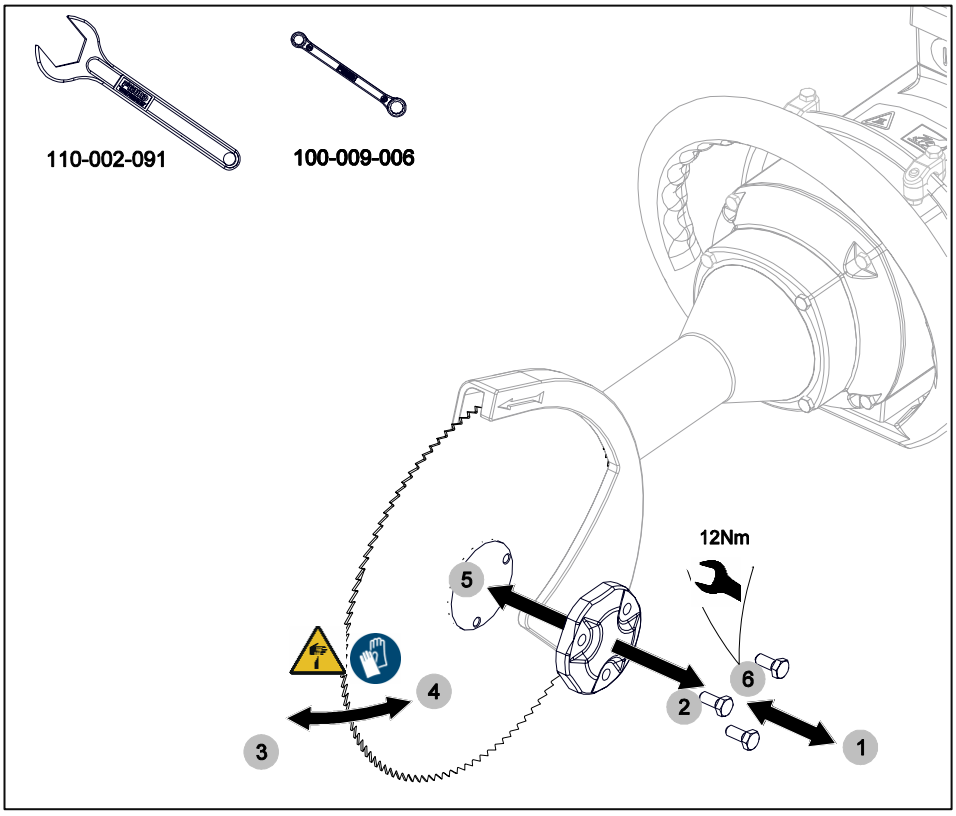


Fig. 8-3 Changing the saw blade (example: K23-06L)

8.7.3 Machines with gear unit 33

HBK33-08
SK40-08L
SK52-08L

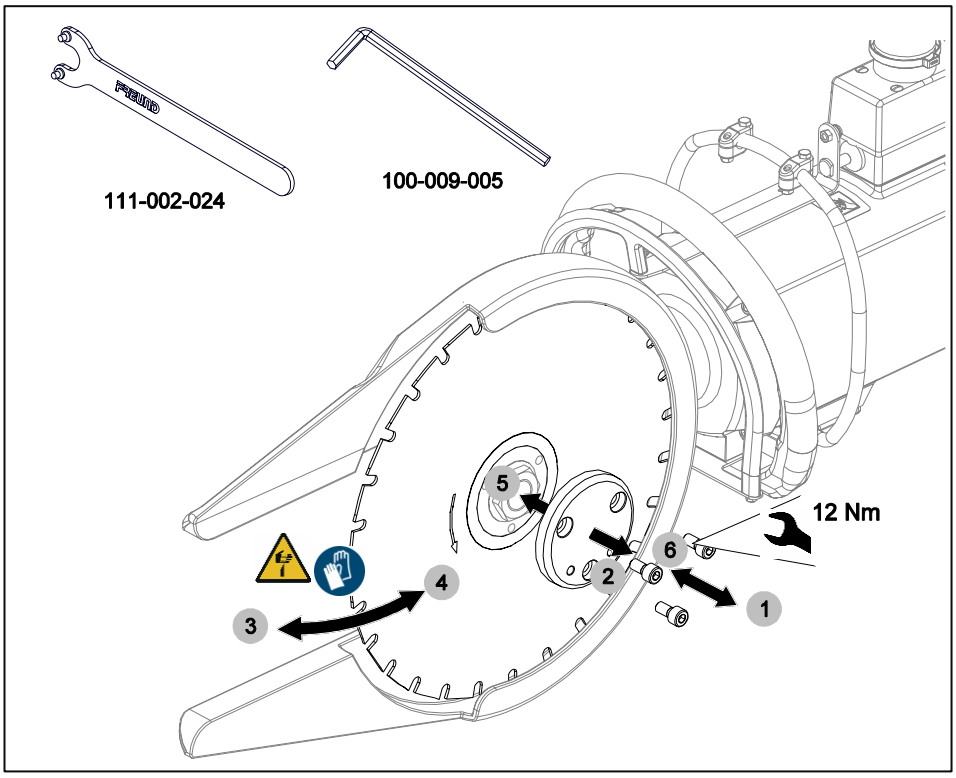


Fig. 8-4 Changing the saw blade (example: HBK33-08)

EN

8.8 Replacing the circular blade

BBKM25-03D
BBKM25-06D

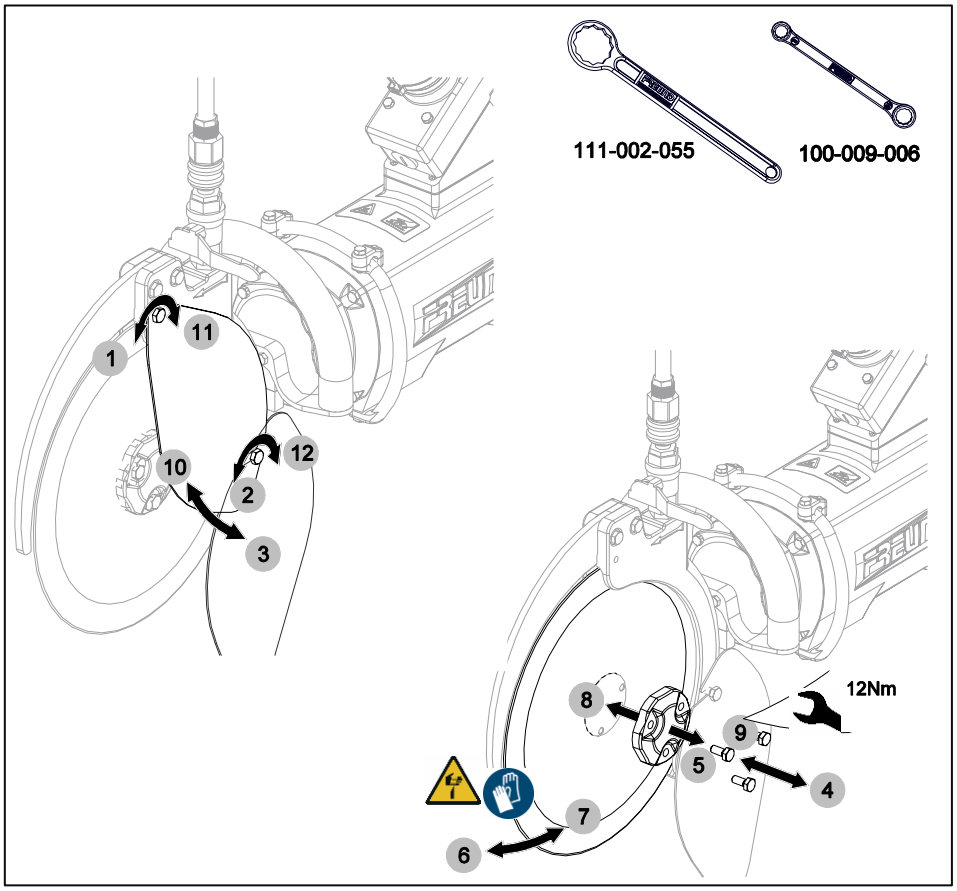


Fig. 8-5 Replacing the circular blade BBKM25

8.9 Sharpening the saw blade

The sharpening instructions for the various saw blade types are delivered on purchase or are available from our homepage https://www.freund.eu/produkte/downloads.html.

8.10 Greasing the gear unit

Grease the bevel gear, and, for K16-P4_evo2 and K18-01, also grease the intermediate gear.

We recommend having the gear unit greased by qualified personnel on a regular basis.

Only use lubricants recommended by FREUND Maschinenfabrik (→ chapter *Recommended lubricants* on page 62).

8.10.1 Electrical machines

Bevel gear

Interval: approximately every six months, more often with heavy usage

Fill volume:

- Machines with gear unit 18: approx. 100 g.
- Machines with gear unit 23: approx. 33 g.
- Machines with gear unit 33: approx. 68 g.

BAC-007867-C/
900-00024

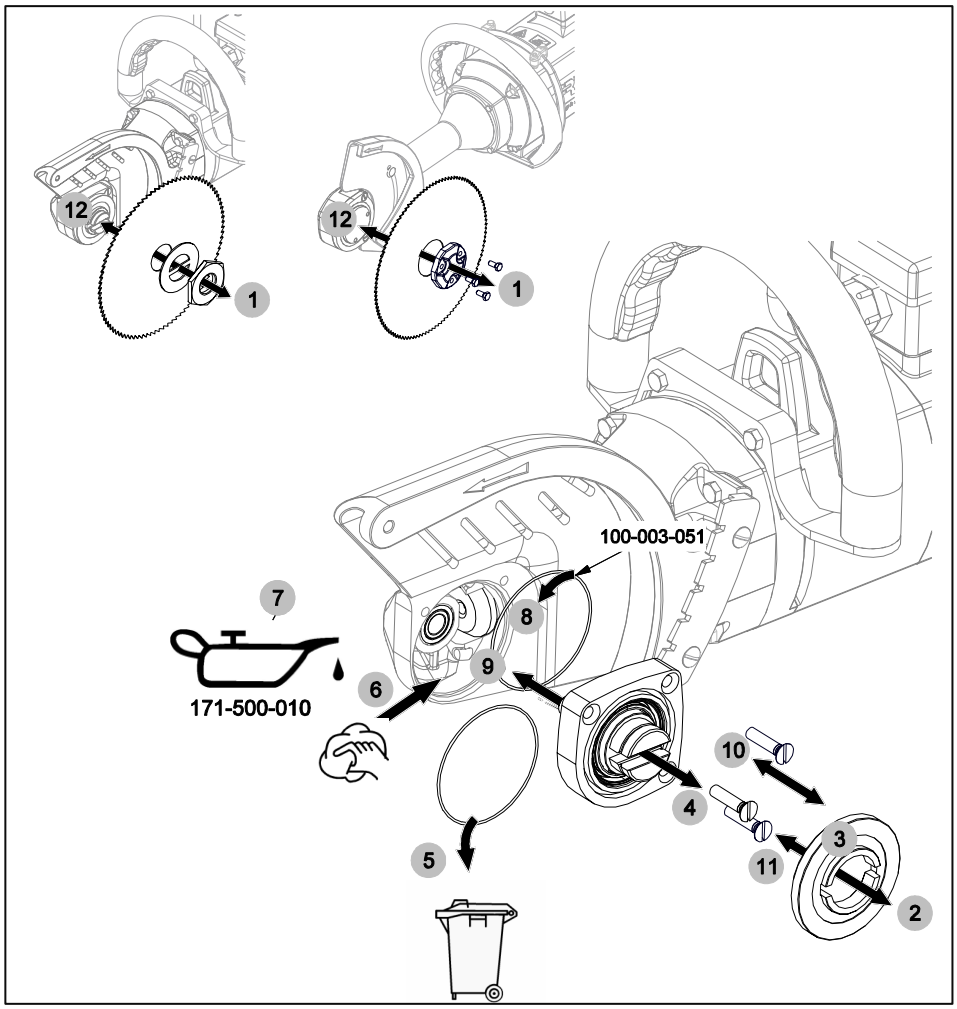


Fig. 8-6 Work steps for greasing the bevel gear unit for K18 01

EN

Intermediate gear

Interval approximately every six months, more often with heavy usage

Fill volume
- Machines with gear unit 18: approx. 60 g.

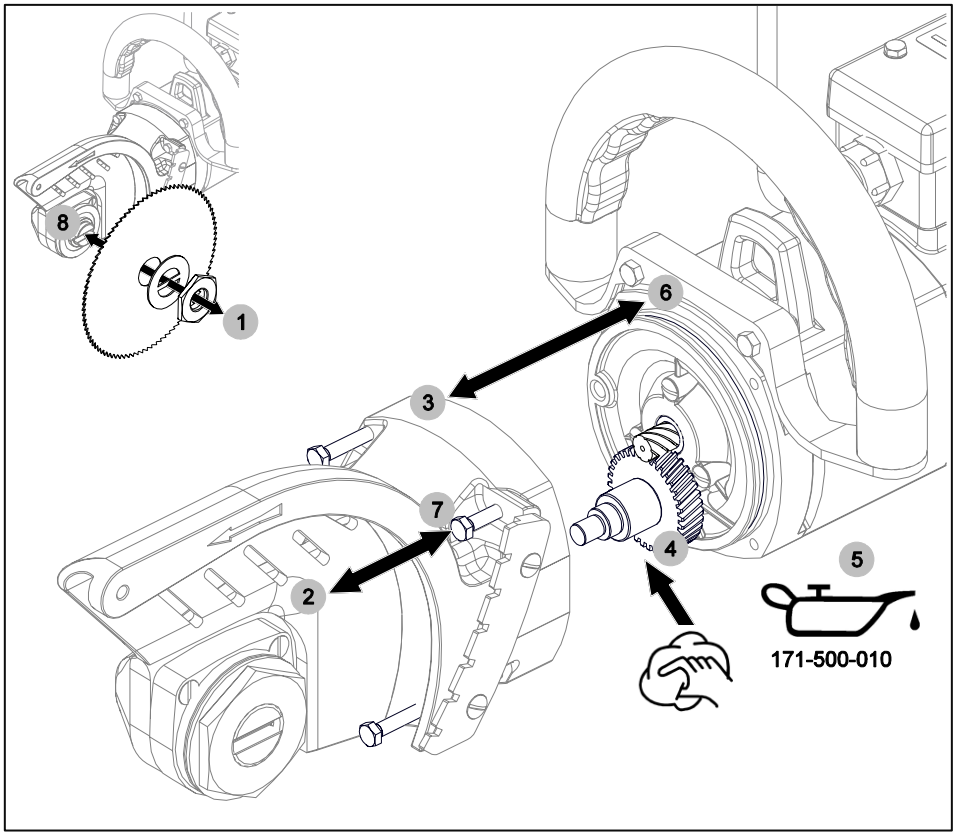


Fig. 8-7 Work steps for greasing the intermediate gear unit K18 01

8.10.2 Pneumatic machine K16-P4_evo2

Bevel gear

Interval every 50,000 cuts with a cutting time of up to a second, more often with heavy usage

Fill volume approx. 40 g

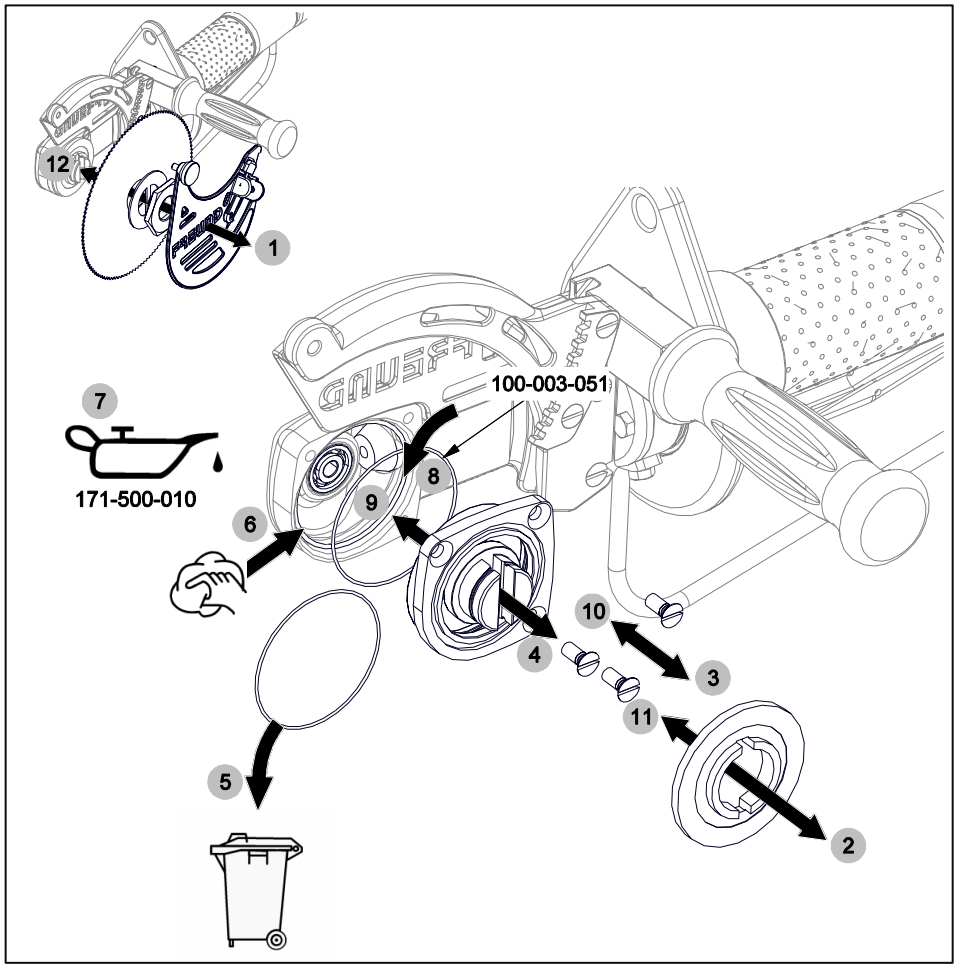
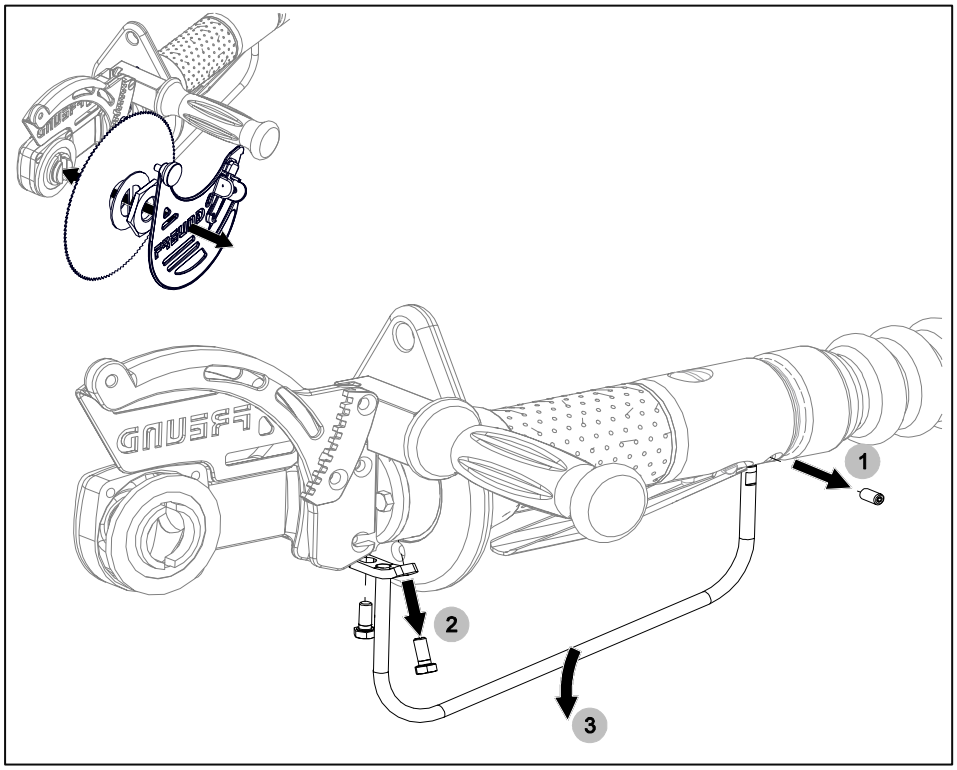


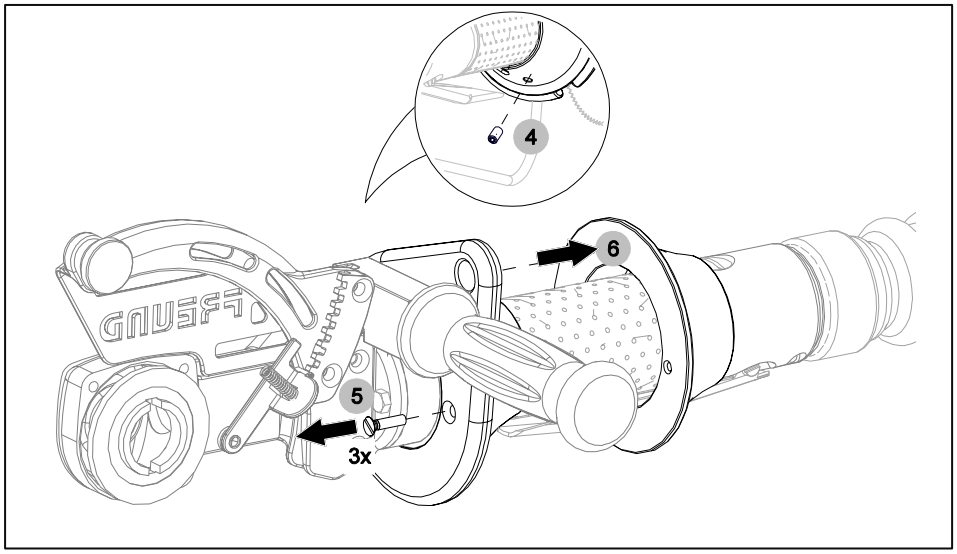
Fig. 8-8 Work steps for greasing the bevel gear unit for K16-P4_evo2

Intermediate gear

Interval every 50,000 cuts with a cutting time of up to a second, more often with heavy usage

Fill volume approx. 60 g





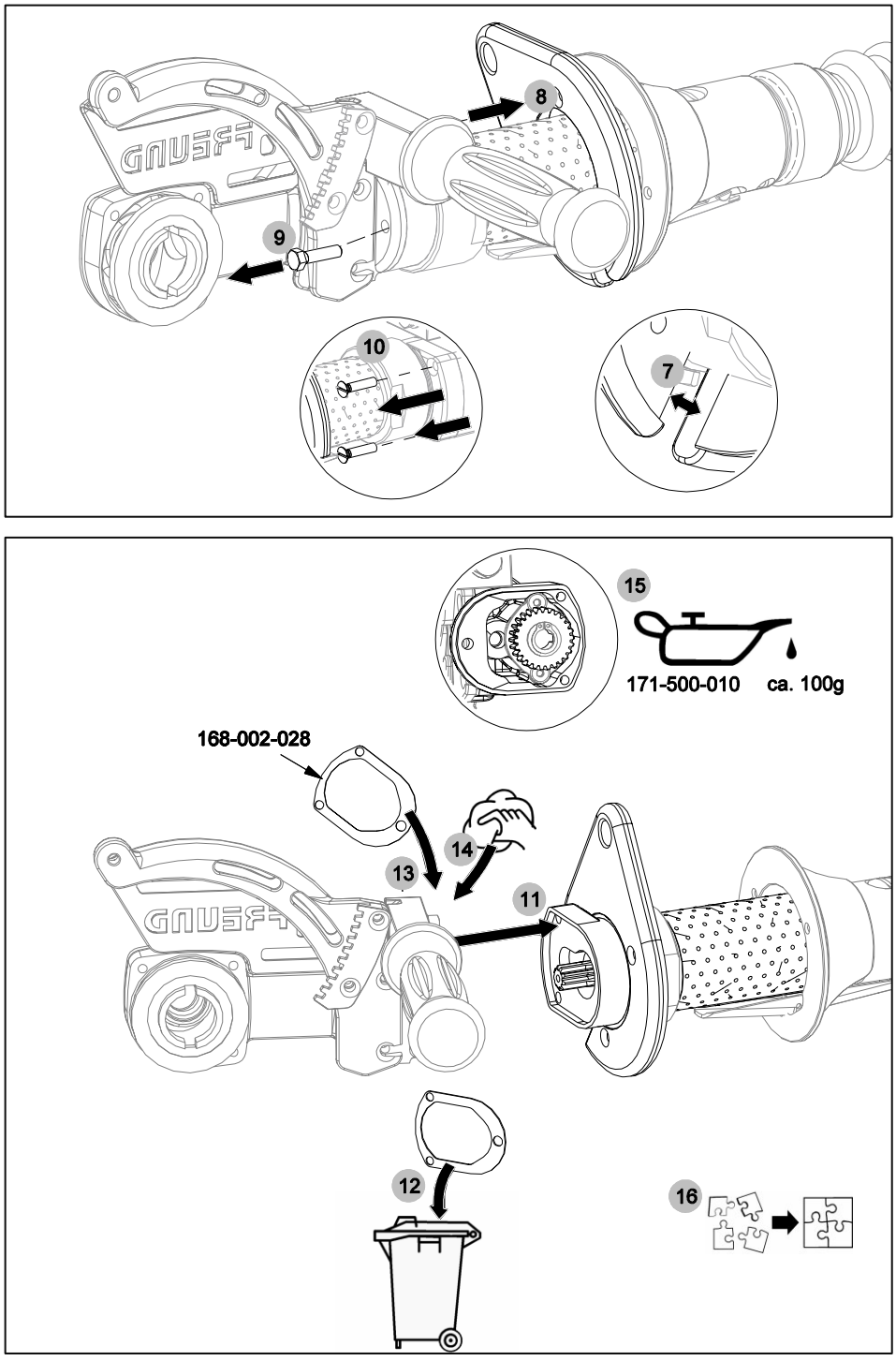


Fig. 8-9 Work steps for greasing the intermediate gear unit for K16-P4_evo2

8.11 Maintenance jobs for K16-P4_evo2

8.11.1 Checking the compressed-air motor

Maintenance after roughly 500 operating hours

We recommend that the compressed-air motor be left unopened for liability reasons. We recommend having maintenance performed by a FREUND Maschinenfabrik service technician.

Service package SDL-003-050

In service package SDL-003-050, FREUND Maschinenfabrik offers the inspection and maintenance of the compressed air motor and the replacement of certain wear parts (including bearings, vanes).

Maintenance kit

If you wish to repair the compressed air motor yourself, order the maintenance kit for motor P4 (Part-No. 168-002-073E) from our sales department.

The maintenance kit includes the necessary tools and provide a detailed, step-by-step description for all working step.

FREUND Maschinenfabrik will not accept any liability for damage resulting from repairs not carried out by the manufacturer.

8.11.2 Checking the service unit

Information on setting values and volumes can be found in the → chapter *Connecting the service unit* on page 50.

- Top up the oil tank up to MAX mark.
- Check the drip setting.
- Empty the water separator.

9 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 for address and telephone numbers or on our webside *www.freund-germany.com.*

9.1 Safety information

DANGER!

Live machine parts.

Danger to life.

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

WARNING!

Risk of accident caused by insufficiently qualified personnel

Danger to Life and most severe injuries are possible.

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

WARNING!

Sharp-edged machine parts.

Cutting hazard.

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

9.2 Personal protective equipment

9.3 Overview of possible faults

All information for saw blades also applies for circular blades.

9.3.1 All machines

Fault	Possible cause	Remedy
Irregular depth of cut.	The depth control is not engaged correctly.	Engage the depth control.
	The depth control is loose.	Screw the depth control tight.
The machine is overloaded.	The machine is not powerful enough.	Use another machine with a higher power rating.
	The saw blade is blunt.	Replace the saw blade or have it sharpened.
The force required for sawing increases.	The saw blade is blunt.	Replace the saw blade or have it sharpened.
	The balancer is incorrectly set.	Set the correct weight range, → *Balancer operating manual*.
Unusual running noises.	The depth control is loose.	Screw the depth control tight.
	The depth control is dragging on the flange nut.	Check the depth control for damage. Replace the depth control, if necessary.
The machine saws poorly or does not saw at all.	The saw blade has been installed against the direction of rotation.	Install the saw blade with the correct direction of rotation. Note the arrow on the saw blade.
	The saw blade is blunt.	Replace the saw blade or have it sharpened.
	The machine is not powerful enough.	Use another machine with a higher power rating.
The saw blade gets stuck in the carcass.	The saw blade is blunt.	Switch off the machine. Replace the saw blade or have it sharpened.
	The saw blade is jammed.	Switch off the machine. Pull the saw out of the carcass.
	The machine is stuck in a bone.	

Fault	Possible cause	Remedy
The saw blade slips when subjected to loads.	Contact surfaces are coarse.	Make sure the contact surfaces are smooth.
	The saw blade is not tightly bolted in.	Tighten the screws at the flange.
	The saw blade is soiled.	Clean the machine.
	The flange and/or lock washer are worn.	Replace the flange and/or lock washer.
Saw blade is corroded	Saw blade was cleaned with unsuitable detergents.	Only use the prescribed detergents → Kapitel *Carrying out cleaning and* disinfection on page 58.
	Detergents were not applied in the specified concentrations.	Only apply the detergents in the specified concentrations → Kapitel *Carrying out cleaning and* disinfection on page 58.
	Application times for the detergents were not adhered to.	Adhere to the application times → Kapitel *Carrying out cleaning and* disinfection on page 58.
	Saw blade was cleaned with unsuitable cleaning equipment.	Only clean the saw blade with a soft cloth or a brush with soft bristles.
There are unusual noises coming from the gear unit.	Lubrication is not sufficient.	Check the quantity of grease, → chapter *Greasing the gear unit* on page 68. Renew or top up the grease.
	There are foreign particles in the grease.	Switch off the machine. Check the condition of the grease. Clean the gear unit. Replace the grease.
	There is increased bearing clearance and/or a bearing is defective.	Check the bearings. If necessary, have the bearings replaced.
	The gear teeth are defective.	Check the gear teeth. If necessary, replace the gear wheels.
	The gear unit is defective.	Check the screws and nuts to ensure they are tight.
	Transport damage.	Check the machine for damage from transport.

Fault	Possible cause	Remedy
Leaking grease.	Too much grease.	Check the quantity of grease, → chapter *Greasing the gear unit* on page 68.
	The shaft rings are defective.	Replace the shaft rings.
	The flange bolts are loose.	Tighten the bolts.
	The flange seal is defective.	Replace the seal.
	Transport damage.	Check the machine for damage from transport.
The gear unit overheats.	The grease is incorrect or is outdated.	Check the condition and quantity of grease, → chapter *Greasing the gear unit* on page 68. Renew or top up the grease.
	There is increased bearing clearance and/or a bearing is defective.	Check the bearings. If necessary, have the bearings replaced.
The drive shaft does not turn when the motor is running.	The connecting shafts between the motor and gear unit are broken.	Replace the defective parts.
	Feather keys are sheared.	
	The coupler bushing is defective.	
The machine does not start or is sluggish.	Not enough grease.	Check the condition and quantity of grease, → chapter *Greasing the gear unit* on page 68. Renew or top up the grease.

9.3.2 Machines with an electric motor

Fault	Possible cause	Remedy
Motor does not run / stops during work.	Motor is not supplied with electricity.	Check whether the connection cable is plugged in.
		Check the connection cable for interruptions or damage.
		Check the main fuse.
	The switch is defective.	Replace the switch.
	The fuse in the transformer is defective.	Replace the fuse.
	K18-01 only: The carbon brushes are worn.	Replace the carbon brushes, → *assembly manual* in the spare parts list.

Fault	Possible cause	Remedy
The machine does not start or is sluggish.	The motor is not supplied with electricity.	Check all connections.
There are unusual noises coming from the motor.	There is increased bearing clearance and/or a bearing is defective.	Check the bearings. Replace the bearing, if required.
	A phase fails.	Check the connections and, if necessary, the resistance of the coil.
The motor overheats.	The transformer has an insufficient power rating.	Use the transformer recommended by FREUND.
	The wrong connection cable is used, or it is too long.	Use only the original cable. Do not extend the connection cable.
	There has been a phase failure.	Check the electrical connections.
	The connecting cable has a loose contact.	Check the electrical connections. If necessary, tighten the connecting terminal.
	The input voltage is too low.	Measure the mains voltage. Select the correct input on the transformer.
	The mains voltage is wrong or fluctuates.	Use a machine that is suitable for the mains voltage.
The saw blade does not stop within three seconds.	The brake is defective.	Check the brake. Replace the brake → *assembly manual MMB* in the spare parts list or have it repaired.
	K18-01 only The brake coil is defective. The collector is soiled. The switch is defective.	Replace the stator. Clean the collector. Replace the switch.

9.3.3 Faults on machine with motor -08 and -08L

Fault	Possible cause	Remedy
Motor does not run / stops during work.	Defective control unit / frequency converter	Possible causes and their remedies, see the attached original operating manual of the frequency inverter or on www.keb.de.

9.3.4 Machine with a pneumatic motor

Fault	Possible cause	Remedy
Motor does not run / stops during work.	No compressed air.	Check whether the compressed air supply is open.
		Check the compressor.
	Air pressure too low	Check the strainer in the lever valve.
		Check the dampers between the lever valve and the adapter for dirt.
		Check that the correct number of shims are fitted to the motor.
		Check whether the compressed air supply line is sufficiently dimensioned.
	The compressed air hoses are not connected or are defective.	Check the compressed air lines.
	The compressor is not switched on.	Switch on the compressor.
	The compressor is defective.	Contact the manufacturer of the compressor.
The bellow inflates.	The bellow is closed.	Open the bellow. The air must be able to escape freely.
The machine does not operate.	The valve O-ring does not close properly.	Terminate work and send the machine to FREUND Maschinenfabrik for inspection.
Motor is frozen	The container of the water separator at the service unit is full.	Empty the container of the water separator at the service unit.
	Water content in the compressed air is too high.	Follow the requirements according DIN ISO 8573-1, Quality Class 3-4 → Chapter *Compressed air (K16-P4_evo2*) on page 39.
	The air pressure at the service unit is set too high.	Set the air pressure to a maximum of 0.6 Mpa and save the setting.

10 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.

10.1 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.

10.2 Disposing 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.

Technical data

Machine	pneumatic	electric, 1-ph	electric, 3-ph	Weight [kg]	Length [mm]	Height [mm]	Width [mm]	Saw blade Ø [mm]	Cutting depth [mm]	Type of motor	Motor power [W]	Speed of rotation [rpm] 50 / 60HZ	Voltage [V] / Rated current [A]	Frequency [HZ]	Water connection ["]	Compressed air connection inside Ø [mm]	Air consumption [l/min]	Pressure [bar]
PFK23-03			●	14,5	594	467	237	230	75	M03	1300	1320 / 1584	42 / 23 400 / 2,7 230 / 4,3	50/60	-	-	-	-
HBK28-06			●	21	850	320	235	280	100	M06	1800	1320 / 1584	42 / 32 400 / 3,4 230 / 5,8	50/60	-	-	-	-
HBK33-08			●	31	920	355	205	320	105	M08	2300	900 / 1080	42 / 40 400 / 4,3 230 / 7,4	50/60	-	-	-	-
BBKM25-03D			●	16	735	320	187	250	85	M03	1300	1320 / 1584	42 / 23 400 / 2,7 230 / 4,3	50/60	-	-	-	-
BBKM25-06D			●	21	750	346	234	250	85	M06	1800	1320 / 1584	42 / 32 400 / 3,4 230 / 5,8	50/60	-	-	-	-
BBK28-06D			●	21	795	420	234	280	100	M06	1800	1320 / 1584	42 / 32 400 / 3,4 230 / 5,8	50/60	-	-	-	-
SK28-03L			●	14	770	300	187	280	100	M03	1300	1320 / 1584	42 / 23 400 / 2,7 230 / 4,3	50/60	-	-	-	-
SK32-06L			●	19	810	330	235	320	120	M06	1800	1320 / 1584	42 / 32 400 / 3,4 230 / 5,8	50/60	-	-	-	-
SK40-08L			●	36	1036	465	305	400	145	M08	2300	900 / 1080	42 / 40 400 / 4,3 230 / 7,4	50/60	3/8			
SK52-08L			●	41	1088	581	305	520	205	M08	2300	900 / 1080	42 / 40 400 / 4,3 230 / 7,4	50/60	3/8			
K16-P4_evo2	●			3,1	525	232	187	160	15-50	P4	800	1100 / 1320	-	-	-	9	950	6,3

Technical data

Machine	pneumatic	electric, 1-ph	electric, 3-ph	Weight [kg]	Length [mm]	Height [mm]	Width [mm]	Saw blade Ø [mm]	Cutting depth [mm]	Type of motor	Motor power [W]	Speed of rotation [rpm] 50 / 60HZ	Voltage [V] / Rated current [A]	Frequency [HZ]	Water connection ["]	Compressed air connection inside Ø [mm]	Air consumption [l/min]	Pressure [bar]
K18-01		●		6	520	194	96	180	15-65	M01	1050	1440 / 1728	230 / 4,8	50/60	-	-	-	-
K18-13			●	11	527	257	187	180	15-65	M13	950	1640 / 1968	42 / 17 200 / 3,5 400 / 1,8 230 / 7,4	50/60	-	-	-	-
RTK18-13			●	12	605	238	184	160	5-51	M13	950	1640 / 1968	42 / 17 400 / 1,8 230 / 7,4	50/60	-	-	-	-
BCK23-03			●	13	670	180	264	230	75	M03	1300	1320 / 1584	42 / 23 400 / 2,7 230 / 4,3	50/60	-	-	-	-
BCK23-06			●	17	690	197	264	230	75	M06	1800	1320 / 1584	42 / 32 400 / 3,4 230 / 5,8	50/60	-	-	-	-
K23-13			●	13	595	244	187	230	15-65	M13	950	1320 / 1584	42 / 17 400 / 1,8 230 / 7,4	50/60	-	-	-	-
K23-03			●	14	594	244	187	230	15-75	M03	1300	1320 / 1584	42 / 23 400 / 2,7 230 / 4,3	50/60	-	-	-	-
K23-06			●	19	613	244	234	230	15-75	M06	1800	1320 / 1584	42 / 32 400 / 3,4 230 / 5,8	50/60	-	-	-	-
K28-03			●	15	698	178	187	280	100	M03	1300	1320 / 1584	42 / 23 400 / 2,7 230 / 4,3	50/60	-	-	-	-
K28-06			●	19,5	717	300	234	280	100	M06	1800	1320 / 1584	42 / 32 400 / 3,4 230 / 5,8	50/60	-	-	-	-

Technical data

Machine	pneumatic	electric, 1-ph	electric, 3-ph	Weight [kg]	Length [mm]	Height [mm]	Width [mm]	Saw blade Ø [mm]	Cutting depth [mm]	Type of motor	Motor power [W]	Speed of rotation [rpm] 50 / 60HZ	Voltage [V] / Rated current [A]	Frequency [HZ]	Water connection ["]	Compressed air connection inside Ø [mm]	Air consumption [l/min]	Pressure [bar]
K32-06			●	20	740	334	174	320	120	M06	1800	1320 / 1584	42 / 32 400 / 3,4 230 / 5,8	50/60	-	-	-	-
K23-03L			●	13	776	245	155	230	75	M03	1300	1320 / 1584	42 / 23 400 / 2,7 230 / 4,3	50/60	-	-	-	-
K23-06L			●	18,5	765	245	234	230	100	M06	1700	1320 / 1584	42 / 32 400 / 3,4 230 / 5,8	50/60	-	-	-	-
K28-03L			●	14	771	300	155	280	100	M03	1300	1320 / 1584	42 / 23 400 / 2,7 230 / 4,3	50/60	-	-	-	-
K28-06L			●	19	790	312	174	280	100	M06	1800	1320 / 1584	42 / 32 400 / 3,4 230 / 5,8	50/60	-	-	-	-
K32-06L			●	19	810	330	174	320	100	M06	1800	1320 / 1584	42 / 32 400 / 3,4 230 / 5,8	50/60	-	-	-	-

Noise level [dB(A)] ≤ 70, can increase at work up to 95 dB(A)

Conformity

The company FREUND Maschinenfabrik GmbH & Co. KG hereby confirms, for articles and their materials that, when used as intended, come into contact with food comply with the following general requirements.

- Regulation (EC) No. 1935/2004 of 27 October 2004 for articles and materials that are intended to come into contact with food.
- Regulation (EC) No. 10/2011 of 14.01.2011 for plastic articles and materials that are intended to come into contact with food.
- Regulation (EC) No. 2023/2006 of 22 December 2006 for good manufacturing practices for articles and materials that are intended to come into contact with food.
- LFBG - Food, Articles of Daily Use and Feeding Stuff Law, as of 01.09.2005.

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

FREUND-Circular-Breaking-Saw

Machine parts that come into contact with food	Material designation	Groups of materials and articles	Notes
Saw blade	X46Cr13 (1.4034)	Stainless steel	
Flange nut	X5CrNi18-10 (1.4301)	Stainless steel	
Protective cover	G-AlSiSMg (Gal23s)	Aluminium	
Gear housing	G-AlSi5Mg (Gal23s)	Aluminium	
Gear neck	G-AlSiSMg {Gal23s)	Aluminium	
Depth control	Polyamid 6 (66)	Plastics	
Fastening elements	X5CrNi18-10 (1.4301)	Stainless steel	

Paderborn, 24.03.2020

Head of Development

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Freund Maschinenfabrik Beteiligungs-GmbH
Amtsgericht Paderborn HRB 2048
Geschäftsführer: Robert Freund

VerbundVolksbank OWL eG
BIC: DGPBDE3MXXX
IBAN: DE 96 4726 0121 8600 0895 00
Sparkasse PB-DT, BIC: WELADE3LXXX
IBAN: DE 38 4765 0130 0001 0450 20

EG-Konformitätserklärung • EC-Declaration of Conformity • Declaración CE de conformidad • Déclaration CE conformité

FREUND
GERMAN QUALITY SLAUGHTER-TOOLS

im Sinne der EG-Richtlinie Maschinen 2006/42/EG, Anhang II, Nr.1 A
content according to 2006/42/EC, Annex II, No. 1 A
contendido según 2006/42/CE, anexonex II, núm. 1 A
contenu conforme à la directive 2006/42/CE, annexe II, N° 1

Hersteller • *Manufacturer* •
Constructor • *Constructeur*

FREUND Maschinenfabrik GmbH & Co. KG
Schulze-Delitzsch-Str. 38
D-33100 Paderborn
Germany

Dokumentationsbevollmächtigter
Documentation manager
Responable de la documentación
Mandataire de la documentation

Robert Penner

Hiermit erklären wir, dass **die Maschine** • *We hereby declare that the machinery* •
Por la presente declaramos que **la máquina** •*Nous déclarons par les presentes que la machine*

Typ • *Model* • Modelo • *Type*

Serien-Nummer • *Serial-Number* •
Número de série • *N° de série*

mit allen einschlägigen Bestimmungen der EG-Maschinenrichtlinie 2006/42/EG übereinstimmt.
fulfils all relevant provisions of Directive 2006/42/EC.
concuerdo con todas las disposiciones de la Directiva 2006/42/CE relativa a las máquinas.
satisfait à la ensemble des dispositions pertinentes de la directive 2006/42/CE relative aux machine.

Die Maschine stimmt auch mit allen einschlägigen Bestimmungen der folgenden EG Richtlinien überein:
The machinery is also in compliance with all relevant provisions of the following EC-directives:
La máquina concuerda también con todas las disposiciones pertinentes de las siguientes directivas de la CE:
Cette machine satisfait également à toutes les dispositions pertinentes des directives CE surivantes:

2004/108/EG – EMV-Richtlinie
EGV 1935/2004

Folgende harmonisierte Normen (oder Teile dieser Normen) wurden angewendet:
The following harmonised standards (or parts thereof) were applied:
Se aplicaron las siguientes normas armonzidadas (o partes de estas normas):
Les norms harmonisées suivantes (ou parties de ces normas) ont été utilisées:

DIN EN ISO 12100, EN 12984
DIN EN ISO 13850, EN 563, EN 60204-1
EN 60529, EN 61558, EN 1672-2, DIN 15112,
EN 55022, DIN EN 61000-6-3/-6-4,
EN 55081-2, EN 50082-1, EN 55014-1, EN 55014-2

Name und Unterschrift
Name and Signature
Nombre y firma
Nom et signature

..... Paderborn
Robert Freund
Geschäftsführer • *Managing Director* • Director gerente • *Directeur*

www.freund-germany.com